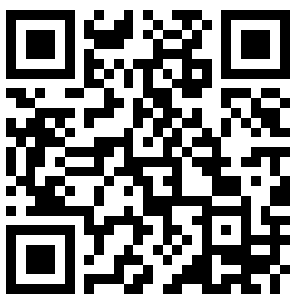

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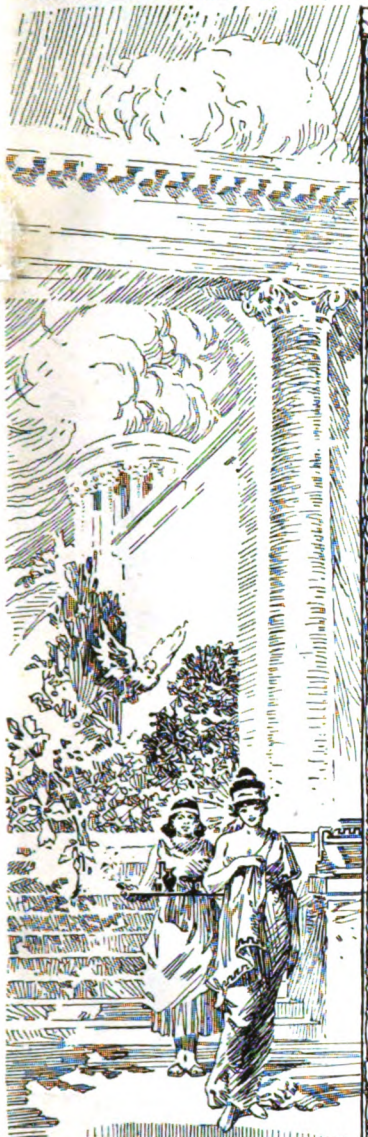

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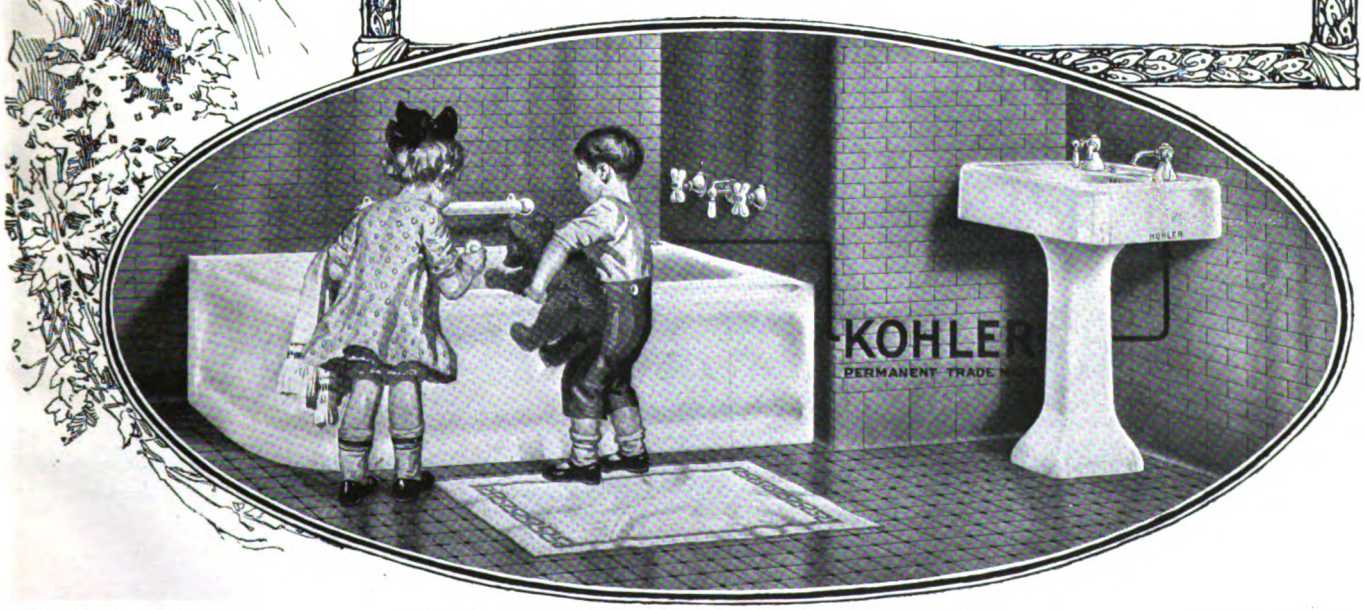

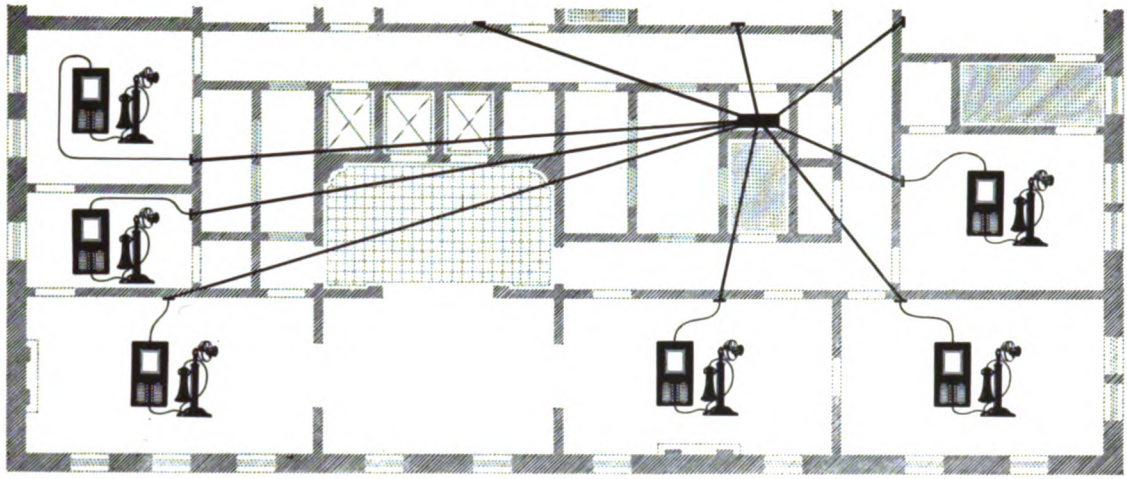

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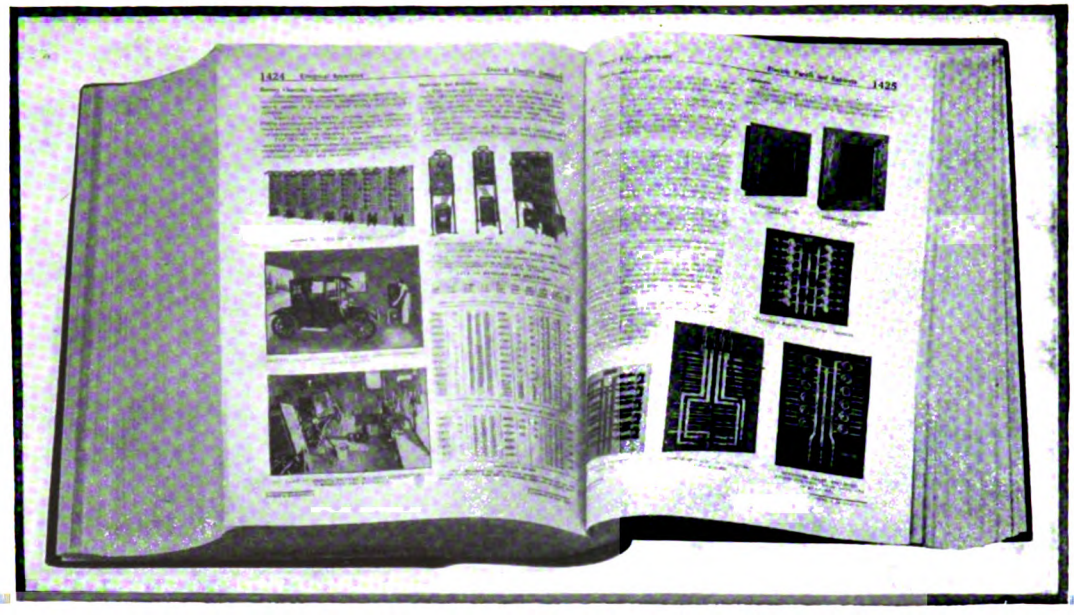

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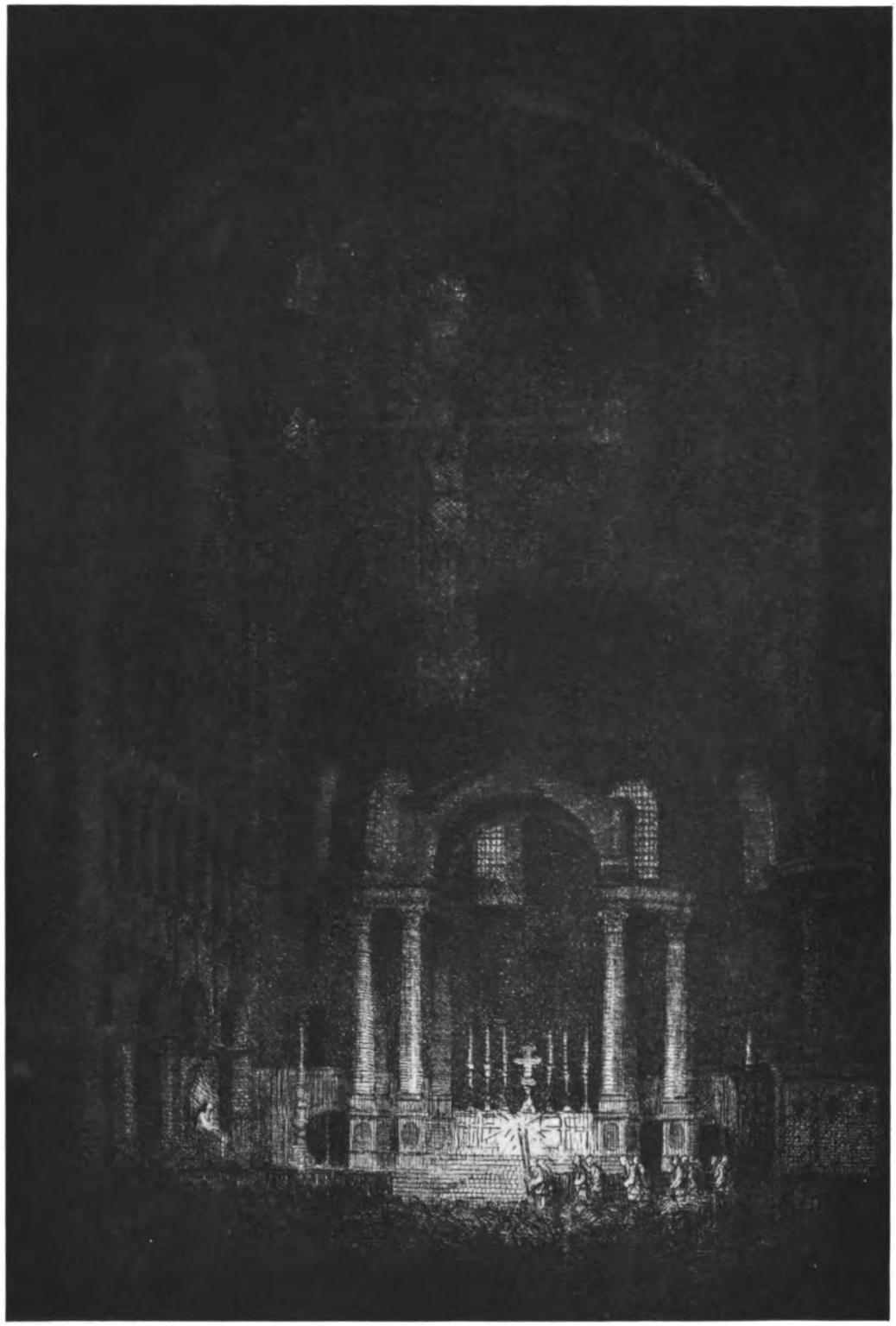

WESTMINSTER CATHEDRAL.—After the etching by Henry Winslow

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Shadows and Straws

NO FIGHT AGAINST THE Omnibus Public-buildings Bill has ever assumed such proportions and intensity as that which now engages the attention of Congress and the entire reading public of the United States. The attacks are not by any means confined to the laity. Representative Frear, of Wisconsin, spoke at length on January 7. His remarks have not been exceeded in the vigor of their denunciation, and they may be epitomized in the following:

"I speak in opposition to the pending $35,000,000 public-building bill which we are told will pass at this session. Judging from past experience the bill will be loaded down at the other end of the Capitol with from $5,000,000 to $10,000,000 more 'Government monuments,' so that it promises to rival the $43,000,000 river and harbor pork barrel passed at this same session of Congress. The last public-building act was rushed through the House under suspension of the rules. Only twenty minutes were given the opponents of the bill in which to discuss a bill of fifty pages, containing between 400 and 500 items, appropriating over $40,000,000, and covering extravagant and worthless projects from one end of the country to the other. The House and the public were blindfolded as to facts, and then bound and gagged by a vote of 154 to 30 to stifle discussion."

Mr. Frear's reference to loading the bill down "at the other end of the Capitol," is intended to point out the fact that the Senate has a large share and a large responsibility in this pork-barrel legislation. As indicating at least one opinion in the House over the question of slices and as evidence of the little antipathies which are always aroused by divisions of spoils, we quote from a speech by Representative Borland, of Missouri, at the passage of the 1913 bill:

"The bill contains perhaps less than a score of items that can be attacked on any ground of just criticism out in the country, but contains nearly $10,000,000 hogshead of pork for the District of Columbia. We are compelled to submit to this unjust criticism from one end of the country to the other of having prepared a pork-barrel bill, when there is not a member of this House that has got more than a slice of side meat compared with this hogshead of pork (Senate amendments). I am disgusted with this high-handed attempt to not only get the lion's share of the pork, but to load all the odium upon the House of Representatives."

AT THAT SESSION IN 1913 to which Mr. Frear alludes, Representative Fitzgerald, of New York, Chairman of the Committee on Appropriations of the House, said, "I denounce as indefensible this method of passing a public-building bill. . . . It cannot be defended from any standpoint of public necessity."

In 1913, criticism of the public-buildings bill reached such a height that Congress appointed a Public Buildings Comission to investigate and report upon the method of making appropriations. Its conclusions follow:

"A general examination of sites and buildings authorized but not consummated has been made and the Commission is satisfied that some appropriations have been made which are not justified. Other authorizations are too large. These authorizations were, it is believed, the result of the present unsatisfactory system of providing for and constructing public buildings."

Postmaster General Burleson, a member of the Commission, submitted a minority report which was as admirable in the lucidity of its analysis and the directness of its criticism as the majority report was weak. From his remarks we quote as follows:

"The absence of clearly defined policies with respect to the construction of public buildings is largely responsible for the delay in authorizing projects under contract. No standards whatever have apparently been observed in authorizing buildings or fixing in advance the limits of cost. As a consequence many expensive buildings have been authorized for places where the needs of the Government do not warrant their construction and widely varying limits of cost have been fixed for buildings for which the needs are about the same. . . . It is clear that limits of cost have not been based on any uniform standards and that the wide variations are indefensible. The inconsistency of the legislative authorizations has not been remedied by the exercise of executive discretion. It has been the practice to approximate the entire appropriation in expenditures for the construction of the buildings authorized. This has necessitated separate treatment in the majority of cases and has restricted the output of the Supervising Architect's office to the minimum. It has also resulted in the erection of monumental buildings out of all harmony with, and greatly exceeding in cost, other buildings in the same localities. Frequently the plan of a public building has been made to include a second story, practically all the rooms in which have remained unassigned, showing clearly that there was no good reason for the provision of this space. The remedy for this condition . . . lies in the adoption of a new public-buildings policy."

In his annual report for 1916, the Secretary of the Treasury stated that as a result of his three years' study of the public-building question, he was convinced

"that the methods pursued by the Congress for the past fifteen years of providing federal buildings through so-called omnibus public-building bills have resulted in the construction of many public buildings in small towns and localities where they are not needed, and at a cost which is clearly unjustified by any actual requirements of the communities in which they are erected. The conclusion is irresistible that authorizations for public buildings in these small communities are too frequently dictated by local reasons and without regard to the best interests of the Government."

BEFORE TURNING TO THE PRESENT omnibus public-building bill, it may be well to say that the Treasury Department has undoubtedly made progress in trying to effect some economies in the purchase of sites and in using its discretion as to the amount to be expended on buildings. But neither real economies nor any sound architectural development are possible under the present system. The amazing situation in the office of the Supervising Architect is disclosed in his annual report of June 30,1916. The work accomplished during the year previous makes the following record, and supports our demand for an expert commission:

"Placed under contract during the year:

Buildings (including the Interior Department office building and the central heating, lighting, and power plant)	88
Extension and remodeling projects	8
	96

"Completed during the year:

Buildings	94
Extension and remodeling projects	7
	101

The amazing part of the situation is revealed in the following summary:

Buildings authorized prior to act of March 4, 1913, and not under contract June 30, 1916	20
Buildings authorized in act of March 4 and June 23, 1913, and not under contract June 30, 1916	248
Building authorized in act of March 4, 1915 (Forsyth, Georgia)	1
	269

On June 30, 1916, there were thus 269 buildings awaiting the making of plans and the preparation of specifications in the Supervising Architect's office!

It is therefore apparent that any buildings authorized at the present session of Congress cannot be undertaken before the year 1920, at the present rate of progress. By that time the conditions of every one of the projects will have changed materially and an appropriation will bear less relation than it does now in the present helter-skelter method of fixing a figure. If the bill itself were not indisputable evidence of its own pork-barrel character, the most complete and perfect testimony to that effect is disclosed by the fact that the Committee on Public Buildings is proposing to appropriate money for buildings, the first of which cannot possibly be begun for three years, and built only at a rate which will make every appropriation obsolete before a plan is drawn. Again we point to these conditions as one of the paramount reasons why the public-building policy of the United States should only be determined after a thorough investigation by an expert commission. Appropriating money is only a part of the problem. Planning and constructing the buildings promptly are also vital factors.

THE PRESENT BILL is known as H.R. 18994, which is a revised version of H.R. 17052 and its supplementary escort H.R. 17188. This latter, merely added a few items to its predecessor and

increased the amounts of other items. H.R. 18994 includes these additions and some new ones amounting to about $400,000. Lewistown, Illinois; Oswego, Kansas, and Plymouth, Pennsylvania, are given buildings where they had only sites in the previous bills. Lenoir City, Tennessee, with annual postal receipts of $6,460 has the cost of its site increased from $6,000 to $10,000. Millen, Georgia, with annual postal receipts of $5,000, gets $5,000 for a site. The large items are an increase in the appropriation for the post office at Fort Worth, Texas, of $100,000, and $60,000 for additional land for the site at Waco, Texas. Such political significance as may attach itself to these post-election changes in the bill is left as a subject for individual speculation.

On submitting H.R. 18994 to the House, Chairman Clark of the Committee on Public Buildings and Grounds of the House also presented a report numbered 1222, and dated December 16, 1916. It appears to be identical with the report originally submitted in connection with the earlier bill known as H.R. 17052 and offers an excellent example of the obscurity on this question which so generally prevails. Excerpts from it also may be useful in clarifying some of the defensive arguments which have from time to time been put forth in support of the method followed by the Committee on Public Buildings and Grounds in making up the omnibus bill.

From this report we find that

"It will also be noted that the bill carries a provision for the construction at such places where only the postal and civil service needs of the Government are to be taken care of, of factory or block type of buildings capable of being enlarged and added to as the necessities of the service may require. It has been the custom of the Government in past years to construct in small cities and towns magnificent buildings of stone and marble, which were entirely out of place and not in keeping with the surroundings, and in a great many places totally unfitted for the purpose intended. It is the view of this committee that a post office should be essentially a workshop and that it should be constructed with a view to efficiency, economy, and the comfort of the employees. . . . We believe that the time is past, and, in fact, it never should have existed, when monumental buildings should be constructed for the conduct of the postal business of the United States. As stated hereinbefore, the Committee is decidedly of the opinion that the post office should be essentially a workshop, with plenty of light, air, and space in which to efficiently and economically transact the business of the Republic."

This statement is of especial interest when contrasted with the words of Mr. Clark, spoken upon the floor of the House on January 17, 1916, or about eleven months earlier than the report from which we have just quoted:

"I hold no brief for the Committee in what I am about to say, but speaking for myself alone, and as an individual member of this great body, I want to say that there are some other considerations which move me and operate upon my mind when giving attention to the matter of constructing Federal buildings in the smaller cities and towns and particularly those of the interior. . . . If I had the power I would erect for every presidential post office throughout the broad domain of the Republic a Government building representative of the sovereignty and the glory of this great country. From Maine to California and from the Great Lakes to the Gulf, in every town of sufficient importance to have the President name the postmaster, I would erect a suitable but not extravagant building and from its apex the Stars and Stripes, proud emblem of the glory of the Republic, should forever wave an inspiration to the youth of the land. Suppose that here and there it should be a little more expensive in dollars and cents to own a building than it is to rent. Is it worth nothing to inspire patriotism and love of country in the hearts and minds of the youth of the country? No youth or citizen ever looked upon a Federal building in which the business of his country was being conducted but that he became a better American."

This moving plea, so unconsciously naive in its fundamental appreciation of architecture, concluded with an oration upon the beauty of the Capitol and three lines from a well-known poem. Yet, eleven months later, the "factory or block type" of building is proposed and the youth of the country are to go unblessed by the vivid emotions aroused by a contemplation of our present post-office style of architecture!

THE BILL OF 1913 contained this clause:

"That hereafter no authorization shall be made for the construction of a building to be used exclusively for post-office purposes at any town or city where the postal receipts have not reached the sum of $10,000 annually, nor shall any authorization for the purchase of a site for post-office purposes only be made at any town or city where the postal receipts have not reached the sum of $6,000 annually."

This law, which is a mere subterfuge, does not apply where other governmental activities are to be housed in the post-office building, and the exception offers a basis for extravagances which will be defended as "under the law," by the sponsors of the present public-buildings bill, which includes many small towns where the postal receipts are below the $10,000 prescribed.

The present bill contains the following provision:

"That from and after the passage of this act no city or town in the United States where there are no Federal activities other than the post office shall be considered, either for the purchase of a site or for the construction of a Federal building, . . . unless it shall appear that the postal receipts for such a city or town have amounted to at least $10,000 annually for three successive years: Provided, That nothing herein shall apply to cities or towns where sites for public buildings have been acquired or authorized."

That last clause may probably be construed as protecting the interests of those towns which may never reach the necessary $10,000 limit, but which have in this and previous bills been able to get an appropriation for a site.

While it may be contended that these laws exhibit a tendency to reduce public building appropriations to a business basis, it is evident that the mere framing of such arbitrary standards is nothing more than a concession wrung from Congress by a nation which is beginning to understand that politics has become an end in itself, and that oil for the political machinery —not ignorance of business methods—is the real source of the polluted stream of Congressional extravagance.

THE CHAIRMAN OF THE COMMITTEE said in the House on Dec. 21, 1916:

"Two objects are involved in the fight upon this bill. One is to take the jurisdiction to legislate away from Congress and turn it over to a bunch of bureaucrats, giving them a lump-sum appropriation and allowing them to say where the buildings shall go; and the other is to defeat this bill and later on come to the Committee with a lot of emergency propositions for the great cities and force us to bring out a bill covering them only. As one member of this Committee, and only one, I want to say I shall never vote for a bill that contemplates only the great cities of the country. If the rural districts cannot be taken care of and their mail facilities cannot be protected, as one member of the Committee, I will never bring out a bill to take care only of the great cities of the land."

As to the first of these objects, we think there is no opponent of the present method of making public-building appropriations but that would frankly avow his belief that the right to administer appropriations should be taken away from Congress. Not the right to legislate, but the right to designate, is the principle involved. The power to grant money for public buildings cannot be taken away from Congress, but the right to say how the money shall be spent does not belong to it, and the abuse of that extra-Constitutional privilege is responsible for extravagances that only the wealthiest nation in the world could shoulder. As to where should go the right to designate what public buildings should be erected under an appropriation based upon a budget allowance, no one cay say. It would be part of the work of such a commission as we advocate to determine the business basis upon which such problems should be met and solved, and until that business basis is determined the extravagance will continue.

Congress will fight to the last ditch to retain the power of designating what buildings shall be built. It is a vital wheel in the political machine which is being ever more perfected. It is one of the important works which protects Congress against the adoption of the budget system and the consequent loss of the huge political power it has built up, always, be it remembered, with the approval of the voters. Congress scents in the opposition of the Treasury Department to the public-buildings bill an effort to obtain control of the power of designating where public buildings shall be built. That this is plain is evidenced in the speech of Chairman Clark which we have quoted. The "bunch of bureaucrats" is a very plain insinuation. So is the similar reference by Speaker Champ Clark of the House, in a letter to the *New York Times* published on December 28, 1916, from which we quote as follows:

"For several years I have been trying to devise a better scheme of erecting public buildings than we now have. I have contended for a long time that there ought to be fixed conditions on which public buildings would be erected automatically—conditions as to postal receipts. I am utterly unwilling that such things should be disposed of by any Cabinet Minister who is simply a head clerk to the President."

As to the second object said to be involved, we trust that the cry of sectionalism, raised like a red flag whenever a national issue is at stake, will pass for what it is. Is such the language of one who seeks to meet a business problem in the best interests of the nation as a whole or is it the protest of one who scents an assault upon the sacred privilege of dealing out perquisites under our system of appropriating money?

ONE SERIOUS ASPECT of the present bill seems to have escaped notice. We do not find that the Treasury Department has pointed out that

the $39,000,000 involved is not a charge against the revenues for the year 1917. We have seen no statements anywhere to illumine the even more serious nature of the situation. It is improbable that more than $5,000,000 to $7,000,000 of the $39,000,000 carried in the pending bill would be expended during 1917, and that almost entirely in the purchase of land. The balance of the appropriations is a liability imposed upon succeeding administrations, and is met year by year as construction actually ensues. Comment upon such a method of Government finance seems unnecessary.

In our protest at the present methods of appropriating money for public buildings, we have endeavored to point out that communities are equally to blame. As a matter of fact, they are more to blame, for by their tacit acceptance of the method involved they encourage Congressmen to believe that it is approved by their constituents and that their possible reëlection will hinge upon the size of the favors they are able to extract from the nation's treasury.

Every community affected in the bill ought to rise as one man and proclaim its refusal to participate in a distribution of public money based upon so palpable a lack of ordinary business foresight. No matter how dire its needs, there should be unanimous resentment at the method involved. What a wonderful thing it would be? How perfectly it would demonstrate that we are really a united nation! That national citizenship does exist! That Congressmen are elected to serve the nation's welfare and not as special pleaders for each community's selfish interests! It is in the mirror of their own civic conscience that the citizens of the un-United States must look if they would understand "pork."

The fight against the Omnibus Public-buildings Bill is only one minor operation in the bigger battle against a snugly intrenched machine, fortified behind that provincialism and sectionalism which pervades the nation, and which tacitly, if not openly, acquiesces in the betrayal of the country when a local selfish issue is involved.

A Depressing Feature of the controversy over public-building methods is the lack of any apparent comprehension of the relationship which architecture should bear to the physical needs of housing Government functions. The allusions to the architectural element, in the press, have been pretty generally confined to sarcastic comments on "monuments," "marble palaces," and such other exhibitions of superlative democracy as have seemed best suited to convey an idea of extravagence in expenditure and an impressive disdain of all things "impractical." The city has howled at the village and the small town; they have replied in kind. The cry of unfairness in distribution has been raised in Congress, echoed throughout the land, and re-echoed in Washington. The vital principle at stake has been lost to sight by cities and towns alike. The cities point out their large postal receipts and demand relief from annoying congestion and vexatious delays. The country places proclaim their right to consideration and accuse the large communities of selfishness and inconsideration. It reads like the tale of a scramble for largesse, rather than a discussion of a national issue which is a matter of business and nothing more, so far as the terms are concerned, and might well lead the stranger in our land to ask what "united" means.

The present issue will perhaps be decided before the Journal reaches its readers. It is reported in Washington that the bill will be passed, and it has likewise been stated by the President, according to press reports, that he will veto the bill if it passes in its present state. We may be able to say something much more definite in the February issue.

THE NECESSITY for economy of paper, together with a desire to have the text pages of the Journal printed upon an uncoated paper surface, have led to changes in the makeup of this number. These include, also, a slightly larger type page, as a measure of paper economy, which has the merit of permitting correspondingly larger plates. The beginning of the Structural Service Department has also been a factor in what are, we believe, to be highly desirable changes, and marks a most important step in the work of the Journal. The measure of its appreciation has increased at a rate which leaves no doubt of the future, and Volume V steps out upon the road with a light heart.

WITH FERVOR, we wish that we might record the demise of the threadbare figure "Educating the public." Reduced to rags and

tatters, the sorry spectacle still totters tremblingly on its way, gathering a little compassion and comfort as it persuades ambitious beings to take up the cry. To ears which have been dulled into insensitiveness by the passionate preachments of this reformer and that; to eyes which have been seared with the sordid "educational" efforts which litter our highways, infest our streets, disfigure our buildings and premiate a general ugliness, there come occasional dreams of an uneducated world where everyone would be content to pursue his own education unmindful of the dense ignorance that now troubles the conceited estimation with which so large a share of the public now regards itself. We recall the memorable "Epistle to the Cymry" of George Moore, and his simple exhortation, "Let us educate ourselves, but be not educated." That epistle would bear a wide reading.

Perhaps never was the word "education" so given over to controversy and speculation. Representing, as it does, a process which begins at birth and is unfinished at death, it has become much confounded with instruction, which is quite a different matter. The Institute now sees, we believe, that both the education of the architect, the client, and the far larger class which may never indulge in building but whose appreciation is so dearly coveted, is a problem which is not easily resolved into separated and isolated phenomena.

We fancy that it is also beginning to be seen that the approach to the problem is through cultivated coöperation with all the agencies that are soberly addressing themselves to the stupendous task of finding out, not alone how to educate, but for what purpose we desire to educate. There are some who have grown to believe that it is the last question which must be answered first; that before we seek remedies we should search out objectives, and that those objectives will be found to lie spiritually deeper than the mere making of clever producers and intelligent consumers. Both are desirable, but there are other things more desirable, and we are glad that occasion permits us to reprint in this number the memorable address by Mr. LaFarge at the Convention in Minneapolis*. It is by way of being an approach to the task ahead of us, as is the following article by Mr. Bosworth. We feel that the Journal is able, with their generous aid, to make a worthy contribution to the preparatory steps which cannot be avoided or lightly skipped over, if there is to be any intelligent following of the path, and we bespeak for these articles a much more than passing attention; they direct the probe into the very roots of our hopes and fears as a nation ostensibly bent upon a high mission, in the fulfillment of which the fate of our architecture is indissolubly bound up.

*"Education and Public Taste," p. 9.

Eight Etchings by Henry Winslow

TO THE readers of the Journal Mr. Henry Winslow needs no introduction, for his articles on John Ruskin, Eugene Isabey, Richard Parkes Bonington, and Samuel Prout, have perhaps not been excelled in the keenness of their analytical quality and in the sureness with which he has placed each of these great interpreters in the long line of draughtsmen to whom architecture held a never-failing appeal. From time to time Mr. Winslow has sent us a few sketches with which to illustrate some of his earlier letters from London. Doubtless there are many who will recognize in the present etching of St. Paul's a likeness to the pen-drawing by Mr. Winslow which we published some three years ago, while others are already familiar with his earlier etchings.

Mr. Winslow went to Paris in 1893 and studied architecture for five years in the Redon atelier. At about this time Whistler opened his school and gave a new impetus to etching; Mr. Winslow was one of the first to enter, and one of his first etchings was exhibited at the Salon, but in 1893 he returned to New York and renewed his architectural interests in the offices of Tracy & Swartout, Howells & Stokes, and Robert D. Kohn, later practising for himself. In 1911 he abandoned architecture, and devoted himself entirely to etching and painting. For several years he has been living in London. The eight etchings in this number are published for the first time.

Education and Public Taste

THEY tell a story, which perhaps you know, of a girl who was riding with her mother in a street-car. Her eye caught a newspaper headline and she exclaimed, "O, Ma, the Cam-pa-níle has fallen!" and burst into tears. The beauty of this story of provincial gaucherie and true esthetic anguish over the collapse of that bell-tower which all the world has come to call *the* Campanile, lies in its truth, for it is true whether or not the incident actually occurred. That is, it presents to us a fair picture of two manifest and touching phases of our American life—our singular lack of that atmospheric condition which should be the product of the education we so agonize over, and the unintegrated sensitive yearning for the beautiful, for escape from our plodding vulgarity, which expresses itself in so many and sometimes so quaint ways. About the yearning there can be, I take it, no doubt—on the side of education conflicting counsel darkens wisdom.

It was at first my intention to direct these remarks toward education in the arts—aside from the fact that any specific discourse of mine upon methods of instruction would have to be second-hand, and therefore presumptuous, there is a further difficulty. The more I think of education in the arts, the less I can see it disentangled from general education; the more I become convinced that to make all education contribute to the making of public taste is as great a need as specific improvement in any special training. So it is as a bystander, vexed and confused by discordant clamor, that I must venture to speak.

To hear the clamors, one need not strain the ear. Pick up any current magazine with even the slightest pretension to be counted serious—I leave out the loathsome parasites that feed like clever lice upon metropolitan social uncleanliness, and those whose pages are a tasteless jumble of advertising and exploitation of the cheap god Success—and you will pretty surely find some paper that discusses education.

The pages of the *New Republic* stoutly proclaim the philosophy of John Dewey and the shining promise of Gary; in the broad *Atlantic*, the Headmaster of Andover breaks in a surge of indignant foam againt the opposing wave of Flexner's heresies. Right and left there is contention and divergence of opinion in what we must regard as the struggle to adjust the processes of civilization to new world-conditions, thrusting themselves more sharply upon our attention day by day, gravely accentuated by the terrific European spectacle; to conditions which we apprehend to mean the dissolving of many long-established boundaries; to new and growing conceptions of man's duty to his fellow-men.

Roughly speaking, very roughly and a little inaccurately, we may divide the educational camps into two: the advocates of a broad and general culture as discipline for the mind and a foundation upon which to build special activities, and those who preach a demonstrably direct utilitarian teaching. American educators, students and observant laymen are not the only contenders; the English are as torn by the strife as ourselves. Of other countries I do not know, though what seems to me a very remarkable and illuminating bit of news, to which I shall refer later, comes from Germany—Germany, where they have it all so settled and do it so well.

The distraught bystander, not qualified to form expert judgment upon the merit in detail of any particular scheme, unless perhaps in the circumscribed province of his own calling, cannot very well decide where the doctors so fiercely disagree. Therefore, being interested and concerned, anxious and doubtful, having also an opinion or two of his own here and there, he is driven back upon some generalizations, if only for the purpose of preserving his mental decorum. But if he must, notwithstanding his place outside the ring, yet arrive at some sort of alignment in his beliefs, some crystallization of opinion, he will, I believe, discover that his deposits are being formed on both sides of the dividing line.

For he will, to begin with, realize that the contenders, in their battles with each other, are fighting for the same thing: to make educational processes effective for the conduct of life, to make teaching teach. The humanists, anxious defenders of what they deem, as so many others of us do, a priceless element of all culture against the assaults they fear would sweep it from any real place in our lives, need not therefore be seen as universally arrayed in denial of the value of direct vocational instruction. The vocationists, inveighing against the hopeless unpracticality and waste of what looks to them like a kind of fetishism, are unfairly judged if we consider them unanimously contemptuous of those things that are the enriching fertilizers of the human mind. The opprobrious charges that one side levels against the other, the one saying "Your precious fertilizer is all very well, but it doesn't seem to take hold, it all leaches away;" the other, "Your blessed practicality is wretchedly unpractical; men are not machines and you can't make them such; the narrow product of your narrow teaching is not even good of its kind"—these charges, true enough indeed, not unadmitted by the sincere on whatever side, express, after all, a promising state of general, we may even call it a divine, discontent.

So, then, the bystander will note that a spirit of inquiry, pretty searching inquiry, is abroad in the land; note, too, that it encounters some formidable obstacles. He probably has but a vague notion of the great Italian, French and German foundations upon which the modern educational structure is reared, but he is not unlikely to catch some echoes of current English discussion, which may lead to interesting observations, casting strange lights upon our own. The first of these is that we have really progressed further, all crudities and poorly cooked theories acknowledged, along the road of inquiry than have they, in two respects: one, that it is but recently—perhaps only since the war has brought men hard up against hard facts—that the English educators pleading for reforms have had a public to understand and help them; the other, that they are still chiefly concerned with the practical question, the proportionate place that the classics, literature and history should hold in the curriculum. With us, on the other hand, it is an old story that whoever, expert or otherwise, has had educational views to air, reforms to demand, reactionary stupidities to decry, has appealed to

a widespread, keenly interested public of laymen and eager parents—the eagerness of the latter sometimes resented in high places. It is also, I think true that while the wrangle over curricula still goes merrily on, our expert leaders have given the best of their thought to philosophical probings; to the psychological aspects of the problem—that is to a determination of the fundamentals upon which constructive methods may safely stand. Not that the Englishmen are without this altogether; Holmes' article, for example, on Discipline and Freedom is a thoughtful attempt to define the nature and uses of discipline and a good exposition of child-psychology.

The other observation is more difficult to state, for it is hard to reduce an atmospheric sense to terms. To read any number of English essays on the subject, writings of laymen as well as of professionals, is to feel what I can find no better names for than catholicity and ripeness. Catholicity, in the sense that the controversial writer, damning, let us say, the grotesque unpracticalities flowing from Oxford traditional standards, yet shows so full a sense of the worth of Oxford culture in its proper place; that a deeply sensitive and sensible plea for the classics comes from a teacher of science in a great public school; while one of the most intensely cultured of all headmasters actually proposes the abolition of Latin and Greek. They understand what the adversary means, even when they most sharply disagree with him; they speak a common language. As for ripeness, how shall I say it? You know that these writers, protesting against the methods by which themselves were taught, declaring their absurdities, crying for new things, could by no conceivable possibility write as they write and think as they think were it not for the saturated air of tradition and general culture in which they have been produced. Despite our own further advance in the ways I have indicated, despite the occasional high merit of our own essays, what they say, as you scan the body of it, makes our writings, our speakings —particularly, I dare say, the remarks of bystanders on platforms where they do not belong—of an almost appalling sophomoric thinness. It is a matter of quality, and in one case it is there, in the other not; which is something we might do well to take account of before we decide on the contents of our proposed junk-pile.

The consideration of that highly distinguished scrap-heap is to some extent imposed upon us, because there is a contest, and contests inevitably develop certain manifestations. They produce partisan attitudes which exaggerate the views of the contestants. The reformer, straining to achieve some breach in the wall of conservatism, attacks more things than he probably would destroy could he once have his way. The conservative, alarmed lest essentials should be undermined, and seeing no guarantee of adequate substitutes, tends to become a reactionary. The advocate of new ideas rails against our teaching of the classics; he may not really mean any more than that they produce, as taught, but little visible effect in most cases, but he carries with him all those whose mental horizon is bounded by their narrow conception of practical utility and who wonder of what use Greek and Latin and history are, why anyone should bother about art, who think all beauty a kind of personal extravagance; for to them none of these things is used in making steel or concrete, or paving, or the manufacture of automobiles, or the development of power-sites. They are apt to be the kind who think conservation a sort of iridescent fad. And of course the humanists and all those to whom traditional things are dear, rise in arms against them. The reformers, impatient with shibboleths about mental discipline and indirect results, cry "Prove your case."—the case is naturally a bit hard to prove with any degree of mathematical precision. The bystander, picking up stray trifles of evidences here and there, is struck, for instance, by the German news I spoke of before.

I suppose that nowhere in the world have educational systems been more thoroughly worked out than in Germany. Nowhere has the distribution of teachings designed to produce specified results been more elaborately determined. German efficiency manifests itself in this way perhaps more clearly than in any other. There, more than in any other place, have men been held to a rigid accounting, in the quality of their performance, for the educational benefits they have received from their country. And yet it is from there we learn that "After ten years' experience of the students drawn from Realschulen as opposed to those from the classical Gymnasium the entire scientific professorate of Berlin University petitioned the Government for a return to some classical basis of education, on the ground that they foresaw 'grave danger to the Fatherland' in the uniform inferiority of mental caliber among the students turned out by the entirely modern schools." And if you happen to be so proally that you discount any pronouncement made by a body of German professors, turn to France, where a petition to the same effect was presented by Les Maitres des Forges, "declaring that the students from the new schools, though better equipped in mathematics and science on arrival at the technical school, invariably fell behind the classically trained boys in the later semesters of their course."

Now I want you to let me tell a story—I shall have recourse to stories for my illustrations, because a bystander must perforce depend so largely upon his own limited personal observations. This is about a little boy, some ten years old, who wanted to know why Herodotus was called "The Father of Lies." So his mother, believing that questions should be answered, read some Herodotus to him, explaining as well as she could while they went along, how later knowledge had proved the truth of so many of the old historian's statements. One summer day they came upon this account of the battle of Sardis: "Crœsus . . . . drew out the Lydians to battle; and at that time no nation in Asia was more valiant and warlike than the Lydians. Their mode of fighting was from on horseback; they were armed with long lances, and managed their horses with admirable address.

"The place where they met was the plain that lies before the city of Sardis, which is extensive and bare; several rivers, as well as the Hyllus, flowing through it, force a passage into the greatest, called the Hermus, which, flowing from the sacred mountain of mother Cybele, falls into the sea near the city of Phocæa. Here Cyrus, when he saw the Lydians drawn up in order of battle, alarmed at the cavalry, had recourse to the following stratagem, on the suggestion of Harpagus, a Mede. Having collected

together all the camels that followed his army with provisions and baggage, and having caused their burdens to be taken off, he mounted men upon them equipped in cavalry accoutrements, and, having furnished them, he ordered them to go in advance of the rest of his army against the Lydian horse; and he commanded his infantry to follow the camels and he placed the whole of his cavalry behind the infantry. When all were drawn up in order, he charged them not to spare any of the Lydians, but to kill every one they met; but on no account to kill Crœsus, even if he should offer resistance, when taken. Such were the orders he gave. He drew up the camels in the front of the cavalry for this reason; a horse is afraid of a camel, and cannot endure either to see its form or scent its smell: for this reason, then, he had recourse to this stratagem, that the cavalry might be useless to Crœsus, by which the Lydian expected to signalize himself. Accordingly, when they joined battle, the horses no sooner smelt the camels and saw them than they wheeled round and the hopes of Crœsus were destroyed."

The little boy took exception to this; he did not believe that the horses would be so frightened and thought that this time Herodotus had surely drawn on his imagination, and his mother was not able, at the moment, to produce supporting proof. The next day—the very next day—it happened that the coachman had to go to a village several miles away, and invited the boy to go with him, an invitation promptly accepted. They hitched up a favorite horse, known to be fast and of remarkable good manners and courage, though very high-spirited. They left the highway, and took a back country road, narrow, crooked, exquisitely bordered by the close hedgerows of trees, bushes and aromatic wild grapevines of southern Rhode Island, and on that road the horse suddenly stopped, trembling. Then, round a turn, came an elephant and a camel. The horse, in terror, mastered a strong inclination to sit down, then, quivering like a leaf, edged as close to the bushes as he could squeeze himself, while these members of a country circus passed. He then broke into a profuse sweat, and went along his way. When the boy got home he told the story.

Now what did all that mean to him? Well, that Herodotus was a living author. That the battle of Sardis was a real occurrence which, I venture to say, he will never forget; that those long-vanished yesterdays were tied to these present days in which he lives. A salient fact in natural history and incidentally a place for the elephant and the camel such as no mere science class would ever give them. And, not the least of all, a confirmation and appreciation of that horse's nerve and good conduct that should appeal to any lover of the horse. That much, anyhow; and all from reading a bit of Herodotus. As we look at the struggle going on between those for and against the classics, and those for and against the sciences, in which history somehow seems in danger of slipping out of sight neglected by both, perhaps this story may help those of us who want it to be taught. For though it actually did happen; the boy was my boy; it was my coachman and my horse—I lay no claim to the exotic fauna—it looks to me like an educational parable.

Once more about a boy. If he asks his parent "What was it like for people when they lived in caves?" what should the parent say? Stave him off with some evasive platitude? Or recognize that this was legitimate inquiry? In the case I have in mind, the latter course was taken. The boy was no prodigy; just a normal, ordinary boy with rather a marked tendency to pursue a subject when he got started on it. He is now fourteen years old; he has read all that Scott Elliott and Fairfield Osborn have given us about primitive man, and the other day I saw his list of the things he wants for Christmas: a gun, rifle, bright socks, a red neck-tie, a dog, tin soldiers, and a copy of the book of the foremost living French authority on prehistoric man.

The point of my telling this is not that this young rascal is really very interesting, except to his fond parents. It is partly that it has contained, for those parents, a lesson upon the importance of home environment as an adjunct to what even the very best of schools may do, something too of distrust in their own predeterminations of what are dry subjects for the youthful mind; partly that it leads to questioning whether some of the difficulties of educators, in arousing interest and in achieving retention of the thing taught, do not arise from insistence upon established formulas rather than willingness to seize upon latent motive impulses. For in every normal child there are God-given springs of right curiosity. And the great parting of educational ways lies between choking those springs and aiding their flow. What shall we do? Shall we, for these spontaneous mental fountains of youth, open channels for them to run in, to gather over and about them all the lovely overhanging ferns and flowers that keep them cool and sweet, that we call culture, until at last they water beautiful gardens or fill reservoirs of power; or shall we block them up because they are troublesome and lawless, build hard channels bare of adornment, and then pump the channels full from the good old stale tank of orthodox custom?

The bystander, ignorant and perplexed, himself a kind of concrete ditch frightfully subject to drought, sees that those who have had the vision of the fountain find arrayed against them the guardians of the tank. About this I want again to tell a story—bear with me please. I apologize for its being so personal, and beg you to believe that the passage of the years since its occurrence has relegated it, long since, to the realm of illustration.

Once, when I was young in what seemed a very young world, I found myself in a famous lovely English cathedral, one graced by perhaps the most exquisite of all Lady Chapels. No need to account for its appeal to me, nor for my eagerness to see it.

As an unprivileged tourist, I went into the cathedral to see for the first time its beauties and certain striking singularities of construction, which awakened a keen desire for closer examination than is allowed to stray visitors. I made the appointed rounds with the dull verger and the little group of hypnotized sightseers he shepherded; paid my sixpence, and then lingered. I asked him how I might gain access to the closed parts, but met with no encouragement. Then, as I persisted, he pointed out a man walking in an aisle across the church and said, "That is his Lordship; you might ask him."

I approached the Bishop—a fine-looking, dignified, elderly person in the cloth of his rank. I apologized for intruding upon him; explained that I was an American, curious about this building, fond of its period. I told

him that I was the architect of the new Episcopal cathedral about to be built in New York, and begged permission to go through this one. He looked me over from head to foot as though I were some strange and presumably offensive insect, and said, "Oh, so you're going to build a cathedral in New York, are you? I suppose it'll be the biggest in the world?"

"No," I answered, "not the biggest in the world. It is planned to build a large one, for it is a large diocese, and New York is an important city. This will probably be the chief cathedral of the Episcopal faith in America."

"Well," said his lordship, after a long pause, and another unfavorable inspection, "I think you'd better follow the verger."

I bowed and withdrew.

A good many years passed before, on another visit, I again met him. A part of our cathedral stood on its heights, and the world was not quite so young. Once more I met him in one of the aisles; he was in a recumbent position and had been turned into marble. Neither of us spoke; what he thought, I do not know; what I, is not to be set down here.

This story is one that may be used for the discountenancing of some British, or for the causing of Yankee exultations. Neither use is a worthy one, nor to the present purpose. The one I want to make comes from seeing that those who would reach the ears and the hearts of our fellow countrymen; who strive to appeal to them for the building of a public taste, expecting to meet minds open to ideas and the formation of intelligent fresh opinion; who ask for educational reforms reaching the problem of taste; who seek permission to indicate the ways of symmetry and order, of cleanliness, economy, tidiness, utility, convenience, and therefore beauty—they are told, over and over again in many ways to follow the verger.

Not sympathetic comprehension and interest nor the desire to move forward, but the verger. You know him; you see him—the pottering parrot wearily reiterating forever the same old phrases. In the presence of ancient glories, his tongue chatters and his mind is mute. His steps may not be diverted from the accustomed path nor his pace changed. For him there are no such things as new ideas. For him new glories do not exist or are meaningless, and the possible new splendors of a future day as remote from his conception as man's conquest of the air to Cotton Mather. And *he* is to be our teacher and our guide!

Follow the verger; preach in a vacuum; talk to ears dulled by the ceaseless repetition of catchwords accepted as a substitute for thought; show to eyes dimmed by never looking a fact in the face; depend upon taste assumed to be the elegant exclusive possession of all Brahmins, having nothing whatever to do with life in its manifold aspects, nor with the making of opinion. For you will indeed find no opinion, nor, for the matter of that can there be one in the absence of taste.

Follow the verger. Yes, and we do, not because we like it but because we must; and hand him our reluctant sixpences. Follow him and ignore our dirty, disorderly, unplanned cities with their needless noise and wasted water-fronts; their crazy taxation and mercurial real-estate values; their dreary, squalid suburbs and inhuman housing; our prisons that perpetuate barbaric hatred and black besotted ignorance of man's duty to man. Follow him to gape at showy libraries pathetically supposed to represent general knowledge and love of literature on the part of a public that scarcely noticed it when the conspicuous giver of most of them stood in honor amid a learned assemblage and complacently wiped Homer off the literary map (a far cry from the dictum of this our omniscient ironmaster, to the plea of those Maitres des Forges, who begged for classical training!); at great museums, splendid and worthy it is true, useful, necessary—I deny them not one whit of their untold value—them I admire, but not the aspect imposed upon them by the verger, who thinks the mausoleum of bygone fertilities an adequate substitute for present productiveness. Follow him and remain blind to our shiftless farms and squandered woodlands; our choked, polluted dried-up ravaged rivers; our schools that teach everything but the desire for learning and the way to use it; that triumph in their labored processes for stamping individuality flat and crushing the noxious weed initiative. And as we go, we listen to his drone about equality, opportunity and democracy, the American spirit, our progress and our superiority.

Such a verger as he of my ecclesiastical encounter is a plodding functionary of little interest; few know and fewer care what may be his name. But a verger whose exhibit is so vast as that of this other; who leads by the nose our swarming millions all day and every day—he is more of an affair. He should have a name, that fellow. And I propose to give him one. I shall call him Our Subfusk Public Taste.

That I attach altogether undue importance to the possession of taste will be the natural belief of those accustomed to regard it as an ornamental adjunct of our existence, a sort of delicate embellishment of refined living. To them, who take their orders from the verger, his good old formula, "correct taste," is as the saying of a prophet. They, in their way, the respectable verger way, established and sanctified, believe it can be taught as so many other things are taught us; stripped of their context; dissociated from their causes and their implications; torn up by their roots; so, with the juice squeezed out of them, imposed upon us as isolated useful facts, irrelevant but necessary, which we are then supposed to know and to remember. As geography is taught and spelling; as grammar, Latin, history for instance—the arts and much of architecture.

This taste of ours, then, is largely a matter of being told what to admire—I will not say like, for that is far too active a verb. We put it on or off like a garment; it is as any other fashion. And it has no closer relation to what we really are as a people, to our actual lives and manners, than have the Pandects of Justinian to a City Magistrate's Court. As we cannot follow here the complicated extent of its many vagaries, let us look at just one of its funny antics. A little while ago, we were very sure that we had found the recipe for our domestic architecture in the Italian Renaissance. The sum of our accomplishment in that style was becoming such as to be an index of our capabilities, when, after a declension into the accumulating of loot, naively accepted by us as the fair equivalent for capacity on our part to originate, we suddenly discovered

Louis Seize and our esthetic salvation. Every one became possessed over-night of the most astonishingly intimate acquaintance with France of the eighteenth century, and displayed it in an appropriate, if somewhat jejune, setting of white panels and period furniture. Perhaps the less I say the better of the appropriateness of that setting to the social quality of the display. The locutions of the Quartier Latin invaded the politest drawing-rooms and even a comforting touch with Montmartre wickedness was experienced by those who fondly imagined they were speaking French when they ordered a demi-tasse from a waiter whose native tongue was probably Greek.

Then, one fine morning, we awoke to find that poor Louis XVI was dead—or worse, *démodé*, and that we must move across the Channel. To talk of "Heavy George" was no longer queer, and you had to know about that and "William and Mary," and to be informed upon Palladian architecture. There we are now, unless something has happened since I last looked out of the window, sure of our classical English, though I seem still to hear a voice wailing for universal Gothic, from somewhere down in the pie-belt.

Of course, I have drawn neither a complete, nor even a fair picture. I am not unaware of the place and the need both for adherence to tradition and the cultivated appreciation, as well as the use, of those things upon which time has set the seal of approval. Nor am I ignorant of the happy fact that throughout this land many are to be found who may be called brilliant examples of culture and attainment; beyond that, indeed, of public-spirited devotion of their advantages to the common good. Far from it! but all that is not what I mean by public taste.

As I conceive it, such taste should be a sort of current flowing through all the veins of our citizenship; an attribute of the man in the street; born in him with his birth; fostered throughout his childhood, his adolescence and his maturity. Not a polite possession or thing applied such as I have tried to indicate just now; not a negative, passive acquirement, but a living force, causing in him acute liking and desire for things orderly, tidy, useful, economical, good and beautiful; hatred for and active revolt against poverty, shiftlessness, wastefulness, disorder, lack of foresight, sham and ugliness. With such a taste generally existent, there would be no mountains we might not move; our preachings and appeals would be to ears trained and receptive; our visions disclosed to eyes clear-sighted from looking square at facts. For *that* taste will be the product of knowledge; knowledge of what is and of what should be, of the relation of things and of their meanings, of the relation of the individual to the community. Not a subfusk thing; not drab and sad in hue, but full of color and life.

I have dared to say it will be, for that is what I believe. I do so believe because the knowledge of which this public taste may be born is to be derived only from education, and I greatly mistake present tendencies if they do not point to new educational paths, paths of self-realization as against mechanical obedience; of the substitution of self discipline for dogmatic drill; of "learning by doing." The road is a long one and it needs so much re-paving that against the dull conservatism clinging to so many deep old hindering ruts, the only effective forces must needs be revolutionary. Our alarm lest, in the inevitable tearing-up, traditional values and beauties will be forever lost is natural, but probably not justified; the road may be rebuilt and the landscape found to remain unchanged; the smoother path a better way for the car of tradition, as well as for that of revolution. Today it is the experiments that are needed, however much in a day to come we shall have to stay the iconoclastic hand. And after all, that hand, once it has had its way, often becomes, by right of what it has done, the conservative hand, and so needs no staying.

We do not yet know that the new trials will altogether succeed. We do know that the old ways have failed, that the drama of modern education is a tragedy. Just what is really promised by Froebel, by Montessori and our variants upon her scheme; what may work out of the Gary plan and its kindred attempts, it is too soon to say. Meanwhile we listen to the chorus of doubting protest and seem to hear the verger's familiar voice, crying aloud the virtues of things-as-they-are and beseeching us to let well enough alone. His apprehensive misery over the prospective upset of his machinery, his bewildered terror lest pupils shall lose the keys of their lockers in the effort to gain their own souls, are like the immortal plaint of our one-time Secretary of War, who on being condoled with because of the hideous mess that ensued upon the outbreak of our war with Spain, said, "O yes; everything in the War Department was running just as smoothly as anyone could wish, when along came this damned war!"

But children wanting to go to their schools and wanting to continue in them—not having to be driven reluctant to their tasks; children eager for those tasks because, instead of stuffy drynesses they are made interesting, real, suggestive, so that one is naturally inquisitive about them; geography not a desperate jumble of queerly-shaped pink and green diagrams, of rivers that flow only away from recollection, but the natural extension of one's own bailiwick, become significant through genuine observation; history made visibly human through the free exercise of dramatic inventiveness; art become a practical means to the fulfilment of common wants; botany no longer the arid accumulation of dessicated instances, remote from the greasy pavements and the congested slums and the dubious push-carts, but actual gardens that the little hands make grow into food for hungry mouths, green for deprived young eyes, quantities and values to be reckoned as the children practise an arithmetic that means something, examples of what may be done with awful sordid back yards, lodestones to draw the ignorant suspicious parents from their tenements to learn of communal thrift and endeavor, civic good-will and unimagined ambitions—these and much more such as these, for which there is not space here, and which all point to the avoidance of the simulation of learning found in repeating the formulæ of learning, and the substitution therefor of personal discovery—are they not at least the possible promise of a future public taste? And if that promise may show even a chance of being made good, what if locker keys are lost, some textbooks made obsolete, systems deranged and the verger generally made uncomfortable? Too soon yet to say how much of promise will be performance, but it is not too soon to say that we have to begin with the children; that we must learn how to liberate the divine creative

impulses inherent in all of them, not to repress those impulses; that we have wasted the days of our children and thwarted their inborn desire for knowledge, stupefied them with indigestible uncoördinated facts; that aversion from learning is a valid, unescapable condemnation of our methods; that although our sentiment for the Little Red School House may be justified by its early days of service, we have passed away from it to a so-called democratic education which has done nearly all that human ingenuity can in a free country to unfit its victims for the responsible conduct of a democracy.

And, if we survey our teaching of the arts, we gaze into chaos; much of what we see is deplorable, most of it needs to be improved. The arts are among the other manifestations of taste; where there is lack of taste there lacks that which must find expression; as we conceive taste to be quite apart from common life, so we have our strange conception of art as something to be put on or off like white gloves for a party, rather than the motive force actuating the hands within the gloves. And so conceiving it, which is to say that we do not know what it is, that is how we teach it, as having naught to do with life. Schools of painting and sculpture, taking young fingers to train in their technique—for it is while the fingers are still flexible that such training must begin—and not only making no provision for but even standing in the way of any training whatever of the minds which alone can inform those fingers. Understand that I am not here concerned with the phenomenon of the occasional genius, who will arise in almost any environment, just as they have arisen in ours. It is the general level I have in mind; the making of an atmosphere; the preparation of a soil, in which those of every grade of talent and capacity may flourish and find their place; so that artistic intelligence may pervade and be everywhere applied. For what sort of national art may we expect to grow out of the stifling of citizenship; what sort of artists can they be who have no national self-consciousness, no true conception of their country?

Some twenty-five thousand years ago, I think it was (but the exact date I cannot vouch for), men scratched upon bone or ivory, and cut into the rock-walls of their cave dwellings the representations of animals whose fossils alone now remain. These are, in many cases, drawn with a spirit so free, a line so sure, a quality of lifelikeness so convincing that for their parallel in historic times we must go, say, to those masters of convention, the Japanese. And yet we feel safe in asserting that there were, in those distant days, no art-schools; in default of records, we can say it on the evidence presented of accurate observation. Those Crômagnons drew, not as men taught that a certain way was the right way to draw a certain thing, but as men who saw and drew what they saw. It looks now as though our schools of art were doing the same thing that we so faithfully accomplish in our other departments of education—mashing their pupils into a given shape so that their own natural shape shall be destroyed.

But, I am told, what I say may contain some truth, though only as to the public education of the masses and the special processes for training in the arts. In our highly wrought establishments for the privately fortunate no such faults may be alleged. To this my reply is an actual illustration. A youth, in the last year at one of the most illustrious private schools, and proposing to go therefrom to a university, is afflicted with artistic proclivities. In his long vacations he has worked at drawing and painting; at school he has tackled, in his very scanty leisure, certain unfamiliar problems of drawing. At that school, as expensive as anything our wonderfully expensive country affords, it is utterly impossible for him to obtain any sort whatever of help, criticism or comprehension in this particular bent. The establishment entertains no sort of doubt that a heavy proportion of what it requires of him is only of indirect application; he will never be a professional athlete, for instance, nor will he be a clergyman. But though drawing can be taught to any intelligent boy or girl, though it is a highly useful accomplishment and excellent training for hand and eye and greatly increases one's accuracy of observation, quite apart from any question of a proposed artistic pursuit, yet its educational value is ignored. This being so we need not be astonished at finding a like ignorance of the practical utility of cultivating that esthetic consciousness which permeates the lives of those historic periods this youth is required to study and expected to understand. When he passes on to his chosen university, he may, if he can find time to do so without too much invading his desired academic progress, dabble in certain "Fine Arts" courses of a supremely desiccated and irrelevant nature and leading straight nowhere. Then, at the age of twenty-two, he will enter upon the special study of his profession as an almost new thing, to be begun without any real preparation, whereas, if he had been sanely educated, that preparation would have been begun soon after he left his cradle, and have been developed naturally throughout all his student days.

Architecture, mother of the arts and all the crafts, compounded of them all, remorseless inevitable record of our civilization—her schools are branches of our great seats of higher learning, of universities still professing to inculcate the study of the humanities. Yet these founts of wisdom and culture, existing by virtue of all that heaped-up store of history telling and telling again in multitudinous tongues how all the arts in all the ages were of the essence of men's lives and interdependent; teaching that history; aiming, we must assume, to drive their teaching home, conduct these schools as though the great art of architecture ran no roots into its allied arts; ignore its dependence upon the crafts—those crafts that fill our museums to overflowing; scarcely seek, through intimate familiar contact with the beautiful, to quicken the sensitiveness of those who must be its students and would be its makers.

Against the darkness there run gleams of light; good, even great, work of individuals such as Professor Mann, for a brilliant example; concerted efforts of groups, notably, let it be said, what Minnesota is doing in her University and through the state; luminous intelligence striving to batter down entrenched indifference; rising unrest and louder protest; voices asking questions that demand an answer, the answer of new ways.

In those new ways seems to lie whatever hope there is of public taste. Edmond Holmes, writing of Discipline and Freedom, says this of them: "Some day or other we shall begin to realize that social reform, for which we are

all waiting, is to be achieved, not so much by legislation as by the transformation of character; and that the transformation of character, which is another name for the evolution of character, must begin in the nursery and the schoolroom. When that day comes, we shall look back with gratitude to the great pioneers who, inspired by faith in the child's latent capacity for good, taught us how best to give freedom to children, young and old—such a measure of freedom, duly arranged for and safeguarded, as would provide for the outgrowth, on the one hand, of independence, self-reliance, and self-control, and, on the other hand, of sympathy and good-fellowship, and would thus make it possible for the child, in all the stages of his development, to discipline, and moralise, and socialise himself."

Social reform, says the Englishman; yes, or civic consciousness, integrated life, communal well-being—call it what you will. It should be the foundation of public taste; taste that spells freedom; that demands the truth; that will not accept phrases as a substitute either for facts or for action; that will reject the poor, the mean, the bad; that will insist on just such work for the ending of cruelty and human waste as Osborne's at Sing Sing prison; that implies a higher citizenship.

With that we may hope to have indeed government of the people, for the people, by the people; to follow, not the verger, but our star*.

C. GRANT LA FARGE.

*An address at the Fiftieth Annual Convention.

The Architect and His Education

NO subject in connection with architecture has been more exhaustively written about than this. The adverb is used with intent; it applies to every phase of the subject from writing of it to reading about it. Its problems have the fascination for writers that perpetual motion has for inventors. Logic tells us that neither are soluble; yet the output of perpetual-motion machines is no greater in number than of the proposed solutions of the problems of architectural education. A continuous victory of hope over experience. We take up the cry of Thalassa! Thalassa! only to find later that salt water has its drawbacks for drinking purposes. We have forgotten the effect of an overindulgence in wild honey. The insoluble element however is the individual—not because he is an individual, but because he is so varied in the mass—and since we must fit our educational system or theories to the average, the extremes suffer in direct proportion to the inflexibility of our system.

One remedy after another is proposed to ease the pain; we are told that all inspiration must be drawn from the past; that the student must be imbued with the spirit of Rome and Greece; that the fundamental underlying principles of composition must be taught in the school, the inspiration to be drawn later from any and every source. Last we learn that it is the present which must be studied.

It is not a new thought which I wish to suggest, or a new element to be mastered by the student, which will turn him out from his college a full-fledged architect, but rather that the various elements of his education be mixed in a different proportion so that when he finishes his course he may be ready to continue to study to the day of his death. If he is the true artist, not till then may his soul rest in peace.

The law has its two terms, tort and remedy; medicine its diagnosis and treatment; in each case the first must be defined before the second is determined. What therefore is the malady of which it is complained that architecture is suffering at the present time? The completion of the voyage of the "Beagle" had an effect upon the philosophy of art only comparable to that of the "Mayflower" upon American furniture. Art, of which architecture is one manifestation, is an expression of human activity, conditioned and determined by environment and heredity. It is, in the case of any people, good or bad in so far as it truly represents that people, their ancestry, environment and social condition. The art of the old empire in Egypt was the expression of a people marvelous in their directness, simplicity and bigness. Nowhere can the keen subtleness of the Greek be better read than on the Acropolis, nor the mysticism of the middle ages than at Chartres. All three are great arts in which the innermost soul of a people has expressed its greatness and its smallness, its everyday life and its religious hopes, its soul's questioning in the Sphinx of the desert and its bodily discomfort in the grotesques of Chartres.

Applying such standards of measurement to architecture in America is but another form of the question, Is there an American style? Does architecture in America represent the American people, their climate, their life and their heredity? On the purely constructional side it does; our buildings are well built, they are modern in construction, they keep out the elements; they are as well suited to the climate as the buildings of any time. But construction is not architecture. The Gothic vault is a constructional development of Gothic architecture—the architecture resultant of the social needs and physical handicaps of the middle ages; the marvelous handling of the Gothic vault is architecture; the steel skeleton is a development of our needs and resources. Our handling and clothing of it is not architecture and it never will be till we learn that the problem is not to clothe and express the steel skeleton but to clothe and express the social and economic needs which have called forth the building with the steel skeleton.

Germany, born as a nation half a century after ours, has a national architecture. In it may be read the character and life of the German people, even to their national motto of "Verboten." We go to Germany for our inspiration in city-planning; we study the work of the German architect and city-planner, not to learn from it an appreciation of beauty but because above all he is a student of social conditions; his ideal is a social ideal; he cares little for beauty, for the "inheritance of the past." Above all he seeks for a solution of the social program, and in seeking he inevitably produces a national architecture.

The American architect, the product of our architectural education, fails to produce an American architecture in just so far as he loses sight of the social side of the problem. The function of the architect of today is more complex than formerly, his problems more difficult to solve, his inheritance larger. Because of this his *raison d'etre* is lost sight of. Let the physical requirements of the problem be resolved and stated in feet and inches and he is replaced by the constructor. Factories are largely built without the aid of the architect. The architect's function is to translate the solution of the social problem into brick and mortar —more than that, he should first seek this ideal social solution. It is this last that he is apt to neglect. His school training did not emphasize it, and it is for the most part unconsciously that he has felt its need in his later practice. He has felt the lack of sufficient subject matter to justify the fine words of his style; the tongues of angels have become to him as sounding brass. The writer has his tale to tell, the painter his message; so, too, the architect, if he be the artist, has his story clothed after the manner of his craft and tested by its every Shibboleth; but that it all may be worth the candle, the story must be first worth the hearing.

If the diagnosis is correct its very statement outlines the cure, suggests the treatment. Our schools have sought to produce men familiar with the historical monuments of the Past and skilled in the art of combining their fragments—architectural cooks whose broth has the fault of any broth where ingredients have been kept overlong. They have not defined for the student nor themselves the aim, the object for the attainments of which the curriculum has been prescribed. Diagnosis and treatment are terms seldom applied to the functions of the architect. The school does not recognize the architectural diagnostician and does not attempt to train such a person. It trains in a most excellent fashion the architectural attending physician; the man who knows his precedents, his styles, his examples, the man of refinement, taste and discernment. But it does not give to him the objective for which all these things are the necessary means of attainment. It does not place definitely before the student the object for which his education is undertaken. It leaves him without a directive force, a focus for his knowledge of planning, his familiarity with the past and his appreciation of the beautiful. It is just this which differentiates the true architect from the archeologist; the creator of an art expressive of the present from the student of the arts expressive of the past. The great architect of the past knew the needs of his time and its handicaps, its thoughts and its hopes, and knowing them preached of its future. A church whose spiritual development had halted proclaimed its future material grandeur in the dome of St. Peter's no less insistently than it did in that of the Pantheon—great works of art preaching of a hoped-for future in the language of their day.

It is not the past we must study nor the present but rather the future. This is but another mode of saying that the student should be taught to analyze his problem from the social rather than the physical side. He should be taught to seek the ideal back of the actual, to study the causes and tendencies beyond the physical stated requirements. He should be taught to write his own program, to seek the ideal requirements of the future building and not be contented to accept them as written in the past. Every program has this ideal element. The museum of art is no longer a series of galleries for the exhibition of works of art, arranged chronologically, each beautifully ticketed in its glass case; it is an institute for public instruction, striving to reach out to all the people. The hospital is not only a place to which sick people go, it is a center for social betterment, for preventive medicine, for investigative research. Its ideal is not to cure people but to do away with disease. So it is with every form of human activity which is to be encased in its architectual shell, whether it be an industrial city built out of hand on the open shore of the Great Lakes or a tenement house in the slums of our oldest city.

For the school such training of the student in the technique of his profession becomes simpler. The history of architecture becomes no longer the study of examples, more or less interesting and more or less beautiful, but an all-absorbing study of social and economic causes with their resultant architectural effects. The student sees in the various periods and styles, their transitions and developments, the working of economic and social forces, and in seeing them is better able to translate these forces of today into an architecture of the present. The storehouse of the past becomes for him no longer a museum of antiquities but a reservoir of vital inspiration. He no longer knowingly attempts to warp the present and future needs of today into a shell to fit the architectural expression of the requirements of a historical past. As with the painter, the technique of the past—a period only separated from the future by an immeasureable present—is of ever new interests; the study of how the result was obtained, how the various architectural elements were combined to fit and give expression to a social need.

This then is what is suggested. That the school training be brought into closer correspondence with the course of later practice and the student be spared the necessity for readjustment of standards and point of view in passing from the theoretic problems of the college to the actual problems of practice. This would be a reason of slight importance in itself if it were not that an analysis of the great examples of architecture show their authors, consciously or intuitively, to have sought after an ideal, a perfect social or spiritual solution of their problems which they then clothed in the architectural raiment of their skill. Let the student first be taught to analyze his problems, seek its social reasons, causes, requirements, and its ideal social solution. About this solution let him define in terms of architecture the physical requirements, subjecting each in turn to the evolutionary standard of fitness. Let him learn to see in the country house the life and habits of the owner, and in its plan and facade their architectural reflection. In each case let these things be defined by him. A thought not expressed is but a half-thought.

The architect, if he be worth the training, is more than a builder, he is a prophet whose voice should be heard in the market place preaching in words of today the vision of tomorrow; but it is for the schools to so train him that his message be the product of a full mind pregnant of the future and not a meaningless dream engendered by the memories of a dead past.

FRANCKE HUNTINGTON BOSWORTH.

Book Reviews

Chinese Art. Volume I (Victoria and Albert Museum Handbooks, No. 102). By Stephen W. Bushell. Reprint of Second Edition, London, October, 1914. Price, one shilling and sixpence.

One of the best-known architects in this country, who was visiting at my home some years ago, stood before a Chinese figure of Buddha which I had then but recently acquired. The architect was a man of exceptional training, with a real understanding of the best of the classics in literature and other forms of art. This Buddha standing on his lotus-leaf pedestal is not a museum piece. As Chinese art it is modern, for it probably dates from 1750. Yet it has that almost other-worldly poise and dignity of form and expression which the best of Chinese sculpture possesses in so marked a degree. The color alone is marvelous to me, for the lacquer is laid over gold to a deep brown tone. For a moment my friend stood silent, then he turned away with the words, "It may be fine but I can't see anything in Chinese Art—no real beauty. It is always merely a curiosity."

This incident comes back to my mind as I read Mr. Bushell's all too summary study of Chinese art. I fear that many of us are unable to appreciate the beautiful independently of the accustomed western European forms and traditions. And yet just such an understanding of the art of other peoples would seem to me to be the mark of a really cultured worker in any art. As a contribution to such an understanding this handbook on Chinese art is of value. It is not at all exhaustive, hardly more than a descriptive catalogue of South Kensington Museum exhibits of historical importance. Yet its more than one hundred illustrations show stone, bronze, jade and ivory worked into novel forms, which are always the outcome of the material in which they were developed and often astonishingly beautiful to an unprejudiced mind. These descriptions are accompanied by an interesting review of the probable waves of influence on Chinese art, many of them dating back to so many centuries before the Christian Era that the art produced by Greek civilization seems but of yesterday.

I can hardly recommend this little book for summer hammock-reading; but to anyone who would study it for even a few hours it would give, as it has to me, a sense of a delightful excursion into a beautiful strange world. I wish that copies might be easily secured through the Journal office.—R. D. K.

Indication in Architectural Design. By D. Varon. The William Comstock Company, New York.

An interesting book to both student and practising architect.

The author says in the Preface:

"Having encountered, as a student of architecture, and in more recent years as a teacher of this art, the many hardships that beset the road of both pupil and instructor, I have made it the main purpose of this work to remove many stumbling-blocks from the student's path, and indirectly help the instructor.

"But even without any obstacle, the road to a thorough understanding of architecture remains an arduous one. The student should feel a real calling for his chosen profession, and not be moved only by the material end of it. The late Prof. Julien Guadet, whenever a youth sought advice about entering the career, would put various questions to him about his academic preparation for the studies of the Ecole des Beaux Arts, and end up by telling his visitor that if financial consideration were his principal motive he might as well get a job at once in the first grocery store and begin to make money right away."

Mr. W. A. Boring, who has written the introduction, rightly appraises the value of the book. He says in part:

"The author of this excellent work aims to assist the student in the art of using knowledge of architecture by broadening his perception, by training his powers of visualization, and by making him see as the artist sees.

"To draw well, one must see well, to design well, one must do both, and seeing with Mr. Varon's vision clears up many problems which baffle the student.

"Since all architects are students, this book will also interest older practitioners by setting forth logically and clearly many things they have discovered after years of experiment and observation.

"Because of Mr. Varon's experience as a designer of buildings and as a teacher in schools of architecture in America, he has been able to contribute this material aid to the cause of education."

The written matter throughout is instructive and inspiring. The sketches are illustrative of the text, but are not wholly convincing and should not be accepted by the student as the last word on indication.—C. S. Z.

Joseph Pennell's Pictures of the Wonder of Work. J. B. Lippincott Co., Philadelphia. 1916. $2 net.

We hardly believe that the discovery of the wonder of work will be assigned to Mr. Pennell, but there is no reason why he should not be credited with having been deeply impressed with the wonder of work as it is carried on in the world of steam and electricity and by engines which seem to dwarf the power of man, until we suddenly remember who brought them into being. Constantin Meunier was undoubtedly one of the greatest interpreters of the wonder of work, but again we feel sure that he would not wish to be considered as the prophet who had inspired the world, even though Mr. Pennell so styles him in his generous and sincere dedication. Work is more or less an ancient custom and its praises have been heard before. But the note is a right one and those who search the horizon for a better understanding of the aim and end of work will welcome Mr. Pennell's enthusiasm. The illustrations are after lithographs made by Mr. Pennell and many of them are very impressive in the majesty of the spectacle which they unfold. In the preface Mr. Pennell explains that painters have seldom been impressed with the wonder of work in the working, but generally only with the finished result.—C. H. W.

News Notes

Australian Parliament Architectural Competition Postponed

We are informed through the British Embassy that the above competition has been indefinitely postponed.

December Chapter Meetings

At the monthly meeting of the Philadelphia Chapter, the delegates reported upon the Convention and the members were then addressed by Monsieur Victor Horta, Director of the Academy of Beaux-Arts at Brussels who is at present lecturing in this country. Monsieur Horta expressed a great interest in the problems of American architecture and praised the public-spirited activities such as were referred to in the report of the delegates. He touched but briefly upon the circumstances which have rendered him temporarily an exile, and yet left a profound impression of the disasters which have overtaken the members of the profession in Europe. The editor of the Journal reported upon the immediate phases of the public-buildings situation in Congress.

At the regular monthly meeting of the New York Chapter, over fifty members and guests were present to hear the report of convention activities and accomplishments, and later to listen to Mr. Charles Butler, a member and former Recorder and Secretary of the Chapter, who has recently returned from a year and a half in France. His description of relief activities, hospital planning, and actual trench conditions was listened to with the deepest sympathy, a contribution of approximately five hundred dollars from those present being the immediate response to an appeal for ponchos for French soldiers made on motion from the floor.

Mr. W. B. Faville, from San Francisco, presented his slides of the San Diego and Panama-Pacific Expositions, with comments on the methods and characteristics of the designers of the different buildings which greatly added to the interest of the pictures.

Through the kindness of Mr. William H. Brett, Librarian of the Cleveland Public Library, the drawings submitted in competition for the new library were exhibited on the walls of the meeting-room and attracted much attention.

Registration

We are informed that the following opinion has been delivered by the Attorney General of the state of NewYork in reference to the new law for the registration of architects now in force in that state:

"Section 77 requires that a person who was not practising architecture prior to April 28, 1915, must procure a certificate from the State Board of Examiners in order to be 'styled or known as an architect.' Persons procuring the certificate are to be known as 'Registered Architect,' using the letters 'R.A.' It is therefore apparent that the status of persons who were known as architects prior to the enactment of the statute is not interfered with and they may continue to be known as architects simply. If they desire the added appellation of 'Registered Architect,' they may apply for certification as will presently be shown. Persons who have not been in practice may not be styled or known even as architects in the future. In order to enter upon practice at all they must qualify as 'Registered Architects.'"

The Executive Committee of the New York Chapter have sent out copies of this opinion with the request that architects note any infringements of the law and lay them before the proper authorities.

State Architects

In the November Journal there was published a brief of the report of the Committee on Professional Practice of the Washington State Chapter in reference to the conditions obtaining in the various states as to the employment of architects by the state. The Committee have asked us to say that subsequent knowledge makes it plain that in Oregon the teaching staff of the School of Architecture in the University of Oregon have only rendered architectural services in connection with buildings which have been erected for the University, for which a commission was paid in addition to the regular salary.

A Correction

The name of W. L. Somerville, architect, of New York, should have appeared in the notice on "Allwood—An Industrial Village," on page 499 of the Journal for December, as associated with Murphy and Dana, architects of New York, in the preparation of plans for houses in Allwood We regret the omission.

Obituary

Herbert Jaques

Elected to Fellowship in the Institute in 1891
Died at Boston, Mass., December 21, 1916

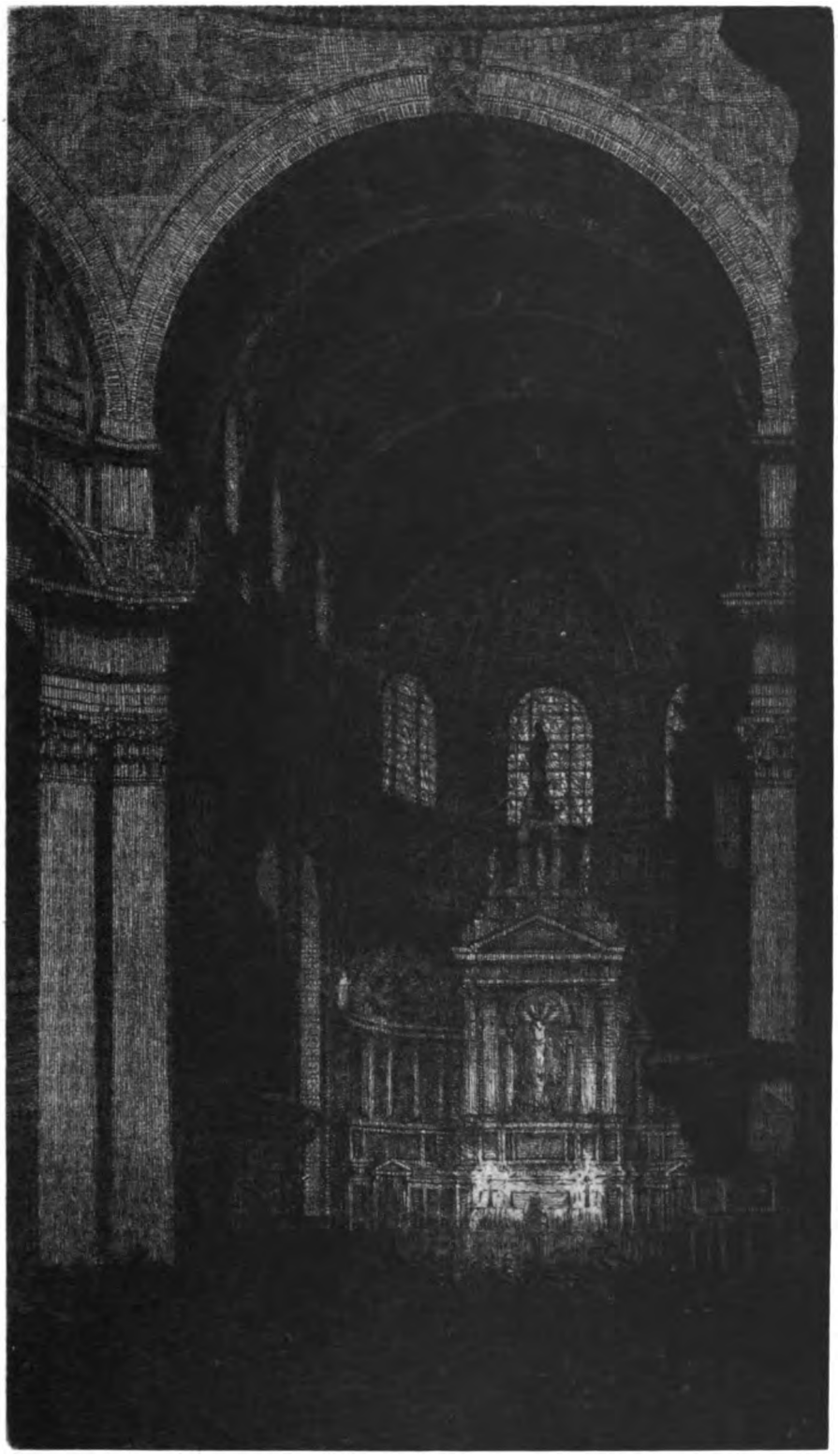
Otto C. Wolf

Elected to the Institute in 1901
Died at Philadelphia, December 19, 1916

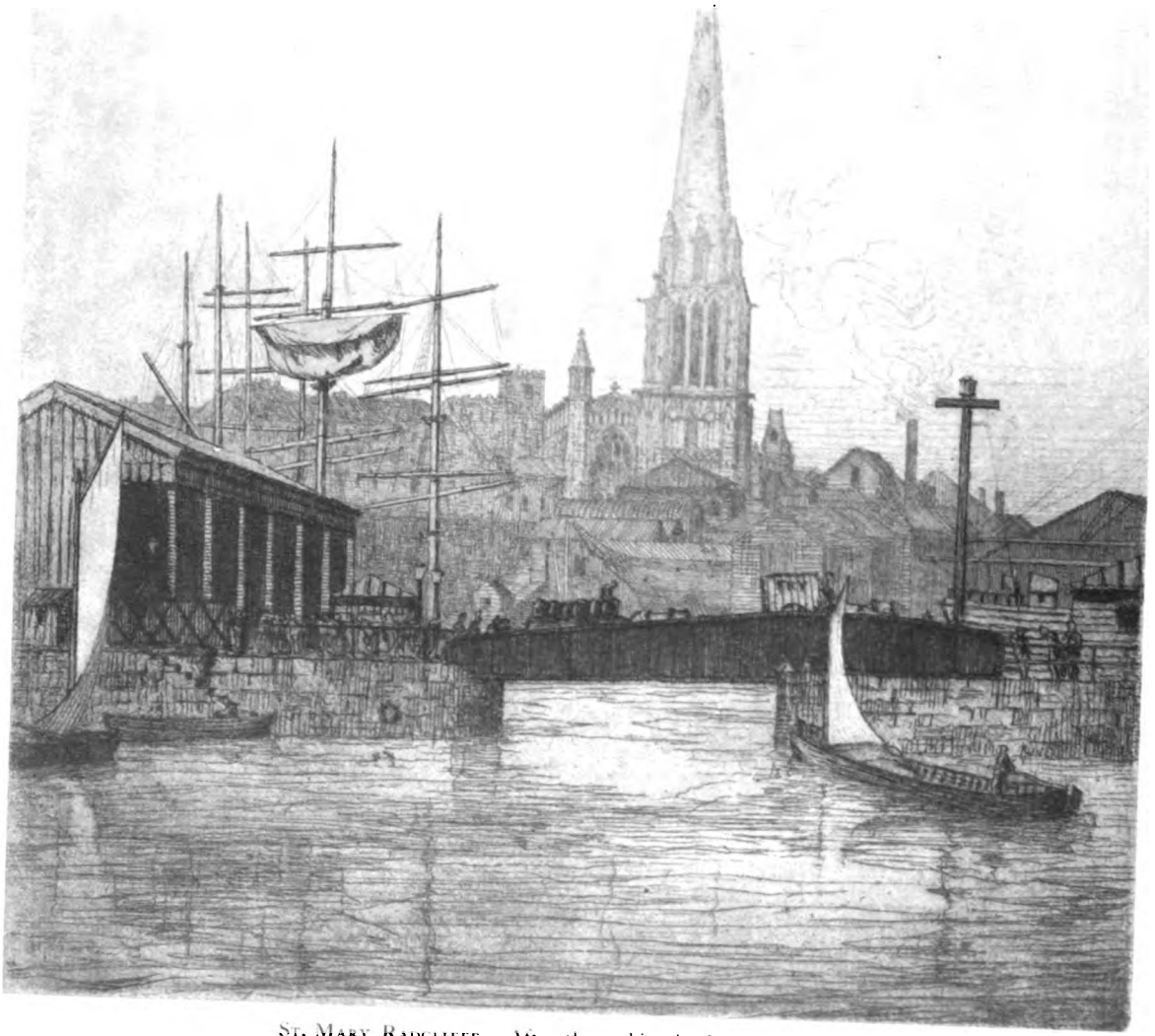
Chas. E. Brush

Member of the Illinois Chapter since 1908
Died at Chicago, November 1, 1916

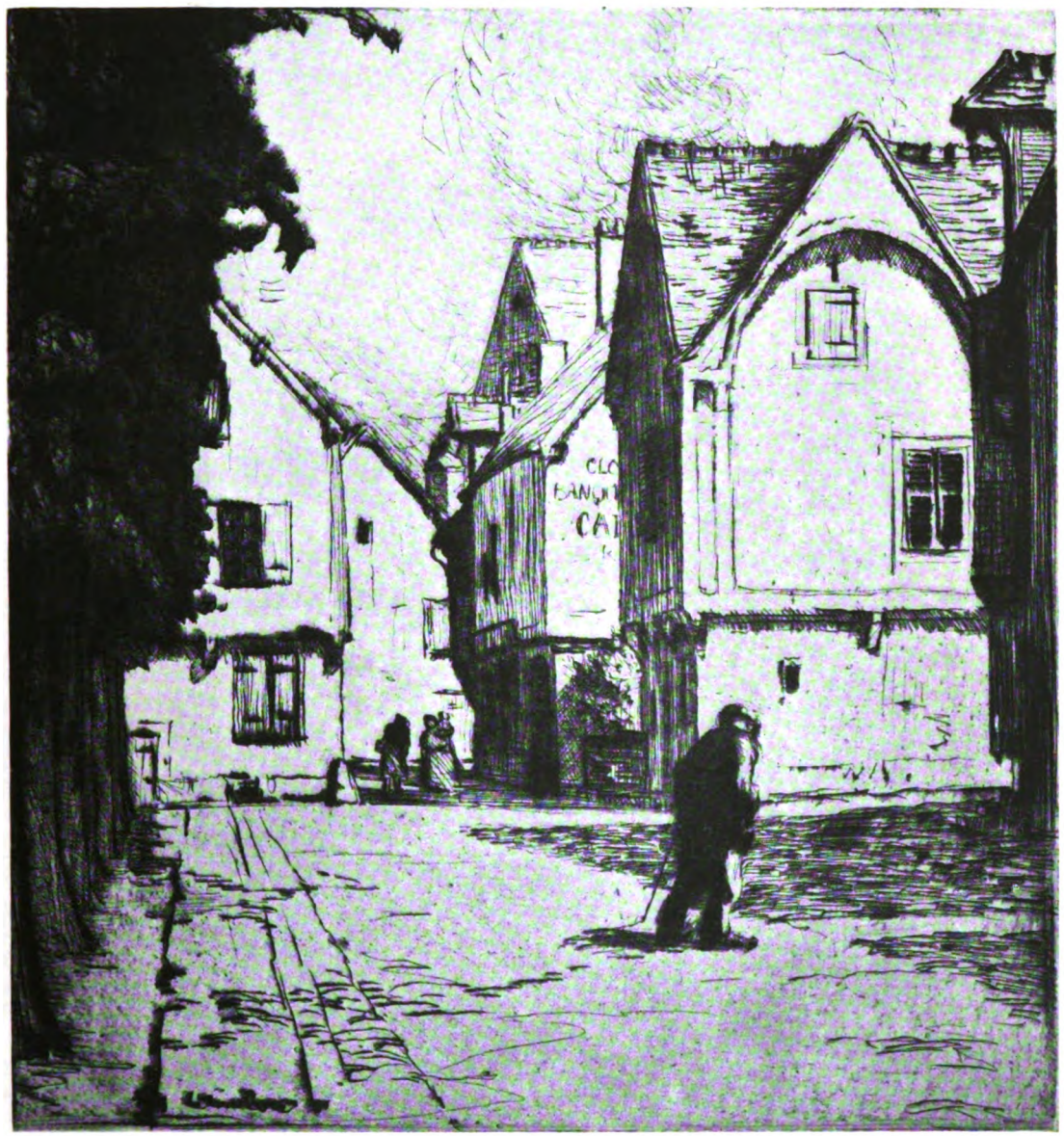
Mr. Brush was born at Carbondale, Illinois, in 1855, and was graduated from the School of Architecture, University of Illinois, in 1877. His work is best known by the buildings of the Illinois Normal School, at De Kalb, Illinois, and the Lee County Court House, at Dixon, in the same state. At the November meeting of the Chapter, resolutions of regret were adopted in which the Chapter expressed its sorrow and its sympathy for the members of his family.



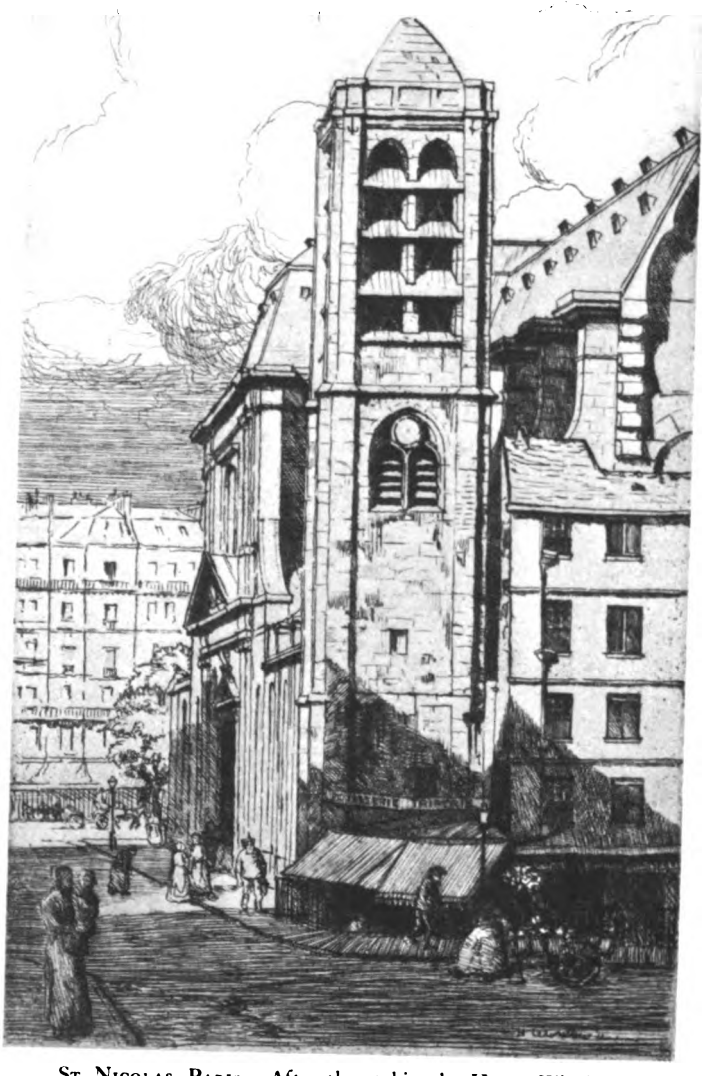
ST. PAUL'S.—After the etching by Henry Winslow



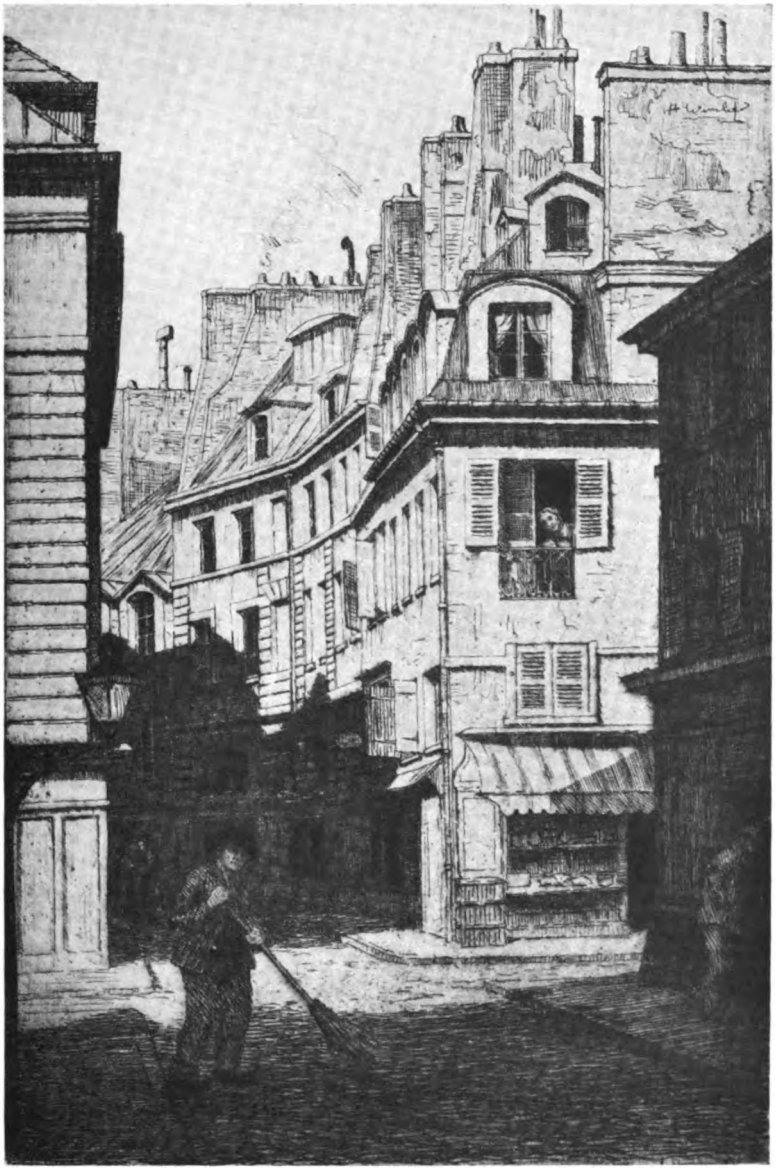
St. Mary Radcliffe.—After the etching by Henry Winslow



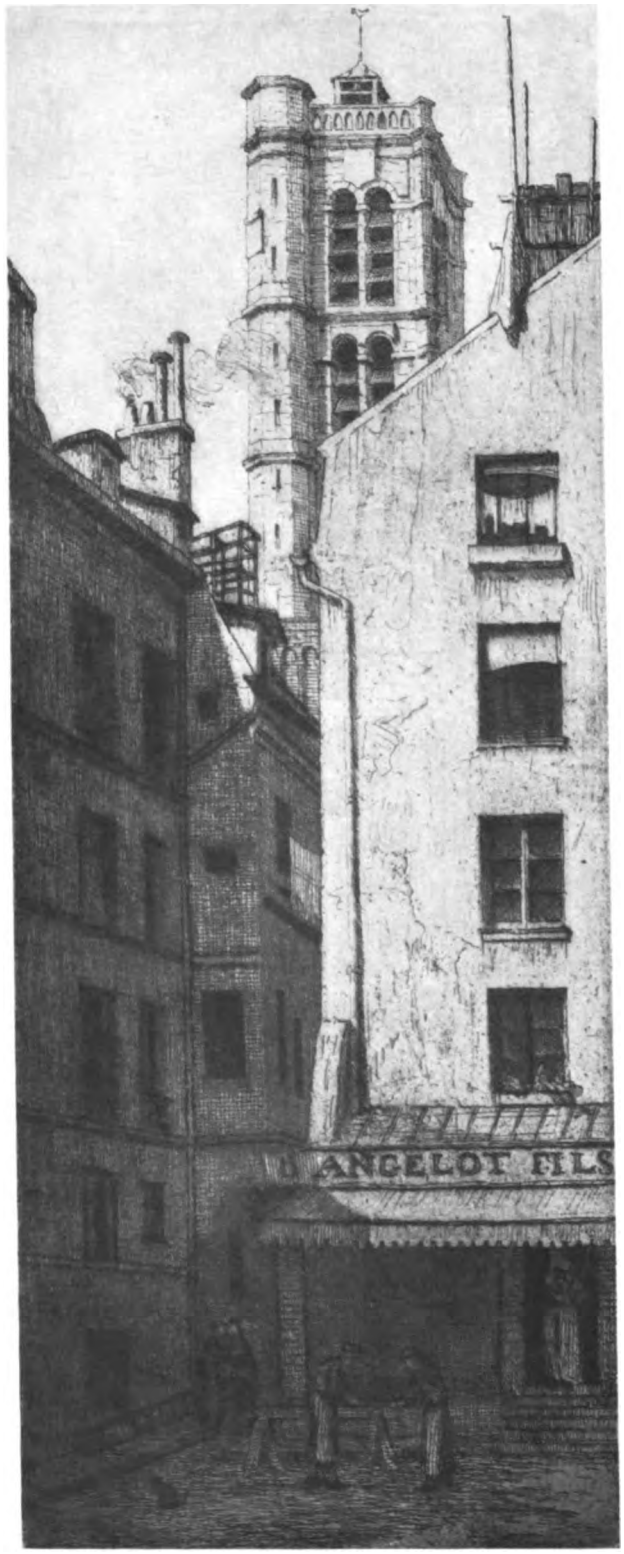
THE OLD SQUARE, PROVINS.—After the etching by Henry Winslow



ST. NICOLAS, PARIS.—After the etching by Henry Winslow



RUE CARDINAL, PARIS.—After the etching by Henry Winslow



St. Gervais.—After the etching by Henry Winslow

Beaux-Arts Institute of Design

Official Notification of Awards—Judgments, November 14-28, 1916

Class "A," First Projet

Jury of Award.—F. H. Bosworth, Jr., G. A. Licht, F. C. Hirons, H. W. Corbett, E. V. Meeks, P. A. Cusachs, H. Sedgwick, M. S. Wyath, H. L. Shay, C. Butler, Professor Leonard, J. Wynkoop.

Program.—A Monastic Church. *Drawings submitted, 76.*

Awards.—First Medals, R. W. Blaine and L. Suckert, University of Pennsylvania; L. Fentnor, Atelier Wynkoop, New York City.

Second Medals, K. Fujikura, Cornell University; A. Burton, Columbia University; H. L. Smith, Carnegie Institute of Technology; L. Morgan, E. A. Lehti, W. G. Sprague and H. S. McCrary, Atelier Hirons, New York City; L. C. Licht and A. P. Goodwin, University of Pennsylvania; C. S. Baker and W. B. Dechant, T-Square Club, Philadelphia; A. C. Webb and H. E. Matz, Atelier Wynkoop, New York City.

Class "A," First Esquisse-Esquisse
Class "B," First Esquisse-Esquisse

Jury of Award.—W. Lamb, A. Ware, E. S. Hewitt, J. O. Post, L. Warren, W. L. Bottomley, C. L. Lawrence, W. N. Taylor, W. Emerson, and G. H. Bickley. This Jury also served as Jury of Award for Class "A" and "B" Archæology, First Projets.

Program.—Class "A," A State Capitol.
Class "B," A Stone Ceiling.

Drawings submitted.—Class "A," 15; Class "B," 48.

Awards.—Class "A," Third Medals, L. Morgan, Atelier Hirons, New York City.

Mentions, E. E. Weihe, Atelier Brown, Jr., S.F.A.C., San Francisco; G. L. Kaufman, Columbia University; J. B. Hays, Atelier Hirons, New York City.

Class "B," Mentions, J. Franziello, Atelier Corbett, New York City; M. Boulicault, St. Louis Architectural Club.

Class "A" and "B" Archæology, First Projet

Program.—A Votive Bridge. *Drawings submitted, 4.*

Awards.—Mentions, J. F. DeYoungk and R. Freeburg, Carnegie Institute of Technology.

First Morris Loeb Prize

Jury of Award.—F. H. Bosworth, Jr., J. C. Levi, E. S. Hewitt, P. A. Cusachs, L. S. Weeks, W. Emerson.

Program.—A Frame. *Drawings submitted, 35.*

Awards.—First Prize ($50), F. M. Holcomb, Atelier Rebori, Chicago.

Second Prize ($25), L. Morgan, Atelier Hirons, New York City. Placed third, G. M. D. Lewis, University of Pennsylvania, Philadelphia. Placed fourth, R. J. Robinson, Atelier Corbett, New York City. Placed fifth, R. A. Lockwood, Los Angeles Architectural Club, Los Angeles.

Judgment of November 28, 1916

Class "B," First Analytique

Jury of Award.—F. H. Bosworth, Jr., L. G. White, H. Sedgwick, M. S. Wyath, H. W. Corbett, H. L. Shay, F. R. King, W. F. Hitchens, Mr. Woolsey.

Program.—An End Pavilion. *Drawings submitted, 156.*

Awards.—First Mention Placed, W. P. Stille and J. O. Vegezzi, Atelier Corbett, New York City; M. N. Weinstein, Columbia University.

First Mentions, J. G. Percy, Buffalo Architectural Club; H. D. Smith and K. B. Weber, Carnegie Institute of Technology; P. A. Tischler, C. F. Roesch, Jr., and D. P. Emley, Columbia University; R. E. Golden, Atelier Hirons, New York City; B. J. Schreyer, New York City; H. W. Anderson, Atelier Rebori, Chicago; G. A. Daidy, George Washington University.

Class "B," First Projet

Jury of Award.—W. Lamb, F. C. Hirons, J. Wynkoop, H. Hornbostel, W. N. Taylor, A. Ware, L. Ayres, L. P. Burnham, V. Alexandre.

Program.—A Photographic Club. *Drawings submitted, 143.*

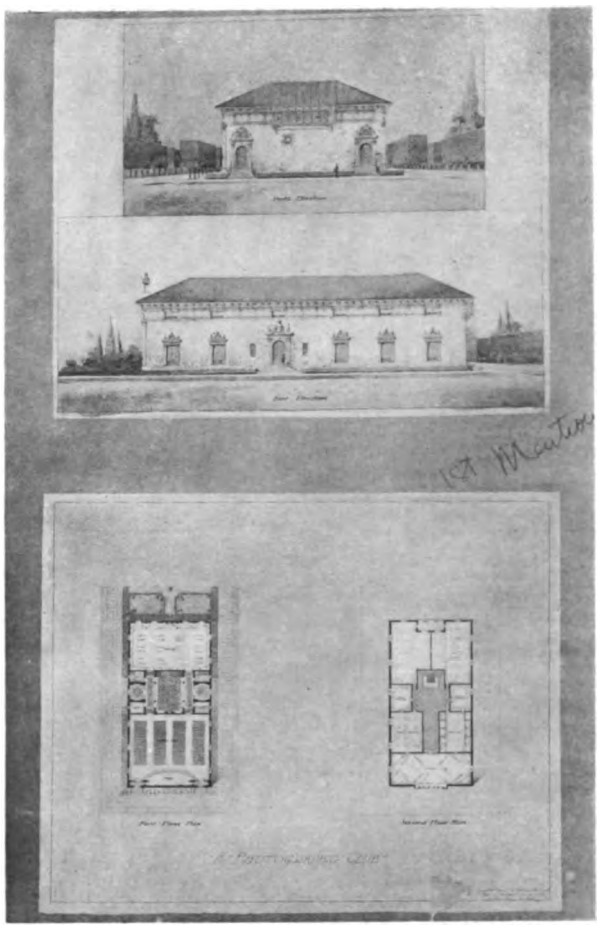
Awards.—First Mentions, E. S. Lacosta, Atelier Corbett, New York City; P. Meng, Atelier Hirons, New York City; A. G. Alexander, Atelier Licht, New York City; L. J. Mahoney, Los Angeles Architectural Club; O. G. Stromquist, Atelier Wynkoop, New York City.

Warren Prize

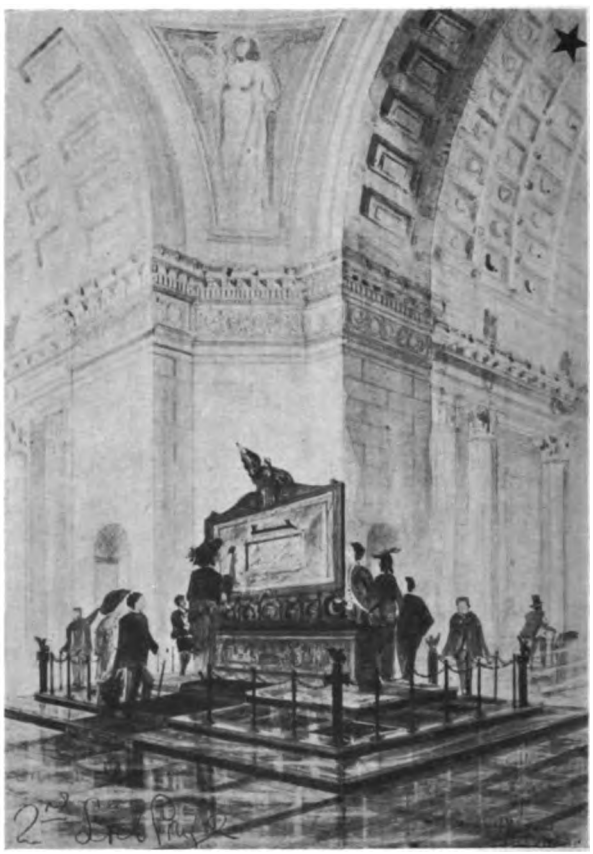
Jury of Award.—F. H. Bosworth, Jr., W. Emerson, J. C. Levi, P. A. Cusachs, M. S. Wyath.

Program.—A County Fair Grounds. *Drawings submitted, 30.*

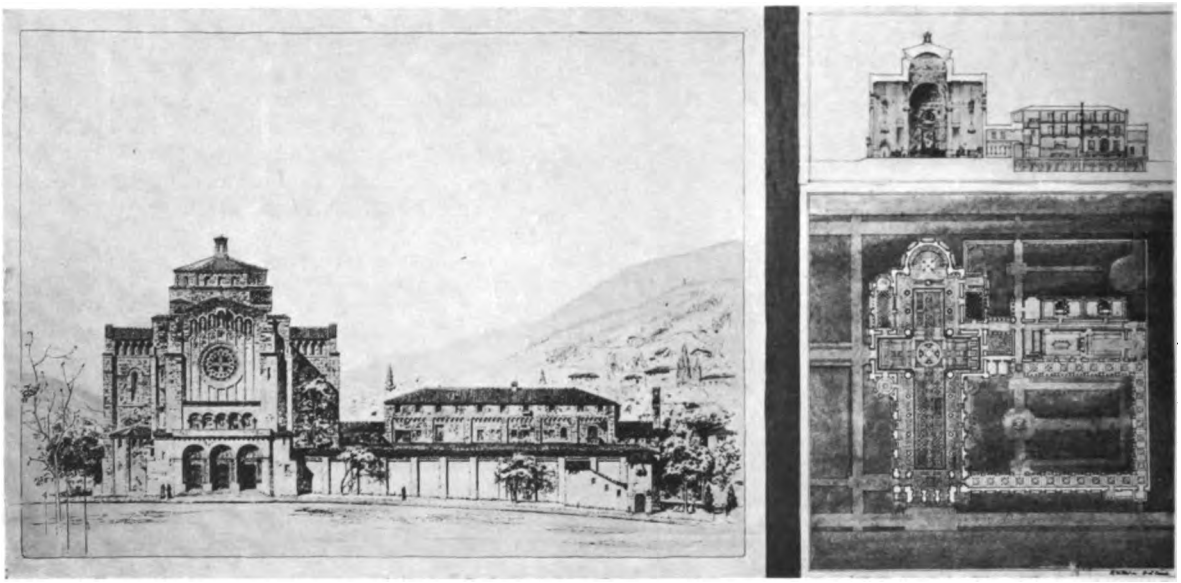
Awards.—First Prize ($50), G. L. Kaufman, Columbia University; Second Prize ($25), I. Seelig, Columbia University. Placed third, A. H. Gentry, Columbia University. Placed fourth, L. V. Lacy, Cornell University.



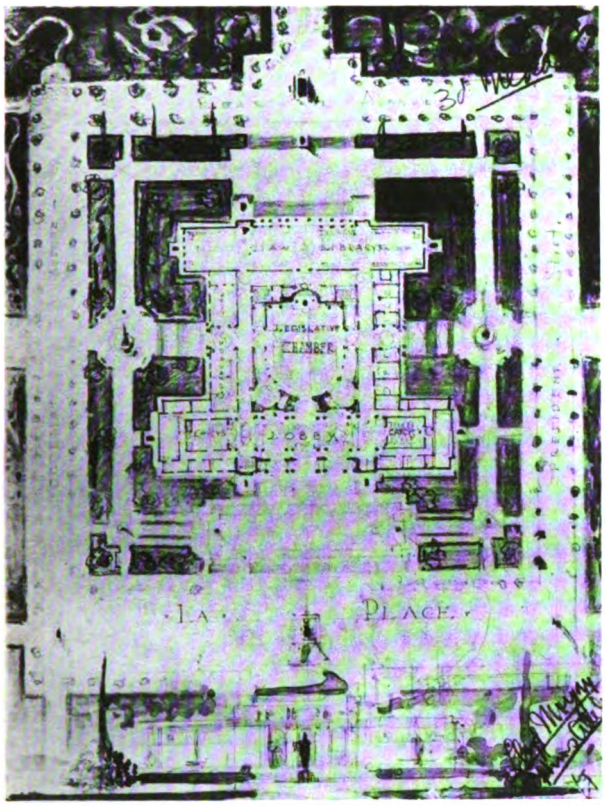
CLASS B.—I. PROJET
First Mention, A. G. Alexander



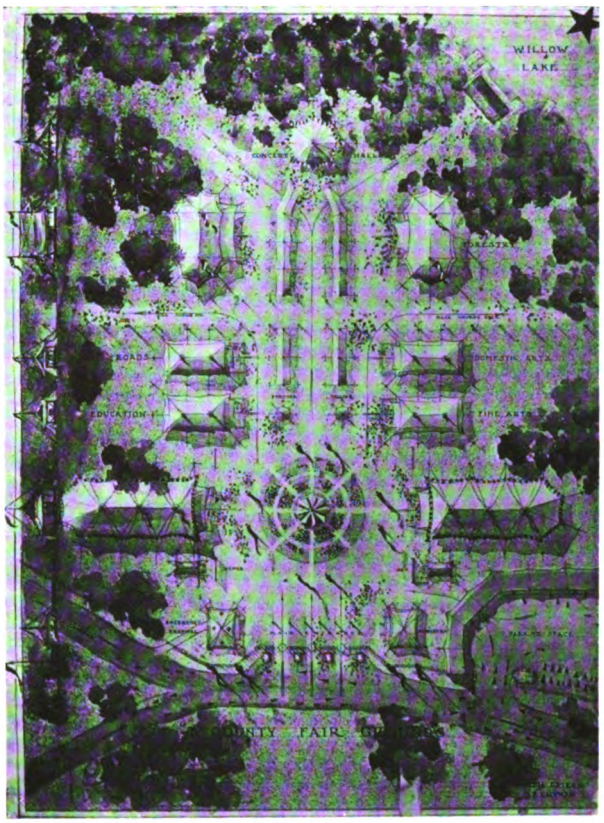
LOEB PRIZE
Second Prize, L. Morgan



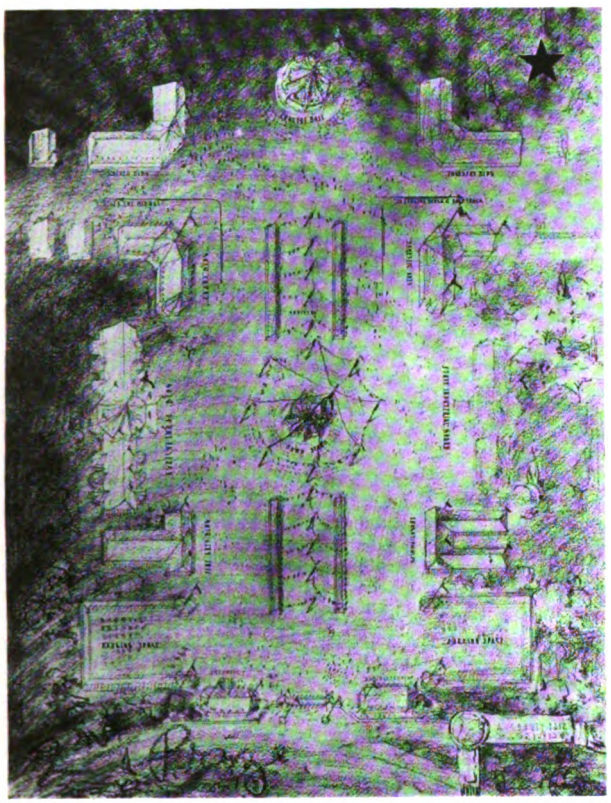
CLASS A.—I. PROJET
First Medal, R. W. Blaine



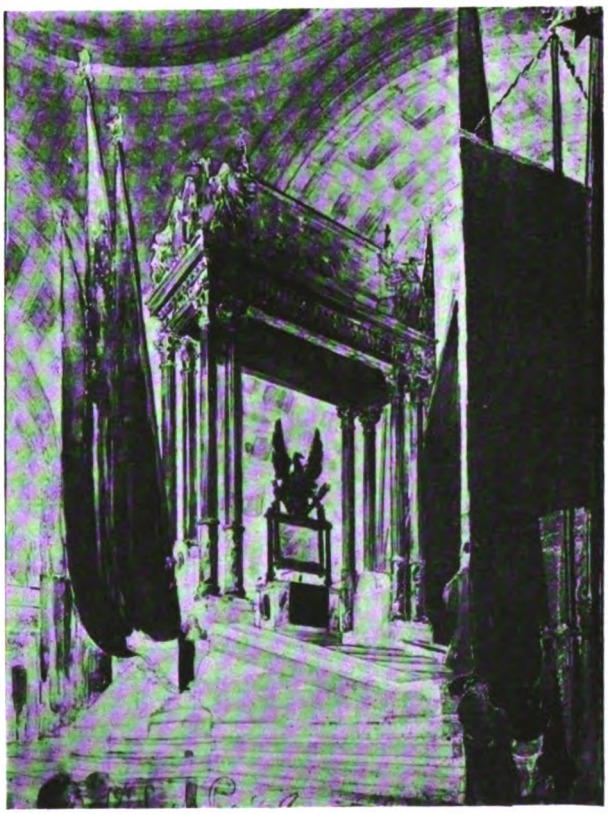
CLASS A.—I. ESQUISSE-ESQUISSE
Third Medal, L. Morgan



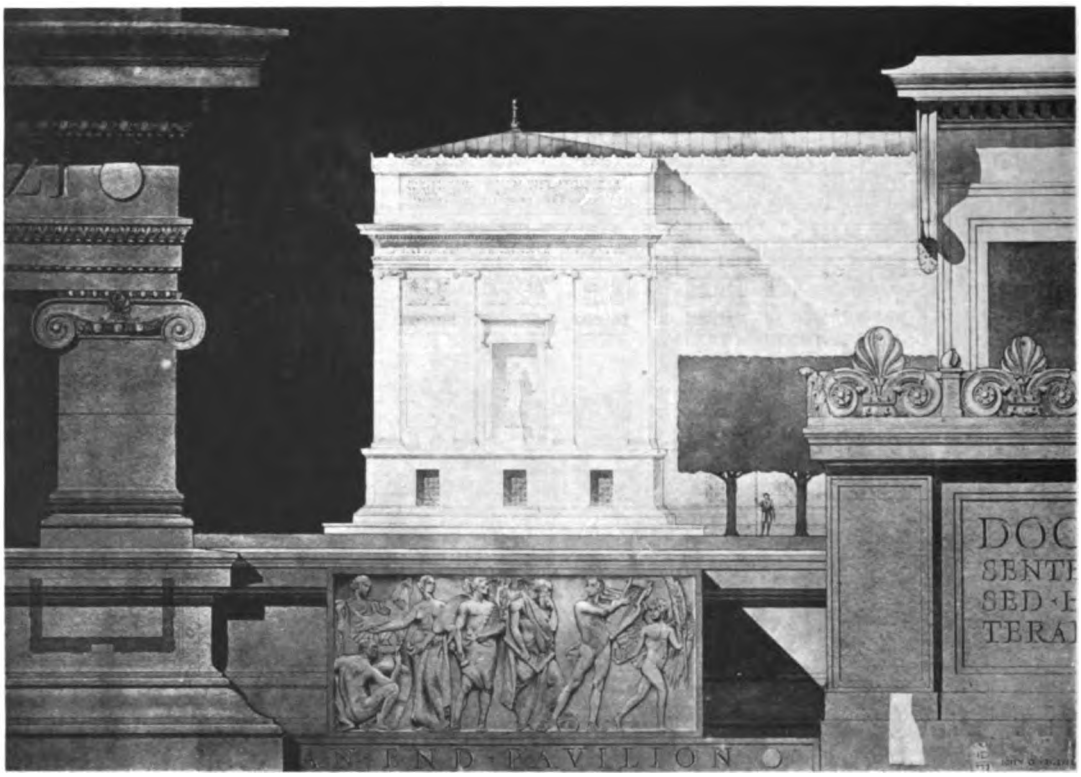
WARREN PRIZE
First Prize, G. L. Kaufman



WARREN PRIZE
Second Prize, I. Seelig



LOEB PRIZE
First Prize, F. M. Holcomb



Beaux-Arts Judgments, continued.—Class B.—I. Analytique
First Mention Placed, J. O. Vegezzi

Town-Planning and Housing

GEORGE B. FORD, Associate Editor

Indian Hill—A Garden Village Near Worcester, Mass.

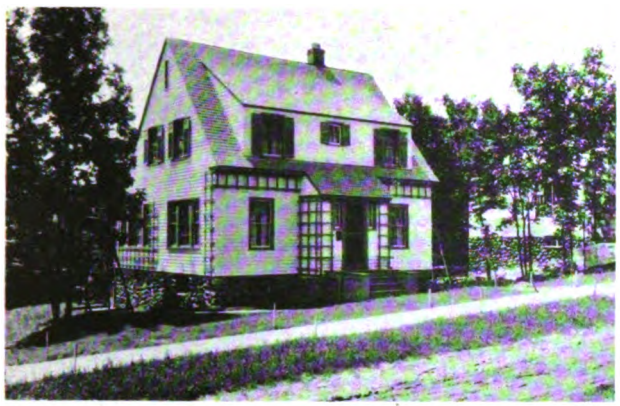
Indian Hill garden village, near Worcester, Massachusetts, is the most recently completed example of an industrial village carried through on comprehensive lines. Situated on a ridge overlooking the head of Indian Lake, several miles from the heart of Worcester, on a site of 116 acres (30 of which have actually been developed), it affords unusual opportunities for wholesome and pleasant living to the families of employees in the Norton Company, of Worcester, which has financed the enterprise.

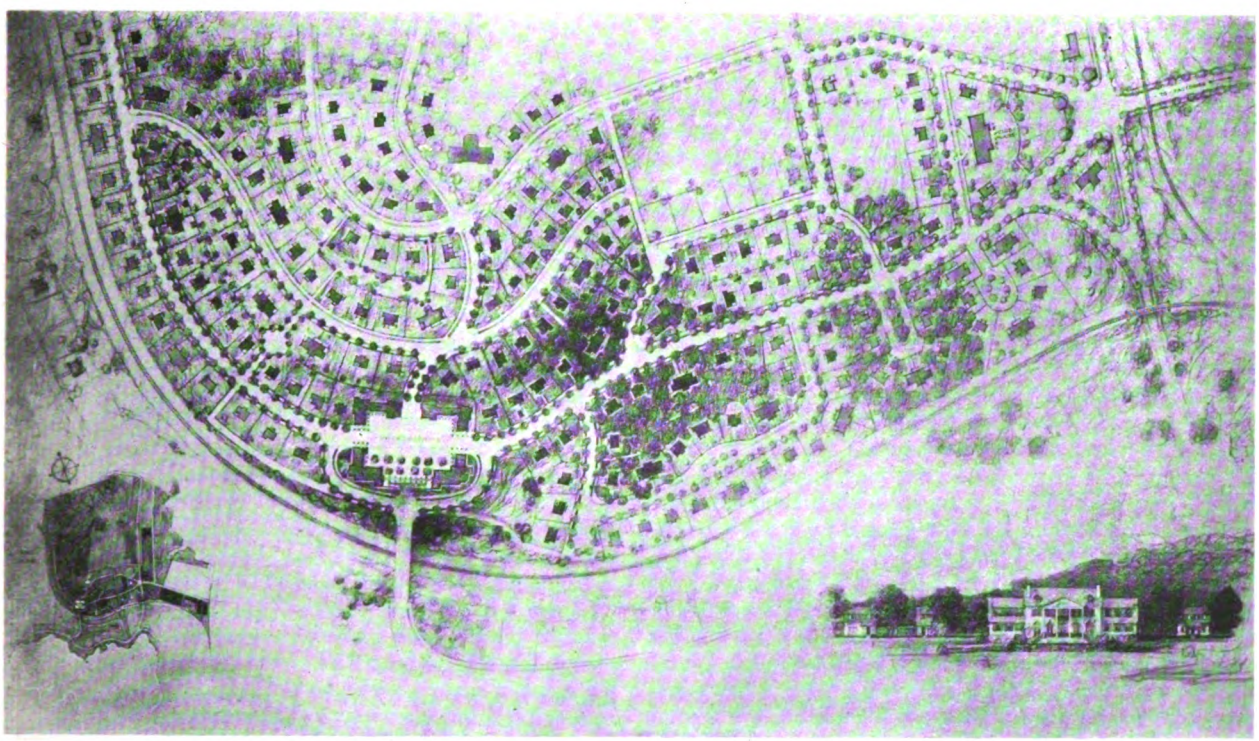
As the plan of the development shows, the advantages of the hillside location have been skilfully seized in the arrangement of the streets and in the distribution of the various units of the scheme. Main circulation roads have been given the best possible grades, and minor streets have been laid down in a way which affords that sense of intimacy and domesticity properly associated with cottage surroundings. The community center group holds the salient point on the shoulder of the hill, with a charming outlook from the side of the square toward the lake.

Fifty-eight houses are now completed, all in white, with slate for the roofing material. Site reservations for a dining-hall, Satucket Inn, a boarding-house for bachelors, a similar institution for girls, a chapel and a recreation-hall are already provided. Generous tracts of high wooded land will be set apart for public enjoyment, and parts of the lake-shore will doubtless be developed for sports. A general recreation center on the side hill to the east is planned, and small parks in the center of the various parks may ultimately be developed as children's playgrounds.

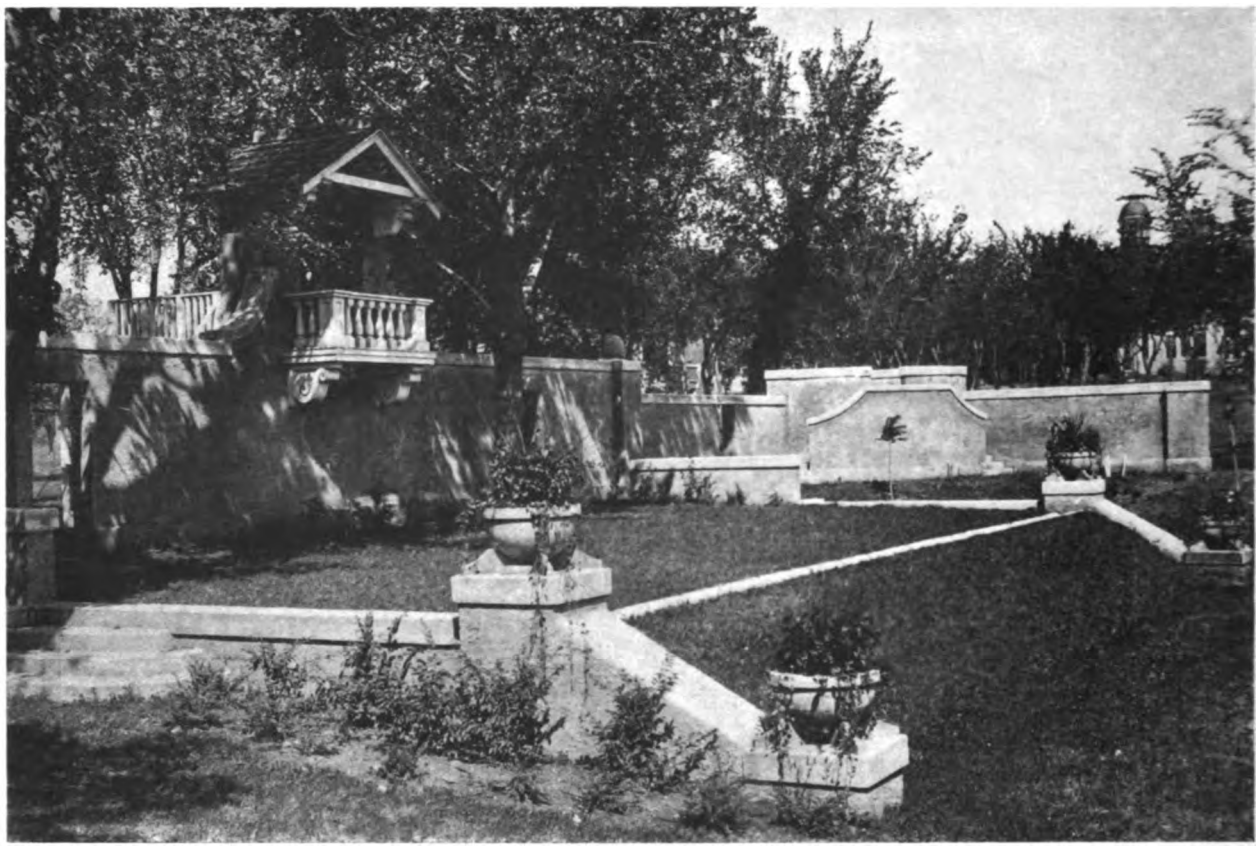
The property is carefully restricted, houses are well constructed, and sales are made to employees of the company on the most liberal terms. The cost of a typical six-room house in 1915 was a little over three thousand dollars, or about sixteen cents a cubic foot. The cost of acreage improvement—that is the construction of sewers, sidewalks, roads, and the planting of trees—has amounted to about seven cents a square foot, this figure not including, however, the overhead and administrative costs, which were not available.

The town-planner for the development and the architect for the houses is Mr. Grosvenor Atterbury, of New York.





INDUSTRIAL VILLAGE AT INDIAN HILL, MASS.—GENERAL PLAN AND TYPES OF HOUSES



GARDEN TERRACE THEATRE, YANKTON COLLEGE, SOUTH DAKOTA

A Garden Terrace Theatre

The garden terrace theatre at Yankton College, South Dakota, was prepared from plans drawn by Phelps Wyman, landscape architect, of Minneapolis, with whom was associated A. R. Van Dyke, architect, of the same city. The theatre is the outgrowth of the annual open-air presentation of a Shakespearean play by student amateurs, funds for the new development having been provided by a group of local citizens. The theatre is to be devoted not to college uses alone, but is to serve the entire community in which the college is located, as a civic center of educational influence.

The dimensions of the terrace stage are 30 by 60 feet, a line of concrete, shaped for footlights, marking the front edge. The sides are outlined by low walls with steps descending to lower garden levels lying to right and left of the stage, which furnish extra space when required. The rear wall at each extreme end is brought forward in a wing to a distance of 30 feet. At each corner thus formed there is a garden balcony, which may be used as a feature of the picturesque setting in the case of a large pageant spectacle. Two large trees rising from the stage form a wide-reaching canopy of foliage. Behind the rear wall is a double line of large trees, forming background to the stage. The audience area, sloping toward the stage, is inclosed by a formal hedge. The whole inclosure is permanently arranged to be lighted electrically.

City Residential Land Development. Studies in Planning. Publications of the City Club of Chicago. The University of Chicago Press. 1916. $3 net, postage extra.

Some four years ago the City Club of Chicago held a competition for the best suggested development of a quarter section lying eight miles from Chicago and on the open prairie. The competition is now a matter of valuable history and the publication of the program, with copious illustrations of the solutions offered by the competitors has now become an accomplishment. The book is of absorbing interest, not alone to architects but to all those who are in any way interested in the possibilities of better living conditions in the future. Twenty-six plans, with descriptive matter are included, and these are supplemented by reviews as follows: Esthetics of the Plans, by W. B. Faville, Albert Kelsey, Irving K. Pond; Sociological Aspects, by Dr. Carol Aronovici; Economic Review, by Robert Anderson Pope, the latter being accompanied by elaborate analytical tables of costs.

Beyond the interest of this book there lies the significance of the city club movement and the reader perceives this publication to be a part of the increasing evidence of the scope of such activities as a fundamental factor in the architectural development of the country. For all of these reasons we may heartily commend this publication. —B.

Structural Service Department

D. KNICKERBACKER BOYD, *Associate Editor*

In connection with professional societies and organized bodies working toward the improvement of building materials and methods, and the following Committees of the Institute:

Foreword

HERE begins the annual review of structural activities throughout the United States with particular reference to the standards adopted or under consideration by the various societies, associations or other potential agencies whose work concerns itself in any way with the materials which enter into building construction, the methods and safety of their production, manufacture and erection. Brief reference is made to standardizations by foreign governments and institutions.

Through this work the Editors have the desire to help in perfecting the art and science of building and in advancing the standing of the professions, trades, and crafts which are concerned therewith. This will require the fullest coöperation of all those whose interests are in common with this creed. In thanking those officials of the Government and of the professional, technical and other associations with whom we have thus far come in contact for their assistance which has been so generously given, we bespeak that further coöperation of all others which will be so necessary for the fullest fruition of our plans. In this we include our readers, whose indulgence we ask for any omissions which may be made this year, due to the magnitude of our task, and we invite such suggestions, advice and comments as will help us to do better.

Only a limited number of references in each industry can be given and a part of the service of this Department will be to furnish any inquirers with additional sources of information, titles of other publications, names of authors and publishers, cost of volumes, and to provide any other information possible for which purpose address The Journal of the American Institute of Architects, The Octagon, Washington, D. C.

NOTE: For any additions, in subsequent numbers, to material appearing in earlier numbers, look always at heading of the Department for serial numbers preceding the current contents, and remember that the main serial number corresponds to the number of the month in the year.

The necessity for providing a historical background requires the publication of such material during the current year only, as a part of the whole idea of the permanent reference and record value of the work.

INDEX—JANUARY, 1917. SERIAL NO. 1

Serial numbers and alphabetical designations are for reference purposes only

1A1 Foreign Governments, Institutions and Architectural Societies

1A1a

The importance of maintaining scientific institutions for the investigation and standardization of materials, including those entering into building construction, has been recognized by the leading countries of the world. The most notable organizations of this character are:

In England the Engineering Standards Committee of Great Britain, which publishes the British Standard Sections and the British Standards Specifications, the latter dealing with materials and methods of testing materials. This institution is liberally supported by Royal Grant of the British Government, and by the national engineering societies. Great Britain also maintains the National Physical Laboratory.

The German government maintains the Königliches Material-Prüfungsamt, a large institution devoted to the investigating and testing of structural, engineering and other materials. In connection with the leading technical high-schools of Germany laboratories are maintained for conducting investigations of building and other materials.

In France there is the Laboratoire des Ponts et Chaussees, and the Laboratoire Municipale d'Essais des Materiaux.

These governments also maintain laboratories whose functions include matters pertaining to scientific and technical standards, physical constants, weights and measures and to some extent the properties of materials. Among these are:

In Great Britain the Standards Department of the Board of Trade in charge of the standards and inspection of trade weights and measures.

In France the Laboratoire de Conservatoire National des Arts et Metiers.

Germany maintains the Normal-Eichungs Kommission, and the Physikalisch-Technische Reichsanstalt.

It is generally recognized that these institutions have been important factors in the industrial progress of these countries. These and similar institutions coöperate directly or indirectly with the International Association for Testing Materials, with headquarters at 50 Nordbahnstrasse, Vienna II, Austria. This association, developed from a conference of a small group of workers in experimental engineering held in Munich in 1882; its objects are "the development and unification of standard methods of testing; the examination of technically important properties of materials of construction and other materials of practical value, and also the perfecting of apparatus used for this purpose."

In the United States, as will be noted below, the Bureau of Standards combines the functions of many of these foreign institutions and maintains coöperative relations with other governmental departments and with the various professional, technical, commercial and other organizations.

1A1b

For lists of foreign architectural societies, see Kidder's Pocket Book, 1916. Pp. 1698–1703.

1A2 Bureau of Standards, Department of Commerce, U. S. A.

Authorized by Act of Congress, March 3, 1901; organized July 1, 1901

Director: Samuel W. Stratton, Bureau Laboratories, Washington, D. C.

Publications:

(*a*) Annual Report of the Director. Limited number for free distribution upon request to the Bureau.

(*b*) Scientific papers, (*c*) technologic papers, and (*d*) circulars: Published as investigations warrant; obtainable upon application to the Bureau or the Superintendent of Documents at Washington, at prices quoted or without charge if no price is given.

(*e*) Miscellaneous Publications: Reports of weights and measures, conferences, metric charts, tables and equivalents, obtainable upon application to the Bureau.

(NOTE: For separate lists of these publications of a special interest to those concerned with structural matters, and for extracts from Annual Reports, see notes in connection with each industry.)

Laboratories:

Main Laboratories: Washington, Pierce Mill Road, near Connecticut Avenue.

Branch Laboratory: Pittsburgh, Pa., temporarily located in buildings of the War Department, Arsenal grounds.

The Bureau is authorized to deal with: Standards of measurement, of values of constants, of quality, of mechanical performance, and of practice.

A standard of quality for a given material necessarily takes into account the purpose thereof; too low a standard results in losses, poor efficiency, and even loss of life; too high a one may result precisely in the same thing: that is to say, the material must be suitable for the purpose intended. The Bureau's investigations are to enable the user of materials, first, to select intelligently the material best suited for the purpose; second, to specify it in terms which the producer cannot mistake; and third, to make the necessary tests to ascertain whether the material supplied is in accordance with the specifications.

The Bureau does not compete with private testing laboratories, but endeavors to assist them by the development of standard specifications, methods of measurement, and other matters where uniformity is desirable.

The time is coming when all materials bought or sold must be as represented. This is impossible except where proper standards of quality and methods of measurement have been developed.

Standards of practice are generally involved in the enactment of laws when technical and scientific matters are concerned, in ordinances regulating public utilities, and in the establishment of building and safety codes. Like standards of performance, they are dependent upon standards of measurement and of quality, and are of the most vital importance to the welfare and safety of the public. In a field so broad, the Bureau can touch only upon the more important aspects of the work—where national uniformity is desired—fields which cannot be covered efficiently in private laboratories.

The maintenance by the Government of correct standards of measurement, quality, or performance, calls for continuous scientific and technical investigations of the highest grade, the most competent expert services and the best scientific equipment. Then there still remains the

serious problem of making the results available and useful to the public, a part of which service the Journal will be able to effect through its columns. But the Bureau's activities are not devoted principally to the interests of the user or consumer, for its work most deeply concerns manufacturers, who are fundamentally concerned, directly or indirectly, with the improvement of methods of production or quality of output, for it is upon quality, as well as upon price, that competition must finally depend, whether in domestic or foreign commerce, and the use of such methods and scientific results is the greatest factor in the improvement of quality, efficiency, or the development of new industries.

The work of testing and investigating the properties of structural materials was taken up and is carried on primarily for the needs of the Government in its structural work, but this information is just as necessary to the public in construction work, and every effort is made by the Bureau to make its findings in a form available to the public generally. In this, again, the Journal can really help, especially if its members will avail themselves of the information.

The work of the structural engineering and miscellaneous materials division includes the investigation, testing and preparation of specifications for these materials, such as the metals and their alloys, stone, cement, concrete, lime, the clay products, paints, oils, paper, textiles, rubber and other miscellaneous materials. Questions pertaining to the manufacture, specifications, testing, and use of the metals and their alloys have become so important that a metallurgical division has been formed of the experts engaged in these problems.

The engineering data resulting from investigations which the Bureau is conducting in reference to fireproofing of building columns, and partitions, should serve as the foundation upon which building codes must be constructed. Some progress has been made recently in compiling the municipal building codes, both with a view to furnishing information to state and city building bureaus and to others interested, and to permit a comparative study of existing codes, to assist in planning a systematic program of investigations of the many important questions about which there are still great differences of opinion. This data will be available to the Institute's committee on Basic Building Code, whose coöperation will be welcomed.

Many inquiries are received annually from architects, engineers, contractors, and builders as to methods of waterproofing concrete, methods of construction to be employed in sea water, physical properties of concretes of various mixtures, the cause of staining of plaster walls and ceilings, methods of preventing the dusting of cement floors, suggestions for building code requirements, the physical properties of marbles, specifications for stucco, fire-resisting properties of structural materials, the corrosion of metal lath, and reinforcement of gypsum plasters.

From the general public requests are received for information on methods of mixing concrete, laying of concrete sidewalks, waterproofing basements, suitability of various materials for use in concrete, durability of composition magnesite floors, physical properties of stones, effect of frost action on concrete, suitability of concrete for oil and acid storage tanks, dampproofing brick and tile walls, dusting of concrete floors.

It is hoped that the acquaintances formed with architects, manufacturers, dealers, and consumers, will result in mutual advantage to them and to the Bureau, and that they will feel more inclined to place their problems before the Bureau for solution. Thus the Bureau will be better able to understand their difficulties, and be of the fullest possible service to the people of this country.

—Rewritten from the current Rport to the Secretary of Commerce, by SAMUEL We. STRATTON, Director

1A3 Other Governmental Departments

The U. S. Geological Survey and the Bureau of Mines will be referred to in Serial No. 2. The Forestry Service of the U. S. Department of Agriculture and other governmental departments will be referred to in later serial numbers in connection with the industries with which they are most concerned.

1A4 American Society for Testing Materials

Affiliated with the International Association for Testing Materials.

Secretary-Treasurer: Edgar Marburg, University of Pennsylvania, Philadelphia.

Publications:

Proceedings, published annually, in two parts containing:

(*a*) Reports of technical committees and Tentative Standards, published for one or two years for criticism before final action toward their adoption, (of which there are now 30).

(*b*) Technical papers and discussions.

(*c*) Book of American Society for Testing Materials Standards, about eight hundred pages, published biennially in the even years and containing the standards adopted by the Society in their latest revised form (of which there are now 103).

(*d*) A pamphlet annually, containing list of members, personnel of committees, and general information concerning the Society and the International Association. Circulars of information to members are also issued at irregular intervals averaging about one a month.

(*e*) Standards, also published individually at 25 cents each; to members, 15 cents.

Each member receives the above publications except (*e*), by virtue of his membership. Current issues obtainable by non-members at (*a*) paper $5; cloth $5.50; (*b*) ditto; (*c*) cloth only $7.50; (*d*) $1.

Organized 1898 as American Section of the International Association of Testing Materials. Incorporated 1902 as American Society for Testing Materials, under which designation it maintains affiliated relations with the International Association.

Its purpose is the promotion of knowledge of the materials of engineering, and the standardization of specifications and methods of testing.

Membership may be held by individuals, firms, corporations, technical or scientific societies, companies, teaching faculties, and libraries. For information address the Secretary.

The work of the Society is done largely through its technical committees, which present reports and recommendations at the annual meeting, usually in June. There are now 36 technical committees with a total membership of 992.

On committees dealing with subjects having a commercial bearing, either an equal numeric balance is maintained between the representatives of consuming and producing interests, or the former are allowed to predominate with the acquiescence of the latter.

Standards: (From "Regulations Governing Technical Committees.")

"Proposed new standards or the proposed amendment of existing standards must originate in the particular committee within whose province such standards properly belong. No action affecting standards shall be taken by

any technical committee except at meetings called for that purpose. Action at such meetings shall be subject to majority vote of those voting, and subsequently to majority of those voting on letter ballot of the entire committee. The results of each letter ballot as to the number of the affirmative votes, the number of negative votes, and the number of members not voting, shall be announced in the report of the committee to the Society. Dissenting members shall have the right to present minority reports, individually or jointly, at the annual meeting of the Society at which the majority report is presented.

"Any recommendations affecting standards must be transmitted to the Secretary-Treasurer of the Society at least eight weeks in advance of the date of the annual meeting, and copies of these recommendations, in printed form, must be mailed by the Secretary-Treasurer to every member of the Society not less than four weeks before the annual meeting, so that members may come to the meeting prepared to discuss such recommendations, and that members not intending to be present at the meeting may contribute discussions by letter.

"At this meeting amendments may be made by a two-thirds vote of those voting. The proposed new standards or the proposed amendments of existing standards, as presented or as amended, shall be printed, on a two-thirds vote of those voting, in the Yearbook under a section designated 'Tentative Standards,' on which written discussions addressed to the appropriate committee shall be invited. At the annual meeting in the next even year these proposed new standards or proposed amendments of existing standards shall be subject to amendment by a two-thirds vote of those voting, and to reference by a like vote to letter ballot of the Society. A two-thirds vote of those voting shall be required for adoption.

"The term 'Standards' shall be applied collectively to standard specifications, standard tests, standard methods, and standard definitions."

The various standards affecting materials or methods of building construction will be separately referred to under the especial material or industry affected. A pamphlet giving a complete list of all Standards may be had upon application to the Secretary.

In reference to the Standards of this Society THE COMMITTEE ON MATERIALS AND METHODS OF THE INSTITUTE calls attention to the following excerpt from the recent report of the Executive Committee, American Society for Testing Materials:

"The increasing use of the Standard Specifications of the Society in federal, state and municipal circles, apart from their extensive adoption in ordinary commercial channels, is significant of the confidence placed in the work of the Society and serves to emphasize the reciprocal obligation upon the Society to justify that confidence in connection with everything to which its name is attached. Purchases for the Panama Canal have been made largely under its standards, twenty-seven of the Standard Specifications of the Society being now in use by the purchasing department of the Canal. Again, nine of the Standard Specifications have been adopted—in some cases with slight modifications—in connection with the Boiler Code recently prepared by a committee of the American Society of Mechanical Engineers, which is expected to be adopted in many states by legal enactment."

THE COMMITTEE ON BASIC BUILDING CODE OF THE INSTITUTE calls attention to this excerpt:

"Similarly, in the current revision of the Building Code of the city of New York, seven Standards of the Society are referred to in some such form as the following:

"Except as may be otherwise prescribed by the rules of the Superintendent of Buildings . . . shall conform to the Standard Specifications of the American Society for Testing Materials. . . ."

1A5 The American Society of Civil Engineers (See Serial No. 2, February Journal)

1A6 American Society of Mechanical Engineers (See Serial No. 2, February Journal)

1A7 The American Institute of Mining Engineers

Organized 1871

Secretary: Bradley Stoughton, 29 West 39th Street, New York City.

Publications:

(*a*) Transactions, three volumes annually, contain the proceedings of the Institute which constitute an important record of progress in research and practice in mining and metallurgy.
(*b*) Monthly Bulletin contains professional papers, reports of proceedings, a forum for discussion and other matters of interest.
(*c*) Papers and discussions printed in the Bulletins are also published as individual pamphlets.
(*d*) Year Book containing a list of members and committees.

Members receive (*a*) and (*b*) free; to non-members the prices are (*a*) each volume, paper, $5, in half morocco $6; (*b*) $12 per annum.

Technical committees are actively at work for the advancement and welfare of the profession and to promote discussion and stimulate the preparation of technical papers.

The Institute aims to promote the economic production of the useful minerals and metals, and the welfare of those employed in these industries.

1A8 American Institute of Architects

Organized 1857

Secretary: W. Stanley Parker, The Octagon, Washington, D. C.

Publications:

(*a*) Constitution and By-laws, in which are set forth requirements for membership.
(*b*) Circular of Advice Relative to Principles of Professional Practice and Canons of Ethics.
(*c*) Schedule of Proper Minimum Charges.
(*d*) Circular of Advice on Architectural Competitions.
(*e*) Standard form of Architectural Program.
(*f*) Circular as to Size and Character of Printed Matter Intended for Architects' Files.

All of the above are free on request.

(*g*) Standard Documents, being Contract Forms prepared under careful study and joint agreement with national organizations interested in the building industry. Complete set, in cover, 15 cents, or obtainable from dealers generally.
(*h*) Monograph on the Octagon. An illustrated history of this charming house. $12.50.
(*i*) Journal of the American Institute of Architects. Monthly, $3.50 per annum. Foreign, $5.

(*k*) The Annuary, containing a list of members and committees.
(*l*) The Proceedings, being the transactions of the Annual Convention (*k*) and (*l*), are free to members only. To others, $5 each. For list of Chapters and officers, see Journal (*j*).

Its objects are to organize and unite in fellowship the architects of the United States of America, to combine their efforts so as to promote the esthetic, scientific, and practical efficiency of the profession, and to make the profession of ever-increasing use to Society.

Standing and special committees report through the Board of Directors to each Annual Convention; the reports and action of the Convention are published in the Proceedings (*l*). Actions of the Board at meetings between Conventions and other matters of interest and information are published monthly in the Journal.

Standards: The only standards adopted are those referred to under publications as *e*, *f*, and *g*.

1A9 American Railway Engineering Association

Organized March, 1899, under the laws of state of Illinois (not for profit)

Secretary: E. H. Fritch, 900 S. Michigan Ave., Chicago, Ill.

Publications:

(*a*) Proceedings; annually; contain complete committee reports, full discussion and special articles.
(*b*) Bulletin; ten issues annually; committee reports and monographs.
(*c*) Manual of the A.R.E.A. First Edition, 1905; 2nd, 1907. Supplements, September, 1906, September, 1907. Revised Edition, 1911. Supplements 1912, 1913, 1914. The current (1915) edition contains the action of the 1915 Convention and a comprehensive revision of the action of previous conventions. Included in the contents are:
  (*d*) Principles of practice.
  (*e*) Suggestions and recommendations.
  (*f*) Specifications adopted (Standards).
  (*g*) Standard form of contract and bond.

Members receive all of the above. Others may purchase them from the Secretary or book-dealers at: (*a*) paper $6, cloth $6.50, half morocco $7; (*b*) per annum $8; (*c*) paper $4, cloth $4.50, half morocco $5.

The object of the Association is the advancement of knowledge pertaining to the scientific and economic location, construction, operation and maintenance of railways. What an important relation much of this has to the art and science of building construction will become evident from the references to the work of this Association under the various industries, as treated.

Adopted Specifications:

The Manual (*c*) includes only such conclusions relating to definitions, specifications and principles of practice as have been made the subject of a special study by a Standing or Special Committee and embodied in a Committee Report, published not less than thirty days prior to the annual convention, and submitted by the Committee to the annual convention, and which, after due consideration and discussion, shall have been voted on and formally adopted by the Association. Subjects which, in the opinion of the Board of Direction, should be reviewed by the American Railway Association, may be referred to that Association before being published in the Manual.

Matters adopted by the Association and subsequently published in the Manual shall be considered in the direction of good practice, but shall not be binding on the members.

1A10 Western Society of Engineers (Reference later)

1B Testing, Inspection and Research Facilities

Throughout the literature of materials and products, and of appliances and systems pertaining to buildings, there constantly recur the names of departments, bureaus, testing stations, laboratories, and universities, with tables, tests and analyses and references to labels, approvals, and lists of inspected materials.

This is indicative of a widespread interest and service involving activities which need to be better understood by the building public in order that their significance shall be more fully appreciated. It is also vitally necessary that a full understanding of the functioning of these activities and of the methods employed in the testing and inspection of materials prevail among architects, builders and all contractors.

Recognition of tests for the purposes of use intended and of those made by engineers or organizations whose findings are known to be generally acceptable to all concerned is a desideratum. The importance to be attached to testing and checking up for continuity of quality and performance is obvious.

To quote from the National Electric Safety Code (1A2*e*):

"In order to avoid the necessity for a repetition of such examinations by different examiners, frequently with inadequate facilities for such work, and to avoid the confusion which would result from conflicting reports as to the suitability of devices examined for a given purpose, it is necessary that such examinations should be made under standard conditions, and the record made generally available through promulgation of organizations properly equipped and qualified for experimental testing, inspections of the run of goods at factories and service value determinations through field inspections, and whose findings are subject to appeal to departments of the Federal Government having equipment for such review."

Some governmental facilities and others of national scope and semi-public nature are:

1B1a Bureau of Standards, Department of Commerce, U. S. A.

Functions of the Bureau pertaining to building construction in general have been previously described.

In reference to testing, the following is taken from Circular No. 45, "The Testing of Materials," which contains full information and a schedule of the fees charged and may be had upon application to the Director of the Bureau:

"Tests of materials are made for the public where the Bureau is asked to act as referee or where an authoritative test is demanded by the nature of the case, or in other cases where the Bureau is primarily interested in the test in connection with investigation. The right is reserved to make such use of the results of these tests as is deemed desirable. The Bureau will coöperate with investigators, manufacturers, testing laboratories, and others, not only in executing tests, but also on request, in furnishing any information at its disposal concerning materials or methods of testing."

1B1b Watertown Arsenal, War Department, U. S. A.

Watertown, Mass.

Publications:

The results of all public tests are published in the annual report of the laboratory, entitled (*a*) "Tests of Metals," the first volume of which is dated 1881. When available, these volumes may be purchased at cost by applying to the "Superintendent of Documents, Government Printing Office, Washington, D. C."

This laboratory is officially designated as the "Testing Laboratory, Watertown Arsenal, Watertown, Mass."

The laboratory is equipped with two horizontal emery testing-machines, one of 800,000 pounds and the other 100,000 pounds capacity, both adapted for tensile or compressive tests, and with all necessary accessory apparatus, such as measuring instruments, extensometers, machines for determining hardness, testing cement briquettes, and similar work.

All classes of constructive materials are tested, such as iron and steel, in the form of test specimens or full-sized members, cement in briquettes or concrete columns and cubes, brick, or stone.

Under the law any citizen of the United States may have tests made by defraying the cost.

Immediately upon receipt of application for test an estimate of the cost of the work will be furnished, and a sum equal to this estimate must be deposited before work for private parties can be begun.

An official report will be furnished covering each test. All data for private tests is considered confidential, and information concerning same will be furnished only to the party for whom the work is done or his order.

A list of all such tests, giving the name and address of the party for whom made, date of test, and kind of material is published in the annual report of the testing laboratory, entitled "Tests of Metals."

1B1c Office of Public Roads and Rural Engineering, Department of Agriculture, U. S. A.

Director: Logan Waller Page, Washington, D. C.

A laboratory is maintained wherein it has been the policy of this office to test, free of charge, for any citizen of the United States, samples of rock, gravel, sand, clay, etc., provided they are submitted strictly in accordance with printed instructions which are furnished upon request. Such tests relate to the value of material for use in road-work and a report as to such value only is furnished.

1B2a Underwriters' Laboratories

Chartered by the state of Illinois, 1901.

President: William H. Merrill, 207 E. Ohio Street, Chicago.

(NOTE: For list of publications and further description of facilities and service see Industrial Section, page ix.)

This institution began its work some twenty years ago as an electrical testing station. Expansion has continued until now the Laboratories undertake to keep its service available wherever it may be effectively employed in the testing and inspection of materials and products having a bearing on the fire hazard or upon accident prevention.

Equipment for this work includes a large plant at Chicago, a branch testing station in New York City and branch offices for the operation of inspections at factories and labeling of standard products in more than a hundred cities and towns in the United States and Canada, and in London, England.

Upon the conclusion of examinations and tests the results thereof, are bulletined to the various insurance organizations and companies subscribing to or coöperating with the Laboratories' work and a copy of the bulletin and the detailed report is furnished the applicant.

Its chief financial support has been received from the National Board of Fire Underwriters, under whose general direction the work is carried on.

For the work of the Laboratories, with reference to steel and concrete structural members, and fire protection see current activities under these respective headings.

1B2b Associated Factory Mutuals' Laborato

(Reference later)

1B3a Educational Research Work

In addition to facilities offered through Governmental agencies and semi-public institutions such as the foregoing, important work is being done in many educational institutions of the country which maintain laboratories, conduct experiments and make tests of building materials. These, while primarily in connection with the work of the students, add annually to the understanding of materials used in building construction, their qualities, action, protection and proper use.

In many cases this work assumes proportions that are of value not only to the students and local communities but to a national development. Many of these institutions distribute bulletins, circulars, and reports contributing toward this end. Among these may be mentioned the following: (Many of these conduct this work only in connection with their instructional activities. Others will make tests on materials which involve investigation and research elements as distinguished from tests of a purely routine or commercial nature. In those from which we have heard, thirty-four in all, where, either through one of the departments or by arrangement with members of the instructive staff, experiments or tests will be conducted for those desiring them, the institution is indicated thus *. In those marked † are located branches of the American Society of Mechanical Engineers where regular meetings are held.)

† 1. Agricultural and Mechanical College of Texas . . . . . College Station, Texas
† 2. Arkansas, University of* . . . . Fayetteville, Ark.
† 3. Armour Institute of Technology* . Chicago, Ill.
† 4. Bucknell College . . . . . Lewisburg, Pa.
† 5. California, University of. . . . . Berkeley, Cal.
† 6. Carnegie Institute of Technology . Pittsburgh, Pa.
† 7. Case School of Applied Science . . Cleveland, Ohio
† 8. Cincinnati, University of . . . . Cincinnati, Ohio
† 9. Colo. State Agricultural College . Fort Collins, Colo.
†10. Colorado, University of*. . . . . Boulder, Colo.
†11. Columbia University . . . . . New York, N. Y.
†12. Cornell University* . . . . . Ithaca, N. Y.

13. Dartmouth College . . . . . Hanover, N. H.
†14. Georgia School of Technology . . Atlanta, Ga.
†15. Illinois, University of . . . . . Urbana, Ill.
†16. Iowa, State University of . . . . Iowa City, Iowa.
†17. Kansas State Agricultural College . Manhattan, Kan.
†18. Kansas, University of . . . . . Lawrence, Kan.
†19. Kentucky, State University of . . Lexington, Ky.
20. Lafayette College . . . . . Easton, Pa.
†21. Lehigh University . . . . . South Bethlehem, Pa.
†22. Leland Stanford, Jr., University . . Stanford University, Cal.
†23. Lewis Institute . . . . . Chicago, Ill.
†24. Louisiana State University* . . . Baton Rouge, La.
†25. Maine, University of* . . . . . Orono, Maine
†26. Massachusetts Institute of Technology* . . . . . Boston, Mass.
†27. Michigan, University of . . . . . Ann Arbor, Mich.
†28. Minnesota, University of* . . . . Minneapolis, Minn.
†29. Missouri, University of . . . . . Columbia, Mo.
†30. Nebraska, University of . . . . . Lincoln, Neb.
†31. New York University* . . . . . New York, N. Y.
†32. Ohio State University* . . . . . Columbus, Ohio
33. Princeton College* . . . . . Princeton, N. J.
†34. Pennsylvania State College . . . State College, Pa.
35. Pennsylvania, University of . . . Philadelphia, Pa.
†36. Polytechnic Institute of Brooklyn . Brookyln, N. Y.
†37. Purdue University* . . . . . Lafayette, Ind.
†38. Rensselaer Polytechnic Institute . Troy, N. Y.
†39. Rose Polytechnic Institute . . . Terre Haute, Ind.
†40. Stevens Institute of Technology* . Hoboken, N. J.
†41. Syracuse University* . . . . . Syracuse, N. Y.
42. Texas, University of* . . . . . Austin, Tex.
†43. Throop College of Technology* . . Pasadena, Cal.
44. Tulane University . . . . . New Orleans, La.
†45. Virginia Polytechnic Institute . . Blacksburg, Va.
†46. Washington State University . . Seattle, Wash.
†47. Washington University* . . . . St. Louis, Mo.
†48. Wisconsin, University of* . . . . Madison, Wis.
†49. Worcester Polytechnic Institute* . Worcester, Mass.
†50. Yale University . . . . . New Haven, Conn.
51. Oklahoma A. & M. College* . . Stillwater, Okla.

1B4 Testing Laboratories and Inspection Bureaus

For the practical business assistance of architects, engineers, and others in conducting tests and analyses of earth-pressure, sand, cement, and building materials generally, and in inspecting the manufacture and erection of steel and other structural members, there exists a number of testing laboratories and engineering concerns of national scope. These are conducted as private business enterprises and many include in their management or on their staff prominent members of several of the societies previously mentioned.

For other information and publications, see Industrial Section, pages viii, ix.

In the case of each industry, after describing the governmental departments and professional, technical, commercial and other associations interested, the order of presentation to be followed, as nearly as possible, will be,

Introductory Remarks.
Information Obtainable.
Other References.
Practice Recommended.
Standards Adopted, or
Progress Reported.
Current Activities.

1C Foundational Requirements, Concrete Piling and Steel Piling

(Other footings and foundations: Stone, Serial No. 2; Brick, Serial No. 3; Wood Piling, Serial No. 4.)

Problems connected with soil conditions are encountered throughout the country. Pending actual investigation of the site, an acquaintance with the source of data concerning conditions likely to be found, the requirements of various cities as to floor loads and bearings allowed, methods of overcoming obstacles similar in nature, the character of engineering or constructional assistance to be obtained, and other information tending to simplify investigation and facilitate subsequent treatment, should prove helpful.

1C1 Information Obtainable

(*a*) The Pennsylvania State College Engineering Experiment Station (1B3*a*, 34). Bulletin, June, 1913. "Experiments on the Distribution of Vertical Pressure in Earth," by R. B. Fehr and C. R. Thomas.
(*b*) A.S.C.E. (1A5), Transactions, Vol. LIII, p. 272. "Lateral Earth-Pressures and Related Phenomena," E. P. Goodrich.
(*c*) Ditto, Vol. LXX, p. 352, "Pressure, Resistance and Stability of Earth," J. C. Meems.
(*d*) Ditto, Vol. LXXI, p. 350, "Earth and Retaining Walls," G. H. Darwin.
(*e*) "Allowable Pressure on Deep Foundations," E. L. Corthell.
(*f*) "A Practical Treatise on Sub-Aqueous Foundations," C. E. Fower.
(*g*) "Foundations of Bridges and Buildings," Jacoby and Davis.
(*h*) "Masonry Construction," Ira O. Baker.
(*j*) "Foundations," M. A. Howe.
(*k*) "Masonry," M. A. Howe.
(*l*) The U. S. Geological Survey has published about four hundred reports (2A1*h*) on various phases of water-supply and conditions likely to be met with in excavating and similar work. Request should be made for information concerning a specific section of the country.
(*m*) In "Journal of the Western Society of Engineers" (1A10) for June, 1914, will be found "Topography of the Red Rock under Chicago," by Roderick Peattie, including diagrams and followed by discussions participated in by several architects.

1C2 Other References

(*a*) "Kidder's Pocket Book," pp. 129–229, 978–982, 1450.
(*b*) "American C. E. Pocket Book," Mansfield Merriman.
(*c*) "Handbook of Cost Data for Contractors and Engineers," H. B. Gillette.
(*d*) "Building Superintendence and Construction," F. E. Kidder.
(*e*) "Carnegie Pocket Companion, 1916," pp. 104, 188, 258–262, 348–351.
(*f*) "Jones & Laughlin Manual, 1916," pp. 82–89, 218–222, 243 284–290.
(*g*) "Concrete Pile Standards," Hunley Abbott, Associate Member A.S. of C.E.

For other information and publications see Industrial Section, p. xvii.

1C3 Practice Recommended

(*a*) By the National Board of Fire Underwriters (Serial No. 3), "Building Code Recommended by the N. B. of F. U.," 1915.
"Excavations, Foundations and Footings," pp. 25–32.
"Bearing Capacity of Soils," p. 28.
"Concrete Piles," pp. 32–34.

(*b*) By, ditto, "Dwelling Houses, A Code of Suggestions for Construction and Fire Protection," 1916.
"Wooden Piling Standards" (adopted specifications), A.R.E.A. (1A9*f*), will be referred to in Serial No. 4.

1C4 Current Activities

(*a*) Special Committee American Society of Civic Engineers (1A5). To codify present practice on the bearing value of soils for foundations. Robert A. Cummings, Chairman.

(*b*) An investigation of the resisting power of earths is being conducted by the Bureau of Standards, U. S. A., in coöperation with a committee of the American Society of Civil Engineers, and a large number of tests have already been made to determine the best means of testing earths under standard conditions. A study of the data thus far obtained has shown the need of some modification of apparatus, and this has been effected with good results. The general laws of earths subject to stress and strain have already been definitely formulated in mathematical physics, but to obtain determinate solutions of the equations for application to engineering practice, it is necessary to know the elastic coefficients of actual earths. In the experimentation being conducted, the endeavor is made to supply these coefficients and their range of possible variation to a closer degree of precision than has been obtained heretofore. A number of experiments have also been carried out with good results to determine the laws of variation of frictional coefficients in relation to diameter and perimeter of piles and foundations as preliminary to further tests on a larger scale. (Report 1916, Bureau of Standards, 1A2*a*.)

1D Waterproofing and Dampproofing

This subject, aside from its relation to engineering problems, is important in the construction of buildings, both above ground and underground. Investigation and experimentation is taking place in Governmental departments, educational institutions and in various laboratories including those maintained by some of the largest manufacturing interests in the country. Practical working tests are being conducted by professional and technical associations, and out of all these activities there will evolve a clearer understanding of when, where and how results may be accomplished in the retention or exclusion of water or other liquids and in lessening the absorptive qualities of those materials enclosing or forming a part of structures.

Under this heading reference will also be made to those forms of construction which are intended to retain or repel water or control it against damage to contents of buildings or other objects.

1D1 Information Obtainable

(*a*) American Society of Civil Engineers (1A5); "Proceedings" from 1872 to 1906; 24 references given in 1D1*r*.

(*b*) Ohio State University (1B3*a*32); 1901 and 1903; "Tests to Determine Causes and Remedies for the Permeability of Cement Mortar."

(*c*) Dartmouth College, Hanover, N. H. (1B3*a*13); Bulletin Thayer School of Civil Engineering; 1902; "The Permeability of Concrete under High Water Pressures," J. B. McIntire and A. L. Pure.

(*d*) National Association of Cement Users and American Concrete Institute (1E1); "Proceedings" from 1905 to 1912; 14 references given in 1D1*r*.

(*e*) Iowa State College Engineering Experiment Station (1B3*a*16), Vol. IV, Bulletin No. 3, 1908; "Experiments on Impermeability and Waterproofing of Cement Blocks, Etc.," B. R. Smith and H. L. Christian, F. E. Cave and G. H. Mack, and W. A. Burton.

(*f*) A.S.T.M. (1A4), Vol. VIII, p. 500, 1908; "Permeability Tests of Concrete with the Addition of Hydrated Lime," Sanford E. Thompson.

(*g*) American Railway Bridge and Building Association, Vol. XVIII, p. 46, 1908; "Report of Committee on Waterproofing of Concrete-covered Steel Floors of Bridges."

(*h*) University of Illinois (1B3*a*15); The Technography, No. 23; 1908, 1909; "Making Concrete Waterproof Tests of Alumand Soap Waterproofing under the Direction of Ira O. Baker," B. L. Bowling and C. G. Derick.

(*i*) Iowa State College Engineering Experiment Station (1B3*a*16), Vol. IV, Bulletin No. 4, 1909; "Experiments on Permeability and Waterproofing Concrete, Etc.," R. R. Strothers and Platt Wilson, O. L. Huffman and E. S. Fowler, Royce Heath, and others.

(*j*) University of Wisconsin (1B3*a*48), Vol. VI, Bulletin No. 1, 1909; "Tests on the Permeability of Concrete," Francis Michael McCullough.

(*k*) A.S.T.M. (1A4), 1909, 1911, 1913; "Reports of the Committee on Waterproofing Materials."

(*l*) A.S.T.M. (1A4), Vol. X, p. 351, 1910; "The Effect of Sodium Silicate Mixed with or Applied to Concrete," Albert Moyer.

(*m*) American Railway Engineering Association (1A9*a*), 1910, 1911, 1912, 1914; "Reports of Committee on Masonry."

(*n*) U. S. Bureau of Standards (1A2*c*); Technologic Paper No. 3, 1912; "Tests of the Absorptive and Permeable Properties of Portland Cement Mortars and Concretes, Together with Tests of Dampproofing and Waterproofing Compounds and Materials," Rudolph J. Wig and P. H. Bates.

(*o*) A.S.T.M. (1A4), Vol. XIII, 955, 1913; "Coal Tar and Asphalt Products for Waterproofing," Samuel T. Wagner.

(*p*) U. S. Department of Agriculture (1B1*c*), Bulletin No. 230, 1915; "Oil-Mixed Portland Cement Concrete," Logan Waller Page.

(*q*) U. S. Reclamation Record ( ), Vol. VI, No. 4, 1915; "Waterproofing Concrete Surfaces," J. L. Lytel.

(*r*) International Engineering Conference; paper presented at San Francisco, Cal., 1915; "Waterproof Concrete," Richard L. Humphrey, Philadelphia, Pa. (Same contains a complete bibliography of waterproofing and concreting to which the Editor is indebted for the references herein given as of especial interest to building constructors.)

1D2 Other References

(*a*) "Kidder's Pocket Book," pp. 1629–1637.
(*b*) "Modern Methods of Waterproofing," Myron H. Lewis.
(*c*) "Asphalt," Clifford Richardson.
(*d*) "The Waterproofing of Fabrics," S. Mierzinski.
(*e*) "Dampness in Buildings," A. W. Keim.
(*f*) "Building Superintendence and Construction," Frank E. Kidder.
(*g*) "Merriman's Pocket Book."
For other information and publications, see Industrial Section, xx.

1D4 Practice Recommended

(*a*) By, Inspection Dept. Asso. Factory Mutual F. I. Co.'s (Serial No. 3), Feb., 1915; "Watertight Floors of Mill Construction."
(*b*) By, N.B. of F.U. (Serial No. 3) "Building Code Recommended by the N.B. of F.U.," 1915, "Waterproofing of Floors," pp. 126, 128, 129.
(*c*) By A.R.E.A. (1A9*e*), 1915, Committee on Masonry, "Waterproofing of Masonry."
(*d*) See, also, 1D1*g*.

1D5 Progress Reported

"Committee D8 of the A.S.T.M., since its organization in 1905, has, through laboratory tests and experiments, together with examinations of work during construction and after completion, as well as the study of literature on the subject, sought to secure sufficient information to enable it to formulate definite methods for securing waterproof concrete structures. The work of the Committee was complicated by reason of the fact that there seemed to be so little concordance between results of tests obtained under laboratory conditions and in the field and that it was necessary to extend its investigations over a period of years in order to determine the permanency of the action noted. The Committee reported that while it had not been able to arrive at sufficiently definite conclusions to enable it to formulate specifications for the making of concrete structures waterproof or for materials to be used in such work, it had reached certain general conclusions which might be of assistance to the constructor in securing the desired result of impermeable concrete."—From "Kidder's Handbook," 1916, p. 1630.

1D6 Current Activities

Investigation of Integral Waterproofing Compounds.

(*a*) During the year a coöperating committee was organized, composed of representatives from Government offices, engineering societies, and the various industries, including all known manufacturers of waterproofing compounds. This committee coöperated in planning a series of field experiments, which contemplates the construction of concrete tanks by contract, both with and without waterproofing compounds. These tanks are to be located below grade near the Potomac River and subject to tidal water. A questionnaire was also prepared and submitted to architects, contractors, and engineers, to gather information on the present usage of these materials. Results of this investigation should be available during the ensuing year. (1916 Report, Bureau of Standards, 1A2*a*.)

Bituminous Materials.

(*b*) Definite methods of tests and specifications have been developed for coal-tar, waterproofing, and roofing pitches, to replace the loose and indefinite requirements which have been more or less in use in the Government service. Methods and specifications are being developed for asphaltic materials. Information is being obtained to insure satisfactory felts and papers for saturation with asphalt and tar products for waterproofing and roofing purposes. Modification of specifications for these latter materials may become necessary, since shortage of rag stock has increased the use of wood-pulp, jute, and manila fiber. (1916 Report, Bureau of Standards, 1A2*a*.)

(*c*) The use of lime will be referred to in Serial No. 2, (February.)

1E Cement and Concrete

The manufacture of American Portland cement first secured recognition at the Centennial Exposition in Philadelphia, in 1876, when David S. Saylor exhibited Portland cement made at Coplay, Pa. The first recorded statistics of this industry were those issued by the U. S. Geological Survey for 1880, during which year the production reached 42,000 barrels; in the preceding ten years the amount produced amounted to 82,000 barrels. Since 1880 the production has steadily increased and will probably exceed 90,000,000 barrels for the year 1916. At the beginning of the manufacture of Portland cement in this country, practically all that was used was imported; the earliest statistics of the Geological Survey show an importation of 92,000 barrels in 1878, which steadily increased reaching a maximum of about 3,000,000 barrels in 1895, since which time it has decreased to 42,218 barrels in 1915. This has resulted from the improvement in the process of manufacture in this country which has decreased the cost and increased the quality until today American Portland cement is unexcelled. The American manufacturer is successfully competing in the world's markets; and there was exported in 1915 over 2,500,000 barrels. The preceding figures are taken from the annual reports of the statistics of the cement industry compiled and published by the U. S. Geological Survey.

The following has just been received from U. S. Geological Survey as of date January 1, 1917. "Another mineral product which furnishes an index of business conditions is cement, the 1916 production of which is estimated to be 5,000,000 barrels in excess of the output of the previous year, while the shipments were even greater, aggregating 94,500,000 barrels, with the outlook reported as good for the new year.

In addition to the governmental departments and other organizations previously mentioned which have taken important parts in developing standard specifications and tests for the manufacture and use of cement the following bodies working specifically in this field have coöperated in the improvement of this product and in bringing about a better understanding of the varied uses of cement and concrete.

1E1 American Concrete Institute

Secretary: Harold D. Hynds, 30 Broad Street, New York City.

Publications:

(*a*) Journal, containing the Proceedings of Annual Conventions including reports of committees and also the following:
(*b*) Proposed Standard Specifications.
(*c*) Recommended Practice.
(*d*) Standard Specifications Adopted.

The following is also issued separately as an authorized reprint from the copyrighted Journal:
(*e*) Standard Specifications.
Members receive (*a*) which may be purchased by others, cloth bound, for $10.50; paper, $10.

Founded in 1905 and incorporated in 1906 as National Association of Cement Users. Charter amended on July 2, 1913, and name changed to American Concrete Institute.

Its purpose is to increase and disseminate knowledge in regard to the use of cement, concrete and allied products; to conduct research into their properties and uses; and to formulate recommended practice and standard specifications. Its object is purely educational.

Any person engaged in the construction or maintenance of work in which cement is used, or qualified by business relations or practical experience to coöperate in the purposes of the Institute, or engaged in the manufacture or sale of machinery or supplies for cement users, or a man who has attained eminence in the field of engineering, architecture or applied science, is eligible for membership.

Standards: (See [*d*]). Sectional committees submit reports before Annual Conventions.

Proposed Recommended Practice and Specifications to be submitted to the Institute must be mailed to the members at least thirty days prior to Annual Convention, and as there amended and approved, passed to letter ballot, which shall be canvassed within sixty days thereafter, such Recommended Practice and Specifications shall be considered adopted unless at least 10 per cent of the total membership shall vote in the negative.

The standards adopted are referred to later under their special headings.

1E2 Portland Cement Association

General Manager: J. P. Beck, 111 West Washington Street, Chicago.

Organized as Association of Portland Cement Manufacturers in 1902. Name changed in 1904 to Association of American Portland Cement Manufacturers and in 1916, to Portland Cement Association. Headquarters moved from Philadelphia to Chicago in December, 1915.

Membership is voluntary and comprises about 93 per cent of the Portland cement producing capacity of the United States.

The Association employs a large number of engineers, architects and other specialists for the purpose of exploiting old and developing new uses for Portland cement. Considerable effort is expended in an endeavor to improve the quality of concrete work, both through advice as to proper specifications and actual supervision of work.

Employees of the Association and of member companies actively participate in the work of a large number of committees of engineering and other societies whose work directly or indirectly involves the testing and use of cement and concrete.

The Association, on September 1, 1916, entered into an agreement with Lewis Institute of Chicago for the operation of the Structural Materials Research Laboratory. This is an endowed institution with an attendance of 3,500 students and the purpose of this Laboratory is twofold: To carry out research work in the properties of concrete and concrete materials for the information of all users; and to give instruction to the students of this institution on the properties and uses of concrete.

Publications:

In connection with its work of investigation and promotion to increase the effective uses and output of cement, the Association issues (*a*) books, (*b*) bulletins and (*c*) circulars looking toward standardized processes. These are distributed without charge unless otherwise noted.

1E3 Cement Products Exhibition Company

Secretary; Blaine S. Smith, 210 S. La Salle Street, Chicago, Ill.

This company was organized for the purpose of holding national exhibitions to place before the people annually a record of the progress and achievements in the manufacture and use of cement and concrete. The ninth annual cement show will be given in Chicago from February 7 to 15, 1917.

1E4 Information Obtainable

The following are selected from sixty publications of the U. S. Geological Survey (2A1) as giving the most comprehensive development of the industry in general, the remaining publications referring chiefly to special districts. Those without prices affixed are free upon application to the Director; those priced may be purchased from the Superintendent of Documents, Government Office, Washington; those marked "Ex." are exhausted.

(*a*) "The Materials and Manufacture of Portland Cement," 1903, E. C. Eckel.
(*b*) "Cement Materials and Cement Industries of the U. S.," 1905, E. C. Eckel, Bulletin 243, 395 pp. 65 cents.
(*c*) "The American Cement Industry," 1905, E. C. Eckel, Bulletin 260. Ex.
(*d*) "Portland Cement Mortars and Their Constituent Materials; Results of Tests 1905 to 1907," R. L. Humphrey, Bulletin 331, 130 pp. 25 cents.
(*e*) "The Effects of the San Francisco Earthquake and Fire on Various Structures and Structural Materials," 1907, R. L. Humphrey, Bulletin 324, pp. 14–61. 50 cts.
(*f*) "The Effect of the San Francisco Earthquake on Buildings, Engineering Structures and Structural Materials," 1907, J. S. Sewell, Bulletin 324, pp. 62–130. 50 cents.
(*g*) "The Strength of Concrete Beams, Results of Tests Made at the Structural Materials Testing Laboratory," 1908, R. L. Humphrey, Bulletin 344, 59 pp. 10 cents.
(*h*) "Mineral Resources of the United States" (2A1. Part 2) for 1909 and for each subsequent year up to 1915. Chapters on cement, by E. F. Burchard. 75 cts. each bound volume.
(*i*) "Portland Cement Materials of the United States," with contributions by E. F. Burchard and others, 1913, Bulletin 522, 401 pp.

Other governmental contributions are:

(*k*) Bureau of Standards (1A2*c*), 1911, "The Strength of Reinforced Concrete Beams, Results of Tests of 333 Beams," by Richard L. Humphrey and Louis H. Losse.
(*l*) Ditto, No. 12, 1912, "Action of the Salts in Alkali Water and Sea Water on Cements," by P. H. Bates, A. J. Phillips and R. J. Wig.
(*m*) Ditto, No. 58, "Strength and Other Properties of Concrete as Affected by Materials and Methods of Preparation," by R. J. Wig, S. M. Williams and E. R. Gates.
(*n*) Ditto (1A2*c*), "Compressive Strength of Portland Cement Mortars and Concretes."
(*o*) U. S. Department of Agriculture, Farmers Bulletin No. 403, 1915; "The Construction of Concrete Fence Posts.
(*p*) U. S. Department of Agriculture, Farmers Bulletin No. 461, 1911; "The Use of Concrete on the Farm."
(*q*) U. S. Department of Agriculture, Farmers Bulletin No. 481 1912; "Concrete Construction on the Live Stock Farm."

In addition to which are the following:

(*r*) Inspection Dept., Associated Factory Mutuals Fire Insurance Companies (Serial No. 3), "Concrete Storehouse of Naumkeag Steam Cotton Co., which Successfully Withstood the Salem Conflagration." No. 37, 1914.
(*s*) American Concrete Institute (1E1) August, 1915. Report of the Committee on Edison Fire.

During the Louisiana Purchase Exposition, at St. Louis, in 1904, an investigation of the constituent materials of

Portland cement mortars and concretes was inaugurated; this was continued on a more extensive scale in the Structural Materials Testing Laboratories of the U. S. Geological Survey at St. Louis and Pittsburgh, and the results of 25,000 of these tests were published in Bulletin No. 331 of the Survey (1E4*d*). The Survey extended the work and in coöperation with the state geologists and others has continued the investigation, collecting for test samples of mine tailings, sands, gravels, crushed slag, and stone to determine their value as aggregate for concrete.

With the transfer of this work in 1910, the Bureau of Standards has joined in this coöperation, and the results of the investigations, some of which are being published in state reports, will be published by the Bureau as they accumulate.

The Bureau has published the completed study of 20,000 tests of Portland cement mortars and concretes from the many investigations, made by the Structural Materials Testing Laboratories of the Geological Survey and those by the Bureau of Standards (1E4*m*). The results show that several of the generally accepted methods for proportioning concrete mixtures are incorrect and that certain precautions are necessary in the fabrication of concrete to insure a product of known quality. The effect of different exposures while hardening, the effect of aging, and the effect of variation in the quantity of cement used, are discussed.

The relative value of various aggregates is shown, such as gravels, limestones, granites, trap rocks, cinders, sands, and stone screenings, also the relative value of round- and sharp-grained sands. Proper methods for testing and selecting aggregates are also suggested.

Other references to cement and concrete, too numerous to mention specifically, will be found in the Proceedings of the A.S.T.M. (1A4*b*), of the A.S.C.E. (1A5), of the Western Society of Civil Engineers (1A10), in the Journal of the A.C.I. (1E1*a*), and in other volumes and in the many monthly publications in which the cement and allied industries are featured.

1E5 Other References

(*a*) "Popular Handbook for Cement and Concrete Users," Myron H. Lewis and Albert H. Chandler.
(*b*) "Inspection of Concrete Construction," Jerome Cochran.
(*c*) "Concrete Construction, Methods and Costs," H. P. Gillette and Charles S. Hill.
(*d*) "Engineers' Pocket Book of Reinforced Concrete," E. Lee Heidenreich.
(*e*) "Building Superintendence and Construction," Frank E. Kidder.
(*f*) "Kidder's Pocket Book," pp. 235–240, 282–288, 816–818, 824–894, 905, 911–997.
(*g*) "Carnegie Pocket Companion, 1916," pp. 51–54, 118–129, 327–333 365–370.
(*h*) "Jones & Laughlin, Manual, 1916," pp. 80, 81, 132, 285, 289, 292.
(*j*) "Standard Specifications," J. C. Ostrup.
(*k*) "Design of Walls, Bins and Grain Elevators," M. S. Ketchum.
(*m*) "Handbook of Cost Data for Contractors and Engineers," H. P. Gillette.
(*n*) "Factories and Warehouses of Concrete," P.C.A. (1E2*a*).
(*o*) "The Concrete House and Its Construction," P.C.A. (1E2*a*).
See Industrial Section, pp. xi to xvi, xxxiv.

1E6 Practice Recommended

By American Railway Engineering Association (1A9*f*), 1916:
(*a*) "Specifications for Plain and Reinforced Concrete and Steel Reinforcement."
(*b*) "Designs of Reinforced Concrete Structures."
(*c*) "Monolithic Construction."
(*d*) "Waterproofing of Masonry."
(*e*) "Methods of Depositing Concrete under Water."
(*f*) "Methods of Repairing Defective or Worn Surfaces of Concrete."
By National Fire Protection Association (Serial No. 3).
(*g*) "Specifications for Construction of a Standard Building," Report of Committee on Fire Resistive Construction, 1913.
By National Board of Fire Underwriters (Serial No. 3).
(*h*) "Building Code Recommended by the N.B. of F.U.," Fourth Edition, 1915.
(*j*) "Dwelling Houses—A Code of Suggestion for Construction and Fire Protection," First Edition, 1916.
By American Concrete Institute (1E1*c* and).
(*k*) "Standard Recommended Practice for the Use of Reinforced Concrete." 21 pp. (No. 7.)
(*l*) "Standard Recommended Practice for Concrete Drain Tile." 3 pp. (No. 9.)
(*m*) "Standard Recommended Practice for Concrete Architectural Stone, Building Block and Brick." 4 pp. (No. 10.)
By American Society for Testing Materials (1A4*a*).
(*n*) "Form of Specifications for Certain Commercial Grades of Broken Stone."
(*o*) In addition to the foregoing there are many excellent publications of the Portland Cement Association (1E2) which are practical recommendations, many with diagrams, for the use of cement and concrete.
See Industrial Section, pp. xi to xvii, xxxii, xxxiv.

1E7 Standards adopted

(*a*) *Standard Specifications and Tests for Portland Cement, A.S.T.M.* (1A4). *Serial Designation C.9-17.*

The undersigned represented the American Institute of Architects at the last three annual meetings of the American Society for Testing Materials. The Institute was appointed a member of that Society's Standing Committee on Cement, and of the latter's Subcommittee on General Clauses.

The consideration of specifications for cement dates as far back as 1885, when a Special Committee of the American Society of Civil Engineers presented a report on "Uniform System of Tests of Cement;" the Committee of the American Society for Testing Materials on Standard Specifications for Cement did not come into being until 1902. This Committee in 1903 adopted as the basis for its work the methods of tests recommended by the Special Committee on Uniform Tests of Cement of the American Society of Civil Engineers. In order to obtain data to aid in drafting specifications, it also arranged a series of tests by some thirty prominent laboratories. The results of these tests were collated, and a specification was recommended by the Committee and adopted by the Society in 1904.

The American Railway Engineering and Maintenance of Way Association, upon the recommendations of its Committee on Masonry, adopted this specification in 1905, and the revisions in 1908 and 1909.

In 1912, a Board of Engineers was appointed to revise the specifications for cement of the U. S. Army. This Board later coöperated with a U. S. Departmental Conference in preparing a specification which was adopted by the U. S. Government by Executive Order, April 30, 1912. The American Society of Civil Engineers accepted the final report of its Special Committee on Uniform Tests of Cement, January 17, 1912. The American Society for Testing Materials adopted the revisions recommended by its Committee, August 16, 1912.

The effort to reconcile the differences in these recommendations led to the organization on October 24, 1912, of the Joint Conference on Uniform Methods of Tests and Standard Specifications for Cement, consisting of three representatives each appointed by the Board of Direction of the American Society of Civil Engineers, by the Committee on Standard Specifications for Cement of the American Society for Testing Materials, and by the U. S. Departmental Committee. After several years' work, this Conference reported recommended American Specifications and Methods of Tests for Portland Cement; these were considered by the several organizations of which the Conference was composed, further modifications made and specifications and Methods of Tests for Portland Cement to become effective January 1, 1917, were adopted by the American Society for Testing Materials, September 1, 1916; they were approved by the U. S. Departmental Conference, December 7, 1916, and were reported favorably by the representatives of the Board of Direction of the American Society of Civil Engineers, December 24, 1916.

There is now a single American specification and methods of test for Portland cement, with its attending advantages to the cement industry and to architects, engineers and others. With this standard now available all architects should encourage its use in every possible way and refer to it on all occasions relating to the use of Portland cement. —THOMAS NOLAN, *Chairman Institute Committee on Materials and Methods.*

These Standards will be found printed and illustrated in Book of A.S.T.M., 1916 (1A4*c*); also separately (1A4*e*); also published as a separate booklet for general distribution by the Portland Cement Association (1E2).

(*b*) *Joint Committee Report: Concrete and Reinforced Concrete.*

The final report of the Joint Committee on Concrete and Reinforced Concrete marks the completion of a highly important step in the standardization of the practice in the use of this very essential material of construction.

This work was undertaken more than twelve years ago when the Joint Committee was organized at Atlantic City, N. J., June 17, 1904, at the meeting of the several special committees representing the American Society of Civil Engineers, the American Society of Testing Materials and the American Railway Engineering and Maintenance of Way Association, initiative having been taken by the American Society of Civil Engineers at its annual convention at Asheville, N. C., June 11, 1903, by the adoption of the following resolution:

"It is the sense of this meeting that a special committee be appointed to take up the question of concrete and steel-concrete and that such committee coöperate with the American Society for Testing Materials and the American Railway Engineering and Maintenance of Way Association." There were subsequently added to this Committee, which now has a membership of twenty-eight, special committees representing the Association of American Portland Cement Manufacturers and the American Concrete Institute. Subcommittees were appointed to consider the various divisions of the subject, and their reports were considered at the thirty meetings attended by a majority of its members."

Progress reports were made in 1909 and 1912 and after consideration of the criticisms of these reports and study of new experimental data, the Joint Committee revised, to some extent, its previous recommendations on subjects not previously touched upon and adopted its final report July 1, 1916.

The recommendations of this Committee have a far-reaching influence; they form the basis of progressive municipal and state building regulations, the specifications and recommended practice of the American Railway Engineering Association, the Standard Building Regulations of the American Concrete Institute and similar standards.

The report is of inestimable value in standardizing the art, and every architect should have a copy for ready reference in designing structures of concrete and reinforced concrete.

The Joint Committee has performed a meritorious service, with care and thoroughness, and has more than justified its existence.

This pioneer work in the standardization of the art of concrete and reinforced concrete construction could only have been so satisfactorily performed by a committee thus constituted.—RICHARD L. HUMPHREY, *Secretary, Joint Committee.*

Reference will be made later as to where this report may be obtained

EDITOR'S NOTE.—The inconsistencies in the requirements of varying building codes and ordinances in cities throughout the United States has frequently been pointed out by architects and engineers, and will be referred to under later serial numbers in the hope that the Structural Service Department may be of assistance in effecting through the cooperation of the municipalities and states uniform standards of practice in the use of concrete.

Other standards with reference to concrete and reinforced concrete are

(*c*) A.S.T.M. (1A4*c* and *e*) "For Billet-Steel Concrete Reinforcement Bars," Serial Designation A15–14.

(*d*) Ditto, "For Rail-Steel Concrete Reinforcement Bars," Serial Designation A16–14.

American Concrete Institute (1E1*c* and *e*.)

(*e*) "Standard Building Regulations for the Use of Reinforced Concrete." 13 pp. (No. 4.)

(*f*) "Standard Specifications for Scrubbed Concrete Surfaces." 3 pp. (No. 8.)

(*g*) "Standard Specifications for Concrete Architectural Stone, Building Block and Brick." 3 pp. (No. 11.)

(*h*) "Standard Building Regulations for the Use of Concrete Architectural Stone, Building Block and Brick." 3 pp. (No. 12.)

(*j*) "Standard Specifications for Portland Cement Stucco on Metal Lath, Brick, Tile or Concrete Block." 9 pp. (No. 15.)
(For other recommended practice as to stucco, see page xi.)

(*k*) "Standard Methods for the Measurement of Concrete Work." 7 pp. (No. 16.)

(See also "Standards" under 1E9.)

1E8 Current Activities

(*a*) *Investigations and Tests on Concrete and Other Columns.* Being conducted by the U. S. Bureau of Standards in coöperation with the Underwriters Laboratories and the Factory Mutuals Laboratories will be referred to under Fire-Prevention in Serial No. 3.

1E9 Concrete Fills (and Various Top Coats)

Without proper underfills or foundations for cement and composition flooring, for sidewalks, paving and other wearing surfaces, the surfaces cannot fulfil their functions as to stability and durability. Activities toward standardization of these foundational requirements have resulted in the following publications, specifications and standards:

(*a*) Office of Public Roads and Rural Engineering, United States Department of Agriculture (1B1*c*). Portland Cement Concrete Pavements for Country Roads, Bulletin 249.
(*b*) National Paving Brick Manufacturers' Association (Serial No. 2). Specifications for the Construction of Vitrified Brick Street Pavements and Country Roads; Green Concrete Foundation; Sand-Cement Superfoundation, and Sand Cushion Type.

Standards:

(*c*) American Concrete Institute: (1E1).
2. Standard Specifications for Portland cement sidewalks.
5. Standard Specifications for one-course concrete highway.
6. Standard Specifications for Portland cement curb and gutter.
13. Standard Specifications for plain concrete floors.
14. Standard Specifications for re-inforced concrete floors.
17–18. Standard Specifications for one and two-course concrete street pavements.
19. Standard Specifications for one-course concrete alley pavements.

(For other information and publication, see Industrial Section, page x.)

1E10 Treatment of Concrete Floors and Surfaces

(*a*) *Practice recommended.* See 1E6*f*.

(*b*) *Standards.* 1E7*f* and *j*. 1E9*c*13 and 14.

(*c*) *Experiments* have been started to determine a suitable material for treating the surface of concrete floors to prevent dusting and increase their durability. This work is part of a more comprehensive investigation which is now being outlined to determine proper methods of construction which will mitigate dusting. An abrasion machine has been designed for testing flooring materials which it is believed will give results comparable with the actual wear on floors, and plans have been made for extensive tests on various flooring materials. Results of this investigation probably will not be available for a year or two. (Report, Bureau of Standards, 1A2*a*).

(See also 1D1*g* and other references under 1D and industrial section, pp. x, xx.)

1F Structural Iron and Steel

From the earliest history of the industry the producers have, closely following first the leading members of the older societies abroad and then of those in this country, coöperated in developing the production of iron and steel to their present state. In addition to the governmental and other agencies already mentioned, the following organizations are to be noted as among those specifically concerned with development on the structural side. Others concerned with iron and steel in other metallic industries will be referred to in subsequent issues.

1F1 American Foundrymen's Association, Inc.

Founded 1896. Incorporated 1916.

Secretary: A. O. Backert, 12th and Chestnut Streets, Cleveland, Ohio.

Publications:

(*a*) Transactions, a bound volume containing the papers, addresses and discussions at the annual meeting.
(*b*) Pamphlets on papers and addresses at the annual convention.
(*c*) Yearbook containing the names of members and the by-laws.

Above are free to members, but may be purchased by others at (*a*) $5 each, (*b*) $5 annually, (*c*) $1.50 a copy.

The object is to promote knowledge in the production of castings, and its work is concerned chiefly with gray and malleable iron and steel foundry practice and does not consider non-ferrous metals.

At the annual meeting, committees submit reports which are, after discussion and adoption, printed in the proceedings.

Standards: Practically all of the standards adopted have first been sanctioned by the A.S.T.M. (1A4).

1F2 American Iron and Steel Institute

Secretary: James T. McCleary, 61 Broadway, New York City.

Publications:

Among these are:

(*a*) Monthly Bulletin, largely devoted to sociological subjects (housing, sanitation and recreation facilities for employees included).
(*b*) Yearbook, giving verbatim report of the proceedings of the general meetings.
(*c*) Annual Statistical Report.
(*d*) Special statistical bulletins, published from time to time during the year as advance copy from the annual statistical report.
(*e*) Iron and Steel Works Directory of the U. S. and Canada, published every few years, latest issue being 1916.

1F3 The Association of American Steel Manufacturers

Secretary-Treasurer: Frank A. Robbins, Jr., care of Pennsylvania Steel Co., Steelon, Pa.

Formed about 1895 to standardize the practices of the steel trade and its specifications. Many of the specifications of this Association have later been adopted in whole or in part by other associations and societies and in many cases this Association has gladly relinquished its claims to the original specifications when good use has been made of its pioneer work.

Officers and committees of this Association coöperate in current movements to standardize the specifications and requirements pertaining to steel in its many forms of manufacture and use.

Standards: In addition to the "standard specifications" for various other forms of manufactured steel, promulgated by this Association, the "Manufacturers' Standard Specifications for Structural Steel for Buildings" have for many years been referred to by architects and engineers to secure uniformity in estimating conditions and practice. While these are still often referred to, as they differ but slightly from the later standards (1F6) of the A.S.T.M., it is noted that the handbooks of steel companies print the latter specifications rather than the former ones, and, for the sake of uniformity, it is suggested that architects observe the recommendations contained in the introduction by Prof. Thomas Nolan to the A.S.T.M. standards.

1F4 Information Obtainable

A voluminous literature upon structural design and practice exists, but this lies outside our province. A carefully prepared bibliography or specific recommendations will be sent in answer to inquiries where needs are carefully stated.

Reference Handbooks:

"Engineers' Pocketbook," J. C. Trautwine.
"The American Civil Engineers' Pocketbook," Mansfield Merriman.
"Kidder's Pocketbook, 1916."
"Civil Engineers' Pocketbook," Albert I. Frye.
"Structural Designers' Handbook," Wm. Fry Scott.
"Properites of Steel Sections," John C. Sample.
"Curves for Calculating Beams, Channels and Reactions," Sidney Diamant.
"Tables of Stresses in Roof Trusses," H. C. Hearne.
"Structural Engineers' Handbook," Milo S. Ketchum.
"Handbook Containing General Information for the Use of Engineers, Architects and Builders, 1915," Lackawanna Steel Company.
"Manual, 1916," Jones & Laughlin.
"Handbook of Information Relating to Structural Steel, 1916," Cambria Steel Company.
"Catalogue of Bethlehem Structural Shapes," edition of 1911. Bethlehem Steel Company.
"Pocket Companion, 1916," Carnegie Steel Company.

1F5 Practice Recommended

(*a*) "Cast Iron Columns, Bases and Lintels," Building Code, 1915. By N. B. F. U. (Serial No. 3).

"*Fabrication of Steel Structures.*" No standards have been officially adopted but the following are in general use:

(*b*) "Specifications for Steel Structures, Design, Details of Construction and Workmanship." Adopted, 1912. American Bridge Company. Printed in Carnegie "Pocket Companion," 1916, pp. 154–161. Also in Standard Specifications, distributed by Carnegie Steel Company.

(*c*) "Standard Specifications for Fabricated Steel Building Construction." Adopted, 1915. Jones & Laughlin "Manual, 1916," pp. 370–377. Jones & Laughlin.

(*d*) "Instructions for the Mill Inspection of Structural Steel," A.R.E.A. (1A9).

(*e*) "Steel Construction," N.B.F.U. (Serial No. 3). Building Code, 1915.

Angles: The Association of American Steel Manufacturers recommend that certain sections of angles be considered as standard for general building construction and other work. These angles are usually indicated in the steel companies' handbooks by a different-faced type; the use of same, whenever possible, instead of avoidable variations, will tend toward economy in construction through lessening costs of rolling and carrying in stock sizes infrequently called for.

1F6 Standards

(*a*) *Standard Specifications for Structural Steel for Buildings A.S.T.M. Serial designation A9–16.*

The specifications from which the present standards have developed were first framed and recommended in May, 1900, by that Society, which was then known as the American Section of the International Association for Testing Materials. They were issued in a bulletin which was accompanied by a table epitomizing the salient features of forty different representative specifications of that period, among which in addition to city and many railway engineering adopted specifications was the "Standard Specifications for Structural Steel" of the Association of American Steel Manufacturers. This Association did good pioneer work in its efforts to standardize the specifications and practices of the steel trade.

The Standard Specifications for Structural Steel for Buildings were, as above stated, originally premised by the A.S.T.M., on a careful comparative study of the leading specifications then (1900) in use by railroads, municipalities, consulting engineers, and the American Railway Engineering Association, the Association of American Steel Manufacturers, and others. Since their original adoption in 1901, they have been revised four times, in 1909, 1913, 1914, and 1916, in order to keep them abreast of the progress of the times.

"In these standard specifications will be noted what are termed the permissible variations in the rolling of plates, shapes and bars, and provision should be made in the design to care for such variations. A design which does not permit of this variation is frequently the cause of serious difficulties. Ample clearances tend toward ease and economy in fabrication and greater facility in the erection of any structure."

These specifications are the standards that should be generally followed throughout the United States, and the members of the Institute and all others interested in promoting the very best usages in materials and methods of construction should urge their universal adoption.—THOMAS NOLAN, *Chairman A.I.A. Committee of Materials and Methods.*

These standards will be found printed and illustrated in the book of A.S.T.M. Standards, 1916 (1A4*c*); also separately (1A4*e*) also printed and illustrated, together with bridge and other standard specifications, in Carnegie "Pocket Companion, 1916," pp. 10–15; also in Jones & Laughlin "Manual, 1916," pp. 342–347; also in "Standard Specifications," distributed by Carnegie Steel Company.

(*b*) By A.S.T.M. (1A4*c* and *e*), For Malleable Iron Castings.
(*c*) By A.S.T.M. (1A4*c* and *e*), For Gray-Iron Castings.
(*d*) By A.S.T.M. (1A4*c* and *e*), For *Billet Steel Concrete Reinforcement Bars.*
(*e*) By A.S.T.M. (1A4*c* and *e*), For Rail-Steel Concrete Reinforcement Bars.

1F7 Current Activities

(*a*) An important investigation, in progress for a number of years and of value to the engineering and architectural professions, consists of two series of column tests which the Bureau of Standards is making in coöperation with the steel column committees of the American Society of Civil Engineers and of the American Railway Engineering Association.

The series of columns recommended by the American Society of Civil Engineers originally comprised nine different types of cross-section. Each type was represented by what was called a light section and a heavy section, and in both the light and the heavy section of each type there were three columns of each of three different lengths.

The American Railway Engineering Association columns originally comprised eighteen latticed columns with rectangular bearing plates at both ends. As in the American Society for Civil Engineers' series, both light and heavy sections, each with three different lengths, were tested, three columns for each length.

Tests upon these two original series have been com-

pleted. A considerable addition has been made to the original American Society of Civil Engineers' program. In order to obtain a relation, if possible, between the ultimate strength and the slenderness ratio, additional columns, totaling thirty-six, have been selected, having such areas, cross-sections and lengths that the slenderness ratio will be different from those embraced in the original series. . . . Twenty-four columns have been added to the series of the American Railway Engineering Association. . . .

The purpose of these tests is to determine the best form of cross-section of columns and also to correct or confirm the formulas used by engineers and architects for calculating the strength of columns. Not alone are such formulas valuable for determining the loads which can safely be carried by the columns used in various structures, but they also enable the designer of columns to make the most economical use of the steel employed in their construction.

The investigation upon columns will be augmented by the addition of about 250 columns which have been in the possession of the Watertown Arsenal and which will be transferred to the Bureau. (Report, Bureau of Standards, 1916 (1A2*a*).

(*b*) Other tests being conducted in coöperation between the Bureau and the Underwriters Laboratories and Associated Factory Mutuals Laboratories, with reference to columns and beams under fire tests with different protectional coverings will be referred under a later serial number.

1F8 Preservation of Iron and Steel

The preservation of iron and steel is a very broad problem. The endurance of steel structures depends not only on good materials but on good methods used for their preservation. The following list covers the theory of corrosion, materials used for the protection of steel, their application and manufacture with a logical subdivision into three classes. The most recent investigational work in the United States, done under the auspices of the A.S.T.M. (referred to in a later issue of the Journal in connection with the Paint Manufacturers' Association of the United States), is recorded in the annual volumes of the Proceedings of the American Society for Testing Materials (1A4*a* and *b*) and will also be found in the works of Cushman and Gardner. The annual reports of Committee D1, A.S.T.M., on "Protective Coatings for Structural Materials," from 1903 to 1914 inclusive, are very valuable and are published by the A.S.T.M. in the form of a single volume of 557 pages which may be obtained from the Secretary at the price of $3.50.

A. Corrosion of Steel.

(1) "Corrosion and Preservation of Iron and Steel," Cushman and Gardner.
(2) "Corrosion of Iron and Steel," Alfred Sang.
(3) "Corrosion of Iron and Steel," J. N. Friend.
(4) "An Electrolytic Method of Preventing Corrosion of Iron and Steel," by J. K. Clement and L. V. Walker, Bureau of Mines (2).
(5) "Corrosion of Fence Wire," Bulletin 239, U. S. Department of Agriculture.
(6) "Electrolytic Corrosion of Iron in Soils," U. S. Bureau of Standards (1A2*c*), No. 25.

B. Protective Coatings.

"Paints for Steel Structures," Houston Lowe.
"Rustless Coatings," M. P. Wood.
"Iron Corrosion, Anti-fouling and Anti-corrosive Paints," Arthur S. Jennings.
"Lead and Zinc Pigments," C. D. Holley.
"The Preparation and Uses of White Zinc Paints," P. Fleury.
"White Paints and Painting Materials," W. G. Scott.

C. Manufacture of Oils and Pigments.

"Chemistry and Technology of Paints," 2nd edition, Maxmilian Toch.
"The Manufacture and Comparative Merits of White Zinc and Zinc White Paints," G. Petit.
"Linseed Oil and Other Seed Oils," Wm. D. Ennis.
"Paint Technology and Tests," Henry A. Gardner.

Other References: See Reference Hand Books 1F4. For additional information and other publications relating to preservative coatings for structural iron and steel, see Industrial Section, pp. xii, xviii, xix, xx.

The subjects of corrosion, protection and preservation of iron, steel and other metals as applied to other products will be treated under the respective industries.

ROBERT W. HUNT & COMPANY

CHICAGO, ILLINOIS, AND IN THE PRINCIPAL CITIES OF THE UNITED STATES, CANADA AND EUROPE

Pioneers in their profession, Robert W. Hunt & Company maintain an International Bureau of Inspection, Tests and Consultation, composed of competent and experienced Engineers, Chemists, Metallurgists and Inspectors who are permanently employed in the divisions of Engineering and Inspection, and in the various Laboratories.

The Company maintains offices in the principal cities of North America and Europe. Resident members of the organization are in charge of these offices, and resident inspectors are maintained at all of the leading industrial centers of the countries in which these offices are located. The personnel of the present technical organization is the result of continuous conservative Engineering work during the past quarter of a century in the business of Inspection, Tests and Consultation.

Members of this firm were, even prior to the organization of Robert W. Hunt & Company, intimately associated with the Iron and Steel Industry in America. This long and successful service affords the assurance that any work entrusted to the Organization relating to the Metallurgy, Manufacture, Inspection, and Testing of Steel and Iron Products will receive the most thorough and careful attention. The developmental period of reinforced concrete construction lies within the life of the company, and, from the beginning, the testing of cement and other concrete materials, checking of plans, and supervision of construction has received continuous and ever-widening application.

The divisions of the Organization and their Departmental Sub-Divisions are as follows:

Engineering
- Examinations and Reports
- Consultation and Checking of Plans
- Construction and Testing

Inspection
- Structural Steel
- Rails, Fastenings, Cars and Locomotives
- Materials of Construction

Laboratory
- Chemical
- Physical
- Electrical
- Cement
- Micro-Photography

The knowledge, experience and ability, and the accumulated data of the various divisions of the Organization, are the property of all divisions, and are made use of freely in the interests of their clients. Highly specialized skill of many kinds has been welded into practical coöperation, capable of effective and rapid performance.

This effective coöperation enables the Engineering Division to make investigations and to solve Engineering problems in the most efficient manner.

The Inspection Service is under the direct supervision of the Engineering Staff, located at the various general offices, and engineering advice in connection with inspection work is freely extended.

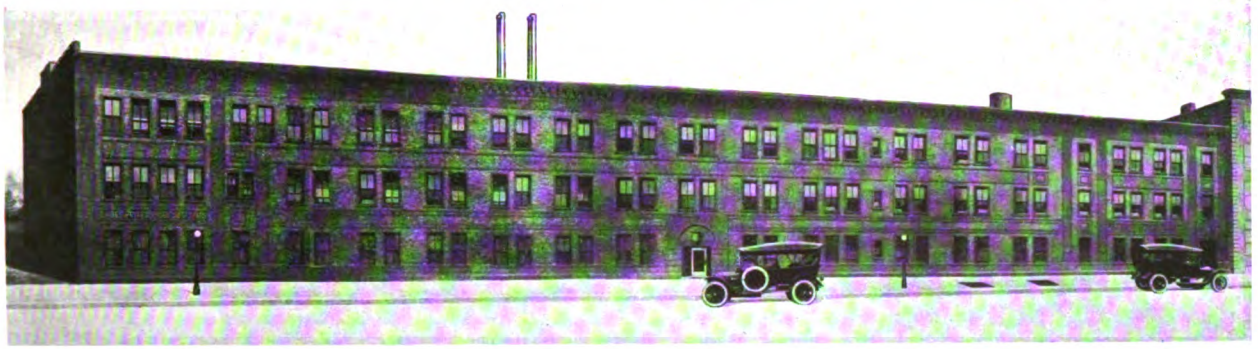
The Laboratory Service maintained at all of our offices is an effective supplement to the work of the Engineering and Inspection Divisions. Over six hundred employees are regularly in the exclusive service of the company, and depression in general business conditions exercises little effect in their number or location. To properly serve their clients at all times, the Organization must be kept intact, and many men have been continued in their positions during months of idleness of the mills and shops where they are located. This policy, reinforced by salaries commensurate with the responsibility they are called upon to bear, has ensured the loyalty and absolute fidelity required in the performance of judicial functions.

The steady growth of the Organization indicates that such ideals are heartily supported by the Architectural profession, and further have established recognition of the Testing Engineer in ethical brotherhood with the other specialized branches of professional structural activity.

Industrial Section Classified Index

INDUSTRIAL SECTION CLASSIFIED INDEX

Industrial Section Index



Underwriters' Laboratories

207 East Ohio Street, Chicago, Illinois

Underwriters' Laboratories, a corporation chartered in November, 1901, by the state of Illinois is authorized to establish and maintain laboratory and inspection service on building materials and other products, and to enter into contracts with the owners and manufacturers of such materials and products respecting the recommendation thereof to insurance organizations. The work is carried on under the general direction of the National Board of Fire Underwriters.

Underwriters' Laboratories is for service—not profit.

It is the task of Underwriters' Laboratories to secure and make available to all who may profit by it the best obtainable opinion regarding the merits of materials, appliances and systems in respect to the fire and accident hazards.

Equipment for this work includes a large plant at Chicago, a branch testing station in New York City and branch offices for the operation of inspections at factories and labeling of standard products in more than a hundred cities and towns in the United States and Canada, and in London, England. The Chicago plant occupies a three-story and basement building of the best modern fireproof construction, containing about 50,000 square feet of floor-space and provided with ample yard-space for huts and large testing furnaces.

The plant is kept well supplied with apparatus, much of which is of special design, for the proper performance of all necessary research work and for making laboratory tests in a thorough, systematic, comprehensive and practical way. There are about one hundred and fifty engineers and assistants on the Chicago staff. Each department is under the direction of an expert of long experience and much special training for his particular line of work.

The work of the branch laboratory at New York is mainly electrical testing.

Inspections at Factories and Labeling

A laboratory test on a sample material cannot of itself usually be depended upon as a reliable criterion of the quality of the daily output of the factory. Test work that ends when tests on a sample material have been completed is necessarily of limited practical value; the importance of proper check methods on run of goods is obvious. Years of study by Underwriters' Laboratories of this problem of securing quality maintenance led to the establishment of its Label Service.

When the product of a manufacturer is admitted to the Label Service, following suitable investigation of sample goods, inspection is established in his factory. Inspectors and engineers in the employ of the Laboratories follow the daily run of material through various processes of production and conduct such tests as have been specified, and to goods thus found to be of suitable quality, Underwriters' Laboratories' labels are attached. Check-tests that cannot be conveniently made at the factory are made on samples forwarded by the inspector to headquarters. This service is further reinforced by tests on labeled material purchased from dealers and on samples of labeled product taken out of service and sent in from the field.

Thus, for a large class of products, the label on the goods or the absence of it, tells the architect, inspector, builder, and property owner whether the product has been inspected and passed.

PUBLICATIONS

(*a*) Organization, Purpose and Methods 1916

The Laboratories also published the following list of manufacturers prepared to make standard products:

(*b*) List of Inspected Mechanical Appliances.
(*c*) List of Inspected Electrical Appliances.
(*d*) List of Appliances Inspected for Accident Hazard.
(*e*) Standards on Rubber-Covered Wires and Cords, Fire Hose, Fire Doors, Electric Cabinets and Cut-Out Boxes, and Lightning Conductors now ready for distribution. Other Standards in preparation.

NOTE: (*b*), (*c*), (*d*), revised semi-annually, sent free on request. (*e*) supplied at $1 per copy.

SPECIFICATION FOR FOUNDATIONS

1. *General*: All under floors to receive our Floor must be cleared of all materials, rubbish, *plaster or lime droppings* and be delivered to us broom cleaned and thoroughly dry.

The surface of the concrete or wood under floor *must be brought up to within* ¾ *inch of finished floor level for Plastic Linoleum and to within* ½ *inch for Amflorite Composition*. If this under floor is not up to, or is out of proper level, or is uneven or imperfectly laid or of defective material, such defects must be rectified before we begin work. Sloping or pitch must be produced in the under floor, so that our floors may be laid by us evenly on top thereof.

2. *Concrete Foundations*—(a) *Cinder Concrete* under floors should be made of Standard Portland Cement, clean, sharp, coarse sand, clean washed steam cinders, in proportion of at least 1, 2, 5, be well tamped, straight edged, free from holes, projections, soft or damp places, well bonded to foundation, and topped off with a mixture of 1 cement to 4 sharp sand, everywhere well bonded and thoroughly raked and scratched. The top mixture to be applied at the same time the concrete is laid.

This concrete to be brought in after the Plasterer has finished the white coat and the foundation has been thoroughly cleaned of all lime and plaster of Paris.

(b) *Stone Concrete* under floors should be made of Standard Portland Cement, with clean sharp sand and gravel and broken stone, in proportion 1, 2, 3. Otherwise same as under cinder concrete.

3. *Wood Foundation for Our Floors* must be well seasoned lumber, preferably not over 4 inches wide, ⅞ inch thick, securely nailed and firmly supported on joists or stringers to prevent sagging.

4. *Sanitary Base:* When our Base or Wainscot is to be applied on wall of brick, stone or terra cotta, a cement backing must be brought out to within ½ inch of finished surface of Base. This backing to be mixed 1 Standard Portland Cement to 2 sharp clean sand, no plaster mortar or plaster putty to be allowed to run into mix, put on as a scratch-coat thoroughly well bonded or anchored and raked or scratched.

When our Base is to be applied to non-fireproof construction, expanded metal must be tightly stretched, nailed not less than every 8 inches and cement—scratch-coated as above to within ½ inch of the finished face of Base.

Our Base cannot be applied directly to plaster block, or lime mortar unless such are thoroughly covered with a cement scratchcoat as before specified.

If wood backing is provided same must consist of good boards preferably not over 4 inches wide, securely nailed at least every 8 inches to blocking and brought to within ½ inch of face of finished Base.

All plaster work, both browncoat and whitecoat, to stop or be removed to not less than ½ inch above top of finish base and patched by the General Contractor after our Base has *thoroughly set and dried and has been finished.*

5. *Iron Stairs, Landings, Duct Covers, etc.:* If Plastic Linoleum or Amflorite is to be applied over or on sheet or cast iron, same *must be sufficiently rigid to supply a solid foundation*, be painted and have ⅛ to ¼ inch holes not further apart than 6 inches each way to enable us to fasten expanded metal to form the bond to the foundation.

If foundations are of cement or wood, conditions are as stated above, under paragraphs 2 and 3.

REMARKS

Fireproof Foundations may be brick, tile, cement, flags, or similar material, each laid on a solid foundation of its own. These materials are often applied on fireproof construction, at a level below the finished floor, the intervening space being filled up with some light fill, generally cinder concrete, used most extensively as a foundation for Composition Floors. In most cases the failure of such floors can be traced to improper use of the cinder concrete. Its application is often let out under contract to the cheapest man, who naturally applies the cheapest labor, little superintendence, and practically any material besides unwashed cinders to fill up the space. The mixing is done under like conditions; the consequence is that in some places the concrete is dense, in others absolutely porous with little or no cement, and the surface out of level. This cinder fill is generally put down at the convenience of the General Contractor and is often brought in before the Plasterer has commenced his work, thereby running the risk of filling the pores of the surface with lime and plaster of Paris droppings. Also the wear and tear caused by working on top of the cinder concrete results in worn-out places, loosened parts, and injury to the whole surface.

If the concrete foundation is laid with an uneven surface, the composition floor, whose surface must be level, will be thicker in some places than in others; such inequalities will cause unequal tension during setting and may develop strains so great that the floor will tear apart in the thinnest places. The even texture of the concrete foundation is necessary because otherwise the different suctions will draw the liquid out of the plastic composition unevenly and thereby affect the color.

Non-Fireproof Foundation: See Clause 3 of our Specification.

A Composition Floor made of the proper ingredients and proportions by Manufacturers experienced with this product, laid by mechanics with thorough training in this trade, does not crack nor bulge on a proper foundation, and it has been proven in innumerable cases that the greatest percentage of failures can be attributed to bad foundations; it is not possible to produce a good floor over a bad foundation.

Protection: Our Floors should be laid as late as possible in the construction of the building because it is physically impossible for us after we leave a job to protect the floors against carelessness of other mechanics, and they should never be laid before the plastering is completed, the trim set, and the doors hung. The best protection is a ½-inch coat of dry clean pine sawdust. Paper should *not* be used; it prevents the action of the air and light on the floor, causing it to cure irregularly in color.

After Care: This has a great deal to do with the appearance of the floor. It is not possible to produce a floor which does not need cleaning. As a rule, a good Composition Floor is very easily cleaned, and needs but little attention. It can be cleaned in the ordinary manner with soap and water and possibly the additional use of steel wool to remove excessive dirt or stains.

Simple building for permanency

Reinforced Concrete Construction and the Master Builders

The architect of today is a master builder commissioned upon short notice to be an artist, a sanitary engineer, a sculptor, a landscape architect, a structural engineer, a mechanical engineer, and, in some cases, a financier.

No master builder of old was expected professionally to advise and furnish expert service in so many fields of building industry. No single human mind is capable of grasping, to say nothing of executing, such innumerable problems as are presented the architect of today.

Ancient building was a matter of years, sometimes of decades, the builder's plan—a work of years—progressing and changing with the structure. The modern architect is called upon to complete his plans and specifications within a few weeks after the owner makes final arrangements to build.

The architect of today must be prepared to furnish detailed plans and specifications of a final and unchangeable character, that the owner may be assured of maximum efficiency and minimum cost, and of a building ready for occupancy in an announceably short time.

To comply with modern requirements, the architect must be prepared to present approved types of reinforced concrete buildings, and command an organization of experience, expert

A Cathedral of reinforced concrete that withstands earthquake shocks

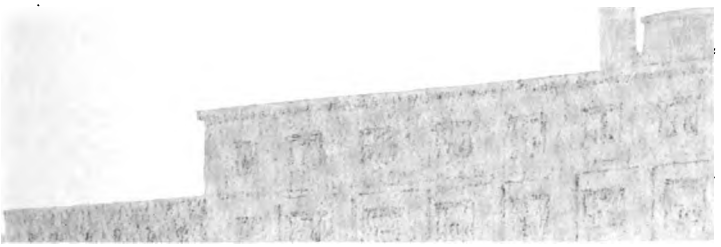
in the possibilities of concrete construction, expert in scientific arrangement for the requirements, expert in the selection of the best types of construction to meet those requirements, expert in the designing and detailing of such structures to be at once safe and economical.

Reinforced concrete construction is available to architects as the best material adaptable to a large variety of building requirements. It is used with perfect results through a wide range of structures from the highest type, as represented by this artistic Cathedral with the walls and ornamentation of concrete as well as the structural members designed to withstand earthquake shocks, down to the type represented by the plain factory building.

Reinforced concrete construction, practically unknown in the United States twenty years ago, has been developed to a large extent by specialist engineers who perfected a variety of patented forms, or systems, of construction to carry out their work successfully. Today the aggregate cost of reinforced concrete construction exceeds $100,000,000 per year.

The plain factory building of reinforced concrete

The architect must select from the vast number of available types of reinforced concrete construction the one most suitable for his particular purpose.



A building must be adapted to the owner's requirements

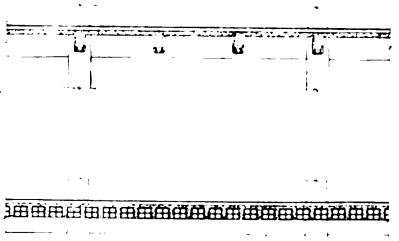
If the architect does not possess the necessary organization in his own office, he should command an outside organization of experts.

By so doing he can furnish his clients without delay

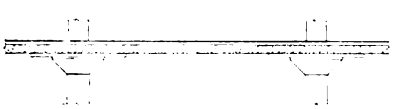
1. **Preliminary and comparative sketches, estimates, and cost data as a basis of negotiations.**
2. **Expert efficiency engineering in analyzing particular building requirements, building location, and arrangement.**
3. **A selection of the best type or types of reinforced concrete construction to save time and building cost.**

By so doing the architect secures

1. **The designs and complete detailed drawings, including setting plans. The latter are often not supplied but are important to the contractor not only in erection but also in making up his estimate of cost.**
2. **Freedom from competitive bids on alternates and close competition on his own design.**
3. **A guarantee of correctness of designs and patent protection on types of construction used.**
4. **An efficient engineering supervision of actual construction work in all its details.**

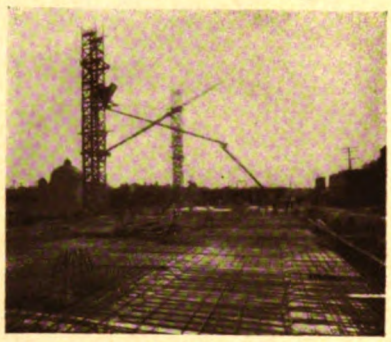


Types must be selected in accordance with the requirements



A patented type may be the most economical

Such an organization is of incalculable value to the architect in the successful completion of his commission.



Patented specifications and setting plans cover work of this kind

It has been assumed that an engineering concern, offering the services outlined in the preceding pages, cannot be divorced from a commercial presentation of patented types of construction that its own engineers have developed.

This has been proved not necessarily to be true.

We are continually rendering engineering service to architects on a fee basis without obligation to use our particular products.

The architect is free to specify any type of reinforcement that has proved merit.

We are able to give complete patent protection on all practical types of reinforced concrete construction.

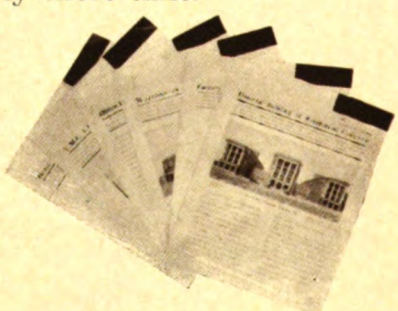
We have an organization that has survived a creative competitive period in reinforced concrete construction.

We can throw the whole force of a highly specialized organization on one project to help the architect carry through the commission in an unbelievably short time.

We can furnish engineering service from any one of our many engineering offices located in all parts of the country.

We will gladly send on request special bulletins, giving examples of the service rendered architects in the execution of the following types of buildings:

Factories Hotels Machine Shops
Warehouses Hospitals Office Buildings



A book of bulletins prepared by our engineers

ENGINEERING SERVICE DEPARTMENT

Corrugated Bar Company, Buffalo, N. Y.

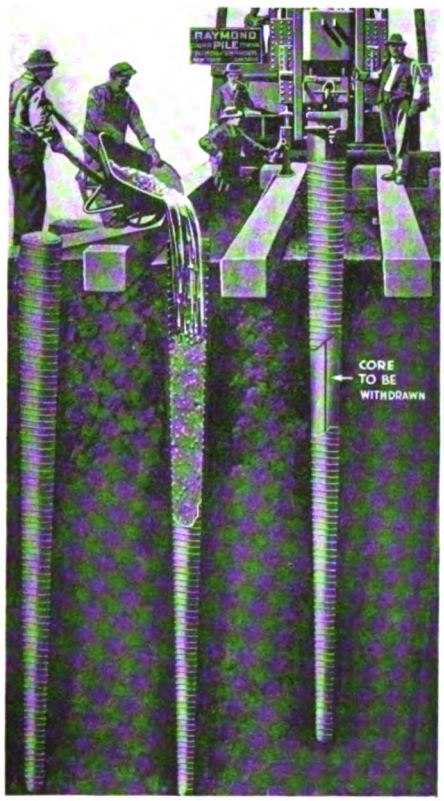
Boston New York Syracuse St. Paul Philadelphia Houston Detroit Atlanta St. Louis Chicago

Raymond Concrete Piles

How are they made?

Answers

1. A permanent shell is placed in the ground and is then filled with concrete; the shell protecting the concrete from distortion and damage.
2. The cost depends entirely upon the number of piles involved and local conditions at the site.
3. From 20 to 40 piles per eight-hour shift can be placed under usual conditions.
4. Raymond Concrete Piles can be placed as close as 2 feet 6 inches on centers.
5. Raymond Piles will support from 30 to 50 tons each, depending upon local Building Ordinances.
6. The average length depends upon the soil penetrated, and varies from 18 to 40 feet.



Raymond Method

1. A collapsible mandrel or core, measuring 8″ in diameter at the point and increasing in diameter .4″ per foot of length, is expanded.
2. This expanded core is encased in a sectional, spirally reinforced, sheet steel shell and is now ready for driving.
3. The combined core and shell is driven into the ground to sufficient penetration. The core is then collapsed and withdrawn from the shell.
4. The shell—which remains in the ground—is then carefully inspected as it is to be the receptacle of the GREEN concrete.
5. Carefully prepared concrete is now poured into the shell, thus forming a complete Raymond Pile, perfect from tip to top.

Simple, isn't it?

Raymond Concrete Pile Company

New York
140 Cedar Street

Branch Offices
in all Principal Cities

Chicago
111 W. Monroe Street

Raymond Concrete Pile Company of Canada, Ltd., Montreal, Canada

A Form for Every Pile — A Pile for every Purpose

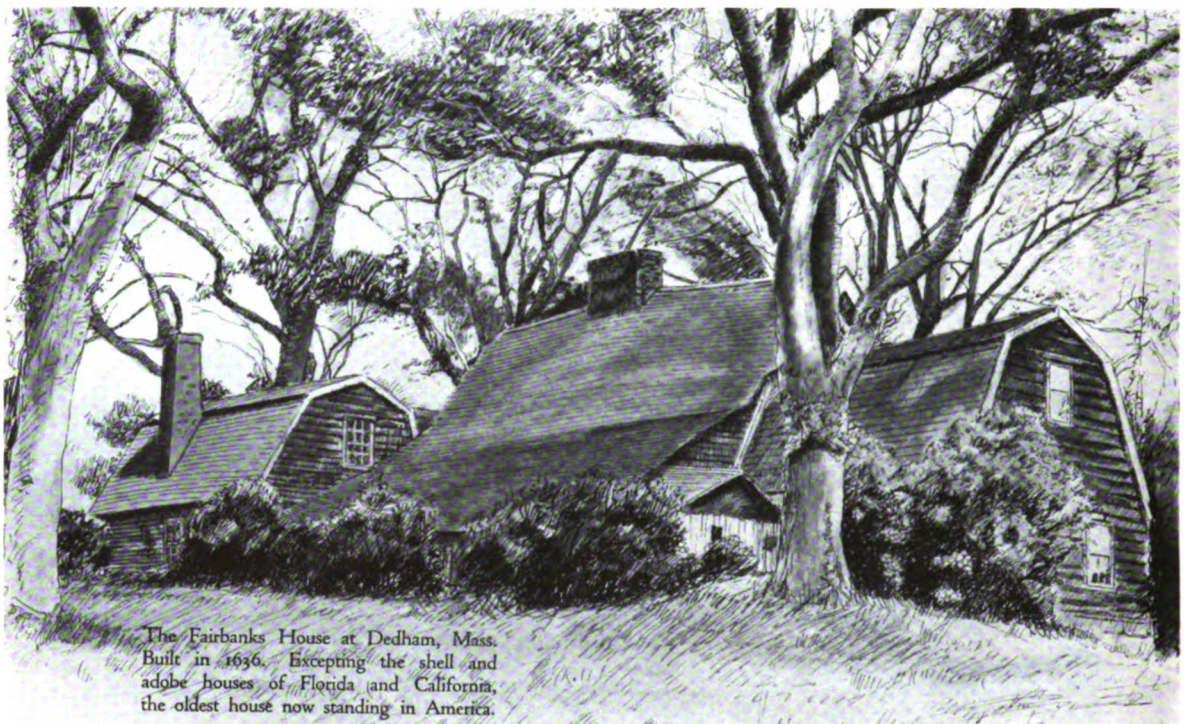
How are they made? See Answer No. 1	**What do they cost?** See Answer No. 2	**How fast can they be placed?** See Answer No. 3
How close can they be placed? See Answer No. 4	**What load will they carry?** See Answer No. 5	**What is their average length?** See Answer No. 6

Western Theological Seminary, Pittsburgh, Pa.
Thomas Hannah, Architect

ARCHITECTS of experience know that tracery and other gothic design will be comparatively inexpensive when executed in gray Terra Cotta, because unlike other materials the cost of making the intricate forms is largely expended on one model and mould of each type of block, and from these moulds may be reproduced, at slight additional cost, any number of duplicates without sacrifice of artistic or mechanical excellence, as is illustrated by the pleasing effect of the Western Theological Seminary.

Atlantic Terra Cotta Company

1170 Broadway, New York



The Fairbanks House at Dedham, Mass. Built in 1636. Excepting the shell and adobe houses of Florida and California, the oldest house now standing in America.

281 Years Old—and Still a Comfortable Home

For almost three centuries this unpainted house has stood exposed to the weather. Continuously occupied and still almost perfectly preserved, it offers convincing proof of the enduring qualities of

WHITE PINE

Ever since the Pilgrims landed, White Pine has been universally recognized as the wood preferred above all others in home-building. And figuring value in terms of service, it is the most economical.

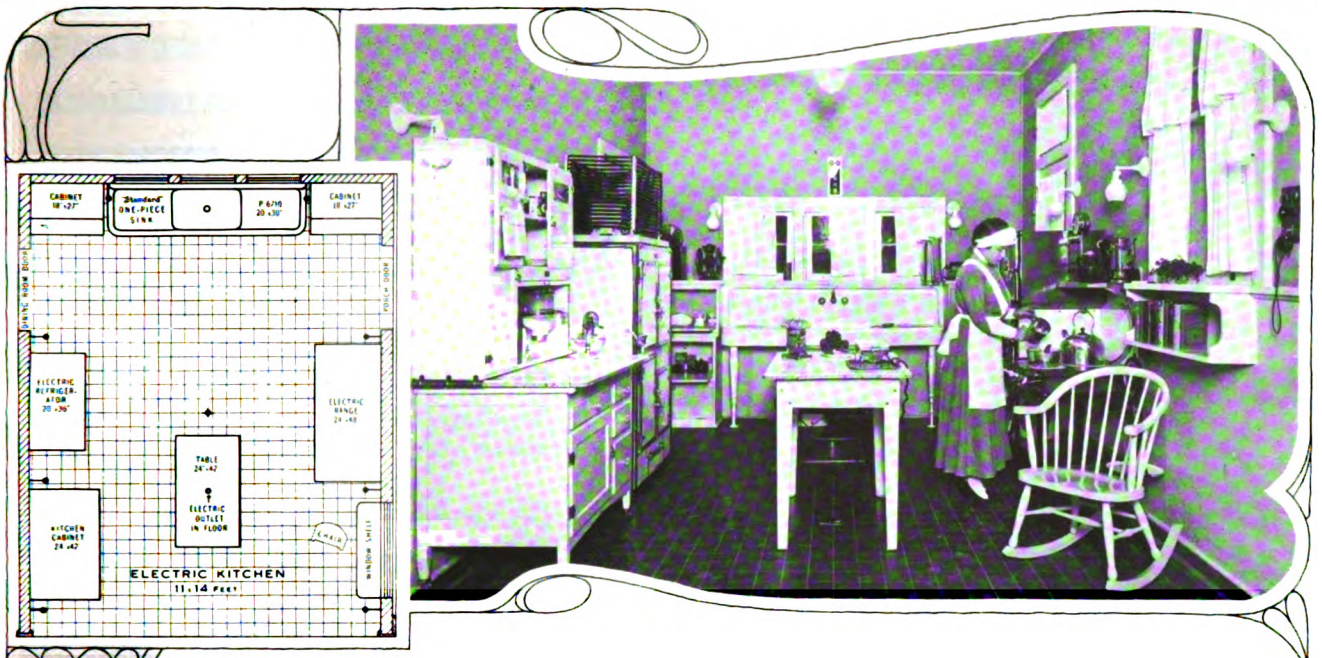
Despite an impression of its scarcity, White Pine is still abundantly available today, as it always has been, in all grades and in any quantities desired. If the lumber dealers supplying your clients are at any time unable to furnish it, we should appreciate the opportunity of being helpful to you in securing it.

If you are not receiving the White Pine Series of Architectural Monographs and feel interested in having them, kindly advise Russell F. Whitehead, 132 Madison Avenue, New York City, who will be pleased to furnish you with the current and all subsequent numbers.

WHITE PINE BUREAU

1144 MERCHANTS BANK BUILDING, ST. PAUL, MINN.

Representing
The Northern Pine Manufacturers' Association of Minnesota, Wisconsin and Michigan, and The Associated White Pine Manufacturers of Idaho



Efficiency Kitchen equipped with a "Standard" One-Piece Kitchen Sink

THE increasing demand for better Kitchens is well founded. The sanitary feature alone is reason enough. The first step in this direction is the installation of a sanitary Kitchen Sink.

The "Standard" One-piece type of Kitchen Sink is accepted as the last word in sink construction, both from the standpoint of absolute sanitation and efficiency in service. White enameled, without dirt catching cracks or crevices, adjustable in height from 30 to 36 inches, improved faucets that prevent splashing, duplex strainers, and air chambers that prevent "pounding" are some of the distinctive features of "Standard" Sinks.

There is a variety of sizes. The largest one (length over all 78½ inches) can be easily placed in a small Kitchen, if the Kitchen is efficiently arranged as shown by the accompanying floor plan.

Our special bulletin on the subject of "Efficiency Kitchens", containing practical information for the Architect, can be obtained by writing to any "Standard" Showroom or from any of our traveling Representatives.

Standard Sanitary Mfg. Co.

Pittsburgh, Pa.

"Standard" SHOWROOMS AND SERVICE STATIONS

NEW YORK.....35 W. 31ST	CINCINNATI.....633 WALNUT	NEW ORLEANS.....846 BARONNE
NEW YORK (EXPORT DEPT.).....50 BROAD	TOLEDO.....311-321 ERIE	HOUSTON.....PRESTON & SMITH
BOSTON.....186 DEVONSHIRE	COLUMBUS.....248-255 S. THIRD	DALLAS.....1200-1206 JACKSON
PHILADELPHIA.....1215 WALNUT	YOUNGSTOWN.....219 N. CHAMPION	SAN ANTONIO.....212 LOSOYA
WASHINGTON.....SOUTHERN BLDG.	WHEELING.....3120-30 JACOBS	FORT WORTH.....828-830 MONROE
PITTSBURGH.....106 SIXTH	ERIE.....128 W. TWELFTH	TORONTO, CAN.....59 E. RICHMOND
CHICAGO.....900 S. MICHIGAN	LOS ANGELES.....671 MESQUIT	HAMILTON, CAN.....20 W. JACKSON
CHICAGO.....14-30 N. PEORIA	LOUISVILLE.....319 W. MAIN	SAN FRANCISCO.....149-55 BLUXOME
ST. LOUIS.....100 N. FOURTH	NASHVILLE.....315 S. TENTH	DETROIT OFFICE.....HAMMOND BLDG.
CLEVELAND.....4409 EUCLID		KANSAS CITY OFFICE.....RESERVE BANK BLDG.

The ARISTOCRAT of BUILDING MATERIALS

Cost Not Too High

Among all the stone buildings of America and Europe an astonishing proportion, including many of the oldest, are built of limestone, and among limestones the world but rarely, and America nowhere affords the equal of INDIANA LIMESTONE, "The Aristocrat of Building Materials," in beauty plus physical excellences.

In spite of its age—long durability and great strength, Indiana Limestone is very easily worked. The quarries are fortunately located for shipment to every State and to Canada. It is, therefore, *not a costly building material.*

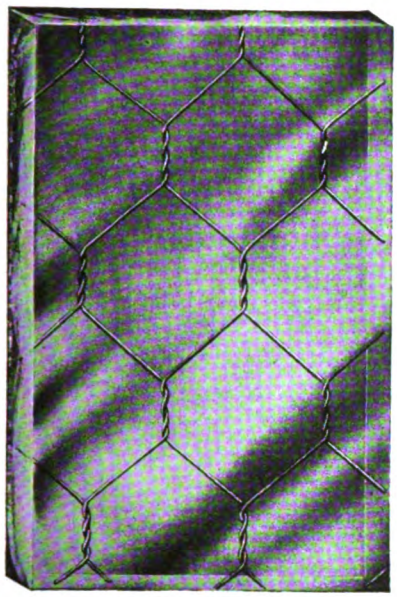
Whether for a cathedral, an office building or a small dwelling, it is frequently able to meet, or even better the price of much less desirable materials.

May we suggest that you figure "both ways" and compare.

SAMPLES AND SUGGESTIVE BOOK ON REQUEST.

Indiana Limestone Quarrymen's Association

P. O. Box 209, BEDFORD, INDIANA



Mississippi
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Your client selects you because he has confidence in your judgment.

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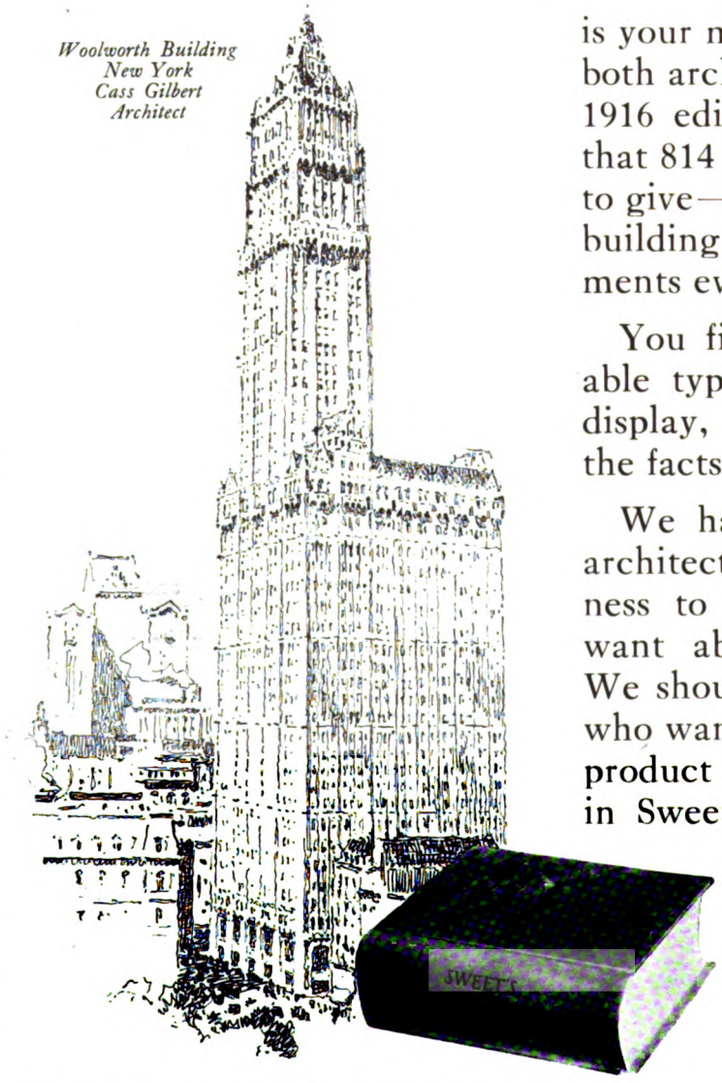

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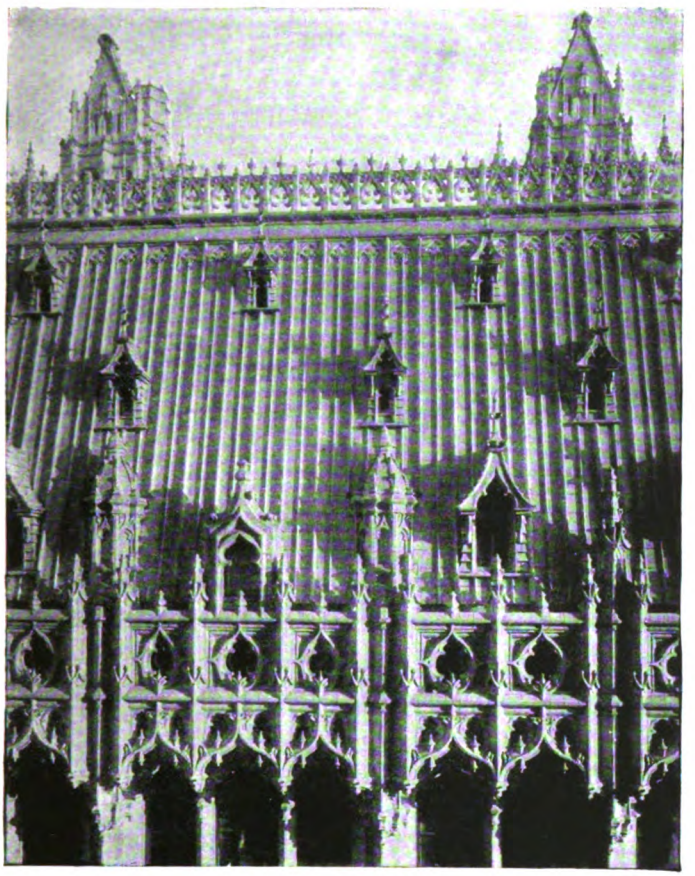

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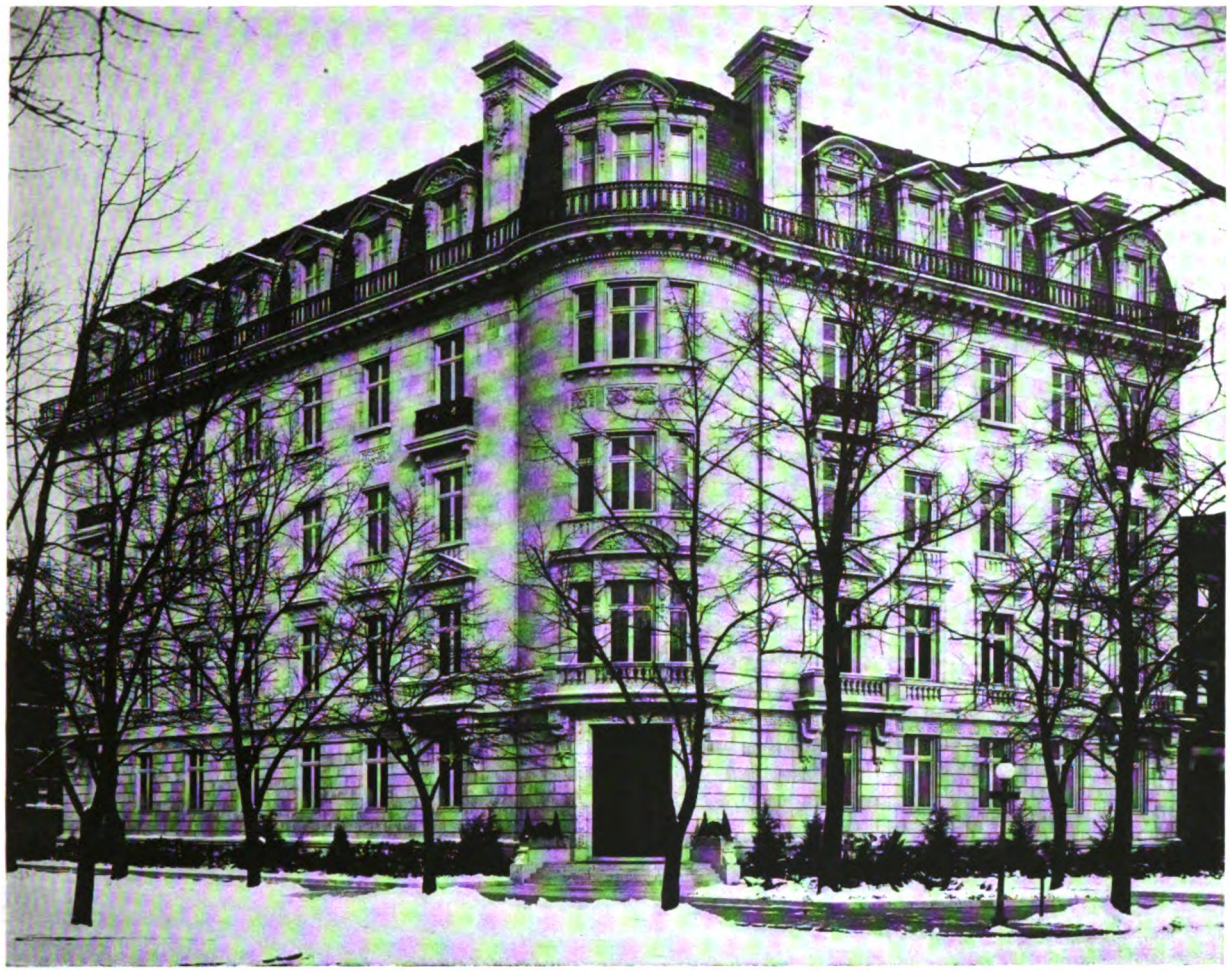

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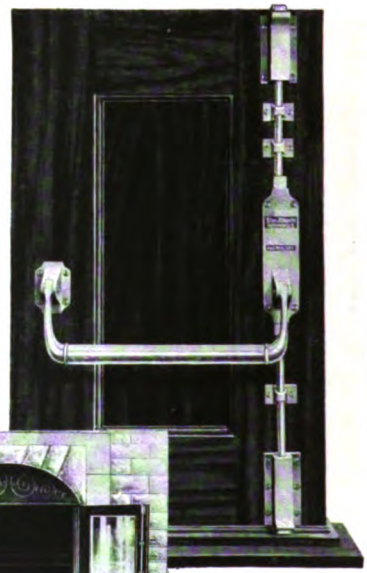

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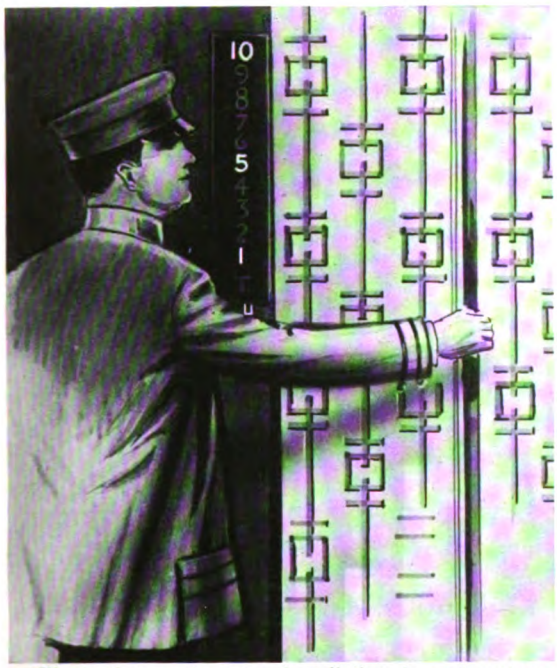

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K. W. consumed	725	630	300
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K. W. per passenger mile	.077	.068	.060

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JOURNAL OF THE
AMERICAN INSTITUTE OF ARCHITECTS

Vol. V FEBRUARY, 1917 No. 2

Shadows and Straws

THE OMNIBUS PUBLIC-BUILDINGS BILL passed the House of Representatives January 19, by a vote of 234 to 92, with 108 not voting. The affirmative votes are accounted for as follows:

Those Voting "Yea" Who Had Items in the Bill.—ALABAMA—Almon, Blackmon, Burnett, Dent, Gray, Steagall; ARKANSAS—Caraway, Jacoway, Oldfield, Taylor, Wingo; ARIZONA—Hayden; CALIFORNIA—Church, Elston, Hayes, Kahn, Kettner, Raker, Randall; COLORADO—Taylor, Timberlake; FLORIDA—Clark, Sears, Sparkman; GEORGIA—Bell, Crisp, Howard, Hughes, Lee, Park, Rucker, Vinson, Walker; IDAHO—McCracken, Smith; ILLINOIS—Copley, Denison, Fuller, Gallagher, King, McAndrews, Rainey, Rodenberg, Sterling, Stone, Wheeler, Wilson; INDIANA—Cline, Lieb; IOWA—Green, Haugen, Hull, Kennedy, Ramseyer, Steele, Towner, Woods; KANSAS—Ayres, Connelly, Helvering; KENTUCKY—Barkley, Helm, Kincheloe, Langley, Powers, Rouse, Thomas; LOUISIANA—Aswell, Estopinal, Lazaro, Martin, Watkins, Wilson; MAINE—Guernsey; MARYLAND—Price; MASSACHUSETTS—Gallivan, Tague; MICHIGAN—Fordney, Hamilton, Kelley, McLaughlin, Smith; MINNESOTA—Davis, Miller, Van Dyke, Volstead, Smith, Steenerson; MISSISSIPPI—Collier, Candler, Harrison, Sisson; MISSOURI—Alexander, Borland, Decker, Dickinson, Hamlin, Hensley, Lloyd, Rubey, Russell, Shackleford; MONTANA—Stout; NEBRASKA—Kinkaid; Shallenberger, Sloan, Stephens; NEW HAMPSHIRE—Sulloway, Wason; NEW JERSEY—Bacharach, Eagan, Hart, Lehlbach; NEW MEXICO—Hernandez; NEW YORK—Bruckner, Charles, Danforth, Gould, Mott, Snell, Snyder; NORTH CAROLINA—Doughton, Hood, Kitchin, Small, Webb; NORTH DAKOTA—Helgesen, Norton; OHIO—Brumbaugh, Cooper, Emerson, Hollingsworth, Key, Matthews, Overmyer, Ricketts, Sherwood; OKLAHOMA—Carter, Davenport, Ferris, Hastings, Morgan Murray, Thompson; OREGON—Sinnott; PENNSYLVANIA—Bailey, Butler, Farr, Focht, Griest, Heaton, Hopwood, Kiess, Kreider, Lesher, Miller, Moore, North, Porter, Watson; RHODE ISLAND—O'Shaunessy; SOUTH CAROLINA—Aiken, Byrnes, Nicholls, Whaley; SOUTH DAKOTA—Dillon; TENNESSEE—Austin, Houston, Moon, Padgett, Sims; TEXAS—Buchanan, Dies, Eagle, Gregg, McLemore, Smith, Sumners, Young; VIRGINIA—Harrison, Montague, Slemp; WASHINGTON—Humphrey; WEST VIRGINIA—Bowers, Cooper, Littlepage, Neely, Sutherland, Woodyard; WISCONSIN—Browne, Burke, Cary, Cooper, Konop; WYOMING—Mondell.—195.

Those Voting "Yea" Who Did Not Have Items in the Bill.—ALABAMA—Abercrombie, Oliver; CALIFORNIA—Curry; COLORADO—Hilliard; GEORGIA—Adamson; ILLINOIS—Buchanan, Madden, McDermott, W. E. Williams; KENTUCKY—Fields; LOUISIANA—Dupré; MARYLAND—Linthicum, Mudd; MISSISSIPPI—Venable; MISSOURI—Dyer, Meeker; NEW JERSEY—Browning; NEW YORK—Caldwell, Carew, Dale, Dooling, London, Magee, Riordan, Swift, Ward; OHIO—Switzer; OREGON—Hawley; PENNSYLVANIA—Crago, Garland, Vare; SOUTH CAROLINA—Lever; TENNESSEE—McKellar; TEXAS—Black; UTAH—Howell; VERMONT—Dale; VIRGINIA—Watson; WASHINGTON—Hadley; WEST VIRGINIA—Saunders.—39.

The negative votes were as follows:

Those Voting "Nay" Who Had Items in the Bill.—CONNECTICUT—Freeman, Glynn; DELAWARE—Miller; ILLINOIS—Foster, Tavenner; Williams (T. S.); INDIANA—Cullop, Dixon, Rauch; IOWA—Dowell, Sweet; KANSAS—Anthony, Doolittle, Shouse; MARYLAND—Coady; MASSACHUSETTS—Carter, Dallinger, Gardner, Paige, Rogers, Treadway, Walsh, Winslow; MICHIGAN—Doremus, Loud, Scott; MINNESOTA—Anderson, Lindbergh; NEW YORK—Platt; NORTH CAROLINA—Page; NORTH DAKOTA—Young; OHIO—Ashbrook, Fess; PENNSYLVANIA—Temple; SOUTH DAKOTA—Johnson; TENNESSEE—Garrett; VIRGINIA—Glass; WASHINGTON—Johnson; WISCONSIN—Esch, Lenroot Reilly.—41.

Those Voting "Nay" Who Did Not Have Items in the Bill.—ALABAMA—Huddleston; CALIFORNIA—Nolan; COLORADO—Keating; CONNECTICUT—Tilson; ILLINOIS—Foss, Mann, McKenzie; INDIANA—Barnhart, Cox, Gray, Moores, Moss, Wood; IOWA—Good; KENTUCKY Sherley; MAINE—Peters; MASSACHUSETTS—Gillett, Tinkham; MICHIGAN—Crampton, James, Nichols; MINNESOTA—Ellsworth, Schall; MISSISSIPPI—Quin; NEBRASKA—Reavis; NEW JERSEY—Parker; NEW YORK—Fitzgerald, Hicks, Maher, Rowe; OHIO—Allen, Crosser, Gordon, Kearns, Longworth, McCulloch, Williams; OREGON—McArthur; PENNSYLVANIA—Coleman, Keister, McFadden; SOUTH DAKOTA—Gandy; TENNESSEE—Byrns, Hull; TEXAS—Rayburn, Stephens; VERMONT—Greene; WASHINGTON—Dill, La Follette; WISCONSIN—Frear, Stafford.—51.

Not Voting.—Adair, Barchfeld, Beakes, Beales, Benedict, Bennet, Booher, Britt, Britten, Burgess, Callaway, Campbell, Cannon, Cantrill, Capstick, Carlin, Casey, Chandler (N. Y.), Chiperfield, Conry, Costello, Darrow, Davis (Tex.), Dempsey, Dewalt, Driscoll, Drukker, Dunn, Edmonds, Edwards, Evans, Fairchild, Farley, Finley, Flood, Flynn, Gard, Garner, Godwin (N. C.), Goodwin (Ark.), Graham, Gray (N. J.), Greene (Mass.), Griffin, Hamill, Hamilton (N. Y.), Hardy, Haskell, Heflin, Henry, Hill, Hinds, Holland, Hulbert, Humphreys (Miss.), Husted, Hutchinson, Igoe, Johnson (Ky.), Jones, Kennedy (R. I.), Kent, Lafean, Lewis, Liebel, Lobeck, Loft, McClintic, McGillicuddy, McKinley, Mapes, Mays, Mooney, Morgan (La.), Morin, Morrison, Nelson, Oakey, Oglesby, Olney, Parker (N. Y.), Patten, Phelan, Pou, Pratt, Ragsdale, Roberts (Mass.), Roberts (Nev.), Rowland, Rucker (Mo.), Russell (Ohio), Sabath, Sanford, Scott (Pa.), Scully, Sells, Siegel, Slayden, Smith (N. Y.), Stedman, Steele (Pa.), Stephens (Miss.), Stiness, Taggart, Talbott, Tillman, Wilson (Fla.), Wise.—108.

The Bill is now before the Senate, but there seems to be much ground for believing that it will not pass that body and may not even be reported for discussion.

THE CHARACTER OF THE parliamentary procedure which accompanied the passage of this measure in the House makes the pages of the Congressional Record anything but dull. Volumes might be written upon the phases of political life revealed in the utterances of certain members and in the rules arbitrarily imposed for preventing discussion.

Mr. Gillett (Massachusetts) said:

"We all know this bill is not brought in here to improve the post-office efficiency. It is brought in largely to improve Congressional fences. It is not peculiar to this com-

mittee; it has always been so. These public-buildings bills are brought in the interest of Members.

"My colleague (Mr. Gardner) on yesterday suggested that he voted for the rule because he hoped that the House would strike out the unnecessary items, and then he could vote for the bill. I do not believe any man in the House shared that hope, because as soon as you strike out one item the bill loses one vote, and if you keep on striking out unnecessary items you keep losing votes until at last there will not be enough enthusiasm for the bill to call for the yeas and nays. You cannot amend, improve, and perfect a bill when each Member is personally interested in it, because we are none of us impartial to the matters which affect our personal interests.

"The very way in which this bill was prepared shows that it was not prepared for the public interest. It was prepared for the private interests of Congressmen. The chairman of the committee last year sent out letters to every Congressman suggesting that he send in an item for the bill. Is that the way the other committees go to work? Is that the way any appropriation bill would be prepared?"

MR. LENROOT (WISCONSIN), referring to the numerous important public matters which are falling a sacrifice to pork, said:

"Those bills must wait, and in all probability never will be considered at this session at all, in order that the membership of this House, not treating this question as a national question, not looking at these things from the standpoint of the national good, may be able to go home on the fourth of March and say to their constituents, 'I got so much money out of the National Treasury for a public building in my district.'"

SPEAKING IN RELATION to the section of the bill upon which we commented last month and which fixed $10,000 as a minimum of postal receipts for three successive years, as a basis for a public building, Mr. Fess (Ohio) said:

"It will be noted that the last paragraph fixes $10,000 as the sum of postal receipts as a necessary requirement for a building. However, it expressly declares 'hereafter' this shall be the requirement, then to be doubly safe, declares that 'nothing herein shall apply to cities or towns where sites for public buildings have already been acquired or authorized.' Splendid! Here is a bill that inserts the items which would be excluded by its last provision, a limitation demanded by common sense, but covers them by providing it shall not be operative as to them. If this provision is a correct position, why not prove its merit by respecting it, by omitting all items in this bill which it excludes in the future? * * *

"In other words, if this bill were made operative on its own items, it would exclude 80 per cent of those in Alabama, 50 per cent of those in Arkansas, 28 per cent of those in Florida, 90 per cent of Georgia, 92 per cent of Kentucky, 37 per cent of Louisiana, 85 per cent of Mississippi, 75 per cent of North Carolina, 75 per cent of South Carolina, 100 per cent of Tennessee, 20 per cent of Texas, and so forth."

THE RULE GOVERNING the bill in the House, originally presented by Chairman Clark, *and before he announced that the bill would be thrown open to discussion*, provided for consideration of the bill in Committee of the Whole, where roll-calls do not occur; for control of the four hours' debate by himself and a sympathetic colleague (Mr. Austin); that none but "committee amendments" could be offered; and that after the farce of a Committee on the Whole session, no deliberation or amendment would be permitted. The rule was not adopted, but (and here we quote from the *Searchlight on Congress*):

"Chairman Henry, of the Committee on Rules, had presented a special rule for the consideration of the Omnibus Public-Buildings Bill, different from the Clark rule in that it placed control of the time for general debate against the measure in the hands of Mr. Mooney (Ohio) and provided the usual opportunities for amendments under the five-minute rule. The Henry rule also permitted one motion to recommit. It was discovered after this substitute rule was reported that Mr. Mooney was not present and had not been in attendance at House sessions for some time. Accordingly, control of the time in general debate against the measure was placed in the hands of Mr. Ashbrook (Ohio).

"The House adopted the Henry rule and began consideration of the measure January 16. In the four hours of general debate Messrs. Clark (Florida), Mondell (Wyoming), Magee (New York), Smith (Michigan), Emerson (Ohio), Kahn (California), Davis (Texas), and Burnett (Alabama) spoke for the bill. It was opposed by Messrs. Barnhart (Indiana), James (Michigan), Gillett (Massachusetts), Ashbrook (Ohio), Cox (Indiana), Fess (Ohio), Kent (California), and Frear (Wisconsin).

"THEN CAME THE HIGH-HANDED proceedings by which opponents of the bill were gagged in defiance of the rule which seemed to guarantee their rights to present and discuss amendments. When the bill was taken up for amendment under the five-minute rule, Messrs. Frear (Wisconsin), James (Michigan), and others began to offer bona fide amendments to strike out various items, and to present facts as to populations, postal receipts, comparative costs, etc. This greatly angered the pork-barrel combination back of the bill and a way was found to stop that kind of debate.

"Mr. Cline (Indiana) was presiding as chairman of the Committee of the Whole and made the ruling which accomplished the gagging. His ruling upheld the right of Chairman Clark, of the Public Buildings Committee to take the floor on a subterfuge motion to 'strike out the last word' of each paragraph and then, having said a few perfunctory words and that having held to constitute 'debate,' to move to close all debate on the paragraph, thus shutting out all opponents of the bill who had facts to present and honest amendments to offer.

"The best way to illustrate this expensive farce is to quote from the *Congressional Record*. On January 18,

page 1826, this occurred, which was typical of the performance with reference to other items:

'The Clerk read as follows:
'United States post office at Green River, Wyo., $25,000.
'Mr. Clark, of Florida. Mr. Chairman, I move to strike out the last word. The town of Green River, Wyo., is a very prosperous place. There are many Federal activities there, and this post office is absolutely essential to that community. I move that all debate upon this paragraph and amendments thereto be now closed.
'The Chairman. The question is on the motion to close debate upon the paragraph and amendments thereto.
'The question was taken; and on a division (demanded by Mr. Frear) there were: Ayes, 97; noes, 5.
'So the motion was agreed to.
'The Chairman. The question now is upon the amendment offered by the gentleman from Florida to strike out the last word.
'The question was taken; and on a division (demanded by Mr. James) there were: Ayes, 0; noes, 52.
'So the amendment was rejected.'

"The following day, when the bill was finished, better judgment prevailed and the steam roller was not so much in use. But the indefensible ruling had been made and another precedent added to the vicious parliamentary system of the House."

THE USUAL ASSAULT upon the Institute and upon the profession of architecture was not missing from the debate. Raising the question of the salary to be paid the Supervising Architect, Mr. Morgan (Oklahoma) suggested that it be decreased from the $7,500 provided in the bill, to $6,000. In reply, Mr. Clark (Florida) said:

"The architects of this country make a great deal more money than that. You can not get a man who is a first-class man to take that place for $5,000 or $6,000. I question whether you would be able to get him for $7,500. . . . The Committee discussed fixing it at $10,000. For myself I would be perfectly willing to pay $20,000 a year to a good man who would go into that office and do the work that ought to be done. He can save his salary a dozen times over in the course of a year, because if we get the right man—and we have attempted here to get not only a good architect but a good business man—if we can get that kind of a combination the Government could well afford to pay him $50,000 a year and save those enormous fees that are paid to outside architects who work upon these great buildings."

At another time, Mr. Clark said:

". . . the fight against these small buildings is not the main fight against the bill . . . the fight that has been inaugurated against the bill is not because of a few little buildings in small towns here and there. The American Institute of Architects is the Architectural Trust of the United States. They have been getting the "pork" for all these years. [Applause.] They hung around the committee room for days and weeks, and they wanted to write the legislation in this bill. The Supervising Architect's office has not for years constructed one of these large buildings in the great cities or in the city of Washington. It has always been farmed out to the American Institute of Architects or their members, and they get 6 per cent on the gross cost of the building. On a $3,000,000 building they would pull down $180,000 for drawing the plans and specifications, and I am here to say I believe, and the committee believes, that the United States Government ought to have men competent to do that work in their own public-building office without going outside to hire these people to do it."

Every architect in the United States is familiar with this sort of injustice, but every citizen may well pause and consider that today, in a nation purporting to be great, free, civilized, wealthy, progressive, the architectural destinies of the buildings of the Government rest in such hands! It is humiliating to the point of disgust! And the record of those three days of wasted debate is filled with such allusions, such ignorances, such prejudices, such misrepresentations.

Less than three years ago the same Mr. Clark signed his name to the report of the Public-Buildings Commission, containing the following:

"It is found that the cost of preparing plans and placing work under contract in the Supervising Architect's office is approximately 4 per cent. Three per cent additional is required to supervise and complete the work."

Competent authorities believe that this total of 7 per cent—compared with the customary 6 per cent paid to reputable architects in private practice—would amount to more than 8 per cent if all items of expense were properly included in making the figures. Fortunately there are members of Congress who understand the real situation and a ray of hope illumines the fight to bring it to an end.

FOR THE FINAL CHAPTER in this lamentable episode we have reserved the architectural gem. Mr. Clark, in his report accompanying the Omnibus Bill, explained that a "factory or block type" of building was proposed to meet the criticism of extravagance which his committee had suffered. In replying to a question on this subject, on the floor, during the debate, Mr. Clark said:

"There is a box type of building which is now proposed which would answer the purpose very well."

He was speaking as a representative of the Government of the United States, charged by Congress with the welfare of our Public Buildings and Grounds!

ON JANUARY 23 there was introduced by Representative Tinkham, of Massachusetts, the following bill, which embodies the principles for which the Institute contends. The Bill is known as H.R. 20410 and is as follows:

A BILL to create a temporary building commission for the purpose of investigating all the public-building needs and methods of the United States in order to recommend a public-building policy.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That to enable the Congress to enact legislation authorizing the erection of public buildings for the United States in such manner that they may be planned, designed, and constructed to give the maximum result in value of expenditure in convenience to the public, in ease of operation, in beauty of appearance, in celerity in meeting present urgent needs, and in carefulness in their provisions for future growth there shall be appointed by the President of the United States a temporary building commission to consist of five citizens of the United States whose knowledge, experience in building undertakings, and whose integrity shall command public confidence and respect, one of whom shall be an architect and one of whom shall be an engineer, and the duty of which commission shall be to study and investigate all the elements of the public-building requirements of the United States, including the purchase of land; the best methods for determining the size, cost, and character of buildings; the provision for standardizing such units of size and plan as are possible; means for coördinating the valuable data and experience now possesed by various departments and bureaus with the highest skilled service in the planning and designing of public buildings; and within two years from the appointment of the commission shall report its conclusions to Congress and make such recommendations or suggest such legislation as it may deem wise to insure that all Government public buildings shall be built along lines of sound business procedure and reflect, in their erection, the highest attainments in building construction; and the commission is hereby empowered to employ such expert and clerical assistance as it may require; and the sum of $50,000 is hereby appropriated for the expenses of the said commission.

THE IDEA OF AN EXPERT COMMISSION of this kind has appealed to many Senators and Representatives, and the press of the country has welcomed it as a simple business procedure which cannot but meet favor with business men.

The New York *Times* said, editorially:

"Public buildings are a technical, not a political, matter. To begin with get the best experts; let them report a plan. There is none now. If a general public-building policy can be laid down and agreed upon, the administrative body to take charge of it will have to be decided upon. The immediate, the initial, step, is to provide a competent and civilized policy. Representative Tinkham, of Massachusetts, has just introduced a bill providing for the appointment of a temporary building commission. . . . The commission is to report within two years from its appointment. Congress is suspicious of experts. Possibly Mr. Tinkham felt that he was going pretty far in specifying an architect and an engineer, and thought it safer not to be too concrete as to the other three citizens. . . . Whatever the best composition of a commission, a commission there should be. Will Congress forgive the experts, a class that the United States will have to make a mightily increased use of in the years after the war, and consent to a commission? Mr. Tinkham asks for $50,000 for its expenses. It could show how to save a great many millions."

THE SATURDAY EVENING POST said:

"Friends of pork cry that Congress will never surrender its right to appropriate public money for public buildings. Nobody we have heard of ever asked it to, or knows of any way, short of a constitutional amendment, whereby it could make that surrender.

"Foes of pork urge that public buildings be erected according to the needs of public business, and not according to the political needs of individual congressmen.

"That is the whole matter. The American Institute of Architects proposes a board of experts to study the subject broadly and work out a plan under which the construction of public buildings, designed by competent architects, shall be recommended to Congress as public business requires them. The question is whether Congress proposes to consult experts or merely to pursue selfish individual ends.

"Pork has not been propitious to architecture. Government architecture, on the whole, lags much behind private enterprise. The Government ought to lead; but it does not—and pork is one of the reasons."

TO THE SENATORS and Representatives of Rhode Island, the Rhode Island Chapter addressed the following letter in connection with the public-buildings bill:

"The Rhode Island Chapter of the American Institute of Architects wishes to place itself on record as strongly opposed to that portion of the Public-Buildings Bill which provides for the construction of a portico for the Narragansett Pier post office, involving an expenditure of $10,000.

"The Chapter regards this appropriation as a fair example of the wasteful methods which are applied to the construction of federal public buildings. It has long noted with disfavor the undue extravagance on the part of the federal Government in its appropriations for public buildings in other states; and it resents this example of "pork" legislation in its own state. Even if the portico were a necessity, the total appropriation for the building which, with the new appropriation would now amount to over $85,000, is far in excess of an expenditure which the size and importance of Narragansett Pier would warrant. But this Chapter is in a position to state positively that the portico is not a necessity either for the appear-

ance of the post-office building or as a matter of practical utility.

"Under separate cover will be sent to you the December, 1916, issue of the "Journal of the American Institute of Architects" which contains the Institute's attitude towards Government architecture as expressed at the recent Minneapolis Convention.

"May we not have your support in the campaign which the American Institute of Architects is carrying on for saner methods in the expenditure of funds for Government buildings?"

From now on, we hope that every Chapter will take a similar interest in the proposals for new buildings within its limits and in the matter of additions, enlargements, and adornments. Such bills are introduced regularly and are frequently ill conceived to meet the real situation.

CLEVE MANOR, the fine old house in King George County, Virginia, which formed the subject of one of Mr. Baldwin's articles on the architecture of the Rappahannock Valley in the Journal for June, 1915, was burned on the 16th of January last. We are unable to report the extent of the destruction, but from all reports the house was so badly damaged as to preclude any hope of rebuilding. It seems distressing that these historic structures should be lost in this manner, yet adequate protection appears to be a matter of great difficulty, and ceaseless watchfulness the only measure of precaution which is possible, in view of the isolation of so many of these houses. Almost all of them have suffered by fire, at one time or another, and only the more fortunate have survived.

THE PURCHASE, by the Government, of Monticello, the home of Thomas Jefferson, was considered by the Committee on Public Buildings and Grounds of the House, during the present session of Congress. We are informed that its owner asked the price of $500,000 for the property, a sum which the Committee believed to be unjustifiable, and the report was therefore against making the purchase.

IN EDUCATIONAL CIRCLES, the recent announcement that the General Education Board, one of the philanthropies founded by Mr. Rockefeller, would provide the funds wherewith Teachers College of Columbia University might "establish and conduct a school for the purpose of constructive work in the reorganization of elementary and secondary education," has created what might be termed a mild sensation. According to the announcement, the proposed educational methods to be tried will be "better adapted to the needs of modern life," and will "frankly discard that theory of education known as 'formal discipline'." The teaching of Latin and Greek will be dropped in favor of more emphasis to be given to science, industry and the domestic arts. Speculation and criticism are both rife, but the answer will be determined by the trial itself.

COMMENTING UPON THE appointment of Mr. Charles Mulford Robinson as city-planning advisor to the city of Greensboro, N. C., the *Daily News* of that city looks forward in a manner which is not only encouraging but even cheering. It says:

"More than one man possessed of both intelligence and the desire to help along any community enterprise that is worth while has of late raised the question, 'What does Greensboro want with a city plan? The city is built now, and is it not forever too late?'

"Is the city in fact built? Greensboro has a population of approximately 30,000. In the year, let us say, 1942, will the population of Greensboro remain approximately 30,000? If we admit that it will, we may be wasting our time in sending for a city-planner; but if we think, as the Daily News thinks, that twenty-five years hence Greensboro will have a population of 100,000, then the city instead of being built, is less than one-third built; and the fact that the first third was built at haphazard is certainly no excuse for building the rest the same way.

. . . . .

"Greensboro is a live town, therefore a changing town. The value of getting an expert's advice is that by following it we may make every change a change for the better. It is probable that the adoption of a city plan would not do the town much good this year, nor next year; but in the course of ten years the improvement would be marked; and in the course of a generation the whole city would have felt its beneficial effects.

"The desperate anxiety to get the man here before the courthouse is built is due simply to the fact that the courthouse is expected to stand for at least fifty years. It is one of the few structures of the present city that will last long; therefore it is highly desirable that it be so constructed that it will be an ornament to Greensboro not only at present, but also half a century hence."

We congratulate the Greensboro *Daily News* upon its ideas of civic duty and upon the admirable manner in which it seized an opportunity to really serve the city it represents.

MR. GROSVENOR ATTERBURY calls our attention to a misconception of the connotation of the word "unit" as referred to in the last number of the Journal, by which we unwittingly made it appear that he advocated consideration of an increase in the size of the units as a solution of the present cost of small houses for workingmen. Actually, he had reference to the "unit" in relation to the proper application of the principles of standardization, wholesale production and machine manufacture in connection with the building of the small house. Reading the word in this light makes it clear that far from being in favor of the multi-family housing unit, he distinctly advocates the small individual house, even to the point of having its erection, by highly systematized methods, result in a considerable degree of monotony.

IN 1859, IT APPEARS that Governor Banks, of Massachusetts, recommended the purchase by the state of the John Hancock mansion, then standing on Beacon Hill, built in 1837, and once a familiar landmark to Bostonians. Yet in spite of all protests, this historic possession was allowed to go the way of so many others. Now Governor McCall advocates that it be rebuilt from the plans which are still in existence, and that it be used to revive the tradition of the Governor's mansion, as well as to complete the proper development of the State House grounds. The suggestion may well cause us to review the careless manner in which we have destroyed so much of our most precious heritage, but it scarcely seems possible that this particular example of short-sightedness can be corrected by reproducing a building which would bear no relation whatever to present modes of life. An ancient building, expressive of the life of another day, exhales, by its very presence, the charm of a ripened architectural beauty and calls forth a feeling of reverence in the heart of those who are not reverentially dead. But an imitation of something which had been thoughtlessly destroyed calls forth quite another feeling—one which needs to be replaced with reverence if we would justly appreciate our inheritance. Fortunately, the work of preservation is finding more and more sympathy, and Governor McCall's suggestion will give an impetus to many hopes and plans.

Regulating the Practice of Architecture as a Profession

SUGGESTIONS FOR A SECTION TO BE INCLUDED IN ALL FUTURE STATE LAWS OR TO BE ADDED TO ALL EXISTING LAWS FOR THE REGULATION OF THE PROFESSION OF ARCHITECTURE

By PETER B. WIGHT

I HAVE been requested by so many Chapters of the Institute and members of State Boards for Regulating the Practice of Architecture as a Profession, for assistance in formulating new laws or amending existing ones, since the publication of my articles in the Journal for October, November and December, that I deem it important to be more explicit in recommendations how to provide for what has for several years impressed me as the most important provision to be embodied in such enactments—that is, for not only eliminating from the profession, but for punishing those who may be found to be guilty of *dishonest practices* in the pursuit of their profession. In my last article I quoted from an address delivered two years ago in which I gave reasons for the necessity for so doing. I quoted from the code of professional practice of the Institute and of the Illinois Society of Architects. Many of the Chapters have adopted and published such codes. Nearly all of the state laws give power to boards of examiners to revoke licenses for "dishonest practices"—without defining what they may consist of—and the Appellate Court of Illinois, without ruling against such penalties being inflicted, has held that the words are plural and that the penalty can not be inflicted for *one* dishonest practice. That makes it necessary to amend such acts by definitions declaring that one dishonest practice is sufficient for revocation.

It is also important that as many as possible of dishonest practices known to be prevalent should be defined in the laws. To that end, I propose that an additional section be added as an amendment to all of such laws. No existing section should be amended, for by so doing court decisions sustaining the constitutionality of such laws might become thereby nugatory. I have therefore drawn up the following explanatory section, to which should be given such a heading as is customary to add to amendatory acts in the several states, and which should always be submitted to some competent lawyer before presentation to any state legislature or general assembly.

The following is suggested as a sample:

A BILL *for an Act to amend an act to provide for Licensing (or Registering) Architects and Regulating the Practice of Architecture as a profession, as adopted and in force ——— and amended by adding a section to be known as Section ———, as follows:*

Wherever the words "dishonest practice" or "dishonest practices" occur in this act the same is hereby defined to refer to one or more of such practices; and the following are hereby defined as among dishonest practices, for which the license of an architect may be revoked upon trial or investigation by the State Board, and are hereby declared to be unlawful, for the commission of which the holder of such license (or certificate of registration) may be punished by fine or imprisonment or both after due trial in any court of competent jurisdiction, which fine shall be not less than two hundred (200) dollars, nor more than five hundred (500) dollars, or imprisonment, upon failure to pay the fine, of not less than two nor more than six months, in the discretion of the Court.

1. *To be guilty of fraud or misrepresentation in obtaining a license (or certificate of registration).*

2. *To accept any commission or substantial service or favor from any contractor or anyone connected with the building trades, or from anyone furnishing materials in a building designed or supervised by the architect of the building in which the same are used.*

3. *To injure intentionally the fair reputation, prospects or business of another architect.*

4. *To attempt to supplant a fellow architect after definite steps have been taken toward his employment.*

5. *To conspire or attempt to conspire with any other person to violate the building or sanitary laws of any village, city, town, county or state, in which building is regulated by law.*

NOTE.—Since this article was received the Legislative Committee of the Architects of Indiana has formulated and had introduced in the General Assembly of that state a bill for the "Licensing of Architects and Regulating the Practice of Architecture," modeled after the Illinois law. It has added a section, the wording of which is almost exactly copied from that recommended by Mr. Wight as above and suggested in his article in December. This section defines "Dishonest Practices" as referring to one or more of such practices and specifically describes three of them as follows:

(1) *"To be guilty of fraud or misrepresentation in obtaining a license to practise architecture."*

(2) *Exactly as recommended in the Journal and marked (2)*

and (3) Exactly as given and numbered (5) in the Journal.

The Committee of Architects in charge of the bill says: "It was thought by our legal counsel that the suggestion that it would be considered a misdemeanor for an architect to injure the reputation of another should be taken care of in an individual suit for damages rather than in the statute; also that a clause referring to an architect supplanting another who had taken steps for procuring a commission or executing it, is one which involves the ethics of the profession and could not be a specific, forceful claim in the statute."

The whole question of adding a new section of similar import to the Illinois law will be considered at a regular meeting of the Illinois Society of Architects to be held very soon, at which legal counsel will be consulted.

The Experiences of a Member of the Institute on the War Front of the Somme, in France

Mr. Charles Butler resigned as Secretary of the New York Chapter and went to Paris in June, 1915, to work with the American Relief Clearing-House in Paris. After spending some months in this field, he was asked by Dr. Alexis Carrel to make plans for a surgical hospital unit of 100 beds, to be placed in an advanced section of the war zone. Through difficulties over the admission of foreign nurses to the advanced zone, this hospital was not built, but the French war department then requested plans for a war hospital of 500 beds to be erected near Paris, and to serve as a model for other such hospitals. At Mr. Butler's request, M. Pellechet, a former comrade in the Beaux Arts was withdrawn from the front to assist in the preparation of the plans, and with the assistance of Dr. Dumont, a surgeon attached to the war department, the plans were prepared. Due to further difficulties the hospital was not erected, but the plans were used as a basis for many of the plans of other hospitals which, under the French military system, are made in the various twenty military districts into which France is divided.

During a lull in this work, Mr. Butler embarked with the Serbian Relief Expedition sent out by the American Relief Clearing-House, and spent the months of February and March, 1916, on a trip to Corfu, Athens and Corsica. By reason of the failure of the ship chartered for the purpose to arrive at Brindisi in time, the expedition was unable to accomplish its mission which was to remove the Serbian refugees from the coast of Albania, so the vessel was later used for transporting American Red Cross supplies from Athens to Corfu and Corsica.

On returning to Paris, Mr. Butler was asked to revise the plans for the permanent hospital near Paris, and it is now in process of erection. During the summer, Mr. Butler collected data on tuberculosis hospitals for submission to the war department, and he returned to America for a brief period in order to make further studies in this connection. After submitting this material upon his return to Paris, he intends to resume his practice in New York City. Some of his experiences are recited on the following page.—THE EDITOR.

Paris, November, 1916.

As we said good-bye to our friends of the staff of the —th Division, with whom Abbott and I had spent three days in the Somme, the General said to us: "You have seen us *au repos*, why don't you come back and visit us when we are *en secteur* next week?" A rapid examination of our *permis bleu* showed that it was good for two weeks more, and on receiving a positive assurance from all hands that we should not be in the way, we agreed to come back. Our friends were to go to the front in four days and stay there for the usual two weeks. So ten days later found me in Amiens, unluckily without Abbott who was under the weather. The General's car was waiting, with two soldiers on the front seat, the second man, as I soon discovered, being the cook, who had profited by the trip to fetch forage for the mess. Heading straight for the front, we passed through the region where our friends had been, out into the battlefield of July 1, well past the old German first- and second-line trenches. Finally, the car stopped—nowhere in particular—a few hundred yards from the ruins of a village. The cook gathered up my belongings and led the way across country toward a few hummocks, passing, alas, en route, the ever-present cemetery. The hummocks proved to be the headquarters of the Division, formerly, very evidently, a German headquarters and comprising various offices ten or twelve feet under ground, and three large sleeping-rooms at least thirty-five feet below ground-level. These last had gone unscathed through the French bombardment, but in one room were found the bodies of forty-five Germans killed by gas. I spent what remained of the afternoon looking over the very interesting arrangement of the headquarters and the excellent German construction, including a mitrailleuse turret in concrete and railroad iron. Of course, this place had been so far behind the German front lines that they had been free to make very permanent improvements, which were proving most satisfactory to the new tenants. The Germans had been especially lavish in their use of timber, which is comprehensible, as it was cut from French forests.

One of the very interesting sights is the great extent of the telephone service everywhere in the battlefield; this we were to realize more and more as we tramped over the plain in every direction and saw the miles of cables, not set up on posts, but lying on the ground, the newest type heavy enough to allow artillery to run over it without cutting it.

At dinner, the various members of the Staff came in from the inspection and office work—the dinner, like every meal I had, was most excellent, quite aside from the result of the cook's foraging in Amiens; incidently, the war bread at the front was better than that of Paris.

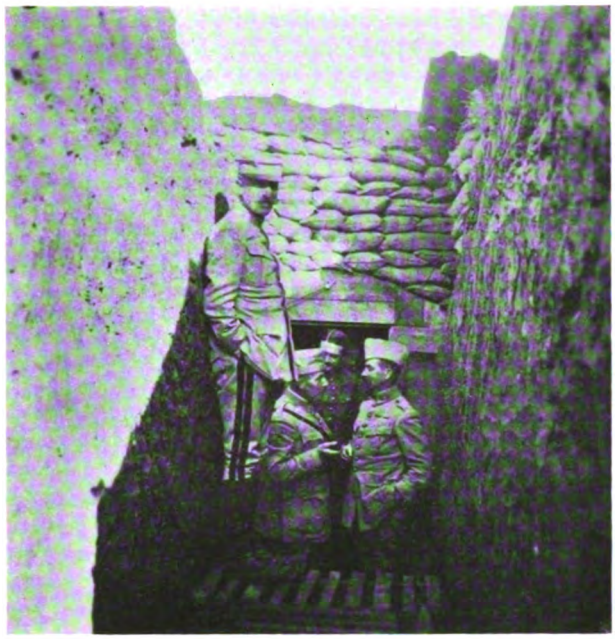
All of this time the cannonading was going on continually, especially to the north where the English lines lay. As we stepped out of our underground dining-room and started for our quarters across the plain the sight was inspiring and beautiful. Three quarters of the horizon was illuminated by the flash of shells, while, at intervals, the sky was lighted up by the flare of fusées. Part of the Staff were living temporarily a mile away across the plain and I had been assigned to them. The trip across fields, pitted with shell-holes, from two to ten or a dozen feet deep and covered everywhere with telephone wires, unexploded shells and grenades, was distinctly interesting. The Staff told with joy of the adventures of one of their number who had, according to his story, been lost on the plain two nights previously and after wandering for hours had given it up as a bad job and slept in a comfortable shell-crater.

Half-way home we crossed the great road, invisible in the dark, but very audible and filled with the continuous stream of ammunition wagons carrying shells to the artillery, for all this work is, of course, done at night. My quarters were formerly the dugout of a German surgeon, and though not very deep under ground—perhaps twelve feet—they were very comfortable and dry. I should have slept very well on my straw *paillasse* but for the absolutely uninterrupted cannonading—nothing that I had heard before bore any comparison to what went on that night; at no time could there have been more than two or three seconds of interval between the shells. The fact that the explosions came from all sides made me realize, better than anything else could, the actual physical advance made by the French and British lines in the Somme, for we were truly a point pushed forward into the enemy lines.

The shelling slowed down a little just before we started at daylight for the more advanced positions. After a hurried cup of coffee with Captain L——— we started through Herbecourt, once a village, but now in ruins. It is always better to get an early start; one has to return in broad daylight, and it is healthier to make the outward trip before the sun is up.

Shortly after leaving Herbecourt we struck one of the *boyaux* which lead toward the front and dropped into it for the remainder of the trip of about two miles, to a knoll in the west face of which lay the *poste de commandement* we planned to visit. The principal object of my trip was to consult with the officers on the subject of the things most urgently needed for the comfort and well-being of the fighting men, for my staff friends had felt that we could get our best information from the officers in direct command of the men in the line. At the *posle* in question we found Colonel L——— commanding a brigade, a soldier who, like most French officers, lives in the closest touch with his men and knows them and their wants. We discussed with him and his staff the various ways in which we could be of assistance and showed him the Boston oilskin poncho which I had brought as a sample. This appealed to him at once, for while the army has caught up with most of the needs of the men—boots, socks, and heavy underwear —the question of a waterproof protection for the man in the trench who must be out in all weathers has not yet been solved. The Colonel called in enlisted men to try the poncho and give their opinion of its practical value, and all agreed that it was the best thing they had seen. I should say, in passing, that my sample was taken from a Lafayette kit, for that wide-awake committee has recently added the poncho to its list of articles. Captain L——— took me on a mile through the *boyau* to visit an observatory, where we had a good view of the "promised land" —Péronne and Mont St.-Quentin. Then home for lunch, part of the way across country and part in the *boyau*, for the Germans were sending over occasional *obus fusants*, the type which explode in the air and rain fragments on the casual passerby. I began to appreciate the distinct advan-

General Deschamps in a Second Line Trench



General de Cugnac in Front of his Division Headquarters' Office and Dining-room

tage of my steel helmet, and when we smelt the queer, bitter-almond smell of the *obus lacrymogénes*, I was glad to feel that my gas-mask was handy.

In the afternoon I went for a walk, merely a sight-seeing tour with the Interpreter Captain who was not busy and volunteered to show me the battlefield of September 25 and what was left of Cléry. There was certainly not enough for any practical use, except in so far as brick-bats are good for road foundations. From this point we again saw Mont St.-Quentin, which Captain H——— did not at first recognize, so great was the change due to French shell-fire, since he had seen it a month before. Here again we used the *boyaux* until we found the going too bad and then, like everyone else, "took a chance." Coming home we crossed a part of the battlefield where territorial soldiers were at work, housecleaning, gathering up copper shell-cases, unexploded shells, hand-grenades, and other things. The German artillery, having, apparently, nothing better to do, though there were hundreds of French cannons needing their attention, began shelling these workers and incidently ourselves. We were quite satisfied to reach our headquarters, as each shell was a little closer than the preceding one, and 150 yards is as close as I care to be, even with a hemlet on. I did not insist on going over across the field to our quarters to wash up for dinner! When they finally let up, we learned that the only result of the shelling was one horse killed.

The next morning I again started, this time with Captain de M——— who wished to learn the condition of certain roads leading to the front trenches and the batteries which lay forward of us. We got away just as the dawn broke, my first real sensation being caused by a battery of 75's firing a salvo, as it seemed to me, from about ten feet behind me. As the sun rose, everything moving on the plain became visible to the enemy, and they at once opened up on half a dozen artillery wagons which has been delayed in getting away. Shell after shell came over, and though they spread out fanlike, it seemed as if some of them must be hit, but the German markmanship was not good enough, and to our joy, all got away safely. As we ourselves offered a pretty good mark, and as that kind of shooting still seemed more important to the enemy than trying to search out the hidden batteries, we again choose the muddy *boyau*.

Our path lay further to the south than the previous day and took us toward Barleux, still in German hands, which we saw at a distance of less than half a mile, not so badly wrecked as Cléry, but showing little but ruins. Again we talked with officers of all ranks and found all enthusiastic for ponchos. I noted the wearied look of the older men among the soldiers after a week *en premiére ligne* and realized how great was the strain and what it would mean to them if we could provide the means to keep them dry.

I was once more impressed with the affectionate relationship between the officers, from the General down, and their men. General D———, the Brigade Commander, seemed to me truly father to his men. He spoke enthusiastically of the fact that he had been able to install his headquarters within 600 yards of the front line so as to be in the closest touch with his brigade.

I was especially struck by the sight, at each *poste de commandement*, of the little local cemetery, barely fifty feet away, with its well-kept graves and their wood crosses. I regret that I could not have been at the front the following week, for I know what solemn ceremonies there were planned for All Saints Day at those little cemeteries along the battle-front, and I feel sure that with their affection and reverence for their dead comrades, the men found, even in that thankless place, the means to beautify their graves.

One of the most interesting of the interesting men I met on my trip was the Catholic Aumonier of the Division. Turned down at twenty for military service on account of heart disease, when war broke out he had insisted on being taken, and was now the picture of health and had won the Croix de Guerre and the Legion of Honor. I did not meet the Protestant Aumonier, but was told that he was an equally fine character and that he and his Catholic colleague were bosom friends and always working together; as my informant put it, "the 'Union Sacrée' certainly works here at the front."

Our tramp back led us through Flaucourt, another wreck, and becoming worse daily, for as we passed through, shells were falling at the other end, and beyond we found the Boches again busy at their favorite game of shelling territorials, totally neglecting the many French batteries

What impressed me most that day was the immense number of French batteries in that plain and their wonderful concealment. Though we crossed it twice and heard hundreds of guns firing and saw, of course, the flashes, I do not think that I actually saw more than four or five cannons. It somehow seemed as if the German gunners had given up the job of finding the hiding-places of the batteries and taken to the more congenial job of "territorial chasing."

They wasted a great many shells, but so far as we could see, did not hit a man. We kept on to our diggings, and I got my first wash in forty-eight hours. After a farewell lunch, I said good-bye to my delightful hosts, more than ever impressed with the ability and charm of the French officers and better able to realize why the French soldier has accomplished such wonders under such leaders.

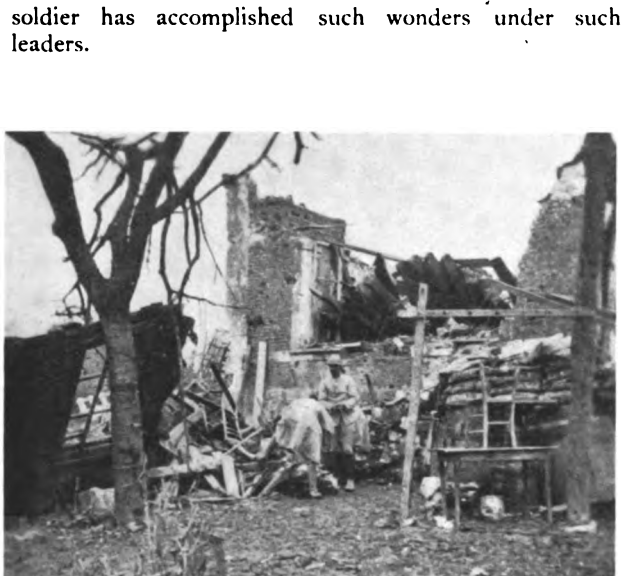
The huge amount of work being carried on at the front staggers the imagination. I had seen the Vosges front and a bit of the Verdun region, but neither of these, as I saw it, is to be compared to the Somme in its extent and its variety.

When we are told that such and such a thing should be supplied to the troops by the army and not by our Committee, my only answer is that since I have seen what must be supplied I can understand perfectly that some wants have to be left to private initiative.

Already, although it was only the end of October, a season which to us in America suggests glorious weather, on the Somme the unceasing winter rain of northern France had begun, and the struggle with mud and wet was only second to the fight against the invaders. It is only too easy for one who has seen the country to imagine what the conditions are now, and to realize what a boon the poncho would be to the man in the first-line trench who must be out in all weather without fire and without shelter.

May I therefore urge those who wish to be of real help to the fighting men of France and who would rather keep a man in good health than cure him when he is ill, to contribute liberally to the Poncho Fund of the War Relief Clearing House, 40 Wall Street, New York City, making checks payable to Thomas W. Lamont, Treasurer. They can rest assured that no other gifts will render greater service or be more thoroughly appreciated.

Since writing the above I learn that an urgent appeal for ponchos has come to the Clearing House in Paris from General Nivelle, for the Verdun troops, showing that in another quarter the poncho has been discovered and its worth appreciated.



SOLDIERS COOKING DINNER IN FLAUCOURT

MEDICAL HEADQUARTERS OF A DIVISION

Architectural Draughtsmen

IX. DANIEL URRABIETA VIERGE

IN proportion to his rank among the workers in his field, it would seem that very little has been written about Vierge. Some graceful eulogy, some passionate appreciations of his genius, with a few restricted and vague details of the artist's personality and story—this is all that we have to fall back upon for a closer acquaintance with him.

Strange—when few figures in his province have inspired such ardour of admiration, and few have so deserved it! If—as in the present case—most of those who have wished to approach him as a theme have suddenly felt tongue-tied, with a sense of how far their enthusiasm outran their powers of expression, it is easier to understand.

To Mr. Pennell, who perhaps is not so readily depressed, we owe the frankest, most spontaneous if somewhat pugnacious tributes that have been offered to this amazing draughtsman. Others may have handled their subject with more delicate, impersonal touch, with equally discriminating analysis, but surely with no truer impulse of hero-worship than inspired him who was of the first in this country to do homage to Daniel Vierge. After that early time it came to pass that the latter's name was a kind of countersign among the Illuminated in the artist-world. Many a humble student has doubtless hugged to his heart the well-founded assurance that no one who knows and prizes his Vierge is quite of the common herd.

To a quaint "professor," long since drifted from Boston's horizon back to his native Italian shores, many dwellers in that city owed their introduction to the great draughtsman. Never could one forget the reverence, the solemn exaltation, the air of giving the accolade, with which that professor placed before his pupils a copy of "Pablo de Ségovie"!

There has been but one Vierge. Evidently born to illustrate the *picaresque* romance, no one else unless Fortuny—yet scarcely Fortuny—could so render the unspeakable dash and swagger of these vivid figures of Andalusia and Castile—this marvelous panorama of students in flaunting draperies and flapping hats, of priests, hidalgoes, beggars, gitanos, swashbucklers in rags—this black-and-white necromancy that has colour; the shadows that quiver, the lights that sparkle, the shapes that live, move and have their Spanish being in the very atmosphere of Spain! A certain lightness and gayety, due no doubt to the admixture of Gallic blood with the more serious, dignified quality of the Spanish strain, are characteristic of the artist's work. With what *brio*, what joyous abandon he peoples his stage! What delightful and delicate settings, what fairy scene-painting he lavishes on it! A special vocabulary, indeed, does one need to describe it. His wizard's pen transmutes the plainest material into enchanting fabric for his own purposes. As an example, may it be permitted to quote Mr. Cortissoz, referring to Vierge's use of the

From "Pablo de Ségovie"

old Roman aqueduct at Segovia in one of his illustrations? "Who else could have introduced that cyclopean structure into a design, the picturesqueness of which is so light in hand, with such aptness and such skill?" Who, indeed, would have thought of trying it? Yet there it is, like lacework, its mammoth size just indicated, a superb background for the two spirited advancing figures. So throughout all his work; nothing is disdained, but with happy assurance, the golden touch transforms heaviness into grace, squalor into riches, grimness into beauty.

Many think of him as illustrator rather than as draughtsman in the ordinary sense. While it is plain that Vierge's dominant impulse was toward figure-drawing, his knowledge of anatomy being supreme and his use of the architectural note chiefly as background for the human element, yet his treatment of architectural features was so exquisite as to be the ideal and despair of professional draughtsmen and illustrators to this day. Although it is not true that many of them approach him, even within hailing distance, still it is always easy to recognize his disciples, and their number fully bears out the statement of his chief biographer that he "completely revolutionized the art of illustration and created a new school of illustrators, the influence of which is now felt all over the world."

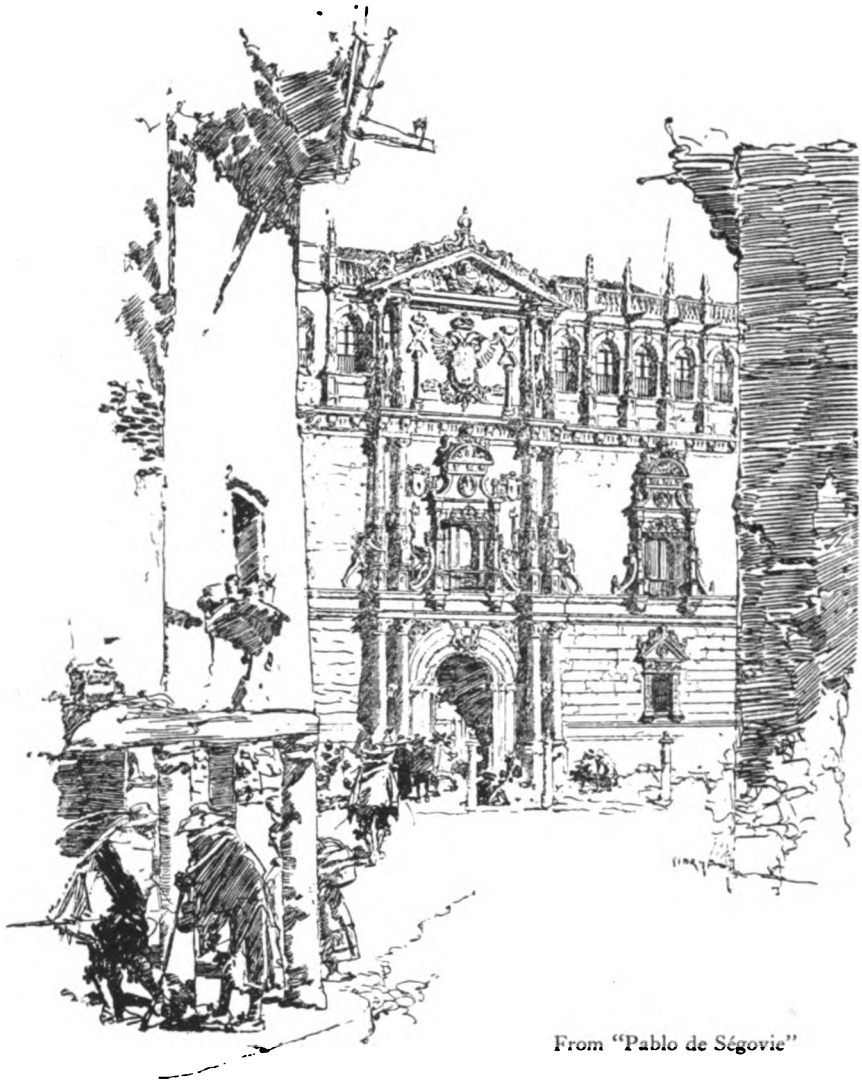
Daniel Urrabieta Vierge was born in 1851, at Madrid. One is not surprised to learn, from the modest sketch of his life prepared by him for a publisher in 1892, that his drawing was his "only amusement as a child"—beginning at the age of three. As rarely happens with infant phenomena, his talent kept up the pace, and it is more noteworthy that his first honorable mention was received at the age of fourteen, at the School of Fine Arts, Madrid. At sixteen, having won his "diplôme d'honneur," the young Urrabieta embarked on his career by illustrating the "Madrid la nuit" of Eusebio Blasco, and another work called "Les Mystères de Rome et du Globe."

His ambition then was to become a painter. With this in view he arrived at Paris, natural goal for that blended Gallic and Castilian spirit which was to give his slightest work its unmistakable stamp forever after. In Paris, nevertheless, the "Urrabieta" drops out, and from that time on—adopting his mother's name and becoming French among Frenchmen—he is known as Vierge *tout simplement.*

That year—1870—saw the outbreak of the Franco-Prussian war. Young Vierge was compelled to change his program. He was thankfully appropriated by the "*Monde Illustré*" ("*accaparé*," as himself puts it), and was with

From "Pablo de Ségovie"

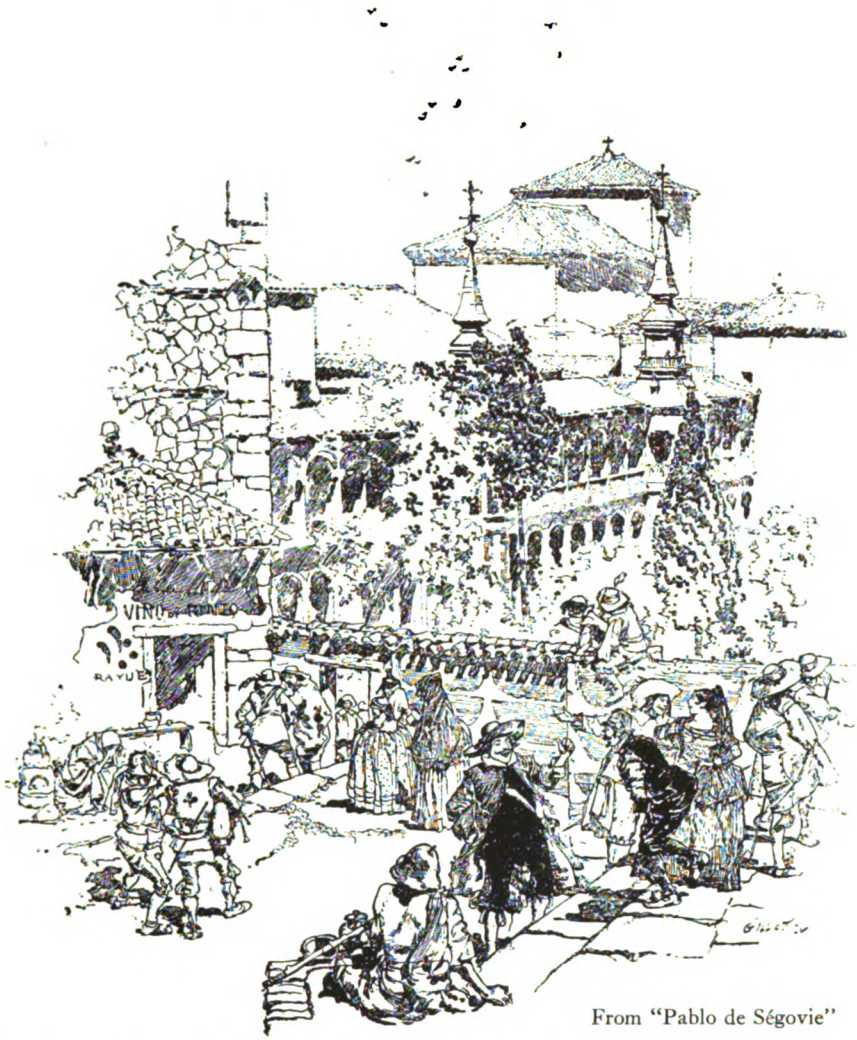
"The Carnival at Madrid, The Baton Dance," by Vierge.—From Le Monde Illustré



From "Pablo de Ségovie"

them as staff artist for years—properly valued, no doubt, as shown by the editorial text of those days.

In spite of his thwarted plans, life must have been very full and very smiling to the young Spaniard, just coming of age, with the great field of his art stretching before him; with a sense of power, and of utter revelry in that power, such as can never have been more frankly revealed in the work of any artist in any age. It is pleasant to picture him as Paris knew him in that early time—a striking apparition, with the splendid head, always picturesque, as seen in his own later sketch, tumbled of hair, fiery and deep of eye, strong of feature. There is an entertaining account of a great charity festival, in a "*Monde Illustré*" of 1879, which offers a flashing glimpse of that romantic young figure. It was a Spanish fete in the old Hippodrome, given by the Paris press for the benefit of the flood-sufferers of Murcia. The *tienda* or pavilion of the "*Monde Illustré*" appears to have been a gorgeous affair, designed and decorated in Spanish Renaissance style, "*avec une maestria et une originalité remarquables*," by M. Vierge and somebody named Scott—a fellow-artist who can hardly have had much claim to immortality unless through the association. So, "MM. Vierge et Scott," with Spanish friends, in native costumes of Galicia, Murcia, Salamanca, etc., assisted gaily in the grand parade, winding up with a "*jota gigantesque!*" The illustration of the parade by MM. Vierge and Scott was the great feature of the next "*Monde*



From "Pablo de Ségovie"

Illustré," coarsely handled in reproduction, but stamped with the undoubted hallmark of its draughtsman. Among the pictorial magazine work of that period, embryonic and rough-finished all, the art of Daniel Vierge stands out like a flame wherever found—"a cresset in a dark night!"

But his industry was not confined to the pages of magazines in these days. "At the same epoch" (to translate from his own writing) "I illustrated a quantity of books, among others 'The Toilers of the Sea,' 'The Terrible Year,' 'Our Lady of Paris,' and others written by Victor Hugo; 'Mosaic,' 'The Family Museum,' 'The Pictorial Magazine,' 'The Great Knave' of Quevedo, 'Tales' by Edgar Poe; also 'The History of France and the Revolution,' by Michelet, and a number of other works." What riches! "The Great Knave" (El Gran Tacaño) is the book—the unique book—known to us as "Pablo de Ségovie."

The first edition of "Pablo," issued in 1882, remains the choice one, not to be approached by any later ones, despite the "*lacune*" to which M. Bonhoure, its publisher, simply but feelingly refers.

For now comes the tragedy—regarding which Vierge himself is silent, with the silence of the stoic, or the philosopher whose will is stronger than fate. In place of the brilliant young being, so gay of heart and so busy of hand, there is revealed to us a dumb, stricken figure, sitting in the abyss of shadow into which it has been flung, but toiling with an immense, unconquerable patience to retrieve something from its wreck, to regain something of its lost cunning—at any rate, to make the most of such fragmentary power as remains. Again

"The Fètes of Saint Jacques de Compostelle." Drawn by Vierge, photographed on wood by Montalti, and engraved by Lepère. From Le Monde Illustré

there is no vocabulary to draw upon, to point the tragic significance of this calamity.

It was many years before Vierge emerged at length fully into the light, having schooled his left hand to hold and use the pen which its wonderful mate had let fall. His old friend the "*Monde Illustré*" again received his work, with acclamation. Little by little he settled again into harness. A new edition of "Pablo" appeared, with twenty new illustrations to supply the "*lacune*." In 1894 the series of illustrations for "Don Quixote"—262 of them!—which was to be to him his crowning work, the great compensation for his blighted years, was begun, and filled the decade left to him with "hard but happy labour," giving to the world, as a writer gracefully says, "the perfect interpretation of one Spanish master by another."

We are grateful for this final chapter in the maimed, too-short life. Yet, to most of us, "Pablo" will remain the unrivaled as it was the first great success of the young pen. The sunlight that gilds the Segovian streets is the sunlight of youth; the dash and *fougue* of the figures that people them are the essence of youth, the mysterious, precious something that flits away with the flitting of the years. And the original edition—the Bonhoure edition—enriched by these charming and daring *tours de force* in pen and ink, these delicious vignettes, even by the "*lacune*" that saddens the closing pages like a silence after merry speech, continues the chosen edition, of which we may say heartily after Mr. Pennell that "some day it will be quite as highly prized as the most precious Caxton."

Later editions, one in English, large and elaborate, are far less desirable; the drawings lack the crispness and richness of the original

plates, owing to the difference in the processes employed. And what bibliophile can tolerate an English setting for these exotic gems of blended France and Spain?

Mr. Pennell has lamented somewhat bitterly that as a mere illustrator, Vierge could not have hoped for a gallery devoted to the exposition of his work. However, in one instance at least, that honour was his, or approximately so. There was a gallery in the Fine Arts Building, at the Paris Exposition of 1889, practically given over to the display of Vierge's drawings, and a splendid and greatly admired display it was, and followed by the conferring of a gold medal upon him. A month later he was made "*Chevalier de la Légion d'Honneur*," a distinction doubtless very grateful to his simple, responsive spirit, and all the more so for the frightful ordeal through which he had passed.

From "Pablo de Ségovie"

Pleasant glimpses of him in the last years of his life have been given us by friends who visited him in his quiet home at Boulogne-sur-Seine. Always cheerful, they said, often singing, never idle, but surrounded by the implements of his beloved work; with a background of summer garden, peopled by fond members of

his family, and with the memory of his own cordial words to bestow on parting guests—what better things could his most fervent disciples have wished for him? It seems that he wished so little for himself, so pathetically little—only the power to work at that which was his happiness, and doubtless also the appreciation of "those who know."

Perhaps no comment on his life-work might have been more acceptable to him than this plain, unexcited estimate by Mr. Cortissoz: "In the sphere of pen draughtsmanship he is what Velasquez is in the sphere of painting, or Rembrandt in the sphere of etching." And perhaps no fitter word can be said; nor for us, having the legacy of Vierge's unapproachable handiwork, is any further word needed.

ANNIE L. M. KIMBALL.

Remaking Belgium

WHILE in London, two or three months ago, the chairman of the Committee on Town-Planning of the Institute found that the English town-planners and architects had gathered together in London all of the Belgian refugee architects that they could discover in England, Holland, and France. The English town-planners had undertaken this because they wanted to care for the Belgian architects during their period of expatriation, and also to help them to learn as much as they could about the modern principles of scientific town-planning. These Belgian architects are going to be the ones on whom Belgium will have to depend after the war, for the rebuilding of her cities, towns, and villages. If these architects could only enjoy the opportunity now to study the up-to-date principles of town-planning, as practised in England, they will be in a far better position to rebuild Belgium, economically and wisely.

Two-Tone Poster, 30 x 40 Inches, Drawn by Frank Brangwyn to Aid the Belgian Architects in England

Those in charge of this splendid work, headed by Ewart G. Culpin, secretary of the Garden Cities and Town Planning Association of Great Britain at 3 Gray's Inn Place, London, W. C., prevailed on Mr. Frank Brangwyn to draw for them this poster. It is in buff, brown, and black, and Mr. Brangwyn has given this to the cause, so that the price of $5, which has been set for it, is almost all net gain for the Belgian architects. The chairman of the Committee on Town-Planning of the American Institute of Architects will be glad to make arrangements for securing copies of the original for all who want them.

GEO. B. FORD

Beaux-Arts Institute of Design

Official Notification of Awards—Judgments, December 27, 1916

Class "A," Second Projet

Jury of Award.—F. A. Godley, E. V. Meeks, H. W. Corbett, G. A. Licht, F. C. Hirons, T. Hastings, H. Hornbostel, L. Warren, D. D. Ellington, H. Sedgwick, W. Emerson, H. L. Shay.

Program.—A Moving Picture Plant. *Drawings submitted, 92.*

Awards.—First Medals, G. M. D. Lewis, F. A. Chapman, P. J. Weber, L. C. Licht, University of Pennsylvania.

Second Medals, F. Bigelow, Atelier Corbett, New York City; M. L. Crandell, D. M. Bowes, R. H. McNaughton, Cornell University; R. Kilborn, Columbia University; R. W. Blaine, L. Suckert, J. R. Tanner, E. F. Giberson, University of Pennsylvania.

Class "A," Second Esquisse-Esquisse
Class "B," Second Esquisse-Esquisse

Jury of Award.—M. Flagg, 2d, W. A. Boring, W. Lamb, R. H. Dana, Jr., A. Ware, G. H. Bickley; also served for Class "A" and "B" Archæology, Second Projets and Measured Drawings.

Program.—Class "A," A Motordrome.
Class "B," A Garden Gate.

Drawings submitted.—Class "A," 35; Class "B," 51.

Awards.—Class "A," Third Medals, D. W. Carlson, J. J. Perrault, J. Hudnut, Columbia University.

Mentions, C. M. Snyder, Syracuse University; P. J. Weber, University of Pennsylvania.

Class "B," First Mentions, W. J. Richards, Carnegie Institute of Technology; C. H. Bruegger, Atelier St. Louis.

Mentions, M. A. Higgins, Catholic University, Washington, D. C.; R. A. Lockwood, P. R. Williams, Los Angeles Architectural Club.

Class "A" and "B" Archæology, Second Projet

Program.—A Chapel. *Drawings submitted, 26.*

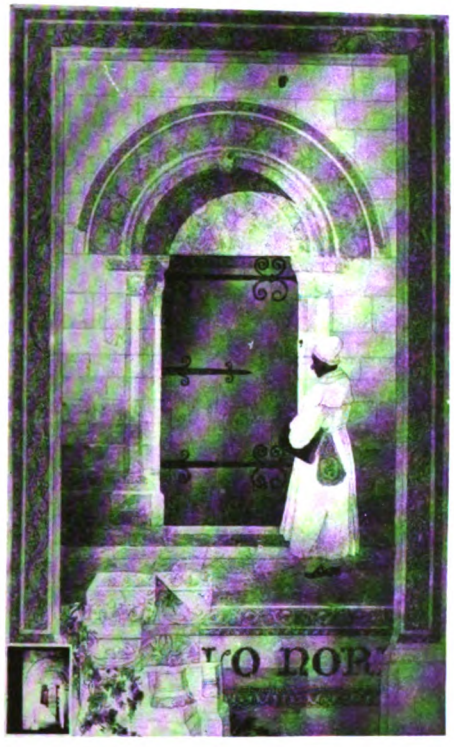
Awards.—Third Medals, H. Strazzabosco, Atelier Hirons, New York City; A. R. Brandner, Atelier Rebori, Chicago; C. H. Bruegger, Atelier St. Louis.

Class "A" and "B" Archæology, Second Measured Drawings

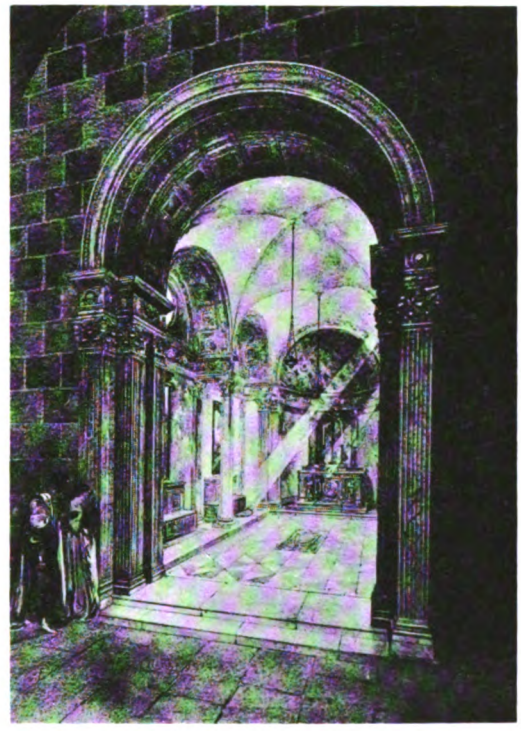
Drawings submitted, 6.

Awards.—Third Medals, C. H. Boyd, H. W. Smith, Carnegie Institute of Technology; H. J. Burke, Columbia University.

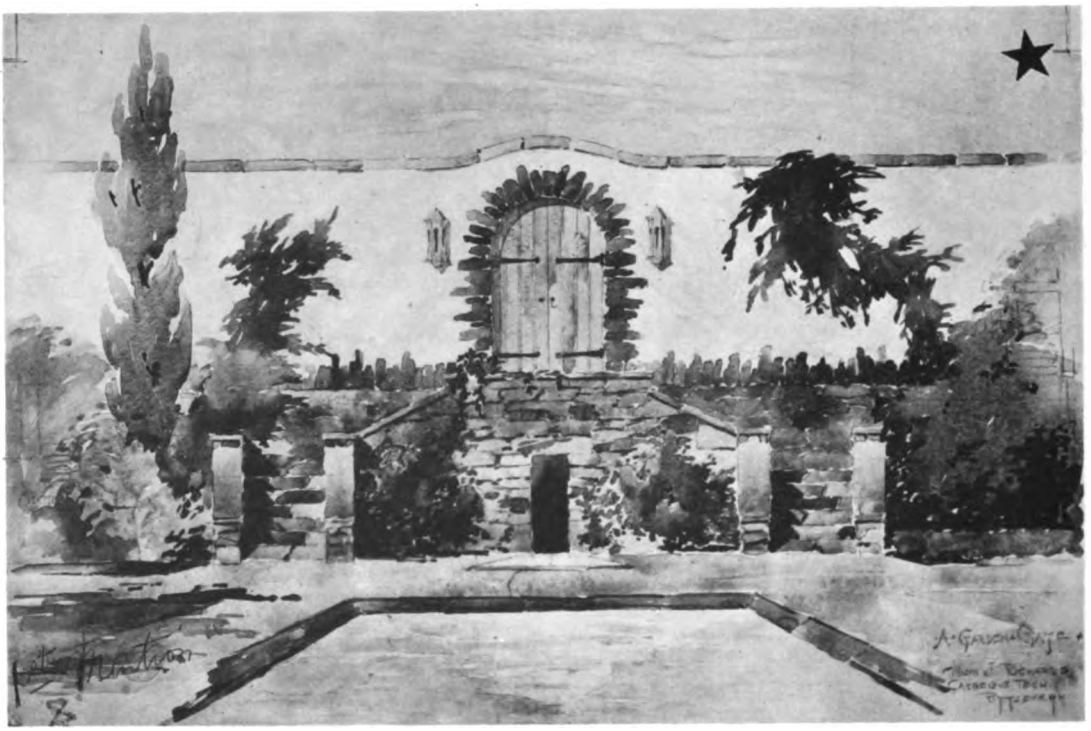
Mentions, G. L. Kaufman, C. F. Roesch, Jr., H. R. Lee, Columbia University.



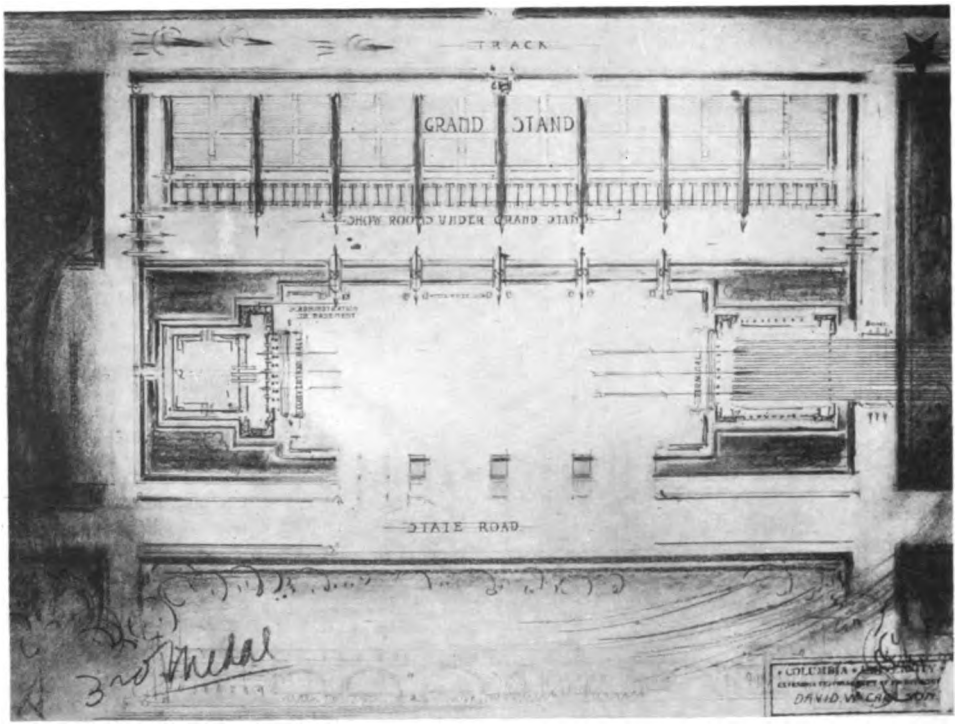
CLASS A AND B.—ARCHÆOLOGY
Third Medal, C. H. Boyd



CLASS A AND B.—ARCHÆOLOGY
Third Medal, H. Strazzabosco



CLASS B.—SECOND ESQUISSE-ESQUISSE.—A GARDEN GATE
First Mention, W. J. Richards



CLASS A.—SECOND ESQUISSE-ESQUISSE.—A MOTORDROME
Third Medal, D. W. Carlson

Institute Business

Meeting of the Board of Directors

JANUARY 18 AND 19, 1917, AT THE OCTAGON, WASHINGTON, D. C.

Present: President Mauran, First Vice-President LaFarge, Second Vice-President Willcox, Secretary Parker, Treasurer Waid, Directors Favrot, Lubschez, Sellers, Faville, Fenner, Kimball, Jensen and Brown, and the Executive Secretary.

The National Forest Reserve on the Potomac

As the Institute is to be represented at the International Forestry Conference by Mr. William M. Ellicott of the Committee on Preservation of Historic Monuments and Scenic Beauties, the following resolution, for transmission to the Conference through Mr. Ellicott, was formally adopted:

Whereas, The American Institute of Architects in Convention assembled has ratified and approved the plan to create a National Forest Reserve adjacent to the city of Washington in Prince George's County, Maryland, and extending along both banks of the Potomac River, to comprise one hundred thousand acres, more or less, for the purpose of restoring a vast forest area which, through neglect, has become unproductive and unsightly and through the practical destruction of its original forests has gradually injured the climatic condition of the national Capital; and

Whereas, The rehabilitation of this tract by the United States Government, as a demonstration of forestry and for other reasons, must have a marked influence upon the development of forest conservation in the various states of the Union and upon cities which may have similar opportunities;

Be it resolved, That the Directors of the American Institute of Architects at their regular meeting held on January 18, 1917, and through its accredited representative, Mr. William M. Ellicott, hereby respectfully and urgently call the attention of the International Forestry Conference to this most important project for the reclamation of waste lands adjacent to the national Capital and invite its active coöperation in an endeavor to influence Congress to provide for the examination, survey and purchase of such tracts as may be found to be available and desirable for the purposes named.

Remission of Initiation Fee

It was resolved that during 1917, the initiation fee be remitted to all applicants for Institute membership who were Chapter Members at the time of the 50th Convention.

Application of Unanimous Endorsement

It was resolved that the principle of unanimous endorsement shall apply only to those who were Chapter members prior to the date of the Fiftieth Convention.

Budget Limited to 1917

The change in the Convention date was considered as well as the fact that the activities of 1918 would be well under way before the next Convention occurred and new officers were elected, and it was resolved that the Budget be framed on the basis of the calendar year 1917, with the expectation that a new Budget for 1918 would be adopted in January of that year.

The Quantity System

At the December meeting it was agreed that the President should appoint a committee to follow the operation of the quantity system on a specific piece of work, with the suggestion that a country residence costing about $125,000 would be an appropriate example.

Such a residence has very kindly been offered for a study of the workings of the quantity system, and it was agreed that a special committee to follow this work be appointed by the President; an account will later appear in the Journal.

Executive Committee

The Executive Committee, to hold office until 15 days after the Convention of 1918, was appointed as follows:

Burt L. Fenner	New York
D. Everett Waid	New York
Elmer C. Jensen	Chicago
Wm. Stanley Parker, *ex-officio*	Boston
John Lawrence Mauran, *ex-officio*	St. Louis

Judiciary Committee

The Judiciary Committee was appointed, as follows:

C. Grant LaFarge, *Chairman*	New York
Charles A. Coolidge	Boston
W. R. B. Willcox	Seattle

and it was directed that the Committee be governed by the instructions contained in A. I. A. Document 110.

Bill Creating a Building Commission

Mr. Whitaker spoke of his conferences with members of Congress in respect to a bill for the creation of a commission to report on the public-building methods of the Government, and said they had agreed that the personnel of the Commission ought to include no Congressional or Departmental representative; that it should include by definite reference one engineer member, one architect member, the rest of the personnel to be clearly defined under a high standard for all members; that the commission should be designated as a temporary one; that the minimum of time should be two years after the date of appointment within which to report to Congress, and that the members of the commission should receive no salaries, but that money should be provided in the bill for necessary expenses. Mr. Whitaker submitted a draft of the bill and the Board gave approval to its general principles.

Resolutions to Mr. W. R. Irby

Mr. Favrot reported that, in accordance with the resolutions adopted at the December Board meeting, he had submitted, on behalf of the Institute, an expression of its appreciation to Mr. W. R. Irby, of New Orleans, for his presentation to the Tulane Educational Fund of the old French Opera House.

The New Portrait of Past-President Post

The President reported that a portrait of Mr. George B. Post had been repainted by Mr. Blashfield and sent to the Octagon to replace the portrait now there.

It was resolved that the Board express its thanks to Mr. William S. Post and to Mr. E. H. Blashfield for their generous action in replacing the old portrait with a new one.

Portrait of Past-President Pond

The President read a letter from Mr. Irving K. Pond, transmitting Mr. Clarkson's portrait of Mr. Pond, which is to become the property of the Institute under certain conditions incorporated in a formal letter.

It was resolved that the Board express its deep appreciation to Mr. Clarkson and Mr. Pond for this admirable portrait, and that steps be taken to place the conditions of gift on the back of the portrait in such manner as will insure their observance in the future.

Committee on Chapters

The personnel of the Committee on Chapters is the same as in 1916, the Committee having been continued by the Convention, with the addition of Mr. J. A. Miller to represent the Alabama Chapter.

Revised Constitution and By-Laws.

The general instructions to the Committee were that it be charged with the preparation of uniform Chapter Constitution and By-Laws, which, if possible, should be submitted in draft form to the next meeting of the Executive Committee.

It was agreed that the Secretary should advise all Chapters of the Committee's work on these documents, suggesting that they delay all action until the standard forms are ready.

The Secretary presented, in type, the draft of a new edition of the Constitution and By-Laws as amended at the Fiftieth Convention. This was based on the drafts approved at the Convention and received from Mr. Perkins, Chairman of the Committee on Chapters, with minor corrections.

Full consideration was given to the documents for matters of substance, and it was resolved that the new documents be issued to all Institute members, after approval by the Secretary and Mr. Perkins.

Standard Form of Application for Associateship.

The Secretary submitted proof of a standard form of application for Associateship based on the amendments to the Constitution and By-Laws made at the Fiftieth Convention.

The accompanying suggestions from Mr. Perkins were carefully considered and it was resolved that the amendments as to form and substance recommended by Mr. Perkins be accepted in general, and the document be referred to the Secretary and Mr. Perkins for final approval and issuance to the Chapters at the earliest practicable date.

Form of Application for Institute Membership.

The Secretary presented an amended form of application for Institute membership corrected to agree with the Constitution and By-Laws as amended at the Fiftieth Convention. A letter of January 16 from Mr. Perkins was read, and the form of application was left to the Secretary and Mr. Perkins for final approval and issuance.

Mr. Parker said that in transmitting the two new application forms he hoped to send a letter to Chapter secretaries explaining the principal changes which have been made, and also outlining the method of unanimous endorsement prescribed at the December Board meeting, as there seems to be some misconception on this point.

Convention of 1918

The President called attention to the fact that the Fiftieth Convention had left with the incoming Board of Directors the power to determine the time and place for the 1918 Convention, and at the same time had fixed the terms of office of all officers and committees for 1917, to be continued until fifteen days after the adjournment of the Fifty-first Convention.

It was resolved that the next Convention be held in April, 1918, in the city of Washington.

Counsel Appointed

Mr. Louis B. Runk, of Philadelphia, was appointed Counsel for the Board of Directors for the year 1917 and until fifteen days after the Convention of 1918.

Recorder at Convention

The President spoke of the admirable work done by Mr. Levi at the Convention and it was agreed that his name should appear in the Annuary as Convention Recorder, and that hereafter the President appoint a Convention Recorder to perform the duties so ably carried out by Mr. Levi at the Fiftieth Convention.

Expression of Appreciation to Mr. Lacey

The Board accepted with regret the resignation of Mr. Edward A. Lacey, who has served the Institute both loyally and well in many capacities during the last eighteen years, and it was resolved that, for this continued service, rendered without stint and in a whole-hearted manner, the Board of Directors hereby expresses its full recognition and sincere appreciation, and extends to Mr. Lacey the very best wishes of the Board and the Institute for the fullest measure of good health and happiness in his voluntary retirement from active work.

Assignment of Chapters to Board Members

The President referred to the custom initiated in 1916 of assigning the Chapters on a geographical basis to various members of the Board, for the purpose of establishing an informal relationship for mutual help and counsel between Directors and the Chapters.

The assignments established in 1916 were continued with the following re-assignments to new Members of the Board:

To Mr. Faville.—The San Francisco and the Southern California Chapters.

To Mr. Fenner.—The Philadelphia, Cincinnati, Virginia, Baltimore, and the Washington, D. C., Chapters.

Conference of Smaller Chapters at Convention

The President read a letter of January 5 from Mr. Robert D. Kohn in which he suggested that there is some dissatisfaction entertained by delegates who come to the

Convention from the smaller Chapters because they do not have an opportunity, under the usual program, to exchange ideas and discuss mutual problems.

It was suggested that a special session of the Convention be devoted to these purposes, and that the subject be brought up for consideration prior to the next Convention.

Method of Handling Public Work in Various States

As suggested at the December meeting, Mr. Favrot presented a most complete report under date of December 1, 1916, which summarized his investigation through extensive correspondence of the present method of dealing with public work in the various states.

His suggestion was that the Institute should make its recommendations of a general nature which could be made available to states or municipalities engaging in solving this important problem.

Mr. Favrot was appointed chairman of a committee to act on this report, the committee to be appointed by the President on the recommendation of Mr. Favrot.

Amendments to the Schedule of Charges

The Fiftieth Convention authorized the Board of Directors to change the language of the Schedule of Charges to the end that, without amending its fundamental principles, its meaning may be made more clear. Tentative amendments were previously considered by the Executive Committee at the October meeting and made available to the Committee on Contracts and Specifications. Since the Convention Mr. Day had prepared an amended Schedule which was submitted and discussed.

The draft was left with the President, Secretary, and Mr. Day for final approval and issuance.

The Minnesota Chapter Plan for Small Competitions

Mr. Brown presented some suggestions from a special Competition Committee of the Minnesota Chapter on a Subsidiary Circular of Advice applying to small problems of a local nature.

He said the Chapter desired to have the opinion of the Board on the idea, and believed that if it were found of value to other Chapters, the Committee on Competitions might issue a subsidiary document of this kind.

It was resolved that the Circular be referred to the Committee on Competitions with a statement that it meets with the general approval of the Board which would be glad to have the comment of the Committee on Competitions before taking further action.

Definition of Advertising

It was resolved that Mr. Kimball and Mr. John Galen Howard be appointed as a special committee to report to the Board upon a definition of "advertising" with recommendations as to the attitude the Institute should take.

Committees for 1917

Due to the delays in acceptance of appointment, the full list of committees will be published in the March number of the Journal.

News Notes

The Proposed Abandonment of the Group Plan for the Washington State Capitol Buildings

Some years ago the State Capitol Commission (Washington state) instituted a competition for a group plan, in response to which thirty-one firms of architects submitted plans. The architect was selected, the group plans adopted, and a Temple of Justice constructed, as far as possible with the funds then in hand. Recently, we are informed that the present State Capitol Commission proposes to abandon the group plan and to proceed along new lines. The Washington State Chapter have protested vigorously at this seemingly unwarranted action, and have very properly urged that if a capitol building is to be constructed, it should be in accordance with the original group plan, and the architect selected only after a competition which will insure a result commensurate with so great an undertaking.

Evidently the nation's capital is not the only place where architectural bungling makes for a conglomerate of political tinkering.

New York State Association Meeting

On February 15, the New York State Association will hold a meeting at Syracuse, under the auspices of the Central New York Chapter. All architects in northern New York state, whether members of the Institute or of a Chapter, or unaffiliated with either, will be asked to attend this meeting and participate in the discussion of architectural problems affecting practice in the state of New York.

Obituary

Henry J. Meier

Elected to the Institute as a Fellow in 1889
Died at Detroit, Michigan, January 25, 1917

Mr. Meier's death occurred after a brief illness, and perhaps no better record of his life is possible than the simple one which was written for us by Mr. John M. Donaldson, his partner of thirty-seven years:

"His high ideals and fine character were an inspiration to all who knew him and his distinguished ability and integrity were a never-failing source of strength and assurance to those with whom he labored and to those whom he served.

"In his death the profession of architecture and the city of Detroit have lost an architect of real accomplishment, ability and distinction, and a man of the finest ideals and character.

"In the varied relations of a long and active life he measured up squarely to the best standards of true manhood.

"With vision, courage, honesty, tenderness and constancy he met serenely life's trials and the end of this mortal life."

Structural Service Department

D. KNICKERBACKER BOYD, *Associate Editor*

In connection with professional societies and organized bodies working toward the improvement of building materials and methods, and the following Committee of the Institute:

CONTRACTS AND SPECIFICATIONS, BASIC BUILDING CODE, AND FIRE-PREVENTION,
of which the personnel for 1917 will appear next month

MATERIALS AND METHODS

THOMAS NOLAN, *Chairman* . . . . University of Pennsylvania
(Each Chapter has a corresponding member who is chairman of the Chapter Subcommittee)

SPECIAL SERVICE

Only a limited number of references in each industry can be given and a part of the service of this Department will be to furnish any inquirers with additional sources of information, titles of other publications, names of authors and publishers, cost of volumes, and to provide any other information possible for which purpose address The Journal of the American Institute of Architects, The Octagon, Washington, D. C. Where special clerical services are involved a small fee may be charged to cover actual costs, in which case the amount will first be stated to the inquirer.

NOTE: For any additions, in subsequent numbers, to material appearing in earlier numbers, look always at heading of the Department for serial numbers preceding the current contents, and remember that the main serial number corresponds to the number of the month in the year.

The necessity for providing a historical background requires the publication of such material during the current year only, as a part of the whole idea of the permanent reference and record value of the work.

SOME EXHIBITIONS, CONVENTIONS AND MEETINGS

February 4 to March 10, 1917

February 4–24.—The Architectural League of New York, 215 West 57th St. Thirty-second Annual Exhibition of Architecture, Painting and Sculpture. This year includes Building Materials.

February 6–7.—National Lime Manufacturers' Association, Hotel Astor, New York. Annual meeting.

February 7–15.—Tenth Chicago Cement Show, Coliseum and Annex, Chicago, Ill.

February 8–9.—American Concrete Institute, La Salle Hotel, Chicago, Ill. Thirteenth Annual Convention.

February 8–10.—American Association of Engineers, Hotel La Salle, Chicago, Ill. Annual meeting.

February 12–13.—National Builders' Supply Association, Hotel Sherman, Chicago, Ill. Annual meeting.

February 12–14.—American Concrete Pipe Association Auditorium Hotel, Chicago, Ill. Annual meeting.

February 13–15. National Association of Builders' Exchanges, Piedmont Hotel, Atlanta, Ga. Sixth Annual Convention.

March 4–11.—National Brick Manufacturers' Association. Hotel McAlpin, New York City. Annual meeting.

March 5–11.—National Complete Building Exposition, Grand Central Palace, New York City.

March 6–10.—Twelfth Annual Mid-West Cement Show, Auditorium, Omaha, Neb.

March 7–10.—Mid-West Cement Users' Association, Hotel Rome, Omaha, Neb. Twelfth annual meeting.

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(For General Index see page 88)

2A1 United States Geological Survey; Department of the Interior

Created by act of Congress, March 3, 1879; organized July 1, 1879

Director: George Otis Smith, 1330 F Street, Washington, D. C.

Publications:

(*a*) Annual Report of the Director.
"Mineral Resources of the U. S.," in two parts.
(*b*) Part 1, "Metals."
(*c*) Part 2, "Non-Metals."
(*d*) Chapters of same, as separate pamphlets for earlier distribution.
(*e*) Monographs.
(*f*) Professional papers.
(*g*) Bulletins.
(*h*) Water-supply papers.
(*j*) Topographic Atlas of the U. S., folios and separate sheets.
(*k*) Geologic Atlas of the U. S., folios.
(*l*) Chapters of certain of classes *f* and *g* separately issued for early distribution.
(Of these publications those of especial interest to all persons concerned with structural materials are listed separately under the respective industries concerned.

Publications of the classes lettered *e*, *j*, and *k*, are sold at cost; the others (unless prices are affixed in the lists given) are distributed free as long as the stock lasts. It is impossible for the Survey to comply with general demands for the publications which are distributed free, such as to have all of any series sent, but requests for a certain paper are granted whenever practicable. No person can obtain more than one copy of any publication. Many of the publications of the Survey are out of print, but these can usually be obtained by purchasing from the Superintendent of Documents, Government Printing Office, Washington, D. C., or can be consulted at public libraries or purchased from dealers in second-hand books in any large city.

For publications to which prices are affixed in the lists given under the various industries prepayment is required, and should be made in cash (exact amount) or by postal or express money order (not postage stamps) payable to the Director of the United States Geological Survey, or to the Superintendent of Documents if the Survey's stock is exhausted.

Descriptive circulars and indexes in regard to topographic atlas sheets and monthly notices announcing the issue of new publications will be sent to those who request them.

Complete catalogue of all publications of the Survey obtainable without charge upon application to Director of Geological Survey, Washington, D. C.

Contributions of the United States Geological Survey to Architects

(Written for the Journal)

By ERNEST F. BURCHARD
Geologist in Charge, Section of Non-metallic Resources

A broad, comprehensive study of the non-metallic structural materials resources of the United States is being made by the U. S. Geological Survey in coöperation with the Bureau of Standards and Bureau of Mines. The Survey studies in the field and office, the occurrence, character, and distribution of the materials, classifies them according to their source, petrographic character, geologic origin and age, commercial uses and suitability for special purposes, and summarizes annually the commercial output and value of all these materials.

The Bureau of Standards tests in the laboratory the physical properties of the materials and makes comparative studies of their durability through observations of materials in use under various conditions. The Bureau of Mines studies in the field the technology of production and preparation for the market of the various materials, paying particular attention to the principles of safety, efficiency, and prevention of waste. Both the Bureau of Mines and the Survey collect materials for test by the Bureau of Standards, taking care not to duplicate work.

This coöperative study is necessarily a large undertaking—one which can be pushed ahead only so fast as men and funds are available for it; but, although it has been in progress only a few years, a good start has been made, and each of the three bureaus is contributing its share toward the fulfilment of the plan and has issued several reports dealing with subjects in its special field.

The forerunner of this coöperative work was a general field and laboratory investigation carried on by the Survey for several years prior to July, 1910, primarily for the information of the Supervising Architect with regard to structural materials available for the construction of projected federal buildings throughout the United States, but also designed to add to the Survey records data concerning materials of promise in any region under survey. The reports to the Supervising Architect were brief—generally about five typewritten pages. They were sent directly from the field without awaiting publication by the Survey. The work was carried on by geologists especially interested in the subject, and in order that there should be uniformity in the reports they were prepared mostly according to the following outline, which indicates the range of non-metallic materials studied by the Survey then, as well as now:

Structural Materials investigated for use in Federal Buildings:

I. Stone:
  A. Dimension stone for exterior.
    a. Foundations.
    b. Walls.
    c. Sills and trim.
  B. Ornamental stone for interior (marble, serpentine, onyx, etc.)
  C. Slate for roofing, sanitary fixtures, etc.
II. Material for concrete:
  A. Sand.
  B. Gravel.
  C. Crushed stone, slag, cinders, shells, etc.
  D. Cement (Portland, natural, hydraulic, etc)
III. Clay products:
  A. Brick:
    a. Common.
    b. Front (pressed, rough, fire-faced, etc.)
  B. Tile:
    a. Roofing.
    b. Hollow building-tile or block.
    c. Ornamental.
IV. Materials for mortars and plasters:
  A. Lime:
    a. Quick.
    b. Hydrated.
  B. Gypsum wall-plasters.
  C. Sand.

Necessarily the work was done very rapidly, and the reports were written not for the use of geologists, but rather for that of persons who may not have had training in geology, care being taken that only data of practical character should be given. The points of special interest to the geologist, however, such as the nature, extent, quality (as to uniformity, durability, and color), location (as to means of handling and transportation), structure, and geologic relation in general, that affected the

use of materials, were borne in mind throughout the series of reports.

In these field studies the endeavor was to relieve the laboratory of all the work possible and to give the Supervising Architect a definite opinion as to the value and availability of a material, backed up by a detailed description of it and the results of a simple field-test. In addition, use was made of any authentic test data in possession of the producer or contained in state or federal geological survey reports. The common points considered with regard to stone, gravel, clay, gypsum, etc., were noted on special forms in loose-leaf books. Many special details had to be considered with regard to the various materials, and for brick and other clay products notes of a special form were kept regarding the processes of manufacture. Sands were subjected to qualitative tests for the presence of lime, alkali, clay, magnetite, quicksand, and silt. Granular metric analyses were made and the material was critically examined under the field-lens.

A knowledge of the Supervising Architect's general specifications was requisite, and after a little practice the geologist was able to tell in most cases, after a careful investigation, whether a sand, gravel, stone, or brick would fulfil these specifications or no.

The direct advantages of these reports to the Supervising Architect or to federal construction work in general may be summarized as follows:

1. Attention was called to materials of merit which, owing to their proximity to the building-site, should be obtainable at lower prices than similar materials from long distances.
2. Attention was called to little-developed and hitherto comparatively unknown materials that may possess special merit for certain kinds of work.
3. Warning was issued against the use of materials that are not suitable yet that are commonly used in certain localities.
4. Warning issued against the acceptance of materials from deposits which may be of good quality but of insufficient quantity.
5. Warning was issued against the acceptance of materials from deposits which may afford excellent material in small samples, but whose quality in adequate quantities is irregular and inferior.
6. Data regarding local costs and freight rates were given on small and large lots of all materials shipped into the locality, such as cement, stone, sand, wall-plasters, etc., thus affording aid toward preparing specifications for buildings.
7. Some attention was paid to the proposed federal building-sites, with reference to character and condition of the ground on which foundations would rest and with reference to smoke conditions.

In addition to the results of this work as related to the Government, its relation to the country at large may be mentioned. When little-known but meritorious materials were thus brought to the attention of the Supervising Architect, and incidentally to that of the public by use in federal buildings and by published reports, the efficient use of important natural resources was encouraged. In many instances materials that would probably otherwise have been passed unnoticed were brought to the attention of the Supervising Architect. Many such instances might be noted, but the following are fair samples showing the range of such materials covered.

1. Large and sound glacial boulders of both crystalline and sedimentary rocks that occur in great abundance in the vicinity of Minot, N. D., a region otherwise devoid of stone. These boulders can be split and trimmed into handsome, massive dimension stones.
2. The "chats" or tailings from the concentrating mills in the Platteville, Wis., and Joplin, Mo., zinc districts, and from the copper smelter at Great Falls, Mont., etc. These "chats" make a good aggregate for both plain and reinforced concrete work, and the tailings from the Great Falls smelter make good sand for mortar and brick.
3. Sandstone used locally at Big Stone Gap, Va.
4. Oölitic limestone at Bowling Green, Ky.
5. Subcrystalline limestone at Batesville, Ark., Frankfort, Ky., and Harriman, Tenn.
6. Shale near Mansfield, Ohio, suitable for brick-making.
7. Loam at various points in the Mississippi embayment in Arkansas, Mississippi, and Tennessee, suitable for the manufacture of brick.
8. Sand and gravel from points on Arkansas River in Kansas and Oklahoma very similar in quality to the well-known Kaw River sand.

Besides the work outlined above, there have been carried on at times at the laboratories of the Survey and the Bureau of Standards in Pittsburgh and Washington special investigations of such subjects as the manufacture and the hydration of lime and studies of Portland and Keene's cements and wall-plasters, tending toward the formulation of standard specifications for these materials in Government construction work. Here again the services of field geologists have been required and the geologic records of the Survey incidentally enriched. In areal field-work geologists frequently visit places containing developed and undeveloped deposts of limestone, sandstone, granite, slate, Portland cement and concrete materials, and gypsum, and the many special papers are either direct or incidental results of such work.

Papers published by the Geological Survey on structural materials available in parts of Oregon and Washington, at Minneapolis, Minn., at Austin, Tex., on the fire-resistive properties of various building materials, and on the effects of the San Francisco earthquake and fire on structures and structural materials, are examples of the results of the type of studies outlined above.

The annual volume entitled "Mineral Resources of the United States" furnishes architects and others with reliable and up-to-date information concerning many of the various materials which enter into construction. Each year statistics are compiled concerning over sixty subjects, giving the production, exports, imports, and value—information of vital interest to all who are dealing with both metallic and non-metallic mineral products. This information for each year is given as soon after the close of the year as possible, but of late years a provisional estimate has been made and published by the first of the year following the year for which the statistics are given and still more lately statistics on many of the important resources have been published semi-annually.

One very important phase of Survey work on structural materials remains to be mentioned. Special investigations have been made, or are in progress, in which certain geologists spend the whole or a large part of their time at certain periods studying a single subject in a district, a state, or throughout the United States. These special investigations have resulted in the publication of papers or bulletins on such subjects as the brownstones of Pennsylvania, the Bedford oölitic limestone of Indiana, the Portland cement materials of the United States, the gypsum deposits of the United States, the stone resources of the United States (illustrated by maps showing the locations of quarries by classes of stone), the granites

of Maine, the granites of the southeastern states, the marbles of western Vermont, the marbles of southeastern Alaska, building-stones of Minnesota, glass-sand in the Mississippi Basin, the clays of the United States east of the Mississippi River, and slate in the United States.

The profession of the architect requires special knowledge in so many diverse branches that it is not surprising that heretofore comparatively few have had the time or the inclination to inquire into the source and nature of the raw materials that enter into construction work. That there is an increasing interest in these subjects is, however, evident through the correspondence being received by the federal Geological Survey, especially from teachers of architecture and from architects who are seeking materials suitable for special purposes, for certain localities and climates, or in order to carry out definite color-schemes. To all such inquiries the Survey is endeavoring to respond to the best of its ability and to place at the disposal of architects and builders the results of its experience and its knowledge of the structural materials, resources of the United States, not only in the non-metallic materials, but in the metals, such as iron and steel, manganese, copper, lead, and zinc. The further use of the resources and services of the Survey is cordially invited and suggestions as to how this service and coöperation may be improved and extended will be welcomed.

2A2 State Geologists

Publications:

(*a*) Bulletins, reports and circulars are issued on behalf of many of the states, forty-seven of which recognize geologic work as a necessary and proper governmental function. These publications are generally furnished upon request.

The coöperation existing between state and federal geological surveys is both intimate and extensive in the conduct of topographic surveys, stream-gaging, and geologic investigations, as well as in the collection of mineral statistics.

In part the federal survey acts as the disburser of state funds in this technical work, in part the state official acts as the representative of the larger organization in local work, and again the national survey investigates some large interstate problem in behalf of adjoining states. Each of these coöperative methods is effective and prevents duplication of effort, accomplishes standardization of results, and promotes the coördination that secures the general results for the national bureau and the more local benefits for the state organization.

2A3 Bureau of Mines, Department of the Interior, U. S. A.

Created by Act of Congress, May 16, 1910. Organized July 1, 1910.

Director: Van. H. Manning, 710 E St., Washington, D. C.

Publications:

(*a*) Annual Report of the Director; (*b*) Bulletins; (*c*) Technical Papers; (*d*) Miners' circulars.

A limited number of those current, one only to each person, is free upon application to the Director.

NOTE: Publications of especial interest to architects and constructors will be referred to under the respective activities. For complete list of publications apply to the Director.

The great importance of the mine-safety and fuel investigations undertaken by the Geological Survey, and the widespread demand for a separate bureau to pursue these and other mining inquiries resulted in Congress passing an act, effective July 1, 1910, which established the Bureau of Mines, at the same time that the Structural Materials Laboratories of the Geological Survey the Engineer in charge of which was Richard L. Humphrey, were transferred to the Bureau of Standards.

While the Bureau's activities are confined to questions of safety and efficiency in the mining and utilization of the great variety of mineral products, there are necessarily places here and there where its work bears more or less directly upon subjects of architectural interest. These will be referred to in conection with the respective industries.

2A4 Society of Constructors of Federal Buildings

Secretary: Frederick A. Hills, New Post Office, Rumford, Maine.

Publications:

(*a*) Journal, devoted to professional papers and discussions, cost data, changes of addresses of members and contract news relative to United States public buildings.

Purpose:

Is a voluntary organization of the technical personnel of the Office of the Supervising Architect, Treasury Department, but has no official connection with the Department.

2A5 Building Data League, Inc.

President: Sullivan W. Jones, 15 West 38th St., New York, N. Y. *Secretary:* F. A. Burdett, 15 West 38th St., New York, N. Y.

An Association, the membership of which embraces persons acting in either a professional or contractual capacity as agents of the consumer in the field of building construction.

Annual dues are $10, and the service consists of reports on research work, reports on investigations of products, and the preparation and publication of standard specifications for distribution to members.

Publications:

(*a*) "Standard Specifications" embodying general information in establishing standards for measuring the comparative worth of competing products in the given classes.
(*b*) "Findings" on registered products.
(*c*) Reports on non-registered products.
(*d*) Bulletin, issued to members at intervals.

The "Findings" and reports are based upon the standards established by the specifications.

2B Lime and Hydrated Lime

The subjects under this heading will be treated herein with respect to their uses in foundational work, masonry, and in mortars generally—but not specifically in connection with "plastering," to which reference will be fully made in a later Serial Number.

2B1 *Lime*

The lime manufactured and sold in the United States in 1915 amounted to 3,589,699 short tons, valued at $14,336,756.

The quantity produced for building purposes according to the figures given in "Lime in 1915," issued by the U. S. Geological Survey (2A1*d*), on the basis of about one third of the total, was 1,163,433 short tons, valued at $5,068,375, or an average price per ton of $4.36 received by the producers. In this amount was included 581,114 tons of hydrated lime.

2B2 *National Lime Manufacturers' Association*

President: W. E. Carson, Riverton, Va.
(Information concerning same difficult to obtain.)

2B3 *Information Obtainable (Lime)*

Publications:

(*a*) The source, manufacture and use of lime, "Mineral Resources of the United States for 1913, pt. 2, pp. 1509–1593, 1914, E. F. Burchard and W. E. Emley.
(*b*) See also chapters on lime in "Mineral Resources of the United States" for each year (2A1*c* and *d*).
(*c*) The U. S. Geological Survey has also issued a large number of bulletins and separate chapters (2A1*d* and *g*) dealing with lime, and other structural materials to be found in various parts of the country. Specific information will be furnished through the Journal or the publications may be had upon application to the Director as noted under 2A1.
(*d*) Proceedings and other publications of the National Lime Manufacturers' Association (2B2).
(*e*) Bureau of Standards, Technologic Paper (1A2*c*) "The Manufacture of Lime."
(*f*) Ditto, "The Properties and Uses of Lime."
(*g*) "Treatise on Limes, Hydraulic Cements and Mortars," Gen. Q. O. Gilmore.
(*h*) "American Civil Engineers' Pocket-Book," M. Merriman; "Lime and Lime Mortar," pp. 518–520.
(*j*) "Cements, Limes and Plasters," E. C. Eckel.
(*k*) "Building Construction and Superintendence," F. E. Kidder; "Limes, Cements and Mortars," pp. 126–204.
(*l*) Other information pertaining to lime, generally in connection with its use in mortars for masonry, will be found in most of the publications mentioned under "2C4. Other References."

2B4 *Hydrated Lime*

The hydrated lime sold in the United States continues steadily to increase, the amount produced in 1915 being stated under "Lime."

The average price per ton, though fluctuating, has on the whole been declining since 1911, when it was $4.50. These changes may suggest that the production of hydrated lime has reached such proportions that its future growth will be at a slower rate than formerly, but as the quantity sold by producers in 1915 amounted to only 16 per cent of the total lime sold, there is ample room for future growth, especially in view of the marked attention now being given to this kind of lime. The superiority of hydrated lime over lump lime for building is receiving broader recognition, due in part to the activity of the Hydrated Lime Bureau, a branch of the National Lime Manufacturers' Association.

An elaborate series of experiments on the properties and uses of hydrated lime, including its effect upon concrete, has been commenced by the United States Bureau of Standards (see "Current Activities"). In addition to these developments, improvements have been made in lime hydrators and in the design of lime-hydrating plants, and a process for increasing the plasticity or spreading quality of hydrated lime by the addition of a limited quantity of clay during hydration has been patented by W. E. Carson (From "Lime in 1915," 2A1*d*).

2B5 *Hydrated Lime Bureau of the National Lime Manufacturers' Association*

Manager: Norman S. Hough, Arrott Building, Pittsburgh, Pa.

The object of the Bureau is to furnish a central office from which architects, engineers and contractors may receive reliable information relative to the use of hydrated lime for building purposes.

Publications:

Books, bulletins and pamphlets, some of which are referred to under 2B6 and 2B8.

2B6 *Information Obtainable (Hydrated Lime)*

Publications:

(*a*) See also Chapters on lime in "Mineral Resources of the U. S." for each year (2A1*c* and *d*).
(*b*) "Hydrated Lime," by E. W. Lazell, 95 pp. Published by Jackson-Remlinger Printing Co., Pittsburgh, Pa., 1915; distributed by the Hydrated Lime Bureau, Pittsburgh, Pa. (A general elementary text on the history, chemistry, manufacture, properties, and uses of hydrated lime.)
(*c*) "Hydrated Lime," by W. B. Joseph, Cement and Engineering News, February, 1915, pp. 45–46. (A brief account of the processes of manufacture and properties of hydrated lime.)
(*d*) "Effect of Adding Hydrated Lime" (to Portland cement), Cement and Engineering News, March, 1915, p. 76. (Cities experiments by Henry S. Spackman, who concluded "that the addition of hydrated lime will be found advantageous under ordinary climatic conditions in concrete work generally, where it is exposed either to air or to fresh water; and concrete to which such additions have been made, besides being more impermeable, will show less change in volume under varying moisture content.")
(*e*) Papers read at the thirteenth annual meeting of the National Lime Manufacturers' Association and published in the minutes of the meeting, February, 1915: "Hydrated Lime Plastering—the Fourth Year's Development," by Lawrence Hitchcock; "The Possibilities of Hydrated Lime Products for Plastering Purposes," by H. S. Spackman; "Hydrated Lime in Oregon State Roads," by R. S. Edwards; "Hydrate as an Addition to Concrete," by E. M. Soper; "A Modern Hydrating Plant," by R. K. Meade.
(*f*) "Advantages in Use of Commercially Hydrated Lime over Ordinary Slaked Lime," by E. W. Lazell, Cement and Engineering News, June, 1915, pp. 125–126.
(*g*) "Perfecting Concrete Roads—the Part That Hydrated Lime Plays in Assuring Absolute Permanency to Concrete," by Charles Warner, Cement and Engineering News, September, 1915, pp. 198–200.
(*h*) Papers read at the fourteenth annual meeting of the National Lime Manufacturers' Association, Cleveland, Ohio, February, 1916 (published in the minutes of the meeting).

The following are some of the pamphlets and bulletins published by the Hydrated Lime Bureau. (Those referring to "wall plastering" will be mentioned under a later Serial number.)

(*j*) "Tests and Uses of Hydrated Lime," A. C. Hoff. A reprint from the Current Era of February, 1915.
(*k*) "Dependable Concrete—Hydrated Lime and its Effect on," Bulletin A.2.
(*l*) "In the Concrete Chute," Bulletin A. 3.
(*m*) "Improving Paving Grout," Bulletin L.

(*n*) "Improved Cement Blocks," Bulletin M.
(*o*) "Concrete Gas Tank Waterproofed with Hydrated Lime," Pamphlet D.
(*p*) Waterproofing Concrete with Hydrated Lime."
(*q*) "Improving Concrete Roads," Pamphlet K.

2B7 *Other References*

See "Kidders Pocket Book," 1916, pp. 1462–1467, for lime and a brief description of the process of making hydrated lime. Other references will be found in most of the publications concerned with masonry mentioned under 2C4 and also under 2B3.

2B8 *Practice Recommended by Various Authorities*

Hydrated Lime Bureau (2B5).
(*a*) "The Ideal Mortar for Brick Masonry—Mortar No. 5," Bulletin J, June 1, 1916. (Contains results of investigation conducted by Prof. J. S. Macgregor, of Columbia University, New York City.)

Standard specifications for plastering and other practice recommended for the use of lime and hydrated lime will be referred to under "Plastering" in a later Serial number.

2B9 *Standards Adopted*

By Navy Department, U. S. A.

(*a*) Specifications for "Concrete and Mortar, and Materials for (cement not included)," Serial designation 59C2*c*, adopted February 1, 1916, copies of which can be obtained upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, provide for lime, lime-paste, lime-cement mortar.

By American Society for Testing Materials (1A4*c*)

(*b*) "Standard Specifications for Quicklime," Serial designation C5-15.
(*c*) "Standard Specifications for Hydrated Lime," Serial designation C6-15.

By Department of Commerce and Labor—Lighthouse Establishment

(*d*) *Whitewash Formulas.* A document with this title is issued which describes what is generally known as "Government Formula" for whitewash of which a verbatim transcript is—

WHITEWASH

The following formula for whitewashing has been found by experience to answer on wood, brick, and stone, nearly as well as oil paint, and is much cheaper:

Slake half a bushel of unslaked lime with boiling water, keeping it covered during the processs. Strain it and add a peck of salt, dissolved in warm water; three pounds of ground rice put in boiling water and boiled to a thin paste; half a pound of powdered Spanish whiting, and a pound of clear glue dissolved in warm water; mix these well together and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable furnace, and when used put it on as hot as possible, with painters' or whitewash brushes.

A SIMPLER WHITEWASH

The following formula for mixing whitewash, when properly made and put on, gives a white that does not easily wash or rub off, viz:

To ten parts of best freshly slaked lime add one part of best hydraulic cement; mix well with salt water and apply quite thin.

By United States Congress

(*e*) *Standard Sizes of Barrels.*

The Sixty-third Congress passed a bill (H. R. 4899) which became effective July 1, 1916, making the standard size of barrels for all dry measures as follows:

"Length of staves, 28½ inches; diameter of heads, 17⅛ inches; distance between heads, 26 inches; circumference at bilge, 64 inches, outside measurement; thickness of staves not greater than $\frac{4}{10}$ inch. It is further provided that any barrel of different form having a capacity of 7,056 cubic inches, shall be a standard barrel."

Opposition to this bill among lime-producers caused the introduction of another bill in the Sixty-fourth Congress, entitled "An act to standardize Lime Barrels" which was approved August 23, 1916, all provisions of the act to become effective January 1, 1917, by which there was established a large and a small barrel of lime, the large barrel to consist of 280 pounds and the small barrel to consist of 180 pounds net weight. (The provisions of these two bills are set forth in "Lime in 1914" and "Lime in 1915" (2A1*d*) and "A General Statement in Regard to the Standard Lime Barrel Law" has been issued by the Bureau of Standards.)

2B10 *Current Activities*

(*a*) *Recent developments* in the building-lime trade, by which old objections to lime as a building material are being overcome, are reasons for encouragement. The principal development is the increased use of hydrated lime in preference to lump lime, and the greater care and accuracy required in the process of manufacture of hydrated lime. The danger of pitting or "popping" of wall-plaster, due to incomplete hydration of lime, is eliminated by the use of thoroughly prepared hydrated lime. From "Lime in 1915, 2A1*d*

(*b*) *Wet-Mortar Plants.* An interesting development in the lime industry is described by William C. Hay in "How Lime Can Be Reëstablished in the Plaster Field," Bulletin No. 7, National Lime Manufacturers' Association (advance of minutes, April, 1916).

It is the introduction of a new type of wet-mortar plant that has been in operation for two years in some of the large building centers of the Pacific coast, manufacturing hard-lime mortar, masonry mortar, finishing putty, and other products. The plant buys kiln-run lime in bulk. It is of the continuous type. The lime is drawn from tight storage-bin into slaking-tank, and after the quicklime has been hydrated or slaked to the consistency of thick cream, it is strained off into curing-vats, the lighter fluid into the "plaster-vats" and the remainder into the "masonry vats."

After aging, the putty is mechanically aërated by violent agitation, after which it flows through a feed-valve to mixer. Here it comes in contact with sand and Keene's cement, which also feed continuously and uniformly, the cement discharging into the sand-feeder before the sand reaches the mixer. As this mass is being churned through the mixer, fiber or hair is fed by a steadily running "draper" to a picking-drum which disintegrates and feeds the hair in finely separated strands into the cold and continuously mixing mass of mortar. From the end of mixer the mortar is elevated to measured steel loading-tanks, from the bottom of which auto trucks of 4 cubic yards capacity are loaded by the opening of a gate. The expense of hauling the extra weight of water in the wet mortar is said to be negligible where auto trucks are employed.

Imperfections due to carelessness of laborers mixing the mortar or to incomplete slaking of the lime are eliminated, as the finished mortar is delivered ready for spreading. It may, however, like unmixed hydrated lime, be kept for days without noteworthy deterioration.

It is estimated that in 1915 these wet-mortar plants purchased approximately 8,000 tons of lime from pro-

ducers, and sold approximately 90,000 tons of mortar, valued at about $270,000, or about $3 a ton.

(*c*) *Alca Lime.* A recent development in the lime industry, is a patented article offered for sale by many licensees in the U. S. under the Spachman patents. See description in "Kidder's Pocket Book," 1916, p. 1467.

(*d*) *Properties of Hydrated Limes.* In 1915 the American Society for Testing Materials adopted the standard specifications for hydrated lime. (Referred to under "Standards Adopted.") It was desired to learn just how the material made by different manufacturers compared with the requirements of these specifications. This will serve the double purpose of giving information as to the qualities of different brands of hydrated lime, and also enable one to form an opinion as to the justice of certain limiting values placed in the specifications. At the present time samples have been examined from about one fourth of all the factories in the United States.

Hydrated lime consists chiefly of calcium hydroxide and generally contains more or less magnesium hydroxide. In the ordinary process of manufacture there is a danger of forming a hydrated lime which has "burned during hydration," a gritty, non-plastic, yellow material, which has a tendency to expand when wet. It is supposed that this phenomenon is caused by partial decomposition of the calcium hydroxide due to the heat generated during the slaking. A study of the temperature required to decompose calcium hydroxide under different conditions was undertaken to eliminate, if possible, this difficulty.

—From Report Bureau of Standards, 1916, 1A2*a*.

(*e*) *Properties of Lime-Cement—Sand Mortars.* It has become general practice to add small quantities of hydrated lime to cement mortars, either for plastering or masonry in order to make them work more freely. It is desirable to know just what effect this lime has on the properties of the mortar. A large number of mortars of varying proportions of the three ingredients have been tested for compressive and tensile strengths when stored in air or under water, expansion, adhesion to brick and plasticity.

—From Report Bureau of Standards, 1916, 1A2*a*.

(*f*) *Hydrated Lime in Concrete.* Hydrated lime, in small amounts, is being added to a great deal of the concrete now being used for various reasons. It is important to know how such an addition will affect the properties of the concrete. At the request of the Bureau an advisory committee, composed of engineers, contractors, and lime and cement manufacturers, has helped to plan an exhaustive research on this subject. It is hoped to determine (1) what proportion of hydrated lime is best for different kinds of concrete, (2) whether or not there is a difference in the behavior of high calcium and high magnesian hydrate, and (3) what effect hydrated lime has on the following properties of concrete: compressive strength, segregation of aggregate, adhesion to reinforcement, resistance to abrasion, resistance to sea water, expansion, absorption of water, and permeability to water.

—From Report Bureau of Standards, 1916, 1A2*a*.

2C Stone Masonry, Broken Stone, Sand and Gravel

In treating of stone for building purposes, rough stone, which is a localized product, will be referred to only in connection with masonry, and broken or crushed stone principally for its use in concrete.

Crushed stone is the largest factor in the stone industry at the present time. In 1907, owing particularly to the great increase in the building of macadam roads, the total value of crushed stone exceeded that of exterior building stone, and the excess in value has been increasing almost continuously ever since.

The following are among the organizations interested in the promotion of products allied with these industries; as a representative of the industrial activities there exists the International Union of Bricklayers, Masons and Plasterers, which is a trade union for advancing the interests of its members.

2C1 *Inter-State Stone Manufacturers' Association*

Incorporated 1913 under the laws of the state of Ohio, not for profit

Acting Secretary: Claude Clark, Columbus, Ohio.

Formed to promote, and increase the use of stone.

Standards: (a) Has formulated standards for numbers and sizes of aggregates of broken stone, which, it is stated, will appear in new specifications of the State Highway Department of Ohio.

2C2

Other associations exist which are interested in the production and use of rough and broken stone, sand, gravel and other "builders' supplies." These will be referred to as their work toward standardization of materials or practice comes to our notice.

2C3 *Information Obtainable*

(*a*) The U. S. Geological Survey has issued many bulletins (2A1*d* and *g*) dealing with rubble and range rock, broken stone, sand, gravel and other structural materials to be found in various parts of the country. Specific information will be furnished by the Journal or the publications may be had upon application, to the Director. (See 2A1.)

(*b*) See chapters on "Stone" in "Mineral Resources of the U. S." for each year (2A1*c* and *d*).

(*c*) "Production of Glass Sand, Other Sand, and Gravel in 1909" (includes numerous analyses): "Mineral Resources of the U. S." for 1909, E. F. Burchard. Pt. 2, 1911, pp. 519–542.

(*d*) See also chapters on "Sand and Gravel" in "Mineral Resources of the U. S." for each year (2A1*c* and *d*).

(*e*) For the relative value of various aggregates, including round- and sharp-grained sands, gravels and other materials and proper methods for testing aggregates see Techologic Paper No. 58 referred to in 1E4 *m* and *q*.

(*f*) For specific information on roads and road materials, apply to the Journal.

(See also 1D1*p*, 1E9, and 2B6.)

For masonry and foundations, see also 1C1 and 1C2.

For waterproofing and dampproofing, see 1D.

For broken stone, sand, and gravel in concrete and for concrete foundations, see 1E4, 5 and 6.

2C4 *Other References*

(*a*) "A Treatise on Masonry Construction," Ira O. Baker.
(*b*) "Masonry," Malverd A. Howe.
(*c*) "The American Civil Engineers' Pocket Book," M. Merriman. Masonry, Foundations, Earthwork, Highway Engineering.
(*d*) "Kidder's Pocket Book," 1916.
(*e*) "Building Construction and Superintendence," F. E. Kidder. Part 1. Masons' Work.
(*f*) "The Building Estimators, Reference Book," F. A. Walker.
(*g*) "Design of Walls, Bins and Grain Elevators," M. S. Ketchum.
(*h*) "The Building Trades Handbook," Masonry Construction.
(*j*) "Standard Specifications," J. C. Ostrup.
(*k*) "Handbook of Cost Data," H. B. Gillette.
(*l*) "Strength of Materials," Edward R. Maurer.
(*m*) "A Practical Treatise on Foundations," W. M. Patton.
(*n*) "The Building Mechanics' Ready Reference," H. S. Richey. Stone and Brick Masons' Edition.

(*o*) Rock Excavating and Blasting, J. J. Cosgrove.
(*p*) "Trautwine's Civil Engineer's Pocket Book."
(*q*) "Highway Construction," A. J. Byrne and A. E. Phillips.
(See also 2J Stone in General.)

2C5 *Practice Recommended by Various Authorities* (See also Serial No. 1, C, D, and E.)

By American Railway Engineering Association (1A9*f*):
(*a*) "Waterproofing of Masonry."
By National Board of Fire Underwriters (Serial No. 3):
(*b*) "Building Code Recommended," 1915—Part VI, "Walls," pp. 34–50, 86; Part XXVI, "Chimneys, Flues and Heating Apparatus," pp. 173–184.
(*c*) "Dwelling Houses, A Code of Suggestions for Construction and Fire Protection," 1916—Part III, "Walls," pp. 21–31; Part VI, "Chimneys, Flues, Smoke pipes and Fireplaces," pp. 50–64.
By N. F. P. A. (Serial No. 3):
(*d*) "Specifications for Construction of a Standard Building," in which is stated "The construction of buried footings is not considered a part of these specifications; retaining walls, if built of stone, must be plastered on the exposed side with ¾ inch of cement mortar," and "If cap-stones are used, they shall be protected against fire by 4 inches of fireproofing," no other reference to stone being permitted in a "Standard Building."
By American Society for Testing Materials (1A4*c*):
(*e*) "Tentative Standard Method for Form of Specifications for Certain Commercial Grades of Broken Stone," Serial designation D35–16.
(*f*) For certain practice recommended with reference to roadwork see 2C3*f*.

2C6 *Standards Adopted*

By Navy Department, U. S. A.:
(*a*) Specifications for "Concrete and Mortar and Materials for (cement not included)," Serial designation 59C2*c*, adopted February 1, 1916, copies of which can be obtained upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, provide for Sand for Concrete, Sand for Mortar, Broken Stone, Gravel, Lime-cement-mortar.
By American Railway Engineering Association:
(*b*) "Standard Specifications for Stone Masonry" (1A9*f*), containing Classification of Masonry, Definitions, Cement (same as 1E7*a*), General Requirements, Bridge and Retaining-Wall Masonry, Ashlar Stone, Rubble Stone, Arch Masonry, Dry Masonry.
By American Society for Testing Materials (1A4*c*):
(*c*) "Standard Sand," mentioned in "Specifications and Tests for Portland Cement," Serial designation C9-17.
(*d*) "Standard Definitions of Terms Relating to Materials for Roads and Pavements," Serial designation D8-15.
(*e*) The A. S. T. M. has issued a considerable number of standard tests and methods in connection with macadam rock, broken stone, bituminous and other materials used in roadwork, under the Serial designation D. (1A4*c* and *e*.)
By Inter-State Stone Manufacturers' Association:
(*f*) Numbers and sizes for aggregates of broken stone (2C1*a*).
For reference to lack of Standards with respect to the "perch" and other forms of measurement, see 2J8.

2D1 Stone: For Building and Decoration

(*a*) The development of the stone industry in the United States is fostered and encouraged by the U. S. Geological Survey. In the effective quarrying and methods of production the Bureau of Mines coöperates with the Survey and with the producers. The Bureau of Standards likewise coöperates with all. (See Mr. Burchard's article under 2A1.)

An awakening is now taking place to the importance of a better understanding of the kinds of stones to be used in buildings and the best method to be employed for their finish and setting. To quote from "Stone in 1915" (2A1*e*):

"There has been a tendency by some producers to market only stone of the finest quality, even for mediocre uses, instead of conserving resources and using second- or third-class stone where the highest degree of appearance is not demanded. Stone rated as second or third class in appearance may be the equal of first-class stone in strength and durability, a statement well supported by the fact that stones now regarded as inferior in appearance have been exposed in buildings of the older cities of the country for as much as 50 or even 100 years without appreciable evidence of deterioration. Exposure for such periods is the most reliable of all tests of building stone.

"Another fact worth mention here is that the settling of dust and smoke upon the surface of light-colored stone soon obscures its original color so that there is no appreciable difference in appearance between first-class and second-class stone. If more consideration were given to the probable appearance of a building after it is a few years old than to its appearance when it is new, the cost of the stone could probably be lessened without impairing its durability in the least."

With reference to stone for building and other purposes the publications of the U. S. Geological Survey are numerous and complete. Beside treating of all stone produced annually in chapters on stone in "Mineral Resources of the U. S." (2A1*c*), these chapters are issued separately for earlier distribution. Some of the bulletins and other documents pertaining to particular stone industries or localities are mentioned under the various subdivisions of stone and under "Stone in General."

It is quite impossible to list the publications of the various state geologists (2A2) the names and addresses of which organizations may be had upon application to the Journal.

2E1 Granite

In 1915, the granite production of the United States was valued at $17,864,000, divided as follows (by millions): Building 4.7, monumental 4.87, paving 2.35, crushed 3.82, the balance in curbing, flagging, rubble and riprap. Importations, $144,382.

In connection with this industry there exists the following national and locality organizations:

2E2 *National Association of the Granite Industries of the United States*

Secretary: Robert D. Smith, 161 Devonshire St., Boston, Mass.

It is the purpose of this organization to associate in a central body all persons, firms or corporations engaged in carrying on any department of the granite industry in any part of the United States.

"The fact that there are three distinct divisions in the industry, viz., quarrying, manufacturing for building and paving work, and manufacturing for monumental purposes, is recognized, but inasmuch as neither of these divisions can conduct business without relations with one of the other two divisions, it is considered imperative that all three divisions be comprehended in this organization, provision being made so that the specific values and rights of each department may be preserved."

2E3 *The Granite Manufacturers' Association of Barre, Vermont*

Secretary: Harold P. Hinman, Barre, Vt.

Consists of over 97 per cent of the quarry owners and manufacturers in the Barre granite center, to promote the best interests of the Barre granite industry. Coöperates

with the Quarry Owners' Association in a campaign to increase the volume of sales and to improve the quality of memorial and building work.

Publications:

(*a*) A house organ known as "Barre Granite" for distribution to members and discussion of the affairs of the Association.

2E4

Other locality granite associations, concerning whose activities and publications we have not heard, exist in Hardwick, Vt., Milford, N. H., Concord, N. H., Quincy, Mass., and Westerly, R. I.

2E5 *Information Obtainable*

(A to K, U. S. Geological Survey. To obtain, see 2A1.)

(*a*) "The Granite Industry of the Penobscot Bay District, Maine," G. O. Smith. Bulletin No. 260, pp. 489–492, 1905. (Exhausted.)
(*b*) "Recent work on New England Granites," T. N. Dale. Bulletin No. 315J, pp. 356–359, 1907.
(*c*) "The Granites of Maine," T. N. Dale. Bulletin No. 313, 202 pp., 1907. 35 cents.
(*d*) "The Chief Commerial Granites of Massachusetts, New Hampshire, and Rhode Island," T. N. Dale. Bulletin No. 354, 228 pp., 1908.
(*e*) "The Granites of Vermont," T. N. Dale. Bulletin No. 404, 138 pp., 1909. 20 cents.
(*f*) "Supplementary Notes on the Granites of New Hampshire," T. N. Dale. Bulletin No. 430, pp. 346–372, 1910. 60 cents.
(*g*) "Granites of the Southeastern Atlantic States," T. L. Watson Bulletin No. 426, 282 pp., 1910.
(*h*) Supplementary Notes on the Commercial Granites of Massachusetts," Bulletin No. 470, pp. 240–290, 1911.
(*j*) "The Granites of Connecticut," T. N. Dale and H. E. Gregory. Bulletin No. 484, 137 pp., 1911.
(*k*) "The Aberdeen Granite Quarry, near Gunnison, Colo." J. F. Hunter. Bulletin No. 540, pp. 359–362, 1913. 45 cents.
(*l*) See, also, chapters on "Stone" in "Mineral Resources of the U. S." for each year, (2A*c* and *d*).

2E6 *Other References* (See, also, 2J4 and 5.)

(*a*) "History of the Granite Industry of New England," Arthur W. Brayley.
(*b*) For information concerning specifically Milford granites see Industrial Section, pp. XIII, XIV.

2E7 *Practice Recommended by Various Authorities*

(For Mausoleum Specifications, see Industrial Section, page XIII.)

2F1 Marble

The marble production from twenty-one states in the United States in 1915 was valued at $6,738,000, of which by far the largest part was used in building. Dressed Vermont marble appears to have averaged $3.20 per cubic foot, while Georgia undressed averaged $1.10, and Tennessee undressed, $1.79. Importations in 1915, $600,000.

"Onyx" marble, or travertine, is quarried in small quantity annually. In 1915 the average price on the total output of 4,574 cubic feet, from Utah, Kentucky and New Mexico, was $4.21. Importations in 1915, $30,000.

In this industry there appears to be no national association composed entirely of producers but there does exist the:

2F2 *National Association of Marble Dealers*

Incorporated under the laws of New York, 1903

Secretary: Wm. A. Davis, 1328 Broadway, New York City.

Confines its activities to interior marble and has prepared, adopted, and circulated a Code of Practice (2D7*a*) governing conditions of estimating, awarding of contracts, grades of marble and workmanship.

The membership includes practically all of the important dealers in the United States, exclusive of New York City and the Pacific coast; also includes quarriers, many of whom are finishers as well.

In September, 1913, this Association entered into a five-year agreement (2D7*b*) with the Bricklayers', Masons' and Plasterers' Union, establishing a standard wage rate throughout the country for the installation of marble, which warrants direct contracts between the architect, owner, or general contractor, and the marble dealer.

The Association has indorsed the standard documents of the American Institute of Architects (1A8*g*) and looks forward to their more complete use as a solution of many controversies not now eliminated by the Code of Practice referred to.

Publications:

(*a*) "Code of Practice." Adopted at the Annual Meeting in New York, November 11, 12, 1915. Copies furnished upon request.
(*b*) "Agreement" (referred to above), copies of which may be had upon request.
(*c*) Bulletins to members at frequent intervals.

2F3 *Information Obtainable*

(A to H, U. S. Geological Survey. To obtain, see 2A1.)

(*a*) "Tennessee Marbles," Arthur Keith. Bulletin No. 213, pp. 366–370, 1903. (Exhausted.)
(*b*) "Marble of White Pine County, Nev., near Gandy, Utah," N. H. Darton. Bulletin No. 340G, pp. 377–380, 1908.
(*c*) "Marble in Chiricahua Mountains, Arizona," D. Siney Paige. Bulletin No. 380, pp. 299–311, 1909. 40 cents.
(*d*) "Variegated Marble Southeast of Calera, Shelby County, Ala.," Charles Butts. Bulletin No. 470, pp. 237–239, 1911.
(*e*) "The Commercial Marbles of Western Vermont," T. N. Dale. Bulletin No. 521, 170 pp., 1912.
(*f*) "Ornamental Marble near Barstow, Cal.," Robert W. Pack. Bulletin No. 540, pp. 363–368, 1913. 45 cents.
(*g*) "The Calcite Marble and Dolomite of Eastern Vermont," T. N. Dale. Bulletin No. 589, 67 pp. 1915.
(*h*) See also chapter on "Stone" in "Mineral Resources of the U. S.," for each year (2A*c* and *d*).

The Bureau of Mines is investigating problems connected with the mining and technology of various building stones. The following will be found descriptive of the production of this building material:

(*j*) "The Technology of Marble Quarrying." Bull. No. 106 (2A3*b*).

2F4 *Terrazzo Floors and Marble Floors*

(*a*) An interesting series of papers treating of same, with suggested specifications, by Charles A. Marsh, Ernest L. Hesse, Carl C. Holloway and David C. Trott, contained in Journal of the Society of Constructors of Federal Buildings (2A4*a*) for November, 1914. This subject will be referred to more fully under "Floors" in a later Serial number.

2F5 *Other References* (See, also, 2J4 and 5.)

(*a*) "Marble and Marble Workers," W. S. Renwick.
(*b*) "Notes on Domestic White Building Marble" Topic 1081, Bulletin of Building Data League (2A5).

2F6 *Current Activities:*

The National Association of Marble Dealers is investigating the entrance of finished foreign marble into this country free of duty, and has established arbitration methods for settling disputes as to the grades and workmanship of marble. (See "Code of Practice," 2F2*a*.)

2G1 Limestone

Limestone was produced in the United States, in 1915, to the value of about $35,000,000. Pennsylvania, Ohio, Indiana, New York, Illinois, Missouri, Michigan and Virginia led in the order named, with productions of over $1,000,000. Only about $3,000,000 of this total represents building stone, the balance (in millions) being used largely for flux 9.6, concrete 5.3, ballast 3.6, and road metal 8.16. Large quantities were also used in the making of cement.

The average price per cubic foot for rough building stone dropped from 21 cents per cubic foot in 1914 to 17 cents in 1915, while the average for dressed stone dropped in the same period from 52 cents per cubic foot to 47 cents.

Much work is being done by producers toward improving the conditions of production, sale, and transportation. —Notes from "Stone in 1915."

2G2 *Indiana Limestone Quarrymen's Association*

Secretary: R. M. Richter, Bedford, Indiana.

A voluntary organization of producers of limestone formed for the purpose of transfusing information about this material and its applications and for promoting its greater use.

It is understood that this Association will take up officially the question of recommendations or specifications for the setting of limestone and will welcome the suggestions or comments of architects. (See letter from Secretary under Practice Recommended (2G6.)

Publications:

(*a*) "Indiana Limestone," Vol. I.

2G3 *Bedford Stone Club Auxiliary*

Secretary. R. M. Richter, Bedford, Indiana.

Organized to bring about better conditions in the limestone trade as between the cut-stone contractor in this district and the general contractors throughout the country.

Publishes a circular ennunciating these principles.

2G4 *Information Obtainable*

(A to J, U. S. Geological Survey. To obtain, see 2A1.)

(*a*) "The Limestone Quarries of Eastern New York, Western Vermont, Massachusetts, and Connecticut," H. Ries. Seventeenth Annual Report, pt. 3 (continued), pp. 795–811, 1896.

(*b*) "The Bedford Oolitic Limestone of Indiana," T. C. Hopkins and C. E. Siebenthal. Eighteenth Annual Report, pt. 5 (continued), pp. 1050–1057, 1897.

(*c*) "The Bedford Oolitic Limestone (Indiana)," C. E. Siebenthal. Nineteenth Annual Report, pt. 6 (continued), pp. 292–296, 1898.

(*d*) "Limestones of Southwestern Pennsylvania," F. G. Clapp. Bulletin No. 249, 52 pp., 1905.

(*e*) "Cement Materials and Industry of the United States," E. C. Eckel. Bulletin No. 243, 395 pp., 1905. (Treats of limestone.) 65 cents.

(*f*) "Limestone and Dolomite in the Birmingham District, Alabama," Charles Butts. Bulletin No. 315G, pp. 247–255, 1907.

(*g*) "Oolitic Limestone at Bowling Green and Other Places in Kentucky," J. H. Gardener. Bulletin No. 430, pp. 373–378, 1910. 60 cents.

(*h*) "The Oolitic Limestone Industry at Bedford and Bloomington, Ind.," J. A. Udden. Bulletin No. 430, pp. 335–345, 1910. 60 cents.

(*j*) "Portland Cement Materials and Industry of the United States," Bulletin No. 522, 401 pp. (Treats of limestone.)

(*k*) "Some Notes and Letters on Bedford Stone," Fremont B. Ward. In Journal of the Society of Constructors of Federal Buildings (2A4*a*), November, 1914.

(*l*) "Report of the Committee on Stone Inquiry," referred to under 2J4*f* and *g*, treats of limestone.

2G5 *Other References* (See, also, 2J4 and 5.)

(*a*) "Indiana Limestone" being Vol. I, now current, the first of a series to be issued by the Indiana Limestone Quarrymen's Association (2G2*a*).

(*b*) For other information on limestone see Industrial Section, pp. XI.

2G6 *Practice Recommended by Various Authorities*

(January 31, 1917)

"In connection with specifications to cover the setting of Indiana limestone, we have to suggest the following:

"'The Indiana Limestone to be plastered on the back with ¾ inch of lime-mortar—rake out all joints on face to avoid spawling, point up at completion with equal parts of non-staining cement and clean white sand.'

"It is our further opinion, however, that it would be advisable to apply on the back of the stone one heavy coat of hot asphalt before plastering same; also, as a precaution against staining, we would advise that the walls of the building be covered each night and at all times during cessation of work, in order that rain, snow or frost may be prevented from getting into the brick wall, causing possible discoloration by reason of same."

(Signed) INDIANA LIMESTONE QUARRYMEN'S ASSOCIATION

2H1 Sandstone

The production of sandstone in 1915 was valued at about $6,000,000, of which about $1,400,000 was in building stone, the balance representing ganister, paving, curbing, flagging and rubble.

2H2 "*Bluestone*"

"The figures of production for bluestone, most of which is quarried in southeastern New York and northeastern Pennsylvania, are included in those of sandstone. This stone is used chiefly for flagging, for curbing, and for sills, lintels, steps, and house copings.

"The bluestone trade, like other branches of the stone industry, is said to have suffered through lack of organization and coöperation on the part of producers and lack of insistence on the use of only first-class material where such material alone could give satisfaction." "Stone in 1915."

2H3 "*Flagstone*"

This is a name very commonly misapplied. In certain sections of the country, notably in Pennsylvania, where bluestone is largely used for sills, steps, copings, paving of terraces, garden walks and other purposes where roughness of texture is sought or smoothness is not a desideratum, it is commonly designated as "flagstone." This should be considered as referring to the treatment rather than the stone, for to the trade this means any good bluestone or other sandstone, ranging in color from gray through a blue-gray to a purplish tint, which has natural split surfaces on the flat exposure and bed and the thickness of which runs within the limitation of about 1½ to 4 inches. Above this thickness it becomes bluestone stock.

2H4 *Information Obtainable*

(A, B, C, U. S. Geological Survey. To obtain, see 2A1.)

(*a*) "The Sandstones of Western Indiana," T. C. Hopkins. Seventeenth Annual Report, pt. 3, pp. 780–787, 1896.
(*b*) "Brownstones of Pennsylvania," T. C. Hopkins. Eighteenth Annual Report, pt. 5, pp. 1025–1043, 1897.
(*c*) Sandstone is discussed in "Structural Materials Available near Minneapolis," in Bulletin No. 430, 1910. 60 cents.
(*d*) The Ohio State Survey, Prof. J. A. Bownocker, State Geologist Columbus, Ohio, has published a bulletin on "Building Stones" in which sandstone is referred to.
(*e*) "Report of the Committee on Stone Inquiry" referred to under 2J4*g* touches on sandstone.

2H5 *Other References* (See, also, 2J4 and 5.)

(*a*) For data pertaining to Kettle River Sand Stone, see Industrial Section, page XII.

2J1 Stone in General

"The stone industry as a whole has advanced with the development of the country in spite of severe competition with brick, Portland cement concrete, and certain other artificial stone products. The use of these materials has seriously affected the production of the lower grades of stone for foundations and to a less degree the production of building stone of higher grade, but it has had little or no effect on the use of monumental stone." —"Stone in 1915," 2A1*e*.

"The producers of building granite in the United States have an idea to try to interest the general public in granite, and will also work directly with architects and builders.

"The ordinary man who builds knows little or nothing about stone and frequently he cannot tell one variety of stone from another. Truth compels the admission that a surprisingly large proportion of architects is also woefully ignorant concerning one of the most important materials of construction. These people need to be told, not once nor spasmodically, but constantly and convincingly, of the nature and physical characteristics of stone, of its eventual cheapness because of its durability, and of its beauty, fitness and adaptability for every kind of building work. This is a task that does not belong to the individual quarry or stone mill, but to those associations that are formed to foster the interests of the entire trade." —"Stone."

Representing the interests of the stone industry in general there are two large national organizations which contain many producers within their memberships. These are:

2J2 *International Cut-Stone Contractors' and Quarrymen's Association*

Secretary: Wm. A. Guthrie, 1 West 42ndSt., New York City.

Holds an annual convention at which addresses are given and papers read concerning developments and progress in the stone industry. Purposes, membership and publications not stated.

2J3 *National Retail Monument Dealers' Association*

Secretary: Frank Mallon, Port Huron, Mich.

Purpose is to elevate the standard of the trade and to encourage the production of the best kinds of monumental work.

At each annual convention an exhibition is held exemplifying the progress in granite, marble and bronze work. For the next meeting and exhibition in Philadelphia, August, 1917, the coöperation of architects is to be invited.

2J4 *Information Obtainable*

(A and B, U. S. Geological Survey. To obtain, see 2A1.)

(*a*) "The Effects of the San Francisco Earthquake and Fire on Various Structures and Structural Materials, Richard L. Humphrey. Bulletin No. 324 of the U. S. Geological Survey, 1907. Pp. 14–61. 50 cents. Also pp. 62–130 in same, "The Effect of the San Francisco Earthquake on Buildings, Engineering Structures and Structural Materials," J. S. Sewell. The next following Bulletin also deals with the effect of fire on building stone.
(*b*) "The Fire-Resistive Properties of Various Building Materials," Richard L. Humphrey. Bulletin No. 370, U. S. Geological Survey, 99 pp., 1909. 30 cents.
(*c*) In the annual report of the Chief of Ordinance, Watertown Arsenal, referred to under 1B1*b* will frequently be found results of tests on various building stones.
(*d*) There are some deposits of building stone within the state of Mississippi that are worthy of consideration. These are described in Bulletin No. 12 recently issued by the Mississippi State Geological Survey, E. N. Lowe, director.
(*e*) "Setting and Pointing Stonework," Carl C. Holloway in Journal of the Society of Constructors of Federal Buildings (2A4*a*) November, 1914.
(*f*) "Report of the Committee on Stone Inquiry," (2A4*a*), in Journal just referred to, January, 1916. Preliminary Report.
(*g*) "Ditto, Later Report, Journal for Dec., 1916.
(*h*) "Stones for Building and Decoration," by Prof. S. B. Merrill, Curator of Geology in the U. S. National Museum, Washington, D. C.

2J5 *Other References*

(*a*) "Report on the Compressive Strength, Specific Gravity and Ratio of Absorption of the Building Stones in the United States," General Q. O. Gilmore.
(*b*) "Building Stones and Clays, Their Origin, Character and Examination," E. C. Eckel.
(*c*) "Modern Stone-Cutting and Masonry," John S. Siebert and F. C. Biggin.
(*d*) "Masonry and Stone-Cutting," E. Dobson.
(*e*) "Building Construction and Superintendence," F. E. Kidder. Part I, "Building Stones," pp. 205–262 and pp. 878–891; "Cut-Stone Work," pp. 263–310.
(*f*) "Building Stones and Clay Products. A Handbook for Architects," Heinreich Ries.
(*g*) "American Civil Engineers Pocket Book," M. Merriman. "Stone Quarrying and Cutting," pp. 496–508.
(*h*) "Building Trades Handbook." "Materials of Masonry Construction," pp. 145–228.
(*j*) "Fire Prevention and Fire Protection," J. K. Freitag. Pp.216–219.
(*k*) "Engineering Geology," H. Ries and T. L. Watson.
(*l*) "Engineering Contracts and Specifications," J. B. Johnson.
(*m*) Trautwine's Civil Engineer's Pocket Book.
(*n*) See, also, Industrial Section, pp. VIII–XIV

2J6 *Soapstone*

In the production of soapstone the United States ranks first among all countries, and Virginia produces about twenty times as much as the four other producing states—Maryland, North Carolina, Rhode Island, and Vermont. The waste from breakage in quarrying, sawing into slabs, manufacturing, and final transportation is so great as to render success in the industry a matter of skilful manipulation. The value of the stone is in large measure proportionate to the work done upon it. In the rough it is valued at $2 or less a ton, but when sawed into slabs its value is increased to about $15, and when made into laundry-tubs it may attain a value of about $30 a ton. The production of soapstone and talc in the United States is steadily increasing.—U. S. Geological Survey, Press Bulletin, November, 1916.

2J7 *Practice Recommended by various Authorities*

There is a lack of information from organized sources with respect to building stones and their best uses. This may be due partly to the fact that so much of the stone produced is used for other than building construction.

Recommendations of individual writers and authorities and of well-known producers or companies will be found under Information Obtainable and Other References.

By the National Board of Fire Underwriters (Serial No. 3):

(*a*) "Building Code Recommended," 1915. Weights of Materials, p. 84; Concrete and Masonry, Compression, 86; Part VI, Walls, pp. 34–50.

(*b*) "Dwelling Houses, A Code of Suggestions for Construction and Fire Protection," 1916. Part III, Walls, pp. 21–31.

2J8 *Standards*

The Lack of Uniformity in Measuring Stone.

Owing to the variety of uses to which stone is put, there is no regular unit of measurement employed by the quarryman, the stone being sold by the cubic yard, cubic foot, ton, cord, perch, rod, square foot, square yard, square, or other unit. Building and monumental stone, especially the dressed product, is usually sold by the cubic foot or the cubic yard, although this unit varies with the class of stone and with the locality. A large quantity of the rough stone is sold by the perch, cord, or ton. Rubble and riprap, including stone for such heavy masonry as breakwater and jetty work, are generally sold by the cord or ton. Fluxing stone and stone for chemical use is sold by either the long or the short ton. Flagstone and curbstone are sold by the square yard or the square foot, the thickness being variable and dependent on the orders received. Crushed stone is reported as sold by the cubic yard or ton, the short ton being more generally used.

The perch is legally defined in many older states as 24¾ cubic feet; in some states, and even within a single state, it varies from 16½ through 20, 22, 25 to 27 cubic feet; and in others it is defined as equivalent to 2,200, 2,500, 2,700, 2,800, and 3,000 pounds. The cord in some states is measured in feet—for instance, 128 cubic feet in the quarry or 100 feet in the wall; in others it denotes weight and is variously defined as equivalent to 11,000 12,000, 12,500, and 13,000 pounds. The weight of a cubic yard of crushed stone varies from 2,300 to 3,000 pounds, the average weight being about 2,500 pounds. In certain localities this crushed stone is sold by the "square" of 100 square feet by 1 foot, or 100 cubic feet. It is also of interest to note the selling of crushed stone by the bushel, 21½ bushels representing a cubic yard of about 2,700 pounds.

[Editor's Note.—The above quotation from "Stone in 1915" (2A1*d*) emphasizes the necessity for concerted action in bringing about, if possible, uniform methods of measurement for stone in all parts of the country. This matter will be brought to the attention of the Institute's Committee on Materials and Methods in the hope that through its subcommittes in the various Chapters some line of action may be determined upon to assist in bringing about standardization.]

2J9 *Current Activities*

Investigation of Building Stones in the United States.

(*a*) In coöperation by the Geological Survey with the Bureau of Mines, 200 samples of marble, limestone, sandstone, and granite have been collected from various quarries in all sections of the country. Testing has been confined chiefly to the marbles, and includes the determination of compressive strength, on wet and dry specimens, on bed and on edge, transverse perpendicular and parallel to bed, percentage of water absorption, tensile strength perpendicular and parallel to bed, specific gravity, weight per cubic foot, porosity, hardness, coefficient of expansion, heat conductivity, electrical conductivity, and resistance to the action of frost. Various building stones submitted by other Government departments and state governments have been investigated to determine their suitability for particular purposes. A collection is being made of samples of all the important building stones for the establishment of a permanent file. At present seventy-five slabs of polished marble, 8 inches by 12 inches, have been collected from typical quarries in the eastern and southern states. These will be filed in a manner to enable persons interested to study and compare the general features of the different types. This collection when complete will consist of samples from all the principal quarries of the country. A paper containing the results of the tests available on building stones will probably be published during the ensuing year. (Report Bureau of Standards, 1916.)

(*b*) The Bureau of Mines (2A3) is investigating problems connected with the mining and technology of various building stones. Bulletin No. 106, "The Technology of Marble Quarrying (2F3j), was recently published and a report on the quarrying of sandstone will shortly be issued.

(*c*) The International Cut Stone Contractors' and Quarrymen's Association of North America has conducted an investigation of the air-hammer as injurious to the users. Some of the results of the inquiry are reported in the Association's monthly leaflet.

(*d*) *Automatic Freezing and Thawing Apparatus for Testing Building Stones.*

"A unique apparatus has been designed to automatically move a charge of stone, concrete or other material back and forth from a freezing-chamber to a thawing-chamber at the intervals required to completely congeal and thaw the contained moisture. With this apparatus it is expected that 80 or 100 freezings can be made in one day. Thus, a great number of freezings on a sample of stone or other material can be made. By comparison of the results with actual observations on structures showing disintegration at the end of a known period of exposure, it will be possible to predict with some degree of accuracy the number of years' service that can be expected from any material under these conditions."—From the Report, Bureau of Standards 1916, 1A2*a*.

2J10 *Current Comment*

(*a*) *Selling Stone by Sample.*—"Stone is a product of Nature's laboratory, and there may be decided variations within a single bed or ledge. For this reason there are few problems before the quarryman of greater importance than the preparation of the samples upon which he is to depend for the bringing of business.

"When an architect is considering stone, his fancy may be captivated by particular markings or by a special tint or shade in the sample before him. He specifies this stone, but when it is delivered on the job he finds that only a small percentage of it has those peculiar qualities. The quarryman may truthfully say that all stone is likely to show variations in its natural bed and, that it is utterly impossible to match exactly a small sample in the entire material for a great building. But what shall he say when the architect asks him why it is that his sample apparently represents only 10 per cent of the quarry output, instead of the remaining 90 per cent? Even if his stone is finally accepted for the building, it is a poor business policy if he has disappointed a purchaser.

"The wisest business judgment dictates that all samples submitted in competition should be chosen with the most scrupulous care to show 'the run of the quarry.'

"In most quarries the stone varies more or less widely in different beds. In other words, Nature has graded it herself. The trouble often is that the quarryman does not follow this excellent example and grade the stone for the trade. He will submit a sample of what is Grade No. 1 and then wonder that he has difficulty in getting a good deal of Grade No. 2 accepted on the job. If the dealer would frankly submit samples of both the first and second grade stone, and make a difference in the price of each, he would find that it would frequently bring him business. The inferior stone may be exactly as strong and durable and fit for building work as the better grade, differing only in some slight point of appearance. Architects would often be willing to use the second grade stone in certain parts of some buildings, where it could not possibly be noticed from the street-level, if they found that this would materially lessen the cost of the structure."—*Stone*, July, 1916.

2K1 Slate

The slate resources of the country, like the other mineral resources, are treated in publications of the U. S. Geological Survey, particularly in Chapters on Slate issued annually (2A1*c* and *d*) from which the statistical and other information within quotation-marks in this section is taken.

The total value of the slate sold in 1915 was: roofing slate $3,746, 334; mill stock $819,672.

In this industry no National Organization appears to exist but some locality organizations have been formed. Information about them seems to be difficult to obtain, though one from which we have heard is:

2K2 *Bangor Slate Association, Incorporated*

Secretary: L. M. Cowling, Bangor, Pa.

Composed of producers in this locality who manufacture slate for roofing or structural purposes.

To give information about genuine Bangor slate and to see that it is used when specified is the sole object of this Association.

Standards:

Has adopted a trade-mark, registered in the U. S. Patent office, a duplicate of which, according to the booklet of the Association (2K2*a*), is pasted on the reverse side of every slate marketed from the genuine Bangor Vein.

Publications:

(*a*) Booklet entitled "Genuine Bangor Slate" for general distribution (not dated or numbered).

(*b*) Specifications for "Genuine Bangor Slate Roofs for Flat Roofs" (over concrete and over sheathing) upon request.

2K3

"The slate production of the United States is practically confined to the northeastern part of the country. Although scattered deposits, more or less developed, occur elsewhere, this eastern slate is shipped to supply markets on the western coast as well as in the central and southern parts of the country. The slate of most of the deposits in the various states has been described either in Bulletin No. 586 of the U. S. Geological Survey or in previous reports on the slate industry. Slate is classified as roofing slate and mill stock, and the use for these different purposes depends largely, although not entirely, on character of the slate."

(*a*) *Mill Stock:* "Mill stock requires a finer, more even-grained, and more compact material than roofing slate, and a material with a smooth cleavage surface. It must be of a fairly uniform color and not too hard to be easily worked by the slate-dressing machinery. The slates of Maine and Vermont and the 'soft-vein' slates of Lehigh and Northampton counties, Pa., are well adapted for mill stock, and these slates are also among the best of the roofing slates. The Arkansas slate has been used both for electrical and roofing purposes, and the Maryland and New York quarries also furnish a small quantity of mill stock."

"Mill stock includes slate used for blackboards, school slates, flooring, wainscoting, vats, tiles, sinks, laundry-tubs, grave-vaults, sanitary ware, refrigerator shelves, flour-bins and dough-troughs for bakeries, electrical switch-boards, mantels, hearths, well-caps, and tops for billiard, laboratory, kitchen, and other tables."

"Lehigh and Northampton counties, Pa., report the only stock produced for school slates and blackboards. The quarries in these counties can best produce this material on account of the unusually fine cleavage of the slate and the thickness and size of the beds."

(*b*) *Roofing Slate:* "Slate used for roofing is not necessarily of so fine a texture nor of so smooth a cleavage as the mill stock, but it must be hard, strong, and tough, and should not contain carbonates or iron pyrites, which decompose or oxidize under atmospheric conditions. A description of the process of dressing roofing slates was given in the report on slate in 'Mineral Resources' for 1911. (2K4*m*.)"

"Nearly 73 per cent of the value of the slate production in the United States in 1914 was represented by slate for roofing, and the roofing-slate output from Pennsylvania and Vermont represented, respectively, about 59 and 29 per cent of the total value of the roofing slate produced. Besides roofing slate Pennsylvania and Vermont produce also mill stock; practically the only use of slate from the other producing states, except Maine, is for roofing."

2K4 *Information Obtainable*

The following are listed from selected publications through the courtesy of the U. S. Geological Survey (2A1); other lists will be furnished upon application to the Journal.

(*a*) "Chemical Notes on the Composition of the Roofing Slates of Eastern New York and Western Vermont," W. F. Hillebrand. Nineteenth Annual Report, pt. 3, pp. 301–305, 1899. $2.25.

(*b*) "The Slate Belt of Eastern New York and Western Vermont," T. N. Dale. Nineteenth Annual Report, pt. 3, pp. 153–200, 1899. $2.25.

(*c*) "The Slate Industry of Slatington, Pa., and Martinsburg, W. Va.," T. N. Dale. Bulletin No. 213, pp. 361–364, 1903. (Exhausted.)

(*d*) "Notes on Arkansas Roofing Slates," T. N. Dale. Bulletin No. 225, pp. 414–416, 1904. 35 cents.

(*e*) "Slate Deposits of California and Utah," E. C. Eckel. Bulletin No. 225, pp. 417–422, 1904. 35 cents.

(*f*) "Slate Investigations During 1904," T. N. Dale. Bulletin No. 260, pp. 486–488, 1905. (Exhausted.)

(*g*) "Note on a New Variety of Maine Slate," T. N. Dale. Bulletin No. 285, pp. 449–50, 1906. (Exhausted.)

(*h*) "The Slates of Arkansas," A. H. Purdue. Bulletin No. 430, pp. 317–334, 1910. 60 cents.

(*j*) "Slate Deposits and Slate Industry of the United States," T. N. Dale and others. Bulletin No. 586, 1914. A revised edition of Bulletin No. 275.

(*k*) The state geological surveys of Arkansas, California, Maryland, and New Jersey have published descriptions of the slate and the slate deposits of these states, and information as to these publications may be had by applying to the respective state geologists.

(*l*) Apublication by E. C. Eckel, "Building-Stones and Clays, Their Origin, Character, and Examination," contains a chapter on slate, which gives information on the slates of the United States and of foreign countries and also many analyses and tests of slate.

2K5 *Other References*

(*a*) "Kidder's Pocket Book, 1916." (See its Index "Slate.")
(*b*) "American Civil Engineers Pocket Book," M. Merriman.
(*c*) "Building Construction and Superintendence," F. E. Kidder. Part I, "Slates," pp. 241–247, 892–899.
(*d*) "Building Trades Handbook. "Slate Roofs," pp. 314-317, 366–367.
(*e*) "Fire Prevention and Fire Protection," J. K. Freitag. Pp. 521–522 682–684.
(*f*) Trautwine's Civil Engineer's Pocket Book.
(*g*) "Carnegie Pocket Companion 1916." Pp. 339–341.
(*h*) "Genuine Bangor Slate." Booklet (2K2*a*.)
(*j*) See, also, Industrial Section, pp. IX, X, XIV.

2K6 *Practice Recommended by Various Authorities*

(*a*) *Thicknesses.*—It has been suggested that a failure to recognize a certain minimum thickness for slates has been unfavorable to the industry; that some producers are in the habit of splitting their slates too thin; and that the insistence by architects and the general public on thicker slates would result in much less breakage, a higher standard of splitting and sorting slates, and the marketing of a product of higher grade. The minimum thickness suggested is three sixteenths of an inch for the strongest slates and fully a quarter of an inch for the common slates of somewhat less strength. The growing demand for thicker slates to produce rough effects should assist in this development of the industry. ("Stone in 1915" 2A1*d*.)

(*b*) *Slope.*—Slate makes a good roof if of good quality and properly watched. It breaks easily and cannot be walked on without damage to the slate.

Tile of good quality gives good results. It is not so tight as slate, but does not break easily. It has architectural value and its use is growing with improvement in the product and in the variety of colors.

Slate and tile of suitable quality, properly protected and fastened, can be recommended on roofs with a pitch of six (6) inches to the foot or over, where expense is not the governing feature, and where they aid in producing the desired architectural effect, except that where there is much chance of driving snow, eight (8) inches to the foot should be the flattest slope allowed. (Committee on Buildings, American Railway Engineering Association, 1A9*e*.)

(*c*) *Flat Surfaces.*—Slate is being much used for flat roofs and for terrace paving, garden walks and similar purposes. For concrete underfills for latter uses see 1E9 and for a suggested flat roof treatment see "Standard Specifications for Use over Concrete" as put forth by the North Bangor Slate Company in collaboration with the Barrett Manufacturing Company, printed on page X of the Industrial Section.

(*d*) By the National Board of Fire Underwriters (Serial No. 3): "Building Code Recommended," 1915. Part XV. "Roofs and Roof Structures." Pp. 102–108.

(*e*) By the National Board of Fire Underwriters (Serial No. 3): "Dwelling Houses, A Code of Suggestions for Construction and Fire Protection," 1916. Part IV. "Roofings, Approved Fire-Resistive Materials for. P. 135.

2K7 *General Standards*

(*a*) *Roofing Slate—Navy Department Specifications. Serial designation 59S1*, February 1, 1915.

General:

(1) Slate shall be of the dimensions specified, not less than $\frac{1}{4}$ inch thick, best quality, uniform in size, color, texture, and composition; sound, dark blue or black, or other color desired. Tails and edges shall be cut square and true. Nail-holes shall be drilled and countersunk for the heads of nails. Slate shall be free from warped surfaces, quartz ribbons, or quartz particles, and the presence of injurious carbonates and sulphides shall be cause for rejection. Where unfading slate is desired, or the slate is to be exposed to acid fumes, slates which effervesce with hydrochloric acid applied as follows shall be rejected: Hydrochloric acid having a specific gravity of about 1.20 at 60°F. or about 38 per cent of absolute acid is to be diluted so that 60 per cent by volume of the diluted acid shall be water. This acid is to be applied to the freshly broken edges of the slate.

Trade Name:

(2) Bidders shall state trade name of slate, name and locality of quarry, and, where required, submit sample of the slate which they propose to furnish.

NOTE.—Copies of the above specifications can be obtained upon application to the various Navy pay offices or to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.

(*b*) *Of Measurement and Size of Roofing Slate.*—Roofing slate is sold in the United States by the "square," a "square" being a sufficient number, of pieces of slate of any size to cover 100 square feet of roof, with allowance generally for a 3-inch lap. The size of the pieces of slate making up a square ranges from 7 by 9 inches to 16 by 24 inches, and the number of pieces in a square ranges from 85 to 686, according to the size of the pieces. The ordinary thickness of a piece is from $\frac{1}{8}$ to $\frac{3}{16}$ inch, and the approximate weight per square is about 650 pounds.—From "Mineral Resources of the U. S.," 1915, 2A1*d*.

(*c*) *Of Laying Cost of Roofing Slate.*—"The square is also the basis on which the cost of laying is measured. 'Eaves, hips, valleys, and cuttings against walls or dormers are measured extra; 1 foot wide by their whole length, the extra charge being made for waste material and the increased labor required in cutting and fitting. Openings less than 3 square feet are not deducted, and all cuttings around them are measured extra. Extra charges are also made for borders, figures, and any change of color of the work and for steeples, towers, and perpendicular surfaces.' "—From "Kidder's Pocket Book," 1916. P. 1499.

2K8 *Current Comments*

(*a*) "The U. S. Geological Survey in 'Stone in 1915' says: 'For several years slate has suffered from competition with artificial roofing materials, which have been aggressively advertised, and from the increasing number of factories, dwellings, schools, and other buildings that have been built with flat roofs. Some slate-producers complain that there is a general apathy on the part of slate companies in meeting these conditions; that inadequate advertising of slate is largely responsible for the inroads made by well-advertised artificial materials; and that the failure of companies to coöperate in promoting its development has allowed the slate industry to remain nearly stationary or to decline, while other competing industries have made substantial progress.' "

(*b*) *Graduated and Variegated Roofing.*—A decided impetus has in recent years been given the roofing slate industry through the activities of a few resourceful producers who have coöperated with some architects in procuring roofs distinctive in this country though happily to be found in abundance in Europe. There, as here, the effect desired is obtained by utilizing to the full the materials with which the quarries abound including the largest range of color and varying sizes and thicknesses. Naturally, however, the cost of production, transportation and laying increases the cost of the roof but not out of proportion to the effect desired. Notes pertaining to this kind of roofing as the "Old English Method" will be found in "Kidder's Pocket Book," 1916, page 1498.

(*c*) As applicable also to slate, see "Selling Stone by Sample" 2J10.

Industrial Section Classified Index

Industrial Section Index

GENERAL SLATE COMPANY

Asks leave, in appearing in this issue of the Journal of the American Institute of Architects, to introduce itself to the profession.

It has recently been organized for the purpose of acquiring and operating the Monson Lustre quarry, the largest producer of Maine roofing slate; the D. C. Sherman quarry near Fair Haven, Vermont, one of the largest producers of unfading purple, mottled, and green Vermont slates; and one or two quarries producing other colors. It plans shortly to equip and operate receiving yards for concentrating at, and distributing from, convenient shipping points its own output of roofing slate and that of a number of other quarries. Still later, it will produce structural slate. It can now furnish terrace and other flagging slate.

It is well known that the roofing slate business requires better service, better producing and shipping facilities, and quicker deliveries. General Slate Company plans to provide all these, and to accept no orders it cannot fill when and as promised; hoping in that way to build a trade upon the solid foundation of willingness and honesty of service. It feels that Architects will appreciate these things and hopes for their recognition accordingly.

GENERAL SLATE COMPANY
Fine Unfading Maine and Vermont Slates

SUCCESSOR TO

Monson Lustre Slate Company Maine Slate Company of Monson
D. C. Sherman Slate Company

200 DEVONSHIRE STREET, BOSTON

Samples filed with

ARCHITECTS SAMPLES CORPORATION
Park Avenue and Fortieth Street
New York, N. Y.

BUILDING MATERIAL EXHIBIT
Fifth Avenue and Sherman Street
Chicago, Ill.

NORTH BANGOR SLATE CO.

BANGOR, PA.

QUALITY:

Bangor slate is renowned for toughness, durability, non-porosity, and fissility, or the quality of splitting readily. Plates as large as 7 x 5 feet may be split into 3/8-inch thicknesses.

COLOR:

U. S. Geological Survey, Bulletin 586, of 1914, says: "The slate is very dark gray and to the unaided eye has a fine texture and a very smooth cleavage surface with but slight luster. It contains some magnetite and is sonorous."

GRADES:

Genuine No. 1 Bangor Slate: The best roofing slate quarried in commercial quantities, as to smoothness, strength, and quality. Split to about 3/16-inch thickness, or thicker if desired, with smooth sides and square corners.

No. 1 Ribbon: Contains one or more "ribbons," so placed as to be covered in laying and presents a roof similar to No. 1.

No. 2 Ribbon: Contains several "ribbons," some of which cannot be covered in laying.

No. 2 Clear: A slate without "ribbons" and made from rough beds.

DIMENSIONS:

Thicknesses: Vary from 1/8 to 3/8 inch with 3/16 inch as average.

Sizes: Range from 6 x 12 to 24 x 14 inches. This Company makes about twenty different sizes. Sizes best adapted to plain roofs are the large wide slates such as 12 x 16 to 24 x 14 inches. Larger sizes make less joints, use less nails, and are more quickly laid; therefore, are the most economical.

Strength: 3/16-inch thick slates give full weather-protection and are strong enough to be walked on.

Weights: 3/16-inch thick slates will weigh, on the roof, about 6½ pounds per square foot; ¼-inch thick weighs 8¾ pounds. Actual weight of ¼-inch thick is 6 3/3 pounds per square foot.

SLATE FOR FLAT ROOFS:

A flat slate roof gives what we believe to be the most serviceable and economical roof, in the end. It is fireproof, weatherproof, and affords a surface that is not injured by being walked on.

Costs: Slate roofs cost more than some others at first, but we believe they are cheapest in the end. Costs vary with freight rates, labor, and the size and thickness desired.

Sizes and Finish: Favored slates for flat roofs comprise 6x8, 7x9, 6½x10, 7x11, 8x12 and 9x13 inches, all 3/16 inch thick. For slate tile roofs we recommend 10x10 and 12x12 inches in size, and ½ to 7/8 inch in thickness as desired. The under surface of slate tile is planed. The upper surface may be planed or rubbed. The edges are sawed.

THE FLAT SLATE ROOF WILL BE EXEMPLIFIED IN OUR EXHIBIT IN THE NATIONAL COMPLETE BUILDING EXPOSITION TO BE HELD IN GRAND CENTRAL PALACE, NEW YORK CITY, MARCH 5–11, 1917.

STANDARD SPECIFICATION OF THE NORTH BANGOR SLATE CO.

Adopted May 1, 1916, for

GENUINE BANGOR SLATE ROOFS FOR FLAT SURFACES

FOR USE OVER CONCRETE:

NOTE:—When incline exceeds one (1) inch to one (1) foot, special specifications will be furnished upon request. Specifications and diagrams for use over *board sheathing* will also be furnished upon request.

The roof deck shall be left, by other contractors, smooth, firm, dry, properly graded to outlets and free from loose material, all ready for the roofer to proceed, as follows:

First. Coat the concrete uniformly with Specification Pitch.

Second. Over the entire surface lay two (2) plies of specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, mopping with Specification Pitch the full seventeen (17) inches on each sheet, so that in no place shall Felt touch Felt.

Third. Coat the entire surface uniformly with Specification Pitch.

Fourth. Over the entire surface lay three (3) plies of Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Specification Pitch the full twenty-two (22) inches on each sheet, so that in no place shall Felt touch Felt.

Fifth. Spread over the entire surface a uniform coating of WARREN'S No. 144 GENUINE BANGOR ROOFING ASPHALT, using an average of fifty (50) pounds to one hundred (100) square feet, into which, while hot, thoroughly embed GENUINE BANGOR SLATE; grade ——— size——— inches by——— inches (grade and size to be inserted); Slate to be perfectly dry when placed.

Flashings shall be constructed as shown in detailed drawing.

The roof may be inspected before the Slate are applied by cutting a slit not less than three (3) feet long at right angles to the way the Felt is laid. The cut can be repaired by sticking five (5) thicknesses of Felt over it, and the spot will then be as strong as any part of the roof.

NOTE.—We advise incorporating the full wording of the specification and inserting roofing details in plans in order to avoid any misunderstanding. If an abbreviated form is desired, the following is suggested:

Roofing: Shall be a GENUINE BANGOR SLATE ROOF FOR FLAT SURFACE (for use over concrete) laid as directed in printed specification, issued May 1, 1916, or as printed in the Journal of the American Institute of Architects, Serial No. 2, 1917, using the materials specified, and subject to the inspection requirement.

The ARISTOCRAT *of* BUILDING MATERIALS

Of United States Post Offices the majority are of late years being built of Indiana Limestone.

This is significant, for it proves four things: 1st, that Indiana Limestone fitly represents in dignity and worth the Federal Government; 2nd, that it has stood the test of time and use; 3rd, that it has stood the searching, scientific tests of the Government laboratories; 4th, that its cost is not too high for the smaller any more than for the larger buildings.

Indiana Limestone supplies a continent with "The Aristocrat of Building Materials" and anyone who contemplates building, whether a cottage or a skyscraper or anything between these, should *begin by sending for Volume I of the Indiana Limestone Library and a sample of the stone. BOTH ARE FREE.*

Indiana Limestone Quarrymen's Association

P. O. Box 209, BEDFORD, INDIANA

Great Northern Station, Minneapolis Constructed of Stone from Kettle River Quarries

KETTLE RIVER

The Stone of Distinctive Color

Location of Quarries.—Sandstone, Pine County, Minnesota, between Minneapolis and Duluth, on the Great Northern Railway.

When Opened.—Opened in 1885 as a source of supply of heavy and durable bridge masonry for use in building the Minneapolis to Duluth branch of the Great Northern Railway, known as the Eastern Minnesota, the quarries have been in continuous operation since that time. The quarry face, a mile long and varying from 75 to 125 feet in height, lies along and above the Kettle River, which affords perfect and natural drainage at all seasons.

Equipment.—A complete modern equipment of stone-quarrying, -sawing, -cutting and finishing machinery, air-compressors, dynamos, twenty-ton derricks, hoisting machinery, gang, diamond and carborundum saws, pneumatic cutting tools, diamond-point barrel column-cutters, lathes, rubbing-beds and polishers. Locomotives, operating on standard gauge tracks furnish quick service between the different quarrying, sawing and finishing plants and operations.

NATURE OF THE STONE

(*a*) *Formation.*—"As to the geologic age of the sandstone now being quarried by The Kettle River Company near Sandstone, Minnesota, I beg to state that the rock is now considered to be of Cambrian age, although possibly future investigations may show it to belong to an earlier deposit. It is regarded by the geologists at the University of Minnesota, who are more familiar with the field than I am, as being older than the Potsdam sandstone. This places the Kettle River stone among the oldest of non-metamorphic rocks."

(Signed) E. F. Burchard, Asst. Geologist, Department of the Interior, U. S. Geological Survey.

(*b*) *Texture.*—"Under the microscope it (Kettle River sandstone) is seen to consist almost wholly of rounded and irregular quartz grains lying in close contact and with comparatively little interstitial material, though the individual granules show at times a very narrow border of secondarily deposited silica."

From examination and report by Dr. Geo. P. Merrill, and furnished by U. deC. Ravenel, Administrative Assistant, Smithsonian Institution, U. S. National Museum, Washington, D. C.

(*c*) *Chemical Anaylsis and Crushing Strength*

Kettle River Sandstone
Results of Tests Made by U. S. Arsenal (1B1.6), Watertown, Massachusetts

		4-inch Cubes	
Silica	97.10	Total pounds	Per square inch
Alumina	2.20		
Lime	0.60	204,100	12,295
Magnesia	0.10	209,900	12,799

(*d*) *Color.*—The distinctive color which ranges from buff to light pink cannot adequately be described even as "buff-pink." The wondrous tone has been likened by several prominent architects to the "Acropolis at sunset."

Due to the opening and developing of new ledges, stone is now furnished in any quantity and sizes having very attractive and effective veinings, particularly adapted to interior finish. An instance of this is the interior finish of the reference section of the new St. Paul Public Library, just completed.

(*e*) *Finish.*—The stone is supplied by the producers in any desired finish for both exterior and interior work, ranging from quarry-faced, pick-pointed, bush-hammered, patent-axed, or tooled to rubbed, gang, diamond or carborundum sawed. The carborundum-sawed surface produces a soft, warm, dull-finished effect that can be secured from no other stone and in sharp contrast to the usual cold, polished surfaces.

(*f*) *Hardness and Durability.*—Kettle River Sandstone is harder than most other sandstones because both the individual grains and the cementing material are almost wholly pure silica.

For over thirty years this stone has been used for heavy bridge masonry, street pavements and curbing where generally granite only is used.

"After fifteen years of hard usage the Kettle River stone masonry at our works is just as good as new, and wear and tear of same by the elements, and other sources, appear to be substantially nil, as anyone may see upon examination."

(Signed) St. Anthony Falls Water Power Company of Minneapolis, by Wm. de la Barre, Engr. Agt. and Treas.

"We have used the Kettle River Sandstone in the piers for the Combination Bridge Company bridge over the Missouri River at Sioux City, Iowa, and also in the large circular pier for the East Omaha bridge over the Missouri River at Omaha. We are now using it in rebuilding the piers for the Government bridge at Rock Island, Ill., over the Mississippi River. I consider the Kettle River Sandstone the best, for bridge purposes, excepting granite, that I have used west of the Mississippi River." (Signed) George Adgate,
Western Manager for Sooysmith & Co.

The same results have been obtained as to durability in building work, instances of which are:

The Forman residence on Park Avenue, Minneapolis, built twenty-eight years ago.

The Lakeside School of Duluth, erected twenty-two years ago.

The Library Building of the University of Illinois, at Urbana, Ill., built in 1896, twenty years past.

"We are much pleased with the Kettle River Sandstone furnished by you for the exterior of the new library building of the University of Illinois. This stone is of a fine and even grain, practically free from stratifications and entirely without flaws, seams, sandholes, shells and other fossils."

(Signed) Ricker and White, Architects.

Owing to the successful use of Kettle River stone in the foregoing and many other buildings throughout the country, it was adopted and used by Chas. H. Frost for the exterior of the two largest buildings erected in the Twin Cities in the last three years—the Great Northern Depot in Minneapolis, and the New Railway Building in St. Paul.

KETTLE RIVER COMPANY, Minneapolis, Minn.

PRESBREY-COYKENDALL COMPANY

198 BROADWAY
NEW YORK

Quarry and Works: Barre, Vt.

MANUFACTURERS AND BUILDERS OF

Monuments and Mausoleums

JOHN R. HEGEMAN MAUSOLEUM
Just completed at Woodlawn Cemetery. Ferdinand Prochaska, Architect. Cut from light Barre granite at our plant in Barre, Vermont, and erected by us

Practically speaking, there is no standard specification for mausoleum work. The essential point to bear in mind first and last is that this class of building differs from almost any other in that it will never be inhabited. The building will stand practically uncared for or have to withstand the elements for a long period without attention. This demands a construction which will require a minimum of care, the best results being more readily obtained in a comparatively small building holding no greater number of catacombs than can be spanned in the roof by stones within the limit of transportation. A consideration of this will show that the building of very large, such as community, mausoleums is more or less a wasted effort, as at best, owing to the construction their size calls for, they can only have a very limited life. The present-day condition of those hitherto in use in South America and some of the European countries, now being discarded, is a practical illustration of their futility.

The first part to give way under the stress of the weather is, of course, the joints, and by reason of this we avoid as far as possible all exposed joints on the base course or stylobate, as the case may be, and on the roof. Such joints as can not be avoided we make raised and cover with either bronze or stone. The same applies in a lesser degree to the joints in the wall. Where the architect feels that he must have a building in small units to give scale, this can be readily obtained by the use of false joints and still use large stones.

The rules of the Woodlawn Cemetery, New York, require fo exterior walls that the stone be not less than 10 inches thick and hold their face size the full thickness of the wall. The only satisfactory material for the exterior walls is granite and the best interior finish is from the same material, but in most cases marble is desired for the interior at least, and wainscoting should not be less than 2 inches thick, doweled and set in cement mortar and securely anchored to walls. Ceiling slabs not less than 1¼ inches thick. These should be supported by bronze perforated rosettes anchored to the under side of the roof with bronze suspension rod and lewis.

Elaborate systems of drainage for the catacombs, especially those involving mechanical features, are not imperishable and little better than useless; in fact, the New York state laws do not allow any drainage systems from the catacombs, but insist that they be as far as possible separately sealed and all interments must be in metal-lined boxes hermetically sealed.

Excerpt from Woodlawn Cemetery Company's rules and regulations:

The catacombs should be at least 7′–6″ long, 2′–8″ wide and 2′–2″ high in the clear. Catacombs which have marble fronts opening at the side may be constructed as follows: Ends 2″ slate rabbeted on the inside rear vertical edges for back slate, and on the front vertical edges for the marble tablet. The rabbets at the back should be ¾″ deep. The rabbets at the front should be ½″ deep at one end of the catacomb and 1⅛″ deep at the other end to allow the tablets to slide back and be taken out. The rabbets for the tablets may be cut on the vertical stiles instead of on the tablets if so desired.

The backs of the catacombs to be 1″ slate, shelves 2″ slate, large enough to fully cover the top edges of rear and end slates. All four corners of the catacomb stack to be braced against the outside walls by brick piers. The marble tablets to be not less than 1″ finished thickness. The posts or vertical stiles at the ends of catacombs to be not less than 2″ thick by 5″ wide, securely doweled or anchored at both top and bottom of the post and at the top of each catacomb. The rails to be not less than 2½″ thick by 6″ wide, and long enough to run back of the vertical stiles and lap 2″ on the slate at each end, the back edge of rail rabbeted to rest at least ½″ on top of the slate shelf, or both rail and shelf rabbeted. All parts to be set in cement mortar.

To avoid the bad effects of condensation, ventilation should be liberally provided, not only in the auditorium, but between the marble wainscoting and outer wall. Inlets should be provided in outside wall leading into the space behind catacomb stacks and wainscoting, and outlets provided in the ceiling of the auditorium and in the upper part of walls to cause circulation of air as much as possible.

We try to avoid the use of reinforced or large masses of concrete for any integral part of the superstructure or the support of roofing. Most problems can generally be worked out to use granite instead.

As for foundations, it has generally been found satisfactory to simply use concrete walls under the main building 6 feet deep and 4 feet deep under the catacomb stacks and flooring. The use of granite in one or more slabs for floor obviates the necessity of providing a foundation for the floor other than the walls, taking care of the catacomb stacks.

We are at all times willing to answer questions or assist architects in developing practical plans for mausoleums or monuments.

MILFORD MASSACHUSETTS GRANITE

WEBB PINK MILFORD WEBB WHITE MILFORD WEBB BUFF MILFORD

WEBB PRODUCTS

Milford, Mass. Granite for Commercial and Monumental Buildings and Memorials. Rough, Cut, Rubbed or Polished.

DESCRIPTION OF WEBB GRANITES

The WEBB PINK MILFORD is a distinctive, warm-toned PINK granite, having a uniform distribution of clear, black spottings, which contribute to the clean, clear-cut appearance, which has made Milford Granite a famous building material. This granite does not take on a cold appearance, but grows warmer, more pleasing, as it ages.

The WEBB WHITE MILFORD has the same characteristics as the Webb Pink, except that the general cast of color is Creamy White, producing a clear, white appearance in the mass, without losing its warmth of tone. This granite does not darken with age, because of its unusual hardness and low absorptive tendency.

The WEBB BUFF MILFORD is a new product, similar in characteristics to the Pink and White, but having a predominating, soft-toned Buff background, which is peculiar to itself. This granite is adapted more particularly to special work, rather than to large work, as it requires careful selection and matching.

GENERAL CHARACTERISTICS

These Granites are hard, compact, close-grained granites, adapted equally well to fine mouldings and carving, or to bold members and large spaces.

COMPRESSIVE STRENGTH

WEBB MILFORD GRANITES rank as the strongest of building granites, having an average compressive strength of approximately 30,000 pounds to the square inch.

FACILITIES AND SERVICE

The WEBB PINK GRANITE COMPANY owns about 350 acres of Quarry Land in Milford, Mass. All the quarries are fully equipped with Electric Power, Compressed Air, and Heavy Duty Derricks.

The large Cutting Plant is fully equipped with electric cranes and crane cars, for handling, and the most modern devices and tools for Cutting, Sawing, and Polishing granite.

The Plant and Organization are planned for Service and Fine Workmanship. Time schedules are maintained religiously, Service being our specialty.

SPECIAL NOTE.—Monoliths and blocks of large size are readily quarried and finished; the only limit as to size and weight being that of transportation.

SOME CONTRACTS EXECUTED

NEW POST OFFICE, New York City.
McKIM, MEAD AND WHITE

WILMINGTON PUBLIC BUILDINGS, Wilmington, Del.
JOHN D. THOMPSON, Jr.
PALMER, HORNBOSTEL & JONES, Associated

NEW EQUITABLE BUILDING, New York City.
E. R. GRAHAM

LEXINGTON STREET BUILDING, Baltimore, Md.
PARKER, THOMAS & RICE

UNION STATION, Baltimore, Md.
KENNETH MURCHISON

U. S. NATIONAL BANK, Johnstown, Pa.
MOWBRAY & UFFINGER

PEOPLES GAS BUILDING, Chicago, Ill.
D. H. BURNHAM & CO.

CENTENNIAL MEMORIAL MONUMENT, Chicago, Ill.
HENRY BACON

WEBB PINK GRANITE COMPANY

WORCESTER, MASS.

CROZER BUILDING, CHESTER, PA. MOWBRAY AND UFFINGER, ARCHITECTS

Speed, Economy, Beauty

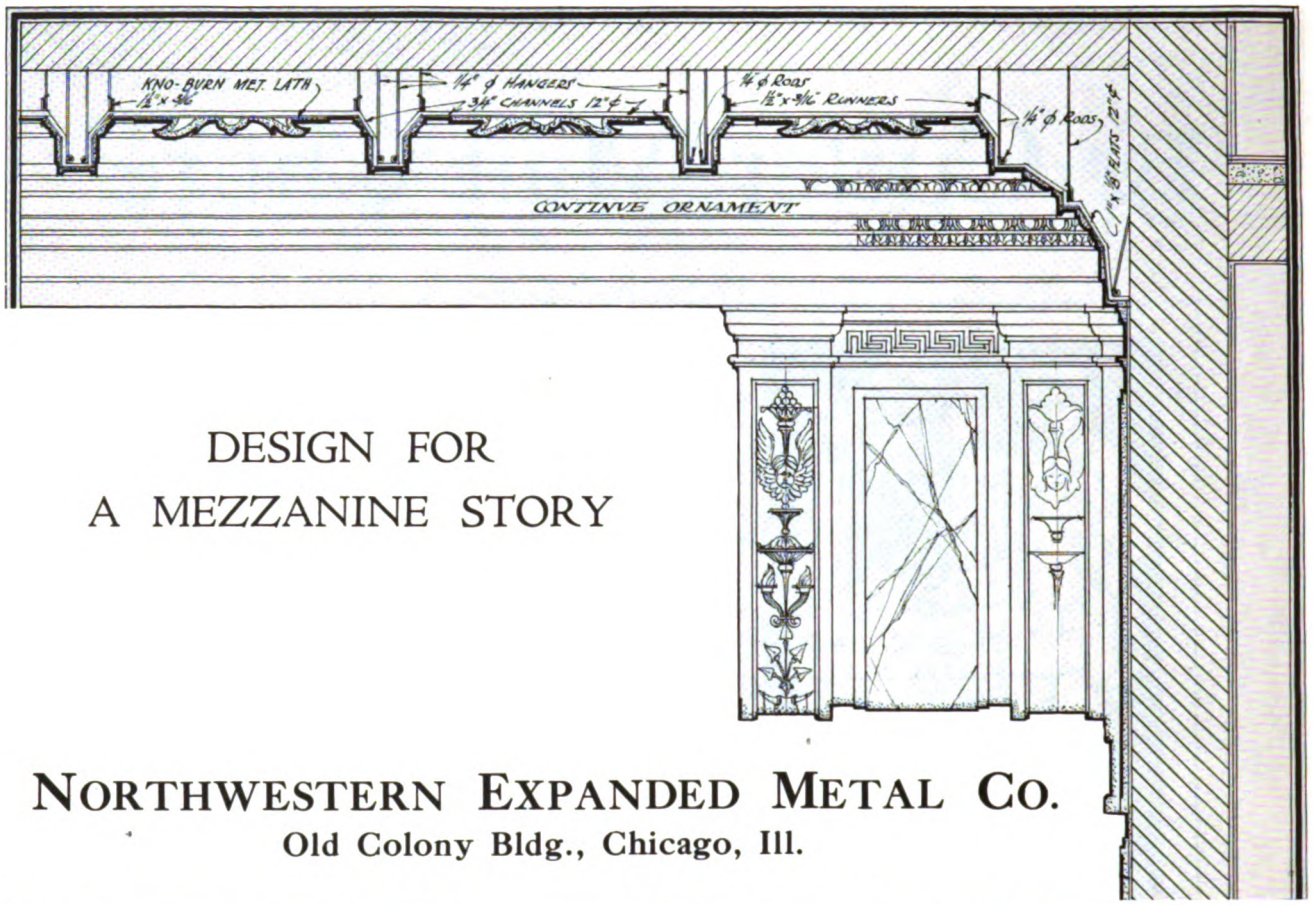
The first story of this building occupied several months in its erection. The remaining stories, in which was used O. W. Ketcham's White MATT-GLAZE Architectural TERRA COTTA, were erected in four weeks' time.

O. W. KETCHAM

Master Builders' Exchange, 24 South Seventh Street, PHILADELPHIA, PA.

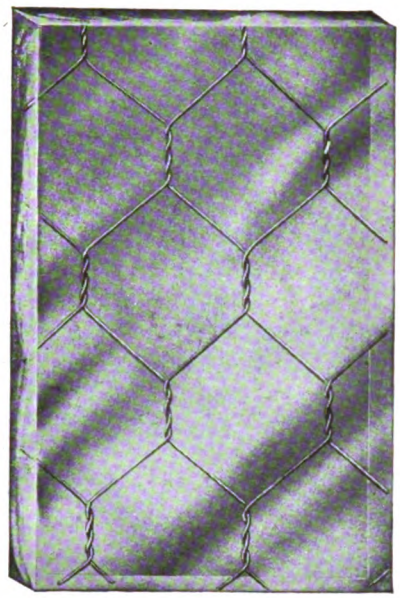
BALTIMORE WASHINGTON NEW YORK

Terra Cotta Factory: Crum Lynne, Pa.



DESIGN FOR
A MEZZANINE STORY

NORTHWESTERN EXPANDED METAL CO.
Old Colony Bldg., Chicago, Ill.



Mississippi
Polished Wire Glass

Your client selects you because he has confidence in your judgment.

Your judgment tells you to use Wire Glass as a protection against fire and breakage.

Your experience has taught you that

Mississippi Wire Glass

is the recognized standard.

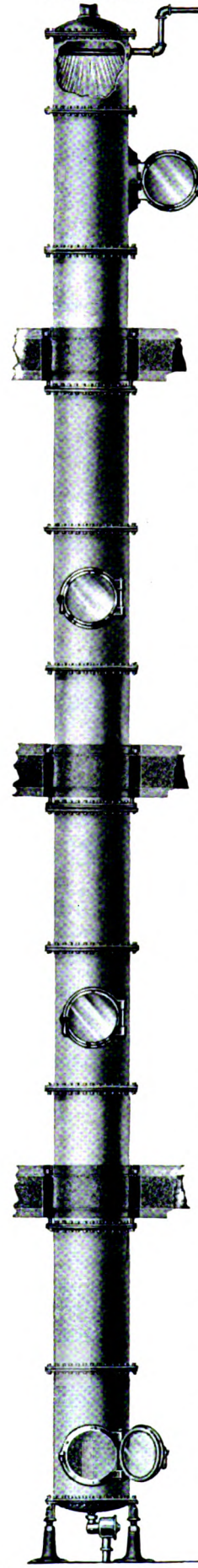
So specify as your judgment prompts you,

Mississippi Wire Glass

Write for Descriptive Catalog, Report on Diffusion of Light, and Samples

Mississippi Wire Glass Co.
Croisic Building, NEW YORK

7 W. Madison St., Chicago 4070 N. Main St., St. Louis



Cleansed by the turning of a valve →

Sensible Economy

in Hospital construction, as well as in that of Industrial plants, often justifies the installation of devices which cost more at first but are cheaper in the end. The

PFAUDLER
Glass Enameled Steel Laundry Chute

is just such a device. It is *cheaper in the end* than a wooden, tile, metal lined or other makeshift chute.

The smooth, sanitary lining of Glass Enamel is thoroughly fused into the substantial steel shell, assuring, as long as the building stands, a conveyor of infected, soiled linen which will not have to be torn out, will never tear the clothes nor stain them with rust, and which **can be thoroughly cleansed.**

A flushing ring at the top purges it, with hot water, of foul deposits and infections. A large vent through the roof dries it quickly and keeps it well ventilated.

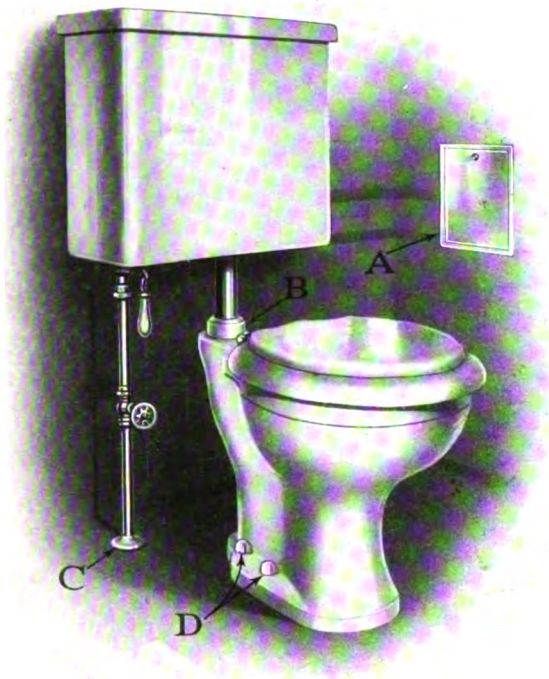
Let us tell you why so many prominent hospitals have been equipped with these time-saving, durable chutes.

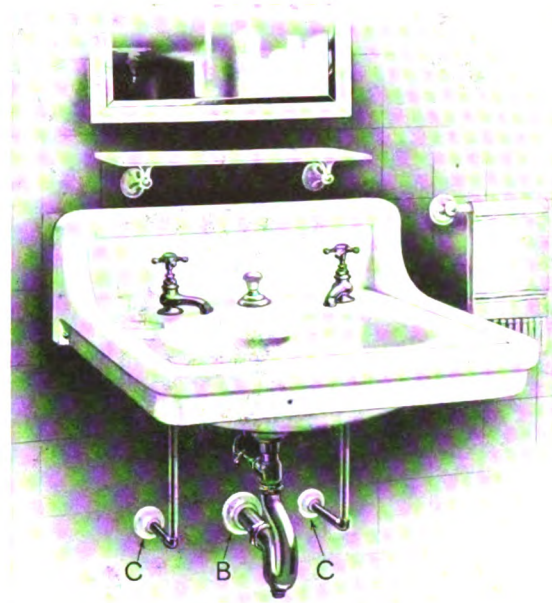
THE PFAUDLER CO.
ROCHESTER, N. Y.

New York 110 W. 40th St. Chicago 1001 Schiller Bldg.

San Francisco, 512 Sharon Bldg.

FAIRFACTS CHINA ESCUTCHEONS CLEAN COLLARS FOR PLUMBING FIXTURES





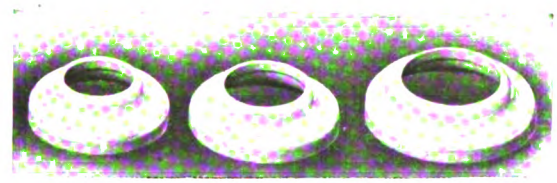
To Architects:

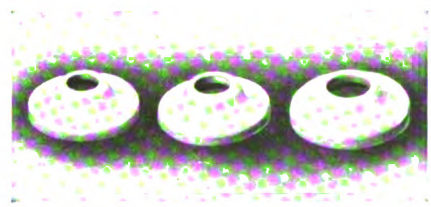
The discordant note in plumbing fixtures, otherwise attractive, has been the shabby pipe escutcheons of metal. Dented, green, and tarnished, they detract from a worthy fixture.

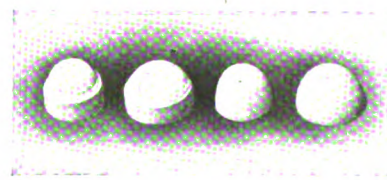
FAIRFACTS CHINA ESCUTCHEONS are the embodiment of sanitary excellence.

Incidentally, they cost no more than the obsolete metal escutcheons.

SPECIFICATION: All exposed waste and supply pipes to all plumbing fixtures shall be finished at the wall or floor with FAIRFACTS CHINA PIPE ESCUTCHEONS of a suitable size.







Write for our booklet, "Clean Collars for Plumbing Fixtures"

THE FAIRFACTS COMPANY, 104 East 41st Street, NEW YORK CITY

NORTHWESTERN is a short form of specification for architectural Terra Cotta of superior quality.

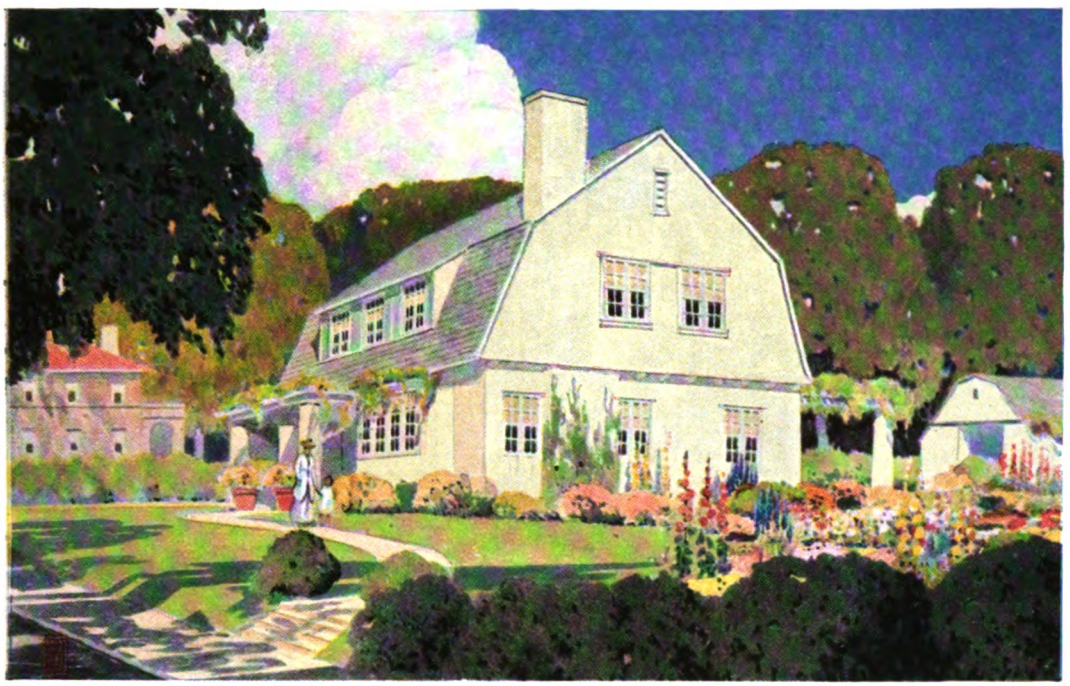
THIS entrance to a modern Chicago building illustrates the skillful use of polychrome terra cotta to obtain an effect of unusual distinction and originality.

The ornaments are white on a blue background, against cream glaze terra cotta. Otis and Clark were the architects The terra cotta was furnished by the Northwestern Terra Cotta Company.

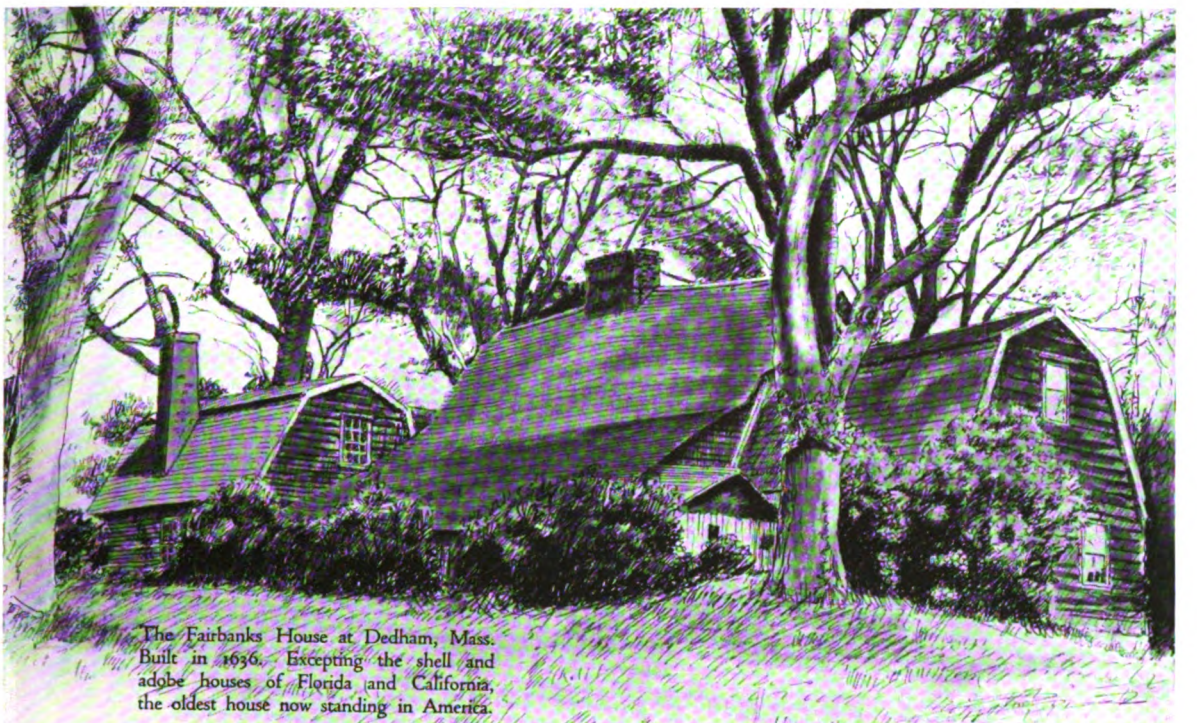
The use of Northwestern Terra Cotta by leading architects is tacit tribute to our long established reputation for unvarying quality and conscientious service.

THE NORTHWESTERN TERRA COTTA CO.

CHICAGO



WITH a view to developing the aesthetic possibilities of stucco, we have undertaken a series of experiments in color tones and textures. In the first of these experiments, attention has been centered upon the use of color aggregates with Atlas-White Cement. Pink marble and granite screenings, yellow gravel or marble, and light red or green marble were used—also mixtures of these aggregates to give variety to the tone. A book reproducing specimen panels of these experiments in full scale and color will be sent upon request. The Atlas Portland Cement Company, New York or Chicago.



The Fairbanks House at Dedham, Mass. Built in 1636. Excepting the shell and adobe houses of Florida and California, the oldest house now standing in America.

281 Years Old—and Still a Comfortable Home

For almost three centuries this unpainted house has stood exposed to the weather. Continuously occupied and still almost perfectly preserved, it offers convincing proof of the enduring qualities of

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Every architect should see the "Viceroy," our beauiful *one-piece* built-in bath. The price is surprisingly low.

Write for free copy of our interesting book, "KOHLER OF KOHLER." It describes the "Viceroy" fully.

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Belmore Lavatory
Plate K-145-EA

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KOHLER CO.
Founded 1873
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The "Viceroy," Plate V-14
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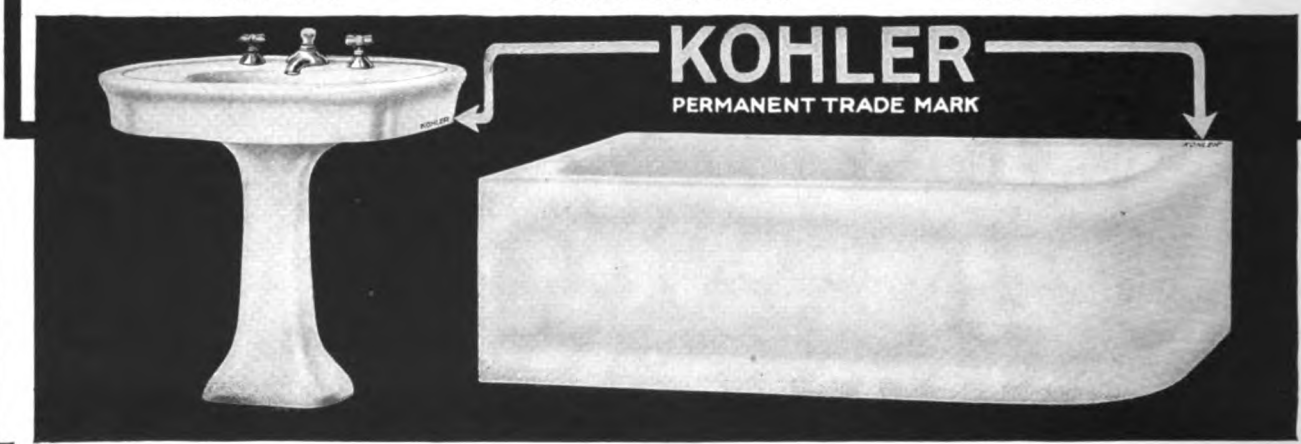
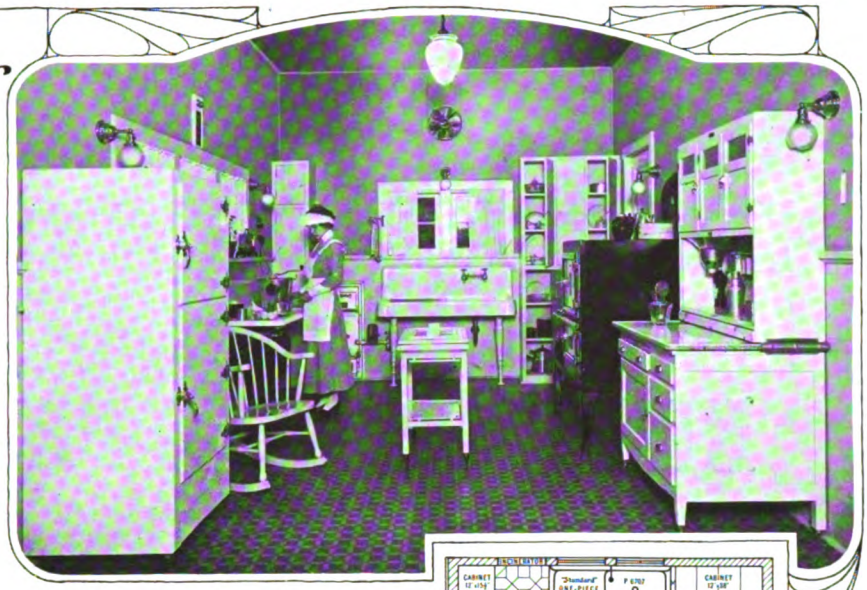
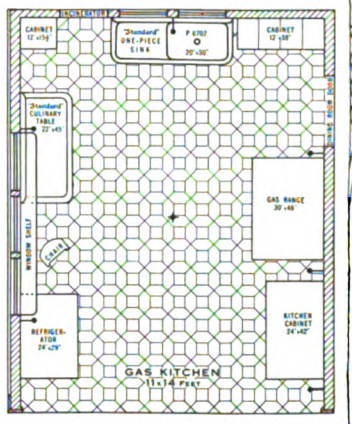


Efficiency Kitchen



EQUIPPED WITH A
"Standard"
ONE-PIECE SINK

A well planned, well equipped Kitchen is a source of comfort and convenience to the present-day busy housewife. The accompanying picture and floor plan represent an ideal Kitchen arrangement and reflect the progress that has been made in Kitchen Efficiency.



Since the first requisite in the efficient Kitchen is sanitation, the necessity of a sanitary sink is obvious. Practically all food is prepared at the sink.

"Standard" One-Piece Sinks

meet the requirements of the most discriminate who demand sanitation, good appearance and efficiency in service. Made in one piece without dirt catching cracks or crevices—beautiful, clean, white enamel finish.

A "Standard" Sink is the Heart of the Efficiency Kitchen.

"Standard" Sinks are adjustable in height from 30 to 36 inches. Improved faucets that prevent splashing, duplex strainers, and air chambers that prevent "pounding" are distinctive features.

The size and design shown herewith is one of a wide variety. Our "Special Sink Folder" describing the complete line will be sent on request. Of particular interest to the Architect is our "Special Efficiency Kitchen Bulletin." Write for a copy. Both Booklets are free.

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FROM the sidewalk, most towns look satisfyingly safe. On every hand we see traffic regulated, police on duty, adequate street lighting, fire hydrants, and modern fire stations.

But the balloon view of that town might look different—less safe. And this is the view fire takes when it figures out a raid. Fire sees the town *above* the cornice line and plots its course from one inflammable roof to another.

So it is largely the community's roof that determines its safety from fire. And since you, the architect, are responsible for its design, the community's safety lies largely in your hands.

But it's not solely on the basis of fire-safety—vital though this is—that we urge Johns-Manville Asbestos Roofing. These roofs resist fire—but on many other grounds, too, they justify their selection. Roofs of J-M Asbestos can neither corrode nor rot, nor do they require periodic renewal, repair, or coating. We call them "first-cost-last-cost" roofings—and hundreds of installations bear out this description through years of service. When you specify them, you serve the community, and at the same time benefit your client by reducing upkeep.

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CAST IRON SOIL

IN THE BUILDING
UNDER THE GROUND

Cast Iron Soil Pipe and Fittings are used in all drainage and vent lines of this Modern 25-Story Office Building at Madison Avenue and 42nd Street New York

JARDINE, HILL and MURDOCK Architects NEW YORK

In the BUILDING

A COMPARISON OF WROUGHT IRON PIPE WITH CAST IRON SOIL PIPE

The horizontal wrought iron pipe is almost gone, and the vertical wrought iron pipe is corroded through in many places. The outside of all this wrought iron pipe is pitted, but most of the corrosion is from the inside. The Cast Iron Soil Pipe is as good as when first installed

The cast iron soil, waste, vent and leader lines in this 16-Story New York structure will last longer than the building

CAST IRON SOIL PIPE IS USED IN THE MOST CAREFULLY PLANNED BUILDINGS

In all house drainage it has an unequalled record for sanitation, economy and permanent service

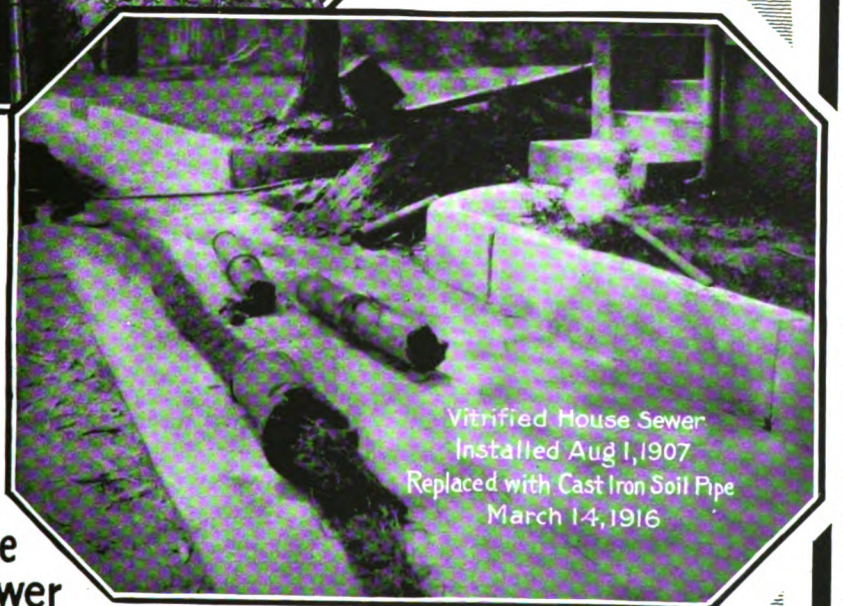
The increasing heights of Buildings make more than ever necessary the use of Cast Iron Soil Pipe

CAST IRON SOIL PIPE LASTS LONGER THAN THE BUILDING

PIPE FOREVER!

UNDER THE GROUND

VITRIFIED house sewers, failed in less than two years. Became choked with tree roots, causing contamination of subsoil and cellar. Replaced with Cast Iron Soil Pipe



THIS Six-Inch vitrified pipe had been used from the sewer main to the property line. and from this point to the house drain four-inch vitrified pipe was used. The sewer became clogged and the toilets overflowed on the floor. Investigation showed the vitrified pipe to be full of roots from the building to within five feet of the sewer main. The sewer main is 8 ft. 6 in. deep at this point. The roots shown are 14 ft. 8 in. long and gained an entrance by breaking the bell from a length of six-inch pipe

USE SOIL PIPE WHERE SOIL PIPE SHOULD BE USED

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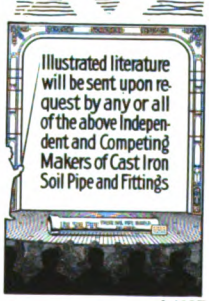

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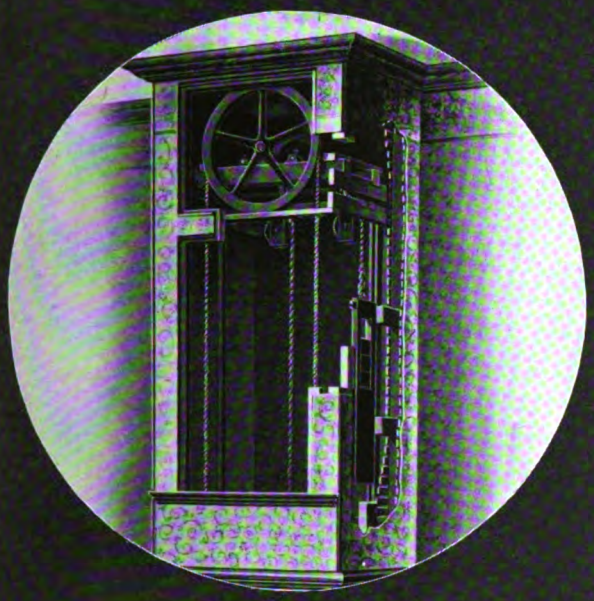

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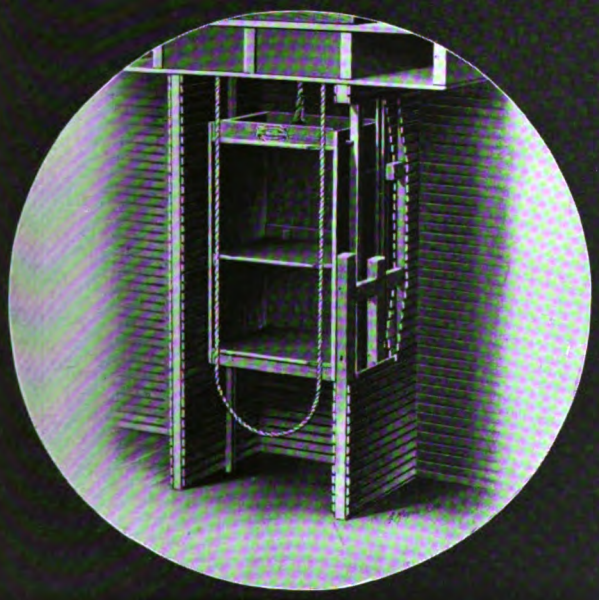

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The Trenton Potteries Co.

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The Si-wel-clo, which cannot be heard beyond a closed door, is the final touch of intelligent taste in bathroom fittings.

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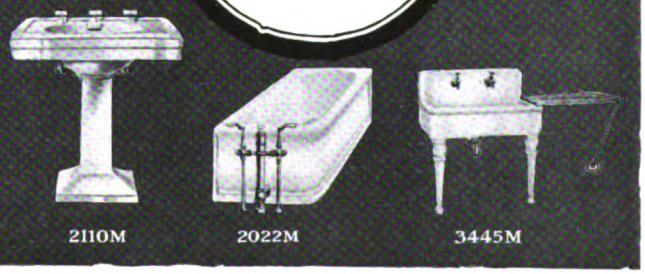

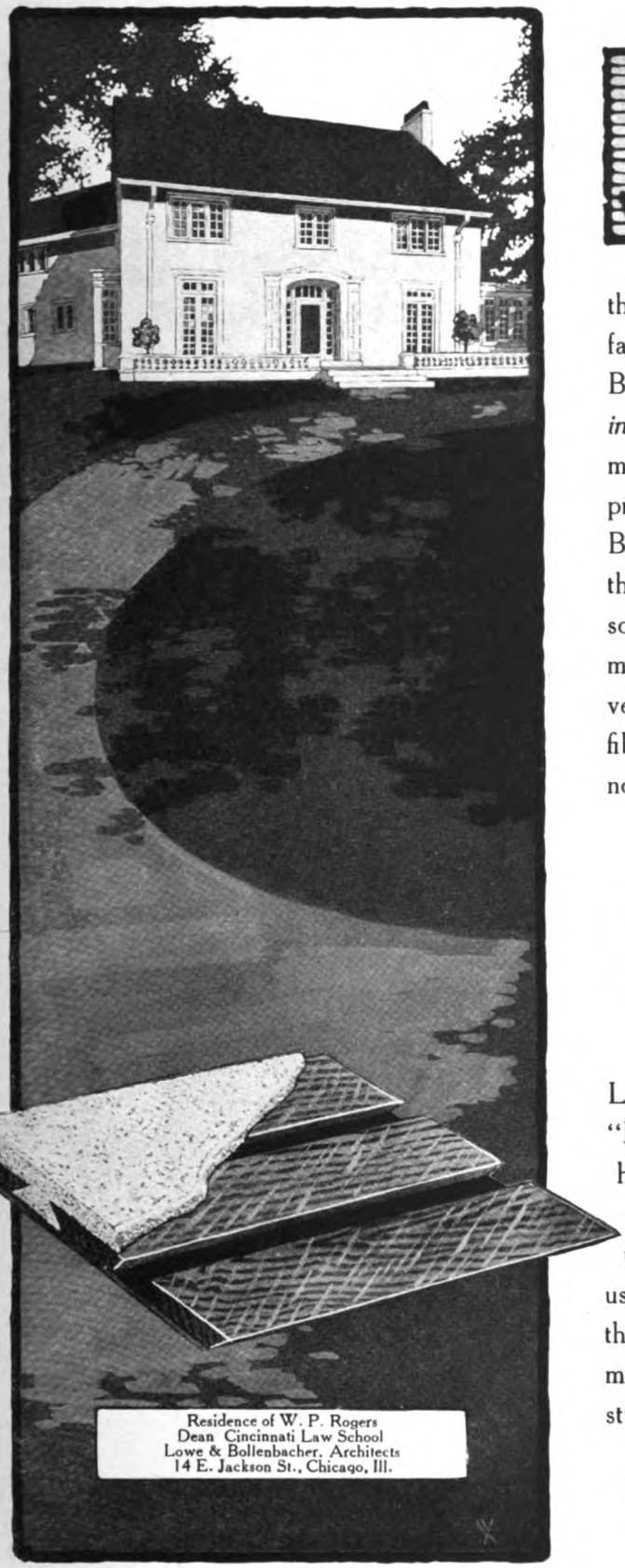

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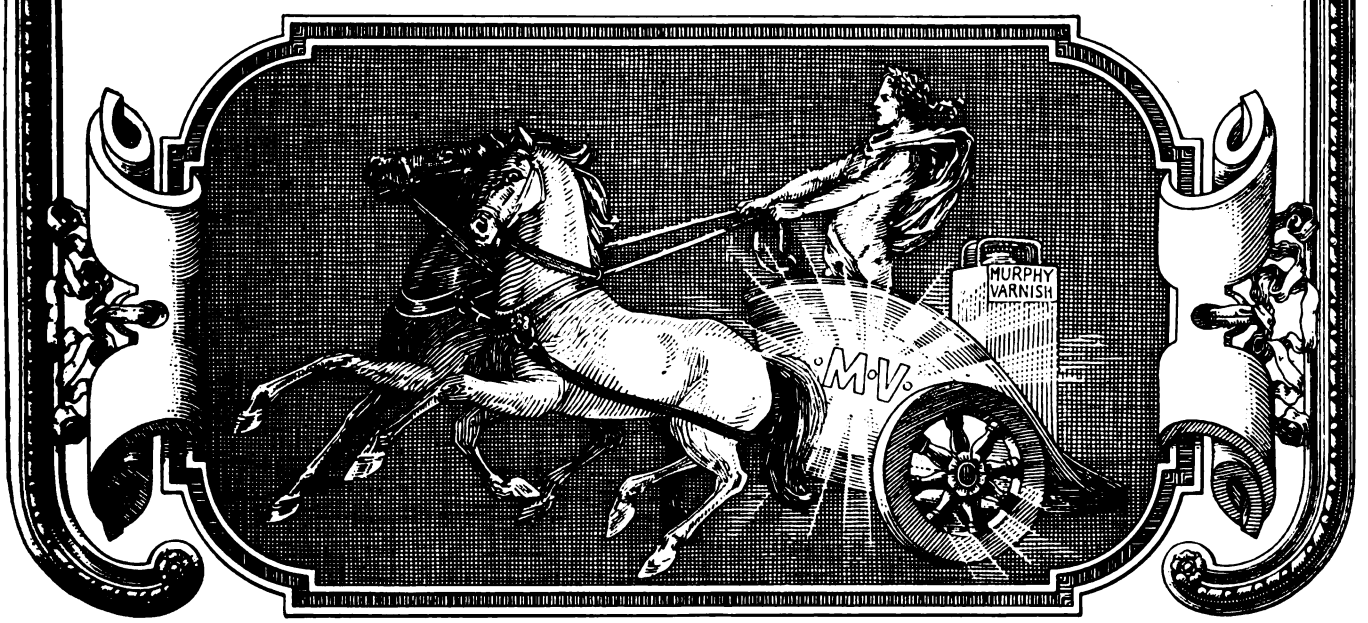

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John M. Donaldson . . . . . Detroit
Arthur Wallace Rice . . . . Boston
Ellis F. Lawrence . . . . . Portland
N. Max Dunning . . . . . Chicago

PUBLIC INFORMATION

Frank H. Bosworth, Jr. . . . New York
Chairman
Albert Kelsey . . . . . Philadelphia
Wm. H. Schuchardt . . . . . Milwaukee
Charles H. Hammond . . . . . Chicago

INSTITUTE PUBLICATIONS

For One Year—
C. L. Borie, Jr. . . . . Philadelphia
H. Van Buren Magonigle . New York
For Two Years—
Thomas R. Kimball . . . . . Omaha
William Emerson . . . . . New York
For Three Years—
Frank C. Baldwin . . Fredericksburg, Va.
Chairman
C. Grant La Farge. . New York

BASIC BUILDING CODE

See Structural Service Department, page 131.

REGISTRATION LAWS

Wm. P. Bannister, *Chairman* . Brooklyn
Albert C. Martin . . . . . Los Angeles
Edward B. Green . . . . . Buffalo
Frank E. Wetherill. . . . . Des Moines
Edgar A. Mathews . . . . San Francisco

MATERIALS AND METHODS

Thomas Nolan, *Chairman* . . . Philadelphia
(There is a subcommittee in each chapter)

COMMITTEE ON LINCOLN HIGHWAY

Elmer C. Jensen, *Chairman* . . Chicago
Elmo C. Lowe . . . . . Chicago
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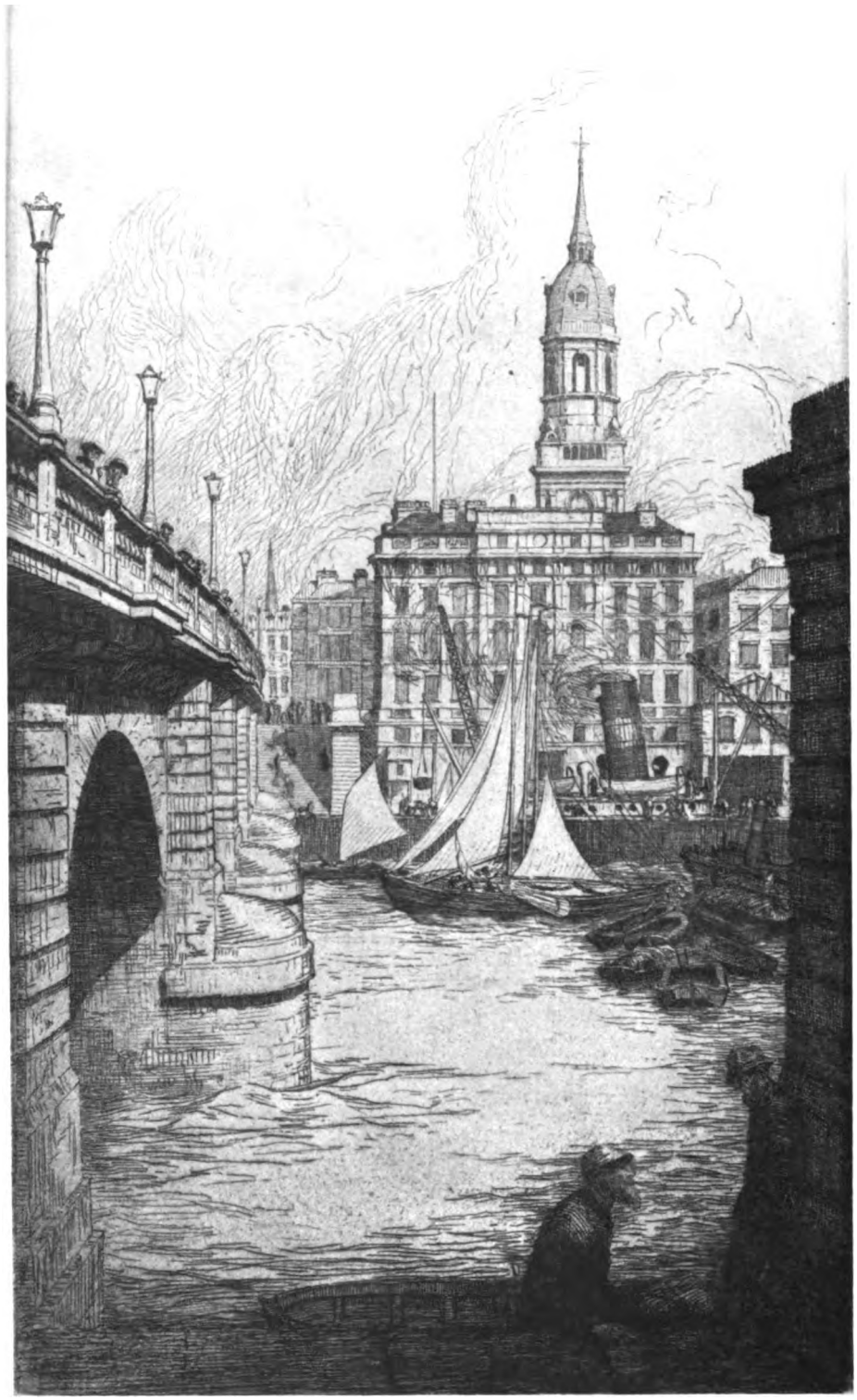

LONDON BRIDGE.—After the etching by Henry Winslow

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Shadows and Straws

TO those to whom art has a deeper interest than is aroused by its consideration as a vague and detached element in the extraordinary intensity of modern life—a sort of esthetic debauch suitable for emotional vacations, or a decorative appendage to something useful or practical—the increasing volume of writing which deals with art as something born and nourished in great communal transformations and aspirations may be of deep import. The war has been a great stimulating factor in the appreciation of spiritual values. It has led to searching questionings—to penetrations into unexplored depths of the spirit—to outpourings of poetry in which battle no longer passes as the field of super-glory, but as a dire symbol of the somber failure of humanity. There are those who believe that, as one of the results of this frightful upheaval, art will again burn with a steady and glorious flame; that mankind shall once more be guided by that flame in its quest of the answer which war has shown not to lie in the direction we have been going. Others look for a new religious awakening, of which art shall be one resultant. Among these we may perhaps place Mr. Cram, who writes in the February *Atlantic* on "The Second Coming of Art."

His passionate arraignment of the nineteenth century is painted in broad strokes. One reads with the sensation of being carried from pinnacle to pinnacle, of looking down from great heights upon a world lost not only in the service of Mammon, but

"in the painting of crazy *isms*, in the architecture and crafts called *l'art nouveau*, in the drama of Broadway and the 'movies,' in the music of Strauss and Schönberg and their like, viciousness, deliberate and bold, covering its technical incapacity with the cloak of esoteric superiority. The taste of the Tired Business Man," says Mr. Cram, of the drama, "is now the standard and the directing cause of whatever is produced; and whenever his fancy rises a degree above the silly and the humorously salacious, it soars only into the dubious realm of pathology plus pornography. No catastrophe so complete, no dêbacle so humiliating has ever been recorded in any art in so brief a space of time."

LET THOSE WHO REBEL at the severity of these indictments—and architecture, painting, and sculpture come in for their share—turn to the article by Theodore Dreiser, on "Life, Art and America" in the *Seven Arts* for February.

Here the sensations of precipitous heights are reversed. One walks on the low levels and looks up at the pinnacles as they rise sheer above the "limbo of nothingness or failure,"—the scrap-heap into which hypocrisy, conventionality and a flabby educational system have combined to pitch all the creative and imaginative qualities of men and women. For Mr. Dreiser's indictment of America is no less.

"America could be described as the land of Bottom the Weaver," says Mr. Dreiser. "And by Bottom I mean the tradesman or manufacturer who has accumulated wealth and, in consequence and by reason of the haphazard privilege of democracy, has strayed into a position of counsellor, or even dictator, not in regard to the things about which he might readily be supposed to know, but about the many things about which he would be much more likely not to know: art, science, philosophy, morals, public policy in general. . . . All merchants, judges, lawyers, priests, politicians—what a goodly company of Bottoms they are. Solidified they are Bottom to the life."

However acute may have been Mr. Dreiser's resentment over the suppression of "The Genius," one feels sure that it was not that

experience alone which has led him into an indictment which has the curious effect of agreeing with Mr. Cram's, while also revealing a vigorous defense of that very freedom and liberality which Mr. Cram so scathingly condemns. One scents in these differing points of view the eternal struggle between those who would censor, Bowdlerise, expurgate, and define, and those who would let the world take its chance. Mr. Dreiser writes as a defender of man's right to "question the things that he sees—not some things, but everything," and to ask of life its source and import. "Else why a brain at all?" he asks.

One suspects, however, that Mr. Dreiser really believes with Mr. Cram, that "Art is not a product, but a by-product," as we have dared to contend not once but many times since the Journal began. But while Mr. Dreiser would not tamper with the by-product by setting limits to the methods and materials which may go into the product, one feels that Mr. Cram has very definite and very different ideas on that subject, for he says:

"Now we will go back, in order that we may go on when the world is made new again after the awful readjustment is completed. Wealth and plenty and efficiency and peace have failed as they have always failed to produce art-bearing conditions. We shall not be troubled by these in the future. We shall have our chance to try what hard, clean poverty will make possible—a poverty that will be such only in material things, for under a new righteousness, a sane philosophy, a restored religious sense, it will become the creator of character, the director and guardian of clean, hard, wholesome and joyful life. All of the great art of the past has grown out of such life as this, even though its loftiest impulse came just after the primal impulse had begun to fail, and corruption of manners and morals had set in. If the war does its work, we may hope for the same again, and so hoping we see the dawn of a new day for art."

A "sane philosophy" is not explained, but the "restored religious sense" to which he refers is later qualified as an "authoritative and universally accepted religion," which would seem to indicate no definite goal in the past toward which we are to retrace our steps.

And Perhaps in Admitting that the "clean, hard, wholesome and joyful life" could not stay the corruption through which art reached its loftiest impulse, and in expressing a doubt as to whether the war will "do its work," there may lie further admissions that Mr. Cram was not too sure as to just how far we are to take our way backward; not does he make it quite clear why we shall not again end in that corruption of the morals and manners of the hard, clean life. He almost leaves us to believe that the greatest in art is only produced through such corruption, and gives us no hope that the turning backward for which he longs would result in more than another cycle of greater or lesser intensity with another concluding dêbacle. May it not be that we shall learn to take our way forward, some day, and that instead of losing ourselves in the paths of those who so persistently wish to define life, we may wander into the broader way where we can deal more rightly with that mystery which seems so simple to so many, yet which forever eludes every net in which one tries to catch it and overflows every channel in which one tries to confine it?

There are those who think that the great day for art is not coming through the restoration of that religious sense which lost its touch with life when it institutionalized itself as a means of authority and power, but in the religion which shall look for the answer to all its questionings in the faces of men; in faces that endlessly pursue the unfindable truth; in faces which are not molded to one image and to one definition, but which, forever changing with the quest, are like spirit waves upon the surface of that sea which still remains a fearful and wonderful expanse.

What saith Edward Carpenter?

"Thought you, frail phantom roaming by the shore,
Gazing wide into the night—a stranger where you had fancied yourself most at home—
Thought you that this great Ocean was to be like an ornamental water in your garden?
Thought you that you knew whence these convulsive waves?—the winds that stirred them, the deeps where they were born?
Think you they weep your sorrows alone, or shake the ground only under your feet?
Not so! not so!
But ever flowing from afar,
From the immeasurable past, from the illimitable shores of human life forever flowing—on its margin passionately breaking,
With strange uncipherable meanings, whose words are the myriad years,
With speechless terror and amazement to the children beside it,
With amazement of expanded identity, and the inflow of immortal swift-riding purposes, incontrollable, leading straight to death,

In living procession out of the deep—O Child! to you they come,
These waves of your great heart, rolling flowing without end:
Through long long ages, under storm and sunshine, by day and night, in indomitable splendor rolling,
At your feet now mournfully breaking."

And from the ceaseless restless rising and falling of those waves—from the storms even as from the calms—life is translated into the language of art—the language which is its own beginning and ending, for it is definable only by life itself—and the definition of life is life.

CONTRASTED WITH THESE two contributions to the theory of life and art, the clear and scholarly analysis of "Religion and Art" by Vernon Lee in the February *North American Review* seems, at first, so seriously studious as to make one fear that it will miss any vital contact—but it does not miss, by any means. Here are no pinnacles. One walks with the measured and careful tread of the scholar, although one feels that it is not only as a scholar that the question is put:

"How has a work of art come to be just what it is and not what some other work of art happens to be? What is its origin? What the genealogy, the pre-natal history, the embryology of this wonderful thing which, at first sight, seems sprung like Pallas Athene, fully equipped and irresistible, from the creative will of a kind of God?"

In seeking a method of approach to these questions, we are reminded that the old philosophy of art is now sadly out of date, and that

"the new and as yet far from adequately appreciated factor in the problem of style is no other than the Principle of Evolution applied to art. It means the recognition of the heredity and transformation of artistic forms; and this evolutional conception implies a method which deals with the types and elements embodied in every work of art as the biological anatomist deals with the organs and tissues of the body, and the embryologists with their pre-natal development. This is the greatest achievement of recent archeology, this is its contribution to the question of how any work of art has come to be what it is, and indeed how art has come to be at all; although the complete answer will be obtained only with the coöperation of another half-fledged but far different study: the experimental psychologic study of the variations of individual psychic types and their connection with the variations in bodily functions."

In answer to Mrs. Strong's argument, as deduced from her lectures on Apothesis and Late Roman Art, that "a definite kind of artistic conception is generally explicable by the requirements of different religious beliefs and practices," it is pointed out that

"unless Art had its own growth, heredity and evolution, religious beliefs, however much armed with the life-and-death power of setting the artist his task, would never have elicited the particular response constituting the characteristics of various historical and national styles of Art. It needs some equally learned and penetrating, some perhaps more synthetically thinking, future archeologist to tell us not the share of religion, and of the rest of the Historical Environment, in selecting Art's native possibilities and influencing its course; but the share of Art in determining, though in less obvious manner, the character and the attitude of that Religion and the rest of that Historical Environment."

In thus returning to the question, "Why has a work of Art come to be just what it is?" we are clearly led to see that "We have arrived in the presence of the great, the mysterious question of the individual artistic endowment and its relation to the general temperament and life of the individual artist."

In other words, one returns to life!

One other paragraph is well worth quoting from this discussion, which is absorbingly interesting, and which betrays the fine scholarship born of a lifelong devotion:

"What plays the part of *heredity* in art is *tradition;* art's growth is due to *imitation* and *invention;* and the current of art's life is the relation between pupil and master; also between the craftsmen of each generation and the public whom their immediate predecessors have accustomed to appreciate and expect certain artistic effects and not others. And the variation in this very real though wholly spiritual life of every art, is due to the psychological necessities of human nature, the necessity for refreshing attentiveness by alterations in aim and means; the impossibility of seeing and feeling twice over alike; the new generation's imperative need to approve itself equal to the old one; the measureless powers of curiosity, of boredom, of wilfulness, of self expression; also of accidental suggestion; and last but not least, of genius perpetually conflicting with the safety and warmth of familiarity: in fact all the psychological necessities of life, which can reproduce itself only after having been produced and nurtured by other life. I have thus spoken of art in biological terms. It must be remembered, nevertheless, that whatever the limitations of bodily heredity, the heredity of spiritual entities like art consists precisely in the storage and transmission of *acquired* variations; and that the action of selection, in this case *social selection*, bears precisely upon such perpetually transmitted potentialities of change. This social selection is carried on by the historical environment; which, in the case of art, means the aggregate of all the other spiritual entities, religion, law, manners, philosophy, science true or false, each subject (like art) to its own processes of heredity and variation, each acting on, and being acted on, by the other; and all

united by that economic pressure which means that ideas and habits, styles and schools, even like concrete individuals, receive permission to live and reproduce only by accomplishing the tasks to which they are set."

MR. LEO STEIN, in a little article called "Meanings," also in the *Seven Arts* (February), states the case for art in a very simple and in a delightfully human way:

"No large factor in life can be explained except upon the basis of a very fundamental need, and art is so great a factor that the need must be equivalently great. Development of mind in man must have produced a gap between his former and his later needs that only art could fill. Science was the organization of his knowledge, and art the adding of completeness to experience, the rounding out of what in life was fragmentary and unsatisfying." . . .

"Art is therefore very close to common life and is life's idealization. It is also life's objectification. Instead of being merely lived, life is reviewed, revised, communicated. Things temporally distant are brought near and are reanimated by the imagination. Inanimate things are given a conferred activity. . . .

"Art in the present social conditions suffers because, in general, we are neither simple enough nor sufficiently evolved. The simple minds are too sophisticated to take in simple-wise their simple things, although they cannot rise to the subtler and more complex. The simple tale is made over like a peasant girl whose father has struck oil. The trappings of civilization become decivilized by her use. Only growth can remedy the matter, and it is hard for the newly-rich to grow. When you can buy the semblance, why wait for the reality?" . . .

"The remedy can lie only in a sounder education and in a consequently deeper integrity. We all need more than we can individually produce. None is so richly creative as to satisfy completely his need for ideal satisfactions and everyone therefore requires participation in the fantasies of others. Advisedly I say 'participation,' for in the world of art only that really exists for us in which we do participate. Education so that the appetite be pure, the palate clean; integrity that should make less possible confusion between what one apes and what one is; knowledge that aspiration only slowly grows to realization—these are the conditions of an art-appreciation that is neither debasing nor a sham."

ONCE AGAIN, what saith Edward Carpenter:

"This is my trade, teach me yours and I will teach you mine. . . .

"Wherever the sea and the land are, is my trade, and it has been known since the eldest Time: the ancient Mysteries and Oracles hinted at it, the venerable sages of India knew it, and men and women who walked this earth before all history; in the remotest stars it is exactly the same as here, and in all the circles of the intelligences whether they dwell in fire or water or in the midst of what is solid, or in the thinnest vacuum.

"Many an old woman sitting by her cottage door is far more profoundly versed in it than I am. Many a fisherman pouncing on crabs along the shores of the Mediterranean has in it long ago served his apprenticeship. If you think or desire by coming with me to know more or be better than these, you mistake me and what I have to tell you.

"Learning and superiority are of no use in the face of all this: they depart much as they came. But to come near to understanding the use of materials is divine, and he that hath never despised a weaker or more ignorant than himself is nearest to this."

MAYOR SMITH, of Philadelphia, has strongly upheld the Art Jury as a desirable factor in dealing with the physical characteristics of our communities. In vetoing a recent ordinance whereunder it was proposed to create a board of commissioners to have full control of the Independence Square group, the Mayor said:

"I disapprove the ordinance, first because it conflicts with the Acts of Assembly, and were it allowed to become law, the commission thus created could perform the duties laid upon it only by courtesy of existing departments of the city government, i. e., the Art Jury and the Department of Public Works. Further, such a commission seems to me unnecessary, in view of the fact that the Art Jury controls the character of furnishings and objects of art placed in the hall, and that the Department of Public Works for a number of years has made alterations and repairs to this group of buildings only under the supervision of the American Institute of Architects, which has so patriotically given time and valuable advice to the city authorities."

The reference to the Institute is a generous acknowledgement of the services of the Philadelphia Chapter.

THE PUBLIC BUILDINGS BILL, over which there has been so much discussion, died with the ending of the Sixty-fourth Congress, on the 4th of March. It was not considered by the Senate, which, even without the tension of the last month, would probably not have sanctioned an expenditure based upon the principles disclosed in the bill. While the country at large may be congratulated that at least some small progress has been made toward the establishment of a business policy for Government buildings, the fact remains that many necessary and warrantable undertakings are made impossible through the failure of the omnibus bill to pass. That is one of the difficulties in opposing the omnibus system, just as it is one of the factors upon which reliance is placed in framing a bill that shall be sure of passing.

The Procession

THE soft mass of luminous haze has begun to draw near. Like the faint reflection of a pillar of fire it has hung aloft in the night sky, signalling the slow movement and direction of the procession. Looking down the narrow street in which we have taken our position, we have watched the tremulous cloud grow brighter, until, hovering for an instant at the turning, the first *char* swings round the corner. Then the little street down which we look makes a picture the like of which you may not see elsewhere on this continent. It is an old street, very narrow, with mere strips of walk at the side. The edge of either walk is lined with men, women, and children. They stand—some sitting in chairs which they have brought from their shops—expectant, yet with a complete freedom from outward agitation, an utter absence of loud talking or of hoodlumism, a generous spirit of kindliness, willingness, and even wishfulness to share in the joy of the evening, and an *abandon* such as is even more unusual to find among crowds, anywhere.

Behind them a narrow lane is kept open for the slow-moving file of pedestrians, most of whom have already seen the procession as it passed uptown—where, amid the jumble of modern architecture, it completely loses its traditions—and who now are wending their way toward the Opera House. Here occurs the final scene in this great outdoor panorama—the descent of the maskers from the *chars* and their disappearance into the old building which has become so priceless a fragment of the Great Tradition. It was preserved to the city through the generosity of one citizen!

At the back of this file, which moves haltingly, one sees the little groups gathered in the doorways. These are recessed, in many cases, and the short flights of steps in the vestibules give excellent points of vantage. The faces of those who stand within reflect the oncoming glow of the flares, and their profiles are set forth, strong against the dark shadow of the doorway.

From the fringe of eager faces on the sidewalk—above the groups in the vestibules—one's eye mounts to the narrow balconies overhead. They do not make an unbroken line, for, at intervals, one notes the ugly, gaping space where one has been torn away. And these spaces are the first tragic note in the scene—they run through your consciousness with a vivid flash and for a second you are reminded that something more than a procession is passing. But only for a moment. There is too much joy abroad for any tragic note to find more than a momentary resting-place, and the ironwork of the balcony railings has already shot its shy message into your perceptions. Your eye is caught by the delicacy of its pattern and the grace of its slender curves and spirals. The figures seated or standing behind it seem a part of the century which produced it. The light plays upon their faces and causes wavering shadows to dance on the walls. And what walls! The stucco makes a background into which the years have wrought such color that they seem to have been woven into soft fabrics in greens, pinks, yellows—each rivaling the other in tenderness—each blending and harmonizing with the other until one may scarcely trace the beginning or the ending of any shade. The old absinthe house is bathed in a soft and shimmering green, and stands, like a figure with wide flowing garments, at the corner where its arched doorways have so long delighted those who are alive to the endless message of form and color.

Above the balconies and the faint gleaming of the stucco walls the eye moves upward to the roof line; free from the uniformity which would have been unpleasantly monotonous at a moment like this, it is broken by the changing heights of the facades, by gables and dormers—and into the irregular spaces the dark sky drops down and silhouettes the outlines against its blackness. And up the narrow way, peopled with expectant faces, dotted with balconies, bright with the stucco, intensely dramatic with the wavering light, the strong, sharp, shadows, the mounting smoke of the flares, the cries of the crowd, the procession moves along. For a moment you are recalled to the *chars*. The sparkling eyes of the children that gaze upon them, the little hands that beat the air nervously as the masked figures move about, the little faces so utterly oblivious to everything save these towering, gilded,

spangled, images of fairyland, all remind you that the procession is a thing which still casts its magic spell. There is nothing so fascinating in the whole spectacle as the face of the little pickaninny who is perched on its mammy's shoulder and whose eyes dance and sparkle with a joy that has passed our comprehension. The nervous rhythm of its hands echoes the rhythm of the flare-bearers as they swing along, their bodies responding to the cadence of the music, their feet not rising and falling with the beat of the march, but swaying joyously forward with the spirit of the dance. Nothing in the procession seems so harmonious a part of the whole as these flare-bearers. Their black faces gleam and shine, contrasted with their long white surtouts and cowls. They carry flares of four lights, each set in front of a rectangular reflector, and it is these smoky flames which light the *chars* and give them an interest not possible in any other way.

An hour later it is only a memory. You have followed behind the last *char*, watched the maskers alight and disappear, and the crowds overflow into the narrow streets and melt away like a sudden flood which has surged over them and subsided as quickly as it came. You walk about these old streets, now that silence has come, and their names re-flood them with the century-long procession of memory and history —Orleans, Bienville, Iberville, Dauphine, Chartres, St. Louis, Royale, Bourbon! The tragic note of those departed balconies awakens itself in your reveries. You recall one disappearance after another during the score of years in which the charm of this quarter has held you in its spell.

On the old clock-maker's house the ancient carved bracket has gone the way of so many other emblems. It once supported a two-dialed clock, visible to all who walked the street in either direction. It was surmounted by a bell upon which there sat a little man who struck the hours as they were unfolded by the wheels within. Now the little man is gone and the bell only is left. It has fallen from its once high position and has descended to the ignominy of being fastened above the dial of the other clock which is set in the face of the wall. The long pendulum behind the glass swings with the measured and inflexible step of Time, and once again you are gripped with the acute sadness that comes with the thought of this silent blotting out of a past which is so precious that you cannot understand why they are willing to let it go. As you pass the spot where the old hotel once stood you cry out with an imprecation upon the vulgar progress which could destroy so precious and irreplaceable a fabric. And unconsciously you become aware of the inexpressible ugliness of the great white building which now seems to look down with a laughing mockery at the ghastly remnant of brick and plaster. Was not that the building which should have been leveled? Now it stands—and will long continue to stand, no doubt—but only as a reproach to a careless city.

And thus you become aware of the power of that passive but relentless force by which this old quarter is slowly being crushed out of existence. The tragedy makes you almost to wish that it be quickly consummated, and that you be spared the pain of longer watching these dying struggles. Yet, may it not be that before the final agony has come—before the last of this architecture which constitutes one of the priceless inheritances of our country has disappeared—ere the hand of the despoiler has wrecked this wealth of craftsmanship in wood and iron—there may come recognition and reverence, and the knowledge that the great city of New Orleans is throwing away an asset which is beyond price—denying its responsibility to its citizens of the future—mocking the labors, the lives, and the taste of its citizens of the past?

Pondering these thoughts, the careless joy of the procession suddenly becomes an ominous, too careless thing.—C. H. W.

The Architect in War-Time

The following letter addressed to the President of the United States by the President of the Institute will indicate that the Institute is quite alive to the possibilities of usefulness in the case of a war. The matter was considered by the Board of Directors and a special committee was appointed to see in what way the profession could best make itself useful. It is, perhaps, pertinent to point out that the President of the Royal Institute of British Archi-

tects, in his recent annual address, referred to the failure of the British Government properly to utilize the services of the architectural profession in Great Britain, although it must be remembered that the task of organizing British resources was a colossal one.

President Mauran's letter is as follows:

ST. LOUIS, MISSOURI, *February 21, 1917.*

THE PRESIDENT,
The White House,
Washington, D. C.

Dear Mr. President: At the time when the Engineering Societies tendered to the Government of the United States, through you, their service in investigating Industrial Preparedness, the American Institute of Architects shared the impulse to place its resources at the country's service.

Rather than act, however, on the impulse in offering indeterminate services, we have postponed our offer until investigation revealed a tangible field of effort for which our special training peculiarly adapts us.

I enclose herewith a copy of the Report made by the Special Committee charged with the investigation which closes with the recommendation that the President of the Institute be authorized to offer the services of the Institute to the President of the United States, and in extending that offer I beg to quote from the Report the following suggestive paragraph:

"A member of the American Institute has for more than a year been in charge of the design and construction of all military hospitals in France, from the temporary unit near the battle-front to the permanent hospital in the rear. Other members of the Institute have made themselves invaluable at the volunteer encampments at Plattsburg and elsewhere in this country, where their special training has peculiarly fitted them for the planning of camp-sites, sanitation, etc., and for reconnaissance work, topographical sketching and map-making."

While awaiting your pleasure the Institute will proceed to form a permanent Central Committee, which will have authority to organize subcommittees among the forty Chapters throughout the country.

Very respectfully,
(Signed) JOHN LAWRENCE MAURAN, *President.*

Supplementary to the letter, we print another letter written by a member of the Institute to Mr. Fenner, when he was Secretary of the Institute, and in answer to a request for a statement based upon the actual experiences of an architect at Plattsburg.

I applied as a deaf man of forty-eight, doubting whether I would be accepted, and was instructed to have a physical examination to save me the trip in case I was turned down by the surgeon at camp. I was accepted on certificate and eventually passed the camp surgeon. The physical examination is severe. The general work is about as hard as it could be, particularly in the hot weather; full-pack drill six to seven hours a day, open order, swamps to your waist, sliding under barb-wire and diving into cinder heaps. Napoleon, I believe, said an army traveled on its belly, but I never knew it did so much of it as they did at Plattsburg. Lectures all the time, at every resting spell, and on particular military subjects by higher officers every evening.

I arrived at camp three days before the July opening, and was the first man in my company. On reporting to my Captain, in filling out my record, I was asked what knowledge I had that might be of military use, and as I had been studying military topography for about a year I spoke of my knowledge of that. I was asked to make a regimental layout of the camp, and then a bird's-eye view of the rifle-range with detailed arrangement of troops for range-practice, and of course these were things any architect could do. After about a week of routine I was ordered to report at headquarters and was asked by the Adjutant, Major Hall, if I could make a map of Plattsburg Camp (about three miles square) and surrounding country, locating new roads, railroads, and some newly forested ground not shown on the Geological Survey which was fifteen years old. I got away with that and was then told to report to the Field Quartermaster. I had in the meantime been appointed Regimental Topographer. I was told that I was to lay out all the camps for the big hike. We had nearly 7,500 men to march eight days, a new camp every day, with all arrangements to make for food, water, fuel and transportation. We had a reinforced brigade, with detachments of field artillery, cavalry, war college, hospitals, band, motorcycle machine guns, and, strange to relate, the United States had not moved so many men on foot in such a period since 1865. High authorities declared the army would break down, but it didn't. We took nearly 30 acres to camp in, hauled 19,800 gallons of water, and used seventeen cords of wood a day for fuel. To handle a force like this across country in time of peace, when crops are uncut and fences, except in case of absolute necessity, cannot be disturbed, is something of an undertaking.

One of the most necessary things was to have the camps mapped out and ready for the troops to enter and dispose themselves in an orderly way on arrival, after fighting all the way (sham battles), and to have their food ready. Of course, in time of war you can camp anywhere in any man's wheat-field and burn his wood and fences. It became necessary then to have accurate maps showing the places for troops to enter, all regimental camps, officers' lines, kitchens, latrines, headquarters, cavalry, war college, hospitals, band, and picket-lines. My work was to go to the selected sites and survey the terrain in a military way, and then at night work up the drawing, trace it and have prints made for each staff and company officer in the camp.

Military surveying is done by pacing and compass bearings primarily. I am not going into intersection and resection, contouring, slopes, clinometer and slope-board work, but you start with a sketch-board in one hand, a compass in the other, a pencil between your teeth, and a scale any place. I shall never forget when I was first dropped in a field with hills, ravines, a stream running through it with patches of cultivated fields and a winding road at one side, and my Captain said, "I'll send for you at four; 5 per cent accuracy will do." When I remarked that I could do more accurate work with instruments and longer time he replied, "In war, 100 per cent accuracy and two hours late and we're all dead. Go to it."

Any architect or draughtsman should be able, after some practice, to make road and position sketches; it takes, of course, some little time to learn all military indications, and, what is of great importance about visibility problems, arriving at positions without being seen, and occupying artillery positions defiladed from the enemy, all from observance of the contour lines on maps. However, to proceed to my work, I managed to successfully lay out the camps, though attending drills, and company work as far as possible. I had not a single evening or Sunday free as the others did. Owing, I suppose, to my familiarity with the camp-sites, I was then relieved from my company and made First Sergeant in charge of headquarters, war college, field artillery, hospitals and band. I was ordered to go to Quartermaster stores and draw tentage, had one hundred and one things charged to me, and was given two squads of regulars, and four war-college negroes as a command, and four 1½-ton motor-trucks.

My work was to start first every morning, proceed to camp-site, erect tents with my men, see that all commands came in properly, that kitchens were properly placed, and have everything ship-shape at an early hour. I was given detailed instructions before we left, and told I would not be instructed a second time, but was expected to have the camp straight. After pitching camp, I was on duty to receive official papers, disposing of all I could without referring to higher officers, and having to turn down requests varying from a request to leave camp on account of an addition to the family, to furnishing swabs for rifle-cleaning, or to "please cash a check for $75."

At the muster out I was urged to return for the September–October hike, which I did. That was a real hike of twelve days; two days and nights the rain froze as it fell; soaked blankets, frozen pup tents to put in your packs, wet fields to lie on, and then an inch and a half of ice. I varied my getting over the ground, from 22 miles on foot, 36 on horse, motorcycle machine gun 40 miles an hour over the fields, to motor truck and automobile. I dropped seventeen pounds, I didn't know I had, but enjoyed every minute of it. I enrolled, doubting whether I could get in, as old, bald, deaf,—thinking I would be lucky if I got to be a corporal. I came out of the first camp with a rating—Regimental Topographer, First Sergeant, Sharpshooter, and ended First Lieutenant. I was recommended for Captain in first camp, Major in my second, having been studying all the time and have just learned from the War Department that I have passed my exams as Major, Engineer Corps, Officers Reserve Corps.

Now if I can do this, there are lots of other architects who should do better. I will say, however, that I have been accustomed to field-work from boyhood, shooting big game and living in the woods, often depending on what I shot, and am not troubled if I get lost for a week. I have gone into this personal end more fully than I expected, not for official use, but to show in a way what it is and what I think about it.

Now as to what an architect can do for his country: First of all his training should give him proficiency in two particular things; military topography, which is of the utmost importance in reconnaissance, and outpost work. Geological Surveys are practically 1 inch to the mile. We shall always need innumerable sketches 3 inches to the mile or greater, and need them every day as we proceed or fall back. The sketches I made were 1 inch = 100 yards.

The second branch is engineering, which includes buildings, barracks, warehouses, earth and concrete works, and lines of communication. The other branch—field-works—includes demolitions. This takes in field defences, bridges, clearances, and pontoon work, all of which is relevant to our profession. A practical problem to be solved on the ground. That is our every-day work, is it not? Instead of making plans for circulation, we must block it, and find vistas for our fire but not for that of the enemy.

One of the greatest assets the architect has in war is imagination. It is laid down by the authorities that "War is an art and not a science." Tactics is logic, tempered with imagination. Strategy is imagination tempered with common-sense. I believe no profession develops these qualities as does ours. Who were the great military engineers of history? Michael Angelo, Leonardo da Vinci, Benvenuto Cellini, and many other of the world's great architects.

How Shall We Teach Something About Art?

Three Discussions by
JOHN PICKARD, President of the College Art Association
GEORGE M. CHASE, Head of Art Department, Harvard University
FRANK JEWETT MATHER, Marquand Professor of Art and Archæology, Princeton University

EDITOR'S NOTE.—The following letters were written in discussion of the report of the Committee on Education which appeared in the Journal for August, 1916, and which dealt very largely with questions affecting University curricula. By reason of the prominence given to the subject of education at the recent Convention and the broad interest which the profession should take in the subject during the coming year, preparatory to action at the next Convention, these articles should be useful in further discussion.

The Institute Committee on Education is seriously at work in the endeavor to focus attention upon the question of how to teach art in our colleges and universities. It is not so much concerned with the question of specialization for those who have definitely elected to pursue the study of art as a calling, as with the question of general courses which shall bring all the undergraduates under the influence of art as an intimate and vital element in the life of the community and of the nation. It would seem difficult to combat the theory that the lack of appreciation which is responsible for the ugliness of our present-day communities is a problem which cannot be dissociated from education as a ruling factor in national life. Art cannot be detached from life and left to struggle as an exotic in a cold land. The whole problem would seem to be one of relating art to all things into which the creative impulse may enter.

ONE of the most vital and interesting educational problems which should engage the attention of governing boards, presidents, and faculties is the question of education in art in our colleges and universities. This is all the more true because presidents, faculties, and boards do not in general realize the immense practical importance of such education. I am not here discussing the training of the technical artist. Yet I say "practical" advisedly. For, while, in this age of specialization we spare no labor or expense in equipment or in teaching force in order that we may properly instruct the limited number of students in any one subject such as law, engineering, biology, or German, we have so far almost entirely failed to grasp the significance of art as a factor in a liberal education for all these classes of students.

The tendency in these latter years is to have the student begin his specializing earlier and yet earlier in his scholastic career. There are not wanting teachers of English, mathematics, or French who apparently believe that the student should in infancy begin on his speciality and devote to it his entire time during his school life—excepting only a few stray hours that are grudgingly allotted to certain subjects closely related to this speciality. Yet comparatively few out of the great mass of college students will in aftertime devote themselves to either law, Latin, or literature. Therefore, for the great body of students no one of these specialties will prove practical in the sense of being actually used in the business of life. For the multitude of graduates, in fact, any one of these subjects will in a few short years become a memory, an "iridescent dream."

But no matter what a man's vocation may be there is one avocation which is today making an ever-increasing appeal to intelligent citizens. This is the pursuit of the beautiful. For it is not merely the architect, painter, sculptor, art critic, or art historian who is interested in beauty. Here and there throughout our land the professional man, the business man, or other laborer is becoming desirous that the architecture of his house, the furnishings of his home, the pictures upon its walls, the appearance of his street or his city, the lines of his automobile, shall be in the highest degree attractive.

This is a most hopeful sign of the times. Most of these people will, however, confess they are rather blindly groping for something that they fear they may not be able to recognize when they see it. Many of them realize that they have not been educated in matters artistic, and some at heart have a vague feeling that art is something very mysterious which only the select few of the initiated can ever really hope to comprehend.

It would seem then that the time is ripe for a great movement for an education in art that shall reach the great masses of people. It is indeed a happy omen when such a potent and influential organization as is the American Institute of Architects gives serious consideration to art education in our colleges and universities.

The freshman comes to college with pretty definite notions of the importance of such studies as history, political science, mathematics, and sociology. Of all such things he has heard throughout his preparatory career. As for art, he either shies at the bare mention of the word with something of the same skittishness which he shows toward the discussion of personal religion, or he regards art as something of no practical value, a sort of sentimental mush that is fed to the denizens of feminine finishing schools. In the dialect of Missouri, he needs "to be shown" that education in art is indeed meant for strong men.

The average American college teacher agrees, in the main, with the above mentioned freshmen's views on art and needs much the same enlightenment.

In the wide range of created beings the most peculiar animal is the college student. There is one animal more peculiar than the college student, and that is the college professor.

So the campaign of those interested in art education in our colleges and universities must first be waged to demonstrate to college communities the value of education in art.

I am here not concerned with the specialist who expects to devote himself to the theory or the practice of art, but with the laymen whose chief interest lies in other fields.

How then shall we reach the average student, attract

him and then instruct him so that he may become a citizen capable of judging, appreciating, and enjoying art? This is the great problem in the teaching of art to candidates for the A. B. degree.

*The Committee on Education of the American Institute of Architects proposes to solve this problem by offering in all colleges and universities five general courses in the history of art. At present writing I do not have their program before me, but these general historical courses include: (1) Architecture, (2) Sculpture, (3) Painting. For these courses, I understand, no prerequisites in the study of art are to be required. The report recommends that they be taught by technical artists rather than by regular university teachers on the ground, as the chairman writes me that "the man who produces is more likely to be able to inspire."

The able Committee of the Institute has devoted much time and thought to their report. Members of the Institute have for three years conducted an experiment in Harvard University the results of which seem to the Committee to warrant the recommendations they have made. I have read the evidence on this Harvard experiment (Mr. Walker's course in Harvard), but I find myself unable to agree with the conclusions reached by the Committee. Therefore, with all due modesty, I shall try to state some of my reasons for this disagreement.

Probably there are no institutions of higher education in the country today that are prepared with the teaching force or the material equipment necessary for the five general courses recommended by the Committee. Nor is it probable that within the next ten years more than two or three of these institutions can be prepared to offer these courses. From institutions whose material resources are already overtaxed it is idle to expect any unusual expenditure in the field of art. With the funds provided it might be easy in Boston, New York, or Chicago to secure the technical teaching force, but how about the great number of colleges in locations far removed from the centers where artists congregate?

For me, in the teaching of undergraduates, one course in the general history of art, or even one general course on the history of architecture, or sculpture, or painting, is anathema. In each of these courses the subject is too large, too broad, too varied to be handled successfully. There is not enough time in which to properly discuss the works belonging to the various schools and periods. For, of course, I am assuming that the teaching of art to the average undergraduate is of little worth unless it deals mainly with original objects of art or with the best available reproductions of such objects. In my own experience I find that better results are reached in courses which cover great art periods, *e. g.*, The History of Greek Sculpture, Italian Renaissance Painting, The History of French Painting. Such courses are broad enough to admit of those comparisons which are essential for true education, but they are not so extensive as to preclude adequate consideration of the entire field.

As a matter of fact we do not prescribe a course covering all the literatures of the world for the student who knows no literature. Nor do we give a general course covering all the languages of the world for the freshman who knows no language—even his mother tongue. Yet the field of art is wider than that of literature, more extensive even than that of language.

It seems to me that the place for a course in the general history of art (as for courses in comparative literature and comparative philology) is in the graduate school after the student has studied many fields of art and understands these fields quite completely. For such a student, if you have a big man to do the lecturing, one who is large enough intellectually, spiritually, and artistically, such a course would be of immense value.

Some of my colleagues in other institutions agree with my view. Others find such a general course as is suggested by the Committee a good course for beginners. I have no quarrel with them for their opinion.

The point that I am making is this. It is useless to dogmatize on non-essentials. The essential thing, to my mind, is that the average college student who is not making a specialty of art shall be taught to understand, appreciate, and love art. It is quite useless to insist that he can be taught all this by being placed in any one course. After reading the evidence on the Walker course at Harvard, I am quite convinced that whatever success Mr. Walker had with those students was due not to the general course he was teaching but to the personality of the man. Success or failure in reaching the desired end in teaching art will always depend far more on the man who does the teaching than on the label which is attached to his course.

I realize that I am now entering on dangerous ground, for there are some educators who do not agree with the liberal position taken by the chairman of the Committee. He declares that it is quite possible for those who have had no technical training to be successful teachers of the history and criticism of art. He emphasizes this statement by referring to that Nestor of American college art teachers, Charles Eliot Norton. But there are those who hold that it is "unpedagogic" for anyone to attempt the teaching of art who is not himself a technician. If the man without techincal training were to attempt to teach drawing or painting, that would indeed be "unpedagogic."

How many of the teachers of literature in this country could have written Hamlet? How many of them, in fact, have written anything notable or even tolerable in the way of literature? Yet many, very many, of them have been inspiring teachers. I question whether Shakespeare would have been a successful teacher of literature. I have no question that it would have been a deplorable misuse of genius to have occupied his time with such teaching.

The power to create and the power to expound and elucidate may indeed sometimes be found in the same individual, but the possession of the one power does not necessarily imply the presence of the other.

The first-class artist is usually too much absorbed with his own creative work to be willing to spend his time and energy in teaching college freshmen. Nor does his artistic training necessarily fit him to understand their needs or to inspire their souls. I doubt indeed if many successful artists would be willing to turn aside from their chosen work to undertake such teaching.

There are, to be sure, unsuccessful artists galore who because they have smudged with charcoal and puddled with pigment feel that they can speak *ex cathedra* on all

*See Report of the Committee, Journal for August, 1916, page 357.

matters pertaining to art. Unfortunately, some who can neither draw nor paint, nor teach, nor lecture have reached positions in colleges and universities greatly detrimental to the cause of the teaching of art. For, owing in part to the unfortunate fact that many art schools admit practically all who apply without regard to the education or lack of education of the applicant, and in part to the very nature of the extreme "artistic temperament," many who have received technical training are not in the least qualified to become teachers of college students.

On the other hand, there are estimable gentlemen holding professorships in some of our colleges who, after spending the best years of their lives in the earnest and often successful pursuit of other branches of learning deem it a pleasant recreation for their declining years to talk to their students about the glorious themes of art.

It is difficult to say from which of these two, the half-baked artist or the academic fossil, the worst teaching is to be expected. Unfortunate is the college that is afflicted with either; most unfortunate is the college that is afflicted with both.

A recent writer in the Journal of the Institute has well said that you cannot teach a man to become an artist. You can teach him to draw, to paint, to handle the T-square and the chisel, but the power to become an artist must be innate; it cannot be acquired from without.

But there are many artists who have never drawn a line, mixed a color, traced a design, or used the chisel and mallet. Their eyes are keen to discern, their spirits quick to appreciate, their tongues are ready to expound. Some such at least are even now inspiring college students with love for the splendid creations of art.

In standing for the first time before the Victory of Samothrace, the Venus of Melos, or the Parthenon Fates, who is interested to know the kind of working tools used by the sculptors? When gazing upward at the Sistine ceiling are we really curious to discover how Michelangelo mixed the mortar and applied the pigments? In the Sainte Chapelle in Paris we do not need to know all the geometry which was mastered by the architect before he could design that vaulted ceiling. But we are filled with wonder and admiration at the beauty of that structure which seems to float upon the golden sea of the afternoon sunlight. It was Whistler who said that in the perfect work of art all traces of the technical methods by which it was achieved have been effaced. Knowledge of technique is not essential in order that we may receive the message of the great art of the world. The one essential is that we shall hold communion with the souls of the masters by oft-repeated and intelligent contemplation of the works of their hands. The realm of art is as long as the life of our race. It is as wide as the gamut of human emotions. To this wonderful region there are many avenues of approach. I would not wish even to seem to block any of these. I would not like by any arbitrary touchstone to designate the guide who shall lead the pilgrim into this fair land.

I condemn the report of the Committee for its seeming narrowness, dogmatism, and illiberality. I contend for freedom, tolerance, and liberty.

I would have the Institute use the great strength of its influence in supporting the cause of sound training in art in every college in the land. I would have the Institute insist that when technical training is offered to college students, it shall not be an emasculated "academic" substitute but that it shall be real training in the fundamentals of art. I would have the Institute urge upon the constituted authorities that gifted teachers give inspiring courses in art to the great body of undergraduates. I would not have the Institute attempt to rigidly prescribe the exact courses or dogmatically designate any special class of individuals as the teachers.

In short, I would have the Institute deal with principles and not with panaceas.—JOHN PICKARD, *President, College Art Association of America, University of Missouri, October 27, 1916.*

I have read the report of the Institute's Committee on Education with great interest, and am very glad to comment on it, in accordance with your request.

The first recommendation of the Committee will, I am sure, be heartily endorsed by all college teachers of the fine arts. On this point there can be no difference of opinion. There certainly should be a general introductory course for undergraduates, in which the history of art should be traced in its broad outlines, with emphasis on the great monuments, the great artists, and general principles. (Incidentally, I ought perhaps to state that we have such a course at Harvard. The two half-courses mentioned in the fifth paragraph of the report, which are said to have "concentrated on Greek sculpture or Renaissance painting," cover the whole history of art and are planned for undergraduates who have no knowledge of the fine arts.) That the college "should lend all its influence to make this a course which every man should take before he leaves college" is also desirable, but under the present arrangement of courses in most American colleges, which, with certain limitations, leaves the undergraduate free to choose what he will study, I do not see how such a recommendation can be carried out. The attitude of some college faculties toward the study of the arts does not encourage the hope that many colleges will "lend their influence" officially to encourage such study in preference to other subjects. A better hope can be founded on the fact that the teaching of the arts in American colleges shows steady improvement and is already winning recognition in places where such teaching was little esteemed, if not actually looked down upon, not many years ago; and a more practical ideal for teachers of the arts is, I think, to make their teaching of such a quality that both their colleagues and the students in their charge may come to recognize the importance of the subject and feel the need of some knowledge of it.

The suggestion of general courses in architecture, sculpture, painting, and the decorative arts, to follow the introductory course, is decidedly original and interesting. It has been the theory of the Harvard division of the arts that after the undergraduate has obtained a general introduction to the subject, he had better be allowed to choose from a number of courses some field which especially interests him and be encouraged to deepen his knowledge of that particular field, that intensive study of a limited portion of a great subject develops power of observation and knowledge of fundamental principles more rapidly and more surely than a large number of general courses.

But the Committee's plan suggests interesting possibilities and deserves careful consideration.

In regard to a prescription of studio work in connection with the five general courses, my own belief is that such a prescription might tend to repel rather than to attract students. There can be no doubt that a certain amount of practice, however elementary, greatly increases the student's appreciation of architecture, sculpture, painting, and the decorative arts, but the average undergraduate is likely to be mistrustful of his manual dexterity and to shun courses in which he thinks such dexterity necessary. The solution of this difficulty which has been attempted at Harvard is the arrangement of what are practically two sets of courses: one series in drawing and painting and the theory of design, in which theory and practice are emphasized and the historical aspects of these subjects are only briefly considered, if at all; and a second series, in which the history and principles of the arts in different ages or in particular countries form the backbone of the course and little or no practice is called for. No hard and fast rule is laid down. The conduct of any particular course is left largely to the instructor. In some of the courses in drawing and painting, lectures of a historical character are given; in some of the essentially historical courses, students are required or encouraged to submit copies of works of art as a part of their work. Such a system gives plentiful opportunity to the student who wishes to develop technical skill, and at the same time does not repel the man who, rightly or wrongly, thinks that he has no talent for the practice of the arts. This advantage, I am afraid, would be lost under the Committee's plan.

The suggestion that the general courses be given by men of professional experience is attractive in many ways, but I think that here again there is a practical difficulty, in that great artists seldom have the time or the inclination to teach, or at least, to teach the *history* of art; and after all, it is the history of art, a knowledge of what has been done in the past and of the relation of works of art to the civilizations from which they sprang, together with some knowledge of esthetic principles, that is desirable for the great majority of undergraduates. Occasional lectures by prominent artists and professional men are undoubtedly of great value to students of the arts and are usually arranged—often with considerably difficulty—in many institutions. But the routine of a long series of lectures is usually irksome to the artist, and his mind is rarely of the analytical and critical type which is desirable in the college instructor. I am under the impression too, that in several American colleges, the teaching of the arts has suffered from being largely in the hands of professional painters. Members of other departments have been inclined to regard the work as not on a par with other instruction on account of the emphasis laid on technical details, without systematic or logical explanation. This is, perhaps, one reason why instruction in the arts has tended, in recent years, to emphasize in courses for undergraduates the historical and analytical, rather than the professional point of view, and to be in the hands of men of the Berenson, rather than the Sargent type. Some technical knowledge is undoubtedly desirable for the college teacher, and is essential for the instructor in the technical school. But the careers of some of the best-known teachers of the arts seem to prove that professional experience is not necessary for successful teaching. It is an interesting fact that Professor Norton, who perhaps did more than any other man to introduce the study of art into the curriculum of American colleges, would not be eligible as a teacher of any of the general courses under the Committee's plan.

If I were to make a broad, general criticism of the Committee's scheme, I should say that it seems to me to be too much influenced by the technical point of view, that it makes too little provision for the man who does not look forward to a professional career, but wishes to gain some knowledge of the great monuments of the past and their significance. The great majority of college undergraduates are of this type, and it is for them that any scheme of instruction of undergraduates, as distinct from professional students in graduate or technical schools, must be planned.

These are some of the points that have suggested themselves to me after reading the report. If they seem to be mostly arguments from the opposition bench, perhaps they will prove helpful to further discussion.—GEORGE H. CHASE, *Harvard University, October, 1916.*

You courteously invite my comment on the report of your Committee on Education, published in the August number of this Journal. Before considering the proposals in detail, it is perhaps fair to remark that the plan is, for very practicable reasons, available only for universities with fully developed art departments. Universities and colleges which have an art staff of a single professor—and that is the usual case—must content themselves with a far more limited program. It is fair also to remark that the question of the architect is, in the policy of a real university, secondary to that of its art curriculum as a whole. The architect will be provided for specifically in a school of architecture. The undergraduate curriculum in art must be framed with regard to the whole body of students. To train the student who later means to be an architect is, from the university point of view, merely an incidental aim. Your Committee naturally asks, What can the curriculum do for the architect? The universities with equal propriety ask, What can architectural studies do for our curriculum?

At Princeton, out of twelve (half-year) undergraduate courses on art, we devote six to architecture. This expresses our conviction that architecture is specially available as the central subject for the study of the general history of art. But we do this in the interest of all our students; and, as a matter of fact, intending architects are probably at no time more than one-tenth of the attendants in our architectural courses. Our object is not vocational, but to produce the well-informed and well-rounded man in matters of taste. Just a few words on the Committee's report.

> "First, there should be a general course for undergraduates, and the college should lend all its influence to make this a course which every man should take before he leaves college."

This seems to me theoretically sound. Practically, however, it is extremely difficult to find the teacher who can make such a course both solid and attractive. The

teaching too often ends in encyclopedic dullness or in mere frothiness. At Princeton we substitute for such a comprehensive course one general course in classical art, and one on classical architecture. These are the basis of our art curriculum. I presume we have been led to this course largely by the nature of our teaching *personnel*, but it seems to me a reasonable solution for universities which do not command lecturers of the exceptional qualities required to make a general course go. I believe that every effort should be made to develop lecturers who can handle comprehensive subjects with that lucidity and judgment which are common only in France.

> "In addition to this general course, which might be considered introductory and elementary, there should be a general course in architecture, one in sculpture, one in painting, and one in the decorative arts—five courses in all."

It would be easier to discuss this proposal if it were perfectly clear what the Committee means by a course. Supposing half-year courses of three exercises a week to be meant, the proposal seems to me to multiply general courses unduly. It would mean prolonging discursive studies for at least a year before studying any subject intimately. I should not want in my own courses students who had lived so long on so thin a diet.

In my opinion it would be better not to follow the elementary course with, for example, another general course on sculpture, but to proceed directly to such central themes as Greek, Gothic, Renaissance, or modern sculpture.

The proposed course on the decorative arts seems to me a luxury from the point of view of the average university curriculum. A discerning student will get a reasonable insight into decorative styles incidentally, in the courses on architecture, sculpture and painting.

> "Second, these five courses should be supplemented by studio work and, if all this work were done under one roof, it would be an advantage. Architecture, painting, sculpture and the decorative arts taught simply and broadly by the lectures and driven home by some practice—elementary and amateur—but still practice."

The advisability of studio work seems to me to depend mostly on the personality of the teacher and the time available for such exercises. In the subject of architecture I feel sure that some drawing is essential. There is no better way of visualizing and memorizing structural facts. I think, too, that students planning to be architects may profitably begin both graphics and design pretty early. Whether studio work is really necessary or even advisable for college students of painting and sculpture I much doubt. I do not see any royal road to the appreciation of fine design through one's self designing badly. Besides what would the "studio work" in the four general courses proposed by the Committee really amount to? Evidently to a few very elementary exercises. Undoubtedly some teachers find such exercises valuable; others do not. A university should be broad enough to let the teacher's personality decide such matters. Art may be taught as objective design (decoration), as esthetics (philosophy of taste) or as a splendid branch of history. All these approaches are good. Some perhaps imply studio work, others do not, so there you are.

> "Third, the courses should be given, the first by an artist, painter, sculptor or architect of wide knowledge and experience; the second by an architect; the third by a sculptor; the fourth by a painter; the fifth by a decorative painter."

This seems to me a most contestable counsel both on the practical and theoretical side. It expresses as against the catholicity which should be the mainspring of university polity, the vocationalism of the professional school. A university should be very glad to find a painter to give its course on painting; it should also be glad to welcome to the same work an art historian, or a connoisseur, a critic, or an esthetician. An ideal art faculty would contain members of all these types and would court such diversity of gifts.

> "Following these general courses would come as many of the courses now given in special fields of art as the college felt able to offer. The backbone of the department of fine arts would be these five general courses."

I wonder if any general course has ever been a "backbone" in the eyes of the department giving it? The Committee imputes to the painter, sculptor, architect, and decorator who are to conduct the general courses a degree of teaching force highly exceptional among professional teachers. My own feeling, based on some observation, is that while only a genius can make much of a subject like Art or Painting, any reasonable talent can cope with such jobs as Italian Painting, or Northern Painting, and any industrious person can do well enough, with highly specialized work, like the study of single artists or of limited schools. But I do not think that either a course on Painting in general or, say, on Catalon Primitives in particular, could ever be the "backbone" of any curriculum. One wouldn't be stiff enough, and the other, at best, would be an isolated vertebra. A course on Gothic architecture would seem to be a backbone course as a general course on architecture could never be.

I trust that my partial dissent from the program of the Committee may not obscure my sense of the value of the report. I agree with most of the proposals so long as they are not made exclusive formulas. Teaching is a very personal matter. Doubtless your Committee men would themselves teach with conviction and success along the lines of their own report. But they ought to leave a place for men of the type of the mysterious "Beresford" (Berenson?) whom they cite as an expert. In all this matter the fullest exchange of views between University teachers, who are of right theorists, and practising artists is desirable. The report of the Committee, rigidly logical and professional as it is in tone, will help the universities to measure and perhaps to amend that delicate empiricism by which successful art departments actually do live, move, and have their being.—FRANK JEWETT MATHER, JR., *Marquard Professor of Art and Archæology, Princeton University, October, 1916.*

SERINVILLE (Meurthe et Moselle).—After a drawing

The Exhibition of Regional Architecture in the Invaded Provinces of France

HELD AT PARIS DURING JANUARY AND FEBRUARY, 1917

DURING the last two months there has been held in Paris an exhibition, composed of drawings, water colors, paintings and photographs, and all related to the ancient dwellings and farmhouses of those provinces of France which have been invaded, and where many historic buildings have been destroyed. In the published catalogue of the exhibition one finds a preface by M. Léandre Vaillat, editor of *Le Temps*. Nothing more fittingly and more sympathetically could have prepared one to enter into this land where the tender roots of so many generations have been wrenched from the soil, and where sorrow and desolation hang like a pall over the quivering debris. None can measure the extent or the influence of this violent uprooting. Architecture has nothing more precious to offer than the deep attachment which it inspires among the humans who move among its humblest creations, into which there has been breathed the spirit of their ancestral race. No more cruel mark is left in the wake of war than these wounds upon which the scars form so slowly, and disappear only after the centuries have spread the balm of obliteration. Do they ever disappear in whole? Probably not.

The following translation of M. Vaillat's preface has been made for the Journal by Mrs. Kimball, and we are grateful for the opportunity of so preserving, in a small way, the memory of that for much of which we shall look in vain when we wander again in those provinces of France where war has taken its ruthless toll.

Old Habitations and Dwellings of the Fields

From the French of M. Leandre Vaillat

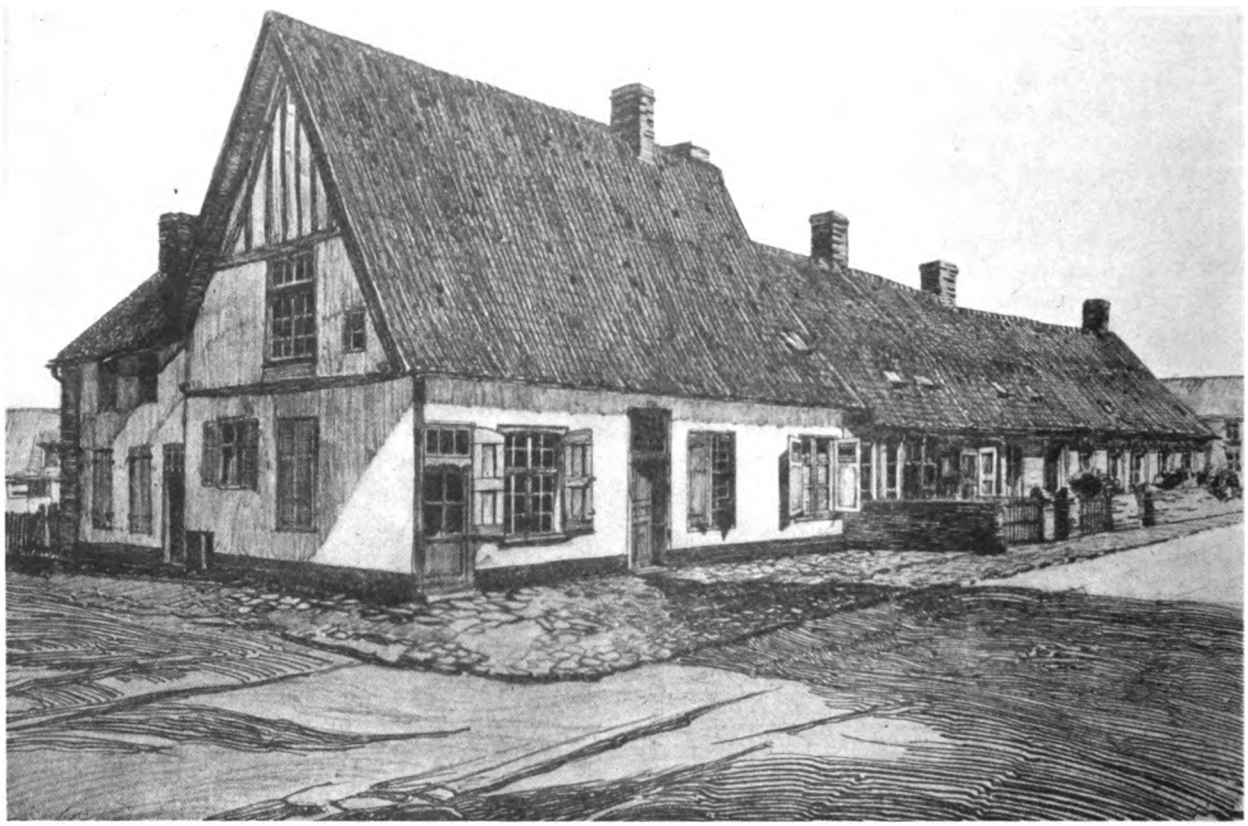
Whom of us has it not at some time befallen to spend certain hours in a remote country station, awaiting the arrival of a train?

You consult your guidebook: the village is a kilometer or two away: there is no mention of cathedral or castle. Idle, helpless, you seek a bookshop to buy some newspapers: there are none. You study the placards: they promise you swift journeys, to lands where there are many mountains, many historic monuments, and never any wearisome stops in places forgotten of men, like this one. You end by examining the station itself; it is similar to those you have viewed from the car-door without feeling any desire for closer acquaintance. You weigh yourself: you have gained a kilo. Then, tired

out, you desperately decide to visit the village, whose bell-tower you see over there through a haze tremulous with heat and light.

A long avenue bordered with plane-trees leads to it; the trees are as new as the station itself; the shadows of their meager foliage do not meet upon the dusty soil, and you take special pains to dodge the sun. But gradually you pass from that torrid zone to a more hospitable one. At first there are some scattered farms of small interest, commonplace like the railway station; they are under its stupefying influence. The dwellings draw closer together, nestle against each other, though without crowding; the road becomes a street; and at once, instead of moving on tediously straight like a geometric line, it indulges in coquetries, turns now to left, now to right, the pointed caps of its roofs, knowing well where it means to go, but planning to go there without fatigue or ennui, appropriating all the coolness, but making detours to avoid the icy and turbulent wind that in winter whips about petticoats and frays out the lace of headdresses.

Everybody is in the fields; the village sleeps in the midst of its harvests; one would think it deserted. You have all the better chance to explore it. Here are no ornaments, no capitals, no statues, but well-balanced forms of building, happily logical, and gaining from that very security a certain welcoming effect. Wood does not masquerade as stone, stone does not simulate wood; the charm of these houses consists in the avowal—proudly agreed to, naively expressed—of a certain rude poverty. Their beauty lies in the modesty of their lines with regard to the surrounding landscape, in the dignity of a taste which reveals itself in the simple juxtaposition of a red and a green, of a basket of fruit and a jardinière of flowers, in such appeal to kindly souls as we recognize in the paintings of Chardin.



WALLON-CAPEL (Flanders).—After a drawing

You go on, forgetting the great journey; and you come suddenly upon a little square where the shadow of the bell-tower travels around all day, as on the face of a sun-dial; a fountain in the center fills it with cool murmurings, the large basin with worn edges receives the water dispensed by four branches of greenish bronze around a granite pillar, surmounted by a ball upholding a cross of finely wrought iron. The flocks are returning homeward, the street comes to life with human beings of tranquil gait, moving with a rhythm suggestive of barn-doors widely swung. The sun goes down; you have forgotten the hour, and when you recall it, it is to regret the dream which you were just formulating, of abiding here and thinking no more of the railway station. . . .

Before the war there were many villages with a charm like this, in the invaded provinces. And it is because we have often so missed the train, because we have often so lingered, in that happy and unappreciated time of peace, that we have wept to know them destroyed, and have dreaded to see them rebuilt without intelligence, conforming to a type chosen with no reference to space or individuality, alien to all personal concern, to all sentimental preferences. We do not wish the aspect of the new-built house to be *forlorn*, we would have it harmonize, like that former one, with the soil, the landscape, the region, even as the old peasant does with the coif that covers her head.

What is to be done, at the start? to seek patiently for pictures, for watercolors, drawings, engravings, photographs, which may give us back the image of that which is no more, or is hidden behind present barriers; to group them according to regions, and show them to the public by way of gently demonstrating to it the immensity of its loss, and suggesting future respect for these old city dwellings, these houses of the fields, which have sheltered under their roof-trees the undying soul of our ancient provinces.

I talked of my project with M. Defrasse, chief architect of the Bank of France. He described to me the work being carried on in the same direction by the society of architects

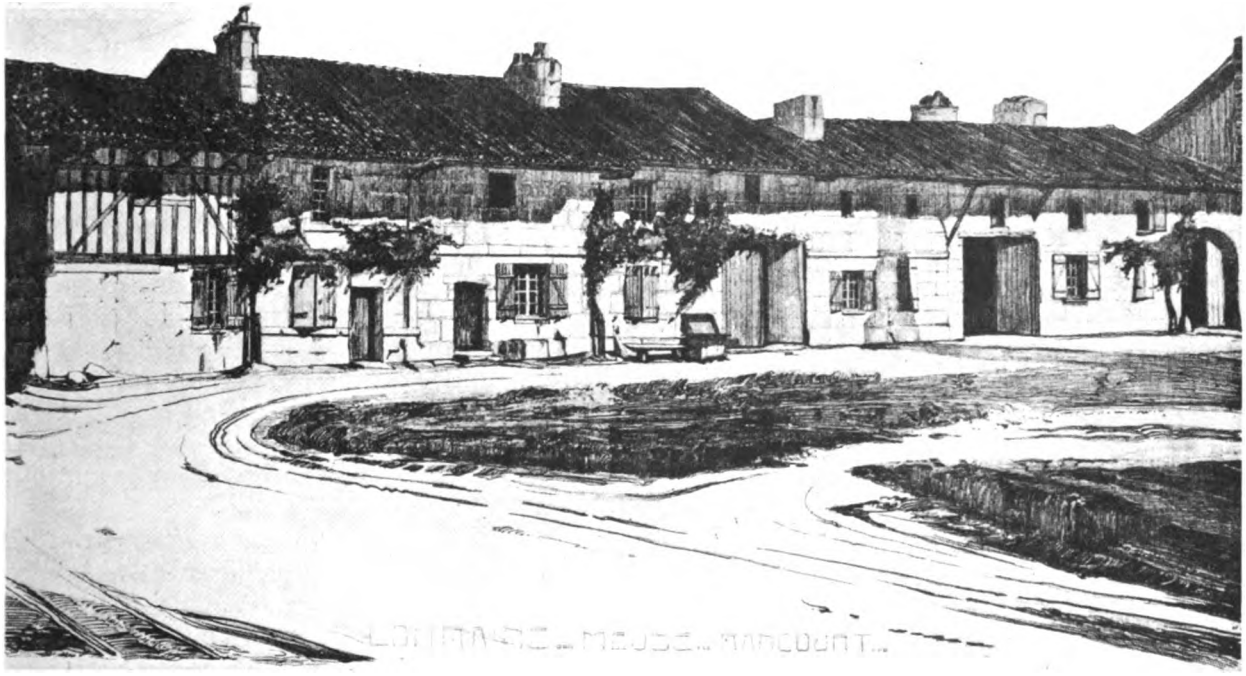
CHEMINON (Marne).—After a drawing

CHEMINON (Marne).—After a drawing

diplomés par le gouvernement; and when I proposed putting my ideas at their service, all our efforts to be in common, he promptly recognized in the spirit which animated me a kindred inspiration to that which was guiding their researches.

It took the war to show people in France that close by the side of Architecture with the capital A—whom the early sculptors depicted in the form of a woman nobly draped, a Vitruvius on her knees, a compass in her hand—there was architecture with a small *a*, whom I picture to myself more simply in the shape of a *bonne femme*, well versed in the receipts that her mother has handed down to her. In these latter years there have been founded many societies of "friends:" Friends of Versailles, Friends of Fontainebleau, Friends of the Louvre. Has any one ever suggested "Friends of Old Houses?" has any one been moved to bring together those whom a subtler sympathy inclines toward an art more rustic and closer to the life led, not merely by a few elect individuals, but by nearly all mankind? That dignity of the "historical monument," to which the church and the castle have been promoted—why not bestow it oftener on the dwellings of city or country? they often teach us as many things as are revealed to us by the cathedral or the palace.

I do not think that our epoch, so finely artistic, so eager to seek in the museums of Europe material for its admiration and also, alas! for its imitation, has granted to these elements of humble beauty the attention that they merited. At least, such attention has been given chiefly by certain incorrigible *regionalists*, or by certain privileged countries. I will instance, for example, and without attempting to mention all, the researches undertaken by the *Revue Alsacienne* of Strasbourg, and the *Revue Lorraine* of Nancy. Everyone knows the museum of Arles, founded by Mistral. It must be said that with little exception, the great public, influenced by books and by propaganda, had no eyes for the houses of simple style harmoniously adapted to each one, to the surrounding scenery, to the climate, to the ground; but lingered to contemplate the exceptional examples, sprung up in periods perfectly normal, and for that very reason less able to throw any light on our im-



PLACE DE L'EGLISE, RANCOURT (Meuse).—After a drawing

mediate necessities. I do not think that the most eminent masters of the School of Fine Arts have concerned themselves greatly with that domestic tradition which, though not permitting the lofty beauty of Roman monuments and classic art, has nevertheless so many hidden, discreet and fruitful virtues.

But let us speak no ill of the School of Fine Arts: there were former pupils and masters of that school, heads of its ateliers, old "*prix de Rome*," who came to me with outstretched hands, who listened with unforgettable cordiality to my suggestions and promised to realize with me the dream of an exposition of regional architecture. Through them that essentially national doctrine, which formerly passed for somewhat revolutionary, overcame orthodoxy; through them it became an official programme of instruction; and I hope that some not distant day will see, in the School of Fine Arts at last reopened, a special chair whose incumbent—easily chosen—shall teach young Frenchmen, not the form of the Pantheon but that of a farmhouse in the Vosges, a house in Alsace, or an inn of Picardy.

Here is the cheering prospect: at the beginning of this year, M. Paul Léon, who directs with so much wisdom and clearness the service of historic monuments, had the happy thought of entrusting to one of their architects, M. André Ventre, a research among the dwellings of the invaded provinces; and asked him to illustrate by drawings those characteristics which I have long endeavored to specify in my studies of the "regionalism" of French architecture. M. André Ventre, in spite of all sorts of material difficulties such as every one may count upon who travels in the army zone, succeeded in collecting a quantity of documents which will explain to the public the exhibition whose catalogue is introduced by this preface.

Geometry betrays faults of construction; rarely can the latter bear its tests; only perfection can triumph over them. On the other hand, perspective has the merit of placing a work in its *milieu*, its atmosphere; it becomes then an architectural mass, with light and shade, that is to say, values in relation to a fixed lighting. M. André Ventre excels in this; his drawings, boldly treated in the ensemble, can be comprehended from afar; he reproduces the essential features, heavily accented after the manner of wood engravings; and when he is quite sure of being understood by every one, he

permits himself to draw for his own amusement and that of the unhurried spectator some detail that interests him, a mantel decoration, a cornice; he takes a pleasure in that so visible that one shares it. And thus, by dint of sympathy, he succeeds in conveying the flavor of a work whose merit lies in solicitude, in a slowly acquired art, in proportions, in a respectful attitude toward people and toward nature.

From Flanders he went down to Artois, then to Picardy; from the region of Noyon he passed to that of Soissons, which in the materials and the character of its constructions is allied to the Valois and the Ile-de-France; before reaching Lorraine and Alsace he crossed Champagne. We recognize the long, low house of the Boulonnais district, its wide windows with little panes and green shutters in the white stucco, hiding under its great thatched roof bordered with red rafter-ends; then its cousins of Artois and Picardy, analogous but not wholly similar; the dwelling of Valois and of the Ile-de-France, with notched gables, all in coarse limestone with shells; that of rocky Champagne, its chalky tufa framed in brown oak; that of Lorraine, quiet of lines like the horizons of the Meuse, opening wide the arch of its barn-door under the gently sloping roof covered with curved tile; finally the wooden-walled house of Alsace, with pointed gables, and galleries where they dry tobacco plants or maize.

I know of nothing comparable to these researches except those conducted by Baron Taylor, toward 1850. Among the artists who worked at illustrating his "Travels in old France," there were two brothers who did for Picardy, their native country, what I should wish done for each province of France. Aimé and Louis Duthoit, born at Amiens in the beginning of the nineteenth century, received their first lessons from their father, a master sculptor established at Lille during the Revolution. I have examined a little note-book of escutcheons, wherein as children they amused themselves by sketching the precise and nervous ornament of plumed crest and blazoned shield. To their origin and training they owed that respectful fondness of the early artisan for atelier traditions; their fidelity and conscientiousness were identified with all the enterprises of those who at that period had a hand in the renaissance of mediaeval art; Viollet-le-Duc called them the last "image-painters" of the Middle Ages.

For a half-century, nearly from 1820 to 1870, with a patience worthy of those masters whom they set themselves to resemble, they drew from morning to evening, without ceasing, aside from their work as artists of images, everything in their province of Picardy that caught their fond attention: bell-towers springing into the light fleecy sky, great steep roofs pierced by dormers in the form of a seated dog, stocky chimneys, pulleys lifting sheaves into the granaries, old worn timber-work stained and surfaced by contact with human hands, trees twisted and solitary in a desolate country, bosquets delicate as plumes waving over the gracious crowd on the promenade, windmills with great wings half opaque and half trans-

A Farmhouse (Artois).—After the painting by Jules Breton

Dixmude (Flanders).—After the etching by Victor Gilsoul

parent, turning above the dunes, heaps of mingled brick and stone, market gardens with innumerable canals peopled by the gardeners' boats, coats of arms carved on the keystone of an arch or the tympanum of a door, farmyards, covered wells shaped like pyramids, stalls familiarly planted between the buttresses of a church, booths at markets and saint's day festivals, belfries, cemeteries encircling humble country churches, sculpture of the past; and dominating all Picardy as a great bell drowns the voice of little bells, the cathedral of Amiens, the cathedral wherein they lived in the company of saints and heroes as in the midst of friends—where they could have found their way about blindfolded, and which they could have reconstructed, stone by stone, if the Germans had destroyed it.

Everything is drawn with a light, *spirituel* touch, without useless insistence: the blacklead stands out brilliantly from the grain of the yellowed paper. These men who lived as ascetics of art, whose learning was prodigious, found a way to avoid crushing under the weight of their knowledge those who viewed their work; in their task of explanation they are humorous, but discreetly so; they are moved, but in a way which is not lacking in irony; and always, in characterising the work of different periods—for example, a mediaeval angel or a *bambino* of the eighteenth century—they playfully indicate their preferences and gently suggest, without pedantry, what should be done and what should not be done.

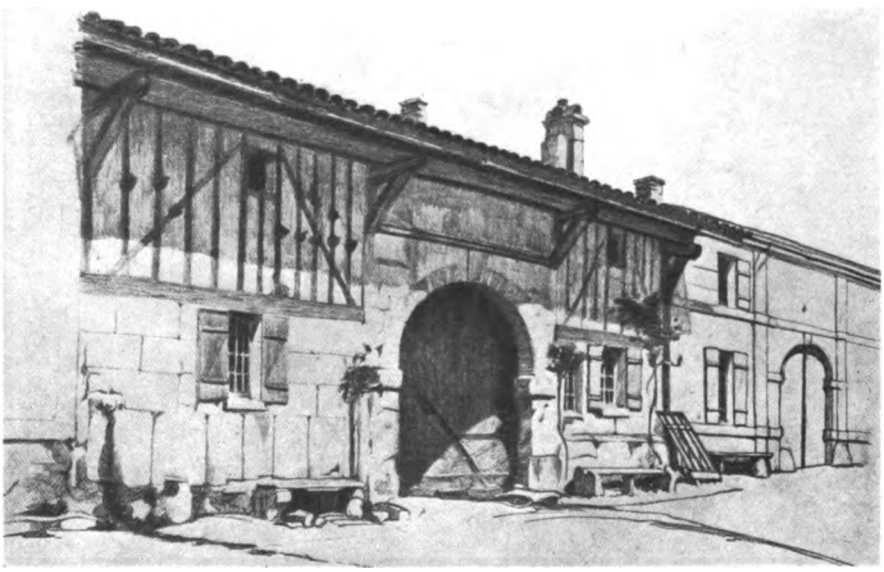
And their counsels are simple: instead of straying into distant lands whose speech and customs are strange to us, let us look about in the country where we were born, have lived, and hope to rest; far from ridiculing the talk of old inhabitants as though it were but dotage, let us endeavor to read the mysterious meaning of those familiar sayings whose banality is but on the surface. Since they talk thus, they must have their reasons; what are they? Since their dwellings are built after this fashion, there must be a motive; what is it? And this applies not merely to rural houses, to city residences, but also to cathedrals, to palaces, to statues. It is easy to jest at Viollet-le-Duc; they may say, smiling, "gothic 1830;" but what did Viollet-le-Duc desire if not a return to national tradition—that is, to an architecture suited to

GIRECOURT (Vosges).—After a drawing

the soil, to the climate, to the scenery, to the inhabitants—and finally the abandonment of an ultramontane architecture, conceived in Greece and Rome by Greek and Roman masters, consequently regional in Greece and Rome but alien to our country. By outlining in their sketch-books the "*beau Dieu*" of Amiens with the silhouette of a Picardy farmhouse, the Duthoit brothers seemed to imply that a master builder of France should study those models that he has under his eye, before reaching after the foreign beauty of the Apollo Belvedere or the Baths of Caracalla. If they made themselves through life the faithful and self-sacrificing servants of Gothic architecture, doubtless it was that the latter's true name was not that but really—*opus francigenum*, French work. By accepting their lessons, or rather their counsels, subtly whispered, we should have discovered in the Middle Ages not only an unrivalled museum, but an art truly our own, the principles and the means of compassing a simple, harmonious and logical embellishment of our life.

If we have not found in each invaded province a similar monument raised with a like devotion, at least we have sought and succeeded in disclosing everywhere a regional tradition, announcing itself with gratifying earnestness. The spirit in which we must consider the work exhibited here is not the same as that which inspired our review of the yearly salons, before the war. It would be well to bring hither —I will not say more indulgence, for the exhibitors have no need of it—but more temperament and more reverence. Here are no longer impressionists, *pointillistes*, cubists, futurists, "*pompiers*," not even "*pompiers*" who take fire; here are only good Frenchmen, concerned with the houses of the country of France. These aquarelles, these paintings, drawings, engravings, plans, perspectives, let us regard them not as works of art evolved "in an ivory tower," but as witnesses and reminders of days unhappily ended.

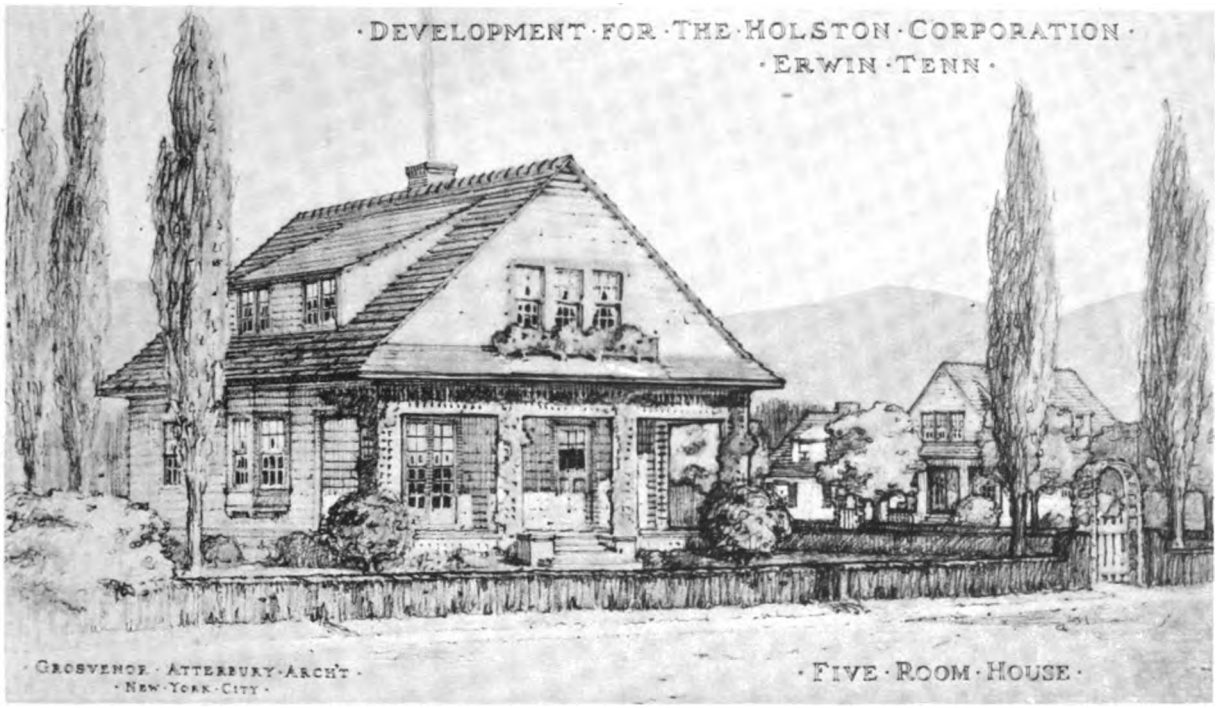
Let us fancy ourselves in the situation of exiles driven from their dwellings, who suddenly return . . . What do they find? Ruins, sections of wall, a fragment of woodwork. They still preserve among their effects, hurriedly brought away at the time of invasion, some postcard or photograph which will aid them in reconstructing the ruined house. Will they amuse themselves by playing dilettante and criticizing that picture? No. They will interrogate it as they would interrogate an old native, without prying into its deficiencies. Misfortune has dignified it; it symbolizes an ancestral tradition, verified by experience; the image has become an *icon*.



RANCOURT (Meuse).—After a Drawing

Town-Planning and Housing

GEORGE B. FORD, Associate Editor



Plan for the Village of Erwin, Tennessee

The development at Erwin, Tennessee, is one of the signs of a wide awakening to the great natural advantages of the Blue Ridge Mountain Section. The Holston Corporation has owned for some time about nine hundred acres at Erwin, and an immediate need for increased housing facilities has arisen with the establishment there of a pottery plant, and with the prospect of other industries to follow. The Corporation has therefore adopted a policy of general development along broad lines with a view to the ultimate good not only of its own tract but of the town of Erwin as well. The latter has at present a population of about three thousand. A large proportion of the local industry has been in connection with the repair shops of the Carolina, Clinchfield & Ohio Railroad, located at Erwin, strategically placed at almost exactly the middle point of the line's extent.

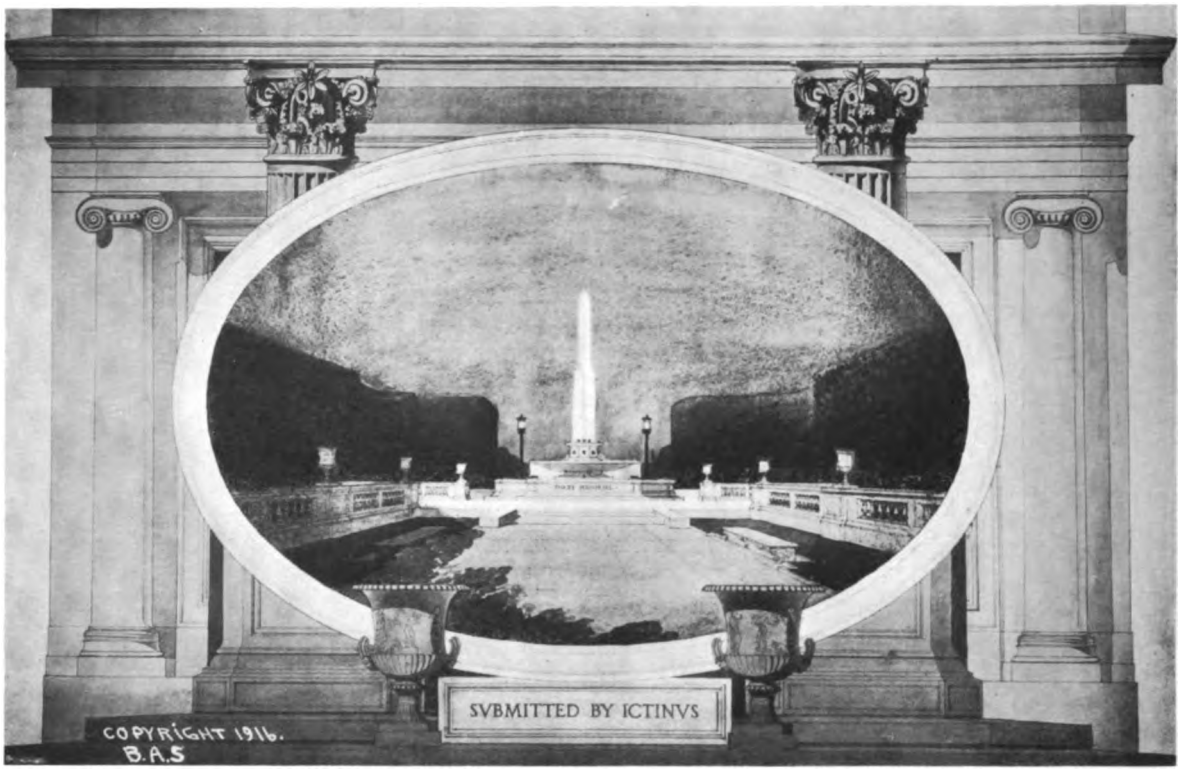
As usual in such cases, the time element was pressing so that it was necessary to contract for the first fifty dwellings within eight weeks after starting the study of the problem. Fortunately it has been possible so to place these first groups of houses as not to prejudice a proper study of the larger problem of the general plan. Work is now being pushed along these lines, under the direction of Mr. Grosvenor Atterbury.

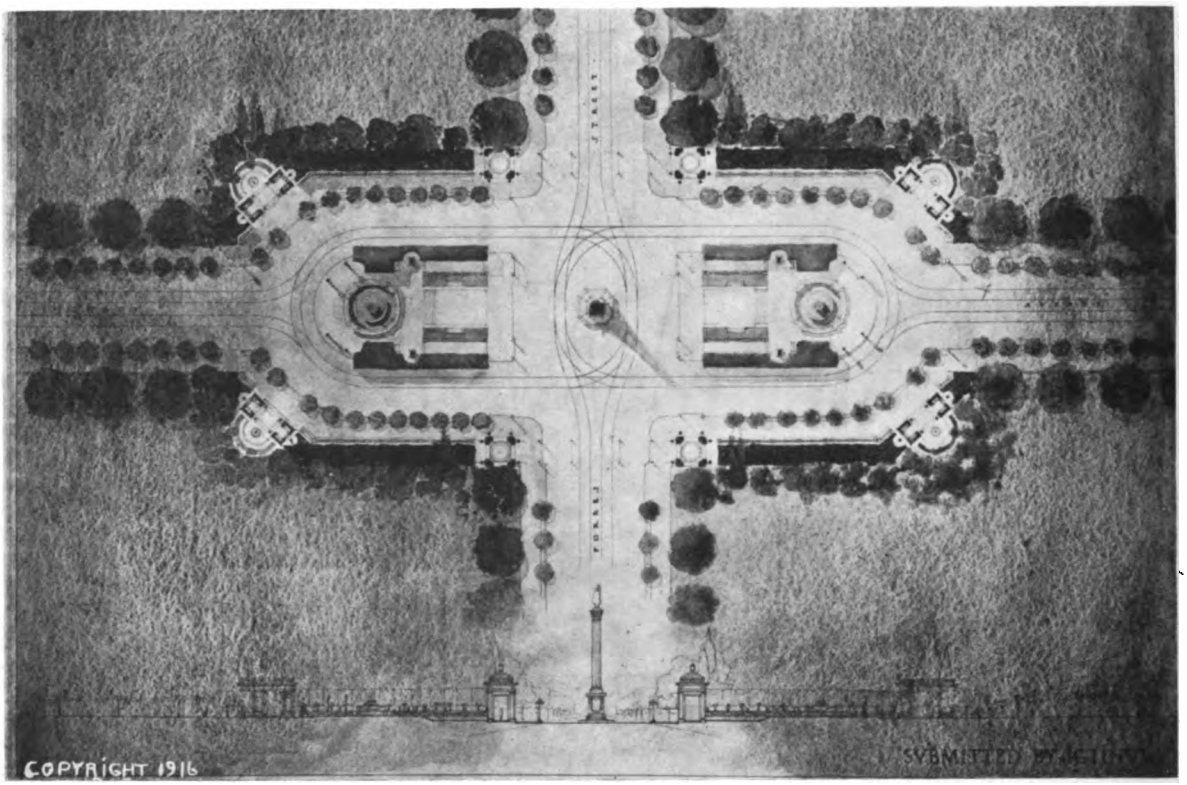
The first groups of houses comprise four-room houses of bungalow type, five-room and six-room houses, both of which have bedrooms and baths on the second floor and, also, several houses of slightly larger type. Building costs at Erwin are surprisingly low, these houses being contracted for at prices varying only slightly from ten cents per cubic foot.

Study for Treatment of Intersection of Two Streets

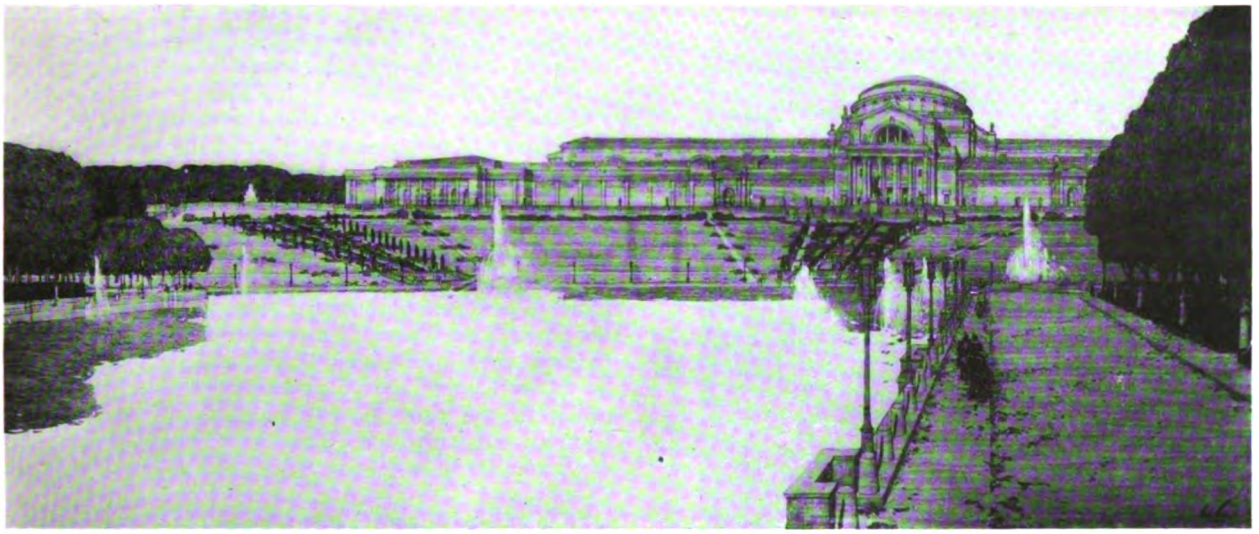
The treatment of the intersection of two streets in a residential district was the subject of a competition held by the Beaux Arts Salon, of Pittsburgh, for which awards were made early in December. Benno Janssen, Frederick Law Olmsted and F. F. Nicola were the judges. The first prize of $250 was awarded to John P. Morgan, of Swissvale, Pa., for a solution which, in the opinion of the jury, met the practical requirements of traffic at the intersection, and had the additional merit of being one of the two most beautiful designs submitted. First honorable mention was awarded to W. Pope Barney and Rutan & Russell for a solution notable for its beauty of design and presentation.

Five of the designs, including that receiving first honorable mention, show a disposition of car tracks which the jurors regard as fundamentally wrong from the standpoint of traffic regulation. Four of the designs present a type of plan differing from the ordinary cross-roads, mainly in the clipping off of the four corners to give more space for traffic, in the monumental treatment of the four corners, and in the occurrence of a central object of more or less monumental character around which traffic is to be directed.





PRIZE-WINNING DESIGN. COMPETITION OF THE BEAUX-ARTS SALON, PITTSBURGH, ON A PROBLEM OF STREET INTERSECTION. See page 115



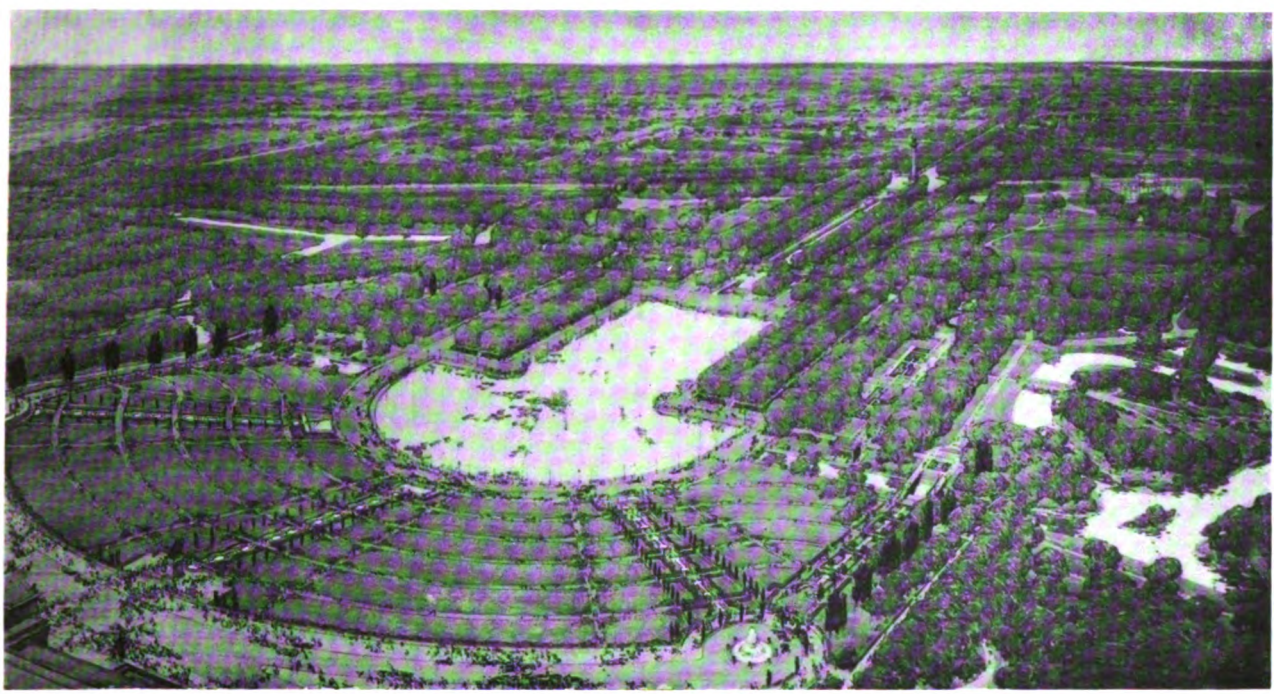
ST. LOUIS—PROPOSED DEVELOPMENT IN FOREST PARK, WITH THE ART MUSEUM AS THE FOCAL POINT

Development of Forest Park, St. Louis

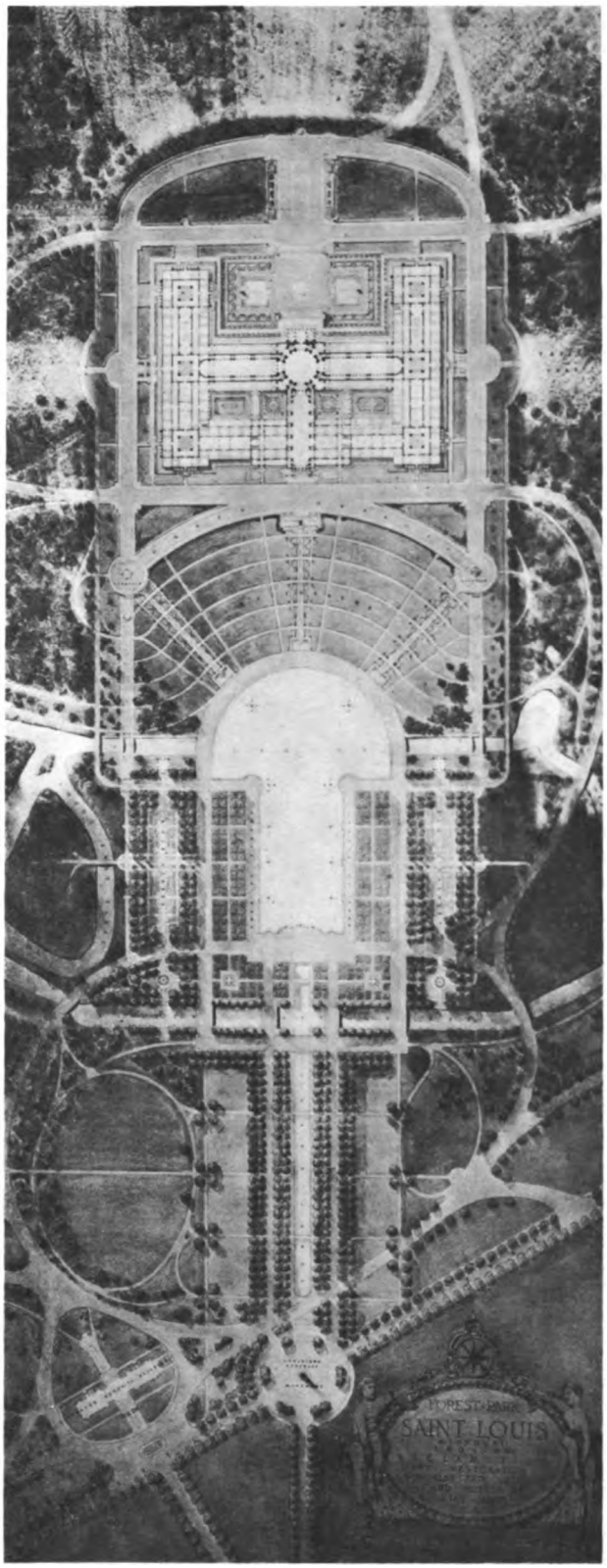
What is said to be the most ambitious scheme for the improvement of a section of a municipal park on formal lines ever attempted in America is that for the development of the grand basin and adjacent grounds in Forest Park, St. Louis.

At the World's Fair in 1904, the development of this site on similar lines, but on a much larger scale, revealed the great possibilities of the location for a permanent formal approach and setting for buildings and as a focus of landscape and architectural interest for a great park. To Nelson Cunliff, Commission of Parks and Recreation of St. Louis, is due the credit for the conception of the idea that has resulted in the design prepared by Cass Gilbert and drawn by Jules Guerin.

The proposal embraces Art Hill, on which the Museum is situated, an amphitheater, a formal basin, and an extensive system of driveways, promenades, paths and cascades, all constituting together an undertaking that will require at least twenty years to complete. The plan permits, however, of full use of all existing features of the



ST. LOUIS—PROPOSED DEVELOPMENT OF FOREST PARK FROM ART HILL TO LINDELL DRIVE. VIEW LOOKING NORTHEAST



ST. LOUIS—PLAN OF PROPOSED DEVELOPMENT IN FOREST PARK SHOWING ART MUSEUM, AMPITHEATRE, GRAND BASIN, RIVER DES PERES, GRAND CANAL, AND LOUISIANA PURCHASE MONUMENT

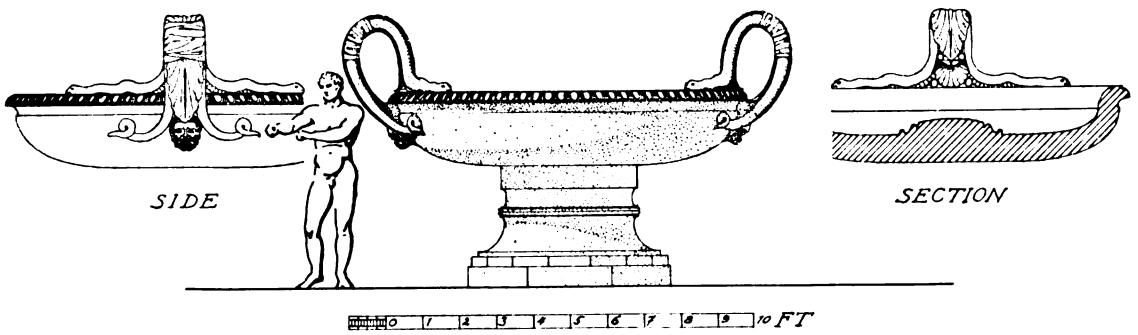
site now, and of such other added features as are carried out from time to time as financial conditions permit.

The Art Museum is to be the focal point of the plan, and the whole design is laid out with this end in view. The plans call for an enlargement of the Museum building to a size which will provide a total area equal to eight times the existing area. Bordering the front line of the Museum, at present, is a broad driveway and promenade. The new plan calls for a realignment of this driveway and a lowering of the roadway in front of the Museum in order to give an unobstructed view of the building from the grand basin below. In carrying out the entire scheme, the main problem is one of planting and grading. Progress in the realization of the development will be gradual, owing to the slow natural development of landscape features, particularly the growth of young trees, 1,000 of which already have been set out in a design to conform to the plan.

The scheme in general has virtually been approved by the Board of Public Service. When the work is actually completed, St. Louis will have one of the most attractive recreational spaces possessed by any city in the world, as well as a magnificent formal setting for its Art Museum.

A Diagnosis of Milwaukee's City-Planning Needs, and a Report on River-Front Improvement

The Wisconsin Chapter of the American Institute of Architects and several civic organizations in Milwaukee coöperating, have received from Dr. Werner Hegemann, the city-planning expert, a report, prepared at their request, on Milwaukee's city-planning problems. The report includes a number of valuable diagrammatic illustrations and descriptive text on the historical features of Milwaukee's plan, pertaining mainly to the street and highway system and the problems of transit and transportation. The great need of parks is accented, which, according to the report, is the most prominent feature of comprehensive city-planning engaging public attention today. Comparisons and suggestions are made on the city's housing problem, which it is stated includes in certain localities slum conditions than which few can be found that are worse, even in the larger cities. Perhaps the most interesting feature of the report, from the architect's standpoint, are the concluding paragraphs on the improvement of the Milwaukee River frontage which is fast becoming a factor of first importance in its effect on the architectural treatment of many of the imposing commercial buildings now being erected in the heart of the city's business district. It is hoped that the river will in time be transformed into a beautiful canal almost Venetian in character. The civic center, which it is hoped will be really expressive of the dignity and importance of the city, is briefly discussed, and support given to recommendations on this phase of the problem by Frederick Law Olmsted and John Nolen a number of years ago. The civic center, together with the parks, are those features of city-planning which so far have been most strongly emphasized in public discussions in Milwaukee.



A Vase from the Baths of Caracalla

The antique vase illustrated above now stands in the center of the west court of the National Museum at Naples. It is entirely of porphyry—a material which the Romans brought from Egypt. Porphyry is no longer quarried and can be had only in small fragments worth almost their own weight in gold. One handle of the vase is gone, and the bowl itself is pieced together in several places. The vase formed part of the celebrated Farnese collection which found its way from Rome to Naples at the time of the marriage of a Farnese to a Neapolitan Bourbon prince. The collection today constitutes one of the chief interests in the museum at Naples.

The following notes may be of interest:

Two members of the Farnese family, Paul III and Alessandro Farnese II, men of wide culture and great wealth, were the first to excavate and exploit the Baths of Caracalla. The principal treasures found by them were the so-called Farnese Bull, Hercules and Flora (all at Naples), and the two gigantic tubs now standing as fountains in the piazza in front of the Farnese Palace in Rome. The celebrated Torso Belvedere, to which Michel Angelo ascribed his power of representing the human form, and over which, in his blind old age, he loved to pass his hands "that he might still enjoy through touch the greatness of its muscles," was also discovered in these Baths. And the last column (of Egyptian granite) was taken to Florence to support the statue of Justice in the piazza San Trinita. Although these and other treasures have been "scattered to the four winds," yet the ruins themselves are still among the most impressive of the whole Roman world: it was here that Shelley found an inspiring surrounding in which to write his "Prometheus Unbound."

The Baths themselves were begun in A.D. 212, and, as may be inferred from what has already been said, were of unparalleled magnificence. The bathing establishment proper measured 240 yards by 124 yards, and the entire enclosure 360 yards by 360 yards. In addition to the general baths there were 1,600 individual marble tubs, exercising-rooms, a race-course, conversation-rooms, lounging-rooms, libraries, lecture-halls, and a labyrinth of underground galleries for the service. The walls were covered with rare marbles from all parts of the world, and the floors were of porphyry, serpentine, and other precious materials laid in elegant designs. The water-spouts were of silver. The process of taking a bath required no little time and afforded the bather a variety of sensations. It consisted of, first, a hot-air bath at moderate temperature in the so-called Tepidarium, accompanied with an anointing and a gentle massage; second, a hot-water bath in the Caldarium; third, a cold plunge in the Frigidarium or Piscina, and, lastly, a rub-down and shampoo with a second anointment. The common could enjoy all this grandeur and luxury for a few small copper coins.—Gorham Phillips Stevens, *American Academy in Rome.*

Town-Planning Propaganda in India

Lectures by MR. H. V. LANCHESTER, F. R. I. B. A.

A very complete and interesting discussion of a wide range of town-planning and housing topics was given by Mr. H. V. Lanchester, F.R.I.B.A., in a series of twelve lectures delivered in the Engineering College at Madras, India, early in this year. The services of Mr. Lanchester were temporarily secured by the Government of Madras to inaugurate schemes of town-planning in the presidency. In comparing Indian with European cities, Mr. Lanchester noted the difficulties attending the work of the town-planner in the East because of the toleration extended there toward dilapidation of all kinds. He made a strong plea, however, for a reverential and sympathetic handling of the characteristic features of local cities and towns, and pointed out that in the beginning Hindu cities were planned with great care, according to sound common-sense principles buried in a great deal of mysticism. He urged that no encouragement be given to those who would break up the Indian social system with its traditional divisions and prescriptive occupations and substitute therefor the conditions of the modern industrial system. Mr. Lanchester said that Madras, in particular, had impressed him from the very first, not as a fine city, but as a city that possessed the most exceptional possibilities, and that he hoped some day to see a city there, no longer indefinite and vague, but one with all the characteristics of impressive dignity such as one sees among the European capitals, while still retaining the full beauty of its natural adjuncts, and an airy spaciousness that some of these lack.

Beaux-Arts Institute of Design

Official Notification of Awards—Judgments, January 23, 1917

Class "B," Second Analytique

Jury of Award.–M. S. Wyath, L. Warren, P. Goodwin, L. G. White, L. S. Weeks, W. A. Boring, J. A. Gurd, A. Ware.

Program.–A Colonnade. *Drawings submitted, 112.*

Awards.–First Mention Placed, D. P. Emley and P. A. Tischler, Columbia University; J. O. Vegezzi, Atelier Corbett, New York City.

First Mentions, D. A. Fletcher, Columbia University; N. Rotholz, Atelier Corbett, New York City; W. T. Conboye, George Washington University; H. W. Anderson, Atelier Rebori, Chicago.

Class "B," Second Projet

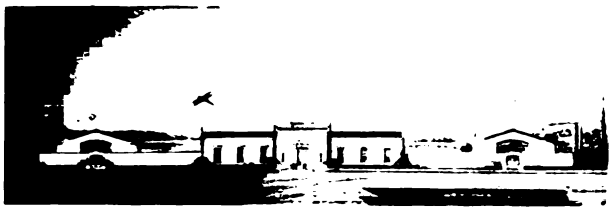
Jury of Award.–F. A. Godley, H. W. Corbett, Prof. Burnham, F. C. Hirons, C. L. Lawrance, E. I. Williams, F. H. Bosworth, Jr., P. A. Cusachs, H. Hornbostel, J. Clark, W. Emerson.

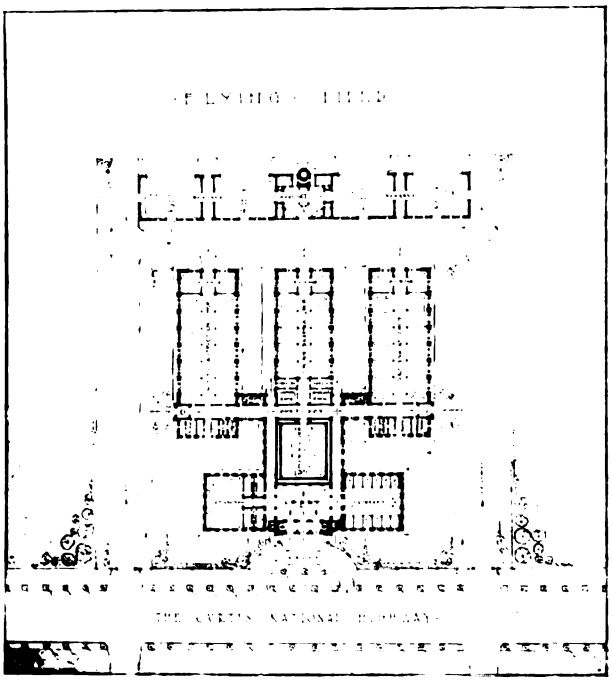
Program.–An Aëronautic School.

Drawings Submitted, 101.

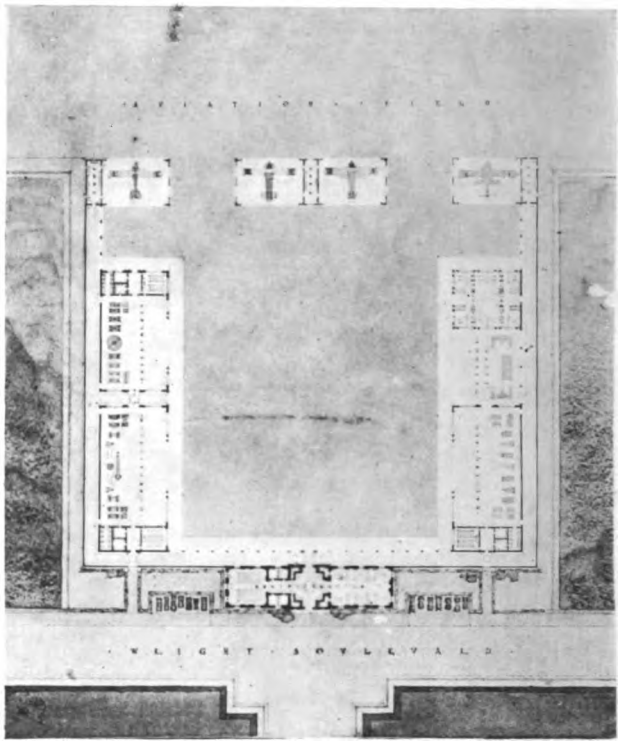
Awards.–First Mention Placed, D. Holstein, Columbia University; J. Siegel, F. P. Wiedersum and A. B. Lincoln, Atelier Hirons, New York City.

First Mentions, D. B. C. Morse, Columbia University; E. T. Truthan, T. H. Farnsworth, C. F. Schmidt and S. P. Thompson, Cornell University; P. Meng, Atelier Hirons, New York City; O. J. Horstmann, Atelier Baur, San Francisco Architectural Club.

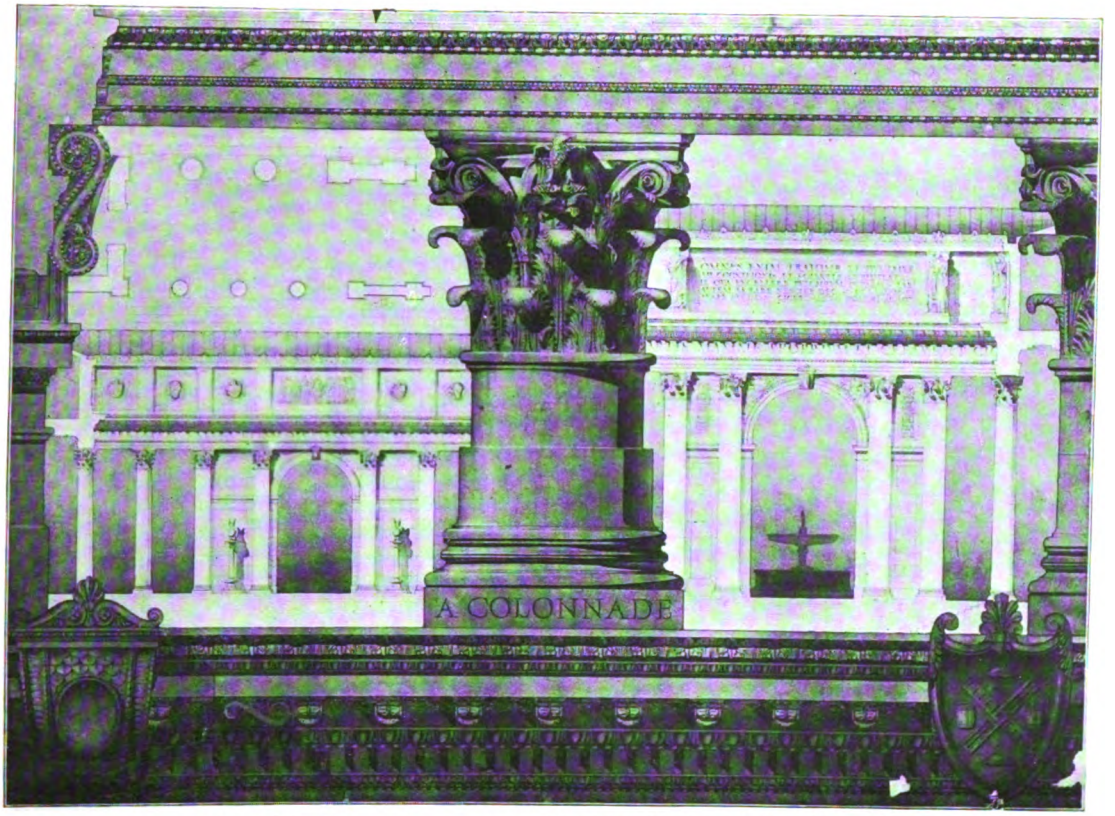




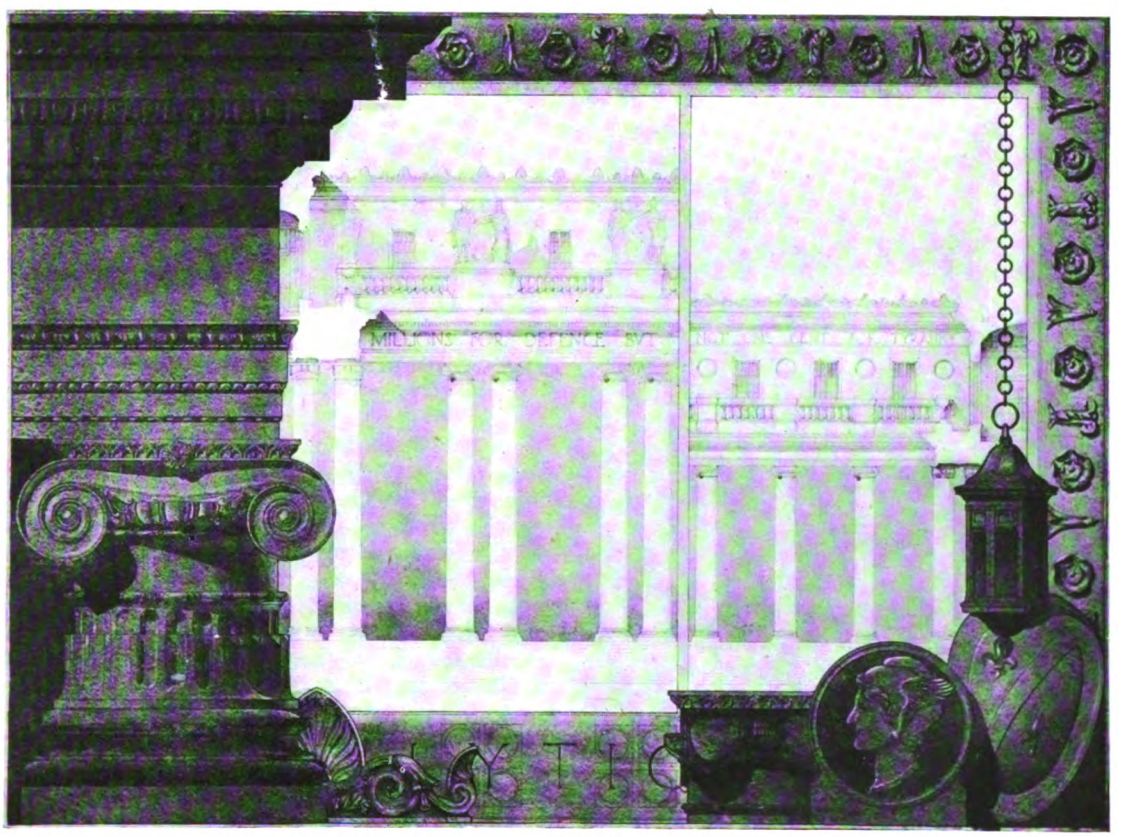
CLASS B.—II PROJET
First Mention Placed, D. Holstein



CLASS B.—II PROJET
First Mention Placed, J. Siegel



CLASS B.—SECOND ANALYTIQUE.—First Mention Placed, J. O. Vegezzi

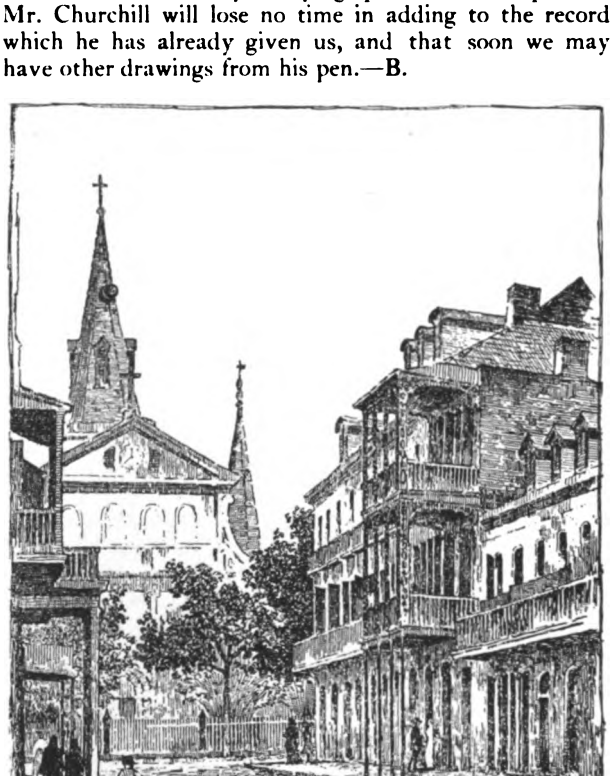


CLASS B.—SECOND ANALYTIQUE.—First Mention Placed, D. P. Emley

Book Reviews

Pen Drawings of Old New Orleans. By Frank G. Churchill. Published by the Author, at the Hibernia Bank Building, New Orleans, La. $1 net.

In this small and well printed volume Mr. Churchill has assembled fifteen of the drawings of old New Orleans. In a brief foreword he explains that the little book is by no means intended to be a complete record, but rather a reminder of the charm of the vanishing quarter in which there was once such an abundance of delightful architecture, exquisite craftsmanship, and fascinating courtyards and gardens. Heaven be praised that Mr. Churchill has taken up the task of perpetuating the memory! He feels the atmosphere of this quarter in every line which he puts upon the paper, and the drawings which he has selected for this present purpose are full of that ripe quality which only the years can give. Some of the buildings pictured in this book have already disappeared, and the destruction of others is only a question of time. A few things have been saved by the untiring energy of members of the profession in New Orleans. What a pity it is that no man of means has yet seen the possibilities which lie dormant in this slowly decaying quarter! We hope that Mr. Churchill will lose no time in adding to the record which he has already given us, and that soon we may have other drawings from his pen.—B.



At the End of Orleans Street, New Orleans
(From "Pen Drawings of Old New Orleans")

George Edmund Street. Unpublished Notes and Reprinted Papers; with an Essay by Georgianna Goddard King. Publications of the Hispanic Society of America. G. P. Putnam's Sons, New York City. 1916. $2.25.

Reading the memoir of George Edmund Street takes one back to the England that will never be again. One writes the phrase with mingled feelings, for behind the creeping industrialism of the nineteenth century there stalked Victorian placidity and insipidity. Keats, slipping ashore at the mouth of the Thames to write the Last Sonnet ere England faded from his view, might well have been the premonition that such wines as his were to cease flowing from English vineyards for many a day.

But the England of Street's day was still a happy hunting-ground for the architect, and there was always the larger supplementary preserve across the Channel. The narrative of Street's life in England, and of his rambles and sketching tours, is full of the poetry of that England that once was—the England of hedge-rows and roses and May mornings in Devonshire, of abbey and church, cottage and castle, all scattered about in bewildering profusion. The pre-Raphaelite movement came within the scope of Street's life, and its sponsors were his friends, yet one is not sure that either the event or the men were greatly to influence his career. But the memoir gives us a delightful glimpse of a life so full, so rich, so strong, that there comes quite a disappointment when we turn to the pages of the reprinted notes.

Here there seem to be no echoes of that thrilling life. The narration of his tours seem chiefly occupied with dates—with the passion for classifying and indexing, at which Street was so remarkably clever, since he probably knew his Gothic as well as one has ever known it. This is all valuable, and would be exceedingly interesting on a journey, yet it leaves one with a longing for a larger reflection of the man who has been so interestingly brought before us in the memoir, for rarely has a more graceful tribute been paid to an artist than this. Not for anything should one miss the reading of those pages.—B.

Port Sunlight. By T. Raffles Davidson, Hon. R. I. B. A. London, B. T. Batsford; New York, Charles Scribner's Sons. 1916. $1 net.

In spite of all that has been written of this now world-famous village, Mr. Davidson has approached the subject in a manner which invites a careful reading by those who really wish to know not so much how Port Sunlight looks, or how it has succeeded from an architectural or esthetic standpoint, but how well it has worked out in the larger manner which formed the basis of the project as it unfolded in the vision of its founders. The illustrations are excellent and give ample evidence of Mr. Davidson's facility of selection. The text is interesting and written under the influence of a warm appreciation of what Port Sunlight was meant to accomplish and of a faith that it has succeeded in a very large measure.—B.

BOOK REVIEWS

The Practical Book of Architecture.

By C. Matlack Price. Philadelphia, 1916. J. B. Lippincott Co.. $6 net.

It is certain that a review of this book by a well-informed layman would give a point of view that is not wholly apparent to the professional reader. The object of the author in writing this book is, I take it, to reach a great part of that intelligent American public, which although it is keenly interested and often-times extremely well versed in music, literature, science, and other forms of art, has forever remained the veriest tyro in all questions pertaining to architecture, a public that the architect has been for years trying to reach and interest in architectural matters. So far as the writer has intuitively been able to interest and awaken that semi-dormant desire of the average intelligent American to know and understand more about the buildings and monuments that he may see in his travels at home and abroad, just so far will he reap the reward that will follow a broad understanding of this work by a large circle of readers.

In accomplishing this he would derive as a by-product the grateful appreciation of the architects of the country for placing before this public, in comparatively simple form, so much information that would help to educate the public to a higher appreciation of, and a more intelligent participation in, those architectural duties, both public and personal, that it may be called upon to perform.

To the architect it would seem that the author has placed before his readers in a readable and easily comprehended manner, the elements of the many architectural styles that have come down to us from the past. They are further elucidated by an illustrated dictionary of architectural features and motifs that will be of much help to the lay reader.

Of special interest are the photographs, showing the derivation and evolution of our present American architecture, which, with the written description accompanying them, makes a most comprehensive and illuminating summing-up of our architectural progress.

The chapters devoted to the relations of architect and clients should be of great assistance to the public and the profession, if this book can be placed before a large number of readers. ALBERT E. SKEEL.

The Social Survey.

By Carol Aronovici, Ph.D. The Harper Press, Philadelphia. 1916. 256 pp. $1.25.

"The Social Survey" is based throughout upon the recognition of the fact that fundamentally a very considerable share of our community problems is due to bad city-planning, and it is from this angle that the book deals with the technique and content of the social survey.

Assuming that the fundamental functions in human society are the protection of life, the promotion of efficiency of labor, and adequate use of leisure time, the book outlines in minute detail the necessary processes in the conduct of a survey which would stand as an efficiency test of the relation that exists between the city plans and the life, labor, and leisure of the people.

The chapter on housing deserves special mention because it approaches the subject from the angle of constructive reform, dealing with the land question, shifts of industries and population, taxation, city-planning, and the many other factors that have come to be recognized as the causes of bad housing. The discussion of the field of leisure as related to the needs of the people presents a new approach to this subject. Recreation is considered only as a small although integral part of the problem of utilizing recreation as a creative social force. The task of bringing before the reader the modern ideas and tendencies on a given subject without in any way forecasting the results that should be expected when the survey is completed, has been done with skill.

The book is written in Dr. Aronovici's direct and rather unusual style which is well known to the readers of the Journal. In spite of its technical nature, the reader's interest is held through the way in which the structural functions of the community have been related to scientific principles and practical experience.

An extensive bibliography and list of the important surveys completed within the decade in this country and abroad constitute the index.—BERNARD J. NEWMAN, *Director of the School of Social Service of Philadelphia.*

Parks, Their Design, Equipment and Use.

By George Burnap, Landscape Architect of Buildings and Grounds, Washington, D. C. Philadelphia, J. B. Lippincott Co. 1916. $6 net.

If Mr. Burnap had said no more than the following, it would have justified the publication of this book: "Due to the unexpectedness with which the demand for civic planning has come upon America, a temporary lack of specially trained men has occurred, with the result that candidates from all the allied professions have aspired to present themselves as qualified for the remodeling of a city." Mr. Burnap does not exempt the architect, by any means, in this over-reaching for extra-professional opportunities, but points out the real complexity of the problem.

The real purpose of the work, however, is to deal with every aspect of parks, beginning, in the case of new ones, with the inception of the movement and tracing the whole development through its every stage and in wise consideration of all the influences which are exerted both upon the development and by it. "A park is the city's child," says Mr. Burnap, "needing to be nourished, trained and educated exactly like a human being; and in far greater degree than many a child, may be depended upon to show thanks and gratitude for whatever attention may be lavished upon it. It is civic suicide to forego the raising of parks, however much trouble they may be in their infancy and during the growing age. A park successfully brought to the full of its powers becomes a city's pride and joy; it establishes a precedent of beauty; many gardens follow and property values increase. A park properly brought up is a town or city asset, never an extravagance; a help and support against misfortune; a rejuvenation and pleasures on the approach of old age." One could scarcely state the case more clearly.

The book is copiously and well illustrated with subjects from all over the world and designed to impress the reader with the manifold methods which have been adopted for the treatment of parks and with every factor related to their use and their influence.—B.

How to Finance City-Planning in America

By WALTER D. MOODY

Money is basic in city-planning. Without Money no tangible results can be had. This applies in its first significance to city-planning in its inception. Money is the root of city-planning endeavor. Because this has not been realized, American cities on all sides attempting city-planning work are groping in the dark.

Money is not only the root—it is the branches, the leaves, the blossoms, the entire tree from which to pluck the fruit of city-planning aspirations. Consideration of city-planning, however, from the basic standpoint of Money requires an all-important analysis of city-planning in its promotional sense.

The term "promotion" as applied to city-planning is all too little understood in America. Here nothing is accomplished by imperial decree. It has been popular in the minds of many that city-planning was inherent in the professions of architecture and engineering—largely the former—and there the subject rested. Perhaps a better expression than "rested" could not be found. Securely at rest in the theoretical arms of the city-planning Morpheus, endeavor generally has either gone permanently to sleep, or is slumbering fitfully between attacks of hideous nightmare and deferred hopes. The greatest issue confronting American municipalities today is city-planning. The hour is imperative if real progress is to be made, that all citizens, professional and law, be brought to realize all of the elements bound up in this great science. Let not the shades of Pericles, Cæsar, Napoleon and Haussmann befog the issue.

The thing confronting us in this day and in America is, how to get things done under the cumbersome, unruly, unwieldy thing known as American municipal rule. Here procedure is a slow grinding and oft a coarse grinding process. Much of this, however, we discussed in our last article, "The New Profession, City-Planning," which followed the text, "How to Go About City-Planning;" hence we had better confine ourselves to the subject under discussion, "How To Finance a City Plan in America," lest we be accused, as was the clergyman of whom it was said, he divided his sermons into three parts—first he took a text, second he wandered away from it, and third he never returned to it. For success in America, city-planning must be divided into three main divisions. A "fourth dimension" we hope later in this article to indicate as potential in the future of accomplishment.

He who fails to proceed from this hypothesis will fail to get anywhere along the pathway of actual accomplishment. The shores of the great river "City-Planning" are lined with derelicts, wrecked on the shoals of mistaken theory. This seems so very stupid when havens of facts are so easy of navigation. Right at this bend in the river, however, is where the practical city-planning mind separates from the Utopian dreamer, he whose energies germinate largely in the boundless Sargossa Sea of theory.

The three divisions of city-planning properly designated are, first, Financial; second, Technical; third, Promotion. In the parlance of the day the wag would designate them as Contribution, Evolution and Execution. If our fourth dimension is to have a future place it could well be named Solution. Successful city-planning then demands first, Money; second, Expert Service; and third, Promotional Effort. Money must be had for plans. Plans must be had for promotional work. Promotional warfare must be waged before public opinion can be had, and without public opinion, public officials cannot be stirred to action. Each of these steps logically and in order takes its place in the successful city-planning program. The reverse of this procedure spells disaster.

Science, like Nature's laws, cannot be reversed and be made to work satisfactorily. It is just as possible to reverse a lawn-mower and attempt to cut grass by running it backward as it is to attempt city-planning by putting the cart before the horse. The laws of many states restrict municipal authorities to the appropriation of funds for expert service only. Generally, the statutes do not permit the appropriation of funds for promotional services. Many state statutes do not permit even the latter. City-planning is all promotional work in its inception.

Now let us reverse the order of delineation to enable us to grasp these facts from a different angle. The people are the first consideration in American city-planning. The ballot-box always goes before the builder—a fact never to be forgotten. Public consent can be had only after comprehensive and far-reaching educational propaganda. Basic in such propaganda, there must be comprehensive city plans affecting with equal benefit all elements in the municipality.

Before comprehensive plans can be had, experts must be engaged and then what do we encounter?—Money. Always and from every angle we come straight back to the basic factor in the whole city-planning scheme of things, Money. Money in the beginning must be secured by contribution from public-spirited citizens. Aside from these facts financial, the best origin for city-planning is in the hearts and minds of the citizens of the community and not in the city administration. Because this truth is not realized, city-planning failures are everywhere recorded. There are many reasons why this is true, but without too careful an analysis, we may cite Money again as the leading factor.

Municipal authorities, naturally, will not appropriate sufficient funds for the inception of a city-planning movement. Fear of public disfavor of a too-generous backing of an untried thing will hold them back if nothing else. Example of this is afforded in a city of half a million people where there originated in the city council the appointment of a plan commission. This commission was given an insufficient appropriation for the employment of experts in the production of an actual plan and nothing for its promotion. By the time an ill-considered plan was finished, the commission was discouraged. It had long since exhausted its funds, and had accomplished nothing because the support of the people was not secured as a necessary first step to success.

Another example is recalled in a city of close to a million inhabitants. Here the state laws would not permit of the appropriation of funds for any phase of city-planning work. The advocates of a city-planning movement there without funds and without prestige actually attempted to secure an enactment from the legislature to enable them to proceed. Failure was again recorded because it was not realized that before such legislation could be had public opinion would have to be aroused. This well-meaning but misguided organization soon went into oblivion because it worked backward. Infallible proof again of the altogether necessary and almost priceless commodity in city-planning—Favorable Public Opinion. Public opinion is required to secure legislation. Public opinion costs money, because to secure it requires education. Educational work in city-planning is most expensive propaganda.

After public opinion has been secured, city-planning has only just begun. The plan commission, if properly recognized, must continue as advisers to the city authorities. The maintenance of such work requires Money. There is where, perhaps, the original subscriber should step out and special financial provision should step in. It is not reasonable that public-spirited men should, in addition to providing the fund for originating and promoting the city plan, provide also maintenance funds for its progressive development.

Neither is it wise to anticipate sufficient funds from city appropriations for all plan-commission needs after the adoption of plan work by the municipality. Special financial means must eventually be provided. The idea of a city-planning department as a part of the city government has been advanced. Under such an arrangement, naturally, ample funds could be provided from city sources. There is no established precedent for this theory. Whether at any stage in a city-planning program a city-planning department would be a desirable feature of municipal government is debatable. It is obvious, though, that no new department can be established in any city without a public demand for it, and also that no public demand can be had until educational work has created it. To create the demand there must be plans, ably drawn and ably promoted. The only way those essentials can be had is by raising them from private sources and expending them in the manner already indicated.

After the plans have been created, after the educational propaganda has been waged, and after something tangible in the plan has been realized to prove the benefits of city-planning to the public, then the question of the establishment of a city-planning department for the further development of the plan may logically be considered. Then looms up the question as to whether or not it is desirable, feasible or possible for the people of a city officially to adopt plans which may require many years to complete.

Further, as each part of the basic plan is developed, circumstances within the city may lead to changes in detail in that basic plan, which will require further educational work. A street which may have been laid out for a boulevard may be found, when the time for its development comes, to require such treatment as will make it a business street for heavy traffic, as was the case in Twelfth Street in Chicago. Changes in the plan, naturally, require educational propaganda, and it is extremely doubtful whether a department of the city can facilitate that propaganda. Therefore, is not city-planning a thing apart, to be kept distinctive from city government? Should not the plan commission, the promotive agent, be left free to act as an intermediary between the people and the city authorities, promoting the plan with the public on the one hand and with the city officials on the other?

It may be too strong a statement to say that the deathknell of city-planning will be sounded when it is made a department of the city government. But in advancing the idea that it should be kept distinctive from the city government, it is recognized that no rule is a good rule that is not elastic in some degree. There may be isolated instances where, under a favorable condition of physical needs and of statutory enactments, the reverse of this reasoning would be true. It may be conceded that in a small city the general knowledge of the physical needs of the city is wide. The average citizen there knows what his city requires. In no large city, however, is it possible for the average citizen to grasp the larger needs of the city with respect to transportation, recreation and public health. It is only possible to make progress in city-planning in large cities by public education. Such work always can best be done by a voluntary organization of citizens such as a plan commission, and in the inception of the city-planning movement, it cannot be done with any other agency or in any other manner.

Every efficient architect and engineer realizes that highly skilled technical assistance will never subordinate itself to the rule of city politics or civil service, both necessary in the establishment and successful conduct of any city department. The efficient man, the man with initiative, the specialist on city-planning, always works best where he has a free hand.

Yes, city-planning as a branch of the city government might succeed if every city could produce a Charles H. Wacker to head it. Public-spirited Trojans like Wacker and city-planning specialists of experience and training are not logical products of municipal departments.

Great works for the benefit of mankind will continue, as always, to originate in and be fostered by the hearts and minds of public-spirited citizens. Welfare work for the people is inspirational and philanthropic. Always will this be the case in countries where there is no conferred power by imperial decree. Such power at least augurs something to the city-planning advantage of the people in absolute monarchies. Through the maze of underbrush incident to procedure in this country, and through all the discouraging and exasperating delays occasioned by cumbersome American procedure and conflicting powers, the plan commission—the agent of the people and of public spirit for the betterment of the city—must stand stalwart and progressive.

As indicative of the vital need of a plan commission in preference to a city-planning department, it may be cited that in almost every city where extraordinary improvements are contemplated it is usually necessary for the city officials to secure the coöperation of business associations and of other quasi-public volunteer organizations in order to accomplish their aims, such as bond issues and the like. These arguments and these reasons are not mere expressions of theoretical research. They are based upon absolute

contact with things municipal and things public. They are the result of years of cold experience, gleaned from actual contact with all the elements involved in city-planning in a great American city.

In questioning the wisdom of establishing city-planning departments as a part of the city government, there is no intent to imply that city-planning departments should be established outside of the city government. Rather, the purpose of this discussion is to show that city-planning in America can best originate in and be fostered by a quasi-public body acting as adviser to the city council and city departments. To deprecate the willingness of city authorities to appropriate as generously as legally can be done for city-planning work is not the intention in this discussion. In Chicago the plan commission has received, commensurate with the statutes, generous financial assistance from the city. The moneys thus had, however, and used only for expert technical service, total only one-quarter of the sums expended in originating the Plan of Chicago and its promotion, all subscribed from private sources.

The successful efforts of the Chicago Plan Commission reflect the financial backing of public-spirited citizens, plus such assistance as the city could render. The Commercial Club, one hundred of Chicago's leading business men, subscribed $85,000 for original work on the Plan of Chicago. This sum was for the actual creation of a technical plan and for the publication of the Club's plan report. Completed, the report was sent to the city authorities with the request for the appointment of a plan commission. Created by the city council, the Commission was authorized to study and promote the Plan of Chicago and for that purpose was given a city appropriation of only $5,000.

Prior to the appointment of the Commission, little had been done to educate the public. Its appointment caused the Commercial Club members to realize the need of the establishment of a Commission headquarters, organized to properly promote the plan, and it again went down into its pockets for a further contribution of $110,000. The Club also appropriated $10,000 per annum for five years for the maintenance of a technical plan staff; subsequently, the city appropriated from $5,000 to $10,000 per annum for three years. At the end of this period, when these sums were exhausted, the Commercial Club members immediately subscribed $50,000 for an additional two-years' work. The city appropriated for the same period approximately $52,000. The total appropriations of the city have amounted in the aggregate only to what the Plan Commission has expended for technical service. No funds whatever have been had at any time from the city for promotional or educational work.

The educational propaganda, resulting in far-reaching plan accomplishments, has included textbooks, pamphlets, illustrated lectures, moving pictures, and other necessary paraphernalia. The Chicago press has been the greatest single contributor to publicity and the most effective, but this invaluable support could not long have been sustained without basic merit in plan procedure or meritorious Commission performance.

Chicago's work on its plan will culminate in construction projects already under way costing $170,000,000. No Chicagoan who knows has any doubt of the wisdom of the expenditure of money for these results. This gigantic sum represents only the initital cost of parks, street-transportation, bridges, pleasure-piers and public-building projects. It does not include anything for the rehabilitation of private properties affected by these public improvements, which will certainly be an enormous item. Besides, other vast public improvement projects are certain eventually to be realized, but are in an incipient stage of procedure and are not included in these figures.

The Commercial Club members have subscribed $295,000 in promoting the Plan of Chicago. The city's entire appropriation in contrast to that sum is $69,000. It may be clearly seen, for it is here positively evident, that the Plan of Chicago, if aided only by such city appropriations as could be made under the limitations of the statutes, never would have been originated nor would it have been advanced an inch.

In logically closing the subject of this discussion, "How to Finance City-Planning in America," we may now give consideration to the fourth or final step, the perpetuity of city-planning effort. This we have named the Solution of the city-planning problem.

The answer is endowment. Why not? What more noteworthy humanitarian endeavor can there possibly be than making the cities more livable for the millions constantly swarming to them. Benevolent people have substantially endowed all manner of humanitarian projects. The world's work has been advanced by such endowment. City-planning is basic in all humanitarian movements. Without city-planning no endeavor toward the betterment of conditions in cities can or will reach the high notch of success which may be achieved with the assurance of a properly organized, well-defined plan for the growth of the city and its citizens. Safeguarding the health of our citizens means safeguarding the nation's greatest asset. Appalling is the last Government report which shows that 75 per cent of the recruits offering themselves for military service at the call of their country were rejected because of physical unfitness.

Endowments for great humanitarian purposes include the Russell Sage Foundation, the Rockefeller Fund, the Carnegie Fund, and a host of others. Why not city-planning endowment? The interest on an investment by the endower of three-quarters of a million dollars would yield a sufficient fund for the annual maintenance of city-plan work in the largest city. Proportionately, a lesser investment would be required in the graduation of cities, as to their size and requirements. The city of 25,000 to 50,000 people could maintain its work on the investment of perhaps $100,000. The needs of a city would naturally correspond with its size. Whatever the size, every city could produce a citizen of ample means for the local endowment.

City-planning endowments could be placed in the hands of a board of trustees, such board to direct the expenditure of the annual income and eventually invest the principal in such substantial manner as would perpetuate the donor's meritorious public enterprise. Albeit, when city-planning history is written, credit should be given to three sources —the public-spirited men who financially backed the plan in its inauguration, the architect or engineer who created it and the promoters who developed it. There is a vacant niche in the city-planning hall of fame for the endower who assures its ultimate realization.

The Forum

Mr. Pitkin Would Exonerate the "Strangely Unmoral" College President

To the Editor of the Journal:

In the December number of the Journal you included an item under "Shadows and Straws" relating to a case in which a certain college board of trustees questioned the bill presented by a firm of architects termed "x & y" for professional services in furnishing preliminary drawings for a college building.

You quote the letter of the president asking advice as to the general practice in such cases, and in your comment you proceed to heartily condemn the "strangely immoral" college president, and to uphold the firm of architects.

Your attitude is an unfamiliar one, in that it is unfair and ignores the fundamental fault in the matter. This fault is a very old one among architects, and professional men generally, and in my opinion is at the bottom of a great many of their difficulties with laymen. It is the fault of failing to state at the time negotiations are begun, and in a plain businesslike manner, the terms on which the work will be done.

Had "x & y" so stated their terms, there could have been no misunderstanding, and in failing to do so they voluntarily laid themselves open to be misunderstood.

It is only fair to the board of trustees concerned to recognize that, due to their inexperience in such matters, they might easily have interpreted the willingness of the architects to undertake the problem as meaning they would assume the risk in the transaction. And it is particularly easy to appreciate their point of view when we consider that other men of the same profession *did* make sketches gratuitously.

This apparent delicacy (or laxity) on the part of architects (and landscape architects) to state their business methods in terms of money is as ridiculous as it is childish. Every other reputable business covers its transaction by some form of agreement, and the buyer knows *before he buys just* what the article or service will cost, or on what basis the cost will be figured.

I believe the Institute recommends the use of a schedule of methods and charges by its members, and in cases such as the one you cite, the presentation of such a schedule to the prospective client, or the writing of a simply but clearly worded letter, would have fully protected both parties.

I cannot, therefore, agree with your comment upon the incident, and believe that upon reflection you will agree that the principal fault lay with the architects in neglecting to employ the simplest precaution of business usage.

Yours very truly,

WM. PITKIN, JR.

Rochester, N. Y., *January 30, 1917.*

[In attempting to characterize the action of the college president to whom Mr. Pitkin refers, we used the phrase "strangely unmoral." We did not accuse the gentleman of immorality, and thus the charge that we heartily condemned his conduct as "strangely immoral" is evidently due to a misreading of the exact phrase. We agree that a proper business statement should precede any arrangement for making plans, yet we still maintain that a man who finds that he has unwittingly created a legitimate indebtedness by asking an architect to make for him certain plans which he abandons in favor of others which were submitted gratuitously; who then announces his willingness to meet a just, if legal, obligation, and who then mulcts the second architect of fifty dollars in order to try and settle a fair claim of two hundred and fifty dollars, is strangely unmoral—for a college president, at least.—EDITOR.]

Institute Business

The Annuary and Proceedings

March, 1917.

The Proceedings of the Fiftieth Convention, held in Minneapolis, and the Annuary for 1917, are now in the hands of all Institute members, or soon will be.

In the Proceedings any subject in which you are interested can be readily found, either by turning the pages and glancing at the subheads or by referring to the index, which is in more complete form than heretofore.

The Convention at Minneapolis was a significant experience, both inspiring and refreshing, for those who took part. The enthusiasm and zeal which marked this meeting are representative of the spirit of the Chapters and members of the Institute throughout the country, and the future of the American Institute of Architects as a potent national organization never seemed brighter or more assured than at the beginning of this current year.

Obviously, it is impossible to put into the written record, which must of necessity be brief and without illustration, the atmosphere of this Fiftieth Convention, or to express adequately the hospitality and thoughtfulness of the Minnesota Chapter. But enough of these things do appear in the written record to make it of all-enduring interest to every architect, Institute member or otherwise, who is proud of his profession.

If you did not attend the Convention you should carefully read its Proceedings, which mark an epoch in our history. Therein is recorded the adoption of radical amendments to the Constitution and By-Laws; the plan

for dedicating the Octagon as a memorial to Charles Follen McKim; the call for better Government architecture; a constructive discussion of architectural education and its needs; the town-planning movement and its relation to the architect; and other subjects of vital interest to the Institute.

If it was your good fortune to attend the Convention this suggestion is indeed unnecessary.

The Annuary appears in about the same style as heretofore.

It should be borne in mind that in a membership of approximately fourteen hundred it is impossible to record accurately, even for twenty-four hours, the correct address of each and every one. Any changes necessary should be sent to the Executive Secretary at the Octagon, where the official records of the Institute are maintained.

In the Annuary, as a permanent place of reference, will be found the following official documents of the Institute:

Information Concerning Requirements for Institute Membership.

Constitution and By-Laws (as adopted at the Fiftieth Convention).

The Circular of Advice Relative to Architectural Competitions.

The Principles of Professional Practice and the Canons of Ethics.

The Schedule of Charges (as amended in form by authority of the Fiftieth Convention).

Copies of any of these documents in separate form may be obtained on request to the Executive Secretary, the Octagon, Washington, D. C.

New Members Admitted

This is a partial list of the members elected at the January meeting of the Board of Directors. Under the requirements of the Institute By-laws, no letter of notification is sent to a successful applicant until he has paid the preliminary fee. Hereafter the Journal will publish only the names of those who have paid this fee and have received the formal notification from the office of the Secretary.

A number of those elected at the January meeting have not sent the preliminary fee, though duly elected and qualified as Institute members in all other respects. It should not be presumed from the omission of the name of an applicant in this list, or from subsequent lists which may appear in the Journal, that such applicant failed of election.

Badgley, Sidney R.	Cleveland, Ohio
Baker, Cecil Franklin	Chicago, Ill.
Balch, Harold C.	Madison, Wis.
Beer, George Wm.	Cleveland, Ohio
Brown, Clifford C.	Dayton, Ohio
Cahill, Paul T.	Cleveland, Ohio
Cramer, Edwin C.	Milwaukee, Wis.
DeGolyer, Robert S.	Chicago, Ill.
Dercum, Hermann	Cleveland, Ohio.
Dippold, Albert P.	Chicago, Ill.
Ferrand, Gabriel	St. Louis
Fontaine, W. F.	Woonsocket, R. I.
Hallberg, Lawrence G.	Chicago, Ill.
Hill, Arthur E.	Providence, R. I.
Johnson, Reginald D.	Pasadena, Cal.
Judell, Walter W.	Milwaukee, Wis.
Kuehne, Hugo Franz	Austin, Texas
Law, James Richard	Madison, Wis.
Lippert, G. Henry	Madison, Wis.
Marx, Samuel A.	Chicago, Ill.
Matteson, Victor Andre	Chicago, Ill.
Overbeck, H. A.	Dallas, Texas
L. Baylor Pendleton	St. Louis
Pingrey, Roy E.	Chicago, Ill.
Saunders, Walter J.	Los Angeles, Cal.
Schaeffler, Joseph C.	New York, N. Y.
Schlacks, Henry J.	Chicago, Ill.
Shaw, Russell Hobart	Providence, R. I.
Simons, Albert	Charleston, S. C.
Snock, Curtis P.	New York, N. Y.
Swern, Perry W.	Chicago, Ill.
Teich, Fred C.	Houston, Texas
Timlin, Ray Irvin	St. Louis, Mo.
Todd, Robert C.	Charleston, S. C.
Van Ryn, Henry J.	Milwaukee, Wis.
Wahrenberger, James	San Antonio, Tex.
Walker, F. R.	Cleveland, Ohio
Walsh, Dennis Robert	Austin, Texas
Wedemeyer, William	St. Louis, Mo.
Weeks, Harry E.	Cleveland, Ohio
White, Thomas E.	Lansing, Mich.
Wolf, Alexander C.	Cleveland, Ohio

Obituary

Frank H. Martin

Elected to the Institute, 1912.
Died at Providence, R. I., February 2, 1917.

Mr. Martin was born in Rhode Island in 1863, and was a graduate of the Massachusetts Institute of Technology and the Lowell School of Design. He was in the employ, at one time, of John LaFarge and of Renwick, Aspinwall & Russell of New York. In Providence he was first in the office of Stone, Carpenter & Wilson, but in 1893 he formed, with Mr. George F. Hall, the firm of Martin & Hall, which had continued up to the time of his death.

At a special meeting of the Rhode Island Chapter, held on February 2, resolutions were adopted by which the chapter recorded its sense of loss, and "an appreciation of his worth, of the rare skill which beautified all it touched, of the solid professional attainments, and of the virtues which advanced his character as a single-hearted Christian gentleman."

Levi T. Scofield

Elected to the Institute as a Fellow in 1870.
Died at Cleveland, Ohio, February 25, 1917.

S. E. Desjardins

Elected to the Institute in 1885; to Fellowship in 1889.
Died at Cincinnati, Ohio, November 2, 1916.

Austin Allen

Elected to the Institute in 1916.
Died at Joplin, Mo., March 1, 1917.

News Notes

Mr. John Russell Pope Receives the Gold Medal of the Architectural League of New York

The Gold Medal given annually by the Architectural League of New York for the most worthy building erected in the United States during the year was awarded to John Russell Pope, of New York City, for the Temple of the Scottish Rite, on Sixteenth Street, Washington, D. C. This building was illustrated in the Journal for September, 1915.

Award of the Medal of Honor and the Apartment House Medals by the New York Chapter

The annual dinner of the New York Chapter was held on February 28, at the Ritz-Carlton Hotel, President Emerson presiding. Past-President Sturgis, of Boston, and Mr. George McAneny, former Borough President of Manhattan, were the guests of the Chapter. The winners of the Medal of Honor were announced as Messrs. Warren and Wetmore.

For the Apartment House Medals, the awards were as follows:

Six Stories or Under: The apartment house at the southeast corner of 188th Street and Creston Avenue, owned by the Pickens Building Company, Andrew J. Thomas, Architect, received the Medal. There were two mentions: The building at the southeast corner of Vyse Avenue and 181st Street, owned by Philip Weinstein & Son, Inc., Goldner and Goldberg, Architects, and the building at the northeast corner of Creston Avenue and 184th Street, owned by the Whitelow Building Company, Kreymbourg Architectural Company, Architects.

Over Six Stories: The Medal was given for the building at 72nd Street and Fifth Avenue, owned by the 907 Fifth Avenue Company, the architect being J. E. R. Carpenter. Mentions were given for the building at Broadway, 88th and 89th Streets, owned by Mr. Vincent Astor, Charles A. Platt, Architect, and for the building at Park Avenue, 55th and 56th Streets, owned by the 42d Park Avenue Company, Warren & Wetmore, Architects.

Mr. Sturgis then spoke upon the qualities of service and loyalty, and dwelt particularly upon the value of unity in the profession and of the necessity for submerging local issues and differences that the Institute as a whole might work out the best good for all. Mr. Sturgis spoke with great feeling and left no doubt of his own convictions on the subject of loyalty to the professon as the one means by which it may be elevated ever higher and higher. At the close of his remarks, he read a poem written by Mr. Guy Lowell, which received vigorous applause.

Mr. McAneny related some of his own intimate experiences when, as Borough President of Manhattan, he had occasion to work with the New York Chapter in trying to bring about many of the reforms which have since come to be accepted as part of the fundamental law of the city. It was one of the most gratifying illustrations of what architects have to offer and what an intelligent city is willing to accept in the way of unselfish effort, and the members of the new York Chapter may well point with pride to the story of their civic accomplishments. Certainly there were none present at the annual dinner who could in any way doubt the sincerity of the tribute paid to the Chapter by Mr. McAneny.

State Architects

The reasons set forth by the Executive Committee of the Boston Society of Architects for opposing the appointment of a State Architect are as follows:

First: Economy—In Cost.

In a tabulation of cost to the State of a State Architect's office should appear:

(*a*) Salaries.

(*b*) Overhead charges, including rental of space occupied by the Department. These charges include telephone, telegraph, mail, materials, etc.

In an architect's office the office force is gauged according to the work on hand. In a State or City Department the office force is held for future service when work is not on hand, with a consequent loss to the State. It is usual for State, City and Federal salaries to be higher than in private offices.

As a result, a department office is at a disadvantage when compared with a private office, excepting in the comparison of the department architect's salary, and one-half of the commissions (i. e., the profit paid to architects employed). Considering the fact that in one case there is continuous expenditure, and in the other intermittent expenditure, only when required, it is obvious that only constant erection of buildings of large cost would warrant the establishment of a State Architect's Department as an economy.

Second: Economy—In Efficiency.

It can be assumed that any office considered for the designing and carrying out of State buildings is capable, and that the State Department may be capable. The tendency for an active private office, depending for its reputation upon constant improvement in its work and on keeping in touch with all new developments, will not be to fall into the perfunctory repetitions of obsolete methods which are the dry rot of all bureaucratic bodies.

The State will, therefore, get better service from employing architects then by establishing a department.

Third: Automatic Power.

Under the bill, while the power of the State Architect is no more than that of an architect to his own office, the susceptibility of the State Architect's Department to interference and influence by political factions is much greater than in a private office, which fact does not tend toward efficient service for the State.

This has been manifest in all similar cases excepting where an exceptional man of unusua independence of

character has occasionally been obtained. The existence of these conditions is to be deplored, but cannot be more than ameliorated.

Fourth: Standardization.

There is an entirely mistaken impression of the value of so-called standardization of plans and consequent economy.

Standardization implies a constant and definite solution of a problem, and can be applied to small details for a certain period of time until improvement in those details has occurred. It cannot be applied to large organic factors of buildings as a whole or in part, as these factors are not constant and vary according to conditions. Any attempt to standardize such factors results in unconsidered work and poor service.

Fifth: Method of Competition.

The method of instituting competitions under the bill is an irresponsible one, prejudicial to the best interests of the work and tends to annul the method of competition instituted by the A. I. A. which is being more and more and more recognized by the public as being in its interest.

Sixth: Efficiency of Result.

The buildings of a State deserve to be of the best character. The best architects will not consent to occupy a position, no matter what the salary, which requires all their time, diverts their energies from other channels of expression, and which from its precarious tenure from political exigencies, may at any moment leave them to recommence their professional work. Therefore the State under the bill will not get the services of the best architects as State Architects, nor will it get the service of the best architects in competition, when competition is of the character specified in the bill.

The Proposed Law for the Registration of Architects in Indiana

The new law for Indiana, as proposed by the Committee in charge, seems to have been very comprehensively drawn and to be its own interpretation of many terms and meanings which have hitherto been more or less obscure in other laws. It is also noteworthy in that it contains the clauses defining the phrase "dishonest practice." It contains clauses 1, 2, and 5 of the tentative form suggested by Mr. Wight in the Journal for February (page 57) but does not provide any other penalty beyond the revocation of the license. Further comment may well be deferred pending the fate of the law in the Indiana Legislature.

An Appeal for the Disabled Soldiers of Belgium

Placed by chance in the path of aggression, mutilated in the defense of their country invaded in flagrant violation of an international treaty, these Belgian soldiers have the clearest claim to our aid and sympathy. To them it is mainly due that a far larger part of France, with its supreme monuments of Gothic art, its towns, villages and fields, is not now in utter ruin.

All of these sufferers can and will be taught some useful work, but their pensions will be very small, and with their so terribly impaired efficiency they can never be wholly self-supporting. To house these maimed men, a society has been formed of well-known Belgians, headed by Mons. Henri de Schoonen, Honorary Vice-Consul of Belgium, which proposes to build, after the war, homes and workshops, to be provided free of rent or sold on generous terms, and which will be, as far as possible, in the native villages of the invalided men.

This work urgently calls for our support and all gifts, however small, will be a real help and a proof of sympathy. To assist in the raising of funds, a series of pictorial postal cards and letter-paper with wood-cut designs, chiefly by Belgian artists, have been printed and will, it is hoped, be soon on sale throughout the United States. All contributions may be sent direct to Mons. Henri de Schoonen, 79 Mark Lane, London, E. C., or to the Editor of the Journal of the American Institute of Architects, The Octagon, Washington, D. C.—HENRY WINSLOW, *American Member of the Committee of Relief for Belgian Artists, 1 Hill Road, N. W., London.*

Progress on Denver's Civic Center

Final plans for the completion of Denver's civic center and court of honor (discussed in the Journal, Vol. III, No. 11) are being drawn under the guidance of Edward H. Bennett, of Chicago. The plan of Frederick MacMonnies, the sculptor, who was called in 1908 to advise the city authorities on the civic-center problem, included a scheme that would make the center another Versailles, resplendent with electric illumination and flowing fountains, so attractive that it would prove the chief center for Denver's people in time of leisure. Mayor Speer, who has been for years an active supporter of city-planning in Denver, in a recent address, accented this idea, saying that it was his hope that the development would actually prove to be a city center, not a civic center as commonly understood.

Annual Meeting of the New York State Association

This meeting was held at Syracuse on the 16th of February. In the morning the delegates were shown the developments of city-planning in Syracuse, and a visit was paid to the Art and Architecture Departments of the University.

The convention approved the bills for the State Basic Building Code, condemned the location of institutions on the Croton Watershed, and the location of the new Central Power House of the Government at Washington.

Efforts are to be made by the Association toward encouraging the preservation of the historic and architecturally interesting buildings within the State, and toward stimulating interest in town-planning, emphasizing the fact that the real goal of this movement is practical, and that the esthetic welfare of any city is only possible when conditions of order, harmony, sanitation, easy transportation, and the general facilities necessary to the easy conduct of business, have been made right.

The officers elected for this year were as follows: President, Frank H. Quinby, Brooklyn; Vice-President,

Edwin S. Gordon, Rochester; Secretary-Treasurer, Leon Stern, Rochester. Directors, F. L. Ackerman, New York; Alexander Mackintosh, Brooklyn; A. L. Brockway, Syracuse; W. L. Wicks, Buffalo.

The convention ended with a dinner at which there were addresses by Messrs. R. D. Kohn, D. E. Waid, F. L. Ackerman, W. P. Bannister, Professor Martin of Cornell, and Professor Revels of Syracuse.

Centralization of Control of Housing—a Proposal to Fix Responsibility in Boards of Health

At the Fifth National Conference on Housing in America held at Providence, R. I., early in October, John Molitor, of Philadelphia, architect, and chief of the Bureau of Housing of the Pennsylvania Department of Health, delivered an address on "Housing as a Part of the Work of the Local Health Department." Mr. Molitor described housing as a new thought which is being woven into our twentieth century government along with many other ideas which are called into being through a new realization of community needs. A health department cannot properly do the work of protecting the health of the people without control of the housing problem. Mr. Molitor made a plea for the placing of the control of building inspection and the approval of plans in the hands of the department of health, which should see that they conform to good housing and health laws. Such control should be exercised under the terms of a uniform state law, the state having oversight and final authority in the matter. A uniform state law would be of great value to architects and builders in that it would give them dependable legislation upon which they could rely in planning new structures. Where a town-planning commission exists, it should consult with the health board in planning for parks, playgrounds and schoolhouses. The local health board should be the working medium of the state department of health in regulating housing for another reason—that of expense to the state, as it has been proven that only by the communities themselves working through their own local health board can a reasonable distribution of the expense involved in prosecuting offenders be assured.

A Model Town With Houses Renting at $10 a Month

A model town, in many respects one of the most interesting of the recent practical solutions of a problem involving homes for workingmen in connection with an industrial plant, is now rising on the banks of the Juniata River, opposite Mount Union, Mifflin County, Pennsylvania. The plans provide for the erection of about one hundred houses at the present time, to be let at about $10 a month. These are arranged in a studied composition on a carefully platted acreage, in which provision is made for a 4-acre playground, a riverside park, reclaiming land now frequently flooded, an attractive railroad approach facing a community green of 1½ acres, and ample grounds for various public and semi-public buildings. The latter include a community house developed from an old building on the site, two churches, and a public school. The area platted is triangular in shape. The Juniata River forms one side, the tracks of the railroad the other. Three main roads are laid out, converging at the apex of the triangle. Rectangular blocks bordered by streets, in some cases open to pedestrian traffic only, provide sites for the small homes on relatively small lots. Each lot, normally 40 by 100 feet, is to have a few fruit trees, and some will be large enough for truck-gardening. Two terraces are recognized in the platting conforming to the topography—the first bordering the river, the second on rising ground extending up to the bordering railroad tracks. About 1½ acres of land will be set aside in the central section of the village for business, with a total store frontage of about 600 feet. The village center will include the railroad station, the community hall and the store district. Everything possible will be done to insure diversity in the design of the houses, for which six designs have been provided, three of single-family detached type and three of single-family semi-detached type. Each family has six rooms and bath and piazzas. In locating the houses on the lots and selecting the house design for the lots, the appearance of the street has been kept in mind. The arrangement of the houses then will not be monotonous, since great variety is obtained.

The property is owned and is being developed by the Mount Union Refractories Company, prosperous and scientific manufacturers of brick, whose plant is located across the Juniata River. The town plan was evolved by John Nolen, landscape architect of Cambridge, and the architectural work on the houses, stores and other buildings is in charge of Mann & MacNeille, architects of New York City. The town will be known as Kistler Industrial Village.

Sculpture Competition

The second competition for figures for the decoration of the Plainfield (N. J.) Municipal Building will be held by the Joint Committee of the Beaux-Arts Institute of Design and the National Sculpture Society. Information may be obtained from the Beaux-Arts Institute of Design, 257 West 57th St., New York City.

Institute Committees for 1917

The full list of Institute committees for the current year will be found on page 93 of this issue, where is usually printed the list of Chapters.

Structural Service Department

D. KNICKERBACKER BOYD, *Associate Editor*

In connection with professional societies and organized bodies working toward the improvement of building materials and methods, and the following Committees of the Institute:

CONTRACTS AND SPECIFICATIONS

FRANK MILES DAY, *Chairman* . . Philadelphia
M. B. MEDARY, JR., *Vice-Chairman*, Philadelphia
ALLEN B. POND . . . . . Chicago
SULLIVAN W. JONES . . . . . New York
FREDERICK W. PERKINS . . . . Chicago
JOS. EVANS SPERRY . . . . . Baltimore
J. A. F. CARDIFF . . . . . New York
GOLDWIN GOLDSMITH . . . . Lawrence, Kan.
JULIUS FRANKE . . . . . New York

BASIC BUILDING CODE

WILLIAM B. ITTNER, *Chairman* . St. Louis
W. W. TYRIE . . . . . Minneapolis
G. F. A. BRUEGGEMAN . . . . St. Louis
OWEN BRAINARD . . . . . New York
ROBERT STEAD . . . . . Washington
E. D. LITCHFIELD . . . . . New York

MATERIALS AND METHODS

THOMAS NOLAN, *Chairman* . . . Univ. of Pa.

FIRE-PREVENTION

ROBERT D. KOHN, *Chairman* . . New York
W. L. PLACK . . . . . Philadelphia
G. C. NIMMONS . . . . . Chicago
JOHN R. ROCKART . . . . . New York
CHARLES H. BEBB . . . . . Seattle
LYMAN A. FORD . . . . . New York

(Each Chapter has a corresponding member who is chairman of the Chapter Subcommittee.)

How to Use the Index

When information is desired on any particular material, look first in the General Index, always found at the end of the Structural Service Department in every number of the Journal. (In this number it is on page 147.) If the subject has been treated in the Journal in this department, a serial number will appear after the subject name, as for example, 2J1. The large figure 2 relates to the month of the year and indicates February, which means that the reference will be found in the February Journal. The large letter J indicates a subdivision of 2. The small figure 1 indicates a subdivision of J.

Under the subject heading in the General Index there will also be found references to manufacturers represented in the Industrial Section.

A part of the service of this Department will be to furnish inquirers with additional information, titles of books, names of authors or publishers, copies of articles, or in any way to afford help to architects wishing to ascertain the latest data available in connection with any material or method. For this service, address the Journal of the A.I.A., the Octagon, Washington, D. C. The service is free, except where clerical expense is involved, in which case a small fee will be charged to cover actual cost. The inquirer will be advised of the amount of the fee before any research work is undertaken.

FIRE PREVENTION AND PROTECTION ISSUE

Section I. Fire-resistive Materials

CONTENTS

Having in the January and February numbers covered foundational requirements in concrete and stone, and in cement and lime of our composite building or typical structure, and having in the same issues treated of the steel and iron work and of the concrete and stonework, our progress in the erection of such a building now reaches the third of the twelve stages and brings us to the point where the enclosing walls with their facings (other than stone), the floors, partitions and some roofings may now be considered, and the skeleton of the structure be brought near completion.

These forms of construction cover a wide range of materials and devices, and to simplify the classification they will be divided as follows: March, Serial No. 3, "Fire-resistive Materials;" April, Serial No. 4, "General Building Construction;" May, Serial No. 5, "Wood," all forms and uses.

All electrical features pertaining to fire- and safety-hazards will be referred to under Serial No. 6. "Electricity," and similarly gas features will be referred to under Serial No. 7, "Gas."

INDEX TO SUBJECTS TREATED IN THIS ISSUE

(For index of materials previously treated see the General Index, page 147)

(The Fire-Prevention and -Protection issue, with the Section on General Building Construction, will be concluded in April.)

Fire-resistive Materials Section

3A1 Navy Department, U. S. A. State, War and Navy Building, Washington, D. C.

No division of the National Government is more concerned with the protection of metal and wood and the prevention of fire than is the Navy Department, because of its control of floating equipment. In this, especially when not in contact with land, the means to control and fight fires is self-contained and must be the utmost in availability and efficiency.

The Navy also has control over a large amount of construction on land, as well as at sea, and frequently in combination, so that its functions with respect to construction are divided.

Standards:

(*a*) For the use of the Government, specifications have been prepared by Boards on Uniform Specifications, representing the Treasury, War and Navy Departments. The "Specifications for Plumbing Fixtures, etc.," prepared by the Board on Uniform Plumbing Specifications will, with descriptions of other Navy Bureaus, activities of interest to designers and constructors of land edifices, be published under later serial numbers where the respective industries are concerned.

(*b*) Researches and investigations in connection with materials are constantly being conducted by all the technical bureaus of the Navy, either individually or in coöperation, and at the various Navy-yards. The results are not usually made public, but the conclusions drawn therefrom are utilized in the frequent revisions of the "Navy Department Specifications" relative to each material or industry affected, described under 3A1*a*2.

3A1a *Bureau of Supplies and Accounts, Navy Department, U. S. A.*

(1) *Publications:*

Among others: "Index to Specifications Issued by the Navy Department for Naval Stores and Material." This is revised quarterly and is received by the Structural Service Department through the courtesy of the Bureau. See (2) below.

The work of this Bureau, which is of especial interest to architects and building constructors, centers on matters of equipment where the use in vessels or appurtenances is applicable to land building construction. This will be evident from the many references which will be found to "Navy Department Specifications" throughout the Structural Service Department.

(2) *Navy Department Specifications:*

These are printed and issued by the Bureau of Supplies and Accounts as standards which obtain in securing estimates or having materials furnished or work done for all branches of the Navy. Copies of the Index (1), and of the specifications when in stock, may be obtained upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.

3A2 Architects and Fire-Prevention

Architects and engineers should from the inception of their work maintain the closest coöperation with the forces organized to bring about a better understanding of those requirements in construction and occupancy which make for a lessening of the risk of loss in the capital invested in the insurance business.

Entirely aside from those ethical considerations, which will always seek the safety of the occupants and the protection of the structure and its surroundings, it should be borne in mind that insurance premiums are in reality a tax levied in the endeavor to stabilize the investment of capital upon which all industry depends.

It is a simple proposition that the less the loss, the less the tax; the less the coöperation at the inception, by those charged with building construction with those administering the tax, the greater the subsequent cost due to reinspection, alteration or readjustment, irrespective of eventual loss.

Therefore, besides observing all local building ordinances, the standards and other publications of the various authorities and controlling agencies hereafter described should be followed as closely as possible, and even when this be done, the local underwriters should in every case be consulted and their comment and suggestions obtained before construction is contracted for or work commenced. The Editor has the assurance of many local boards of underwriters (which, as pointed out by Mr. Woolson in his description of the National Board, have no connection therewith), and it has also been his invariable experience that these opportunities to discuss conditions before contracts are let, instead of afterward when vexatious and perhaps costly changes may be requisite to serve the best interests of the owner and of the community, are welcomed—never discouraged. (For Coöperation see 3A9*e* and 3G2.)

3A3 National Fire Protection Association Organized 1895

Secretary: Franklin H. Wentworth, 87 Milk Street, Boston.

Publications: (See pages 144, 145.)

Standards and literature on varied phases of building construction, fire-prevention and -protection, and on other matters of great importance and value to architects, engineers, constructionists and public-spirited citizens generally are issued as listed on page 144 under a special classified 3A3 extension index with other publications for members, prices and detailed information.

Among them are: "Standard Regulations for Fire-Protection and the Safeguarding of Hazards."

"Suggested State Laws for Regulating Fire-Hazards."

"Suggested Municipal Ordinances for Regulating Fire-Hazards," which have also been adopted by, and are the official standards of, the National Board of Fire Underwriters.

Of the above publications those of especial significance to architects and constructionists will be referred to under each industry, material, or subdivision in this and other issues of the Journal.

Many of these will be found, through use, to save much time, trouble and duplication of effort on the part of Architects and others, as well as to afford the satisfaction of having contributed toward the general adoption of standards, so valuable when measured by results obtained.

Purposes, Standards and Membership:

The National Fire-Protection Association has two functions. One is to make the "standards" under guidance of which the fire waste may be checked; the other is to edu-

cate the people in the observance of those standards and point out the grievous economic penalties for ignoring them.

The character of these standards, rules and requirements is shown by the list of publications printed on pages 144 and 145. The standards are made by the representatives of the membership organizations, included in which is the American Institute of Architects and 128 others. These representatives are men selected for expertness in one form or another of all phases of building construction or fire-prevention engineering and, serve the Association without pay. There is no public effort in the history of the nation to which there has been so freely given, over so long a period, any more of expert thought and painstaking technical investigation than to the National Fire-Protection Association.

This work of compiling and revising standards covering explosives, gases, oils, electric wiring, fire appliances and all methods of construction must continue indefinitely. It is a work for experts and commands the services of those members having not only technical education but wide, practical experience in their special callings.

These men meet throughout the year, having membership on various committees in the Association, of which there are a large number constantly at work. Those whose activities are of especial significance in connection with building construction are:

The Committee on Fire-resistive Construction, which is composed mainly of engineers and architects with Ira H. Woolson as Chairman, some five years ago decided to establish requirements of construction suited to buildings of the greatest fire-resistance and to define a "Standard Building" applicable to any occupancy, leaving, as much as possible, the details of construction for special occupancy and special use or hazard to be determined later as modifications of these standard requirements. This resulted in the publication of "Specifications for Construction of a Standard Building" (3A3*d*31), which "Standard" has served as a model or framework for the application of the various standard forms of construction adopted by the Association.

The Committee later drafted recommendations for forms of construction adapted to buildings of special use, including dwelling houses, and at the Convention in 1916 submitted specifications for a structure of the executive administration type known as "Office Building." This report of the Committee has been published as "Specifications for Construction of Office Building Grade" and is listed under 3A, page 145.

The Committee on Field Practice is made up of those especially qualified to pass upon details of construction and equipment and who are familiar with the necessity for the proper upkeep and maintenance of installations.

This Committee's knowledge and observations have resulted in the publication of "Field Practice" referred to frequently and listed under 3A3*d*1. It covers the more essential features to which especial attention should be given in order that the efficiency of installations should be maintained and conforms to the standards of the N. F. P. A. as published and promulgated by the National Board of Fire Underwriters to which references are made throughout.

The Committee on Manufacturing Risks and Special Hazards, during the recent year, gave especial attention to the correction of structural defects in existing buildings and submitted a report intended to be of practical use to persons in charge of property or the alteration of buildings. This report is illustrated and is replete with suggestions. It is entitled "Structural Defects, Suggestions for Their Elimination and Protection," listed under 3A3*d* 32*b*, also printed in the "Proceedings of the Twentieth Annual Convention, 1916."

The Committee on Protection of Openings in Walls and Partitions has promulgated regulations and recommendations for these important features of construction to which reference will elsewhere be made.

The Committee on Safety to Life will be mentioned in connection with "Exits, Stairways and Fire Escapes," Serial No. 4.

Many other Committees exist whose work, all of it important, concerns one phase or another of protection equipment and installation.

The Association meets annually in a three days' convention, at which the report of each committee working during the year on the various standards is presented by its experts and discussed by the convention before adoption. The progess of the nation in science, invention and the industrial arts makes constant revision of these standards imperative. The Association for over twenty years has been compiling and revising these standards, which are now the recognized national guide and authority, and are officially adopted by the National Board of Fire Underwriters and all other organizations interested in fire-protection or -prevention.

The proceedings of the annual convention are issued in printed form so that all members may study the reports and the discussions thereon at their leisure.

The Quarterly Magazine of the Association is unique in its special articles on fire-hazards, fire-protection and -prevention, and the economic effects of the fire-waste, and the monthly News Letter is of decided interest and keeps members posted on the latest developments in fire-protection engineering and building materials and construction.

Special studies are made of the effect of fire on concrete and other buildings of fire-resistive construction. Bulletins are regularly issued and, during each year, many individual papers and reports on specific topics are sent to members, besides copies of all the Association's standards as soon as they are completed and published.

The Association's membership is composed of architects, builders, merchants, manufacturers, warehousemen, lumbermen, engineers, fire-marshals, fire-wardens, fire-chiefs, electricians, credit men, bankers, insurance agents and inspectors, boards of trade, chambers of commerce, public libraries and many other organizations, individuals, firms and corporations. Any individual, firm, corporation or society is eligible to membership.

[Editor's Note.—It is with considerable satisfaction that attention is called to the fact that for two years past a member of the Institute, Mr. Robert D. Kohn, was President of the N. F. P. A., and that the present Treasurer of the Institute, Mr. D. Everett Waid, is a Vice-President—but, with regret, attention is drawn to the further fact that but fifty architects are members of the Association.]

3A4 *The National Board of Fire Underwriters*

Organized 1866

General Manager: W. E. Mallalieu, 76 William St., New York City.

Publications: (See pages 145, 146.)

Suggested regulations covering the installation of hazardous and protective devices, model building regulations and ordinances, and special reports on various subjects prepared by the engineers of the Board. A list of the publications distributed by the Board will be found on page 145 under a special classified 3A4 extension index.

The National Board of Fire Underwriters, an organization composed of 133 of the principal stock fire insurance companies, is supported by a pro rata tax upon the members, and has been in existence fifty-one years.

STRUCTURAL SERVICE DEPARTMENT

Organized in the troublous period following the Civil War, when unlimited rate competition and a rapidly rising fire ratio were threatening the solvency of American fire insurance, it sought to restore stability through a rigorous control of rates. At first these efforts met with considerable success, and to them is largely due the fact that so many companies were able to survive the double blow of the Chicago and Boston conflagrations in 1871 and 1872.

Difficulties arose, however, which made it necessary to abandon rate-control. This was done in 1877, since which date the National Board has exercised no jurisdiction or supervision of the question of rates, that power being entirely in the hands of local fire underwriters' associations, each having jurisdiction over certain specified areas. (See 3A5.)

Eleven years after its abandonment of rate-control, the National Board likewise ceased to regulate brokerage commissions. Following this final relinquishment of legislative power, the organization began a new phase in its history and rapidly developed into the great service institution, to both its members and the public, which characterizes its beneficent operations today.

In a sense, its name has become a misnomer, since it no longer exercises the functions of an underwriter. It has really become an investigative, standardizing, and distributing organization, dealing with the broad principles of underwriting and fire-protection. In this work it cooperates the best technically trained service it can secure with the wide practical experience of its members.

Its activities are conducted through standing committees under supervision of the Executive Committee and the direction of the General Manager. Most of these committees employ skilled experts who devote their entire time to work planned by the committees. The more important committees are the following:

The Committee on Laws makes a special study of the legal, legislative, and administrative phases of the relations of fire insurance to the public.

The Committee on Incendiarism and Arson, as its name implies, is organized to combat these most subtle and heinous of crimes which frequently destroy human life as well as property.

The Committee on Statistics and Origin of Fires collects and classifies fire-loss figures from fire-department records and other sources of public information. It critically studies this data and makes recommendations based upon the conclusions obtained.

The Committee on Fire-Prevention has for many years been one of the country's strongest influences for lessening the public fire-hazard. This Committee, at large expense, maintains a staff of field engineers under the direction of a Chief Engineer, Mr. George W. Booth, who are constantly engaged in inspecting the water-supply, fire-department equipment and efficiency, and fire-alarm system in the larger cities of the United States. Particular attention is devoted to the proper protection of congested valued districts and the removal of conflagration hazards.

It issues detailed reports covering these inspections and recommendations based thereon. These reports are furnished to members of the Board and to the city officials, but are not for general distribution. The Committee's recommendations have lead to extensive improvements in many cities.

The Committee on Construction of Buildings devotes its energies to encourage better building construction, and thereby endeavors to aid in reducing the enormous annual fire-waste. As the activities of this Committee are of more direct interest to the architect than the others, they are treated here in greater detail.

The most important work accomplished by this Committee was the drafting of a Model Building Code intended as a guide for the use of city commissions entrusted with the preparation of new building ordinances or the revision of old ones. (See 3A4*d*1.)

This Code was first issued in 1905. It has passed through four editions, and over 25,000 copies have been distributed. The last revision—that of 1915—was very radical, the form and text being completely changed. The volume is thoroughly up-to-date, and its engineering and fire-protection features represent the best current practice. The Code is furnished, without charge, to building commissions, and upon application is sent to architects, engineers and builders who desire to use it as a guide in safe construction. The Code has been adopted as a supplementary textbook in the engineering and architectural courses of several universities and technical schools.

The last revision was made by Ira H. Woolson, Consulting Engineer to the Committee, and formerly a professor in engineering at Columbia University, who has been engaged to prepare the Committee's publications and take charge of its rapidly increasing work of promulgating building construction standards and fire-protection information.

The Committee's office has become a clearing-house for distribution of such data. It renders a vast amount of gratuitous consultation service to cities which are revising their building codes, and results show that it is wielding a strong influence in eradicating pernicious building customs which have been such prolific contributors to our enormous and senseless annual fire-loss. The Code is being used as a guide by many cities in the revision of their building ordinances, and not infrequently it is copied practically as printed.

The Committee also distributes "A Suggested Building Ordinance for Small Towns and Villages" which was prepared jointly with a committee of the National Fire Protection Association. (See 3A4*d*2.)

The latest publication on safe construction issued by the Committee is entitled "Dwelling Houses," which deals specifically with the fire-hazards of this class of buildings and is full of suggestions for remedying such defects. Copies of this were furnished the Institute's Committee on Fire-Prevention for distribution to all members of the Institute. (See 3A4*d*3.)

Considering that the annual dwelling house property loss in the United States for the year 1915 (the latest figures available) was in excess of $40,000,000, and that it was accompanied by a large loss of life, the need of such a publication is apparent. The majority of dwellings are located outside the jurisdiction of municipal building laws, and as there are at present but two or three states which exercise authority over building construction, most dwellings are erected without any supervision whatever.

The Committee on Lighting, Heating, and Engineering Standards is the special intermediary between the Executive Committee and the Underwriters' Laboratories of the National Board of Fire Underwriters. The function of the Laboratories is to test and classify materials, constructions and devices according to their fire-resistive qualities, and to assure that the quality of the manufactured product is maintained equal to that of the sample tested. Details of the operations of the Laboratories are given elsewhere in the Journal.

The Committee on Clauses and Forms studies the intricate structure and phraseology of fire insurance policies, and offers proposals for betterment, but they are not mandatory upon local underwriting organizations.

The Committee on Adjustments operates principally as

a stabilizer when the relations between insurance companies and the assured have suddenly been thrown into an unbalanced or chaotic condition, as by a conflagration.

The Actuarial Bureau is the newest activity of the National Board, having been put in operation in 1915. It receives daily reports of practically all fire-losses paid by the insurance companies in the United States, averaging over two thousand (2,000) per day, and has a large force of tabulators, sorting, classifying and recording the vast amount of data contained in the reports.

Figures are compiled showing the number of fires and loss in each class of occupancy due to the various causes of fire. The accumulated figures are carefully studied, their meaning interpreted and conclusions drawn as to the relative hazard of construction, exposure and occupancy.

These statistics are the first really reliable data ever collected over the whole country upon this extremely important subject. They include the number of fires and insurance losses paid, segregated in accordance with the various causes, under each standard class of construction, whether protected or unprotected by water works and fire departments.

The recent history of the National Board has been one of rapidly increasing influence as a public service institution. It will be noted that most of its work is distinctly educational in character and of direct public benefit. It inaugurated and has vigorously sustained, through close and cordial relations with the National Fire Protection Association, the fire-prevention movement which is now finding expression throughout the country, both in the matter of public improvements and popular education.

The above summary indicates briefly the functions and scope of this great organization which, although it possesses no legislative powers and is sustained at private expense, is unquestionably one of the greatest constructive forces in the United States today.

IRA H. WOOLSON
Consulting Engineer to Committee on Construction of Buildings.

3A5 *Local Underwriters' Associations*

The local boards of fire underwriters, or fire insurance exchanges, are composed of the insurance companies or their officers or agents; some of the officers may also represent their companies in the National Board with which the local bodies have otherwise no official connection whatever. Each such organization is a separate and distinct association, complete within itself, having its own officers and different departments dealing with the special hazards which affect fire-insurance losses and other matters relating to the actual business of underwriting within its own prescribed territory.

They endeavor to establish equitable rates to cover the hazards; use their influence to create efficient private and public fire-protection; and encourage the enactment of proper building laws. It is their purpose and desire to coöperate with all local municipal and other authorities and with architects, owners and constructors of buildings to whom will be distributed the Standards of the National Board and other publications upon request and in the interest of their general observance. Some associations issue publications of their own.

3A6 *Underwriters' Laboratories*

Chartered by the State of Illinois, 1901

President: William H. Merrill, 207 E. Ohio St., Chicago.

Publications:

(*a*) Organization, Purpose and Methods, 1916.
(*b*) List of Inspected Mechanical Appliances.
(*c*) List of Inspected Electrical Appliances.
(*d*) List of Appliances Inspected for Accident Hazard.
(*e*) "Brick and Cement, Fire," Navy Dept. Specification, 50B6, May 1, 1916.
(*f*) "Bricks and Cements, Converter and Open Hearth," Ditto, 50B5, May 1, 1916.
(*e*) Electrical Data.
(*f*) Standard on Rubber-covered Wires and Cords.
(*g*) Procedure for Inspections at Factories and Labeling Rubber-lined Fire-Hose.
(*h*) Standard for Counterbalanced Elevator Doors.
(*j*) Standard on Cabinets and Cutout Boxes.
(*k*) Standard (Tentative) for the Construction and Installation of Materials for Lightning Rod Equipments.
Other Standards are now in mimeograph form.
[NOTE: (*a*) sent upon request; (*b*), (*c*), (*d*), and (*e*) revised semi-annually, sent upon request; (*f*) to (*k*) separate publications, supplied at $1 per copy.]

The work of the Underwriters' Laboratories was mentioned in the January Journal under 1B2*a*, and more fully described on page IX of the Industrial Section of that issue. More specific reference to its activities in fire-prevention matters will be found on page XII of the current Industrial Section. See also 3E3*b*.

The work of the Laboratories with respect to accident-hazards will be mentioned under Serial No. 5, and with respect to electrical matters under Serial No. 6.

3A7 *Inspection Department; Associated Factory Mutual Fire Insurance Companies*

Organized 1886

Secretary: C. H. Phinney, *Engineer, and Asst. Sec'y.* H. O. Lacount, 31 Milk Street, Boston, Mass.

Publications: (See page 146.)

"Approved Fire-Protection Appliances."
"Approved Electrical Fittings."
These are issued semi-annually, in April and October, and contain results of the tests and examinations of the various appliances which are, by the Mutual Companies, used as a basis for approvals.
Pamphlets.
Leaflets.
All these publications will be found listed under a special numerical index on page 146, and will be referred to in this and other issues of the Journal under various subdivisions or industries; those pertaining to lumber and wood construction in Serial No. 5, and to electricity in Serial No. 6.

The Associated Factory Mutual Fire Insurance Companies grew from the idea of a New England manufacturer who started the system in 1835. Other manufacturers became interested and it was agreed to share losses in their factory on a mutual plan. They studied the causes of fire, profited by each others' experiences, and through such coöperation reduced the cost of their insurance materially. This led to the formation of a mutual fire insurance company and later similar companies were organized which joined in forming the present great system, that now oversees the protection and provides the insurance for a large part of the better manufacturing properties in the United States and Canada, aggregating over three and one quarter billion dollars in value. Insurance is distributed among the following, comprising the Associated Factory Mutual Fire Insurance Companies.

1. Manufacturers Mutual Fire Insurance Co., Providence.
2. Rhode Island Mutual Fire Insurance Co., Providence.
3. Boston Manufacturers Mutual Fire Insurance Co., Boston.
4. Firemen's Mutual Insurance Co., Providence.
5. State Mutual Fire Insurance Co., Providence.
6. Worcester Manufacturers Mutual Insurance Co., Worcester.
7. Arkwright Mutual Fire Insurance Co., Boston.
8. Blackstone Mutual Fire Insurance Co., Providence.
9. Fall River Manufacturers Mutual Insurance Co., Fall River.
10. Mechanics Mutual Fire Insurance Co., Providence.
11. What Cheer Mutual Fire Insurance Co., Providence.
12. Enterprise Mutual Fire Insurance Co., Providence.

13. Merchants Mutual Fire Insurance Co., Providence.
14. Hope Mutual Fire Insurance Co., Providence.
15. Cotton and Woolen Manufacturers Mutual Insurance Co., Boston.
16. American Mutual Fire Insurance Co., Providence.
17. Philadelphia Manufacturers Mutual Fire Insurance Co., Philadelphia.
18. Rubber Manufacturers Mutual Insurance Co., Boston.
19. Paper Mill Mutual Insurance Co., Boston.

The Associated Factory Mutual Fire Insurance Companies established in 1886, an Inspection Department, or Engineering Bureau, to take over the work of inspection of all the Mutual risks, the making of plans and appraisals of the properties insured, and the engineering work along all lines of fire-protection engineering previously done by the individual companies for the information of themselves and the Mutual members. Since 1896 the Bureau has also been responsible for the adjustment of all losses.

The work in fire-protection engineering soon called for the testing of fire appliances, and in 1890 a laboratory was established under the direction of the Inspection Department, as mentioned under 3A8.

A large amount of pioneer work in fire-protection has been done in the Inspection Department and Laboratories, notably Fire-Stream Tables prepared from data obtained in an extensive series of tests by John R. Freeman; improved building construction in the slow-burning or mill-construction type of factory building and the development of the private fire-protective equipment, involving particularly the design, construction and installation of the steam, rotary and centrifugal fire-pumps and of automatic sprinklers and dry-pipe valves. At the present time about 1,000 automatic sprinkler joints are on test there under daily observation. A large amount of work has also been done on rubber compounds, principally as applied to the linings of fire-hose and valves in Underwriter fire-pumps. During the past several years the subject of dry rot of factory timber has been very thoroughly investigated, resulting not only in a suggested specification for long-leaf pine for use in Mutual risks, but also a treatment of timber to prevent or arrest decay. This important piece of work will be referred to in the Journal under Serial No. 5, "Wood," and later in this section.

There has recently been completed an exhaustive investigation on the subject of fire-hazards of cutting oil, in which a large percentage of kerosene frequently is used.

When the resources of the Laboratory have been exhausted on any particular device, more can be learned through service in the field, and this field experience is being brought to the Laboratories continuously by the inspectors of the Inspection Bureau. Again, a large amount of information can frequently be obtained from the investigation of fires, which is generally made in connection with the adjusting of losses, and this first-hand, valuable data is immediately available to the Laboratories. These features are believed to be real assets of the Laboratories, and assist materially in reaching a correct conclusion, which finds application throughout a large and increasing field. Advice on all subjects having to do with the prevention of fires and protection against fires is freely given property-owners carrying Mutual insurance.

3A8 *Factory Mutual Laboratories* Established 1890

Engineer: W. O. Teague, 31 Milk Street, Boston, Mass.

This laboratory, known as the Factory Mutual Laboratories, was established under the direction of the Inspection Department, as above noted. It issues no publications, as these emanate from the Inspection Department. From time to time, hazards incident to manufacturing processes have been investigated in the Laboratories, and the work has greatly increased until now they occupy the central plant at the above address, and in addition there is a hydraulic station at Lowell, Mass., and a fire-test house at North Woburn, Mass.

The Laboratory is designed primarily for the use of mill-owners whose properties are insured in the Associated Factory Mutual Fire Insurance Companies. In general only such devices and subjects are investigated as will be of interest to Mutual members, and there is no charge for this service, either to the parties submitting the appliances or to the members. See also 3E3*b*.

3A9 *American Institute of Architects*

(For reference see 1A8)

Of the various committees of the Institute the four most intimately concerned with building construction, and hence with fire-prevention matters, are as follows:

3A9a *Committee on Fire-Prevention*

In the past the Committee has been mainly active representing the architects at the conventions of the National Fire-Protection Association and particularly active in the committee work of that Association. Under the past chairmanship of Mr. Julius Franke of New York, it distributed to the architects throughout the country valuable information on the subject of fire-protection. The new Committee just organized has not yet had time to plan out its campaign. The Chairman realizes that the enlightenment of the average architect on the subject of fire-protective design is a mighty difficult job. A plan is being considered at present whereby the Committee, in coöperation with other organizations, might publish a series of structural-service sheets or details showing clearly the methods of fire-resistant construction in all types of buildings and in all parts of buildings.

ROBERT D. KOHN, *Chairman.*
Institute Committee on Fire-Prevention.

3A9b *Committee on Basic Building Code*

3A9c *Committee on Materials and Methods*

The reports of these Committees, as presented to the last Convention and printed in the "Proceedings" of the Institute, will be found of much interest structurally. These Committees will, of course, coöperate in all ways possible with the Committee on Fire-Prevention and provide valuable assistance to the Structural Service Department. The Chairman of the latter Committee has already addressed all members of subcommittees on the subjects covered and to be treated in this Department.

3A9d *Committee on Contracts and Specifications*

See "Fire Insurance" (4H) for practice recommended by the Institute in respect to this matter.

3A9e *New York Chapter, American Institute of Architects* Organized 1867

Secretary: Stowe Phelps, 20 West 43d St., New York City.

"Realizing the vital relation of the architect's work to the causes which produce the enormous annual economic waste and loss of life due to fire, the New York Chapter, some six or seven years ago, formed a Fire-Prevention

Committee. This Committee coöperates with the New York Board of Fire Underwriters.

"The former Chairman of the Committee, Mr. Julius Franke, working with the assistance of Mr. F. J. T. Stewart of the Underwriters, prepared and sent out two years ago a very valuable booklet of general information for architects with regard to the important points to be considered in the design of buildings from the point of view of fire-prevention and low insurance rates. (See 4B2e1.)

"Since then the Committee on Fire-Prevention has been sending out to the Chapter members such of the fire reports of the Underwriters as deal with buildings in which obvious and curable defects of design have contributed toward the fire-loss. These reports are printed by the Underwriters and submitted to the Chairman of the Committee for his opinion as to whether or not they will be of value to the architects. For reports of value, the Chapter pays part of the cost of printing and mailing."

J. A. F. CARDIFF, *Chairman*,
Fire-Prevention Committee, New York Chapter A. I. A.

3A9f *Joint Committee on City Departments*

"The New York Chapter also has one other field of coöperation with the Underwriters through the 'Joint Committee on City Departments.' In this Committee the delegates of the Chapter, the Underwriters, the building trades and the engineers come together to discuss any questions affecting the building interests of the city. This Committee is very active in the furtherance of fire-protection ordinances and laws, and in its opposition to amendments that are liable to lower the standards of fire-protection work." J. A. F. CARDIFF, *Chairman*,
Fire-Prevention Committee, New York Chapter A. I. A.

[EDITOR'S NOTE: Other Chapters are invited to communicate data on any other similar local activities.]

3A10 *Reports of Other Committees*

(*a*) The Report of a Special Committee of the American Institute of Architects relative to the work of the Underwriters' Laboratories will be published in Section II, April issue.

(*b*) Reference will also be made in same issue to the Committee on Fire-prevention in the American Society of Mechanical Engineers.

3B1 *Fire Marshals' Association of North America*

President: L. T. Hussey, Topeka, Kans.

Publications:

Proceedings of the Convention, issued annually. In this volume papers and addresses on subjects affecting state building regulations, laws authorizing state fire marshals to condemn and remove buildings that are fire-hazards, and others of similar purport, with the discussions and resolutions, are printed.

Its membership consists of the Fire Marshal, Fire Commissioners and their deputies of each state, who are charged with the duties defined as those of the State Fire Marshal of Massachusetts in the original law of the state. Such official may delegate as his representative at any meeting or on any committee any person officially connected with his department.

3B2 *International Association of Fire Engineers* Organized 1873 as the National Association of Fire Chiefs; name changed in 1894

Secretary: Chief James McFall, Roanoke, Va.

Holds annual meeting at which committees report, papers are read and addresses made which are constantly being printed as valuable recommendations or contributions toward the improvement of fire-fighting apparatus and methods.

As has been said in the "American-La France Bulletin," "Probably no other body of men have devoted themselves so silently, watchfully and constantly to the welfare of the people, served progress so faithfully, or have in forty-four years rendered such a mighty service in the saving of life and property as the members of this organization."

3C Other Agencies Concerned with Fire-resistive Materials

In addition to the foregoing governmental departments and organizations interested in fire-prevention, fire-protection and fire-fighting, the following are known nationally for their interest, through investigation, production or manufacture of materials used in fire-resistive construction, with particular reference to burnt clay, which will be treated herein as a product and to metal lath, metal appliances, gypsum and asbestos, which will be referred to as accessories. The latter will again be referred to as products in other serial numbers.

In later serial numbers, also, burnt-clay products other than brick and terra-cotta will be referred to in connection with other industries, and wired glass, as a product, will be more fully treated.

It will be recalled that concrete construction and structural steel have been treated in Serial No. 1, and stone and slate in Serial No. 2.

3C1 *American Ceramic Society, Inc.*

Edward Orton, Jr., Department Ceramic Engineering, Ohio State University, Columbus, Ohio.

Publications:

(*a*) "The Transactions" in seventeen volumes, varying in price from $4 each, in paper, to $6.25 in cloth.

(*b*) "A Bibliography of Clays and the Ceramic Arts," Dr. John C. Branner, 1906. Contains 6,027 titles of works on ceramic subjects. Cloth, $2.

(*c*) The collected writings of Dr. Herman August Seger, Vol. I, p. 552, cloth, $7.50; contains:
(1) Treatises of a General Scientific Nature.
(2) Essays relating to Brick and Terra Cotta, Earthenware, and Stoneware and Refractory Wares.

(*d*) Vol. II, p. 605, cloth $7.50; contains:
(1) Essays on White Ware and Porcelain.
(2) Travels, Letters and Polemics.
(3) Uncompleted works and extracts from the archives of the Royal Porcelain Factory.

(*e*) List of papers and discussions contained in "The Transactions," —furnished upon request.

Its work has been confined to discussions of the many little-understood phases of the ceramic industry and has not yet reached the stage of definite specifications. Holds an annual meeting from which the resulting contributions to the development of the whole clay-working industry, published in "The Transactions," are to be considered as of great import.

3C2 *Educational Research Work* (See also 1B3*a*)

As mentioned in Serial No. 1, the colleges and universities of the country are performing distinctive ser-

vice in the development of materials and methods pertaining to the structural industries. Many of those listed maintain departments or branches devoted to investigation and study in clays and clay-working. The University of Illinois, on December 6 and 7, 1916, formally dedicated its recently completed Ceramic Engineering Building. Among others contributing to the development of the ceramic arts are Ohio State University, Department of Ceramic Engineering, Iowa State College, Rutgers College, and the New York State School of Clay-working and Ceramics.

(*a*) University of Illinois Engineering Experiment Station, Urbana, Ill. Established 1903 to carry on investigations in engineering and to study problems of importance to professional engineers and to manufacturing, railway, mining, constructional, and industrial interests of the state.

Publications:

(1) Circulars and (2) Bulletins on important phases of problems affecting architects as well as engineers.

Each bulletin is subject to a free initial distribution, on the basis of existing mailing-lists. It is also placed on sale with authorized agencies, both in this country and abroad. A limited number of copies is available for free distribution upon request, after the initial distribution. As the supply approaches exhaustion, it is placed upon a reserve list and withdrawn from free distribution.

A name is placed upon the regular mailing-lists of the Station at the request of the person, institution or company so desiring. These lists are divided into six classes: All-Bulletin, Structural, Electrical, Fuel, Railway, and Notification. In requesting a name placed on the list state class of bulletins desired.

3C3 *The Refractories Manufacturers' Association*

Secretary: Frederick W. Donahoe, 220 S. Michigan Ave., Chicago.

Issues no publications—other than (*a*) and (*b*)—that would interest anyone not directly engaged in the manufacture of fire-brick and similar refractories.

Objects are to promote a closer relation between the manufacturer, dealer and consumer of refractories of all kinds; to improve in every way the product of its members and to standardize, as far as possible, the various designs and shapes manufactured.

Holds an annual meeting, and, like so many others mentioned herein, maintains relations with the U. S. Bureau of Standards and other agencies working to improve the nature, understanding and use of structural materials.

Standards:

Has committees to work with the American Society for Testing Materials, with the Refractories Committee of the American Gas Institute, and on Standardization of Fire Clay, on Silica, and on Government Adoption of Standards.

As the beginning of a series of charts, issues two, which are of Institute standard size, entitled:

(*a*) "Standard 9 inch and 9 inch Series Brick Shapes Adopted by The Refractories Manufacturers' Association, July 29, 1913."

(*b*) "Tables Showing the Number of Brick Required to Turn Various Circles, the Brick Being of Standards Adopted by the R. M. A."

3C4 *National Terra Cotta Society*

1 Madison Avenue, New York — Founded January 1, 1912

Publications:

(*a*) "Architectural Terra Cotta, Standard Construction." July, 1914. A book of construction drawings (70 plates) showing the most approved form of terra cotta construction for cornices, friezes, balustrades, etc., with anchorage irons and detailed notes, complete.

(*b*) Architectural Terra Cotta Brochure Series.
Vol. I. "The School."
Illustrated by photographs of many modern school buildings, erected entirely or in part of terra cotta.

(*c*) Vol. II. "The Theatre."
Illustrated by many photographs of terra cotta theatre buildings.

(*d*) "Store-fronts in Terra Cotta."
Illustrating and describing the appropriate use of architectura terra cotta for the small store-front.

(*a*) Free to architects—$5 to general public. Others upon request to qualified inquirers.

Objects:

To encourage the production of the best materials and the maintenance of high and uniform standards of work; to spread the knowledge of the many advantageous qualities of good architectural terra cotta by widely advocating its merits; to coöperate in the investigation and study of the more important technical and other problems of the business; to advance mutual business interests in every legal and proper way without in any manner, directly or indirectly, agreeing to maintain prices or suppress competition; to promote a feeling of confidence and friendship among the members, so as to secure the benefits of the several objects above set forth.

Standards: See publication (*a*).

3C5 *The American Face Brick Association*

Secretary: R. D. T. Hallowell, Fulton Building, Pittsburgh, Pa.

Issues no publications dealing with technical subjects. Membership is composed of manufacturers and distributors of facing bricks of all kinds throughout the country.

Its object is to promote the interests of its members, to conserve the resources and increase the efficiency of the entire face-brick industry. Holds a meeting annually, at the last of which, in December, 1916, two important policies in modern trade development were adopted, namely: Uniform Cost-Finding and the Open Price-Plan.

3C6 *The National Brick Manufacturers' Association*

Organized 1886

Secretary: Theodore A. Randall, Indianapolis, Ind.

Publications:

(*a*) The Convention Proceedings, other transactions and reports of committees are published in full in *The Clay Worker*, the official organ of the Association.

Is distinctly an educational organization, formed to relieve the clay trade of the "rule-of-thumb" methods which formerly characterized it. Its purpose is also to promote the interests of the makers and users of clay products.

Standards:

(*b*) Has a committee on technical investigations and holds a convention annually, at one of which, in 1893, standards were adopted for the sizes of bricks. These were reaffirmed in 1899 and still obtain. See Standards (3D3*c*).

3C7 *National Building Brick Bureau, Inc.*

Secretary-Manager: Theo. A. Randall, 211 Hudson St., Indianapolis, Ind.

Publications:

Pamphlets and reprints, entitled "Build with Brick," and others.

Its chief purpose is to advocate the advantages and eventual economy of brick and substantial building construction and to encourage a greater use of brick in structural work of all kinds. Holds an annual meeting.

3C8 *Building Brick Association of America*

Secretary: H. J. Lee, 40 W. 32d St., New York.

Organized six or seven years ago for the purpose of providing publicity for the brick business and was supported by brick manufacturers. A series of competitions were held through the medium of the *Brickbuilder*, and over one thousand plans were secured for brick houses. These were divided into three groups and published in three books, entitled:

(*a*) "One Hundred Bungalows." 50 cents.
(*b*) "A House of Brick of Moderate Cost." 50 cents.
(*c*) "A House of Brick for $10,000." 25 cents.

In addition to these a large amount of general literature was published under the following titles:

(*d*) "The Beauty of a Brick House." 5 cents.
(*e*) "The Maintenance of a Brick House." 5 cents.
(*f*) "The Brick House Safe from Fire." 5 cents.
(*g*) "Brick or Frame: Which?" 5 cents.
(*h*) "A Revolution in Building Materials." 5 cents.
(*j*) "The Cost of a House—a Comparison between Brick, Wood, Cement and Hollow Block Construction," J. Parker B. Fiske. 10 cents.

Support was withdrawn to such an extent that this Association is now in the process of liquidation. In a sense it laid the foundation for the American Face Brick Association, which has since been formed and is taking up some of the activities of the former.

[NOTE.—A limited supply of the above publications remain, and copies may be had at the price given upon application to the Secretary.]

3C9 *National Paving Brick Manufacturers' Association*

Secretary: Will P. Blair, Engineers Building, Cleveland, Ohio.

Publications:

(*a*) "Dependable Highways," monthly, $1 a year.

Purposes:

Dissemination among its membership of technical knowledge relating to the manufacture of their product; to bring to the attention of the public the merits of vitrified brick as a paving material; to influence to the greatest possible extent the proper construction of brick streets; furnishing faithfully information regarding brick and other materials, and comparative values as pavements.

Standards:

(*b*) Specifications for the Construction of Vitrified Brick Street Pavements and Country Roads (furnished upon request), containing:
(1) Green Concrete Foundation,
(2) Sand-Cement Superfoundation,
(3) Sand-Cushion Type.

The preparation of these specifications is worthy of especial comment because of the evidence given that an organization expends effort and energy upon the development of the proper use of the material with which it is concerned and not alone upon the improvement of the material itself.

3C10 *Hollow Building Tile Manufacturers' Association of America.*

(Information not obtainable.)

3C11 *The Associated Metal Lath Manufacturers*

Publicity Bureau, Swetland Building, Cleveland, Ohio.

Publications:

(*a*) "Metal Lath Hand Book." Copyrighted 1915. Bound in stiff cloth with 128 pages of text, detail drawings, and other illustrations, together with notes on acoustics, specifications for plastering and other information. Includes results of tests and makes recommendations for the best methods of using metal lath in building construction.
To obtain and for outline of contents see Industrial Section page XIV and XV.

Purpose:

To standardize the manufacture, use and sale of metal lath, so that the architect may be familiar with the grade, weight and type to specify for every kind of work, the contractor may know definitely what he must figure on, and the dealer will best know what materials to carry in stock. Has carried out fire-tests in the East and West to determine the value of metal-lath construction in comparison with other materials for the same purpose, and has conscientiously endeavored to formulate the standard construction drawings and specifications for the use of metal lath published in "Hand Book" (*a*).

Elaborate tests of stucco and metal lath are now being made by the Bureau of Standards in which the Association is coöperating. (See 3E3*g*.) Progress report will soon be published of this and also of tests for soundproofing partitions and walls which are now being made at one of the great universities for this Association.

In reviewing its work less than two years ago, the Association saw that, while it was accomplishing a great good for the metal-lath industry, the vital need was to have immediate and reliable information regarding the prices quoted on metal lath, and the open-price plan was thereupon adopted.

Each member notifies the office of the Association of any change in his quotations, and these are promptly bulletined to the other members.

This simple, fair and right exchange of true market information has cured the cancer of distrust, promoted intelligent competition and put the metal-lath industry on a higher plane.

For list of component companies, for detail drawings and other information on the use of metal lath see Industrial Section, pages XIV and XV.

3C12 *Gypsum Industries Association*

Reference later

3C13 *Asbestos Manufacturing Associations*

Reference later.

3C14 *National Glass Distributors Association*

Reference later.

3D Terra Cotta, Hollow Tile and Brick

(Pottery and soil-pipe later under Plumbing; also wall, floor and roof tile under later serial numbers.)

The total value of all clay products marketed in 1915 was $163,120,232, included in which it is interesting to note that "common" bricks figured to the quantity of seven billion one hundred forty-six and a half million.

Brick and tile continue to form approximately four fifths and pottery one fifth of the total, though the pot-

tery products have been gradually increasing of late years.

The most prominent features in the industries were (1) the large increase in production and the even larger increase in value of common brick in Cook County, Ill. The production in 1915 (739,173,000 brick) made it the rival of the New York portion of the Hudson River region, the output of Cook County being less in quantity by only 2,395,000 brick and greater in value by more than $1,000,000; (2) the large increase in production and value of fire-brick; (3) the increase in value of front-brick; (4) the large increase in value of clay products in Illinois and Pennsylvania; (5) the large decrease in value of sewer-pipe; and (6) the small increase in average price per thousand of common brick and the decrease in average price of other varieties of brick.

Clay products, except the highest grade, are made principally for local consumption, every state being a producer of clay wares, their low value preventing transportation for any considerable distances. Hence none but the highest grades of ware, principally pottery, are imported, and the European war has had little direct effect on the brick and tile industries. (Notes from Clay-Working Industries and Building Operations in the Larger Cities [3D1*c*].)

3D1 *Information Obtainable*

(*a*) The U. S. Geological Survey has issued a great many pamplets and bulletins (2A1*d* and *g*) dealing with clay resources and various phases of the clay-working industry. Specific information will be furnished by the Journal or complete catalogue of all publications may be obtained as noted under 2A1.

(*b*) See, also, chapters on "The Clay-Working Industries" in "Mineral Resources of the U. S." (2A1*c*) in which all phases are treated and complete statistics given annually.

(*c*) The separate chapter for 1915 (2A1*d*) published December 22, 1916, is available and is entitled "Clay-Working Industries and Building Operations in the Larger Cities"—46 pp. of valuable statistics.

(*cc*) The U. S. Bureau of Mines (2A2) in its work on the technology of clays, has issued Bulletin 53, "Mining and Treatment of Feldspar and Kaolin in the Southern Appalachian Region," and Bulletin 92, "Feldspars of the New England and Northern Appalachian States," and Technical Paper 99, "Probable Effect of the War in Europe on the Ceramic Industries of the United States."

(*d*) In the "Annual Report of the Chief of Ordnance, Watertown Arsenal" (1B1*b*) will often be found results of tests on clay products.

See also "Progress and Current Activities" (3D4) for tests by Bureau of Standards and others on clay products.

(*e*) See "Report of Committee C3 on Standard Specifications for Brick: I, Building Brick, II, Paving Brick." (The latter adopted as a standard), in "Proceedings" A. S. T. M. (1A4), Vols. XIII, XIV and XV, containing results of tests and other data and suggestions concerning building brick.

(*f*) "Practical Methods for Testing Refractory Fire-Brick," C. E. Nesbit and M. L. Bell Pp. 349–378 "Proceedings" A. S. T. M., Vol. XVI, pt. II.

(*g*) See American Ceramic Society for list of informative publications (3C1), (*b*), (*c*) and (*d*). Use (*e*) as finder for valuable papers and discussions published annually in The Transactions (*a*).

(*h*) "Tests of Brick Columns and Terra Cotta Block Columns," A. N Talbot and D. A. Abrams. 1909. 25 cents. University of Illinois Engineering Experiment Station (3C2*a*2); also "An Investigation of built-up columns under load," A. N. Talbot and H. F. Moore. 1911. 35 cts.

(*j*) Journal of the Society of Constructors of Federal Buildings (2A4*a*).
(1) "The Manufacture of Vitrified Brick," C. B. Sullivan. November, 1914.
(2) "Rough-Texture Brick: A Query," J. A. Sutherland. May, 1916.
(3) "Architectural Terra Cotta," Thos. F. Armstrong. March, 1916.

(*k*) "Notes on the Compressive Resistance of Fire-Stone, Brick Piers Hydraulic Cements, Mortars and Concretes, Gen. Q. A. Gilmore.

(*l*) "Wall Construction" being Chapter XX of "Fire-Prevention and Fire-Protection" by Joseph Kendall Freitag, treats of ornamental terra cotta, with many construction details and notes, and of structural terra-cotta walls and brickwork.

(*m*) See "Kidder's Pocket Book:"
(1) "Data on Bricks and Brickwork," pp. 1454–1462.
(2) "Terra Cotta, Hollow Tile and Brick" (see Index to Kidder's).

(*n*) For brick construction and data see "Trautwine's Civil Engineer's Handbook."

(*o*) See "Building Construction and Superintendence," F. E. Kidder. Part 1, "Masons' Work."
(1) "Bricks and Brickwork," Chapter VII.
(2) "Architectural Terra Cotta, Thomas Nolan. Chapter VIII.
(3) "Form of Specifications (for all parts of a building) Including Architectural Terra Cotta and Brickwork," Chapter XIII.

(*p*) See "The Building Estimator's Reference Book," Frank R. Walker. Sections on Terra Cotta, Hollow Tile and Brickwork.

(*q*) See "Building Trades Handbook:"
(1) "Brick Masonry." (2) "Chimneys and Fireplaces." (3) "Hollow-Tile Construction."

(*r*) See the nine publications of the Building Brick Association of America listed under 3C8.

(*rr*) See "Hollow Tile Construction," N. F. P. A. Quarterly (3A4*h*), Vol. 7, No. 1; and "Terra-cotta or Tile Blocks," Vol. 4, No. 4.

(*s*) Read "Standardizing Face Brick," F. W. Donahoe, "Brick and Clay Record," October 3, 1916.

(*ss*) "The Development of the Ceramic Industries in the U. S." A "communication" by A. V. Bleininger, presented before the Franklin Institute, Philadelphia, Nov. 2, 1916.

(*t*) See "Brick Houses and How to Build Them," Radford.

(*u*) See "Practical Brick and Tile Book," Dobson-Hammond.

(*v*) See "Clays, Their Occurrence, Properties and Uses," H. Ries.

(*w*) Catalogue, Architectural Exhibition, 1913, St. Louis Architectural Club contains an excellent treatise on brickwork, detailed and illustrated, with an introduction by Wm. B. Ittner.

(*x*) See "Brickwork and Masonry," Mitchell; "Bricks and Tiles," Dobson; "Clay-workers' Handbook," Searles; "Details of Building Construction," Radford.

(*y*) "The Brick Church and Parish House," published 1915 by Hydraulic Press Brick Co., containing Notes on Church Architecture in America and plates and illustrations of the "Brick-builders' Competition."

See also references under Buildings and Structures in General 4B.

See also Other References in February Journal under Stone Masonry 2C4 and under Stone in General, 2J5.

For other information pertaining to Terra Cotta, see, also, Industrial Section: Atlantic Terra Cotta Co., page XVII; Federal Terra Cotta Co., page XIX; O. W. Ketcham, page XVI; Northwestern Terra Cotta Co., page XVIII; with respect to Brick, see Hydraulic Press Brick Co., page XX.

For information and detailed drawings pertaining to Guastavino Dome Construction, see 2nd cover.

See, also, "Atlantic Terra-Cotta" printed monthly for architects and distributed by that Company.

3D2 *Practice Recommended and Suggested*

By N.F.P.A.

(*a*) "Chimneys, Flues and Fireplaces, To Provide for the Safe Construction of" (3A3*c*1).

(*b*) Field Practice (3A3*d*1): Chapter II, "Furnace Stacks, Chimneys and Flues;" Chapter VII, "Chimneys and Flues, Their Common Dangers, Means of Safe Construction, Repairing and Maintenance."

(*c*) "Chimneys, Flues and Fireplaces" (3A3*c*3).

By National Board of Fire Underwriters:

(*d*) Building Code (3A4*d*1): Part VI, "Walls," pp. 34–50.

(*e*) "Dwelling Houses" (3A4*d*3): Part III, "Walls," pp. 21–31. See, also, 3A4*d*2 and *d*4.

By National Terra Cotta Society:

(*f*) See 3C4*b*, *c*, and *d*. The School, The Theatre and Store-fronts. See, also, Standards (3C4*a*), the same, though showing carefully prepared detailed drawings for construction, does not include any basic recommendations or specification data for setting.

By National Fireproofing Co.:

(*g*) For suggested details of wall construction with hollow-tile building-blocks and for "Manufacturers' Standard Specifications" prepared by that Company in collaboration with the editor of the Structural Service Department while acting as Consulting Architect to Sweets Catalogue Service, see pp. 304, 305, "Sweets Architectural Catalogue, 1916."

3D3 *Standards Adopted*

(Independent of existing municipal and state building codes which obtain in respectative localities.)

By the N.F.P.A.:

(*a*) "Specifications for Construction of a Standard Building" (3A3*d*31). Report of Committee on Fire-resistive Construction.

By the National Terra Cotta Society:

(*b*) "Architectural Terra Cotta, Standard Construction (3C4*a*).

By the National Brick Manufacturers' Association (3C6*b*.):

(*c*) The following are the sizes officially adopted as Standard: Common brick, 8¼ x 4 x 2¼ inches; paving brick, 8½ x 4 x 2½ inches; pressed brick, 8⅜ x 4 x 2⅜ inches; Roman brick, 12 x 4 x 1½ inches; Norman brick, 12 x 4 x 2⅜ inches.
It is to be noted that, due to the different kinds of clay used and varying degrees of heat by reason of location of bricks in the kiln, these sizes will naturally vary slightly, though presumably not enough to affect any layout which allows for ample jointing.

By the A.S.T.M. (1A4*c*):

(*d*) "Standard Specifications for Paving Brick," Serial Designation C7-15.

By Navy Department, U. S. A. (3A1*a*2)

(*e*) "Brick and Cement, Fire," Navy Dept. Specification, 50B6, May 1, 1916.
(*f*) "Bricks and Cements, Converter and Open Hearth," Ditto, 50B5, May 1, 1916.

By the National Paving Brick Manufacturers' Association:

(*g*) "Specifications for the Construction of Vitrified Brick Street Pavements and Country Roads" (3C9*b*).

By the Refractories Manufacturers' Association:

(*h*) "Standard 9 inch and 9 inch Series Brick Shapes" (3C3*a*.)
(*j*) Tables showing the number of bricks required to turn various circles (3C3*b*).

3D4 *Progress and Current Activities*

(*a*) *Strength of Brick Piers.* The investigation of the strength of large brick piers, which has been conducted during the previous two years, has been confined to brick selected from the important geographical districts east of the Mississippi. The bricks have been classified individually according to the tentative standards recommended by the American Society for Testing Materials. The experimental work of this investigation has been completed for piers constructed from the product of the Chicago and Pittsburgh districts. The work will be continued for the remaining districts during the coming year. This research is being carried on in coöperation with the National Brick Manufacturers' Association.—From Report Bureau of Standards, 1916, 1A2*a*.

(*b*) *Strength of Hollow Building Tile.* During previous years, numerous tests of building tiles from different geographical districts have been made, and the data is being studied and coördinated for publication. In addition, a number of tile walls have been tested under compression and transverse forces to determine the physical laws and most efficient types of construction, appropriate mortars, best type of bond, and the relation of strength to hardness of burn. This investigation will be continued during the coming year. It is hoped to furnish adequate data for outlining standard methods of testing tile and preparing consistent specifications for the use of manufacturers and engineers.—From Report Bureau of Standards, 1916, 1A2*a*.

(*c*) *Effect of Pressure upon Fire-Bricks at Furnace Temperatures.* In coöperation with the American Gas Institute and the American Refractories Manufacturers' Association, tests have been carried on for the purpose of correlating the effect of varying pressures upon clay fire-bricks at the temperatures 1,300 degrees and 1,350 degrees C. The results obtained have been made the basis of tentative specifications to be adopted by the Gas Institute.—From Report Bureau of Standards, 1916, 1A2*a*.

3D5 *Metal Lath, Gypsum, Asbestos and Wired Glass.*

Further reference to these will be made under later serial numbers.

(*a*) See "Mineral Resources of the U. S.," Part Non-Metals (2A1, 2), chapters on Gypsum and on Asbestos.
(*b*) The U. S. Bureau of Mines (2A3) expects to issue within the next few months a report on the manufacture of gypsum.
(*c*) For references to metal lath in this section see 3C10 and 3E3*g*. Also under Fire Tests 3E2 and for further information and detailed drawings see Industrial Section, pp. XIV–XV, Associated Metal Lath Manufacturers.
For detailed drawing of Vaulting with metal lath, see Industrial Section, page XXII, Northwestern Expanded Metal Co.
(*d*) For information on wired glass in this issue see Industrial Section, p. VIII, Mississippi Wired Glass Co. The application of wired glass will be referred to under Building Construction in April, Serial No. 4, and is included in many of the Reports under 3E1.
(*e*) Gypsum for floors and partitions will be referred to in Section 2, April.
(*f*) For information on the use of asbestos as a roofing material, see Industrial Section, p. XXXVIII, H. W. Johns-Manville Co.

3E1 *Reports on Buildings Under Fire, and*

3E2 *Reports on Fire Tests of Materials*

(See, also, Buildings and Structures in General, Serial No. 4.)

(*a*) U. S. Geological Survey (2A1*g*), Bulletin 324, 163 pp. text, 55 plates and two maps. (50 cts.) "The Effects of the San Francisco Earthquake and Fire on Various Structures and Structural Materials," 1907, Richard L. Humphrey. Pp. 14–61. Also contains "The Effects of the San Francisco Earthquake and Fire on Buildings, Engineering Structures and Structural Materials," J. S. Sewell. Pp. 62–130. Also, "The Earthquake and Fire and Their Effects on Structural Steel and Steel-frame Buildings," Frank Soulé. Pp. 131–158.
(*b*) Same Bulletin gives over forty references for other articles particularly with respect to the earthquake and effects.
(*c*) Survey, Bulletin 370 (2A1*g*), 99 pp., illustrated. (30 cts.) "The Fire Resistive Properties of Various Building Materials," Richard L. Humphrey. Contains results of tests of thirty panels of various building materials made by the U. S. Geological Survey with a furnace in the Underwriters' Laboratories, Chicago.
(*d*) See the twelve "Special Fire Reports" listed under publications available in the files of the National Fire Protection Association 3A3*f* 1–12.
(*e*) See "Index" to all publications of the N. F. P. A. (3A3*h*) including *The Quarterly* which contains in each issue matter of interest to architects and other constructionists. Seventeen references to Conflagration alone. Fifteen references to Records of Fires in Fire-resistive Buildings.
(*f*) "Concrete Storehouse of Naumkeag Steam Cotton Company Which Successfully withstood the Salem Conflagration," Inspection Dept. Associated Factory Mutual Fire Insurance Companies 3A7*a*40.
(*g*) See "Burning of the Edison Phonograph Works," and other publications of the Inspection Department, Associated Factory Mutual Fire Insurance Companies. 3A7*a* and *b*.
(*h*) "Report of the Committee on Edison Fire." Cass Gilbert, Chairman. Published by American Concrete Institute (1E4*f*), 1915.
(*j*) "Report on a Fire in Reinforced Concrete Warehouse at Far Rockaway, N. Y., November 10, 1916," Committee on Construction of Buildings, National Board of Fire Underwriters (3A4). Upon application to Ira H. Woolson, Consulting Engineer to the Committee.
(*k*) See "Fire-Prevention and Fire-Protection," Joseph Kendall Freitag.
(1) "Experimental Testing Stations," Chapter V.
(2) "Fires in Fire-resisting Buildings, and Conflagrations," Chapter VI.
(*l*) See "The Fireproofing of Steel Buildings," Joseph Kendall Freitag.
(1) "Fires in Fireproof Buildings," Chapter III.
(2) "Tests of Fireproof Floors," Chapter IV.
(*m*) See "Fire Tests of Floors in the United States" (under "Horizontal and Sloping Features," Serial No. 4D).
(*n*) See "Tests of Fire-resistive Construction," Proceedings N. F. P. A. (3A4*h*), Vol. 18, p. 217.
(*o*) For reports of tests on metal-lath construction made at Cleveland, and at New York, see "Metal Lath Hand Book" 3C10*a*, and Industrial Section, p. XIV.
(*p*) See 3E3*g* for progress report on fire tests.
(*q*) See Report of Committee of American Society of Civil Engineers on San Francisco Fire (to which reference is made in Industrial Section on p. XV).

3E3 *The U. S. Bureau of Standards and Fire Tests*

(*a*) With an annual life and property loss conservatively estimated as some thousands of lives and exceeding $300,000,000, a per capita loss nearly ten times as great as that found in the leading European countries, and this in spite of the most expensive and efficient fire-fighting equipment in the world, it would be a neglect of duty not to direct attention to the pressing needs for greater activities on the part of the National Government in the nation-wide movements to diminish this unpardonable waste of our national resources. The Natio nal Fire Protection Association, through its 125 or more allied engineering, industrial, commercial, municipal, and state associations, has done, and is now doing, splendid and unselfish work in this great public movement. It is the moral duty of the National Government to lend its fullest coöperation and assistance to this great work.

The field of activity in which the Bureau can be of the greatest service to the many organizations now enlisted in the fight against our enormous fire-waste is in the determination of fundamental engineering data to serve as a basis for the revision and reconstruction of state and municipal building codes. The important investigations now under way that are expected to yield data of direct practical application are the fire-tests of structural steel building columns, fireproofed in different ways, and of reinforced concrete columns of different aggregates and types of construction.

It is imperative that tests of floors, roofs, fire-resisting doors, shutters, and windows, must be included in this program, and must be carried along with the column and partition tests, if we are to be in a position at the end of a few years to lay before American engineers a comprehensive set of data to enable them to redraft our present unsatisfactory codes in the light of the best modern engineering experience.—From 1916 Report of Director Stratton to the Secretary of Commerce.

Fire-Tests of Building Columns

(*b*) Many millions of dollars are annually spent on the construction of buildings the integrity of which, in the event of fire, is dependent on the behavior of the steel columns supporting the structures. Very little engineering data are available which would permit of any certain conclusions as to the thickness and kind of fireproof covering required to render these columns safe under various conditions of fire-hazard. The requirements of city building codes on these questions are so different that it is evident that some codes are either requiring an unnecessarily thick fireproof covering, with undue increase in construction costs, or else other codes are requiring too thin coverings, with undue increase in danger to the stability of the structure under the existing fire-hazards.

The fire-tests on building columns are being carried out jointly by the Underwriters' Laboratories of Chicago, the Mutual Laboratories of Boston, and the Bureau of Standards. The first series of tests was originally planned to include about seventy structural steel columns and about six reinforced concrete columns. During the past year, while the steel columns were being fabricated and assembled and the various aggregates and covering materials were being brought together from different parts of the country, a detailed syllabus of the proposed tests was prepared and sent to several hundred engineers and architects interested in fireproof building construction as well as to various technical societies with a request for criticisms and suggested modifications of the proposed program of tests. At a conference of the several laboratories jointly conducting these tests, held at Pittsburgh in March, 1916, the many valuable suggestions and criticisms called forth by the publication of the syllabus were carefully considered, and the program of tests was finally revised. While the original program was modified in many minor but important details in accordance with the suggestions that had been received, the most important modification consisted in the addition of about twenty fireproofed structural steel columns which will be subjected to the combined action of fire and water, the water being applied after a one hour's exposure to fire.

The specially designed furnace, which is being erected by the engineers of the Underwriters' Laboratories especially for these tests, together with the 200-ton hydraulic jack for applying loads of fifty tons to the columns while exposed to fire, the trolley cranes for moving the walls of the furnace to permit of the application of water, have been installed, with the exception of the burner for heating the furnace by means of natural gas. The steel columns, representative of the types commonly employed in building construction, are now being covered with concrete, plaster on metal lath, clay tile, and gypsum tile coverings. Thermocouples are being built into the column coverings to enable the temperature changes of the structural steel to be followed throughout the course of the fire-test. Some of the important parts of the specially designed deformeter for measuring the amount of deformation produced in the column during the test have been completed. It is confidently believed that the results of these tests will be a most important contribution to modern structural engineering.—From Report, Bureau of Standards, 1916, 1A2*a*.

[Note.—There has just been received a document issued jointly by the Bureau of Standards, the Associated Factory Mutuals and the National Board of Fire Underwriters with diagrams and descriptive details of the above tests. This is entitled "Prospectus of Fire Tests of Building Columns."]

Thermal Efficiencies of Column Coverings.

(*c*) Tests have been under way during the past two years at the Pittsburgh branch laboratories of the Bureau on the rate of temperature rise within cylindrical specimens of the various materials used for fireproofing building columns. A special gas heating furnace was built for this work, and a large number of cylinders of different materials were tested with thermocouples mounted axially in the cylinder and with their junctions at different distances from the surface. Cylinders similar to the cylinder under test were placed at each end of the latter, in contact with its end faces, to minimize the disturbing effects of heat losses from the ends. This investigation is practically completed with the exception of a few tests to round out the series. It will be prepared for publication as soon as time will permit.

(*d*) Some tests on the compressive strength of steel at high temperatures, briefly reported in the last annual report, showed that at 600 degrees C. the compressive strength had decreased to 60 per cent, and in the next 50 degrees C. (i. e. at 650 degrees C.) to about 30 per cent of its value when cold. Such data are of fundamental importance in their bearing on the behavior of structural steel when exposed to fire conditions.—From Report, Bureau of Standards, 1916, 1A2*a*.

Panel-Testing Furnace.

(*e*) The panel-testing equipment was installed during the year. The plant has been operated several times to test its performance and has been found admirably suited to the work for which it has been designed. The equipment that is now available for this work is probably the

most complete that has ever been built, and its efficient utilization should include as a minimum thirty panel tests a year.

Steps have been taken to secure the coöperation of prominent engineers, representatives of engineering and technical societies, and of manufacturing associations, in the formulation of a comprehensive program of tests of the fire-resisting properties of structural materials.—From Report, Bureau of Standards, 1916.

(*f*) For tests at the Bureau on Fire Brick see 3D4*c*.

(*g*) As we go to press there has been received a copy of a new publication of the Bureau of Standards—Technologic Paper No. 70—entitled "Durability of Stucco and Plaster Construction."

This paper presents a report of progress in an investigation of stucco and plaster undertaken by the Bureau of Standards five years ago in coöperation with the Associated Metal Lath Manufacturers. In 1915 a test building, 200 feet long, was erected, having fifty-six panels representing the common types of stucco construction including a variety of mixtures on metal lath, wood lath, hollow tile, brick, concrete, block, plaster board, gypsum block and concrete bases. Examination of the panels six months after completion showed that a number were in poor condition. About forty were rated as satisfactory, the remainder being in various stages of deterioration. It is evident that the smooth type of finish known as the sand-float finish is well adapted to bringing out the small defects, such as cracks, blotches, uneven texture, etc. This paper contains suggestive information, but definite recommendations are deferred until further service-test results are known. Those interested may obtain a copy by addressing a request to the Bureau of Standards.

For the Underwriters' Laboratories and Fire and Other Tests, see Serial No. 4, April, with report of the Institute's Special Committee.

3A3 List of Publications Available in the Files of the National Fire Protection Association

See also, 3A3, on page 133, of which this is a classified extension, correct to March 1, 1917.

Membership in the Association is open to any society, corporation, firm or individual interested in the protection of life or property against loss by fire. Annual dues, individuals, $6.

All the valuable engineering and popular literature issued by the Association is sent, as issued, to every member.

The Association is always glad to send samples of its publications to prospective members.

Copies of the Standards, model state laws and city ordinances, committee reports, and miscellaneous publications given below, will be mailed on application to

FRANKLIN H. WENTWORTH, *Secretary*,
87 Milk Street, Boston, Mass.

NOTE.—Where no price is quoted the publications are free. Prices given are for single copies. Discounts for publications in quantities can usually be given.

(*a*) *Standard Regulations for Fire-Protection and the Safeguarding of Hazards:*

1. Acetylene Gas Machines, Oxy-Acetylene Heating and Welding Apparatus and Storage of Calcium Carbide.
2. Blower Systems for Heating and Ventilating, Stock and Refuse Conveying.
3. Dip Tanks, Construction and Installation.
4. Electric Wiring and Apparatus (National Electrical Code).
5. Electrical Fittings, List of Approved.
6. Fire Brigades, Private.
7. Fire Pumps, Steam.
8. Fire Pumps, Rotary and Centrifugal and Electrical Driving of Fire Pumps.
9. Fuel Oil, Storage and Use, and Construction and Installation of Oil-burning Equipments.
10. Gas Shut-Off Valves.
11. Hazardous Liquids, Containers for Storing and Handling.
12. Hose Couplings and Hydrant Fittings, for Public Fire Service.
13. Hose-Houses for Mill-yards, Construction and Equipment.
14. Internal Combustion Engines (gas, gasolene, kerosene, fuel-oil) and Coal-gas Producers (pressure and suction systems).
15. Lightning, Suggestions for Protection against.
16. Municipal Fire-Alarm Systems.
17. Nitro-Cellulose Motion-Picture Films (storage and handling).
18. Protection of Openings in Walls and Partitions.
19. Signaling Systems Used for the Transmission of Signals Affecting the Fire-hazard.
20. Skylights.
21. Sprinkler Equipments, Automatic and Open Systems.
22. Steam Pump Governors and Auxiliary Pumps.
23. Tanks (gravity and pressure), Concrete Reservoirs and Valve-pits
24. Vaults.

NOTE.—The above Regulations have also been adopted by and are the official standards of the National Board of Fire Underwriters.

(*b*) *Suggested State Laws for regulating fire-hazards:*

1. State Fire Marshal Law (of the Fire Marshals' Association of North America).
2. Explosives, To regulate the manufacture, storage, sale and use of
3. Explosives, To regulate the transportation and carriage of.
4. Matches, To regulate the manufacture, storage, sale and distribution of.

(*c*) *Suggested Municipal Ordinances for regulating fire-hazards:*

1. Chimneys and Flues, To provide for the safe construction of chimneys, flues and fireplaces.
2. Ordinances for Small Municipalities (including Building Code).
3. Fireworks, To prohibit the discharge or firing of fireworks and other pyrotechnic display and to limit their storage.
4. Explosives, To regulate the manufacture, keeping, storage, sale, use and transportation of.
5. Inflammable Liquids and the Products Thereof, To regulate the use, handling, storage and sale of.
6. Inspection of Premises by the Fire Department (with sample of Inspection Blank).
7. Matches, To regulate the manufacture, storage, sale and distribution of.
8. Motion-Picture Machines, To regulate the installation, operation and maintenance of.
9. Theatres, To regulate the construction and equipment of.

NOTE.—The above Model Laws and Ordinances have also been officially adopted by the National Board of Fire Underwriters.

(*d*) *Educational:*

1. Field Practice. Inspection Manual designed for the use of property owners, fire departments and inspection offices in safeguarding life and property against fire. This handbook is printed on bond paper and is substantially bound in real leather. The dimensions (4½ x 6½ inches) make it a most convenient size for the coat-pocket. This information represents the latest thought of the leading American fire-prevention engineers, and is not elsewhere accessible. Price, postpaid, single copies, $1.50.
2. Story of the National Fire Protection Association.
3. Syllabus for Public Instruction in Fire-Prevention.
4. A Campaign to Prevent Fire, address of Franklin H. Wentworth. Published by the Canadian Manufacturers' Association.
5. Fire-Prevention, Its Object and Possible Results, C. Heller.

5a Fire-Prevention Through Adequate Power and Common Sense, Clement J. Driscoll.

5b. Topics for Fire-Prevention Meetings.

6. Fire Waste Overtaking Insurance Capital, Committee on Publicity and Education.
7. Fire Losses in U. S. $30,000 an Hour and What Individuals and Communities Can Do to Reduce Them, Committee on Publicity and Education.
8. Will You be a Fire Warden and Life Saver? (1) In the Home. (2) In the Store and Factory. Committee on Publicity and Education.

8a. Safeguarding School Children from Fire. Price, 15 cents.

9. Fire-Prevention Work in Small Cities and Towns, Committee Report.
10. Debarment of City Conflagrations, Albert Blauvelt.

11. Inspection of Buildings and Contents by Uniformed Members of Fire Departments, Fire-Chief H. C. Bunker, Cincinnati, Ohio.
11a. Building Inspection by Firemen: Suggestions for systematic procedure, James Crapo, Battalion Chief, Chicago Fire Department.
12. Individual Liability Laws for Fires Due to Carelessness or Neglect.
13. Public Fire Departments, George W. Booth. Price, 5 cents.
13a. Volunteer Fire Departments: Organization and Conduct, Harry W. Bringhurst.
14. Architects: General Information Regarding Fire Insurance Requirements.
15. Fire Exits, Outside Stairs for: Recommendations for their Construction and Installation. Price, 5 cents.
16. Exit Drills for Factories, Schools, Department Stores and Theatres: Suggestions for Their Organization and Execution. Price, 5 cents.
17. The Wooden Apartment House, the Fight Against it in Brookline, Mass., Gorham Dana.
17a. Dwelling Houses: Suggestions for Their Construction and Protection, National Board of Fire Underwriters. Price, 10 cents.
17b. Shingle Roofs as Conflagration Spreaders, National Board of Fire Underwriters. Price, 5 cents.
18. Fire Stories for Children, Committee on Publicity and Education.
19. Fire-Prevention Day Programs for Public Parade, School Exercises, Evening Assembly. Price, 10 cents.
20. Fire-Hazards Due to Trolley Circuits, Samuel S. Wyer.
21. Fire-Hazards on the Farm.
22. Automobile Fire Apparatus, Committee Report, 1913.
22a. Automobile Combination Pumping Engine and Hose-Wagon.
22b. { Gasolene Combination Chemical Engine and Hose-Wagon. { Gasolene Combination Service Ladder-Truck.
23. High-Pressure Systems for Fire Service, Committee Report.
24. Fire-Service Connections, Protection of, H. O. Lacount.
25. Fire-Hose: The need for a better quality of Public Department Fire Hose, Committee Report.
26. Fire-Pumps: Notes and Suggestions on Same, Associated Factory Mutual Fire Insurance Companies. Booklet, 53 pages, illustrated. Price, 15 cents.
27. National Standard Hose Couplings and Hydrant Fittings for Public Fire Service: Progress in their Adoption by Cities of United States, F. M. Griswold.
28. Elevated Tanks: Their Improved Design and Construction, W. O. Teague. 23 pages. Price, 5 cents.
29. Water Barrels and Pails for Fire Protection, W. R. Ruegnitz. Price, 5 cents.
30. Freezing Preventives for Water Pails and Chemical Extinguishers, J. Albert Robinson. Price, 5 cents.
31. Fire-resistive Construction, Specifications for, Committee Report.
31a. Office Building, Grade A, Specifications for Construction of.
32. Factories and Their Fire Protection, Franklin H. Wentworth. Price, 5 cents.
32a. Mill Construction Buildings, C. E. Paul. Price, 5 cents.
32b. Structural Defects, Suggestions for Their Elimination and Protection. Price, 5 cents.
33. The Automatic Control of Fire, Fitzhugh Taylor. Price, 5 cents.
34. Explosions, Dust and Smoke, P. D. C. Steward.
35. Smoke and Water Damage, F. E. Roberts.
35a. Sprinkler Leakage, Albert Blauvelt. Price, 5 cents.
36. Uses of Wood in Building Construction, Committee Report. Data of tests on inflammability of untreated wood and of wood treated with fire-retarding compounds. 55 pages, illustrated. Price, 25 cents.
37. The Permanent Fireproofing of Cotton Goods, William Henry Perkins. Price, 5 cents.
38. Cordage Fibers: Their Physical Properties, Hazards and Characteristics, T. E. Sears. Price, 5 cents.
39. Color, Paint and Varnish Factories: Processes and Hazards, F. E. Roberts. 31 pages. Price, 5 cents.
40. Lumber and Lumber Drying, with Notes on Steam Jets, Committee Report. Price, 5 cents.
41. Tanneries: Suggestions for Their Improvement as Fire-Risks, Committee Report. Price, 5 cents.
42. Shoe Factories: Suggestions for Their Improvement as Fire-Risks, Committee Report. Price, 5 cents.
43. The Cooperage Industry, J. Albert Robinson.
44. Cold-Storage Warehouses: Suggestions for Their Improvement as Fire-Risks, Committee Report. Price, 5 cents.
44a. Refrigerating Machinery Explosions and Fires. Price, 5 cents.
45. Inspected Mechanical Appliances. Published by Underwriters' Laboratories, Inc. List includes inspected devices and materials, fire appliances, gas, oil, mechanical and chemical appliances. (Revised semi-annually—January and July.)

(e) Special Bulletins:

1. Dwelling-House Hazards: How to Prevent Fires in the Home. 4 pages, illustrated. Price, $1 per 100, $7.50 per 1,000.
2. The Evil Wooden Shingle. 4 pages, illustrated. Prices, $1 per 100, $7.50 per 1,000.
3. Chimneys, Flues and Fireplaces: How to Build Them. 4 pages, illustrated. Price, $1 per 100, $7.50 per 1,000.
4. School-Houses, Fire Protection of. 16 pages, illustrated. Price, 10 cents per copy. Special discount for quantities.
5. Holiday Bulletins. Illustrated four-page bulletins are prepared for circulation preceding Independence Day and Christmas Day, warning against the hazards of fireworks and inflammable decorations, temporary electric wiring, etc. Price, $1 per 100, $7.50 per 1,000.
6. Frozen Water-Pipes: A Winter Fire-Hazard. Price, 60 cents per 100, $5 per 1,000.
7. Electric Pressing-Iron Fire-Hazard. Price, $1 per 100, $7.50 per 1,000.
8. Storage of Bituminous or Soft Coal. Price, 60 cents per 100, $5 per 1,000.

(f) Special Fire Reports:

1. The Baltimore Conflagration, February 7, 8, 1904. 130 pages, illustrated. Committee Report. Price, 25 cents.
2. Parker Building Fire, July 10, 1908. 56 pages, illustrated. Report by New York Board of Fire Underwriters. Price, 15 cents.
3. The Equitable Building Fire, January 9, 1912. 50 pages, illustrated. Report by New York Board of Fire Underwriters. Price, 15 cents.
4. Binghamton Clothing Company Fire, July 22, 1913. 12 pages, illustrated. Committee Report. Price, 10 cents.
5. Melvin Apartment House Fire, Boston, April 14, 1914. 4 pages, illustrated. Price, 1 cent.
6. Cleveland Lumber and Public Property Fire, May 25, 1914. 8 pages, illustrated. Report by Cleveland Inspection Bureau. Price, 5 cents.
7. *Salem, Mass., Conflagration, June 25, 26, 1914. 16 pages, illustrated, maps. Price, 10 cents.
8. Edison Phonograph Works, West Orange, N. J., December 9, 1914. 60 pages, illustrated. Price, 25 cents.
9. Diamond Candy Company Factory Fire Holocaust, Brooklyn, N. Y., November 6, 1915. 16 pages, illustrated. Price, 5 cents.
10. Paris, Texas, Conflagration, March 21, 1916. 8 pages, illustrated, map. Price, 5 cents.
11. Nashville, Tennessee, Conflagration, March 22, 1916. 8 pages, illustrated, map. Price, 10 cents.
12. Augusta, Georgia, Conflagration, March 22, 1916. 16 pages, illustrated, map. Price, 10 cents.

*Out of print.

(g) No Smoking:

Signs, black ink on red card. Price, 5 cents. Discount for quantities.

(h) Publications for Members Only:

News Letter. A monthly bulletin of special information on current items of interest to those charged with the responsibility of safeguarding life and property from fire.
Proceedings of Annual Meeting. Containing stenographic report of transactions of the Association and the discussions incident to the adoption of its standards. Extra copies, $1.
Quarterly Magazine of the Association. A chronicle of the Association's activities, with valuable contributions of articles on fire-prevention and -protection, and special hazards, and compilations of fire statistics on various classes of property. Extra copies, 50 cents.
Year-book and directory. Complete list of members with addresses.
Index to all subjects covered in the printed records. (Proceedings, Quarterly, etc.)
Special reports, bulletins, etc., issued during the year.

[NOTE.—Each member receives one copy of all the Association's publications current during the year of his membership. Membership year begins with date of election.]

3A4 List of Publications Available in the Files of the National Board of Fire Underwriters

(See, also, 3A4 on page 134, of which this is a classified extension, correct to March 1, 1917.)

Copies may be obtained, without charge (except *d*3, upon which a charge of 10 cents is made to cover postage), by qualified inquirers, by addressing The National Board of Fire Underwriters, 76 William St., New York City.

(*a*) Suggested Regulations of the National Board of Fire Underwriters for the installation of devices. Recommended by the National Fire Protection Association.

The list embracing these is the same as the (*a*) list of the N. F. P. A. on page 144, with the addition of the following:

25. Gasolene Vapor Gas Lighting Machines.
26. Railway Car Storage.
27. Electrical Appliances, List of Approved.
28. Underwriters' Laboratories.

The latter two are the same publications as mentioned by the Underwriters' Laboratories.

(*b*) Suggested State Laws issued by the N. B. F. U. For use by State Officials in framing regulations on matters pertaining to Fire Prevention and Building Construction.

These are the same as the four mentioned in the (*b*) list of the N. F. P. A.

(*c*) Suggested Separate City Ordinances issued by the N. B. F. U. for use by City Officials in framing regulations on matters pertaining to Fire Prevention and Building Construction.

*1. To Regulate the Installation, Operation and Maintenance of Motion Picture Machines, and the Construction and Arrangement of Picture Booths and Audience-Rooms.
*2. To Regulate the Manufacture, Storage, Sale and Distribution of Matches.
*3. To Regulate the Manufacture, Keeping, Storage, Sale, Use and Transportation of Explosives, in Cities Whose Population Exceeds 100,000 Inhabitants.
4. To Regulate the Manufacture, Keeping, Storage, Sale, Use and Transportation of Explosives, in Villages or in Cities Whose Population Does Not Exceed 100,000 Inhabitants.
5. To Govern the Construction and Operation of Laundries.
*6. To Regulate the Construction and Equipment of Theatres.
*7. To Regulate the Use, Handling, Storage and Sale of Inflammable Liquids and the Products Thereof.
8. Shingle Roofs as Conflagration Spreaders: An appeal to the Civil Authorities and Civic and Commercial Bodies. Contains an Ordinance for Fire-resistive Roof Coverings.

*These are evidently the same as 4, 5, 7, 8 and 9 in the (*c*) list of the N. F. P. A. 8 is listed D17*b* in N. F. P. A.

(*d*) Suggested Codes issued by the N. B. F. U. For use by State and City Officials in framing regulations on matters pertaining to Fire Prevention and Building Construction.

1. A Recommended Building Code, suitable for a city of any size and providing for fire limits, and regulations governing the construction, alteration, equipment, repair or removal of buildings or structures.
2. A Suggested Building Ordinance for Small Towns and Villages: Providing for fire limits and the construction and equipment of ordinary non-fireproof buildings.
3. Dwelling Houses: A Code of Suggestions for the Construction and Fire-Protection. Intended especially as an aid in in construction of isolated homes outside the control of building ordinances, and is addressed directly to the owners of dwellings, and to carpenters and builders who erect them.
4. A Code of abbreviated Ordinances for Small Municipalities, and containing ordinances providing for Fire Limits and the the Construction and Equipment of Buildings; the regulation of Garages; the regulation of Motion Picture Machines and Premises where operated; the Inspection of Premises by the Fire Department; also a blank form for use by the inspector; the Cleanliness of Streets, Alleys and Premises; the Burning of Refuse; the Storage of Explosives; Fire Escapes, and prohibiting the Discharge of Fireworks.

No. 3. will be found under D17*a* N. F. P. A. list.

3A7 List of Publications Available in the Files of the Inspection Department, Associated Factory Mutual Fire Insurance Companies

(See also 3A7 on page 136, of which this is a classified extension, correct to March 1, 1917.)

Single copies of these publications may be obtained on request without charge, except Nos. 9 and 45, and (*c*), which will be furnished at a price of 25 cents per copy. Where additional copies of any of the pamphlets are desired, a charge sufficient to cover the cost of printing will be made.

(*a*) *Pamphlets:*

1. "Anchorage of Roofs."
2. "Approved Electrical Fittings."
3. "Approved Fire Protection Appliances."
4. "Beltway Fires."
5. "Carbon Tetrachloride as a Cleaning and Solvent Agent."
6. "Centrifugal Fire Pumps—Specifications, and Rules for Electrical Driving." (Included in No. 20.)
7. "Cotton Conveying Systems from Bale to Opener Room."
8. "Dry-Pipe Systems of Automatic Sprinklers—Rules."
9. "Electric Light and Power Equipment—Rules."
10. "Fire Hose, Play Pipes and Hose Houses—Rules."
11. "Fire Pump Protection for City Risks (Paterson Fire)."
12. "Fires in Cotton Mills."
13. "Fuel Oil Installations for Furnaces and Engines."
14. "Gravity Tanks and Towers—Specifications."
15. "Installations for Handling Gasoline and Similar Oils."
16. "Installing Sprinkler Equipments—Rules."
17. "Laying Cast Iron Water Pipes in Factory Yards—Rules."
18. "Notes and Suggestions on Fire Pumps."
19. "Prevention of Large Loss in a Mutual Mill."
20. "Rotary and Centrifugal Fire Pumps—Specifications and Rules for Electrical Driving."
21. "Sawdust as an Extinguisher of Fires in Moderate Sized Tanks of Lacquer, Paint, etc."
22. "Sprinkler Protection in Picker Trunks, Dryers, etc."
23. "Steam Pump Governors and Auxiliary Pumps—Specifications."
24. "Underwriter Steam Fire Pumps—Specifications."
25. "Valves, Indicator Posts and Hydrants—Specifications."
26. "Water-tight Floors of Mill Construction."
40. "Concrete Storehouse."
41. "Fire Doors."
42. "Humidity for Preventing Fires in Rubber Factories."
43. "Mill Watchman."
44. "Edison Phonograph Works, Burning of."
45. "Dry Rot in Factory Timbers."
46. "Salem Conflagration."
47. "Fire Hazards in Charcoal."
48. "Mill Fire Brigades."
49. "Fire Protection of Pyroxylin Plastics (Celluloid)."

(*b*) *Leaflets:*

27. "Directions for Use of Red Tags on Closed Valves."
28. "Fire Brigades Inside Mill."
29. "Mill Fire Brigade Data and Sheets."
30. "Rotary Fire Pumps—Directions for Starting."
31. "Steam Fire Pumps—Directions for Starting."
32. "Weekly Inspection of Fire Protective Apparatus. A Suggestive Form of Blank."
33. "When Putting in Fire Protection—Things to be Considered."
34. "Failure of Public Water Supplies."
35. "Gage Connection for Use in Testing Main Controlling Valves."
36. "Longleaf Pine Factory Timber."

(*c*) *Report No. 5— Mill Construction:*

The work of the Insurance Engineering Experiment Station under direction of Boston Manufacturers Mutual Fire Insurance Company was taken over by The Associated Factory Mutual Fire Insurance Companies several years ago; notable among their publications was Report No. 5 on Slow Burning, or Mill Construction, which will be furnished at 25 cents a copy.

The Fire-Prevention and -Protection issue will be concluded in the April number, Serial No. 4, with the Section on General Building Construction.

Current Comments

Refer to 1E4:

We have recently received Bulletin No. 25, "Public Works of the Navy," under the cognizance of the Bureau of Yards and Docks and the Corps of Civil Engineers, U. S. Navy, for January, 1917; included in which is eleven pages giving bibliographies and abstracts of published articles on the "*Durability of Concrete in Sea Water.*"

Refer to 1E7b:

We are in receipt of a letter from Ernest McCullough, Chief Engineer Fireproof Construction Bureau of the Portland Cement Association, accompanying a copy of the "*Final Report of the Joint Committee on Concrete and Reinforced Concrete.*" He states that the Portland Cement Association purchased a few copies for distribution and as long as these copies are available they will be sent free upon request to architects, engineers and contractors.

General Index to Structural Service Department

Classified Index to Industrial Section

GENERAL INDEX TO STRUCTURAL SERVICE DEPARTMENT

Industrial Section Index

Standardization as Applied by the Solar Metal Products Company, Columbus, Ohio, in the Manufacture of Hollow Steel Doors and Interior Metal Trim

FOREWORD

High prices have, up to the last year or so, been inseparably associated with hollow steel. In the average case architects have found the cost to be prohibitive, excepting for the more costly buildings.

CAUSE OF FORMER HIGH PRICES

This has not been due to the cost of materials. An average 3 by 7 foot door contains less than one hundred pounds of furniture steel, fifteen or twenty pounds of butt and lock reinforcements, asbestos panel-boards, cork strips and finishing enamels. These are all the necessary raw materials and can be purchased of the best quality at a relatively small cost.

The waste has been due to an unstandardized product to meet an unstandardized demand. Formerly every job was made to order, involving special estimating, designing, special dies, machinery, superintendence, and excessive labor—all to meet requirements that might have been reduced or eliminated.

SEEKING THE SOLUTION

An analysis of several thousand jobs disclosed the fact that eighty per cent (80%) might have been standardized. If standard sizes had been available, architects would not have specified odd inch or fractional sizes. If standard styles had been established, few architects would have deprived their clients of the advantage of hollow steel or forced them to pay an excessive cost for the sake of having each opening made to order.

THE REMEDY

Standardization as practised by the Solar Metal Products Company makes it possible to manufacture and sell hollow steel at a moderate cost. Architects and owners can secure all the advantages of a permanent, fire-resisting installation with doors that cannot crack, shrink, swell, or stick, but which operate perfectly for the life of the building itself.

Standardization reduces production costs. Manufacturing in advance of orders keeps the factory busy at easy capacity, facilitating efficient routing, economical fabrication and prompt delivery. Even more than this—it means a perfected product.

Standardization does not mean limitation. The standards established by the Solar Metal Products Company cover a comprehensive series of sizes and styles ready for quick assembly and delivery at a low consistent cost.

APPLYING THE REMEDY

It was thought that architects would not accept standardized hollow steel. Hundreds of representative buildings throughout the country equipped with Solar standardized products demonstrate that the importance and benefits of the standardization of hollow steel are recognized. Standardization has enabled them to secure for their clients the highest character of installations at one half the former cost of hollow steel.

CONCLUSION

A demonstration of standardization as applied to hollow steel is contained in the Architects' Handbook, published by the Solar Metal Products Company, Columbus, Ohio. This is the first and only Handbook on hollow steel. Detail drawings of standards suitable to all classes of openings, are included, with elevations and sectional details and accurate specifications. Copies will be mailed upon application.

Fire Tests on Roof Coverings at Underwriters' Laboratories

UNDERWRITERS' LABORATORIES

W. H. MERRILL, PRESIDENT

Reports on Building Materials, Systems and Devices having a bearing upon Fire Hazards and Accident Prevention. Testing and Inspections at Factories, and Labeling of Products found to comply with Underwriters' Requirements.

Principal Office and Testing Station, 207 East Ohio Street, Chicago
New York Office and Testing Station, 135 William Street
Branch Offices throughout the United States and Canada, and in London, England

Underwriters' Laboratories is for service in protection against fire and accident. The institution is in this work with an equipment in plant and men which is extensive and highly specialized, and with experience covering a period of twenty years. Results obtained and service provided are believed to be the proper explanation of the Laboratories' growth. It is the aim of Underwriters' Laboratories, at all times, to be of every possible service to architects interested in safeguarding their clients and the public against fire and accident hazards. Inquiries concerning requirements on any product or relative to any other phase of the work should be addressed to the Chicago office.

MATERIALS LISTED AND LABELED

Underwriters' Laboratories' service is now operative in industries supplying the following of the materials and systems mentioned on other pages of this issue of the Journal:

Automatic and Open Sprinkler Equipment
Sprinkler Supervisory Devices
Fire Doors and Shutters
Frames for Fire Doors and Shutters
Hardware for Fire Doors and Shutters
Automatic Closers
Door Checks
Panic Bar Latch Release
Wired Glass
Glass
Frames and Sash for Wired Glass
Fire Window Frames
Hardware for Fire Window Frames
Fusible Links
Transom and Transom Operators
Wall Hangers
Floors
Partitions
Flue Fittings
Gypsum Blocks
Putty
Post Cap and Girder Supports
Heat Insulating Coverings
Paints, Fire Retardant
Ceilings
Asbestos Building Lumber
Pipe Covering
Plaster Boards
Fire Escapes
Safety Treads
Roof Coverings
Fire Alarm Systems
Watchmen's Time Recording Apparatus
Lightning Protection

It is impossible to go into sufficient details here relative to Underwriters' requirements on these products to be of any considerable value to architects. Certain manufacturers of the materials and systems enumerated above have been listed by Underwriters' Laboratories as being prepared to supply goods complying with the Underwriters' specifications, after proper laboratory investigation of samples of their wares, following their applications for this service. Suitable tests on run of goods and service value determinations are regularly maintained in every case for keeping the Laboratories informed concerning the quality of the products to be sold as standard. Except in a few instances where this is impracticable, Underwriters' labels are attached to goods found suitable as evidence of compliance with standard requirements. Underwriters' Laboratories' "List of Inspected Mechanical Appliances" is a useful guide to persons interested in products of these classes. It may be had free upon request.

Metal Lath and Plaster Construction

The Associated Metal Lath Manufacturers have published a Handbook designed to place concisely before architects, contractors and others interested, the best methods of using Metal Lath, giving illustrations and descriptions of various types of the material and observations by the best authorities on construction affected by its use.

In this Handbook are also given condensed records of various scientific experiments and reports of fire-tests made to determine fundamental data affecting the use of Metal Lath.

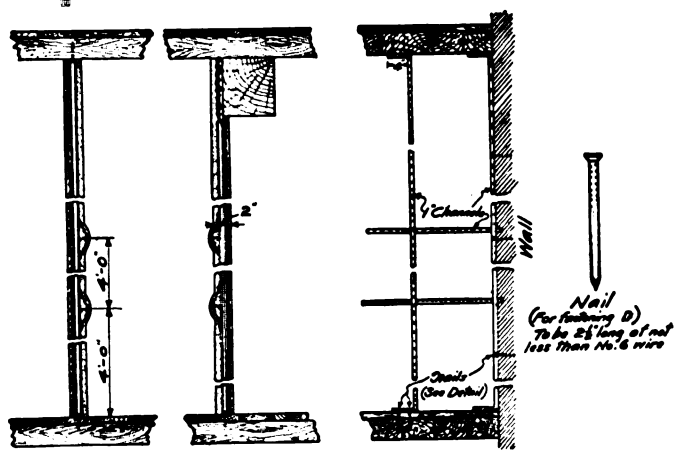
A copy of this book will be sent to all architects making request for it by any of the member companies or the Publicity Bureau of the Association. (See addresses below.)

Summary of Subjects Treated in the Metal Lath Handbook

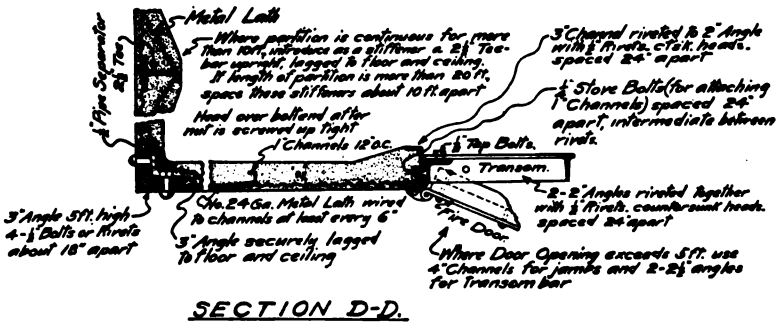
Report of Cleveland Fire-Test	**Beam and Girder Protection**	**Specifications Exterior Plastering (Stucco)**
Report of New York Fire-Test	**Column Protection**	**Overcoating**
Vertical Openings	**Suspended Ceilings**	**Fire-Stops**
Beltways	**Partitions**	**Cornice and Cove Furring**
Elevator Enclosures	**Specifications Interior Plastering**	**Protection of Mill Construction**

The Cleveland Fire-Test fully described with official pyrometer readings, curves, etc., in the Handbook was made in June, 1912, under the direction of Mr. Virgil D. Allen, Inspector of Buildings, who named as his committee to conduct the test, Mr. W. S. Lougee, City Architect; Prof. John H. Nelson, Case School of Applied Science; Mr. L. H. Miller, Bethlehem Steel Co. This showed Metal Lath and plaster construction an efficient fire-stop after exposure to fire reaching 1929° Fahr. for two hours, and the application of water at fire-pressure thirty seconds after the fire was withdrawn. The New York Test was made July 17, 1914, by Prof. James S. McGregor, under the regulations of the Committee on Fire-Hazards of the Industrial Board of the New York State Department of Labor and was equally convincing.

BELTWAYS. **See description on page XV**



SKETCH 1.
SECTIONS OF PARTITIONS SHOWING FRAMING.

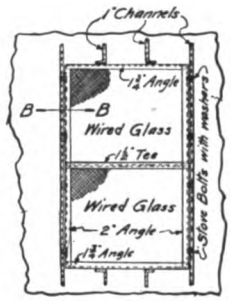


SECTION D-D.

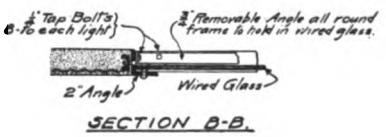
SECTION A-A.

STANDARD DETAILS FOR
FIRE RETARDANT BELT ENCLOSURES
PLASTER & METAL LATH ON STEEL FRAME PARTITION

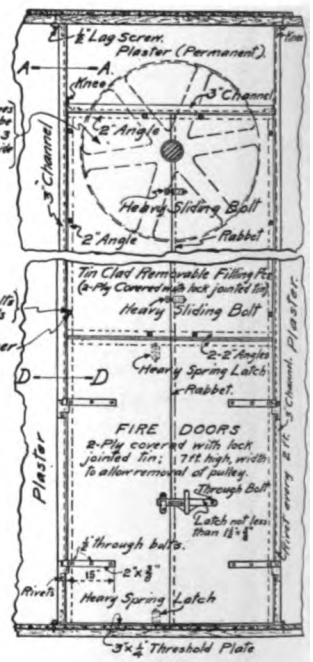
FIG. 28-A



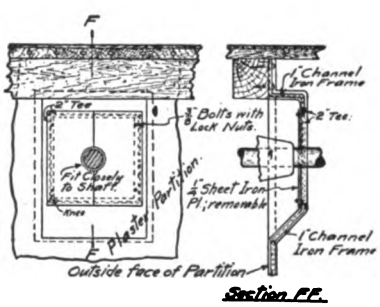
SKETCH 4.
Window (Abt. 3'x5')
(Framing)



SECTION B-B.



SKETCH 2.
(Door & Panel)



SKETCH 3.
Recess for Bearing.

SPECIFICATIONS FOR PLASTER

FIRST COAT:- 1 part Portland Cement, ½ part Hydrated Lime, 2½ parts sand. All parts by volume, a sack of Cement being counted as one cubic foot. One pound of long hair or fibre per bag of Cement.

SECOND COAT:- Same as first coat with hair omitted.

IF FINISH COAT:- Use 1 part Cement & 2½ parts sand.

FIG. 28-B

BELTWAYS, continued

The Associated Mutual Fire Insurance Companies (3A7), after much research, have had their Engineering Department design beltway protection with Metal Lath and plaster as shown by the cuts on page XIV. Their Inspection Department also recommends this construction for non-bearing enclosures of stairs and elevators, and for setting off special hazards such as waste and oil supplies.

ELEVATOR ENCLOSURES

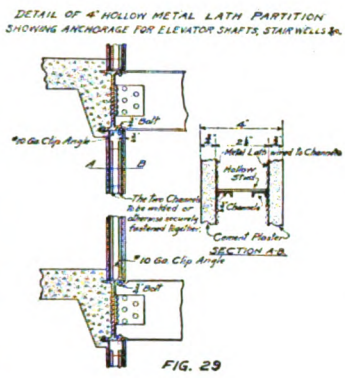
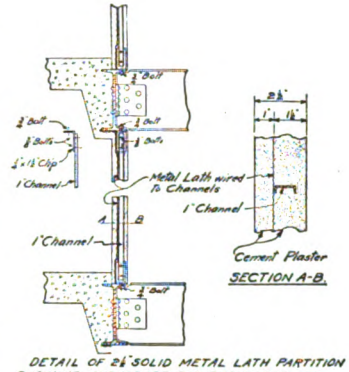
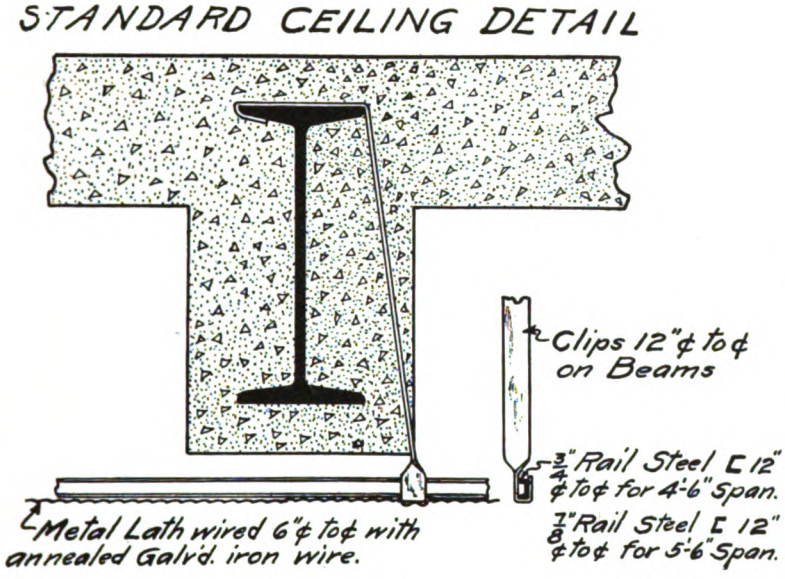


FIG. 29

The Bacon fire in Boston and the McCrory fire in Pittsburgh have emphasized the efficiency of Metal Lath and plaster for elevator enclosures; they have stood after fierce conflagration monuments of their own efficiency, where brick walls had crumbled and steel beams were twisted. The importance of protecting the elevator shafts is recognized; the figures show a form of anchorage that typifies the best in construction, one for hollow Metal Lath enclosure, the other for 2½ inch solid wall. The materials in this type of wall yield naturally with the contraction and expansion, and their integrity is so assured that a constant can be used in computations.



DETAIL OF 2½" SOLID METAL LATH PARTITION SHOWING ANCHORAGE FOR ENCLOSURE OF ELEVATOR SHAFTS, STAIR WELLS AND OTHER VERTICAL OPENINGS.
FIG. 29-1

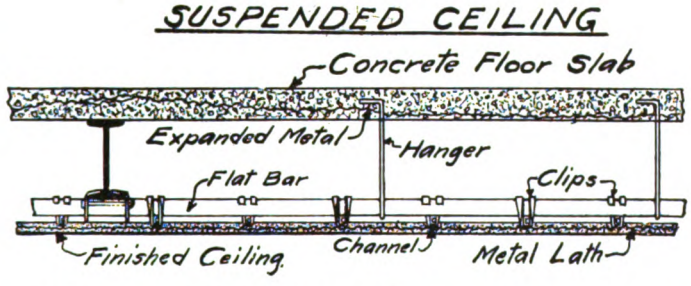


SUSPENDED CEILINGS

(From report of Committee of Members of American Society of Civil Engineers.)

"It may be stated that one of the most obvious lessons taught by the San Francisco fire is the protection to concrete floors and floor-beams by the suspended ceiling of lath and plaster. In all cases where used it afforded complete protection—where not used concrete was destroyed and beams distorted."

The Metal Lath Handbook has diagrams covering all classes of suspended ceiling work, the construction of which is approved in the best practice. The San Francisco report quoted is a typical instance of results in actual service—columns and beams are similarly protected.



Further information upon Metal Lath and plaster construction will appear in these pages in the Industrial Section of the Journal from time to time. The engineering departments of the member companies will also give data upon any special construction required. The Metal Lath Handbook can be obtained from any of the following member companies:

The American Rolling Mill Co., Middletown, Ohio
The Berger Manufacturing Co., Canton, Ohio
The Bostwick Steel Lath Co., Niles, Ohio
Consolidated Expanded Metal Companies, Braddock, Pa.
The General Fireproofing Co., Youngstown, Ohio
The Sykes Metal Lath and Roofing Co., Warren, Ohio
Milwaukee Corrugating Co., Milwaukee, Wisconsin
Northwestern Expanded Metal Co., Chicago, Ill.
Penn Metal Co., Boston, Mass.

OR THE

Associated Metal Lath Manufacturers Publicity Bureau
Swetland Building, Cleveland, Ohio

CROZER BUILDING, CHESTER, PA. MOWBRAY AND UFFINGER, ARCHITECTS

Speed, Economy, Beauty

The first story of this building occupied several months in its erection. The remaining stories, in which was used O. W. Ketcham's White MATT-GLAZE Architectural TERRA COTTA, were erected in four weeks' time.

O. W. KETCHAM

Master Builders' Exchange, 24 South Seventh Street, PHILADELPHIA, PA.

BALTIMORE WASHINGTON NEW YORK

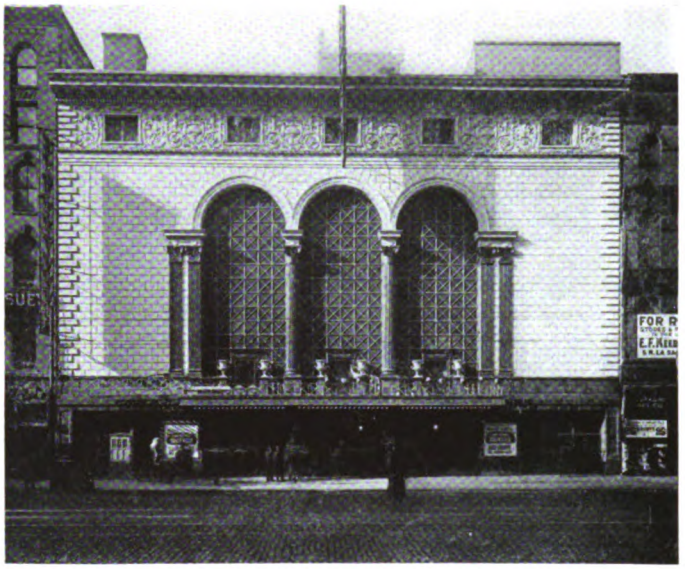
Terra Cotta Factory: Crum Lynne, Pa.

MAY we send you a copy of our monthly magazine, Atlantic Terra Cotta?

The February number illustrates Atlantic Polychrome Terra Cotta in five colors.

Atlantic Terra Cotta Company

1170 Broadway, New York



NORTHWESTERN
is a short form of specification for architectural Terra Cotta of superior quality.

CHICAGO'S newest theater, the Rialto, Marshall and Fox, Architects, illustrates the natural dominance of architectural terra cotta for theater facades.

For the Rialto Theater, Northwestern Terra Cotta was selected. Glazed granite terra cotta was specified for the ground floor work and column and pilaster shafts. The capitals of the columns and pilasters are of bright gold terra cotta; the main wall surface, cream matt enamel terra cotta and the vases, architrave, frieze and crown moulding are old ivory enamel terra cotta.

The selection of "Northwestern" by leading architects is its best endorsement.

THE NORTHWESTERN TERRA COTTA CO.

CHICAGO

—"Or Equal"

IN *many* cases an "or equal" clause in your specifications doesn't materially affect your client's interests. Several products may be of equal or nearly equal quality.

In *some* cases, however, an "or equal" clause is materially detrimental to your client's interest. In the case of fire exit latches it may mean the loss of human lives.

Our attention has recently been repeatedly called to substitutions of inferior devices for **Von Duprin** Self-Releasing Fire Exit Latches by unscrupulous dealers because of "or equal" clauses in the specifications. In many instances cheap devices were substituted, *but* **Von Duprin** *prices were charged.* The architect's client, without knowledge in such matters, has paid a quality price for a cheap product.

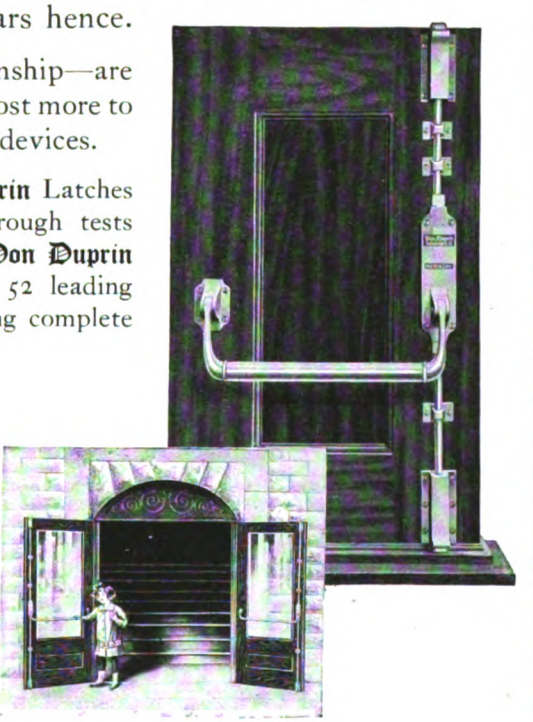
We realize the tremendous responsibility that goes with the manufacture of a product that may some day mean the saving or losing of scores of lives. **Von Duprin** Self-Releasing Fire Exit Latches are built so thoroughly and so honestly that they will perform their functions perfectly whenever they are called upon—whether that time be tomorrow or years hence.

Finest tested materials—careful, expert workmanship—are combined in **Von Duprin** devices. Naturally they cost more to produce and sell for more than less reliably made devices.

We invite a thorough comparison between **Von Duprin** Latches and other makes. Many architects have made thorough tests and the verdict has always been for **Von Duprin.** **Von Duprin** has become standard equipment in the schools of 52 leading American cities. And in every instance they are giving complete satisfaction.

We shall be glad to coöperate with any architect in solving his exit latch problems. Send us your blue-prints and we shall recommend the **Von Duprin** device best suited to meet your requirements.

See Sweet's or ask for Catalog 12-S



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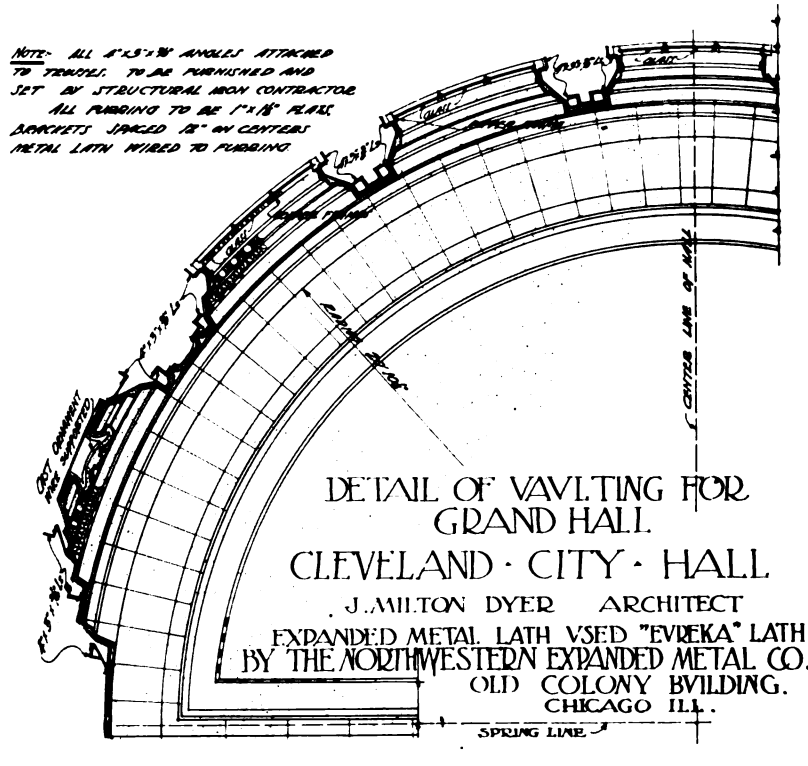

DETAIL OF VAULTING FOR GRAND HALL
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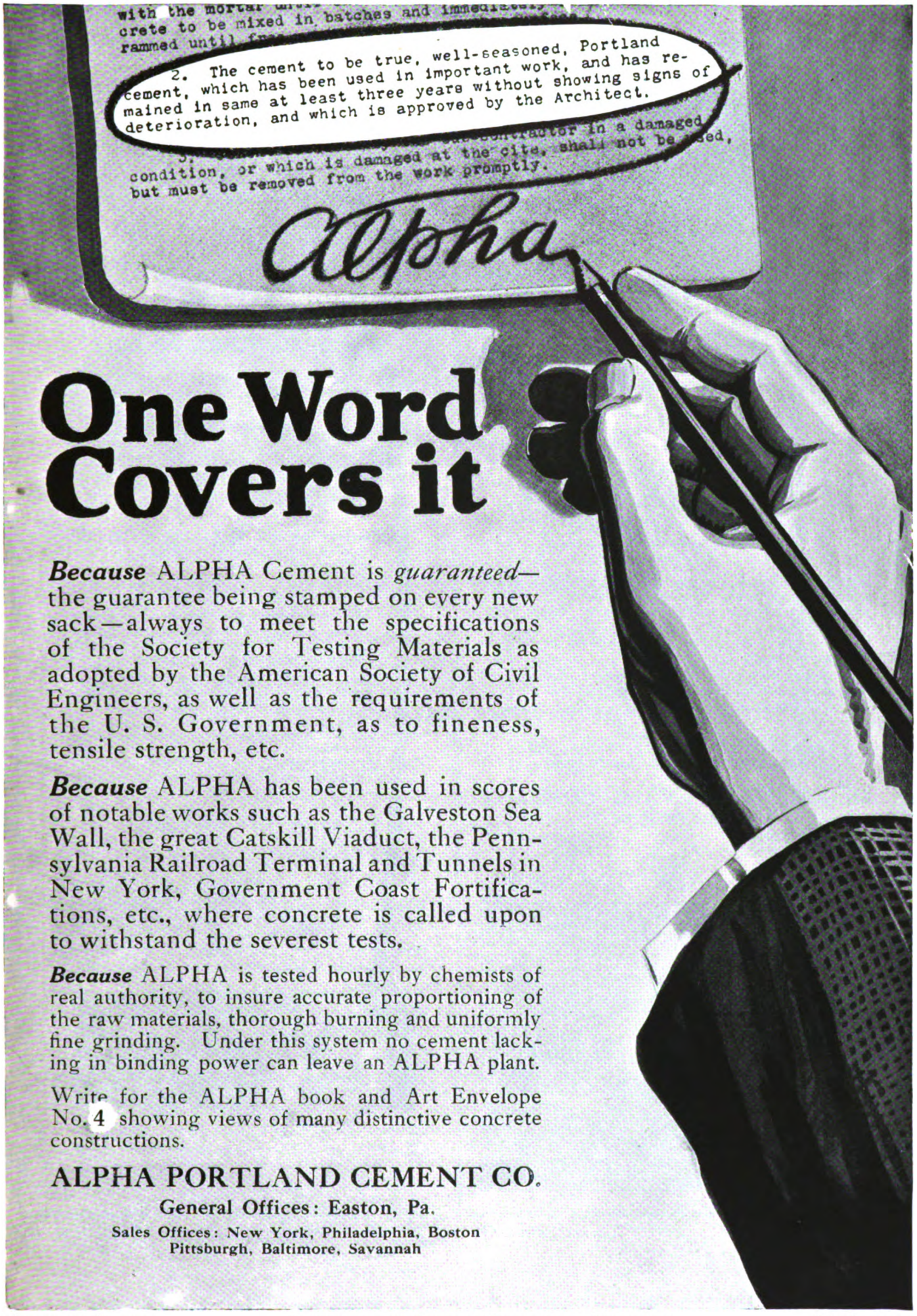
CHICAGO ILL.

CROSS SECTION & ELEVATION OF END WALL



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Because ALPHA Cement is *guaranteed*—the guarantee being stamped on every new sack—always to meet the specifications of the Society for Testing Materials as adopted by the American Society of Civil Engineers, as well as the requirements of the U. S. Government, as to fineness, tensile strength, etc.

Because ALPHA has been used in scores of notable works such as the Galveston Sea Wall, the great Catskill Viaduct, the Pennsylvania Railroad Terminal and Tunnels in New York, Government Coast Fortifications, etc., where concrete is called upon to withstand the severest tests.

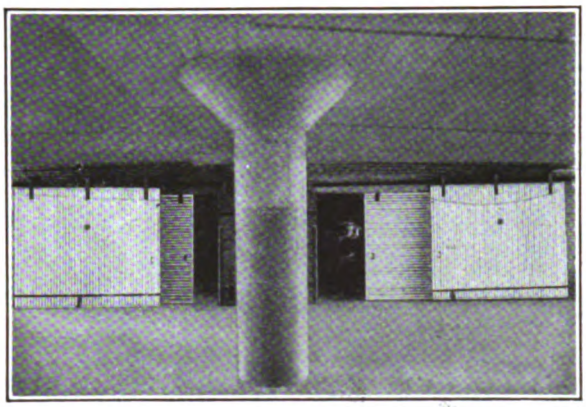
Because ALPHA is tested hourly by chemists of real authority, to insure accurate proportioning of the raw materials, thorough burning and uniformly fine grinding. Under this system no cement lacking in binding power can leave an ALPHA plant.

Write for the ALPHA book and Art Envelope No. 4 showing views of many distinctive concrete constructions.

ALPHA PORTLAND CEMENT CO.

General Offices: Easton, Pa.

Sales Offices: New York, Philadelphia, Boston Pittsburgh, Baltimore, Savannah



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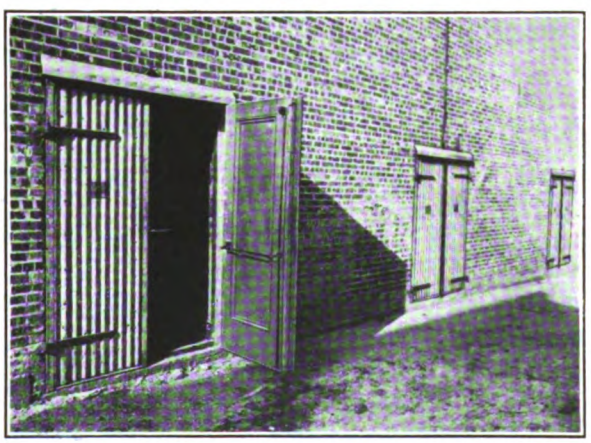

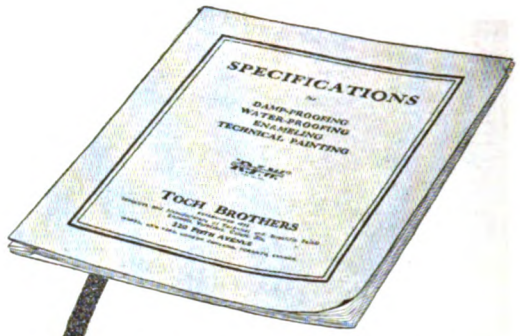

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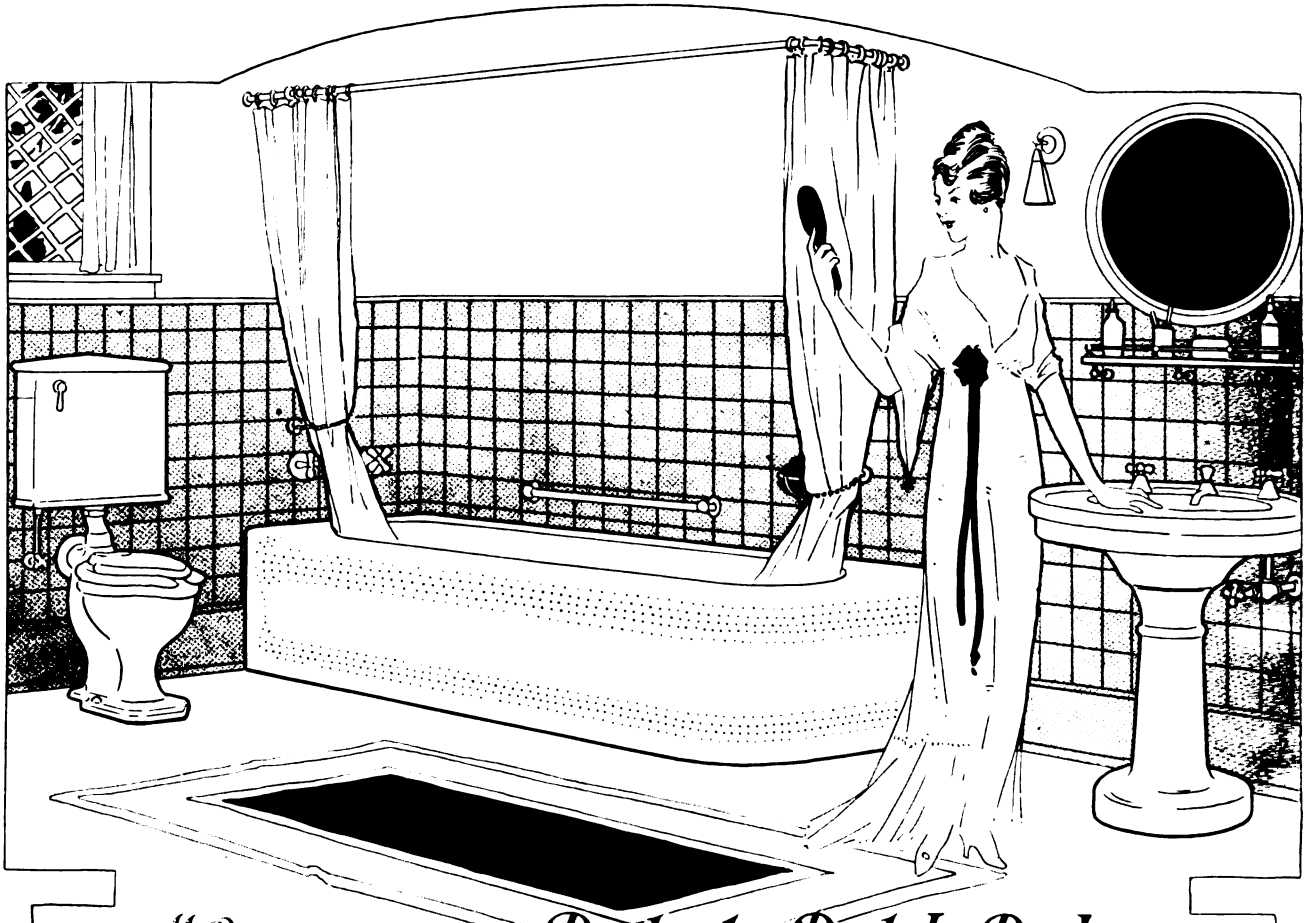
THE UNIFORM CONTRACT

AS is generally known, the Form of Agreement and General Conditions of the Contract, the principal form in the new Standard Documents of the Institute, has displaced the old Uniform Contract, as was intended. This latter document was faulty in many respects, from both the architectural and legal points of view. Its authorized sale by architectural supply dealers was discontinued more than a year ago—but in order to accommodate architects who encounter special conditions for which they desire to use the old form, publication of it has been resumed and copies may be obtained direct from the EXECUTIVE SECRETARY, THE OCTAGON, WASHINGTON, D. C., at 10 cents per copy.

This notice modifies all previous notices and advertisements regarding the discontinuance of the old Uniform Contract.



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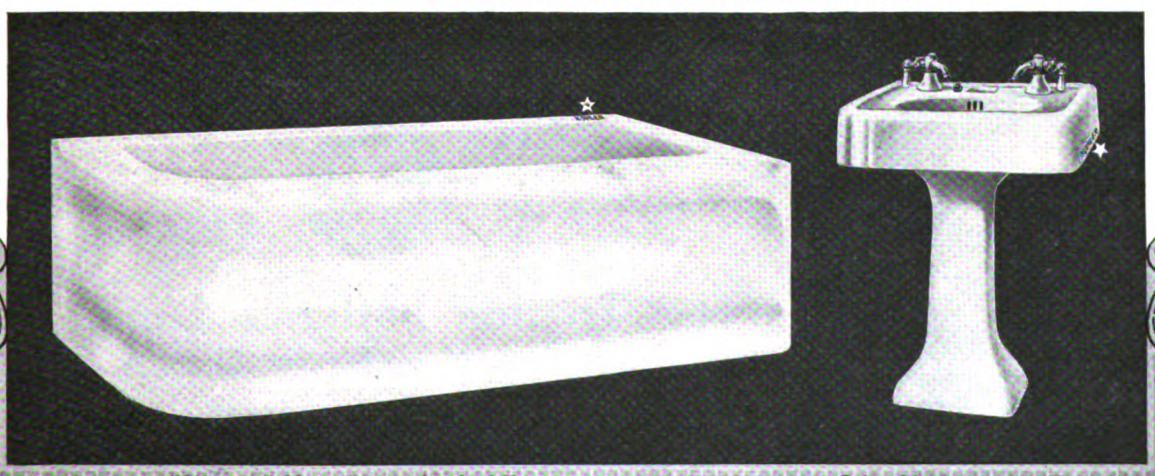

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The Standard Contract Documents.

The Standard Form of Agreement between Owner and Architect (Percentage Basis).

Circular Relative to the Size and Character of Advertising Matter.

A Circular of Advice Relative to Principles of Professional Practice. The Canons of Ethics . . . . A. I. A. Document, Series A, No. 107

A Circular of Advice and Information Relative to the Conduct of Architectural Competitions . . . A. I. A. Document, Series A, No. 114

Standard Form of Competition Program A. I. A. Document, Series A, No. 115

Proceedings of the Fiftieth Convention (1916) A. I. A. Document, Series A, No. 121

Annuary (1917) . . . . . A. I. A. Document, Series A, No. 122

Constitution and By-Laws . . . A. I. A. Document, Series A, No. 123

Schedule of Proper Minimum Charges . A. I. A. Document, Series A, No. 124

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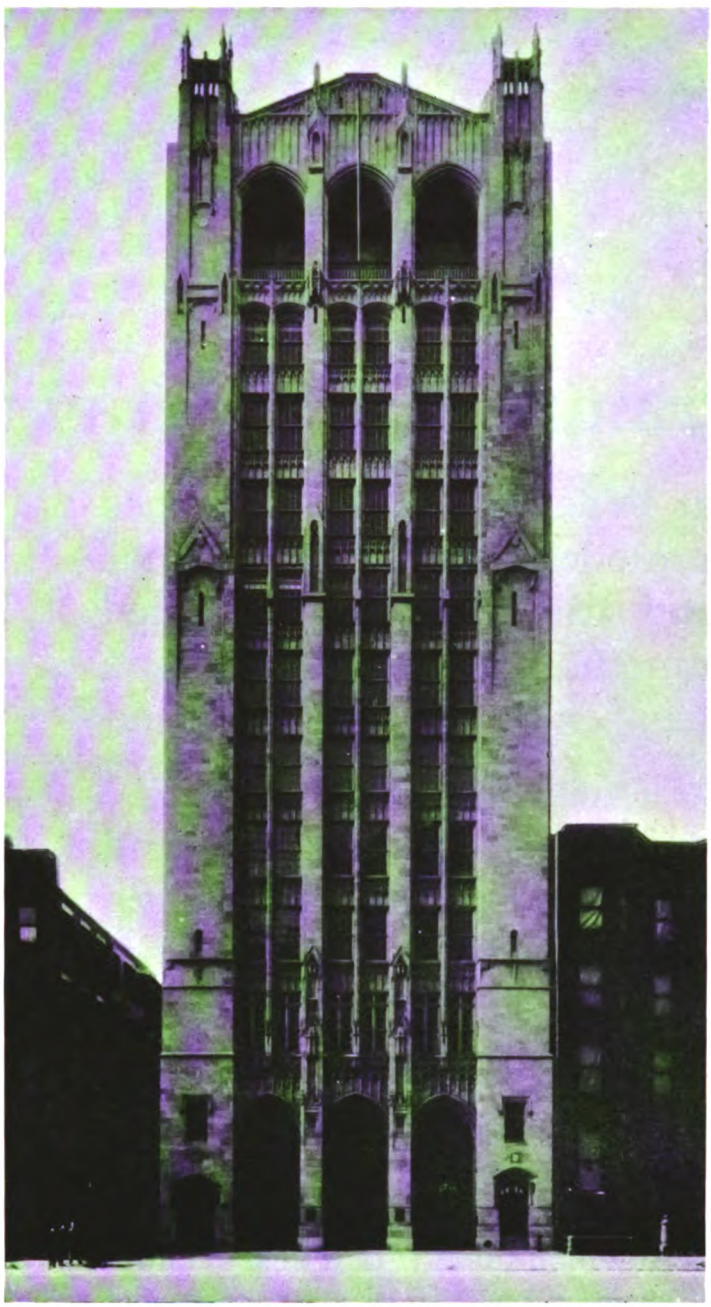
Volume I of the Indiana Limestone Library is a beautiful booklet which gives an interesting lot of information. No matter what you intend to build, begin by writing for this book. It is FREE and a sample of the stone will come with it. Our Service Bureau will be glad to answer your questions and to advise and help you. Write today.

Indiana Limestone Quarrymen's Association

P. O. Box 209, BEDFORD, INDIANA



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GENUINE BANGOR ROOFING SLATE

QUALITY:

Bangor slate is renowned for toughness, durability, non-porosity, and fissility, or the quality of splitting readily. Plates as large as 7 x 5 feet may be split into 3/8-inch thicknesses.

COLOR:

U. S. Geological Survey, Bulletin 586, of 1914, says: "The slate is very dark gray and to the unaided eye has a fine texture and a very smooth cleavage surface with but slight luster. It contains some magnetite and is sonorous."

GRADES:

Genuine No. 1 Bangor Slate: The best roofing slate quarried in commercial quantities, as to smoothness, strength, and quality. Split to about 1/8-inch thickness, or thicker if desired, with smooth sides and square corners.

No. 1 Ribbon: Contains one or more "ribbons," so placed as to be covered in laying and presents a roof similar to No. 1.

No. 2 Ribbon: Contains several "ribbons," some of which cannot be covered in laying.

No. 2 Clear: A slate without "ribbons" and made from rough beds.

DIMENSIONS:

Thicknesses: Vary from 1/8 to 3/8 inch with 3/16 inch as average.

Sizes: Range from 6 x 12 to 24 x 14 inches. This Company makes about twenty different sizes. Sizes best adapted to plain roofs are the large wide slates such as 12 x 16 to 24 x 14 inches. Larger sizes make less joints, use less nails, and are more quickly laid; therefore, are the most economical.

Strength: 1/8-inch thick slates give full weather-protection and are strong enough to be walked on.

Weights: 1/8-inch thick slates will weigh, on the roof, about 6½ pounds per square foot; ¼-inch thick weighs 8¾ pounds. Actual weight of ¼-inch thick is 8 3/4 pounds per square foot.

SLATE FOR FLAT ROOFS:

A flat slate roof gives what we believe to be the most serviceable and economical roof, in the end. It is fireproof, weatherproof, and affords a surface that is not injured by being walked on.

Costs: Slate roofs cost more than some others at first, but we believe they are cheapest in the end. Costs vary with freight rates, labor, and the size and thickness desired.

Sizes and Finish: Favored slates for flat roofs comprise 6x8, 7x9, 6½x10, 7x11, 8x12 and 9x13 inches, all 1/8 inch thick. For slate tile roofs we recommend 10x10 and 12x12 inches in size, and ½ to 7/8 inch in thickness as desired. The under surface of slate tile is planed. The upper surface may be planed or rubbed. The edges are sawed.

IDENTIFICATION:

Genuine Bangor slate is widely specified but specifications are frequently disregarded and cheaper goods substituted.

We identify our slate by pasting to the under side of each piece of slate the copyrighted trade-mark of the Bangor Slate Association, Inc., and we furnish the buyer with each invoice a Certificate of the Bangor Slate Association, Inc.

Ask for the Certificate and inspect the slate itself for the trade-mark.

STRUCTURAL SLATE

Genuine Bangor slate is an excellent material for many structural purposes. Among its advantages are: (*a*) Strength—9,810 pounds per square inch; (*b*) density-specific gravity—2.780; (*c*) non-porosity—absorbtion in 24 hours .145 per cent. (See page 97, Bulletin 586, U. S. Geological Survey.)

These qualities make slate an ideal material for stair-treads and landings, toilet-room wainscoting, urinal, closet and shower stalls, sanitary base, morgue slabs, conservatory shelving, and numerous other structural uses.

Architects and engineers designing office buildings, schools and colleges, manufacturing plants, etc., are invited to write for samples and costs for comparison with other materials.

SLATE BLACKBOARDS

The blackboards are an integral part of the school building. As such the architect should insist on using a material that will wear as long as the floors, the walls, and other integral parts of the building. Slate blackboards fulfil this essential requirement perfectly. The following are recent examples:

Example A. Public School No. 4, Hackensack, N. J., a new school, has just been completed. The slate blackboards installed in an old building more than twenty years ago and used constantly since installation, were taken down and used in the new structure.

Example B. St. Francis Home, Detroit, Mich., is a new building, not yet completed. Fourteen hundred feet of slate blackboards are available from an old building now torn down and will be used in the new structure. Eleven hundred feet of new slate must be purchased.

Literature and samples of slate blackboards will be supplied to Architects and Engineers on request.

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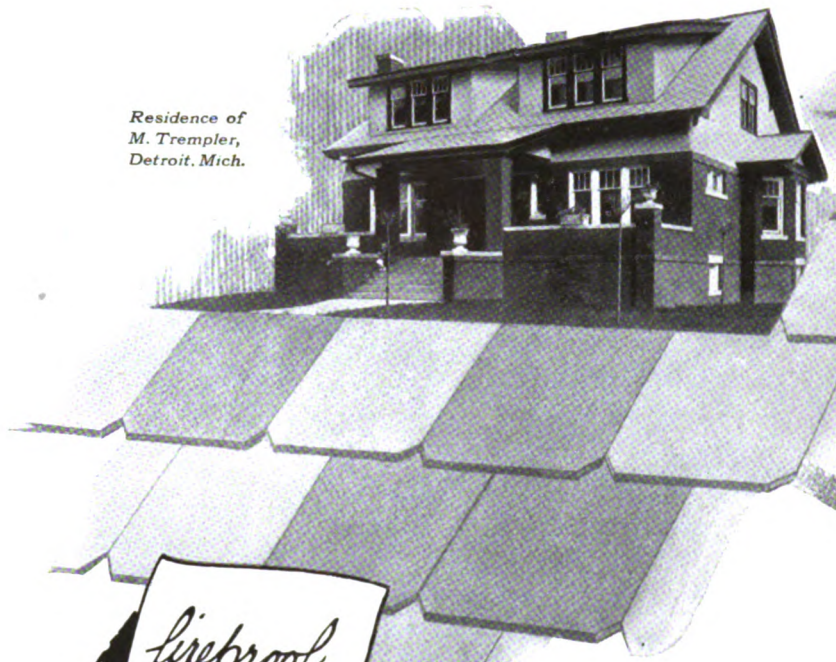
Reinforced Concrete Terminal Warehouse — Baltimore and Ohio Railroad, New York

REINFORCED concrete lends itself with peculiar fitness to buildings where economy, fire-protection and permanence are demanded. The architectural possibilities of this medium, however, are just beginning to be realized and their development promises a new contribution to our architecture — industrial buildings efficient and economical, but architectural. The architects who are interested in reinforced concrete buildings are invited to write to The Atlas Portland Cement Company, New York or Chicago.



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New Angles on the Treatment of Home Roofs

The possibilities for artistic treatment afforded by this modern roofing have thus far been but partially developed. The different colors, shapes, sizes and thicknesses of shingle, and the opportunities to vary pattern and bond to obtain distinct and attractive roof texture, prove this a rich field for study

Nor is it difficult to foresee the time when inflammable roofings will be generally prohibited by law, as evidenced by many recent city ordinances.

In J-M Transite Asbestos Shingles you can offer your client a distinctive roof, free from the threat of communicated fire. It will neither burn, rust, rot, nor demand periodic and costly repairs. J-M Transite Asbestos Shingles are examined, approved, and labelled by the Underwriters' Laboratories, Inc., under the direction of the National Board of Fire Underwriters.

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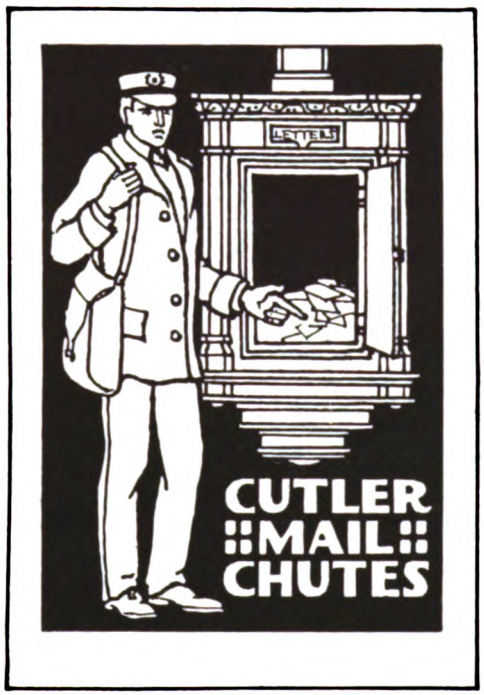

is used in thousands of buildings in every part of the United States, and abroad; has been for more than a quarter of a century, and will remain, the standard of excellence in every respect.

It has received the highest award wherever exhibited, and is being furnished to all those who consider quality as well as price, at exceptionally low figures.

The construction developed in long experience as the only safe one is protected by litigated patents, which have been sustained and which counsel advises are being infringed.

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Sweet's Index Pages 1726 and 1727.

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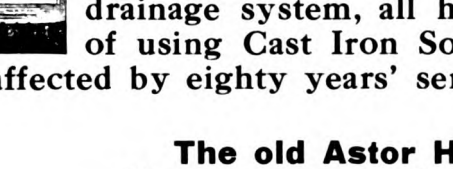
Cast Iron Soil Pipe 80 Years Young

The Entire Story To Be Waste and



shown by th best-known hote

THE alternate wetting and drying of drainage lines, with its highly corrosive effects, the increasing use of hot water, the action of disinfectants and washing powders, the ordinary acids and alkalies of a house-drainage system, all have contributed to demonstrate the advisability of using Cast Iron Soil Pipe for these lines. Cast Iron Soil Pipe was unaffected by eighty years' service.

The old Astor House purchased by the City of New York to provide for a new subway station shows eighty years of service for Cast Iron Soil Pipe and Fittings. This pipe was removed by the wreckers and found to be in perfect condition.

The Astor House was built in the days when there were no substitutes for good material; and the plumbing contractor erected his work to last as long as the building. When soil pipe was installed in the waste and drainage lines, all questions of damage from corroded pipe and the possible dangerous conditions in sanitation from leaking sewage and gases were settled forever. There could later be no corrosion of pipe, no tearing up of floors and walls to remove pipe wasted away with a few years of service.

Cast Iron Soil Pipe removed from the Astor House after 80 years' service shows no deterioration.

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Regarding Pipe Used In Vent Lines

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The Substitute Was Removed in Less Than 20 Years

The Waldorf-Astoria, one of the most popular hotels in the world, has been confronted with an engineering problem caused by the necessity of replacing piping in less than 20 years.

When this building was being erected the question of piping for the work was submitted to a committee of plumbing experts, and, although their advice was that Cast Iron Soil Pipe be used, the builders used a substitute.

These lines, by the action of gases from thc acids and alkalies carried by the sewage, have entirely given out. Strong corrosive gases are formed in the decomposition of sewage and the bacterial action which takes place. The damage cannot be figured simply by the cost of replacing the pipe and the ceilings and floors ruined, but includes the resultant loss of use of rooms during reconstruction work. This damage will be a constant one until all the drainage lines are replaced.

Specifications and illustrated literature will be mailed you, upon request, by any or all of the following independent and competing makers of Cast Iron Soil Pipe and Fittings

ON SOIL PIPE SHOULD BE USED
nger than the Building

Somerville Iron Works	New York, N. Y.
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A sample of the pipe removed from the Waldorf-Astoria Hotel less than 20 years after building was erected.

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That will successfully avoid two or more cars becoming bunched, caused by irregular spacing.

That will positively prevent one indolent operator from trailing a loaded car, thereby distributing the traffic equally and fairly and bringing about perfect running order.

That will entirely eliminate two cars getting the same passenger signal at one floor, thus saving waste of time and the enormous expense of unnecessary stops.

To equip each car with a small cabinet in plain view of the operators, containing a row of electrically lighted indicators, each light representing a floor. The movement of any car will illuminate a number in each cabinet corresponding with the floor position of the car. This apprises the operator of the relative position of all the cars in each battery as well as his own car. Therefore, should a car get out of position, a distress signal provided can be set up in the pursuing car, signifying that, due to unavoidable delays, the signaling car must withdraw temporarily from service and depend on the signaled car to serve the floors passed up so that the proper running order may be adjusted.

To prevent possible confusion in having any number of elevators indicated in one cabinet in the car, the operator is required to watch the pursuing car only. Therefore, it is obvious that there is only one car to keep track of in order to adjust his car to its proper position.

Illuminating the position of his own car renders unnecessary the display of numbers formerly used on the landing. Concealing the landing numbers from the view of the passengers compels them to announce their stops promptly, enabling the operator to save the loss of time and expense of overrunning a landing.

Our system provides the manager's office with a means of communication with the operators and information as to the location of all cars in the building, and each car separately, therefore furnishing a complete check on the performance of each operator. The installation consists of a simple wiring plan, without the use of coils or magnets, or any mechanism that is likely to get out of order, neither does it require any adjustment or cost for maintenance. Our method of regulating elevator service has been approved by some of the best authorities on elevators and elevator service, and by all who have seen it in operation.

Supervising Cabinet in Manager's Office.

Illustrating a three-car installation in a ten-story building. Note Car No. 1 first floor, Car No. 2 fifth floor, Car No. 3 tenth floor.

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Showing Comparative Operating Cost and Service of Three Local Modern Office Buildings. All High-speed Cars, Otis 1-1 Traction Type.

RECORD TAKEN 8.00 A. M. TO 6.00 P. M.	Building No. 1, not equipped with our device.	Building No. 2 not equipped with our device.	Building No. 3, equipped with our device.
Number of elevators in building	5	4	3
Number of offices in building	319	231	251
Number of floors served	13	16	12
Starter at first floor	1	1	None
Actual running time each car checked	10 hr.	9 hr. 40 min.	9 hr. 30 min.
Average service at first floor	26 $\frac{9}{13}$ sec	33 $\frac{2}{3}$ sec.	25 $\frac{1}{3}$ sec.
K. W. consumed	725	630	300
Passengers served both ways	9,360	9,146	5,062
Round trips	1,350	1,040	1,420
Elevator miles	86.42	66.57	69.38
K. W. per elevator mile	8.38	9.46	4.32
Passengers per mile	108.3	137.5	71.09
K. W. per passenger mile	.077	.068	.060

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(Outside Finish to be of White Pine)

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Design placed second will receive - - - - -	400.00
Design placed third will receive - - - - -	250.00
Design placed fourth will receive - - - - -	100.00

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All Architects and Architectural Draftsmen are cordially invited to enter this competition

Competition closes at 5 p. m., Tuesday, May 1, 1917

For complete program see the February Number of The White Pine Series of Architectural Monographs

If you are not receiving the Monographs and feel interested in having them, kindly write Mr. Russell F. Whitehead, 132 Madison Avenue, New York City, who will be pleased to send you the February Number and all subsequent issues.

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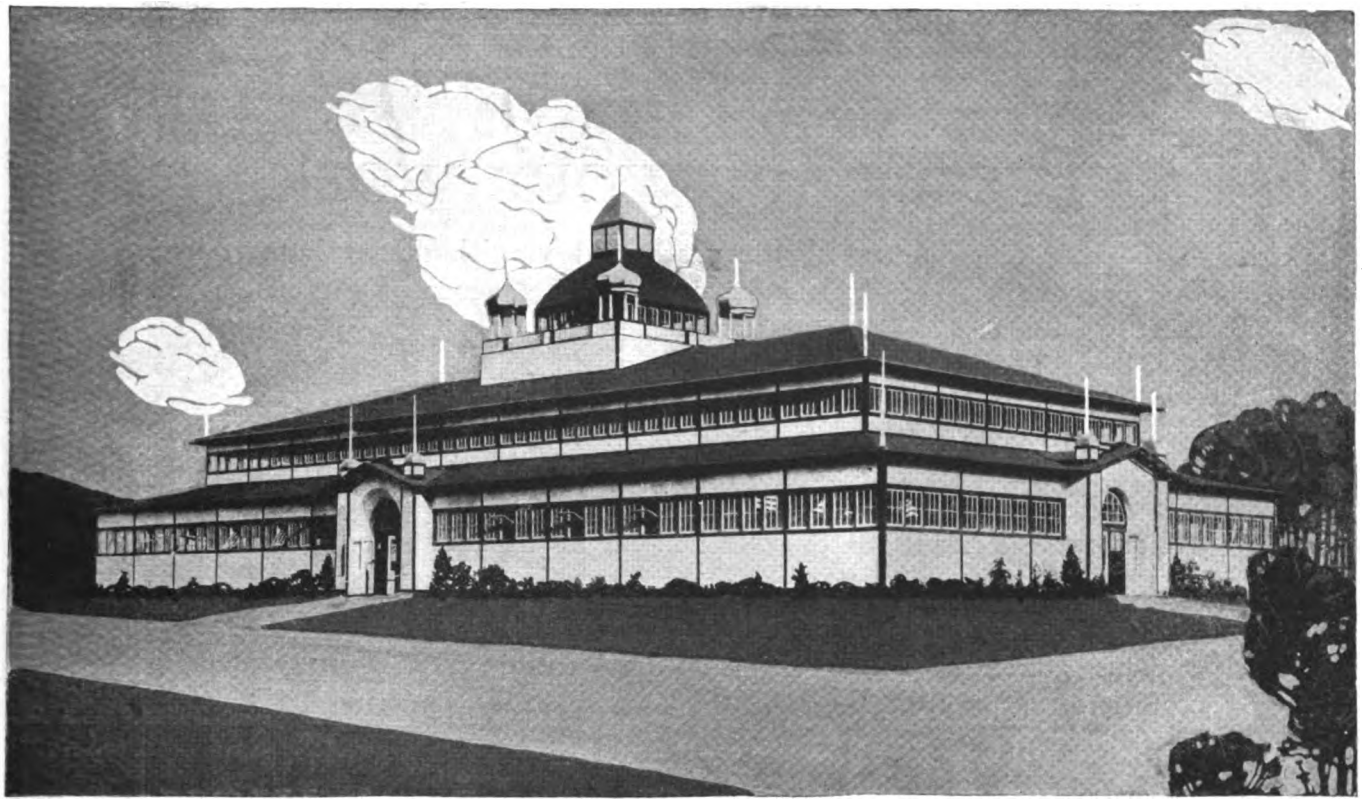

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Stucco is admittedly an artistic and attractive exterior finish. And *now* it can be made *lasting* and *economical.* Bishopric Board makes it possible. How? By applying principles that ages of actual use in building construction have proven the most efficient.

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Now apply it properly on a *background of Bishopric Board.* Note how it is *anchored* to the background! Those dovetailed joints between the lath *clinch* the stucco—it *can't* let go! And nails through every lath hold the Bishopric Board firmly and securely to the building. There is *no breaking away* and *sagging,* causing the stucco to crack and chip off.

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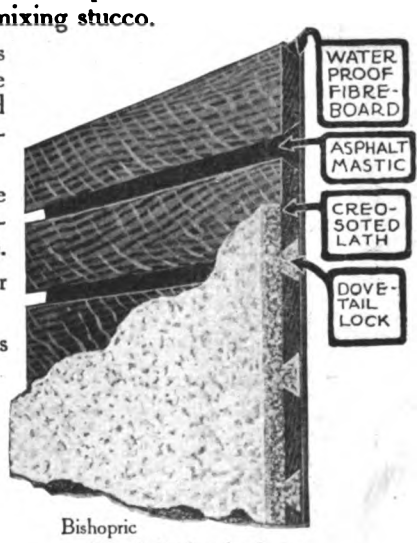
Finally, Bishopric Board, under the severest scientific tests and in actual use, has *proved* its superiority.



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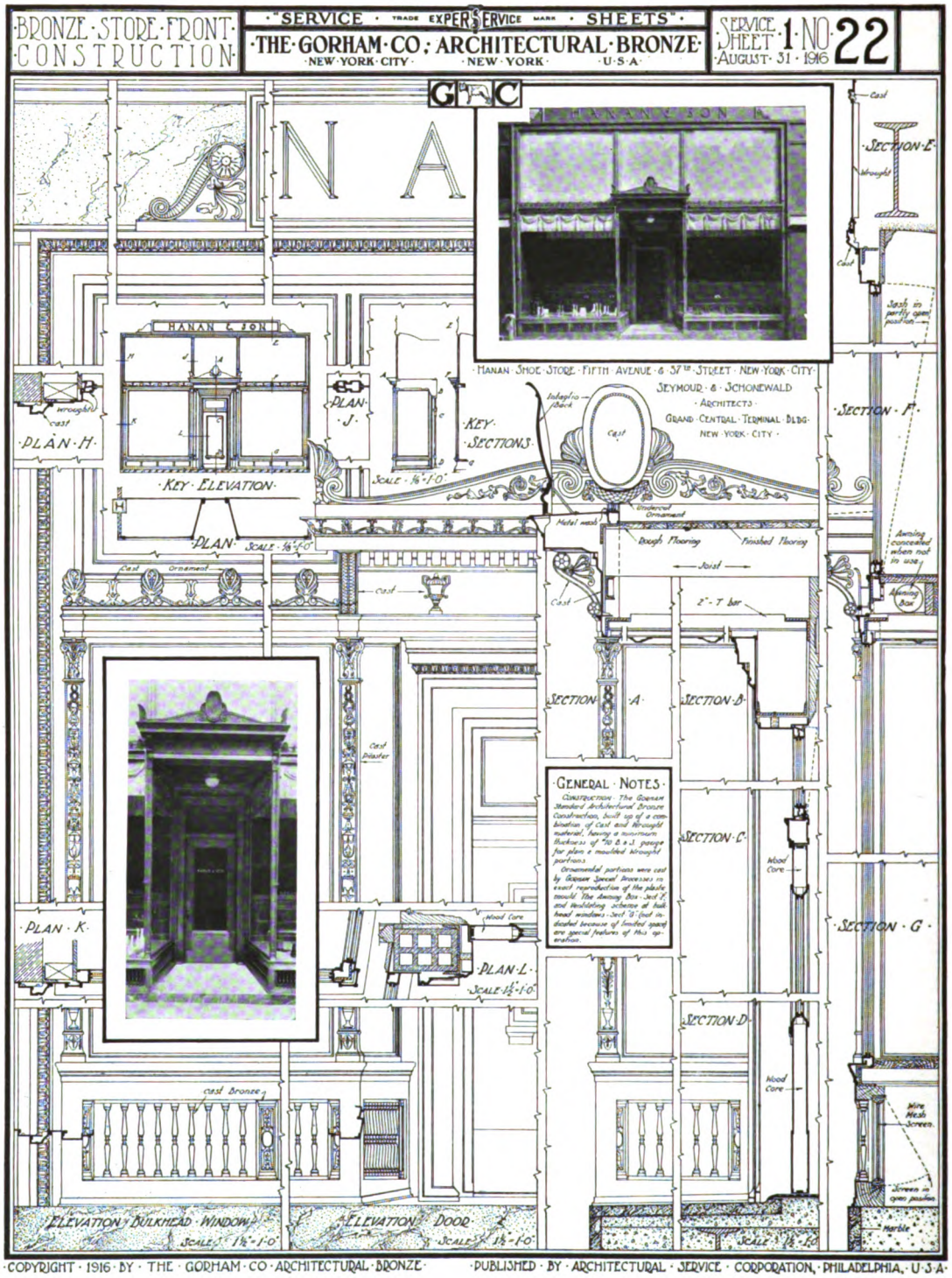

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George S. Drew . . . . New Jersey
Robert D. Kohn . . . . New York
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Ellis F. Lawrence . . . Oregon
John P. B. Sinkler . . . Philadelphia
R. M. Trimble . . . . Pittsburgh
J. H. Cady . . . . . Rhode Island
G. F. A. Brueggeman . . St. Louis
J. G. Howard . . . . . San Francisco
C. C. Wilson . . . . . S. Carolina
R. D. Farquhar . . . . . S. California
Reinhardt Dempwolf . . S. Pennsylvania
W. W. Watkin . . . . . Texas
L. S. Bellman . . . . . Toledo
C. A. Neff . . . . . Virginia
Glenn Brown . . . . . Washington, D. C.
Jos. S. Cote . . . . . Washington State
Wm. H. Schuchardt . . . Wisconsin

FIRE-PREVENTION

See Structural Service Department, page 131.

CONTRACTS AND SPECIFICATIONS

See Structural Service Department, page 131.

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Reinhardt Dempwolf . . . York, Pa.
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Arthur B. Benton . . . . Los Angeles
L. A. Livaudais . . . . . New Orleans
Ernest Coxhead . . . . . San Francisco
Warren R. Briggs . . . . Bridgeport
George Cary . . . . . Buffalo
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C. Grant La Farge. . New York

BASIC BUILDING CODE

See Structural Service Department, page 131.

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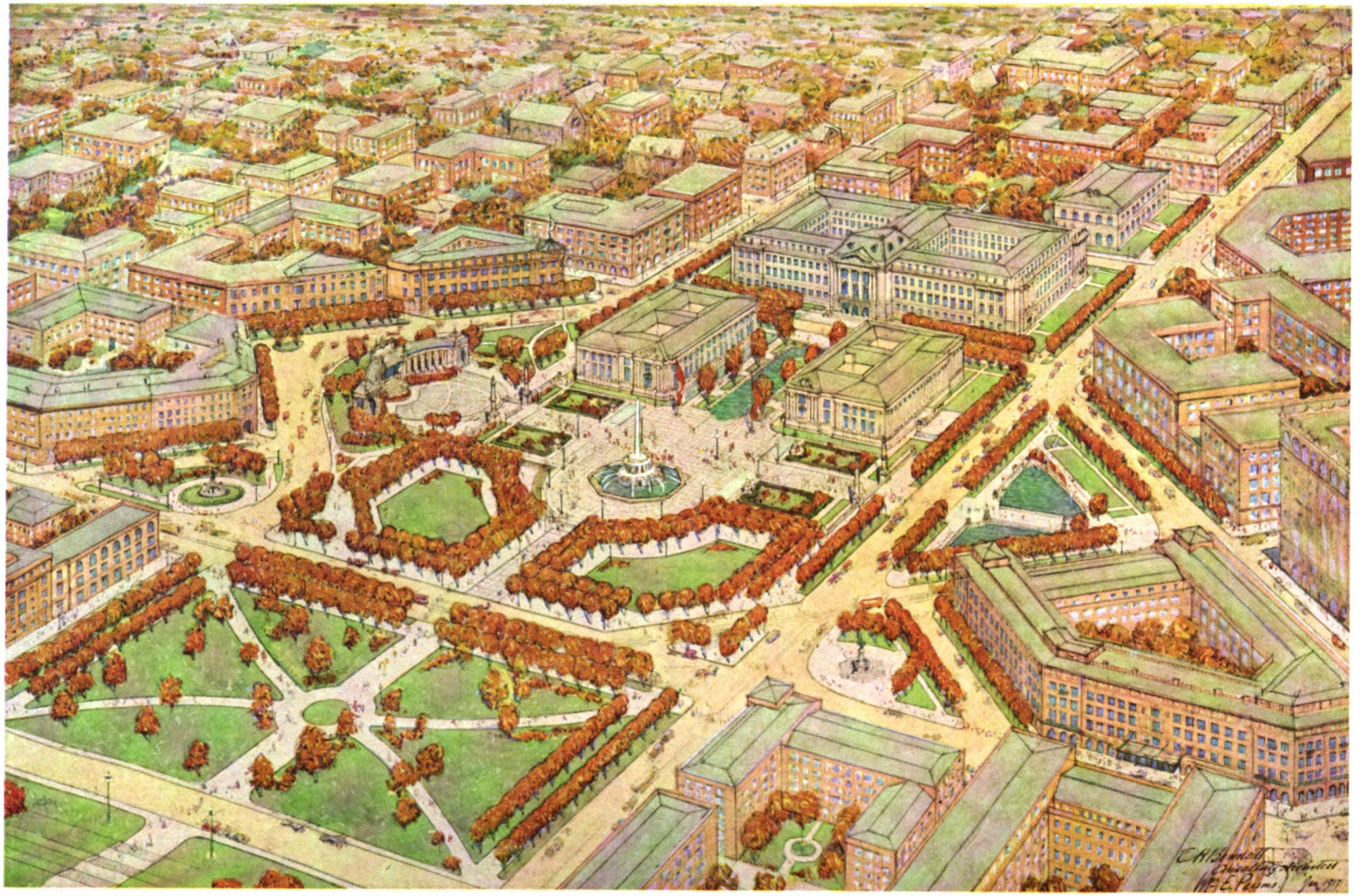

DENVER.—VIEW OF THE CIVIC CENTER.—Drawn by Jules Guerin

The Background of the Concert Garden is Formed by the Colonnade, on the Columns of Which are to be Inscribed the Names of Civic Benefactors. The Central Motif is the Fountain to Typify the State, now Being Designed by Lorado Taft

JOURNAL OF THE
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Shadows and Straws

THERE SEEMS TO BE A DIFFERENCE of opinion on the merits of the last exhibition of the Architectural League of New York. Perhaps an effort to analyze the differences may be of avail in throwing light upon a subject which is of constant interest and in which so many potentialities are thought to reside. There are those who accord the highest praise to the particular exhibition to which we refer, just as there are others who point out what they consider to be its glaring defects. The line of cleavage seems to be fairly clear and to be confined pretty closely to the question of the architectural value of an undertaking of this kind. Mr. Cortissoz, in the New York *Tribune*, deprecates the mixed character of the League exhibition and reaffirms his conviction of last year by challenging architects to an exposition of their work which shall be intimately architectural and not lost or hidden among the work of the painters, the sculptors, or the decorators.

While one may well hesitate to question the criticism of so competent an authority, grounds for taking issue in this particular instance might well be found in the avowed purpose of the League itself, which, as we understand its name to imply, is not wholly devoted to architecture but to the other contributing arts, the products of which in the League exhibition seemed, to Mr. Cortissoz, to obscure those of architects. Upon such a premise it ought to be possible to build a sound defense for the recent exhibition. Yet the vital question is not to be disposed of in that way, for it would not effectually answer the challenge to produce a real architectural exhibition.

ON FIRST THOUGHT it would seem just as reasonable to undertake an exhibition of newspapers as it would to assemble an exhibition of architecture. The world is so full of buildings of every conceivable kind that one might well ask why it was necessary to have an exhibition of architecture. If a man cannot be interested in the infinite variety of structures among which his daily life is cast, then how is he to be interested in the pictorial presentation of those and other buildings. The test of architecture is the building. It is not the drawing, nor the rendering, nor the photograph. To really study architecture, one must study buildings. To study it seriously, one must look behind the pleasing or displeasing façade and consider the purpose, the facility which the building offers for carrying out that purpose, and the plain facts of soundness, durability, and income-producing value.

This last factor is apt to be something of a shock to the academician, and yet that is the most insistent test to which modern architecture has to respond. It is idle to ignore it, futile to dismiss it. Study the architecture of the past as we may, enjoy it as we do, be inspired by it as we must, we cannot get away from the bald fact that the modern builder wants a fair return on his investment. We may except certain kinds of structures, where the return is of an indirect kind difficult to evaluate, but we shall still find ourselves confronted with the vast volume of building undertaken as a business investment. Is it not in this field that we find the incongruous jumble which makes the modern city so intolerably ugly? Ought an exhibition of architecture to exert a corrective

influence upon this kind of work? Is it for the purpose of informing that large majority of the public that an exhibition should be held, or ought it to be devoted to country-houses and the small class of buildings where the income is not measured in actual money?

POSSIBLY THAT IS THE QUESTION that must first be answered. We can all think of a kind of exhibition that would interest architects. They understand drawings and can read a plan. They can see through and beyond the rendering, the perspective, the elevation, and derive both benefit and pleasure from a study of the methods by which other architects have combined their structures to attain certain ends and yield certain effects of form and color. The technique of the art is at their finger-tips. Its alphabet runs through their minds without any effort at translation or decipherment. They are not tricked by methods of presentation which obscure defects of plan and proportion. An elevation can be measured and estimated by the experience which comes from long practice. Its flatness and lack of shadow can be informed with the imaginative eye of the trained mind. Palpable errors in plan stand forth with a clearness that no process of dressing up can hide.

But it is not so with the untrained. Not one man in a thousand can read a plan, or imagine what an elevation will look like when it is built, or detect the difference between a good building badly or indifferently presented and a bad building which has been dressed out with some blue sky and a landscape. Obviously there must be a distinction made between the kind of an exhibition one would offer as a means of impressing and informing the public and an exhibition which would merit the approval and the keen interest of architects.

They have an interest in the tools of the trade. Plans, elevations, sections, perspectives —these things which are merely the media through which the building is evolved—possess a power of attraction that is purely professional and technical. As a method of studying architecture it would seem that they are only related to the thing which really tells the story. It is the resultant building that stands as the architectural expression.

Be the architect ever so skilful a maker of pictures, the one test is the building. It always has been so; always will be so. The presentation of plans and elevations of projected work is not a study of architecture, but a study of the architectural method of building. The presentation of the plans and elevations of a building which has actually been built would seem to be a futile attempt to substitute the portrait for the living body. The one excuse is the opportunity for gathering together, pictorially, examples of architecture from widely distributed areas—of presenting a record of nation-wide or world-wide progress, such as could be viewed in no other way. That is certainly a legitimate purpose.

BUT IF THE STUDY OF ARCHITECTURE is the study of the building, then every attempt to study it by pictorial presentation is as much removed from the real study as the element of translation enters into the presentation. There is no way of drawing or painting or etching a building without having the result reflective of the artist's conception of the work. Such an exhibition would be interpretative, not accurately architectural, and would afford as many different presentations of a particular building as there were drawings. Such a result is inescapable and brings us face to face with the fact that it is not easy to say how to put together an architectural exhibition that shall be really interesting, and honestly instructive to those who daily move from their home to their work, from one city to another, from one land to another, and yet who find no interest whatever in the study of the buildings which meet their eye by thousands. We may possibly except those who travel to Europe, Baedeker in hand, and credit them with an effort to seriously understand the tale which has been written for their perusal, yet it is difficult to find solid ground for believing that such study is reflected in any mighty effort to apply the results to their own environment. We live among an ugliness which is appalling, if one can pause long enough to thoroughly take it all in. But we never do pause. It does not trouble us. We do not even see it. And so, perforce, we must seek to accomplish by an exhibition that which we cannot accomplish by the example before us, for of all the ever-present works of man, architecture may surely claim preëminence.

BUT THERE STILL REMAINS the photograph as a means of presenting architecture. The camera, it is said, does not lie. Ignoring the technique of the photographer, however, or dismissing it as a negligible quantity, we may assume that it would be quite possible to assemble any quantity of photographs truthfully to portray any quantity of buildings. It does not seem to be possible to come nearer than that to a study of architecture which shall be in no way interfered with by personal interpretations, whatever the medium. Models are without doubt the most fascinating and interesting form of presentation which it is possible to find. To the public at large they arouse all the interest possessed by any creation which can be understood by being seen. It is the irresistible appeal of the moving picture, of pantomime, of pageant and parade, possessed of the supplementary charm of the diminutive. Is it too much to believe that a well-arranged exhibition of forty or fifty models, or even less, would possess an infinitely greater public interest than a thousand photographs? We venture the question and make no assertion. We frankly confess that we have little faith in the photographs, and we are sure that such an exhibition would be of little technical interest.

It is possible, is it not, that the best exhibition would be one in which drawings, elevations, photographs and models were all presented in such a manner that the novice might trace the whole procedure and thus gain a very definite impression of how the architect pursues his studies and to what purpose he serves his clients. Perhaps the problem is to be solved only by going deeper into what, for want of a better word, we shall have to call the human equation in the relationship of architecture to modern life. Possibly it might be also well worth while to carefully inquire whether exhibitions are held primarily for the advancement of architecture or for the welfare of the profession. There is a wide difference, and each involves a different method of approach.

THE SUBJECT IS NOT TO BE DISCUSSED as an isolated factor, however, if one wishes to approach it intelligently. The exhibition, as an element in educational influence, is, at best, a substitute for a kind of education which shall eventually train our children to refuse to live in cities and towns which have been made over to other pursuits than those of the common welfare and the common enjoyment. When we have found out how to teach the horror of ugliness, we shall have learned something about how to interest people in architecture. But the Journal would welcome discussions on the subject of the exhibition.

THE NEW COMPETITION is what Mr. Sullivan W. Jones calls the open-price system of conducting business and about which he has written the interesting article in this number of the Journal. This system is not new, by any means, and yet in spite of the showing it has already made, it undoubtedly possesses all the elements of terror which are imagined into every effort to make the individual see that whatever benefits his particular industry also benefits him. In business, as in all other things, thought is ever arrayed against fear-of-change, that logical and understandable conservatism into which one mind has to make the breach through which others may follow. But fear of change in business is generally masked by indifference, inability to think clear through any problem, and the dread of submitting to the test of quality.

Perhaps, of the three, indifference is most to be blamed. Inability to think is the principal product of our educational system and the sufferers ought to be pitied. Dread of submitting to the test of quality is the natural corollary to business conducted primarily as a source of profit and incidentally, and far too infrequently, as a department of human service, yet it is to the test of service that business must finally submit. The mills of the gods grind slowly, but in their process of reducing all things to the greatest service of human life, they may grind business exceeding small—just as they will grind kings and emperors, religions and governments, trades and professions. The only way to survive is to be of service. Nothing can escape the final test.

To us that seems to be the hopeful thing about the open-price system. It is a step toward making business of greater service by eliminating fear and suspicion, and by encouraging confidence and integrity. We understand that other trades and businesses are studying the open-price system very carefully,

and we hope that architects will coöperate, in every way possible, toward its fair trial as a promising element of better building conditions.

IN KANSAS an architect was retained in connection with a public school building undertaking. His retention was challenged on the ground that it was a violation of the Kansas School Laws which prescribe that no contract involving more than Five Hundred Dollars shall be let without sealed proposals and to the lowest responsible bidder.

Attorney General Brewster of that state handed down an opinion which contains so admirable a recognition of the necessity of the architect as a safeguard of the public welfare and of his services as a precursor to any contract, that we reprint these paragraphs:

"The work of the architect may or may not be paid for out of money derived from an issue of bonds, but the professional work of an architect in draughting plans for the construction of such a building (school) necessarily must be done before the contract for the construction of the building can be let, and is of such professional and expert nature that it is impracticable to let that work at a competitive bidding."

We wish that every school board in the United States might have at least one member as intelligent as Attorney General Brewster of Kansas.

THE SECRETARY OF THE INSTITUTE has issued a circular letter to the Secretaries of all Chapters in which the following explanations of Institute and Chapter Membership are set forth:

Chapter Members, as of December eighth, 1916, retain their standing and will continue to be known as Chapter Members. They may be admitted into the Institute as provided in the By-Laws, but no new Chapter Members are henceforth permissible. Each Chapter has the right to create a class known as Associates of the Chapter, but those who enter that class must agree to make application for admission to the Institute within three years of their admission to Associateship with the Chapter, will have no vote upon Institute affairs during their Associateship, and failing to enter the Institute within the prescribed period, will automatically forfeit their affiliation with the Chapter.

Applications for such Associateship cannot be made until the Chapter creating such a class has amended its Constitution and By-Laws to conform with the mandate of the last Convention which abolished further Chapter Memberships, and provided that the Associate class might be established by any Chapter which so wished.

It is no longer necessary, however, for an intending applicant for Institute Membership to be affiliated with or belong to a Chapter. Application for admission to the Institute may be made direct to the Institute, in which case the application follows the prescribed routine. If elected, the new member is assigned to the Chapter in the territory of which he practises, or, upon request, to the Chapter in the territory of which he resides. From the foregoing it will be seen that the Chapters will ultimately be composed of Institute Members and Associates of the Chapter.

Institute Members will be transferred, in the future, from one Chapter to another as follows: The Member will obtain the usual credentials from the Secretary of the Chapter which he is leaving, forward them to the Secretary of the Institute, and receive therefrom an assignment to the new Chapter.

BEFORE WAR BECAME AN ACTUALITY, President Mauran had tendered the services of the Institute in an investigation of industrial preparedness, as reported in the Journal last month. The Secretary of War, in acknowledging his appreciation of the offer, stated that the matter had been referred to the Chief of Engineers of the War Department for action whenever and in what manner the Institute might best be utilized.

The Permanent Central Committee of the Institute has now been organized with Mr. Evarts Tracy, of New York City, as chairman, and on page 188 there will be found a detailed account of the methods to be pursued by the Committee in its work of organizing the architect resources of the country. There can be no doubt where the profession will be found in this emergency, and we hope that the Government will fully realize the especial character of technical service the profession is capable of contributing, quite aside from the eagerness with which individuals will respond.

The Remarkable Application of Town-Planning Principles to the War-Time Necessities of England*

By EWART G. CULPIN
Secretary of the International Garden Cities and Town Planning Association

ONE of the most serious, perhaps the most serious, social problem which confronts Great Britain at the present time, and which will be even more serious at the termination of the war, is the question of the great shortage in the supply of cottage dwellings. The universal British custom of a one-family dwelling for all classes of society has been well ministered to by all sorts of enterprises in the past, but for the last seven or eight years there has been an enormous falling off in the amount of cottages provided, so that at the present time it is estimated that no less than 400,000 cottages are required in England and Wales to make up the present shortage, which is increasing at the rate of 75,000 per annum.

A number of reasons are given for this shortage. Legislation which had as its object the securing of the "unearned increment" and the prevention of the holding up of building land has operated in an unexpected manner, and the old English idea of security in real estate has received a shock. The opening up of other and more remunerative channels for the employment of capital has had considerable effect, and another very important factor is the enormous increase in prices, which even before the war, had become so very marked owing to the activity of combines among building-trade merchants.

One of the principal agencies for cottage-building at the present time, and one which promises to become increasingly important as time goes on, is the garden-city movement toward housing on coöperative lines by societies of public utility. Already some eighty such societies are affiliated to the British Garden Cities and Town Planning Association, and between them they have built some eight thousand cottages and have a large acreage of land ready planned and with every arrangement made for going on with work at the earliest possible time. Every one of these estates has been laid out in accordance with the best ideals of modern town-planning and with due regard to the garden city standard of housing.

The number of houses is not large, considering the total, but it must be remembered that the activity resulting in the formation of the societies had its reward only in the two years preceding the war. In 1913, twenty-five garden suburb schemes were started on 1,500 acres of land for the housing of 90,000 people, and this work was in process of rapid expansion when the war came and, naturally, put an end to much building work. There has, however, been a large amount of building going on in those areas where increase of population made essential the provision of extra housing accommodation, and although in some places it was necessary to erect temporary wooden houses, there has been all over the country a keen desire to see that the accommodation provided was of such a character as to be a permanent asset to the housing resources of the country. Thus, even during this present year some thousands of cottage dwellings have been built.

The most remarkable of all is without doubt the Well Hall Estate, which was built by the Government for the accommodation of munition workers at Woolwich. Some sixteen hundred houses have been built there on virgin soil, and the result is a community which I can confidently say is, from the architectural standpoint, without equal in the whole world. Formerly I would have given the palm to Margaretenhohe, near Essen, while the Hampstead Garden Suburn ran that closely, but the Well Hall Estate is undoubtedly first. Design, material and workmanship are of the highest character; the variety in architecture and in finish prevents any semblance of monotony;

*With this article, the author posted a number of unusual photographs of housing, under government authority, for munitions workers, but the censor prevented their despatch. We shall publish them at the earliest possible moment.—EDITOR.

and already some charming street pictures can be obtained. Roughcast of various finishes, half-timber, red brick, and tiled fronts are carefully introduced into the scheme, while in some instances an overhanging upper floor gives fresh character to a street. The existing trees have all been preserved, and a number of corner plots have been left for ornamental gardens and shrubberies. The fatal objection to this scheme is that the community sense is lacking. There is no provision for a public hall, a place of worship, for play or amusement; there is no store, there is no school.

This is where the housing by societies of public utility shows such a great advance: the social side is ever present because it has been the reason for the work. In all those which are sufficiently advanced there are institutes, reading-rooms, and clubs of various sorts, and especial attention is given to the fostering of the spirit of neighborliness. The most important societies devote a certain percentage of their income to social work, and in others a premium is put upon what is termed "good neighborship" by means of additional facilities for the tenants. The estates of public utility societies will not have the same architectural pretensions as Well Hall because they will not have the money to spend upon it. The expense on the Well Hall Estate was colossal, so much so that there is a fear that the extravagance may deter others from copying the example.

Of the works being carried out under the Ministry of Munitions, one is not allowed at present to speak, but when the time comes for a record to be placed before the world of what has been done in this regard, it will be a revelation. Much could have been excused at such a time and under such conditions. One has only to read the accounts which have appeared in the British press from the pen of Sir Arthur Conan Doyle on the new munition towns that have sprung up, to realize that the whole of this has been done under town-planning conditions and with an eye to the future ordered development of these communities. That this has been the case is due to the recognition by the Government of the value of the improved housing work which has resulted from the activities of the garden city movement, and there is little doubt that the example of Letchworth and the other places which have followed in its train has convinced the world of the sanity of building in this manner.

In the press of November 28, for instance, Sir Arthur Conan Doyle gives a description of a town which he calls Moorside, nine miles long and a mile and a half wide, which twelve months ago was only a lonely peat-bog fringing the sea, and now has a population of some 25,000 inhabitants and a staff of 1,500 builders still engaged in extending the place.

Although names must not be mentioned, it is well to recognize that two of those who have been most employed upon this work of building in war-time are men whose names are most honored wherever garden cities and town-planning are talked about.

From the architectural standpoint the development of the English cottage is a matter of considerable interest. Everybody knows those long, long rows of continuous terraces of cottages and small villas, all of one type, repeated *ad nauseam* over all the outskirts of all our industrial towns. There is hardly a variation from a standard type, which comprises the narrow frontage with a deep setback, effectually screening light and air from what came to be the principal living-room of the house.

When the coming of the garden-city movement opened the way to a revival of domestic architecture and gave a new meaning to cottage building, there was such a violent swing of the pendulum that in the attempt to escape from the cramping hideousness which had disfigured our towns for the past two or three generations, all sorts of artistic extravagances were introduced into cottage-planning. Gables and oriel windows, leaded lights and long, sloping roofs, excellent in their places and things of beauty when carried out on a certain class of property, were specified for cottages whose occupants could pay only a few shillings in weekly rent. There was a sort of impression abroad that everybody who was to come and live in these cottages was a "fresh-air fiend," a student of Ruskin and Thoreau, and that if there were those who were not lovers of the simple life, they had "jolly well got to be." So we had the street-doors opening into the large, and often drafty, living-room, with the open stairs to the bedrooms going out at another corner, while very little provision was made elsewhere for cooking or for other domestic duties. The bed-

rooms were none of them square, and headroom was a minor consideration, so that getting into and out of bed became sometimes a matter of delicate strategy.

I am far from regretting that these things were done. They were probably necessary and were almost inevitable. If some of them were absurd and overdone, at any rate they directed many people's minds to considerations which had not previously been studied at all, and without doubt they woke in many people a latent appreciation of artistic construction. But it was overdone and it was expensive, as many cottage companies and owners have found to their cost when they have come to make alterations necessary to secure tenants after the first rush of popularity had subsided. After a dozen years of constant experiment, a type seems to be evolving which does more nearly meet the case.

In a recent visit to a number of these schemes I was impressed by the fact that the logic of circumstances has forced upon cottage architects the conclusion that the simple type of cottage is the one which must now be concentrated upon, and that the plain roof is superior for this purpose to the type which was formerly so much used—a type which was certainly more picturesque but which was more expensive, did not contain so much accommodation, and was not, by reason of the many breaks in the roof, so impervious to weather.

One does not want to see a whole colony of one-type cottages, with a simple front and a simple roof, any more than the present town street of one-type houses, but there are enormous possibilities even in dealing with one type when that one contains nothing which is architecturally objectionable, even though it may not include everything that we desire. In one new garden suburb of 600 to 800 houses there are only three types of cottage provided, and yet the colony has a charm of its own, simply on account of the skill with which the site-planning has been done. By varying the size of the blocks, by setting back here and there, forming squares and gardens, and securing by proper placing a "closed-in effect" for the streets with a decent block in the vista, this scheme has been given a distinctive character.

We have to face squarely the problem which is before us in the British Isles. Building has become, I fear, permanently dearer, and we must cut our coat according to our cloth, and as cottages must be provided, we who stand for an improved type of house with a proper environment and with social advantages, must find a type which will at once provide the accommodation which the speculating builder has provided in the past and also give us those improvements in internal accommodation and in design for which our movement stands.

For the moment, therefore, I pin my faith to the simple plain type and look to site-planning and grouping to provide the necessary variety. When things become normal again, then, perhaps, we can add some more ornament and have more freedom in design, but for the moment we must be content.

A Review of the Operation of the Registration Law in the State of New York

By D. EVERETT WAID

ONE may venture the assertion that the demand which has brought about the enactment of architects' registration laws in eleven states, with more soon to follow, is not primarily the wish to protect the public against unsafe buildings. It is safe to say that, on the other hand, the underlying motive is not a unionistic one to limit competition in business or to prevent cutting prices. The public, however, will believe, in spite of any protestations we may make, that we are making trades-union efforts. They may continue to believe that for some time to come, but eventually they will recognize the truth as we see it. That truth is that an architect, in order to do the work which belongs to his name, should have special ability and special training backed up by a broad general education; and the further sad fact is that, up to the present, anyone in New York State could assume the title of architect without let or hindrance, even if he were lacking in any one or all three of these qualifications—general education, special ability, and special training. Anyone with a flattered knowledge of drawing but without taste; anyone with a T-square and triangle, a little knowledge of carpenter work and none of the vital

elements of construction; anyone shrewd enough to hire a draughtsman but not to know a Corinthian capital from a Gothic vault;—any of these may (and all of them do) go to the public which builds usually only once and under false pretenses claim a commission to design a building. The client, imbued with thrift, knows that he has secured his building for one per cent instead of five or ten. He may never have the taste to realize that he has committed a crime against his neighbors, but when he completes his building is only confirmed in his belief that six per cent architects are robbers.

The function of the registration law, so far as the public is concerned, is to say, "If you want an architect, the man who may *use* that title is sure to know something about his business." The client who wishes to employ a builder or an engineer is free to do so on his own responsibility and without misapprehension as to what he is doing. Quite apart from our registration law, good building laws should fix the responsibility for safe construction upon the designer who is incompetent and jointly, also, upon the owner who employs him. Quite apart from our registration law we may look to future art commissions to protect the public against esthetic offenses. It is entirely futile to say that buildings shall be designed only by architects. But it is most important that the public eventually shall say that only well-designed and safely constructed buildings shall be permitted.

The time will come when the public will say that and say it effectively. But what our registration law says to architects is not what others say that engineers shall or shall not do, but what we ourselves must do. What we, as architects, say to ourselves is said through our own registration law, and that is that we, as architects, shall know something. Of the need for saying that we have only too much evidence.

The work of the Board of Examiners in administering the New York registration law had to do in its first year with 2,000 applications for certificates. Over 300 of those who applied were rejected as being unqualified to practise architecture. Some of these, it should be remarked in passing, are young men, promising, but as yet inexperienced, and no doubt they will reapply later and become able practitioners. Over 1,200 applications have been approved. Many of them, it must be admitted, are a sorry credit to the name of architect. Over and over again, as the Board reviewed evidence offered by a candidate—drawings badly done, elevations and construction badly designed, interiors badly planned, letters showing lack of scholarship and refinement, even to grossness and bad grammar—again and again did it realize why our profession does not occupy the high place in public estimation which it should hold. A mere recital of the functions of an architect would be a demonstration of the need of a broad education and a painstaking technical training. An architect's work puts him in a position of trust; to hold his clients' confidence he should have a mind capable of independent initiative and balanced judgment. His professional duty requires that he should be an administrator, a constructor and an artist.

Turning to the problems which have had to be met by the New York State Board of Registration of Architects, as it has been designated by the Regents (although named in the law the "Board of Examiners"), one may be interested first to ask about his own certificate. The parchments have been engraved from the design secured in competition, but none have as yet been issued, owing to the fact that some oversight in the State University left them without sufficient appropriation to pay for engrossing, and incidently for the time being without enough to pay the running expenses of the Board of Examiners. As soon, however, as a name is disapproved, the applicant is promptly returned his $25. If an applicant receives no notice at all it means that the Board is probably awaiting some drawings or a statement of his record which he forgot to send to Albany.

In interpreting the law the Board has tried to be as liberal as it properly could be and with due regard to actual rather than theoretical conditions.

The Board has had the assistance of a very full opinion on our registration law written by the Attorney General, which opinion seems very wise and broad in view. It has had the great advantage in the fact that the Department of Education also has had experience in administering the medical and other registration laws. With an able Assistant Commissioner of Education and an Attorney of the Department and clerical assistants, our avalanche of work has been handled with greater facility and less severe sacrifice on the part of the Board members than otherwise would have been the case.

One of the heaviest tasks of the Board has been the formulation of rules for its own procedure, and the writing of a syllabus of examinations which is designed to be a guide for study of architectural students. This book is likely to be delayed in publication until there can be secured certain amendments to the law which the Regents believe are required before they can administer the law properly. One of these amendments will fix the term of office of the five members of the Board at five years, one expiring each year. The President of the University, as well as the members of the Board, had assumed that the term of office could be fixed by the Regents. Another amendment will fix the standard of high-school education as that approved by the Regents. It is proposed also to correct some other slight verbal ambiguities in the law.

Since some amendments seem imperative we propose to ask for the following:

First, add another year to the exemption period during which architects who were in practice when the law was passed may apply for registration without examination

Second, permit registration upon a special examination for architects of ten years' experience and recognized standing from other states and from other countries.

Third, require that graduates of architectural schools shall not only have had three years' practical experience subsequent to graduation but shall give evidence of real knowledge of professional practice.

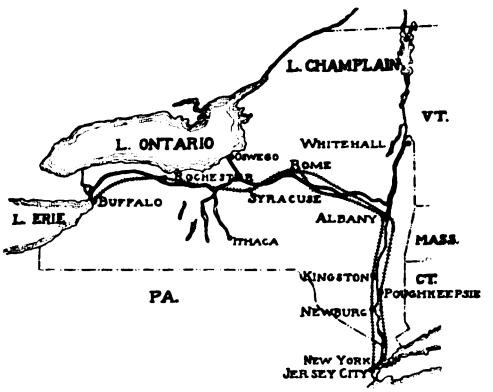
Fourth, provide that the registration law shall not be construed to restrict to architects the obtaining of building permits.

The members of the New York Board believe that registration laws rightly drawn and administered will have a powerful educational influence upon architects themselves, and that therein lies the primary importance of legislative regulation of the practice of architecture.

The National Importance of the Hudson-Mohawk Thoroughfare, and Objects in its Landscape

By WARREN H. MANNING

IN the national, state and town-planning movement of today, we must more fully recognize the far-reaching importance of such big continental features as the mountains that are barriers to easy surface traffic, and the plains, lakes, rivers, and their drainage basins, through which are traffic lines of least resistance. The two greatest continental thoroughfares, with New Orleans and New York as the gateways, are the Mississippi valleys, which cover over two fifths of the United States, and the Hudson-Mohawk valleys.



(1) THE HUDSON-MOHAWK VALLEY THOROUGHFARE

No city is more impressively big and busy than is New York, and few, if any, continental thoroughfares in all the world are more stately, beautiful, or serviceable than is the Ambrose Channel from the sea to the city, the tidal basin of the Hudson to Albany and Troy. From here through the Mohawk valley continue the railways and waterways to the Great Lakes with their steam lines and then to the Mississippi basin. Mr. A. B. Hepburn states that 73.5 per cent of the 9,113,614 (1910) New York state population is within two miles of the State Barge Canal along the 500-mile Hudson-Mohawk valley to Buffalo. (Illustration 1.)

It is estimated by well-informed persons that 4,125,000 passengers are carried up and down the Hudson Valley and to and from the sea through the New York gateway each year. This is the equivalent of 4⅛% of the population of the whole United States.

Needed—A Great Highway, Thoroughfare, and Reservation Plan in the Hudson and Mohawk Valleys.

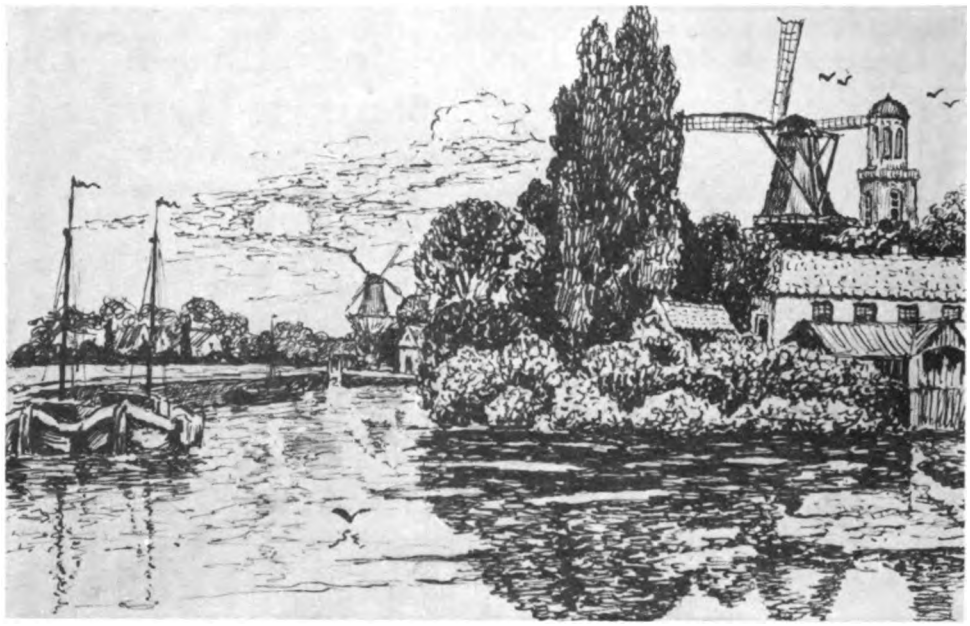
Notwithstanding the commanding importance of this thoroughfare to the state and the nation, there is no comprehensive state action or coördinated movement among all the towns along the line definitely to establish a great highway thoroughfare and reservation plan that will adequately and creditably meet future needs.

It is true that the splendid public spirit and generosity of a few wealthy men and women have secured a public reservation of about 22,000 acres with forty miles of river-front, including the Palisades, the only scenic unit of first magnitude in the valleys except Niagara Falls. These holdings are taken advantage of for recreation purposes by over a million people a year. Land has not been acquired, however, on the top of the bluff for a great thoroughfare from which an unobstructed view, for all time, would be gained over the Hudson Valley as it is now gained from the Morningside Park in New York. The Park road, as now located, partly near shore, partly back of villages, and at times upon the talus slope, is sure to be obstructed more and more as time goes on by villages, railroad terminals and industrial plants that will occupy every scrap of available Hudson River shore, as its waters are increasingly used by Barge Canal, and other low-cost river traffic, as railroad congestion increases.

Already, in many places and especially at Troy (17), the shore is fully occupied to the water's edge, an occupancy that is not of necessity unattractive, as one who has visited the Venetian (3) or Dutch (2) canals will know.

Commercial and Pleasure Highways—Aëroplane Landings.

The absence of wide and direct automobile highways along this great thoroughfare is obvious to one who examines the Government to-



(2) The Dutch Canals with Foliage

pographic sheets. Such thoroughfares, when possible, ought to follow each side of railway and canal rights-of-way to increase their width and allow slow-moving auto traffic to pass from station to station. Another passage should be along warehouses, shops, and factory delivery fronts. Between the two roads in the industrial centers would be the rapid passenger auto ways that would pass residential frontage beyond the industrial centers. There should also be opportunities provided for a separation of grade as conditions require it. There also must soon be aëroplane landings on flat, smooth land not less than 1,000 by 1,000 feet square and preferably 1,600 by 2,000, which is about eighty acres, as stated in a recent address by Mr. Orville Wright. From such a main trunk line with its aëroplane-landing junctions, the branch roads would lead. It is by such wise planning that New York will maintain its commercial supremacy and do its part in preparedness for the intense international industrial competition of the future.

The importance of such a project is emphasized by the great valley population along the Barge Canal towns, and by Mr. Albert M. Turner's Connecticut state study in which he finds that in a century 84 upland towns have decreased 10.7 per cent while 84 lowland towns have increased 89.3 per cent.

Industry Now the Dominant Influence in a Highway Plan.

To us, who have to do in a large way with the design of landscapes and of structures in landscapes, this movement has much historic and practical significance. It leads from feudal days, when the hilltop watch-towers and castles gave wide outlook to detect enemies and protect retainers whose homes and little home industries crowded about the base of the castle. (9) It leads from monastic days, when a cult with its terror of saving and cursing souls gave vast resources to religious leaders with which to build dominating cathedrals in the crowded villages of their followers. (27) It takes us back to the forefathers who broke away from religious tyranny but still retained the dominance of the high-spired church in our colonial villages and the hilltop location for protection against enemies. (16) Then came the dominant evidence of civil as against ecclesiastical authority in the design and hilltop location of state capitols; but now, the spires and the capitols are being obscured by much higher and bigger business and industrial structures. (8–11.)

Through Traffic Lines in the Valleys.

Now, great industrial establishments are dominating not the hilltop but the valleys where through traffic lines are, and where employees'

(3) The Venetian Canals without Foliage

homes crowd about the factories and up nearby hillsides to overlook the factories. (10)

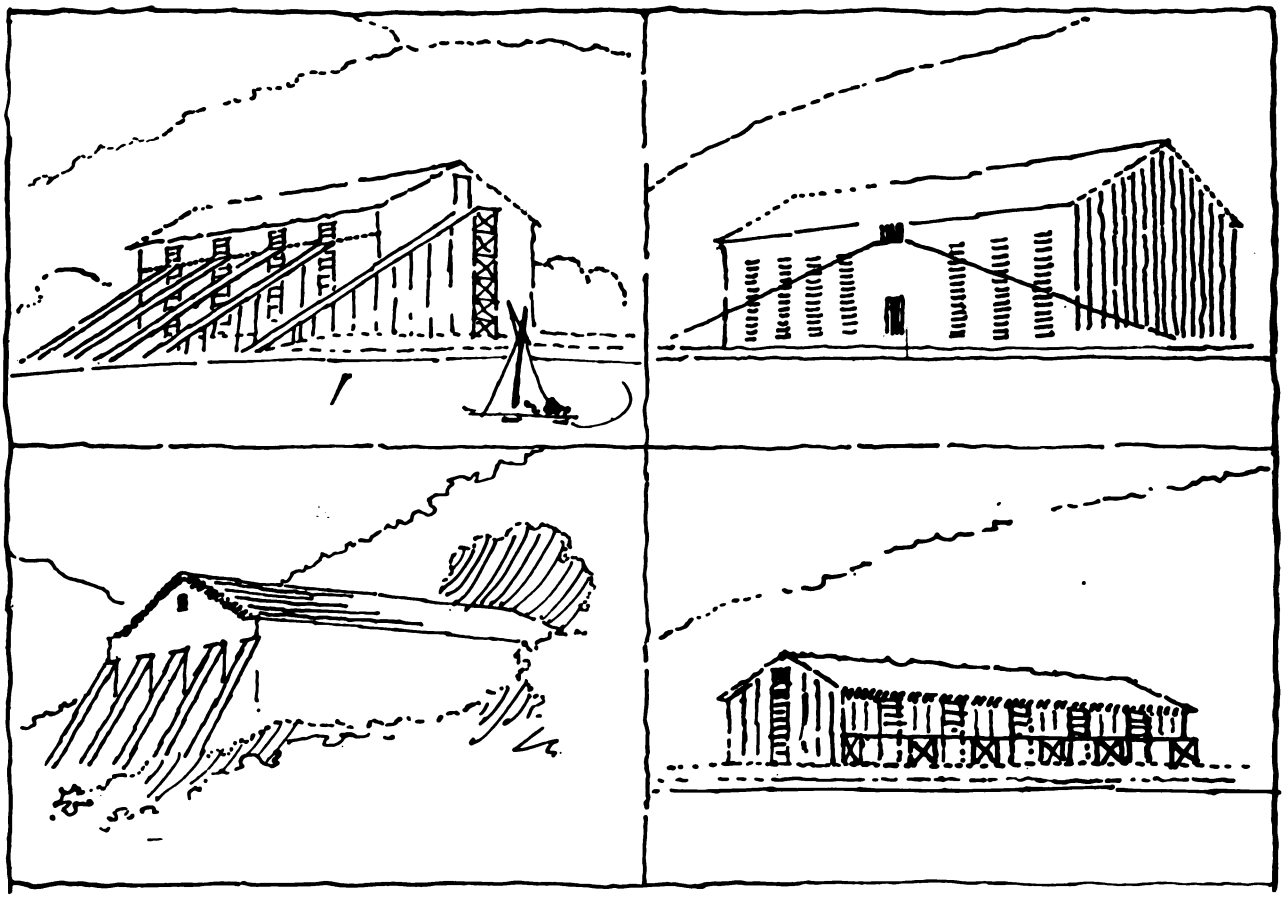
Let us here consider these industrial plants. They have been constantly migrating with changes in economic conditions. For example, when New England's best timber was exhausted, furniture factories went to Michigan. Now that the limits of natural resources are better known, industries will tend to become permanently established at the place where raw and finished products can be most economically assembled and distributed. Distinct types of industrial structures will be developed in each locality, with homes to meet the needs of both the highly paid finished-product workers of one locality and the low-paid labor that is harvesting raw products in another.

A Study of Architectural Accents in the Proposed Route between Albany and New York.

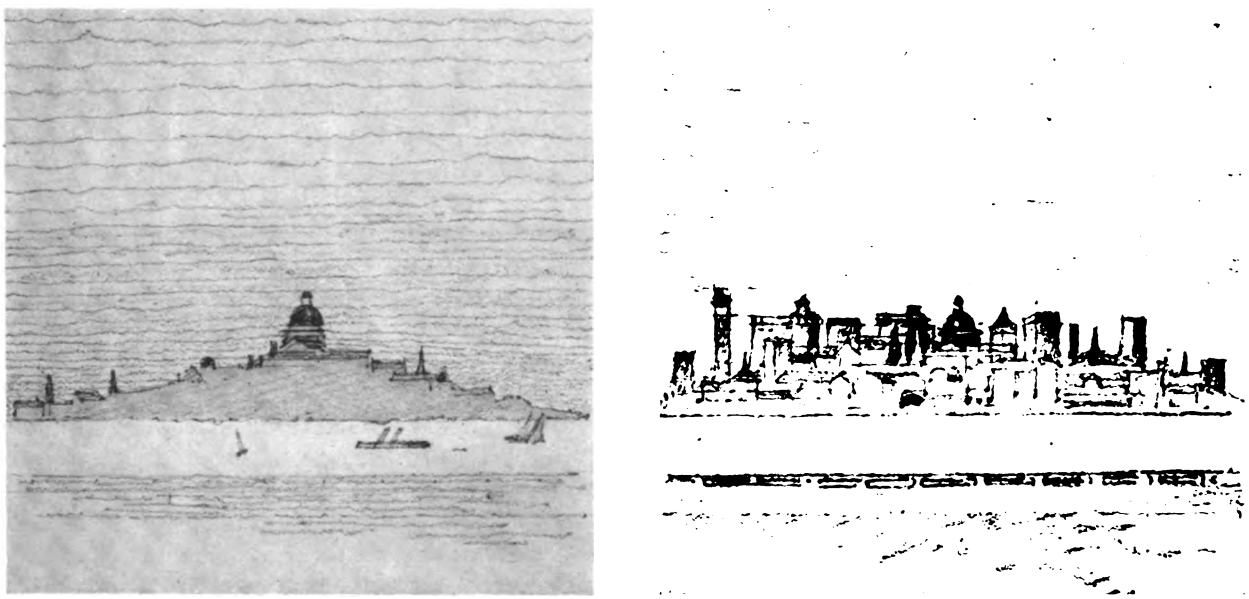
How dominant industrial plants are is made evident to one who studies landscape between Albany and New York from the New York Central trains. Ice-houses, for example, present a surprising variation in construction detail. While some are not attractive, it is obvious that they may have distinction, dignity, and beauty. One at Hudson, with red-latticed runways and framework outlined against a whitewashed wall and reflected in the water below, is certainly attractive. Another, on a river island, was covered on four sides with a raw-colored advertising sign that is an insult to the public, a discredit to the owners of the buildings and to the producer of the advertised product. These are excellent examples of the good and evil opportunities offered by this class of structures. (4–7, 12–15) Close to the railroad is a big concrete storage building with big, simple, flying buttresses. (6) It has distinction and impressiveness.

Opposite Greendale a large cement plant merges unobtrusively into the landscape with its gray cement-colored surfaces. Above Poughkeepsie is a great bare rectangular public institution, shot full of little window-holes and surmounted by a miniature all-out-of-scale belfry. Presumably this was the work of an architect, but it is as unattractive as any ice-house. (15) Near this point, and at Kingston, are brickyard structures many hundred feet long with a low-lying broad roof-line and long dark shadows under the eaves. These are dominant and not unattractive features, especially when separated into balanced units by a higher structure. (29–32.) At one point a gray terraced clay-pit with sharp edges and steam-shoveled channeled faces was not unattractive as seen from across the river.

These brick-sheds show how a plain structure can be attractive, as does the work of Mission

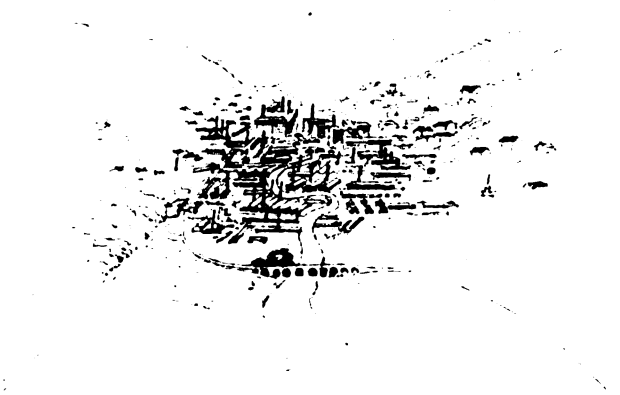


(4–7) Typical Hudson River Icehouses Offering Opportunities for the Beauty of Good Proportion in Mass and in the Utilitarian Detail. The lower left-hand Picture shows a Concrete Storage House, revealing Strength and Stability



(8) Boston —The Capitol as it was and now is. Representing the Dominance of Civil Authority being Eclipsed by Business and Housing

(9) An Ancient Castle and Retainers' Village. Representing the Dominance and Protection of Feudal Days



(10) The Dominance of the Factories in the Valley with Homes on the Hillside Above

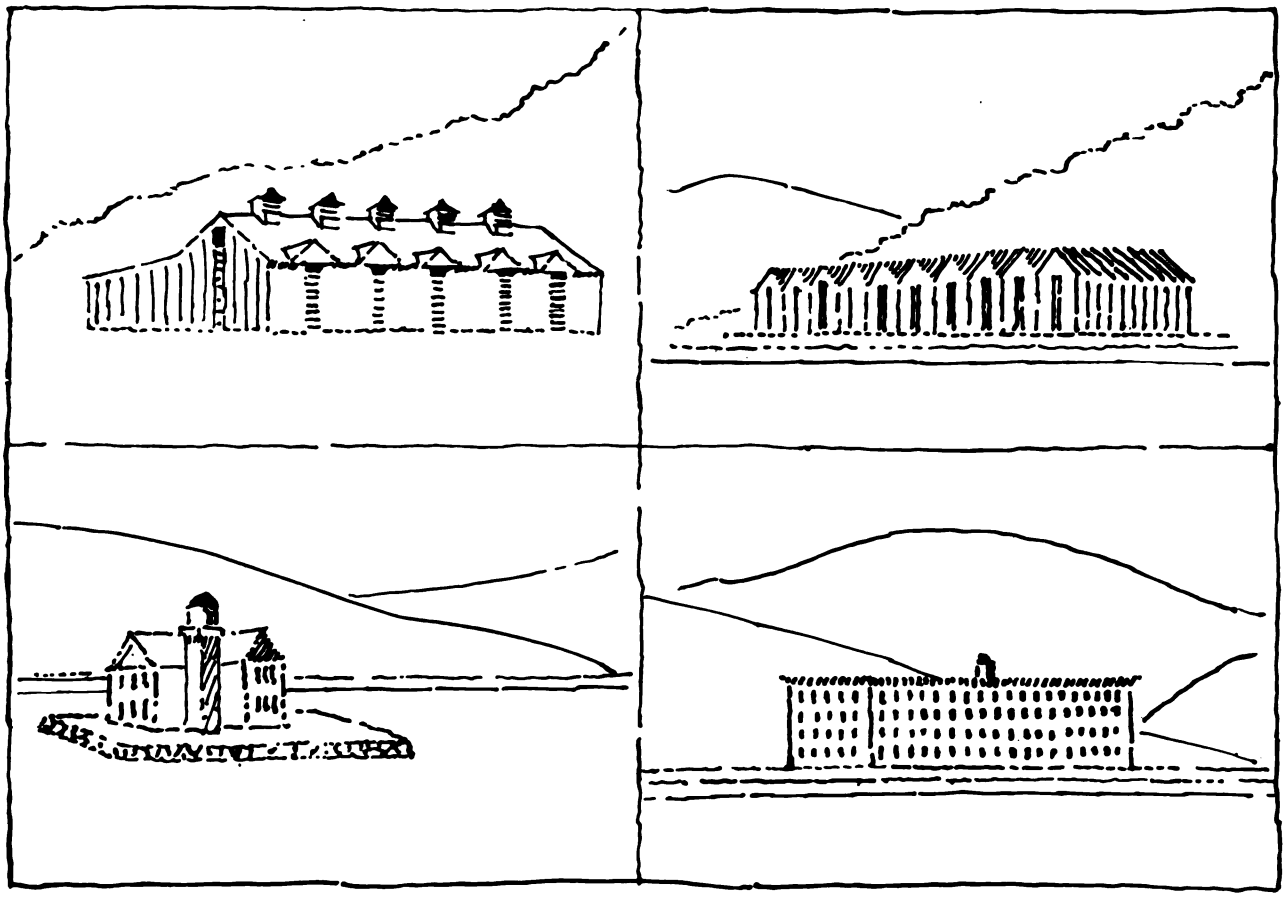
builders (25) of the Pennsylvania Dutch at Ephrata (26), and of the English soldiers at Mackinaw Island (33).

From Newburg North.

At Newburg, near the shore, the dominant structure is a clumsy many-storied yellow factory. (22) Above this the town spreads over the landscape like a blot of reddish gray ink on the brownish winter hillside, with only a few little spires to relieve monotony. Near Kingston other brickyards form the foreground for an attractive high-porticoed old house (31) with high lights on, and deep shadows between the columns. This type of buildings counts among the best in a distant landscape. On either side of this are reddish clay-pits, broken down and untidy, that ought to be planted. Near this town a charming little island is disfigured by the billboards of one Smith's product. He ought to be ashamed of himself for thus insulting the public. Again, where High and Kings bridges span the valley, a billboard monstrosity shuts out the most effective bridge view completely, just as one is beginning to enjoy it.

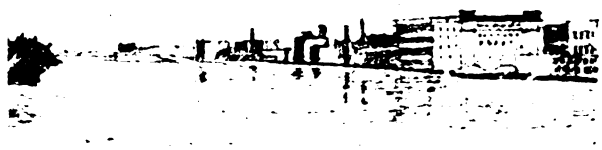
Of educational buildings, West Point forms a splendidly effective pile as it steps up the steep hillside from the water's edge in a well-studied grouping of its parts. There is a fat trail of red brick dwellings trailing along the face of the

(11) The Dominance of Distinctive Buildings Lost in the Jumble of Big Things in New York

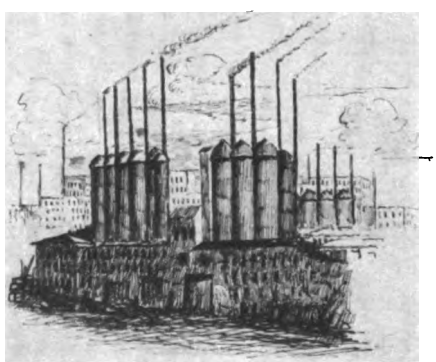


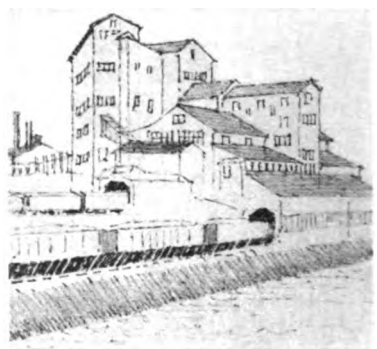
(12–15) Showing How Icehouses Are More Attractive than a Hudson River Lighthouse or a Public Institution

(16) Church Spire in a New England Village—A Recognition of Church Authority

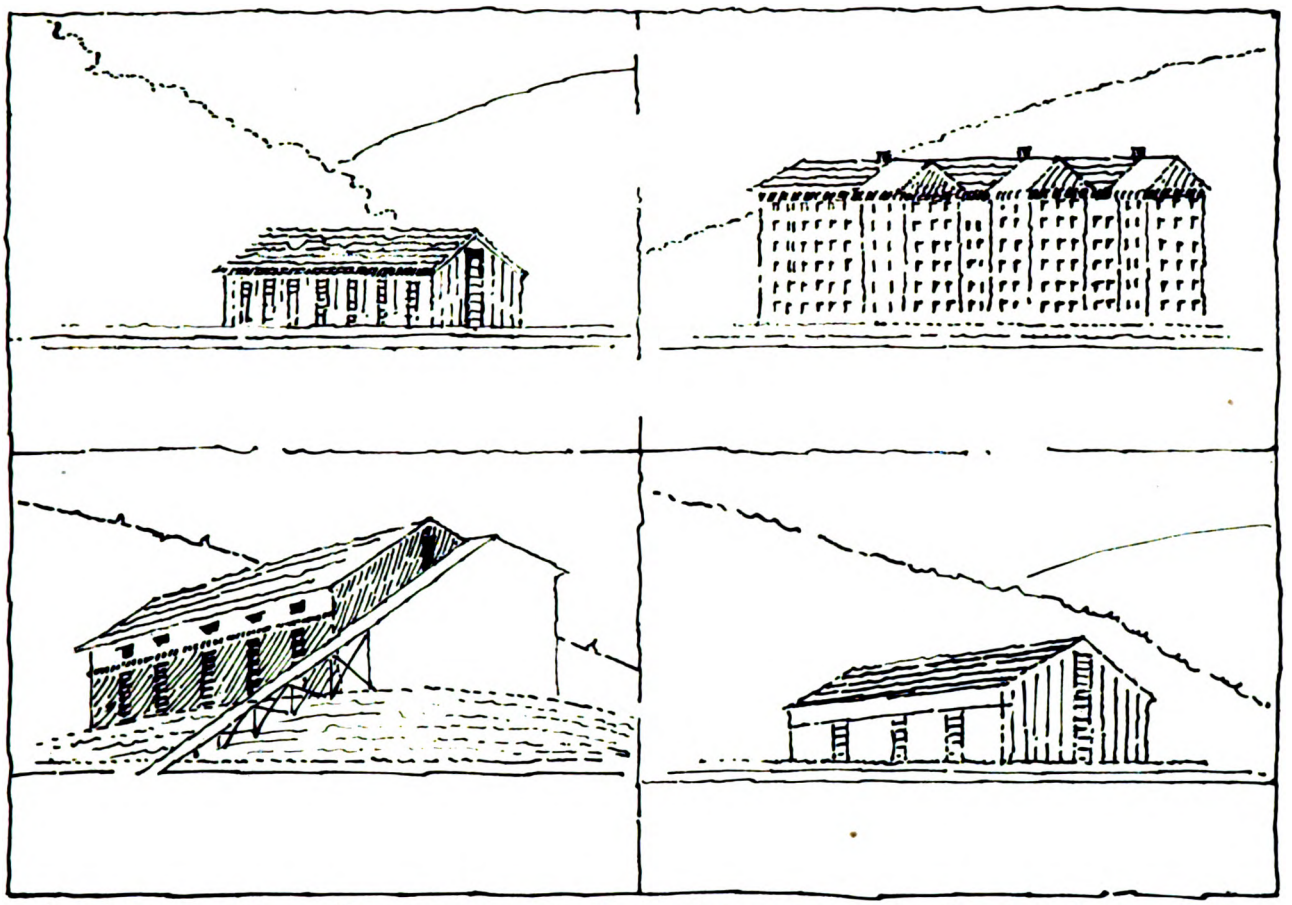


(17) Collar and Cuff Industries at Troy on the Water's Edge of the Hudson River

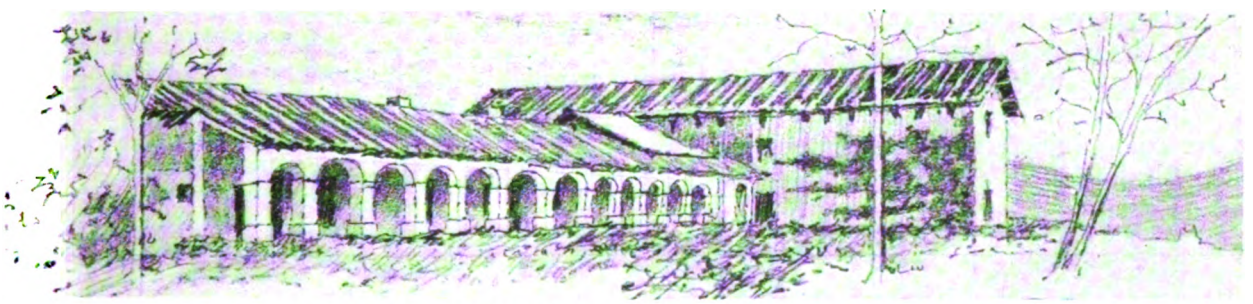




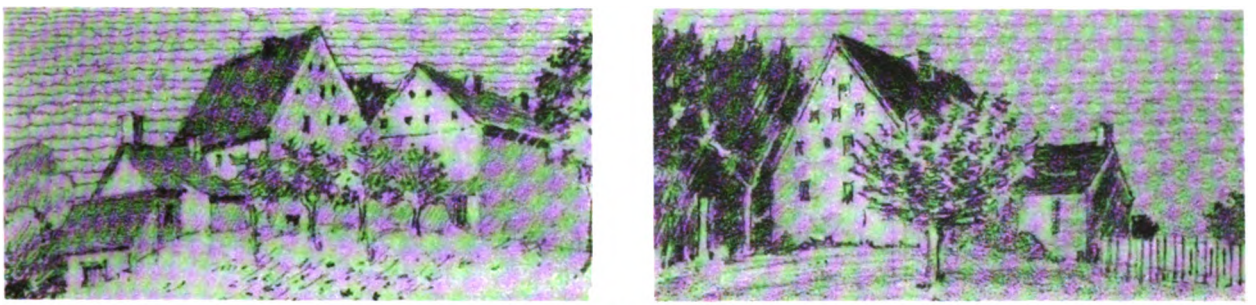
(18–20) Coal-Mining and Blast-Furnace Structures Will Give Individuality to the Industrial Towns of the Future



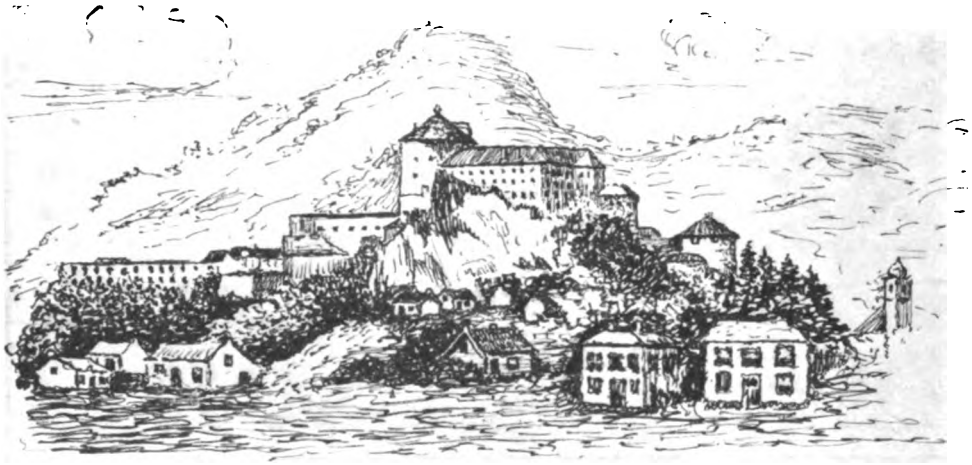
(21–24) Icehouses Are also More Attractive than a Factory Building with too Many Stories for Looks or Safety



(25) The Attractiveness of Plain Structures. The Work of the Mission Builders



(26) The Attractiveness of Plain Structures. The Work of the Pennsylvania Dutch at Ephrata



(27) THE MONASTERY AND ITS VILLAGE. REPRESENTING THE DOMINANCE OF ECCLESIASTICAL DAYS

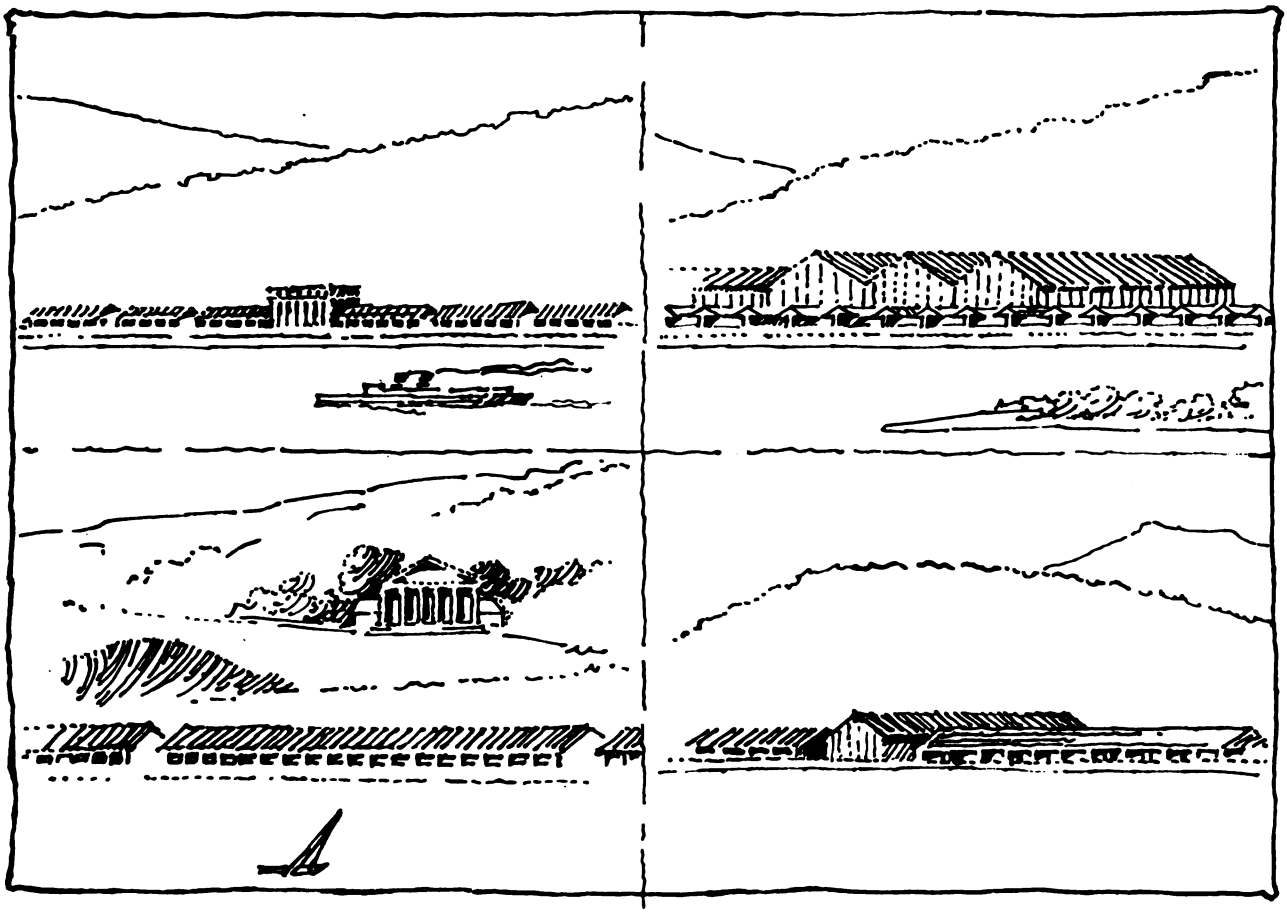
bluff to the south that would have merged better in the group if built of the stone of the main buildings. Quite as effective, in a lesser degree, are the ranks upon ranks of brick buildings near Hastings in which yeast-cakes are made. A most conspicuous structure in which architectural detail has run riot is a private island castle with embrasures, battlements, bastions, and a display of artillery antiques. Standing in the river at intervals are lighthouses that might have been most attractive architectural beacons (14) but are not.

How special industries develop a distinctive and attractive structure in which architects have taken no part, but that convey a lesson to all who have to do with design in landscape, is made evident by the Scranton & Wilkes-Barre coal-mining and assorting structure and the Birmingham, Alabama, blast furnaces (18–20).

An Object Lesson—A Suggested Program of Action.

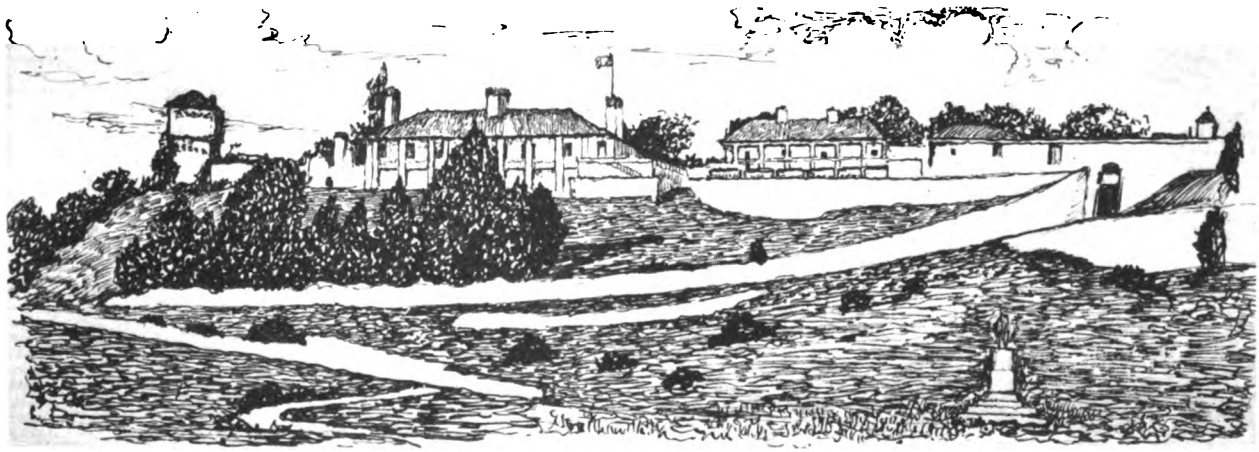
It is such incidents that make one feel that it would be really worth while for a group of those who have to do with the development and delineation of landscape to take two "days off" on a steamer from New York to Albany and back for the purposes of sketching existing river-side conditions and practicable improvements that could be easily made, and offering them as suggestions to be acted upon by industries, towns, and individuals. These suggestions could be offered through the local press or otherwise. This work would be a contribution to the educational movement that is leading a constantly increasing number of people to gradually, but surely, develop thought, sentiment, conviction, and then readiness to work for more adequate and beautiful thoroughfares for traffic and pleasure, for reservations to preserve landscape

(28) SPRINGFIELD, MASSACHUSETTS.—A Distinctive City with its Evidence of Church Authority over-topped by the Evidence of Civic Authority



(29–32) The Attractiveness of Plain Structures. Brick Yards

beauty, and for more beautiful towns and structures to house all kinds of human activities. It is not to be expected that suggested improvements can be brought about quickly through legal authority alone, especially when this authority is arrogantly and ignorantly enforced, as it often is. Permanent good results must come through the more persuasive and insistent demands of educated popular opinion, and every professional man owes a duty to himself and to the public to give some time and aid to this great work.



(33) The Attractiveness of Plain Structures. English Barracks at Mackinaw Island

Beaux-Arts Institute of Design

Official Notification of Awards—Judgments, February 13, 1917 and February 27, 1917

Class "A," Third Projet

Jury of Award.—F. A. Godley, W. Emerson, G. A. Licht, F. C. Hirons, E. V. Meeks, H. W. Corbett, S. Codman, H. Sternfeld, F. H. Bosworth, Jr., E. I. Williams, H. L. Shay, H. Sedgwick, J. Wynkoop.

Program.—A Country Home. *Drawings submitted, 89.*

Awards.—First Medals, A. C. Robinson, III, S. Matthews, J. Hudnut, Columbia University; E. A. Lehti, Atelier Hirons, New York City; D. R. Wilkinson, Los Angeles Architectural Club; L. C. Licht, L. Suckert, R. W. Blaine, University of Pennsylvania.

Second Medals, W. H. Jones, F. W. Bail, D. F. Innes, D. B. Ferris, A. Burton, M. M. Konarski, Columbia University; L. V. Lacy, W. W. Horner, Cornell University; W. G. Sprague, A. F. Skogse, M. C. Beebe, Atelier Hirons, New York City; A. H. Christman, University of Pennsylvania; A. C. Webb, Atelier Wynkoop, New York City.

Class "A," Third Esquisse-Esquisse
Class "B," Third Esquisse-Esquisse

Jury of Award.—M. S. Wyath, F. H. Haskell, Mr. Everett, F. T. Chamberlain, P. Schultz, G. H. Bickley; also served as Jury of Award for Class "A" and "B" Archæology, Third Projets and Measured Drawings.

Program.—Class "A," A Jeweler's Store-Front. *Drawings, 62.*

Class "B," A Clock Tower. *Drawings, 60.*

Awards.—Class "A," Third Medals, L. C. Licht, University of Pennsylvania.

Mentions, J. Hudnut, J. L. Newman, F. H. Buell, Columbia University; R. H. McNaughton, Cornell University; E. R. Froese, Atelier St. Louis; L. Suckert, P. J. Weber, University of Pennsylvania.

Class "B," First Mentions, P. A. Tischler, Columbia University; D. W. Orr, Yale University.

Mentions, J. P. Morgan, Carnegie Institute of Technology; C. A. Albrizio, Atelier Hirons, New York City; A. G. Alexander, Atelier Licht, New York City; G. Chittenden, R. A. Lockwood, Los Angeles Architectural Club; F. M. Hodgdon, Atelier Rebori, Chicago; T. Steinmeyer, St. Louis Architectural Club; M. Boulicault, Atelier St. Louis; W. T. Conboye, George Washington University, Washington, D. C.; J. F. Cook, Atelier Wynkoop, New York City.

Class "A" and "B" Archæology, Third Projet

Program.—A Patio. *Drawings submitted, 18.*

Awards.—Third Medals, W. F. Diehl, Carnegie Institute of Technology; J. Hudnut, Columbia University; P. J. Weber, G. M. D. Lewis, University of Pennsylvania.

Two Measured Drawings were submitted in this competition on which the following award was made: Third Medal, C. H. Sorber, Carnegie Institute of Technology.

Official Notification of Awards—Judgment of February 27, 1917

Class "B," Third Analytique

Jury of Award.—F. A. Godley, W. Emerson, P. A. Cusachs, H. P. Pennington, L. Warren, J. F. Harbeson, A. Ware.

Program.—A Doorway. *Drawings submitted, 117.*

Awards.—First Mention Placed, D. Reinhardsen, Columbia University; R. Golden, Atelier Hirons, New York City; G. H. Levy, 527 Fifth Avenue, New York City; G. K. Trautwein, T-Square Club, Philadelphia.

First Mentions, I. S. Stark, A. A. Klingensmith, Carnegie Institute of Technology; H. Strazzabosco, Atelier Hirons, New York City; B. Sutter, Atelier Puckey, Chicago Architectural Club.

Class "B," Third Projet

Jury of Award.—F. H. Bosworth, Jr., H. W. Corbett, F. C. Hirons, H. Sedgwick, W. L. Bottomley, M. S. Wyath, H. Hornbostel, Prof. Burnham.

Program.—A Battalion Armory. *Drawings submitted, 122.*

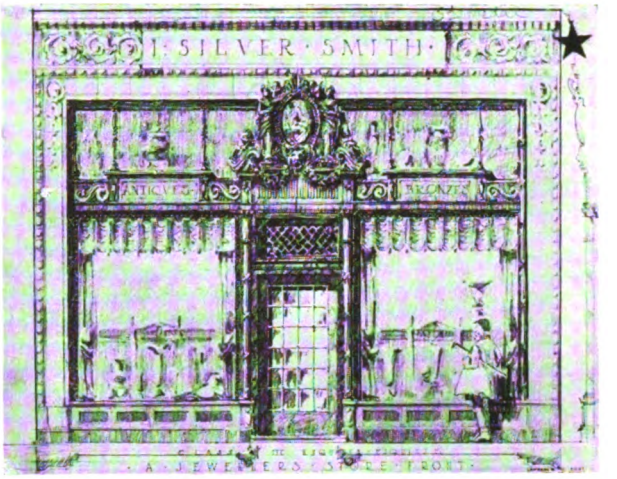
Awards.—First Mention Placed, E. S. Lacosta, Atelier Corbett, New York City; F. I. McCathern, F. W. Knecht, Jr., Atelier Hirons, New York City.

First Mentions, H. G. Marceau, D. Holstein, Columbia University; R. P. Raseman, S. P. Thompson, Cornell University; D. A. Hamilton, Carnegie Institute of Technology; W. C. Skinner, Jr., Detroit Architectural Atelier; W. H. Bond, Jr., Atelier Hirons, New York City; A. G. Alexander, Atelier Licht, New York City; F. A. Elsasser, Atelier Wynkoop, New York City.

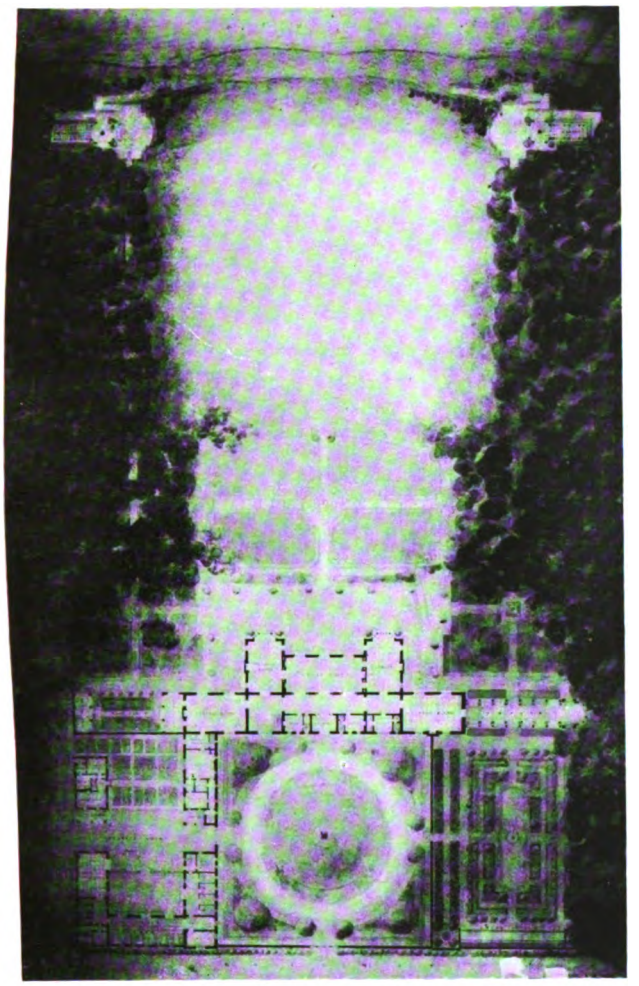
War-Time Help for the Students of the Ecole des Beaux Arts

Under the Honorary Presidency of Mr. Whitney Warren, there has been formed, by a number of American students at the school, a committee for assisting the members and graduates of the school now with the French colors, as well as their families at home. The work has been carefully organized, and contributions are asked in order that the assistance may be enlarged to cope with the growing needs. Contributions may be sent to Mr. Henry R. Sedgwick, Treasurer, 107 East Thirty-seventh Street, New York City.

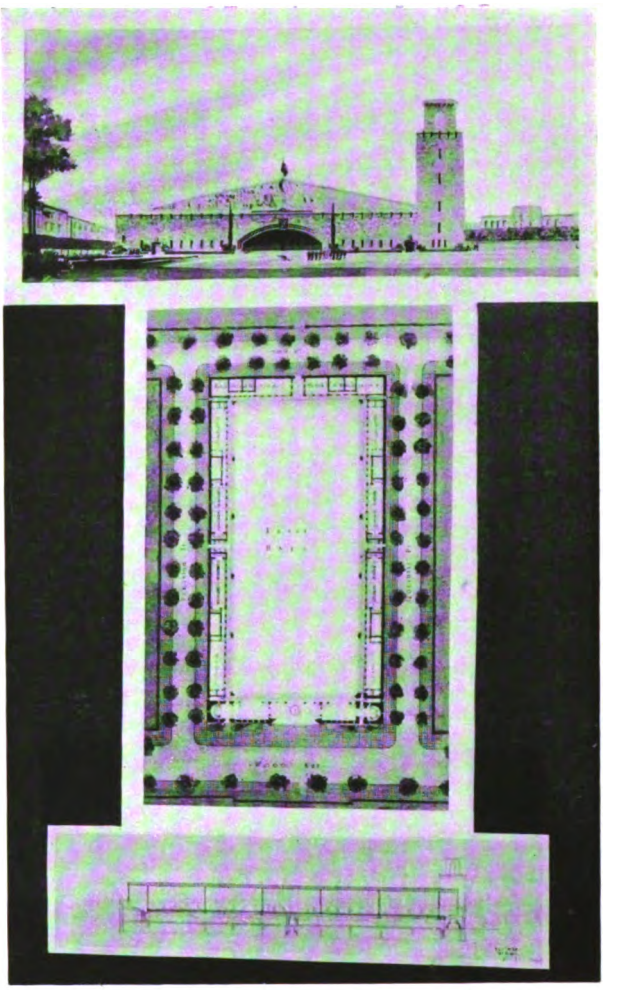
Class A.—III Projet.—A Country Home
First Medal, L. E. Licht



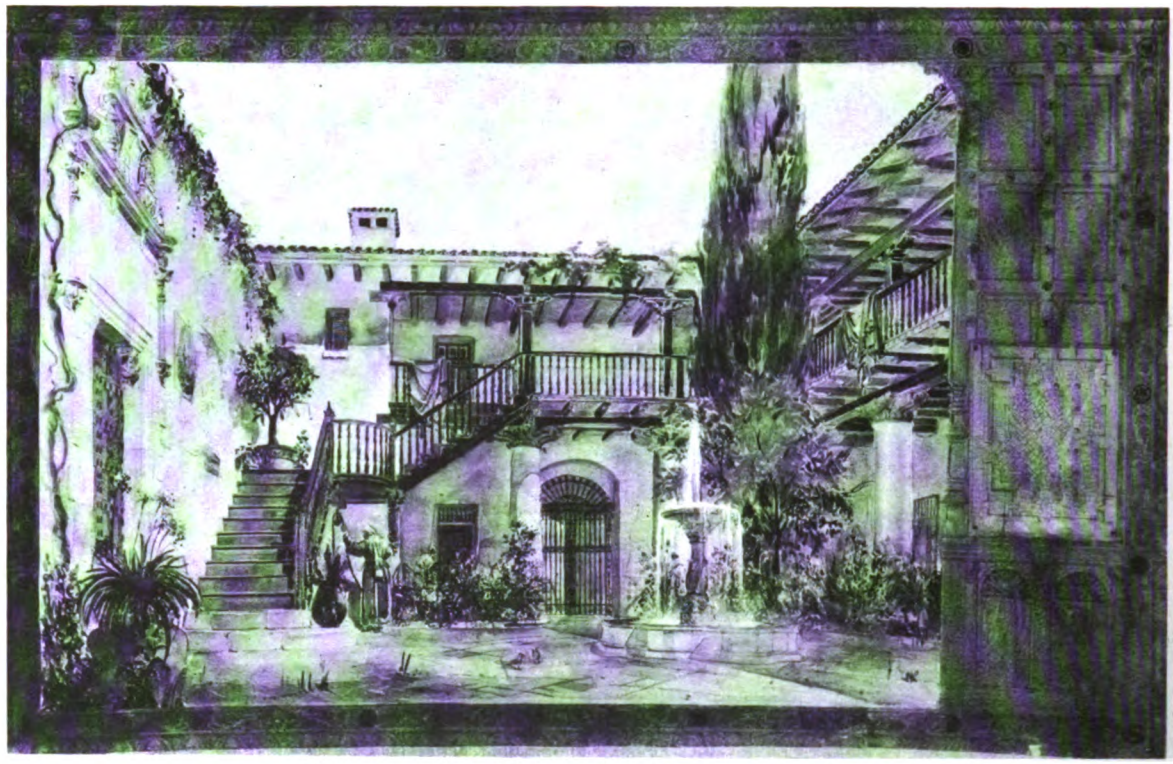
Class A.—III Esquisse-Esquisse.—A Jeweler's Store Front
Third Medal, L. E. Licht



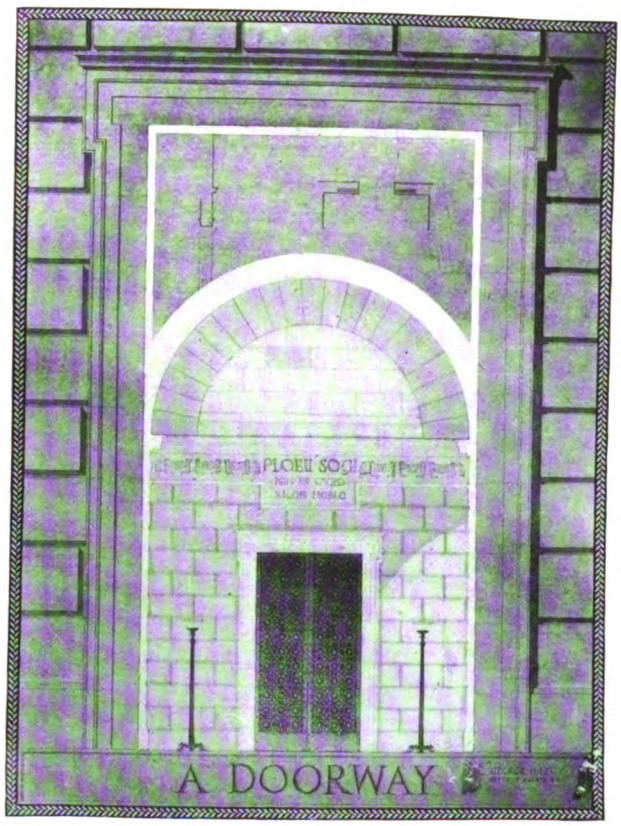
Class A.—III Projet.—A Country Home
First Medal, L. E. Licht



Class B.—III Projet.—A Battalion Armory
First Mention Placed, F. I. McCathern



CLASS A AND B.—ARCHÆOLOGY.—III PROJET—A PATIO
Third Medal, P. J. Weber



CLASS B.—III ANALYTIQUE.—A DOORWAY
First Mention Placed, G. H. Levy

CLASS B.—III ESQUISSE-ESQUISSE.—A CLOCK TOWER
First Mention, D. W. Orr

Town-Planning and Housing

GEORGE B. FORD, Associate Editor

A Residence Park on the Site of the Panama-Pacific Exposition

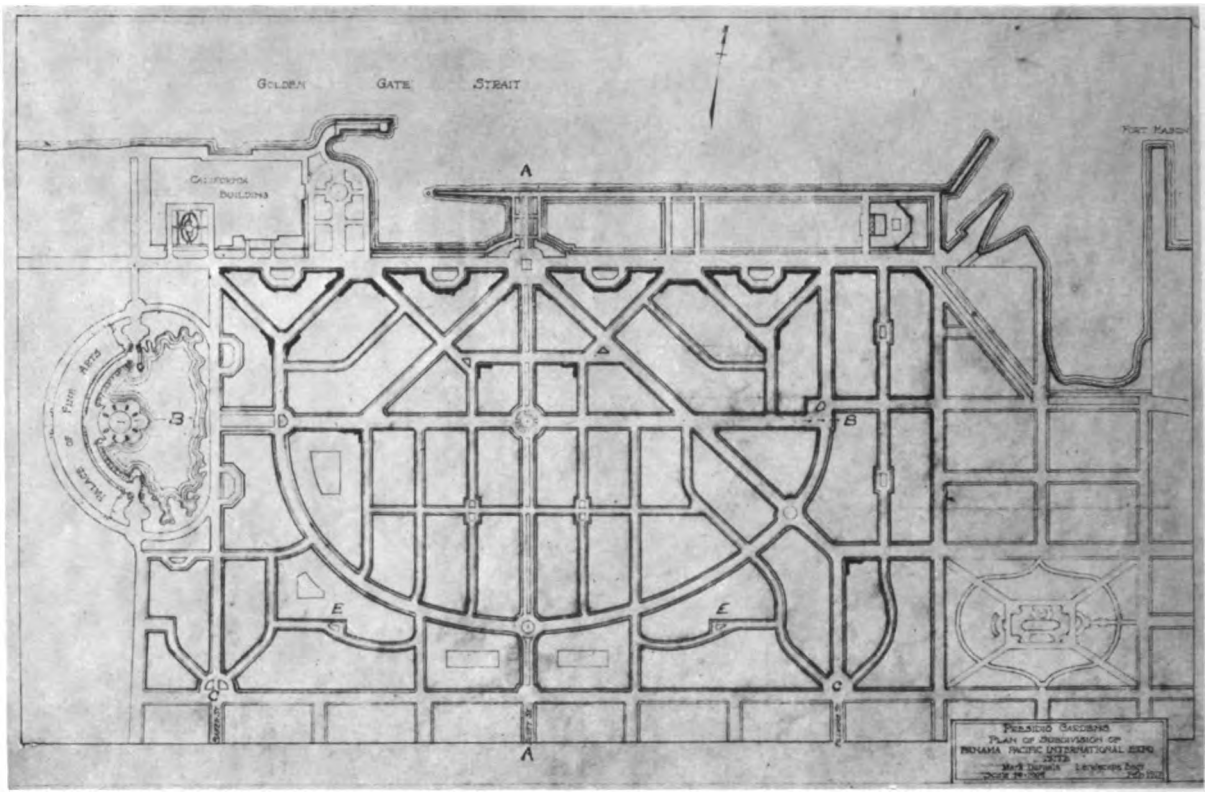
By MARK DANIELS
Architectural Renderings by C. K. Bonestell, Jr.

The Plaza Indicated at D on the General Plan (p. 174).—From a Point South of the Plaza, Looking North. From a Water Color Sketch by C. K. Bonestell, Jr.

IF there were ever any doubts in the minds of laymen concerning the value of city-planning, the controversy over the purposes to which the area recently occupied by the Panama-Pacific International Exposition should be put ought to cause them to be laid aside forever. For the past ten years the residents and others interested in the northern sections of San Francisco have been arguing and pulling this way and that, first to make this site, formerly known as Harbor View, into a manufacturing district, next into a home for wandering warehouses, then into massive shipyards, a wholesale district, freight-yards, and, in fact, almost every possible purpose except that to which geographical conditions and the trend of city development point, namely a beautiful residence park.

The Influence of Existing Property Values in Determining Proper Use of the Exposition Site.

Two conditions alone should suffice to indicate the wisdom of making a residence district of this site. First, the great manufacturing district of San Francisco lies to the south, where land is cheaper and has drawn about it the great masses of the laboring element of the city's population. Running diagonally across the city is Market Street, the principal business thoroughfare. The industrial life of the city is developed largely on the south side of this street, and the great area in this section of the city is built up of factories, warehouses, and the residences of those who are employed in them. It is possible for the city to expand almost indefinitely in this direction as this



SKELETON OF THE GENERAL PLAN, SHOWING THE STREET SYSTEM FOR THE RESIDENCE PARK TO OCCUPY THE SITE OF THE PANAMA-PACIFIC EXPOSITION AT SAN FRANCISCO

The Heavy Lines Show the Method of Securing an Increased Marine View by Using Diagonals as Streets of Entry to the Marine Boulevard. A–A, Main North and South Axis, Centering on the Column of Progress at the Northern End. B–B, Main East and West Axis, Centering on the Dome of the Fine Arts Palace. C–C, Business Centers, Along which Are also the Transportation Lines

property becomes more valuable, and factories and warehouses may extend along the southerly lines of the only railroad entering the city and in the direction of the cheaper land.

On the north of Market Street the area is fixed and cannot be increased, and the land values in this district must, beyond any question of doubt, eventually preclude factory and warehouse sites from the district.

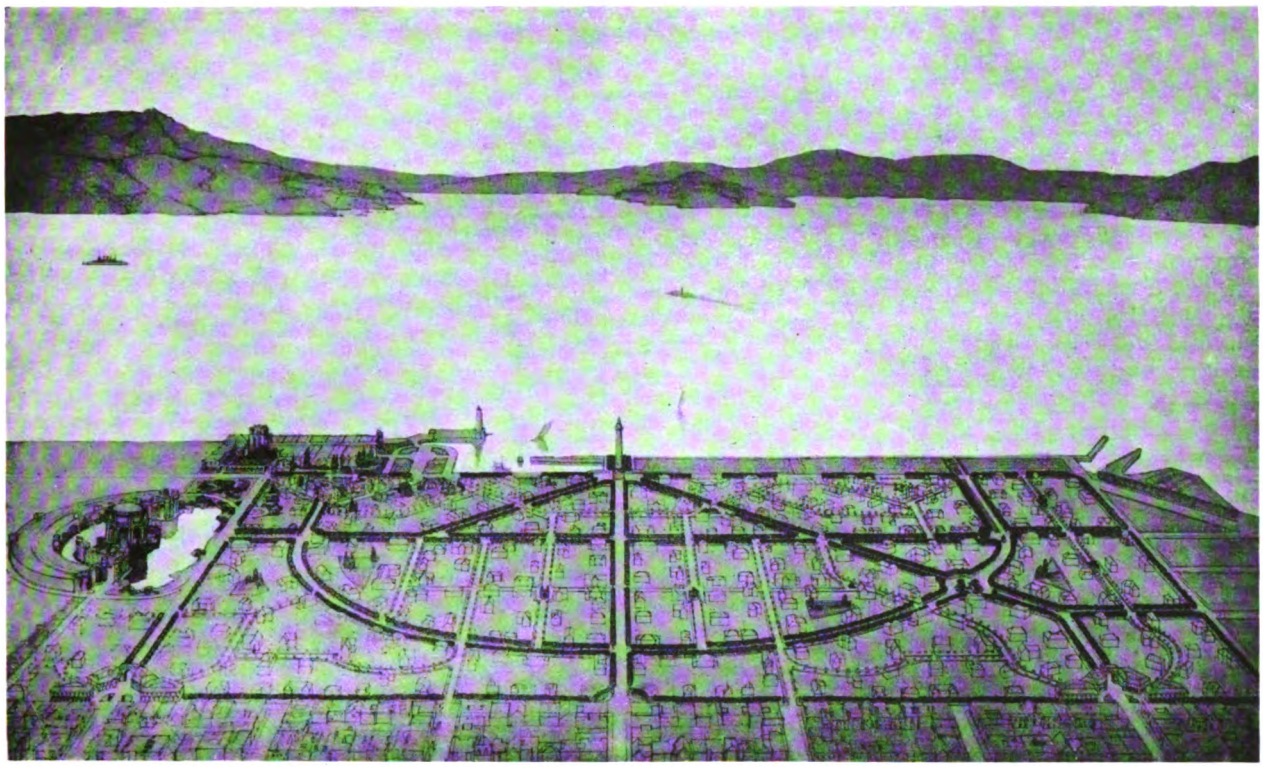
Scenic Value of Site.

The second factor is the superior scenic value of the northern part of the city. The hills and slopes in the northern district command a view of the Bay, the Golden Gate, and the Pacific Ocean, that can be surpassed in few cities in the world; and since in a city of over one-half million population there must always be pretentious dwellings, it is only logical to assume that they will seek locations with beautiful settings. This is made doubly certain by the fact that the southern portion of the city is so densely built up by the laboring element that it would be difficult to find locations for the pretentious dwellings in that district.

Again, San Francisco is developing along peculiar lines. For, despite the fact that the city is bounded on three sides by salt water, this location is substantially the only one where the residences could be built on the water's edge. Of the many miles of the city's shore there are only a few thousand feet where an imposing home could be built on the shore. However, it is not the purpose of this article to enter into another of the almost innumerable discussions of the merits of the present plan to make a residence district of the site of Harbor View, despite the opportunity to succumb to the temptation of again pointing out the value of city-planning.

Evolution of Accepted Plan.

In developing the plan for the park, a process of elimination was carried on; a great number of studies were made in an effort to secure a street system that would fit the unusually large number of local conditions. First, the lines of traffic were established and a general block plan worked out regardless of ownerships and other factors that might be controlled. As a result of these studies Plan No. 1 seemed to be the most desirable, but it was found impossible of execution as there were certain owners of property in the district who refused to abandon the idea of the district eventually being used for other purposes than a residental locality. Another plan was commenced on the property of those owners who were willing to develop along these new lines and, as a result Plan No. 2 was finally adopted and is now being established, as rapidly as possible, on the ground.



PERSPECTIVE OF THE ADOPTED PLAN, SHOWING THE THREE HERITAGES OF THE EXPOSITION, THE FINE ARTS PALACE, THE CALIFORNIA BUILDING AND THE COLUMN OF PROGRESS
The Two Business Centers are Shown in the Lower Right and Left Hand Corners

Factors Controlling the Design.

The site is almost level with a general slope from south to north, giving a drainage to the shores of the Golden Gate. The problems of grades were therefore practically eliminated.

The factors that control the design were as follows:

1. Lines and routes of traffic.
2. Tracks of prevailing winds.
3. Marine view.
4. Axes centering on predominating architectural features left by the Exposition Company.

The transportation lines are along Chestnut Street, which bounds the area on the south; and Fillmore Street, which intersects Chestnut at right angles one block west of its southeastern corner. This intersection of transportation lines suggests the business center at that point. From this center arteries radiate into the property, giving more or less diagonal routes of travel. The encircling boulevard affords a similar route of travel in the opposite direction of the main diagonals.

The Column of Progress.

The main north and south axis of the plan is approximately in the center of the property and is terminated to the north by the Column of Progress, one of the monuments left as a heritage of the Exposition. The two main diagonals also lie on axis with the Column of Progress.

The Palace of Fine Arts.

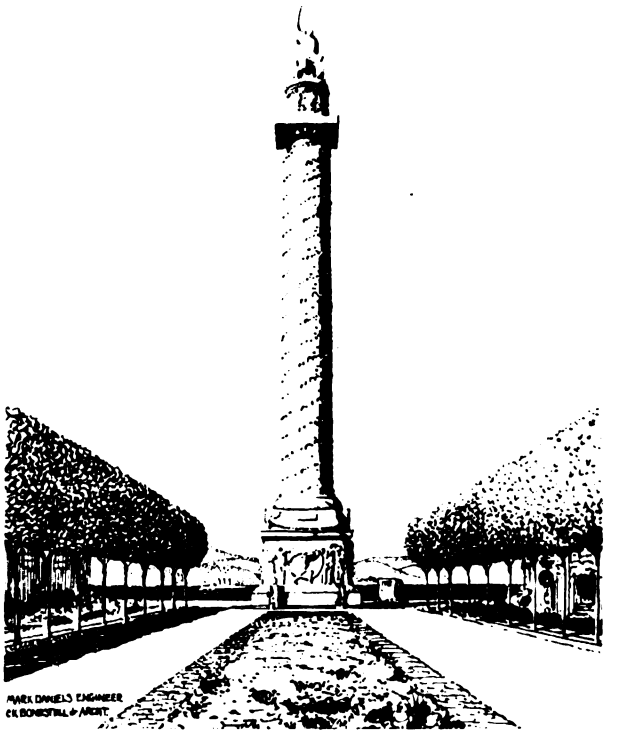
The axis of the main east and west thoroughfare through the property centers on the dome of the Palace of Fine Arts, that wonderful conception of Bernard H. Maybeck, which the people of San Francisco have wisely determined to preserve to prosterity. The eastern end of this axis terminates in a plaza formed by its junction with the circle drive.

The diagonals gave an excellent opportunity for disrupting and changing the directions of the streets, thus making it possible to avoid the long streets of continuous direction which seem to invite those winds which so annoy the stranger, while they become the joy of the resident of the city.

The prevailing winds of the district are from the water, or from the west and north. It has been demonstrated in such modern residence parks as Forest Hill that the winds in San Francisco lose their violence in the streets where the directions of the latter are changed frequently. For this reason the plan does not incorporate any straight street of considerable length, except where a vista upon some inspiring feature is desired.

Shore Boulevard.

The main boulevard of the district, and perhaps of the city, is along the shore. Frontage upon this is the most valuable in the property. By bringing the intersecting streets into this artery at an angle, no frontage, strictly as such, is lost; whereas, if the secondary arteries were led into this boulevard at right angles there would be a loss of frontage on it just equal to the sum total of the widths of these arteries. By grouping the dwellings about courts along the boulevard the frontage is again increased.



PARKING SCHEME FOR MAIN NORTH AND SOUTH AXIS, CENTERING ON THE COLUMN OF PROGRESS

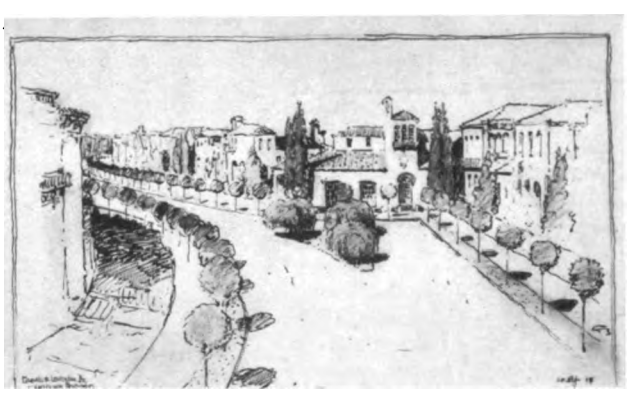
VIEW OF THE ABANDONED PLAN, LOOKING WEST. Designed by Mark Daniels and Rendered by C. K Bonestell, Jr.

The final result is a total marine frontage in excess of that which could be secured if the entire length of the boulevard were interrupted by no streets at all. Another potent factor in determining the use of diagonals and north and south streets was the necessity of avoiding north-front property wherever possible. Since the better views are to the north, there seemed to be no other solution than the one adopted.

Building Restrictions.

It is the intention of the owners to establish building restrictions along most modern lines, not only to assure the general character of the neighborhood, but to preserve a unity of architecture. All utilities, such as light and power lines, will be placed underground and installed before paving is commenced. Buildings will be grouped and restricted as to location so as to provide a maximum of sun, view, and air.

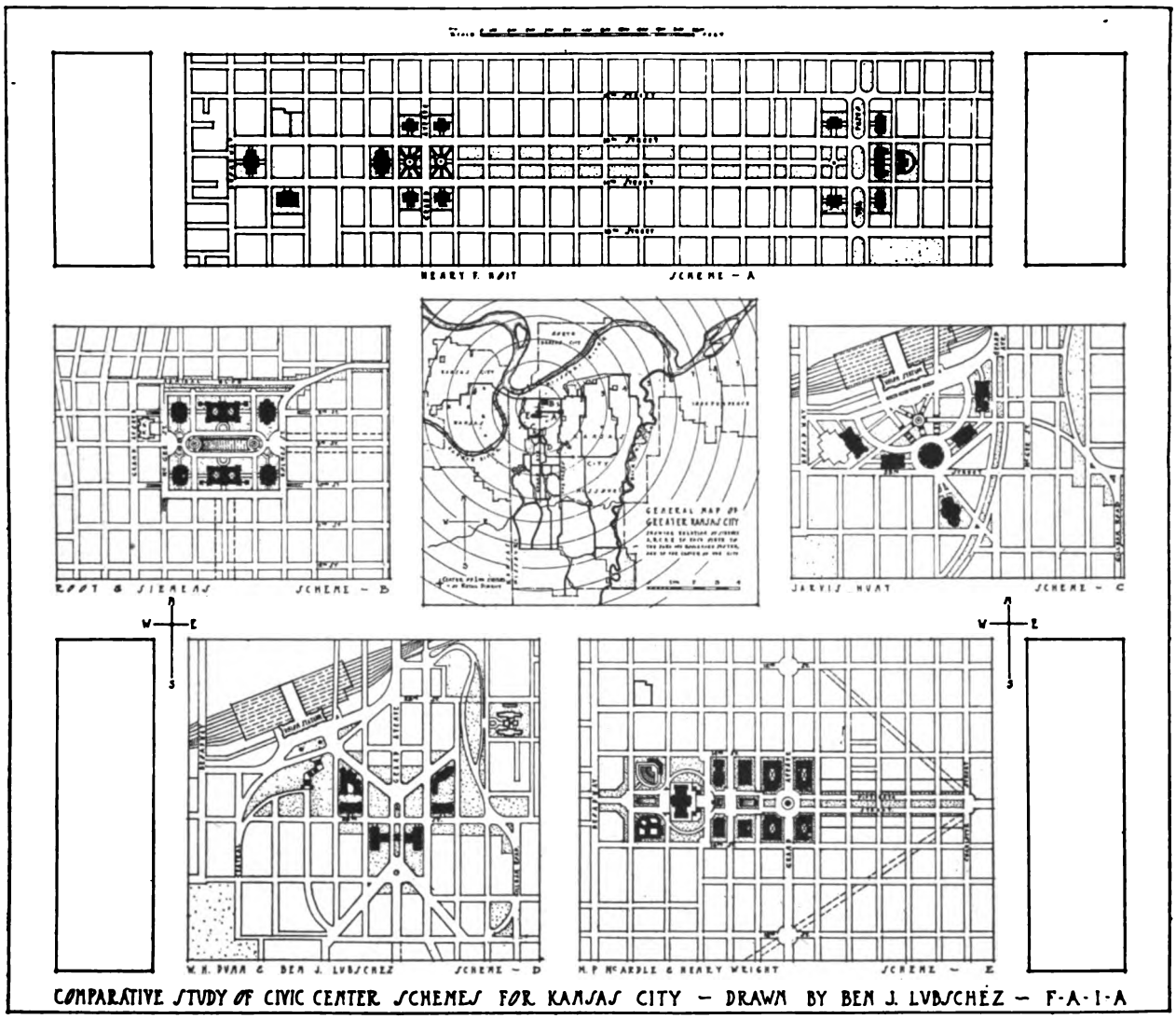
It would necessitate more space than here available to enter into a detailed description of a project that consumed some eight or ten months in preparation, while to enumerate the obstacles that were presented, in planning to satisfy a large number of individual owners, would consume volumes. The property is now subdivided into rectangular blocks with unnecessarily wide streets, and to convince all owners that a change of streets was advisable was, alone, an Herculean task. In some instances it became necessary to change the plan so as to leave portions of the old streets, if for no other reason than to leave ingress to the stable of the mule whose stubbornness made a change impossible. In other instances changes had to be made so as to make practical boundaries between holdings. Were it not for the perseverance of some few idealists, who wanted to see a fine district established in their city, and the intelligent coöperation of the city officials, it is doubtful if any change could have been agreed upon. But it is believed that a brilliant example has been set by San Francisco.



ONE OF THE NUMEROUS INTERIOR COURTS.—(Located at E and E on the Plan, p. 174.) From a Sketch by C. K. Bonestell, Jr.

Civic Center Schemes for Kansas City

By BEN J. LUBSCHEZ



COMPARATIVE STUDY OF CIVIC CENTER SCHEMES FOR KANSAS CITY - DRAWN BY BEN J. LUBSCHEZ - F-A-I-A

Before the city-planning movement was definitely known as such, it had a big start in Kansas City when, about twenty-five years ago, the nucleus of the present comprehensive park and boulevard system was established. Yet, despite this early start, the movement never developed along the broad lines recognized today, and Kansas City has as yet not considered a complete city plan. Let us hope that an impetus to the acquirement of this will be given by the City Planning Conference to be held there in May.

The next step in city-planning was taken about five or six years ago. The beginning of the great new Terminal Station and the granting to the city of several acres of park area opposite this building evoked the discussion of what to do with this park area and then of the possibilities of making the station building the principal note of a civic center group. This discussion led to the presentation of five civic center schemes, some including and some excluding the station building. These plans were presented by a committee of the City Club and were made voluntarily by architects within and outside the committee.

The first scheme (Scheme C) presented was by Mr. Jarvis Hunt, the architect of the station. This plan, although very effective on paper, would have been exceedingly expensive to carry out on account of requiring radical and extensive changes in topography. Its principal feature was the crescent-like arrangement of various public buildings in front of the station, with the City Hall and Art Museum on the principal axis of the station.

The other plans need not be considered chronologically, for they were made almost simultaneously and some months later than Scheme C.

Scheme A, made by Mr. Henry F. Hoit, was perhaps the most ambitious of all. It included a wide parkway

connecting Grand Avenue, the principal north and south business street, with the Paseo, the principal north and south boulevard. At the axis of Grand Avenue was the municipal group, and on the axis of the Paseo was the educational group, the first consisting of the City Hall, Courthouse, Hall of Records, and so on, while the second included the Library, Museum, and Art Gallery. This scheme was admirable in many ways, but also very expensive on account of the necessary condemnation of so much valuable land for the broad connecting parkway. This plan also extends beyond Grand Avenue on the west and includes the existing auditorium in a minor group.

Scheme B was presented by Messrs. Root and Siemens. This scheme is adjacent to Grand Avenue, on one side, and connects with Admiral Boulevard, a down-town boulevard connection, on the other. The plan shows an interesting study of the diversion of traffic ways, both on the surface and in subways.

Scheme D was made by Mr. W. H. Dunn, the Superintendent of Parks, and the writer. It was criticized at the time for placing the municipal and other public buildings too far from the present heart of the city, but it has many interesting features. It fits the topography admirably and connects numerous short streets which now have either no reasonable beginning or end. Its principal feature is a great tower or campanile, the central motif of the municipal group, closing a vista of a mile and a half down Grand Avenue. It also has a vista down one diagonal street to the Terminal Station and down another to the existing Municipal General Hospital.

Scheme E was submitted by Messrs. M. P. McArdle and Henry Wright. This is an interesting plan and shows some slight resemblance to Scheme A. It shows a shorter and less important east and west parkway leading to the municipal group on the axis of Grand Avenue. Here the distinguishing feature of this plan begins. We are led, by a series of pools and terraces, from Grand Avenue to Baltimore Avenue, where the Art Gallery stands on a high hill. On account of this feature, the authors called it "The Acropolis Plan." There are also shown, tentatively, two diagonal streets which should prove valuable as traffic ways.

It will be noticed that all the plans are either on the axis of or adjacent to Grand Avenue, and that the locations of Schemes A and E and Schemes C and D overlap somewhat. None of the plans has gone beyond the preliminary study stage; meanwhile, the acquisition of land for any scheme is becoming more expensive and difficult.

After careful study and deliberation, it seems that none of the schemes is entirely satisfactory, and that perhaps the best and most effective plan would be to combine the Grand Avenue group of Scheme A with Scheme D, treating Grand Avenue in some monumental way as a connecting link.

The Denver Civic Center

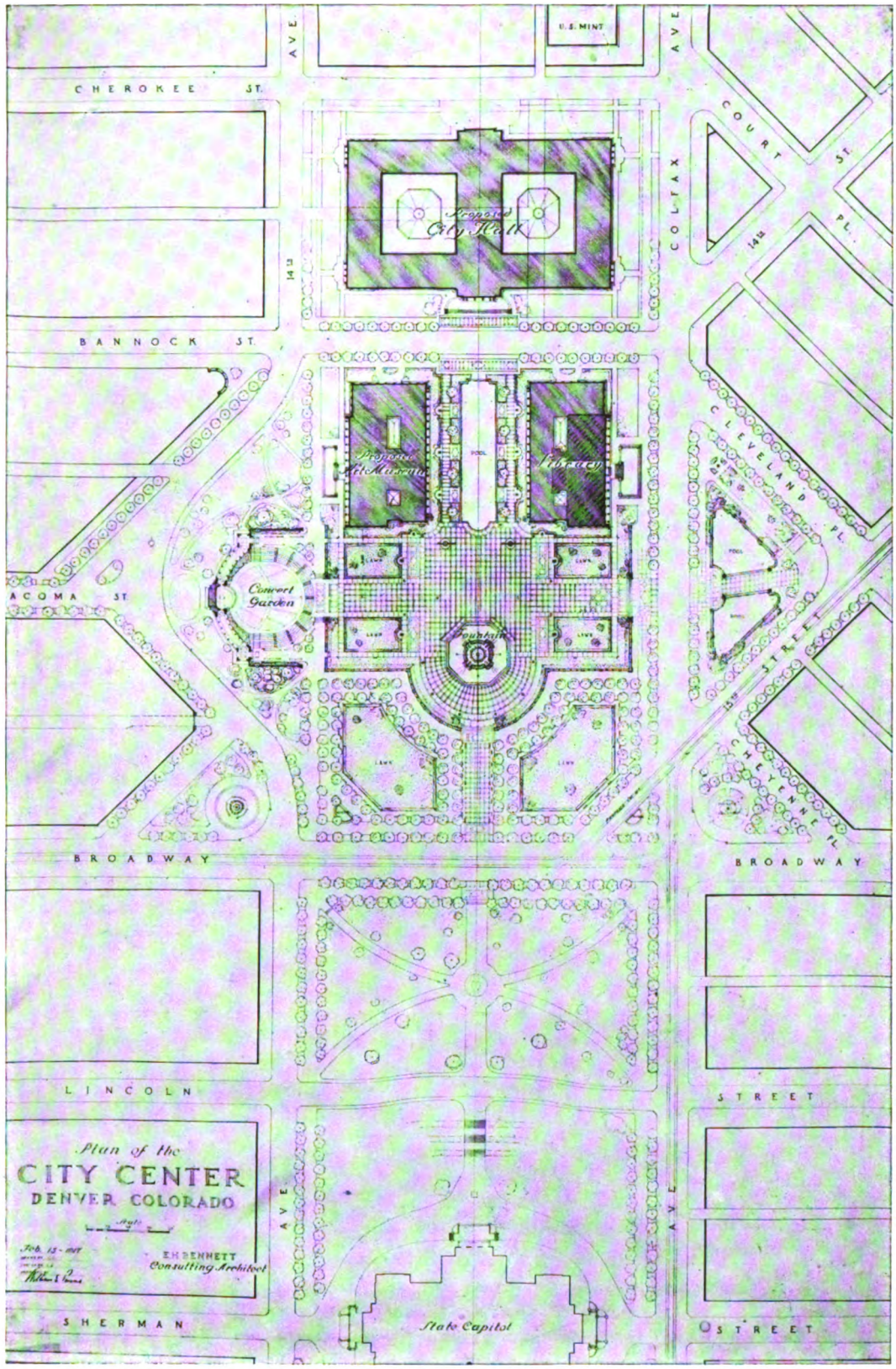
Denver is remodeling her civic center plans (described in the Journal for November, 1915) on a scale surpassing any of the proposals submitted since the project was first conceived, about ten years ago. The new development was started in May, 1916, when the Mayor and his cabinet engaged E. H. Bennett, of Chicago, to revise the plan to include as one of its chief features a court of honor for civic benefactors. As the illustrations show, the central portion of the site is to be given over to a broad paved area which will provide a place of assemblage for many thousands of people. Liberal provision is made, however, for the planting of shade trees and shrubbery to afford variety and background for statues, balustrades and decorative features. Space has been reserved for a new art museum, adequate for Denver's increased needs and in architectural harmony with the enlarged public library. The proposed site for a new city hall occupies an entire block opposite the art museum and library bordering on the intersecting streets. Thus located, the City Hall may be designed to harmonize with the existing library and the future museum.

The Main Axis.

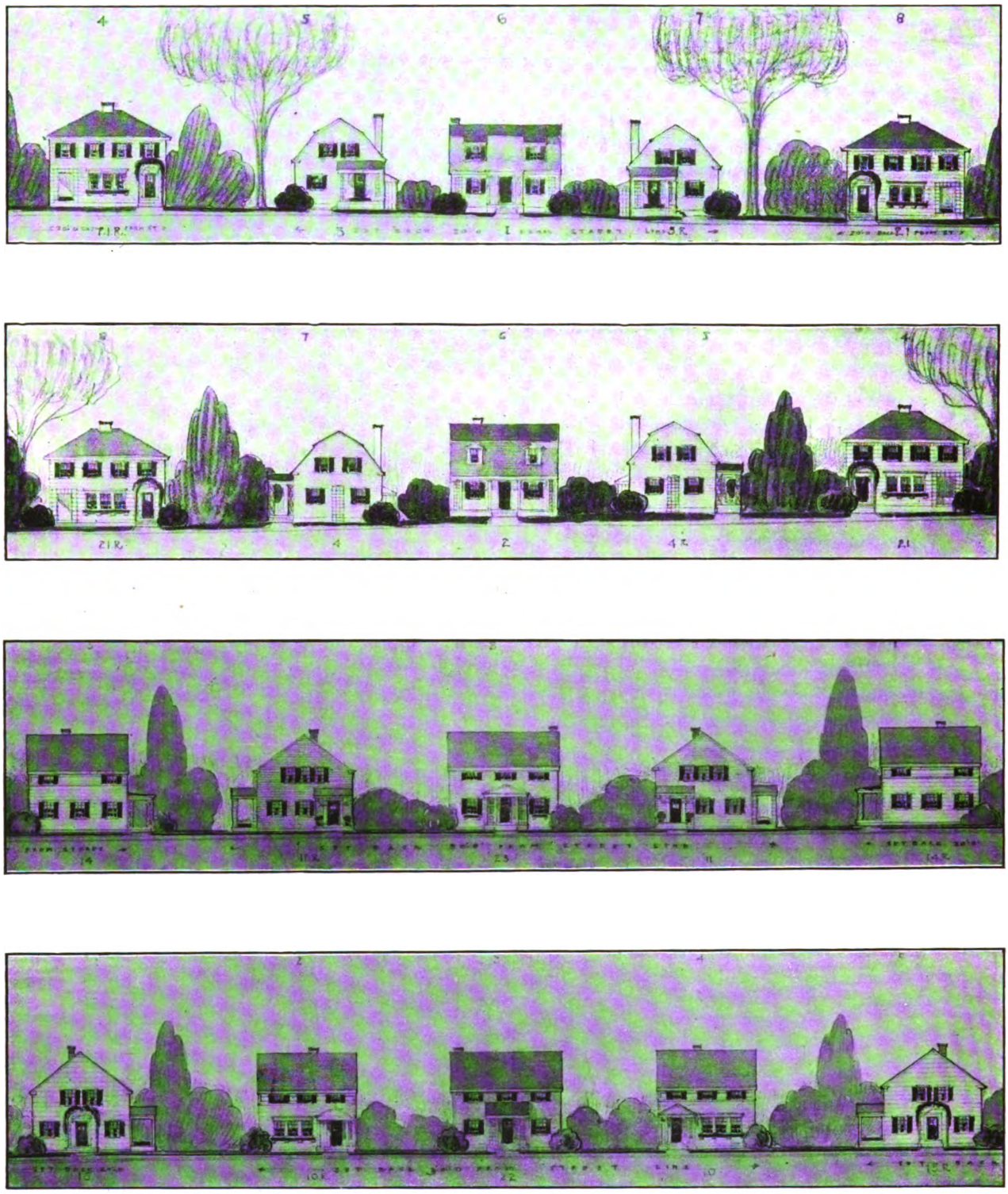
At one end of the main axis of the civic center is the capitol (not shown in plan or perspective) from which a vista may be had of the City Hall. In this vista is a fountain of monumental proportions, occupying the center of the great open area. Funds for the erection of the fountain have been provided by citizens of Denver, and Lorado Taft, of Chicago, is now engaged in modeling the fountain. In contrast with the central fountain, a pool is proposed between the library and the museum, in which will be reflected the dome of the capitol, looking east, and the façade of the City Hall, looking west. The entire space between the flanking buildings will form, in fact, a court of honor which should be adorned with appropriate sculpture.

The Transverse Axis.

At the north end, at the right of the transverse axis, is the principal approach from the business center of Denver. Here a triangle is shown, with pools of water and grass spaces. This portion of the scheme is assured by the action of the city, and detailed plans are being prepared. At the other end of the transverse axis is to be placed the concert garden and shell for band concerts, to be flanked by the colonnade arranged in an arc of a circle. On the columns of this latter structure will be engraved a fitting tribute to citizens who have contributed gifts for the beautifying of the city or for adding to its educational advantages. The floor of the concert garden will be depressed about five feet below the general level. Advantage will be taken of the sloping surface by the introduction of permanent seats of marble or concrete, semicircular in plan. Ample provisions for tree-planting is made at this point to screen this part of the development from the surrounding business structures. This feature of the civic center has also been assured by the action of the city authorities, and detailed drawings are now being made. The Pioneer Monument, by Frederick MacMonnies, occupies a site in the triangle shown in the plan at the right and to one side of the center at the intersection of Broadway and Cheyenne Place. A site for a



(See frontispiece)



FLINT, MICHIGAN.—Workingmen's Houses to cost from $1,500 to $2,000. Davis, McGrath & Kiessling, Architects
(See the article on following page)

similar monument on the opposite side of the center is shown also.

Lighting.

In order that this center may be made, in every way possible, a vital part of the city by night as well as by day, a luminous and decorative lighting scheme, using both direct and indirect methods, will be adopted—one that will be free from the glaring effect common in the city streets.

Traffic and Building Heights.

Traffic studies have been made to determine the effect of the various elements of the plan on the movement of vehicles. Some minor changes in the street system have been proposed. The control of the height and use of the buildings on the surrounding blocks is being considered, and it is recommended that this be done in connection with general districting for the entire city. The plan of the civic center has been considered with reference to the state capitol grounds and building, but no radical changes are proposed. It is recommended that a revision of the plan of the area about the capitol be undertaken in the near future, and that additional grounds be acquired for this purpose around the capitol building, and that building development be regulated on the adjacent land. By this means the Government and the municipal centers may be made to contribute to each other and conform to a thoroughly harmonious whole.

Housing Developments in Flint, Michigan

In Flint, as in scores of other towns, increased industrial activity has created a demand for dwellings far in excess of those available, in spite of the 1,500 homes constructed by real estate operators in 1915. The Civic Building Company of Flint, organized by members of the Board of Trade, has attempted to meet the demand for homes by building several hundred houses according to a preconceived plan, based on competent professional advice. It is intended that the houses shall be sold to individual owners at low cost on an easy-payment basis

The Site Plan.

As practically all the available land within the city limits had been acquired by speculative builders and was in course of development, the Civic Building Company found it was necessary to buy up small parcels widely scattered or to go outside of the city where land could be acquired at farm prices. It was very wisely decided, therefore, to make an entirely fresh start and to acquire a 400-acre tract bordering on the city limits. The work of laying out this property was placed in the hands of William Pitkin, Jr., landscape architect, of Rochester. His plan calls for a total of 1,500 lots of a minimum size of 50 by 100 feet—or a total of 3.8 houses per gross acre. Two blocks are available for stores and business buildings. The streets have been laid to link up properly with existing or proposed thoroughfares, and the layout forms an integral part of the city plan of Flint. Twenty-two acres of woodland have been set aside for park purposes, while sites for a branch library, three churches, an amusement building, and well-planned school lot have been reserved.

In view of the pressing need for houses, many important problems were given second place temporarily in order to get the first 200 houses started quickly.

The House Plans.

The problem of the architects, Davis, McGrath & Kiessling, of New York, was to design houses for each lot with from five to eight rooms, at a cost for construction of from $1,500 to $2,000. Three-fourths of the houses were to be of five and six rooms. The dimensions of the houses range from 17 by 27 feet for five-room houses of one and one-half stories, to 24 by 27 feet for eight-room houses of two stories. The houses are provided with living-room, dining-room, kitchen and bathroom, hot-air furnaces and a drainage system connecting with properly constructed sewer.

An old New England village type, with the simplest possible roof-lines, close eaves, small-paned windows and blinds, has been adopted for the exterior treatment. Simple latticework is introduced here and there to relieve the bald spots, and flower-boxes are used under windows and on the sides of porches to provide further elements of individuality.

While an effort has been made to use the smallest possible number of house plans for reason of economy, the architects have endeavored to obtain a maximum variety of effects. There are, therefore, twenty-nine exterior designs and further variations are obtained by the use of different sized shingles, siding, and by the color schemes used. Set-backs from the street line vary from twenty to thirty feet. Groups of from three to five rooms in each block have a further set-back leaving the remaining houses set slightly forward. The roofs throughout are of uniform weathered color and roof lines in each block have been studied to give a pleasing composition.

First Steps in Zoning Movement for Chicago

The first step in a plan for districting or zoning the city of Chicago was taken recently when a member of the Board of Aldermen brought to the attention of the city authorities a plan for the protection of people and property in the city against the evils resulting from the present unregulated shifts of industry. His plan provides for industrial, residential, and such other zones as conditions and surroundings seem to warrant, and in discussing the advantages of the restrictions proposed in the interest of intelligent and systematic growth, he cites the steps taken by Los Angeles, New York, and other cities. The problem of directing and influencing the growth of rapidly expanding cities—in which the general civic good is the prime consideration—is an essential feature of city-planning, and intelligent city officials, stimulated by the example of other great and prosperous communities, are rapidly bringing their influence to bear in a direction that will secure this much needed protection.

"The New Competition"

THE OPEN-PRICE SYSTEM AND ITS RELATION TO THE BUILDING INDUSTRY

By SULLIVAN W. JONES

ON the evening of February 5, 1917, in the Hotel Biltmore, New York, the Institute of Electrical Contractors gave a dinner to a small group of architects, engineers, general contractors and sub-contractors, extraordinarily representative of the building industry. The occasion afforded those present an opportunity to meet Mr. Arthur Jerome Eddy and to hear him talk on the "open price." I dare prophesy that this dinner will prove historical—will prove to be the beginning of a new era in the field of building.

The Institute of Electrical Contractors of New York is one, perhaps the latest, of the many "open-price" associations organized upon the plan for stabilizing industry originated by Mr. Eddy. In introducing Mr. Eddy, Mr. Comstock, the President of the Institute said: "Publicity is the greatest educational force in modern civilization. Publicity is the essence, the heart and soul of the open-price policy in business. There are other open-price associations, but ours is the first to act upon the realization that the open-price movement is of vital importance to the whole of the great industry of which ours is but a small part. From our short experience with it we are convinced that the open-price plan should be generally adopted. It has remained for the Electrical Contractors to light the way."

Men who had been satisfied that their competitors were "crooks," forgot their grievences and sat around that table listening in rapt attention while Mr. Eddy laid down the principles of his simple plan and propounded a common-sense philosophy of business that answered the vague questioning in the mind of every thinking man present.

He carried his listeners into a world where business is an intellectual pursuit and success is not measured wholly by the accumulation of dollars; where secrecy and its handmaidens, intrigue and deception, are unknown, and knowledge is made common property—and knowledge has not the semblance of truth until it is common property; where the individual works for the benefit of all in order that in the end a larger benefit may accrue to him; where the Biblical maxim "to give is better than to receive" becomes a precept of sound business.

Mr. Eddy made very many of those who heard him feel that such a world was desirable, not only because it made for better business, even more profitable business than is possible under present conditions, but also because it offered moral as well as practical satisfaction in successful work and raised mere selling to the level of a profession.

The millenium, you will say; Utopia, the dream of an idealist! But Mr. Eddy showed himself to be a very practical hard-headed idealist with a long and varied business experience, a thorough knowledge of men. And when you once see, as Mr. Eddy has seen, as I have seen in a very limited way, the psychological effect of honest unrestricted coöperation, you will understand that Mr. Eddy's millennium is within reach, is attainable, is in fact here, now, if the first move is made, that of taking your competitors into your confidence. The change that it works in men is truly amazing. One contractor, now a member of the *Institute, had declared he would not join because a certain other contractor was a member. This same man sat for two hours after the dinner trying to justify to the other a bid he had put in which was $1,600 less than the bid of his former "business enemy." The success of the open price lies in the fact that a man will not knowingly do things which will later call down upon him either ridicule or accusation, not even in a world where he may imagine himself driven under the lash of necessity's whip to the ruthless pursuit of profit and the use of power to purely selfish ends.

I had read Mr. Eddy's book "The New Competition"—read it twice in the last two years, and I understood the bare facts of the argument for the open price. But the human touch, the magnetism and enthusiasm of the speaker were needed to lift the printed words out of the realm of cold, unresponsive theory and logic and to give them the vitality of faith, the dynamic force of an overpowering conviction. I know very many of the men who listened that night to Mr. Eddy went away with the firm resolution to bend their energies toward hastening the day when this new order of things shall prevail.

Mr. Eddy began his remarks by saying he would rather talk about art or architecture than the open price because he knew less about them, and "men prefer to talk about things of which they know little, and always talk most volubly upon subjects about which they know least." I could not help feeling that perhaps he had discovered one of the besetting sins of men in the building industry and wanted us to know that he had. His house, he said "had its roots in the classic architecture of the Greeks." He had traveled and studied, drawing his inspiration from the work of those ancient masters of art—and was building himself a "Californian bungalow." "Sufficient unto the day is the house thereof" were his last words on architecture. But as he later talked upon the subject of which he did know something, I found that he had also drawn upon the ancient Greeks for his ideals; his philosophy had Platonic roots.

"In a nutshell," said Mr. Eddy, "the open price consists of telling your competitors what you are doing and the price you are asking for your goods or services. It does not concern future prices but past prices, quotations made. If you know what your competitors have done up to last night, you will come pretty close to knowing what they will do tomorrow, and you can act accordingly with intelligence and wisdom. But before we can work such a radical change in business policy, before we can effect a cure for our present troubles, we must correctly diagnose those troubles. We are going to drag this evil thing we call competition out into the sunlight and examine it closely."

*Institute of Electrical Contractors.

He then outlined competitive conditions as they exist, showing how the instability of business, the high and rising cost of selling and, consequently, high market price of products, the trickery and deceit and fraud practised, were the natural and inevitable results of secrecy. "The condition that a standard article has no price known alike to competing manufacturers and to purchasers, places the very foundation of our commercial structure upon quicksands. Do not deceive yourselves," said Mr. Eddy. "There is, in reality, no such thing as secrecy in business." This statement reminded me of one made by Dr. Stratton of the U. S. Bureau of Standards at the first meeting of a conference committee of which I am a member. The manufacturers of the product under consideration showed considerable hesitancy about telling what they knew. Dr. Stratton, after listening for some time to the jockeying that was going on around the table said: "Gentlemen, I have sat at many conferences such as this, and I have found from experience that there is always one of two reasons back of a man's refusal to talk about his product: either he has nothing to say, or what he has to say he is ashamed of." It is amazing what men do to find out what their competitors are doing, and they generally succeed. The essential difference, as outlined by Mr. Eddy, between frankly telling and letting the other fellow dig, is that at the bottom of the latter process lies suspicion, and suspicion fills the mind with hostility. It leads to illegal combinations and agreements, to price-fixing and many other arbitrary and artificial efforts to stabilize business, all of which must fail and have always failed because they are conceived in an atmosphere of corruption and are fundamentally and essentially wrong in spirit and purpose. Suspicion is the seed from which springs brutal, unfair competition in which competitors become adversaries and enemies, to be dealt with as such—overcome, strangled, destroyed. Suspicion is the death of competition. Remove suspicion, and competition becomes what it should be; the life of trade.

This new competition of which Mr. Eddy spoke is a competition of efficiency in which excellence of product, fairness of method, honesty of coöperation are the elements of success. Such, in substance, were the statements made by Mr. Eddy, and he drove his points home with illustrations drawn from the conditions and incidents of the business life with which we are all familiar. He cast a new light of broader understanding on our present competitive struggles, illuminating the dark places, piercing the fog which has blinded us and led us into pitfalls.

Speaking of the effect of secret prices or no price on merchandising, Mr. Eddy declared: "Nearly all manufacturers and purveyors of goods think that their high-salaried salesmen are working for them. They are not. Let us see what happens. The salesman calls upon a customer and is given to understand that a competitor has quoted a lower price. From that moment the salesman is working for the customer against his employer's interests. He presses his employer for a lower price. He upsets the local sales office. He gets the home office on the telephone; he telegraphs; and if the sale is of sufficient importance, he gets on a train and goes to Pittsburgh or Chicago at the employer's expense, to argue the customer's case."

Mr. Eddy said that the experience of a great drygoods house with retail and wholesale departments is an illuminating example of the difference between "no price" and "open-price" methods. "In the retail department where prices are established and displayed, a *$6-a-week-girl can sell $5,000 worth of goods in a week, whereas in the wholesale department where prices are more or less secret and variable, it takes a man drawing twenty times the girl's salary to sell the same amount. When the price of goods is known to all, price is removed from haggling, and the quality of the goods becomes the prime consideration in the transaction. It may be laid down as a business axiom that any form of competition which is not an incentive to increased excellence is destructive. That is the acid test. One does not have to search for evidence of the character of present-day competition.

When the price is unknown or uncertain, the purchaser is never sure that he has the lowest possible quotation. "He becomes obsessed with the idea that he can do better, that he has not reached the bottom." Trading with him becomes a mania, and he will resort to actual falsehood to victimize the man who is willing to sell at any price. "This condition is the one most bitterly complained of by subcontractors," said Mr. Eddy. "It is not the fault of any individual, but under pressure of a vicious system, general contractors and owners, and some architects and engineers, often drive prices down to levels which prevent the delivery of work up to the standards established by the specifications, and which they themselves desire. That sort of thing cannot happen under the open price. The owner and the general contractor cannot say or intimate that they have a lower figure when such is not the case, and get away with it." Mr. Eddy said the curious thing about this condition was that the subcontractor did not seem to understand the psychology of such trading. "It is always the low bidder that is worked upon. Why should a purchaser waste his time trying to get a high bidder to reduce his figure when he already has a lower one, except, of course, in special cases, when one bidder is shown a preference or it is desirable for some reason that he should do the work?"

"Another thing the statistics of open-price organizations demonstrate," Mr. Eddy continued, "is that there is always far less competition than is supposed; that is to say, buyers select the contractor they want without asking for competitive bids in far more instances than anyone would believe who had not seen the reports, yet under the old secret system the one bidder who is asked is often wrongly led to believe he is in competition when he is not, and he cuts and pares his bid and skimps the work, thereby defeating the very object of the owner or architect to secure the best work at a right price." Taking up a sheet of statistics compiled by the electrical contractors' organization, Mr. Eddy quoted from it to show that during the month of January members of the Institute of Electrical Contractors collectively filed bids on 163 jobs amounting to more than $500, but that only one bid was filed on 118 of these 163 jobs. Thus, there was competitive bidding on only 31 per cent of the jobs. But the electrical contractors did not understand the true conditions until they began reporting their business to the organization.

Such a condition is unwholesome. Too many are justly

*One assumes that this pitiable stipend is used to strengthen the comparison, and not in justification of the business methods which depend upon such a wage scale for their success.—EDITOR.

dissatisfied; the industry is in a state of turmoil; uncertainty rides in the saddle, and competition has been killed. It is the direct result of the impossible situation which has developed under the old competition; of the bad work which followed a competition of price-cutting and the sacrifice of legitimate profit.

Mr. Eddy said that the idea of the open price came to him in connection with the trouble growing out of futile attempts at price-fixing in a branch of the steel industry. The president of one of the large steel companies came to him with the plans of an association and said that the arrangement was unsatisfactory to his company, and he wished to withdraw, partly upon the ground that it might be illegal and partly because the prices agreed upon were not adhered to and nothing was being accomplished except the acceleration of "cut-throat" competition. Mr. Eddy took the papers home and studied them for several days. He examined into the conditions which had led to the price-fixing agreement and the net results. Entirely aside from the legality or illegality of the whole plan, Mr. Eddy found it to be wholly unsound economically. He reasoned thus: A number of men meet and fix upon the prices at which their respective companies are to sell their products for six months to come. That done, there should be no reason why these same men could not pack their trunks and spend the six months at Palm Beach and let inexpensive salesmen sell the goods. Did they do it? No. Why? Because they have no intention of sticking to the agreement, and they know that none of the others will. In spite of the fact that they committed themselves to a selling price for their products, they found they had to be on the job every minute to handle the business issues of the day. Well then, why not make it frankly a day-to-day business? What right has the high-salaried executive of a corporation whose duty it is to be ready each day to give his time and his brains to the service of his company, to enter into hard and fast agreements which bind his company to fixed prices for months ahead? When he does that he limits his usefulness for the period, and a clerk can run the selling end. Mr. Eddy worked out his open-price plan and, representing the president of the company, went to the next meeting of the association and announced that his company was going to withdraw from the agreement, but that every morning each one of his competitors would find upon his desk a complete list of the quotations made the day before by the company Mr. Eddy represented. "Henceforth," said Mr. Eddy, "we propose to deal with past prices, not future prices. We will deal with facts, not promises, and there will be no hard feelings over broken agreements." That was the first open-price association.

In giving the gist of Mr. Eddy's remarks I have not attempted to set down in detail the open-price plan. Those who are interested should read "The New Competition." I have only tried to impart to others the impression Mr. Eddy's words made upon me.

Mr. Eddy's remarks were followed by a general discussion of which the most interesting aspect was that every statement made, every argument advanced for or against the open price, indicated the pressing need for stabilizing the building industry. There were objectors. There always are objectors, reactionaries, conservatives and cautious persons who have to be shown. Their presence at this dinner was deliberately planned. They precipitated discussion, kept the ball rolling and helped others to reach correct conclusions.

One of the general contractors present said that the troubles in his business were not due primarily to instability of prices; he and others were not driven to adopting questionable methods by the necessity of getting the lowest possible quotation. The great trouble was that the drawings and specifications they receive from many architects for the purpose of estimating were incomplete and ambiguous. He said much more in very forceful language, but I felt no offense, and I am sure the other architects present did not. The discussion had reached a level where we were handling the truth without reserve and where men were thinking of the smallness and the narrowness of their personal efforts and self-interest. This general contractor claimed that the subcontractors did not know upon what they were bidding; that was at the bottom of the general contractor's uncertainty. There was, in fact, no basis for competitive bidding.

Mr. Eddy answered him by saying that the point he raised was beyond the reach of the open price. But when men get together and in open frankness discuss the cost of production, prices, and the other economic problems which confronted them, they could, and did, go further. The open-price association in the architectural iron and bronze trade was struggling with this very problem, he said, and he believed they had found the answer in establishing a technical bureau which would standardize the classes of work and prepare estimates of quantities. The Quantity System, properly developed, was the complement to the open-price plan.

"These problems are up to you, gentlemen, to you architects and to you general contractors. Your hosts, the electrical contractors, are too few in number and represent too small an industry to make much impression by themselves; they can do nothing without the active and sympathetic coöperation of owners, architects, engineers and contractors; with your help they can go far toward remedying the abuses that affect them especially and by so doing help you to place the great building industry of the country on the high plane where it belongs."

Mr. Cass Gilbert, Mr. A. B. Trowbridge, Mr. C. W. McMullen, Mr. Paul Starrett, and Mr. Baldwin all expressed views, some of them most interesting, particularly those expressed by Mr. Gilbert, but I cannot devote space here to repeating them. They merely laid greater emphasis upon some of the aspects of the open price.

Have you ever sat through a play that gripped the soul and noticed that when the curtain dropped the audience remained seated, loath to break the spell? Well, that was the way those men felt that night when the thing was over. Mr. Eddy said to Mr. Comstock "Your guests do not seem to want to go home." I had quite forgotten the "open price." It had become the inconspicuous beginning of a tide of broader understanding. I was trying to grasp the potential possibilities of expansive coöperation; the infinite corrective power of mobilized thought and effort. There seemed to be nothing impossible of accomplishment if men were animated by the spirit which this simple instrument of open price created in them. To me, that was the chief effect and value of Mr. Eddy's talk.

How Shall We Teach Something About Art? II

A DISCUSSION BY ALFRED M. BROOKS*
Head of the Art Department, Indiana University

WHEN Nature would produce an artist, she bestows a twofold gift upon her chosen one. She gives him a cunning, i. e., a mechanic, hand. She gives him an imaginative and logical mind, i. e., a philosophic equipment. To understand, which is to appreciate, the work of an artist; to comprehend the significance of art, apart from specific examples of any particular art, is the goal of the humanities. Not less are these the avowed, though often the grudgingly avowed ends of that sort of education which is styled liberal. Colleges and universities are the institutions which profess to give and are alone resorted to for such education. Seldom, of late years, despite this purpose to which they are vowed, has the vow been kept faithfully. An obvious deduction follows. The academic world should do all it can, which is a vast deal more than it is doing, to further intelligent study of art—works, theory, history. The corollary of this is, make the necessity of art more generally and deeply felt.

To every man Nature gives a touch of cunning-handedness—a touch of philosophic-mindedness. Ideal higher education, if truly liberal, would be that education which should develop to the utmost these twin capacities peculiar to man. Actual education during the past half-century has not sought to do this thing. In the majority of cases it has intentionally gone about not to do this thing. The method has been, and is, to feed the cunning, the technical, the mechanic, and to starve the philosophic. Its way has been to train its charges most assiduously in the practical and to turn them away from the imaginative. For proof of this, in respect to the art of architecture which, for its well-being, requires, more than any other art, complete merger of the practical and the beautiful, vision and technique, I adduce the fact that signs of real grief over the barbarous destruction of Rheims cathedral have been relatively few in our highly prosperous but not highly educated country. How is it that we have not grieved more or been more indignant? Simply because, as an educated people, we have not been taught that this most glorious building embodied more than any other of what civilized and cultivated men recognize as reasonable, lovely, and sublime. I say not a word of the human associations of centuries which it had gathered to it, or the religious sentiment of ages which, issuing from its sacred precincts, has done so much to make gentler the heart of man—because we have not been taught how wonderful it was; how technically splendid; imaginatively, how beautiful. Who should have taught us, those of us fortunate enough to have access to so-called liberal education? Who should not only have offered us, as a few have, but urged upon us, instruction in this matter and matters kindred to it? Emphatically, the learned men who are the builders of that wonderful structure known as the academic curriculum.

Speaking from the practical angle, architecture is the most important of all the arts. By the great majority of men, past and present, who have viewed it from the esthetic angle, it has been acclaimed the most beautiful. Beyond a doubt it is the art which adds more to the dignity of a civilized people than any other. How insignificant a place it holds in the college and university—technical schools are another consideration—is amazing if not staggering. Many an institution of higher learning does not have the word in its catalogue. The fact is symptomatic. It represents one of the moves made, both covertly and openly, over and over again, during the well-planned and executed educational campaign of the past fifty years against subjects classical, or savoring of the classics. First, by crowding out Greek, the language which, more than any other ever has, lent itself to the expression of intellectual experience and the activities of imagination; by crowding out this repository of so great a part of humanity's best and clearest thinking; by more and more heavily discounting the classics in general, and not alone those of Greece and Rome, for there is many a classic of the Middle Age and Renaissance, classic of architecture not less than letters, which present-day colleges and universities relegate to the domain of the unvaluable, if not wholly valueless, because not practical by persistently seeking, through the last ten academic generations, to turn the attention of Young America away from the past, and all the significance which it holds, to the present things of immediate utility, applied science and the unlovely, though physically comfortable, world of its making; by advancing these and other similar movements with might and main, institutions of higher learning the country over, with but very few exceptions, have placed to their long discredit the appallingly unimaginative, hence vacant, lives of numberless so-called and often doctored, educated men. For them there is, and can be, no grief when even "the shadow of that which once was great" passes away, not to mention the passing in a moment of *schrecklichkeit*, of vengeful wrath, before their very eyes, of many complete monuments—realities but a *short* time since—which have long been the glory of civilization, and should have stood, through ages yet to come, for the teaching and the inspiring of innumerable men.

The arraignment is sad and bitter but not futile because not mere scolding. There is yet time to change. There yet stand, and shall, after the present zeal for destroying beautiful old churches and town halls has worked its partial will, many splendid things of architecture. Then, too, the bare ruins of what was so glorious as Rheims will become a fruitful source of life to generations of unborn architects and of sad satisfaction to future lovers of architectural beauty throughout the world, just as the ruins

*Mr. Brooks is the author of "Architecture and the Allied Arts," which was most appreciatively reviewed by Mr. Cram, in the Journal for September, 1914.—EDITOR.

of the Parthenon have so long been. If the university and the college will but increase their efforts, which hitherto have been so weak, to familiarize youth with the world's best architecture and to enlist the interest of youth in and beget its love for such architecture, there will come about —college and university can bring about—a very different state of affairs from that which pertains in our unlovely present, all intent upon what it believes, and is too often academically taught to believe, practical; a present which, through its immediate half-century of past, has been taught in no small degree to regard the devotee of beauty, not only in architecture but elsewhere, at worst as a sort of fool and at best as a freak. When our institutions of higher learning shall begin to give a tithe of the attention now bestowed on practical education, so-called, vocational education, shop-work, cooking, dressmaking and innumerable kindred and, in their place, important subjects, to the study of the universal art of architecture, we may begin to hope for noble buildings wisely placed amid beautiful surroundings; in a word, for such cities as shall adequately express the ideals, brains and wealth of a great country. Until then, we may not hope.

To learn to understand the work of a mechanic hand working mechanically is not difficult. Neither is it a difficult matter to impart the knowledge necessary for such understanding. To learn to understand the work of a hand trained to obey implicitly the dictates of a highly imaginative and thoroughly logical mind, bent on combining use with beauty, is a very different matter. So, too, is the imparting of the knowledge necessary to such understanding. This latter implies education in art of a really sound sort. It is true that much time and thought have been expended in recent years upon questions which bear upon this kind of education, particularly the place which it should hold in group-courses looking to the B. A., and higher degrees. We should not overlook or belittle the fact that much which was well worth accomplishing has been accomplished. But this further fact should be looked squarely in the face. We have done little more than make a start, and this start pertains in great measure to the art of painting and in very small measure to the art of architecture.

On the side of painting, and for that matter the graphic arts generally, theory, history, practice, as taught in college courses, there is room, legitimate and plenty, for actual execution. This is not the case with architecture, the theory and history of which are, obviously, all that can be compassed in a classroom. And just because the classroom so generally and so vainly seeks to admit and abet actual execution, thus to deserve the all-coveted epithet of practical; just as it seeks to make instant and visible application of what it teaches, so does it go on excluding, as it always has excluded, the subject of architecture. If, as most academic authorities would stoutly maintain, the B. A. and higher degrees represent, in theory at least, such intellectual training as shall make the trained man capable of pursuing sustained mental effort along logical lines of investigation, the goal of which may be either reason, or beauty, or both, then, surely, these same academic authorities should not only admit, as a good many of them do, but also heartily encourage, as extremely few of them do, the study of the most logical as well as one of the most beautiful of all the arts, the art of architecture, to say nothing of it as a *sine qua non* of civilized society. This brings us to the question of how the study of the theory and history, significance and purpose of architecture may be made thoroughly practical despite the fact that such study in the average college classroom can, at most, mean nothing beyond a negligible amount of drawing and tracing, useful as a means of furthering understanding of the subject, but in no sense implying a practice of it. Let us meet the academic worshipers of the god of practicality in their own temple.

Architecture, more than any other art, creates and fixes the environment of civilized society. It is the art which, more than all others, denotes the fact of wealth and declares the manner of its spending. It is the one art in which every successful, or moderately successful, man takes part sooner or later, either as a private citizen building his own house or place of business, or, in public capacity, sitting as member or chairman of committees on the erection of civic, religious, or governmental institutions, —chapel, church, cathedral, schoolhouse, college building, hospital, museum, library, city hall, jail, capitol— these and many more, in every size and of every sort. To put it differently, architecture is not only the art, but the science as well, upon which we spend a very large part of all our money. Is it a really thorough-going system of practical education to make use of the slogan of so many present-day educators, which for the most part, and often wholly, omits architecture from its prescriptions? And how then about the education which has for its goal the filling of men's minds with knowledge of the best that has been thought and done by their forebears? This, together with training men's minds to deal appreciatively, which is wisely, with the principles, not less real because intangible, upon which that best was produced, and alone can be produced—best in the present consideration meaning architecture?

In all architectural design, in degree as it approaches perfection; in all works of architecture which have long been, and continue to be, potent agents for culture among men who truly believe that beauty is its own excuse, and that the effort to impart a liberal education should include the effort to further an intelligent passion for beauty in all of the arts which are practised by men; in every example of architecture which stands high in the scale of beauty and, for doing so, higher in the scale of service, there is more than one liberal lesson which, once learned, will help the student to push his way forward along that road which is the endless path that cultivated men travel with ever-increasing delight to the end of their days. The present state of knowledge about architecture on the part of most college graduates is an absolute blank. Few know even something about it; very few know much. We should remember that upon the present depends the future. What the past has been in this connection the present proves. It should be the care of university and college, here and now, to provide against a continuance of the present lack of knowledge and interest in this great art by offering courses, really liberal courses, in it and by urging students to take these courses. Art, and architecture in particular, as Viollet-le-Duc says, "does not consist in this or that particular form but in a principle,

a logical method." It is courses on these principles, this logic, together with all of practical service which they can render and of beauty which they can beget, that should be offered, and, in all legitimate ways, made attractive to the utmost.

The educated man is the man who is at home among principles and is master of logical methods. The liberally educated man, the cultivated man, is he who loves that beauty which invariably accompanies every wise application of principle and every logical application of method; who sees his authority in the works of Nature and from her works draws his inspiration. In the great artist, the man of superior imaginative and mechanical power, in the great architect, the Michael Angelo, Sir Christopher Wren type, we find the passion for mathematics, science, and the passion for beauty and art molten into an indissoluble one; this one, the architect, made known to the world and kept alive to all time in his work—Angelo in St. Peter's dome, Wren in St. Paul's. To grasp the principles which underlie these and all similar works of architecture, as well as to become an understanding and intelligent devotee to the beauty which is in them and all similar works, is as essential to the public as to the actual producer, builder, designer, or architect. That the public do its share in connection with the all-useful and beautiful art of architecture, by becoming a deeply interested and truly discriminative public, is absolutely essential to a far-flung production which shall bear universally the impress of genius in that sense in which Greek and Gothic architecture bear that impress. What agencies have we which should be active in creating such a public in respect to architecture? Few, if the truth is to be told. The technical schools of architecture accomplish something in this way, but it is not properly their chief concern. Their end is attained when they make architects. Where, then, should we look for that particular activity which will make, at least lay the foundations for, a just appreciation of architecture on the part of a considerable body of our citizens? To college and university. But when we do look to them what is it that we find? Little, if the truth is again to be told. Finally, how long are we going to allow this state of affairs to go on?

The Annual Report of the American Academy in Rome

The report of the Executive Committee of the Academy reviews the question of finances and sets forth the need for further endowment of the Academy. It is pleasant to note that Mr. Morgan has generously offered to cancel the Academy's debt to him, by an amount equal to any sum which shall be paid in for endowment, and to learn of the Fellowship in Architecture endowed by Mr. William R. Mead, and the Fellowship, of which the character is left to the determination of the Academy, made possible through the contribution of Mr. A. W. Mellon. In closing its report, the Executive Committe says: "It will not be amiss to indicate ways in which Academy influence may be strengthened and brought into closer contact with American educational life. The American Institute of Architects has already manifested officially its growing appreciation of our potentiality; were its Committee on Education charged with the duty of reviewing our work and reporting thereon to the Institute, this appreciation would doubtless grow even faster. The Association of Collegiate Architectural Schools is concerning itself very seriously with educational standards and methods, in which it coöperated with the Institute; since it is from these schools that we must draw our Fellows, here is a movement closely affecting us. In those schools, not only practitioners but teachers of the art of architecture must be developed. It is conceivable that in conference with the Association representing them, plans might be worked out for including one somewhat like that between the Contributing Colleges and the School of Classical Studies, of much benefit to the Schools of Architecture, to the Academy, and hence ultimately to American Art." These suggestions would seem to disclose large opportunities, and they will doubtless receive careful consideration.

In the report of Mr. Stevens, Director of the School of Fine Arts, it is interesting to note that the campaign of the Institute toward a common-sense public building policy for the United States found an echo in the work which the School did in making a report upon the public building policy of the Italian Government. Also, we may all share Mr. Stevens' hope that the close of the war will make it possible to undertake the excavation of an ancient site, thus broadening the interest and influence of the Academy.

The report of the Director, Dr. Carter, gives one an intimate picture of the Academy in war-time, and of Rome devoid of tourists—"the City come into its own again, the 'contadini' as visitors 'seeing Rome first,' peasants from the Abruzzi and Sardinian fishermen in full costume on the Corso, the Pantheon admired by the people of Calabria, the Forum visited by peasants from Scanno." The Villa Mirafiore is now a training-school with workshops for the soldiers who have lost arms or legs. Student-travel and taking of measurements and photographs have become almost impossible under war conditions, and yet the Academy has continued its work, with even two more students than in the previous year.

"We thus step forward," says the report, "into the new year, with our budget still further cut, grimly determined to make it go, but we have a steadily growing conviction that we have reached the limit of our economies. So long as the war lasts and our work cannot be seen face to face, it may be difficult to cause others to share this conviction; and yet, somehow, we feel that things are about to change, and that our great and prosperous country will soon take a proper pride in what we are doing and what we stand for, and that we shall soon be able to carry out the dreams of our Founders, occupying all of our properties to the universal service of Art and Letters and the glory of our country in a foreign land."

Of all the agencies which are silently at work tearing down the barriers of race and country between men, surely none is more worthy of generous support than the American Academy in Rome, for it works in a language which is universal and over the manifestations and interpretations of which men are forever at peace.

The Central Committee on Preparedness*

On March 8, the President of the Institute appointed the following Central Committee on Preparedness:

Evarts Tracy, Chairman, 244 Fifth Avenue, New York City.
Aymar Embury II, Vice-Chairman, 132 Madison Avenue, New York City.
Charles H. Hammond, Steinway Hall, Chicago.
Francis B. Wheaton, 2324 Nineteenth Street, Washington, D. C.
Frank H. Holden, 485 Fifth Avenue, New York City.
Woodruff Leeming, 20 Broad Street, New York City.
Charles Butler, 16 East Twenty-third Street, New York City.
Shipley Thomas, 244 Fifth Avenue, New York City.

The membership of this Committee is not entirely confined to the Institute, as it was decided that the work which was proposed should not be limited to Institute members, but should embrace the entire profession in the United States. Most of the members are from the East and have had some military experience. It was appointed for quick action, and it was necessary to be able to hold meetings at short notice.

A questionnaire was prepared and sent to 8,241 architects, with a view to finding out who were willing to serve and what were their special qualifications. At the moment, no official status in the Army can be given to this corps, but it is believed that one will yet be attained. Individual members are urged to join the branch of the service in which they will be most valuable. All Army officers who have been interviewed believe the organizing of architects will be of very great value to the country, and have heartily endorsed our action.

The first action of the Committee, after formulating and sending out the questionnaire, was to telegraph the Quartermaster General and the Department Quartermasters that the Institute would furnish, from local Chapters, architects and draughtsmen in any department, on request to the Committee. Very appreciative answers were received from all these officers. The presidents of all Chapters were notified of this action, and took immediate steps for readiness.

The first request came from the Eastern Department, to prepare maps for the mobilization in the Northeastern, Eastern, and Southeastern Departments, recently created by a division of the old Eastern Department. These maps had to be drawn to different scales and much information placed on them from an atlas. They were large maps, needed in twenty-four hours, and were made on time.

This was, of course, a small service, but if it had required ten times as much work, it would have been done promptly. Such service as this, and what may come immediately is, of course, an emergency one, but when our knowledge of the profession is classified, we will have something that the Government will need, and we will have it in such shape that there will be no lost motion in delivering it.

This enrollment of architects does not mean that a man signing the questionnaire has placed himself under any legal obligation for service. It is merely intended to have ready for the country in time of need a tabulated list of names of men in different parts of the country who are willing to serve, if necessary, and who have special abilities or qualifications for service.

EVARTS TRACY, *Chairman.*

*Announcement of the appointment of this Committee appeared in the letter from President Mauran to the President, as printed in the Journal for March.—EDITOR.

Personal Enlistments and Attachments

Up to the moment of going to press, the Journal has received word of the following:

Mr. Evarts Tracy, of the New York Chapter, is now a Major of Engineers in the Officers Reserve Corps.
Mr. Francis B. Wheaton, Washington, D. C., Chapter, Advisory Architect to the War Department, is Major and Inspector General, National Guard of the District of Columbia.
Mr. Woodruff Leeming, of the Brooklyn Chapter, is Major in the Quartermaster's Department, O. R. C.
Mr. Shipley Thomas, of New York City, has passed his examination for First Lieutenant in the O. R. C.
Mr. Aymar Embury II, of the New York Chapter, has applied for Captain of Engineers in the O. R. C.
Mr. J. Theodore Hanemann, of the Brooklyn Chapter, has received his commission as Captain in the Q. M. C.
Mr. Herbert W. Congdon, of the New York Chapter, Captain of the 23d Regiment of Brooklyn, has been placed on the Officers Reserve list for the state of New York.
Mr. William B. Claflin, architect, of New York City, is studying for the examinations for a Captain in the line.
Messrs. William Emerson, President of the New York Chapter, Mr. Edward S. Hewitt and Mr. A. D. Shepard of the same Chapter, are taking examinations for the O. R. C.
Mr. Gordon D. Orr, Meriden, Conn., enrolled in the Home Guard, is intending to transfer to the Naval Reserve.
Mr. James C. Mackenzie, Jr., New York City, Reserves of Squadron A, Cavalry.
Mr. Gilbert L. Van Auken, Albany, N. Y., subject to call for three years as reservist, U. S. N. G.
Mr. Willis A. Cooper, New Haven, Conn., 2nd Company, Governor's Foot Guard of Connecticut.
Mr. Frank J. Miller, Scranton, Pa., Captain and Adjutant, First Regiment Infantry, Pennsylvania Reserves.
Mr. Wm. F. Dominick, New York Chapter, serving with Battery F, 10th F. A. N. G. of Connecticut.
Mr. Jacob Thinnes, New York City, Business Men's Military Training Camp of Brooklyn, Depot Battalion, 14th Infantry.
Mr. John P. Benson, New York Chapter, Naval Reserve.
Mr. John Elliott Wood, Brookline, Mass., private, Troop A., Massachusetts Cavalry, N. G.
Mr. Arthur C. Jackson, New York Chapter, Depot Battalion, 7th Regiment.
Mr. Irving D. Porter, Washington, D. C., National Capital Military College, Washington, D. C.
Mr. Paul Cairnes Smith, New York City, Veterans' Association, 22nd Engineers, N. G. of New York.
Mr. Russell E. Collins, New York City, applied for commission, Aviation Section, O. R. C.
Mr. Charles K. Cummings, Boston Chapter, Ensign, U. S. N. R. F.
Mr. Arthur Cleveland Nash, New York City, Depot Troop B, Squadron A.
Mr. Alton Haight, New York City, Depot Battalion, 7th Regiment.
Mr. Edward P. Casey, New York Chapter, passed examination for Engineer, O. R. C.
Mr. George Mott Pollard, New York City, Reserve, 9th Coast Defense Command.
Mr. Morris B. Payne, New London, Conn., Major, Connecticut C. A., N. G.
Mr. Philip Sawyer Lacy, New York City, Columbia University O. R. C.
Mr. Leo F. Kunst, New York City, Captain, 7th Regiment, New York.
Mr. C. F. Eachan, Kearny, N. J., Kearny Horse Guards.
Mr. Harry M. Ahrens, Jr., New York City, Observer, 8th Coast Defense Command.
Mr. Henry A. Macomb, Philadelphia Chapter, Home Guard, Merchantville, N. J.
Mr. Lewis F. Pilcher, New York State Architect, services at the disposal of the Governor.
Mr. H. Van Buren Magonigle, New York Chapter, Reserve List, N. G. of New York.

Mr. Robert D. Kohn, New York Chapter, tentatively attached to the Council of National Defense; has volunteered to organize a subcommittee on Structural Safety and one on Fire Safety, if desired.
Mr. William S. Covell, New York Chapter, Captain, 7th Regiment, New York Infantry, N. G.
Mr. Frederick Bigelow, Newark. N. J., Lieutenant, Cavalry, O. R. C.
Mr. Thomas H. Desmond, Hartford, Conn., Connecticut Home Guards, Simsbury Company.
Mr. Harold B. Senior, Bethel, Conn., Connecticut Home Guards.
Mr. L. H. Broome, Jersey City, N. J., 1st Brigade Staff, H. I., Engineer and Signal Officer, rank of Major.
Mr. Howard L. Beck, Buffalo, N. Y., awaiting orders, Lieutenant Colonel, Infantry.
Mr. Wm. Henry Gravell, Philadelphia, applied for Engineer, O. R. C.
Mr. William M. Scofield, Cleveland, O., Major, Ohio N. G. Reserve.
Mr. H. Edwards-Ficken, New York City, Squadron A, N. G. of New York.
Mr. Louis E. Marié, Philadelphia Chapter, expects assignment to active duty in 4th Naval District.
Mr. Carl R. Stephany, Rochester, N. Y. N. G. Reserves.
Mr. William R. Greeley, Boston Chapter, enlisted through M. I. T.
Mr. Norman K. Kann, Pittsburgh, Pa., with American Ambulance Field Corps, Paris, France.
Mr. H. P. Alan Montgomery, New York Chapter, 1st Lieutenant, 12th Infantry.
Mr. Thomas H. Atherton, Jr., Wilkes-Barre, Pa., 1st Lieutenant, 3rd Penna. Field Artillery.
Mr. Jerome Paul Jackson, Minnesota Chapter, has applied for Captain's Commission, O. R. C.
Mr. Harold Worth Vassar, New York City, applied for Naval Reserve Aviation Camp.
Mr. Hugo K. Graf, St. Louis, Mo., 1st Regiment of Missouri.
Mr. Thomas Farr Ellerbe, St. Paul, Minn., Minnesota Field Artillery.
Mr. Albert A. Grenville, New York City, 1st Regiment Cavalry, Troop C.
Mr. Dale Truscott, Camden, N. J., Senior Corporal, Battery B, Field Artillery, N. G. of N. J.
Mr. E. Lynn Drummond, Savannah, Ga., Corporal, 4th Co., Georgia Coast Artillery.
Mr. Frederick C. Foltz, 1st Illinois Field Artillery.
Mr. John Holabird, Chicago, Captain, 1st Cavalry, Illinois N. G.
Mr. John A. Rauch, Little Rock, Ark., Machine Gun Company No. 1, Arkansas N. G.
Mr. Roland A. Gallimore, New York, N. Y., Eighth Coast Defense Command, N. Y. N. G.
Mr Chas. F. Schweinfurth, Cleveland Chapter, Troop A, Ohio N. G.
Mr. Gerald St. Glenn, Bryn Athyn, Pa., taking examination for O. R. C.
Mr. Warren L. Rindge, Grand Rapids, Mich., 8th Division Michigan Naval Militia.
Mr. Reed M. Dunbar, Monroe, Mich., Sergeant, Co. K, 31st Michigan.
Mr James E. Gould, Dedham, Mass., Officers School, Co. L, 6th Reg. Inf. Mass. N. G.
Mr. Harold D. Davenport, Ann Arbor, Mich., Engineering Corps, University of Michigan, preparing for O. R. C.
Mr. Harold E. Ayer, Portland, Maine, Naval Coast Defense Reserve.
Mr. Wihner C. Kashner, Lafayette, Ind., 1st Lieut. Field Artillery, Ind. N. G.
Mr. John M. Paul, White Plains, N. Y., N. Y. N. G.
Mr. Edwin M. Van Voorhees, Philadelphia, Pa., 2nd Lieut, Ill. N. G.
Mr. Yale D. Hills, Minneapolis, Minn., preparing for O. R. C.
Mr. George J. Metzger, Buffalo, N. Y., Major, Engineers Corps.
Mr. Louis La Beaume, St. Louis Chapter, Base Hospital No. 21.
Mr. Andrew R. James, Cincinnati, Ohio, Commissioned Officer, Ohio N. G.
Mr. R. Warren Roberts, Chillicothe, Mo., 1st Lieut., 4th Mo. Infantry.
Mr. Leslie V. Abbott, Louisville, Ky., applied for O. R. C.

The above is by no means a complete register. The information was taken from the first five hundred answers to the circular sent out by the Central Committee. These naturally came from the near East and assured the Committee of the signer's willingness to serve in any capacity where his knowledge and experience could be used. Many architects were attached to local defense organizations; only a few signified their inability to serve, except in a minor way, by reason of age or physical disability. A fuller announcement will appear in the next Journal, by which time the replies will have been received from all sections of the country. All subscribers of the Journal are asked to send us any information relating to architects who are in any way attached to the military or naval forces of the country.

Individual Professional Service in the War

Under date of April 14, President Mauran addressed the following letter to every member of the Institute:

Having received the spontaneous patriotic offer of individual Professional service to the Government from a number of prominent members of the Institute in New York and Boston, I am making the opportunity available to our entire membership.

The offers already made are in the following language:

"Through you, as President of the American Institute of Architects, we tender the services of our office force at cost, and the services of members of our firm without charge, to the United States Government, or to the Red Cross Society, for any Architectural work, such as Hospital designing and construction which may follow the entrance of the United States into the War."

Should you desire to avail yourself of this opportunity, kindly communicate with me, at my St. Louis office.

This offer is outside of and in addition to the service of mobilization of the Institute's resources already being carried forward by the Central Committee of which Mr. Evarts Tracy is Chairman.

Promptness is the essence of the value of your offer.

JOHN LAWRENCE MAURAN, *President.*

Industrial Safety in War

At a meeting of the Committee on Labor of the Council for National Defense, held in Washington on April 16, Mr. Kohn, Chairman of the Committee on Fire-Prevention of the Institute, submitted a proposal for organizing, in conjunction with the National Safety Council and the National Fire Protection Association, a joint committee on industrial safety, to cover the field of accident-prevention, structural safety and fire-prevention. Mr. Kohn urged that the Government adopt the basic principle that no contracts for supplies or materials of any nature be let without a requirement as to the safety conditions which are to surround their production, the joint committee to prepare a basic safety code for this purpose, and, if necessary, inspection staffs to coöperate with Federal and state authorities to insure its enforcement. The Committee on Labor favored the proposal and asked for its presentation in writing for submission to the Council for National Defense the following day.

New York Chapter Preparedness Committee

The New York Chapter has appointed a Preparedness Committee as follows: Evarts Tracy, E. P. Casey, Aymar Embury II, Stowe Phelps, Charles Butler, and Burt L. Fenner. The Committee will learn, by direct inquiry, whether architects as such should not be useful in the preparation of typical or standard plans and specifications for the various buildings required to house or care for the Regular Army units, studying the needs of such buildings and bringing them thoroughly up-to-date in connection with information gathered from experience gained abroad.

Book Reviews

Six Lectures on Architecture.

By Ralph Adams Cram, Thomas Hastings, and Claude Bragdon; the Scammon Lectures for 1915. Published for the Art Institute of Chicago by the University of Chicago Press. 172 pages. $2 net.

The Scammon Foundation of the Art Institute of Chicago provides a fund for lectures "upon the history, theory, and practice of the fine arts by persons of distinction or authority on the subject on which they lecture, such lectures to be primarily for the benefit of the students of the Art Institute. . . . This particular volume gives the lectures of 1915.

In the two lectures under the general title "The Promise and Fulfilment of Gothic Architecture," Mr. Cram reviews the history of Gothic art in a manner wholly admirable and delightful. Despite their enforced brevity, the lectures are filled with the kind of charm which would fire the imagination of a student and interest him to dig further for himself, and that surely is the test of any lecture. It is only a pity that Mr. Cram should have seen fit toward the end to add his own reactionary views as to the future of art. When he does not pretend to prophesy but gives the result of his studies and his insight into medieval art, he is most interesting.

In the two lectures on "Principles of Architectural Composition" and "Modern Architecture," Mr. Hastings rambles along most amiably, with a wealth of wise old architectural "saws," such as are only known to the experienced and well-trained architect. To be sure, he takes his favorite fling at engineering science: there is "no necessity for calculating the thrusts of the arches and the strength of materials" in a well-studied plan of beautiful proportions "excepting for the purpose of verification," a doctrine likely to be misunderstood by the student. He protests against the imitation of the styles of other times, particularly against any attempt to copy medieval architecture. We should begin our progress where, with the Renaissance of the eighteenth century, all consistent architectural development stopped; but we are not to be misled by "the would-be style inventors, the socialists who have penetrated the world of art further than they have the world of politics." Among painters, Manet and Constable were decried in their day; we wonder, from Mr. Hastings' point of view, when socialism in art really began? It is only fair to realize, however, that in two brief discourses, full of worth-while information, Mr. Hastings could hardly be expected to define at what point in our artistic progress tradition should be transcended.

In the first of his two lectures on "Organic Architecture," Mr. Bragdon makes a real contribution in his studied and carefully drawn distinction between "arranged" and "organic" architecture; and he does indicate the path in which we must enter if we would move forward in our arts. He holds no brief for Gothic or Renaissance. Neither is suitable as "the space language" of today with our structural forms and our new life, though he considers the forms of the Renaissance "of the two on the whole more appropriate and amenable to modern needs." This whole admirable address is an earnest plea for patient study to find something organic, something true to what is best potentially in the life about us.

Mr. Bragdon's second lecture, that on "The Language of Form," starts interestingly with a review of some of the forms made familiar mainly by the traditional compositions of painters and sculptors. He relates this to architectural composition and the need for a "rhetoric of spacial expression." But a complete and adequate form language needs an appropriate system of ornament. He asks if this is to be the creation of a gifted personality, to be derived from nature, or to be developed from geometry. He rejects the first for obvious reasons; an individual cannot make a style. The second is rejected because the forms of our native flora are no longer distinctive; they may be found in any country, besides, as he remarks, "the dwellers in our cities are more familiar with corn in the can than corn on the cob." Therefore, it is geometry which offers the richest promise. Then, since "ornament depends less upon structural necessity than upon psychology," he finally reaches the conclusion that the evolution of ornament might well be out of fourth-dimensional geometry. His illustrations convince the reader only that this decision is a wise one as far as he personally is concerned, and that he has unconsciously accepted for himself that first possible source of a new ornamental language (the individual) which he had just previously rejected! To the critic the logic seems pretty thin, but the performance based thereon is delightful. Both addresses must have been not only interesting but exhilarating to the students, as they will be to any architect who reads them and who thinks at all about the future of his art.

The Art Institute of Chicago is to be congratulated on its possession of a lecture fund which makes possible the presentation of such distinctive, divergent and interesting viewpoints on architecture by three such distinguished speakers.—R. D. K.

Manchester Old Town Hall.

A drawing by Mr. Gordon Hemm and published by the author, Fern Lea, Manchester Road, Heaton Chapel, North Stockport, England. 15 by 10 inches on paper 24 by 19 inches. Price 10 shillings and 6.

Readers of the Journal will recall, in the February, 1916, number, Mr. Walter D. Blair's review of the Manchester School of Architecture Sketch Book which contained measured drawings of this charming English building, now demolished, and may be interested to know that artist's proofs of a perspective drawing of the same building are now obtainable.

Pen Drawings of Old New Orleans.

By Frank G. Churchill. Published by the Author at 1102 Hennen Building, New Orleans, La. $1.50 net.

We regret that in our announcement and review of this book last month, both the price and the author's address were stated wrongly, and we hasten to correct the errors.

The Houses of Providence. The Snow & Farnham Co., Providence. 15 cents.

It is a very human record which Mr. John Ihlder and his associates, Madge Headley and Udetta D. Brown, have set down as the result of their studies of the conditions which affect the housing of Providence. A peculiarly American record as well, and full of the historic charm and interest which we still associate with the New England of long ago. It is impossible in a brief review to give any adequate summary of the volume of information contained in this pamphlet of 100 pages. One may disagree with some of the generalizations which result, but one cannot but appreciate the painstaking care with which these studies were made and be thankful that they are set forth in a simple and straightforward manner such as is all too frequently conspicuously absent in a report of this character. Rarely have we read a document of this kind which so held our interest and won our respect. It should be read by every architect in the United States who has any interest in the problems which so vitally affect the welfare of his environment—and thus, his profession. In the *Providence Magazine* for February, the report is illustrated with many photographs and one delightful drawing by Mr. Henry S. Pitts.—B.

News Notes

The Meeting of the Executive Committee to Be Held in Atlanta, Georgia

The Executive Committee of the Board of Directors of the American Institute of Architects has accepted an invitation from the Georgia Chapter to hold its May meeting in Atlanta.

To derive the fullest benefits for architects throughout the southern states in this section of the country, and in order that the members of the profession generally in the South may become better acquainted with the officers of the Institute, the Georgia Chapter most cordially invites them to meet with it in Atlanta on Friday evening, May 18, and on Saturday, May 19.

On Friday evening, May 18, there will be an informal dinner for the Chapter and its guests at a cost of $2, and on Saturday morning the entire party will be shown in and about Atlanta.

Details concerning the exact time and place of the dinner will be announced later.

Intention to attend should be communicated to Mr. Wm. J. J. Chase, Secretary, Georgia Chapter, 1033 Candler Building, Atlanta, Ga. If so requested, Mr. Chase will make reservations at the Georgian Terrace Hotel, which is to be the headquarters for the meeting.

Second Conference of Public Art Commissions

The Department of the Art Jury of the city of Philadelphia is inviting the members of the Federal Commission of Fine Arts and of the State and Municipal Departments of Art of the United States, to a Conference to be held in Philadelphia on May 15. This will be the second conference of such bodies, the first having been held three or four years ago on the invitation of the New York Art Commission.

The morning session will be held in Mayor Smith's reception room, City Hall. Those attending the Conference will then be taken in motors to Lynnewood Hall, the residence of Mr. Joseph E. Widener, President of the Art Jury, who will entertain them at luncheon. The afternoon session will also be held in Lynnewood Hall. Those attending the Conference will be guests at dinner at the Ritz-Carlton. The first municipal departments of this kind were appointed in New York and Boston in 1898. In addition to the National Commission of Fine Arts there are now five state art commissions and about twenty-five municipal ones.

The Award of the Royal Gold Medal of the R.I.B.A.

The Royal Institute of British Architects will this year present the Royal Gold Medal to Monsieur Henri Paul Nenot, Member of the Institute of France, Honorary Corresponding Member of the Royal Institute of British Architects, Honorary Corresponding Member of the American Institute of Architects, and Inspector General of Public Buildings and National Palaces in France.

M. Nenot was awarded the Prix de Rome in 1877, and is perhaps best known as the designer of the buildings for the University of Paris, the new Sorbonne. The announcement of the nomination was made at the special meeting of the R.I.B.A. in March, and the medal will be presented in June. The award has an especial significance at this moment, inasmuch as M. Nenot fought against Germany in the war of 1870.

Institute By-laws. A Correction

The Executive Secretary desires to notify members of the Institute that in the addenda to the By-laws as printed in A. I. A. Document, Series A, No. 123, page 12, as well as in the Annuary, page 60, under the third paragraph, the reference to Article VIII, Section 3 of the Constitution, should read Article VII, Section 3.

Personal

Mr. Cass Gilbert, of New York City, announces his removal to 244 Madison Avenue, that city.

Messrs. Zantzinger, Borie & Medary, Philadelphia, announce their removal to 112 South Sixteenth Street, that city.

Mr. D. Knickerbacker Boyd, Philadelphia, announces his removal to 112 South Sixteenth Street, that city.

Mr. Thomas C. Young, of Eames & Young, St. Louis, and Mr. Alfred H. Granger, formerly of Frost and Granger, Chicago, will be associated for the practice of architecture after April 1, as Eames & Young, Wright Building, St.

Louis, and Granger & Young, 332 South Michigan Avenue Chicago.

Furness, Evans & Co., of Philadelphia, announce their removal to the Franklin Bank Building of that city.

Mr. W. Carbys Zimmerman, Chicago, announces the new firm of Zimmerman, Saxe and Zimmerman, with offices at 64 Van Buren Street. The new partners are Mr. R. W. Zimmerman and Mr. Herbert Moore Saxe.

Annual Meeting of the Fire Protection Association

The annual meeting of the National Fire Protection Association is to take place in Washington, May 8, 9, and 10. The Committee on Fire Protection of the Institute will be represented and will doubtless, as usual, take a serious part in the discussions that take place during these three days of the meeting. The Committee wishes it were possible to get every member of the Institute to attend one of these meetings of the National Fire Protection Association. It is certain any such attendance would prove of the greatest possible value to the architects themselves. The subjects on the program are frequently of the highest technical value to a professional man. Unfortunately the representation of architects is usually small and one of the favorite topics of discussion at these meetings is: "How can we make the architects of the country realize their responsibility and know their power in this matter of fire protection."

At last year's meeting in Chicago there was a most valuable and interesting discussion between Mr. Ittner of St. Louis and Mr. Snyder of New York, both members of the Institute, on safe design of school buildings. Equally interesting and important items will be found on this year's program. Every member of the Institute is welcome at the meeting in Washington on May 8, 9, and 10, as the Institute is a constituent member of the National Fire Protection Association. Detailed programs of the sessions may be had on application to Franklin H. Wentworth, Secretary, 87 Milk St., Boston.

The Omnibus Public Buildings Bill

On Tuesday, April 3, being the second day of the present session of Congress, Mr. Clark of Florida introduced another Omnibus Public Buildings Bill, apparently the exact counterpart of the Omnibus Bill which was passed by the House at the last session but which failed to be acted upon by the Senate. It scarcely seems possible that the nation will permit a bill of this kind to be enacted at such a moment in its history, but we shall report further on this particular attempt in the next Journal.

Obituary

*Levi T. Scofield

Many of us will miss the familiar figure of Captain Scofield at future Institute conventions. He was the first Cleveland architect to join the Institute, and as there was no Chapter in Cleveland at the time, he entered through the Cincinnati Chapter and remained a member of it during his life.

Mr. Scofield was born in Cleveland on November 9, 1842, and died in his seventy-fifth year. He received his early education in the public schools of Cleveland and then took up the study of architecture and engineering, working with his father, Wm. B. Scofield, who also was an architect. In 1860 he removed to Cincinnati and continued his studies there, but at the outbreak of the Civil War he returned to Cleveland and enlisted. Captain Scofield had a brilliant military record, and on account of his engineering work in the army, he was affectionately called "Old Topog" by his comrades.

There are many works in Cleveland and throughout the state of Ohio as evidence of Mr. Scofield's activity as an architect, but his Soldiers' and Sailors' Monument in the Public Square of Cleveland best illustrates his character. To this monument he devoted seven and one-half years as architect, engineer and sculptor, without compensation, and when at the end the county refused to coöperate in defraying expenses, he gave from his private fortune to do so!

Besides being a Fellow of the American Institute of Architects, Mr. Scofield was a member of the Architectural League, of the Loyal Legion, the Army and Navy Post, and the Grand Army of the Republic.

Mr. Scofield married Miss Elizabeth Clark Wright on June 26, 1867. Mrs. Scofield died a little more than three years ago. Two sons and a daughter survive him. Until his retirement from active practice, about a year and half ago, Mr. Scofield was associated with his sons in business.

*Austin Allen

Mr. Allen was born in Philadelphia, August 8, 1880, and moved with his parents to Joplin, Mo., at the age of ten. There he received his common and high school education. He was graduated from the University of Pennsylvania with the class in Architecture of 1902. He was always prominent in athletics and represented the University of Pennsylvania at the English games held during the coronation of King Edward VII. It was after this that Mr. Allen spent some time in travel and study in Europe. On his return to this country, he worked in the office of the late Bruce Price, of New York, and later in the office of Hunt and Hunt, of New York. In 1905, Mr. Allen opened his office in Joplin, and about three years ago he opened another in Kansas City, dividing his time between the two cities.

Mr. Allen designed many of the most prominent buildings in Joplin, and his work was marked by a chaste dignity and scholarly restraint. Mr. Allen was a member of the Kansas City Chapter and very much interested in the work of the Institute. He was a delegate at the Minneapolis Convention of the Institute and one of the tellers. He also took part in the California excursion two years ago.

Eleven years ago, Mr. Allen married Miss Belle Taylor, of Joplin who, with three children, survives him.

*First notice appeared in March.

Structural Service Department

In connection with professional societies and organized bodies working toward the improvement of building materials and methods, and the following Committees of the Institute:

BASIC BUILDING CODE

WILLIAM B. ITTNER, *Chairman* . . . St. Louis
W. W. TYRIE . . . . . Minneapolis
G. F. A. BRUEGGEMAN . . . . . St. Louis
OWEN BRAINARD . . . . . New York
ROBERT STEAD . . . . . Washington
E. D. LITCHFIELD . . . . . New York

FIRE-PREVENTION

ROBERT D. KOHN, *Chairman* . . . New York
W. L. PLACK . . . . . Philadelphia
G. C. NIMMONS . . . . . Chicago
JOHN R. ROCKART . . . . . New York
CHARLES H. BEBB . . . . . Seattle
LYMAN A. FORD . . . . . New York

CONTRACTS AND SPECIFICATIONS

FRANK MILES DAY, *Chairman* . . . . . Philadelphia
M. B. MEDARY, JR., *Vice-Chairman* . . . . . Philadelphia
ALLEN B. POND . . . . . Chicago
SULLIVAN W. JONES . . . . . New York
FREDERICK W. PERKINS . . . . . Chicago
JOS. EVANS SPERRY . . . . . Baltimore
J. A. F. CARDIFF . . . . . New York
GOLDWIN GOLDSMITH . . . . . Lawrence, Kan.
JULIUS FRANKE . . . . . New York

MATERIALS AND METHODS

THOMAS NOLAN, *Chairman* . . . . . Univ. of Pa.

(Each Chapter has a corresponding member who is chairman of the Chapter Subcommittee)

April, 1917, Serial No. 4

A part of the service of this Department will be to furnish inquirers with additional information, titles of books, names of authors or publishers, copies of articles, or in any way to afford help to architects wishing to ascertain the latest data available in connection with any material or method. For this service, address the Journal of the A.I.A., the Octagon, Washington, D. C. The service is free, except where clerical expense is involved, in which case a small fee will be charged to cover actual cost. The inquirer will be advised of the amount of the fee before any research work is undertaken.

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The Octagon
Washington, D. C.
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Structural Service Department

D. KNICKERBACKER BOYD, *Associate Editor*

FIRE-PREVENTION AND -PROTECTION ISSUE

Section 2. General Building Construction

CONTENTS

Attention is directed also to Terra Cotta, Hollow Tile and Brick (3D), to Metal Lath, Gypsum, Asbestos and Wired Glass (3D5), and also to Cement and Concrete (1E) and Structural Steel (1F), which should be considered in connection with fire-prevention and -protection in general building construction, quite independent, of course, of all municipal ordinances and state building codes which obtain in the various parts of the country.

For information and statistics on fire-losses, hazards in general, theory and practice and other items not specifically referred to herein in connection with structural matters, the reader is referred to the *Quarterly* and other publications of the N.F.P.A. (to find which by items the N.F.P.A. "Index," mentioned under 3A3*h*, will prove invaluable), and to the publications referred to by titles under Information Obtainable (4B1), also to a phamphlet (180 pages) entitled "A Five Years' Fight against Fire Waste," by Powell Evans, copyright 1912.

INDEX TO SUBJECTS TREATED IN THIS ISSUE

(For index of materials previously treated see the General Index, page 207)

4A1 Report Relating to the Work of the Underwriters' Laboratories by the Committee of the American Institute of Architects

Chicago, Ill., March 7, 1917.

To the Members of the American Institute of Architects:

It has long been recognized that there is no feature in the designing and planning of any building that is more vital or important than provision against fire and for the prevention of accidents and loss of life, yet comparatively few people realize that the percentage of loss of buildings by fire in this country, in spite of our organized fire departments and our fire-prevention apparatus, is about as great as any in the world.

In 333 cities in this country, the total annual loss for 1915 is $68,200,000, or $1.94 for every individual in those cities. All that fire departments or fire-fighting apparatus can do in a fire is to try to put it out after it has started. The possibility of reducing this great loss does not depend so much on the fire departments or apparatus as it does upon the architects who plan and design the buildings. Whether the blaze once started shall spread to be uncontrollable, or whether the occupants shall have safe exit, or whether they shall be reasonably safeguarded against accidents, depends largely upon the architect.

The insurance companies can only penalize the owners for bad fire- or accident-risks by imposing high insurance rates, and city authorities can do considerable by building ordinances toward making buildings reasonably safe and proof against fire; but architects are in a position to do most when they design and create these buildings by raising the standard of their fire-resisting qualities and their safety. For the purpose, therefore, of determining and accumulating the facts about all those materials and agencies which serve to reduce fire-losses and to prevent accidents to persons, the Underwriters' Laboratories were established in 1901. They are undoubtedly today the greatest and the most scientific source we have for securing such information. They are entirely independent of any corporation, and although self-supporting, they are run without any profit, and their assistance and information can be had by architects for the asking.

Realizing, therefore, this great opportunity and the value of such information to the architectural profession, the American Institute of Architects has appointed the Committee which is the author of this communication to investigate and study the Laboratories and to bring

the architects into closer touch with their work by arranging to have such information and data of the Laboratories as would be most useful brought directly to the attention of the architects. The January issue of the Journal of the American Institute of Architects, in the new Structural Service Department, presents a brief general description of the Laboratories, the scope of their work, and some of the publications to be had, and also a reference to the future publication of information and data of the Laboratories under different headings of the Department.

The Committee on Fire-Prevention of the Institute has also been doing valuable service for years in coöperation with other organizations and in helping to promote the cause of fire-prevention. The American Institute of Architects, however, has felt that there was still a field of work led by the Underwriters' Laboratories of such vital interest to architects that a committee on that subject could find abundant opportunity for usefulness without in any way conflicting with the work of other committees or with the Structural Service Department of the Journal.

The Committee on the Laboratories has therefore undertaken to carry out a plan of witnessing those tests by the Laboratories of building materials and methods of construction most useful to architects, of selecting such information and data as is most suitable for the purpose and causing this to be sent directly to the architects, after first publishing such notices and accounts of tests, etc., in the Journal. In this way the Committee hopes to arouse a new interest among architects on the subject and a better appreciation by them of the great need in this country of better construction in buildings and, particularly, a more effective provision for fire-prevention and avoidance of human accidents.

As an illustration of part of the program adopted by the Committee, the following account is given:

The publication entitled "The Organization, Purpose and Methods of the Underwriters' Laboratories," of 1916, will first be mailed to every architect. This will give a clear understanding of the Laboratories and their work and an illustration in color of the labels used by the Laboratories. Among other uses the book will be a useful reference in recognizing labels as official on fire-doors, wire-glass windows, electrical appliances, and all of those things frequently specified to be labeled. At various times during the year it is the intention to send out several bulletins containing the results of important investigations and tests by the Laboratories. Among the important tests being made now is that of the modern steel-sash window in its various forms. Particular interest is being taken in the investigation of those windows in large units where the opening is divided by one or more mullions. Such windows in courts, alleys, etc., have only been approved heretofore when the mullions between were fireproofed in a clumsy way, taking up 6 or 8 inches of space. The new windows going through the test have mullions only 1½ to 2 inches in width. If these windows endure the test successfully—and some of them have already done so—then the insurance authorities will permit them in buildings without adding penalties on the insurance rates, and undoubtedly city building departments will permit them in buildings where now the large mullions are required which shut off so much light.

A test of building columns is shortly to be made which is quite remarkable. Elaborate preparations lasting some months have been made whereby large columns, some 14 feet high, one of cast iron fireproofed, one of steel fireproofed, and one of reinforced concrete, each carrying a load of 250 tons is to be subjected to severe heat, such as would occur in a great fire, and then subjected to a large stream of cold water under high pressure. This will undoubtedly produce some very interesting evidence bearing on the subject so frequently and earnestly debated after the Baltimore and San Francisco fires as to the relative merits of these columns. Information such as this and of other important investigations will be collected and supplied to the architects.

It is the sincere hope of the Committee that the information to be furnished will be of practical use to each architect, that he will feel at perfect liberty to make use of the Laboratories, who earnestly invite coöperation with the architects, and that there will be an improvement in the fire-resisting qualities of new buildings and also greater safeguards against accidents and injuries to persons.

Very respectfully submitted,

The Committee of the American Institute of Architects Relating to the Work of the Underwriters' Laboratories.

ELMER C. JENSEN,
H. WEBSTER TOMLINSON,
GEORGE C. NIMMONS, *Chairman.*

4A2 The Committee on Fire-Protection in the American Society of Mechanical Engineers

(Description of the Society's publications and activities will appear under later serial number.)

This Committee is composed of members who have had experience in the subject and are particularly interested in it. Its Chairman, Mr. John R. Freeman, President of the Manufacturers' Mutual Fire Insurance Company, is a recognized authority upon matters pertaining to fire-protection.

The Committee has not been especially active for the past two years, awaiting results from the investigation of column-protective coverings in progress at the Underwriters' Laboratories in Chicago, but several papers by its members have been presented and published in form for distribution. Among these are the following:

(*a*) Safeguarding Life in Theatres, John R. Freeman. This is an exhaustive study of the hazards of theater construction and suggestions for remedying them.

(*b*) Allowable Heights and Areas for Factory Buildings, Ira H. Woolson. A compilation and discussion of the opinions of 117 fire chiefs in the principal cities of the United States which were given in reply to a questionnaire upon the subject.

(*c*) Debarment of City Conflagrations, Albert Blauvelt. This deals with the broad problem of methods to prevent conflagration and is published by the N.F.P.A. (3A3*d*10).

(*d*) Life Hazards in Crowded Buildings Due to Inadequate Exits, H. F. J. Porter. Is a plea for the use of the horizontal fire-escape exit by one who has specialized and written frequently on this and other features of building construction with respect to safety to life.

(*e*) National Standard Hose Couplings and Hydrant Fittings for Public Fire Service, F. M. Griswold. It describes the necessity for such standardization and the great benefits to be secured by same. (See 3A3*d*27.)

Membership of the Committee on Fire-Protection, A.S.M.E.:

JOHN R. FREEMAN, *Chairman*
EDWARD V. FRENCH
ALBERT BLAUVELT
F. M. GRISWOLD
H. F. J. PORTER
T. W. RANSOM
IRA H. WOOLSON

4A3 National Automatic Sprinkler Association

Secretary-Treasurer: Ira G. Hoagland, 80 Maiden Lane, New York, N. Y.

Publications:

(*a*) "Safety From Fire: The Automatic Sprinkler." December, 1914. A brochure (32 pp.) describing application of automatic sprinkler systems for protection against fire to factories, stores and offices, hotels, schools and colleges, institutions, dwellings and clubs, piers and wharves, and ships and boats.
(*b*) Reprints of matter and comments concerning automatic sprinkler protection and related subjects.
(*c*) "Automatic Sprinkler Diffuser." Published periodically for the advancement of the automatic sprinkler art as applied to the conservation of life and property from fire.

Purposes:

Advancement of the art of automatic sprinkler protection and promotion of the idea of the protection. Education of the public and its constituted authorities. Dissemination of information; a central source from which architects, engineers and contractors may obtain reliable information concerning the application of automatic sprinkler systems to the protection of property from fire.

Development of opportunities for increased application of sprinkler protection. Elevation of trade and technical practices and solution of economic problems in the automatic sprinkler industry. Opposition of conditions restricting development of the art of automatic sprinkler protection.

Buildings and Structures in General

4B New Construction Work and Safeguarding Old

(See all subdivisions for separate features of construction and for devices.)
(See also "Reports on Buildings under Fire," 3E1, "Cement and Concrete," 1E6, and "Terra-Cotta, Hollow Tile and Brick," 3D.)

4B1 *Information Obtainable*

(*a*) The Bureau of Standards has issued, Jan. 31, 1917: Technologic Paper No. 70. "Durability of Stucco and Plaster Construction" (see 3E3*g*), being progress report containing results of investigations up to April, 1916.
(*b*) See among others the following publications of the N.F.P.A. listed under 3A3*a* to *h*. For additional information it is recommended that the "Index" (3A3*h*) be carefully consulted as therein all papers, addresses, discussions, reports of committees at conventions and all articles in the *Quarterly* are fully indexed and cross indexed for reference.
1. "Fire-Prevention: Its Object and Possible Results," C. Heller. (3A3*d*5.)
2. "Fire-Prevention Through Adequate Power and Common Sense," C. J. Driscoll. (3A3*d* 5*a*.)
3. "Debarment of City Conflagrations," Albert Blauvelt. (3A3*d*10.)
4. "Fire-Hazards on the Farm." (3A3*d*21.)
5. "Factories and Their Fire-Protection," Franklin H. Wentworth. (3A3*d*32.)
6. "Mill Construction Buildings," C. E. Paul. (3A3*d* 32*a*.)
7. See, "Planning of School Buildings for Safety," illustrated address by Wm. B. Ittner. "Proceedings" N.F.P.A., 1916.
8. See, "Summer Hotels, Hazards and Protection," G. Dana. N.F.P.A. *Quarterly*, Vol. 3, No. 2.
9. See, "Warehouses, Construction and Protection," C. H. Patton. N.F.P.A. "Proceedings," Vol. 14, p. 125.
10. For "Theatres, Construction and Equipment." See several references in N.F.P.A. "Index" (3A3*h*).

(*c*) See Committee on Fire-Protection, American Society of Mechanical Engineers (4A2).
1. "Safeguarding Life in Theatres" (*a*).
2. "Allowable Heights and Areas for Factory Buildings" (*b*).

(*d*) See Crosby-Fiske-Forster Hand Book of Fire-Protection. (Sixth edition now in preparation.)
1. "Fireproof Construction."
2. "Slow-Burning Construction: Recommendations for Mill Construction."
3. "Improvements for Existing Buildings."

(*e*) See "Fire-Prevention and Fire-Protection," Joseph Kendall Freitag.
1. Slow-Burning or Mill Construction, Chapter IV.
2. The Materials of Fire-Resisting Construction, Chapter VII.
3. Permanency and Corrosion, Chapter VIII.
4. Planning and General Design, Chapter IX.
5. Efficiency versus Faulty Construction, Chapter X.
6. Theatres, Chapter XXII.
7. Schools, Chapter XXIII
8. Residences, Chapter XXIV.
9. Factories, Chapter XXV.
10. Garages, Chapter XXVI.
11. Safes, Vaults, Metal Furniture, etc., Chapter XXVII.

(*f*) See, also, "The Fireproofing of Steel Buildings," J. K. Freitag.
(*g*) See "Kidder's Pocket Book," 1916.
1. "Wooden Mill and Warehouse Construction," A. P. Stradling, Supt. of Surveys, Philadelphia Fire Underwriters' Association, Chapter XXII.
2. "Fireproofing of Buildings," Rudolph P. Miller, New York, Chapter XXIII.
3. "Reinforced Concrete Construction," Rudolph P. Miller, Chapter XXIV.
4. "Reinforced Concrete Factory and Mill Construction," Emile G. Perot, Chapter XXV.

(*h*) See "Trautwine's Civil Engineers' Pocket Book" for general notes and details of construction and for "Price List and Business Directory."
(*j*) For all forms of concrete construction see "Concrete," Trautwine. 1916. Reprinted from "Trautwine's Civil Engineers' Pocket-Book."
(*k*) See "Building Construction and Superintendence," F. E. Kidder, Part 1, Masons' Work.
1. "Fireproofing of Buildings," Thomas Nolan, Chapter IX.
2. "Concrete and Reinforced Concrete Construction," Thomas Nolan, Chapter X.
3. "Form of Specifications (for all parts of a building)," Chapter XIII.

(*l*) "Plain and Reinforced Concrete," F. E. Turneaure. Being Section 5 in "American Civil Engineers' Pocket-Book," M. Merriman.
(*m*) See "Mechanical Engineers' Hand Book, 1916," Lionel S. Marks.
1. "Building Construction," Lionel S. Marks, pp. 1264–1304.
2. "Reinforced-Concrete Construction," Sanford E. Thompson, pp. 1305–1316.
3. "Industrial Buildings," Charles Day, pp. 1317–1333.

(*n*) "Reinforced-Concrete Construction," Geo. A. Hool, Vols. 1 and 2.
(*o*) "Concrete, Plain and Reinforced," Taylor and Thompson. Revision just out.
(*p*) For notes and tables on walls, floors, columns, and other data, see "Mechanical Engineers' Pocket-Book," William Kent. Pages 1385–1394, "Construction of Buildings."
(*q*) See Building Trades Hand Book.
1. Fireproofing.
2. Metal Furring and Lathing.

(*r*) See, "The Architect and Fire-Protection," address by I. K. Pond. N.F.P.A. "Proceedings," Vol. 14, p. 117.
(*s*) See, "The Architect and the Fire Waste," C. M. Goddard. N. F. P. A. *Quarterly*, Vol. 5, No. 4.
(*t*) Read "The Status of Schoolhouse Construction in the United States," address by Frank Irving Cooper. N.F.P.A. "Proceedings," Vol. 19, p. 102; also an address by him before the fifth congress of the American School Hygiene Association entitled "Schoolhouses and the Law." Contains statistics on various requirements for construction and fire-protection.
(*u*) See "Fireproof Building, Its Advantages and Its Weaknesses," H. W. Forster. N.F.P.A. *Quarterly*, Vol. 7, No. 4.
(*v*) See "Fireproof Construction, What It Is and What It Ought to Be," E. T. Cairns. N.F.P.A. *Quarterly*, Vol. 7, No. 1.
(*w*) "Fire-Resistive versus Fireproof," N.F.P.A. "Proceedings," Vol. 8, p. 235, and *Quarterly*, Vol. 3, No. 4.
(*x*) For "Fire-Retardent Materials," see N.F.P.A. "Index," 3A3*h*.
(*y*) "Requirements for Standard Mill Constructed Building," see N.F.P.A. "Proceedings," Vol. 12, p. 103, and Vol. 21, 1917.
(*z*) See "Concrete Construction for Mill Buildings," illustrated paper read before The National Association of Cotton Manufacturers, April, 1915, by Leonard C. Wason.

(*aa*) See "Proceedings" of the A.S.T.M., Vol. XVI, Part I (1A4*a*).
1. Report of Committee D7 on Timber.
2. Report of Committee C11 on Gypsum and Gypsum Products.

(*bb*) For further references to Gypsum in Building Construction, see:
1. Reports by Underwriters' Laboratories on "Calcination Test on Gypsum Blocks," "Gypsum Block for Fireproof Partitions;" also, "Inspected Mechanical Appliances," 3A6*b*.
2. See, also, Bureau of Standards, Pittsburgh, Tests on Gypsum Fireproof Partitions.
3. See, also, Report on Strength and Flexure Tests on Structolite made at Columbia University.
4. See References under 4B2*g* and 4D1*h* 1 and 2.
5. For descriptive list of Products of the United States Gypsum Co. and Specifications for "Pyrobar" Gypsum Partition Tile, see Industrial Section, p. XIII.

(*cc*) See the following publications of the Portland Cement Association (1E2).
1. "Factories and Warehouses of Concrete" (1E5*n*).
2. "The Concrete House and its Construction" (1E5*o*). Price $1, postpaid.
3. "Concrete Houses and Why to Build Them."
4. "Fundamentals of Reinforced Concrete Design."
5. "Recommended Specifications for Reinforced Concrete Design."
6. "Concrete Schoolhouses."
7. "Small Concrete Garages."

(*dd*) See "Fire-Prevention," Joseph McKeon, 1912.

(*ee*) See the writings variously published of Ex-Chief William Croker and of Charles T. Main on fire-prevention and -protection in relation to building construction.

(*ff*) This list would not be complete without making reference to the writings and publications of that pioneer spirit, Edward Atkinson, valuable for their significance in the development of sounder building construction.

(*gg*) See "Official Record" of the First American National Fire-Prevention Convention, Philadelphia, 1913, containing papers and discussions, among others on Building Construction, Building Codes, Protection Equipment and Insurance.

The grading of lumber, preservation of wood and all other matters in connection with the use of wood in construction will be treated in later serial number.

For information on engineering services in connection with reinforced concrete structures, see the Industrial Section, page xxxvii, Corrugated Bar Co.

For general information on the use of cement in fire-resistive construction see Industrial Section, Alpha Portland Cement Co., page xviii.

(*l*) For information and suggestions in connection with Industrial Buildings see the publication of the Atlas Portland Cement Co. (1916) described in the Industrial Section on page L.

4B2 *Practice Recommended and Suggested by:*

(*a*) U. S. Bureau of Mines: 1. Technical Paper No. 18 (2A3*c*), "Magazines and Thaw Houses for Explosives." 34 pp. text, data and diagrams.

(*b*) National Board of Fire Underwriters:
See all four of the "Suggested Codes" listed under 3A4*d*.
1. "Building Code" 3A4*d*1 (see description by Mr. Woolson under 3A4), will be found to offer invaluable suggestions and assistance on all features of construction both generally and specifically. In addition to buildings in general and all parts of their construction, the following are separately treated:
(*a*) Construction and Equipment of Theatres, illustrated, Part XXXI.
(*b*) Construction of Moving Picture Theatres Having Capacity of Three Hundred or Less. Part XXXII.
(*c*) Assembly Halls: Requirements for Public Safety. Part XXXIII.
(*d*) Tenement-House Law. Part XXXVIII.
2. "Dwelling Houses" 3A4*d*3 (see description by Mr. Woolson under 3A4), contains concise and explicit recommendations on all forms of residence construction, including:
(*a*) General Discussion of Defective Construction and Its Relation to Their Fire-Hazard.
(*b*) Quality of Materials Suitable for Construction Work.
(*c*) Major Structural Requirements to Protect Life and Prevent Spread of Fire.
(*d*) Fire-Stopping.
(*e*) Concrete Construction.
(*f*) General Precautions for Fire-Protection.
3. To Regulate the Installation, Operation and Maintenance of Motion Picture Machines and the Construction and Arrangement of Picture Booths and Audience Rooms (3A4*c*1).
4. To Regulate the Construction and Equipment of Theatres (3A4*c*6).
5. To Govern the Construction and Operation of Laundries (3A4*c*5).

(*c*) National Fire Protection Association:
1. Field Practice. Inspection Manual. See description 3A3*d*1.
2. Office Building, Grade A—Specifications for Construction of (3A3*d*31*a*).
3. Structural Defects—Suggestions for Their Elimination and Protection. (Particularly with reference to safeguarding existing features.) (3A3*d*31*b*.)
4. Uses of Wood in Building Construction. Committee Report. Data of tests on inflammability of untreated wood and of wood treated with fire-retarding compounds. 55 pp., illustrated. (3A3*d*36.)
5. Dwelling-House Hazards—How to Prevent Fires in the Home. 4 pp., illustrated. (3A3*e*1.)
6. Schoolhouses, Fire-Protection of. 16 pp., illustrated. (3A3*e*4.)
7. Cold-Storage Warehouses—Suggestions for Their Improvement as Fire-Risks. Committee Report. (3A3*d*44.)
8. Shoe Factories. Suggestions for Their Improvement as Fire-Risks. Committee Report. (3A3*d*42.)
9. Tanneries. Suggestions for Their Improvement as Fire-Risks. Committee Report. (3A3*d*41.)
10. Fire-Prevention Work in Small Cities and Towns. Committee Report. (3A3*d*9.)
11. For Report of the Committee on Fire-Resistive Construction, see "Proceedings," 1915, p. 93, with Recommendations for Construction of Private Residences (with Full, Partial and Temporary Protection); also Recommendations for Construction of Places of Amusement (Theatres and Opera Houses, Assembly Halls, Motion Picture Halls, Pavilions, Exposition and Fair Buildings, etc.).

(*d*) Inspection Department, Associated Factory Mutual Fire Insurance Companies:
1. Dry Rot in Factory Timbers. 107 pp. with many illustrations showing also diagrams of standard slow-burning mill and factory construction and with suggested forms of specifications for special grades of long-leaf and southern pine (3A6*a*45).
2. Fires in Cotton Mills. (3A6*a*12.)

(*e*) New York Chapter A.I.A. and the New York Board of Fire Underwriters:
1. General Information Regarding Fire Insurance Requirements with Particular Reference to Fire-Prevention. Pamphlet. 1914.

(*f*) The International Association of Fire Engineers:
1. The safeguarding of Existing School Buildings against Fire. See Report of Committee to recent convention published in *School Board Journal*, Feb., 1917. 3 pp.

(*g*) The American Society for Testing Materials (1A4):
1. Tentative Standard definitions of Terms relating to the Gypsum Industry, Serial Designation (C11, 16*t*.)

(*h*) The Associated Metal Lath Manufacturers: See page xiv.
1. See Metal Lath Handbook (3C11*a*) for general details of building construction with this material (and plaster) carefully worked out and figured; includes a standard diagram for a motion picture booth.

(*j*) National Lumber Manufacturers' Association, Engineering Bureau (Serial No. 5):
1. Heavy Timber Mill Construction Buildings. This contains also a chapter describing Standard Mill Construction as mentioned under 4B3*g*1.

(*k*) See the publications of the Portland Cement Association referred to under 4B1*y* in many of which will be found descriptive and diagrammatic recommendations pertaining to the construction covered by the title.

(*m*) See "Natco Hollow Tile Fireproofing as Used in the Construction of Standard Steel Frame Fireproof Buildings."

4B3 *Standards Adopted*

(*a*) *Building Codes.* The mandatory provisions of all Codes, state or municipal, must first govern construction in each locality. That these are not always perfect is freely admitted, and it is the duty of all architects, engineers, contractors and owners to coöperate, not only in the fulfilment of all requirements, but in raising the general standard of building construction in every way possible and to take part, as has been done in many localities, in movements to improve existing codes or portions thereof. On this point the Institute, in its Document 107 (1A8*b*), says:

"An architect should be mindful of the public welfare and should participate in those movements for public betterment in which his special training and experience qualify him to act. He should not, even under his client's instructions, engage in or encourage any practices contrary to law or hostile to the public interest; for as he is not obliged to accept a given piece of work, he cannot, by urging that he has but followed his

client's instructions, escape the condemnation attaching to his acts. An architect should support all public officials who have charge of building in the rightful performance of their legal duties. He should carefully comply with all building laws and regulations, and if any such appear to him unwise or unfair, he should endeavor to have them altered."

Without referring specifically to various other localities where notable activities obtain with respect to the improvement in and standardization of Building Codes, it is suggested that, as an example of the latest printed word on this important subject, the Building Code of New York City, March 14, 1916, be read, and that its development, through changes officially adopted, be followed. Bulletins giving these changes will be sent to those who register requests for the same. State-wide codes have been adopted in whole by Wisconsin and in part by Ohio. Tentative codes have been prepared by the Commonwealths of Massachusetts, Pennsylvania, and Illinois, through commissions created for this purpose, and printed drafts of these codes have been distributed for comment and criticism preparatory to possible final adoption by the legislative bodies of each of these states.

A bill has just been prepared by the New York State Association of Architects asking for a commission to consider the "desirability and necessity" of a Building Code for that state. (See 4J2.)

See "Practice Recommended and Suggested by:" 4B2*b*, for reference to the Building Code recommended by the National Board of Fire Underwriters which is a proposed standard that has been widely distributed and copiously copied throughout the country as well as used in educational institutions and otherwise as described by Mr. Woolson under 3A4.

For progress report on work by the Bureau of Standards with respect to Building Codes, see Progress and Current Activities 4J.

For progress report and valuable suggestions, see report of Institute's Committee on Basic Building Code in "Proceedings" of 1916 Convention (1A8*f*).

(*b*) By the National Fire Protection Association:
1. Specifications for Construction of a Standard Building (3A3*d*31).

(*c*) By the National Board of Fire Underwriters (recommended by the N.F.P.A.):
1. Vaults, specifications for. Intended for banks, trust companies and others having large values to protect. Drawn primarily from the point of view of fire-protection, but many of the provisions have a bearing on protection against burglary. (3A3*a*24).
2. Hose Houses for mill yards, construction and equipment (3A3*a*13).

(*d*) By Inspection Department, Associated Factory Mutual Fire Insurance Companies:
1. See 4B2*d*1 for small illustrations and brief reference to standard, mill and factory construction.

(*e*) By Joint Committee on Concrete and Reinforced Concrete:
1. See Report of the Committee 1E7*b*.

(*f*) By American Society for Testing Materials (1A4*c*):
1. Standard Definitions of Terms Relating to Structural Timber. Serial Designation D9–15.

(*g*) By Associated Mutual Fire Insurance Companies of New England:
1. "Standard Mill Construction," shown in Report V, issued by the Insurance Engineering Experiment Station under direction of Boston Manufacturers Mutual Fire Insurance Co. Illustrated and described in Chapter VIII of 4B2*j*1. Report now obtainable from the Associated Factory Mutual Fire Insurance Companies (3A7*c*), by whom the work of the Experiment Station has been taken over.

(*h*) See all references in N.F.P.A. "Index" to "Uniform Requirements."

Vertical Structural Features

4C Walls, Chimneys and Flues; Columns, Partitions and Enclosures; Doors, Windows, and Shutters; Wired Glass and Other Retardents

[NOTE.—For this and all other subdivisions, see, also, the various references under "Reports on Buildings" under Fire 3E and "Buildings and Structures in General," 4B.]

4C1 *Information Obtainable*

(*a*) See particularly all references under Terra Cotta, Hollow Tile and Brick 3D, and Metal Lath, Gypsum, Asbestos and Wired Glass 3D5.

(*b*) Wall Construction, Chapter XX of "Fire Prevention and Fire Protection," J. K. Freitag, contains text matter and illustrations on:
1. Openings in walls.
2. Furring of exterior walls.
3. Mullions.
4. Party and fire walls.
5. Wall Columns.

(*c*) See, also, in Fire Prevention and Fire Protection" (Freitag):
6. Columns and Column Protections, Chapter XII.
7. Fire-Resisting Partitions, Chapter XIII.
8. Fire-Resisting Shutters, Windows and Doors, Chapter XIV.
9. Elevator Shafts and Enclosures, Pipe Shafts, Chutes, etc., Chapter XVI.

(*d*) See various sections of Crosby-Fiske-Forster Hand Book of Fire Protection. (Sixth edition now in preparation.)

(*e*) See "Building Construction and Superintendence," F. E. Kidder." Part 1, Masons' work.
1. Fireproof Construction, Columns, Partitions, Furring, Chapter IX. Also includes Plaster Block, Hollow Tile and Metal Lath.
2. Lathing and Plastering, Chapter XII.
3. Form of specifications, Chapter XIII.

(*f*) See Kidder's Pocket Book, 1916.
1. Various sections relating to Walls.
2. Column Protection, pp. 823–827.
3. Recesses for Pipes, p. 827.
This calls attention to Freitag's conclusions that pipes should never be run within fireproofing encasings of columns—which practice is now prohibited in many of our cities.
4. Partitions and Wall Coverings, pp. 878–896.
5. Metal Doors, Windows and Trim, pp. 898–908.

(*g*) See "Notes on Leakage of Air Through Windows," Bulletin, Building Data League (2A5*d*).

(*h*) For information on the subject of fire-wall divisions in buildings, read Mr. Porter's address mentioned under 4A2*d*.

(*j*) For references to "Fire Protecting Coverings for Window and Door Openings," see N.F.P.A. "Index," 3A3*h*.

(*k*) See Industrial Section for the following:
1. Detailed drawings of Lupton Steel Sash, counterbalance type, and description of Underwriters' Laboratories' test, p. x.
2. Information on Austral Balance Window, p. xix, Winslow Bros. Company.
3. Standardization as applied by the Solar Metal Products Co. in the manufacture of Hollow Steel Doors and Interior Metal Trim p. xvi.
4. Information on "Almetl" Fire doors, p. xxvii. Merchant & Evans Co. Also see notes under 4C3*b* and *e*.
5. For detailed drawings of Bronze Store Front Construction, see p. vi, Gorham Mfg. Co.
6. Descriptive matter pertaining to wired glass, p. xxii, Mississippi Wire Glass Co.
7. Illustration and description of Glass Enameled Steel Laundry Chute, p. xxxviii, The Pfaudler Co.

4C2 *Practice Recommended or Suggested by:*

[NOTE. See, also, Practice Recommended under Terra Cotta Hollow Tile and Brick 3D, and under Cement and Concrete 1E6.]

(*a*) National Board of Fire Underwriters:
1. "Building Code" 3A4*d*1. Read index to same and see all sections and clauses relating to walls, chimneys and flues, fire-doors, fire-windows and shutters, protection of vertical openings, mill construction, fireproof construction, and fireproofing.
2. "Dwelling Houses" 3A4*d*3. Read index to same. In addition to sections mentioned under 4B2*b*2, there are sections on walls, chimneys, flues and fireplaces.

(*b*) National Fire Protection Association:
1. Read "Index to all Subjects" (3A3*h*), which is carefully cross-indexed for reference to all subjects under this subdivision.
2. Examine contents of "Field Practice" (3A3*d*1).

(*c*) Inspection Department Associated Factory Mutual Fire Insurance Companies.
1. "Beltway Fires, Experience showing the urgent need of, and suggestions for providing non-combustible, sprinkled enclosures for main belts" (3A6*a*4).
2. "Prevention of Large Loss in a Mutual Mill," treats of partitions, beltways and protection.
3. For wood posts in "Mill-Construction" data see "Dry Rot in Factory Timbers" 3A6*a*45.

(*d*) Associated Metal Lath Manufacturers:
1. For detailed drawings of beltway enclosures and of elevator enclosures, with notes and descriptions, and for drawings of column protections from the Metal Lath Handbook, see Industrial Section, p. xiv.

(*e*) National Lumber Manufacturers Association, Engineering Department (Serial No. 5) 4B2*j*1:
1. Exterior Walls, Fire-Walls and Enclosures, Chapter II.
2. Posts, or Columns, Chapter IV. (With details of steel post caps.)
3. See Technical Letters Nos. 4 and 5, August, 1816. "Building Code Suggestions."

4C3 *Standards Adopted*

(*a*) See Specifications for Construction of a Standard Building, N.F.P.A. (3A3*d*31).
1. Walls. 2. Piers. 3. Columns. 4. Stair, Elevator and other shafts. 5. Room, Hall and Fire Exit Partitions. 6. Protection of Exterior Wall Openings. 7. Protection of Interior Wall Openings.

(*b*) Protection of Openings in Walls and Partitions, N.B.F.U. (3A4*a*18.)
The full title of this publication is "Regulations of the National Board of Fire Underwriters for the Protection of Openings in Walls and Partitions against Fire. Recommended by the National Fire Protection Association. Edition of 1915."
This deals entirely with the installation of all such protection devices and does not cover the construction. The National Board of Fire Underwriters no longer issues "Rules and Requirements for the Construction and Installation of Fire Doors and Shutters," or "Rules and Requirements for the Manufacture of Wired Glass and the Construction of Frames for Wire and Prism Glass Used as a Fire Retardent." Copies of same in existence should be destroyed.
The Underwriters' Laboratories issues special publications, one entitled "Specifications for Construction of Tin-Clad Fire-Doors and Shutters" another, "Hollow Metallic Window Frames and Sashes for Wired Glass." These are used as the rules for such construction by the National Board of Fire Underwriters and by most of the local underwriters.
Architects' specifications (unless referring to (*e*) which follows) should state that tin-clad fire-doors and shutters should be constructed in accordance with the Underwriters' Laboratories' specifications and that they should comply with the rules and requirements of (name the Local Fire Underwriters' Association) and of the City of (name the City). Tin-clad fire-doors and shutters should bear the label of Underwriters' Laboratories as evidence of such compliance or otherwise they must be accepted in writing by the local underwriters' association.
Note.—The card quoted as follows is on file with the Editor, but like so many others with which he has come in contact, it bears no date or number or means of identification, except those given by him. After describing the type of door, whether tin-clad, rolling or sliding, steel or metal rolling or sliding and the gauge, make or kind to be considered, the following will apply as:

"Specifications for Automatic Fire-Doors
to Standard of
National Board of Fire Underwriters

All openings in the fire-walls are to be equipped on both sides of each opening with automatic fire-doors, to be released by an automatic release, both doors and release to be approved by, and bear the label of, the Underwriters' Laboratories. The doors are to slide or swing as indicated on the plans, and to be installed with standard approved hardware, in every instance allowing for proper lap. Doors to be adjusted for easy operation after erection."

(*c*) See "Vaults" described under 4B3*c*1.

(*d*) "Standard for Counter-balanced Elevator Doors" Underwriters' Laboratories (3A6*h*.)

(*e*) "Specifications. Tin Clad Fire Doors and Shutters, 1914." Inspection Department, A.F.M.F.I. Co's. (3A7*a* 41.)
Note. Where "Sheet Metal" doors are used they should be installed to comply with these requirements for tin-clad doors.

(*f*) For mechanical appliances and materials inspected and labeled or approved, with names of the articles and manufacturers, see:
1. List of Inspected Mechanical Appliances (3A6*b*) and description of contents of same published in the Industrial Section, on p. xii.
2. Approved Fire-Protection Appliances, Oct. 1916 (3A7*a*3).

(*g*) "Standard Tests for Fireproof Partition Construction," A.S.T.M. (1A4*c*.) Serial Designation C. 3-09.

(*h*) Navy Department specification (3A1*a*2). "Expanded Metal," Serial Designation 47M1, Aug. 1, 1914.

(*j*) For dividing of floor areas, types of partitions, stair enclosures, and other features of industrial buildings, see "Universal Safety Standards," 1914. Compiled under the direction of and approved by the Workmen's Compensation Service Bureau, New York.

4C4 Scuppers, Inserts, and Devices

(*a*) For these in general see Field Practice, Inspection Manual N.F.P.A. (3A3*d*1.)

(*b*) For description and detail drawings of scuppers see N.F.P.A. *Quarterly* (3A3*h*), Vol. 4, No. 1. Also see *Quarterly*, Vol. 9, No. 2, and "Proceedings," Vol. 19, p. 483.

(*c*) For detail drawings of scuppers see "Watertight Floors of Mill Construction (3A6*a*26).

(*d*) Similar details shown in Chapter III of 4B2*j*1.

(*e*) Other details and description of scuppers, "Kidder's Pocket Book," p. 767.

(*f*) For information on scuppers, data as to sizes and requirements relative to floor area, see "Building Code" (3A4*d*1).

(*g*) For suggestions on wall fastening devices see paper with that title read by Carrington McFarland before Society of Constructors of Federal Buildings in Journal (2A4*a*) for March, 1916.

Horizontal and Sloping Features

4D Beams, Girders and Floors, Ceilings and Roof Construction, Roofs and Roof Coverings.

4D1 *Information Obtainable*

[Note. For this and all other sub-divisions, see the various references under Reports on Buildings under Fire, 3E and Buildings and Structures in General, 4B. See, also, references under 3D, and 3D5.]

(*a*) See, "Fire Prevention and Fire Protection," J. K. Freitag.
1. Slow-burning or Mill Construction, description and typical diagrams, Chapter V.
2. Fire-Resisting Floor Design, Beam and Girder Protections, Ceilings, Chapter XI.
3. Terra Cotta Floors, Girder-Protections, etc. Chapter XVII.
4. Concrete Floors and Reinforced Concrete, Chapter XVIII.
5. Combination Terra-Cotta and Concrete Floors, Chapter XIX.
6. Roofs, Suspended Ceilings, Furring, Chapter XXI.

(*b*) See "Fire Tests of Floors in the United States," Ira H. Woolson and Rudolph P. Miller. A completely illustrated paper giving detailed drawings and descriptions forming a record for the International Association for Testing Materials of all fire-tests obtainable upon all kinds of floors. 1912.

(*c*) See various sections of Crosby-Fiske-Forster Hand Book. (Sixth edition in preparation.)

(*d*) See Building Construction and Superintendence, F. E. Kidder.
Part 1. Masons' Work.
1. Fireproof Construction—Floors, Roofs, Ceilings, pp. 460–542.

(*e*) For much valuable information on suggested construction and floor-load developments, read 1916 progress report of Committee on Basic Building Code A.I.A. (1A8*l*).

(*f*) See "Kidder's Pocket Book, 1916."
1. Strength and Stiffness of Wooden Floors (with tables of loads for floors and rafters) pp. 717–750.

2. Fireproof Floor Construction, pp. 827–871, treats of all kinds.
3. Fireproof Roof Construction, pp. 872–878.
4. Fireproof Flooring, pp. 897–898.
5. Asbestos Roofing Shingles, Asbestos Protected Metal and Other Products, p. 819.

(*g*) The Bureau of Standards, U. S. A. issued a "Report of Loading Test of a Two Way Reinforced Floor in William A. Hill Apartment Building, Washington, D. C., June 22, 1916," which was referred to the Institute's Committee on Materials and Methods by Leon E. Dessez, then member of the Washington Chapter subcommittee. Consists of 5 pp. typewriting, 2 detailed blueprint sheets, showing combination hollow-tile and reinforced concrete construction.

(*h*) Bulletin No. 25 "Public Works of the Navy" under the cognizance of the Bureau of Yards and Docks and the Corps of Civil Engineers, U. S. Navy, Jan., 1917 (later Serial No.) gives:
1. "Report on Inspection of Installation of Gypsum Slab Construction for Roofs and Floors," Geo. A. McKay, U. S. N.
2. "Report on Loading Test of a Composition Floor Made by the U. S. Bureau of Standards, Nov. 14, 1916," E. B. Rosa. Illustrated.

(*j*) In Journal of the Society of Constructors of Federal Buildings (2A4*a*) for May, 1915, is an address by Charles F. Hennig describing "Gypsum Plasters" which includes reference to floor-domes and partition-blocks.

(*k*) See "Unit System of Wood Flooring for Fireproof Manufacturing Buildings," C. H. Patton. N.F.P.A. *Quarterly*, Vol. 8, No. 1.

(*l*) See "Waterproofing Floors," N.F.P.A. *Quarterly*, Vol. 7, No. 4.

(*m*) For general information on the subject of composition flooring, see Industrial Section, p. xi, American Flooring Co.

(*n*) See "Enclosures for Floor Openings" N.F.P.A. *Quarterly*, Vol. 8, No. 3.

(*o*) For "Classification of Roofs and Roofings," see five references in N.F.P.A. "Index" (3A3*h*).

(*p*) See "Asbestos Roofing," N.F.P.A *Quarterly*, Vol. 6, No. 2.

(*q*) See "Roof Covering Tests" N.F.P.A. *Quarterly*, Vol. 4, No. 1, and Vol. 10, No. 4.

(*r*) For information on metal roof and other coverings, see Industrial Section, p. xix, American Sheet and Tin Plate Co., p. xlii, N. and G. Taylor Co.

4D2 *Practice Recommended or Suggested by*

(*a*) National Board of Fire Underwriters:
1. "Building Code" (3A4*d*1)
   (*a*) Read index to same and see all sections and clauses relating to steel, concrete, and composite floors and roofs and to mill construction, allowable loads.
   (*b*) See section on strength test for floor construction and data on slope of floors in mill construction and other floors for drainage of water.
   (*c*) See section on skylight construction and all others applicable to this subdivision.
2. "Dwelling Houses" (3A4*d*3).
   (*a*) Read index to same and see recommendations which are applicable to this subdivision in the various materials described.

   In addition to those mentioned under 4B2*b*2 there is a section on "Floor and Roof Construction" and one on "Horizontal Cut-off for Cellars."
3. The publication 3A4*c*8 contains an "Ordinance for Fire-Resistive Roof-coverings."

(*b*) National Fire Protection Association:
Read "Index to all Subjects" (3A3*h*) which is carefully cross-indexed for reference to subjects under this subdivision and see particularly Reports of Committees to Conventions published in the Proceedings.

(*c*) Inspection Department Associated Factory, Mutual Fire Insurance Companies:
1. For wooden floor construction data and wooden floors, see "Dry Rot in Factory Timbers" (4B2*d*1).
2. For detail drawings and recommendations see "Anchorage of Roofs" (3A6*a*1).
3. "Watertight Floors of Mill Construction" (3A6*a*26) contains also diagrams of flashings against walls and around columns.

(*d*) The Associated Metal Lath Manufacturers:
1. For diagram and description of Protected Mill-Constructed Building, see p. xiv in Industrial Section.

(*e*) National Lumber Manufacturers Association Engineering Department. (Serial No. 5) 4B2*j*1:
1. Floors, Chapter III. 2. Roofs, Chapter V.

(*f*) Portland Cement Association (1E2):
1. Suggested Specification for Concrete Floors.

(*g*) For "Standard Specifications of the North Bangor Slate Company" for flat slate roofs, see Industrial Section, p. xxi.

(*h*) For slate used as Fireproof Roof Construction, see General Slate Co., p. viii.

(*j*) For illustrations and for information on the use of asbestos as a roofing material, see data of the H. W. Johns-Manville Company on p. xxiii of the Industrial Section.

(*k*) For descriptive matter pertaining to the use of Roofing in Rolls and of Slate Surfaced Asphalt Shingles, see Industrial Section p. xvii, Certain-teed Products Corporation.

(*l*) In using the Barrett Specification for roofs, and guarantee bond, it is to be noted that the latest specification should be referred to by date, as of May 1, 1916, as explained in circular letter of March 8 from this Company.

4D3 *Standards Adopted*

(Observe also the Standards under Vertical Features, 4C3.)

(*a*) See "Specifications for Construction of a Standard Building," N.F.P.A. (3A3*d*31.)
1. Floor and Roof Construction. 2. Drainage.

(*b*) See, also, "Skylights," listed 3A3*a*20.

(*c*) By the American Society for Testing Materials (1A4*c*):
"Standard Tests for Fireproof Floor Construction," Serial Designation C2-08.

(*d*) By the U. S. Navy Department. See "Specifications" (3A1*a*2):
1. For "Cement Flooring," Serial designation 59F-1, Aug. 1, 1914.
2. For "Linoleum," Serial designation 29L1*c*, Sept. 1, 1916.
3. For "Copper, Rolled Bars, Plates, Sheets and Shapes," Serial designation 47C2*a*, Nov. 1, 1915.
4. For "Zinc Plates, Rolled or Composition," Serial designation 47Z4, Nov. 1, 1913.
5. For "Felt, Sheathing, Tarred," Serial designation 33F1, Sept. 20, 1912.
6. For "Slate Roofing" (mentioned under 2K7*a*).
7. For "Sheet Rubber Tiling" Serial designation, 59T1*a*, July 15, 1913.
8. For "Tinned Plate" Serial designation, 47T1*a*, Jan. 2, 1915.

(*e*) By Building Data League (2A5*a*):
1. "Standard Specification" for Concrete Hardeners. Dated Feb. 1, 1917.
2. "Standard Specification" for Floors, Concrete. Dated Feb. 1, 1917.
3. "Standard Specification" for Asbestos Shingles. Dated Sept. 23, 1915.

(*f*) For mechanical appliances and materials inspected and labeled or approved, with names of the articles and manufacturers, see:
1. List of Inspected Mechanical Appliances (3A6*b*).
   This includes Roof Coverings, Class A, Class B, and Class C, and some thirty-three other materials, and systems as mentioned in Industrial Section on p. xii.
2. Approved Fire Protection Appliances, Oct. 1916 (3A6*a*3)

4D4 Floor Hangers, Roof Connections and Devices

(See, also, Scuppers, Inserts and Devices 4C4.) Many of these are included in the various references given under 4D1, 2 and 3, which see.

(*a*) For reference to details of steel post-caps, see 4C2*a*.

(*b*) For stirrups and hangers, see "Kidder's Pocket Book," pp. 751–758.

(*c*) For hangers, post-caps, and other floor and roof connections, see "Kidder's Pocket Book," pp. 783–800.

(*d*) See N.F.P.A. "Index" (3A3*h*), "Devices and Materials."

(*e*) See Universal Safety Standards (Workmen's Compensation Service Bureau) for all types of devices recommended for protection of openings in floors and elsewhere and for objects located on floors or above roofs in industrial buildings.

(*f*) For illustrations and descriptions of vent and leader connections through roofs, see pamphlet, but recently issued by the Barrett Mfg. Co., entitled "Holt Roof Vent and Leader Connections." Especially interesting as evidence of a manufacturing concern's desire to perfect accessorial details in the installation of their own specialized product.

4D5 Tanks and Reservoirs

As architects have frequent occasion to specify tanks of steel and wood within, and in connection with buildings for many purposes other than fire-prevention, the standards are here enumerated which may well be referred to in place of independently specifying the tanks.

1. The "Regulations of the National Board of Fire Underwriters for the Installation of Gravity and Pressure Tanks, Concrete Reservoirs and Valve Pits" (3A3*e*23) contain diagrams and standard specifications for wood tanks, frostproof boxing of pipes, steel tanks and supports, reservoirs, tables of capacities, and, throughout constitute valuable and trouble-saving standards to follow.
2. The same applies to the standard specifications of the Inspection Department Associated Factory Mutual Fire Insurance Companies. "Gravity Tanks and Towers" (3A6*a*14).
3. See, also, "Elevated Tanks, Their Improved Design and Construction," N.F.P.A. (3A3*d*28.)
4. See, also, "Field Practice" (3A3*d*1) for installation suggestions.
5. See, also, "Building Code," N.B.F.U. (3A4*d*1.) Pp. 105, 195.

4E Exits—Stairways and Fire-Escapes; Safety to Life; Slipping Hazards

4E1 *Information Obtainable*

(*a*) For valuable statistics on the movement of crowds of people on stairways and ramps, and for calculations used in proportioning areas and exits in connection with the planning of the Hudson Terminal Buildings, see paper "A Terminal Station," by J. V. Davies and J. H. Wells, read at Convention of the American Institute of Architects, 1909, and published, with other papers, in separate form, from the Proceedings of that year under the title "The Relations of Railways to City Development."
(*b*) For "Entrance and Exit Calculations" see Proceedings N.F.P.A., Vol. 15, p. 257.
(*c*) See "Life Hazards in Crowded Buildings Due to Inadequate Exits," H. F. J. Porter. Described under 4A2*d*.
(*d*) See "Planning School Buildings for Safety," C. B. J. Snyder. Address before N.F.P.A., 1916. Proceedings, Vol. 20, p. 95.
(*e*) See "Fire Danger in Schoolhouses," with illustrations and descriptions of stairs, and exits, furnished through Russell Sage Foundation, Safety Engineering, Vonnegut Hardware Co., and C. B. J. Snyder, by Miss May Ayres and F. I. Cooper. Reprinted from *American School Board Journal*.
(*f*) See description of "Philadelphia Fire Escape Tower," N.F.P.A. *Quarterly*, Vol. 4, No. 4.
(*g*) For "Fire Escapes," see N.F.P.A." "Index" (3A3*h*).
(*h*) See "Kidder's Pocket Book," 1916. Doors and Stairways, with Table of Treads and Risers," pp. 1565–1568.
(*j*) See Ditto "Tower for Stairways, Elevators, etc.," p. 768.
(*k*) See "Fire Prevention and Fire Protection," J. K. Freitag.
1. Stairways and Fire-escapes, Chapter XV.
2. Fire Drills, Chapter XXXVII.
(*l*) See Crosby-Fiske-Forster Hand Book of Fire-Protection (sixth edition in preparation), many sections of which are devoted to these subjects specifically.
(*m*) See "Planning the Schoolhouse against the Fire-Hazard," reprinted from *Better Schools Magazine*, Dec., 1915, F. I. Cooper and H. F. J. Porter, 8-page pamphlet with suggestions for state regulation.
(*n*) See "Mechanical Engineers Hand Book, 1916," Lionel S. Marks; "Prevention of Accidents," D. S. Beyer, pp. 1382–1389.
(*o*) For papers, discussions and resolutions on "Fire Escapes," "Life Hazards," "Standards," and other subjects bearing on this subdivision (and others), see "Official Record of the First American National Fire-Prevention Convention." Philadelphia, Oct. 13–18, 1913. 541 pp.
(*p*) For information on Von Duprin Self-Releasing Fire Exit Latches, see Industrial Section, p. xx.

4E2 *Practice Recommended and Suggested by:*

(*a*) National Fire Protection Association:

1. Attention naturally centers upon the important work of the Committee on Safety to Life. The reports of this Committee and discussions printed in the 1914, 1915, and 1916 Proceedings should be carefully read by everyone planning urban or other buildings in which people congregate.

This Committee was created in June, 1913, and empowered to consider advisable modifications of the Association's standards in order to provide for safety to life, additional standards on safety to life with particular reference to exit facilities and housekeeping methods, and to consider coöperation, respecting accidents through fire, with existing bodies organized to study industrial or other accident prevention.

The personnel of the Committee makes it representative of these coöperative interests, including the National Safety Council, which will be mentioned in another serial number, and the Workmen's Compensation Service Bureau, reference to which is made herein.

Perusal of the reports will disclose recommendations, calculations, statistics and other data of great value and helpfulness in the planning of all types of buildings. These include:

(*a*) Escapes, stairs, balconies, chutes, and poles.
(*b*) Location, access, material, and strength.
(*c*) Number of occupants based on exit capacity.
(*d*) Stair capacity, with calculations and tables.
(*e*) Exits based on area.
(*f*) Horizontal openings; vertical openings.
(*g*) Report on outside stairs: 8 pages of descriptions and with recommendations concerning various types, heights of buildings with specifications and illustrations; 9 pages of discussion.
[Note.—This report is published separately and listed 3H3*d*15.]
(*h*) Sprinklers as life-savers.
(*j*) Stair requirements for buildings.
(*k*) Exit capacity schedule (Massachusetts Rating and Inspection Bureau).
(*l*) Proposed capacity in number of persons per unit of stair-width.
(*m*) Classification of occupancies.

2. See also "Exit Drills for Factories, Schools, Department Stores and Theatres" (3H3*d*16).
3. Also "Fire Protection in Schools" in which are illustrations of smokeproof school stairway with wired glass in metal frames, plans, diagrams and rules of the New York Board of Education for safeguarding lives of school-children (3A3*e*4).

(*b*) National Board of Fire Underwriters:

1. "Building Code" (3A4*d*1). Read index to same for all sections applicable.
2. "Dwelling Houses" (3A4*d*3). See all sections applicable including "Necessity for Secondary Exits" and "Structural Requirements for Protecting Stairways and Shafts."

(*c*) Abrasive Metals Co.:

In connection with the slipping hazard. For data on Ferulin Anti-slip treads with sectional drawings and "model specifications" see Industrial Section, p. ix.

4E3 *Standards Adopted*

(*a*) See Building Code, New York City, referred to under 4B3*a*.
(*b*) See Building Code, City of Philadelphia, with provision for the original smokeproof tower.
(*c*) See "Specifications for the Construction of a Standard Building," N.F.P.A. (3A3*d*31).
1. Stairways and Smokeproof Towers.
(*d*) See "Universal Safety Standards" (Workmen's Compensation Service Bureau, New York) for diagrams of stairways, exits, fire-escapes and runways.
(*e*) Navy Department Specification (3A1*e*2) "Safety Treads," Serial Designation 12T4*a*, March 1, 1916.

4F Fittings, Contents and Protection Equipment

4F1 *Information Obtainable*

(*a*) The U. S. Bureau of Mines, 2A3*c*, has published, 1915, Technical Paper No. 127, "Hazards in Handling Gasoline."
(*b*) See "Fire-Prevention and Fire-Protection," J. K. Freitag. Part VI.
1. Auxiliary Equipment and Safeguards, Chapter XXIX.
2. Sprinkler Systems, Chapter XXX.

3. Automatic Fire Alarms and Sprinkler Alarm and Supervisory Systems, Chapter XXXI.
4. Simple Protective Devices, Fire-Pails and Extinguishers Paints and Solutions, Chapter XXXII.
5. Watchmen, Watch-Clocks and Manuals, Chapter XXXIII.
6. Standpipes, Hose-racks and Roof-nozzles, Chapter XXXIV.
7. Inspection and maintenance of Fire-Protective Devices, Chapter XXXVI.

(*c*) The new Edition (sixth in preparation) of the Crosby-Fiske-Forster Hand Book of Fire-Protection will be found replete with data, statistics, and suggestions pertaining to these subjects.

(*d*) Interesting automatic fire-alarm systems for the detection of fire have been devised and should be given consideration in connection with the installation of protection equipment in buildings.

(*e*) For "Sprinkler System and Heating, Combined" see N.F.P.A. *Quarterly*, Vol. 6, No. 3.

(*f*) The subject of the relative corrosion of iron and steel pipe will always engage the attention of those responsible for sprinkler and other installations. This subject will be more fully treated in later serial numbers when under heating and plumbing the investigations and reports of the American Society of Heating and Ventilating Engineers and of the American Society of Mechanical Engineers and others are mentioned. Meanwhile the following will be found of interest in connection with sprinkler work:

1. "Corrosion of Automatic Sprinklers," N.F.P.A. *Quarterly*, Vol. 4, No. 2.
2. "Corrosion of Automatic Sprinklers," N.F.P.A. "Proceedings," Vol. 4 and Vol. 6.
3. "Relative Corrosion of Iron and Steel Pipe as Found in Service," Wm. H. Walker, N.F.P.A. *Quarterly*, Vol. 6, No. 3.
4. "Standardization of Pipe and Pipe Fittings," progress report of Committee, N.F.P.A. "Proceedings," Vol. 19.
5. For other information on the subject of pipe and piping, see N.F.P.A. "Index" and read Reports of Committees on Automatic Sprinklers in various "Proceedings."

(*g*) See "Mechanical Engineers Pocket Book," Lionel S. Marks·
1. "Corrosion of Pipes, Boilers and Structural Work," pp. 556–562.
2. "Fire Protection," H. O. Lacount, pp. 1390–1393.

(*h*) See "Mechanical Engineers Pocket Book," Wm. Kent, for data on all kinds of pipe.

(*j*) For information on Sprinkler Equipments in general see National Automatic Sprinkler Association, 4A3 and Industrial Section, p. xi.

(*k*) For information on cast iron pipe, see Industrial Section, p. xxxix, Cast Iron Soil Pipe Makers Association.

4F2 *Practice Recommended or Suggseted:*

(*a*) By the National Fire Protection Association:

The work of certain of the committees should be followed and the reports and discussions printed in the "Proceedings" should be read for all matters pertaining to the Fittings, Contents, and Protection Equipment of Buildings. This is particularly the case with the following committees:

1. On Safety to Life (see 4E2*a*).
2. On Field Practice (see publication "Field Practice" 3A3*d*1).
3. On Manufacturing Risks and Special Hazards.
4. On Automatic Sprinklers.

There are other committees concerned with various technical and engineering subjects, and the features of the work of all of these committees of especial significance at the time of need for reference may be ascertained through the N.F.P.A. "Index to Subjects" (3A3*h*).

5. For discussions on occupancy of buildings and recommendations for licensing, see "Proceedings," 1916, pp. 195–201.

(*b*) By the National Board of Fire Underwriters:
1. See "Building Code" 3A4*d*1, and read classified Index.
2. Read "Dwelling Houses" 3A4*d*3 and its Index.

(*c*) By the American Society for Testing Materials 1A4*a*:
1. Tentative specifications for 2½-, 3- and 3½-inch double-jacketed cotton rubber-lined fire hose for public fire department use.
2. Tentative tests for cotton fabrics for use in hose, belting and similar articles.

(*d*) By the Workmen's Compensation Service Bureau:
1. See "Universal Safety Standards." A reference book of Rules, Drawings, Tables, Formulæ, Data and Suggestions with particular reference to Occupancy, Fittings and Protection Equipment in Industrial Buildings.

(*e*) For detailed drawings of metal wainscoting and shelving prepared by Dahlstrom Metallic Door Company, see Industrial Section, p. xv.

4F3 *Standards Adopted:*

(*a*) By the U. S. Navy Department:
The Navy Department issues specifications in large number for many kinds of materials, installations, extinguishers and other apparatus and devices. These include specifications for iron, steel and wood and their protection, for mechanical systems and appurtenances and for metal furniture and lockers—all of which are of interest and value in connection with fire-prevention, and -protection in buildings and their equipment. Read the "Index to Specifications" (3A1*a*1), for titles and Navy Department serial numbers.

(*b*) By the National Fire Protection Association:
See Specifications for the Construction of a Standard Building (3A3*d*31).
1. Protection of Exterior Wall Openings.
2. Protection of Interior Wall Openings.
3. Service Equipment.

(*c*) By the National Board of Fire Underwriters, which have been adopted by and are also distributed by the National Fire Protection Association:
1. See "Vaults" referred to under 4B3*b*1.
2. "Sprinkler Equipments—Automatic and Open Systems" (3A3*a*21).
3. "Fire Pumps (Steam)" (3A3*a*7).
4. "Fire Pumps, Rotary and Centrifugal, and Electrical Driving of Fire Pumps" (3A3*a*8).
5. "Steam Pump Governors and Auxiliary Pumps" (3A3*a*22).
6. "Signaling Systems Used for the Transmission of Signals Affecting the Fire Hazard" (3A3*a*19).
7. "Tanks (Gravity and Pressure), Concrete Reservoirs and Valve Pits" (3A3*a*23).

(See other publications on specialized subjects in lists of publications.)

(*d*) By Inspection Department, Associated Factory Mutual Fire Insurance Companies:
1. "Rules for Installing Sprinkler Equipments," 1911 (3A7*a*16).

The following is taken from "Approved Fire-Protec-Appliances" (3A7*a*3), Oct., 1916, which see for all appliances or materials stipulated as approved:

"Before a sprinkler equipment, either wet or dry pipe, is put in, or before a present sprinkler equipment is remodeled, complete working plans of the piping should be sent to the insurance companies.

"The plans will be cherfully examined, criticized, or approved free of charge. This avoids subsequent expensive changes and secures the benefit of latest experience. Only the plans of the successful bidder should be sent for approval."

2. "Specifications for Rotary and Centrifugal Fire Pumps," 1912 (3A7*a*20).
3. "Specifications for Underwriter Steam Fire Pumps," 1911 (3A7*a*24).
4. "Rules for Dry Pipe Systems of Automatic Sprinklers," 1912 (3A7*a*8).
5. "Specifications for Fire Hose, Play-Pipes and Hose-Houses" 1911 (3A7*a*10). Purchasers of cotton rubber-lined and unlined linen hose are advised to insist on the guarantee given in the specifications on inside of front cover.

"For outside service the 2½-inch cotton rubber-lined hose should be used, and for inside the unlined linen, the 2¼-inch for standpipe work and the 1¼-inch for small-hose equipment."

6. "Specifications for Valves, Indicator Posts and Hydrants," 1914 (3A7*a*25).
7. "Specifications for Gravity Tanks and Towers," 1913, (3A7*a*14).

(See other publications on specialized subjects in list of publications.)

(*e*) By the American Society for Testing Materials 1A4*a*, "Standard Specifications for Welded Steel and Wrought-Iron Pipe." Serial Designation A 53–15.

(*f*) By Underwriters' Laboratories:
For mechanical appliances and materials inspected and labeled with names of the articles and manufacturers, see "List of Inspected Mechanical Appliances" (3A6*b*).

4G Lightning Protection

4G1 *Information Obtainable*

(*a*) In an address by the then Architect of Farm Structures in the Office of Public Roads and Rural Engineering, U. S. Department of Agriculture, entitled "Architectural Problems of the Farmhouse," delivered before the American Society of Agricultural Engineers, in December, 1914, it was pointed out:

That the necessity for and desirability of lightning protection is affirmed by scientists and confirmed by experience. Statistics compiled by fire marshals were quoted to show the infinitesimal proportion of loss in different states of rodded buildings compared to those without lightning protection.

That in Illinois there was no loss whatever from rodded building during the previous year and $1,104,693 for buildings not rodded.

That in the instances when an examination was made, it was found that the rods were not properly placed or that, as in one instance, they had been in service thirty years without repair.

It was also stated that farmers' mutual insurance companies, after keeping records of the losses from lightning in both rodded and unrodded buildings, were making substantial reductions in rates for rodded buildings, and that several companies were refusing to insure buildings not provided with this protection.

(*b*) In a paper by Ernst J. Berg, Professor of Electrical Engineering, University of Illinois, read before the Illinois State Electrical Association in 1912, he stated that "to people living in cities the lightning protection of buildings is of little or no interest, as the extensive network of wires, metal roofs, etc., are usually ample for protection. The man living in the country, however, is very much concerned, as experience has shown that in certain localities, at least, it is indeed tempting Providence not to have some lightning-rod scheme."

(*c*) In the Price Current-Grain Reporter, Dec. 23, 1914, it was stated that the Mutual Fire Prevention Bureau of Oxford, Mich., quotes data on 15,000 farm buildings all over the country, which have been compiled by Prof. J. Warren Smith of the U. S. Weather Bureau, Columbus, Ohio. Thirty-three per cent of 5,000 of the buildings were rodded. Of the total of 15,000 buildings, 1,089 were struck and 250 burned. Out of the 5,000 rodded buildings, 37 were damaged and 6 wholly burned. Of the 10,000 unrodded buildings, 10 per cent were struck and 2½ per cent burned. Of the 5,000 rodded buildings, ¾ of 1 per cent was damaged and ⅛ of 1 per cent burned.

The same Bureau also states: "One insurance company in Illinois had never paid a loss on a rodded building and had seven million dollars' insurance in force. The calculated efficiency of rods in Michigan is 99.9 per cent; Iowa, 98.7 per cent; Ontario, Canada, 94 per cent; and in Mississippi, 99 per cent. These facts certainly prove that lightning rods do protect when properly installed. A system of rods not properly grounded is no better than no rod at all. It is not out of place to assume that a large number of the losses on rodded buildings was due to the system being out of repair. This is something on which we have no data."

(*d*) "Protection of Buildings from Lightning," A. R. Sawyer and L. J. Smith, August, 1907. Michigan State Experiment Station, Agricultural College, Mich., Bulletin No. 249, 35 pages, illustrated.

(*e*) "Preventable Fires, Increasing Farm Hazards Due to Modern Conditions," Chas. E. Campbell, in the *Country Gentleman*, March 15, 1913, p. 431. Curtis Publishing Co., Philadelphia. Discusses particularly the lightning risks of barns and the advisability of separating the hay-barn from the general farm-barn.

(*f*) "Lightning and Lightning Conductors," J. Warren Smith, Professor of Meteorology, Columbus, Ohio. "Proceedings and Papers of the Nineteenth Annual Meeting of the National Association of Mutual Insurance Companies," Columbus, Ohio, 1914, pp. 23–42. Harry P. Cooper, Secretary, Crawfordsville, Ind. Also printed separately. Contains many statistics and also instructions for protecting buildings.

(*g*) "Lightning Loss and Damage, and Lightning Protection," Prof. W. H. Day. March, 1914. Ontario Agricultural College, Toronto, Canada, Bulletin No. 220. Lightning statistics gathered in Ontario, Iowa and Michigan.

(*h*) "Protecting Buildings against Lightning," George H. Armstrong. The functions and effectiveness of the lightning rod considered in the light of modern theory and practice. *Electrical World*, New York, August 21, 1915, pp. 402–406, illustrated by 14 figures.

(*j*) "The Use of Metal Conductors to Protect Buildings from Lightning," E. W. Kellogg, Missouri University Engineering Experiment Station, Columbia, Mo., Vol. 3, No. 1.

(*k*) "Practical Talks on Farm Engineering," handbook by R. P. Clarkson. Doubleday, Page & Co., New York. Contains short article on the use of barbed wire for lightning rods for protecting farm buildings.

4G2 *Practice Recommended or Suggested by:*

(*a*) The U. S. Bureau of Standards issued, 1915, Technologic Paper No. 56, O. S. Peters (1A2*c*), "Protection of Life and Property Against Lightning." This contains important evidence of the value of lightning-rod protection and a comprehensive discussion of the entire subject.

(*b*) The U. S. Department of Agriculture, published, 1909, Farmers' Bulletin No. 367, "Lightning and Lightning Conductors," by Alfred J. Henry, illustrated, which is now being revised and brought up to date by R. N. Covert, of the Weather Bureau, under the title "Modern Methods of Protection against Lightning."

(*c*) The National Fire Protection Association:

See references to Committee Reports in "Proceedings" N.F.P.A., Vol. 8, p. 251; Vol. 9, p. 271; Vol. 10, p. 264; Vol. 17, p. 263, and especially the very complete Report of the Committee on Signaling Systems in Vol. 20 (1916). This contains 26 pages of descriptive text and discussions, is fully illustrated with details and diagrams, and is prefaced with this explanation by the Chairman, Ralph Sweetland.

"This Association once published a pamphlet entitled 'Suggestions for Protection against Lightning,' which was the result of a considerable amount of work and investigation and study of theoretical considerations which had been found expressed in various governmental publications here and abroad. It served a useful purpose for some time, but with the development of the art and the extension of the application of lightning rods in this country following the American practice, it appeared desirable to revise this pamphlet. Through the Underwriters' Laboratories and through committees, a large amount of work was done in conference with manufacturers of lightning rods, the U. S. Bureau of Standards and other organizations, looking toward the development of a standard of practice in lightning-rod work and an investigation of public opinion in regard to the effectiveness of lightning rods in general. As a result the Signaling Committee has collected and presents in this report the essential results of those efforts. The report, however, gives a general discussion of the theory and goes into the question of the installation of lightning rods; how they should be put on buildings, how the grounds should be made, and similar installation matters.

"The subject is one on which there is a wide difference of opinion; one in which there has been a large amount of investigation, a great deal of theory and some practice. The investigations of the last two or three years have shown the development of a very excellent practice in lightning-rod work and have thoroughly established in the minds of the Committee the opinion that the rather widely prevalent and popular idea that lightning rods are out of date and worthless and unimportant is wholly incorrect, and that lightning rods are an important, valuable and essential part of fire-protection engineering work in very many locations, when properly made, installed and maintained.

"I think we may say that the recommendations as to practice now presented afford one of the first, if not the first, practical and commercially feasible presentations of how to do it. This has been developed and worked out with the very liberal and very widespread coöperation of the lightning-rod manufacturers with this Committee and with Underwriters' Laboratories.

(*d*) The National Board of Fire Underwriters issues "Suggestions for Protection against Lightning" as recommended by the National Fire Protection Association, 1916 (3A3*a*15).

(*e*) The Underwriters' Laboratories:

1. See "Standard (Tentative) for the Construction and Installation of Materials for Lightning-Rod Equipments" (3A6*k*).

2. The "List of Inspected Electrical Appliances" published semi-annually by the Underwriters' Laboratories, contains a list of manufacturers of materials for lightning-rod equipment whose standard products are regularly inspected at the factories and labeled under the Laboratories' service.

4H Fire Insurance

1. The following clauses constitute Article 21 of the Standard Documents of the American Institute of Architects (1A8*g*):

Art. 21. Fire Insurance.—The Owner shall effect and maintain fire insurance upon the entire structure on which the work of this contract is to be done and upon all materials, tools and appliances in or adjacent thereto and intended for use thereon, to at least 80 per cent of the insurable value thereof. The loss, if any, is to be made adjustable with and payable to the Owner as Trustee for whom it may concern.

All policies shall be open to inspection by the Contractor. If the Owner fails to show them on request or if he fails to effect or maintain insurance as above, the Contractor may insure his own interest and charge the cost thereof to the Owner. If the Contractor is damaged by failure of the Owner to maintain such insurance, he may recover under Art. 39.

If required in writing by any party in interest, the Owner as Trustee

shall, upon the occurrence of loss, give bond for the proper performance of his duties. He shall deposit any money received from insurance in an account separate from all his other funds, and he shall distribute it in accordance with such agreement as the parties in interest may reach, or under an award of arbitrators appointed, one by the Owner, another by joint action of the other parties in interest, all other procedure being in accordance with Art. 45. If after loss no special agreement is made, replacement of injured work shall be ordered under Art. 24.

The Trustee shall have power to adjust and settle any loss with the insurers unless one of the contractors interested shall object in writing within three working days of the occurrence of loss and thereupon arbitrators shall be chosen as above. The Trustee shall in that case make settlement with the insurers in accordance with the directions of such arbitrators, who shall also, if distribution by arbitration is required, direct such distribution.

2. . . . It is the common experience of owners of buildings which have been damaged or destroyed by fire that, in the adjustment of their insurance, they have been obliged either to forego competent expert advice or to pay the cost of such advice themselves.

Through the efforts of the Louisiana Chapter of the Institute, owners in that section of the country are now generally insisting on the insertion of the following clause in all fire-insurance policies:

ARCHITECT'S OR ENGINEER'S FEE CLAUSE.

"It is understood and agreed that this insurance also covers assured's liability for necessary fees for architects and engineers employed by them as a result of loss to the property insured, but in no case shall the loss and said fees combined exceed the amount of this policy, nor shall said fees exceed 6 per cent of the amount of the loss in case of a total loss, nor shall said fees exceed 10 per cent of the amount of the loss in case of a partial loss."

To attach to and form part of Policy No. . . . of the . . . . . Insurance Company of . . . . . .

Date. . . . . Agent.

3. See, also, pamphlet "General Information Regarding Fire Insurance Requirements," referred to under 4B2e1; also distributed by N.F.P.A., see 3A3d14.
4. See "Prevention Measures in Buildings versus Fire Insurance," F. S. Baker. "Proceedings" N.F.P.A., Vol. 14, p. 141.
5. See "Self Inspection by the Assured," "Proceedings" N.F.P.A., Vol. 4, p. 206.

4J Progress and Current Activities

1. *The Bureau of Standards and Building Codes:*

The engineering data resulting (from the various investigations now taking place through coöperative work) must serve as the foundation upon which building codes must be constructed. Some progress has been made during the year in compiling the municipal building codes, not alone with a view to furnishing information to state and city building bureaus and to others interested along these lines, but with a view to a comparative study of existing codes to assist in planning a systematic program of investigations to definitely answer the many important questions about which there are still great differences of opinion.

Progress in summarizing the enormous amount of material contained in the many municipal building codes is necessarily slow with the present wholly inadequate force that can be assigned to this work; indeed, it is an endless job. Several capable assistants with a good engineering training and experience, and as many clerks, should be kept on this phase of the work uninterruptedly if reasonable progress is to be made. At the present time, as each city takes up the question of revision of its building code, it expends large sums of money and much time in making a very imperfect summary of a few existing codes—just sufficient to imperfectly serve its immediate needs—with the result that large sums of money have been expended in the past for such work, the results of which are available to nobody. It is evident that this work should be well done once, and thus made generally available. In addition to summarizing American building practice as exemplified in our building codes, the building practice of the most important European cities should be collected and made available to our state and municipal building bureaus when they take up the revision of their own codes.—From Report, 1916, Bureau of Standards.

(2) *The New York State Association of Architects and a State Building Code.*

In a letter to Prof. Thomas Nolan, Chairman of the Institute's Committee on Materials and Methods, Frank H. Quinby, Chairman of the Brooklyn Chapter Subcommittee (and recently elected President of the New York State Association), under date of March 30, 1917, says:

(Not previously referred to)

"The Legislation Committee of the New York State Association, A.I.A. has prepared a bill providing for a State Commission to investigate and report on the necessity or desirability of a state building code.

This measure has been approved by the four chapters in the state and the builders and fire underwriters and is now pending in the legislature.

I am enclosing copy of the bill" (which follows).

AN ACT to provide for the appointment of a commission to investigate and report on the necessity or desirability for the enactment of a state building code, and making an appropriation therefor.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. *Appointment of Commission: Term; Qualifications.* A commission to investigate and report on the desirability and necessity of the enactment of a state building code is hereby created. Such commission shall consist of seven members, to be appointed by the Governor, one of whom shall be an employing carpenter contractor, and an employing mason contractor, both of whom shall be actively engaged in building operations; two architects, one structural engineer, one expert in fire-prevention and one attorney. Each of such persons so appointed shall have been actively engaged in his respective calling or profession for at least ten years. The term of each commissioner shall be two years from the date of his appointment, unless further extended by the Legislature on the recommendation of the Governor, and each commissioner shall receive such pay in addition to his actual traveling and other expenses as is consistent and within the appropriation made by the Legislature to cover the total expense of the commission. Before making such appointments, the Governor shall invite recommendations from architects' and builders' and engineers' organizations and from the board of Fire Underwriters as to those best qualified to serve on such commission. The commissioner of public works and the chairman of the committees on buildings of the Senate and Assembly, if such committees are appointed, shall be ex-officio members of such commission. The Governor shall have the power to fill all vacancies in the commission but shall maintain each class of commissioners as herein described.

2. *Power of the Commission.* Such commission shall elect a chairman and an executive secretary. The executive secretary may not be, however, a member of such commission, and in the event that he is not a member of such commission, he shall have no vote in the deliberations of the commission. Such commission shall fix the salary of the executive secretary and may appoint, and at any time may remove, such other assistants as it shall deem necessary and fix their compensation.

3. *Duties of the Commission.* The commission shall investigate and report on the desirability or necessity of the enactment of a state building code. If it finds that such a code is desirable, the commission shall prepare and report to the Legislature a draft thereof giving the requirements essential to govern the safe construction of all buildings erected in the state, the maximum working stresses to be imposed on materials to be used and the qualities of the same, and the minimum requirements as

to safety from danger of fire or collapse in all classes of buildings, and the means whereby such code shall be enforced by existing local machinery provided or to be provided therefor. Nothing contained in such proposed code shall reduce the requirements of any existing state law with regard to protection of health or property in factories, mercantile establishments or tenement houses nor infringe the right of any municipal corporation to enact and enforce its own building or other ordinances, nor reduce the requirements of any such code, provided the requirements of such ordinances or codes are equal to or greater than those of the state code. Such reports shall be made by the commission not later than the fifteenth day of January, nineteen hundred and eighteen, unless the time therefor is extended by the Legislature on the recommendation of the Governor.

4. The sum of twenty thousand dollars ($20,000), or so much thereof as may be necessary, is hereby appropriated out of any moneys in the treasury not otherwise appropriated, to be paid by the State treasurer on the warrant of the comptroller on the audit of the chairman of the commission, ten thousand dollars of whicb sum shall be immediately available and the other ten thousand dollars to be available on the first day of January, nineteen hundred and eighteen.

5. This act shall take effect immediately.

4K Structural Matters in General

1. *Conventions and Meetings.*

Attention is directed to the Twenty-first Annual Convention of the National Fire Protection Association which will be held in Washington, D. C., on May 8–10, 1917. Two days' sessions will be held in the New Willard Hotel, and one day's session at the Bureau of Standards. Members of the Institute's Committee on Fire-Prevention will be delegates, and members of the Committee on Materials and Methods will attend. A cordial invitation is extended by the association to all members of the Institute to be present.

2. *Standard Specification for Magnesia Pipe Covering.*

The Editor is pleased to direct attention to every activity or advance in connection with the standardization of structural materials or processes.

The following letter to the Editor has been received from the Chairman of the Institute's Committee on Materials and Methods:

March 12, 1917.

I have before me the "Specification for '85% Magnesia' Non-Conducting Coverings for Power and Heating Systems." This specification is issued by the Magnesia Association of America and represents the best established practice based on over a quarter of a century of experience.

The engineering experience upon which this Specification is formulated covers all users of "85% Magnesia" insulating, including the U. S. Navy (where "85% Magnesia" has long been the regulation covering), powerplants, factories, and heating systems for buildings of all sizes.

I would suggest, as Chairman of the Institute Committee on Materials and Methods, that the attention of the profession be called to this standard specification which may be obtained in two forms, one a very brief form and another full and detailed and ready for incorporation in any specification. It is so written that any part not applicable to any particular work may be omitted.

This standard specification is so well arranged and of such assistance to architects that I think the Association referred to is to be complimented upon its production and publication. (Signed) THOMAS NOLAN

Chairman Committee on Materials and Methods.

[NOTE.—For further information concerning this specification and the association which promulgated it, see Industrial Section, p. VII.]

3. *Gypsum Report Issued.*

The Geological Survey, U. S. Department of the Interior, now has available for distribution its annual statement on Gypsum for 1915, which states the quantity of crude gypsum mined in the United States during the year to be 2,447,611 short tons.

4. *The Publicity Bureau* of the *Associated Metal Lath Manufacturers*, in a recent announcement regarding the removal of their offices from Chicago to Cleveland, and the appointment of Mr. Zenas W. Carter as Commissioner, states that among the plans of the Metal Lath Association is one for a coöperative national campaign of publicity which will be developed by the Council of Advertising Managers of the member companies.

Their plans cover a series of extensive and exhaustive tests of the fire-resistance properties of metal lath, its use in fire-retarding construction, the exploitation to architects and the public of the saving in space which can be effected through the use of this material, its vermin- and rodent-proofness, investigation and assistance in the revision of building codes of cities so that metal lath may receive its proper recognition by city officials and engineers.

Mr. Carter was the first General Secretary of the Electric Development Association when it was incorporated in New England. The Julian Armstrong Bureau of Related Industries will continue its special work for the Associated Metal Lath Manufacturers.

Gypsum.

A committee of the American Society for Testing Materials is endeavoring to write specifications for gypsum and gypsum products, which are largely used as wall plasters and fire-proof partition tile. Among other things, the committee desires to develop standard methods for testing the material. This bureau has coöperated by carrying out some of the necessary laboratory experiments to determine whether any one of the methods now in use is better than any other and to devise new methods when needed. The tsets at present being investigated are chemical analysis, microscopic examination, normal consistency, water-carrying capacity, time of set, tensile strength, and sand-carrying capacity. (From Report of the Bureau of Standards, 1916.)

General Index to Structural Service Department

Classified Index to Industrial Section

GENERAL INDEX TO STRUCTURAL SERVICE DEPARTMENT

Industrial Section Index

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In Buckram, $2.50. In Half Morocco, $3.50*

Loose numbers to be exchanged for Bound Volumes should be sent to the office of the Journal at The Octagon, Washington, D. C. Missing numbers will be supplied at current rates of 35 cents per volume.

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Journal of the American Institute of Architects

*We reserve the right to advance this price after May 1. Morocco is very scarce at the moment, and may shortly be unobtainable.

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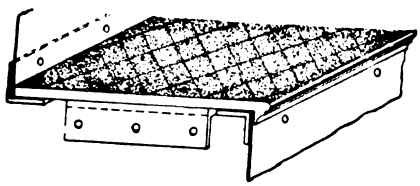
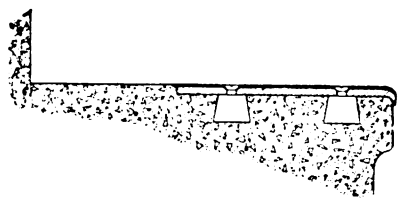
Standard Form of Competition Program	A. I. A. Document, Series A, No. 115
Proceedings of the Fiftieth Convention (1916)	A. I. A. Document, Series A, No. 121
Annuary (1917)	A. I. A. Document, Series A, No. 122
Constitution and By-Laws . . .	A. I. A. Document, Series A, No. 123
Schedule of Proper Minimum Charges .	A. I. A. Document, Series A, No. 124

ELIMINATE SLIPPING HAZARDS

IN a single year 170 people were killed by falls on Stairs and Sidewalks in New York City (Manhattan). Only 65 were killed by fires, 47 by elevators and 53 by surface cars.

The nation-wide agitation for Accident Prevention has brought forth new State and Municipal laws and requirements. The elimination of the slipping hazard has become essential in all types of structures; and Architects, Engineers and others concerned with construction are urged through these laws to specify for surfaces on which people must walk or work only those materials which are made and can be maintained in such manner that slipping and tripping casualties will be prevented.





"FERALUN" ANTI-SLIP TREADS

Only Safety Tread receiving GRAND PRIZE from American Museum of Safety
Approved by National Board of UNDERWRITERS without qualification

PREVENTABLE HAZARDS

Every surface of cast iron, steel or brass on which people must walk or work, constitutes an incipient hazard. Mud, oil, soapy water or concentrated wear makes such surfaces dangerously slippery.

SAFETY SUGGESTION

"FERALUN," which is metal with an abrasive grit embodied in the tread surface, is not slippery even when covered with oil; is made in any desirable design; is extremely durable; and not expensive.

As a stair tread, "FERALUN" is particularly desirable as there are no heel catching grooves or projections; and the nosing edge, which is the contact point of the foot when descending, has the anti-slip element in it.

MODEL SPECIFICATION

1.—All concrete steps shall be equipped with American Abrasive Metal Co.'s "FERALUN" or equal anti-slip treads approved for safety and fire-resistance by the Underwriters' Laboratories. These treads shall be set flush with the cement surface and firmly secured with cast iron anchors and screws. They shall extend continuously along the step to within 4" of strings; and in width shall be not less than $\frac{5}{8}$ the distance between nosing and riser.

2.—All other stairs (give location) shall have American Abrasive Metal Co.'s "FERALUN" (give style—"O," "K," "L," etc.) or equal one-piece anti-slip treads approved by the Underwriters' Laboratories for safety and fire resistance.

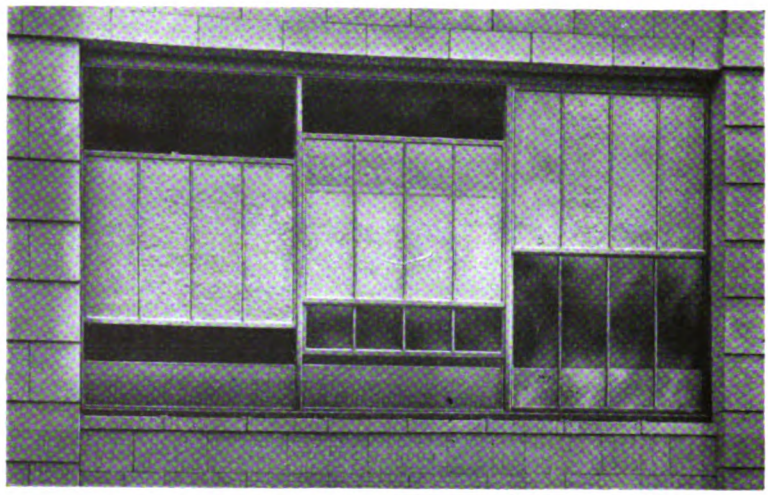
3.—Cement sidewalk vault lights shall have American Abrasive Metal Co.'s "FERALUN," or equal crosses, approved by Underwriters' Laboratories for safety, set flush in the cement between each glass.

4.—All (give forms—coal hole covers, elevator saddles and floor landings, etc.) shall be American Abrasive Metal Co.'s "FERALUN," or equal anti-slip tread, approved for safety by the Underwriters' Laboratories.

Also see SWEETS—send for sample and literature

AMERICAN ABRASIVE METALS CO.

Fifty Church Street **New York, N. Y., U. S. A.**

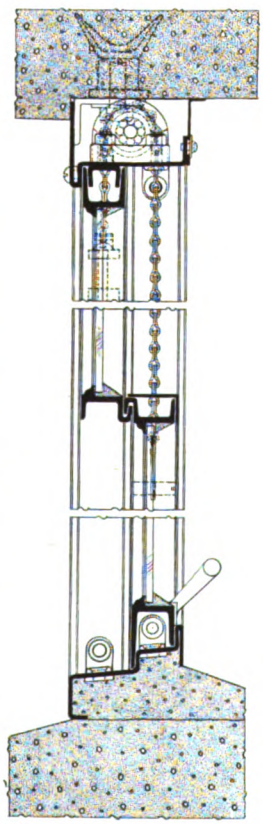


OK'd by Underwriters

Abstract of Report of Test made August 5, 1916, by Underwriters' Laboratories, Inc., on Lupton Steel Sash, Counterbalanced Type.

The sample tested was made for an opening 5′1½″ wide 7′1″ high. It had 2 sash 56¾″ wide 37½″ high, each with eight 12½ x 17″ lights. The percentage of glass area was 72, glazed with Pennsylvania ribbed wire glass set in putty.

This window was subjected to fire starting with temperature 48 degrees F. on both sides. This heat was increased on the fire side every five minutes, until the fire side heat was 1675 degrees F. and the unexposed side 118 degrees F. The following conditions then existed: the upper rail of the lower sash was about ¼″ above the level of the lower rail of upper sash at middle. The jambs bulged slightly towards the fire and slightly towards the center of the opening. Sill bulged slightly towards fire and slightly towards center. The muntins of the lower sash bulged ½″ towards the fire; of the upper sash ¼″ towards the fire. The heat was very severe to the face at a distance of 6′ from the glass. The glass ceased to crack after 20 minutes, with the unexposed temperature 83 degrees and the fire side 1275 degrees. At no time did the flames come through the window, nor did the putty smoke; the joints between frame and sash members remained intact.



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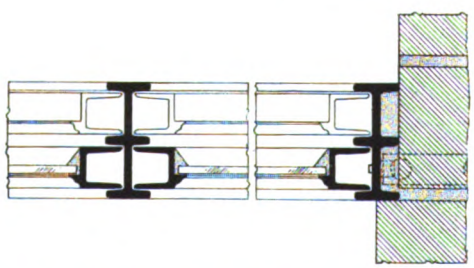
WESTMORELAND AND TRENTON STREETS, PHILADELPHIA, PA.

LUPTON STEEL SASH

COUNTERBALANCED TYPE



Catalogue No. 9 of all Lupton Sash Products will be sent on request

Mr. Architect and Master Builder:

In creating modern buildings first consideration is given the requirements for safety of life and of the owner's investment. Architectural beauty is considered as much as ever, only nowadays it does not transcend the practical.

Fire is the greatest menace to safety of life and investments. Therefore the essentials of safety from fire are fundamental in building creation.

AUTOMATIC SPRINKLERS

Provide essentials of safety from fire. Also provide many economic benefits

They—

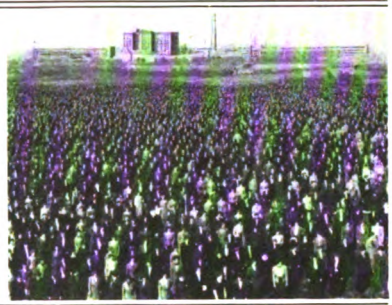
SAFEGUARD LIFE

"The automatic sprinkler affords the largest degree of protection of life against fire."—*The National Fire Protection Association's Safety to Life Committee.*

Not a life lost in more than 20,000 fires in sprinkler-equipped buildings under conditions such as obtained in the Triangle and Diamond factory fires where 160 lives were lost!

"Loss of life would not have occurred had the Triangle building been equipped with automatic sprinklers."—*Opinion of New York Fire Department.*

More than 3,000,000 persons work daily under constant protection from fire by automatic sprinklers in factories and shops in North America. The 3,000 pictured at the right do.



MAKE BUILDINGS FULLY FIRE-RESISTANT

"Fireproof" buildings are proof against fire in that the materials of construction are incombustible and will not burn, but this physical property does not impart to the contents of buildings any mysterious power to resist fire.

The Triangle factory fire happened in a "fireproof" building. It effectually exploded the delusion that a "fireproof" building is a sufficient assurance of safety, and showed that such a building is as a stove in which the contents are fuel and human beings potential cinders!

Incombustible materials of construction offer passive resistance to fire while automatic sprinklers in discharging water when actuated by fire offer active resistance and, in consequence, protection to contents.

MAKE SAFETY PAY DIVIDENDS; BETTER BUSINESS

Automatic sprinklers reduce insurance cost from 40 to 90 per cent, according to construction, occupancy and location of buildings. In the average "fireproof" loft building in New York the reduction is 85 per cent. The announcement pictured at the right was in a grade-story show window of such a building.

Moreover investments in sprinkler protection hold the record for brief periods of amortization and thereafter increase profits as much as 20 per cent.

"Sprinklers are practically an insurance against vacant lofts; the unsprinklered building cannot compete with the sprinklered building for tenants," says a big New York renting agency. "We do not know of any investment that will yield the owner greater dividends in economies."

CONSERVE CONSTRUCTION AND DECORATION ESTHETICS

Architects sometimes object to automatic sprinklers because the exposed piping of ordinary systems does not always harmonize with the esthetics of interior construction and decoration.

But this difficulty is easily overcome. Supply pipes can be concealed in construction work and sprinkler heads arranged so that they just protrude through the ceiling and ornamental devices serve to harmonize them with decorative schemes.

How inconspicuous is a concealed sprinkler system is illustrated in the picture at the left, a view of the principal's office in a completely sprinklered private school—only the sprinklers are visible.

INFORMATION SERVICE DEPARTMENT

NATIONAL AUTOMATIC SPRINKLER ASSOCIATION

80 Maiden Lane, New York, N. Y.

Part of Equipment for Hydraulic Testing at Underwriters' Laboratories

UNDERWRITERS' LABORATORIES

W. H. MERRILL, PRESIDENT

Reports on Building Materials, Systems and Devices having a bearing upon Fire Hazards and Accident Prevention. Testing and Inspections at Factories, and Labeling of Products found to comply with Underwriters' Requirements.

Principal Office and Testing Station, 207 East Ohio Street, Chicago
New York Office and Testing Station, 135 William Street
Branch Offices throughout the United States and Canada, and in London, England

Underwriters' Laboratories is for service in protection against fire and accident. The institution is in this work with an equipment in plant and men which is extensive and highly specialized, and with experience covering a period of twenty years. Results obtained and service provided are believed to be the proper explanation of the Laboratories' growth. It is the aim of Underwriters' Laboratories, at all times, to be of every possible service to architects interested in safeguarding their clients and the public against fire and accident hazards. Inquiries concerning requirements on any product or relative to any other phase of the work should be addressed to the Chicago office.

MATERIALS LISTED AND LABELED

Underwriters' Laboratories' service is now operative in industries supplying the following of the materials and systems mentioned on other pages of this issue of the Journal:

Automatic and Open Sprinkler Equipment
Sprinkler Supervisory Devices
Fire Doors and Shutters
Frames for Fire Doors and Shutters
Hardware for Fire Doors and Shutters
Automatic Closers
Door Checks
Panic Bar Latch Release
Wired Glass
Glass
Frames and Sash for Wired Glass
Fire Window Frames
Hardware for Fire Window Frames
Fusible Links
Transom and Transom Operators
Wall Hangers
Floors
Partitions
Flue Fittings
Gypsum Blocks
Putty
Post Cap and Girder Supports
Heat Insulating Coverings
Paints, Fire Retardant
Ceilings
Asbestos Building Lumber
Pipe Covering
Plaster Boards
Fire Escapes
Safety Treads
Roof Coverings
Fire Alarm Systems
Watchmen's Time Recording Apparatus
Lightning Protection

It is impossible to go into sufficient details here relative to Underwriters' requirements on these products to be of any considerable value to architects. Certain manufacturers of the materials and systems enumerated above have been listed by Underwriters' Laboratories as being prepared to supply goods complying with the Underwriters' specifications, after proper laboratory investigation of samples of their wares, following their applications for this service. Suitable tests on run of goods and service value determinations are regularly maintained in every case for keeping the Laboratories informed concerning the quality of the products to be sold as standard. Except in a few instances where this is impracticable, Underwriters' labels are attached to goods found suitable as evidence of compliance with standard requirements. Underwriters' Laboratories' "List of Inspected Mechanical Appliances" is a useful guide to persons interested in products of these classes. It may be had free upon request.

PRODUCTS OF THE UNITED STATES GYPSUM CO.

PYROBAR GYPSUM PARTITION AND FURRING TILE. Tested and recommended by the National Board of Fire Underwriters as a fireproofing material. It weighs 40% less than Clay Tile.

PYROBAR REINFORCED ROOF TILE. Made of Structolite (structural gypsum). The Tile are permanent and tests show that they excel any other fireproof roof as a nonconductor of heat. Their light weight and long spans save steel.

PYROBAR GYPSUM FLOOR TILE. For long span, reinforced concrete joist construction. A thoroughly tested, economical fireproof floor system.

U. S. G. CEMENT PLASTER, to be mixed with sand at the job.

U. S. G. WOOD FIBRE PLASTER, requiring the addition of water only.

U. S. G. PREPARED PLASTER (sanded) water only to be added.

ADAMANT WALL PLASTERS. (For Interiors and Exteriors.) Sold only in prepared form.

U. S. G. PREPARED NO-LIME TROWEL FINISHES. These finishes are very much harder than lime putty finish, are easily troweled, are made in various grades, in white or gray colors, and require the addition of water only.

U. S. G. PREPARED SAND FLOAT FINISHES. Same as U. S. G. Prepared Trowel Finishes except that they have a granular surface.

U. S. G. GAUGING PLASTERS, for putty finish.

U. S. G. BOND PLASTER. A prepared material recommended for plastering interior concrete surfaces.

U. S. G. CAEN STONE CEMENT. A substitute for genuine French Caen Stone.

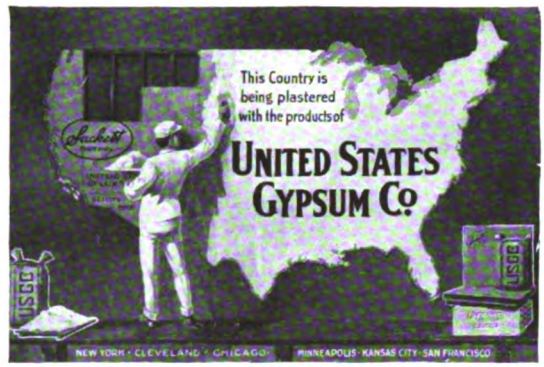
U. S. G. MOULDING OR ORNAMENTAL PLASTERS.

IVORY HYDRATED FINISHING LIME. A high magnesium, snow-white lime from Genoa, Ohio.

SACKETT PLASTER BOARD. A heat-insulating, sound-deadening, fire-resisting lathing material.

SHEETROCK WALL BOARD. A uniform wall board of gypsum, made in lengths up to 9 feet.

JESTER SACKETT HOLLOW AND SOLID PARTITIONS AND SUSPENDED CEILINGS. An economical and thoroughly incombustible construction consisting of Sackett Plaster Board applied to channel irons.



Specifications for PYROBAR Gypsum Partition Tile

PARTITIONS.—Unless otherwise specified or shown, all partitions shall be built of UNITED STATES GYPSUM COMPANY'S PYROBAR Gypsum Tile, of thickness indicated on plans. All partitions shall be started on the fireproof floor, and the tile shall be set plumb, leaving both faces of partitions straight and true. All partitions shall be wedged at ceiling and slushed in with mortar.

FURRING.—All outside walls, where shown on plans, shall be furred with PYROBAR Gypsum Tile, of thickness and type indicated on plans, laid up against the wall, and where 2-inch solid or hollow furring tile is used, the same shall be securely spiked to the wall every square yard with 10d steel cut nails.

COLUMN PROTECTION.—All exposed interior columns shall be covered with solid PYROBAR Gypsum Tile, of thickness indicated on plans and in accordance with specifications.

SHAFTS, OPENINGS AND DUCTS.—Construct all pipe chases, dumbwaiter shafts, heating and vent ducts, etc., where shown on plans, with 2-inch solid PYROBAR Gypsum Tile.

MORTAR AND LAYING.—All PYROBAR Gypsum Tile shall be laid up in mortar composed of any brand of UNITED STATES GYPSUM COMPANY'S Cement Plaster—one part of plaster to three (3) parts of clean, sharp, dry sand, thoroughly mixed. No mortar shall be retempered. All tile shall be laid with full flush joints to a line, with horizontal beds uniformly level on each course. Fill all joints, chinks and crevices between the tile and other work which shall be well slushed in.

FRAMES.—The carpenter contractor shall set the rough bucks for openings ahead of the contractor for this work, so as to cause no delay. These bucks shall be left plumb and true by the carpenter, and shall be made of 2-inch lumber of the same width as the thickness of the partition, and there shall be ⅝-inch by 2¾-inch grounds nailed to the bucks forming a rabbet to receive the PYROBAR Tile. Anchor the partition at the wall by driving spikes into the wall in the joints at the top of each course.

Special literature describing any of the above mentioned materials sent upon request. We will gladly answer technical questions on roof, partition, or floor construction.

UNITED STATES GYPSUM COMPANY

World's Largest Makers of Gypsum Products

CHICAGO

NEW YORK CLEVELAND MINNEAPOLIS KANSAS CITY SAN FRANCISCO

Cuts Reproduced from the Metal Lath Handbook

TYPES OF COLUMN PROTECTION

COLUMN PROTECTION

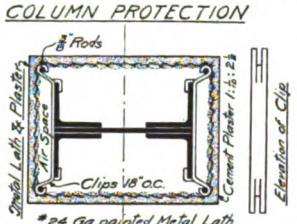


FIG. 31-A

FILLED COLUMN PROTECTION

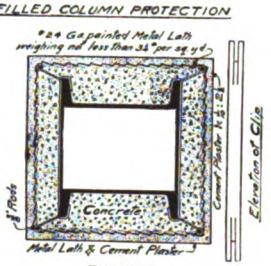


FIG. 31-D

DOUBLE WALL COLUMN PROTECTION

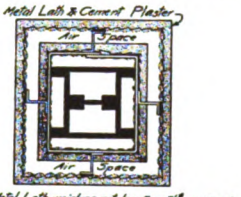


FIG. 31-C

CONCRETE AND METAL LATH AND PLASTER COLUMN CASING AND PIPE CHASE

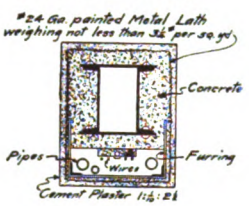


FIG. 31-E

ELEVATOR ENCLOSURES

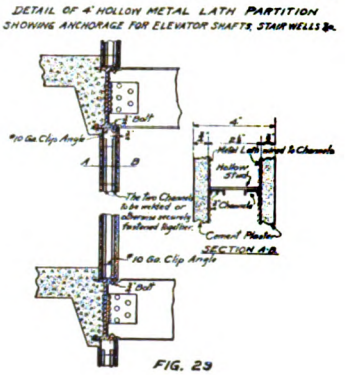
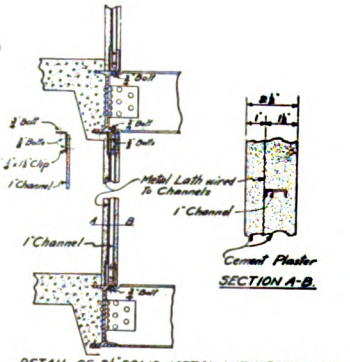
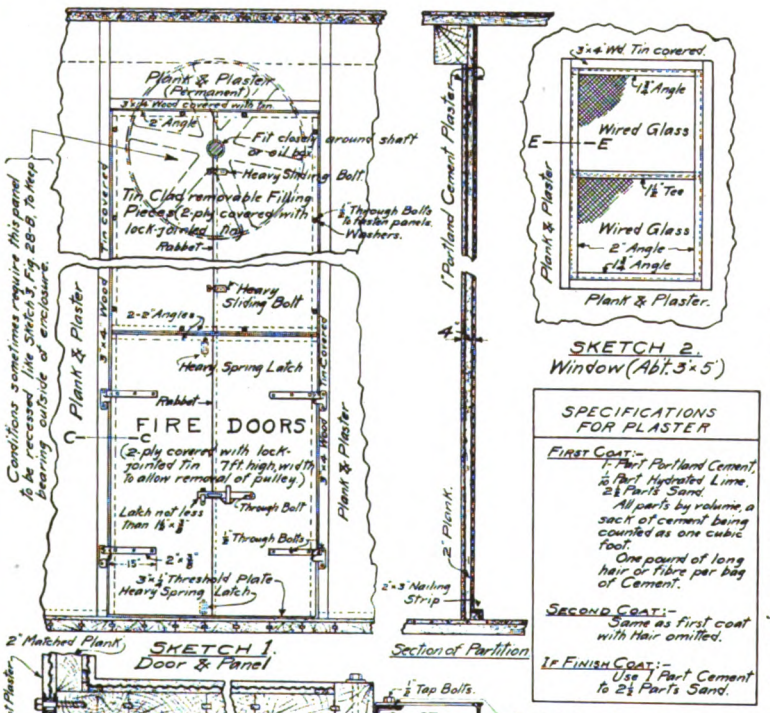


FIG. 29



DETAIL OF 2½" SOLID METAL LATH PARTITION SHOWING ANCHORAGE FOR ENCLOSURE OF ELEVATOR SHAFTS, STAIR WELLS AND OTHER VERTICAL OPENINGS.

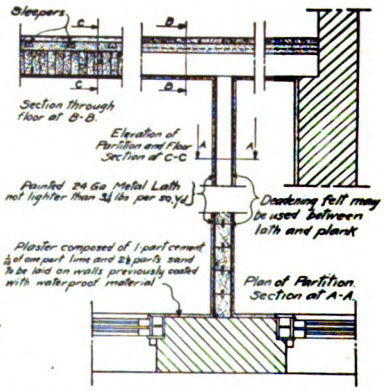
FIG. 29-a



STANDARD DETAILS FOR
FIRE RETARDANT BELT ENCLOSURES
PLASTER & METAL LATH ON PLANK PARTITION.

FIG. 27

SPECIFICATIONS FOR PLASTER
FIRST COAT:— 1 Part Portland Cement, ½ Part Hydrated Lime, 2½ Parts Sand. All parts by volume, a sack of cement being counted as one cubic foot. One pound of long hair or fibre per bag of Cement.
SECOND COAT:— Same as first coat with Hair omitted.
IF FINISH COAT:— Use 1 Part Cement to 2½ Parts Sand.



TYPICAL DETAIL FOR MILL-CONSTRUCTED BUILDING IN WHICH WOOD IS PROTECTED BY METAL LATH AND PLASTER.

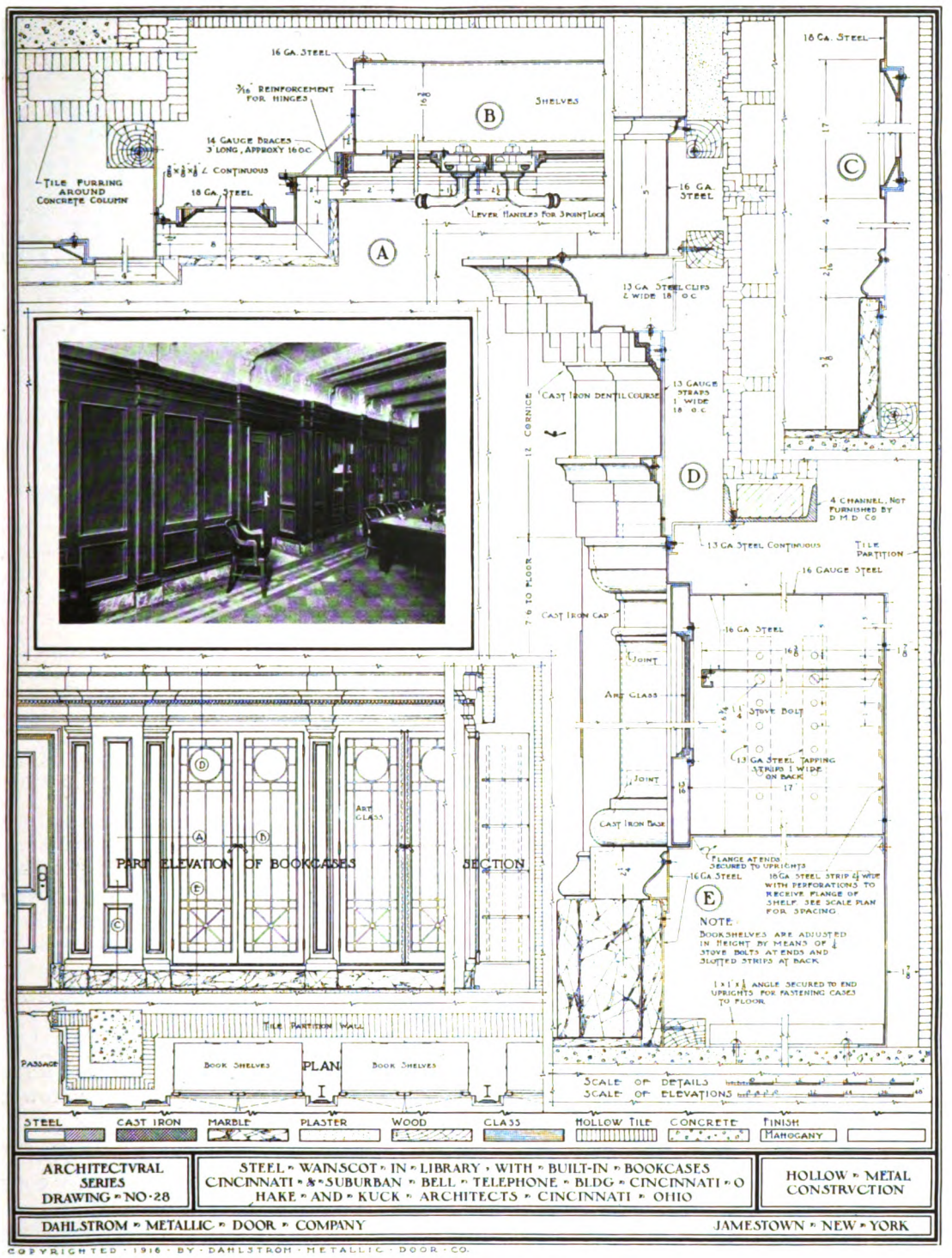
FIG. 36-A

A copy of the book will be sent you by any of the following member companies:

The American Rolling Mill Company, Middletown, Ohio
The Berger Mfg. Company . . Canton, Ohio
The Bostwick Steel Lath Company . Niles, Ohio
Consolidated Expanded Metal Companies, Braddock, Pa.
The General Fireproofing Company, Youngstown, Ohio
Milwaukee Corrugating Co. . . Milwaukee, Wis.
Northwestern Expanded Metal Co. 918-950 Old Colony Bldg., Chicago, Ill.
Penn Metal Co. . 201 Devonshire St., Boston, Mass.
The Sykes Metal Lath & Roofing Company, Warren, Ohio
Trussed Concrete Steel Company . Youngstown, Ohio

OR

THE PUBLICITY BUREAU ASSOCIATED METAL LATH MANUFACTURERS
901 Swetland Building, Cleveland, Ohio



Standardization as Applied by the Solar Metal Products Company, Columbus, Ohio, in the Manufacture of Hollow Steel Doors and Interior Metal Trim

FOREWORD

High prices have, up to the last year or so, been inseparably associated with hollow steel. In the average case architects have found the cost to be prohibitive, excepting for the more costly buildings.

CAUSE OF FORMER HIGH PRICES

This has not been due to the cost of materials. An average 3 by 7 foot door contains less than one hundred pounds of furniture steel, fifteen or twenty pounds of butt and lock reinforcements, asbestos panel-boards, cork strips and finishing enamels. These are all the necessary raw materials and can be purchased of the best quality at a relatively small cost.

The waste has been due to an unstandardized product to meet an unstandardized demand. Formerly every job was made to order, involving special estimating, designing, special dies, machinery, superintendence, and excessive labor—all to meet requirements that might have been reduced or eliminated.

SEEKING THE SOLUTION

An analysis of several thousand jobs disclosed the fact that eighty per cent (80%) might have been standardized. If standard sizes had been available, architects would not have specified odd inch or fractional sizes. If standard styles had been established, few architects would have deprived their clients of the advantage of hollow steel or forced them to pay an excessive cost for the sake of having each opening made to order.

THE REMEDY

Standardization as practised by the Solar Metal Products Company makes it possible to manufacture and sell hollow steel at a moderate cost. Architects and owners can secure all the advantages of a permanent, fire-resisting installation with doors that cannot crack, shrink, swell, or stick, but which operate perfectly for the life of the building itself.

Standardization reduces production costs. Manufacturing in advance of orders keeps the factory busy at easy capacity, facilitating efficient routing, economical fabrication and prompt delivery. Even more than this—it means a perfected product.

Standardization does not mean limitation. The standards established by the Solar Metal Products Company cover a comprehensive series of sizes and styles ready for quick assembly and delivery at a low consistent cost.

APPLYING THE REMEDY

It was thought that architects would not accept standardized hollow steel. Hundreds of representative buildings throughout the country equipped with Solar standardized products demonstrate that the importance and benefits of the standardization of hollow steel are recognized. Standardization has enabled them to secure for their clients the highest character of installations at one half the former cost of hollow steel.

CONCLUSION

A demonstration of standardization as applied to hollow steel is contained in the Architects' Handbook, published by the Solar Metal Products Company, Columbus, Ohio. This is the first and only Handbook on hollow steel. Detail drawings of standards suitable to all classes of openings, are included, with elevations and sectional details and accurate specifications. Copies will be mailed upon application.

In every community where an efficient, economical and enduring roofing is demanded, CERTAIN-TEED stands out conspicuously.

Certain-teed

Roofing in Rolls

This is now the accepted type of roofing for sky-scrapers, office buildings and farm buildings, with either flat or pitched roofs. For factories, especially where roof area is considerable, it is ideal, because it is light in weight, spark-proof, fire retardant, absolutely weather-proof, smooth, clean, and sanitary—and will not run.

It costs less to buy, less to lay, and less per year of life. You take NO RISK in specifying CERTAIN-TEED for *your* buildings, because it is guaranteed for 5, 10, or 15 years, according to thickness (1, 2, or 3 ply), by the world's largest manufacturer of prepared roofings and building papers.

It is made from the best quality roofing felts, which are thoroughly saturated with the General's special blend of *soft* asphalts, and then coated with a harder blend to preserve and keep it soft.

Certain-teed

Slate Surfaced Asphalt Shingles

For residences CERTAIN-TEED Slate Surfaced Asphalt Shingles give the handsome, *artistic* appearance of solid slate, but at considerably lower cost.

They are far superior to wood shingles, because they are *better looking*, spark-proof, fire retardant, more artistic, and absolutely *weather-proof*. They do not need painting and are easily and quickly laid, because each shingle is perfect and uniform—there is *no waste in laying*.

They lie flat and stay flat; they will not crack, buckle, split or fall off.

They have the same high-grade body as CERTAIN-TEED Roll Roofing, and a *heavy coating* of *genuine* crushed slate in natural red or green.

They are guaranteed for ten years.

Certain-teed Paints and Varnishes

Advise them in *your* specifications, because they are good, dependable products, guaranteed to give satisfaction. They are made by expert paint men and mixed by modern machinery to eliminate the uncertainties of hand-mixing. They are sold at a reasonable price, because in marketing them we take advantage of the extensive warehouse system and selling organization of the Certain-teed Products Corporation—the largest manufacturers and distributors of roofing and building papers in the world. The paint user gets the benefit of this economy.

CERTAIN-TEED PRODUCTS CORPORATION

General Roofing Mfg. Co., Gregg Varnish Co., Mound City Paint & Color Co.

New York Chicago Philadelphia St. Louis Boston Cleveland Pittsburgh Detroit Buffalo San Francisco Milwaukee Cincinnati New Orleans Los Angeles Minneapolis Kansas City Seattle Indianapolis Atlanta Richmond Grand Rapids Nashville Salt Lake City Des Moines Houston Duluth London Sydney Havana

—"Or Equal"

IN *many* cases an "or equal" clause in your specifications doesn't materially affect your client's interests. Several products may be of equal or nearly equal quality.

In *some* cases, however, an "or equal" clause is materially detrimental to your client's interest. In the case of fire exit latches it may mean the loss of human lives.

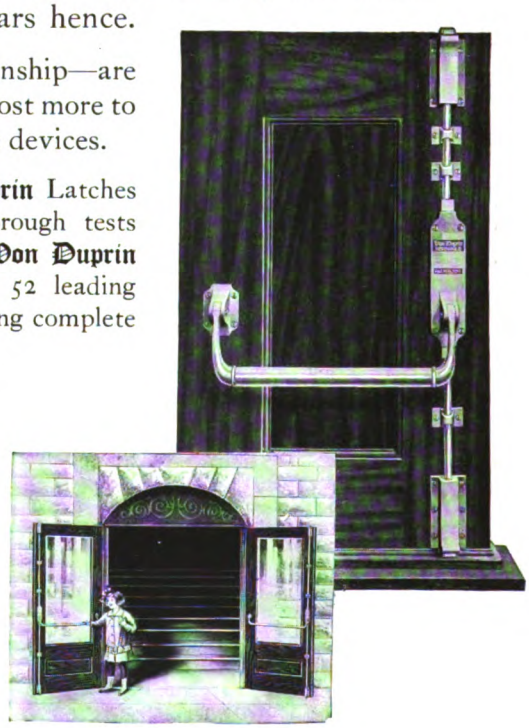
Our attention has recently been repeatedly called to substitutions of inferior devices for **Von Duprin** Self-Releasing Fire Exit Latches by unscrupulous dealers because of "or equal" clauses in the specifications. In many instances cheap devices were substituted, *but* **Von Duprin** *prices were charged.* The architect's client, without knowledge in such matters, has paid a quality price for a cheap product.

We realize the tremendous responsibility that goes with the manufacture of a product that may some day mean the saving or losing of scores of lives. **Von Duprin** Self-Releasing Fire Exit Latches are built so thoroughly and so honestly that they will perform their functions perfectly whenever they are called upon—whether that time be tomorrow or years hence.

Finest tested materials—careful, expert workmanship—are combined in **Von Duprin** devices. Naturally they cost more to produce and sell for more than less reliably made devices.

We invite a thorough comparison between **Von Duprin** Latches and other makes. Many architects have made thorough tests and the verdict has always been for **Von Duprin**. **Von Duprin** has become standard equipment in the schools of 52 leading American cities. And in every instance they are giving complete satisfaction.

We shall be glad to coöperate with any architect in solving his exit latch problems. Send us your blue-prints and we shall recommend the **Von Duprin** device best suited to meet your requirements.



See Sweet's or ask for Catalog 12-S

VONNEGUT HARDWARE CO.
INDIANAPOLIS, IND.
Manufacturers and Distributors

NORTH BANGOR SLATE CO.

BANGOR, PA.

QUALITY:

Bangor slate is renowned for toughness, durability, non-porosity, and fissility, or the quality of splitting readily. Plates as large as 7 x 5 feet may be split into 3/8-inch thicknesses.

COLOR:

U. S. Geological Survey, Bulletin 586, of 1914, says: "The slate is very dark gray and to the unaided eye has a fine texture and a very smooth cleavage surface with but slight luster. It contains some magnetite and is sonorous."

GRADES:

Genuine No. 1 Bangor Slate: The best roofing slate quarried in commercial quantities, as to smoothness, strength, and quality. Split to about 1/8-inch thickness, or thicker if desired, with smooth sides and square corners.

No. 1 Ribbon: Contains one or more "ribbons," so placed as to be covered in laying and presents a roof similar to No. 1.

No. 2 Ribbon: Contains several "ribbons," some of which cannot be covered in laying.

No. 2 Clear: A slate without "ribbons" and made from rough beds.

DIMENSIONS:

Thicknesses: Vary from 1/8 to 3/8 inch with 1/4 inch as average.

Sizes: Range from 6 x 12 to 24 x 14 inches. This Company makes about twenty different sizes. Sizes best adapted to plain roofs are the large wide slates such as 12 x 16 to 24 x 14 inches. Larger sizes make less joints, use less nails, and are more quickly laid; therefore, are the most economical.

Strength: 1/8-inch thick slates give full weather-protection and are strong enough to be walked on.

Weights: 1/8-inch thick slates will weigh, on the roof, about 6½ pounds per square foot; 1/4-inch thick weigh 8¾ pounds. Actual weight of 1/4-inch thick is 3/8 pounds per square foot.

SLATE FOR FLAT ROOFS:

A flat slate roof gives what we believe to be the most serviceable and economical roof, in the end. It is fireproof, weatherproof, and affords a surface that is not injured by being walked on.

Costs: Slate roofs cost more than some others at first, but we believe they are cheapest in the end. Costs vary with freight rates, labor, and the size and thickness desired.

Sizes and Finish: Favored slates for flat roofs comprise 6x8, 7x9, 6½x10, 7x11, 8x12 and 9x13 inches, all 1/8 inch thick. For slate tile roofs we recommend 10x10 and 12x12 inches in size, and ½ to 7/8 inch in thickness as desired. The under surface of slate tile is planed. The upper surface may be planed or rubbed. The edges are sawed.

STANDARD SPECIFICATION OF THE NORTH BANGOR SLATE CO.

Adopted May 1, 1916, for

GENUINE BANGOR SLATE ROOFS FOR FLAT SURFACES

FOR USE OVER CONCRETE;

NOTE:—When incline exceeds one (1) inch to one (1) foot, special specifications will be furnished upon request. Specifications and diagrams for use over *board sheathing* will also be furnished upon request.

The roof deck shall be left, by other contractors, smooth, firm, dry, properly graded to outlets and free from loose material, all ready for the roofer to proceed, as follows:

First. Coat the concrete uniformly with Specification Pitch.

Second. Over the entire surface lay two (2) piles of specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, mopping with Specification Pitch the full seventeen (17) inches on each sheet, so that in no place shall Felt touch Felt.

Third. Coat the entire surface uniformly with Specification Pitch.

Fourth. Over the entire surface lay three (3) piles of Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Specification Pitch the full twenty-two (22) inches on each sheet, so that in no place shall Felt touch Felt.

Fifth. Spread over the entire surface a uniform coating of WARREN'S No. 144 GENUINE BANGOR ROOFING ASPHALT, using an average of fifty (50) pounds to one hundred (100) square feet, into which, while hot, thoroughly embed GENUINE BANGOR SLATE; grade ——— size——— inches by——— inches (grade and size to be inserted); Slate to be perfectly dry when placed.

Flashings shall be constructed as shown in detailed drawing.

The roof may be inspected before the Slate are applied by cutting a slit not less than three (3) feet long at right angles to the way the Felt is laid. The cut can be repaired by sticking five (5) thicknesses of Felt over it, and the spot will then be as strong as any part of the roof.

NOTE.—We advise incorporating the full wording of the specification and inserting roofing details in plans in order to avoid any misunderstanding. If an abbreviated form is desired, the following is suggested:

Roofing: Shall be a GENUINE BANGOR SLATE ROOF FOR FLAT SURFACE (for use over concrete) laid as directed in printed specification, issued May 1, 1916, or as printed in the Journal of the American Institute of Architects, Serial No. 2, 1917, using the materials specified, and subject to the inspection requirement.

JOHNS-MANVILLE
ASBESTOS · ROOFING

Foster Building, New York City F. E. Townsend, Architect

NO more convincing testimonial for the life of Johns-Manville Asbestos Roofing exists than mother earth's own history. For ages asbestos has repelled the fiercest heats, the shock of quick cooling, and earth's corrosive agents. Unscathed after all these tests, it comes to you felted into sheets, ready to apply to your buildings—a natural roofing material whose inherent properties answer every requirement that you would include in specifying an ideal roofing.

No other roofing material has such a past behind it—no other roofing has such a future before it on your building.

For flat roofs, J-M Asbestos Built-Up Roofing. For sloping roofs, J-M Flextone Asbestos Roofing. For skeleton framing, J-M Corrugated Asbestos Roofing. For homes, J-M Transite Asbestos Shingles. All these roofings are backed by

J-M ROOFING RESPONSIBILITY

—a principle that certifies the service of every Johns-Manville Asbestos Roofing. You can register your roofing with us, and thus be assured of complete satisfaction in the service it gives.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
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The Journal of the American Institute of Architects. Monthly, 50c, $3.50 yearly.

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The Standard Form of Agreement between Owner and Architect (Percentage Basis).

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A Circular of Advice and Information Relative to the Conduct of Architectural Competitions . . . A. I. A. Document, Series A, No. 114

Standard Form of Competition Program A. I. A. Document, Series A, No. 115

Proceedings of the Fiftieth Convention (1916) A. I. A. Document, Series A, No. 121

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Schedule of Proper Minimum Charges . A. I. A. Document, Series A, No. 124

FRANKLIN SCHOOL, PHILADELPHIA, PA. J. HORACE COOK, *Architect*

Architectural Terra Cotta Doorway

IN SOFT GRAY COLOR

MANUFACTURED BY

O. W. KETCHAM

Master Builders' Exchange, 24 South Seventh Street
PHILADELPHIA, PA.
Factory: Crum Lynne, Pa.

Branch Offices
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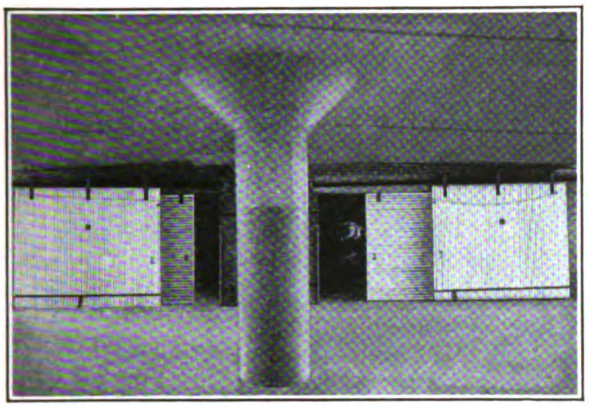

Industrial Buildings

can be protected against the spread of flames through fire-walls, if the installation of

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"ALMETL"
FIRE DOORS

Pat. Pending

is recommended and strongly urged. Of rigid all-steel and asbestos construction they offer maximum protection wherever installed.

Their lightness in weight, permanence, adaptability and low maintenance cost, easily make them one of the best doors on the market.

Approved by the Underwriters' Laboratories, Chicago, and the Factory Mutual Laboratories, Boston.

Descriptive Booklet sent upon request to Dept. "C-30."

Manufacturers of
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FIRE RETARDING "STAR" VENTILATORS

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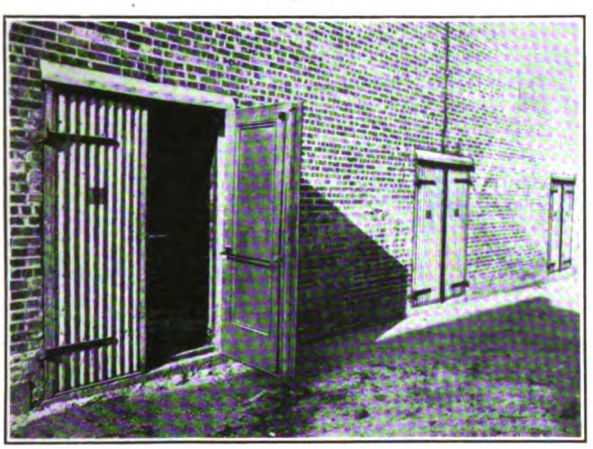

LAPIDOLITH
TRADE MARK

For Every Concrete Floor

NEW and old concrete floors can ***now*** be made dustproof and waterproof.

You can save your clients the expense of floor repairs and prevent the ruinous effects of silicate dust on their machinery and merchandise by advising them to flush on the colorless liquid chemical Lapidolith.

Lapidolith acts chemically on the Portland Cement, converting it into a granite-hard mass, creating an unbreakable grip on the sand and other aggregate, so that the friction of walking and trucking cannot grind it out.

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There are Lapidolized floors in your city. Write us for references.

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THE February issue of our magazine, ATLANTIC TERRA COTTA, shows this entrance detail as it was finally executed in Atlantic Polychrome—cream, yellow and gold.

May we send you a copy?

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NORTHWESTERN
is a short form of specification for architectural Terra Cotta of superior quality.

BY the use of Northwestern Terra Cotta, Marshall & Fox, Architects, were enabled to produce in the corridors of the Burlington Building, Chicago, an effect of unusual dignity and beauty.

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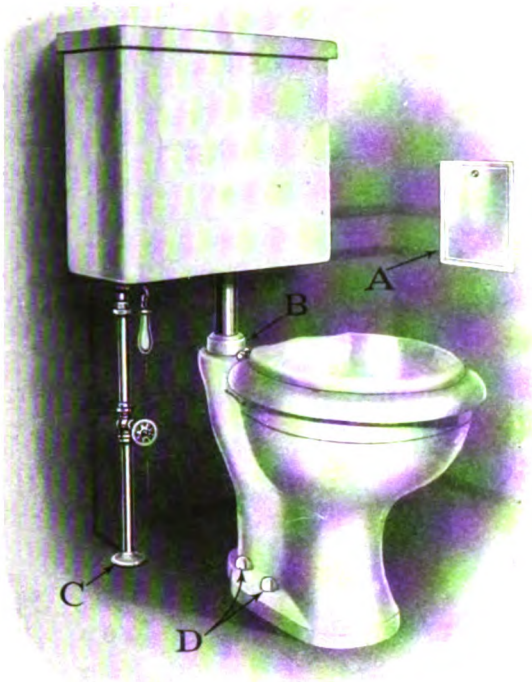
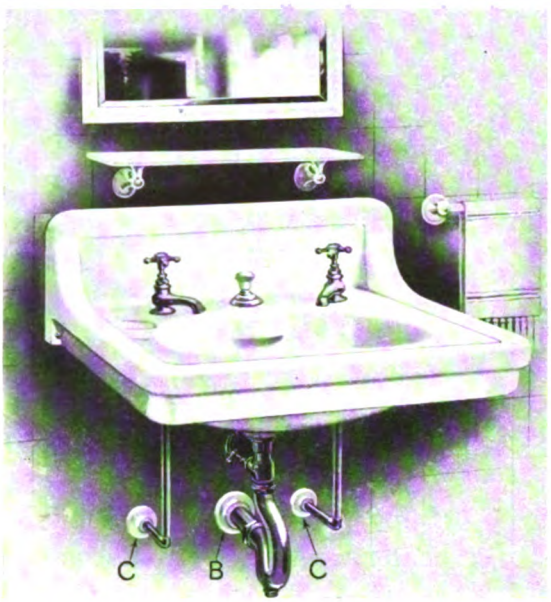
For over thirty years Northwestern Terra Cotta has stood pre-eminent in workmanship and manufacture. "Northwestern" is a product that may be consistently relied upon.

THE NORTHWESTERN TERRA COTTA CO.

CHICAGO

FAIRFACTS CHINA ESCUTCHEONS CLEAN COLLARS FOR PLUMBING FIXTURES





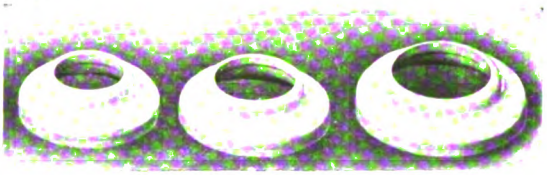
To Architects:

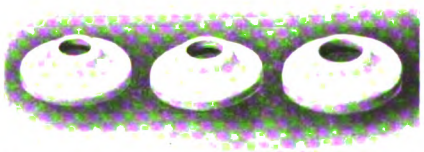
The discordant note in plumbing fixtures, otherwise attractive, has been the shabby pipe escutcheons of metal. Dented, green, and tarnished, they detract from a worthy fixture.

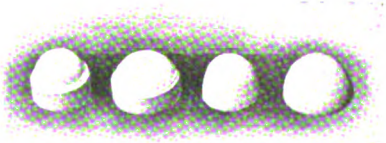
FAIRFACTS CHINA ESCUTCHEONS are the embodiment of sanitary excellence.

Incidentally, they cost no more than the obsolete metal escutcheons.

SPECIFICATION: All exposed waste and supply pipes to all plumbing fixtures shall be finished at the wall or floor with FAIRFACTS CHINA PIPE ESCUTCHEONS of a suitable size.



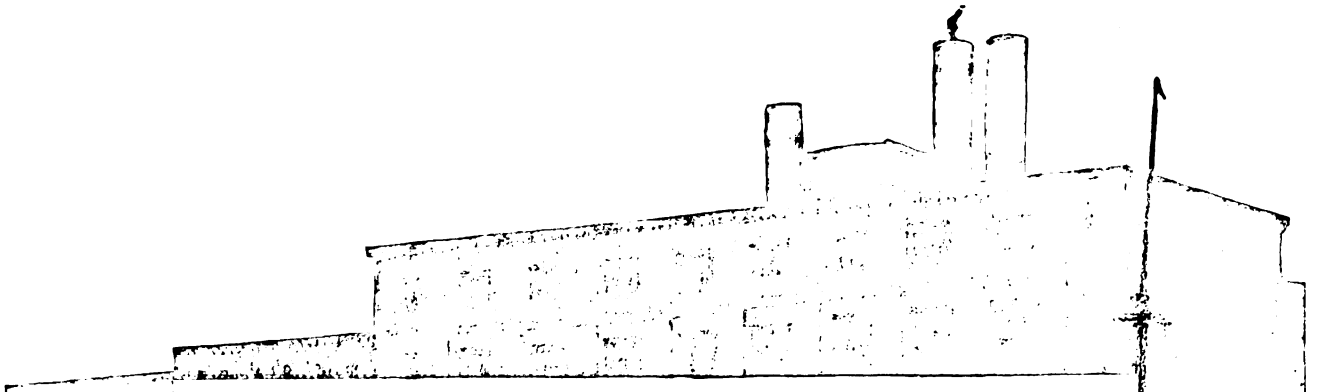




Write for our booklet, "Clean Collars for Plumbing Fixtures"

THE FAIRFACTS COMPANY, 104 East 41st Street, NEW YORK CITY

INTERESTING new effects in color stucco are reproduced in full color and described in our monograph "Color Tones in Stucco". These effects are the result of a number of experiments in toning white stucco with a colored aggregate—such as pink, yellow, light red and green marble and granite screenings, warm-tinted sands and gravels—or with combinations of these. The color effects secured are not monotones but are warm, variegated, and full of life, individuality, and texture. The monograph gives the formula for each sample shown, contains a list of colored aggregate sources, and a convenient guide to color stucco specifications. A copy will be mailed to you upon request. The Atlas Portland Cement Company, New York or Chicago.



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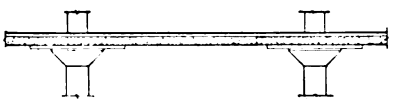

A patented type may be the most economical

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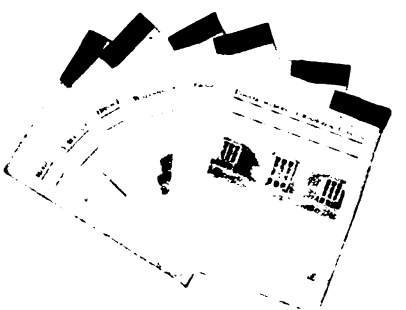

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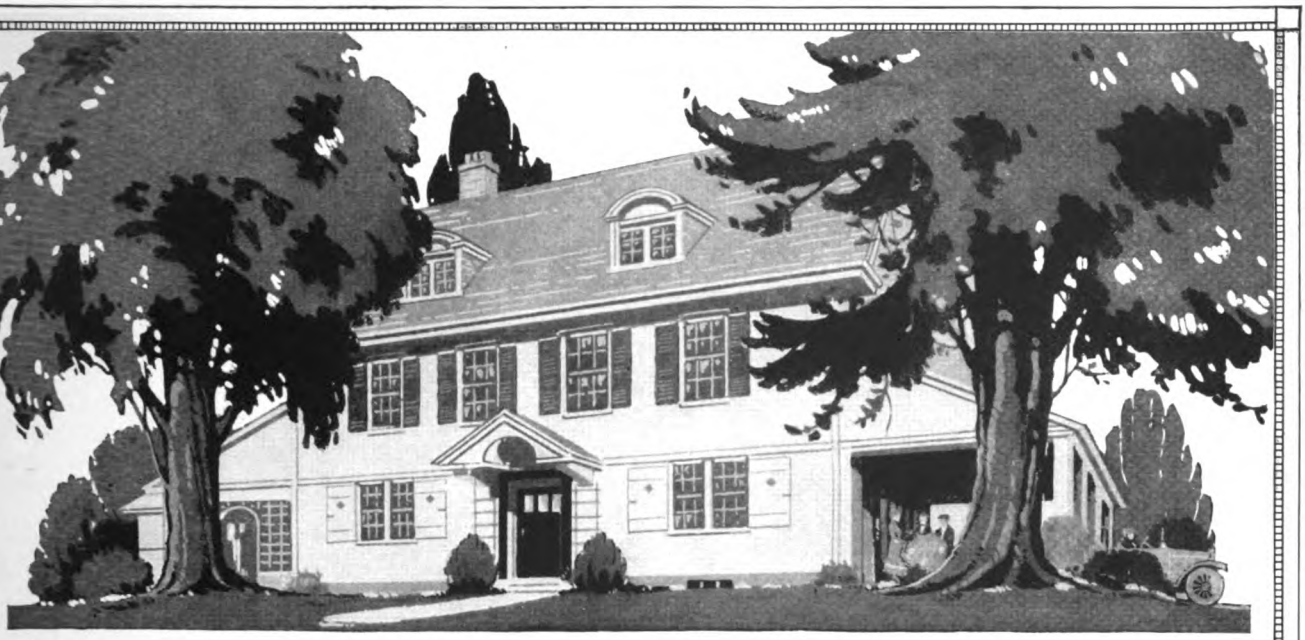

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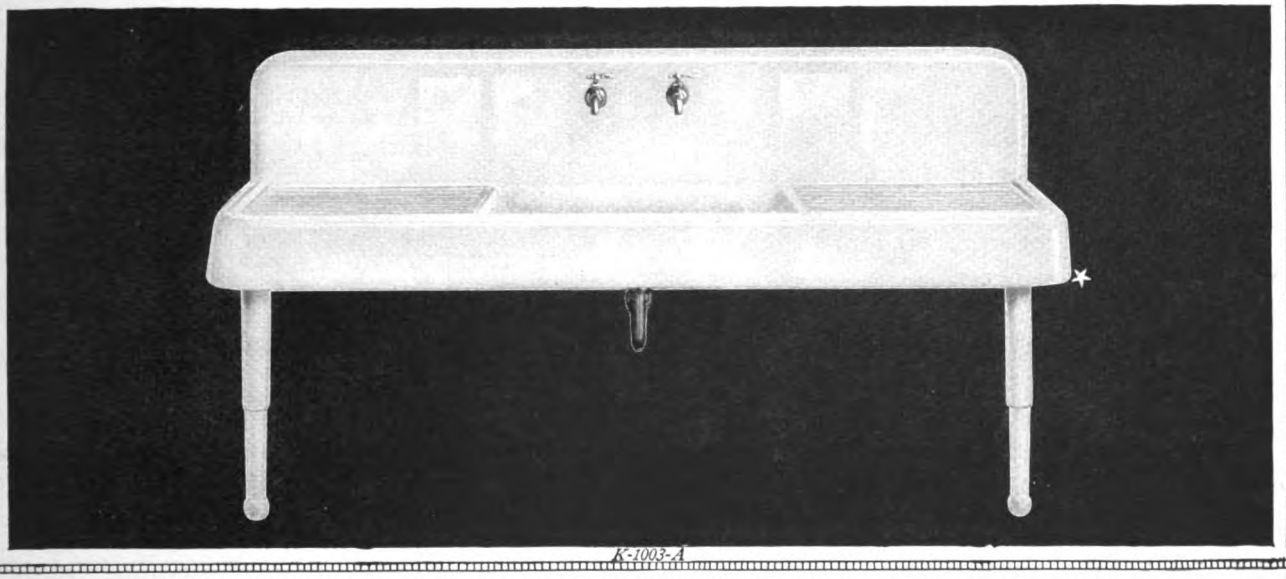

K-1003-A

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WEBB PINK GRANITE COMPANY

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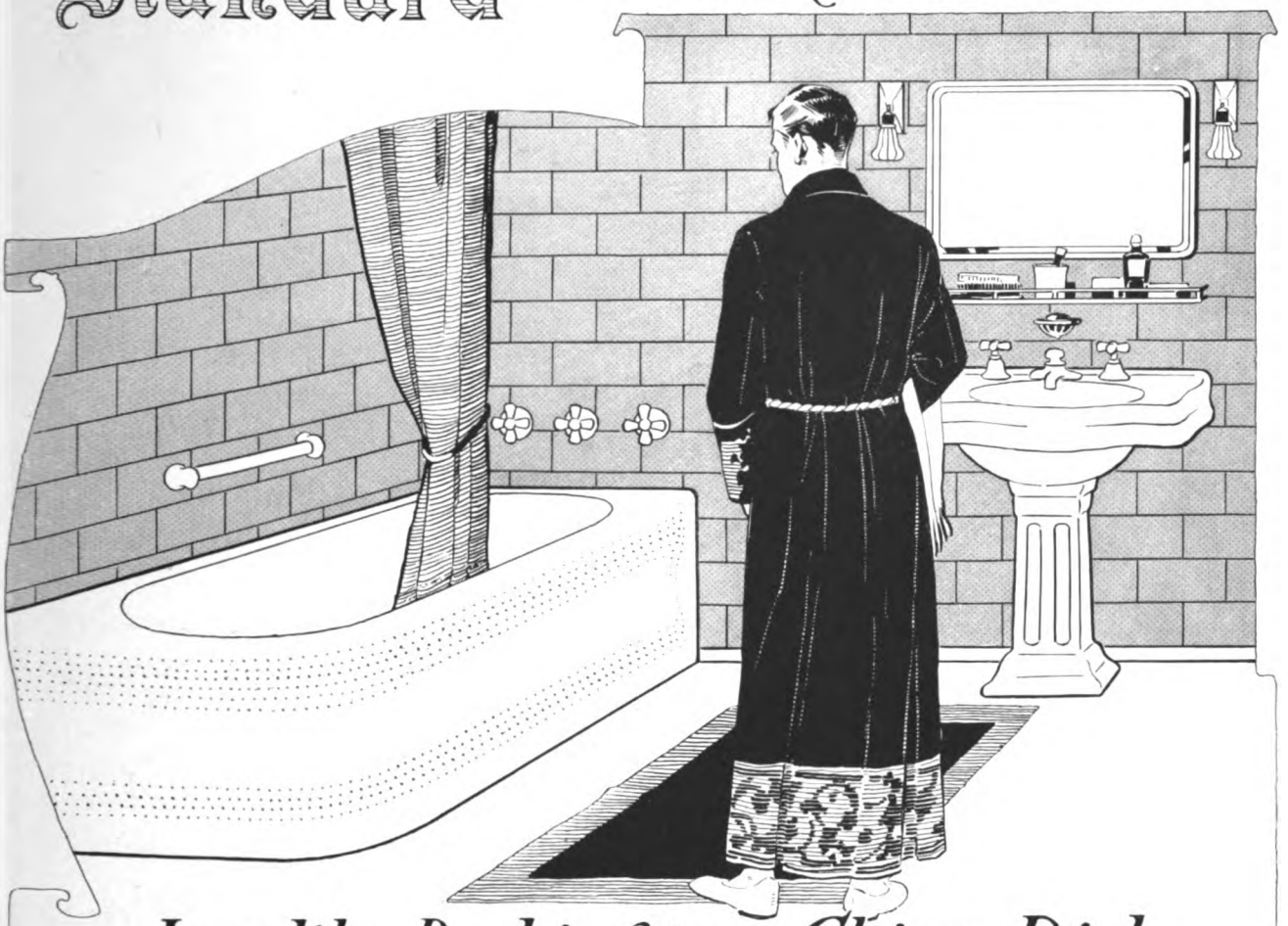

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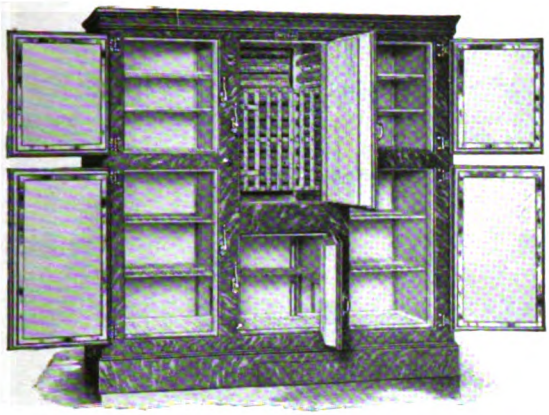

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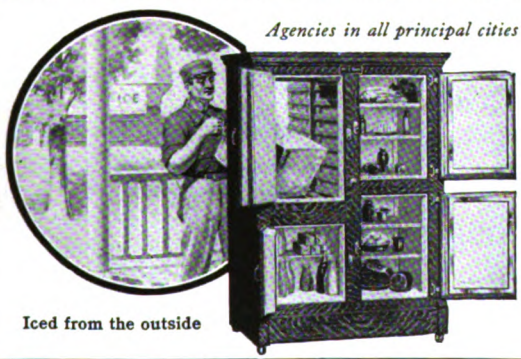

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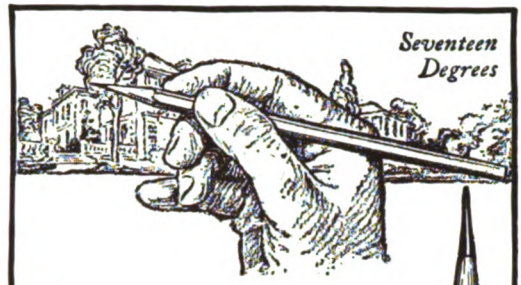

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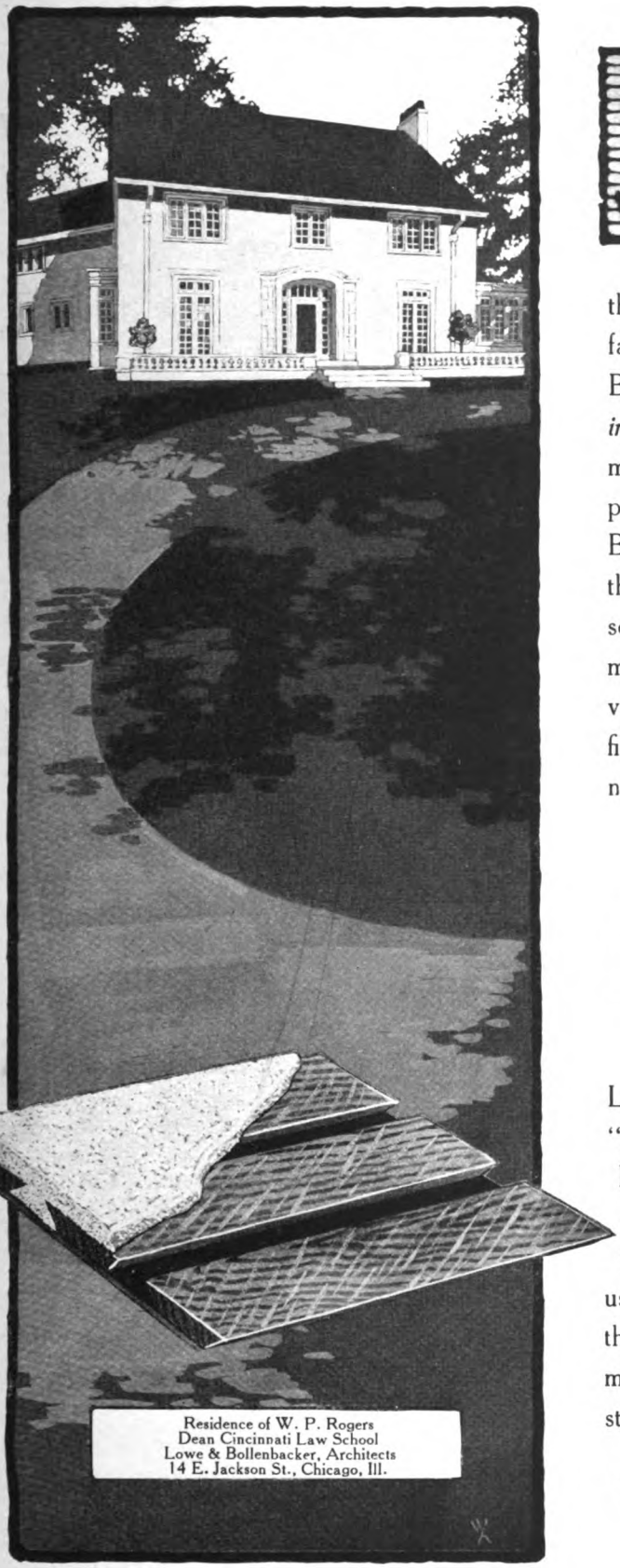

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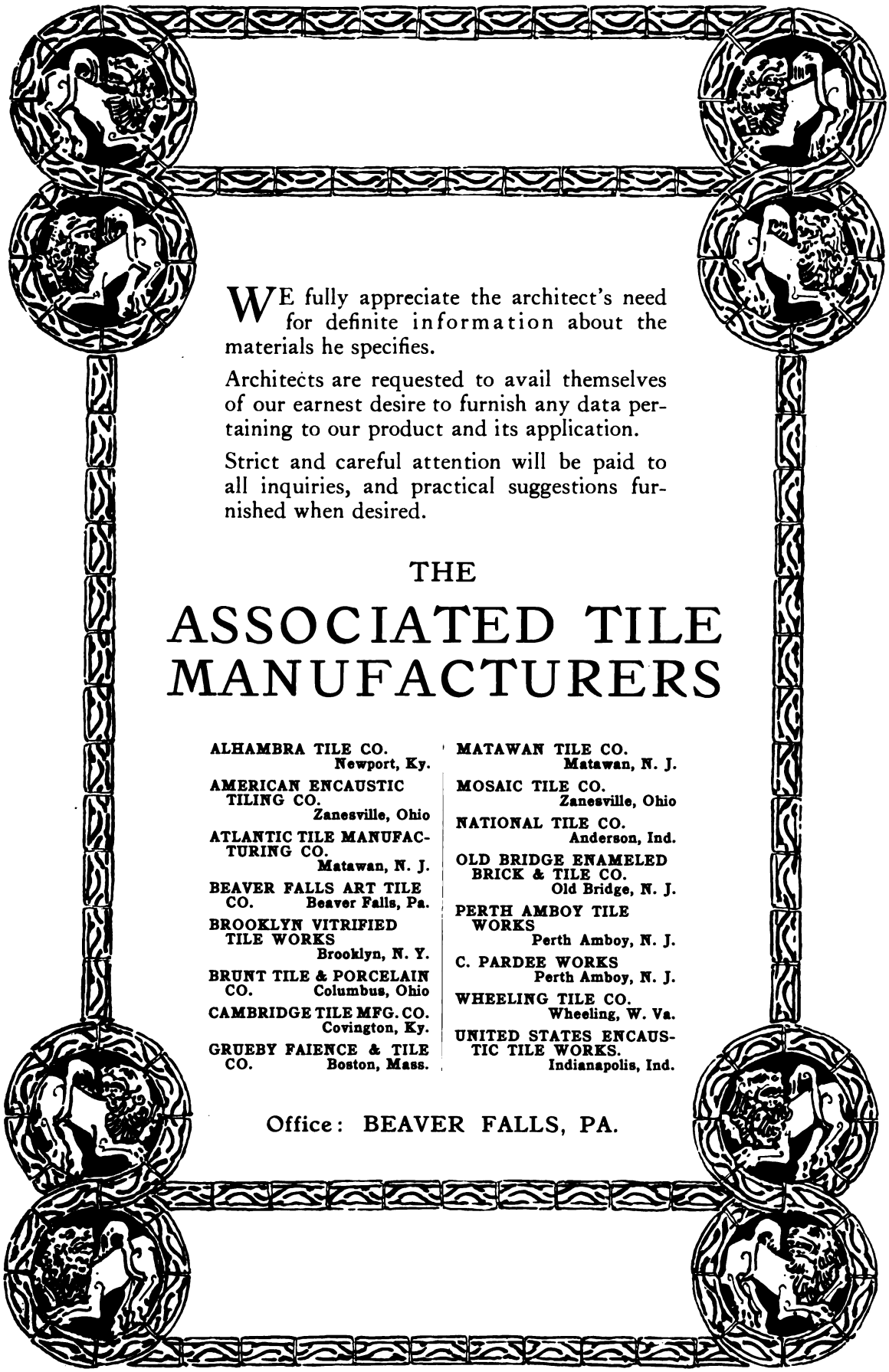

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GE662
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GE663
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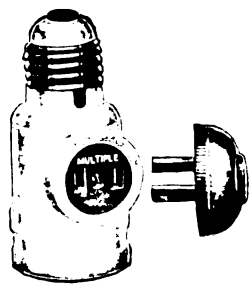
GE658 and 49491 (plate)
Single Outlet Flush Receptacle



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CLEVELAND.—*Abram Garfield, Garfield Building; †C. E. Tousley, 209 Avenue Building, Cleveland.

COLORADO.—*Thomas MacLaren, Hagerman Bldg., Colorado Springs; †Harry J. Manning, Secretary, 214 Majestic Bldg., Denver.

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ILLINOIS.—*Frederick W. Perkins, 332 South Michigan Ave.; †Elmo C. Lowe, 14 East Jackson Blvd., Chicago.

INDIANA.—*M. S. Mahurin, Swinney Block, Fort Wayne; †Herbert W. Foltz, Lemcke Annex, Suite 1456, Indianapolis.

IOWA —*Parke T. Burrows, 62-64 Davenport Savings Bank Bldg., Davenport; †Eugene H. Taylor, 222 S. Third St., Cedar Rapids.

KANSAS CITY.—*W. H. Sayler, Gumbel Bldg.; †Selby H. Kurfiss, Scarritt Bldg.

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NEW JERSEY.—*Henry Baechlin, 665 Broad St., Newark; †Hugh Roberts, 1 Exchange Place, Jersey City.

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NORTH CAROLINA.—*R. S. Smith, Asheville, N. C.; †Williard C. Northup Winston-Salem.

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TEXAS.—*O. J. Lorehn, 302 Le Power Bldg., Houston;† F. E. Giesecke, University of Texas, School of Architecture, Austin.

TOLEDO.—*T. F. Huber, Spitzer Building; †L. S. Bellman, Ohio Building, Toledo.

VIRGINIA.—*Wm. C. Noland, Travelers Building; †Benj. F. Mitchell, Seaboard Bank Building, Norfolk, Virginia.

WASHINGTON (D. C.).—*Waddy B. Wood, 816 Connecticut Ave.; †R. L. Macneil, Union Trust Bldg.

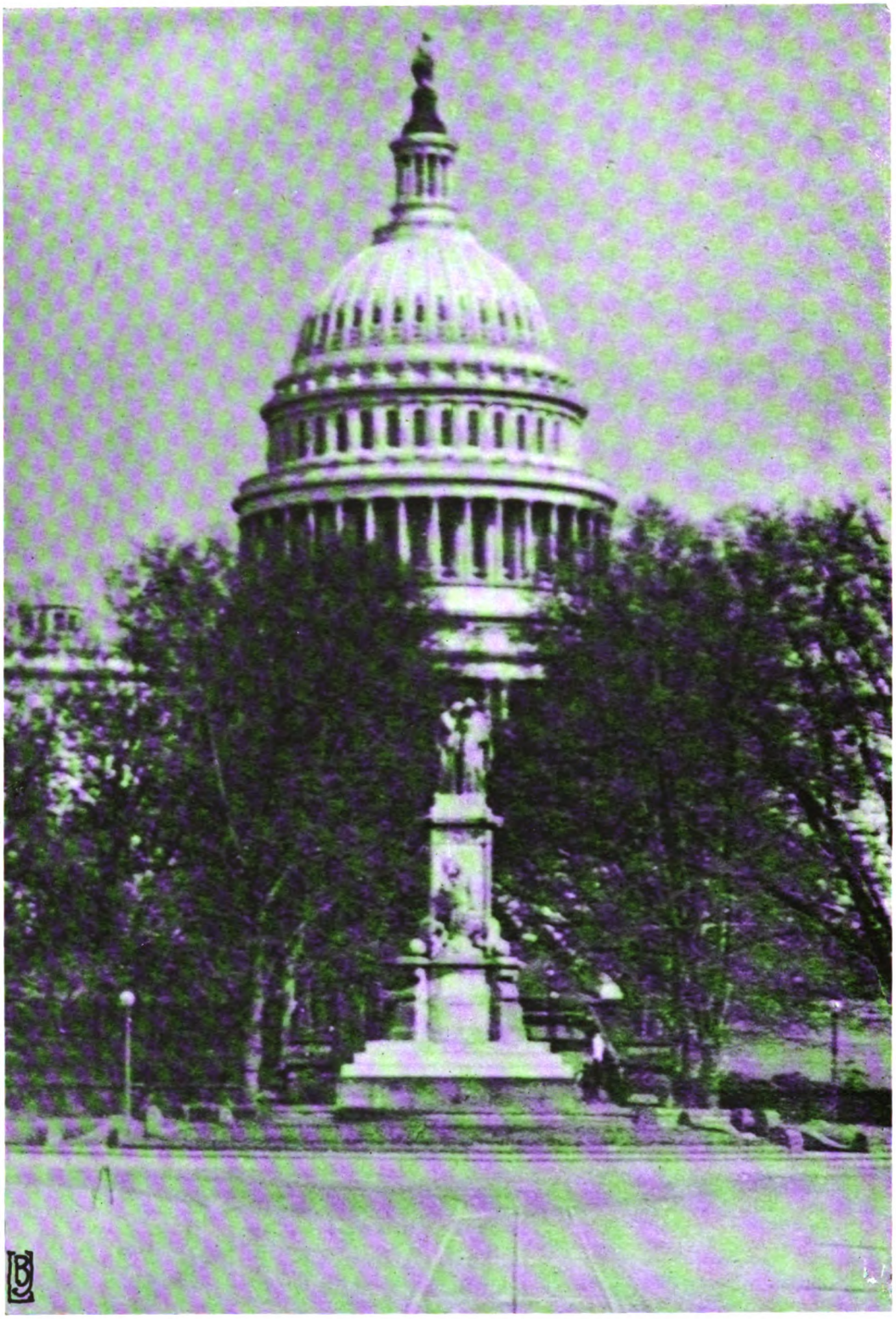
WASHINGTON STATE.—*Charles H. Bebb, Denny Bldg.; †J. S. Coté, 520 Haight Bldg., Seattle.

WISCONSIN.—*T. L. Rose, 1312 Majestic Bldg.;† Henry J. Rotier, 813 Goldsmith Bldg., Milwaukeee.

WORCESTER.—*George H. Clemence, 405 Main St., †Lucius W. Briggs, 390 Main St., Worcester, Mass.

*Presidents.

†Secretaries.



NEVER WAS THIS GLORIOUS DOME MORE BEAUTIFUL THAN ON THIS SIXTH DAY OF APRIL, 1917

JOURNAL OF THE
AMERICAN INSTITUTE OF ARCHITECTS

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Shadows and Straws

THE GOVERNMENT PUBLIC BUILDING situation was the subject of the following editorial in the *Washington Post* of April 28, last:

BLUNDERS IN BUILDING

While the distinguished visitors from England and France will be too courteous to comment, one may imagine their impressions as they gaze upon the unique disarrangement of Washington's public buildings.

Their very haphazardness of situation and construction is symbolic of the blunders of the past that must be rectified in every field of endeavor. The original plans of the Nation's Capital were laid down by the skilled hand of L'Enfant, whose rare foresight and broad vision contemplated a seat of government which would transcend in beauty and grandeur that of any of the capitals of Europe.

And then we began to build in any fashion and after any model. L'Enfant mapped the approaches and Jefferson searched Europe for plans to aid in building designs. The Capitol and the White House were set on commanding hills, with an uninterrupted vista between. Then the Treasury Building, though of noble and dignified design, was thrust across the vista of the White House from New York Avenue and Pennsylvania Avenue, to be balanced later on by the State, War and Navy Building, blocking the vista on the opposite side. The Botanic Garden was placed in an area reserved by Washington and Jefferson for a wonderful park approach to the western entrance to the Capitol. Together with these and after came new styles of architecture, such as the State, War and Navy Building, the Postoffice Department and the Pension Office—huge, clumsy, awkward piles without any relation to the classic lines of the early architecture. The L'Enfant plan had become a "scrap of paper."

Thus they stand today as monuments to the blunders of the past. They accentuate the demands for better methods of construction and coördination in every sphere of the Nation's development from now on. Fortunately there has been no period in our history when these matters have been more in the public mind than they are today. With the intelligent support of Congress, as is being given at present in park and building development, one may look hopefully forward to the time when the National Capital will present in its architectural structures the unmistakable evidences of its stability, grandeur, and order.

Admirable as is this summing up of the regrettable blunders which have so disappointed the lovers of Washington, it yet fails in emphasizing the real heart of the problem. The fifty years of shortsightedness, during which time the needs of the Government have grown apace, have left the departments in the worst possible condition to grapple with the avalanche of extra work which has now descended upon them as a result of the war. Congestion and disorder are crippling effort. Office room is sought wherever it can be found and must be occupied, under stress, no matter how poorly it may be located with respect to the center of its particular activity. At the moment when the whole world is looking toward our ability to organize, systematize, and create an effective instrument, the misguided public building policy of the United States lays a heavy hand upon the enthusiasm and the zeal of those upon whom the burdens are falling.

But it is precisely because of these things that we would point out the fact that the architectural development of Washington must be based upon a systematic and comprehensive plan. Making Washington beautiful must be incidental to making Washington useful, orderly, convenient. We are not pleading for millions to be spent in ornament, but for the necessary sums to be spent in giving the departments the proper equipment with which to carry on their work. The nearly $700,000

paid in annual rentals would afford a capitalization of more than $20,000,000. With such a sum, there could be provided a series of buildings so planned as not only to give the necessary room and convenience but also to further improve the appearance of the city. In the past there has been a not unnatural tendency on the part of those in authority to mistake the purpose which animated those who have struggled so hard to make Washington realize all the hopes of its founders of a century ago, and all the hopes of its lovers, throughout the nation. Let it never be forgotten that Washington is a national possession!

But it is perhaps true that in their enthusiasm, architects and artists in general have laid so much emphasis upon the esthetic side of the problem as to obscure the economic and utilitarian importance of the things for which they contend. This is natural. It is always hard for a small group to state its problem in an elementary form and make it so clear that all men may understand. Yet everyone who loves Washington must realize that every effort to make it more beautiful must be founded upon the purpose of making it more orderly, more convenient, more adaptable to the purpose for which it exists—to be the center of the Nation's legislative and administrative activity. Based upon those premises, it can be made a national exemplar to which men will repair in search of the best in civic development. Based upon the whims and caprices of any man or any passing group, it will become a reproach to our national carelessness.

Washington has a plan for the location of its public buildings. That plan has been evolved through study by competent men. Like every other plan, it will undoubtedly require ultimate changes, since nothing is created to be permanently perfect. But for the present needs of the Government, and for its needs far into the future, a plan has been made which should be followed. No further departures should be allowed. The new building of the Department of the Interior does not conform to the plan, and such mistakes should not longer be permitted. These are not isolated questions of abstract beauty. They are questions very closely related to the problems of growth and expansion of the Government's activities. They are questions pertinently and vitally related to national preparedness. Administration in a government must begin in a home so built as to be able to deal with a temporary emergency without a heavy and costly sacrifice of efficiency —in a home so planned that it can always be expanded without interference with a comprehensive scheme based upon order and utility.

It is for these reasons that the report of the Public Buildings Commission, authorized by the last Congress to investigate and report upon the public building situation in Washington, is now awaited with such eagerness. This is the moment when that report is badly needed, for it is evident that one of the first steps in national preparedness must be the erection of buildings in which the Government can carry on its business. But whatever may be the need for meeting the temporary emergency, there should be no sacrifice of the future of Washington upon which so much has been expended. All sorts of projects are rumored, from the erection of temporary one-story buildings in various open spaces, duplicating the new Interior Department building, adapting previous plans to emergency needs—and, finally, the project to let private capital erect a building on the Arlington Hotel site for renting to the Government at $200,000 a year. This latter is the kind of speculative scheme which always crops up in a Government building need, but, as Mr. Moore points out in his article, this property should be acquired by the Government. It is not its business to drag the Arlington Hotel fiasco out of the difficulty into which it has sunk, nor should Congress countenance any more of the ten-year leases at a rental of 10 per cent of the estimated cost. These scandals must be stopped, even as a war-time emergency. Resort to these makeshifts is responsible for the present condition. To permit more of them would be a national disgrace.

Let Congress sanction any temporary buildings which can be built by the Government to meet the present emergency, but let Washington express in the dignity and grouping of her permanent buildings the solemnity of the ideal for which this Nation has pledged itself.

IN RESTRICTIONS ON BUILDINGS, of whatever kind, we believe that action has always been based upon the questions of safety and property value. So far as we know, with

the exception of certain powers possessed by art juries in our cities, no question of esthetics has ever been permitted to serve as a basis for regulatory enactments. Yet the value of architectural fitness and harmony is slowly coming to be understood, and it seems not unlikely that we may look forward to an increasing recognition of these values in urban development which are so zealously guarded by the older and wiser cities of Europe.

In New York City, the Fifth Avenue Association, always alert to safeguard the great thoroughfare which has now become world-renowned, has appointed Messrs. Michael Dreicer and Douglas L. Elliman as a committee of the Association, to which there have been joined three members of the New York Chapter, Messrs. Robert D. Kohn, C. Grant La Farge and H. Van Buren Magonigle, the whole constituting a Committee on Architectural Harmony. The Association will keep watch over all intending building improvements and alterations, and will suggest to the owner thereof, and to the architect where one has been appointed, the desirability of coöperating with the Committee we have named. If the owner and architect consent, a subcommittee, consisting of two architects and one layman, will be appointed to confer with them in an effort to secure harmonious treatment of such factors as side walls, materials for façades, color, and fenestration. The subcommittee will report its recommendations to the Association, which in turn will transmit the report to the owner and the architect, with a plea for the adoption of the suggestions made.

While the individualist will no doubt cry out that such a step may have the effect of curbing initiative and be in restraint of genius, we believe that experience will show that a more consistent upward trend is likely to result from this form of coöperation than under the unlimited freedom of action which has so far governed the architecture of our city streets. The effort to accomplish this good for Fifth Avenue seems a worthy one, and although it invokes only a friendly consideration on the part of those who are paying the bills, we believe that the inherent value of harmony will make an appeal such as few will resist.

A gold medal will be awarded to the owner of the building erected during each year which shall be judged, under the rules to be formulated by the committee, to be the best, and another gold medal will also be given, under similar conditions, for the alteration of an existing building. In each case the project deemed second in merit will be the basis for the award of a diploma.

IN RESPONSE TO THE CIRCULAR letter sent out by President Mauran, a copy of which was printed in the April Journal, inviting architects to place their offices and equipment at the disposal of the Government for war emergency purposes, on the basis of actual cost of operation, a great many tenders have been received. This work is now being organized under the auspices of the Institute, as an Institute activity, so that the service will really be an act of Institute service rather than a series of individual assignments. Further details of this plan will appear as soon as the work of organization is definitely completed. It is, perhaps, pertinent to especially emphasize the fact that under the plan now being formulated, it is the Institute which is offering an emergency architectural service to the country, in time of need, through the organization of many of the offices of its members.

Up to the first of May, one hundred and seventy-five individual architects and firms had volunteered in this work, and the Navy Department gladly availed itself of this service, immediately, and seized the opportunity to start work upon seven projects involving three million dollars' worth of buildings on both our coasts and elsewhere. Surely there could be no better illustration of the value of organizing all the nation's resources along lines of skill and experience.

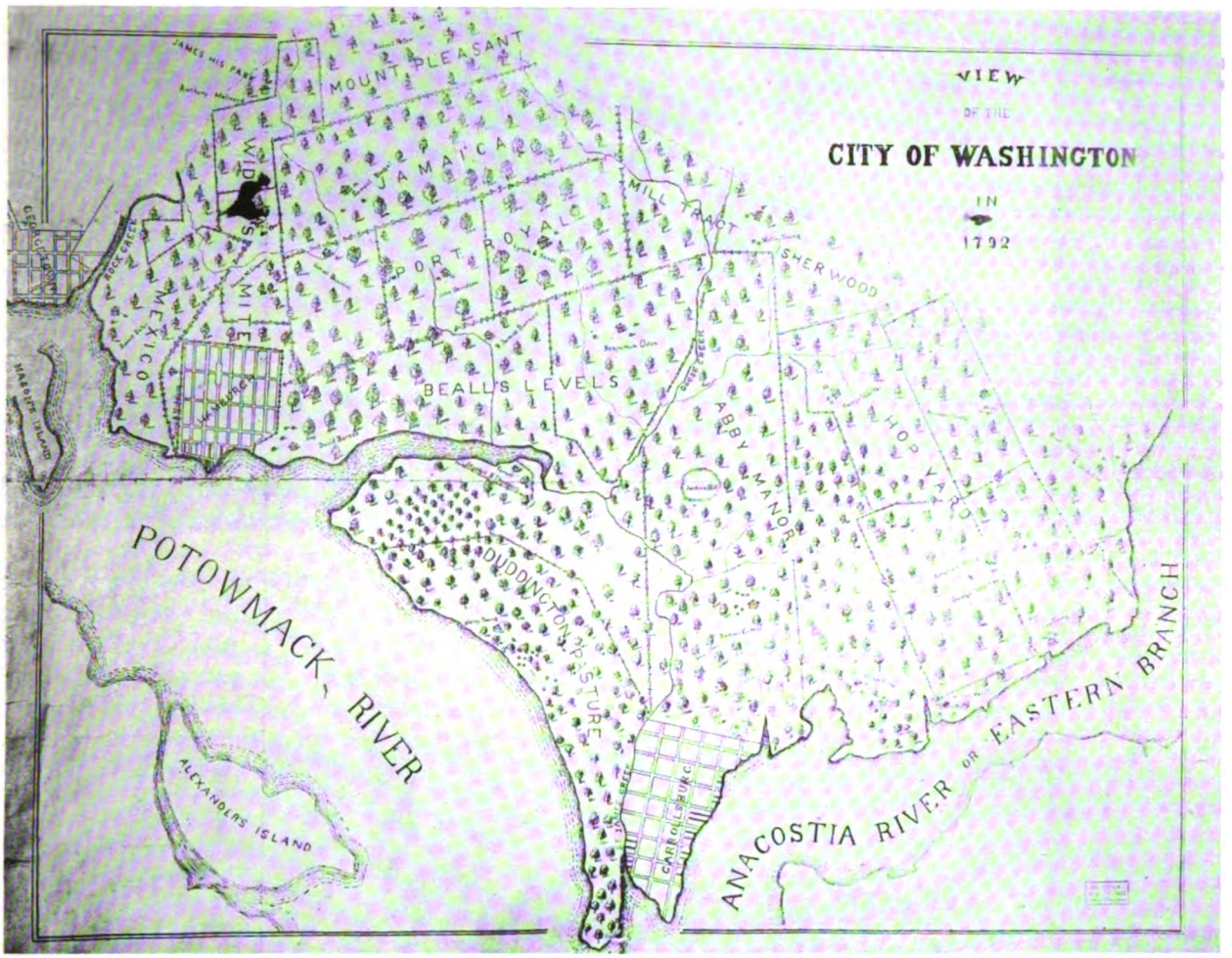
NEARLY 3,000 answers have been received from the circular letter sent out by the Chairman of the Central Committee on Preparedness. A list of the enlistments was published in the last Journal, and a further supplementary list appears elsewhere in this issue. The replies have been carefully analyzed and card indexed according to the location and especial abilities of those architects who responded. Thus, on request of the Government for help of any kind, the Institute can furnish, through the president of the Chapter in the territory where help is required, a list of men suited for the particular work to be undertaken.

This method of classifying and indexing is in conformity with the practice suggested by the departments to whom so many offers of organized service have been made. The press has taken particular pains to point out the mistakes made by England, where the enthusiasm for enlistment caused a serious maladjustment in her industries, professions, and trades, through the loss of the men so skilled in their particular work that their absence diminished production to a point where her armies could not be supplied. Only the most skilful organization will answer at this moment, and war service, to be effective, must be based upon the giving, by each person, of that which he or she is best qualified to give when all the circumstances are taken into consideration. Architects are peculiarly endowed for rendering certain essential services which must be performed as a vital part of the great war machine. The patience required to await the right opportunity will be worth vastly more than the enthusiasm for rushing blindly into work which can best be done by others. We shall make the most haste in this matter by taking counsel with the experience of our allies. Never was the question of organization so vital a factor in the success of a national undertaking.

THE REGISTRATION OF ARCHITECTS is discussed in this number of the Journal by Mr. D. Everett Waid, Treasurer of the Institute, who has made a most careful study of the existing laws on this subject. The new laws passed in the state of Idaho, and pending in the state of Pennsylvania, form the subject of his discussion. It is becoming evident that there is at present a great diversity in the registration and license laws of the different states, and that there are many defects in them which give serious concern to those interested in the ultimate establishment of a law which will not only make a wise provision for safeguarding the public interest but which will also avoid conflicts between the various states. While there may yet be room for a difference of opinion on many points, it would appear that much could be accomplished by coöperating with the Special Committee of the Institute which was appointed for the purpose of just such coöperation. Mr. William D. Bannister, of the Brooklyn Chapter, is the Chairman of this Committee, and we believe that if proposed laws could be submitted for suggestions and constructive criticism, the subject of registration laws would gain much thereby.

We feel that it is never inopportune to restate the basis upon which such laws should be enacted—always for the protection of the public and never for the aggrandizement of the profession, except as the educational and technical requirements imposed by those bodies which have the licensing power will help to raise the standard of architectural equipment. No legislation should be thought of which, even by remote indirection, deprives any intending builder of the right to have his plans made wheresoever he wills and by whom he chooses. Registration laws should be for the purpose of making a distinction between the architect who possesses the knowledge, experience, and skill necessary in pursuing his calling and the man who takes the title to himself as a business expedient. Under any kind of a law it will take many years to change the present conditions, since it is scarcely possible to change a situation which has persevered for many years by legislative enactment. Registration laws of the right kind must aim at an ultimate condition rather than at the immediate and complete correction of those evils from which the public suffers wherever incompetence and inexperience usurp a title which should imply competence and experience in a very high degree.

That these qualities are not always possessed by those who call themselves architects is shown by the fact that 25 per cent of those who applied for registration in New York State were not granted a certificate. These men may still continue their practice and call themselves architects, but the enactment of a registration law does not cause the state to step in and give them a badge of competency. This is a point which should be very carefully studied in all proposed laws; it is manifestly contrary to the public welfare for a state to certify to competency where it does not exist, even though it is without the power to restrain the activities of those who have pretended to possess the ability required to practise architecture, and have thus built up a business which is beyond the reach of the law, under our constitutional safeguards.



Land Selected by President Washington as the Site for the Federal City.—By Courtesy of the Library of Congress

Problems in the Development of Washington

By CHARLES MOORE
Chairman of the National Commission of Fine Arts

As the development of Washington proceeds according to the original plan of the city made by L'Enfant in 1790 and extended by the Commission of 1901, certain special problems arise which require decision in accordance with the general lines of the plan.

The Capitol Group

The House and Senate office buildings have been constructed with the view of creating about the Capitol a group of buildings more or less connected with the legislative branch of the Government. Lands between the Capitol and Union Station have been purchased, and these lands have been cleared of most of the buildings that formerly occupied them. The present conditions are unsightly. Congress should decide as to how this space shall be utilized, whether to enhance the dignity and impressiveness of the approach to the Capitol by creating a series of splendid gardens, or to provide sites for public buildings. When this main question shall have been decided, a plan should be made for this important area. Congress should also determine whether the stoneyards and insignificant buildings shall be cleared from the spaces south and west of the Capitol grounds, so as to put an end to the squalid conditions now existing about that great national building.

The Supreme Court shows no disposition to urge Congress to build a building for its own special use. When the increase in its working force and the consequent demands for space shall compel the Court to quit the Capitol, a building corresponding with the Library of Congress should be built. It is a question as to whether the Maryland Avenue axis should be blocked by this building as the Pennsylvania Avenue axis has been blocked by the Library of Congress, or whether two buildings should occupy the space between North Capitol Street and B Street North, thus leaving Maryland Avenue free.

The Mall

Last year the Senate passed a bill to extend the present Botanic Gardens by taking in an additional section of the Mall. The bill failed in the House, but it has been reintroduced in the Senate, where it has the backing of two influential Senators. Should the bill become a law, the proper development of the Mall will be retarded for many years.

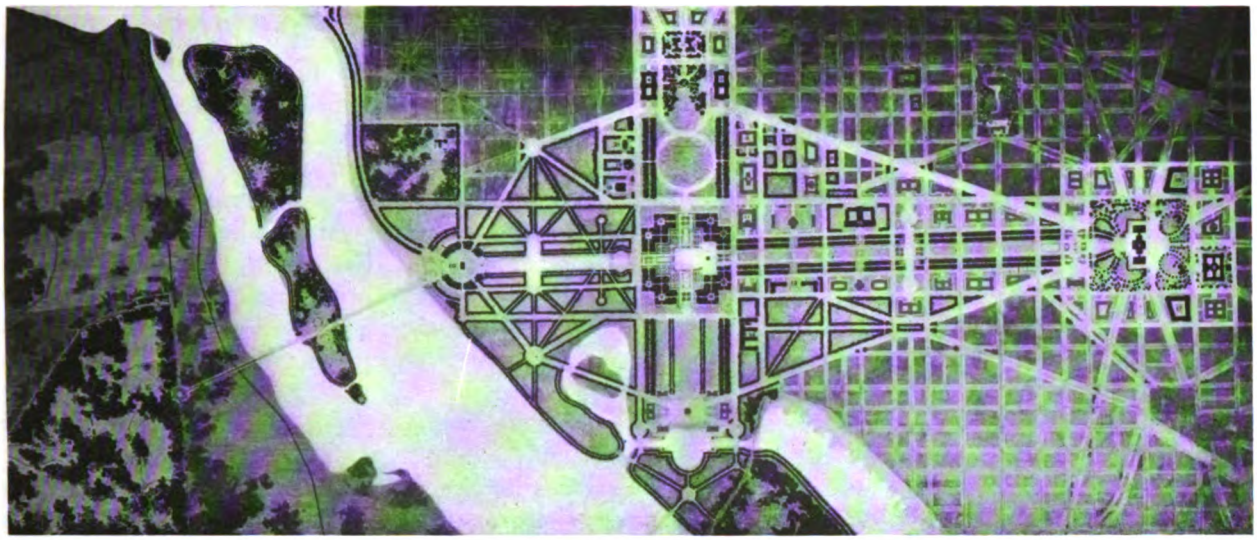
To secure such development the Government paid the Pennsylvania Railroad $1,500,000 to remove its tracks from the Mall, and when he consented to such removal, President Cassatt expressly stated that he did so in order that the Mall plan might be carried out.

Also, to provide for carrying out the Mall plan, the Agricultural Department buildings were relocated after the excavations for foundations had been begun; and the buildings have been constructed so as to require the lower grades involved in the plan.

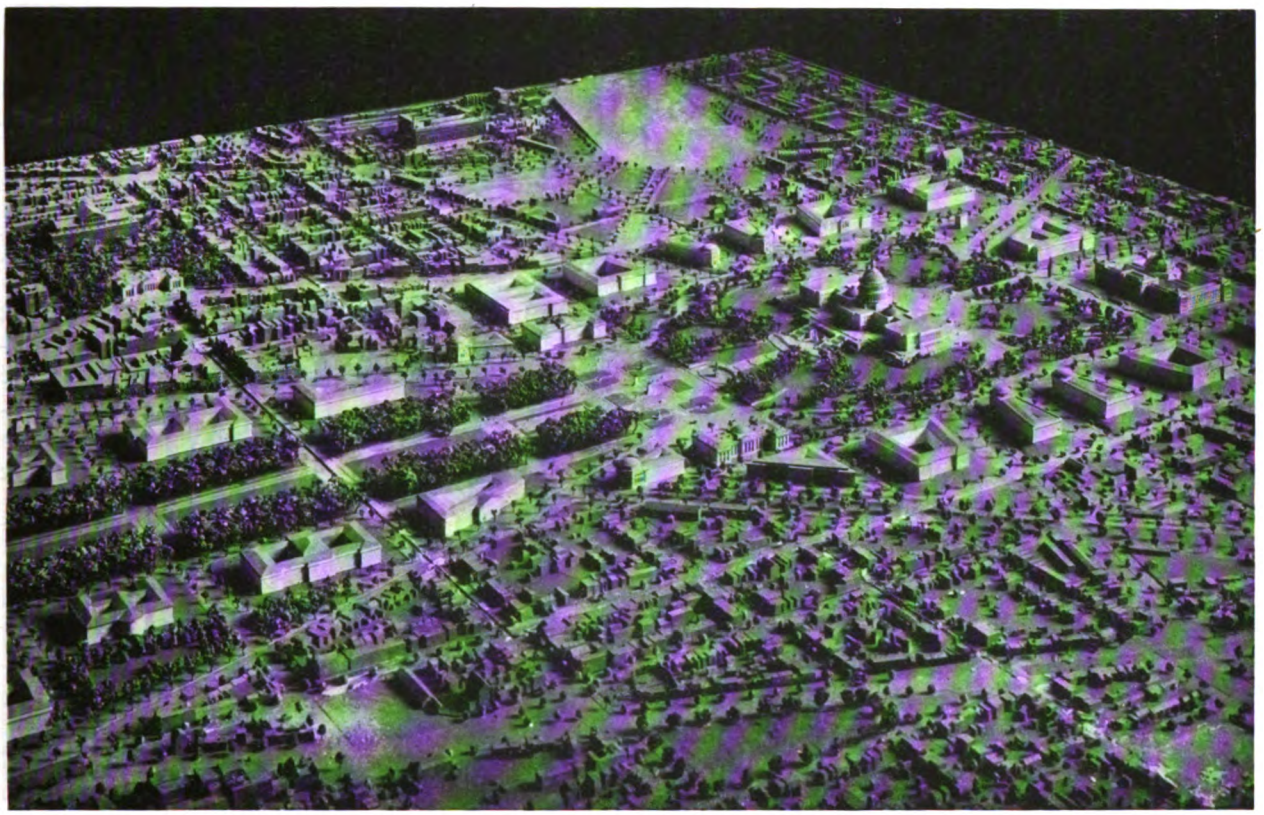
The National Museum has been located with reference to the new Mall axis; likewise the Freer Gallery. Trees have been planted, and grading has been begun in accordance with the Mall design.

Congress located the Grant Memorial at the head of the Mall in such manner as to force the removal of the present Botanic Garden to a new and adequate site. The two occupancies are inconsistent in extreme. The Botanic Garden in any location between the Capitol and the Washington Monument cannot be more than a

PLAN PREPARED BY PETER CHARLES L'ENFANT UNDER THE DIRECTION OF PRESIDENT WASHINGTON AND SECRETARY JEFFERSON FOR THE FEDERAL CITY.—By Courtesy of the Office of Public Buildings and Grounds



DEVELOPMENT OF THE CENTRAL COMPOSITION OF THE L'ENFANT PLAN BY THE COMMISSION OF 1901.—Shows the Capitol surrounded by buildings related to legislative activities, and the White House surrounded by departmental buildings; the main axis beginning with the Capitol, extending through the Washington Monument to the Lincoln Memorial; the White House axis beginning with the White House, extending through the Washington Monument gardens, and ending with a site for a great memorial yet to be determined upon; also shows the proposed memorial bridge to Arlington and the location of public buildings south of Pennsylvania Avenue.—Courtesy of the National Commission of Fine Arts.



PHOTOGRAPH OF THE MODEL PREPARED TO SHOW THE ARRANGEMENT OF BUILDINGS ABOUT THE CAPITOL, AND OPEN APPROACH TO THE CAPITOL FROM THE WEST WHERE THE BOTANIC GARDEN NOW STANDS, AND THE ARRANGEMENT OF MUSEUM BUILDINGS ALONG THE MALL.—Courtesy of the National Commission of Fine Arts.

makeshift as a garden, but it can play the part of dog in the manger and delay a systematic development of the space as a great park connection between the Capitol and the White House.

It is essential that this question be settled right and at once.

The Monument Grounds

Nothing has been done to open the White House cross axis of the Mall or to create an appropriate setting for the Washington Monument. This is a subject which may well receive attention from the Washington Monument Association at its annual meeting on January 1, next. There is no need of haste in carrying out the plans, but at least the subject should be discussed as one of the things to be done in the future. As the landscape treatment leading to the Lincoln Memorial progresses, the necessity for an adequate setting for the Monument will be forced on the attention of the public—and the plan for the terraced gardens shown in the plan of 1901 will become apparent.

The Executive Group

When plans were prepared for buildings to accommodate the departments of State, Justice, and Commerce, the area along Fifteenth Street, between Pennsylvania Avenue and B Street North, was found to be too small for the three buildings. Consequently, the State Department was forced over into the Mall. This location never was sanctioned by Congress; and it never should be. The buildings along the Mall should be of a museum character—structures housing collections in which the public primarily is interested.

The plan of 1901 calls for the location of departmental buildings on three sides of Lafayette Square, thus surrounding the White House with structures devoted to executive work. At one time plans were prepared for a building for the combined use of the departments of State and of Justice, to be located on the square west of Lafayette Square, but there was opposition to any combination. Each department desired its own building. The State Department building, as recently planned, would occupy this entire block, and then would accommodate functions too large for the White House. This location should be adhered to for reasons of convenience, both to the department in its intimate relations to the White House and to the people having business therewith, whether callers or members of the clerical force. Such has been the uniform opinion of State Department officials. The Government already owns the old Corcoran Art Gallery and occupies other property situated in this square. The character of the occupancy of the remainder is now such as to enable its purchase on favorable terms. The project should be started at once.

Again, the Government owns the corner on Pennsylvania Avenue and Madison Place, opposite the Treasury Department, and such is the pressure for building-space that probably the site will be built up before long. Any building erected on this site should be designed in such manner as both to preserve the dominance of the White House and also to become a portion of a single building to occupy the entire frontage extending from Pennsylvania Avenue to H Street.

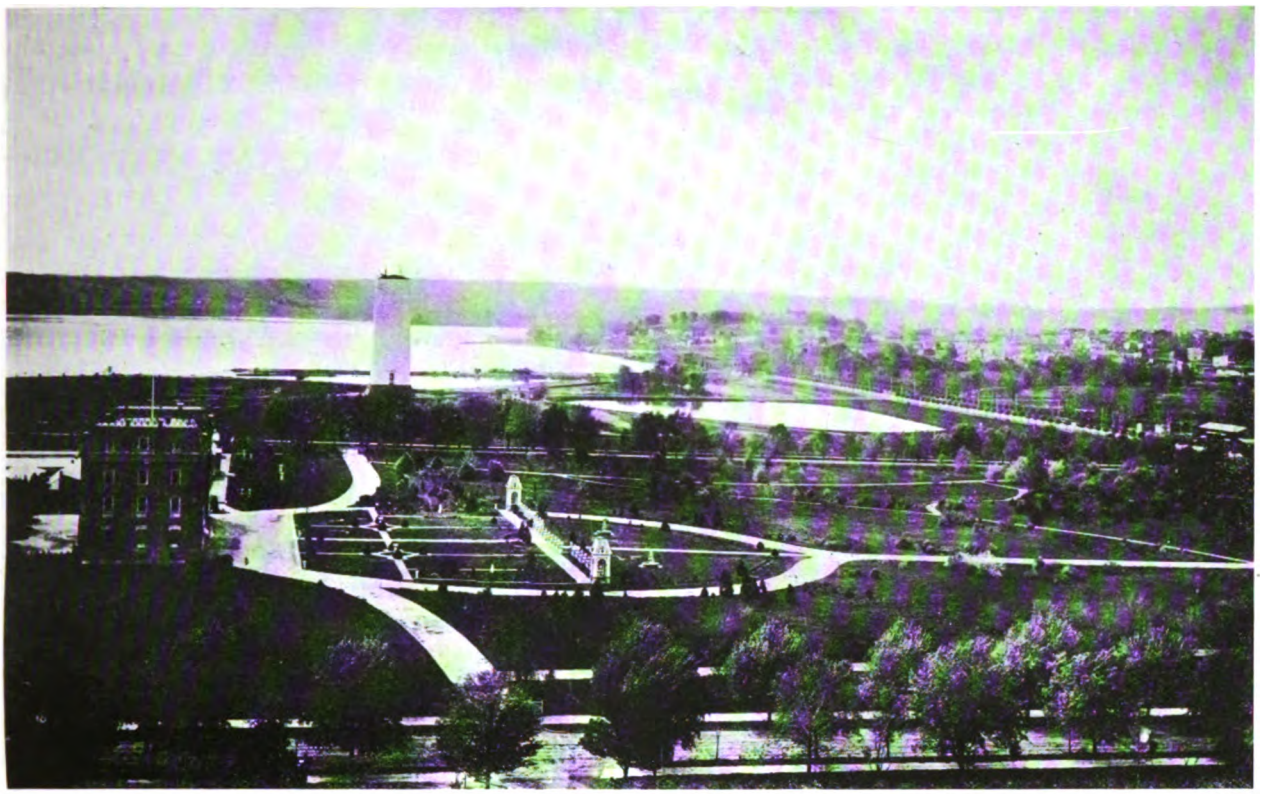
If the Government should now take over the site of the Arlington Hotel and erect thereon a temporary building, in time it could obtain the other frontage along H Street to Sixteenth. In any event, the scheme for a group of executive buildings around Lafayette Square always should be kept in mind.

The Area South of Pennsylvania Avenue

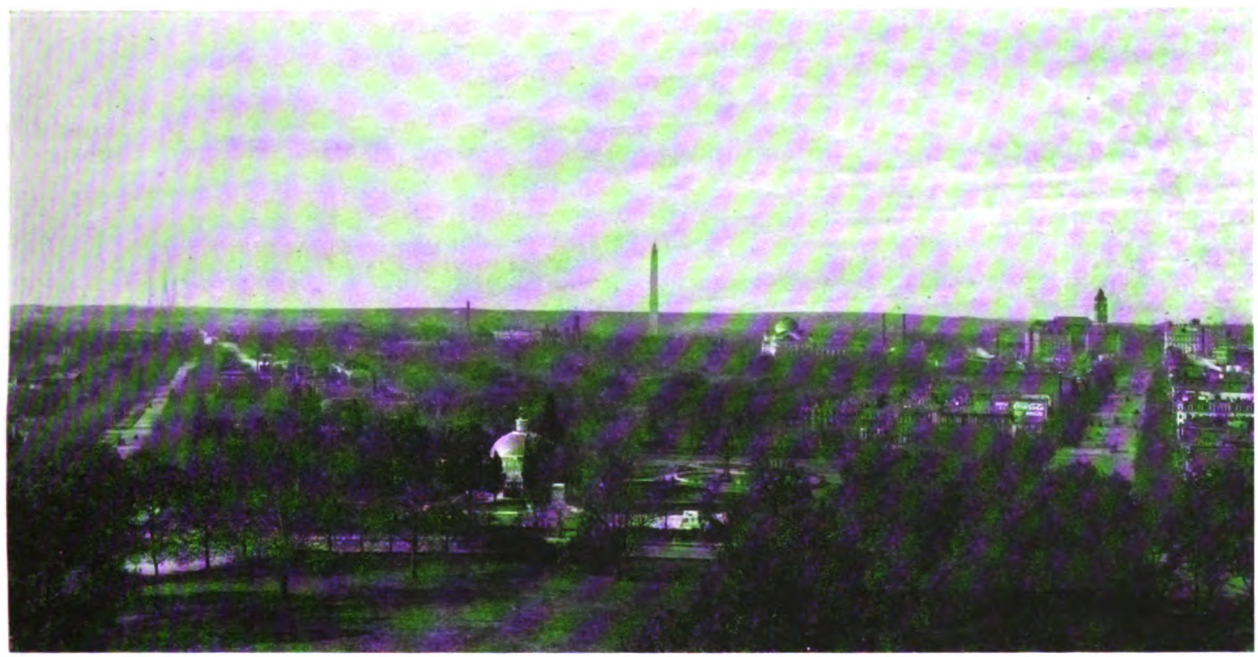
Pennsylvania Avenue will always remain the great thoroughfare of Washington. That portion of the Avenue between the Capitol and the Treasury Department offers appropriate locations for the many buildings which maintain relations with both the legislative and the executive branches of the Government. The market site is fixed by the conditions imposed at the time the market was created, and in case the market shall be removed the land will revert to the heirs of the original owners. It would be unwise, perhaps, to change these conditions. B Street North, however, should be extended with its full width from Sixth Street to Pennsylvania Avenue, thus giving the Mall its proper outlines.

The Lincoln Memorial

The main planting between the Washington Monument and the Lincoln Memorial has been



VIEW FROM THE SMITHSONIAN TOWER ABOUT 1878.—Shows the uncompleted Washington Monument and the overflowed lands which have been filled in to make Potomac Park—about 740 acres in all. The view shows the grounds of the then Bureau of Agriculture in the foreground. Courtesy of the National Commission of Fine Arts.



VIEW SHOWING THE GRANT MEMORIAL, THE BOTANIC GARDEN, AND THE BARTHOLDI FOUNTAIN.—In order to give a proper setting to the Grant Memorial, both greenhouses and fountain must be removed to other locations. The vista from the Capitol to the Washington Monument is yet to be developed. Courtesy of the National Commission of Fine Arts.

put in, but it will take several years before the trees obtain a sufficient growth to impress the public with the general scheme of treatment. The design for the grounds calls for a reflecting basin extending from Seventeenth Street to the Lincoln Memorial, a distance of 2,300 feet. This basin, when completed, will be one of the most charming features of the Mall system. It is essential to the beauty of the plan, and the sooner it is created the more pleasure the present generation will get from the composition. In the erection of memorials in this portion of Potomac Park, extreme care should be exercised in order that no design inharmonious with the great monument to Lincoln shall be permitted in its proximity. This harmony should be historical as well as artistic.

The Memorial Bridge

Very serious problems arise in the treatment of the proposed bridge to connect the Lincoln Memorial with Arlington. There is a question, for example, as to whether the bridge should extend on the axis of the Washington Monument and the Lincoln Memorial, reaching a terminus above Arlington. There is another question as to whether the bridge proper should end at Analostan Island and not be brought to the main land. The channel between Analostan Island and the Virginia bank of the Potomac carries very little water and is in process of being filled up. If the bridge is constructed for so great a length as from the Lincoln Memorial to the Virginia shore, it will require a very elaborate treatment on the slopes of Arlington in order to make a proper termination. On the other hand, if the bridge is kept comparatively short, only a simple and naturalistic treatment of the Virginia approach would be required.

Potomac Parkways

Congress has provided for the connection between Potomac Park and Rock Creek Park along the river to Rock Creek and thence up the Creek to the Zoölogical Park. Most of the difficulties in the way of this improvement have been overcome, and the long-cherished hopes of the citizens of the District interested in the development of lower Rock Creek are about to be realized. The machinery is in such good working order at the present time that Congress may safely increase the appropriations, with the assurance that the money will be economically and efficiently spent.

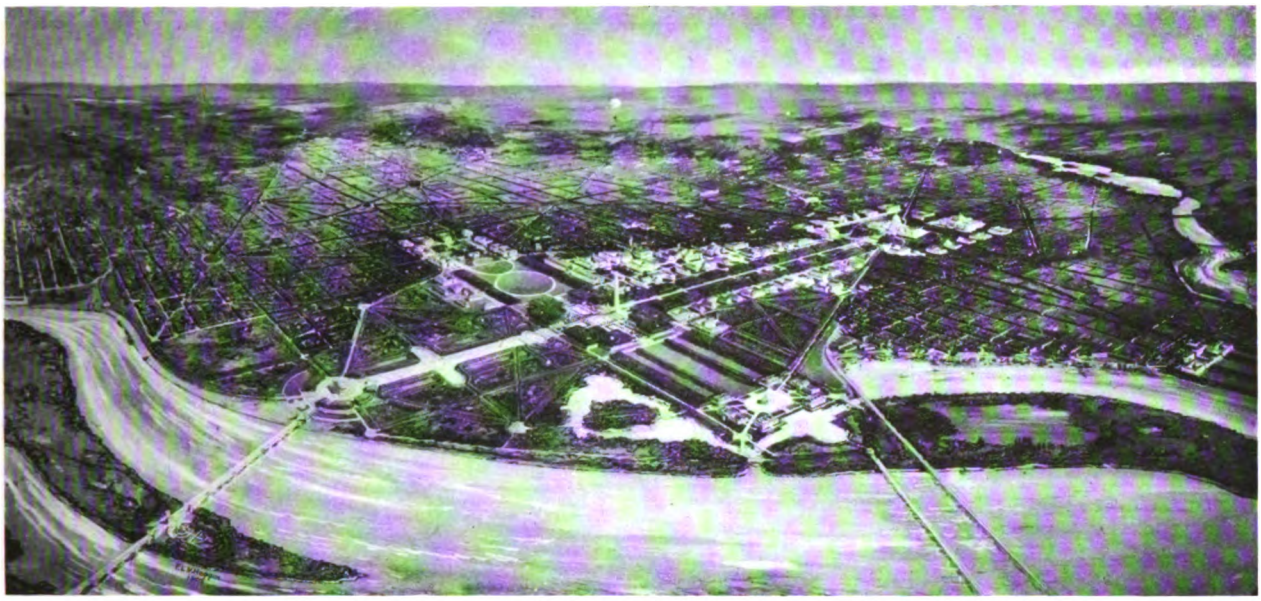
The Washington Channel Boulevard

Serious indeed is the problem of a boulevard connection along the bank of the Washington Channel from Potomac Park to the War College and thence along the Anacostia to the new water park now under construction. This connection was indicated but was not adequately worked out in the plan of 1901, because of uncertainties as to ownership of the waterfront. The Government now has undisputed title to the entire frontage on the Washington Channel, and nothing but the will of the powers-that-be stands in the way of creating on the east a parkway connection quite as necessary to the proper development of Washington as is the Potomac Park and Rock Creek Parkway on the west, for which Congress is spending several millions of dollars. Indeed the creation of the latter makes inperative the construction of the Washington Channel Boulevard, in order to complete the parkway circuit on the south. Now that a comprehension of this fact is spreading among persons concerned with new projects in this locality, there are indications of certain revisions of plans in order to accommodate these large considerations. No structure should be permitted along this waterfront which is so located as to encroach upon Water Street or so designed as to be unsightly from the sports-fields and driveways in East Potomac Park.

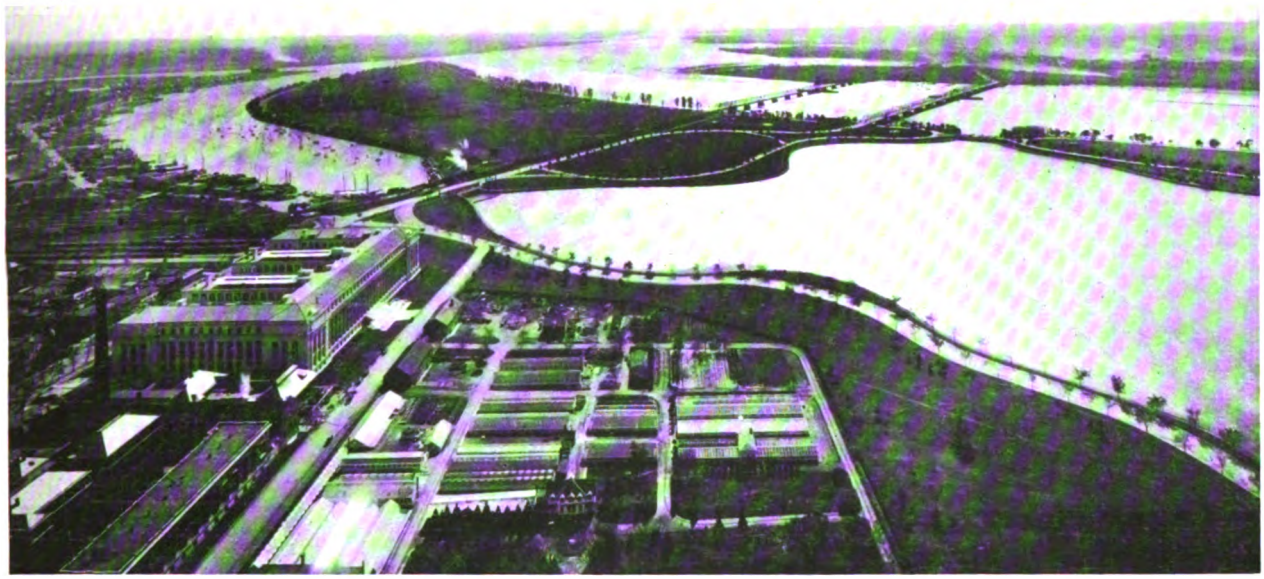
Memorials in Washington

During the first half-century of Washington the city got along without any out-of-door art. It was in 1853 that General Jackson mounted his charger in front of the White House. This is the oldest equestrian statue in the United States. The conclusion of the War of Secession brought about the rapid development of the city of Washington. Also, the time had come when the glad hearts of the people were in the mood to set up memorials to recent heroes. As a consequence, circles and squares were quickly populated by bronze soldiers on foot and on horseback.

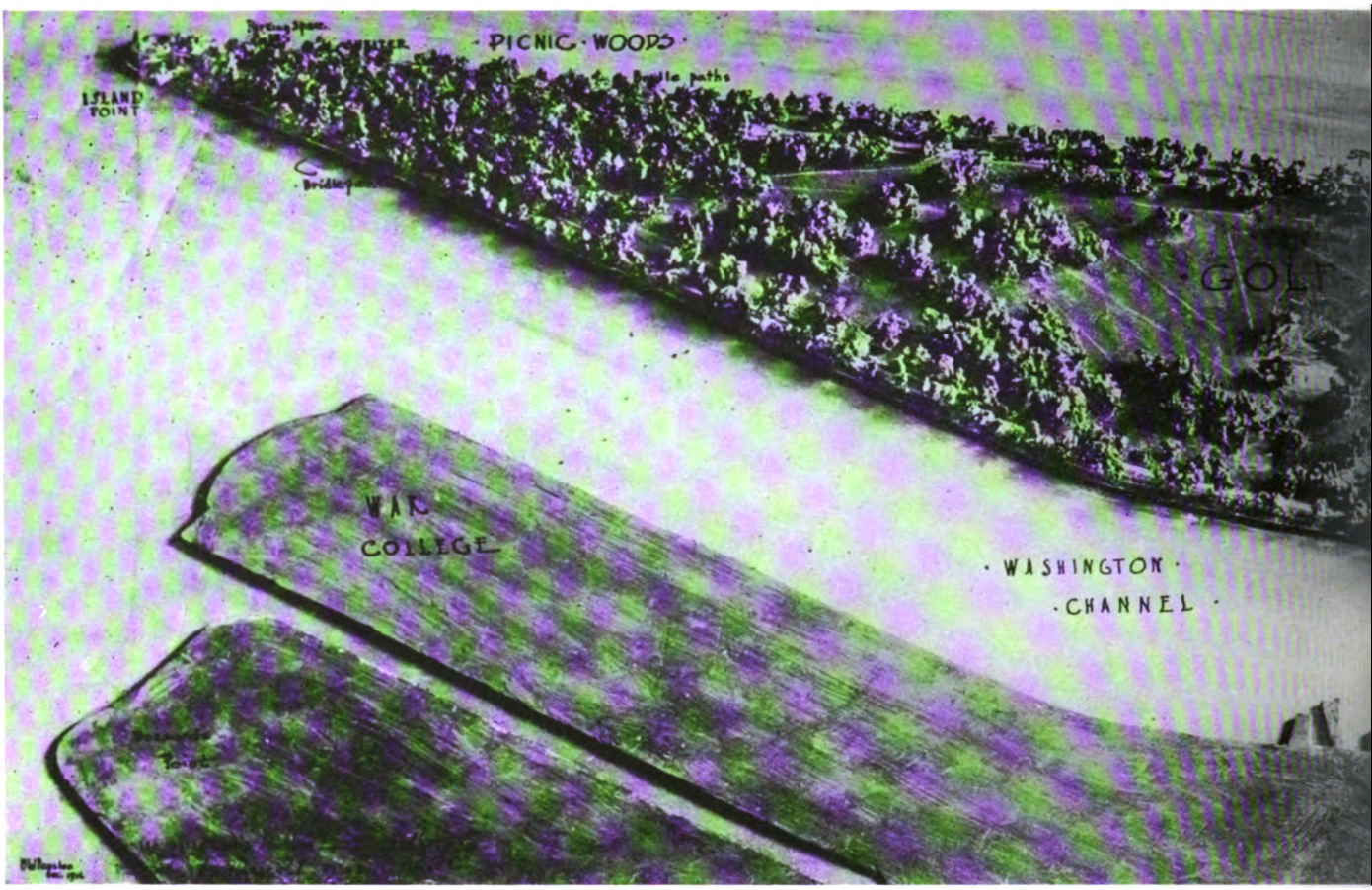
As the improvement of Washington proceeds, almost every group of men with a hero desires to find a place for him in Washington. Portrait



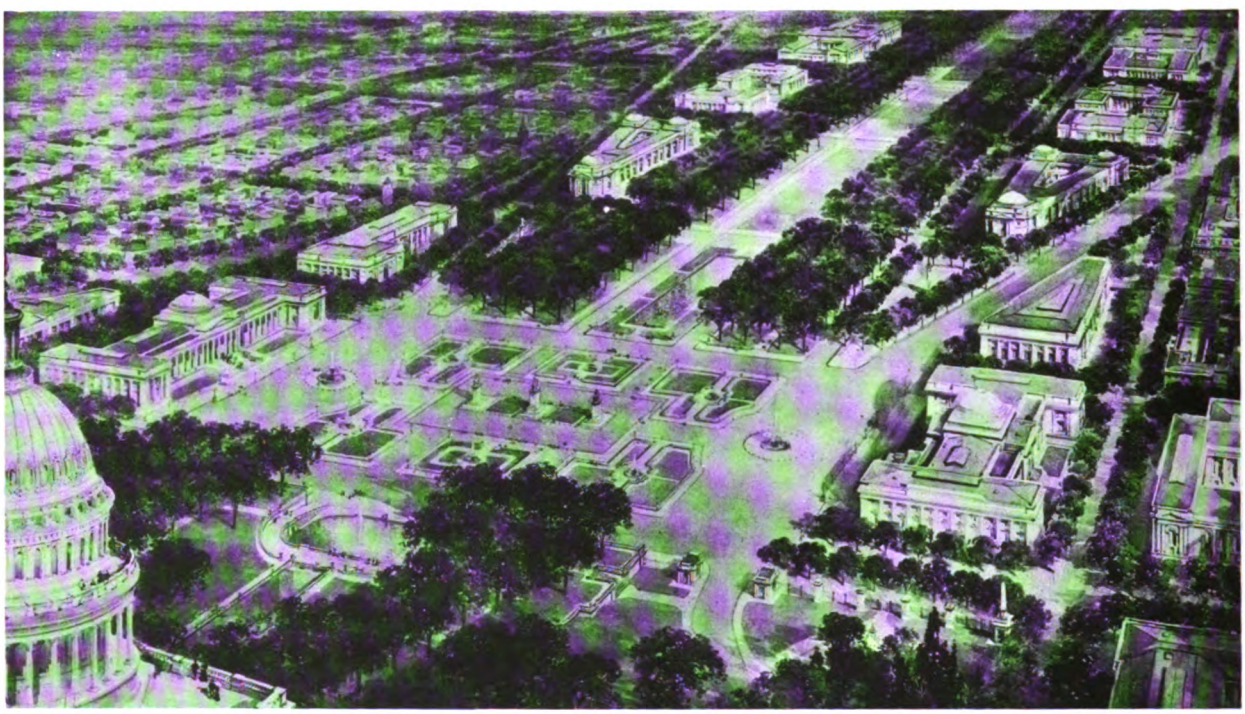
VIEW OF THE MALL SYSTEM.—Shows the actual relations existing between the Capitol, Washington Monument, and Lincoln Memorial, and between the White House, the Washington Monument, and the Memorial Site to be developed; also showing the Anacostia Water Park on the right, the connection between Potomac Park and Rock Creek Park on the left, and the proposed memorial bridge across the Potomac.



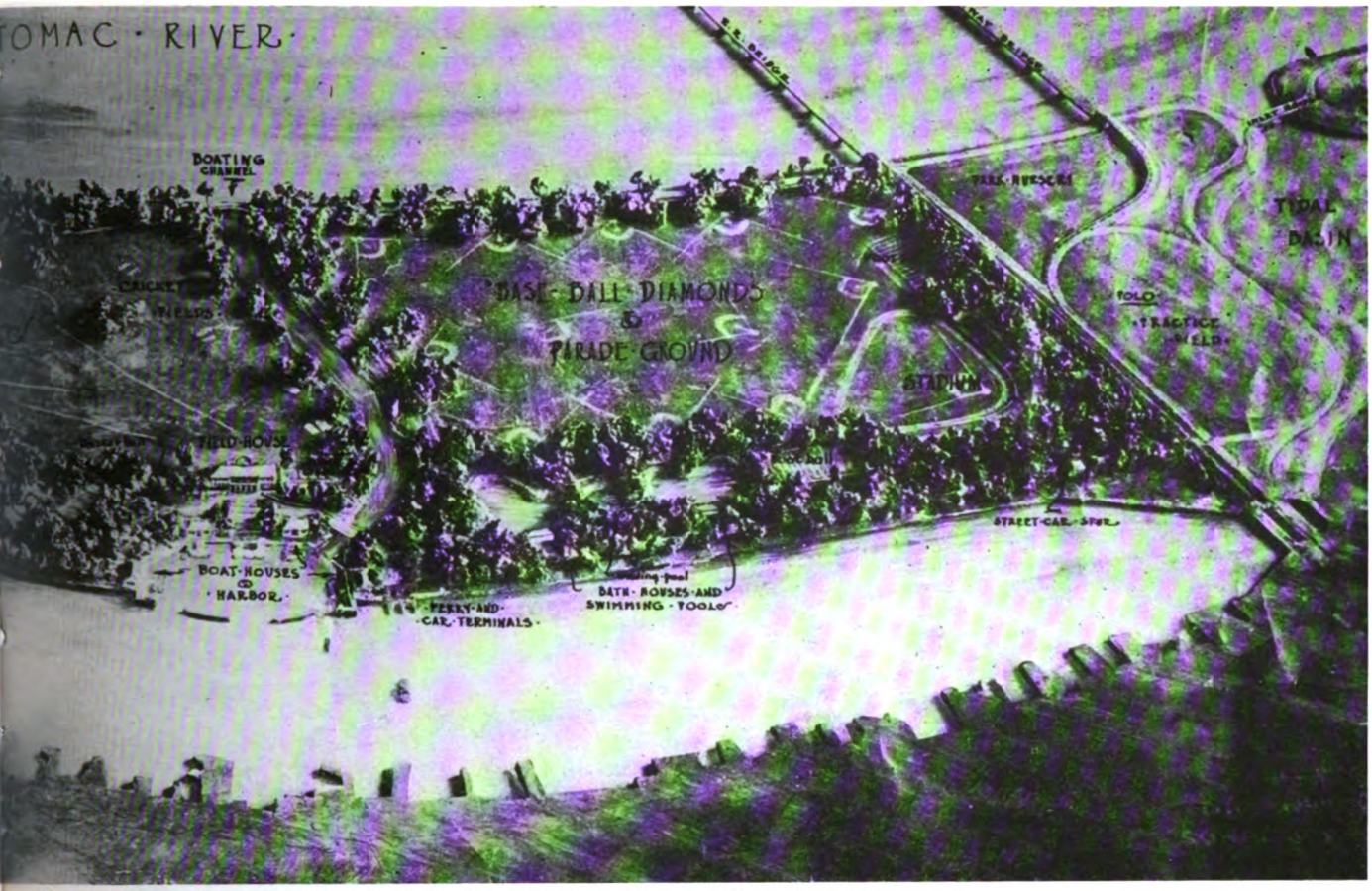
EAST POTOMAC PARK, CREATED BY DREDGING THE POTOMAC RIVER AND NOW AWAITING DEVELOPMENT.—The view shows the Tidal Basin, a portion of West Potomac Park, the Bureau of Engraving and Printing on the left, and the White House propagating gardens and greenhouses in the foreground. Taken from the top of the Washington Monument.—Courtesy of the National Commission of Fine Arts.



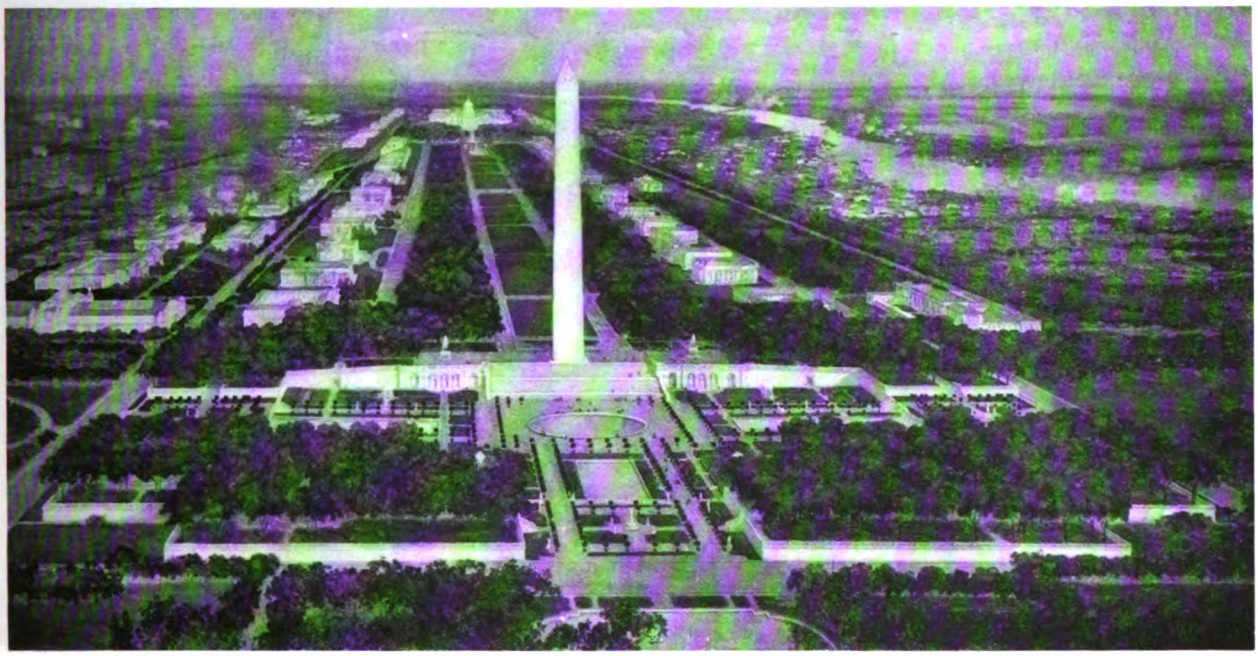
From a Photograph of the Model Showing the Proposed Development



Union Square.—The proposed approach to the Capitol from the west. A study based on L'Enfant's plan of 1791 approved by President Washington. The Botanic Garden at present occupies this area. Courtesy of the National Commission of Fine Arts



AST POTOMAC PARK.—Design prepared by the Office of Public Buildings and Grounds



VIEW OF THE MONUMENT GARDENS.—The central pool in front of the monument is on the axis of the White House. In 1901 the axis of the Mall was changed to bring the Washington Monument in line with the dome of the Capitol and to bring the Monument gardens into proper relations with the White House. The National Museum, the Agricultural Department Buildings, Freer Art Gallery, and the Lincoln Memorial, have been located in accordance with the new axis. Courtesy of the National Commission of Fine Arts.

statues, like portrait paintings, are interesting to the family, but are rarely works of art. The rule should be laid down, and vigorously enforced, that *no statue or memorial shall be located in Washington unless such statue or memorial is a distinct contribution to the general scheme of the development of the city and adds an artistic element thereto.*

Washington needs fountains, just as Rome did, and a memorial may properly and with advantage take the form of a fountain. There are now two such fountains in Washington, and soon there will be a third and perhaps a fourth. Both are in themselves works of art and enhance the attractiveness of the city as well as honor the men whose names are connected with them. Memorials may also take other forms that express artistic conceptions. The subjects of these memorials should be limited, however, to persons whose reputations are national in character and high in quality. Congress should be very jealous as to the admission of candidates for this particular form of immortality.

The foregoing are some of the problems which readily suggest themselves in connection with the development of Washington. It would be quite easy to multiply the number several times.

The one object to be kept in mind constantly and rigorously is the ideal development of the National Capital, typifying the aspirations of the people, and the achievements of the Nation, so expressed as to make the city of Washington a unified, dignified, and impressive work of art.

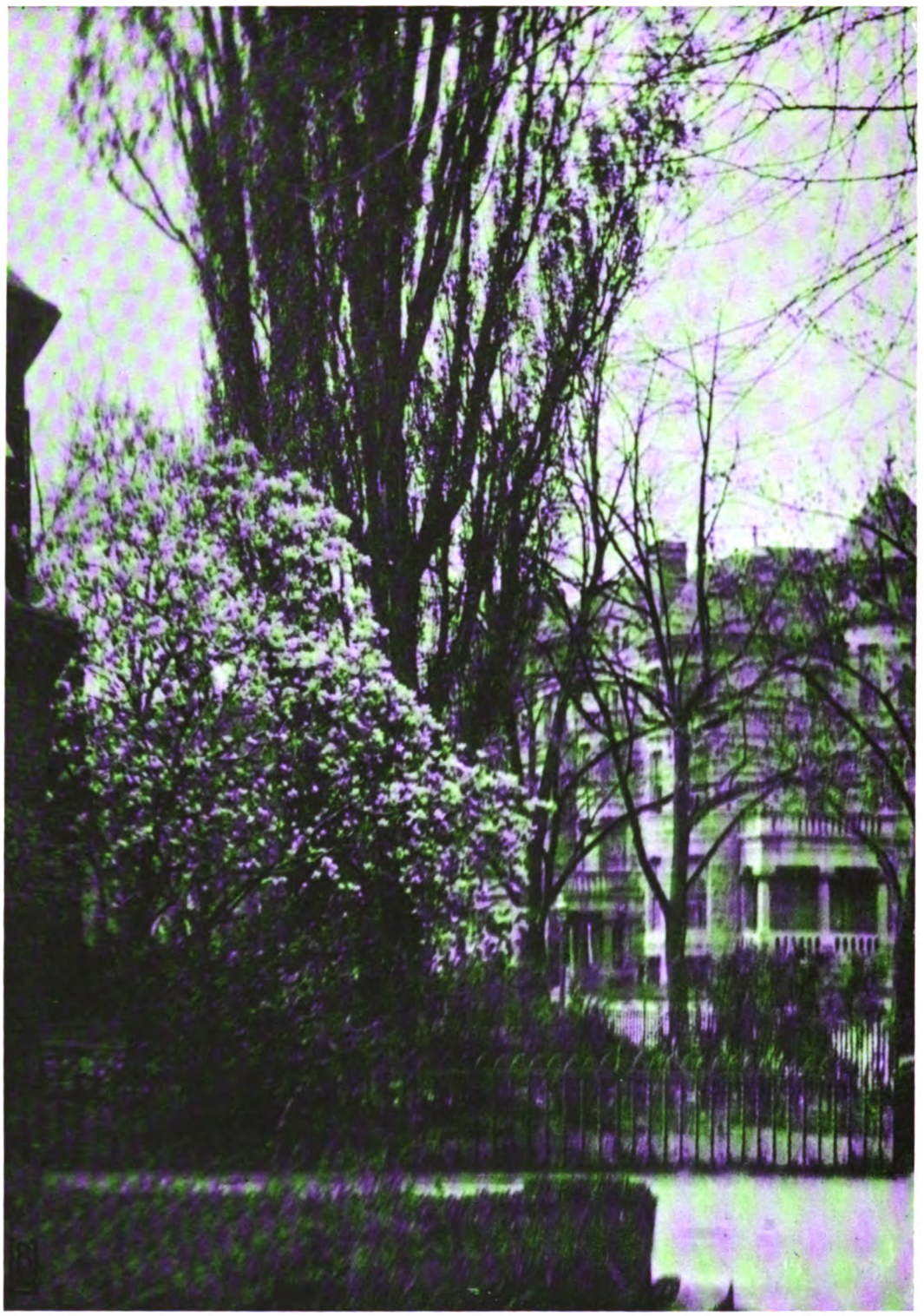
MEMORIAL FOUNTAIN ERECTED IN MCMILLAN PARK, WASHINGTON

Erected by citizens of Michigan in honor of James McMillan, Senator from Michigan, 1889–1902. Herbert Adams, Sculptor; Charles A. Platt, Architect. The design of the fountain was passed upon by the Commission of Fine Arts. A type of memorial suited to the development of the District of Columbia.

THE MEMORIAL TO FRANCIS DAVIS MILLET AND ARCHIBALD W. BUTT

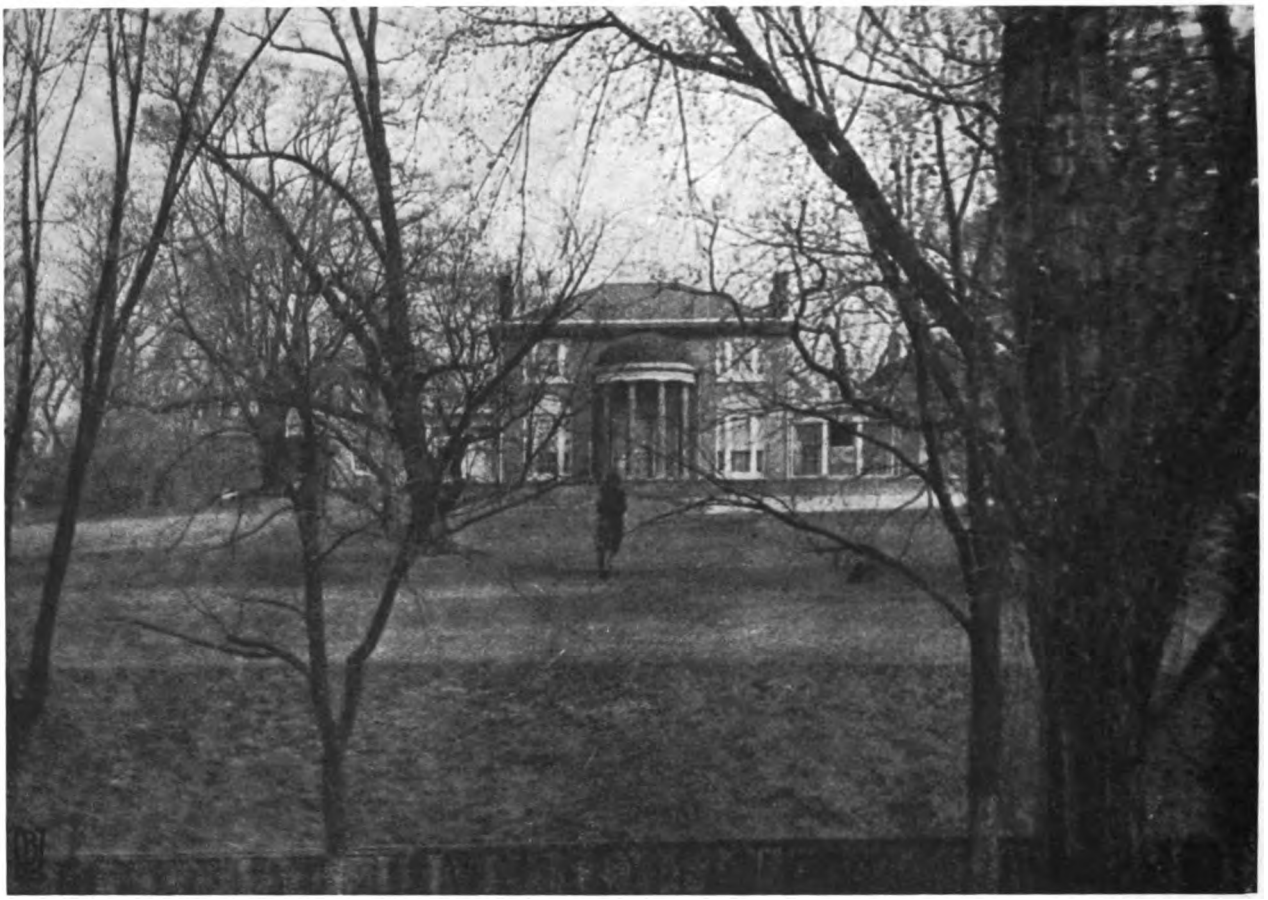
A type of memorial adapted to the adornment of the National Capital. Daniel C. French, Sculptor; Thomas Hastings, Architect.—Courtesy of the National Commission of Fine Arts.

New Hampshire Avenue in Early Spring



Magnolias, Ivory-White and Coral-Pink, with a Background of Delicate Poplar Green

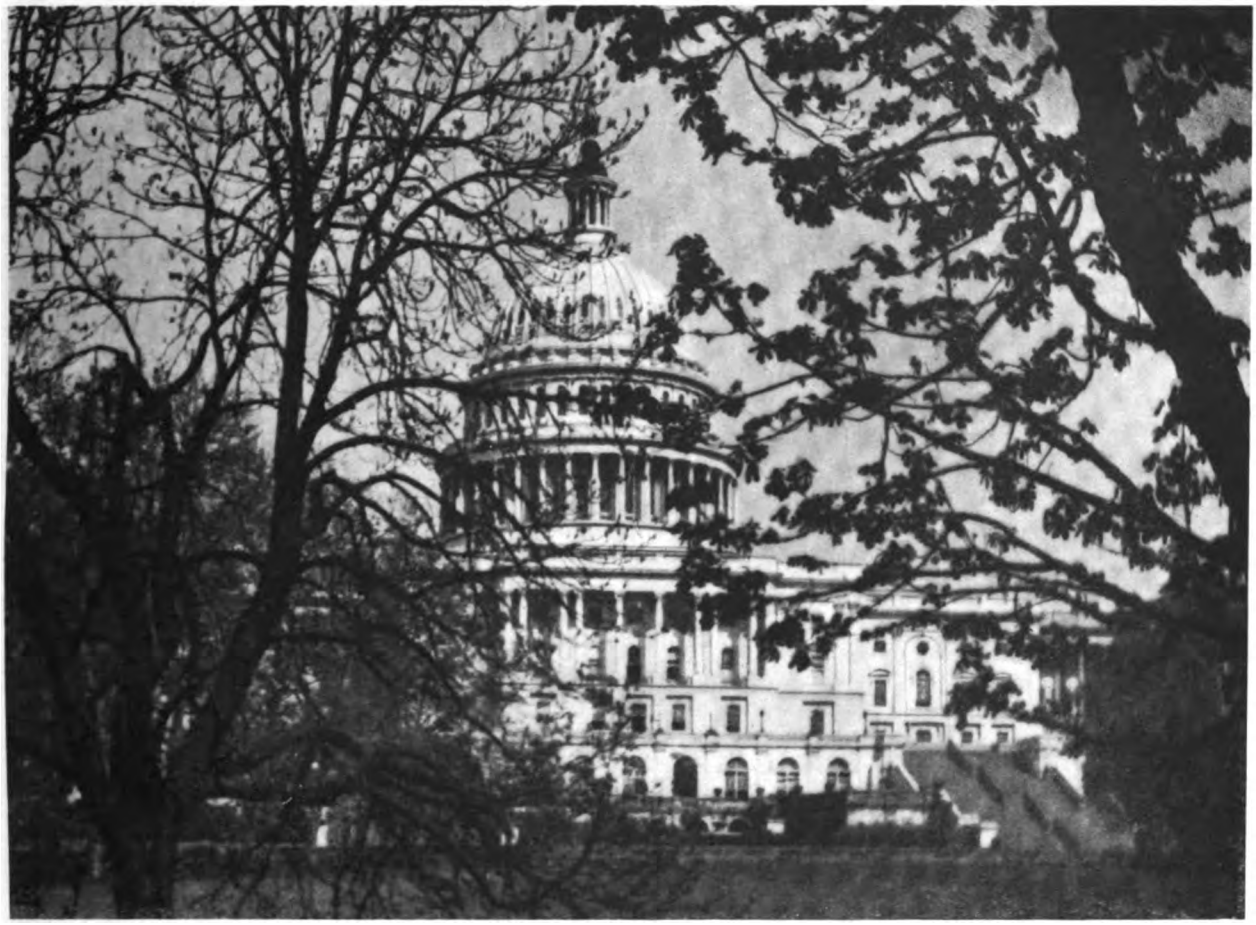
THE ENCHANTRESS OF WASHINGTON IS SPRINGTIME, WHO WRAPS THE CAPITOL IN A CLOUD OF SHIMMERING GREEN



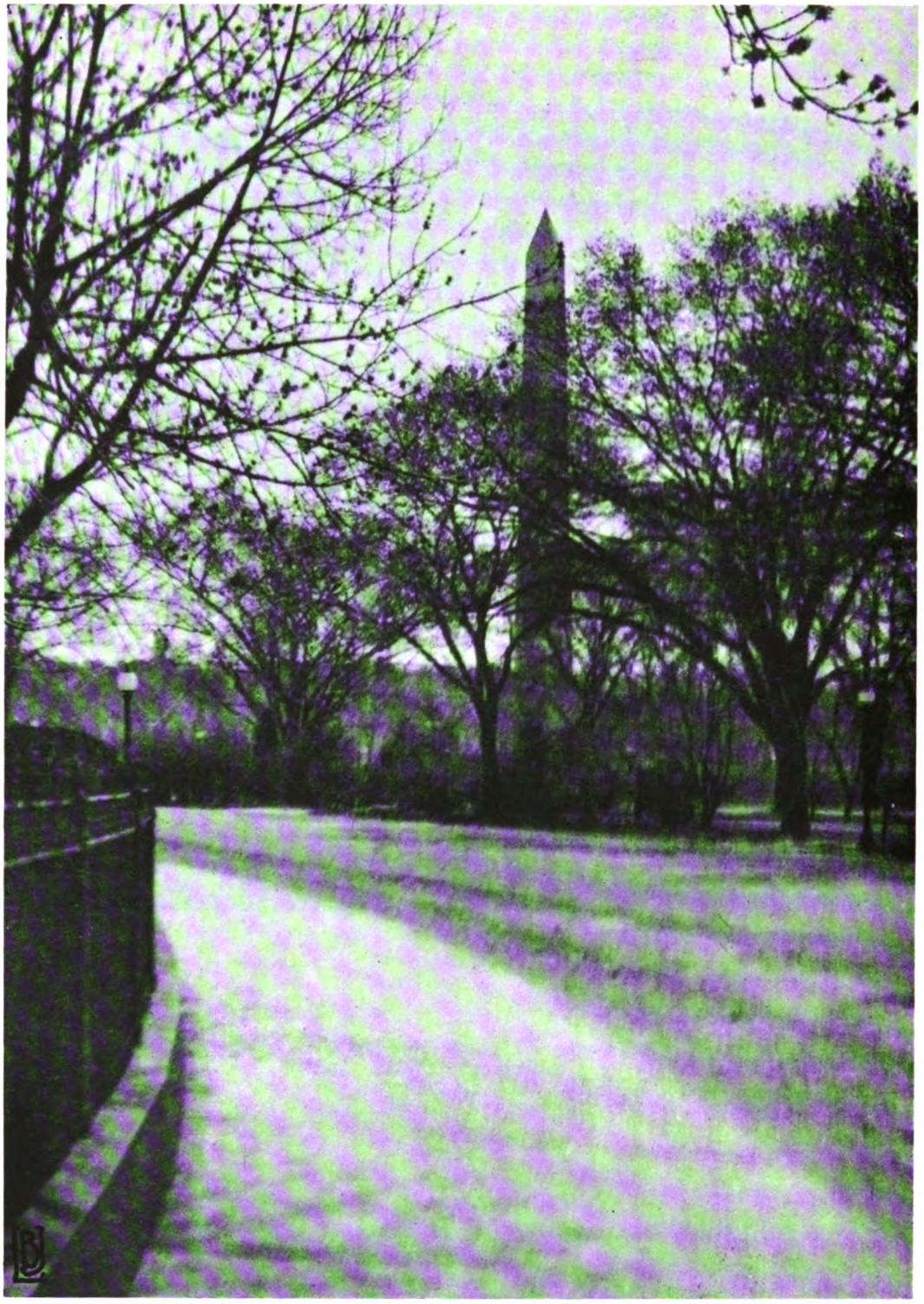
THE MANSION IN GEORGETOWN KNOWN AS TUDOR PLACE.—Designed by Dr. William Thornton, the architect of the Capitol and of the Octagon House.

On the Stucco Walls of Tudor Place the Morning Sun Weaves a Fleeting Pattern of Branch and Twig

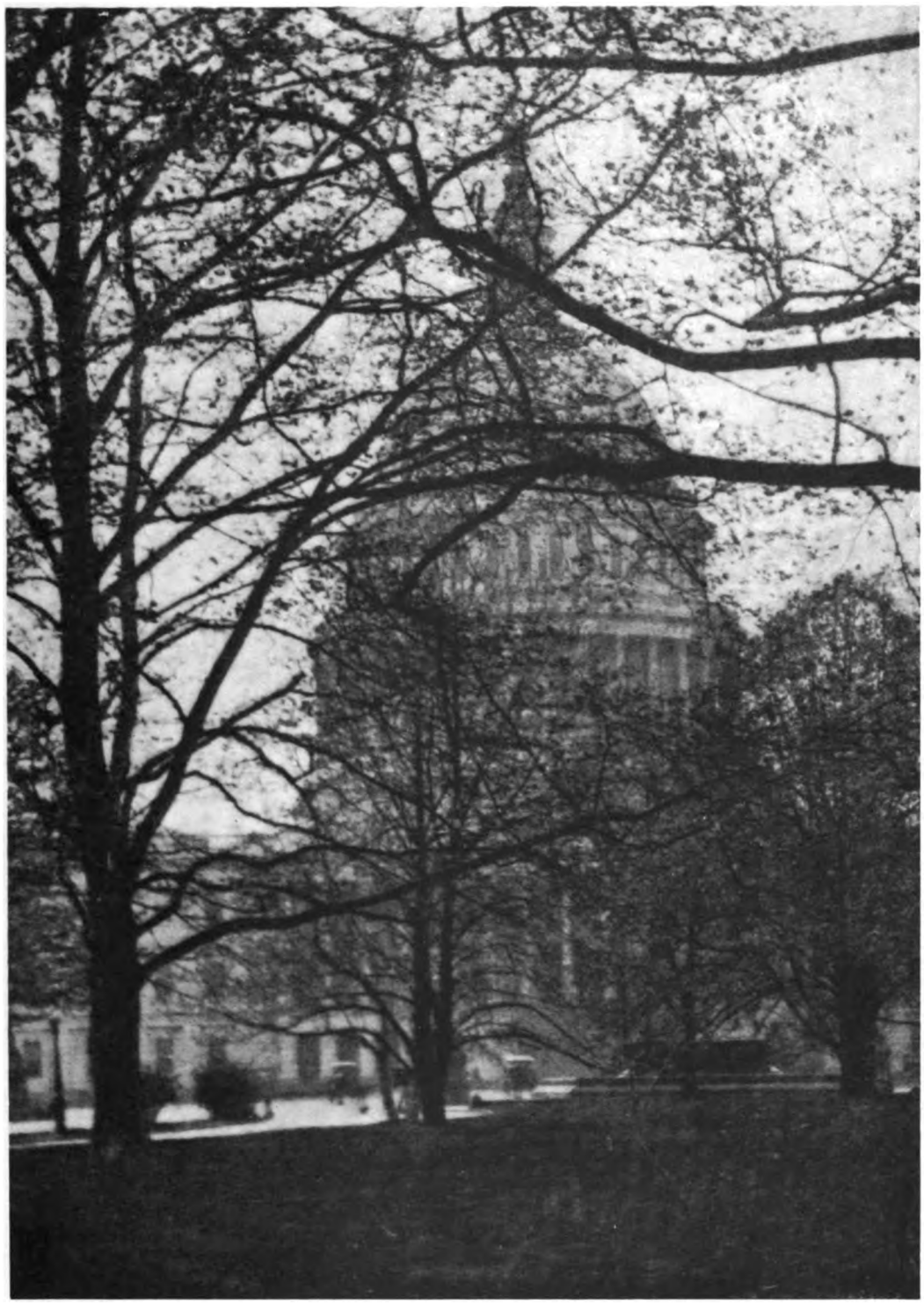
THE SIMPLE DIGNITY OF THE DAYS WHEN GEORGETOWN LOOKED ACROSS ROCK CREEK TO WHERE WASHINGTON WAS TO RISE FROM THE SLOPING PLAIN BESIDE THE POTOMAC



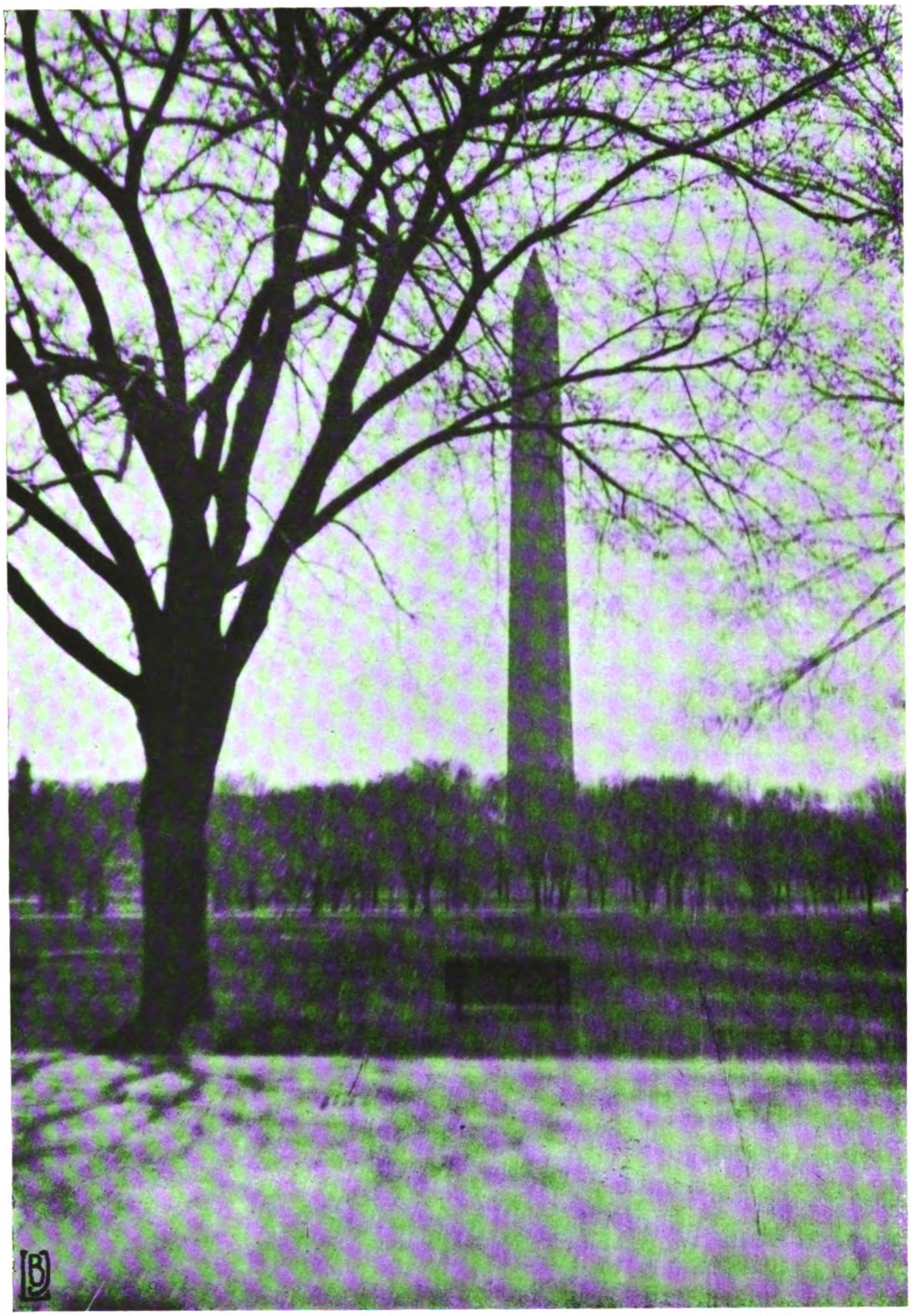
THERE ARE A HUNDRED FRAMES OF LEAF AND BOUGH IN WHICH ONE MAY SET THE CAPITOL



CHANGELESS, YET EVER CHANGING! WONDERFUL BY DAY—MORE WONDERFUL ON A STARRY NIGHT!



SOLEMN, DIGNIFIED, SERENE! SOMETIMES IT SEEMS THE SYMBOL OF AN INFINITE PATIENCE WITH THE TRANSIENT VANITIES OF MEN



LIKE A BENEFICENT SENTINEL RECALLING MEN TO THE LOFTINESS OF THAT PURPOSE WHICH A GRATEFUL NATION HAS HERE ENSHRINED

Beaux-Arts Institute of Design

Official Notification of Awards—Judgments of March 27 and April 10, 1917

Municipal Art Society Prize and Class "A," Fourth Projet

Jury of Award.—F. A. Godley, J. O. Post, L. Warren, F. H. Bosworth, Jr., C. W. Stoughton, R. F. Almirall, D. Barber, T. E. Blake, J. W. Cross, R. H. Dana, Jr., E. V. Meeks, S. Codman, M. S. Wyath, P. Schulz, H. L. Shay, Professor Leonard, H. W. Corbett, J. Wynkoop, F. C. Hirons, G. A. Licht.

Jury of Award for Awarding of Prize.—F. A. Godley, J. O. Post, L. Warren, F. H. Bosworth, Jr., C. W. Stoughton, R. F. Almirall, D. Barber, T. E. Blake, J. W. Cross, R. H. Dana, Jr., M. S. Wyath.

Program.—A Harbor Entrance. *Drawings submitted*, 92.

Awards.—First Prize ($50 and First Medal), A. C. Webb, Atelier Wynkoop, New York City.

Second Prize ($25 and First Medal), M. E. Boyer, Jr., Carnegie Institute of Technology.

First Medals, H. L. Smith, Carnegie Institute of Technology; R. W. Blaine, University of Pennsylvania.

Second Medals, R. S. Simpson, B. Cardwell, and P. O. Klingensmith, Carnegie Institute of Technology; O. E. Reagan, Columbia University; P. H. Harbach, Cornell University; J. Siegel, Atelier Hirons, New York City; L. Suckert and W. T. Sprout, Jr., University of Pennsylvania.

Class "A," Fourth Esquisse-Esquisse
Class "B," Fourth Esquisse-Esquisse

Jury of Award.—W. Emerson, W. Lamb, P. A. Cusachs, W. L. Bottomley, H. M. Woolsey, F. B. Chapman, H. R. Sedgwick, F. H. Haskell, G. H. Bickley. This Jury also served as Jury of Award for Class "A" and "B" Archæology, Fourth Projets and Measured Drawings.

Program.—Class "A," A Park Entrance. *Drawings, 34.*
Class "B," A Stairway. *Drawings, 43.*

Awards.—Class "A," Third Medals, J. P. Morgan, Carnegie Institute of Technology; L. C. Licht, University of Pennsylvania.

Mentions, E. R. Froese, Atelier St. Louis; P. J. Weber, University of Pennsylvania.

Class "B," First Mention, P. R. Williams, Los Angeles Architectural Club. Mentions, A. B. Lincoln, Atelier Hirons, New York City; R. A. Lockwood and S. H. Brown, Los Angeles Architectural Club.

Class "A" and "B" Archæology, Fourth Projet

Program.—A Dutch Living-Room. *Drawings, 16.*

Awards.—Third Medals, H. F. Almon, George Washington University.

Mentions, W. W. Roche and M. A. Higgins, Catholic University; H. F. Bremmer and W. J. Richards, Carnegie Institute of Technology; P. Meng, Atelier Hirons, New York City.

One Measured Drawing was submitted in this competition on which the following award was made: Mention, H. Marceau, Columbia University.

Pupin Prize Competition

Jury of Award.—F. A. Godley, W. Emerson, F. H. Bosworth, Jr., W. Lamb, J. O. Post, W. L. Bottomley, R. F. Almirall, D. W. Candler.

Program.—A Clock. *Drawings submitted, 42.*

Awards.—First Prize ($50), R. W. Hubel, Detroit; Second Prize ($25) G. M. D. Lewis, University of Pennsylvania; Placed, T. H. Buell, Columbia University; R. J. Richardson, Atelier Corbett, New York City.

Judgment of April 10, 1917

Class "B," Fourth Analytique

Jury of Award.—F. H. Bosworth, Jr., L. Warren, J. A. Gurd, G. A. Licht, H. W. Corbett, H. R. Sedgwick, H. P. Pennington, J. F. Harbeson.

Program.—A Loggia. *Drawings submitted, 134.*

Awards.—First Mention Placed, D. T. Hird, Carnegie Institute of Technology; G. F. Axt, Atelier Hirons, New York City.

First Mentions, A. C. Denison, B. J. Schreyer and L. G. Noyes, Columbia University; H. W. Stone and C. E. Silling, Carnegie Institute of Technology; J. A. Sovis, Cleveland Architectural Club; L. R. Warriner, Atelier Corbett, New York City; J. W. Wilson, and S. W. Konvalinka, Atelier Hirons, New York City; I. D. Harris, Atelier Swaine, San Antonio.

Class "B," Fourth Projet

Jury of Award.—F. A. Godley, C. L. Lawrance, W. Lamb, J. C. Mackenzie, Jr., H. Hornbostel, F. C. Hirons, Professor Burnham, W. P. Barney, A. Ware, B. Hoyt.

Program.—A Stairway. *Drawings submitted, 88.*

Awards.—First Mention Placed, J. P. Thompson and A. E. Middlehurst, Cornell University; R. G. Bergstrom, Carnegie Institute of Technology; A. B. Lincoln and M. E. Lavanoux, Atelier Hirons, New York City.

First Mentions, J. S. Whitman, W. Dunbar, C. A. Holcomb and W. G. French, Cornell University; J. P. Morgan, Carnegie Institute of Technology; O. Blomstergren, Columbia University; W. F. Kussin, Atelier Hirons, New York City.

Second Loeb Prize

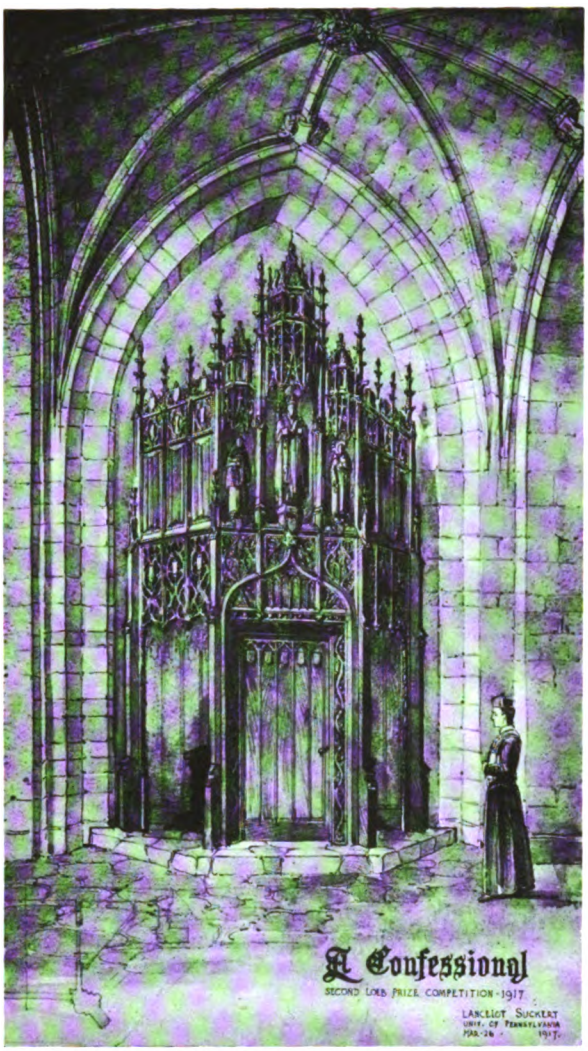
Jury of Award.—F. A. Godley, W. Emerson, F. H. Bosworth, Jr., W. Lamb, W. N. Taylor.

Program.—A Confessional. *Drawings submitted, 24.*

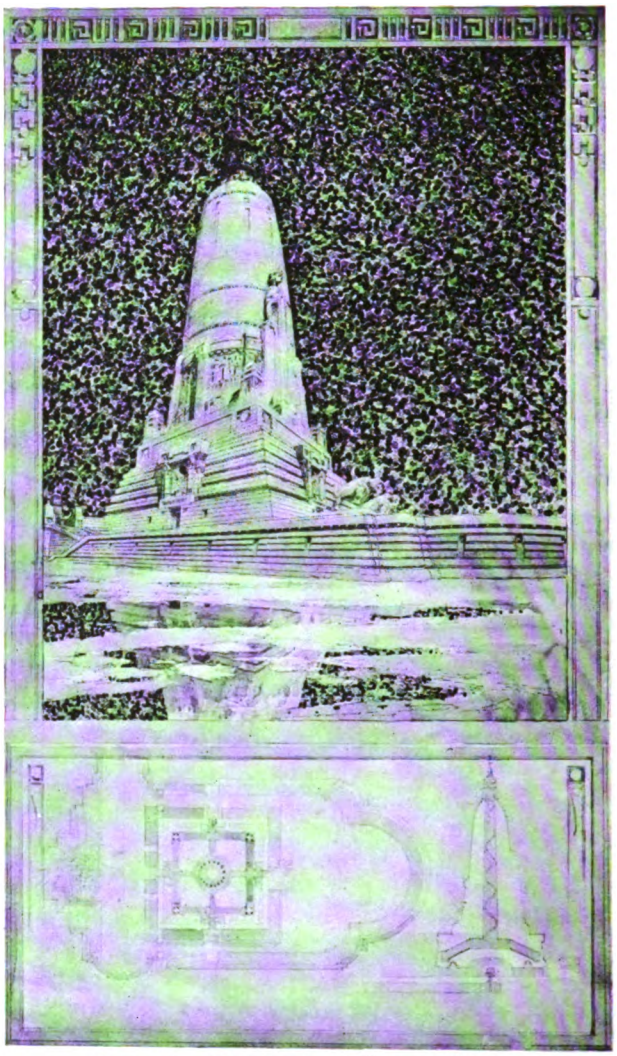
Awards.—First Prize ($50), L. Suckert, University of Pennsylvania; Second Prize ($25), W. F. McCaughey, Atelier Rebori, Chicago; Placed, M. E. Boyer, Jr., and C. H. Sorber, Carnegie Institute of Technology; F. J. Schlosser, Cleveland Architectural Club; J. J. Wade, Atelier Wynkoop, New York City.

(The First and Second Prize Drawings in the Pupin Prize Competition will be published in June.)

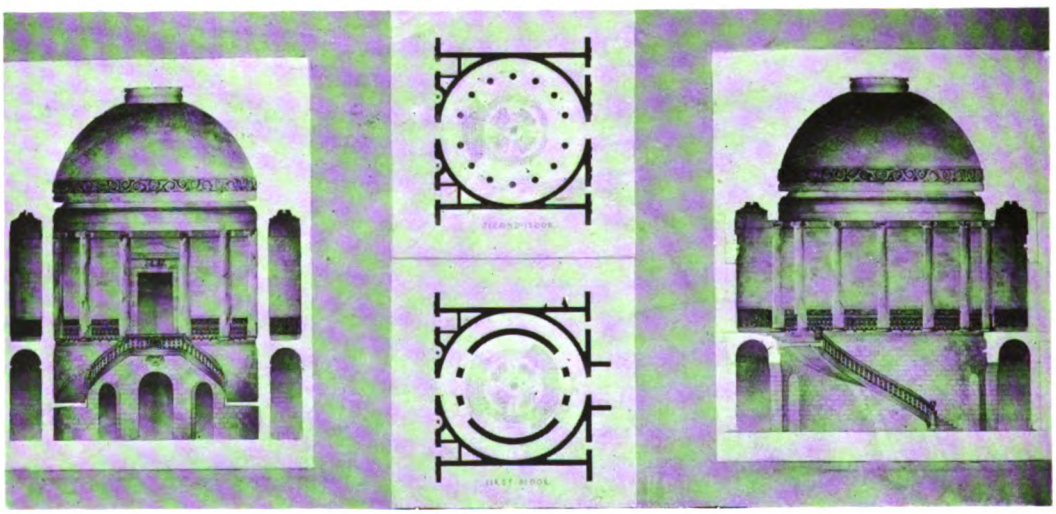
CLASS A AND B.—ARCHÆOLOGY.—IV PROJET—A DUTCH LIVING-ROOM
Third Medal, H. F. Almon



SECOND LOEB PRIZE COMPETITION.—A CONFESSIONAL
First Prize, L. Suckert

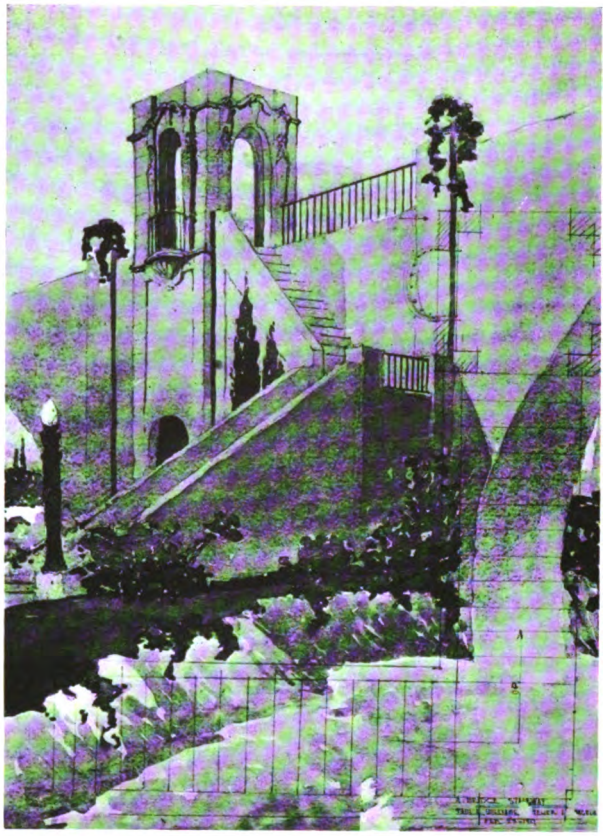


CLASS A.—IV PROJET.—A HARBOR ENTRANCE
First Medal and First Prize in Municipal Art Society Prize,
A. C. Webb

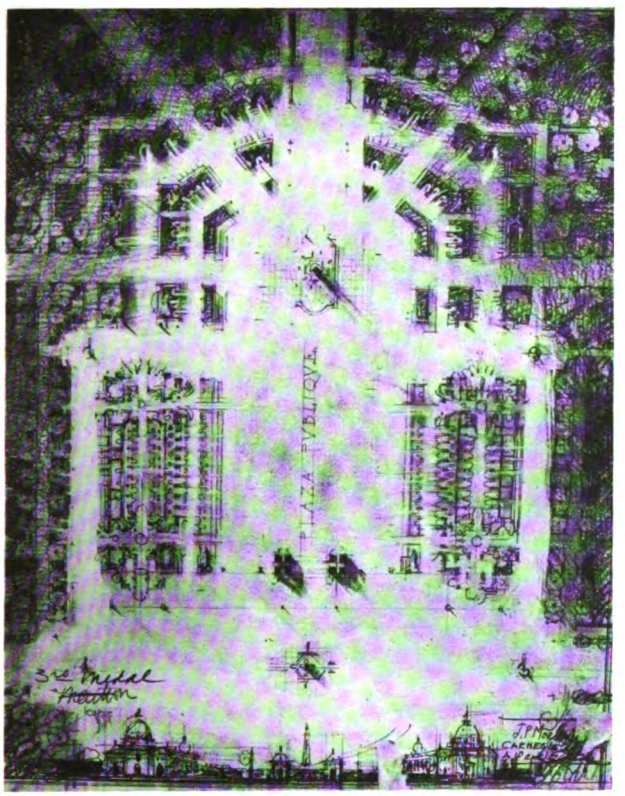


CLASS B.—IV PROJET.—A STAIRWAY
First Mention Placed, J. P. Thompson

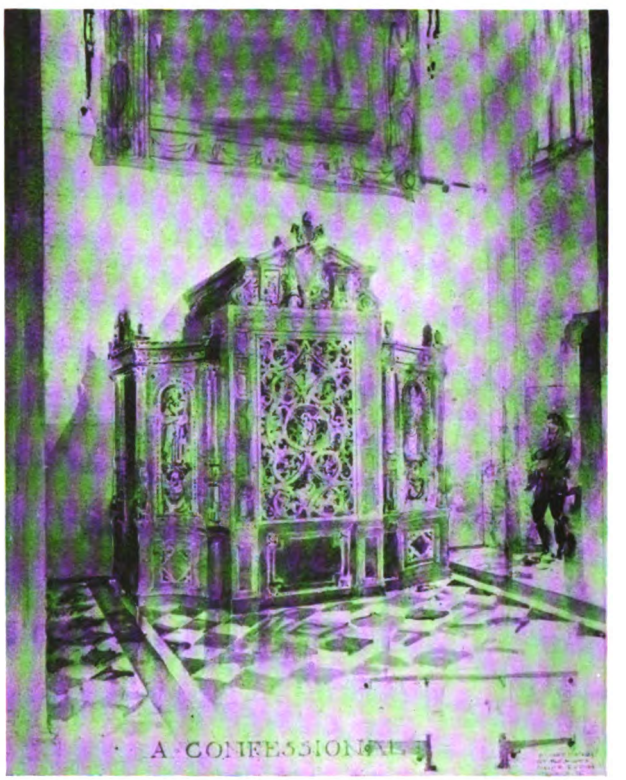
CLASS B.—IV ANALYTIQUE.—A LOGGIA
First Mention Placed, H. D. Hird



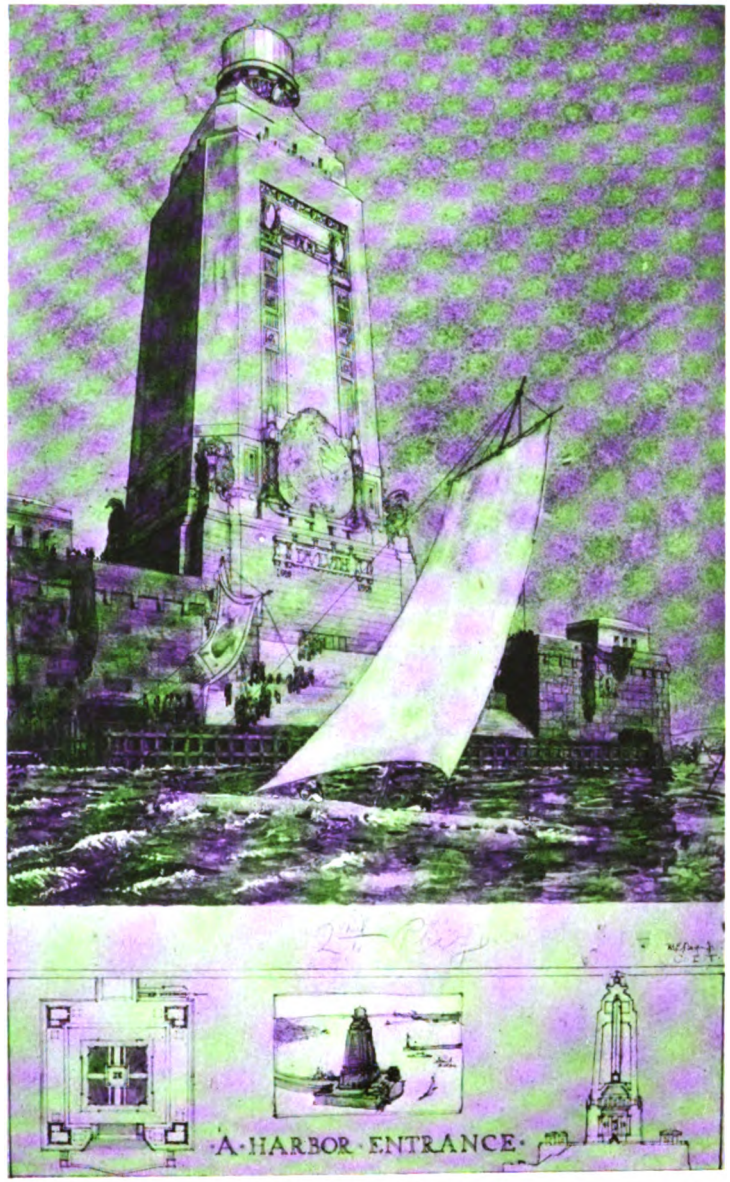
CLASS B.—IV ESQUISSE-ESQUISSE.—A STAIRWAY
First Mention, P. R. Williams



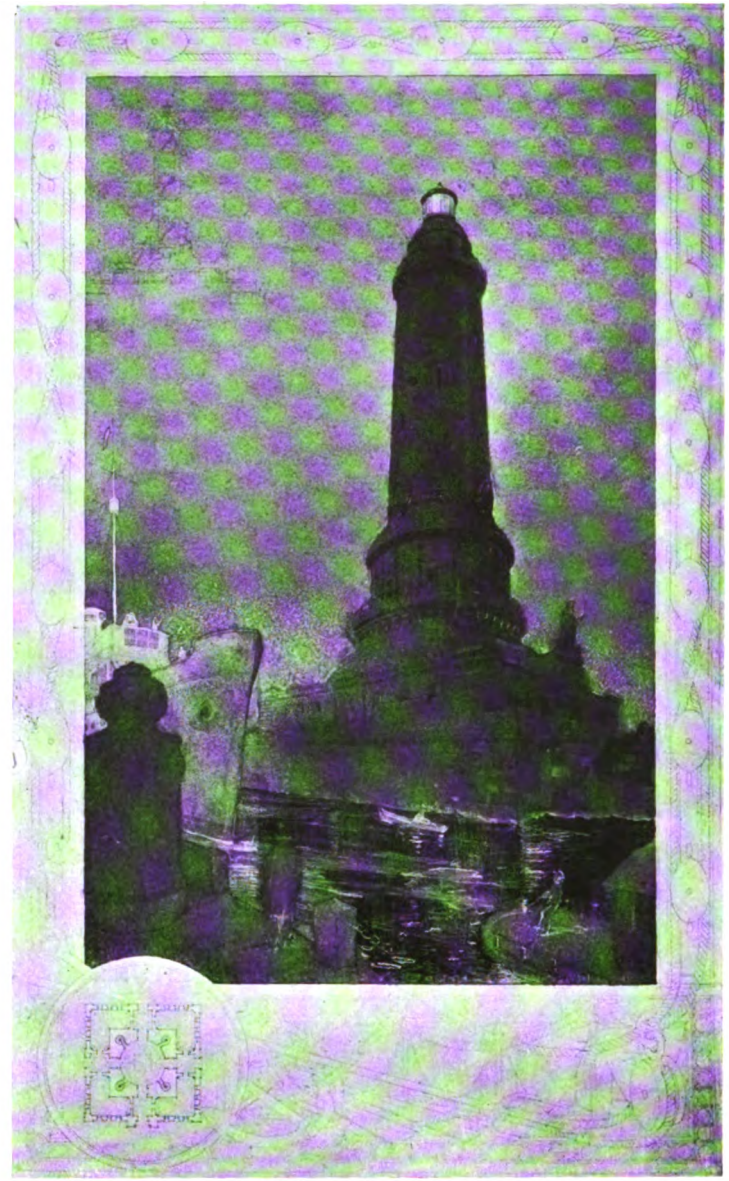
CLASS A.—IV ESQUISSE-ESQUISSE.—A PARK ENTRANCE
Third Medal, J. P. Morgan



SECOND LOEB PRIZE COMPETITION.—A CONFESSIONAL
Second Prize, W. F. McCaughey



CLASS A.—IV PROJET.—A HARBOR ENTRANCE
First Medal and Second Prize in Municipal Art Society Prize, M. E. Boyer, Jr.



CLASS A.—IV PROJET.—A HARBOR ENTRANCE
First Medal, H. L. Smith

How Shall We Teach Something About Art?

III. Basis of Esthetic Education

By FREDERICK L. ACKERMAN

As a general background against which I wish these thoughts to stand in silhouette, it should be stated that my conception of art, of esthetic values in life, corresponds—in fact, is based upon—the philosophy expressed in Santyana's "Reason in Art." This conception includes both the nature of art itself and the part it actually plays in the "Life of Reason." I also base my conception of what constitutes education upon the educational philosophy expressed by Dr. Dewey in his various writings upon that subject. In particular, I refer to his article in *The New Republic* of July 1, 1916, entitled "American Education and Culture."

The question with which we are primarily concerned is usually phrased as: How can we teach art? Sometimes it is: How can we teach appreciation of art? With not a few—in fact, with the vast majority—either of these questions expresses quite accurately what they have in mind. I am, however, not satisfied with these questions, for they fail to express the fundamental nature of the problem; and our conception of what is meant by the word "teach" focuses our attention immediately upon our traditional methods of imposing ideas or values, thus limiting our inquiry to the processes or the technique of teaching art. It is almost impossible to frame a question of this nature which expresses with any degree of accuracy the vague, questioning attitude which motivates our inquiry. Art, esthetics, teaching—each has accumulated a group of associate ideas which carry quite as much error as truth. The underlying thought and something of the attitude of inquiry may be expressed by the question: How can we stimulate an appreciation of esthetic values? This question is, I admit, inadequate, but it has the merit of shifting our associate ideas from the field of matter, things, art objects, to that of thought, of impulse and reaction.

Those of us whose conscious purpose has found expression in the desire to teach art or its appreciation surely agree with Dr. Dewey when he says: "I am one of those who think that the only test and justification of any form of political and economic society is its contribution to art and science—to what may roundly be called culture. . . . That America has not yet so justified itself is too obvious for even lament." It is indeed strange how little of this purpose has found expression in our teaching; how little it is understood by the many who write upon art, and how completely and utterly it is ignored by those who teach art or who are themselves artists. In our primary and secondary schools, in our preparatory schools and universities, there is little evidence that this thought has been given consideration.

One of the larger problems of modern education is that of developing a concept of life in which art—esthetic values—appear as a very definite goal of endeavor. In our system of formal education the value of art, the value of the esthetic, is ignored. This is the fundamental reason why our environment is so ugly, why our life seems so empty and purposeless. "Of all reason's embodiments art is . . . the most splendid and complete. Merely to attain categories by which inner experiences may be articulated, or to feign analogies by which the universe may be conceived, would be but a visionary triumph if it remained ineffectual and went into no actual remodeling of the outer world, to render man's dwelling more appropriate and his mind better fed and more largely transmissible. Mind grows self-perpetuating only by its expression in matter. What makes progress possible is that rational action may leave traces in nature, such that nature in consequence furnishes a better basis for the Life of Reason; in other words, progress is art bettering the conditions of existence."

Modern, formal education has held no such conception of progress as this. It has assumed that progress came first, and that then art might be applied to what resulted from progress. That esthetic values, that art, were material factors, were essential factors, is an idea which is not included in education's conception of its purpose. Education has recognized that there have been esthetic values in the past, and our art teaching for the greater part has centered about the dry and uninteresting process of cataloguing them. Our teaching about art has treated the entire field of esthetic expression as that which might be shifted about, quite as we shift pictures about in a room or change their frames. Our descriptive phrases have been little more than the faintest echoes of reality, with the result that the values we have set up appear not as the expression of life's impulses or as the stepping-stones of progress, but as something which has been thrown off by life in its progress through the centuries.

The broad problem, as I see it, is quite clearly stated by Dr. Dewey:

"Our public education is the potential means for effecting the transfiguration of the mechanics of modern life into sentiment and imagination We may, I repeat, never get beyond the mechanics. We may remain burly, merely vigorous, expending energy riotously in making money, seeking pleasure and winning temporary victories over one another. Even such an estate has a virility lacking to a culture whose method is reminiscence, and whose triumph is finding a place of refuge. But it is not enough to justify a democracy as against the best of past aristocracies even though return to them is forever impossible. To bring to the consciousness of the coming generation something of the potential significance of the life of today, to transmute it from outward fact into intelligent perception, is the first step in the creation of a culture. The teachers who are facing this fact and who are trying to use the vital unspiritualized agencies of today as means of effecting the perception of a human meaning yet to be realized are sharing in the act of creation. To perpetuate

in the name of culture the tradition of aloofness from realistic science and compelling industry is to give them free course in their most unenlightened form. Not chiding but the sympathy and direction of understanding is what the harsh utilitarian and prosaic tendencies of present education require."

This does not imply that all reference to art teaching should be omitted from our system of public education. It is rather suggested that we direct our efforts toward the problem of selecting those impulses which appear as most worthy and significant in modern life, and of guiding and directing those impulses to a more worthy expression. We flatter ourselves that our teaching in general and our teaching of art in particular are acts of this nature. It seems to me that by such an attitude we but fool ourselves and broaden the chasm which separates art and life.

To formulate an educational program which would accomplish this immensely difficult task is not the work of a day or many days. It is rather a theme for educational experiment. But educational experiment must have a beginning, and in view of establishing such a beginning I offer a few tentative suggestions which, while stated broadly in principle, at least apply to the entire field of formal education.

Our courses in the history of art or in appreciation of art are presented to the student as subjects in which the principal object is to distinguish what concensus of opinion has come to label the "good" and the "bad." This effort, as far as true appreciation is concerned, is worse than futile; for instead of developing an inquisitive attitude of mind in the student, independent thinking is suppressed by our acts of forever presenting conclusions.

We must understand about forms and form expressions of the past; such knowledge is essential to progress. We must also understand something of social history in order to progress. And in the same way that we should reach back into the past and link up social conditions of today with the background of events, so should we study form expressions.

Social conditions, past and present, should be examined through the two vehicles of expression, language and form (physical environment), not in isolated courses arranged remotely from each other in the curriculum, but in one and the same course. These two methods of expressions, language and form, were simultaneous, and if we hope to present the picture of the past with any degree of truthfulness, then these two expressions should be considered simultaneously in education.

Our courses in drawing are presented as courses in art; and the value of art not being well understood, drawing is naturally relegated to a place in the background of education. Drawing should not be presented as having as its direct object the production of art. It is in its essence a mode or manner of expression, a method of conveying ideas. It is like language in this respect.

Instead of isolating the subject of drawing and treating it as one in which the end is the production of pictures, it should become the vehicle—as language is the vehicle—through which ideas relating to every subject in the curriculum might be more clearly explained. The art of drawing—graphic representation—is in its essence the art of simple and direct statement. If one considers for a moment the simple forms scratched on the rocks by savage tribes, the truth of this statement is evident. These crude scratches may be the highest form of art, but it must not be forgotten that the purpose was direct expression. Drawing taught from this angle tends directly toward developing the power of simplification, of choosing the essentials and of making ideas vivid. There is no subject in the entire curriculum which possesses an equal value in this respect. If taught solely as a means to art production, its greater value is lost because technique immediately becomes the all-absorbing theme of interest. Drawing should be conceived as a form of expression.

Our first step in the teaching of geography might well emphasize a consideration of our immediate environment, not in view of merely learning the names of places, but from the standpoint of considering what man has made of his surroundings. If we have not made proper use of the natural advantages, if we have not provided sufficient open spaces, if we have polluted our rivers and destroyed their value from the recreation standpoint as well as endangering the health of communities, these might be considered as well as the mere physical features.

We teach the principles of ethics and moral relationship in the main through drawing upon the past. Our environment might well serve as the illustration if we wish to develop an understanding of what is meant by the application of moral principles to life. Improper housing, inadequate provision for light and air and recreation facilities, the effect of the greed of individuals in their use of property can all be made to illustrate the point that our conception of life is faulty. It is not necessary for us to establish a system of relative esthetic values. We may perfectly well leave this to the student to judge or appraise. What is essential is that in our general scheme of education we should point out that esthetic expression bears a definite relation to the social condition which produces it. It is only through some such inductive or suggestive process that it is possible to develop an appreciation of art which will represent more than the mere memorizing of phrases.

New Fellowships in the American Academy in Rome

To the Editor:

I am much pleased to note the appreciative comments of the Journal on the annual report of the American Academy in Rome. May I, however, ask you to correct one statement made therein to the effect that a fellowship was made possible through the contribution of Mr. A. W. Mellon? Mr. Mellon has been a generous contributor of a kind which we should greatly like to see largely increased in number, but the particular contribution to which you refer is the gift of Mr. A. D. Juillard.

It is of very great interest to know that, since the publication of the last report, the family of the late Daniel H. Burnham has contributed to the endowment fund of the Academy an amount sufficient to endow another Fellowship in Architecture, which is to be a memorial of Mr. Burnham and to bear his name.

Yours very truly,

C. GRANT LA FARGE, *Secretary.*

Idaho's New Registration Law and the Proposed Law for Pennsylvania

Idaho is the twelfth state (if our list is correct) to enact a Registration law. The law is entitled "An act to provide for the licensing of architects, and regulate the practice of architecture in the state of Idaho."

Despite its title and its length (3,000 words against New York's 1,300) one may hazard the guess that Idaho has one of the best laws yet passed. The following notes are intended to mention some of the salient details and also some of the serious faults of this law.

Board of Examiners: Five, one an architect or engineer member of the faculty of the state university and four architects of five years' experience. Five years might better be ten if art in the state were older. Term of office four years. Five might be better, thus bringing in not more than one new member each year.

The surplus fees paid over annually to the State Treasurer, instead of going into the general fund, "shall form the nucleus of a fund to provide for an advanced course of architectural study to be established in the University of the State of Idaho."

A regrettable feature of this law is that every man in the state who called himself an architect before the law went into effect can demand a license. In effect the Board of Examiners has no discretion but must issue to each a badge of competency, however poorly qualified he may be. This provision not only prolongs the time for raising the standard of education but at one stroke holds before the public the most unworthy architects as a standard sufficient for registered or licensed architects. That means a low standard which cannot be eradicated from the public mind in generations. The respect of the public for the profession will be deserved if a reasonably high standard of character and competency is adopted at once. Incompetent men may continue to exercise any right they had when the law went into effect, but a registration law should not place a seal of approval upon them.

One superfluous requirement of this law, which is a highly expensive and annoying nuisance, is that each architect must have a seal which is to be impressed on all drawings and specifications. Why not as well require physicians to seal every prescription?

Section XIX of this law undertakes the task of defining the word "architect" as one who designs or supervises buildings for others and to be constructed by persons other than himself, and proceeds by a peculiar definition of "a building" to eliminate from architecture pergolas or park shelters, smokestacks or railway track sheds a mile long, simply because they do not possess all of the three assumed essentials of a building, namely, "foundation, walls and roof."

Civil engineers are not limited to practice under their own proper title but are also required to call themselves architects if they design buildings. This will surely lead to jealousy and friction.

It seems hardly fair or wise to prohibit engineers from doing buildings under their own title. If they *wish* to call themselves architects then they should be required to qualify on the artistic side of architecture. Instead of trying to force engineers who may have no artistic inclinations to qualify esthetically, it is better surely to encourage engineers and architects to coöperate. An architect and an engineer in partnership make an admirable team, for instance, to do factory work.

A bill has been introduced in the Pennsylvania legislature which it is to be hoped will be amended before passage, but which, as introduced on April 2, 1917, on account of its good and bad features is worthy the study of other states where similar legislation is in prospect. In the first place its title is in excellent legal form, exact and comprehensive of the content of the act.

The bill provides seven in the Board of Examiners—two professors of architecture, one professor of engineering and four architects of ten years' practice, and all members of the American Institute of Architects.

"Architect" is better defined than in the Idaho law since the meaning of "building" is not limited.

The secretary and the treasurer of the Board of Examiners are given a combined total of $750 per year, and the other members must serve without pay beyond reimbursement for actual expenses. This, if legal, is surely a mistake. Few honest men can afford to give such laborious service for nothing, and others would be tempted to use their office and its influence dishonorably. Ten dollars a day for actual service is not open to serious criticism one way or the other.

The age twenty-five, general education two years high school, and experience of seven years—these requirements are an improvement over the New York law.

The reciprocal relation with other states as expressed in this bill is a conditional privilege which is likely to hamper the Board of Examiners in cases on which it would like to act. Compare with the New York and Idaho laws.

It may be predicted that $10 per year for renewing the license will be regarded as an objectionable tax.

The Board of Examiners is to own seals for all architects in the state and will have the pleasure of issuing and recalling and reissuing these seals. The architects pay the cost and enjoy as best they can applying impressions to all their drawings and specifications. Surely there is trouble enough without paying for such useless gratuities.

Pennsylvania in this bill proposes the same serious mistake which Idaho has made in giving every so-called architect a license tag. If the law is intended to encourage education and is to discriminate in future with higher standards, why not begin at once with at least some reasonable standard and grant certificates to architects now in practice who are doing legitimate work and refuse registration to those who cannot show an honest record and at least one or two decent buildings? Professional practice laws should fix some measure of skill and ability. Licenses are issued to peddlers and taxicabs for a different fundamental reason.

D. Everett Waid.

Book Reviews

City-Planning Progress in the United States.

Prepared by the Committee on Town-Planning of the American Institute of Architects. Edited by George B. Ford and Ralph F. Warner. Published by the Journal of the American Institute of Architects, The Octagon, Washington, D. C. $1.70 postpaid.

In its publication of "City Planning Progress in the United States—1917," the Institute's Committee on Town Planning has brought to completion a monumental work. The term monumental is used, not to suggest that the work is heavy—for it belongs to that class in which excellence of proportion, harmony of parts, and a certain lightness of detail give grace and charm—but, rather, to suggest its size and the permanence of its value, both commemorative and inspirational. The book is edited by George B. Ford, assisted by Ralph F. Warner, Mr. Ford being the chairman of the Town Planning Committee. Though he is himself one of the most prominent of American city planners, with many notable achievements to his credit, he has done, perhaps, nothing of greater importance to the profession that the preparation of this remarkable book.

To anyone who doubts the hold which city planning has taken upon practical Americans, or who questions the worth-whileness of the work done in its name, this volume makes conclusive reply. The data covers what has been accomplished, or is projected, in city planning in all cities of the United States of over 25,000 inhabitants, and in a few cities and towns where the population is even smaller but where the work is of special interest. The Editor declares that every statement is taken "either from authentic published reports or from signed statements made by responsible authorities in the respective communities," nothing having been accepted simply on hearsay. The reviewer may properly add that the mass of material thus obtained has been so well boiled down, and the unimportant and irrelevant matter (of which there must have been much) so fully eliminated that the Editor has been able to tell in something less than two hundred pages, clearly and interestingly, as well as concisely, the city planning ambitions and achievements of between two and three hundred communities. And not only that. He has been able, at the same time, to include scores of pertinent illustrations. The truth is, it is very hard not to write of the book wholly in superlatives. For once, the reviewer is tempted to speak of a volume with far less tempered enthusiasm than does its own Preface!

Another feature of the volume's compilation which must impress the reader is its up-to-dateness. With the exhaustiveness of an encyclopedia, it is as fresh in its material as a newspaper. Events which took place hardly more than a month before publication are included with as much nonchalance as if making a book were an overnight affair. That every city planning commission and city planner will keep it constantly at his elbow, goes without saying; that it will promptly gain a place in every public, sociological, and municipal reference library, may be confidently predicted; that any layman who wants to know what the city planning movement in America is, what concretely has been done by individual cities and individual city planners, should turn to this book, is the reviewer's advice. In its piling up of fact from city upon city, the volume offers an inspiration which gives to it the best kind of propagandist value.

The book's compilation of data from the towns and cities is supplemented by an introductory discussion on How to Get Started in City Planning, and by a Summary. The latter includes among its subheads, The Leading Accomplishments of the Year, Acts and Ordinances, State, Interurban and Metropolitan Conferences, County Planning, Instruction in City Planning, City Planning Abroad, and The Effect of the War on City Planning. Then comes a brief but admirable List of References on City Planning, compiled by Theodora Kimball of the Harvard School of Landscape Architecture, and finally a very complete topical index.

The book is not copyrighted. Newspapers and commercial and civic bodies are invited to quote from it, to the end that through its means the ideals of city planning may be extended to the utmost.—CHARLES MULFORD ROBINSON.

The Enjoyment of Architecture.

By Talbot Faulkner Hamlin. Duffield & Co. 1916. New York. 348 pp., illus. $2 net.

In this volume the author has essayed a difficult task. He has written a book intended to be acceptable and interesting to the layman, and it is evident at once that he has succeeded in the attempt. It may be argued that no architect can put himself in the place of a man untrained in architecture so as to judge fairly of a work of this kind. The reviewer has, however, verified his own judgment by consulting a number of laymen. The work appears not only to have proven acceptable to these laymen, but Mr. Hamlin seems to have supplied something that has long been needed.

Such subjects as the architect's materials, the fundamentals of planning, the meaning of style, the social value of architecture and the laws of form in architecture are discussed with ability and the arguments reinforced with illustrations from well-known historical examples. The discussion and illustration of unity and balance in design is particularly successful. Chapters on "The Decorative Material of Architecture" and "The Criticism of Ornament" could perhaps have been considerably curtailed, since the book is lacking in any adequate consideration for that all-important subject "How far shall the architect abandon the restraints of historic tradition in order to meet the needs of a radically changing world?" Such minor criticism and a question as to the validity of certain judgments expressed by the author seem unfair, however, in view of this admirable attempt to make cultured people look at and think about the buildings that surround them. It may not be a book for the trained architect, but it is the sort of book which he should recom-

mend to an actual or prospective client whom he wishes to make familiar with at least the basic historical principles of his art.—R. D. K.

Domestic Architecture. By L. Eugene Robinson. The Macmillan Co., 66 Fifth Avenue, New York. $1.50.

Mr. Robinson says his book "is intended for all who are interested in house problems" and hopes that "it may be of special service to those who are interested in the teaching of the house to students in colleges or in schools of economics." The writing of a textbook of value and interest to the lay reader as well as the professional is indeed a difficult task. The technical parts of this volume are too technical for the layman and too elementary for the professional, yet there is much that should prove interesting and valuable to both. One can hardly refrain from wondering, as one reads, whether the author has not attempted a Cook's tour through architectural design and building practice! There is much sound advice in many paragraphs, and those on color, decoration, and furnishing are especially good.

The sketch problems at the end of each chapter are quite inadequate for the student and entirely beyond the layman. The cost data is somewhat inaccurate and misleading, while the recommendations regarding construction are not always in accord with the best practice. The so-called "drafting-room manual" seems irrelevant and would have been far better omitted. The use of "lathe" for "lath" throughout the book, except in one or two instances, is a very unpleasant and annoying error. The glossary of architectural terms at the end of the book is concise and an exceedingly well-chosen list for the lay reader. The illustrations are numerous and very well drawn, and altogether there is much interesting matter in the book, though this is often obscured by material which is dry and out of place.—B. J. L.

News Notes

Central Committee on Preparedness

The Committee has continued its work of classifying and card-indexing the replies received from the circular letter sent out last month, as reported in the editorial columns. There follows a supplementary list of those architects who are now attached to the military service.

Mr. John Davis Hatch, San Francisco, Cal., Lieut., Coast Artillery, N. G. of Cal.
Mr. Harold M. Kingston, Rochester, N. Y., Troop H, 1st N. Y. Cavalry.
Mr. Sherley W. Morgan, Princeton, N. J., Co. L, 2nd N. J. Infantry.
Mr. Herbert A. Blogg, Seattle, Wash. Applied for O. R. C.
Mr. Harold W. Doty, Portland, Ore., N. G. of Ore.
Mr. Hermann Wischmeyer, Louisville Chapter, Class of Instruction, Engineer O. R. C.
Mr. Charles F. Norris, Gary, Ind., Sergt., Co. F., 1st Ind. Infantry.
Mr. Arthur B. Drake, Key West, Fla., Ensign, U. S. N. R.
Mr. A. E. Sprackling, Cleveland, Ohio, Past Commander, Cleveland Grays.
Mr. Charles Werner, Brooklyn, N. Y., O. R. C.
Mr. George E. Parsons, Boston, Mass., 1st Corps Cadets, N. G. of Mass.
Mr. Harrison H. Atwood, Jr., Boston, Mass., 1st Corps Reserve, N. G. of Mass.
Mr. Alex. G. Donaldson, Michigan Chapter, Chief Boatswain, Lake Patrol Service.

Industrial Safety Commission

President Mauran has appointed the following to serve as a Committee to represent the Institute in the Industrial Safety Commission: Messrs. Owen Brainard, Elmer C. Jensen, D. Everett Waid, with Robert D. Kohn as Chairman, and the President a member ex-officio.

Personals

Messrs. Charles H. Bebb and Carl F. Gould, Seattle, have removed to 1005 Securities Building, that city.

Mr. Harry Leslie Walker, New York City, announces his removal to 19 West Forty-fourth St.

Mr. Alfred Rosenheim, Los Angeles, has removed his offices to 1124 Van Nuys Building.

Mr. Charles Butler, of New York City, announces the removal of his office to 56 West Forty-fifth St.

Next Housing Conference

National Housing Association, Chicago, October 15 to 17, 1917. Headquarters, Hotel La Salle. For information inquire of Lawrence Veiller, Secretary, 105 East Twenty-second Street, New York City.

New York State Registration Law Amended

The four amendments described by Mr. Waid in his article in the April Journal (page 160) have now been duly enacted into law.

Corrections for the Annuary

The Executive Secretary announces the following:

Since the publication of the Annuary, A.I.A. Document, Series A, No. 122, the following corrections have been brought to the attention of the office of the Secretary at the Octagon:

Honorary Members:

The address of Violet Oakley should read "Cogslea," Allen's Lane Station, Philadelphia, Pa.

The reference to Viscount Bryce, should appear—Bryce, James, Viscount of Dechmont, Hindleap, Forest Row, Sussex County, England.

Honorary Corresponding Members:

Honorary Corresponding Member Richard Phene Spiers is dead, and his name should be transferred to Honorary Corresponding Members Deceased.

Alphabetical List of Fellows and Members:

The name of Alfred S. Joseph was omitted by mistake from the alphabetical list and from the roll of the Louisville Chapter. It should appear in each place.

Obituary

William Rotch Ware

1848–1917

William Rotch Ware, educated as an architect, first at the Massachusetts Institute of Technology in its early days and later at the Ecole des Beaux Arts, became, at the age of twenty-eight, the editor of the *American Architect*, and devoted thirty-one years of a very earnest and industrious life to that journal. During this period the art of architecture in America developed from an imitative admiration for many peculiar expressions of both French and English antecedents, crudely performed, to many admirable examples of studied, refined work thoroughly consistent with modern conditions and appreciative of the best of the past. Eccentricity, gradually yielding to sanity, with the standard of requirement constantly rising, was accompanied by corresponding improvement in the art itself. During this period Mr. Ware as editor of the *Architect* made it the exponent of the advancing interest in architecture. His editorials and comments were stimulating to the best efforts and enlightening as to the best purposes and results. Recognizing the fact that architecture is one of the three fine arts, he held it high and stated its ideals. By the public as well as by the profession, the *Architect* was welcomed for its frank and fearless advocacy of the best in study and design. He obtained critical articles at a time when ignorance of architecture was profound, and the journal occupied the position of being one of the few American weeklies which was frequently quoted abroad. Under his hands it became a forum for all subjects related to the profession. His brusque personality thinly veiled a sincere and kindly humor, associated with an intolerance for shams and a dislike for suavity. Though he at times regretted that he had not been active in the actual work of his profession, his influence as an editor was so unique that no such regret was justifiable.

In a formative and adolescent epoch in American Architecture he fostered high ideals, guided endeavor and called attention to achievements, and therefore encouraged all that was best in the art—a work which was widespread in its influence and well befitted the man who devoted his life to it so successfully. Few have more materially benefited the work of their profession than Mr. Ware did with his pen instead of with his pencil.

C. Howard Walker.

Samuel Huckel, Jr.

Elected to the Institute in 1881; to Fellowship in 1889. Died at Philadelphia, April 18, 1917.

Mr. Huckel was born in Frankford, Pa., in 1858, and began the study of architecture in the office of Mr. Benjamin D. Price. He later traveled extensively, and in 1883, entered into partnership with Mr. Edward Hazelhurst. The Manufacturers' Club at Philadelphia, the Executive Mansion at Harrisburg, the Odd Fellows Temple, and the Church of the Messiah, Philadelphia, were some of the works of this firm. Mr. Huckel received the commission for remodeling the old Grand Central Station at New York City, about 1900, at which time the partnership was dissolved. In 1902 the firm of Watson & Huckel was established, continuing until Mr. Huckel's death. By this firm there were designed, among many other buildings, the Union Station, Worcester, Mass.; the New Monmouth Hotel, Spring Lake, N. J.; the Monterey Hotel, Asbury Park, N. J.; St. Mark's Church, Frankford, Pa.; Christ Church, Norfolk, Va., and the Cumberland County Court House, Bridgeton, N. J.

Town-Planning and Housing

GEORGE B. FORD, Associate Editor

The Architect and City Planner*

Even a casual glance at the status of city planning as a science in this country at the present time reveals two fundamental obstacles to success which it is our bounden duty to effectively attack and overcome. The first, and probably the more familiar, is that insistent and ever-recurring gibe, which shows the confusion in the lay mind of the highly trained city planner with the dreamer of the old "city beautiful" type. We, as architects, have long shared the opprobrium conveyed by the term "dreamer," at least in the sense as employed in the periodical attacks on the profession in Congress and by those ever-sternly practical organizations which might, without injustice, be termed "designing contractors."

"Dreamer" in its true sense, and in the sense in which it properly applies, is very different, for no project with breadth of scope, with far-sighted vision, was ever conceived save in the mind of the dreamer who could translate his dream into terms of a practical reality. Nevertheless this misconception is one of the bars to progress which we must break down.

The other obstacle was very happily and wittily treated in the brilliant address made at the Fiftieth Convention of the American Institute of Architects, by President Vincent of the University of Minnesota, who outlined the growth and development of this vast unwieldy country

*Address made to the City Planning Conference in Kansas City, May 9, 1917, by John Lawrence Mauran, President of the American Institute of Architects.

of ours, in every section of which the spirit of the frontiersmen, who must of necessity know a little in every field of effort, still persists, and where the most self-sufficient and complacent of this distinctly American type of "know-it-all" is the logical candidate for high office. This type of man resents above all things the thought that expert opinion on any subject under the heavens can, by any chance, be superior to and therefore helpful to his own.

You would be amazed to know how often and under what curious conditions this resentment of expert advice has been shown to the American Institute of Architects, but personal experiences in many communities support the truth of such a statement and this second bar to progress must be broken down. I wish to emphasize some of the important services which the architectural profession can render in city planning, and, conversely, some of the fields in which the coöperation of city planners, with all the ramifications of their interests and contacts, can assist architects. I have referred to the bars to progress caused by the attitude of the lay mind, but the Institute, in the campaign it seriously inaugurated in Minneapolis last December, is striving to secure an intelligent and comprehensive handling of the Government's vast and continuing architectural program.

Any accomplishment of its purpose in that tremendously important field is bound to make its impress on every local community, as well as nationally, and one of the principal means of attaining that end is by the development of public opinion, because public opinion is the last word in determining the vote in Congress.

The vast army of laymen, the thinking, conscientious busy men of affairs who have become absorbed in the cause of city planning, constitutes the strongest force in the way of public opinion that could possibly be marshalled together. For the advancement, therefore, of the causes which we represent, and in which there is a singular unity of interest, let us work shoulder to shoulder in the disproving of worn-out theories, and in the building up of an understanding of that truth, however little it is at present understood, that utility, efficiency and beauty can and should be combined in the solution of any architectural or city-planning problem, provided the expert, to whom that truth is a creed, be trusted in the field which he has made his own.

How best can this be accomplished?

First of all, I would answer, by establishing between us that mutual respect and confidence which is the basis of all coöperation.

After all, the city planner *per se* and the architect belong to the same profession, and if one happens to have specialized in his planning in the laying out of cities and communities, while the architect has specialized in the planning of buildings, nevertheless, neither one is effective in his own calling without that breadth of fundamental training which prepares the designer of today to solve the complicated problems which occur in almost every commercial and monumental structure.

I have always held by the belief laid down by the late H. H. Richardson who, as you may know, spent eight years at the Ecole des Beaux Arts, and who said, in defending (as one had to in the early days) the Beaux Arts method of planning on broad lines, so familiar to us today, that an architect who could design a charming country house was not qualified by that fact alone to undertake the planning of a state capitol, but that the converse of that proposition is absolutely true—that the architect equipped and qualified to plan and design a state capitol could well be trusted as the designer of a country house.

I think you must see the force of the argument, for it is only through training on the broadest fundamental lines that a foundation can be laid for capable work in the specialized fields.

At the present moment, when we stand face to face with war conditions, without adequate preparation in so many of those fields where our expert knowledge might be of service, it must be an inspiration for city planners to feel that they have that special knowledge available for our Government, which they are ready and anxious to contribute as soon as the fields in which it can be employed are realized and recognized by those in command.

We stand here together at an hour when every impulse impels us toward the offer of active service, which all long to perform for our country, and in impressing upon you the gravity of the task that has been undertaken, and in urging upon you to make haste slowly, I do it in the full conviction that before us lies a field of service in which the finest patriotism may be displayed, the harvest of which will be of incalcuable value and benefit to our Country, to the Cause, and to Civilization!

Ninth National Conference on City Planning Held at Kansas City, May 7–9, 1917

Not since the National City-Planning Conference was organized in Washington, nine years ago, has there been an annual meeting more profitable to those attending than that held in Kansas City on May 7–9, last. Apart from the discussions in the proceedings of the Conference, to which reference will be made, the opportunity which the delegates enjoyed to study at first hand the notable contribution which Kansas City has made to the solution of planning problems lent peculiar interest to the program, which was specially designed to emphasize certain aspects of practical local problems that were likewise of interest and importance to other cities in America. The interurban passenger terminal problem, now a vital one in Kansas City, and one which is now being intensively studied, was discussed by George A. Damon, Dean of the Throop College of Technology, Pasadena, Cal. The correlated problem of the industrial terminal, to which Kansas City is devoting much attention, was discussed by A. Pearson Hoover, Consulting Engineer, of New York City. Closely related to these problems are those dealing with traffic-ways and street-widening, the former discussed by Curtis Hall, City Engineer, of Kansas City, and the latter by Nelson P. Lewis, Chief Engineer of the Board of Estimate and Apportionment of New York.

But Kansas City's most notable advance in city planning and civic improvement is exemplified in her remarkable park system, which in its completeness, its pervasiveness, in the way it reaches every quarter and section of the city, is unexcelled by that of any other city in the world. It was to this phase of the problem that three of the most illuminating and valuable addresses were devoted, namely, that by Frederick Law Olmsted, landscape architect, on the "Treatment of Water Courses, with Special Reference to the Needs of Kansas City;" that by William Buchholz, President of the Park Commission, on the "Way in which Kansas City Acquires Its Park System;" and that by the designer of the park system, George E. Kessler, who emphasized the relation of the existing system to the present and future city plan.

At one of the sessions held on the second day of the Conference, consideration was given particularly to the work of organizing and conducting city planning. George B. Dealey, publisher of the *Dallas News*, presided. His work in propagandizing city planning in Dallas and other cities of Texas is among the most remarkable accomplishments of recent years. Albert Schaaf, secretary of the Real Estate Association of Indiana, told of the remarkable state campaign for city planning which was conducted in Indiana during the latter part of 1916. Other addresses dealt with the inauguration of work in small cities, accounts of which were give by Henry L. Goemann, chairman of the City Planning Commission of Mansfield, Ohio, and George E. Kessler of St. Louis. At the second session on the same day the delegates listened to Thomas Adams, Town-Planning Adviser of the Commission of Conservation of Canada, on the subject of "The Development of the Plan." Mr. Adams' work in England as adviser to the Local Government Board, in whom is vested the authority for administering the Town Planning Act of 1909, and his subsequent service in creating a remarkable enthusiasm for city planning in Canada, enabled him to speak with peculiar authority and forcefulness of this important phase of the city-planning problem.

At the evening session of Tuesday, May 8, the most timely topic from the city-planning standpoint, and one which is probably being more widely considered in cities of America than any other, was discussed. This is the subject of districting, or zoning, to the exposition of which Edward M. Bassett and Lawson Purdy, both of whom have been intimately connected with the remarkable districting work that has been enacted into law in New York City, brought their unique and valuable experience.

The session on Wednesday, May 9, was devoted to a general discussion of city planning from the standpoint of the practical needs and experiences of cities in America.

The opportunity which those who attended the Conference had to visit and study the great works which Kansas City has completed or has under way was worth as much, if not more, than any other part of the remarkable program of the Conference. It is certain that all those who had a chance to observe the remarkable park system came away with a strengthened conviction that the issues with which city planning is concerned are among the most vital and important of any which the cities of America are called upon to solve.

The Legislature Passes Housing Code for Minneapolis

After five years of agitation and effort by the Civic and Commerce Association of Minneapolis, the Minnesota Chapter of the American Institute of Architects, the Real Estate Board, the Builders' Exchange, and labor organizations, the Legislature of Minnesota has at last passed the housing code for Minneapolis, which, combined with the new building code secured by that city last year, will give it first place among the American cities that have taken steps to protect homes against inadequate light and ventilation, unsanitary conditions, and fire hazard.

The movement for better housing in Minneapolis is of special interest as showing in the most convincing manner the strongly intrenched position which the modern commercial organization is taking in matters pertaining to civic improvement. The Civic and Commerce Association, through its Committee on Housing, led the movement for a comprehensive housing code from the beginning. For the actual work of investigation on the housing problem of Minneapolis, Otto W. Davis was engaged several years ago. Mr. Davis had accomplished the passage of a modern housing code in Columbus, Ohio, the first code in this country to apply to the one-and-two family houses regulations similar to those which had hitherto been applied only to tenement houses. Lawrence Veiller, Secretary of the National Housing Association, coöperated in preparing the proposed code. Progress in this work was described in the Journal for August, 1915, where reference was made to the publication of a comprehensive report on housing, of which 4,000 copies were circulated by the Association. Following the publication of this report, the newspapers took up the fight and were united in their demand for the passage of laws that would prevent any increase in housing ills. An attempt was made at the Legislature of 1914–15 to secure the passage of the code prepared by the Civic and Commerce Association, but it failed for political reasons. Since then, public opinion has had greater opportunity to observe the workings of unrestricted housing. The new code is the result.

Interesting features of the Minneapolis code are a provision limiting the height of dwellings, except hotels, to six stories and basement or seventy-five feet, and a provision requiring side yards proportionate to the height of buildings. The code is available for any other city in the state which desires to use it. Many men labored hard and unselfishly to secure this legislation, and their names will be recorded in the annals of better housing for Minnesota.

American City-Planning Institute

At the Ninth Annual City-Planning Conference, just described, it was unanimously voted to change the loosely organized Conference into a City-Planning Institute. A constitution was adopted and the following officers elected: President, Frederick Law Olmsted; Secretary, Flavel Shurtleff. The offices continue at 19 Congress St., Boston.

Structural Service Department

In connection with professional societies and organized bodies working toward the improvement of building materials and methods, and the following Committees of the Institute:

BASIC BUILDING CODE

WILLIAM B. ITTNER, *Chairman* . . . St. Louis
W. W. TYRIE . . . . . Minneapolis
G. F. A. BRUEGGEMAN . . . . . St. Louis
OWEN BRAINARD . . . . . New York
ROBERT STEAD . . . . . Washington
E. D. LITCHFIELD . . . . . New York

FIRE-PREVENTION

ROBERT D. KOHN, *Chairman* . . . . New York
W. L. PLACK . . . . . Philadelphia
G. C. NIMMONS . . . . . Chicago
JOHN R. ROCKART . . . . . New York
CHARLES H. BEBB . . . . . Seattle
LYMAN A. FORD . . . . . New York

CONTRACTS AND SPECIFICATIONS

FRANK MILES DAY, *Chairman* . . . . . Philadelphia
M. B. MEDARY, JR., *Vice-Chairman* . . . . . Philadelphia
ALLEN B. POND . . . . . Chicago
SULLIVAN W. JONES . . . . . New York
FREDERICK W. PERKINS . . . . . Chicago
JOS. EVANS SPERRY . . . . . Baltimore
J. A. F. CARDIFF . . . . . New York
GOLDWIN GOLDSMITH . . . . . Lawrence, Kan.
JULIUS FRANKE . . . . . New York

MATERIALS AND METHODS

THOMAS NOLAN, *Chairman* . . . . . Univ. of Pa.

(Each Chapter has a corresponding member who is chairman of the Chapter Subcommittee)

May, 1917, Serial No. 5

A part of the service of this Department will be to furnish inquirers with additional information, titles of books, names of authors or publishers, copies of articles, or in any way to afford help to architects wishing to ascertain the latest data available in connection with any material or method. For this service, address the Journal of the A.I.A., the Octagon, Washington, D. C. The service is free, except where clerical expense is involved, in which case a small fee will be charged to cover actual cost. The inquirer will be advised of the amount of the fee before any research work is undertaken.

The Journal of the American Institute of Architects
The Octagon
Washington, D. C.

Structural Service Department

D. KNICKERBACKER BOYD, *Associate Editor*

WOOD ISSUE

TIMBER, LUMBER, WOOD CONSTRUCTION AND FINISH

CONTENTS

As indicated by the title and explained in the March number, this issue will be devoted to all forms and uses of wood in building construction. At the same time it completes the exterior shell and covers it, of the composite building with which this Department is concerned and provides for much of the interior finish—fittings, furniture and movable features will be treated later.

The Index below, together with the explanatory notes under many of the separate headings, will sufficiently explain the sequence whereby wood is considered, first as standing timber and taken up by progressive stages from its management and utilization under Governmental direction through its manufacture, treatment, use and finish in building construction.

From now on several issues will deal with separate features of installation, such as, for instance, electricity, which will be referred to in June Serial No. 6.

INDEX TO SUBJECTS TREATED IN THIS ISSUE

(For Index of Materials previously treated see the General Index, page 261)

5A1 United States Department of Agriculture, Forest Service

Forester, Henry S. Graves, 928 F Street, Washington, D. C.
FOREST PRODUCTS LABORATORY, Madison, Wisconsin.

Publications:

(*a*) Department of Agriculture Yearbook.
(*b*) Annual Report of the Forester.
(*c*) Professional Papers. Published as Bulletins of the Department of Agriculture.
(*d*) Farmers' Bulletins.
(*e*) Contributions to the *Journal of Agricultural Research*. For sale only by the Superintendent of Documents, Government Printing Office, Washington, D. C. To be found, also, in the libraries of agricultural colleges, universities, technical schools, and other institutions.
(*f*) Yearbook Separates.
(*g*) Miscellaneous publications.

Of the above (*b*), (*c*), (*d*) and (*f*) are in stock, to a limited number, and single copies of those available will be distributed free upon request to the Division of Publications, Department of Agriculture, Washington, D. C. The Yearbook can be obtained free only through Congressmen. Copies are also sold by the Superintendent of Documents.

(*h*) Much of the information obtained through the researches of the Service is published in various trade and technical journals. Lists of such articles, a great many of which are included under 5D1*c*, may be obtained by application to the Forest Service, Washington, D. C., or to the Director, Forest Products Laboratory, Madison, Wis. Frequently reprints are available in limited quantities for free distribution.

(*j*) The Department of Agriculture issues a monthly list of publications which lists all new publications of the Department as they appear. This list is for free distribution upon application to the Division of Publications, Department of Agriculture, Washington, D. C. Lists of those publications of the Forest Service which are still in print, but are no longer for free distribution, may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. (Price-list 43, which is kept up to date by periodical revision.) The various price-lists are the only documents distributed free of charge by the Superintendent of Documents.

(*k*) In addition to the above series, there were formerly published a series of Forest Service bulletins and a series of Forest Service circulars, many of which are still in print. Copies of a few of these are still available for free distribution, and copies of many others can be obtained only through the Superintendent of Documents.

(*l*) Many publications, containing information of value, now out of print, are not listed by the Superintendent of Documents and may be seen only in public or technical libraries. These are contained in a mimeographed list of all publications issued by the Forest Service which may be had upon application to the Forest Service.

The work of the Forest Service consists of the administration and protection of the National Forests, the development and utilization of their resources, and research into technical problems connected with forestry; also the discovery and dissemination of knowledge concerning the best uses of forest products. Forest products include wood pulp, turpentine and rosin, tannin, dyes, charcoal, acetate of lime, alcohol, and a considerable number of lesser chemical products. Lumber, however, is the most important of the forest products, and as a material of construction is the one of most concern to the architect.

An impression seems to be prevalent that the supply of timber is becoming depleted, but there is still enough of the virgin stand of several important species to last for several generations, and with the growing practice of forestry methods, a certain supply of lumber will always be available.

Wood has been, and still is, one of the chief materials used in construction. It has natural advantages because of the ease with which it can be worked and fastened, its light weight, its poor conduction of heat, and its pleasing appearance. These properties are due to its peculiar physical structure, which also makes it non-homogeneous and highly variable as compared with clay and metal products. In competition with these other materials, wood has suffered because of improper use which can only be corrected by a better knowledge of its properties. The Forest Service is contributing to this knowledge through its experimental investigations. Statistical studies covering the manufacturing of lumber, markets, and uses, are made by the Office of Industrial Investigations at Washington, D. C., and studies relating to the properties of wood, its protection against fire and decay, and its proper use in construction of all kinds are made at the Forest Products Laboratory, Madison, Wis.

Since the laboratory was opened in 1910, over 130,000 tests have been made on practically all commercial woods of the United States. These tests include bending, compression, shear tension, cleavage, and hardness, and establish the comparative strength values of the various species. They are also the basis on which has been established the relation between the physical and mechanical properties of wood, such as the relation of moisture, density, and rate of growth to strength. Special tests are made on methods of fastening and on finished products made of wood, such as barrels and boxes. A box-testing machine has been devised which approximates closely the conditions met in actual service and gives results easily interpreted.

It is the aim usually to employ the data from mechanical tests in the perfecting of grading rules and specifications. That has already been accomplished in a number of cases. For example, the grading rules for southern pine structural timber adopted by the American Society for Testing Materials, the American Railway Engineering Association, and the Southern Pine Association; assistance given the city of New York and other cities, the Wisconsin Industrial Commission and the National Board of Fire Underwriters in the preparation of building codes and specifications for timber; specifications for canned-goods boxes adopted by the National Canner's Association and the American Society for Testing Materials; specifications of the Interstate Commerce Commission for shipping containers.

The use of refractory woods and the increasing necessity for artificial seasoning have added new problems in the conditioning of wood. Improper drying methods will injure the strength of wood. It is also very necessary, for many purposes, that the wood should stay put and this depends to quite an extent on proper conditioning. Investigations at the laboratory have resulted in the design of a kiln in which it has been possible to overcome many of the difficulties met with in common practice. The kiln has been patented and dedicated to the public. Direct assistance has also been rendered in the design of commercial kilns wherever the Forest Service has been called upon to do so.

In order that wooden construction should be permanent, it should be protected from both fire and decay. Moisture is necessary for decay, but too little or too much moisture will prevent it. For instance, interior finish is protected under normal conditions, and wood kept immersed in water is not subject to decay, except that in the sea it is attacked by marine borers. There are also conditions under which wood will not be subject to destruction by fire, but the architect at some time meets the danger from both decay and fire and will recognize the importance of preventive measures.

Tests have been made on more than thirty wood preservatives, including creosotes and various salt solutions, to determine their ability to check the growth of fungus, their ability to penetrate wood, their effect on the strength of the wood, and their permanence. The preservative represents from 50 to 75 per cent of the cost of treatment. This is particularly true of the creosotes, necessitating their careful analysis and grading, and Forest Service investigations have aided materially in establishing standards in commercial practice.

There is a growing need for a perservative which, after injection into wood, can be painted over. Wood treated with creosote will not take paint, and wood treated with zinc chloride will not hold paint well, particularly when exposed to the weather. Sodium fluoride offers possibilities in this direction. It is very antiseptic, practically non-corrosive in contact with iron and steel, and strength tests show it has no apparent effect upon the mechanical properties of the wood. Several panels treated with sodium fluoride and zinc chloride, and then painted with white lead and zinc oxide paint, were exposed to the weather in different parts of the country, and after eighteen months there was no difference between those treated with the fluoride and the untreated paint, while the panels treated with zinc chloride had peeled.

The economy in the use of treated wood depends largely upon the comparative life of the natural and the treated material. As a basis for comparison, matched specimens are first tested on a small scale where conditions are readily controlled. Later, actual service tests are conducted in

coöperation with the large users of wood—railroads, telephone and telegraph companies, and municipalities.

Our congested districts and high buildings increase the natural fire-hazard and demand fire-resistant materials. Fireproof construction at present means a minimum use of wood, unless wood can be made fire-resistant. Investigations have been made along two lines in developing a fire-retardant—impregnation and surface painting. A fire-test house has been built in which it is possible to approximate office-building conditions, and a number of demonstrations have been made. The Forest Service has in this way been able to assist the National Fire Protection Association in developing specifications for wood in fire-resistant construction. A patent has been granted, and dedicated to the public, covering a method of treating wood and fibrous materials to make them fire-resistant.

It is the policy of the Forest Service to undertake any investigative work pertaining to the use of forest products, provided the problem is of general interest, and it seeks at all times to secure the coöperation of the various associations affected.

5A2 *Committee D-7 On Timber, American Society for Testing Materials, (1A2), (Formerly Committee 2)*

Chairman: Herman von Schrenk, St. Louis, Mo.

This Committee was organized in 1904 for the purpose of developing standards dealing with timber in its various forms, both as to treated and untreated timber, and for developing standard methods for inspection of timbers, both treated and untreated, and processes used in connection with the preservation of timber.

The early work of this Committee was devoted to the adoption of standard names for various kinds of wood and accurate definitions for various types of defects. These standard names and standard definitions for defects now form part of the Book of Standards of the Society. The Committee has also devoted considerable time to specifications for bridge and trestle timbers, and in 1910 adopted standard specifications for such timbers, which were revised in 1915.

The most important recent work of the Committee has consisted in formulating a new rule for southern yellow pine timbers (popularly known as the "Density Rule," and referred to under 5D3 and 5D4). The standard adopted in 1915 was the result of continuous work on the part of the Committee since 1904. Realizing the difficulty in the botanical classification of longleaf, shortleaf and loblolly pine, the Committee endeavored to formulate a definition which would make possible the proper identification of timbers of high strength value by the ordinary man. In coöperation with the United States Forest Service, this new definition was formulated. After its adoption it was accepted by the manufacturers of southern yellow pine as their standard, and has since been adopted by the American Railway Engineering Association, as well as numerous railroad companies and other users of structural yellow pine timber.

The Committee at the present time is engaged in formulating a similar standard for structural Douglas fir timber.

Committee D-7 has furthermore formulated standards for the distillation and fractionation of creosote oil, and in its report this year is presenting a tentative standard for wood-block paving.

In addition to the foregoing, various subcommittees are investigating such questions as making wood fire-resistive, the relation between the qualities of timbers and their ultimate use, standard methods for inspection of timbers, etc., the subcommittees bearing the following titles: I, On Classification and Designation of Southern Yellow Pines; II, On Uses of Untreated Yellow Pines; III, On Pacific Coast Timbers; IV, On Wooden Paving Blocks; V, On Methods of Preservative Treatment of Timber; VI, On Timber Preservatives; VII, On Inspection of Treated Timber; VIII, On Fireproofing of Timber.

5A3 *Committee on Grading of Lumber, American Railway Engineering Association (1A9)*

Chairman: Herman von Schrenk, St. Louis, Mo.

This Committee was organized in 1911. It has devoted most of its work to the adoption of standard names for timber, and particularly to the study and arrangement of the classification and grading rules of various classes of lumber. Up to the present time the A. R. E. A. has adopted standard grading rules for lumber as follows: Southern yellow pine, Douglas fir, construction oak timbers, cypress, and hemlock. Under each kind of lumber, definitions for defects are given. The rules were adopted after conferences with the grading rule committees of the various manufacturing associations in order to harmonize the manufacturers' rules as far as possible with those used by the consumer.

The principal work in which the Committee is engaged at the present time deals with the relation between lumber grades and the uses to which the various grades are to be put. The preliminary report on the general classification of uses was made at the annual convention in 1916, and the rules above referred to are published in the "Manual," as mentioned under 5D3*b*.

5A4 *Committee on Uses of Wood in Building Construction, National Fire Protection Association*

Chairman: Julius Franke, New York, N. Y.

This Committee has submitted reports to the last two conventions of the National Fire Protection Association.

The Report submitted to the 1915 Convention, printed in the published Proceedings and also separately as referred to under 5E1*b*, was an important contribution on "The Inflammability of Treated and Untreated Woods."

The Report to the 1916 Convention was a progress report on the work of this Committee concerning the subject of "Mill-constructed Buildings."

The Report to the 1917 Convention will contain a new Standard for Mill-construction to supercede the existing one, which, although excellent in ways, has gradually become out of date and it has become necessary to revise it. The new features will deal mostly with the question of the decay of wood and how to avoid it, and also with the strength of timber and how to calculate the same. After action by the Convention in Washington, May 8 to 10, 1917, the Report will appear in the Proceedings of the Twenty-first Annual Meeting.

5A5 *Committee on Lumber and Timber Specifications, Illinois Society of Architects*

Chairman: Robert S. Linstrom, Chicago, Ill.

No report being available, a portion of the account given in *The American Contractor*, January 29, 1916, of the formation of this Committee is quoted as of interest.

The specification of lumber is one of the important functions of the architect. It was the paramount topic for discussion and action at the regular monthly meeting of the Illinois Society of Architects held last Tuesday evening at the Art Institute, Chicago. The meeting was attended by the largest number of architects in the history of the organization, and the program was a most interesting and important one.

The principal speakers of the evening were W. J. Haynen, of Hattiesburg, Miss., chairman of the Grading Rules Committee of the Southern Pine Association; A. T. North, consulting engineer, Chicago; and Dr. von Schrenk, St Louis, consulting engineer of the Southern Pine Association. A large number of Chicago lumber dealers were present.

After an extended discussion, the Southern Yellow Pine Association and the Chicago Lumber Association volunteered to coöperate with the Illinois Society of Architects in formulating standard architectural specifications for all classes of timber and lumber. The committee to take up that work for the Illinois Society of Architects was appointed. (Mr. F. D. Chase, who was made chairman, has been succeeded by Mr. Linstrom.)

5A6 *Educational, Research Work and Other Agencies*

The U. S. Forest Service furnishes lists of colleges and schools with (*a*) ranger courses in forestry, (*b*) courses in forestry other than ranger, (*c*) courses leading to a degree in forestry; of these some provide facilities for investigation, research and testing, as mentioned under 1B3*a*, and others, as in the case of (*d*) the University of Illinois, maintain engineering experiment stations and issue bulletins and circulars (3C2*a*), and one (*e*), the University of Wisconsin at Madison, maintains close coöperative relations with the Forest Products Laboratory. At this University, in addition to the courses (*b*), a number of special lectures are given in various departments by members of the Forest Products Laboratory staff, and opportunities are also offered in these Laboratories for research work. One (*f*), the New York State College of Forestry, maintains a Wood Utilization Service, with Henry H. Tryon in charge. (See, also, 5C16.)

When the New York State College of Forestry was started at Syra-

cuse in 1911, one of the first problems that confronted the institution in its state-wide educational campaign was that of decreasing the amount of unnecessary waste which goes on in the lumber and woodworking industries. To accomplish this, what is now known as the Wood Utilization Service was instituted, and shortly thereafter the Department of Forest Utilization was formed and was given full charge of this Service.

Professor Tryon is desirous of bringing to the attention of all members of the Institute the Correspondence Course in "Lumber and Its Uses" which is a part of the Wood Utilization Service.

One-page bulletins are published intermittently. Each bulletin contains a number of items, usually ten. The information used in the building up of these bulletins has always been obtained through voluntary correspondence addressed to the college, and architects are invited to correspond with the Department in the interest of conservation and a better understanding of lumber and its uses.

5B1 *The National Lumber Manufacturers' Association*

Secretary: R. S. Kellogg, 11 South LaSalle Street, Chicago, Ill.

Publications:

Issues a series of bulletins upon structural timber, mill-construction buildings, and upon rural architecture; also technical letters especially adapted to the files of architects and engineers upon subjects such as building-code suggestions, creosoted wood-block paving, pier and wharf and other forms of construction. Through these publications and through its Engineering Bureau later referred to, the Association seeks to give the best and most helpful advice upon all species of wood in order to secure most appropriate use, the longest service, and the greatest satisfaction to all concerned.

These are published in series as follows, the various titles being referred to under the appropriate later sub-divisions in this department of the Journal. Any of these, with the exception of (*f*), will be furnished without charge to qualified inquirers.

(*a*) Rural Architecture. Valuable suggestive bulletins, the ten of which are described under 5G2*c*5.

(*b*) Engineering Bulletins. The two published to date are described under 5G1*a*1 and under 5G2*c*4.

(*c*) Better buildings. Two publications to date.

(*d*) Technical letters. Nine in all.

(*e*) Miscellaneous publications. Three to date.

(*f*) Arrangements have recently been made with the publisher, the Radford Architectural Company, Chicago, for a special handbook edition of the 400-page volume entitled "Lumber and Its Uses" which on behalf of the National Lumber Manufacturers' Association, will be supplied by the publisher at $2 per copy. (Revised Edition now on the press.) This volume deals in a broad way with the properties and commercial uses of all the principal American woods, and its contents will be found referred to under the appropriate sub-divisions in this issue of the Journal.

The National Lumber Manufacturers' Association is a federation of the principal associations of lumber manufacturers throughout the United States, whose purposes, as set forth in its charter are to

"Gather and disseminate information upon the production and shipments of lumber, market conditions, and the supply of forest products; to make technical and other investigations of the properties and uses of woods; to promote uniformity and efficiency in the methods of manufacturing and distributing lumber and allied products . . . and to promote the use of forest products by all lawful means."

The organizations affiliated with the National Lumber Manufacturers' Association, and the kinds of timber chiefly handled by them are indicated in the list given under 5B2.

Each of these associations has standard rules for the grading and inspection of the lumber manufactured by its members, which, together with much helpful literature about their products, may be had upon request. Two other organizations which work in harmony with the National Lumber Manufacturers' Association upon problems of national interest are the Gum Lumber Manufacturers' Association, Memphis, Tenn., and the American Oak Manufacturers' Association, Memphis, Tenn.

The National Lumber Manufacturers' Association maintains an engineering bureau, the services of which are freely available for advice and suggestions as to the use of wood for all structural purposes.

This has been established as a clearing house of authoritative information relative to the most advantageous use of woods for all of its numerously great adaptabilities. The purpose is to encourage the use of wood where wood is best to be used and to avert the misuse of wood through the public lack of knowledge of the special merits of the several distinct species.

It aims to coöperate with architects, engineers, builders, and others by furnishing upon the basis of the best engineering and architectural practice in wood construction all latest available data, and assisting them and the lumber-consuming public in receiving the greatest economic benefit from the proper application of wood, without desiring to urge that wood be used except where best for the purpose intended.

5B1A *Other Lumber and Allied Associations*

Among such there are (not including those interested in other than structural products) the following, those marked (*) being affiliated with the National Lumber Manufacturers' Association (5B1), immediately after the name of which follows the kinds of lumber chiefly handled by them:

1. *West Coast Lumbermen's Association, Seattle, Wash.
   Douglas Fir, Western Red Cedar, Spruce, Hemlock.
2. *Georgia-Florida Sawmill Association, Jacksonville, Fla.
   Yellow Pine.
3. *Hardwood Manufacturers' Association of the United States, Cincinnati, Ohio.
   Ash, Basswood, Beech, Buckeye, Butternut, Cherry, Chestnut, Cottonwood, Elm, Gum, Hickory, Maple, Oak, Walnut, Poplar, Sycamore, Tupelo.
4. *Michigan Hardwood Manufacturers' Association, Cadillac, Mich.
   Ash, Basswood, Beech, Birch, Elm, Maple, Hemlock.
5. *Northern Hemlock and Hardwood Manufacturers' Association, Oshkosh, Wis.
   Hemlock, Ash, Basswood, Birch, Elm, Maple, White Cedar, Tamarack.
6. *California Redwood Association, San Francisco, Cal.
   Redwood.
7. *Southern Cypress Manufacturers' Association, New Orleans, La.
   Cypress, Tupelo.
8. *California White and Sugar Pine Association, San Francisco, Cal.
   Sugar Pine, California White Pine.
9. *North Carolina Pine Manufacturers' Association, Norfolk, Va.
   North Carolina Pine.
10. *Northern Pine Manufacturers' Association, Minneapolis, Minn.
    White Pine, Norway Pine, Spruce, Tamarack.
11. *Southern Pine Association, New Orleans, La.
    Southern Pine.
12. *Western Pine Manufacturers' Association, Spokane, Wash.
    Western Pine, Idaho White Pine, Fir, Larch.
13. Arkansas Soft Pine Bureau, Little Rock, Ark.
14. White Pine Bureau, St. Paul, Minn.
15. Gum Lumber Manufacturers' Association, Memphis, Tenn.
16. National Hardwood Lumber Association, Chicago, Ill.
17. American Oak Manufacturers' Association, Memphis, Tenn.
18. Carolina Air-Dried Pine Association, Raleigh, N. C.
19. East Oregon Lumber Producers' Association, LaGrande, Ore.
20. Eastern Lumberman's Association, Sheridan, Me.
21. Eucalyptus Hardwood Association, Los Angeles, Cal.
22. Hardwood Dimension Manufacturers' Association, Arlington, Ky.
23. Hemlock Manufacturers' Promotion Bureau, Oshkosh, Wis.
24. Humboldt Lumber Manufacturers' Association, Eureka, Cal.
25. Indiana Hardwood Lumbermen's Association, Indianapolis, Ind.
26. Lumber Manufacturers' Association of Southern New England, Ansonia, Conn.
27. Mississippi Pine Association, Hattiesburgh, Miss.
28. Mountain Lumber Manufacturers' Association, Nelson, B. C.
29. Northern White Cedar Association, Oshkosh, Wis.
30. Tennessee Manufacturers' Association, Nashville, Tenn.
31. West Alabama Pine Association, Tuscaloosa, Ala.

5B1B *Other Associations Specifically Concerned with Wood Problems and Products*

Among such are the following, exclusive again of those with interests outside of building construction, and not including also those interested in furniture manufacture:

1. American Wood-Preservers' Association, Baltimore, Md.
2. Association of Creosoting Companies of the Pacific Coast, Seattle, Wash.
3. Creosoted Wood Block Paving Bureau, Chicago, Ill.
4. Northern White Cedar Shingle Manufacturers' Association, Oshkosh, Wis.
5. Redwood Shingle Association, Eureka, Cal.
6. Shingle Branch, West Coast Lumbermans' Association, Seattle, Wash.
7. Maple Flooring, Manufacturers' Association, Chicago, Ill.
8. Oak Flooring Manufacturers' Association, Cincinnati, Ohio.
9. Eastern Sash, Door, and Blind Manufacturers' Association, Holmesburgh, Philadelphia, Pa.
10. Millwork Cost Information Bureau, Chicago, Ill.
11. Southern Sash, Door, and Millwork Manufacturers' Association. Atlanta, Ga.
12. Curtis Service Bureau, Clinton, Iowa.
13. Building Industries Association, St. Louis, Mo.

14. National Veneer and Panel Manufacturers' Association, Indianapolis, Ind.
15. Commercial Rotary Gum Association, Memphis, Tenn.

In addition to which, representing artisans and others engaged in some of the wood industries, there exists:
16. Brotherhood of Carpenters and Joiners, Indianapolis, Ind.
17. Wood Carvers' and Modellers' Association, Philadelphia, Pa.
18. International Wood Carvers' Association of North America,

5C State Wood-Using Industry Reports

Prepared by the United States Department of Agriculture, Forest Service, Office of Industrial Investigations.

The Forest Service has completed studies of wood-using industries in a number of states. The reports, primarily of local interest, containing information which should be of much value to architects and builders, have been printed by some department of the Government of the state interested, or by a periodical devoted to the interest of lumbering and conservation. Bulletins at present available are indicated below and may be secured from the coöperator whose address is given. In ordering those for which there is no charge, postage should accompany the application. (See also 5A6.)

State	Coöperator	Address	Price
1. Ala.	Lumber Trade Journal	New Orleans, La.	$0 25
2. Ark.	Supt. of Doc., Gov. Print. Ofc.	Washington, D. C.	05
3. Ark.	Separate Directory of Wood-Using Plants, Lumber Trade Journal	New Orleans, La.	....
4. Cal.	G. M. Homans, State Forester	Sacramento	....
5. Conn.	W. O. Filley, State Forester	New Haven	....
6. Fla.	W. A. McRae, Comr. of Agr.	Tallahassee	....
7. Ga.	Lumber Trade Journal	New Orleans, La.	....
8. Ill.	J. C. Blair, Univ. of Ill.	Urbana	....
9. Ind.	Forest Service	Washington, D. C.	....
10. Me.	State Forest Commissioner	Augusta	....
11. Mich.	Public Domain Commission	Lansing	....
12. Miss.	Lumber Trade Journal	New Orleans, La.	$0 25
13. Mo.	St. Louis Lumberman	St. Louis	10
14. N. H.	E. A. Hirst, State Forester	Concord	25
15. N. J.	Alfred Gaskill, State Forester	Trenton	....
16. N. Y.	State College of Forestry	Syracuse	....
17. N. C.	J. S. Holmes, State Forester	Chapel Hill	....
18. Ohio	Edmund Secrest, State Forester	Wooster	....
19. Pa.	R. S. Conklin, Commissioner of Forestery	Harrisburg	....
20. S. C.	E. J. Watson, Commissioner of Agriculture	Columbia	....
21. Tenn.	Southern Lumberman	Nashville	....
22. Tex.	Lumber Trade Journal	New Orleans, La.	25
23. Vt.	A. F. Hawes, State Forester	Burlington	....
24. Va.	G. W. Koiner, Commissioner of Agriculture	Richmond	....
25. W. Va.	H. E. Williams, Comr. of Agr.	Charleston	....
26. Wis.	F. B. Moody, State Forester	Madison	....

The supplies of the wood-using reports in the following states are entirely exhausted: 27. Idaho, 28. Iowa, 29. Kentucky, 30. Louisiana, 31. Maryland, 32. Massachusetts, 33. Minnesota, 34. Montana, 35. Oregon, and 36. Washington.

5D Standing Timber and Manufacturered Lumber: Localities, Kinds, and Classifications

Closely allied to this subdivision is that on Wood in Buildings and in Structures in General, where the publications pertaining to specific uses in buildings are separated as well as possible from those here described, which deal more with the product, its source, and general uses.

5D1 *Publications and Articles. Listed by the U. S. Department of Agriculture, Forest Service, Washington, D. C., and Forest Products Laboratory, Madison, Wis.*

(*a*) The U. S. Department of Agriculture, Forest Service, 5A1, issues a large number of publications pertaining to the silvicultural end of the work—that is the planting, growing and management of trees in forests—and other publications relating to the supply and uses of woods in specified areas. Consult list of publications to be had, as mentioned under 5A1*h*.

(*b*) Other Governmental publications pertaining to this subdivision and of interest structurally which follow, under this (*b*) classification, can be obtained only from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the price stated, until the supply is exhausted. Remittances should be made by money order or in coin (at sender's risk). Stamps can not be accepted. Those indicated by * are exhausted. For those not now obtainable through the Superintendent of Documents, see 5A1*j*.

1. Wood-using industries and national forests of Arkansas: Part 1, Uses and supply of wood in Arkansas; Part 2, Timber resources of national forests in Arkansas. 1912. 40 pp. (Forest Bulletin No. 106.) 5 cents.
2. Uses for chestnut timber killed by bark disease. 1914. 24 pp., illus. (Farmers' Bulletin No. 582.) 5 cents.
3. Properties and uses of Douglas fir: Part 1, Mechanical properties; Part 2, Commercial uses. 1911. 75 pp., illus., map. (Forest Bulletin No. 88.) 15 cents.
4. Southern Cypress. 1915. 74 pp., illus. (Agriculture Bulletin No. 272) 20 cents. Embraces geographical and commercial range, present supply and annual cut, properties and use of wood, markets and prices, life history of the tree, etc.
5. Red gum, with discussion of mechanical properties of red gum wood. Revised 1906. 56 pp., illus. (Forest Bulletin No. 58.) 15 cts. Sweet gum or star-leafed gum of the southern states.
6. Eastern hemlock, *Tsuga canadensis*, Linn., Carr. 1915. 43 pp., illus. (Agriculture Bulletin No. 152.) 10 cents. Describes characteristics, gives tables of its volume and rate of growth, and chief facts regarding its utilization for lumber, pulp, tanning, etc.
7. Mechanical properties of western hemlock. 1913. 45 pp., illus. (Forest Bulletin No. 115.) 15 cents. Also known as hemlock spruce, western hemlock fir, Prince Albert fir, gray fir, and Alaska pine.
8. Larch: Mechanical properties of western larch. 1913. 45 pp., illus. (Forest Bulletin No. 122.) 10 cents.
9. Lumber saved by using odd lengths. 1910. 5 pp. (Forest Circular No. 180.) 5 cents.
10. Our timber supply (general information). 1914. 8 pp. 5 cents.
11. Seasoning of timber. 1903. 48 pp., illus. (Forest Bulletin No. 41.) 25 cents.
12. Strength values for structural timbers. 1912. 8 pp. (Forest Circular No. 189.) 5 cents.
13. Tests of structural timbers. 1912. 123 pp., illus., maps. (Forest Bulletin No. 108). 20 cents. Tests of Southern yellow pines, Douglas fir, western hemlock, western larch, redwood, Norway pine, tamarack, red spruce, and white spruce.
14. Principles of drying lumber at atmospheric pressure, and humidity diagram. 1912. 19 pp., illus. (Forest Bulletin No. 104.) 5 cents.
15. Timber, elementary discussion of characteristics and properties of wood; with key to more important woods of North America. 1895. 88 pp., illus. (Forest Bulletin, No. 10.) 10 cents.
16. Forest trees of Pacific Slope. 1908. 441 pp., 207 illus. 60 cents. The illustrations show the foliage and fruit of the 150 species described.
17. Mahogany: Colombian mahogany, *Cariniana pyriformis*, its characteristics and its use as substitute for true mahogany, *Swietenia Mahogani;* with description of botanical characters of *Cariniana pyriformis*. 1911. 16 pp., illus. (Forest Circular No. 185.) 5 cents.
18. Hardwoods of Americas—Mahogany. (American Republics Bulletin, August, 1909, pp. 386 to 402, illus.) 25 cents.
19. Identification of important North American oak woods based on study of anatomy of secondary wood. 1911. 56 pp., 48 illus. (Forest Bulletin No. 102). 10 cents. The illustrations furnish a means of identifying commercial woods.

20. Shortleaf pine, its economic importance and forest management. 1915. 67 pp., illus. (Agriculture Bulletin No. 308.) Paper, 15 cents.
21. Sugar Pine. 1916. 40 pp., illus., map. (Agriculture Bulletin No. 426.) 15 cents.
22. Physical properties of yellow pine. (Forest Circular No. 12.)
*23. Rules and Specifications for the Grading of Lumber, Adopted by the various Lumber Manufacturers of the United States, compiled by E. R. Hodson. 1906. 127 pp. (Forest Bulletin No. 71.) 15 cents.
24. Economic aspects of the lumber industry. (Agriculture Report No. 114), extracts printed in *The American Contractor*, April 14, 1917.
25. White pine under forest management. 1914. 70 pages, illus. (Agriculture Bulletin No. 13). 15 cents. "Of all the trees of eastern North America white pine best combines the qualities of utility, rapid growth, heavy yield, and ease of management."
26. Windbreaks, their influence and value. 1911. 100 pp., illus. (Forest Bulletin No. 86.) 30 cents. Deals with the best species of trees for planting as an obstacle to the surface winds and for the protection of orchards and field crops in various regions of the United States.
27. Adhesion of nails, spikes, and screws in various woods. (In Tests of Metals, Watertown Arsenal 1B1*b*, 1884, pp. 448 to 471, illus.) Cloth, 60 cents. White pine, chestnut, yellow pine, white oak, and laurel were tested.
28. Effect of moisture upon strength and stiffness of wood. 1906. 144 pp., illus. (Forest Bulletin No. 70.) 15 cents.
29. Uses of commercial woods of United States: Beech, birches, and maples. 1913. 56 pp. (Agriculture Bulletin No. 12.) 10 cents.
30. Uses of commercial woods of United States: (1) Cedars, cypresses, and sequoias, 1911. 62 pp. (Forest Bulletin No. 95.) 10 cents; (2) Pines. 1911. 96 pp. (Forest Bulletin No. 99.) 15 cents.
31. Uses of wood. Pp. 391 to 420, illus. (In Agriculture Yearbook, 1896.) Price of entire vol., cloth, 50 cents.
32. Mechanical properties of woods grown in United States, preliminary summary of tests on small, clear, green specimens of forty-nine species of wood. 1913. 4 pp., 1 table. (Forest Circular No. 213.) 5 cents.
33. The Strength of Wood as Influenced by Moisture, Harry Donald Tiemann. August 26, 1907. (Forest Circular No. 108.)
*34. Redwood, Mechanical properties of. Nov. 1, 1912. (Forest Circular No. 193.)
*35. Density of wood substance and porosity of wood. Sept. 21, 1914. (Published in *Journal of Agricultural Research*.) 25 cents.
*36. Southern pines, Properties and uses of. 1909. (Forest Circular No. 164.) 5 cents.
*37. Redwood, Mechanical properties of. 1912. (Forest Circular No. 193.) 5 cents.

(*c*) Those which follow, under the (*c*) classification, are papers prepared by Forest Products Laboratory and published in proceedings of societies and technical, trade and other journals. The star before the name of an article indicates that no reprints are available for distribution. Such articles must be consulted in the original publication. Of the others a limited supply of reprints are available for general distribution, and copies will be sent free, until the supply is exhausted, upon application to Director, Forest Products Laboratory, Madison, Wis.

1. A Few Deductions from Strength Tests of American Woods, J. A. Newlin. *American Lumberman*, Jan. 16, 1915.
2. Factors Affecting Structural Timbers, H. S. Betts. *Engineering Record*, Aug. 29, 1914.
3. Grading Rules of Yellow Pine Structural Timber Discussed, H. S. Betts. *American Lumberman*, Apr. 24, 1915.
4. Applicability of Yellow Pine Grading Rules to Other Timbers, J. A. Newlin. *Engineering Record*, Oct. 3, 1914.
5. Air Seasoning of Timber, W. H. Kempfer. American Railway Engineering Bulletin No. 161; also *Railway Review*, Jan. 10, 1914.
6. Effect of Different Methods of Drying on Strength of Wood, H. D. Tiemann. *Lumber World Review*, April 10, 1915.
*7. Fourth Progress Report on Tests of Treated Ties. American Railway Engineering and Maintenance of Way Association Bulletin No. 124.
8. The Protection of Ties from Mechanical Destruction, H. F. Weiss, Proceedings American Wood Preservers' Association, 1914.
9. Structural Timber in the United States, H. S. Betts and W. B. Greeley. International Engineering Congress, San Francisco, Sept. 20–25, 1915.
*10. Discussion of Proposed Forest Service Rules for Grading Strength of Southern Pine Structural Timber, H. S. Betts. American Society for Testing Materials, 1915.
*11. Effect of Moisture and Other Extrinsic Factors on the Strength of Wood, H. D. Tiemann. Society American Foresters, Proceedings, 1907.
*12. The Effect of Speed of Testing upon the Strength of Wood and the Standardization of Tests for Speed, H. D. Tiemann. American Society for Testing Materials, Proceedings, 1908, Vol. VIII.
13. Eucalyptus Lumber: Part 1, To What Extent is California-grown Eucalyptus Suitable for Lumber? Part 2, Results of Experiments in Drying Blue Gum and other Species, H. D. Tiemann. *Hardwood Record*, Sept. 25, 1913.
*14. Kiln-Drying Lumber and a Discussion of the Whole Problem—A New Kiln, H. D. Tiemann. *Lumber World Review*, March 10, 1914.
15. Principles of Kiln-Drying Lumber, H. D. Tiemann. *Lumber World Review*, Jan. 25, Feb. 10, 1915.
16. Improvements in Forest Service Humidity Regulated Dry Kiln, H. D. Tiemann. *American Lumberman*, Sept. 1, Sept. 5, 1915; also *Hardwood Record*, Sept. 25, 1915.

(*d*) The Government statistics of the lumber industry were formerly covered in publications, entitled "Forest Products," issued by the Department of Commerce, Bureau of the Census, compiled in coöperation with the Department of Agriculture, Forest Service.

Annual statistics of the production of lumber, lath, shingles, and other forest products are now being obtained by the Forest Service and are being published as U. S. Department of Agriculture Bulletins, forming a part of this regular series. The latest lumber, lath, and shingle statistics will be found in U. S. Department of Agriculture Bulletin 506, entitled "The Production of Lumber, Lath, and Shingles in 1915 and Lumber in 1914." Copies of this may be obtained from the Division of Publications.

5D2 *Government Specifications*

(*a*) *Specifications issued by the Navy Department for naval stores and materials.*

The Navy Department issues specifications, as mentioned under 3A1*a*, those pertaining to wood being under Serial Designation No. 39, and covering among others the following kinds: Beech, Birch and Maple; Butternut; White Cedar; Douglas Fir; Puget Sound or Oregon Pine; Oak; White Oak Timber; White Pine; New England Country White Pine; Western White Pine (Idaho); Tonawanda White Pine, inspection rules for; Yellow Pine for decking, lumber, timber, and sticks for masts and spars; Spruce and Teak.

(*b*) *Specifications of the War Department and Treasury Department (supervising architect's office).*

The portions of such specifications with respect to lumber and woodworking are not separately issued as in the case of specifications for certain other branches of the work, as referred to under 3A1*a*, nor are they available for general distribution to others than those interested in the work for which prepared.

5D3 *Specifications, Standards, Manuals and Publications of Technical, Professional and Other Organizations*

(*a*) American Society for Testing Materials:
1. "Standard Definitions of Terms Relating to Structural Timber" (Serial Designation D 9–15), Book of Standards, 1916 (1A4*c*). Pp. 598–601.
(See Mr. von Schrenk's description under 5A2.)

(*b*) American Railway Engineering Association:
"Grading of Lumber." Adopted report of committee, completely illustrated with photographic reproductions of knots, streaks, holes and conditions, sound and otherwise. "Manual," 1915, (1A9*f*), pp. 591–653, containing:
1. Classification and Grading Rules for Douglas Fir.
2. Classification, Grading Rules and Dressing Rules for Southern Yellow Pine.
3. Specifications for Construction Oak Timbers.
4. Classification and Grading Rules for Cypress Lumber and Shingles.
(See Mr. von Schrenk's description under 5A3.)

(*c*) National Board of Fire Underwriters:
1. "Grading Rules for Timber," Building Code, 1915, pp. 278–283. These are printed as an appendix to the Code and comprise "a proposed revised form of Rules of the U. S. Forest Service for Grading Structural Timbers of Southern Yellow Pine;" also, tables for computing the strength of rectangular wooden beams and tables of allowable floor-loads for different kinds of woods.

(*d*) Inspection Department, Associated Factory Mutual Fire Insurance Companies:
1. "Longleaf Pine Factory Timber" (3A7*b*36.)
2. "Dry Rot in Factory Timbers," 1915 (3A7*a*45). 107 pp.; illus. Contains specifications suggested for a special grade of longleaf pine for use in Mutual factories. Also a full discussion of varying conditions and precautions to be taken. Illustrates and describes timber available and discusses interstate rules for grading lumber and specifications of societies and associations and observations of the U. S. Forest Products Laboratory. (See, also, Chapter mentioned under 5E.)

(*e*) Journal of Society of Constructors of Federal Buildings:
1. "What Is a Plank?" Chas. E. Morrell, Jr. November, 1914. P. 385.
2. "Inspection of Yellow Pine;" Hermann von Schrenk. March, 1916. Paper No. 205, p. 152.

5D4 *Grading and Inspection Rules, and Other Publications of Lumber and Manufacturers' Associations*

Other publications of other associations, bureaus and branches will be found mentioned under the various subdivisions to which they chiefly pertain.

(*a*) National Lumber Manufacturers' Association:
1. "Timber for Structural Purposes," E. A. Sterling. Engineering Bulletin No. 1, January, 1916, 20 pp.

(*b*) National Hardwood Lumber Association:
1. See "Rules for the Measurement and Inspection of Hardwood Lumber." The purposes of these are to provide for the uniform inspection and measurement of the woods described therein.

(*c*) Hardwood Manufacturers' Association of the U. S.:
1. "Association Standard Grades of Poplar, Oak, Cottonwood, Gum and other Hardwoods." Effective October 1, 1915. 118 pp. Contains Classification, Official Grading, Inspection Rules and Sales Code.

(*d*) Northern Hemlock and Hardwood Manufacturers' Association:
1. "Rules for the Inspection of Hemlock Lumber," revised at Annual Meeting on January 29, 1913. 27 pp. Includes Standard Sizes adopted October 29, 1913.

(*e*) Northern Pine Manufacturers' Association:
1. "Rules for the Grading of Northern Pine, Spruce and Tamarack Lumber." Reported by the Bureau of Grades. Edition of February 1, 1915 (ninth issue). 72 pp.

(*f*) The Oregon Lumber Manufacturers' Association (Since merged with the West Coast Lumber Manufacturers' Association):
1. "Merits of Pacific Coast Woods," E. D. Kingsley. Being an address delivered before the Nebraska Lumber Dealers' Association at Omaha, on Feb. 6, 00. 16 pp.

(*g*) Southern Pine Association:
1. "Southern Yellow Pine Timbers, Including Definition of the 'Density Rule'." Authorized reprint from the copyrighted Standards of the American Society for Testing Materials, approved and adopted by the Southern Pine Association, January 1, 1917. 22 pp.
   (*a*) "Discussion of the Proposed Forest Service Rules for Grading the Strength of Southern Pine Structural Timbers," H. S. Betts. Appendix I, pp. 15–30. Contains diagrams and illustrations.
   (*b*) "Southern Yellow Pine Timber and Density Grading Rules," O. T. Swan. Appendix II, pp. 31–47. Contains diagram and tables.
2. "Standard Specifications for Grades of Southern Yellow Pine Lumber." April 1, 1917. 58 pp. (Supersedes all previous issues.) "Being the specifications for southern yellow pine lumber generally recognized by the lumber trade for years. Mills of manufacturers subscribing to this Association are located in the states of Texas, Arkansas, Missouri, Louisiana, Mississippi, Alabama, Georgia, and Florida."
   This contains specifications for all forms of a manufactured lumber, including dimension timbers, siding, fencing, ceiling, flooring, roofing and Byrkit lath, with full-sized detailed and figured drawings of all but the former.
3. "The Gulf Coast Classification of Pitch Pine Resawn Lumber and Sawn Timber." Revised May, 1910, by the Gulf Coast Lumber Exporters' Association. Adopted by the Southern Pine Association 1915. 28 pp.
4. "Service in the Department of Inspection and Grades." 1917. Describes in detail the functions of this Department, which include: Grading Rules, Grading Methods, Specifications and Standardization, Inspection at Point of Origin, Inspection at Point of Destination.

(*h*) West Coast Lumbermen's Association:
1. "The Lumber Users' Guide" (No. 8), a general description of Douglas fir.
2. "The Lumber Users' Guide "(No. 12), a general description of western red cedar. 22 pp., illus.
3. "Not the Non-Use but the Proper Use of Wood," a description of fire-test made by the Building Department of the city of Seattle in coöperation with the Port Commission, the City Fire Department and the West Coast Lumber Manufacturers' Association. 18 pp., illus.
4. "Comparative Strength Values for Structural Timbers." Leaflet giving tables.

(*j*) California Redwood Association:
1. "California Redwood Lives Forever." Leaflet. 8 pp., illus.
2. "Two Births 2,000 Years Ago—The Marvel God Wrought with the Redwoods of California." Booklet. 12 pp., illus.

(*k*) The North Carolina Pine Association, Inc.:
1. "Official Inspection Rules," January 25, 1917, 24 pp., covering kiln-dried North Carolina Pine (revised 1917), Longleaf Pine (1905 Rules), Air-Dried North Carolina Pine (1913 Rules), Shortleaf Pine Dimensions (1910 Rules). It is stated that "at the present time fully 95 per cent of the output of pine lumber in the states of Maryland, Virginia, North and South Carolina is graded and classified according to these grading rules, and all quotations are made on them as a basis." In addition to rough and dressed lumber, describes, with full-sized drawings, all kinds of worked material including ceiling, partition, siding, shiplap and other forms.

(*l*) Southern Cypress Manufacturers' Association:
1. Issues a "Cypress Pocket Library" consisting of 41 Volumes, each of which describes different features and uses of this wood, some, as in No. 1, entitled "What It Is," describing generally the wood and uses (from Forest Service Bulletin No. 95, June 30, 1911), in which Volume is also an Index to all others.

(*m*) American Oak Manufacturers' Association has in preparation a booklet on the growth and uses of oak which will shortly be ready for distribution.

5D5 *Pocket-books, Textbooks and Publications by Educational Institutions and Publishers*

(*a*) Engineering Experiment Station, University of Illinois (3C2*a*2):
1. "Tests of Timber Beams," Arthur M. Talbot. 1910. Bulletin No. 41. Free.

(*b*) *American Forestry* publishes each month a list of titles, authors, and prices of books on forestry and related subjects. These may be ordered through the American Forestry Association, Washington, D. C.

(*c*) "Lumber and Its Uses" (5B1*f*). Contains, among others, sections on: The Structure of Wood, Mechanical Properties of Wood, Lumber Grades, Standard Sizes of Lumber, Shipping Weights, Lumber Measurements, Lumber Manufacturing, Structural Timbers, Seasoning of Timber, Lumber Prices, The Uses of Lumber, Commercial Woods, Forest Products, Timber Supply, Permanent Advantages of Wood, and Sources of Information about Timbers.

(*d*) "Building Construction and Superintendence," F. E. Kidder. 1915. Part II, "Carpenters' Work," contains, among others, sections on: The Tree, Physical Properties and Characteristics of Timber, Seasoning and Drying of Timber, Defects in Timber, Conversion of Timber, Strength of Timber as Affected by Its Physical Condition, Selection of Timber for Special Purposes, Decay and Preservation of Timber, Varieties of Timber Used in the United States—Their Characteristics and Uses, Data Relating to the Strength of Materials, and List of Tables.

(*e*) "Mechanical Engineers' Handbook," Lionel S. Marks. 1916.
1. "General Properties of Wood," H. von Schrenk. Pp. 577–585.
2. "Strength of Wood," W. K. Hatt.

(*f*) The Building Trades' Handbook:
1. "Weights of Dry Woods," p. 68.
2. "Description of Woods and Relative Hardness of American Woods," pp. 229–233.
3. "Shrinkage of Woods," p. 234.
4. "Qualities of Timber," pp. 234–236.
5. "Quarter and Bastard Sawing," pp. 236–238.

(*g*) See "Identification of the Economic Woods of the U. S.," Samuel J. Record.

(*h*) "The Manufacture and Uses of Cypress." An illustrated address by Dr. Hermann von Schrenk before a meeting of Michigan lumbermen. Reprinted from the *Lumber Trade Journal*, New Orleans.

(*j*) "Southern Cypress," Samuel J. Records. *American Architect*, October 18, 1916. Descriptive article, illus.

(*k*) "The Strength of Long-Seasoned Douglas Fir and Redwood," Arthur C. Alvarez. May 17, 1913. Bulletin of the Department of Civil Engineering, University of California.

(*l*) "One Thousand Uses for Oak," to be had from Oak Information Bureau of *Hardwood Record*, Chicago; gives names of all oaks, production, and uses.

(*m*) "American Forest Trees," *Hardwood Record*. Practical information on commercial trees.
(*n*) See "Principal Species of Wood—Their Characteristic Properties," Charles Henry Snow. 1908.
(*o*) See "Timber and Timber Trees," Thos. Haslett and H. M. Ward. 1894.

5D6 *Branding or Trade-marking of Timbers and Lumber*

This is a subject which is being given much attention by several associations, societies, and manufacturers, some of which have adopted the practice, and is of interest and importance to architects, builders, and general consumers, many of whom have also given consideration to the subject. In addition to being treated within some of the publications mentioned elsewhere, the subject is dealt with in—

(*a*) Proceedings of the National Lumber Manufacturers' Association (5B1) for 1915:
1. "Trade-marked Lumber, from the Standpoint of the Manufacturer," J. A. Gabel. Pp. 125–133.
2. "Trade-marked Lumber, from the Standpoint of the Association," A. W. Cooper. Pp. 134–141.
3. "Trade-marked Lumber, from the Standpoint of the Advertising Man," Everett Sisson. Pp. 142–149

(*b*) Proceedings of the National Lumber Manufacturers' Association for 1916:
1. "Why Architects and Engineers Want Branded Timber," Frank D. Chase. Pp. 186–192.
2. "Why the Retail Lumbermen Want Identified Merchandise," F. A. Good. Pp. 193–208.

(*c*) See "Specifications for Structural Timber" in 3A7*a*45 from which the following is also quoted:
1. Branding as a Guarantee.
It has been suggested by Mr. Weiss, Director of the United States Forest Products Laboratory, that longleaf pine timber should be branded by the manufacturers. This is an excellent idea. Under present conditions the manufacturers are the only people who can positively say whether the timber is longleaf or not, as the standing loblolly, longleaf, and shortleaf timber exhibits the distinguishing differences in bark, leaves, and cones, not shown when cut into lumber.
After the trees are cut into lumber, it is practically impossible to check grades based upon botanical varieties.
Branding, without a clearly defined description of the several grades of wood, which can be checked by methods within the power of the purchaser, will depend entirely for its value upon the honesty and carefulness of the lumber manufacturer; but, with well-defined physical and chemical specifications, such as those in common use with iron and concrete, the branding can be checked by the purchaser when necessary and will facilitate inspection on the job.

(*d*) The Oak Flooring Service Bureau (5J15) states that "Manufacturers of standard grades of oak flooring designate the grades and color on the back of every bundle."

(*e*) A leaflet (not dated) of the Maple Flooring Manufacturers' Association states:
"This trade-mark MFMA on flooring is a guaranty of quality. It has been adopted as a means of identifying the flooring made by members of the Maple Flooring Manufacturers' Association. Architects, contractors, dealers and consumers can hereafter be sure of getting what they want when they specify or order Association Flooring. The individual factory is indicated by a number following the trade-mark. Trade-marking and advertising are twin pledges of good faith."

(*f*) The following is quoted from Publication (Jan. 1, 1917) of the Southern Pine Association:
1. Branded Timber.
"Proper service to buyers and users of yellow pine timber demands correct grading and the branding or marking of each stick of timber showing its grade. Variation in the individual character of different pieces of timber is responsible for the difference in strength. Structurally, some are much stronger than others. Owing to the confusion which frequently results in the proper classifying of timbers into longleaf, shortleaf, loblolly, etc., a new rule has been devised and recently adopted by the American Society for Testing Materials, and known among the trade as the "Density Rule," which classifies all southern pine timbers, irrespective of botanical species, into two classes, namely, "dense southern yellow pine" and "sound southern yellow pine. The Southern Pine Association recommends that all timbers be branded. All manufacturers and dealers are invited to brand their timber in accordance with the grades and classifications contained in this book."

(*g*) In a folder received April 24, 1916 (undated), issued by the associated mills mentioned below, it is stated: "When you specify timbers bearing the brand of the Associated Calcasieu Longleaf Mills you are not only assured strength, durability and long wear in every timber, but you are also guaranteed grading according to the specifications of the Factory Mutuals, American Society of Testing Materials, American Railway Engineering Association, and the Southern Pine Association."

5D7 *Standardization and Conservation*

These comments, of course, are quite independent of any reference made elsewhere, principally under the A and B divisions, to the important work along these lines being done by the Forest Service and the Committees and Associations which coöperate with it, not only as concerns structural lumber, but the other utilizations of forest products.

(*a*) Concerning these subjects the two extracts which follow from the Proceedings of the National Lumber Manufacturers' Association are of especial interest:
1. In 1915 the Committee on Standardization reported as follows—
"A previous committee on standardization of lumber sizes made a report giving the various sizes which are standard in the different lumber-producing localities, but no result toward having a single schedule of sizes adopted and made use of universally was obtained. The conditions now prevailing operate against such a benefit being obtained, and it seems as if we must wait until things become more favorable."
2. At the 1916 Convention it was:
"*Resolved*, That in the interest of efficiency, economy, and reasonable conservation, the National Lumber Manufacturers' Association approves the manufacture of odd lengths in all forms of lumber where practical from a use standpoint, and urges the support of all manufacturers, wholesalers, and retailers in establishing firmly such practice."

(*b*) It is also of interest to note that the American Railway Engineering Association (1A9*c*) maintains a Committee on Conservation of Timber Supply, recommendations of which Committee will be found printed in the "Manual," 1915, pp. 60, 61.

(*c*) See Forest Circular No. 180 (5D1). "Lumber Saved by Using Odd Lengths," as a step not only in Conservation but in reduction of cost of building.

(*d*) In "North Carolina Pine—Doubly Desirable for Flooring and Ceiling" (5J12*b*) is a description of the saving in material and cost due to this Association's standards for working these products with ½-inch allowance for tonguing and grooving instead of ¼ inch.

(*e*) See "Grading Rules" of the Maple Flooring Manufacturers' Association (5J14) in which it is stated that modern perfected methods of manufacturing flooring produce a larger proportion of shorter lengths because the defects are cut out closer and that the sentiment in favor of conservation is strongly in favor of utilization to the greatest extent of the valuable woods used.

(*f*) In the "Standard Specifications for Grades of Southern Yellow Pine Lumber," issued by the Southern Pine Association, 1917, it is stated, with respect to grading of flooring "The (above) percentage of short lengths is customary, and in the interest of Conservation will be included, so far as practicable, in all shipments of mixed lengths."

(*g*) In "California Redwood," 5H4*a*, in a chapter entitled "The Use of Redwood 'Short Lengths' is Highly Intelligent Economy," is a most illuminating discussion of the savings and advantages to be obtained by discriminating in favor of conservation and effect through the use of lengths and grades other than the longest and the "select."

5E1 *Treatments of Woods: Preservatives and Fire-Retardents*

(The subjects covered by this heading will also be found described in many of the publications referred to under 5D and 5G, and elsewhere. See also descriptions under 5A for activities of committees concerned with these problems and 5B1*b* for associations interested.)

(*a*) United States Department of Agriculture: Publications listed by Forest Service and Forest Products Laboratories (5A1, under which are also described current activities).
1. Commercial creosotes, with special reference to protection of wood from decay. 1912. 38 pp., illus. (Forest Circular 206.) 10 cents.
2. Relative resistance of various conifers to injection with creosote. 1914. 43 pp., illus. (Agriculture Bulletin 101.) 15 cents.
3. Preservative treatment of poles. 1911. 55 pp., illus. (Forest Bulletin 84.) 15 cents.
4. A primer of wood preservation. (Bulletin No. 139.)
5. Strength and stiffness of natural and treated stringers. (Bulletin No. 286, Sept. 27, 1915.)
6. Specific heat of wood (dry-kiln operation, wood preservation, and distillation). 1912. 28 pp., illus. (Forest Bulletin 110.) 5 cents.
7. Estimation of moisture in creosoted wood. 1908. 7 pp., illus. (Forest Circular 134.) 5 cents.

8. Experiments on strength of treated timber. Second edition, 1908. 31 pp., illus. (Forest Circular 39.) 5 cents. (In the tests the preservatives were creosote and zinc chloride, and the wood was from railroad ties of loblolly pine of Texas and western yellow pine.)
9. Preservation of wood. Pp. 196 to 205. (In Smithsonian Report, 1864.) Price of entire vol., cloth, 70 cents.
10. Recent progress in timber preservation. Pp. 427 to 440. Illus. (From Agriculture Yearbook, 1903.) 5 cents.
11. Report on condition of treated timbers laid in Texas. Feb., 1902. 45 pp., illus. (Forest Bulletin 51.) 10 cents.
12. Strength tests of structural timbers treated by commercial wood-preserving processes. 1915. 15 pp., illus. (Agriculture Bulletin 286.) 5 cents.
13. Tests of wood preservatives. 1915. 20 pp., illus. (Agriculture Bulletin 145.) 10 cents. (The results of testing 30 preservatives are given.)
14. Visual method for determining penetration of inorganic salts in treated wood. 1911. 5 pp., illus. (Forest Circular 190.) 5 cents.
15. Wood preservation in United States. 1909. 31 pp., illus. (Forest Bulletin 78.) 10 cents. (Describes various processes for treating wood.)

(*b*) National Lumber Manufacturers' Association:
1. "Tests of Fire Retardents, with special reference to the Shingle Roof," Hermann von Schrenk and Arnold von Schrenk. Technical Letter No. 2. May 27, 1916.
2. "Preliminary Report on Tests with Fire-Retardent Compounds on Wood," Hermann von Schrenk and Arnold von Schrenk. Proceedings, 1916, pp. 96–117; illus.
3. See sections on "Fire Retardents" and "Wood Preservation" in "Timber for Structural Purposes," 5D4*a*1.
4. See one of the series of Farm Bulletins referred to under 5G1*c*, entitled "The Preservative Treatment of Farm Timbers."
5. See other publications referred to under 5F (Piling), many of which also deal with treatments of woods.

(*c*) National Fire Protection Association:
1. "Uses of Wood in Building Construction." Committee Report. Data of tests on inflammability of untreated wood and of wood treated with fire-retarding compounds. 55 pp., illus. (3A3*d*36); also in Proceedings, 1915, pp. 106–158.

(*d*) Inspection Department, Associated Factory Mutual Fire Insurance Companies:
1. See "Dry Rot in Factory Timbers" (3A7*a*45). Contains a chapter on "Chemical Treatments to Prevent Rot," and one on "Penetration of Antiseptics."

(*e*) American Railway Engineering Association:
1. "Wood Preservation." Adopted Report of Committee, with specifications and illustrations, pp. 539–557; Manual, 1915.

(*f*) American Wood Preservers' Association:
1. Annual Reports contain many authoritative and helpful papers upon methods of protecting timbers from decay.

(*g*) American Society for Testing Materials:
1. See Report of Sub-Committee VI on Timber Preservatives, Proceedings, 1916 (1A4*a*), pp. 328–339.
2. See "Tentative Specifications for Southern Yellow Pine Timber to be Creosoted," Proceedings, 1916 (1A4*a*), pp. 483, 484. Serial designation. D24–15T.
3. See "Tentative Specifications for Southern Yellow Pine Piles and Poles to be Creosoted," Proceedings, 1916 (1A4*a*), pp. 485, 486. Serial designation D25–15T.

(*h*) Southern Pine Association:
1. "Southern Pine Manual—Standard Wood Construction," 1917 (5G2*i*1), contains information on "Creosoting," pp. 99–103.

(*j*) California Redwood Association:
1. "The Test by Fire." Leaflet on the remarkable quality of California Redwood; illustrated.

(*k*) West Coast Lumbermen's Association:
1. "Structural Timber Handbook on Pacific Coast Woods," copyrighted 1916 (5G2*j*1), contains information on "Creosoting Douglas Fir."

(*l*) Association of Creosoting Companies of the Pacific Coast:
1. "Creosoting Douglas Fir Bridge Stringers and Ties without loss in Strength," Feb. 1916, 27 pp., contains tables, diagrams, and illustrations.

(*m*) See "Tests of Timber Beams," Arthur N. Talbot. Bulletin No. 41, University of Illinois Experiment Station, 1910 (3C2*a*2); contains information on "Treated Timbers."

(*n*) See "Preservation of Structural Timbers," Howard F. Weiss. 1915.

(*o*) "Mechanical Engineers' Handbook," Lionel S. Marks, 1916.
1. "Timber Preservation," H. von Schrenk; pp. 580–583.

(*p*) "Building Construction and Superintendence," Part II, Carpenters' Work, F. E. Kidder, 1915.
1. "Methods of Preserving Timber," pp. 35–37.

(*q*) "Fire Prevention and Fire Protection," J. K. Freitag.
1. "Fireproof Wood," pp. 260–262.

(*r*) Journal of the Society of Constructors of Federal Buildings.
1. "Preservative Treatment of Structural Timber and Piles," H. G. Richey, April, 1917, pp. 194–206.

(*s*) Trautwine's Civil Engineer's Pocket-Book.
1. Preservation of Timber, pp. 954–957.

(*t*) "Lumber and Its Uses" (5B1*f*).
1. Section on "Wood Preservation" describes prevention of decay, and brush, pressure, and open-tank methods of treatment.
2. "Fire-Resistance" gives data on natural and artificial qualities, and describes "fireproofing" processes and fire-retardent paints.

5E2 *Treated Wood Flooring and Paving*

(*a*) National Lumber Manufacturers' Association:
1. "Creosoted Wood Block Paving," Walter Buehler; Technical Letter No. 1, May, 1916. Paper presented before the Arkansas Good Roads and Drainage Association, at Little Rock, Ark., April 12 and 13, 1916.
2. "Standard Specification for Creosoted Wood Block Pavement," Technical Letter No. 8, Nov. 25, 1916. (14 p. Specification, separately backed, contains several diagrams.)

(*b*) Southern Pine Association (See also p. xi):
1. "Noise, the Nerve-Wrecker—How to Eliminate It in Your City." 20 pp. Illustrated book on wood block pavements.
2. "What the Cities Say about Creosoted Wood Block Pavements," 24 pp., illus., being the opinions of civil engineers, paving experts, street commissioners and citizens' leagues, with comments by the United States Government.
3. "Floors of Service, for Factories, Foundries, Machine Shops, Mills, Warehouses, Platforms, Bridges, Loading Docks, Stables, Barns, etc." 31 pp., illus. Deals with heavy service floors, with especial reference to the points of durability, safety, and practical economy.
4. "Use of Creosoted Wood Blocks for Floors." Illus., reprinted from *The Iron Trade Review*, March 11, 1915.
5. "Creosoted Wood Block Floors for Railroad Buildings." Illus., reprinted from *Railway Age Gazette*, December 17, 1915.

(*c*) The West Coast Lumbermen's Association, and The Association of Creosoting Companies of the Pacific Coast:
1. "Facts about Paving Bridge Floors." 6-page leaflet.
2. "Creosoted Douglas Fir Paving Blocks." 46 pp. Contains tables, diagrams, and illustrations; revised Oct., 1915.

(*d*) American Society of Municipal Improvements:
1. "Specifications for Creosoted Wood Block Paving," adopted Oct. 13, 1916, copyrighted 1917. Any municipality which is represented in the membership of the Society by one or more city officials will be given free permission to use these specifications or any part of them upon application to the Secretary. 23 pp.

(*e*) Southern Pine Association (See also p. xi):
1. "Southern Pine Manual—Standard Wood Construction," 1917 (5G2*i*1). Contains a section, with diagram, on "Creosoted Wood Block Floors," pp. 126, 127.

(*f*) "Lumber and Its Uses" (5B1*f*).
Section on Wood Block Paving gives "Essentials" and specifications.

5F Piling, Piers, and Bulkheads

(The subjects covered by this heading will be found also described in many of the publications referred to under other headings.)

1. United States Department of Agriculture:
   (*a*) Preservation of piling against marine wood borers. 1908. 15 pp., illus. (Forest Circular 128.) 5 cents.
2. National Lumber Manufacturers' Association:
   (*a*) "Chicago's Four Million Dollar Pier." Technical Letter No. 3, June 12, 1916. Reprint from *Lumber World Review*, May 10, 1916.
   (*b*) "Interesting Comparison of Two Docks Recently Constructed in the City of Chicago, Illinois." Technical Letter No. 7, Sept. 5, 1916.
   (*c*) "Timber in Pier and Wharf Construction." A plain statement of facts and summary of data in regard to the use of timber in water-front structures, together with authoritative testimony from experienced engineers who have compared its fitness, durability, and cost with concrete in similar cases. Technical Letter No. 9, Nov. 30, 1916.

3. American Railway Engineering Association:
   (*a*) "Wooden Bridges and Trestles." Report of Committee. Manual, 1915 (1A9*c*) and (5G3*g*1). Contains sections on piles and pile-driving, with principles of practice and specifications for same.
4. National Board of Fire Underwriters:
   (*a*) "Building Code," 1915 (3A4*d*1). Contains: Section 19, "Wooden Piles."
5. West Coast Lumbermen's Association:
   (*a*) "Structural Timber Handbook on Pacific Coast Woods." Copyrighted 1916, (5G2*j*1). Contains section on "Piling," with diagram, pp. 255–259.
6. Journal, Society of Constructors of Federal Buildings:
   (*a*) "Pile Foundations," William S. Van Loan. Nov., 1914, Paper No. 165, p. 409.
   (*b*) "Pile Tests at the Site of the Boston Appraisers' Stores," William N. Collier. Sept. 1915, Paper No. 187, p. 278.
   (*c*) "Test Piles," Ernest G. Schurig. Nov., 1915, Paper No. 195, pp. 332–336.
7. The Building Trades' Handbook. See "Piles," pp. 157, 158, and "Spread Footings," p. 162.
8. See Kidder's Pocket Book, 1916. Contains section on "Wooden Pile Foundations," pp. 188–196.
9. American Civil Engineers' Pocket Book, 1916, M. Merriman. Contains section on "Piles and Pile-Driving," by Ira O. Baker and other sections on "Piers," "Docks," "Ferries," and "Harbor and River Works."
10. Mechanical Engineers' Hand Book, 1916, Lionel S. Marks. Also contains sections on "Piles" and "Driving" and other data.
11. Specifications issued by District Engineer, War Department, New Orleans, for "Piles, Wallings, Lumber, and Bulkheads" for Southwest Pass, Mississippi River; Jan. 16, 1917.
12. See Proceedings of the American Society of Civil Engineers. List of engineering articles of interest, published monthly.
13. See index to Journal of the American Society of Mechanical Engineers.
14. See index to the Journal of the Western Society of Engineers.

5G Wood in Buildings and in Structures in General

(See publications mentioned under Standing Timber and Manufactured Lumber, in many of which features of building construction are treated in connection with those main subjects.)

(See all subdivisions for separate features of construction and for accessories and devices.)

5G1 *Information Obtainable:*

(*a*) See, in addition to those elsewhere mentioned, the following publications of the National Lumber Mfrs.' Association (5B1):
   1. "The One-Story School-House Idea," F. Leather. (Prepared in coöperation with the United States Bureau of Education (5B1*e*). Feb., 1917. Contains 56 pages of valuable data on this type of school building, with a list of over one hundred one-story schools in America, and many plans and other illustrations. Includes technical suggestions and data for architects, fire-resistive wood construction, and discussions of heating, ventilation, and other subjects and is an important publication for every one interested in the study of one-story buildings as compared with those of greater height.
   2. "Your Garage—How to Build it." November, 1916. 16 pp. Contains floor-plans and elevations. 10 cents. (5B1*c*).
   3. "John Smith's Garage" (5B1*e*).
   4. "Wood Construction in Relation to Fire Losses" (5B1*e*).
   5. "The Shingle Roof" (5B1*c*).

(*aa*) See "Lumber and Its Uses" (5B1*f*), which contains, among others, elsewhere referred to, sections on the "Uses of Lumber," "Structural Timbers," "Lumber Prices," and "Permanent Advantages of Wood."

(*b*) See among others the following publications of the National Fire Protection Association listed under 3A3*a* to *h*:
   1. "Mill Construction Buildings," C. E. Paul, (3A3*d*32*a*).
   2. "Requirements for Standard Mill Constructed Building," Proceedings, Vol. 12, p. 103, and Vol. 21, 1917.
   3. See "Warehouses, Construction and Protection," C. H. Patton, Proceedings, Vol. 14, p. 125.
   4. Read Index 1916, for list of all subjects covered in the printed records of the N.F.P.A., many of which pertain to the varied uses of wood in general building construction.

(*c*) See Crosby-Fiske-Forster Hand Book of Fire-Protection. (Sixth edition now in preparation.)
   1. "Slow-Burning Construction: Recommendations for Mill Construction."
   2. "Improvements for Existing Buildings."

(*d*) See "Fire-Prevention and Fire-Protection," J. K. Freitag.
   1. "Slow-Burning or Mill Construction," Chap. IV. Contains description and typical diagrams, pp. 69–112.

(*e*) See Kidder's Pocket Book, 1916:
   1. "Wooden Mill and Warehouse Construction," A. P. Stradling, Supt. of Surveys, Philadelphia Fire Underwriters' Association, Chap. XXII.
   2. "Strength of Wooden Columns." Tables of safe loads, metal caps and bolsters for wooden columns, pp. 448–454.
   3. Data on wooden beams, formulas and tables, working unit stresses for woods, pp. 627–647.
   4. For built-up wooden girders, trussed beams and types of roof trusses, see separate Sections.
   5. For strength and stiffness of wooden floors, with tables of load for floors and rafters, see separate Chapter referred to under 5J2.

(*f*) See Trautwine's Civil Engineers' Pocket Book, for strength of timber and wooden columns, and for price list and business directory.

(*g*) See "Building Construction and Superintendence," Part II "Carpenters' Work," F. E. Kidder:
   1. See Chapter II, "Wooden Framing, Ordinary Construction," pp. 89–166. Profusely illustrated with framing plans and diagrams, and describing walls, floors, partitions and roof construction.
   2. See Chapter VII, "Heavy Wooden Framing," pp. 668–741. Also fully illustrated and describing flooring, trusses, girders, and mill-construction in detail, with post caps, wall boxes, hangers, stirrups, and all accessories.
   3. See Form of Specifications (for woodwork, millwork, painting, finishing, and other parts of wooden building construction), Chap. VIII, pp. 742–810.
   4. See Part III, separate volume on "Trussed Roofs and Roof Trusses."

(*h*) See "Mechanical Engineers' Handbook, 1916," Lionel S. Marks:
   1. "Building Construction," pp. 1,264–1,304.
   2. "Industrial Buildings," Charles Day, pp. 1,317–1,333.

(*j*) See "Mechanical Engineers' Pocket Book," William Kent, for notes and tables on walls, floors, columns, and other data, pp. 1,385–1,394, "Construction of Buildings."

(*k*) See "The Building Estimator's Reference Book," Frank R. Walker, second edition, Feb. 1, 1917. Contains, in addition to sections elsewhere referred to, a complete treatise on "Rough Carpentry," Chap. X, including data on materials and labor required, costs in various parts of the country, pertaining to all forms of wooden construction and accessories.

(*l*) See Proceedings of the American Society for Testing Materials, Vol. XVI, Part I (1A4*a*):
   1. Report of Committee (D7) on Timber.
   2. See also Mr. von Schrenk's description under 5A2.

(*m*) See "American Civil Engineers' Pocket Book," M. Merriman:
   1. "Materials of Construction," Rudolph P. Miller, "Timber," pp. 360–370.
   2. "Masonry and Timber Structures," W. J. Douglas, pp. 651–702.

(*n*) See "Materials of Construction," Johnson.

(*o*) See "The Building Trades' Handbook" for information on Carpentry Joints; Balloon Framing; Joints in Joinery; Estimating Carpentry and Joinery; Weights of Floors, Partitions, and Roofs; Beams and Girders; Roof Trusses; Columns; Furring and Lathing.

(*p*) University of Illinois, Engineering Experiment Station (3C2*a*2):
   1. "A Study of Roof Trusses," N. Clifford Ricker. Bulletin No. 16, 1908. 15 cents.

(*q*) Southern Cypress Manufacturers' Association:
   1. See the volumes of "Cypress Pocket Library," covering all uses for cypress (5H10*a*).

For information on the use of yellow pine in building construction, see the Industrial Section, p. xi, Southern Pine Association.

For information on oak, see Industrial Section, p. viii, American Oak Mfrs. Association.

5G2 *Practice Recommended and Suggested by:*

(*a*) United States Department of Agriculture, Forest Service and Forest Products Laboratory:
   1. See such of the publications, which are listed under 5D1, as may apply to this subdivision.

(*b*) United States Bureau of Mines:
   1. "Magazines and Thaw Houses for Explosives." Technical Paper No. 18 (2A3*c*). 34 pp. text, data and diagrams.

(*c*) National Lumber Manufacturers' Association (5B1):
   See, in addition to those elsewhere mentioned:
   1. "Building Code Suggestions" (Fire Stops, Careful Workmanship, and Proper Selection of Materials as Safeguards in Frame Dwelling Construction). Technical Letter No. 4, Aug., 1916. Contains construction details.

2. "Building Code Suggestions" (Chimneys, Flues, Smokepipes, and Fireplaces in Their Relation to the Fire Hazard in Dwellings, with Detailed Provisions for Incorporation in Municipal Building Codes). Technical Letter No. 5, Aug., 1916. Contains construction details.
3. "Economics of Concrete and Timber Factory Buildings," F. E. Davidson, President Illinois Society of Architects. Technical Letter No. 6, Sept. 2, 1916.
4. "Heavy Timber Mill Construction Buildings," C. E. Paul. Engineering Bulletin No. 2, May, 1916 (5B1*b*). Contains chapters on: Mill Construction Defined; Exterior Walls, Fire Walls, and Enclosures; Floors; Posts or Columns; Roofs; Fire Protection; Cost of Mill Construction Buildings; Standard Mill Construction; Quality and Kind of Timber Used; Formulas for Design in Mill Construction (with table of working unit stresses). 67 pp. 50 cents.
5. Helpful suggestive bulletins on "Rural Architecture" (5B1*a*). The ten issued to date bear the following titles:
   (*a*) Dairy and General-Purpose Barns; (*b*) Teachers' Cottages; (*c*) Poultry Houses; (*d*) Farm Residences; (*e*) Implement Sheds; (*f*) Ice Houses; (*g*) Silos; (*h*) Grain Storage Buildings; (*j*) Swine Houses; (*k*) The Preservative Treatment of Farm Timbers.
   These publications are of especial interest and value to all architects concerned with the development of rural or suburban properties along practical, scientific, and harmonious lines. The publication of these Bulletins covering different farm units is most commendable as a distinct step in the elevation of the standards obtaining in these so frequently neglected types of structures. The reported demand for these publications is indicative of the interest aroused on the part of architects and others desirous of developing a finer type of rural architecture.
6. "Teachers' Cottages," R. S. Kellogg, in coöperation with the United States Bureau of Education, April, 1916 (5B1*a*). 31 pp., with illustrations of foreign and American accommodations for teachers and a valuable list of articles and publications for reference.

(*d*) National Board of Fire Underwriters:
1. "Building Code," 1915 (3A4*d*1). (See description by Mr. Woolson under 3A4.) Will be found to offer invaluable suggestions and assistance on all features of construction both generally and specifically. In addition to buildings in general and all parts of their construction, the following are separately treated: Classification of Buildings, Ordinary Timber Construction, Mill Construction, Frame Buildings, Structural Timber, Working Stresses of Structural Timber. Allowable Loads, and Fire Stopping.
2. "Dwelling Houses," 1916 (3A4*d*3). (See description by Mr. Woolson 3A4.) Contains sections on "Frame Dwellings," "Fire Stopping," Floor and Roof Construction," and others of interest. See index to same.

(*e*) National Fire Protection Association:
1. "Field Practice: Inspection Manual." See description 3A3*d*1.
2. "Structural Defects: Suggestions for Their Elimination and Protection" (particularly with reference to safeguarding existing features) (3A3*d*32*b*).

(*f*) Inspection Department, Associated Factory Mutual Fire Insurance Companies:
1. See "Anchorage of Roofs" (3A6*a*1) for detail drawings and recommendations for securing wooden roofs.

(*g*) The American Society for Testing Materials:
1. Tentative specifications for "Selected Structural Douglas Fir Bridge and Trestle Timbers," Proceedings, 1916 (1A4*a*), pp. 479–482. Serial designation D23–16T.

(*h*) The Associated Metal Lath Manufacturers (See also p. xxix):
1. See "Metal Lath Handbook." Contains descriptions and detail drawings for "Protection of Steel Beams in Slow-Burning or Mill Construction;" "Fire Stops;" and "Mill Construction Buildings Protected by Metal Lath and Plaster."
2. Illustrations from the Metal Lath Hand Book, showing details of ceiling construction and giving important recommendations on the weight of metal lath will be found in the Industrial Section on p. xxix.

(*j*) West Coast Lumbermen's Association:
1. "Structural Timber Handbook on Pacific Coast Woods," copyrighted 1916, 289 pp. Contains description of Pacific Coast Woods, specifications, tables for beams and floors, safe loads, diagrams and illustrations. $1.
2. "The Douglas Fir Silo," 24 pp., illus.

(*k*) Association of Creosoting Companies of the Pacific Coast:
1. "Structural Timber Handbook."
2. "Strength Values for Structural Timbers."
3. "The Douglas Fir Silo."

(*l*) Southern Pine Association (See also p. xi):
1. "Southern Pine Manual: Standard Wood Construction," 1917 (fifth edition). Contains, in addition to sections elsewhere referred to, diagrams, tables, specifications, grades of timbers, and data relating to beams, columns, floors, partitions, etc. 128 pp. Leather bound, $1.
2. "Implement Sheds," 11 pp. Contains: Table Showing Floor Space and Height of Space Required to House Common Farm Implements.
3. "Service and Economy in Building," 23 pp., illustrated.
4. "The Home-Built Garage," 16 pp., illustrated.

(*m*) California Redwood Association:
1. "California Redwood on the Farm," 38 pp., illustrated. Contains descriptions of many uses and recommendations for painting or staining this wood. See reference under "Shingles," 5K.
2. "The Home of Redwood." Illustrating and describing exterior and interior of building erected at the Panama-Pacific International Exposition by this Association, L. C. Mulgardt, architect.

(*n*) Arkansas Soft Pine Bureau:
1. "How to Build," 24 pp., with illustrations of the wood, and diagrams of framing construction and of exterior wooden walls, with other recommended practice in frame construction.

(*o*) White Pine Bureau (See also p. xiv):
1. "White Pine in Home-Building." A book of 35 pages, describing the qualities, availability, and cost of White Pine, with many illustrations of attractive exteriors with "close-up" views of entrances, fences, and other features.
2. The White Pine Series of Architectural Monographs. These publications, especially prepared for architects, under the direction of Mr. Russell F. Whitehead, are unusually interesting and suggestive as exemplifying the artistic and lasting qualities which may be obtained through the use of wood in the construction of buildings and in the embellishment of the structures and their surroundings. These Monographs were issued to present classified illustrations of wood construction critically described by representative American architects, the pictorial side being made the dominant feature and the example being selected for their general attractiveness. Beginning with July, 1915, nine volumes as follows have been issued to January, 1917. Copies of current issues may be had upon application to Mr. Whitehead, the Editor.
   Vol. I, No. 1, Colonial Cottages. Text by Joseph Everett Chandler.
   Vol. I, No. 2, New England Colonial Houses. Text by Frank Chouteau Brown.
   Vol. I, No. 3, Farm Houses of New Netherlands. Text by Aymar Embury II.
   Vol. II, No. 1, Houses of the Middle and Southern Colonies. Text by Frank E. Wallis.
   Vol. II, No. 2, Domestic Architecture in Massachusetts. Text by Julian Buckly.
   Vol. II, No. 3, Early Houses of the Connecticut River Valley. Text by Richard B. Derby.
   Vol. II, No. 4, A Suburban House and Garage. Report of Jury of Award.
   Vol. II, No. 5, Old Woodbury and Adjacent Domestic Architecture in Connecticut. Text by Wesley S. Bessell.
   Vol. II, No. 6, Colonial Architecture of the Eastern Shore of Maryland. By Charles A. Ziegler.

(*p*) Carnegie Steel Company:
1. See "Pocket Companion," Jan. 1, 1916, for Allowable Uniform Loads for Wooden Beams and Columns of various woods, Specific Gravities and Weights, and other tables.

(*q*) Jones & Laughlin Steel Company:
1. See "Manual" for Architects, Engineers and Contractors, 1916, for Allowable Uniform Loads for Wooden Beams and Columns of various woods, Specific Gravities and Weights, and other tables.

5C3 *Standards Adopted*

(*a*) "Building Codes." The mandatory provisions of all Codes, state or municipal, must first govern construction in each locality, as mentioned under 4B3*a*.

(*b*) See also 4B2*b*, and the publications of the National Lumber Manufacturers' Association mentioned under 5G2*c*1 and 2, for reference to the Building Code recommended by the National Board of Fire Underwriters as a proposed standard.

(*c*) By the National Board of Fire Underwriters (recommended by the N.F.P.A.):
1. "Hose Houses for Mill-Yards: Construction and Equipment," (3A3*a*13).

(*d*) By Inspection Department, Associated Factory Mutual Fire Insurance Companies:
1. See 5D3*d*2 for small illustrations and brief reference to standard mill and factory construction.

(*e*) By American Society for Testing Materials:
1. Standard Specifications for Yellow Pine Bridge and Trestle Timbers. Serial designation D10–15.
2. See Standard Definitions of Terms (5D3*a*1).

(*f*) By Associated Mutual Fire Insurance Companies of New England:
1. "Standard Mill Construction," shown in Report V, issued by the Insurance Engineering Experiment Stations under direction of Boston Manufacturers' Mutual Fire Insurance Co. Illustrated and described in Chapter VIII of 5G2*c*4. Report now obtainable from the Associated Factory Mutual Fire Insurance Companies (3A7*c*), by whom the work of the Experiment Station has been taken over.

(*g*) By American Railway Engineering Association:
1. "Wooden Bridges and Trestles" (5F2*a*), Manual 1915, pp. 219–246. Contains sections on Standard Defects of Structural Timber; Standard Names for Structural Timbers; Standard Specifications for Southern Yellow Pine Bridge and Trestle Timbers; Standard Heart Grade, Longleaf Yellow Pine; Standard Grade, Longleaf and Shortleaf Yellow Pine; Standard Specifications for Douglas Fir and Western Hemlock Bridge and Trestle Timbers.
2. See Grading of Lumber (5D3*b*).

(*h*) For dividing of floor areas, types of partitions, stair enclosures, and other features of industrial buildings, see "Universal Safety Standards," 1914. Compiled under the direction of and approved by the Workmen's Compensation Service Bureau, New York.

(*i*) By Underwriters' Laboratories:
List of appliances inspected for accident hazards, first issue July, 1916, revised, January, 1917, covers a variety of safety appliances which are regularly inspected and labeled under the Underwriters' Laboratory label service. This work is carried forward in coöperation with the Workmen's Compensation Service Bureau.

(*j*) For mechanical post cap and girder supports and other appliances and materials inspected and labeled or approved, with names of the articles and manufacturers, see:
1. List of Inspected Mechanical Appliances (3A6*b*).
2. Approved Fire Protection Appliances, Oct. 1916 (3A7*a*3).

(*k*) See all references in N.F.P.A. Index to "Uniform Requirements."

(*l*) For wood cores in fire doors and shutters, see the various publications mentioned under 4C3.

(*m*) For wooden tanks, see 4D5.

5C4 *Some Wood-Construction Accessories*

(*a*) Very important, with respect to the reductions of shrinkage in construction when open and the cracking of plaster when closed, is the consideration of post caps, hangers and other devices designed, not only for structural support, but to overcome some of these defects. Reference to these accessories will be found in many of the publications listed in this issue and also as follows:

(*b*) For Floor Hangers, Roof Connections, and Devices, see 4D4.

(*c*) For Scuppers, Inserts and Devices, see 4C4.

(*d*) Pulleys. This is an important question in connection with millwork. In addition to the finish of the article, so much depends upon the construction and size—determined by the use, the area and weight of sash, size of box and other considerations. The matter of standardization has been carefully worked out by the Columbian Hardware Co. as exemplified by the data printed in the Industral Section on pp. XXIII, XXIV, XXV.

(*e*) "Nail Knowledge," Oct. 2, 1915, and "More 'Nail Knowledge'", W. T. Flanders, *American Lumberman*, Nov. 27, 1915. Articles of much interest in connection with the use of wood and the lasting qualities of nails used.

(*f*) For correspondence concerning lathing nails, see 5M3.

(*g*) For information on self-releasing fire-exit latches, see Industrial Section, p. XXXII, Vonnegut Hardware Co.

(*h*) For Lightning Protection, see 4G.

(*j*) The use of units individually applied for "grounds" instead of plugging walls for continuous wooden stringers and for laying of "sleepers" for wooden floors is receiving the attention of manufacturers, as evidenced by circulars and catalogues distributed. See same for information.

5H Exterior and Interior Wood Finish, Veneering and Finishing

United States Department of Agriculture (Forest Service):
(*a*) "Sugar Pine." Professional paper, Bulletin No. 426, 15 cents. Describes the qualities of this as an important wood in the manufacture of special and general millwork.
(*b*) "Veneers" (statistics and method of production), 1906, 6 pp. (Forest Circular 133), 5 cents. 1909, 23 pp. (Forest Products 5), 5 cents, 1910, 6 pp., 5 cents. 1911, 8 pp., 5 cents.
(*c*) "Circassian Walnut," 1913, 12 pp., illus. (Forest Circular 212), 5 cents.

(For Floors and Floor Finishing, see 5J.)

1. See "Lumber and Its Uses" (5B1*f*):
(*a*) Section on "Standard Sizes of Lumber" gives Association Standards for Flooring, Ceiling, Partition, Siding, Finish, Shiplap Boards, and Dimension Work.
(*b*) Section on "Permanent Advantages of Wood" treats of Availability, Strength Compared with Weight, Workability, Insulating Qualities, and Figure.
(*c*) Section on "Paints and Wood Finishes" describes: Preparatory Treatments, and gives Specifications of Master Painters for Exteriors, Interiors, Hardwoods, and Softwoods.

2. Southern Pine Association (See also p. XI):
(*a*) "The Standard Moulding Book," 1916, 37 pp., illustrated with Patterns of Full-sized Mouldings and all forms of finish in Southern Yellow Pine.
(*b*) "Directions for Finishing Southern Yellow Pine," 19 pp., colored fac-similes of finished woods and other illustrations, including interiors, with notes on painting, staining, and varnishing of this wood.
(*c*) Service and Economy in Building (5G2*n*). Also similar in contents to (*b*) without the colored plates.
(*d*) See "Standard Specifications for Grades of Southern Yellow Pine Lumber." Contents described under 5D4*f*2.

3. Gum Lumber Manufacturers' Association (See also p. IX):
(*a*) "Technical Information about Red Gum," (no date), 16 pp. Illustrating and describing the figure in this wood, with notes on the care of hardwood doors and trim.
(*b*) "Red Gum Facts" (no date), 13 pp. Illustrating and describing interior and other uses and with formulas for various finishes.
(*c*) For many illustrations and much illuminating information on processes of manufacture, methods of using, kinds of veneers and other data, see *Canadian Woodworker and Furniture Manufacturer* for April, 1917, being a Feature Number on Gum Lumber.

4. California Redwood Association:
(*a*) "California Redwood," 70 pp., colored illustrations. Treating of the use of redwood for interior trim and offering many suggestions in addition to giving "Directions for Rare Finishes on Redwood." Eight large colored panels show in facsimile varying effects of grain also. See 5D7*g* for reference to discussion of lengths and selections.
(*b*) "In the Home of Redwood" 5G2*m*2. The use of this wood in interiors is described and formulas are given for interior finishes.

5. Arkansas Soft Pine Bureau:
(*a*) "Architects' Manual on Arkansas Soft Pine," copyrighted 1916, 62 pp., illus. Includes complete description of the wood as to Origin, Individuality, Physical Characteristics, Proper Uses, Proper Finishing, Painting Formulas, and contains table of Board Measure and 30 pages of full-sized drawings of all kinds of exterior and interior trim, frames, sills, rails, and Standard Molding Designs and Grading Rules for all forms of finish.
(*b*) "Arkansas Soft Pine: Interior Trim," 18 pp., colored and other illustrations.
(*c*) "Arkansas Soft Pine: How to Finish and Paint It," copyrighted 1917, 23 pp., illus.
(*d*) "Not a House but a Home." Home Construction, Hints for the Layman; Description of Wood; Cottage and Residence Designs, with introduction of Aymar Embury II, architect. 36 pp.

6. West Coast Lumbermen's Association:
(*a*) "Suggestions for the Finishing of Western Woods."

7. Society of Constructors of Federal Buildings:
(*a*) "Fumed Oak," Chas. E. Morrell. Journal, Nov., 1915, Paper No. 198, pp. 342–343.

8. White Pine Bureau (See also p. XIV):
(*a*) "White Pine Specifications." This is an exhaustive treatise, in preparation, and now almost completed, to supply the information heretofore lacking with respect to "frame construction" and the grades of lumber. It has been designed especially for architects to assist them in specifying and to enable them to refer in the language of the lumber trade to the specific grades of white pine most economically adapted to various building uses.
(*b*) See "Architectural Monographs," described under 5G2*q*2.

9. North Carolina Pine Association:
   (*a*) "Architects' and Contractors' Reference Book on North Carolina Pine," 7 pp., illus. Contains information on the origin and nature of the wood, its adaptability, its use in connection with interior and exterior work and for various types of buildings, comparative cost, and colored illustrations of finish.
   (*b*) "North Carolina Pine for Architects and Contractors," 15 pp., colored illustrations, of stained boards and illustrations of exteriors. Treats of the character of the wood, its exterior and interior use, its adaptability to staining and enameling, digest of grading rules, use of millwork for doors and sash, cost and availability.
   (*c*) "Your Home Beautiful," 16 pp., colored illustrations of stained boards and colored interior views.
   (*d*) "Planning the New Home," 24 pp. Contains colored illustrations of stained boards; exterior illustrations and floor plans of ten modern homes, together with information on the characteristics of this wood, its adaptability for every use, its cost, and digest of grading rules.
   (*e*) "Architects' Reference Book," 16 pp., color plates.
   (*f*) "Home Builders' Book," 24 pp., color plates.
   (*g*) "N. C. P. Millwork Manufacturers," giving a list of same.
   (*h*) "Inspection Rules," 24 pp. Contents noted under 5D4*k*1.
10. Southern Cypress Manufacturers' Association:
   (*a*) "Cypress Pocket Library." Consists of 41 booklets covering all uses for Cypress (5G1*q*1). See index to same in Vol. 1.
11. See "Veneered Work in Building Construction," G. D. Crain, Jr. Article printed in "Veneers," September, 1916.
12. See Kidder's Pocket Book, 1916, in addition to sections elsewhere referred to.
13. See "Building Construction and Superintendence," Part II, "Carpenters' Work," F. E. Kidder. Contains, in addition to sections elsewhere referred to:
   (*a*) Chapter III describes: Sheathing; Window-frames; Sashes; Store-front Construction; Window-glass and Glazing; Outside-door Frames; Superintendence.
   (*b*) Chapter IV describes: Outside Finish in general; Eaves, Cornices, and Gutters; Gables; Water-tables, Corner-boards, and Belt-courses; Covering of Outside Stud Walls; Porches and Piazzas; Dormers; Skylights and Scuttles; Roofing.
   (*c*) Chapter V describes: Rough Work; Joiners' Work; Doors and Windows, Frames and Finish; Inside Blinds and Coiling Partitions; Bases and Wainscoting; Wooden Cornices, Built-up Beams, and Columns; Miscellaneous Interior Wooden Finish; Stairs; Fixtures and Fittings; Dimensions of Furniture.
   (*d*) Chapter VIII: "Specifications" for: Interior Finish; Painters' Work; also Notes on Painting Specifications.
14. See "The Building Estimators' Reference Book," 1917. Frank R. Walker. Contains, in addition to sections elsewhere referred to:
   (*a*) Chapter XI: "Mill-Work and Interior Finish, Erection of Same;" treats of Methods of Estimating the Labor Cost for Erecting Exterior and Interior Mill-work and Finish.
15. See "Building Trades' Handbook." Contains, in addition to sections elsewhere referred to, information on Windows, and Outside and Inside Finish, with many illustrations.
16. For further information on the use of white pine for exterior and interior finish, with illustration of doorway to house at Bedford, Mass., see the Industrial Section, p. xiv, White Pine Bureau.
17. For more detailed information concerning red gum, with illustrated effects and description of publications of the Red Gum Manufacturers' Association, see p. ix in Industrial Section.
18. For Special Service Department for Architects on the use of cypress in greenhouse construction, see Industrial Section, p. i, Lord & Burnham Co.
19. For description of oak and its uses, see Industrial Section, p. viii, American Oak Manufacturers' Association.
20. For other information on materials to be used in finishing woodwork, see pages in the Industrial Section as follows:
   Special Varnish for Every Purpose." Murphy Varnish Co. P. xii.
   "Kyanize White Enamel." Boston Varnish Company. P. x.
   "Hospital and Laboratory Enamel." Toch Brothers. P. xv.
   "Satinette Enamel." Standard Varnish Works. P. xvi.

5J Wood Floors and Finishes and Parquetry Work

(Treated wood flooring and paving referred to under 5E2.)

In addition to their inclusion in many of the publications elsewhere referred to, these subjects will be found treated in:

1. "The Building Estimator's Reference Book," Frank R. Walker. February 1, 1917.
   (*a*) A complete section on wood flooring, pp. 1318–1381, gives quantities, costs, kinds of materials, methods of laying plain floors, laminated floors, hardwood and parquetry floors, and of scraping sanding, and complete finishing with several pages of illustrations of parquetry floors and wood carpets.
2. Kidder's "Architects and Builders' Pocket Book, 1916." (Revised edition in preparation.)
   (*a*) Strength and Stiffness of Wooden Floors, Thomas Nolan. Chapter XXI. Includes framing plans, tables for plank flooring and all other kinds, illustrations of joist and beam hangers.
   (*b*) See "Data on Lumber and Carpenters' Work," pp. 1472–1478.
3. "Building Construction and Superintendence," F. E. Kidder. Part II, Carpenters' Work.
   (*a*) Floors, p. 519 and following: Grading of Flooring, Weights of Flooring, Laying Flooring, Parquet Flooring, Parquetry Flooring, illustrated with full-size sections of flooring boards and otherwise.
4. Suggested Codes of the N.B.F.U. (3A4*d*1).
   (*a*) "Building Code, 1915." See section giving data on slope of floors in mill-construction and other floors for drainage of water, pp. 129–130.
   (*b*) "Dwelling Houses." See Floor and Roof Construction, pp. 31–39, particularly the recommendations under Section 29 on "Wooden Flooring" for double floors and floors over fireproof construction, with notes on timber.
5. See "Watertight Floors of Mill-Construction" (3A6*a*26). Also contains diagrams of flashings against walls and at columns.
6. "Flooring—Hardwood." Standard Specifications (Specifications and General Notes), Building Data League (2A5*a*), March, 1917.
7. *Quarterly* of the N.F.P.A. See "Index" to subjects, also:
   (*a*) Unit System of Wood Flooring for Fireproof Manufacturing Buildings, C. H. Patton, Vol. 8, No. 1.
   (*b*) Waterproofing Floors, Vol. 7, No. 4.
   (*c*) Enclosures for Floor Openings, Vol. 8, No. 3.
8. "Mechanical Engineers' Pocket Book," Wm. Kent. 1916.
   (*a*) Floors, Strength of floors (planks), pp. 1390–1394.
9. "Lumber and Its Uses" (5B1*f*).
   (*a*) Hardwood Flooring—Kinds, Grades, Uses and Methods of Finishing.
   (*b*) Standard Sizes of Lumber—Association Standards for Flooring.
10. "Structural Timber Hand Book on Pacific Coast Woods" (5G2*j*1).
   (*a*) See sections and tables on Laminated Floors and Mill-Floors.
11. Publications of the Southern Pine Association (See also p. xi):
   (*a*) "Standard Specifications for Grades of Southern Yellow Pine Lumber," 1917 (5D4*g*2). Contains sections on "Heavy Flooring" and on "Flooring," with full-size detailed and figured drawings and describes sizes of material in the rough and when surfaced and finished. Defines sizes, lengths, grades, crook, and gives a special clause for determining average of defects. Grades, as follows, defined: Edge Grain—A, B, C, D, and No. 1 common;—Flat Grain—A, B, C, D, No. 1. Common, No. 2, common and No. 3. Sheathing (or No. 3 Common Flooring); also refers to Standard Matched Flooring, Center Matched Flooring, and No. 1, Common Factory Flooring and Heart Face Edge Grain.
   (*b*) "The Gulf Coast Classification of Pitch Pine Resawn Lumber and Sawn Timber," 1915 (5D4*g*3), gives list of sizes of flooring and defines grades as follows: Rift, Special (Crown and French Flooring), Prime (Heart Face), Standard (Genoa Prime), Merchantable, and Square Edge.
   (*c*) "Yellow Pine—A Manual of Standard Wood Construction." (5G2*m*1.) See Properties of Yellow Pine Mill Floors and Laminated Floors and tables and other data on heavy floor construction.
   (*d*) "Directions for Finishing Southern Yellow Pine" (5H2*b*). See section on Finishing Southern Yellow Pine Floors; contains general directions and recommendations as to the wood, manner of laying and methods of finishing floors in residences.
   (*e*) See 5D7*f* for note about short lengths in flooring.
12. Publications of the North Carolina Pine Association:
   (*a*) "Official Inspection Rules," January 25, 1917. Under "Flooring" gives description of the standard lengths and defines the grades, as follows: Flat grain (unless otherwise specified)—No. 1 Flooring, No. 2 Flooring, No. 3 Flooring, No. 4 Flooring; Rift—No. 1 Rift Flooring, No. 2 Rift Flooring. Also describes lengths (same as flooring) for "Factory Flooring and Roofers" and defines grading same as box lumber. Contains full-size detailed and figured drawings of standard gauges for flooring, ceiling, partition, factory flooring and spline.

(*b*) "North Carolina Pine—Doubly Desirable for Flooring and Ceiling," 4-page folder, describes the method used in the working of this wood for these and similar purposes and quotes from Forest Service Bulletin No. 99, about the use of shortleaf pine.

For further reference to this publication see 5D7*d* under "Standardization and Conservation."

(*c*) In "North Carolina Pine for your Home" is given a digest of grading rules adopted by the Association for all forms of finish including flooring.

(*d*) In "North Carolina Pine, the Wood Universal" is given a similar digest.

13. In "Red Gum Facts" (5H3*b*) is a description of the process of kiln-drying and reference to this wood as flooring material as well as for its many other uses.

14. Publications of the Maple Flooring Manufacturers' Association:

(*a*) "Grading Rules—for Maple, Beech and Birch Flooring." Adopted September 24, 1913. Copyrighted and reproduction prohibited. Definitions given: The Clear Grade, the No. 1. Grade, The Factory Grade, Special Grades, Standard Measurement, Custom Governing Reinspection, Advantages of Standard Lengths.

(*b*) "How to Lay and Finish Maple Floors." 1915. Contains: Directions for Laying, Economy of End Matched Flooring, The Proper Nail to Use (with illustrations of kinds and methods), Scraping and Sanding, Directions for Finishing Floors, (oil treatment, wax finish, and varnished floors), Repairing Waxed Floors, Staining Maple, Beech and Birch, Selection of Flooring.

(*c*) "Schoolroom Floors," 1915. A 16-page illustrated treatise.

(*d*) "Individuality in the Home," 1915. 14 pages of suggestions to home-builders with respect to flooring.

(*e*) See statement about branding under 5D6*e* and about short lengths under 5D7*e*.

15. Publications of The Oak Manufacturers' Association of the U. S. and the Oak Flooring Service Bureau:

(*a*) "Oak Flooring." Seventh Edition, 1915. Contains grading rules as follows: Quarter-Sawed—Clear, Sap Clear, Select; Plain Sawed—Clear, Select, No. 1 Common, Factory; also recommendations as to the use of different grades. Also contains, Standard Thicknesses and Widths, How to Arrive at the Amount of Oak Flooring Required, Standard Weights of Oak Flooring, Handling, Laying Oak Floors, with Directions for Kind and Spacing of Nails, Scraping, Finishing (oil, wax and varnish), Care of Oak Floors, and Economical Uses.

(*b*) "How to Lay Oak Flooring." Leaflet. (Not dated, received November 8, 1916.) Contains Grading Rules (changing factory grade of "Plain Sawed" to "No. 2 Common" but with definition as before), The Use of Different Grades, with detailed drawings of Two Ways to Deaden a Floor, Laying, Scraping, Care of Oak Floors.

(*c*) "Three-eighths-inch Oak Flooring—Its Commercial Worth in Old Houses." Leaflet with illustrations and descriptions contributing to this purpose, with the Names and Uses of Different Grades ⅜-inch Oak Flooring and ⅝-inch Oak Flooring vs. Carpets. (Not dated, received August 28, 1916.)

(*d*) See statement about branding under 5D6*d*.

16. Arkansas Soft Pine Bureau:

(*a*) "Architects Manual on Arkansas Soft Pine" contains Grading Rules for Flooring, and Heavy Flooring, with description of sizes when worked and drawings and photographic illustrations of flooring.

17. Southern Cypress Manufacturers' Association:

(*a*) In Vol. 1, of the Cypress Pocket Library it is recommended that porch floors should be of cypress.

18. Northern Pine Manufacturers' Association:

(*a*) In "Rules for the Grading of Northern Pine, Spruce and Tamarack Lumber" Association Standard Grades for Flooring define: A Flooring, B Flooring, C Flooring, D Flooring, and Farmers' Clear Flooring.

19. In "Heavy Timber Mill Construction Buildings" (5G2*c*4) is a section devoted to floors, describing general construction with details of laminated floors, sizes of bays, methods of flashing, with tables of allowable floor loads and working stresses.

20. See various publications and recommendations of manufactures of floor finishes which are not here referred to, except as below, the intention being to give at this time the recommendations of the manufacturers of the floors themselves who are of course eminently concerned with the proper treatment and care of their products.

21. For statement with respect to varnish used on floors, see Industrial Section, p. xii, Murphy Varnish Company.

22. For references to oak flooring, see Industrial Section, p. viii, American Oak Manufacturers' Association.

5K Shingles, Lathing and Wall-boards

The subjects covered by this heading will be found included in a great many of the publications referred to under the other subdivisions.

1. See Forest Products—Lumber, Lath and Shingles. 1909, 63 pp. 5 cents; 1910, 45 pp., 5 cents; 1911, 45 pp., 5 cents. Department of Commerce, Bureau of the Census, compiled in coöperation with Department of Agriculture, Forest Service. (Discontinued, see 5D1*d*.) These are statistical summaries.

2. Standard specifications for yellow pine shingles are included in the publication of the Southern Yellow Pine Association mentioned under 5D4*g*2, which also includes standards for lathing and Byrkit lath and gives a list of standard sizes of yellow pine laths.

3. In "The Lumber Users' Guide" (No. 12) listed under 5D4*h*2, the use of Washington red cedar for shingles is touched upon—grades not given.

4. In "California Redwood on the Farm," listed under 5G20*i*, is a section devoted to redwood shingles and shakes, with interesting illustrations of split-strakes and diagrams for laying shingle and shake roof construction. Contains, also, a description of the grades and recommendations as to the manner of laying.

5. For cypress shingles, see "Classification and Grading Rules for Cypress Shingles" p. 652 of 1915 "Manual" of American Railway Engineering Association. (1A9*c*.) Defines grades—Bests, Prints, Star a Star, Economy and Clippers and standards for quantities and inspection.

6. See Pocket Library of Southern Cypress Manufacturers' Association Vol. 7, "Cypress Shingles (a 'Yes' Book);" Vol. 29, "Cypress Shingle House No. 1;" Vol. 34, "Shingle House No. 2."

7. For red cedar shingles the Shingle Branch of the West Coast Lumbermen's Association adopted grading rules, effective June 25, 1916, entitled "Rite-Grade Grading Rules." See separate leaflet defining same.

Among the many other publications of this Shingle Branch are:

(*a*) "Distinctive American Homes of Red Cedar Shingles." 18 pp.

(*b*) "Bungalow Homes of Red Cedar Shingles." 18 pp.

(*c*) "Farm Buildings of Red Cedar Shingles." 18 pp.

Each of these is attractively illustrated with perspective views, plans and diagrams.

(*d*) "Nails," a leaflet giving sizes and kinds to use for different forms of material, including shingles.

It also publishes a set of twelve "Bungalow Designs" (plans and elevations, specifications and bill of materials), based on the use of shingles.

8. In "Structural Timber Hand Book" published by the same Association (listed 5G2*j*1) will be found several pages describing and illustrating the correct method of laying red cedar shingles, the kind and size of nail to use, and other recommendations. Also "Grading Rules for Red Cedar Shingles Which Have Been in Use Since 1908," as well as the "Rite-Grade" Grading Rules of the Shingle Branch of this Association, above referred to.

9. See "Architects' Manual on Arkansas Soft Pine" (5H5*a*) for drawings and grading rules of lathing, Byrkit lath, lattice and other finish.

10. In "Rules for the Inspection of Hemlock Lumber," adopted by The Northern Hemlock and Hardwood Manufacturers' Association (5D4*d*1), the definitions are given, at length, of No. 1, and No. 2 Lath.

11. In "Report of the Committee on the Uses of Wood in Building Construction" (5E1*c*1), see Part III, Investigation of the Relative Inflammability of Untreated and Treated Siding and Shingles.

12. See "The Building Estimator's Reference Book," F. R. Walker, 1917, for estimating quantities of shingles, labor, nails and other features of construction.

13. In "Building Trades Hand-book" is a treatise on shingles with illustrations and descriptions of laying, gauging, forming hips and valleys and table of quantities; also reference to lathing.

14. "Building Construction and Superintendence," F. E. Kidder. Part 11, Carpenters' Work.

(*a*) Wall Shingling. (*b*) Shingled Roofs in General, 18 pages of descriptive matter about kinds and grading of woods, paper lining, laying, ridges and hips, valleys and flashings, and snow-guards, with various tables and diagrams. (*c*) Furring and lathing.

15. See "Association Standard Grades," rules for the grading of northern pine, spruce and tamarack lumber of the Northern Pine Manufacturers' Association. In same is defined No. 1 White Pine Lath; No. 1 Mixed Lath and No. 2 Lath.

16. See Current Comments (5M3) for some interesting correspondence on the subject of lathing.

17. For illustrations and description of a wooden dovetailed lath (creosoted) imbedded in asphalt-mastic on a fiber-board backing, making a stucco or plaster-board, see Industrial Section, p. iii, the Bishopric Manufacturing Co.

18. Shingles may be obtained already treated and stained, whether for "regular" effects or for "thatched roofs," as in the case of "Creo-Dipt" stained shingles; see Industrial Section, p. xlvii.

19. For illustration and description of effects to be obtained by the use of creosote stains on shingles, see Industrial Section, p. xvi, Samuel Cabot, Inc.

5L Recreation Facilities—Bowling Alleys, Billiard Tables and Other Games

As wood is the principal material entering into the construction of games and other recreational facilities which are housed from the weather, and as many of them require and should receive proper consideration in planning on account of adequate provision which should be allowed for their accommodation in the structure, it has been thought well to touch upon the subject of space requirements for some installations here. Other recreational facilities for indoors and outdoors will be treated in subsequent issues.

1. In "Kidder's Pocket Book (1916)" and in some few of the other books referred to in various issues of the Journal will be found, under the Index, names of games and equipment required, and in the text brief desrciptions, list of sizes and similar data pertaining to shuffle-boards, squash-courts, and other games.
2. In the Industrial Section of this issue will be found, on p. XIII, authoritative figured installation drawings and measurements for bowling-alleys and lists of sizes of billiard tables and space-requirements as prepared by the makers themselves—the Brunswick-Balke-Collender Co.
3. It should be borne in mind that space-requirements given, while a liberal minimum for satisfactory playing, do not purport to provide space for spectators for whom, when desired, further space-allowance should be made. Columns, pilasters, chimney breasts and other projections should never be allowed to encroach upon the space required, nor to interfere with the player's enjoyment.

5M Current Comment

1. Activities to date, with respect to lumber and its uses structurally, are fully covered under descriptions given of the Forest Service, and of the various committees and associations at the beginning of this issue.

2. The following notation of corrections which should be made in the New York City Building Code is of interest:

Attention is called to incorrect values of working stresses for timber in compression across the grain, still printed and circulated (May, 1917) in the Code of Ordinances of the City of New York, Article 3, Section 51, as amended by ordinance adopted April 20, 1915, effective May 1, 1915. The values given are two or three times as high as they should be and are due to errors in transcribing manuscript, as explained to the undersigned by the Superintendent of Buildings of the Borough of Manhattan.

THOMAS NOLAN,
Chairman Committee on Materials and Methods.

3. In connection with the subject of lathing referred to under 5K, the subjoined correspondence between the Chairman of the Committee on Materials and Methods and a committeeman is of interest and will, it is hoped, lead to further discussion on this subject.

My dear Prof. Nolan: I am enclosing a copy of "Standard Rules of the Measurement of Plastering" as adopted by the Employing Plasterers' Association of this city.

These rules have not been formally approved by our Chapter (which has a committee appointed for the purpose of "standardizing" workmanship and materials), and I do not know what modifications, if any, would be demanded before our approval would be given, but the adoption of "standards" in any branch makes it almost impossible to get work done in accordance with the *architects'* specifications, if they *vary* from the adopted standard; for instance, I always specify three-penny, fourteen-gauge wire nails, 1⅛ inches long, for wood lath. The "standard" adopted by the plasterers and unions calls for three-penny, "fine," of sixteen gauge, which is not much better than a good healthy "pin" and is not heavy enough to make a good job—especially if *hard* pine lath are used which are liable to twist and pull out.

I have a fight on every job on this point—as the lathers do not like the larger nails (not so convenient to hold in the mouth)—and there are only about three-fifths as many to the pound, making them cost more. However, I believe the standardization of workmanship and materials will be of great benefit, provided the standards adopted meet the architects' approval. Yours very truly,

———— ————

My dear Mr.————:

I have your letter of February 28th, enclosing the copy of "Standard Rules of the Measurement of Plastering," adopted by the Employing Plasterers' Association of your city.

Of course, all of the so-called "standard rules," specifications, tests, etc., recommended by producers are not necessarily to be accepted by the profession: but "standards" approved by a society like the American Society for Testing Materials, I think, may be accepted by the profession without question, because that Society is made up of membership of both producers and non-producers, that is to say, of producers and manufacturers on the one hand, and of engineers and architects on the other hand. The A.S.T.M. Standard Specifications for portland cement and structural steel, for example, may well be approved and recommended by the architectural profession.

Yours very truly,
THOMAS NOLAN, *Chairman.*

Some Conventions and Meetings

May, 1917:

May 8–10, National Fire Protection Association, annual meeting, Washington, D. C.

May 28–June 1, National Electric Light Association, 40th annual convention, Atlantic City, N. J.

June, 1917:

June 12–15, National Association of Sheet Metal Contractors, Cleveland, Ohio.

June 26–30, American Society for Testing Materials, annual meeting, Atlantic City, N. J.

June 26–29, American Institute of Electrical Engineers, annual convention, Hot Springs, Va.

General Index to Structural Service Department.

Classified Index to Industrial Section

Industrial Section Index

OAK

The Wood Used from Time Immemorial

UNIVERSALITY

Oak has been regarded as the king of the forest from the earliest days. Its manufacture into lumber was a pioneer phase of the hardwood industry of the country. By reason of respectful familiarity there is an inbred accuracy in handling Oak among those who work in woods.

Oak is strong, tough, enduring and beautiful. Its application to all forms of building construction, adornment, and equipment is practically without limitation—so infinite are its possibilities.

CHARACTERISTICS AND EFFECTS

The Oaks in this country are commercially divided into two varieties—the White Oak and the Red Oak. In height they range from 60 to 100 feet, and in diameter from 1 to 6 feet. The growth is from southern Maine and southwestern Quebec to central and southern Ontario, the lower Peninsula of Michigan, southern Wisconsin and southern Minnesota, and to southern Nebraska and Kansas, southern and northern Florida and Texas, and to the Gulf. The leaves of nearly all varieties of White Oak have rounded lobes while those of the Red Oak are invariably pointed. The bark of the White Oak is also an aid in identification, as from its whiteness it gained its name. The medullary rays of no wood in the world are more utilized to commercial advantage than those of the Oak. Quartersawing is for the purpose of bringing them out and producing the beautiful figured effect so much admired by all. They are the bright streaks, clearly visible to the naked eye, in the end of an Oak log, radiating from the center outward like the spokes of a wheel. By quartersawing, the rays are cut edgewise and appear as bright streaks or flakes, often called mirrors, on the surface of the board.

IN HOME-BUILDING

In its charming simplicity, Oak will be in style and good taste for all time to come, and its choice for interior finish, paneling trim, doors, furniture, and floors insures the quality that gives a friendly atmosphere to the home.

IN PUBLIC BUILDINGS

Oak doors and interior trim for public buildings are desired, not only because of Oak's historic excellence as a cabinet wood and its inborn trait of "staying put," but also because by its use the best results may be obtained without the experimentation required with woods less thoroughly standardized. There is no other wood which will better withstand the very hard usage to which doors, interior trim, flooring, paneling and furniture are put to in public buildings.

THE OAK MANUFACTURERS' ASSOCIATION

From the felling of the trees in the forest and the selection of logs by size and quality, the manufacturers of Oak lumber are now enabled to take the fullest advantage, by coöperative work, of the experience gained through long years of training. With mechanical appliances of the very best type for specified methods of sawing—by piling and seasoning according to the best established practice—and through following approved standards of inspection and grading, the manufacturers of Oak lumber are able to offer a product and assure a service in accordance with the highest state of the art in the growth and uses of Oak.

We have now in preparation a booklet about Oak which will shortly be ready for distribution. It, and the service of the Association, are at the command of those desiring information pertaining to this premier hardwood.

The American Oak Manufacturers' Association

Bank of Commerce & Trust Building **MEMPHIS, TENN.**

RED GUM

"The wood unsurpassed for Interior Finish"

Characteristics, uses and effects:

Commercially the term "red gum" applies to the heart wood of the red gum tree. In Europe this wood is known as red gum, satin walnut and hazlewood. Unselected gum, or sap gum, may be partially heart wood and partially sap wood or all sap wood. Red gum is furnished in either plain or quarter-sawed lumber and veneer, as is the unselected, or sap gum. Red gum selected for figure can also be supplied in both lumber and veneer.

Gumwood is adaptable to a great variety of uses including the best grades of the richest colored and highly figured panels used in artistic architectural woodwork of all kinds. The effects that can be obtained by staining are varied and unusually attractive.

Red Gum has become a leading cabinet wood because of its beauty, adaptability and fine workable qualities. Selections of lumber or veneer may be made to meet special requirements, either of highly figured wood or plain wood, quarter-sawed or plain sawed. Veneer is also manufactured in sliced and rotary cut.

Below see illustrations of two pieces cut from Gum Wood showing the range from the simplest plain-sawed plain wood to the quarter-sawed figured wood, the latter a veneer. Between these there are many variations, as explained and illustrated in "Technical Information about Red Gum."

"America's Finest Cabinet Wood"

No. 2

No. 2—Shows plain sawed Red Gum, plain wood (commonly termed Plain Red Gum, but when plain sawed plain wood is desired it should be *specified* as "Plain Sawed Red Gum, plain wood"). This is a fine example as it runs by the car load. However, not all plain sawed Red Gum, plain wood, is perfectly plain, as most Red Gum shows some stripe effects and color tones. Its character is soft and delicate, and finished natural or stained, is very pleasing and attractive. Millions of feet are used, both in this country and abroad, for interior finish, furniture, etc.

No. 7

No. 7—A panel of quarter-sawed Red Gum veneer, figured wood, matched. All Red Gum, whether figured wood or plain wood, quarter-sawed or plain sawed, has a rich, reddish-brown color, with a character as soft and delicate as the sheen of fine satin, and quarter-sawed figured Red Gum veneer offers possibilities for matching figure known to no other wood. It produces a great variety of markings and color tones, and selections of flitches may be made to meet the individual taste of the designer. It has the combined beauty of Circassian Walnut and Mahogany, yet has a distinctive character peculiar to no other wood.

The Gum Lumber Manufacturers' Association was organized three years ago with headquarters at Memphis, Tenn. The Association now has a membership composed of one hundred and fifteen of the leading gum manufacturers. It has become a power which has lifted gum to a leading place among the cabinet woods.

The Gum Lumber Manufacturers' Association has carried on a scientific study of the best methods of manufacturing, caring for and kiln-drying gum lumber.

During the last three years, since the Gum Lumber Manufacturers' Association began a general publicity campaign in behalf of red gum, its use has increased more than one hundred per cent, in our domestic markets, and at the present time it is giving universal satisfaction. This is due entirely to a thorough understanding of the wood, which begins with the progressive lumber manufacturer, includes the appreciative discernment of the architect and ends with the gratified client.

Publications:—The Association has prepared and will gladly send to Architects and other readers of *The Journal*, either or both of its Booklets, entitled: "Red Gum Facts," "Technical Information about Red Gum," which are referred to under sub-divisions in this issue.

It offers its facilities and service, and samples when desired, to all those desiring the fullest information, facts and recommendations pertaining to the use of Gum-wood where its use is best, whether in large work or small.

GUM LUMBER MANUFACTURERS' ASSOCIATION

1339-44 Bank of Commerce and Trust Building - MEMPHIS, TENN.

INSTITUTE PUBLICATIONS

(*Of a Permanent Nature*)

The Journal of the American Institute of Architects. Monthly, 50c, $3.50 yearly.

The Monograph on The Octagon. $12.50.

The Standard Contract Documents.

The Standard Form of Agreement between Owner and Architect (Percentage Basis).

Circular Relative to the Size and Character of Advertising Matter.

A Circular of Advice Relative to Principles of Professional Practice. The Canons of Ethics	A. I. A. Document, Series A, No. 107
A Circular of Advice and Information Relative to the Conduct of Architectural Competitions . . .	A. I. A. Document, Series A, No. 114
Standard Form of Competition Program	A. I. A. Document, Series A, No. 115
Proceedings of the Fiftieth Convention (1916)	A. I. A. Document, Series A, No. 121
Annuary (1917)	A. I. A. Document, Series A, No. 122
Constitution and By-Laws . . .	A. I. A. Document, Series A, No. 123
Schedule of Proper Minimum Charges .	A. I. A. Document, Series A, No. 124

Billiard Table Information for Architects

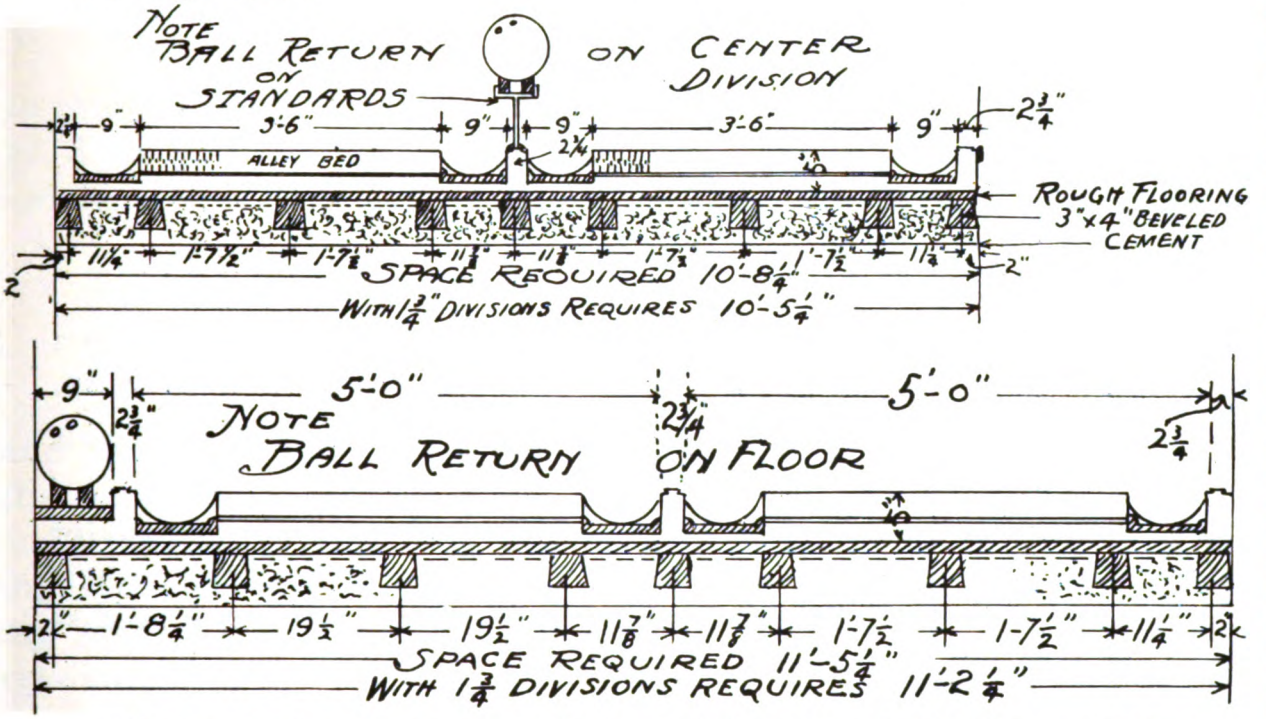
We make seven sizes of billiard tables. The space required for each of these tables is listed below:

Table	Outside dimensions	Room space required	Length of cue used
2½ x 5	2′ 9″ x 4′ 10″	10′ x 12′	42″
3 x 6	3′ 4″ x 5′ 11¼″	11′ x 14′	46″
3½ x 7	3′ 11″ x 7′ 1″	12′ x 15′	51″
4 x 8	4′ 7″ x 8′ 5″	13′ x 17′	58″ (standard cue)
4½ x 9	4′ 11½″ x 9′ 1½″	14′ x 18′	58″
5 x 10	5′ 5½″ x 10′ 1½″	15′ x 20′ (regulation table)	58″
6 x 12 ("English Table")	6′ 8″ x 12′ 6″	16′ x 22′ (We recommend this size also for regulation tables, wherever possible.)	58″

For dimensions required to use two or more tables of any size or sizes, we will make suggestions and furnish complete information on request.

Bowling Alley Information for Architects

Below we present two drawings to show the minimum width required for a single pair of alleys, and the maximum width required when alleys are arranged in a larger series.



The length, from back wall to the front of the approach should never be less than 82′–0″. This allows for pit and swinging cushion 4′–0″; for alley (to foul line) 63′–0″; and for run-way 15′–0″. Space for players' seats or for spectators should be in addition to the lengths and widths given.

For installations of all kinds, we invite correspondence. We will gladly and without charge make suggestions and furnish complete information to help in the solution of any bowling-alley problem.

The Brunswick-Balke-Collender Company

623-633 South Wabash Avenue, Chicago
29-35 West 32nd Street, New York City

DOORWAY
THE STEARNS HOUSE
at Bedford, Mass.
Built in 1802.
Ruben Duren, Architect.

The front elevation of this house was shown in Vol. 1, No. 2 of the White Pine Monographs.

THREE essentials for success in home-building are—a practical plan, artistic design and good workmanship.

But without the fourth essential—proper selection of materials—the other three are of little avail.

Take the matter of lumber. Not all woods are equally good for all uses. One is good for one purpose—another for another. Select woods for their proper uses, and you will have no disappointments.

WHITE PINE

For the outer covering of a house—subjected to the rigorous onslaught of rain and snow, heat and cold, sun and wind—no other wood is so durable and holds its place so well, without warping, splitting, rotting or opening at the joints, as White Pine.

Representing
The Northern Pine Manufacturers' Association of Minnesota, Wisconsin and Michigan, and The Associated White Pine Manufacturers of Idaho

Address WHITE PINE BUREAU,
1544 Merchants Bank Building, St. Paul, Minn.

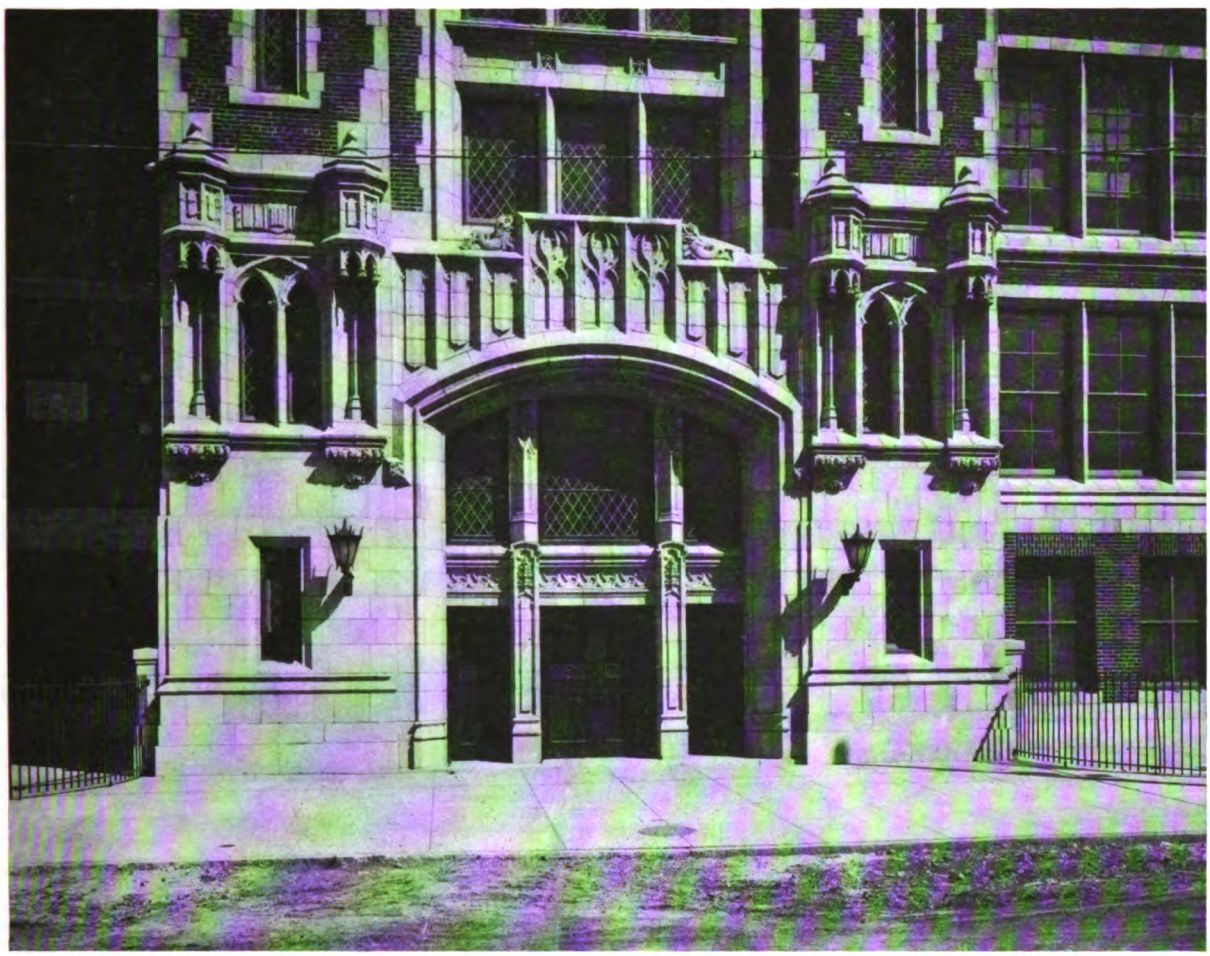
Union Terminal Station, Dallas, Texas

Jarvis Hunt, Architect *J. W. Thompson, Builder*

FLUTED columns of Architectural Terra Cotta manufactured and erected by the Atlantic Company.

Atlantic Terra Cotta Company

1170 Broadway, New York



JOHN L. KINSEY SCHOOL, PHILADELPHIA J. Horace Cook, Architect

In the modern schoolhouse of today we find a style of architecture totally different from that of a decade or two ago—a comparison of the old with the new shows a marked contrast.

The old prison-like structure is a thing of the past. The new development shows refinement.

Buildings for educational purposes should be so constructed as to instil in the minds of the students an inspiration for Art, Literature, Science, and preparation for future success and world's usefulness.

The use of KETCHAM TERRA COTTA fills the need.

O. W. KETCHAM

Manufacturer of

Architectural Terra Cotta—Brick—Roofing Tile

Master Builders Exchange, 24 South 7th St., Philadelphia

WASHINGTON	BOSTON	BALTIMORE	NEW YORK
Home Life Building	4 P. O. Square	Baltimore American Building	1170 Broadway

"Standard" Plumbing Fixtures

and "Standard" service win and deserve the favor of builders of homes, apartments, public structures, etc., because they stand for advanced ideas in manufacture and meet the requirements of any range of demand. In every "Standard" showroom there is a complete line of specimens—for every purpose and representing a great variety of prices.

"Standard" Vitreous China Lavatories

are excellent types of the "Standard" policy of manufacturing a line to meet any need. The same spirit of co-operation and service is back of the output of our vitreous china potteries that has for two-score years marked the "Standard" organization's great business in enameled fixtures.

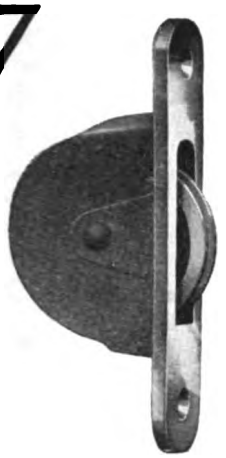
Architects are invited to take advantage of "Standard" facilities—both in the way of assortment and service. The latter includes showroom conveniences in many of the important centers—listed below—and the personal attention of representatives in the field, who will be glad to respond to any call.

This is a "Standard" Vitreous China Lavatory – one of the many popular styles produced at "Standard" potteries

Standard Sanitary Mfg. Co., Dept. 3, Pittsburgh, Pennsylvania

"Standard" Showrooms and Service Stations

NEW YORK.....35 W. 31ST
NEW YORK (EXPORT DEPT.).....50 BROAD
BOSTON.....186 DEVONSHIRE
PHILADELPHIA.....1215 WALNUT
WASHINGTON....SOUTHERN BLDG.
PITTSBURGH.....106 SIXTH
CHICAGO.....14-30 N. PEORIA
ST. LOUIS.....100 N. FOURTH
CLEVELAND.....4409 EUCLID
CINCINNATI.....633 WALNUT
TOLEDO.....311-321 ERIE
COLUMBUS.....243-255 S. THIRD
CANTON..1106 SECOND ST. N. E.
YOUNGSTOWN.219 CHAPEL PLACE
WHEELING.....3120-30 JACOBS
ERIE.....128 W. TWELFTH
LOS ANGELES.....671 MESQUIT
LOUISVILLE.....319 W. MAIN
NASHVILLE.....315 S. TENTH
NEW ORLEANS.....846 BARONNE
HOUSTON.....PRESTON & SMITH
DALLAS.....1200-1206 JACKSON
SAN ANTONIO.....212 LOSOYA
FORT WORTH....828-830 MONROE
TORONTO, CANADA.....59 E. RICHMOND
HAMILTON, CAN...20 W. JACKSON
SAN FRANCISCO..149-55 BLUXOME
DETROIT OFFICE..HAMMOND BLDG.
KANSAS CITY.....RIDGE ARCADE



In Regard to

Columbian Sash-Pulleys

Presenting further a *Specification Catalog of Columbian Sash-Pulleys*

YOUR needs in Sash-Pulleys in that "building-to-be" which you are now creating, are neither general nor indeterminate.

There is a definite Sash-Pulley of distinct size, grade and finish, a specific *Columbian* pulley that will best meet that need.

The Specification-Chart, reproduced on the following two pages, automatically defines that need, and shows the Sash-Pulley that best meets it.

Five sizes of standard faces, two standard grooves, a complete line of standard face-finishes make up a line of *Columbian Standard* Sash-Pulleys that will meet every need—Standard in Size, in Quality, in Satisfactory Service.

The Specification-Chart, "Architects'-Special" is printed on heavy stock to serve as a standard verticle-file folder for Sash-Pulley data. Let us send you one.

Specify Sash-Pulleys *definitely* and

Look for the Triangle!

The Columbian Hardware Co.

Manufacturers

Representatives in all Principal Cities

Cleveland, Ohio

TWO essential factors, variable between definite limits, determine the economical and efficient selection and specification of sash-pulleys. The first factor is the weight of the sash. The second factor is the refinement desired in the product, the finish, the bearing, the appearance-quality of the sash-pulley.

Sash

The following classification is adapted from Kidders Hand Book, 1916 edition.

Sash Pulleys—Group A
Inexpensive

Wheels—Ground and Polished, Combination Groove for Rope and Chain.
Faces—Plain, Lacquered, Polished and Lacquered.
Packing—Plain Faces shipped in bulk, 100 doz. in a bbl. Lacquered Faces 1 doz. in a package, 100 doz. in a bbl.

Sash Pulleys—Group B
Intermediate

Wheels—Same as Group A
Faces—Bronze Electro-Plated, Bronze Metal Face.
Packing—1 doz. in a box.
Screws—To match, included.
Extra Heavy Service Pulleys
These pulleys have heavy machined wheels.

Sash Pulleys—Group C
Best Grade

Polished and Lacquered Faces
Wheels—Machined to a combination groove for rope and chain, or special double groove for chain only.
Faces—Polished and lacquered faces listed below. Plain faces can be furnished.
Packing—1 doz. in a box.
Screws—To match, included.

Series 1 *Light Weight*
Up to 40 lb.

2-in. Wheel

1⅛ x 5-in. Face

		List Price
No. A100	Plain Face	$1.02
No. A101	Lacquered Face	1.08
No. A102	Polished & Lacquered	1.24

2-in. Wheel

1⅛ x 5-in. Face

		List Price
No. B103	Polished Bronze Plated	$2.08
No. B106	Bronze Metal Face	2.66

2-in. Wheel

1⅛ x 5-in. Face

		List Pr
No. C102	Combination	$1.
No. C112	Chain only	1.

Series 2 *Medium Weight*
Up to 100 lb.

2¼-in. Wheel

1⅛ x 5-in. Face

		List Price
No. A200	Plain Face	$1.28
No. A201	Lacquered Face	1.32
No. A202	Polished & Lacquered	1.50

1⅛ x 5½-in. Face

No. A220	Plain Face	$1.54
No. A221	Lacquered Face	1.60
No. A222	Polished & Lacquered	1.80

2¼-in. Wheel

1⅛ x 5-in. Face

		List Price
No. B203	Polished Bronze Plated	$2.34
No. B206	Bronze Metal Face	2.92

1⅛ x 5½-in. Face

No. B223	Polished Bronze Plated	$2.60
No. B226	Bronze Metal Face	3.26

2¼-in. Wheel

1⅛ x 5-in. Face

		List Pri
No. C202	Combination	$2.
No. C212	Chain only	2.

1⅛ x 5½-in. Face

No. C222	Combination	$2.
No. C232	Chain only	2.

Series 3 *Heavy Weight*
Up to 150 lb.

2½-in. Wheel

1¼ x 5¾-in. Face

		List Price
No. A300	Plain Face	$1.70
No. A301	Lacquered Face	1.76
No. A302	Polished & Lacquered	1.94

1¼ x 6-in. Face

No. A320	Plain Face	$1.74
No. A321	Lacquered Face	1.80
No. A322	Polished & Lacquered	1.98

2½-in. Wheel

1¼ x 5¾-in. Face

		List Price
No. B303	Polished Bronze Plated	$2.78
No. B306	Bronze Metal Face	3.52

1¼ x 6-in. Face

No. B323	Polished Bronze Plated	$2.82
No. B326	Bronze Metal Face	3.62

2½-in. Wheel

1¼ x 5¾-in. Face

		List Pri
No. C302	Combination	$2.
No. C312	Chain only	2.

1¼ x 6-in. Face

No. C322	Combination	$2.
No. C332	Chain only	2.

Series 4 *Extra Heavy*
Meeting practically every requirement in weight.

2½x½-in. Machined Wheel

1¼ x 6-in. Face

		List Price
No. B400	Plain Face, Combination wheel	$2.40
No. B410	Plain Face, chain wheel	2.40

3x½ in. Machined Wheel

1¼ x 6½-in. Face

No. B420	Plain Face, Combination wheel	$3.12
No. B430	Plain Face, Chain wheel	3.12

2½ x ½-in. Wheel

1¼ x 6-in. Face

		List Pri
No. C402	Combination	$2.
No. C412	Chain only	2.

3 x ½-in. Wheel

1¼ x 6½-in. Face

No. C422	Combination	$3.
No. C432	Chain only	3.

IN the chart below we have correlated these factors simply and directly; we have indicated the *Columbian* sash-pulley which, in our experience, has best met the specific need. Our earnest wish is that this chart, by simplifying and standardizing sash-pulley needs, may prove a real help to you.

sh Pulleys—Group D

?est Grade

Bronze Metal Faces

heels—Machined as per Group C
ces—Bronze Metal Faces listed below. Plated pulleys can be furnished in this series.
rping—Individually wrapped in tissue paper, 1 doz. in a box.
ews—To match, included.

in. Wheel

x 5-in. Face (Bronze Metal)

		List Price
D106	Combination - -	$3.30
D116	Chain only - -	3.30

-in. Wheel

x 5-in. Face (Bronze Metal)

		List Price
D206	Combination - -	$3.50
D216	Chain only - -	3.50

x 5½-in. Face (Bronze Metal)

D226	Combination - -	$3.86
D236	Chain only - -	3.86

½-in. Wheel

x 5¾-in. Face (Bronze Metal)

		List Price
D306	Combination - -	$4.20
D316	Chain only - -	4.20

x 6-in. Face (Bronze Metal)

D326	Combination - -	$4.30
D336	Chain only - -	4.30

½ x ½-in. Wheel

x 6-in. Face (Bronze Metal)

		List Price
D406	Combination - -	$4.44
D416	Chain only - -	4.44

x ½-in. Wheel

x 6½-in. Face (Bronze Metal)

D426	Combination - -	$5.28
D436	Chain only - -	5.28

Sash Pulleys—Group E

U. S. Government Standard and Solid Bronze Wheel Pulleys

Solid Bronze Wheels — Machined, and fitted with roller bearings, can be used in any of the pulleys listed on this page.

Quotations for all Solid Bronze Wheels furnished on request.

For Bank, Post Office, Grilles, and Interior Sash

1¾-in. Solid Bronze Wheel

¾ x 4¼-in. Bronze Metal Face

No. E166 For Tape only.
No. E176 For Chain only.

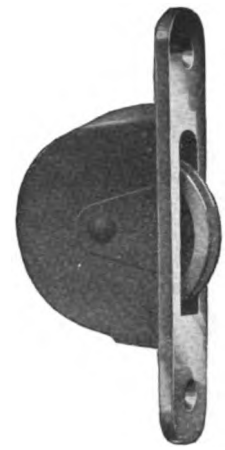
U. S. Government Standard Specifications

Heavy bronze metal face, solid bronze turned wheel for chain, steel bushed and roller bearing.

2½ x ⅜-in. Solid Bronze Wheel

1¼x6-in. Bronze Metal Face, Government Standard in every respect.

No. E376 For Chain only.



General Notes

Standard — *Shipped from Stock*

All pulleys listed above are standard. Shipments can be made from stock upon receipt of order.

Weights of Sash — *Depend on Glazing*

The weights per square foot of glazing in general use are:

Single strength 1 lb.
Double strength 1½ lb.
Plate from 3½ to 4 lb.

As to sash, averaging the weight of checks, stiles and rails, a fair assumption for the weight of material per lin. ft. of sash girth is:

For 1¾-in. sash ¾-lb. per lin. ft.
For 1⅜-in. sash ½-lb. per lin. ft.

With these practically constant factors, it is an easy matter to arrive at an approximate weight for any sash.

Wheels and Axles — *Built for Service*

The groove in all wheels, unless otherwise noted, is ⅜-in. The exceptions are in the "Extra Heavy" service pulleys in which the groove is ½-in. wide.

All wheels, unless otherwise noted, are carried on a hardened steel 5-16-in. axle cap-rivetted into the case. The exceptions are in the "Extra Heavy" service pulleys in which the wheels are carried on a ⅜-in. axle.

For Roller Bearing — *Add to list 60c per dozen*

Pulleys in group E, as noted, have roller bearing axles. Pulleys in groups A, B, C, D have plain axle bearing.

Any pulley in these first four groups can be furnished with Roller Bearings at an additional cost of 60 cents per doz. list.

Packing

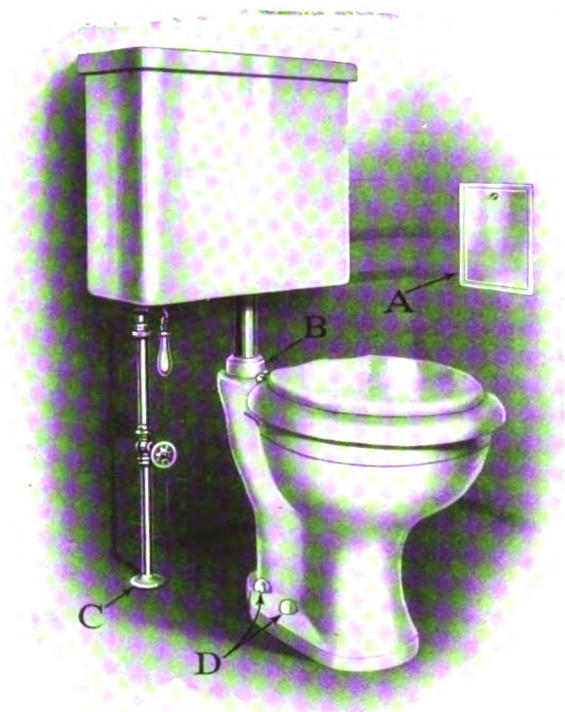
On orders of 100 dozen or over, where boxing is not needed, credit can be allowed.

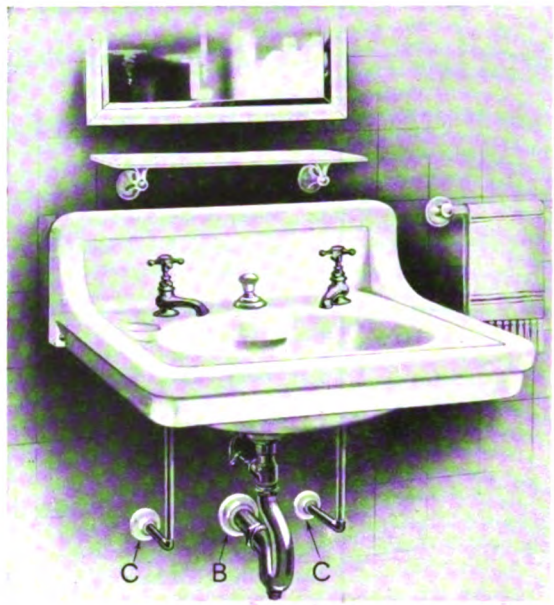
Prices — *List per dozen*

The prices given are "List per Dozen." Write for current discount.

The Columbian Hardware Company
Manufacturers Cleveland

FAIRFACTS CHINA ESCUTCHEONS CLEAN COLLARS FOR PLUMBING FIXTURES





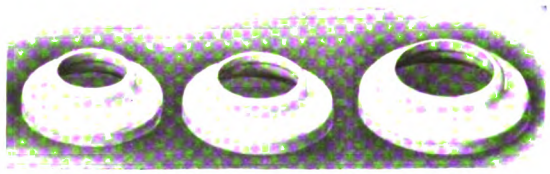
To Architects:

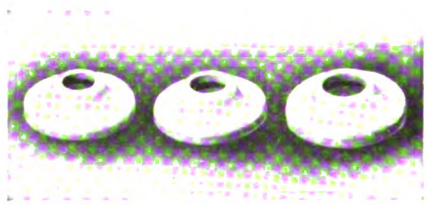
The discordant note in plumbing fixtures, otherwise attractive, has been the shabby pipe escutcheons of metal. Dented, green, and tarnished, they detract from a worthy fixture.

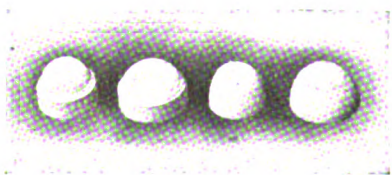
FAIRFACTS CHINA ESCUTCHEONS are the embodiment of sanitary excellence.

Incidentally, they cost no more than the obsolete metal escutcheons.

SPECIFICATION: All exposed waste and supply pipes to all plumbing fixtures shall be finished at the wall or floor with FAIRFACTS CHINA PIPE ESCUTCHEONS of a suitable size.

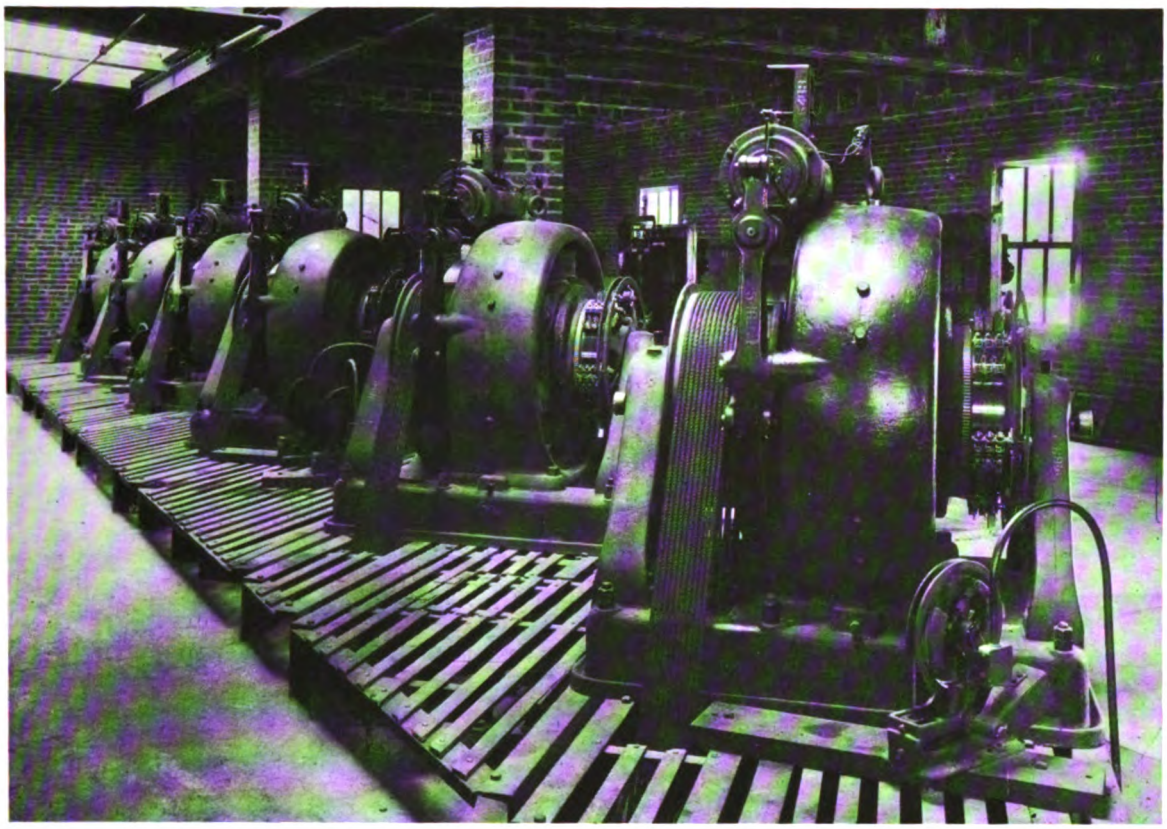






Write for our booklet, "Clean Collars for Plumbing Fixtures"

THE FAIRFACTS COMPANY, 104 East 41st Street, NEW YORK CITY



SIX GEARLESS TRACTION TYPE

PASSENGER ELEVATORS

INSTALLED IN THE DEPARTMENT STORE OF

LANSBURG & BRO.

WASHINGTON, D. C.

BY THE

A. B. SEE ELECTRIC ELEVATOR COMPANY

220 Broadway, NEW YORK CITY

Philadelphia Baltimore Boston Washington Hartford Cleveland Montreal Toronto

Reproduced from the Metal Lath Handbook

Various Details of Suspended Ceiling Construction

INTEGRAL FABRIC USED IN SUSPENDED CEILING

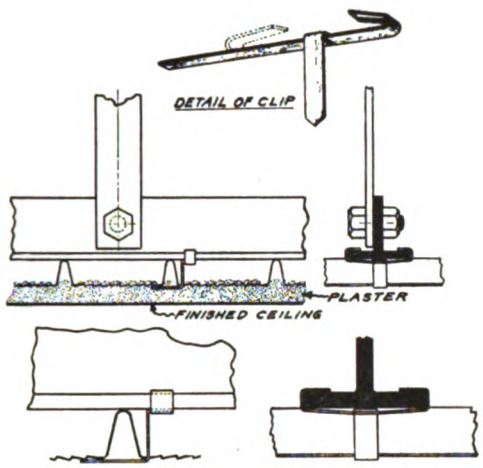


FIG. 32-D

SUSPENDED CEILING CONSTRUCTION AS USED WITH CONCRETE ROOFS

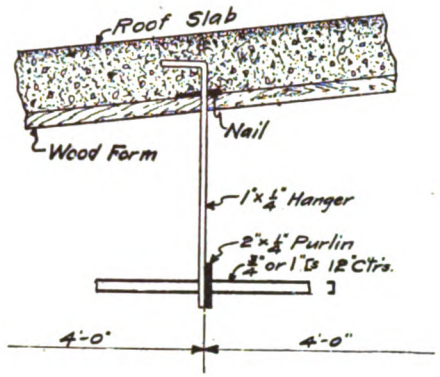


FIG. 32-J

A copy of this book will be forwarded upon request by any of the Member Companies or from the Commissioners.

SUSPENDED CEILING

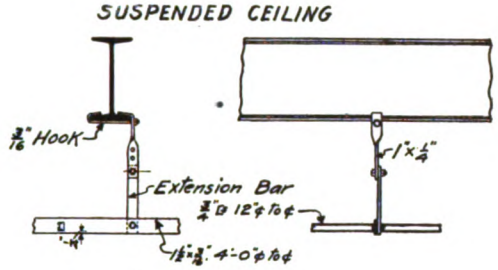


FIG. 32-G

SUSPENDED CEILING

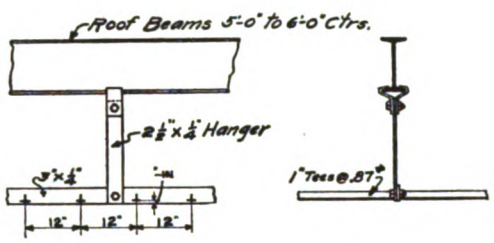


FIG. 32-I

The Metal Lath Handbook recommends Metal Lath of 3⅜ lbs. weight.

The Manufacturers are standardizing material of the following weights:

24 gauge . . . 3.4 lbs. per sq. yd.		26 gauge . . . 2.5 lbs. per sq. yd.	
25 " . . . 3.0 " " " "		27 " . . . 2.3 " " " "	

To insure a standard material being used upon their work, Architects would confer a favor by specifying the weight as well as the gauge of the Metal Lath they require.

Member Companies:

The American Rolling Mill Co. . Middletown, Ohio	Milwaukee Corrugating Co. . . Milwaukee, Wis.
The Berger Mfg. Co. . . . . Canton, Ohio	Northwestern Expanded Metal Co.
The Bostwick Steel Lath Co. . . . Niles, Ohio	918-950 Old Colony Bldg., Chicago, Ill.
Consolidated Expanded Metal Companies, Braddock, Pa.	Penn Metal Co. . 201 Devonshire St., Boston, Mass.
The General Fireproofing Co. . . Youngstown, Ohio	The Sykes Metal Lath & Roofing Co. . Warren, Ohio
	Trussed Concrete Steel Co. . . Youngstown, Ohio

THE ASSOCIATED METAL LATH MANUFACTURERS

901 Swetland Building, Cleveland, Ohio

NORTHWESTERN
is a short form of specification for architectural Terra Cotta of superior quality.

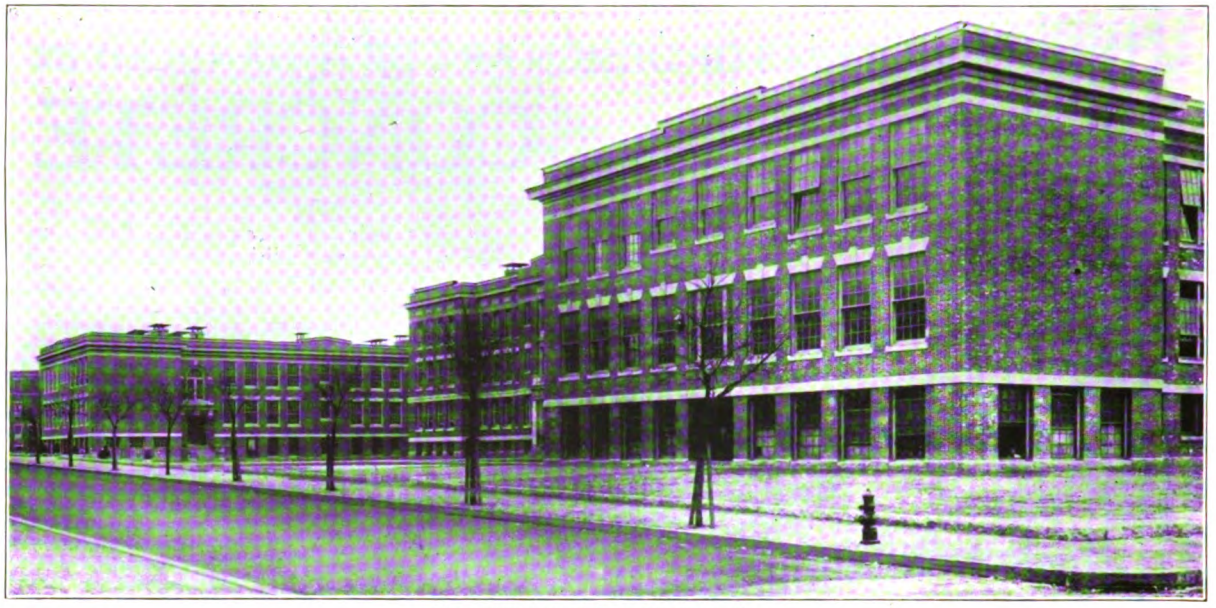
THIS ornamental panel from the Holy Family Church, Cincinnati, Ohio, J. F. Sheblessy, Architect, is one of a series, modeled for the decoration of this sanctuary, and produced in Grey Granite Vitreous Enamel Terra Cotta by The Northwestern Terra Cotta Company.

For church architecture, which should be a permanent expression of an enduring faith, terra cotta is the most fitting of all materials. It yields to the lightest touch of artistic inspiration with all the plasticity of soft clay, and offers to time and the elements a greater resistance than the hardest stone.

Architects everywhere know that Northwestern is a short form of specification for architectural Terra Cotta of superior quality.

THE NORTHWESTERN TERRA COTTA CO.

CHICAGO



The Williams School, Chelsea, Mass.

The Largest Elementary School in the World

is completely equipped with

Von Duprin

Pat. United States and Canada
Trade Mark Reg. No. 85021 U. S. Pat. Office

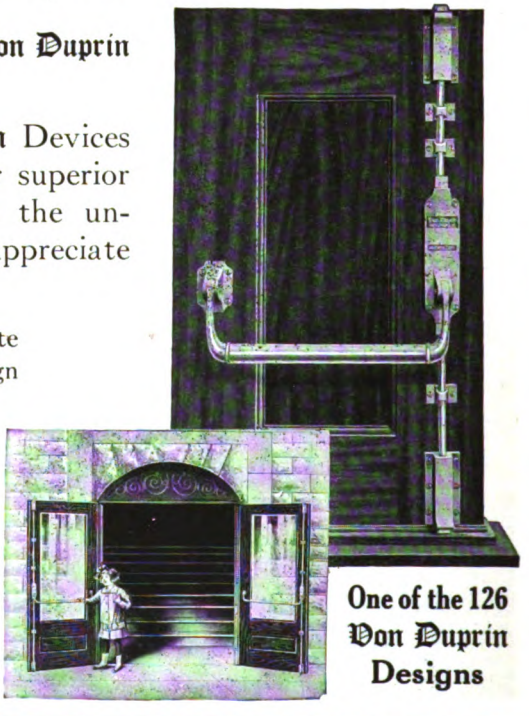
Self-Releasing Fire Exit Latches

Just another example of the dominance of **Von Duprin** Devices.

Wherever thorough tests are made **Von Duprin** Devices are selected. Their absolute dependability, their superior construction, their thorough workmanship win the unqualified approval of leading architects who appreciate quality products.

Our service department is always ready to coöperate with architects in selecting the **Von Duprin** design best suited to meet any given requirement.

See Sweet's or ask for Catalog 12-S

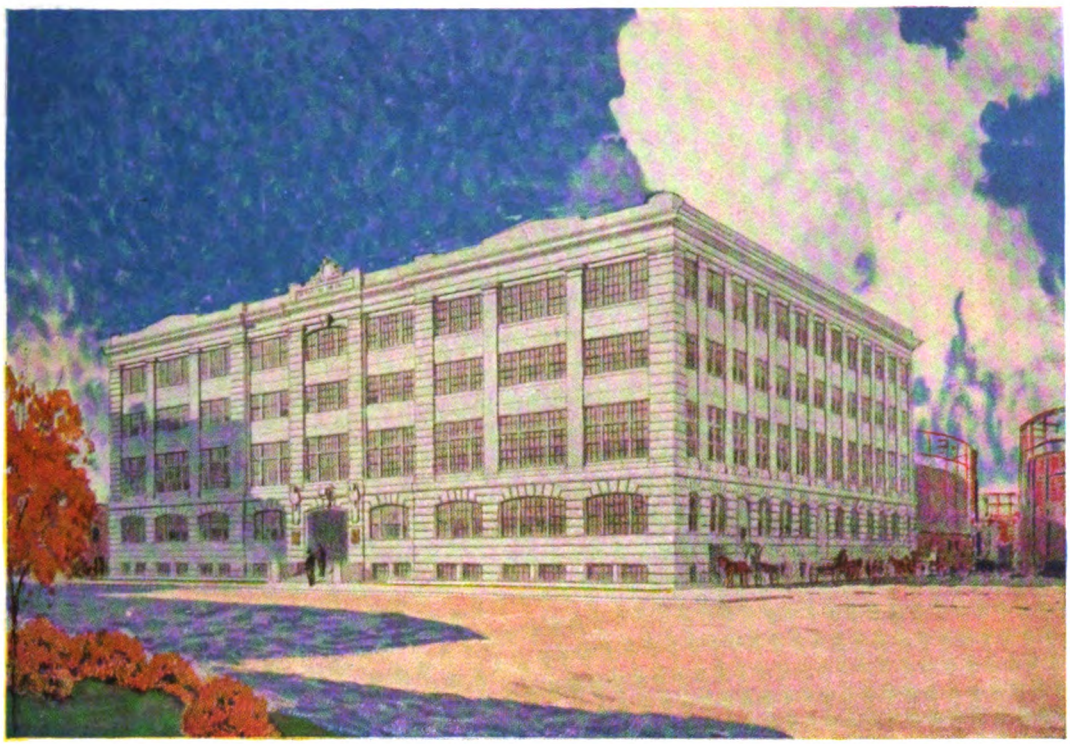


One of the 126 Von Duprin Designs

Vonnegut Hardware Co.

INDIANAPOLIS, IND.

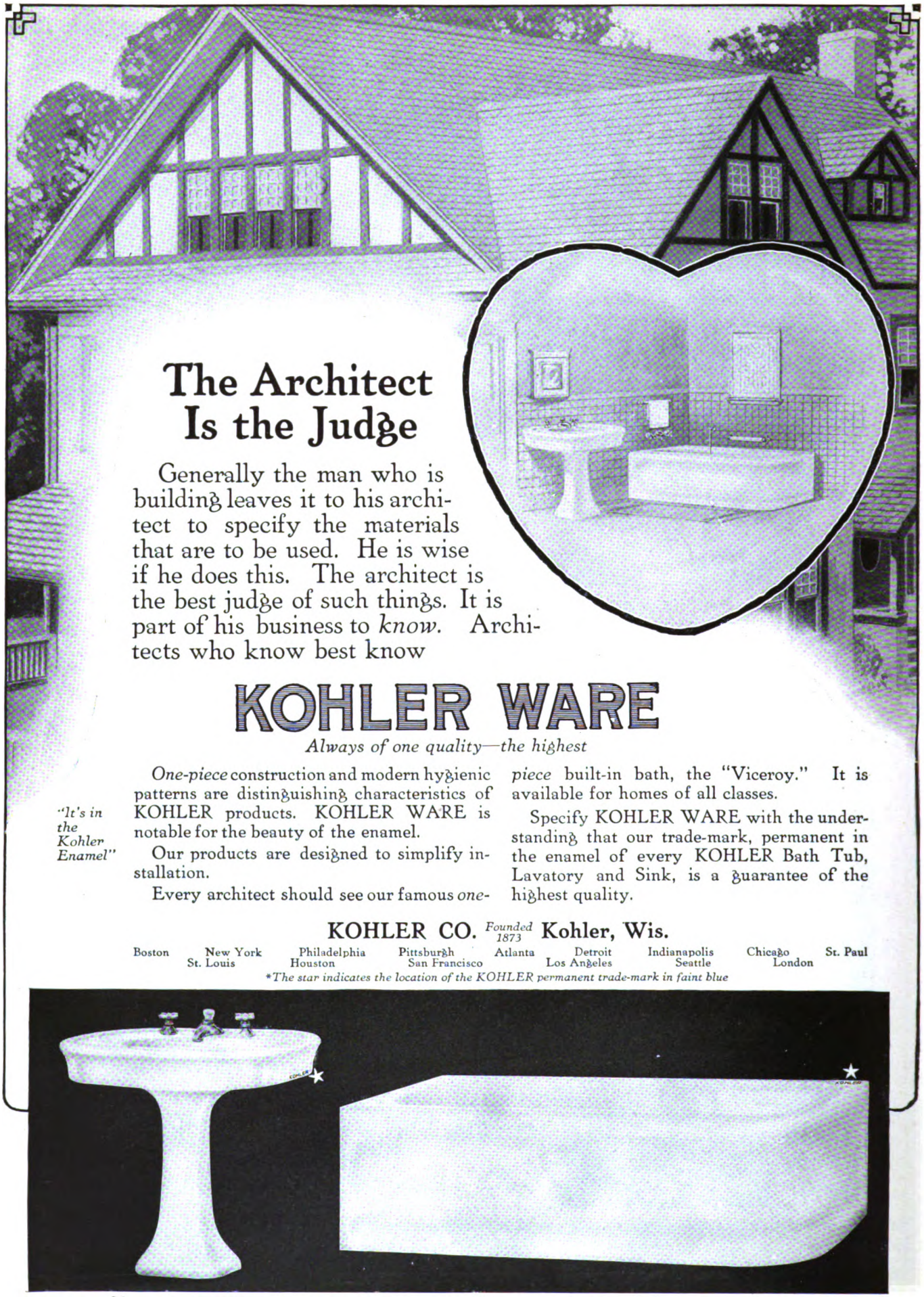
Manufacturers and Distributors



Reinforced concrete factory. The Carter's Ink Company, Cambridge, Mass. Densmore & LeClear, Architects

EACH year a greater percentage of factories, warehouses, terminals and lofts are built in reinforced concrete, because of its economy, fire-protection, and permanence. Each year, also, more and more owners are coming to realize that good architecture has great commercial worth for industrial buildings, and they are retaining architects to add this value. Opportunities are therefore increasing for architects to do noteworthy designing for concrete industrial buildings.

We will gladly furnish architects, upon request, with statistics and data on reinforced concrete buildings and will co-operate, if desired, in developing designs and economical layouts. The Atlas Portland Cement Company, New York or Chicago.



The Architect Is the Judge

Generally the man who is building leaves it to his architect to specify the materials that are to be used. He is wise if he does this. The architect is the best judge of such things. It is part of his business to *know*. Architects who know best know

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Always of one quality—the highest

"It's in the Kohler Enamel"

One-piece construction and modern hygienic patterns are distinguishing characteristics of KOHLER products. KOHLER WARE is notable for the beauty of the enamel.

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Every architect should see our famous *one-piece* built-in bath, the "Viceroy." It is available for homes of all classes.

Specify KOHLER WARE with the understanding that our trade-mark, permanent in the enamel of every KOHLER Bath Tub, Lavatory and Sink, is a guarantee of the highest quality.

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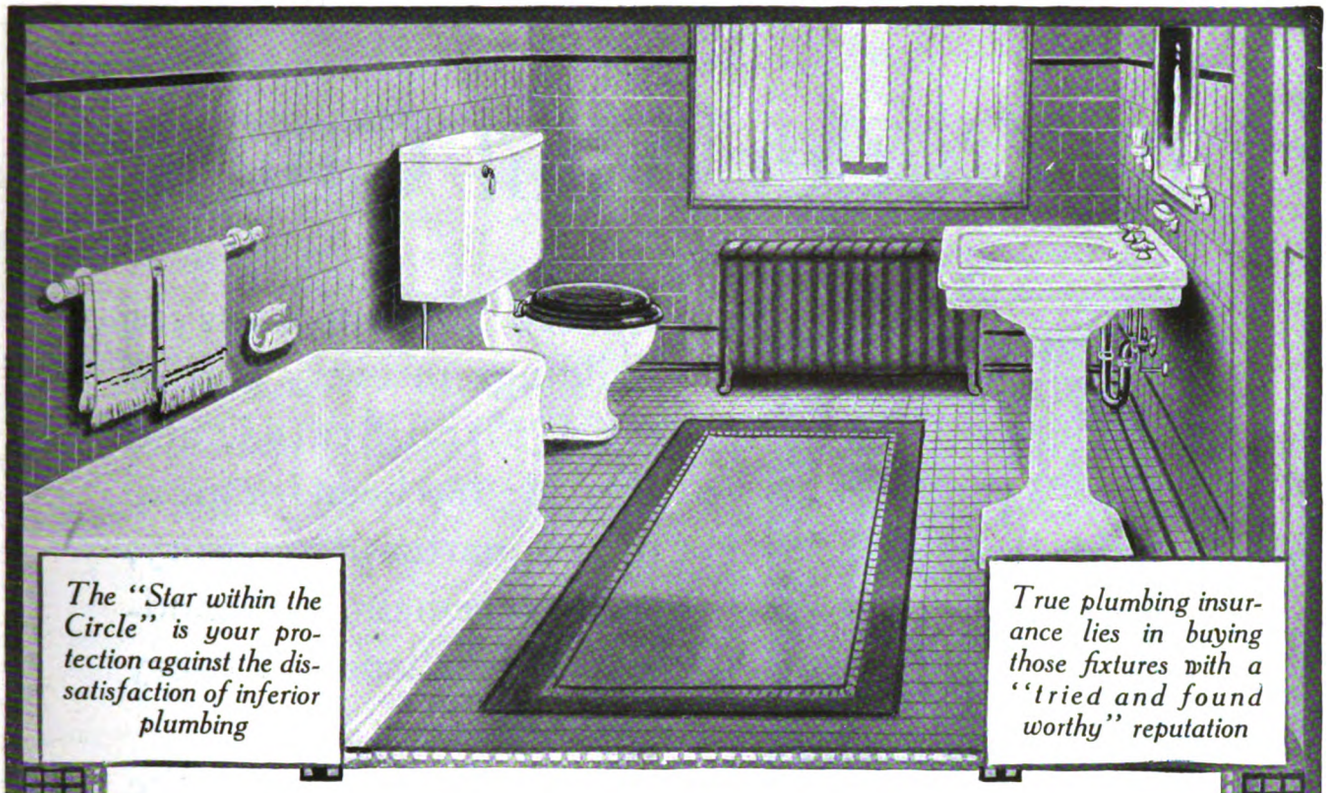
**The star indicates the location of the KOHLER permanent trade-mark in faint blue*

Belmore Lavatory, Plate K-145-F A — *The "Viceroy," Plate V-14. (Patent applied for and name registered)*



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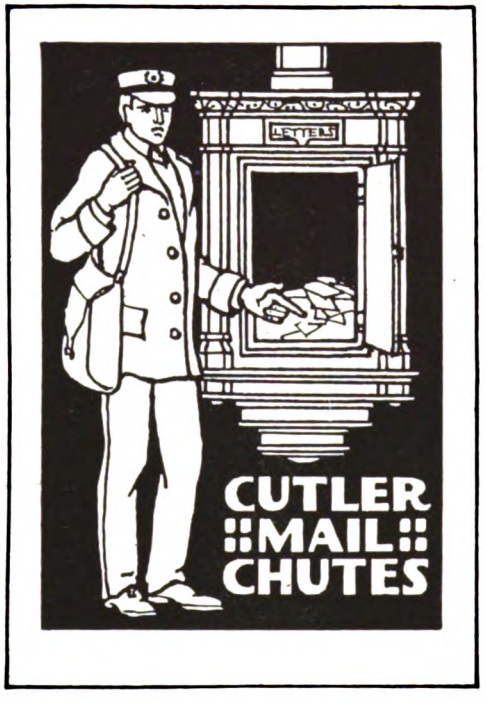
To the unitiated, plumbing fixtures all look alike—the difference is one of years. Almost any fixture is good for a year or two—but after that you will conclude that the best is none too good.

Clay products differ. A manufacturer who skimps the baking has a glaze that is soft. We *guarantee* our ware is subjected to heat of not less than 2400 degrees—often more. It means the hardest possible *surface* and the hardest possible ware *beneath* the surface. It means years of service after poorer made plumbing fixtures are defaced and hammered beyond recognition.

THE TRENTON POTTERIES COMPANY
TRENTON, NEW JERSEY, U. S. A.

The Cutler Mail Chute



is used in thousands of buildings in every part of the United States, and abroad; has been for more than a quarter of a century, and will remain, the standard of excellence in every respect.

It has received the highest award wherever exhibited, and is being furnished to all those who consider quality as well as price, at exceptionally low figures.

The construction developed in long experience as the only safe one is protected by litigated patents, which have been sustained and which counsel advises are being infringed.

You will not know what our price is until you get it from us, and, when it is before you, we shall be favored with your business.

Agents in every important center.
Sweet's Index Pages 1726 and 1727.

CUTLER MAIL CHUTE COMPANY

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A REPRESENTATIVE WILL CALL ON REQUEST

Humphrey Hot Water Service—
The Acme of Modern Convenience!

IN the Humphrey Automatic Gas Water Heater every modern improvement is evident! This means maximum efficiency and therefore maximum satisfaction for your clients when you recommend the

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The Humphrey Burner, for example, is a patented spout flame burner. It produces 100 per cent heat from gas burned. That means no fuel waste! Positively does not "flash back" or corrode and clog up. Has no equal for its purpose.

Humphrey Pilot: Patented flash construction. Burns least gas. Will not go out! Semi-Bunson flame prevents sooting up of heating coils.

Water Valve: Equipped with patented two-piece, two-point suspension pistons. This makes true travel, least friction and surest operation. The Humphrey two-piece piston, as a positive protective feature, is second in value only to the thermostat.

These are three of fifteen specific features which have helped to make Humphrey Hot Water Service the ideal of modern day convenience.

Complete information will be sent upon request. We will gladly send any special information desired. Write us.

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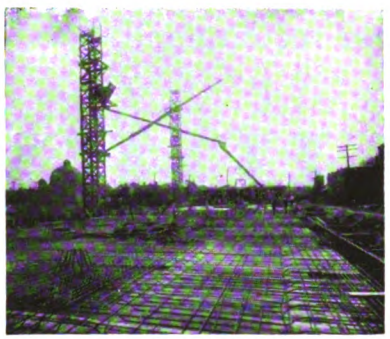

Specifications and setting plans cover work of this kind

IT has been assumed that an engineering concern, offering the services outlined in our Bulletins, cannot be divorced from a commercial presentation of patented types of construction that its own engineers have developed.

This has been proved not necessarily to be true.

WE are continually rendering engineering service to architects on a fee basis without obligation to use our particular products. The architect is free to specify any type of reinforcement that has proved merit.

We are able to give complete patent protection on all practical types of reinforced concrete construction.

We have an organization that has survived a creative competitive period in reinforced concrete construction.

We can throw the whole force of a highly specialized organization on one project to help the architect carry through the commission in an unbelievably short time.

We can furnish engineering service from any one of our many engineering offices located in all parts of the country.

We will gladly send on request special bulletins, giving examples of the service rendered architects in the execution of the following types of buildings:

Factories	Hotels	Y. M. C. A.
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A book of bulletins prepared by our engineers

In writing for particulars, kindly use business letterhead or enclose your card

ENGINEERING SERVICE DEPARTMENT

Corrugated Bar Company, Buffalo, N. Y.

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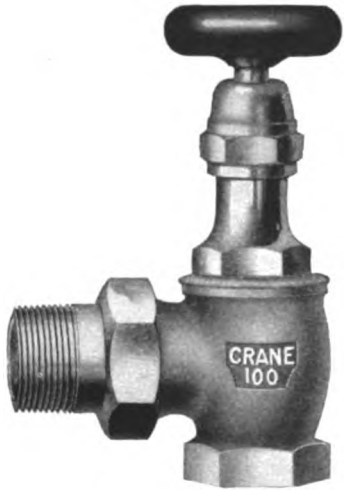
CRANE—220

The Perfect Radiator Valve



Requires little or no attention after it is installed;

Cannot be jammed wide open;

Stuffing box is always tight;

Shrinkage on disc automatically taken care of—hence no leakage;

Neat appearance;

Heavy and strong enough to withstand abuse;

Contains three times as much packing as the ordinary radiator valve;

Made in Angle and Corner types.

USE IT

on single-pipe gravity systems,
on single-pipe vacuum systems,
on two-pipe gravity systems,
on two-pipe vacuum systems, or
on any steam, vapor or vacuum job.

Architects should include this valve in all specifications for high-grade work.

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The ARISTOCRAT *of* BUILDING MATERIALS

The Practicable Stone

In building of Indiana Limestone you do not find it necessary to make elaborate advance preparations or to wait long periods for delivery.

Due to favorable natural conditions you can get Indiana Limestone—*all* you want—*any* size—*when* you want it—at a cost not far from that of substitutes.

Though enormously strong and enormously durable it is easily worked. Large turned columns cost less than built-up wooden ones. It may be easily carved even in the very finest detail.

The central location of the quarries makes for convenient shipping to any point.

A good example of the practicability of Indiana Limestone is furnished by the construction of the U. S. Bureau of Engraving and Printing, Washington, D. C. All the stone for this vast building with its vast colonnades was *cut, delivered and set in 9 months.*

The practical difficulties of many other sorts of stone construction do not exist with Indiana Limestone. There is nothing to deter you from planning for the beauty and dignity of this *natural* material wherever it is appropriate.

Indiana Limestone Quarrymen's Association

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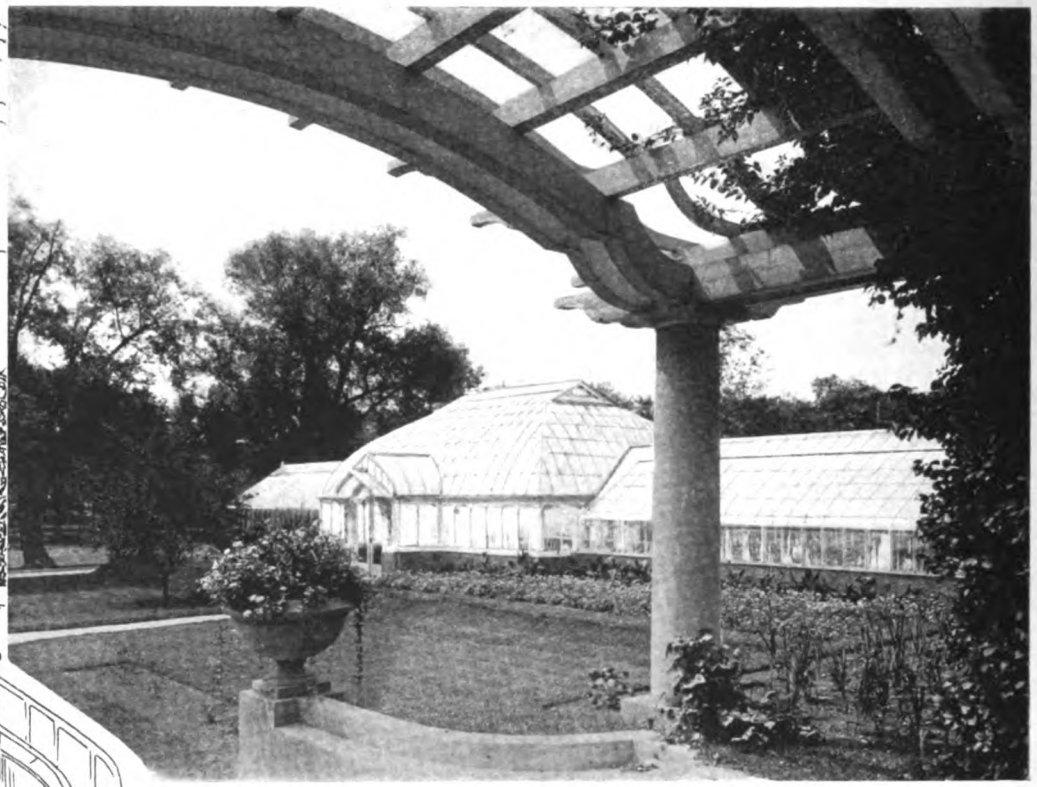
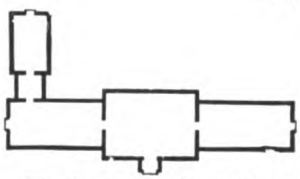
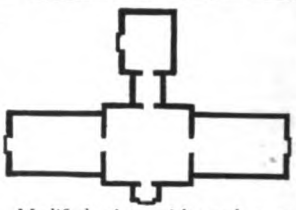


Located at Oak Park, Illinois



The plan as necessity prompted, with workroom adjoining the left wing house.



Modified plan with workroom immediately back of palm-house, which works for economy in heating and working.

A Special Service Department for Architects

EVERYBODY, these days, is riding fast and furiously the word SERVICE.

Many ride it, but few give it.

To make sure that we give it; and that you secure, we sometime ago established a carefully organized architects' Greenhouse Service Department.

Enjoying marked success with the New York office, it was promptly extended to all nine of our offices in the principal cities. This country-wide location not alone makes the Service readily available, but materially short cuts service action.

You are invited in the broadest sense to make use of this Special Architects' Service.

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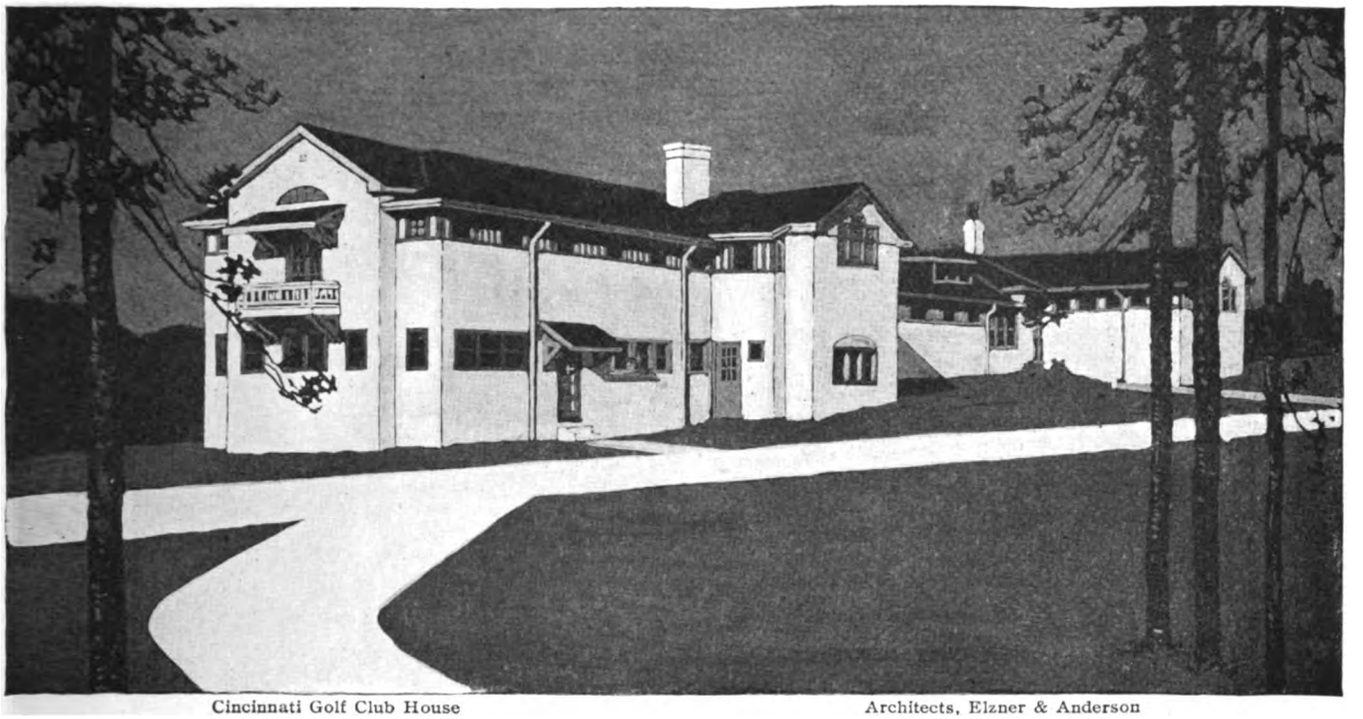


Cincinnati Golf Club House Architects, Elzner & Anderson

A Stucco "Job" That Lasts

Look at the illustration below of Bishopric Board. Note how the Stucco is dovetailed into the lath. The Stucco and Bishopric Board are practically *welded together* into one solid piece. The Stucco *can't* let go—it's *clinched* to the lath. The lath are creosoted, imbedded in Asphalt Mastic on a background of heavy fibre-board. Nails through each and every lath hold the Stucco Board firmly to the frame-work.

Bishopric Board *can't sag* and crack the stucco. The fibre-board, Asphalt Mastic and creosoted lath give absolute protection against heat and cold, wind and weather. They form a construction that is water-proof, vermin-proof and sound-proof.

Bishopric Board is making Stucco finish more popular. It is providing a background that is *dependable*—that prevents unsightly cracks and breaks and that *gives added life* to the entire structure.

That is why Bishopric Board was chosen for the Cincinnati Golf Club House shown above—why architects, contractors, builders and owners all over the country, who take the trouble to investigate its merits, specify and use Bishopric Board.

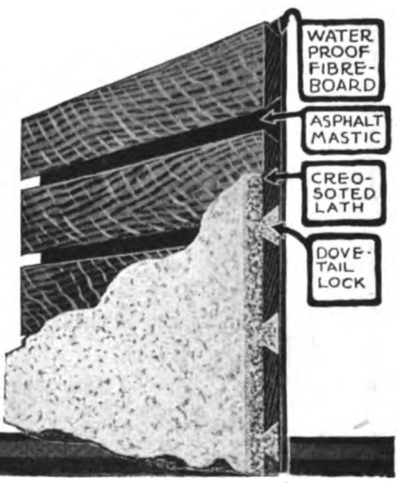
The Bishopric Manufacturing Co.

914 Este Ave. Cincinnati, O.

THE DOVETAILED KEY LOCKS THE PLASTER
BISHOPRIC STUCCO OR PLASTER BOARD
TRADE-MARK REGISTERED

Write for our free book. "Built on the Wisdom of Ages," illustrating homes, apartments, factory and public buildings finished in stucco on Bishopric Board. It contains letters from architects, builders and users, and extracts from reports of scientific tests. It also gives full instructions for making a stucco mixture that will last. With this book we send free samples of Dishopric Board.

Write *today*, investigate for yourself, be convinced.



America builds back to Permanency

HIGH up in the pockets of great cliffs, sheer above the dangers of life thousands of years ago, our American predecessors lived in permanent buildings. Here they were free from the awful forest fire, the lurk of beasts and the treachery of fever-laden air.

For entirely different reasons but with equally good judgment, modern America has moved back into the permanent building. Structurally, we have found ourselves. Our cities have staked their claims once for all and have set about to make building history that will not pass like the Red Man's wigwam. We have learned a lesson from the age of inflammable materials just past, which from log cabin to Queen Anne Mansion has gone—leaving a blot on the pages of building history.

Concrete, Steel, Stone, Masonry and Asbestos—these materials have focused thought on building permanency. The first four have given us the permanent building. Asbestos has topped it all with a lasting, mineral, stone roofing that repels fire and resists the ravages of time.

Nor is Johns-Manville Asbestos restricted in its application to the pretentious building of steel, concrete or stone. Its use as a roofing is reaching out everywhere*—to the farm, the home and the out-building. Here, too, its lasting power is a protection against fire, rot and disintegration. It is America's safest and most economical roofing.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
10 Factories—Branches in 55 Large Cities

**Johns-Manville Asbestos Built-Up Roofing for flat roofs; Asbestos Ready Roofing for sloping surfaces; Transite Asbestos Shingles for the home; Corrugated Asbestos Roofing for skeleton frame structures. Johns-Manville Mastic Flooring, Waterproofing, Asbestos Siding, Transite Asbestos Wood, Keystone Hair Insulator.*

JOHNS-MANVILLE SERVICE COVERS THE CONTINENT

JOHNS-MANVILLE Building Materials

Sacrificed to Indifference to Safety

were the four lives lost in the recent fire in a shop and apartment building in Manchester, N. H. This editorial from the *Manchester Leader* tells the story:

"Once more the fire enemy has discovered a weak point in the city's fire wall, and has taken its toll of human life. Once more, too, the air is filled with ugly rumors, most of which are as silly as they are ugly. There will be an investigation, the regular one at least, and possibly a special one. In the meantime we shall do well to hold judgment in abeyance, remembering that because there is loss of life in a fire it doesn't necessarily follow that loss could have been prevented, once the fire was under headway.

"But on one point we do not need to reserve judgment. **Most of the fires like that of Sunday morning have no reason for being except public indifference, or downright opposition to preventive measures.** Nor can we lay the blame altogether upon a past generation which permitted the erection of flimsy buildings around stairways and light wells which are potential flues. In the winter just closed there was an attempt made to get a bill through the legislature requiring automatic fire sprinklers in the basements of all buildings in the fire zone which are used for living purposes above the lower floors. It was killed. The argument against it was that it would put a burden of expense upon property owners. In the present instance a basement sprinkler would have been useless, but one on the ground floor would have checked that fire until it could be put out, and probably not a life would have been lost. As a matter of fact, sprinklers ought to be required in buildings like this one on all the floors below those used for tenement or sleeping room purposes, and the only reason on earth why they are not required is that of cost. Yesterday morning we paid the cost of not having them.

"Which is better, to pay a few dollars for sprinklers and get a proportionate reduction in insurance rates, or pay in destroyed property, interrupted business, and human life, for not having them?

"It is true that for the heavy price we have paid we shall get a point of strength instead of a point of weakness in the city's fire wall. This building is burned out so thoroughly that under our code it will have to be made comparatively safe for the future, but **it is the cost for a cure that we are paying—the cost of prevention would have been much smaller.**

"Four dead bodies and a ruined Elm street building ought to be sufficient warning to our property owners to undertake this cost of prevention before they are called upon to pay the cost of cure. The Manchester legislative delegation couldn't see its duty with regard to the sprinkler bill, and so we have no means of forcing reasonable protection in this respect, but **with such an object lesson as this it would seem as if common-sense ought to make legislation unnecessary.** There are flimsy, ill-planned, unsafe buildings all along Elm street. They ought to be made as safe as human ingenuity can make them.

"We have neither money nor human life to throw away. Both are thrown away when they are sacrificed to the false economy which leaves our buildings an easy prey to fire instead of converting them into walls of protection against fire."

Not a life lost in more than 20,000 fires in sprinkler-equipped buildings under conditions like those in the Manchester fire.

"The automatic sprinkler affords the largest degree of protection of life against fire"—*The National Fire Protection Association's Safety to Life Committee.*

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NATIONAL AUTOMATIC SPRINKLER ASSOCIATION

80 MAIDEN LANE, NEW YORK, N. Y.

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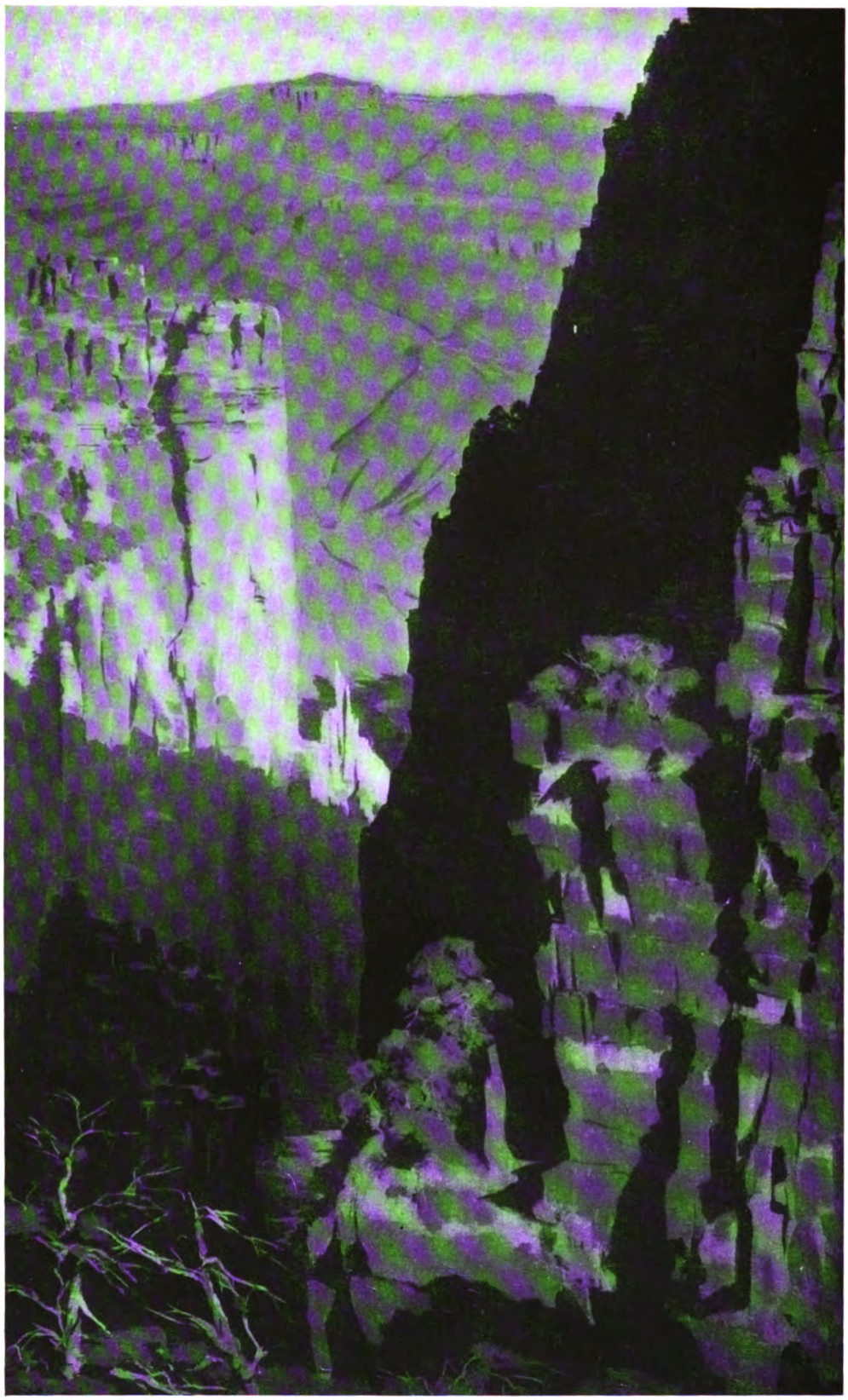


Looking Down Devil's Chasm and Across the Great Cherry Creek Canyon, About Twenty Miles from Roosevelt Dam. This is perhaps the most astonishing chasm in the world and offers a glorious study in color. After a painting by C. K. Bonestell, Jr. (See page 277)

JOURNAL OF THE
AMERICAN INSTITUTE OF ARCHITECTS

Vol. V JUNE, 1917 No. 6

Shadows and Straws

THE ARTICLE ON PROFESSIONAL ORGANIZATION, as related to the practice of architecture, of which we are able to begin the publication in this number of the Journal, is from the pen of a distinguished English student of the social and economic problems of modern times. The American architect who reads this article will be struck with the similarity of the English problems, which Mr. Webb analyzes so skilfully, to those with which the Institute has been wrestling, vaguely and indirectly through the first four or five decades of its existence, but with a vigor which has been constantly increasing during the last ten years. The tireless process of change is making itself felt. The need for adapting the profession of architecture to ceaseless social and physical changes and demands is urging itself with an insistence which will not be denied. The profession of architecture, organized or unorganized, is constantly on trial, and the test is the quality of service which it can give. That is the test which acts as the real source of all inquiry into such problems as education and registration, both of which are prominently before the profession today and upon which the Institute is concentrating as never before.

One is struck, in this study, with the pronounced and almost antagonistic tendencies which seem to govern the evolution of the practice of architecture. Within the profession, as is clearly shown by Mr. Webb, organization was at first along social and esthetic lines. Architecture as an art was the uppermost thought in the minds of the small group which first began to foregather in London. And yet the world at large was not interested in architecture primarily as an art—nor is it to be hoped that it ever will be. Harried and pursued by the necessities of business and commercial expansion, by an ever-increasing congestion in urban centers, by a constant upward rise in the cost of building sites, by the introduction of a bewildering variety of new methods and materials, it had little time for consideration of architecture as an art. The physical and financial tests which society applied to the building were automatically transferred to the builder. Now and then the world paused in its hurried march—whither it knew not—to take the trouble to erect a public building where the financial return upon the investment had no need of consideration, and where art was allowed to alight temporarily and fan the fitful blaze with its tired wings. Out of all this struggle, between attempts to impose esthetic considerations on the one hand and the demand for the practical on the other, a chasm began to develop, and there grew up two fundamental misconceptions: first, that architecture was essentially an art which embellished and ornamented, and second, that a knowledge and love of it were to be taught by trying to explain it as an esthetic value. Now it is beginning to be seen that the primary test is serviceability, and that only out of the effort to seriously demonstrate the fact that a natural esthetic quality should grow out of a building designed primarily for useful and effective service can there come any genuine appreciation of the part that architecture plays in the advancement of a race.

This first instalment of Mr. Webb's article takes the story as far as the beginnings of architectural education in England. The next

part will go further and deal with the closely allied subject of registration.

PERHAPS THERE IS A GLIMMER of those misconceptions to which we have referred, in the following dialogue, gleaned from a hearing held by the Committee on Public Buildings and Grounds in connection with the proposal to erect a new building for the Navy Department:

THE CHAIRMAN:* Mr. Wetmore, do you not think that a monumental building such as we are speaking of could be constructed out of granite for $4,000,000?

MR. WETMORE:† An office type of building?

THE CHAIRMAN: No; I mean a building like this (referring to the plans for the building for the Department of State).

MR. WETMORE: No, sir. . . . The quickest thing that could be done in the way of constructing a permanent building for the Navy Department would be to take the plans and specifications for that building (referring to the recently completed building for the Department of the Interior) and duplicate them. The plans and specifications are already prepared.

. . . . . .

THE CHAIRMAN: That is an office-type building?

MR. WETMORE: Yes.

THE CHAIRMAN: I do not think we would want to put up a building of that sort for the Navy. We have got to have a monumental building. I think the Committee would all be agreed to that.

Earlier in the hearing there occurred the following:

THE CHAIRMAN: I do not think there is any doubt but that we will have to put a monumental building there (referring to the site selected for the State Building).

MR. BURNETT:‡ It might be monumental in size and not be of such ornate character and such ornate material as to make a very considerable increase in the price, it seems to me. For instance, I should think there would be a difference of several hundred thousand dollars in the construction of a monumental marble building of this character and the construction of one of granite. Would there not necessarily be a difference?

MR. WETMORE: There is a difference between the cost of granite and marble; yes, sir.

THE CHAIRMAN: Would not a monumental granite building be all right there?

MR. WETMORE: I think so. The Treasury is a granite building.

THE CHAIRMAN: Do you think the Commission of Fine Arts would object to that?

MR. WETMORE: I do not think they would object to a granite building, but they would probably object to a tall building there.

THE CHAIRMAN: Would they object to a limestone building of this character?

MR. WETMORE: Well, I cannot say what they will object to.

THE CHAIRMAN: Would a building constructed of limestone be monumental?

MR. WETMORE: Yes, sir; we build monumental buildings of limestone.

And still earlier in the hearing one finds the following:

MR. BURNETT: . . . Would it not be possible for the Navy Department to state to us, in order that we might put it in the bill, the character of material they want, whether they want marble, granite, or limestone? That is the trouble we had with the Fine Arts Commission, that they were insisting on a monumental building or a marble building and insisting on constant increases. If you gentlemen could come down to that I think we could keep out of the clutches of that Fine Arts Commission to a great extent . . . The Fine Arts Commission held us up for years on that building, where people were being murdered, because they wanted a certain kind of material used and would not approve anything else. . . .

It would appear, from these dialogues, that the word "monumental" as applied to architecture had acquired a connotation greatly detrimental to an understanding of the functions of the architect when called upon to design a building of the character under discussion. "Office-type" also is alluded to, one feels sure, as a deprecatory qualification, and thus the real basis upon which such a problem should be considered becomes fogged and lost to sight. The truth is that a building of the so-called office type is essential for the effective conduct of the business of a great governmental department. We are so prone to criticise governmental machinery as unbusiness-like that it is hard to understand why we should not warmly welcome the the introduction of business features, such as ample light, maximum floor-space, convenience in plan, and facility and economy of operation, in a departmental building for the United States Government. The problem begins right there and should be studied from that basis. It is, then, the functions of the architect to combine those indispensable factors with an exterior which shall express the dignity of the Nation, for whose service the building exists. Modern needs will not be met by grouping a collection of motifs from Greece and Rome under the guise of "monumental," nor will the Nation be satisfied with the average type of commercial

*Mr. Clark, of Florida.
†Acting Supervising Architect.
‡Of Alabama.

structure for a departmental building at Washington. To effect this reconciliation between physical needs and beauty of line and form is the province of the architect. To understand the proper relation of these factors is to grasp the principle upon which architecture rests as an art.

One also notes the falsity which has crept in through the use of the words "Fine Arts" as applied to the Commission which is charged with trying to safeguard Washington against objectionable structures. The name does not connote a body which is dealing with practical things. It savors of something fussy, flossy, ornamental, decorative—a useless appendage to a practical problem. Yet the Commission of Fine Arts deals with practical problems and suffers the reproaches we have chronicled merely because, mistakenly it was given a name which does not express its purpose—any more than "fine arts" expresses the purpose of anything else. It is dangerous to try to force appreciations by using words which first evade definition and then acquire queer connotations.

THE ANNUAL REPORT of the Council of the R. I. B. A. for the year 1916–17 is of unusual interest. Tragic are the records of the seventy-six members who have lost their lives in the war; yet inspiring is the simple narrative of what the Institute has contributed toward helping the country in its need. We gain an insight into the great problem of readjusting employments to meet the business of war, and find that the R. I. B. A. was able to show the Government how useful architects could be in all sorts of work for which their training had especially fitted them. The work of a special committee appointed to advise with the Government as to what kind of trees should be planted for providing future timber for building purposes indicates a phase of war destruction from which we have heard that England has not been spared, though uninvaded.

Out of its trust funds, the Institute was able to invest nearly $8,500 in the war loans, and by careful economy and wise financing was still able to carry forward a balance of $2,000 to the new year. The Journal has been reduced in size and published monthly instead of fortnightly, and the Kalendar has been briefed, giving only lists of new members, changes of address, and fixtures for the new year. The report is significant of the high degree of skill with which the Royal Institute has organized the architectural profession of Great Britain. It is a fine showing after three years of a war which has tried nations as never before.

MEMBERS WHO HAVE JOINED THE FORCES since the outbreak of the war number 72 Fellows, 513 Associates, 312 Licentiates and 293 Students, a total of 1,190.

The Royal Gold Medal was awarded to Sir R. Rowand Anderson, LL. D., F. R. S. E. (*F.*). This year the medal will be presented, at the General Meeting on June 25, to M. Henri Paul Nenot, Membre de l'Institut, architect of the new Sorbonne in Paris, in recognition of the merit of his executed work.

In the report of the Literature Standing Committee one is impressed with the attention paid to the Library of the R. I. B. A., and the amount of interest taken in its enlargement and improvement. The contributions of measured drawings and sketches are numerous. During the year 1,220 members and 999 non-members used the library, which must be taken as a further indication of its value.

Homes for Workingmen Built by the City of London

By W. F. RILEY, F. R. I. B. A.*

THE procedure in dealing with the practical problems involved in clearing away slums and erecting in their place good healthy buildings is a matter which has been favorably solved in England, where the authorities are vested with powers much more comprehensive than those enjoyed by municipalities in America. Specifically, in the housing operations carried out by the London County Council, accommodations have been provided for nearly 60,000 persons in buildings erected by the city. Nearly 50,000 people have been displaced by the demolition of old and unsanitary buildings.

*Superintending Architect of Metropolitan Buildings and Architect to the London County Council.

By a parliamentary act of 1890 (Section 38, Part 1) the authorities may initiate proceedings for the demolition of old houses on representations from a medical officer of health. The same authorities may also undertake the construction of new buildings for the rehousing of the displaced. The law requires that the buildings must be on the area formerly occupied by the old structure or in the immediate vicinity. The law permits in the same operation the widening or closing of existing thoroughfares and the construction of new thoroughfares. Under Part II of the same act, the city authorities may remove buildings which obstruct light and air about adjacent buildings. This portion of the act applies to areas too small to be of general importance.

As to the comparative utility of Part I (for the clearance of unsanitary areas) or of Part II (for the removal of buildings which obstruct light and air of adjacent buildings) experts differ. Advocates of Part I contend that nothing but an immediate scheme can effectively remedy the conditions in a particular area, and that the demolition or repair of isolated obstructive buildings only produces a patchwork result and aggravates unsanitary conditions elsewhere. Whether Part I or Part II shall be applied to any particular area must always be a problem for determination according to the special circumstances of each locality.

In the work in the central sections of London, however, under Parts I and II of the Act previously referred to, it has been found necessary to charge rents based on the housing value only. It has been found practically impossible to provide accommodations in the old centers at rents equal to or lower than rents ruling in the neighborhood, so that in such improvements all or part of the value of the land has been discounted by the municipalities. In other words, the commercial value of the cleared sites has had to be written down to housing value and the loss to the municipality has had to be distributed as a part of the taxation on property throughout the city.

But without complying with the statutory obligations, the London County Council voluntarily has provided housing accommodations in unbuilt-up areas under the provisions of the Town-Planning Act of 1909. Estates have been purchased on the outskirts of the county where land has a low value and cheap and rapid traveling facilities exist. In these operations, an essential requirement not applying to those previously referred to is that they must be self-supporting. Notwithstanding this fact there is an actual saving in rent to the tenant by living in one of the suburban sections laid out by the London County Council. Obviously, the great need of London is the building of more adequate rapid transit facilities in which connection would be made with the virgin territory in the country for a single fare. The Town-Planning Act for 1909 was a distinct step in the direction of a solution of the problem with which the London County Council is confronted. This Act provides not only for the limitation of the number of houses to the acre but also for the provision of adequate light and air and does away with the overcrowding of large masses of population. As noted above, it is under this Act that the development of the cottage estates in London by the County Council has proceeded.

To refer briefly to the development of the suburban cottage estates of the London County Council, the houses are two-story buildings arranged in short terraces with space at intervals, and they are almost invariably set back five to fifteen feet from the fore-court fence. The schemes for development have been largely influenced by the following considerations:

1. Economy of land area and road construction in proportion to the building.
2. The avoidance, so far as practical, of deep external back projections in close juxtaposition.

In the development of these estates every endeavor has been made successfully to combine commerical and architectural values. Variety in planning the treatment of the elevations has been consistently aimed at. A feature of the County Council estates is that each cottage has its own plot of ground at the rear. The conclusions which have been drawn by authorities in London are that from the educational, social, hygienic, and in fact, from nearly all practical aspects, the proper way of housing workers is at the outskirts of the city or town where convenient transit should be made a part of the scheme.

The Organization of the Architectural Profession*

By SIDNEY WEBB, LL.B.
Professor of Public Administration in the University of London (School of Economics and Political Science)

Early Records of Architecture as a Profession

We need not, for our present purpose, inquire by whom either the cathedrals or the castles of the Middle Ages were constructed, nor discuss how far William of Wykeham (1324–1404) or John Thorpe (circa 1570–1620) can be considered to have contributed to the foundation of an architectural profession. The first known use of the word in English seems to be in 1563 when John Shute, on the title-page of what was perhaps the first book that this country produced avowedly on architecture,† styled himself "painter and architect." Inigo Jones (1573–1671) is commonly said to have been the first definitely professional architect in England. In Italy, Inigo Jones found architecture, though its greatest glories were past, still intimately connected with the arts of painting and sculpture. In England, as it seems, the profession emerged from other surroundings. For yet a couple of centuries after Inigo Jones the work of the architect continued to be only very partially marked off from that of the master mason or building contractor on the one hand, and from that of the surveyor or the civil engineer on the other—an association from which the architect in some other parts of the world, and even in some provincial towns in this country, has not yet shaken himself free. Sir Christopher Wren (1632–1723), it will be remembered, at the end of the seventeenth century, was "Surveyor of His Majesty's Works and Buildings," and combined with the exercise of his genius as an architect very considerable duties of what we should now class as surveying, building, and civil engineering. Thomas Telford (1757–1834), engaged in 1787 as Surveyor of Works for the county of Salop, did, in the course of his life, much work as a mason and a clerk-of-the-works, a roadmaker and a bridge-builder, a surveyor and an architect, though we think of him now as essentially a civil engineer.‡ During the seventeenth and eighteenth centuries there lingered still the traditional skill of the craftsmen in stone and brick and wood who dealt direct, each for his own specialty, with the customer who desired a house. To them, as much as to any professional architects, we apparently owe the taste and charm of so many of our old cottages and country houses. From the middle of the seventeenth century in London, and during the following hundred and fifty years elsewhere, we see these master craftsmen becoming more and more superseded by the contracting builder, who took all trouble off the customer's hands, himself supplied all the necessary materials and hired the wage labor, and speculated to the extent of undertaking to produce the building for a fixed sum. We do not know how the two changes may be connected, but, in the United Kingdom at any rate, the coming in of the professional architect corresponded closely with the employment of the contracting builder. In some cases the same person filled both parts.**

*The materials for a sketch of professional organization among architects in the United Kingdom are to be looked for mainly in the records and published "Proceedings" (1835–93), "Transactions" (1836–93), and *Journals* (1893–1915) of the R.I.B.A., together with the annual R.I.B.A. Kalendar; in the records, and *Journals* (under various titles from 1889) of the Society of Architects, together with its annual "Year Book;" in the records and annual "Notes" (1887–1904) and *Journal* (1905–15) of the Architectural Association; and in the publications of the local "allied societies," together with those of the few others not in alliance with the R.I.B.A. See also "Architecture, a Profession or an Art," edited by R. Norman Shaw and T.G. (afterward Sir Thomas) Jackson (London, 1892 xxxv+240 pp.); the article on "Architects" by Alfred Waterhouse, in "Unwritten Laws and Ideals," by Miss E. H. Pitcairn (London, 1899); "The Legal Registration of Architects," by J. Wreghitt Common, F.R.I.B.A., 1888; "As to the Making of Architects," by Maurice B. Adams, F.R.I.B.A., 1904; "The Consulting Architect," by Robert Kerr (London, 1886, 313 pp.); "The Architect as the Arbitrator between the Employer and the Contractor," by C. G. Gregory (London, 1891, 340 pp.).

†"The First and Chief Grounds of Architecture used in all the ancient and famous monuments, with a further and more ample discourse upon the same than hitherto hath been set out by any other," by John Shute (folio, 1563 and 1584).

‡In contrast with these English examples of the seventeenth and eighteenth centuries, we may cite such eminent Italian architects as Giotto, Brunelleschi, Bramante, Michael Angelo and Sansovino, who were, to say the least, scarcely less distinguished as painters or sculptors, some of them working with success in all three branches. The present most authoritative meaning of the word architect is "a master builder; a skilled professor of the art of building whose business it is to prepare the plans of edifices and exercise a general superintendence over their construction." (*Murray's New English Dictionary.*)

**Thus, already three centuries ago, we find Robert Smithson (1585–1614) who designed much of Longleat, described as "undertaker and overlooker." Robert Timmins (1618–35) who designed Blickling Hall in Norfolk, is termed "architect and builder." Sir Thomas Chambers and Robert Adam both contracted to supply houses to their clients at fixed sums, sometimes including not only design and building, but also much of the furniture. Much of West London was erected by the enterprise of those who were both architects and building contractors. George Cooke, to whom we owe the foundation (in 1786) of the first professional journal, *The Builders' Magazine*, is only one of many who avowedly combined the two callings of builder and architect.

The First Societies

But in the London of the latter part of the eighteenth century there gradually drew apart a small class of practitioners who catered principally for the wealthy noblemen and gentlemen of artistic tastes, and who, in contrast with the "builder-architect" of the suburbs, as of the provincial towns, limited their functions to those of the architect as we now understand the term. Not until the very end of the century do we find any coming together of these professionals. There was an Architects' Club from 1791 onward, in which a select company of leading men in the profession foregathered at the Thatched House Tavern in St. James's Street. This friendly social gathering included such distinguished members of the profession as Robert Adam, Chambers, Soane, Wyatt, Milne, Dance and S. P. Cockerell, but seems to have exercised no definitely professional functions.* The London Architectural Society, established in 1806, appears to have been merely an organization for mutual improvement, its members binding themselves each to produce annually an original drawing and an essay, which were discussed at general meetings. This society apparently died out some time before 1831. The Architectural Society, established in 1831, was a more ambitious attempt at a learned society, intending to found a school of architecture and hold annual exhibitions, but had only eleven years' rather abortive existence. In 1833 appeared *The Architectural Magazine*, the first exclusively architectural journal. Meanwhile, what was destined to become a more substantial organization arose. In February, 1834, there was a meeting of London architects and surveyors for the purpose of forming a new society for the study of architecture and architectural topography.† Those among them who were architects seem to have preferred a separate association and drew apart in July, 1834, to form The Institute of British Architects. It was this group of architects who, after three years rather informal existence, obtained a charter in 1837, thenceforward styled itself the Royal Institute,* basked in the sun of courtly and other influential patronage, was honored by the foundation of an Annual Royal Medal in 1848, obtained new charters in 1887 and 1909, and has gradually grown into the position of the dominant organization of the profession throughout the whole British Empire.

*See the article by Harry Sirr, in *Journal*, Jan. 7, 1911.

†"An Historical Sketch of the R.I.B.A.," by C. L. Eastlake, Secretary, 1876.

The Purely Social Purpose of Early Organizations

Those who founded the Institute neither troubled to define the qualifications for the architect's profession nor to prescribe any particular kind of education for those seeking entrance to it. They were clear, it seems, that they did not want to associate themselves with surveyors, who were then principally "builders' measurers;" but in 1835 the infant Council discussed "whether it be consistent with the constitution of the Institute to admit as Fellows such gentlemen as are chiefly known and distinguished as Civil Engineers."† The decision was apparently in the negative. The members, indeed, thought of themselves as artists, and their report to the little annual meeting of 1836 justifies the formation of the Institute by the plea that the Royal Academy, to which it seems to have been supposed that they might have owed some allegiance, had given up its lectures on architecture and failed to make accessible any architectural library—was composed, in fact, almost wholly of painters and sculptors.‡ There was, at first, no thought of establishing a large or far-reaching organization, or, indeed, of a professional association at all. The members, it has been said, "were selected at first for their respectability and not necessarily for their talent. . . . It was . . . considered desirable by its founders that none should join its ranks who were not gentlemen by education and social status."** The founders of the Institute were, indeed, a little group of architects of artistic tastes, who had found success in carrying out the projects of cultivated

*The title of Royal Institute appears to have been commonly used from the first, although express permission by the Queen was given only in 1866.

†Summons to a Council Meeting of 1835. Sir John Rennie had been invited to one of the preliminary meetings.

‡Annual Report 1836.

**"Architects," by Alfred Waterhouse, in "Unwritten Laws and Ideals," edited by E. H. Pitcairn, 1899, p. 344. It is fair to note, however, that among these early members were some of the most distinguished architects of their day: we need only mention the names of Donaldson, Tite, Barry, Decimus Burton, Cockerell, Gilbert Scott, and Gwilt, to whom were presently added Hardwick, Burges and Pearson.

clients. What they sought was not any widely extended membership, still less the regulation throughout the whole Kingdom of what was already a widespread straggling profession, but the formation of a "subject association" for the development of architecture, largely by the bringing together in pleasant social intercourse of its more successful votaries, and especially those who were "free from those complicating relations with trade which frequently existed in the early part of the century, and prevented that implicit confidence on the part of the public which should enable a client to regard his architect not only (as free from) the receipt or acceptance of any pecuniary consideration or emolument from builders or other tradesmen whose works they may have been engaged to superintend on behalf of others," or having any "interest or participation in any trade contract or materials supplied at any building whereof they may be engaged to superintend the execution or elsewhere;" or any other conduct "derogatory to the character of a gentleman in the practice of the profession;" but specifically also "engagement in measuring and valuing or estimating on behalf of builders, except those executed under the architect's own directions."* The Institute was not confined to professional architects. As a "subject association," it rightly welcomed those whose interest in architecture was that of the amateur. The Institute depended, in fact, largely on donations from wealthy patrons of its art. "Without and beyond the circle of its professional members," declared a published appeal, it will "at first be difficult to form and carry on such a society," so the architects relied, as they frankly said, "on the munificence which distinguishes so many noblemen and gentlemen in this country." Nor did they rely in vain. For years the receipts from these amateurs formed more than half the annual revenue of the Institute. The presidency was held right down to his death in 1859 by Earl de Grey, who (except when he was holding office in Ireland) attended every meeting of the Council, took the most active part in the proceedings, sumptuously entertained the members at his house, and secured for the Institute a series of courtly favors. The Institute remained a select coterie interested in the development of architecture, rather than in the promotion of the profession; not aspiring to any regulative authority, not concerning itself about professional education; only slowly becoming much more than a London and indeed a West End body;* and occupied almost entirely with the friendly relations and pleasant social intercourse among its own members, for which the meetings, the slowly growing library, and the annual award of the Royal Medal to a distinguished British or foreign architect afforded convenient occasions. It made an attempt in 1837 to organize lectures for its members on geology and chemistry and on the different kinds of timber—a "mode of conveying instruction in practical architecture and the new branch of knowledge now first brought to bear upon construction," which, as the Council observed, was "somewhat of a novelty in the profession." But the members did not attend in any numbers, and the experiment was not continued. In 1838 an attempt to absorb the Architectural Society was defeated, owing, it seems, to the refusal of the Institute to take over the surveyor members of the Society.† The remnant of this Society was absorbed in 1841, without apparently greatly affecting either the membership or the activities of the Institute. Its principal professional interest appears in these years to have related to the way in which its members found themselves generally excluded from the execution of public buildings, owing to the devotion of both the national and local governing bodies, and also of trustees and committees, to the crudest form of open competition among architects in the submission

*Address of the Institute of British Architects explanatory of their views and objects, and the regulations adopted at a meeting held July 2, 1834.

The prohibition to architects to engage in quantity surveying (which has since been developed into a distinct profession having its own Quantity Surveyors' Association) requires explanation. What was aimed at was the practice, to which many architects, especially in the provinces, then succumbed (as some are said still to do), of taking out the quantities for the builder, at the builder's request, and receiving payment (usually at 2½ per cent on the total amount) *from the builder* unknown to the client. What was objected to was this concealed relationship and commission. Where the architect, to the knowledge of his client and at the client's expense, takes out the quantities from his own plans and supplies them to the builder without receiving from him any payment whatsoever, the practice is not open to objection. In this form it may be convenient (or even necessary where the professional quantity surveyor is not at hand), and it has been forcibly upheld. "The quantities," it has been urged, "are never so well taken out as when the architect himself does the work, or has it done in his office, because he alone can know clearly what is in his own mind." ("The Consulting Architect," by R. Kerr, 1886, p. 197.)

The Institute's prohibition, expressed in somewhat vague terms, was objected to by many provincial architects and was (as regards Associates) rescinded by vote of the annual meeting in 1850, and (as regards Fellows) quietly dropped out of the revised form in 1887.

*It should be noted that in the very earliest years a few architects practising outside London (as at York, Gloucester, Plymouth, etc.) were admitted.

†"An Historical Sketch of the R.I.B.A.," by C. L. Eastlake, 1876.

of plans. In 1839, and again in 1843, the Institute fulminated against this abuse, declaring that "there are few cases in which competition is anything but a convenient engine for fraud," and "that the modern practice of submitting designs in competing speculations for premiums, or for employment, or in any competition for preference, without specific or properly implied promise of certain payment to each and every competitor, operates injuriously upon architecture and upon the interests and character of the profession." It is interesting to find an almost total absence of mention of the methods of preparing for or entering the profession. In 1841, indeed, the existence was recognized of "students," who, in return for an annual subscription, were admitted to the library and meetings on the recommendation of members, but for whom no education was provided. Their numbers never rose, however, to more than a handful. The Institute itself continued for years to have only a hundred or so professional Fellows and Associates. The membership long remained almost stationary.* In 1839, when there were still only a couple of hundred Fellows and Associates on the books and considerable difficulty was experienced in inducing even these to pay their annual subscriptions, a committee was appointed to inquire why greater progress was not being made. A great obstacle to membership was the prohibition to engage in quantity surveying, which was then very commonly combined with practice as an architect. The controversy raged over a couple of years. After hot discussion a majority of the Council refused to give up the prohibition, even for the sake of enrolling more of the provincial architects. The annual members'.meeting in 1850 took, however, a different view and rescinded the prohibition. In 1855, when a new metropolitan building act was passed, the Government entrusted to the Institute, as being the only available professional body, the duty of conducting the technical examination of architects who wished to obtain "certificates of competency" to hold the office of "building policeman" or Public Inspector of Building Plans in London, misleadingly styled that of District Surveyor, or, as various Local Acts put it, Building Surveyor.

*In 1837 there were (apart from non-professional and other honorary members) 64 Fellows and 33 Associates. In 1846 there seem to have been still only a hundred actually subscribing, though in 1849 the numbers on the books were 110 Fellows and 96 Associates, and in 1851, 120 Fellows and 96 Associates.

The Development of the R.I.B.A.

In the year 1859, when Earl de Grey died, a professional architect was elected to succeed him as president, new and more commodious premises were obtained, and the Institute entered into a new phase. The membership rapidly increased, especially in the provincial centers, and the Institute took on a more strictly professional character. The presidency was thenceforth held normally only for two years. The donations from wealthy amateurs, rewarded by Honorary Fellowships and Honorary Memberships, ceased to form an important item in the revenue. Though the Council of the Institute continued to be made up mainly of architects who had achieved opulence and distinction on the old lines, the Associates, and even the Fellows, came to include more and more of the rank and file of men engaged in the erection of shops and factories, mills and offices, and the mass of ordinary dwelling houses with which so much of the country was being covered. The technical and commercial aspects of the architect's duties obtained greater attention. The Institute was ceasing to be predominantly metropolitan in membership, and, moreover, it was not the only society to which architects could belong. The profession was, indeed, rapidly spreading to every large town. Local societies were formed in which architects could meet and discuss their common interests. In Dublin the Royal Institute of the Architects of Ireland had been established on the model of the British Institute as early as 1839. In the course of the next half a century local societies with divers titles were started in Liverpool (1842), Bristol (1850), Newcastle (1858), Edinburgh (1858), Nottingham (1862), Manchester (1865), Glasgow (1868), Leicester (1872), Birmingham (1873), Leeds (1876), York (1882), Dundee (1884), and Sheffield (1886), to be followed in 1890 by the South Wales and Devon and Exeter Societies, in 1898 by the Aberdeen Society, in 1911 by the Northamptonshire Society, and in 1912 by the Hampshire and Isle of Wight Association. These societies, which were completely autonomous, framed their own definitions of the limits of the profession, fixed for themselves the districts that

they would take for their several spheres, elected their own Fellows and Associates, admitted their own students upon such qualifications as they chose,* and, in some cases, added not only "Honorary Members" or "Honorary Associates," but also such new classes as "Lay Members," and "Associated Craftsmen," who are certainly not architects.†

These local organizations—now known as the "allied societies"—were not hostile to the Royal Institute, nor did they presume to be its rivals. On the contrary, they looked up to it as the premier society of the profession; and many of their leading members belonged to it as Associates or as Fellows. During the quarter of a century that followed on the expansion of the Institute in 1860, the numbers of these provincial societies—whether born and mainly trained there, or merely migrants from London who had settled in practice there—were, in fact, during the latter part of the nineteenth century, coming to constitute a considerable proportion of the Institute membership, which thus lost, by imperceptible degrees, its original character of a select group of personal acquaintances.*

The members of the Council of the Institute, who continued down to 1894 to be annually elected (and usually year after year reëlected) at the annual meeting of members in London, seem to have looked upon these changes with mixed feelings. There were some, even among the leading members, who wished the Institute to pass away from being merely a "subject association" and to take on avowedly all the functions of a professional association, aiming, for this purpose, at representing the whole profession and not merely its most distinguished or most successful members. In 1865, reverting for once only to the tradition of the first president, the Institute elected, not a professional architect, but that accomplished and distinguished dilettante, A. J. Beresford Hope, to fill the presidential chair. In his inaugural address the new president made for the Institute claims larger than its dominant members were then inclined to support. "I am ambitious," he said, "for the honor and usefulness of the Institute, and as the result of this ambition, I decline to remain where we are . . . The Institute ought to be, without rival and without demur, the central regulating areopagus of architecture—as practised by its professional votaries and as studied by the amateur—within this Imperial realm. The time should come when the absence of those letters which denote some grade in the Institute from the name of anyone who practises architecture should be as much the cause for inquiry as the absence of academic distinction from that of the clergyman who has the misfortune to be a Literate. Do not mistake me, and imagine that I am the mouthpiece of any policy of aggression; least of all do I wish to crush the free art-life which has given birth to so many architectural and semi-architectural societies . . . I wish them all prosperity and all liberty; at the same time I desire that they

*Thus, the Royal Institute of the Architects of Ireland requires its students to have signed articles for three years to a member of the Institute, or of the R.I.B.A., or of an allied society; the Glasgow Institute insists that its Fellows, if not F.R.I.B.A., shall have gone through a six years' apprenticeship in an architect's office, recognized as such by the Council; the South Wales Institute requires its Associates to have been assistants or pupils under articles to qualified architects, unless the Council relaxes this rule in particular cases; and the Devon and Exeter Archæological Society requires either service under articles or some other training recognized by the R.I.B.A. Service under articles is, however, with the growth of schools of architecture, becoming steadily less usual and, where it continues, much curtailed.

It may be noted that the Edinburgh Architectural Association admits as Associates the apprentices, pupils, or assistants of civil engineers or surveyors, as well as of architects and also junior designers; the Leicester and Leicestershire Society of Architects admits as Assistant and Pupil Members those over 16 "in the office of an architect, surveyor or civil engineer, in practice in the Counties of Leicester or Rutland;" and the newly formed Hampshire and Isle of Wight Association of Architects admits as Associates "gentlemen engaged in public offices to do architectural work."

†Some of these "allied societies" are open, according to their rules, to persons merely interested in architectural matters, or "in the furtherance of the work of the Association"—a lack of definiteness sometimes animadverted on. But it is understood that the number of such non-professional members is infinitesimal.

Upon being accepted as allied societies, these local organizations become entitled to receive 25 per cent of the subscriptions paid by any of its members to the Royal Institute as Fellows, Associates or Licentiates, and any change in the rules or by-laws have to be approved by the Council of the Royal Institute.

The position of the Ulster Society of Architects is peculiar. It was formed at a meeting at Belfast, convened by Sir Thomas Drew, F.R.I.B.A., President of the Royal Institute of the Architects of Ireland. It was subordinate to the R.I.A.I. and had two representatives on the Council of that body. In the year 1906 friction had developed between the two bodies. Belfast said that Dublin was too far away, paid no attention to Ulster interests, had a lower standard of professional practice, etc. The Ulster Society seceded and applied for direct alliance with the R.I.B.A. as an independent society. Dublin objected to this dismemberment of its province. The demand for alliance with the R.I.B.A. has been renewed annually since 1906. The R.I.B.A. Council has consistently refused to make any change, except on the basis of an agreement between Dublin and Belfast.

*The Subscribing Membership of the R.I.B.A. has been as follows in the years mentioned:

1850	215	1905	1,904
1860	324	1910	2,353
1870	520	1911	*3,626
1880	796	1912	*4,330
1890	1,367	1913	*†4,632
1900	1,678	1914	*4,673
	1915	*4,641	

*Including Licentiates.

†No further admissions to Licentiateship after this year.

should all act as members of one system . . . looking up to this Institute as the Alma Mater, ready to give all fostering care at the cheap price of unsuspicious confidence."* The conception of a united architectural profession, all of them becoming members of the Institute, failed to find favor among those who at that time ruled its destinies. Yet the membership steadily grew, and with the membership the professional influence. With its growth the Institute was, in fact, taking on new functions. Its position as the predominant society led to its being pressed to undertake such duties as seemed from time to time to be imposed on an organization representing the profession. Presently it made itself national in constitutional structure, and, later on, definitely Imperial in its scope. In 1889 nine of the local societies, and subsequently ten more, were admitted to affiliation, with representation on the Council in the persons of their presidents taken in a certain rotation. In 1892 the Royal Institute gave itself a further extension of scope by admitting to affiliation (though without representation on the Council) the Institute of Architects of New South Wales, a step followed, between 1907 and 1913, by similar admission of nine other architects' organizations of the Canadian, Australian, New Zealand and South African Dominions. The increased membership and greatly extended activities of the R.I.B.A. were, however, accompanied by a certain loss of prestige among a section of the leading architects. Some of the most distinguished members of the profession felt that the Institute was no longer what it had been. They had not much resented the transition from a select gentlemanly club, in which social position was even more regarded than professional eminence, into a widespread association of national and international influence. But other developments were taking place, to which we have now to allude, in the way of the deliberate training of men to be architects and of subjecting them to examination tests, against which these distinguished members of the profession revolted. They demurred to the transition from the "subject association" to the professional association. They resented what they declared to have become "the constantly avowed desire" of the Institute "to make itself co-extensive with the profession, by sweeping all architects into its net."*

They had no taste for anything like a scientific society or an active professional organization. To them, as to Earl de Grey, to whose influence the Institute in its first quarter of a century owed so much, the duty of the Institute was the promotion of architecture as one of the "fine arts;" the function of its members was not to direct and supervise the erection of all the buildings of their country, whatever they were, but only to design and plan such among them as were intended or desired to be beautiful;† that they were, or should be, essentially artists, not to be organized as if they were civil engineers, or professionally instructed like district surveyors. Moreover, as the Institute had continued to elect as Associates and Fellows any architects whose personal character and professional reputation commended itself to the little group of the Council and other active members, it cannot be said that its membership commanded universal respect.‡ Thus, in contrast with the history of most professional organizations, the R.I.B.A. has not the record of a steadily progressing inclusion of all the leaders of the profession. It started with the idea of including the most gentlemanly and respectable, among whom, it was assumed—at that time not altogether incorrectly—would be found the most successful and the most distinguished. Toward the end of the nineteenth century, when the total membership had risen only to some sixteen hundred, there may well have been as many of the leading architects outside the Institute as within; and some of the most artistic, the most cultivated, and the most distinguished members of the profession preferred to be without the initials F.R.I.B.A.

Such was the position toward the end of the nineteenth century. The last two decades have witnessed a bewildering change, which it is difficult to analyse. We have to note the con-

*Inaugural Address of A. J. Beresford Hope, Nov. 6, 1865, in "Transactions, R.I.B.A.," 1865–6; see also *The Builder*, Oct. 29, 1887, p. 590.

*"Architecture a Profession or an Art?" by R. Norman Shaw and T. G. Jackson, 1892, p. xxxi.

†"For nine buildings in ten, if not ninety-nine in a hundred, no architect is, or perhaps ever will be, required." (*Ibid*, p. xv.)

‡In 1892 it was said, with some bitterness, that about half the members of the Institute "are surveyors who only devote a fraction of their time to architecture." Twenty-two leading architects, all men of distinction, signed the memorial against registration in 1892, as persons wholly unconnected with the Institute. Seven of the best-known Fellows at the same time resigned their Fellowship (*Ibid*, p. xxxv), as a protest, not entirely or even principally against the policy of registration but essentially against the Institute becoming a professional association, or, as they said, a trade union.

tinuous development of systematic professional education for architects. We have to record the advent of the fiercely resented system of examinations on which membership of the Institute has come, in practice, to depend. We see a great increase in the numerical strength of the profession and its ever-wider geographical dispersion. And with all this, it is clear that professional organization among architects in the British Isles has become more general, more active, and, as it seems, more effective. The two main factors in this transformation in professional organization—at first the cause of disaffection and disunion, but during the last few years, as we read it, actually becoming the means of bringing the whole profession closer together—have been the desire to promote a real professional training for those desiring to be architects, and the aspiration after an authoritative registration of those qualified to exercise the profession. Under the influence of these factors we see the R.I.B.A. continuously increasing its strength, its activities, and the range of its influence; we note the steady development of the educational work of the Architectural Association and the upgrowth of other "recognized" schools of architecture; and we become aware of the rise of a new body, the Society of Architects, devoting itself specially to the movement for statutory registration. These results have not been achieved without controversies which have sometimes been fierce and bitter. But the center of discussion has, it seems to us, almost imperceptibly shifted; and whilst, on the practicability or even the desirability of statutory registration, opinion is still divided, those who think of architecture as a branch of the arts have joined hands with those who are conscious of its needs as a profession, so that it seems as if, today, among reputable and successful architects in general practice on their own account, only a small minority of the older men still deliberately stand aloof from professional organization.

The First Realization of the Problems of Architectural Education

In a certain sense it may be said that, more than anything else, it has been a growing realization of the need for the systematic instruction of the architectural aspirant that has drawn the profession together. Throughout the greater part of the nineteenth century the youthful student of architecture practically "picked up" his profession by serving, under more or less formal apprenticeship or "articles," in the office of a practising architect, who, in return for a not unsubstantial fee—in London usually three hundred guineas—gave his pupils for five years* the run of his office, allowed them to help in his work, and afforded them such hints and advice for which he found time and inclination. The student might attend a drawing-school and study such plans and designs or read such books on building construction and on architecture in past ages and in other countries as those to which he could get access. He acquired only such practical knowledge of geology, chemistry, and civil engineering as he chose. More generally he satisfied himself by joining a sketching club which visited buildings of architectural interest. As a distinguished member of the profession has put it, "he might there become a fair draughtsman and, by dint of application, learn to write a specification and prepare detail drawings of more or less use, but of systematic architectural education there was none."† At the expiration of his term of apprenticeship the student often found paid employment for a few years in the office of other and perhaps busier architects as an assistant, and thus increased both his professional experience and his knowledge of what may be called the business side of his work, before starting in practice on his own account.‡ This freedom to "pick up" the profession by working under one or more of its masters, without systematic or formal instruction, has, it is claimed, the advantage of affording free scope to artistic talent; and, when the master is himself a genius, of giving the best chance of inspiration. But apart from the fact that the majority, even of the masters, are not at any time likely to be men of genius, nor the majority of

*University graduates were often articled pupils for three years only.

†"Architects," by Alfred Waterhouse, in "Unwritten Laws and Ideals," by Miss E. H. Pitcairn, 1899, p. 344.

‡The Institute keeps a useful register for assistants seeking employment, which is open also to pupils and "improvers," and also to clerks-of-works. It should be noted that a certain proportion of trained assistants, failing to get into practice on their own account, or to get a sufficiently well-paid assistantship, take employment, after a few years, as clerks-of-the-works, "whose duty it is to be constantly on the works to see that every item of the contract is carried out in strict accordance with the agreement" ("Architects," by Alfred Waterhouse, in "Unwritten Laws and Ideals," by Miss E. H. Pitcairn, 1899, p. 352–3), a class recruited also from builders' foremen, builders' clerks, and from those who have been unsuccessful as master builders. The clerk-of-the-works is selected by the architect but paid by his client. There is a separate Clerks-of-the-Works Association which looks after their interests.

students to be very receptive of inspiration, the range of practice and the character of the experience of any one professional, even in the best case, is necessarily limited; and the arrangement affords no assurance that the student, however artistically promising, would acquire that knowledge of all the practical devices of the art of construction, without which the best possible drawing will not result in the most useful or even the most beautiful building; nor yet that acquaintance with business methods and of the laws and regulations controlling the erection and alteration of houses without which the architect cannot successfully serve his clients.*

It is only fair to note that three-quarters of a century ago the need for the formal and systematic instruction of the young architect was less than it is today. There was at that time scarcely more than one conventional style, in which all those buildings were constructed on which architects were employed. Any articled pupil, in any office, might therefore count on getting acquainted, in the course of years, with the commonly accepted run of designs. There was, in any particular locality, but little variety of building material available, and the different kinds of buildings for which architectural designs were called for were few in number, so that it may almost be said that all architects handled the same things to much the same purposes. Moreover, the requirements of laws and by-laws like the demands of sanitation and ventilation, were restricted and simple. It was not then so unreasonable as it seems today to contend that apprenticeship to an architect in good practice provided practically all that could be taught. The first disturbance of this complacency was brought about by the now forgotten "battle of the styles." When the revival of Gothic and the introduction of this and that startling innovation broke the uniformity of architectural convention, the pupils in different offices found themselves limited in design to the practice of their several principals, and a demand arose for some wider and more varied instruction in design. The successive employment of new materials revealed the need for almost an engineering knowledge of the mechanics of construction. Finally, the increasing demands of sanitation and ventilation, and the obligations imposed upon the architect by the ever-growing mass of legal regulations, made it necessary for even the most artistic of architects to apply himself to an unfamiliar branch of study.

The movement to provide and ensure a more complete professional training for architects took two main forms, the organization of systematic public instruction and the institution of examinations. To enable the architectural pupils and youthful architects of the metropolis to get a fuller and wider instruction than they could pick up in the respective offices in which they were engaged, the Architectural Association was established in 1847 as a separate body, under the wing of the Institute, at first even sheltered under its roof, and always largely run by its Fellows and Associates, but having from the outset its own distinct aims.* Useful as were the lectures, the art classes, and the growing museum of architectural examples thus provided, it cannot be said that, in its official capacity, the Council of the R.I.B.A. was able to do much for education.

*Those who thought of architecture as one of the "fine arts" sometimes took up the position that none of these things even came within the scope of the architect's duties. "It is imperative," wrote Mr. T. G. (afterward Sir Thomas) Jackson in 1892, "that the callings of the architect and surveyor should be kept distinct; and that the architect should *give his whole life to his art*, leaving to the lawyer, the surveyor and the commission agent those incongruous, though lucrative, occupations to which so many nominal architects, within the Institute and without, devote the larger part of their time." ("Architecture a Profession or an Art," edited by R. Norman Shaw and T. G. Jackson, 1892, p. xxix). But this was in the heat of controversy. A no less distinguished member of the profession gives us, seven years later, a saner view of the duties of even the most artistic architecture. "He must be an artist in the first place, for without the intuitions of an artist he can never hope to be a really great architect. He should be a man of science in the second place, that he may wisely select and apply the materials at his command. He should be a man of business in the third place, with a sense of the value of money, a knowledge of the cost of materials and labor, and of how to dispose of the sums intrusted to his spending." ("Architects," by Alfred Waterhouse, in "Unwritten Laws and Ideals," by Miss E. H. Pitcairn, 1899, p. 342.)

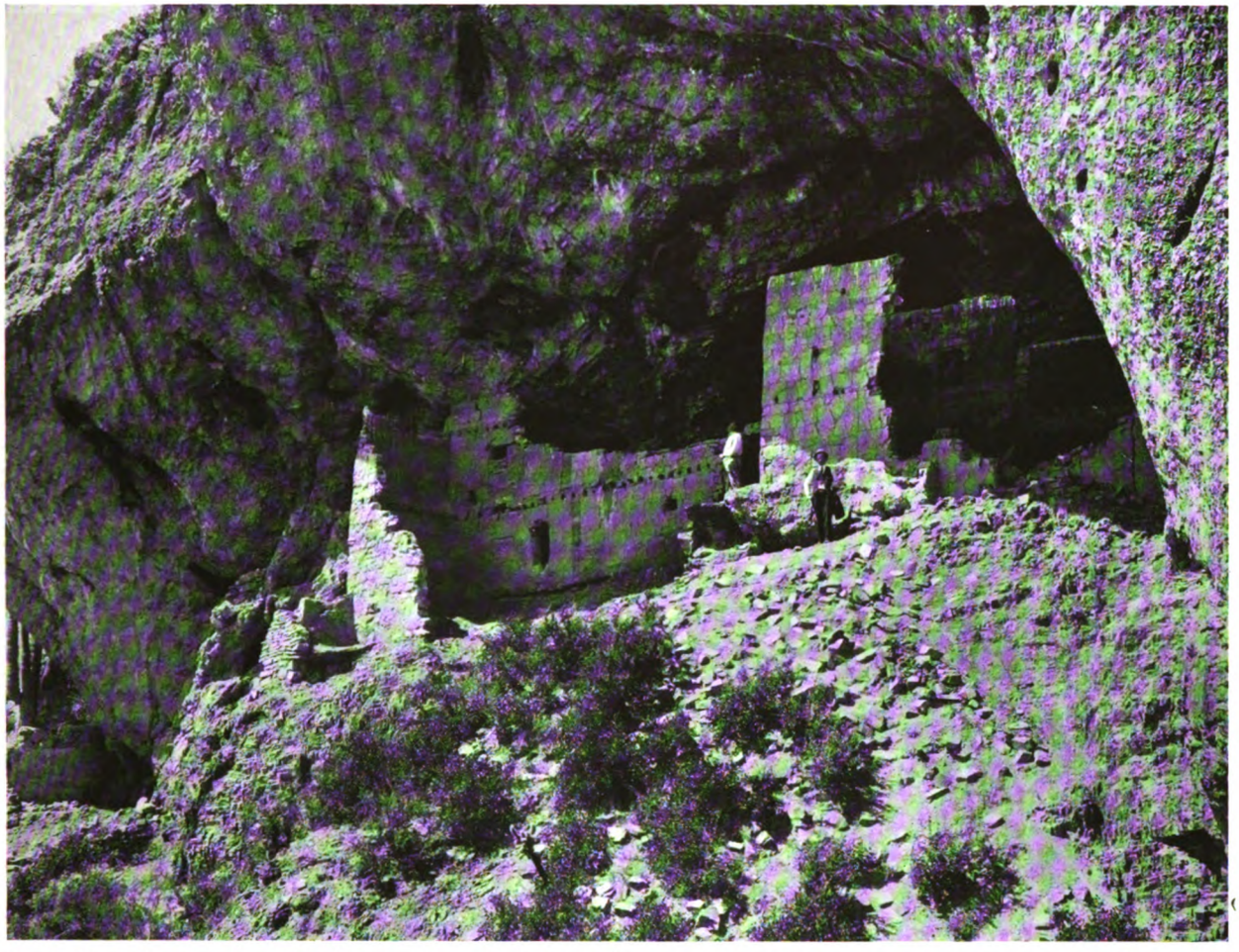
*The Architectural Association, from its establishment in 1847, always a separate body, with its own membership and funds, is now more closely than ever associated with the Institute, of which it has come to be recognized as the educational branch. Its president for the time being sits *ex officio* on the Council of the Institute, and it now nominates officially an Advisory member to the Institute's Board of Architectural Education.

It has some 1500 members (of whom a third are either Fellows or Associates R.I.B.A.), at an annual subscription of a guinea (or 1/6 for provincial members of the allied societies); and it administered its own very successful Day and Evening Schools of Architecture until 1916, at Tufton St., Westminster.

(*To be continued*)

Antique America

By MARK DANIELS



In all Cliff Dwellings of Any Extent There Have Been Found Kivas, or Ceremonial Chambers, and the Removal of the Debris of These Ruins Would no Doubt Disclose Such Remains.

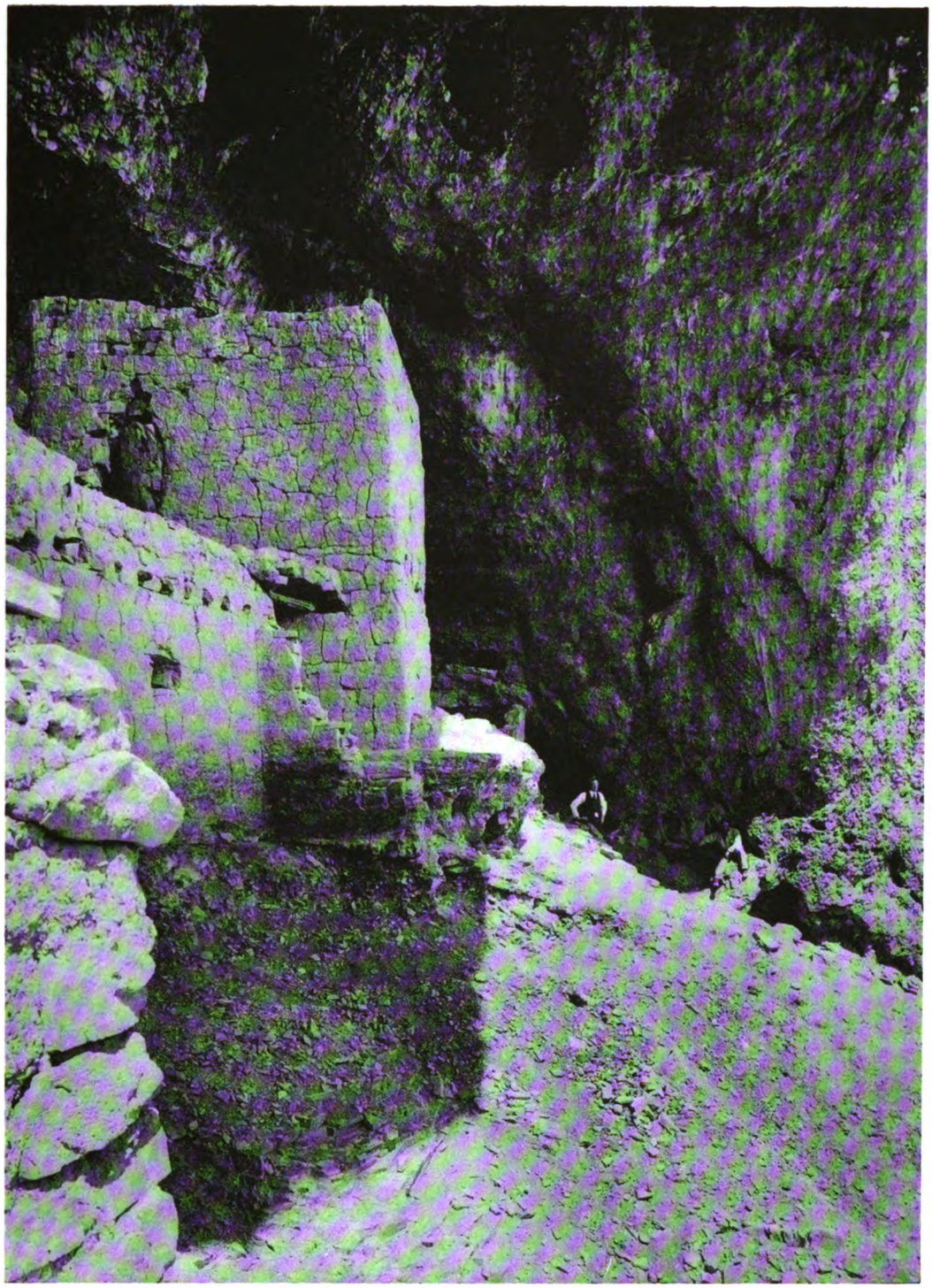
A PROPHET is not without honor, save in his own country. Witness the fact that annually millions of dollars are spent by American tourists who ignore the ruins of an ancient race in the southwestern part of the United States and spend their money on another continent. Perhaps they are prompted to do so by the weakening admonitions of a conscience which urges the expenditure of some of their surplus funds in the country whence most of it came. However, it hardly seems possible that such a flimsy excuse could justify the citizens of the United States in turning their backs upon the glories of Apache land where the ruined cities of a once populous race extend, in joint appeal with the glories of this land of color, and the lure of its fascinating mysteries to the lover of antiquity.

It seems strange that in this day of perpetual "Open Season" on railroads, when the big-game hunters of Washington take particular delight in pot-hunting the common carriers, it is left to a railroad to open the way and demonstrate to the people of the United States that the wonders of the scenery and history in the Federal Reservations in the southwestern part of the United States need not be strangers to the feet of white men. Yet this is at present

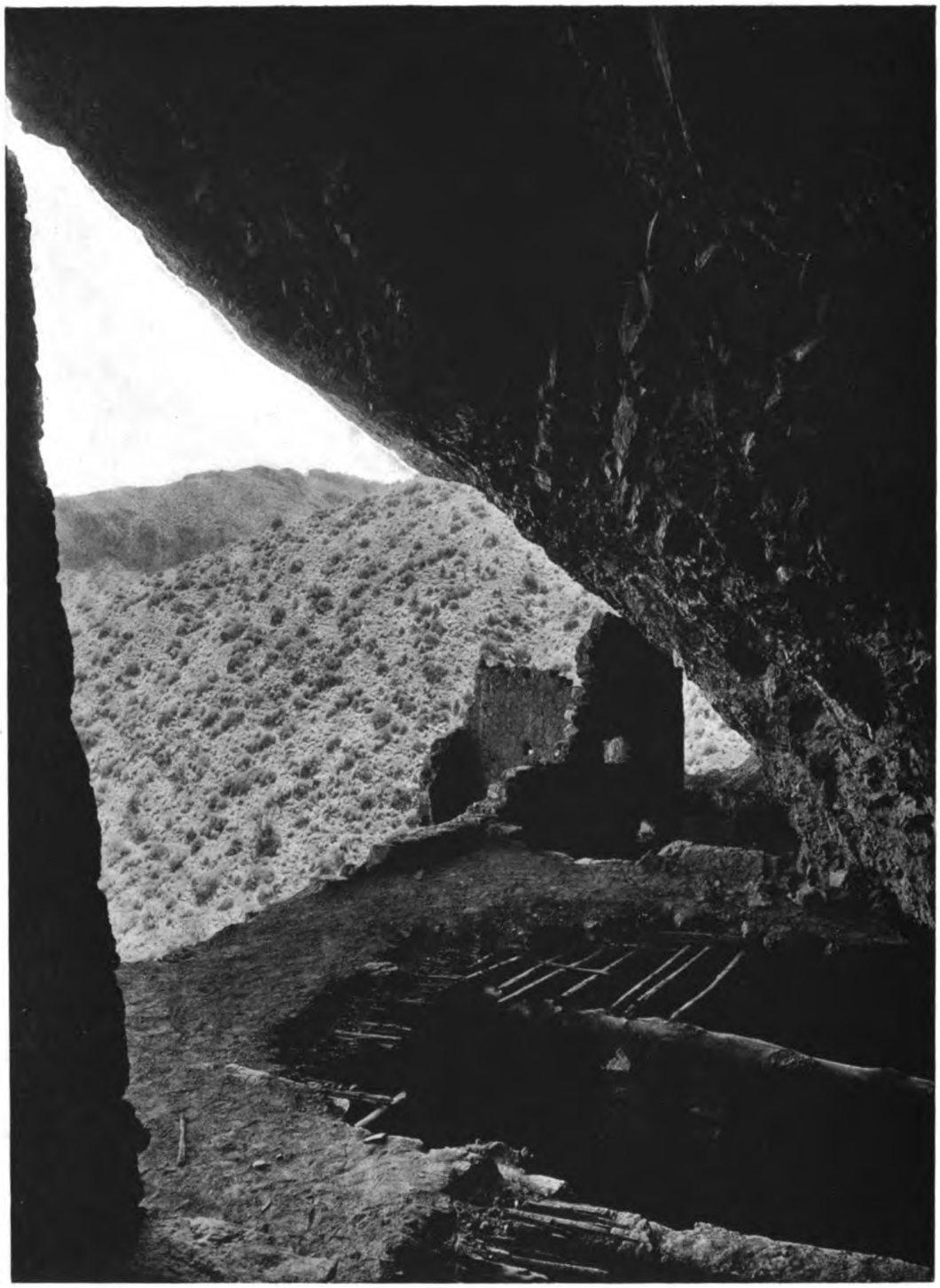
CLOSE VIEW OF A RUIN NEAR ROOSEVELT DAM, ARIZONA. The walls are of stone laid up in adobe mortar; some were plastered. The floor construction is of small, straight wands laid on cross-beams. Above these is placed the floor of stone and adobe. A man in the rear chamber may be seen through the hole in the wall.

the case, for only within the past year has the Southern Pacific Railroad sent an expedition into the Sierra Ancha Mountains of Arizona and discovered numerous ruins of the cliff dwellers, in great caverns, high up in the precipitous walls of cañons that seem, when viewed from the top, to extend to the very bowels of the earth. No doubt most of these ruins have been seen by white men before, but there is also little doubt that some of them have not. In any case, the number of white men that have been there could almost be counted on the fingers of the hand.

The ruins of this district, exclusive of that monumental ruin which our beneficent Government has made of the Apache Indian, are not confined to the type known as cliff dwellings. There are remains of the work of the mound-builders and some walls and buildings left by either the Taltecs or Aztecs who built their cities on the plains. To enumerate and describe the different varieties would take a volume or so, as is evidenced by the reports of the Smithsonian Institute on the subject of ruins in the Southwest. Many of them are quite inaccessible and therefore, as yet, of little interest to the traveler. But there are some very close to the automobile road which traverses what is known as the Apache Trail, and these may be seen with little effort. There are two groups of small dwellings within a mile or two from the Lodge at Roosevelt Dam, which can be easily reached afoot or horseback. Neither of these ruins has been cleaned of the debris that clutters the bases of the standing walls, and therefore they do not present as extensive a plan as would be seen if they were cleared and restored. Nevertheless, they are of sufficient interest to



SOME OF THE RUINED TOWERS AND CHAMBERS ARE IN AN UNUSUALLY GOOD STATE OF PRESERVATION. The desiccating atmosphere of Arizona preserves matter so that there is substantially no decay. Woodwork, corn, and other household articles may be found in good condition after a lapse of nearly a thousand years.



It is Very Difficult to Secure a Good Picture of the Interior of the Ruins, as Few of the Rooms Had Any Source of Light. This illustration clearly shows the roof and floor construction.

any lover of antiquity to justify a trip over the Apache Trail.

Much has been said and printed about the Apache Trail, but little or nothing has been reported about the ruins that can be seen in the vicinity, and so a party was gathered together to investigate this question and ascertain how extensive were the ruins in the neighborhood of Roosevelt Lake. The party started from Phoenix, Arizona, by motor, and traversed the road from Phoenix to Roosevelt, keeping alongside of the old trail which was used by the Indians in crossing from one range to another. Here and there, along the road, glimpses of the trail could be seen, worn deep in the attesting stone by the moccasined feet of the Indians. Cañons and cliffs were on every side, and to one who was familiar with the sites which had appealed to cliff dwellers in other parts of the world, it was at once evident that somewhere in this country of mesas and box cañons there must be a great number of ruins. At one point can be seen, through a gap, the scene of the last stand of the Apaches before our conquering soldiers, and as the party ventured further into the mountains, the spell of antiquity enfolded all with the mantle of respectful silence.

Upon turning the point that overlooks the Roosevelt Dam, the atmosphere suddenly changes, for, stretched out before the traveler is a great valley filled with a beautiful lake, at the sight of which, and as the spell was broken, the party on this particular trip began chattering like a flock of magpies. After a night's rest at the Lodge, the serious work of trying to find the great number of ruins which rumor, in Phoenix, had located as being a few miles from Roosevelt Dam, was begun. Everyone knew, of course, that there were ruins of cliff dwellings in the Cherry Creek Cañon, Pueblo Cañon, Devil's Chasm and Whatnot, but no one had ever seen them or had been there before. Everyone knew somebody else who had, and all that was necessary was to ensconce oneself securely on the hurricane deck of a bronco and ride to them. So horses were ordered to meet the party on the north shore of the lake, to reach which place it is necessary to ferry the eastern arm. The only difficult part of this task was in getting the ferry to go across the lake. All other details were easily managed. Horses were driven on board the ferry with no mishaps, while the boat also was finally launched and got well under way, and, so far as could be determined with a naked eye, the engine was running beautifully despite its decrepitude. Members of the party, not knowing the engine, thought that all was well, but the man who had nurtured it from childhood and trained it with a vocabulary that would make a sea captain turn green with envy, knew better. Suddenly he decided that the engine's good behavior was due entirely to a preconceived plan to lull his suspicions until the pyschological moment might arrive. The engineer therefore took steps to anticipate any refractory inclinations on the part of the engine and began pouring things into it. He poured water into a pipe and oil into every hole on the engine. As a result, we were stranded mid-stream. The only consolation in this situation was the fact that there were horses aboard that could be eaten if no assistance arrived. After several hours of delay, however, the sulking mood of the engine ceased, and the boat was finally landed on the northern shore. From this point on, evidences of the lack of veracity on the part of the residents in Phoenix sprang up with shocking rapidity.

First, the road which had been pronounced almost impassable was found to be an excellent highway over which an automible would have had little difficulty in traveling at a fair rate of speed, and the temper of everyone can be imagined when it is realized that they were confronted by an all-day horseback ride over a road that could be traversed by a motor in a few hours. At the summit, however, the ride was fully rewarded by a sunset which would have been missed had a motor been used.

Off to the west from the great Roosevelt Lake, the sun was setting in a sea of red and purple fire. The vertical walls of the cañons that threaded the mesas were cast in silhouette, here and there, against the vivid skies. Violet shadows were shot with shafts of orange and scarlet. Far to the south and the north, the colors of the sky faded from orange and yellow to a pale luminous lavender. But it is hardly safe to describe a sunset in this district. No one would believe it. It is even difficult to believe while observing.

The party reached a place known as Carr's Ranch about 8.30 in the evening, having traveled the last two hours in darkness that would

ONE OF THE RUINS NEAR ROOSEVELT DAM, ARIZONA. The debris has never been cleared away from the bases of the walls. No kivas, or ceremonial chambers, are in evidence, but would undoubtedly be found if the ruin were cleared.

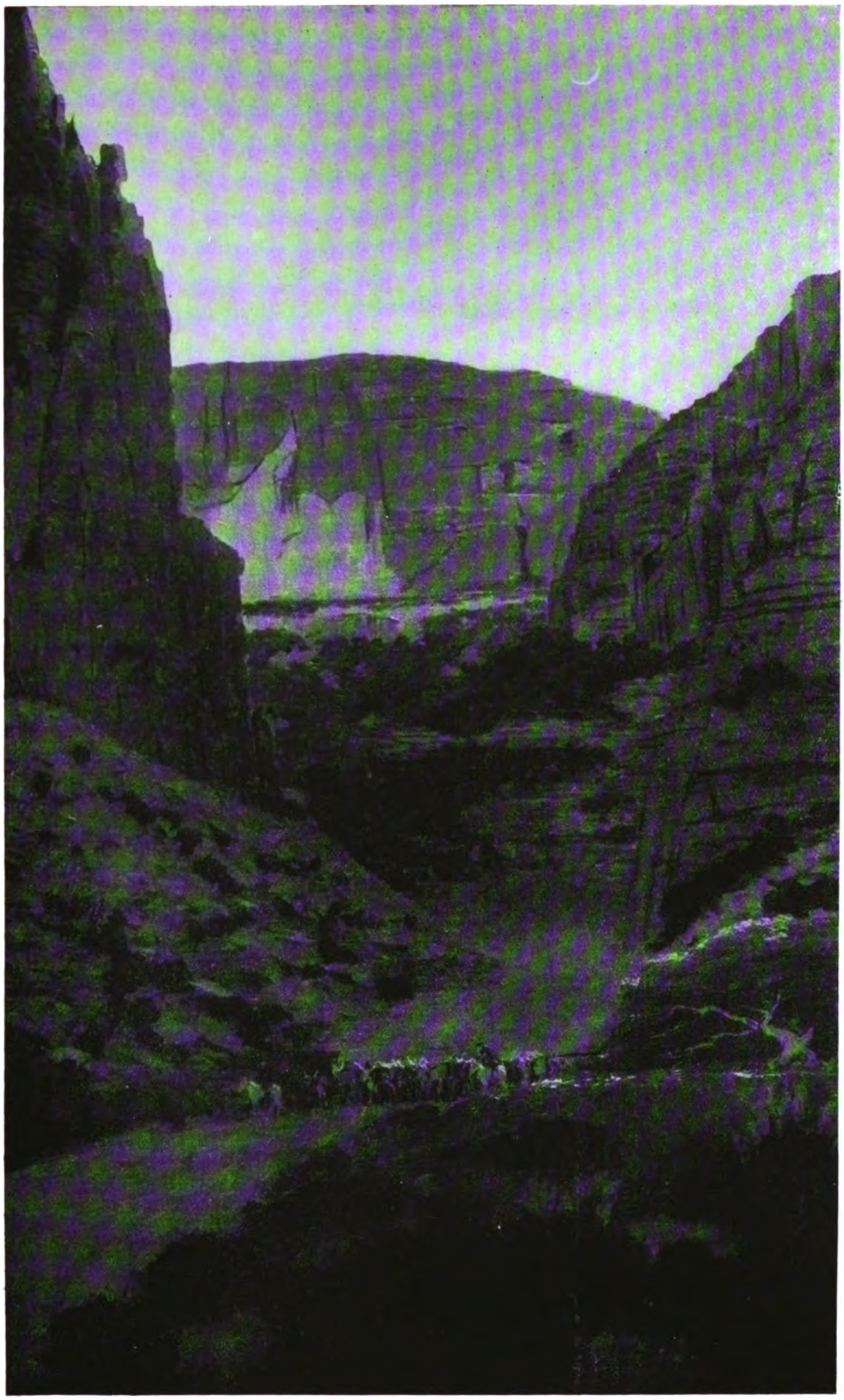
defy comparison with a coal-mine. At last it seemed certain that all information desired would be easily secured from Old Dad Carr; and these hopes were fully justified when that dignitary informed the party that he could take them to a dozen ruins if they were crazy enough to want to see the silly things. As a result, the next morning every member was seen breaking a half-inch of ice to get to the water in the bottom of the wash-basin.

By 7 o'clock the mountain road was abandoned for a trail through one of the chasms, and by noon the main summit of the mountains had been reached. Here the party was led by Old Dad Carr to a point known as Look Out, for Arizona firmly refuses to acknowledge the distinction of not having a "Look Out" point in every range of mountains, as have all other states. After lunch the sweeping panorama of the Cherry Creek Valley and the White Mountains in the distance were pointed out to a gasping audience. After they caught their breath some of the party began timidly to inquire about the cliff dwellings, and the trail was again taken up.

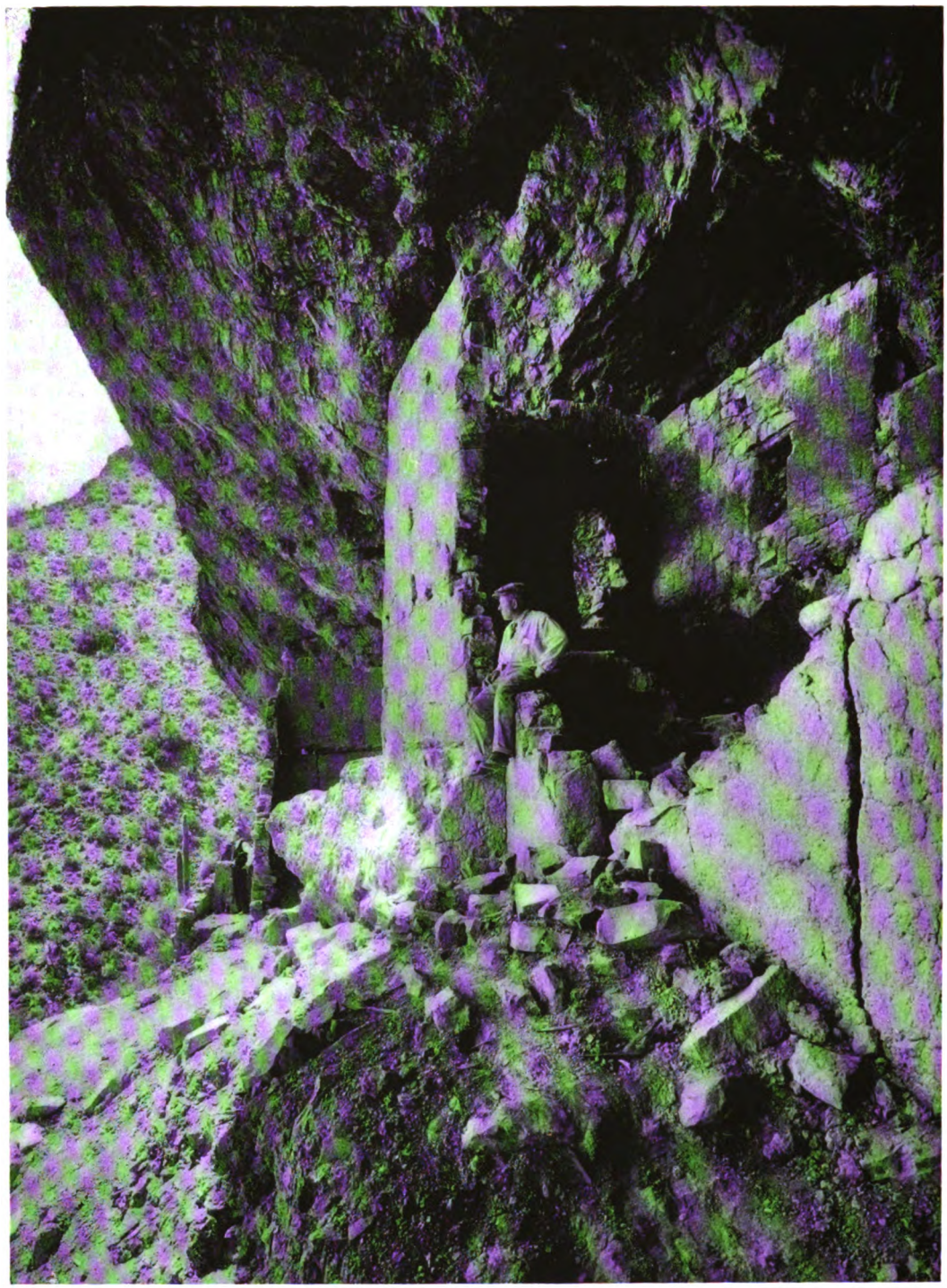
About 3 o'clock, Carr, who was leading the company with a man who swore he had let himself down to the ruins by a rope, led the way out on the rim of Devil's Chasm, which feeds the great Cherry Creek Cañon. Everyone was asked if they had ever seen such a chasm before, and, in justice to their truthfulness, each admitted that he had not, though all had traveled considerably. But where were the ruins of the cliff dwellings? Dad Carr spoke up:

"Gosh ding it! I never thought you men wuz serious about them there cliff dwellings. This scenery here is a whole lot finer. I wisht I had known you really wanted to see the pesky things, but we h'ain't got any time now because we'd freeze plum to death before midnight here." And so the party returned, to send another expedition out to find the ruins.

A party did finally go out to find those ruins. They went where instructed and ignored the advice of the hundreds of people who had climbed into ruins and through them and let themselves over cliffs to them, yet who could not find a trail that went within twenty miles of them. They actually found them and at the same time were unable to discover any indications of white men ever having been in any one of those ruins. Many of them were high up in great cliffs and so inaccessible that they could be seen, in any degree of detail, only with the binoculars. Several of them were actually visited. As a result, another party is going, fully equipped with cameras, artists and laborers, to actually reach the bigger cañons and to bring back evidences, on an extensive scale, of these wonderful and fascinating remains of a lost race. The Southern Pacific Railroad Company also will open up trails this year; a comparatively small expenditure of money will bring these places within a few hours by motor from Roosevelt.



A Scene in the Box Canyon of the Road Along the Apache Trail Taken at a Point About Fifteen Miles from Roosevelt Dam. After a painting by C. K. Bonestell, Jr.



THE WALLS OF MOST OF THE RUINS ARE SLOWLY CRUMBLING, AND SOME STEPS SHOULD BE TAKEN TO PRESERVE THEM.

The Architecture and Incidents of a Texas Frontier Town

By SAMUEL E. GIDEON
Associate Professor of Architecture in The University of Texas
With photographs by the author

The Feathery Green of the Mesquite with a Background of Deep-Toned Stone Work

HAVE you ever lived within less than a hundred miles of a place whose identity you never knew, and then come upon it unexpectedly and discovered a town—in this case—of unusual charm and interest? You wonder why its houses of such artistic merit have not been heralded by its people and by outsiders who did know of their existence. This was my experience, on a recent pearl-hunting trip, when we stopped in the little town of Mason, in the great big state of Texas, to buy gasoline for the car.

Mason, a very old town, on the old overland road from San Antonio to El Paso, is way off the railroad—thirty miles off in fact—in the heart of a great cattle country, where the climate is ideal, the skies clear blue, the hills low, the shrubs and trees stubby, with the exception of the live-oak and pecan, and the cattle and people huge.

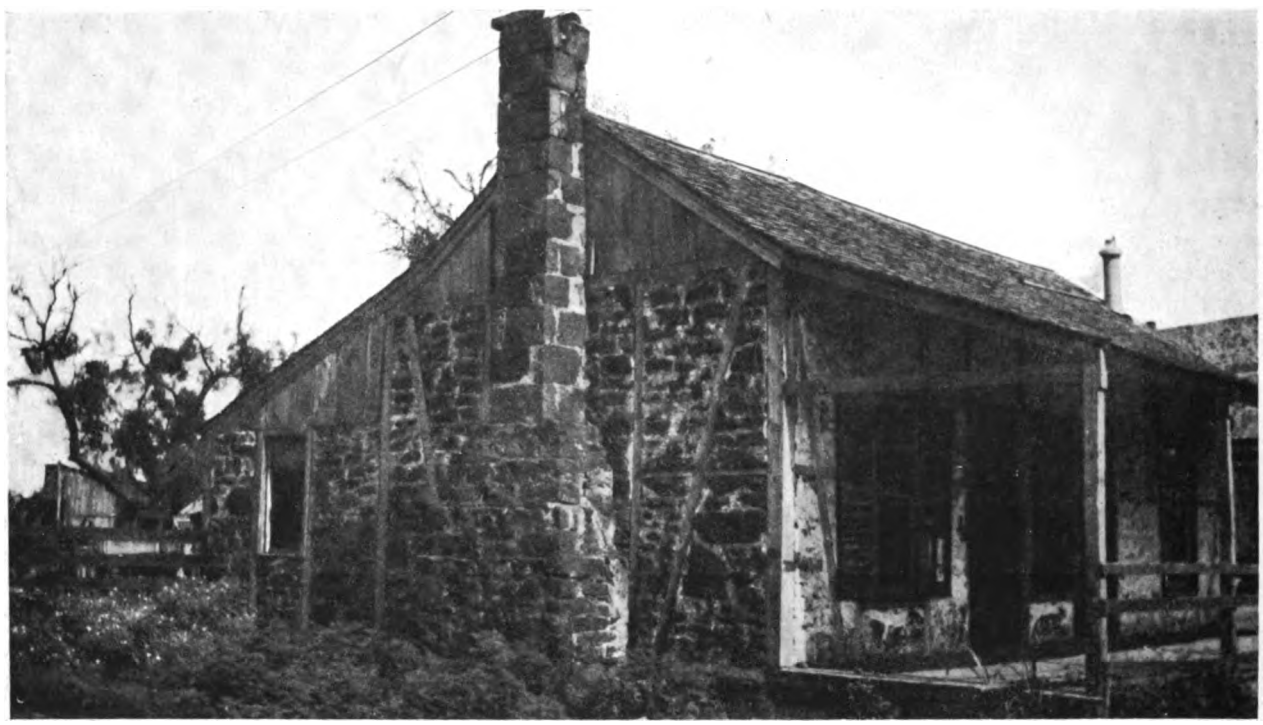
As Texas was settled in the early days, chains of forts, in charge of United States troops, were established on the frontier for protection against the Indians, who, once friendly, became hostile.

Fort Mason was built in 1852 on a hill overlooking the country for miles around—the rendezvous of the Comanche Indians—and at its foot sprang up the little town of Mason, settled by the pioneers who clustered around it for protection and who were often given employment in the fort.

The fort consisted of officers' quarters, a mess, and barracks, all substantial stone houses, surrounded by a high, thick stone wall. Hardly a trace of this fort now remains, save a well and a few piles of stone. It is told that the stones of the fort were plundered to build the foundations of many of the houses in the town.

At the foot of the hill a beautiful spring, now capped by a cement fountain for the use of the children in an adjoining school, was an attraction for many army officers who traveled from fort to fort in this vast stretch of country. Gen. Robert E. Lee, who was then inspector general of this chain of forts before the out-

From Across the Rolling Country One Can Identify the Location of a Residence by the Lombardy Poplars in Its Garden. Usually There Are Two, and They Are Taller and Healthier Than the One in This Picture



A Type of House Introduced by the German Settlers. A Frame of Post-Oak Timbers Doweled Together with Wooden Pins, with the Spaces Between Timbers Filled in with Rocks

Log Houses Are Common. The Chinks Between the Logs Are Filled with Rocks, Chunks of Wood and Mud

This House with Its Traces of Brilliant Color and Lichen-Covered Roof Has all the Charm of a Foreign House

break of the Civil War, spent much time at Fort Mason and was much attracted to this spot.

In what is now the town of Mason, John O. Meusebach, representing the German Emigration Society in Texas in 1846, signed a treaty with the Comanche Indians, under a live-oak whose twisted, gnarled, and decayed trunk still stands. Meusebach was greatly respected by the Indians, who called him "El Sol Colorado" (The Red Sun) on account of his flowing red beard. This district was part of the grant of the republic of Texas to Fischer and Miller for colonization purposes. Each head of a family was to receive 640 acres and each single man 320 acres.

Fischer and Miller sold their rights to The Adelsverein in Germany, an organization of noblemen for German immigration purposes on a large scale. The grant was a long and dangerous way from the coast, the place of landing. The Germans, in the meantime, settled at New Braunfels and Fredericksburg, and not until assurances of friendship were secured from the Indians was an attempt at colonization made in the grant.

The first houses were picket houses built of post-oak logs stuck upright in the ground.

The Complex System of a Prosperous Settler's Home

"Hall-Way Houses."—Two Houses Were Connected by the Same Roof, Which Formed an Open Hall-Way, Now Closed in

Later there was the hallway log house, built in stages—first as a single cabin, then the cabin was duplicated and the two connected by one roof, leaving a hallway in the center. When the Germans came, they built their typical German house, called the *Fach haus*, which is a half-timber structure whose post-oak frame of uprights and diagonal braces is first put up and doweled together and the spaces filled in with rocks. Brown sandstone, which is plentiful in this locality, became the common building material. The stone is of an excellent quality, but much of it contains iron which enriches the color but is difficult to work. The walls of houses and the fences are laid up in rubble, "random rubble" and "range work," and sometimes all these methods are combined in one building.

There are many thrifty German families here, people who came, or whose parents came, from troublous Germany of the eighteen forties under the auspices of the German Emigration Society. Chief among them is a most remarkable woman who came over with her family after her father failed in business. They were people of education, means, and refinement and

The Natives Wonder Why One Sees Beauty in These Old Rock Walls over Which the Feathery Mesquite and the Live Oak Trees Drape Themselves so Beautifully

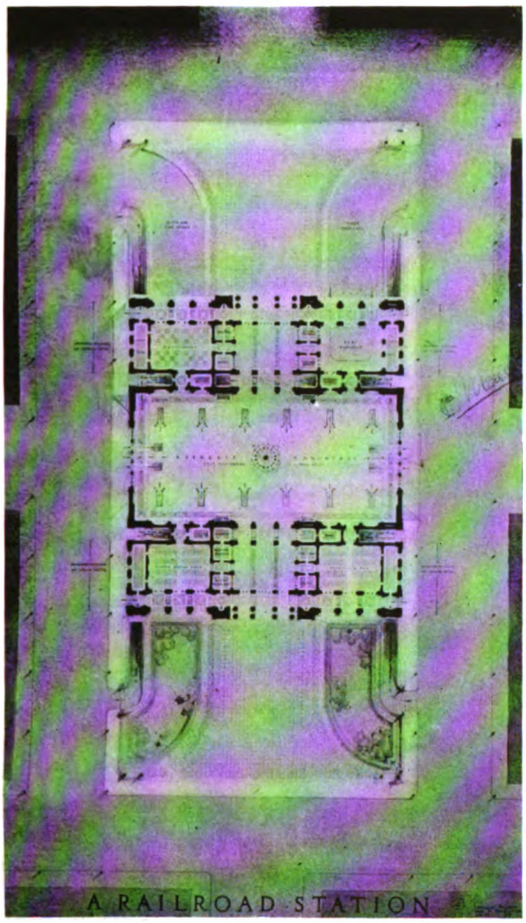
This House Was Quite Small at First and Grew as the Settler's Means and Family Grew

Barns, and Even Houses, Partly of Stone and Partly of Logs, Are Common

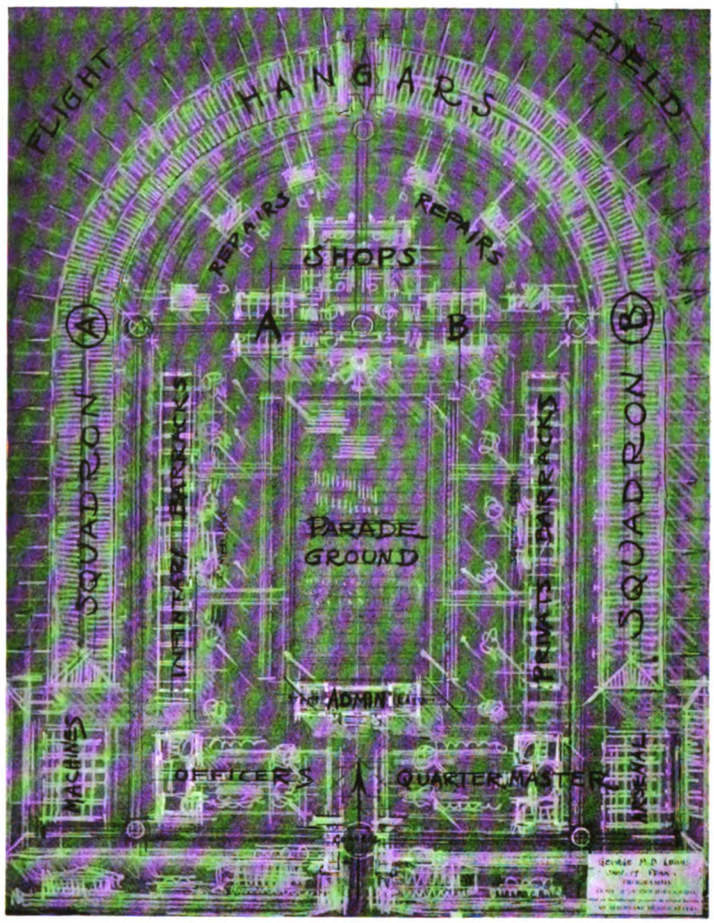
found life in this country, from the moment they landed, full of trouble and misfortune. The Immigration Society promised them much and they found nothing, and after weeks and weeks of travel with an ox-team they were dumped in the midst of a wild country infested with Indians.

Mason is the shopping place, not stopping place, for a band of pearl hunters, who spend eight months of the year combing the rivers in the neighborhood for pearls and the remainder of the year mending stoves. They never live in houses, but the year round they are either in the water or in their prairie schooner, which is usually drawn by two donkeys and followed by a procession of scrawny dogs. They know the value of a pearl, but realize that they cannot demand the price, and dispose of most of their finds to a local banker and ranchman who now has a large and beautiful collection. Others they trade in to a local grocer who sends them on to the East.

And so the present-day life of this little town goes on day after day, the automobile and good roads putting it more and more in touch with the outside world; but the old houses of the early setters are fast going to decay. Therefore it will not be long before these interesting walls and fences will be only a memory, no more than a pile of stones like those in the ruins of the fort.



CLASS A.—V PROJET.—A RAILROAD STATION
First Medal, L. Suckert



CLASS A.—V ESQUISSE-ESQUISSE.—AN AEROPLANE HEADQUARTERS
Third Medal, G. M. D. Lewis

BEAUX-ARTS INSTITUTE OF DESIGN

Beaux-Arts Institute of Design

Official Notification of Awards—Judgment of May 8, 1917

Class "A," Fifth Projet

Jury of Award.—F. H. Bosworth, Jr., W. Emerson, L. Warren, F. C. Hirons, H. R. Sedgwick, H. W. Corbett, J. Wynkoop, W. P. Barney, G. A. Licht, H. L. Shay, E. V. Meeks, F. R. King, H. Tallant, B. W. Morris.

Program.—A Railroad Station. Drawings submitted, 49.

Awards.—First Medal, L. Suckert, University of Pennsylvania.

Second Medal, B. Cardwell, Carnegie Institute of Technology; P. H. Harbach, Cornell University; L. C. Licht, University of Pennsylvania.

Class "A," Fifth Esquisse-Esquisse
Class "B," Fifth Esquisse-Esquisse

Jury of Award.—F. A. Godley, J. O. Post, G. H. Bickley, B. Delehanty, F. H. Haskell. This Jury also served as Jury of Award for Classes "A" and "B" Archæology, Fifth Projets and Measured Drawings.

Program.—Class "A," An Aëroplane Headquarters. *Drawings, 14.*
Class "B," A Sign-Post. *Drawings, 57.*

Awards.—Class "A," Third Medal, G. M. D. Lewis, University of Pennsylvania.

Mentions, L. C. Licht, F. A. Chapman and B. E. Howden, University of Pennsylvania.

Class "B," First Mention, F. J. Tarlowski, Syracuse University.

Mentions, P. A. Tischler, Columbia University; W. B. Grove, Carnegie Institute of Technology; F. Monhof, Los Angeles Architectural Club; F. M. Hodgdon and A. G. Mayger, Atelier Rebori, Chicago; R.P. Vanderpoel, Syracuse University; J. F. Cook, Atelier Wynkoop, New York City.

Class "A" and "B" Archæology, Fifth Projet

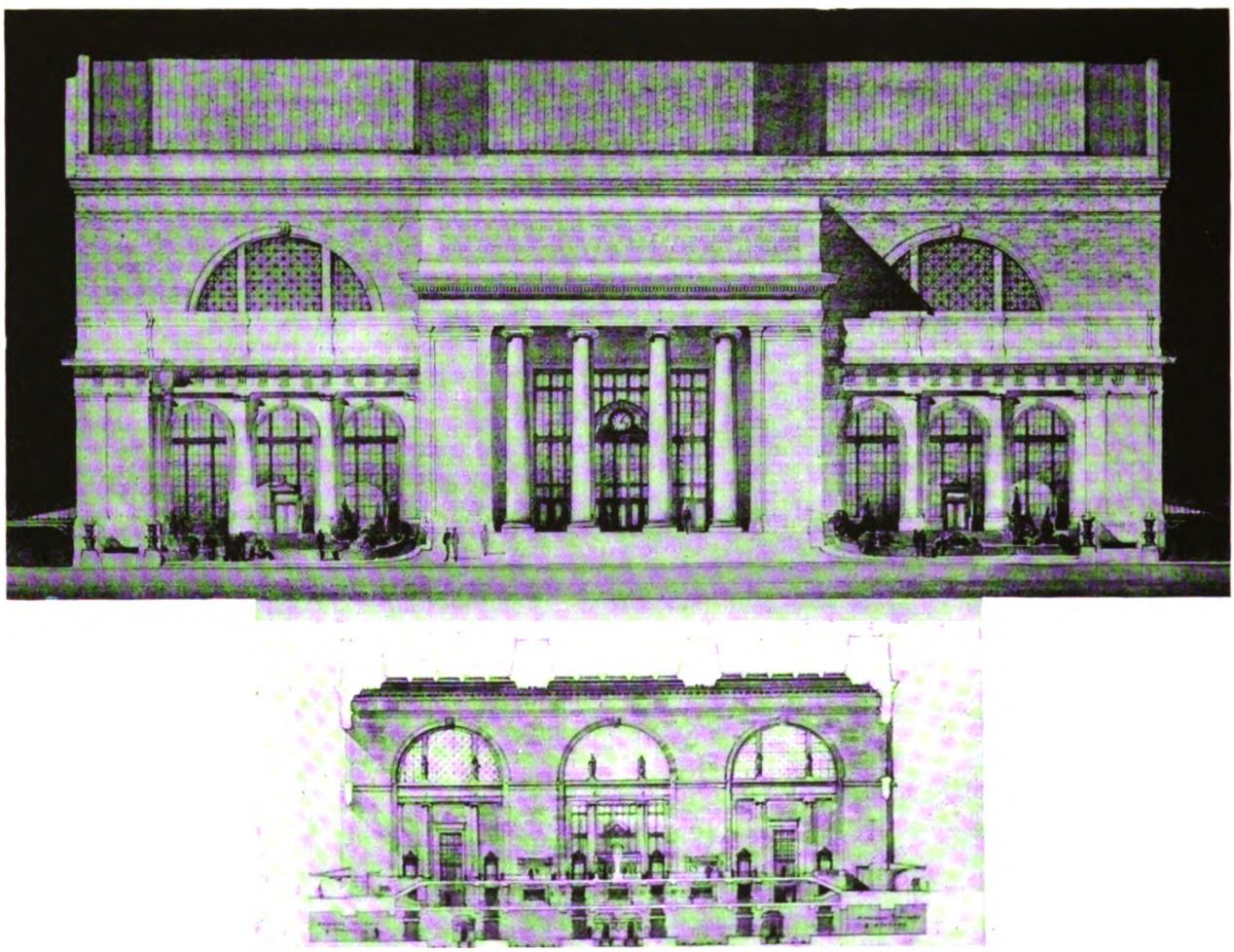
Program.—A Garden Bathing-Pool. *Drawings submitted, 5.*

Awards.—Mentions, P. O. Klingensmith, L. C. Smith and M. E. Boyer, Jr., Carnegie Institute of Technology.

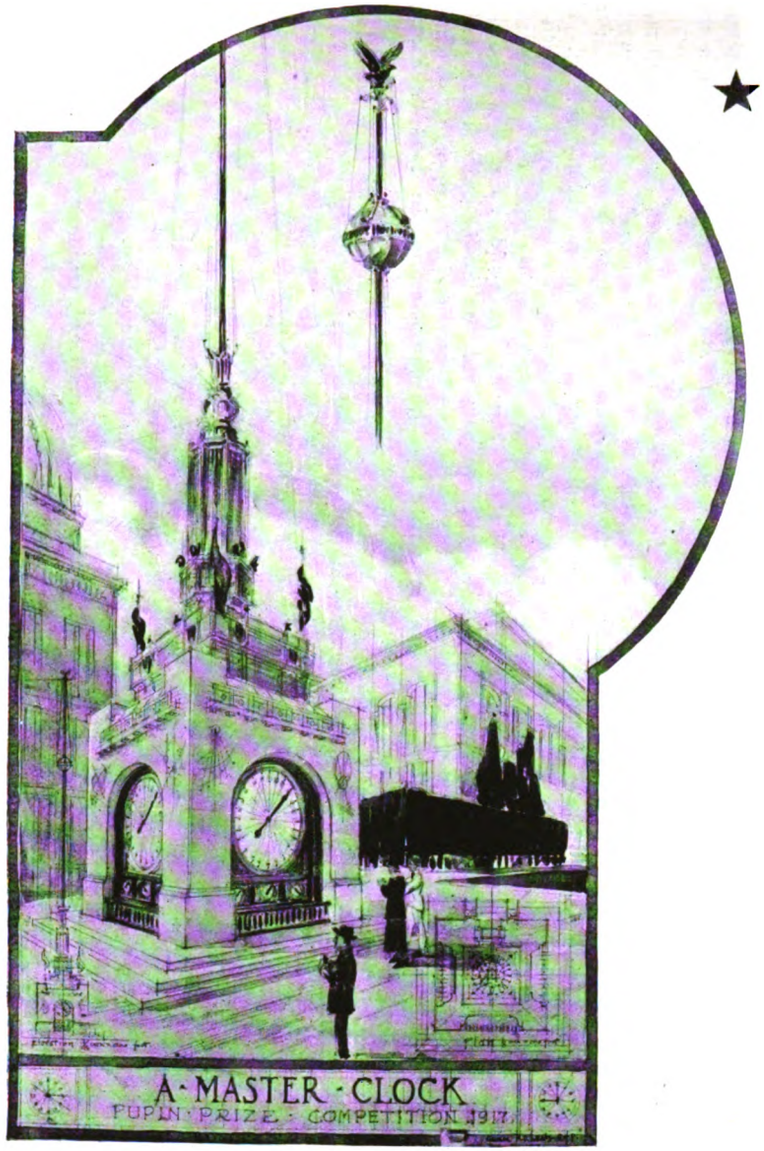
Five Measured Drawings were submitted in this competition on which the following awards were made:

Third Medals, L. C. Smith, Carnegie Institute of Technology; W. J. Creighton and G. M. D. Lewis, University of Pennsylvania.

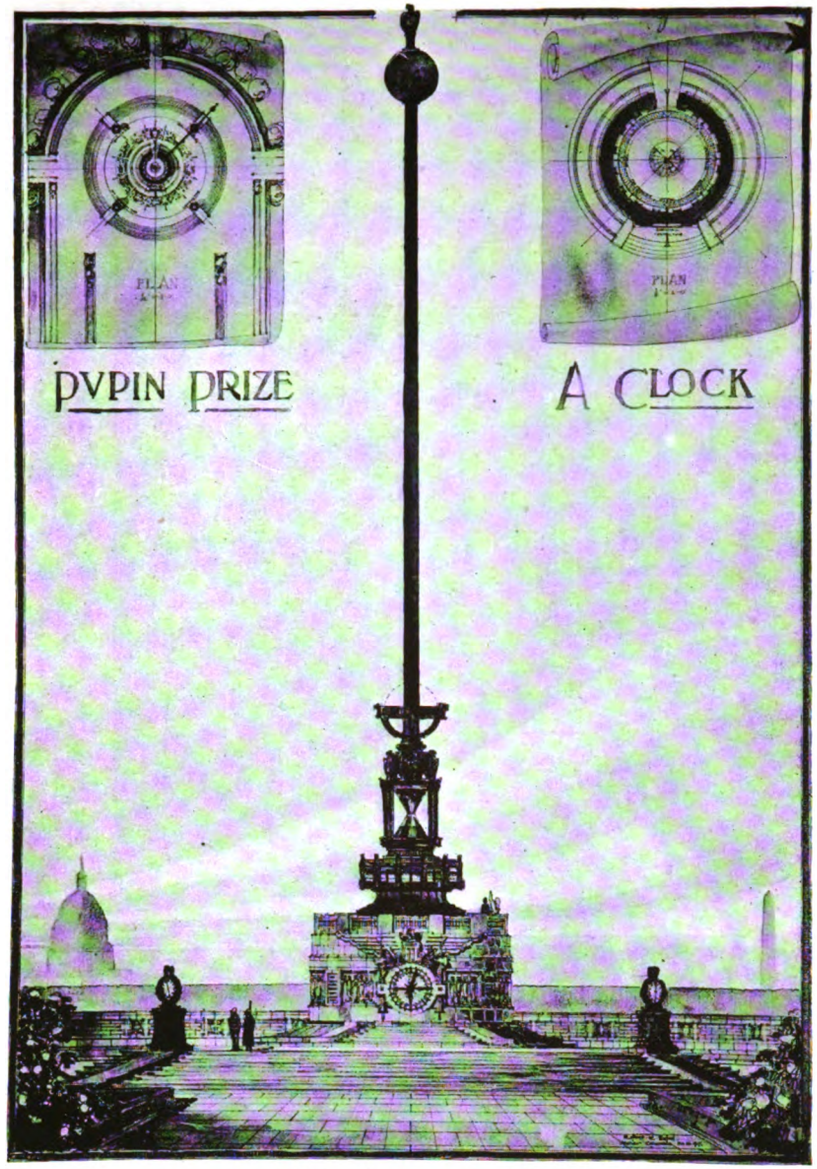
Mentions, W. R. Kendall, Carnegie Institute of Technology; V. Balikdjian, Syracuse University.



CLASS A.—V PROJET.—A RAILROAD STATION
First Medal, L. Suckert



PUPIN PRIZE COMPETITION.—A CLOCK
Second Prize, G. M. D. Lewis



PUPIN PRIZE COMPETITION.—A CLOCK
First Prize, R. W. Hubel

THE CATHEDRAL OF SAINT ANDRE AT BORDEAUX

The Cathedral of Saint André at Bordeaux

By JEAN-PAUL ALAUX

ONE of the most admired monuments of Bordeaux is certainly this cathedral, its two spires seeming to challenge the heavens with their audacious tips, and its isolated tower crowned with a bronze Virgin and named the Tower of Pey-Berland, after one of the early archbishops. We cannot more successfully give an idea of this majestic ensemble than by offering one of the beautiful pen-drawings of Léo Drouyn, who was a master of engraving, and whose archeological work at Bordeaux and in the adjacent region was very extensive.

Fifty years ago the Cathedral still possessed the same setting as in the Middle Ages. Like most Gothic churches, it was surrounded by little, narrow, winding streets, and houses were braced against the very walls of its nave in most picturesque disorder. So was it also, as Victor Hugo relates, with Notre Dame de Paris, whose main façade alone projected itself into the Place. Plans were made to disencumber the Cathedral and, at the same time, the town hall, whose mass may be seen in profile on the right of the engraving, at the end of the Place. The Cathedral presents to the city its lateral façade adorned with the two spires above the principal porch, on the right of which is seen, slightly in the background, the Porte Royale. This is due to the fact that the façade opposite the choir at the end of the great nave was backed against the ramparts of the city. That façade is, therefore, but a bare wall devoid of all interest.

The great nave is the oldest portion; there we find architectural remains, of the beginning of the twelfth century. The arches which had crumbled were rebuilt. But the number of bays was doubled by adding a story of windows.

At that period the archbishop of Bordeaux was made pope, under the name of Clement V; he directed the work on the apse about the year 1300. The importance of this portion may be seen by the accompanying plan. The great nave, which is perhaps the largest of its epoch (it measures 18 metres), has arches lower by 6 metres than those of the choir (29 metres and 23 metres). That gives a magnificent amplitude to the choir, which is narrower but whose perspective is increased by the number of chapels radiating from the ambulatory. In 1508 "a contract was made with a mason to lower the arches." The moldings of these arches show in their intelligent geometric design the style of the sixteenth century.

Among the parts of the church which attract special attention are the three doors, two on the north side and one on the south. The Porte Royale, on the north, is a pleasing piece of sculpture of the time of Saint Louis. This door, once hidden by a wall of masonry, was only disclosed within a few years. Several statues from the gallery above it, whose trilobate arcades are supported on slender little columns, have been reproduced by Viollet le Duc for Notre Dame de Paris. Its lintel displays a Resurrection of the Dead, curiously naïf in conception. Above on the tympanum appears a Last Judgment. What an exquisite mysticism in this Gothic work! Christ is shown seated on His throne, around Him winged figures

bearing the symbols of the Passion. The cross shines apparently with such brilliancy that angels are carrying away the sun and moon, which have *become useless*.

The other north door, which serves as the principal entrance, under the great rose-window between the towers, is truly a *chef d'oeuvre*. Casts of it have been made for the Museum of the Trocadero, the South Kensington Museum, and the Carnegie Institute of Pittsburgh. The personages whose effigies adorn the jambs of the door are probably bishops or cardinals of Bordeaux created by Pope Clement V, who himself appears on the pillar in the center of the porch.

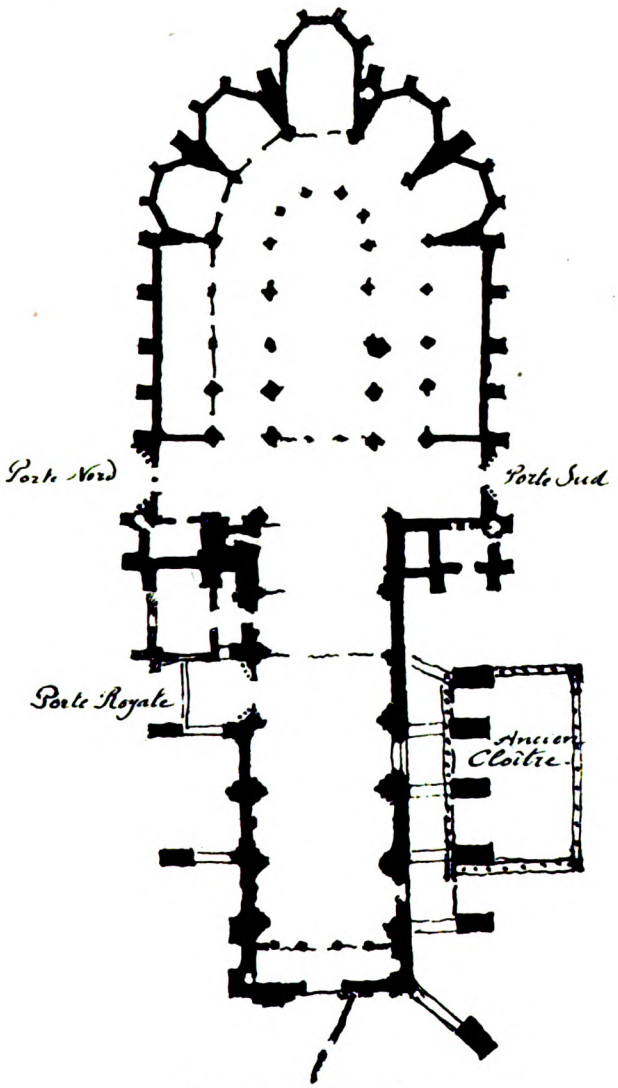
The façade is crowned by two slender spires whose outline is, perhaps, a trifle attenuated, but which give to the edifice, lofty in itself, an effect of extreme height. It is unquestionable that this façade has, as they say at the Beaux Arts, "*beaucoup d'échelle*."

The south porch at the extremity of the transept is very pure work of the thirteenth century. The frieze which decorates it, at the height of a man's head, is extremely beautiful; but the bas-reliefs, unfortunately, were mutilated during the Revolution. We offer a reproduction of this porch from an *aqua fortis* by Drouyn.

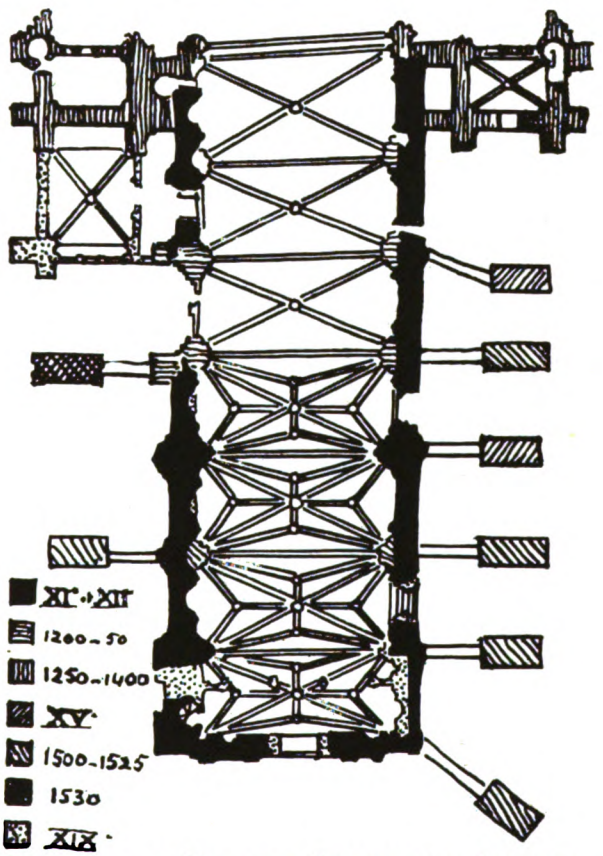
In the interior of the church is found a Crucifixion by Jordaens, a masterly work. The crucified Christ is represented—as according to the Jansenist belief—with the arms stretched vertically toward heaven. Several tombs of cardinals and bishops built against the walls of the great nave are interesting examples of modern sculpture. Unhappily, all the ancient mausoleums, some of which, according to the chronicles, were very fine, were destroyed in 1793. The pulpit, wrought in the eighteenth century by the great sculptor Cabirol, was ordered for the church of St. Rémy. The Revolution ordered it transported to the "Temple Décadaire" of St. Michel, where the worship of Reason was observed. In 1804 this pulpit was given over by the church of St. Michel to the Cathedral where we now see it. It is a delicate and admirable piece of execution of very fine style.

On the south side of the Cathedral was formerly a cloister composed of open work arcades. The architect Abadie, designer of the Sacré Coeur of Montmartre, tore down that cloister to make room for the sacristies.

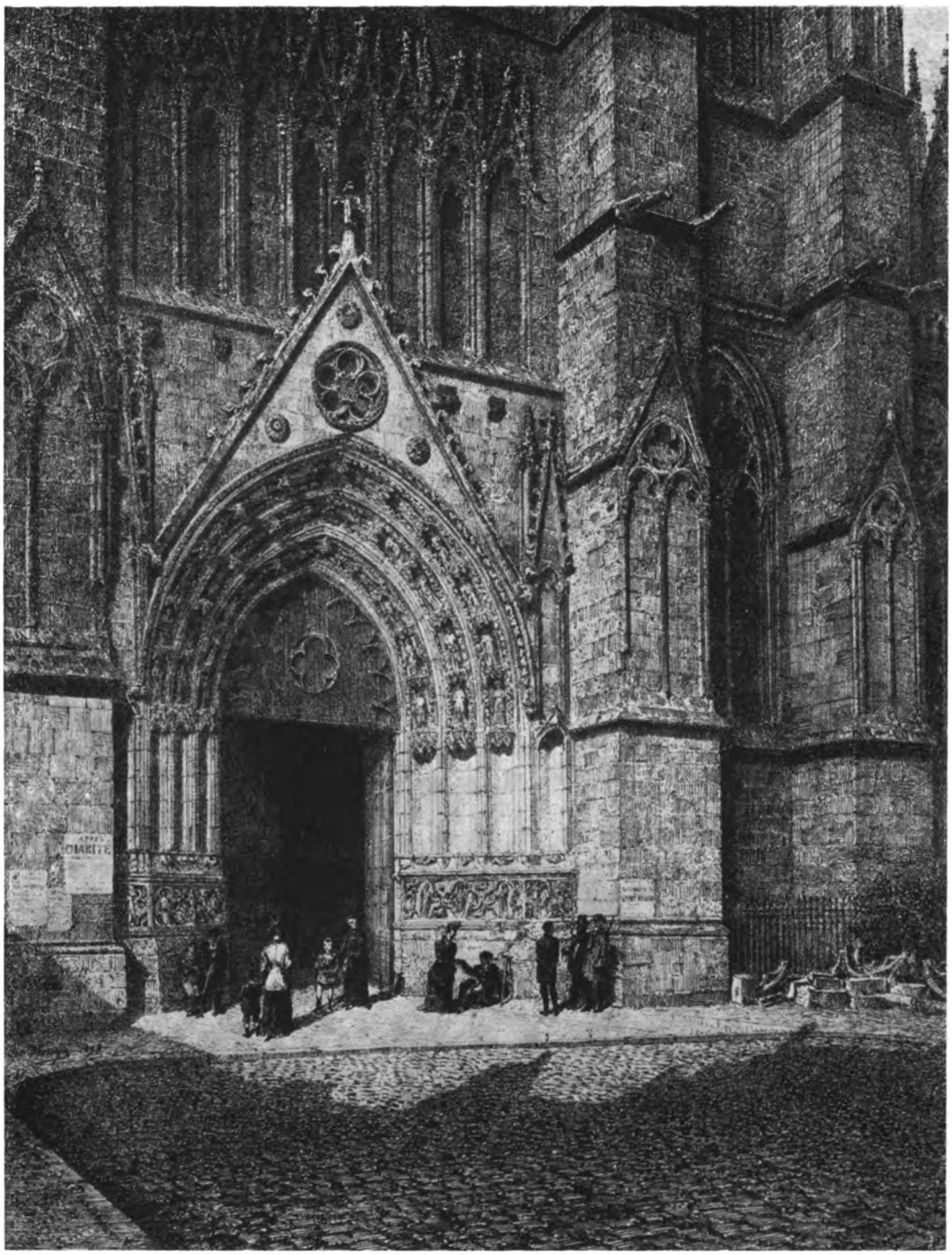
The Tour Pey-Berland, which forms a part of this ensemble, is nevertheless a completely isolated tower. Its construction was decided on by the Archbishop of Pey-Berland, who began the work in 1440. Hurricanes over-



PLAN OF THE CATHEDRAL



DETAIL PLAN OF NAVE WITH CHRONOLOGICAL INDICATION

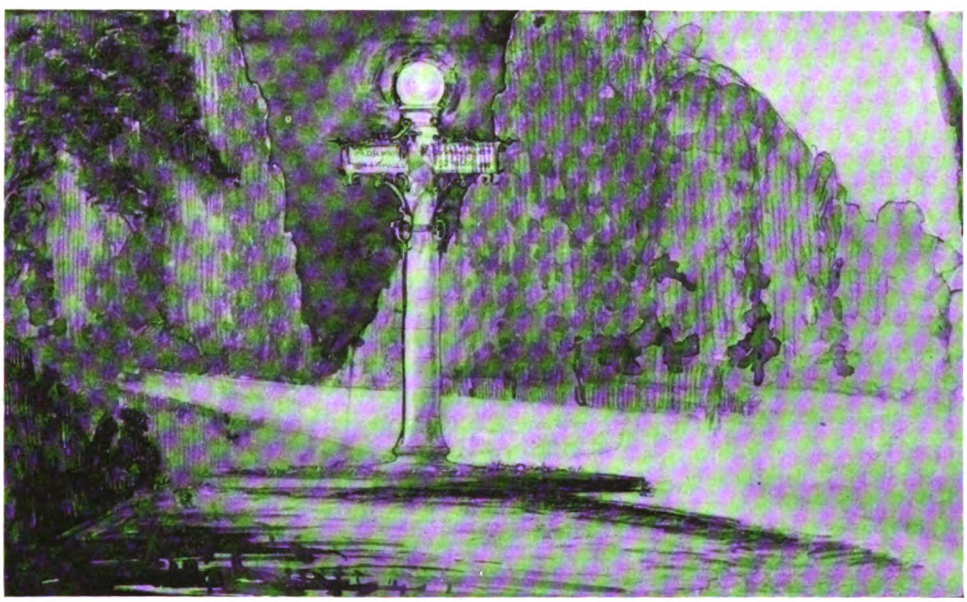


PORTE NORD.—CATHEDRAL AT BORDEAUX

threw its spire. Another hurricane, yet more dangerous, afterward threatened it—the Revolutionary hurricane. The Tower was, in fact, sold on the 23d of April, 1793—"the purchaser being enjoined to demolish the aforesaid tower of Pey-Berland within three weeks' time." Luckily they found a use for the structure, which became, like the Tour St. Jacques at Paris, a shot manufactory. In 1850, Cardinal Dounet bought it back and crowned it with the bronze virgin which adorns its summit today.

Visitor to Bordeaux, mount to the top of the Tour Pey-Berland; you will see a magnificent panorama! The fair city stretches indolently along the bank of its broad river. Above the sea of its roofs, whose waves are lost in the blue distance, rise like great ships the bold monuments of the ancient capital of Aquitania.

[Note.—Many months have elapsed since Monsieur Alaux's last contribution to the Journal, and the letter which accompanied the article above will be of interest at the present moment. "I am writing you in the middle of the night," says Monsieur Alaux, "from the powder works where I am serving. My hours are from 7 o'clock in the evening until 7 o'clock the next morning. It is hard work! But what would not one do for France! Here, we salute the entrance of the United States into the war with ardent joy. The Stars and Stripes have already floated above the battlefield of Vimy, reconquered by the Canadians. Quel symbole! The success at Vimy, Lievin and at Angres, is especially dear to me because I passed more than a year in the trenches before those points which we could not attain, lacking sufficiently powerful artillery, in spite of unremitting effort. From my trench I saw the houses of Lievin as plainly as one sees Brooklyn from the end of Manhattan Island. The first American soldier to debark in France will be received like a god! Many of them are now in the aviation service, and I shook hands with Norman Prince, in the train from Bordeaux to Paris, a few days before his death on the Somme front.



Class B.—V Esquisse-Esquisse.—A Sign Post
First Mention, F. J. Tarlowski

BEAUX-ARTS INSTITUTE OF DESIGN. (See page 290)

Book Reviews

Lombard Architecture. By Arthur Kingsley Porter. New Haven: Yale University Press. London: Humphrey Milford, Oxford University Press, 1917. Three volumes text, one volume plates. 750 copies printed from type. $50.

An adequate review of Arthur Kingsley Porter's "Lombard Architecture" is a task for the archæologist rather than the architect; it is an archæological work, a synthetic analysis of the style, as the author himself terms it, not a history—not a history, because that word connotes a treatment of the theme that shall place it in relation to the human scene, make it a part of the human story. In such an analysis the qualities that make Symonds' "History of the Renaissance in Italy" more interesting than a tale are, perhaps inevitably, missing; in the latter the works of the chosen period are so bathed in the atmosphere of the time, the work of art so surrounded with warm living presences, that it lives again for us with them. True that the salient personalities of the Renaissance lend a strong human interest to the art of the time; true, that in the darker centuries from the sixth to the twelfth the individual is merged in the mass; but the mass did live and breathe; the period, century by dim century, had an atmosphere of its own; and this atmosphere is almost completely absent in the work under review. The monks of Cluny, the Cistercians, the bands of workmen moving from place to place with the master builder, the squabbles between the communes and the church—these are touched upon in the introduction to the first volume, the only part of the book the architect will read with any great degree of pleasure; but the summary manner in which they are treated, the rather dry touch, make one feel that the author was not particularly interested in them but was anxious to pass on to the analysis and comparisons of vaults and capitals, corbel tables and the like which occupy the body of this volume, and the detailed descriptions of buildings, a sort of *catalogue raisonné*, forming, in small print, the second and third volumes.

The plan adopted for the illustrations is most unfortunate. They are half-tones on a highly calendered paper and contained, loose, in a box, with an index. Each plate carries from one to half-a-dozen subjects; each subject is merely numbered, and to identify any one, when going through them, reference to the index is necessary. To get at the illustrations at all, they all have to be taken out of the box and the paper is so slippery that handling them bores one to tears. In a conscientious effort to study the book seriously for review, the physical difficulty of referring to the illustrations was so vexatious that I found myself repeatedly shrinking from looking them up. Why they were not bound instead of left loose, why the titles of the subjects were not printed along with the identifying numerals, is incomprehensible. The paper of all the volume is excellent, the type beautiful, the page of the first volume handsome and most legible, the binding simple but adequate. The arrangement of the illustrations could not have proceeded from motives of economy; but it is a serious error in a book of reference such as this.

The reader cannot fail to be deeply impressed by the stupendous amount of research, the immense patience in examination and comparison, the scholarship, the acumen, penetration, involved in the production of these volumes. And in the presence of such a monumental work, the fruit of such sincere and painstaking labor, a labor that must have been carried through with a sustained passion, it seems ungracious to have to say that the book leaves the reviewer quite cold; the passion is to be divined and ascribed by the reader; it is not communicated to him. But to the archæologist and the special student the book will no doubt be of immense value for the enormous mass of detailed information it contains.

The architect may very well be charged with a lack of interest in the merely archæological aspect of architecture, and he will bear the charge with equanimity; he deals with a living and growing art; unless he prefers to be Purely Original and let tradition go down the wind he choses to give the work in hand a certain character—and it is all one to him whether any element of it is in an archæologically correct relation to any other element of it; he seeks, or should seek, a point of departure, a start, from which he may produce something new in which its origins are more or less faintly traceable as a Sanskrit root is traceable in a modern word. And therefore the ascription of a building or of a capital to a particular year or even decade is of merely academic interest to him. What do interest him are the broad characteristics of the style of an epoch, the constructive systems, the articulation of its structures, and beyond all these and equaling them in importance, he is interested in the people out of whose life, out of whose physical and spiritual needs they were evolved.

The architect is both analyst and artist, and the artist in him demands for his full satisfaction some veil of glamor, the marshaling of a series of pictures that shall show the warm blood beating through the walls be they of flesh or stone. A synthetic analysis is a demonstration of an anatomical structure stark in death, and the blood does not flow under the bistoury.

And as one closes the book, one wonders whether imagination could not find a place in a serious and accurate archæological work. Is it too dangerous a quality? Would it distort the fact or merely color it? Must the naked fact be seen in the cold and pitiless light that beats upon the dissecting-table, or might it be perceived through the filmy garments of the fancy—none the less the fact, but the fact warmed and vitalized?

The architect desires the beloved fabric of flesh and blood, the archæologist shows him bones and dust.—H. Van Buren Magonigle.

School Houses. The Eleventh Annual Year Book of the Pittsburgh Architectural Club. For sale by James M. Macqueen, Secretary of the Pittsburgh Architectural Club, P.O. Box 816, Pittsburgh, Pa. $1.

This book is a well-printed exhibition catalogue of more than usual interest. It contains copious illustrations of the many new school buildings recently built in Pittsburgh and a few other cities. It should prove to be a valuable reference work for architects and others interested in school buildings of the modern type.

How Shall We Teach Something About Art?

IV. The Painter and the Architect*

By JOSEPH T. PEARSON, JR.

I AM always glad to find myself in the company of architects. Long before I went in for painting, and at the conclusion of my time at the Manual Training School, I was admitted to the office of Wilson Eyre. I remained there for about three years, during which time I was a member of the T-Square Club. Seeing that I was more fond of doing landscapes in pastel than the work of the office, Mr. Eyre advised me to go to the Academy, which I did quite promptly. I then became separated from a vocation which would be very congenial to me and for which I feel I had certain qualifications, though lacking many.

Architecture is, as it were, a pond in which I learned to swim, and while I have been out of it for over fifteen years, I feel that I could swim in it and enjoy the experience if I were to try it once more. The average height of a chair, the usual length of a window-sill or proportions of a door became then, and are still, sort of mental kinks which will remain ever. I was made sensitive to certain refinements of proportion, shape, character, color, finish, and, under the subtle spell of my employer, the romantic, the poetic, the highly imaginative Eyre, I was led in fancy through the fascinating world which his genius and wonderful instincts created, the altogether most distinct and charming world suggested by anyone of my acquaintance.

In this way was established a sort of speaking acquaintance with architecture which has perhaps made it less formidable and cold to me than it may seem to the average painter who has never handled a scale nor seen or smelled an architect's office. One may ask whether I consider the experience profitable. It was very profitable, though many could be found who think otherwise.

All painters should have, and will some day have, some architecture, and the architect should and will have more of painter's training. As evidence of my genuine interest in the architectural profession may I say that I frequently inquire the name of the designer of a building and enjoy visiting a house or bank newly completed. My interest in architecture, I might say, is probably greater than that of the architect in painting. Therefore, when I say that I have quite given up the thought of working in conjunction with architects, they may realize how indifferent are painters generally. They have a very live, if not intelligent, interest in what architects do, but it seldom occurs to them that architects might be interested in what they do. Furthermore, the impression prevails that the architect disregards and disrespects his client's wishes and causes him to spend more than he desires, thus leaving little for the decorators, who, it is said, have a sort of syndicate in New York to secure the little that there is to be done, and that little is, naturally, badly done. The failure of the effort made by the Academy of Fine Arts to embrace a department of architecture for the students of the University of Pennsylvania adds to the hopelessness of any immediate prospect of consolidation of these two intimate arts now separate.

But this discussion is only a preface to a rather more formal and comprehensive statement.

*An address at the May meeting of the Philadelphia Chapter.

The occurrences of the past month have so affected the common course of events that, unless our business in life contributes in some special way to the cause of our country at war, one is disposed and rightly expected to readjust and redirect oneself and one's energies so that the greatest possible concentration of effort shall be brought to bear for the common good for which we and our allies are contending.

It is, therefore, quite difficult, if not inopportune, to discuss the painter's art and its relations to that of the architect; but, inasmuch as the opportunity has not before offered itself to me to present the matter in this pleasant informal way, I gladly avail myself of the chance, with hope that the painters and the architects may again be coördinated as they were when painting and architecture reached their zenith.

It is not likely that that separateness which now exists will be lessened until the painters and the architects have a more common experience in schooling and apprenticeship. Their present absolute disassociation in this respect is largely responsible for their peculiar estrangement, which at times approaches antipathy. They should be brought up under the same roof, as it were, learn the same lessons, play at the same games, and form that partnership which shall, when firmly established, produce the best possible results, both social, material, and artistic.

The architect should realize that it is he who must make the advances, suggest the means, and seek the way whereby the arts shall be united, for he is in the majority, deals in a necessity, and has a certain and generous remuneration. The painters are in the minority, produce a luxury, and receive uncertain and small remuneration. While in no sense less important, the painters are at the architects' command. That the architect does not command or demand them is variously explained and is responsible for the fact that things now painted have scarcely any architectural application. The law of demand and supply would not fail here. What the architect and his client demand will be produced. The fault lies plainly with the architect. He is not totally undesirous of utilizing the painted product for the embellishment of his usually sterile work, but he has not the training that one must needs have to feel the need, to know the character, and understand the application of the painted thing. On the other hand, the painter, the decorative painter, being neglected, spends his talents in other directions; his things finding an occasional place here or there. When he is commissioned he shows a lack of understanding corresponding to that of the architect, and the unhappy result

can be laid to neither one nor the other; they are both ill bred artistically. It is therfore most commendable that architects as an organization realize the imperative need of greater coöperation and manifest it by asking painters and sculptors to meet with them. They thus make those advances which will ultimately create a unity of the arts and, through them, not only finer and more beautiful things, but what is more, a higher civilization.

By what devious means that exalted state is to be reached this war bears witness. Is it not possible that this great calamity with its ensuing griefs will place humanity upon a common plane from which may issue a more concerted effort for the common good which shall include coördination of the arts? Revolution is but the speeding up of evolution, so that the coördination of the arts, which seemed distant, may come strong and lasting from this travail. At the moment the painter and the architect seem to be hopelessly unrelated. The feeble attempts at a partnership are really pathetic. Long unfamiliarity finds them on lofty but separate eminences from which one feebly becks the other. They must get back to a common ground, and then may one accompany the other to his task. Could anything be more calculated to knock them down (for knocked they must be) than the present war?

You see it is impossible for me not to see things in their relation to this world upheaval. We may sow our thoughts as one would peas in a garden infested with ground-moles and find them strewn over the earth tomorrow—nothing is stable now. Reckonings are impossible. We may while away a pleasant evening with this discussion, yet it is but chaff in the wind. We may serve our time and the future as fertilizer, but, even at that, let us merrily sow the thought; another people, another day, may see it realized.

In days of strife, in days of travail, we promise ourselves something better. Today we hear on every hand "The world needs this chastisement; 'twill be the better for it." Fine resolutions are the order of the day. The nonsense is being knocked out of us, and reason lights the gloom of dark despair. We are become more democratic. We shall be as one. Thus, not only shall painting and architecture be united, but they in time will join with other crafts and industries in a more concordant order than the world ever knew.

War is a wild detour from the path of civilization, but cilvilization must be repaired at times. The road will be better when we return to it, if we survive the detour. If there is greater pleasure to be derived from anticipation than from realization, then we should be very happy, for we feel we are in for better things. But this is idle speculation—we are at war. We would not escape the thought, and while we feel the pride of a great cause, we are depressed. Talk as we may of architecture, of painting, *war* looms large and dark before us, and we know we cannot, we should not, put it from us. Whatever the architect or painter may do in the future, he should now war for Liberty and Democracy. It appears to me as being the beginning of the commonalty of experience and aim which I have pointed out as being necessary to insure that unity of effort and consummate attainment we all desire.

The people of the earth, and especially those of this part of the earth, being scattered to the four winds and severed from those traditions and practices that made possible the great achievements of the past, shall, through the prevailing disorder, experience a greater intimacy which will tend to revive and continue the lost traditions. The golden threads of tradition have been broken, and not until they are united may we hope to approach the standards of the past.

The interdependence of people and things has at no time been so evident. Upon the return of peace there will develop a community of thought and purpose one would have considered utopian but a short time ago. The individual will enjoy a new birth of freedom. Fellowship and comradeship will fill him with the zest of life. the desire to serve, the joy of achievement, and there will undoubtedly be a revival of the arts, as well as the humanities.

In the past we have looked to the University to direct our progress, to supply a formula, but now I believe it fails as does the church, each being but evidence of wrong to be righted. In the harmonious interdependent activity of the individual, be he painter, architect, or candlestick-maker, rests the highest destiny of the race. We must rise or fall together. One person, one people, one nation is not sufficient unto itself. If one is descendent and the other progressive, a readjustment must be made. Today that readjustment is being made. We call it war and it appalls us, but thus has the race progressed from stage to stage. Each spasm has been followed by a renaissance. With agonized step man rises to perfection.

To return to our subject. The thing we desire is not an alliance of the several arts; it is a unity of the arts. Fellowships, orders, clubs, and societies—for all of which I have one aversion—are fundamentally selfish. They would enjoy some special privilege and tend to antagonize society. They keep various people separate who would otherwise meet in the common course of events and perform their tasks, one in conjunction with the other, with confidence, affection, and the greatest success. The fundamental thing, the thing to be desired in the crafts, is not organization but disorganization, the free and undirected or unrestricted mingling of all the workers of the earth. This can best be brought to pass in a world democracy wherein, in a measure, there may exist the simple, unfettered life throughout the earth which existed in the various parts of Europe wherein the arts reached their great perfection. To realize the possibility, if not probability, of a great intimacy between all the people of the earth, witness the confluence of the races upon the battlefields of Europe. They will there be welded into one and shall hereafter recognize no boundaries, not even the limitations of the earth.

The conditions which but recently made debatable the wisdom of our taking part in this conflict are disappearing so rapidly that one is astonished that it should not have always been evident that one and another must bear equally the joys and tribulations of life. The barriers of race, creed, and breeding fast disappear, so that no man's life may be or can be hidden from another. His heart and his hand will feel the effect of his fellows, will act in accord, and there shall be a united effort—industrial and artistic.

The imminence of this world federation—which makes the millennium seem far less distant—dispels in us all lesser

considerations. The prospect is thrilling, glorious. It stirs all the finer impulses, and one is eager to spend oneself to hasten its realization.

The structure of colossal blunderings and cross purposes is disappearing rapidly before the onslaught of right, and we see exposed the sure foundations of humanity. You and I go on with this feeble effort at patching the superstructure —the malformations—but we know in our hearts that we labor in vain.

The world is to be rebuilt, so that painting, architecture, music, literature, science and law shall form inseparable and indispensable units in a new structure. We are committed to the task of removing the debris and that rugged portion of the old building which was so firmly but stupidly constructed apart and unrelated to the whole. From the bare souls of men shall rise a new edifice of civilization in which shall be consolidated all the aspirations of race.

The Forum

A Municipal Cannery in Kansas City

To the Editor of the Journal:

The architect's work naturally leads him into thoughts of a sociological nature. When, with all his knowledge of beauty and fitness, he sees the slums and the struggle for existence contrasted with the homes of the wealthy and the privileged, he is—being as a rule an observing man—prone to ponder on the reasons for "things as they are." This is my excuse for offering a story of a cannery to a technical paper devoted to esthetics and various subjects of elevated forehead. Architects, of course, do not as a rule notice such trifles as grocers' bills (?), so they may not—except as they read the papers—know what the dear public is having done to it in the matter of high prices of food.

It happens that I have had wished on me the job (which I enjoy) of administering the funds of the Kansas City Anti-Tuberculosis Society, some $10,000 a year, raised by the Red Cross Christmas Seal campaigns. These funds we use in paying those special expenses of the fresh-air schools that cannot be paid under the constitution of Missouri and the laws made and provided—which sacred documents, though all intelligent people know they are useless—the Missouri public year after year fails to change.

So I notice this rise in the price of food. Also it has been the fortune of our firm to assist in developing some very interesting work done by the city prisoners on our Municipal Farm, where our Board of Public Welfare, who have been splendid citizens doing their work without fear or influence, have pulled off some stunts which, because they are so good, the scornful might call socialistic.

One of these stunts is a small cannery which puts up food raised on the Municipal Farm and provides several thousand gallons of good food for the two or three hundred men whom Society educates and sends to the institution, many to be cured temporarily so they will be in better shape to go back and let Society have another whack at them.

Inasmuch as most of our schools have domestic science departments, and inasmuch as many serve lunches to the children at cost, it had been argued privately with one or two members of the Board of Education that they also, in addition to the Board of Public Welfare, should do one or two of these coöperative stunts.

Of course we architects, being wiser than most, know there are many things communities could do for themselves much cheaper and better than by our neat system of individualism. If this war is good for anything, it may teach us that we can do better.

Well, Hoover began to write things about our food-supply; we had a talk or two from the presidents of our agricultural colleges at the City Club; and the *time* seemed ripe—if not the fruit and vegetables—so I sprung the subject of a cannery on the Board of Education and they fell for it.

One of the most satisfactory things about the matter is that the different departments of the city want to help. This is one of the few times in history where one department of the city wants to help another. It must be that people are all figuring on doing something in the line of food conservation, because the powers that really be (just now) have put the price of cans up fifty per cent in three weeks and seem determined we shan't have them. Well, we shall use champagne bottles if necessary.

The architects well know what is being done in building materials. It is possible some of them may notice one or two details about this food business with more than usual interest; they may have to.

Well we are going to have a very nice little canning and preserving factory in jig time—the Trade School boys will build it. Our gardeners will be taught to preserve and can. We have a municipal garden of about forty acres surrounding our canning factory, and society flocks out there to learn the homely arts of hoeing and weeding. Our hope is that the spirit of coöperation and service now at flow may enable us to accomplish some little good.

For instance, when gardens are producing, a large amount goes to waste—more than one-half. If we can gather this, by the help of Boy Scouts or otherwise, we may save some of it. It might be possible to have people bring in their food, let us can it—if we can get the cans—and take a toll for our trouble.

Of course municipal warehouses, cold-storage plants, and such socialistic activities we won't stand for, until the Government gets around to seizing things!

As to how our little experiment works, I may write you later. We know we can put up enough for the schools to use.

By the way, the latest thing in food is dried food. May we all, during the coming winter, have enough of it—be it canned or dried.—W. C. Root.

News Notes

Annual Meeting—Pennsylvania State Association

The annual convention of the Pennsylvania State Association of Architects was held at Harrisburg, May 15.

The bill recently introduced into the Legislature, providing for the licensing of architects, was endorsed.

The Association pledged itself to conduct an investigation among the presidents of the thirty-seven universities of the United States, conferring degrees in architecture, on their attitude toward conducting more popular lectures on the subject of architecture and on other ways and means calculated to make architecture a part of a liberal education.

Professor Nolan, Chairman of the Institute Committee on Materials and Methods, spoke of the work of his Committee and reported his regret upon the neglect of practical things by architects, impressing those present with the importance of recognizing and using standards. In accordance with his suggestion, the following resolutions were adopted:

"That the Pennsylvania State Association recommends the use of and actually adopts, where they do not conflict with a city code, the standard specifications for Portland cement and structural steel for buildings, as adopted by the American Society for Testing Materials."

"That the State Association records its appreciation of the value of the Structural Service Department in the Journal, and that it congratulates Mr. Boyd for the splendid work he is doing in that connection."

Officers were elected as follows: Albert Kelsey, President, Philadelphia; Frederick A. Russell, Vice-president, Pittsburgh; W. A. Plack, Secretary, Philadelphia; M. I. Kast, Treasurer, Harrisburg.

Open-Stair Tenements

The Brooklyn Chapter of the American Institute of Architects, having had opportunities to review and study the problem exemplified in open-stair tenements recently erected under the existing law, and other types of existing tenements, and to compare them with what they might have been if some of the restrictions had not existed, has passed the following resolutions:

"WHEREAS, Limitations and restrictions imposed by the present Tenement House Law tend to increase cost of living by causing unnecessary expense in construction and uneconomical planning of tenements, and

"WHEREAS, Among the restrictions imposed is the one which makes the open-air staircase plan less effective and not economical in arrangement of space by prohibiting the lighting and ventilating of toilets and bathrooms on the open-stair court recess,

"*Be it resolved*, That the Brooklyn Chapter A.I.A. considers that there is no valid objection to this arrangement of plan and therefore gives its support to a movement which may tend to the elimination of this restriction.

At a more recent meeting held on April 30, when the matter was again taken up, the following resolution was presented and also unanimously passed.

"*Resolved*, That the Brooklyn Chapter A.I.A. advocates and supports the creation of a Board of Appeals which shall have similar powers with regard to the Tenement House Law as are now given the Board of Standards and Appeals with regard to the Building Code of New York City."

If the modifications in the Tenement House Law recommended herein could be brought about by remedial legislation, such buildings as the Vanderbilt tenement, housing 384 families, and the John Jay dwellings, housing 287 families, might be built containing features of plan and arrangement tending to greater economy of floor-space with ample light and ventilation for living-rooms and without interior intercommunication between families.

In a modified form known as the quadrant or saw-tooth arrangement of separate units, the plan is adaptable to the industrial town for the housing of many families with the maximum of light and air and open yards and gardens.

It would seem that the application of the Tenement House Law to varying conditions could be more scientifically administered and with safety, justice, and equity for every interest, by the creation of a Board of Appeals having authority to interpret and pass upon the intent of the law in its relation to the many unusual conditions which are presented through the efforts which are being expended by owners and architects to improve housing facilities both urban and suburban.

The Brooklyn Chapter A.I.A. has also endorsed and approved the Lawson Tenement House bill now before the legislature, and which legalizes the conversion of three-story and basement dwellings into three-family dwellings under reasonable conditions, as being a step in the right direction. CARROLL H. PRATT, *Secretary*.

Central Committee on Preparedness

The minutes of the meeting of the Executive Committee (page 301) contain an excellent account of the work being done by the Institute toward the organization of the profession for coöperation with the Government in war work, while the Journal issued a special News Bulletin on June 2, last, devoted to the same subjects and advising members of the Institute that a further questionnaire would be sent out at once. It is also evident that many Chapters are taking steps to gather information as to the services available among their own members, which information should be made available to the Central Committee of the Institute.

American Architects in France

Among the members of the Red Cross Commission which is going to France to study relief needs of every kind are Mr. George B. Ford, Associate Editor of the City Planning Department of the Journal, and Mr. William Emerson, President of the New York Chapter and a

member of the Institute Committee on Publications. Mr. Ford will consult with the French authorities in regard to rebuilding problems and will be the planning expert attached to the commission.

Medals of Honor for Buildings to be Awarded by the Southern California Chapter

At its last meeting, the Southern California Chapter established three medals of honor to be given annually for buildings erected during the year preceding the date of the award. The first medal is to be for residences costing between $2,000 and $10,000; the second for residences costing above $10,000; the third for work other than residences.

The medals will be awarded, unless there is no work of sufficient merit to justify them in any one year, by a Jury of Award composed of architects and laymen to be elected by the Chapter, the nominations to be made by the president of the Chapter. The medals will be accompanied by a certificate setting forth the name of the structure which formed the basis of award together with a summary of the considerations upon which the medal was conferred.

Obituary

L. E. Masqueray

Elected to the Institute in 1906
Died at St. Paul, Minnesota, May 26, 1917

(Further notice later.)

Institute Business

MEETING OF THE EXECUTIVE COMMITTEE AT ATLANTA, MAY 17, 18

The Executive Committee met at Atlanta, Ga., on May 17 and 18. All members were present, also the Executive Secretary.

Proposed Membership for Educators

The Treasurer read a letter from a member of the Institute, suggesting that the Institute consider some plan for remitting in whole or in part the dues of those of its members who are engaged in teaching in the schools of architecture. The letter was referred to the Advisory Committee of the Committee on Education with a request for its report and advice at the September Board meeting, and the Secretary was requested to consider with the Advisory Committee the question of establishing a special class of Institute membership for educators.

Payment of Examination Fee

On motion duly made and seconded, it was directed as a standing order that the examination fee must be paid by the applicant before the Board of Examiners or Executive Committee will consider his application.

Repairs and Restorations at the Octagon

The restoration of the stable was discussed, as its condition at the present time is dangerous. Mr. Fenner referred to an estimate for a satisfactory restoration at the net cost of labor and material—less than $1,500. Mr. Waid spoke of urgent repairs needed for the Octagon itself, particularly the pointing up of outside masonry.

The following resolution was adopted:

Whereas, It is desired to put the Institute in a position to proceed at once, or as soon as sufficient funds are in hand, to make the stable safe by restoring it in a proper manner, and to put the grounds in good order in line with the future complete restoration of the property, therefore, be it

Resolved, That the Building Committee be and is hereby directed to present to the President and Treasurer as promptly as possible a report giving its recommendations in detail specification form as to (*a*) the restoration of the stable, and (*b*) the restoration or redesign of the Octagon grounds.

Collection of Work of Prominent Members

The President read a letter from Mr. Day suggesting that a library or collection be established at the Octagon for the purpose of preserving the best work of members of the American Institute of Architects, as is now done by the Royal Institute of British Architects.

It was agreed that lack of facilities at the Octagon and the financial limitations of the Institute are such that the Executive Committee fears the plan is not practicable for adoption at the present time. It was suggested that local libraries or state institutions might be utilized as depositories for drawings and plans of the memorable architectural works of the current time.

Sprinkler System Completed

The Treasurer reported that the installation of the sprinkler system at the Octagon is now complete. Sprinkler heads are located in all exposed locations, such as closets, the small stairway, the attic, and the cellar, but there are no pipes in the main rooms of the building. The total cost will be well within the appropriation of $2,000, and there may be a slight saving.

War Services of the Institute—Building Construction

President Mauran summarized the participation of the Institute in the war service of the country as follows:

The work of the Institute may be properly divided into two classes, the first relating to actual coustruction of buildings for war purposes.

In the early part of April, President Mauran received unsolicited offers from various members of the Institute to give their individual services free of cost to the Government in war construction work, thus undertaking such projects at actual cost. The patriotism of these offers so highly commended itself that the proper course seemed to be to give the same opportunity to all members of the Institute. Accordingly, on April 14 a letter was sent to the membership, incorporating the following form of offer for those who desired to take part in the program:

"Through you, as President of the American Institute

of Architects, we tender the services of our office force at cost, and the services of members of our firm without charge, to the United States Government, or to the Red Cross Society, for any architectural work, such as hospitals, designing and construction which may follow the entrance of the United States into the war."

Many responses were received from firms and individuals in practically every city of the country. Mr. Mauran had previously addressed communications to President Wilson and the Secretaries of the War, Navy and Treasury Departments, transmitting an offer of service in the name of the Institute as tendered by its members. Acknowledgements were received from the President and each of these Departments, and on April 19 specific requests were made by the Chief of the Bureau of Yards and Docks of the Navy Department that the Institute undertake, in accordance with its offer, the following projects:

Extension of Naval Hospital, Norfolk.
Extension of Naval Hospital and Medical Supply Depot, Brooklyn.
Marine Barracks, Philadelphia.
Extension of Naval Hospital, Puget Sound, Washington.
Extension of Naval Hospital and Medical Supply Depot, Mare Island, Cal.
Extension of Naval Hospital, Pearl Harbor, T. H.

The Bureau was advised in reply that the Institute would immediately undertake this work, and on April 28 Mr. Mauran and Mr. Fenner met at Washington for a conference with Admiral Harris, Chief of the Bureau of Yards and Docks, and Assistant Secretary Franklin Roosevelt of the Navy. Both expressed the keenest interest in and appreciation of the Institute's generous offer of coöperation for this emergency. It was agreed with the Navy Department that the services to be performed in each case are to be those of the American Institute of Architects and not those of any individual architect or firm. To this end committees of three have been appointed in Washington, Philadelphia, New York, Baltimore and San Francisco.

The business arrangement with the Navy Department is that the work is to be performed by the Committee on a basis of actual cost, which is to be determined by doubling the cost of the draughtsmen's time The members of the Committee will receive a nominal per diem to comply with the law, which prohibits the Government from accepting gratuitous service. Any traveling expenses by order of the Department are to be paid by it. These six projects are waiting on the passage by Congress of the necessary appropriation, and it is hoped will be completed in record time and in the most efficient manner, so far as the architectural services are concerned.*

Subsequent to the agreement to undertake these projects, it was learned that the Council of National Defense in Washington was about to issue a report advising the Federal Departments to make no contracts based on services volunteered at cost. As this concerned the entire program of the Institute, President Mauran met with the members of the Munitions Board of the Council in Washington on May 14, as a result of which a formal letter was addressed to its Chairman, Hon. Frank A. Scott, under date of May 15, 1917, also a letter on the same subject to Admiral Harris of the Bureau of Yards and Docks under date of May 15, outlining the position of the Institute and its willingness to continue its program as first established, but also expressing a willingness to adopt any course which the Council and the Department might decide upon as the proper method of doing the work for the Government.

After full consideration, it was resolved that these letters be approved as stating correctly the position of the Institute.

It was agreed that an explanatory letter from the President be sent to each of those who has volunteered as well as to the committees on the projects already assigned. This letter will state that the work now in hand, as well as all future work, will be handled on such basis of compensation as the Council of National Defense and the Department may determine upon as being most acceptable to them. A somewhat similar letter will be sent to all Institute members, stating that with respect to future work the Institute will be guided by the Council. The reasons for this decision are to be clearly set forth.

The second part of the Institute program has to do with the mobilizing of trained men. A Central Committee on Preparedness, under the chairmanship of Mr. Evarts Tracy of New York, sent out in April a circular letter, with a volunteer service blank attached, to 8,000 architects. To date about 2,500 responses have been received from men who are willing to serve where their training will be of the most value. A second circular, addressed only to Institute members, has already been sent out, with the request that the technical employees of firms and individuals be given an opportunity to volunteer their services and to register at the Octagon. It is believed that the responses of this circular will bring the register of the Institute to a total of at least 5,000. (This letter was sent out in Special Journal Bulletin No. 5, and outlined the plan for holding in abeyance the enrollments made at the Octagon and called for responses from draughtsmen and others who have not registered.—EDITOR.)

Officials of the War Department have expressed gratification that this work is being done and are of the opinion that it will prove of value later on.

Under the present plan of procedure, a request for a specific number of men for a particular project in any specified state, coming from a branch of the National Government, will be referred at once to the president of the Chapter having jurisdiction, together with a complete summary of those who are registered for his territory, such summary to show the special qualifications and general fitness of each individual. The Chapter President will thereupon make the necessary assignments and conduct the correspondence with the Federal authorities. Chapter presidents have been fully advised of the part they are to take.

In conclusion, Mr. Mauran said that he had communicated with the Director of the American Red Cross, the National Committee of Patriotic and Defense Societies and the Secretary of the National Association of Master Builders Exchanges for the purpose of making known the general program of the Institute and obtain-

NOTE.—Congress has so far failed to provide the funds for this work.—EDITOR.

ing the interest of these organizations. A request received from the Council of National Defense that the Institute assist the Council in rendering a specific service has been complied with by appointing the president and secretary of each Chapter to act in the manner desired. The President was requested to write to Chairman Scott concerning the registration list, inquiring as to what the Institute should do to prevent the selection by draft of the architects and draughtsmen registered thereon. The President will also communicate with the proper authorities of the War Department.

Preparedness Fund

The Treasurer reported that after conference with the President and Mr. Tracy, Chairman of the Committee on Preparedness, he had called for contributions with which to finance war services of the Institute. To date of May 14, 1917, the receipts have been $485.65 and expenditures $445.05. Mr. Fenner pointed out that drastic action should be taken to finance the operations of the Institute for the balance of the year, so far as its war service work is concerned, for the Budget as drawn will permit small leeway for such expenses. After a complete survey of the situation it was resolved that the appropriations of the following committees be reduced in the amounts indicated below: The chairman of each committee will be notified by the Treasurer, and the various sums are transferred to the Contingent Fund.

Allied Arts (Medal)	$50 00
Basic Building Code	75 00
Education	25 00
Public Works	75 00
Historic Monuments	25 00
Practice	75 00
Public Information	25 00
Lincoln Highway	40 00
Historian	100 00
	$490 00

Standard Form of Chapter Constitution and By-Laws

The Secretary submitted a report from the Chairman of the Committee on Chapters under date of May 15. This report submitted a draft of standard Chapter Constitution and By-laws which had been transmitted to the various Chapters for comment, together with notes on the document as received and recommendations by the Chairman of the Committee on Chapters. The Executive Committee deemed it inexpedient to review the form in detail and authorized the issuance of a standard form approved by the Chairman of the Committee on Chapters and the Secretary of the Institute.

Chapter Affiliates Since the Date of the Fifitieth Convention

The Secretary reported that, regardless of the distribution of the Institute Constitution and By-laws in draft form prior to the Convention, the action of the Convention in adopting the same in principle, notices in the Journal, and at least two circular letters to Chapter secretaries, various Chapters have insisted upon electing affiliates as "Members" rather than "Associates," though such Chapters have no Associate Class. There are about forty of such affiliates in various Chapters elected on the old membership forms, which have been sent to the Octagon for filing. About twenty-four who applied for "membership" before the Convention have been elected as members since the Convention.

The standard application for associateship was distributed about March 1. It is believed that the adoption of the Standard Chapter Constitution and By-laws will put an end to this practice, and, in the meantime, uniform procedure should be devised for correcting these obvious mistakes after the Associate Class has been established in each Chapter. It was resolved that the situation be left in the hands of the Secretary for such action as he may deem desirable.

Reinstatement of Members

The Secretary stated that in his opinion the By-laws of the Institute should contain some definite provision relative to reinstatement of members whose membership had been discontinued.

He found that in the past the Board has in a number of instances reinstated members on the merits of each particular case. The procedure suggested is that the former members shall make application for reëlection on the prescribed application form, and the question of remitting the initiation fee and back dues will be considered and decided upon by the Board on the merits of each particular case.

Proposed Amendment to Article I of By-Laws

The Secretary referred to a resolution of the Fiftieth Convention which instructed the Board of Directors to consider the changing of the wording of Article I of the By-laws which reads "Any resident of the United States," etc., to "Any resident who is a citizen of the United States," etc.

The Executive Committee was of the opinion that no change should be made in the Constitution as it now stands, but the subject was held over for the Board at the next meeting.

It was pointed out that the Institute is primarily a professional body, without reference to citizenship, and as a matter of principle a resident of a foreign country should not be barred. American architects are not barred in various foreign societies of good standing.

Report of Committee on Contracts and Specifications

Mr. Frank Miles Day, Chairman of the Committee on Contracts and Specifications, submitted a report concerning matters now in his charge. This was read in full and approved, as follows:

"*Handbook:* The manuscript of the first draft of the Handbook of Professional Practice and Business Administration is now finished. Proofs of the earlier pages have been received and the matter is rapidly advancing.

"It is my purpose, as soon as proofs are completed, to send a copy to every member of the Board, to the Standing Committee on Contracts and Specifications, to the Committee on Publications, to each Chapter, to the Institute Counsel, and to a selected list of persons who take a peculiar interest in the subject of the book.

"Upon receipt of criticisms from those thus addressed, a second draft will be prepared by the Standing Committee which draft will be issued in the Journal of the Institute and thus made available for criticisms by every

member of the Institute and any others who may wish to send them. The work in the Journal will be printed in such form that from its type the matter may be published as a book. Opinion grows that when the Handbook ceases to be the work of one individual and comes, through general criticism, to express the consensus of opinion of the profession, it will be of distinct value to the classes for whom it is intended, to wit, students, the younger members of the profession, and owners.

"*Contract Documents:* Revision of the Institute's Contract Documents has called forth suggestions for changes in various details. These have been scheduled and submitted to the members of the Standing Committee. (See "Contract Documents" below.)

"*Form of Agreement* between Architect and Owner when a Percentage of the Cost of the Work forms the Basis of Payment. This form has been revised, reprinted and re-issued.

"*Form of Agreement* between Architect and Owner when cost plus a fee forms the basis of payment is ready, final proof is satisfactory to all concerned, and it is now about to be printed and published.

"*Form of Agreement* between Contractor and Owner when cost of the Contractor's work plus a fee forms the basis of payment. As previously reported, the Chairman of the Committee has been at work upon the first draft of this agreement. The circulation of that draft to members of the Standing Committee, to contractors whose work has been done chiefly by that method, and to others, has elicited so lively an interest in the publication of such a form of contract, has brought so many suggestions and so many statements that the work was well worth while, that the subject has suddenly assumed an importance and taken on difficulties which at first were quite unforeseen. Your Committee will continue to work upon this subject and will in due time present to the Executive Committee a second draft which will doubtless differ in many particulars from the draft heretofore submitted to you.

"*Agreement with Brief Conditions:* The subject of a form of agreement with brief conditions suited for purchases, such as metal furniture, elevators, etc., has been referred to a Subcommittee consisting of Mr. A. B. Pond and Mr. Frederick W. Perkins, who have submitted a preliminary report outlining their proposed method of attacking the subject. They have been instructed to proceed along the lines indicated in their report and, doubtless, in due course, they will present at first a draft of such an agreement and general conditions.

"*Schedule of Charges:* The revision of the Schedule of Charges which was one of the duties imposed by the Board upon the Standing Committee has received the approval of the officers of the Institute, and has been printed and published."

Contract Documents

Mr. Medary, Vice-Chairman of the Committee on Contracts and Specifications, submitted a report in detail recommending certain revisions to the Contract Documents of the Institute as they now stand. These revisions were arrived at after extended conference with legal counsel, members of the Committee, prominent users of the documents, Mr. Waid and Mr. Jones, of New York, and the New York Employers' Association. The report was summarized by the Secretary, who mentioned the principal changes in substance. The Executive Committee affirmed the changes in principle and authorized the issuance of a third edition in such form as the Committee on Contracts and Specifications may suggest, subject to the approval of the Secretary and the Treasurer, with the recommendation that they give careful consideration to the details relating to the issuance of the third edition so that the purchaser will be fully advised of the changes and warned against the use of copies of the second edition and third edition jointly in any one contract.

Membership Status of Resigning Members

It was resolved, as a standing order, that the Chapters be requested to advise the Secretary of the Institute before accepting resignations of Institute members; and the Secretary of the Institute will advise Chapter Secretaries in like manner. This will prevent the acceptance of a resignation by the Institute when charges are pending in the Chapter against the member resigning and vice versa. It will also place a check on any financial obligation which the resigning member may have to his Chapter or the Institute.

Meeting with Georgia Chapter

On Friday evening the Georgia Chapter entertained the members of the Executive Committee and visiting architects from Florida, Alabama, and Tennessee at an informal dinner at the Piedmont Driving Club. The President of the Chapter, Mr. William J. Sayward, presided at the gathering.

Short addresses were made by the officers of the Institute and by the visiting architects and those of Atlanta. All spoke of the great advantage to the Institute and the profession of this acquaintanceship and exchange of ideas. The members of the Georgia Chapter were most appreciative of the visit of the Executive Committee, which was unanimous in expressing the thought that the journey to Atlanta had been of great value in bringing about a clearer realization of conditions in the South and a more sympathetic point of view for the problems of the profession there.

Winners of the A. I. A. Student Medal for 1917

Carnegie Institute of Technology: Howard Leland Smith.
Columbia University: Walter Feasel Wilson.
Harvard University: Eugene Dodd.
University of Illionis: Charles Russell Federman.
Massachusetts Institute of Technology: Harold Sterner.
University of Minnesota: Donald Henry Buckhout.
Syracuse University: Carl Milnes Snyder.
Washington University: Raymond Louis Herbert.

New Members Elected May 18, 1917

Bennes, J. V.	Portland, Ore.
Davidson, F. E.	Chicago, Ill.
Eisen, Percy A.	Los Angeles, Cal.
McDowell, J. H.	Burlington, Vt.
Sayre, C. Gadsden	Anderson, S. C.
Scheibel, Morris W.	Youngstown, Ohio
Stanley, E. A.	Youngstown, Ohio

Structural Service Department

In connection with professional societies and organized bodies working toward the improvement of building materials and methods, and the following Committees of the Institute:

June, 1917, Serial No. 6. Electricity

A part of the service of this Department will be to furnish inquirers with additional information, titles of books, names of authors or publishers, copies of articles, or in any way to afford help to architects wishing to ascertain the latest data available in connection with any material or method. For this service, address the Journal of the A.I.A., the Octagon, Washington, D. C. The service is free, except where clerical expense is involved, in which case a small fee will be charged to cover actual cost. The inquirer will be advised of the amount of the fee before any research work is undertaken.

The Journal of the American Institute of Architects
The Octagon
Washington, D. C.

Structural Service Department

D. KNICKERBACKER BOYD, *Associate Editor*

ELECTRICAL ISSUE

CONTENTS

The purpose this month is to place before the readers of the Journal a résumé of matters electrical applying to buildings, their construction and equipment. Practice in this respect has been standardized to an extent perhaps not excelled by any other science or industry. And yet improvement is constantly taking place. For some years the leading activities in the development of electrical utilization within and around buildings have centered about the revision of the National Electrical Code, the requirements of which have long been recognized as affording the working basis necessary for a unison of purpose on the part of all interests in the electrical field.

The plan of presentation is revealed in the Index:

INDEX TO SUBJECTS TREATED IN THIS ISSUE

(For index of materials previously treated see the General Index, page xiic.)

Electrical Societies, Associations, and Allied Agencies

6A1 *American Institute of Electrical Engineers*

Secretary: F. L. Hutchinson, 33 W. 39th St., N. Y. C.

Publications:

(*a*) Proceedings. Published monthly, in two sections. One section contains news and notices of interest to members, and the other contains technical papers, discussions, reports of committees and other matters of an engineering character. $10 annually.

(*b*) Transactions. Published annually, containing selected technical papers, discussions, and reports, and forming a permanent record of the progress of electrical engineering.
Existing bound volumes may be purchased by non-members at $10 in paper; $11.50 in cloth.

(*c*) Separate Papers and Discussions. Certain of those contained in the Proceedings and Transactions can be furnished separately at 50 cents each.

(*d*) Standardization Rules. Revised Edition.
Gives standard definitions of electrical terms, technical data, standard performance specifications, and tests of electrical machinery, standard voltages and frequencies, and general recommendations, as adopted by the Standards Committee and approved by the Board of Directors, June 30, 1915, to take effect July 1, 1915. Price 25 cents.

(*e*) Year Book.

The Institute has technical committees covering practically the entire electrical field, those concerned with matters of interest structurally being Electric Lighting Committee, Standards Committee and Code Committee.

The work of the Standards Committee is of great value to the profession and to every user of electrical power. The main purpose of this Committee, hitherto aimed at in the rules, has been to draw up engineering definitions of terms, phrases, and requirements relating to electrical machinery and apparatus, so that the meaning of technical terms might be standardized among the members of the Institute. (See 6E3 for description of these Standardization Rules.)

6A2 *The Society for Electrical Development*

General Manager: J. M. Wakeman, 29 West 39th Street, New York City.

Public Information:

Issues no publications for general distribution. A possible exception to this is a reprint of "Useful Electrical Information for Architects, Contractors and Engineers." Copies furnished practising architects upon request.

The Society maintains, and through painstaking research work is constantly adding to, an extensive library of electrical information, including records of electric rates and data concerning engineering work, all of which material is carefully classified and filed for ready reference.

One of the Society's activities has been to coöperate

with the Wiring Committee of the National Electric Light Association and H. C. Cushing in preparing a special section of over fifty pages on "House Wiring" in the "Cushing Standard Wiring Handbook."

[NOTE.—While the general uses and advantages of electricity are known to all, it is impossible for anyone not in touch with the industry to know of the constant changes which are being made in the means of supply and the many improvements which are taking place in the means of its utilization. In planning electrical service it is always wise to consult with local electrical interests—the central station management, electrical or consulting engineers, and electrical contractors, of known reliability—as they are familiar with local ordinances, inspection rules, and terms of service, but the Society will gladly aid the architect and all builders in other directions.]

6A3 *National Electric Light Association*

Secretary: T. C. Martin, 29 West 39th Street, N. Y. C.

Publications:

(*a*) Proceedings, and (*b*) Reports, issued annually.
(*c*) The N.E.L.A. Bulletin, issued monthly, for members only and for distribution to institutions of learning, so as to be accessible to the many engineering students.
(*d*) Handbooks, which are permanently valuable contributions to the literature of electricity and have received wide appreciation, not only from public utility companies and their employees, but from college professors and students in colleges and technical schools.
(*e*) Booklets are issued from time to time through the commercial section of the Association, with the aim of promoting better conditions of service to the public.

Many other publications are issued, some of which will be found referred to under subdivisions later.

The National Electric Light Association was organized in 1885 to foster and promote the effectiveness of the service furnished by electric central station corporations engaged in the production, transmission, and distribution of electricity, in supplying the public with light, heat, power, and other forms of service.

At a very early stage the Association took part in the now universal "Safety First" movement, and is at present coöperating with the U. S. Bureau of Standards in the development of the National Electrical Safety Code.

The Association maintains a Lecture Bureau and is also one of the bodies represented on the Electrical Committee of the N. F. P. A. in charge of the National Electrical Code.

The engineering and attendant scientific and educational work of the Association is carried on through appropriate subdivisions or sections of the national organization known as the Technical and Hydro-Electric Section, the Commercial Section, the Accounting Section, and the Electric Vehicle Section, and through Committees, of which there are now about 70 with some 500 leading experts in their membership.

6A4 *National Electrical Contractors' Association of the U. S.*

Secretary: H. C. Brown, 41 Martin Building, Utica, N. Y.

Publications:

(*a*) Standard Symbols for Wiring Plans, as adopted and recommended by the National Electrical Contractors' Association and the American Institute of Architects. Copies may be had without charge upon application to the Secretary of the Association, or to the Executive Secretary of the American Institute of Architects at The Octagon, Washington, D. C.
(*b*) National Electrical Contractors' Association Standard Conduit Charts, showing standard sizes of conduits for the installation of wires and cables, adopted and recommended by the N.E.C.A. of the U. S. and required by the National Electrical Code; completely illustrated with drawings of conduits, wires and cables at one-half full size; copyright 1912. These are mounted upon boards 21½ by 30, and may be obtained upon application to the Secretary, at a price of $3. Postage additional.
(*c*) *The National Electrical Contractor* is the official journal of this Association and covers a wide field in the electrical industry.

This Association was organized in Buffalo, 1901, by forty-nine progressive electrical contractors who were desirous of raising the standard of electrical contracting to the plane of a profession, and the objects were, in chief, to collect for electrical contractors and dealers important information which they could not get independently. The main objects are:

Committees exist to solve various problems for the members and allied electrical interests. The Association is represented on the Electrical Committee of the N. F. P. A in charge of the National Electrical Code and is also represented in all the important electrical societies and organizations.

6A5 *National Board of Fire Underwriters*

See March Journal, Serial No. 3A4, for description of activities and list of publications, and see, also, 6C.

6A6 *Local Underwriters' Associations*

See March Journal, Serial No. 3A5, for description, and 3A2 for coöperation with architects. For the convenience of architects, engineers, and constructors, a colored map of the United States, 28 x 14 inches, is issued by Ream, Ives & Wrightson, Insurance Brokers, 24 Broad Street, New York City. It shows the territory under the jurisdiction of the various boards and bureaus making electrical inspections and fire insurance rates. Price, $2.50.

6A7 *Underwriters' Laboratories, Electrical Department*

For other descriptions of activities and publications see 3A6 and previous issues of the Journal including Industrial Sections:

Electrical Publications:

(*a*) List of Inspected Electrical Appliances (see Standards Adopted and Progress Reported, 6E3*d*).
(*b*) Electrical Data (see Information Obtainable, 6E1*x*).
(*c*) Standard on Rubber-Covered Wires and Cords (3A6*f*).
(*d*) Standard on Cabinets and Cut-out Boxes (3A6*j*).
(*e*) Standard on Flexible Steel Armored Cables.
(*f*) Standard (Tentative) for the Construction and Installation of Materials for Lightning Rod Equipments (3A6*k*).

NOTE.—(*a*) and (*b*) revised semi-annually; sent free upon application. (*c*), (*d*), (*e*) and (*f*) for sale in printed form at $1 per copy. Other standards in mimeographed form, some of which will be printed later.

The testing of electrical appliances and electric wiring materials was the first work undertaken by Underwriters' Laboratories; it has always been a very important division of the activities of the institution. Two electrical laboratories are maintained, one in Chicago and the other in New York. Underwriters' Laboratories' Councils are bodies of experts having extensive field experience, as relates to fire and accident protection, with the products upon which Underwriters' Laboratories is called to pass. The Councils review and criticize reports on laboratory tests on products that have been submitted for investigation and listing, and the members are called upon to register their approval or disapproval of the recommendations of the Laboratories' engineers before any product investigated can be listed as standard. In various other advisory capacities these bodies also serve the institution. There are three Councils: The Fire Council, the Casualty Council, and the Electrical Council.

Underwriters' Laboratories' Electrical Council consists of forty-eight prominent electrical engineers and inspectors, including, in addition to Underwriters' representatives, two representatives of the Federal Government, a representative of the Hydro-Electric Power Commission of Ontario, and engineers and inspectors from municipalities, New York and Chicago being among these.

As has been pointed out in previous issues of the Journal, suitable supervision of the factory output and a comprehensive field follow-up are employed on all products carried as standard in the Laboratories' lists. The Label Service, described in detail in the January, 1917, Journal, is the system of supervision follow-up most extensively employed in the electrical industry, as in other industries. Electrical appliances and materials passed by Underwriters' Laboratories may be identified by means of Underwriters' labels on the goods themselves, except in relatively few instances where labeling is impracticable. The labeling may consist of a marker attached or of a permanent marking in the material, the latter being known as die labeling.

For further and more detailed information in this issue concerning Underwriters' Laboratories see 6C2 and Industrial Section, p. xix.

6A8 *Associated Factory Mutual Fire Insurance Companies*

For description of same and of Inspection Department and for complete list of publications see March Journal, Serial No. 3A7. For the two publications especially relating to electrical subjects see "Standards Adopted" 6E3*e*. Of these the "Electric Rules," which is the National Electrical Code illustrated by cuts and with explanatory footnotes, has been adopted as a textbook in several educational institutions throughout the country.

The Associated Factory Mutual Fire Insurance Companies are represented on the Electrical Committee of the N.F.P.A.

6A9 *National Fire Protection Association*

For complete description and list of all publications see March Journal 3A3.

The Biennial revision of the National Electrical Code is now in the hands of the Electrical Committee of the N.F.P.A. as explained in the introduction to the Code under 6C. The contemplated 1917 revision did not take place for the r easons stated, in the Report of this Committee to the Convention of the N.F.P.A. in Washington May 8–10, 1917, as follows:

(*a*) *Report.* "Owing to the injunction granted without a hearing by the New York Court at the prayer of a manufacturer of fuses against all the members of the Electrical Committee, the regular biennial open meeting of the Committee was not completed."

"The preliminary injunction has been dissolved and it is hoped to complete the work of the meeting at an early date."

F. E. CABOT, *Chairman.*

6B *Other Electrical Associations.*

American Electric Railway Association, New York City; Associated Manufacturers of Electrical Supplies, New York City; Association of Edison Illuminating Companies, San Francisco, Cal.; Association of Iron and Steel Electrical Engineers, McKeesport, Pa.; Association of Railway Electrical Engineers, Chicago, Ill.; Canadian Electrical Association, Toronto, Canada; Electrical Manufacturers' Club, Syracuse, N. Y.; Electrical Supply Jobbers' Association, Chicago, Ill.; Electric Power Club, Chicago, Ill.; Jovian Order, St. Louis, Mo.; National Association of Electrical Inspectors, Concord, Mass.; Institute of Electrical Contractors, New York City.

Other national associations having committees concerned with the use of electricity in buildigs are:

American Society for Testing Materials (1A4), American Railway Engineering Association (1A9), American Society of Mechanical Engineers (Serial No. later), Western Society of Engineers, with headquarters at Chicago, maintains an Electrical Section administered by an Executive Committee.

(For educational institutions in connection with research work in electricity and testing facilities, see 1B3*a*.)

6C The National Electrical Code

EVOLUTION OF THE CODE

(*a*) The position occupied by the National Electrical Code is a unique one. So far as the rules themselves go, they are but little more than recommendations. But they are so wisely drawn and specify so well what is necessary for safety in electric wiring that all insurance and electrical interests accept their recommendations with seldom a question, while municipal boards enforce them as ordinances.

The New York Board of Fire Underwriters issued, in October, 1881, the first printed requirements on electric wiring. A few days later the Boston Manufacturers' Mutual Fire Insurance Company issued a similar document. Early in 1882 both of these organizations issued circulars containing a few rules on electric wiring. Soon thereafter the National Board of Fire Underwriters adopted the requirements of the New York Board. In this same year (1882) the Boston Board of Fire Underwriters issued a set of rules, as did the New England Insurance Exchange in 1885.

In the first part of the year 1890, six of the insurance organizations issued quite complete sets of rules relative to the installation of electric wiring. In 1891 the National Electric Light Association adopted a code of wiring rules prepared by this bureau, and in 1892, a convention of insurance men met in New York and made such revisions in the rules which had been adopted by that body as seemed wise. At a second meeting in December of the same year, attended by representatives from insurance boards all over the United States and from many sections of Canada, the Underwriters' National Electrical Association, a permanent organization was effected and an Electrical Committee appointed, consisting of electricians in the employ of insurance interests, whose duties were to be the care of the rules, the making of tests, and the giving of information and advice to the Association.

At the next meeting of the Underwriters' National Electric Association in Chicago in 1893, and at a subsequent meeting in Boston the same year, the rules were revised again. In February, 1894, they were adopted by the National Electric Light Association; before the close of the year, by six additional insurance boards, coming thus into use by insurance inspectors all over the United States. The plan was then adopted of having all the printing of the rules done by the National Board of Fire Underwriters and having no changes made in rules except through this Board.

By 1895 the rules had been adopted practically by all the Underwriters' associations, forty of which were using copies of them printed from the same type. Moreover, they had been accorded the approval of many electrical manufacturers and prominent central-station men, and

had been incorporated into the ordinances of fifteen or twenty leading cities.

In October, 1895, a communication was sent out on behalf of the National Electric Light Association, suggesting a joint conference, to be composed of delegates from the American Institute of Electrical Engineers, the American Street Railway Association, the National Board of Fire Underwriters, the American Institute of Architects, the International Fire Chiefs' Association, the American Bell Telephone Company, the Western Union and the Postal Telegraph Companies, the General Electric Company, the Westinghouse Electric and Manufacturing Company, the National Electric Light Association.

From this meeting a National Conference on Standard Electrical Rules was organized in 1896, and a Committee appointed to amend and codify the rules. This Committee decided that the rules promulgated by the Underwriters' National Electric Association offered the best basis for a standard set of rules. That Committee prepared a number of suggestions for changes in and additions to the Underwriters' rules. Most of these suggestions were adopted and the Underwriters' National Electric Association immediately set to work to revise and recodify the rules.

The revised rules were approved by the Code Committee of the National Conference and promptly indorsed and adopted by the National Electric Light Association and other interested organizations.

Thus there came into existence in 1897 the "National Electrical Code."

The assistance which Mr. C. M. Goddard, of Boston, rendered in the creation of the Code attracted such wide attention to his enthusiasm and ability that when the Underwriters' National Electric Association was formed he was made its secretary. Because of the exercise of these same qualities, he was in 1911 retained in the Electrical Committee of the National Fire Protection Association in the hands of which Committee is now placed the biennial revision of the National Electrical Code.

When a revision takes place the Code is adopted and published as "Regulations of the National Board of Fire Underwriters for Electric Wiring and Apparatus, as Recommended by the National Fire Protection Association."

The Code, with its amplifications for the design and construction of appliances, as mentioned under 6E3*a*, then becomes the National Standard pertaining to electric wiring and apparatus—and is administered by local Inspection Departments, for which see 6A6.

The Editor wishes to pay especial tribute on behalf of architects to Mr. Alfred Stone who for over ten years so well and so assiduously represented the Institute as its delegate to the National Conference on the Electrical Code. The Reports to conventions year after year will be found printed in the "Proceedings" (1A8*l*).

(*b*) The Code is divided into six sections under the designations Class A, B, C, D, E, and F, as listed below. The reader is referred to the Code itself for all detailed descriptions, except the General Suggestions which are here printed in full for the recommendations which they contain.

Copies of the Code may be obtained from the National Fire Protection Association, the National Board of Fire Underwriters, the Underwriters' Laboratories, the Associated Factory Mutual Fire Insurance Companies (see 6A8 and 6E3*e*), and from all local underwriters' associations or inspection departments.

6C1 *National Electrical Code—General Suggestions* (quoted from the Code)

"The following general suggestions, as well as the fine print notes in the rules, are simply suggestions and explanations and are in no case to be considered by inspection departments as mandatory."

"In all electric work, conductors, however well insulated, should always be treated as bare to the end that under no conditions, existing or likely to exist, can a ground or short circuit occur, and so that all leakage from conductor to conductor or between conductor and ground may be reduced to the minimum.

"In all wiring special attention must be paid to the mechanical execution of the work. Careful and neat running, connecting, soldering, taping of conductors, and securing and attaching of fittings, are specially conducive to security and efficiency, and will be strongly insisted on.

"In laying out an installation, except for constant current systems, every reasonable effort should be made to secure distribution centers located in easily accessible places, at which points the cutouts and switches controlling the several branch circuits can be grouped for convenience and safety of operation. The load should be divided as evenly as possible among the branches, and all complicated and unnecessary wiring avoided.

"The use of wire-ways for rendering concealed wiring permanently accessible is most heartily endorsed and recommended; and this method of accessible concealed construction is advised for general use.

"Architects are urged, when drawing plans and specifications, to make provision for the channeling and pocketing of buildings for electric light or power wires, and also for telephone, district messenger, and other signaling system wiring."

6C2 The Other Sections of the Code Are:

Class A, *Generators, Motors, Switchboards, etc.:* (Includes electrical equipment of Central Stations, Dynamo, Motor and Storage-Battery Rooms, Transformer Sub-Stations, etc. Rules 1 to 11.): Class B, *Outside Work;* (Not including wiring for Light, Power and Heat, Protected by Service Cutout and Switch. For Signaling Systems see Class E.) All Systems and Voltages. (Rules 12 to 15.): Class C, *Inside Work;* (Including all work for Light, Power and Heat, Protected by Service Cutout and Switch. For Signaling Systems see Class E.) General Rules, all systems and voltages. (Rules 16 to 19.) Constant-Current Systems. (Rules 20 to 22.) Constant-Potential Systems; General Rules, all voltages. (Rules 23 to 25.) Low-Potential Systems, 550 volts or less. (Rules 26 to 43.) High-Potential Systems, 550 to 3,500 volts. (Rules 44 to 46.) Extra-High-Potential Systems, over 3,500 volts. (Rules 47 to 48.): Class D, *Fittings, Materials and Details of Construction;* All systems and voltages. (Rules 49 to 84.): "This section of the Code relating to the design and construction of appliances is but a partial outline of specifications. Underwriters' Laboratories has complete standards for electrical fittings which include the provisions of this Code and in addition specifications for performance under test and in service and further details of design and construction. Copies of these standards will be furnished electrical inspection departments, manufacturing concerns, national electrical associations, societies and institutes, and copies filed with the Bureau of Standards, Department of Commerce, Washington, to which Bureau may be referred questions as to the correctness of the Laboratories' tests": Class E, *Miscellaneous;* (Rules 85 to 89.): Class F, *Marine Work.*

6D1 National Electrical Safety Code

(*a*) After three years of continuous study and investigation and the thorough revision of successive preliminary drafts submitted for discussion and criticism, the Bureau of Standards, in Circular No. 54, Second Edition, November 15, 1916, presents the completed text under this title "National Electrical Safety Code for Examination, Trial, and Constructive Criticism." Copies may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 20 cents each, paper bound; 30 cents each in cloth.

In addition to two introductory sections giving definitions of terms and rules for the grounding of apparatus and circuits, the Code consists of four principal parts, as follows:

1. Rules for the installation of machinery, switchboards, and wiring in central stations and substations.

2. Rules for the construction of overhead and underground lines for the transmission and distribution of electrical energy and intelligence.

3. Rules for the installation of electrical apparatus and wiring in factories, residences, and wherever electricity is utilized for light, heat or power.

4. Rules for safeguarding employees when working on or near electrical machines or lines.

This Electrical Safety Code, more particularly Part 3, on Electrical Utilization Equipment, runs parallel with the National Electrical Code (for fire-protection). As it was desirable that there be no conflict between them, and as little overlapping as possible, the Bureau came to an early understanding with the Electrical Committee of the National Fire Protection Association as to the relations between the two codes. The Bureau offered originally to coöperate with the Electrical Committee in framing safety rules to be incorporated in the present electrical code, but at a conference it was found to be the general desire to keep the safety rules and the fire-prevention rules as distinct as possible and have these two parts of a complete electrical code parallel and separate instead of interlaced in such a way that they could not be distinguished. This separation simplifies their preparation, and also their administration, as in some cases administrative bodies concerned with one of the codes will not be concerned with the other.

Part 4 was first published in August, 1914, as Circular No. 49 of the Bureau, and after revision, with the coöperation of the Accident Prevention Committee of the National Electric Light Association, republished in May, 1915, as a second edition of that circular. The rules have been used by a large number of companies during the fifteen months since their second publication, and the present edition has been thoroughly revised in the light of considerable experience in actual use.

The other three parts of the Code were printed as Circular No. 54 of the Bureau, in April, 1915, and have been very thoroughly studied and developed since then. The complete code is now offered for careful study and use in practice, and the Bureau recommends that it be adopted at present only for use on trial. The Code will be revised in a year or so in the light of such experience, and may then be adopted more formally and made mandatory to a greater degree than would be reasonable at present.

Criticism of the rules contained in the Code and suggestions for their improvement, either by way of changes or additions, are invited. Before offering such criticism, however, the statement concerning the plan and scope of the code in the Introduction to Circular No. 54, second edition, should be read, as well as the discussions on the rules.

(*b*) As of interest in offering opportunity for the further coöperation of architects in the development of standards pertaining to some of those technical and structural problems with which the successful practice of the profession abounds, the following extracts from a letter to the Editor of the Structural Service Department from the Bureau of Standards are quoted.

"We should be very glad to have the expressed approval of the American Institute of Architects for the idea and general character of the National Electrical Safety Code and the indorsement of the Institute of the Bureau's proposal of giving this Code a thorough field trial in the immediate future with the coöperation of all the agencies concerned.

"In response to your inquiries as to such agencies as may be already utilizing the Safety Code, we may state that the State Commissions of Wisconsin, North Carolina, California, Pennsylvania, West Virginia, and Nevada now use the Safety Code in one form or another. New York City, through its Department of Water Supply, Gas and Electricity, is also making a trial use of the Safety Code in new construction. The Code has also been used as a basis by casualty insurance associations, and in particular by the National Workmen's Compensation Service Bureau operating in a number of states and with headquarters at New York City.

"Among those associations whose committees have for nearly three years been giving active coöperation in the preparation of the Safety Code, may be instanced the American Institute of Electrical Engineers, the National Electric Light Association, the American Electric Railway Association, the American Railways Association, the National Fire-Protection Association, and many others. These associations will, without exception, so we are advised, continue this coöperation and we should greatly appreciate coöperation by a similar committee of The American Institute of Architects, the possibility of which you have suggested. The interest of The American Institute of Architects in the safety of wiring installations is parallel with their interest in the prevention of electrical fires, and they have rendered great service in the past to the Electrical Committee of the National Fire Protection Association in the development of the National Electrical (Fire) Code.

"It has sometimes been proposed that a permanent advisory council drawn from the various national associations coöperating in the development of the National Electrical Safety Code and representative of all interests, including administrators and workmen as well as engineers, would be a desirable method of assuring the general correctness and satisfactoriness of future action in amending the National Electrical Safety Code. We should be glad to have an expression from The American Institute of Architects on the feasibility of such a plan. It is the hope that the continued coöperation of all interested in the Electrical Safety Code will insure its increasing adequacy and reasonableness and bring about its general adoption and use as against the adoption and use in different administrative jurisdictions of electrical safety rules separately arrived at by less extended local study or by the efforts of only a part of the interests concerned. The confusion which would necessarily result from such differing codes is apparent and would mean an unnecessary repetition of the confusion which existed as to electrical fire-prevention rules prior to the formulation and general adoption of the National Electrical (Fire) Code."

Signed, E. R. Rosa, for the Bureau of Standards.

Electricity Within and Around Buildings

6E Apparatus, Appliances and Installations in General

6E1 *Information Obtainable*

No attempt is here made to list the articles frequently appearing in the periodicals devoted to electrical subjects or in the bulletins, journals, or proceedings of Governmental Departments, professional or technical societies, or educational institutions, the indexes to the publications of all of which, including especially the American Institute of Electrical Engineers, The American Society of Mechanical Engineers and the National Fire Protection Association, should be consulted by those interested as well, also the list of publications of the U. S. Bureau of Standards.

See especially the subdivision 6L for description of the features included under this heading in the Mechanical Equipment of Federal Buildings.

(*a*) "Standard Handbook for Electrical Engineers," prepared by a staff of specialists, Frank F. Rowle, Editor-in-chief. 2000 pp. Fourth edition, revised, rewritten, and reset. The joint production of over 60 leading engineers; written for engineers in practice.

(*b*) "American Handbook for Electrical Engineers," Harold Pender, Editor-in-chief, and 26 Associate Editors. 2023 pp., fully illustrated. All phases of electrical engineering and related engineering subjects treated to meet everyday requirements of the practising engineer.

(*c*) "Electrical Engineers' Pocket Book," Horatio A. Foster, A.I.E.E., with the collaboration of other engineers and specialists. 1000 pp., illustrated. Useful data for electrical engineers, architects, and electricians.

(*d*) "American Electricians' Handbook," Terrell Croft. 711 pp., pocket size, illustrated. Does not go into design and gives only enough theory to explain why certain things should be done in certain ways.

(*e*) "Architects' and Builders' Pocket-Book," F. E. Kidder, pp. 1371–1399: "Electric Work for Buildings," W. H. Timbie. Contains a brief general treatise on electricity, machines, currents, fuses and circuit breakers, describes lighting systems, gives wire calculations, and offers general suggestions for electric work, conduit systems and specifications for interior wiring; illustrated.

(*f*) "Mechanical Engineers' Handbook," Lionel S. Marks, pp. 1566–1779: Section on Electrical Engineering by M. C. Beebe and F. A. Kartak, with tables and illustrations including wiring calculations and data on switches and fuses.

(*g*) "American Civil Engineers' Pocket Book," Mansfield Merriman, pp. 1310–1340: Section on Electricity.

(*h*) "Electrical Cost Data, Estimates and Working Tables," Horatio A. Foster.

(*j*) "Switchboards," Wm. Baxter, Jr. 192 pp., illustrated.

(*k*) "Cushing's Standard Wiring, 1916," H. C. Cushing, Jr. Based on the latest 1915 National Electric Code's Rules. Has special section devoted to house-wiring, and explains and illustrates the code. Contains tables and formulæ for inside and outside wiring.

(*l*) "Wiring of Finished Buildings," Terrell Croft, Consulting Electrical Engineer. 275 pp., illustrated. Combines both commercial and technical aspects. The technical end covers methods of wiring, tools, manipulation, fixtures, and gives examples of successful installations.

(*m*) "Electric Wiring, Diagrams and Switchboards," Newton Harrison. 272 pp., illustrated. A practical treatise, included in which is a development of a simple circuit with the position of mains, feeders and branches, their treatment as a part of a wiring plan and their employment in house-wiring.

(*n*) "Theatres and Motion Picture Houses," Arthur S. Melloy, Architect. 1916. 125 pp. Includes sections on Electric Wiring, Auditorium Lighting and Stage Lighting.

(*o*) "Universal Wiring Computer," Carl Hering. 44 pp., 4 charts. For determining the sizes of wires for incandescent electric lamp leads and for distribution in general without calculation, with some notes on wiring and a set of auxiliary tables.

(*p*) "Handbook of Electrical Methods," compiled from the *Electrical World*. 284 pp., illustrated. A collection of useful details that were contributed to the *Electrical World* in four years from the everyday experiences of the workers in the industry. It gives a vast amount of well-arranged information in comparatively small compass.

(*q*) "Alternating Current Wiring and Distribution," William L. Emmet. Second edition, 98 pp., illustrated. Contains the principles of alternating currents from the practical point of view, and of their distribution and application to lighting and power.

(*r*) "Electric Wiring Specifications," J. H. Montgomery, Professor of Physics and Electrical Engineering in the University of Southern California. 139 pp. A book from which a specification can be readily prepared which will cover all ordinary electrical work.

(*s*) "Electric Lighting Specifications," E. A. Merrill. 213 pp. For architects and engineers.

(*t*) "The Wiring Handbook," with 32 complete labor-saving tables and digest of underwriters' rules, by Cecil P. Poole. 85 pp., illustrated.

(*u*) "Building Estimators' Reference Book," Frank R. Walker, pp. 3300, 3301: Section on Electric-Wiring.

(*v*) "How to Check Electricity Bills," S. W. Borden. 55 pp., illustrated.

(*w*) "Mechanical Engineers' Pocket Book," William Kent, pp. 1396–1467, also pp. 713, 714 and 1420–1425 for electrical heaters, heating, and furnaces.

(*x*) See "Electrical Data," August, 1916. Published by Underwriters' Laboratories. 22 pp., illustrated. Contains: Announcement of Label Service for Cartridge-inclosed Fuses and Snap Switches; A Retrospect; Causes and Losses in Fires Due to Electricity; Rats and Lead-covered Cable; Fires and Accidents Due to Electrical Causes.

(*y*) In the "I.C.S. Electrical Engineers' Handbook" will be found much valuable information presented in a form useful to architects and engineers, comprising tables and sections on Electricity and Magnetism, Dynamos and Motors, Electric Lighting, Interior Wiring Power Transmission, and Operation and Maintenance of Electrical Apparatus. 414 pp.

(*z*) The above handbook is independent of 23 volumes on Electrical Engineering and allied subjects in the extensive International Library of Technology, each of which treats the subject exhaustively.

(*aa*) Read Reports of Committees printed in Proceedings of the American Society for Testing Materials (1A4*a*), 1916:
1. Committee B 1 on Copper Wire, p. 177.
2. Committee D 11 on Rubber Products.

(*bb*) Refer to the various publications mentioned under the Societies Associations and allied Agencies 6A1 to 6A9.

(*cc*) For information on electrical apparatus, installations and appliances in general, with notes, explanations and descriptions pertaining to the utilization of electrical energy in buildings and with references in many cases to the National Electrical Code, latest Underwriters' requirements, and other controlling factors. See pp. vii to xii*b* of the General Electric Company, including Sprague Works, in the Industrial Section. This includes generators, switchboards, motors and other apparatus, conduits, wiring devices and other subjects listed in the special G-E Index on p. viii.

(*dd*) For information concerning subjects under this heading, see the Industrial Section, p. yxiv. National Metal Moulding Co., "How to Write Conduit Specifications."

6E2 *Practice Recommended or Suggested by*

(*a*) U. S. Bureau of Standards:
1. See description of National Electrical Safety Code (6D11*a*).

(*b*) National Fire Protection Association (3A3):
1. See the "General Suggestions" which preface the National Electrical Code and which are printed in full under 6C1. Particular attention is called to the last two paragraphs recommending the general use of wire-ways for rendering concealed wiring permanently accessible (conduit systems) and urging architects when drawing plans and specifications to make provision for the channeling and pocketing of buildings for these and all other possible arteries for the utilization of electrical energy.
2. See "Field Practice," Inspection Manual of the N.F.P.A.; pp. 23, 31, 48, 77, and 75–77 for notes on the installation, care and maintenance of electric heating devices, irons, motors and power equipment, and other sections for explanations of the rules and requirements of various inspection departments of label service and of matters in general pertaining to good practice.

(*c*) National Board of Fire Underwriters (3A4):
1. From the "Building Code—1915" (3A4*d*1) the following is quoted in full from Section 261: "Electrical Installations—All electrical wiring, apparatus, or appliances for furnishing light, heat, or power shall be in accordance with the 'National Electrical Code,' and no installation of electrical equipment shall be made, except in conformity thereto."
2. In "Dwelling Houses" (3A4*d*3) the section relating to Electrical Installations is of exactly the same purport.

(*d*) American Society for Testing Material (1A4):
1. Tentative Standard Specifications for Insulated Wire and Cable, 30 per cent Hevea Rubber; Serial Designation D 27–16 T.

(*e*) Mechanical Equipment of Federal Buildings.
1. See the description of publication with this title given under 6L.

6E3 *Standards Adopted and Progress Reported*

(*a*) The National Electrical Code:

The Code (6C) comprehends the allowable approved methods for the manufacture of electrical apparatus and for the installation of conduits, wiring, switches, fixtures and devices carrying or consuming electricity in connection with buildings.

Where the Code is printed for the information of architects and building constructors, sections relating essentially to methods of manufacture are usually omitted.

It is presumed that such sections are complied with by reputable manufacturers and have become a precedent to their products being labeled by the Underwriters' Laboratories, which label is the architect's and user's evidence of compliance with the requirements of the Code.

It is of interest to note that the building codes of many of the larger cities make no mention of compliance with the Code or offer any other requirements which must be complied with in the wiring of buildings for electricity. There are few cities or towns where the electric light and power company will supply service to a building until a certificate of inspection of the wiring is secured from the local board of Underwriters or from the municipal electrical inspection department. Where there is a municipal inspection department, it is generally a violation of the city ordinance for the lighting company to provide service until such certificate has been obtained; in other cases there is an agreement with the lighting company not to connect to the building until the electrical work therein has been inspected and approved. It is also well known to the framers of codes that the furnishing of such a certificate is a requisite before fire insurance may be placed on any building, and that without such insurance mortgages cannot be negotiated or other financing of building construction be consummated. It would seem then that this system is practical, and it is taken for granted that it will be understood without the frank acknowledgement which one might expect to find in building codes of the procedure to be followed.

Specifications will invariably provide that the local requirements shall be met, for the same will be based upon the National Electrical Code, with such amplifications and variations as climatic and other conditions warrant.

(*b*) Standardizati on Rules of the American Institute of Electrical Engineers (see 6A1*d*):
In these particular effort has been directed toward defining in engineering terms the rating of electrical machinery and the requirements connoted thereby.

(*c*) International Standardization:
"It becomes impossible to carry standardization beyond a very elementary stage in any one country, without influencing the procedure in other countries. Coöperative relations have been entered into at different times between the A.I.E.E. Standards Committee and corresponding committees in other countries, to considerable mutual advantage, but especially through the influence of the International Electrotechnical Commission, an international body engaged in international electrical engineering standardization."

(*d*) "List of Inspected Electrical Appliances:"
(This list and a "List of Manufacturers of Inspected Mechanical Appliances;" also "List of appliances Inspected for accident Hazard" are published by Underwriters' Laboratories. Both lists are revised semi-annually.) See 1B2*a*, 3A6.
"Products labeled or listed as mentioned above are not necessarily uniform in quality or merit, the labeling and listing indicating only compliance with Underwriters' requirements."

(*e*) "Electric Light and Power Equipments—Rules:
"Approved Electrical Fittings" (subject to semi-annual revision):
(These two publications are issued by the Inspection Department of the Associated Factory Mutual Fire Insurance Companies.) See 3A7.
"The 'List of Approved Electrical Fittings' is designed to enable mill managers and electrical contractors to quickly learn where thoroughly reliable fittings can be obtained. This pamphlet forms a supplement to 'Rules for Installing Electric Light and Power Equipments,' which should be carefully followed in all electrical construction work."

(*f*) "Universal Safety Standards:" A reference book of Rules, Drawings, Tables, Formulæ, Data and Suggestions for use of Architects, Engineers, Superintendents, Foremen, Inspectors, Mechanics and Students, by Carl M. Hansen, M.E., Consulting Safety Engineer, Member American Society Mechanical Engineers. Compiled under the direction of and approved by the Workmen's Compensation Service Bureau, New York City.

(*g*) See also "Electrical Edition" of same.

(*f*) and (*g*) contain diagrams and descriptions of guards for motors, switchboards, starting panels, controllers, fuse-boxes, and other safety devices.

(*h*) The American Society for Testing Materials has adopted the following:
1. Standard specifications for Hard-Drawn Copper Wire, Serial Designation B 1–15.
2. Standard Specifications for Medium Hard-Drawn Copper Wire, Serial Designation B 2–15.
3. Standard Specifications for Soft or Annealed Copper Wire, Serial Designation B 3–15.
4. And others relating to cables, trolley wires, and specialized products.

(*j*) U. S. Bureau of Standards:
1. See Circular No. 31, "Copper Wire Tables," referred to under 6E3*b*.
2. The Bureau is coöperating with a number of testing laboratories identified with the American Society for Testing Materials in investigating the merits of an accelerated heat-test as applied to rubber insulation on wire. The object of the work is to determine the relative effect of dry heat 160° F., as compared with the effect of natural aging under uniform atmospheric conditions. This investigation is in line with a similar work that has been in progress at the Bureau for several years, in which the relative effect of dry heat, as compared with natural aging, has been studied in the case of fifty-five rubber compounds.
3. Some of these results appear in the third edition of Bureau of Standards Circular No. 38, "Testing of Mechanical Rubber Goods."

6E4 Standard Symbols and Charts

(*a*) See Standard Symbols for Wiring Plans, as adopted by the National Electrical Contractors' Association of the U. S. and the American Institute of Architects, mentioned under 6A4*a*. In addition to the copies on cardboard, which may be had as there mentioned, these Symbols may be seen illustrated and explained in:
1. "Kidder's Pocket Book—1916," pp. 1398–1399.
2. "Sweet's Architectural Catalogue—1917," p. 1423.
3. "Portfolio of the Architectural Service Corporation," Service Sheet No. 1, January, 1916.

(*b*) Standard Conduit Charts, showing standard sizes of conduits for the installation of wires and cables, adopted and recommended by the National Electrical Contractors' Association of the U. S. and required by the National Electrical Code, may be obtained as mentioned under 6B2*b*.

6F Electric Elevators and Dumbwaiters

Complete descriptions will be found in some, and a very considerable amount of valuable data in others, of the publications mentioned below:

See especially the Chapter on "Elevators" from "Mechanical Equipment of Federal Buildings" described under 6L.

1. "Standard Handbook for Electrical Engineers," Frank F. Fowle: Section on "Electric Elevators," by D. L. Lindquist, Chief Engineer Otis Elevator Co., and Asso. A.I.E.E.
2. "Mechanical Engineers' Handbook," Lionel S. Marks: Section 9 treats of "Hoisting and Conveying," by C. Kemble Baldwin, pp. 1006–1187.
3. "American Handbook for Electrical Engineers," Harold Pender: Section on "Electric Elevators."
4. "Architects' & Builders' Pocket Book," F. E. Kidder: Section on "Elevator-Service in Buildings," pp. 1579–1597, contains information on electric elevators and gives valuable data for calculating the number of elevators required, determining sizes, etc. —similar to that mentioned under JL1*h*.
5. "Electrical Engineers' Pocket Book," Horatio A. Foster: Section on "Electric Elevators."
6. "Mechanical Engineers' Pocket Book," Wm. Kent: Section on "Hoisting and Conveying," pp. 1181–1218.
7. "Building Estimators' Reference Book," Frank R. Walker: Chapter XXII on "Miscellaneous Building Specialities," pp. 2900–2906, gives information on Cost of Electric Passenger Elevators, Electric Freight Elevators, Cost of Cars and Dumbwaiters.
8. "Elevator Shaft Construction: Practical Suggestions for the Installation of Elevators in Buildings," H. R. Cullmer and A. Bauer.
9. "Universal Safety Standards" (described under 6E3*f*) shows safety devices, controls, guards, hatchways and entrances, automatic trap-doors and gates, platforms and guards for sheaves and for safe installations in general.
10. The codes of cities or ordinances regulating elevator construction will also afford specificational requirements. Valuable suggestions will be found in catalogues and other literature of manufacturers.
11. For specific information pertaining to the installation of electric elevators, see pages in the Industrial Section as follows:
(*a*) Otis Elevator Co., p. xx–xxi.
(*b*) A. B. See Electric Elevator Co., pp. xvi–xvii.
12. For specific data, illustrations and detailed drawings pertaining to an Elevator Signal System, see Wakefield & McNabb, pp. xxii–xxiii, in the Industrial Section.
13. For information relating to dumbwaiters (hand-power), see Industrial Section, p. xxviii, Sedgwick Machine Works.

6G Telephones, Signaling Systems, Clocks and Bells

Attention is again directed to the necessity of providing in all buildings such chases, channels, pipe-ducts, or runways as will adequately meet all needs for installing arteries of service, not only for present requirements, but allowing also for reasonable future needs and the possibility of installations not now thought of.

1. The two following paragraphs are again quoted from the National Electrical Code:
(*a*) "The use of wire-ways for rendering concealed wiring permanently accessible is most heartily endorsed and recommended; and this method of accessible concealed construction is advised for general use."

(*b*) "Architects are urged, when drawing plans and specifications, to make provision for the channeling and pocketing of buildings for electric light or power wires, and also for telephone, district messenger, and other signaling system wiring."

2. "Telephone Construction, Installation, Wiring, Operating and Maintenance," W. H. Radcliffe and H. C. Cushing, Jr. 223 pp., illustrated. Intended for electricians, wiremen, engineers, architects, contractors and others interested in the installation of telephone exchanges in accordance with standard practice.
3. "Architects' & Builders' Pocket Book," F. E. Kidder: Section on "Interphones and Automatic Telephones for Intercommunicating Service," pp. 1627–1628.
4. "American Handbook for Electrical Engineers," Harold Pender: Section on "Telephone Instruments and Circuits," pp. 1530–1550.
5. "Standard Handbook for Electrical Engineers," Frank F. Fowle: Section on "Telephony, Telegraphy, and Radio-telegraphy."
6. "Electrical Engineers' Pocket Book," Horatio A. Foster: Section on "Telephony."
7. "American Telephone Practice," Kempster B. Miller. 904 pp., illustrated.
8. "American Civil Engineers' Pocket Book," Mansfield Merriman: Section 14, Article 19, p. 1339. Information on open-circuit batteries for use on intermittent service, such as call bells and short telephone lines.
9. "Fire Prevention and Fire Protection," J. K. Freitag: Chapter XXXI, "Automatic Fire Alarms, and Sprinkler Alarm and Supervisory Systems," pp. 908–921; also Chapter XXXIII, "Watchmen, Watch-Clocks and Manuals," pp. 944–958.
10. "Crosby-Fiske Handbook of Fire Protection," Fifth Edition (Sixth Edition now in preparation): Section on "Signaling Systems and Watchman Service," pp. 250–269.
11. "Field Practice," Inspection Manual of the N.F.P.A. Information on signaling systems, pp. 179–182.
12. "I.C.S. Telephone and Telegraph Engineers' Handbook." Contains useful tables, and sections on Telephone and Telegraph Systems, Location of Faults, Electricity, Magnetism, Electrical Measurements, and Batteries. 398 pp.
13. See the "I.C.S. Electrical Engineers' Handbook" (6E1*y*) for information on signal-bell circuits, pp. 369–371.
14. Along the lines of the recommendations contained under 6G1*a* and *b*, above referred to, it should be noted that the N.E.C. does not prescribe the sizes for conduits for signal systems and that the wires permitted by the telephone companies of various cities differ as to thickness of insulation. The Chart (described under 6E4*b*) therefore represents wires with both light and heavy insulation and shows conduit sizes accordingly.
15. See "Mechanical Equipment of Federal Buildings" 6L1*f*.
16. Some telephone companies insert notices similar to the following in their directories: "Adequate facilities for handling telephone wires and cables in new buildings will mean the most satisfactory telephone service for the tenants. Satisfied tenants are an asset to the owner of a building. The Telephone Company asks the coöperation of the architects. When designing new buildings, call the Plant Engineer."
17. The New York Telephone Company states that of the two ways to wire an apartment house—conduit system or wires in a molding—the conduit layout is now generally preferred. For further information on the subject by this company, see Industrial Section, p. XIII.
18. For Elevator Signal Systems, see Industrial Section, pp. XXII–XXIII, Wakefield & McNabb Co.
19. Standard of Telephone Service:
Preliminary studies have been undertaken to ascertain to what extent the different grades of telephone service required under different conditions can be adequately described in series of standard service specifications. Detailed studies under actual operating conditions, and under the manifold variations encountered in different localities, are necessary before it will be possible for the Bureau of Standards to suggest suitable service standards for telephony similar to those already proposed for gas and electric light and power supply. Such detailed coöperative studies in this and other lines are necessary before public utility commissions can regulate telephone utilities with full justice to all interests concerned. From Report of Bureau of Standards, 1916.

6H Illumination, Lighting Fixtures and Lamps

Most of the publications which follow treat of illumination by gas as well as electricity, and cross-reference to same will be made under the next Serial Number (7) when those which treat especially of gas will be separately referred to. In that number also will appear a description of the Illuminating Engineering Society.

6H1 *Information Obtainable*

(*a*) "The Art of Illumination," Louis Bell, Ph.D. 353 pp., illustrated. Dr. Bell's treatise was the pioneer book on illumination. The new edition, entirely rewritten, is designed primarily for the use of illuminating engineers.

(*b*) "Radiation, Light and Illumination," Charles P. Steinmetz, Ph.D. 305 pp., illustrated. It covers illuminating engineering fully, and will appeal strongly to the illuminating engineer and to the architect as well.

(*c*) "Factory Lighting," Clarence E. Clewell, Assistant Professor of Electrical Engineering, University of Pennsylvania; formerly Lighting Expert, Westinghouse Co. 160 pp., illustrated. Tells in a simple way how to obtain good lighting by analyzing actual installations, and gives illustrations to show good and bad lighting in shops, drafting-rooms, offices, power-houses, etc.

(*d*) "Illumination and Photometry," William E. Wickenden, Assistant Professor of Electrical Engineering, Massachusetts Institute of Technology. 195 pp., fully illustrated. An investigation of the scientific principles of illumination. Subject treated in a condensed way, but always with emphasis upon the principles.

(*e*) "Practical Illumination," J. R. Cravath and V. R. Lansing. 356 pp., illustrated. Gives suggestions and specific data showing the application of the broad general principles underlying the design of artificial illumination for everyday use in all kinds of buildings.

(*f*) "Architects' & Builders' Pocket Book," F. E. Kidder: Section on "Lighting and Illumination of Buildings," by W. H. Timbie, pp. 1351–1370.

(*g*) "Mechanical Engineers' Handbook," Lionel S. Marks: Section 11 contains a chapter by Louis Bell on "Illumination;" treats of Computation of Illumination, Practical Sources of Light, and Methods of Lighting; pp. 1366–1381.

(*h*) "American Civil Engineers' Pocket Book," Mansfield Merriman: Section 14, Article 18, pp. 1335–1338, gives information on "Electric Lighting and Illumination."

(*i*) "Mechanical Engineers' Pocket Book," Wm. Kent: Section on "Illumination," pp. 1,468–1,477.

(*k*) "Standard Handbook for Electrical Engineers," Frank F. Fowle: Section on "Illumination."

(*l*) "American Handbook for Electrical Engineers," Harold Pender: Section on "Illumination," pp. 756–763.

(*m*) "American Electrician's Handbook," Terrell Croft: Illustrated section on "Illumination."

(*n*) "Crosby-Fiske Handbook of Fire Protection," (sixth edition now in preparation). Information on "Lighting by Electricity," in fifth edition, pp. 120–122.

(*o*) See Section on "Illumination" in "Electric Light Wiring," C. E. Knox. 225 pp., illustrated.

(*p*) See "Electric Lighting Specifications," E. A. Merrill. 213 pp. For architects and engineers.

(*q*) See "Theatres and Motion Picture Houses," Arthur S. Melloy, Architect. 1916. 125 pp. Includes sections on "Auditorium Lighting" and "Stage Lighting."

(*r*) "Color and Its Applications," by M. Luckeish.

(*s*) "Light and Shade and Its Applications," M. Luckeish.

(*t*) Consult the list of publications issued by the U. S. Bureau of Standards for Bulletins bearing on this subject.

(*u*) See the pamphlet entitled "Light—Its Use and Misuse," published by the Illuminating Engineering Society (Serial No. 7).

(*v*) See also the periodical of the I.E.S. called the "Transactions," in which are printed papers dealing with all phases of the art and science of illumination.

(*w*) See the "I.C.S. Electrical Engineers' Handbook" (6E1*y*) for information on Illumination and Lamps.

(*x*) For general information on illumination with reference to exterior and interior lighting units of the General Electric Company and of its Ivanhoe-Regent and Edison Lamp Works, and to Mazda lamps, see p. XII*a* of the G-E Company, this issue. Also the G-E Index.

(*y*) For Types of Lighting, Terms Used, Measurement of Lighting and Method of Determining Quantity of Light with a Table of the Average Practice in this Regard, see "Electrical Information and Data" furnished by the Society for Electrical Development, Inc., and printed in "Sweet's Architectural Catalogue," 1916, pp. 1316–1318.

(*z*) For further information regarding lighting fixtures, see pages in the Industrial Section, of The Mitchell Vance Co., Inc., Vance-bronze, the new metal, p. XVIII.

6H2 *Practice Recommended and Standards Adopted*

(*a*) Refer to appropriate sections of National Electrical Code (N.F.P.A.) and National Electrical Safety Code (U. S. Bureau of Standards).

(*b*) See "Field Practice" (N.F.P.A.), 3A3*d*1, sections on "Lighting Hazards—Electricity," pp. 21–23 and 130.

(*c*) See "Code of Lighting: Factories, Mills and other Work Places," prepared by committees of the Illuminating Engineering Society and issued under the direction of the Society (to be described in Serial No. 7). Copyright 1915. 45 pp., with half-tone illustrations, plans, sections and other diagrams. Treats of daylight requirements as well as of artificial illumination. "While the code is intended as an aid to industrial commissions and other similar bodies in those states and municipalities which shall actively take up the questions of legislation as related to factory and mill lighting, it is intended in equal measure for the industries themselves as a practical working guide in individual efforts to improve lighting conditions. The language of the code has not been drafted according to legal phraseology but is simple and pointed throughout, thus being readily available for transforming into legal orders, and at the same time as a working guide in practical design and installation work."

(*d*) See reports of various committees of the Illuminating Engineering Society.

(*e*) Consult, in Associated Engineering Societies' Library, publications of the National Electric Light Association, such as those of the Lighting Sales Bureau, Reports of Subcommittee on Industrial and Yard Lighting, on residential lighting, and on other lighting problems. Illustrated with diagrams of buildings and plates showing installations, lighting fixtures and other essentials.

(*f*) See "List of Inspected Electrical Appliances" (6E3*d*). See also 6A and Industrial Section, p. xix.

(*g*) See "Approved Electrical Fittings" (6E3*e*).

(*h*) For "Standard Symbols" indicating number and kind of lights to wiring outlets and methods of control, see description under 6E4.

(*i*) For valuable data and suggestions on illumination and the wiring to accomplish same, see "Mechanical Equipment of Federal Buildings" as described under 6L1*f* and 6L1*g*.

6H3 *Life Testing of Incandescent Lamps*

The lamps purchased by the Federal Government, amounting to about 1,250,000 annually, are inspected and tested by the Bureau of Standards. The specifications under which these lamps are tested are published by the Bureau and are recognized as standard by the manufacturers as well as by the Government. They are used also by many other purchasers of lamps.

The lamps are first inspected for mechanical and physical defects, this being done at the factory by Bureau inspectors. Representative samples are selected and sent to the Bureau, where they are burned on life test at a specified efficiency, at which they must give a certain number of hours' life, depending upon the kind of lamp. From 3,000 to 5,000 lamps are thus burned on test each year.

Scientific Paper No. 265 gives a complete description of the special apparatus and of the methods used in these inspections and tests.—From Report of the Bureau of Standards, 1916.

6J Heating, Cooking and Other Appliances and Devices

1. These various appliances and devices pertaining to the comfort and convenience of occupants of hotels, apartment houses, office buildings, residences, and other structures are treated in but very few of the Electrical handbooks and other such publications.

Some will occasionally be found by looking in the index of publications referred to, but so rapidly is development taking place in their manufacture and utilization that the chief source of information to be had concerning them is through catalogues and other literature of the manufacturers themselves.

(*a*) Some notes and suggestions on various devices will be found in Useful Information for architects, contractors and engineers referred to under 6A2 and elsewhere.

(*b*) For a list of many such devices of the latest type and for publications pertaining to them see the General Electric Company's presentation in the Industrial Section, pp. xi–xii.

6K Vacuum Cleaners

1. This important modern development in building sanitation will also not be found treated in many of the handbooks elsewhere listed though the operating and controlling features of so many of these systems, whether stationary or portable, are of interest electrically. For this reason the subject is treated in this issue, although vacuum systems will be again mentioned in a later Serial Number.

Included in standard handbooks, the subject has been found treated in:

(*a*) Kidder's "Architects' & Builders' Pocket Book," 1916. See "Vacuum Cleaning," pp. 1628, 1629.

(*b*) For a complete treatise on the whole subject, including a highly interesting historical review of the development of the Vacuum Cleaner, see "Vacuum Cleaner Systems," by M. S. Cooley, Mechanical Engineer in office of the Supervising Architect, Treasury Department. Copyright 1913 by Heating and Ventilating Magazine Company of New York. 232 pp., completely illustrated.

This states the requirements of an ideal system and gives descriptions and diagrams of all mechanical and electrical parts of various systems, including the pipe and fittings, controlling appliances and tools.

It gives data on the selection of various types, methods of testing and Specifications for five classes of plants.

It also describes portable vacuum cleaners, including those for attachment to lighting systems.

(*c*) See Chapter on "Vacuum Cleaning Systems" described under 6L1*l*.

(*d*) For information on Arco-wand Vacuum Cleaners, see Industrial Section, p. xv, American Radiator Company, and for detailed drawings of the mechanism and further data pertaining to this system, see "The Ideal Fitter," edition of May 1, 1916, pp. 281–286.

6L Mechanical Equipment of Federal Buildings

1. A subdivision is given to this subject in order to mention and briefly describe a publication with which all architects should be familiar, in connection with the mechanical equipment in buildings, other than residences, whether or not the same are installed in coöperation with consulting engineers.

This refers to "Mechanical Equipment of Federal Buildings under the control of the Treasury Department," by Nelson S. Thompson, Chief Mechanical and Electrical Engineer, Office Supervising Architect, Treasury Department, Washington, D. C.

The subjects treated are as follows:

(*a*) Chapter I. Heating and Ventilation.

(*b*) Chapter II. Commercial Practice in Regard to Heating Factory and Other Buildings.

(*c*) Chapter III. Commercial Practice in Regard to Heating by Forced Circulation of Hot Water from a Central Station.
(These will be described in the issue of the Journal devoted to Heating and Ventilation.)

(*d*) Chapter IV. Plumbing, Drainage and Water-Supply.
(Will be described in Plumbing issue.)

(*e*) Chapter V. Gas Piping.
(Will be described in next issue.)

(*f*) Chapter VI. Conduit and Wiring Systems.
This gives the standard arrangement for electric installations in Federal buildings, including underground service, switchboards, distribution tablets, table of conduit sizes for conductors, and of lead-encased cable in unlined metallic conduit, describes outlets and standard wiring for lighting, gives wiring formulæ and tables, gives data on illumination with tables of effective lumens for different lamps and reflectors, and estimating data on electrical appliances.
It also includes conduit systems for time-clocks and other special purposes, also town clocks, fire alarm and watchman's time-detector systems, vault-protection systems, telephone and call-bell conduits, and conduits for signal systems.

(*g*) Chapter VII. Lighting Fixtures.
This gives "Basic Data in Connection with Design and Installation of Lighting Fixtures" and data for estimating the cost of same. It also includes a "typical lighting fixture speci-

fication prepared by the office" which covers various types of fixtures, glassware, reflectors, metals and finish, switches, and gives a schedule of fixture and notes on inspection and tests.

(*h*) Chapter VIII. Elevators.

This gives data of the utmost importance to architects, especially in the preliminary study necessary to reach a decision upon the number, type and speed of elevators for all kinds of structures.

With the aid of individual experience and judgment, a close approximation of the number of elevators and of the size of each which should be installed in a given building may be based on the facts in regard to elevator service in this chapter which are stated by Mr. R. P. Bolton, consulting engineer, of New York, in his treatise entitled "Elevator Service."

It also gives data to determine the loads to be carried and space requirements, and states recommendations as to various forms of equipment, concluding with a "Specification for the standard tandem worm geared electric passenger elevator with direct current motor and full magnet control such as is installed by the office of the supervising architect," and a supplementary specification for "Alternating Current Elevators," following which is "Instructions Relative to the Inspection and Test of New Elevators."

(*j*) Chapter IX. Small Power Plants.

This is prepared with special reference to installations in Federal buildings under control of the Treasury Department and states all items which require consideration in determining whether the mechanical equipment should include a power plant for the generation of electric current for light and power.

It discusses types of engines and electric generators, gives tables and includes "A specification for Engines and Generators as prepared in the office of the Supervising Architect."

(*k*) Chapter X. Motors and Controlling Apparatus.

Discusses direct and alternating current motors and gives various recommendations.

(*l*) Chapter XI. Vacuum Cleaning Systems.

This contains data on stationary systems of both the so-called high-vacuum and low-vacuum types and gives tables for determining the sizes of plants and recommendations for installation. It also includes a complete, "Specification such as is used by the office of the Supervising Architect for a Four-sweeper Plant," included in which is a description of the electric motor and its automatic control.

(*m*) Chapter XII. Operating Data.

This gives calculations of cost of operating mechanical equipments with sample reports of those made in certain Federal buildings and includes a discussion of the isolated plant versus the central station as regards heat as well as electric current.

Appendix.

(*n*) General Instructions, issued to draftsmen by the Chief Mechanical and Electrical Engineer, Office Supervising Architect.

This could well be read by all practising architects as it contains eleven pages of valuable suggestions which could be followed in the case of any building, taking up as it does the procedure followed in an office from the inception of a building project to its conclusion. It not only treats of surveys and data to be obtained concerning the site, its surroundings and public utilities, but contains many calculations for determining quantities cost and space requirements with respect to all features of mechanical equipment and building construction affected. It contains also recommendations as to procedure and gives departmental requirements about which it is well to be informed.

(*o*) Suggestions to Superintendents.

These are a natural complement of and extensions to the General Instructions to Draughtsmen just referred to.

(*p*) Miscellaneous Data.

Consists of tables such as Capacity of Cylindrical Tanks and many others of much usefulness.

6L2

In this subdivision it is also desired to call attention to the Journal of the Society of Constructors of Federal Buildings (2A4*a*). In various numbers of this publication will be found contributions of interest to architects, engineers, and constructors on electrical installations and other matters pertaining to the mechanical equipment as well as the construction of buildings.

6M Lightning Protection

(For data see April Journal, Serial No. 4G.)

6N Electrolysis

References to this subject will be found in many of the publications elsewhere referred to; also under "Experiment and Practice" in Trautwine's Civil Engineers' Pocket Book, pp. 1168, 1182. See, also, the following publications of the U. S. Bureau of Standards:

Technologic Paper No. 28, "Methods of Making Electrolysis Surveys;" Technologic Paper No. 54, "A Report on Conditions in Springfield, Ohio, with Insulated Feeder System Installed;" Technologic Paper No. 55, "A Preliminary Report on Electrolysis Mitigation in Elyria, Ohio;" Technologic Paper No. 62, "Modern Practice in the Construction and Maintenance of Rail Joints and Bonds in Electric Railways;" Technologic Paper No. 63, "Leakage of Current from Railways;" and Technologic Paper No. 75, "Some Instances of Track Leakage."

The following extracts from the Report of the Bureau of Standards, 1916, will be found of interest.

"When considering the enormous value of the pipe and cable properties buried in the streets of cities and forming in many cases transmission networks between cities throughout the country, and when considering further that there are very few water, gas, or lead cable systems which are not more or less subject at some points to electrolytic damage from stray currents, it is possible to better form a judgment of the practical importance of this subject which still does not receive in many quarters the attention that its importance deserves.

The water- and gas-pipe systems of this country alone have an aggregate value at the present time of approximately $1,500,000,000, and in addition to this there is a vast extent of underground lead-cable systems belonging to telephone and electric power companies and to municipalities, a considerable part of which may be more or less subject to electrolytic damage. There are also possibilities of trouble in the case of bridge structures, portions of steel frame buildings, and piers, which are occasionally exposed to damage from this source. While it is impossible at present to determine with any accuracy the extent of the damage to pipe systems by electrolysis, nevertheless, the most conservative estimates place it at many millions of dollars annually.

The Bureau has been studying the electrolysis question for the past six years and has done a large amount of work in connection with it. The first problem investigated was that concerning the effects of electrolysis in reinforced concrete, after which special attention was given to electrolysis of underground pipes. This has included laboratory investigations concerning the effects of electric current on concrete and on metal pipes, tests of pipe-coverings, the corrosion of metals in the soil, methods of measuring soil resistance, and various other experimental phases of the work; methods of electrolysis mitigation that have been used or proposed; field studies in actual practice with the application of remedies; and a determination of the cost and results obtained.

GENERAL ELECTRIC COMPANY

G-E—Its Service to Architects and Engineers and Its Relation to the Electrical Features of Building Construction

The General Electric Company welcomes this opportunity to present in the Electric Issue of the Journal of the American Institute of Architects an outline description of its organization, manufacturing facilities, output and service, and to express its desire to coöperate with architects in perfecting and maintaining a uniform standard of excellence in the electrical installation and equipment of all buildings.

G-E INDEX TO SUBJECTS TREATED AND TO PUBLICATIONS REFERRED TO

G-E1 Resources and Unified Responsibility.

G-E2 Suggestions for Specifying Electrical Equipment.

G-E3 Universality of Production and Use.

G-E4 Sources of Energy—Electrical Apparatus.

Publications:	G-E Bulletins
Steam Turbines	42206, 42201
Steam-Driven Generator	40500
Belt-Driven Generator	40400
Gas-Driven Generator	42400

G-E5 Control and Distribution.

Publications:	G-E Bulletins
Switchboards	"Standard Units" B-3303
Circuit Breakers	47502, 47503
Electrical Instruments	46013
Electrical Meters	42691, 46253, 46203

G-E6 Power Appliances—Electric Motors.

Publications:	G-E Bulletins
Induction Motors	41302
Direct Current Motors (constant speed)	41013
Direct Current Motors (variable speed)	A-4130
Direct Current Motors (crane and hoist)	48108

G-E7 Transmission—Wiring and Conduit Data.

Publications,* also

Sprague Bulletin	49600
Sprague Pamphlets	117
Various Sprague Folders	

G-E8 Local Centers of Distribution—Panel Boards and Cabinets.

Publications,* also Sprague Special Pamphlet, "Safety Panels"

G-E9 Switches for Every Use.

Publications: See Supply Catalogue, Remote Control Switches, G-E Bulletin A-4070

G-E10 Sockets and Receptacles.

Publications: See Supply Catalogue

G-E11 Utilization of Electrical Energy—Cooking and Heating.

Publications:	G-E Bulletins
Ranges, Domestic	B-3353
Disk Stoves, Domestic	B-3410
Radiant Grill, Domestic Table	B-3278
Ranges, Hotel	Y-898
Broiler, Hotel	Y-898
Ovens, Hotel	Y-898
Toaster, Hotel	Y-898
Air Heaters, Domestic	B-3423
Luminous Radiator	B-3329
Irons, Flat, Domestic	B-3318
Irons, Flat, Tailors'	B-3394

G-E12 Hotel Equipment.

Publications*

G-E13 Special Transformers.

Publications:	G-E Bulletins
Night Lamp	B-3341
Bell Ringing Systems	B-3400

G-E14 Fans.

Publications:	G-E Bulletins
Desk Fans	B-3367
G-E Ventilating Outfits*	

G-E15 Battery Charging Outfits.

Publications: G-E Bulletin B-3374

G-E16 Moving Picture Apparatus.

Publications*

G-E17 Illumination.

Publications:
Flood Lighting Projectors. G-E Bulletin 43850. Novalux Ornamental Units, 43503.
Ivanhoe-Regent catalogues and pamphlets.
Bulletins of Edison Lamp Works of the G-E Company.

G-E18 Generation, Transmission, Distribution and Application of Electric Power Everywhere.

*Information may be obtained at our nearest office. See page xii*b*.

G-E1 Resources and Unified Responsibility

The factory, engineering and laboratory equipment of the General Electric Company is practically unlimited. Therefore, it is able to manufacture complete lines of apparatus, appliances and devices which possess the important features of uniformity and interchangeability to a degree possible only in the products of a single large manufacturer.

(*A*) *Organization*

The organization of the General Electric Company comprises subsidiary corporations specializing in all features of installation equipment that make it possible for G-E products to be adopted from the source of electrical energy to its fullest utilization within and without any type of building, monumental, industrial, or residential.

(*B*) *Standardized G-E Equipment*

It is entirely practical, therefore, for the architect to standardize with G-E equipment throughout. By this procedure all parts interrelate and much time and annoyance can be saved. The added advantage of having all electrical equipment provided by one company, ready for immediate installation and operation is obvious.

G-E2 Suggestions for Specifying Electrical Equipment

We believe that the sequence of presentation hereafter followed, the descriptions given, and the publications listed, will, with the known reliability of all G-E products and service, so impress architects that they may feel warranted in considering a paragraph similar to the following as most appropriate for inclusion in their specifications:

Wherever makes or names are mentioned in this specification for generators, switchboards, motors, wiring, conduits, fittings, switches, receptacles and all other electrical appliances or devices, and any alternative choice is provided, it is to be understood that preference will be given to that estimate, not necessarily the lowest, which proposes to incorporate in the contract and the building the greatest number of fixtures, fittings, and materials of a standardized line from one manufacturer under recognized names fully indentifiable on every piece or part of the equipment.

This suggestion is made with the full consciousness of the fact that no other maker can so fully meet the conditions, under all usual circumstances, as the General Electric Company and in the belief that the greater the quantity of materials of one reputable manufacturer which is installed under any one contract the greater is the responsibility of manufacturer and contractor on the one hand and the better served are the interests of both architect and owner on the other hand.

G-E3 Universality of Production and Use

The products of the General Electric Company comprise practically every kind of apparatus and machinery used in the generation, transmission, distribution, and use of electrical energy. Its thousands of products, in use in all parts of the world, have established the G-E Trade Mark as the Guarantee of Excellence on Goods Electrical. As in the past the General Electric Company will continue to be foremost in all developments and improvements tending toward the perfection of present electrical service and its extension into new fields of usefulness.

(*A*) *Engineering and Sales Departments*

For the convenience and use by architects, engineers, and the consuming public, in the coöperative development of a universal service and the highest standards of efficiency for both original installation and upkeep, the G-E Company has established a complete chain of sales offices which are listed on last page. These departments and the engineering staff are prepared to assist architects and engineers in any way desired in the planning, selection, and use of apparatus, materials, and devices most appropriate to each demand of service and to all climates, inspection and code requirements to which reference will be found under the various subdivisions.

(*B*) *Publications and Informative Data*

The G-E Company issues a complete series of publications, in the form of Bulletins and Supply Catalogues, which are available to all architects and engineers. A list of those current is printed in connection with the Index for their convenience, and reference to these is made under the various subdivisions.

In addition to these certain tables of capacities and dimensions, space requirements, and other data pertaining to general requirements will be found in the G-E pages of Sweet's Architectural Catalogue (pp. 1425–1439 in 1917 edition) and recommendations, notes, and formulæ of interest will be found in electrical information and data furnished by The Society for Electrical Development, Inc., also printed therein and referred to under 6A2 and elsewhere in this issue of The Journal. See also pages in Sweet's of Sprague Electric Works (1440) and of Ivanhoe-Regent Works (1466–1467).

It is a well recognized fact that a knowledge of the many functions which electricity performs in modern building practice is necessary to every architect. In this

outline description of G-E facilities and service, the methods of obtaining electric power, controlling it, and applying it to various uses are described and illustrated with concrete suggestions which will aid in the preparation of electrical specifications for building construction. Complete detailed information will be found in the various G-E publications of interest structurally, under the G-E Index on p. VIII.

G-E4 Sources of Energy—Electrical Apparatus

In designing an electrical installation it is essential to determine in advance whether central station current will be used or a complete power plant is to be installed. When central station current is available, it is generally conceded to be more economical, except in special cases, to use such power than to install a generating plant. In the latter case it is recommended that the current generated shall correspond to the class of current obtainable from the public service company, for in case of a breakdown of generating plant, central station power will be suitable, and there will be no occasion for interruption of service.

In any case, it is wise to consult with the central station management, as they are always familiar with the latest regulations affecting the industry, both those of the local city administration and of the local underwriters' inspection department. It is advisable also to confer with the latter authorities, the territorial jurisdictions of which are stated under 6A6.

As a rule, alternating current is used when transmission is over one-quarter mile, and where constant speed and constant service are required, and whenever lighting systems are the principal load. In buildings where stopping and starting of various machines will be frequent, and where a large number of adjustable speed motors are desired, or battery charging or electroplating is required, direct current is best adapted.

(*A*) *Where Central Station Power is Available*

When power is purchased from a lighting or power company it is possible to connect incoming wires direct to switchboard. Suitable switchboard panels with main switch and meters for measuring current should be specified when ordering switchboard. When incoming current is not suitable for requirements, it will be necessary to change the form of the current to meet these conditions by using motor generator sets, rotary converters, transformers, or mercury arc rectifiers. Whenever such conditions are encountered, it is advisable to get in touch with the nearest G-E office which will gladly give detailed information.

For power stations supplying electric light and power to office buildings, machine shops, mills, etc., the Curtis steam turbines are admirably adapted for this class of work. Their operation is characterized by a minimum of vibration and noise. They are very compact, requiring minimum floor-space, headroom and attendance. The exhaust steam is free from oil and may be used for heating.

Turbine sets are available in sizes ranging from 100 kw. to 50,000 kw. for alternating current, and from 15 kw. to any larger for direct current.

Publications:	G-E Bulletins
Steam Turbines	42206, 42201
Steam-Driven Generator	40500
Belt-Driven Generator	40400

(*B*) *Where Steam Power is Available*

When central station service is not available for small isolated plants requiring 100 kw. or less, the steam engine generating set is used. These sets were designed originally to meet the severe conditions of marine work, which demand light, compact, and durable sets of close regulation and quiet operation. These sets have been used extensively for both power and lighting service.

When it is desired to provide for taking power from an outside source in case of emergency, double-throw switches may be added to main panel of the switchboard equipment.

For the production of electrical energy from mechanical sources of power, belt-driven generators are used. Such units are available in sizes up to 300 kw. for direct current and up to 500 kw. for alternating current.

Publications:	G-E Bulletins
Steam Turbines	42206, 42201
Steam-Driven Generator	40500, A4189
Belt-Driven Generator	40400

(*C*) *Where No Power is Available*

For rural residences, hotels, farms, country estates, rural railroad stations, camps, etc., electrical power and light is obtained from the internal combustion engine-driven generator sets. Several of these sets are on the market equipped with G-E generators. These types of generators are also designed, and are available, for direct connection to gas engines of other manufacturers.

Publications:	G-E Bulletin
Gas-Driven Generator	42400

G-E5 Control and Distribution—Switchboard Data

For the control and distribution of current the General Electric Company offers a complete line of switchboards for all systems of electric distribution. These boards are equipped with latest improved instruments and controlling, measuring, and other devices.

All devices mounted on these boards are made by a single company, thus centralizing responsibility for the behavior of the entire switchboard and providing for the utmost efficiency in operation.

For the convenience or assistance of architects and consulting engineers, switchboard specialists are stationed in the principal branch offices of the Company. Architects and consulting engineers are invited to confer with these engineers in planning a switchboard to meet any unusual require-

ment or space condition. Sketches, detailed drawings, and specifications of any such special boards, or the adaptation of standard panels, will be furnished promptly on request.

While the General Electric Company will make any switchboard to meet any and every condition or requirement, it recommends, in the interest of economy and efficiency, that wherever possible fullest utilization be made of the very complete lines of standard panels which it has developed on the unit principle, known as:

(*A*) *G-E Standard Unit Switchboards.* These panels are so designed that they can be assembled in different combinations, to fit any usual condition and to form a complete switchboard having a neat uniform appearance, both front and back, all parts on the back being easily accessible. They are constructed for both direct and alternating current, complete with all switches, instruments and other equipment necessary.

They not only cost less than special boards but can be delivered quickly, completely equipped and ready for erection.

This is the most advanced system of switchboard manufacture and obviates the time and expense necessary when original specifications are drawn up for each individual installation by the architect, consulting engineer or contractor. Each panel is listed as a separate unit and has its own catalogue number. There are thousands of these "Standard Units," and they are listed in 22 separate lines for different classes of service.

(*B*) *Construction Notes on Standard Panels.*

(*a*) *Panels.*—All panels are of slate, those for isolated or small plants, of dull black marine finished slate, and for central station boards, of natural black slate. Slate is 1½ inches thick, with ⅜ inch bevel. Widths vary from 12 to 32 inches; height of panel varies from 20 to 90 inches. The sizes being determined by the instruments and controlling devices.

(Panels of marble can be substituted at prices which may be obtained from any of the G-E offices.)

(*b*) *Framework.*—A complete supporting framework of 1¼-inch pipe, with necessary fittings, is included for each panel. Total height never exceeds 90 inches.

(*c*) *Switches, Fuses, and Card-holders.*—The sizes and types of switches furnished with each panel are determined by amount of current carried, and their number depends upon the number of circuits which they control.

The fuses furnished in connection with switching apparatus open the circuits if overloads occur and protect the electrical apparatus.

One card-holder to designate the different circuits should be specified for each switch.

(*d*) *Connections.*—Each panel is furnished complete, unless otherwise specified, with small wiring on back of panel and with copper connections between the appliances which comprise the equipment of the panel.

The connections from generator to panel and from panel to all distribution points are invariably made by the electrical contractor and are not furnished by the manufacturers.

Publications.

The "Standard Unit" panel may be ordered direct from a bulletin. This is explained in G-E Index Bulletin No. 47001.

Details of framework are covered in G-E Bulletin No. 47750.

Rules governing the installation of switchboards will be found in the National Electrical Code, see Class A, Rules 3 and 4. Familiarity with all features of the Code, except details of manufacture, covered in Class D and supplemented by Underwriters' Laboratories' requirements and publications, is advisable on the part of all architects. The various rules epitomize the essential standards to be observed in installation and operation of all apparatus and devices.

Publications:	G-E Bulletins
Switchboards	"Standard Units" B-3303
Circuit Breakers	47502, 47503
Electrical Instruments	46013
Electrical Meters	42691, 46253, 46203

G-E6 Power Appliances—Electric Motors

The G-E motors cover a wide range of application of electric power to mechanical service. Constant and variable speed motors for both alternate- and direct-current service are built. Complete lines of these motors are manufactured, varying in size from 1-200 horsepower up to any requirement. Complete detailed information and illustrations pertaining to motors, with dimensions, space requirements and other data, will be furnished on request. State horsepower, voltage, frequency, etc., in making request.

Motors suitable for mounting on walls or ceilings can be furnished for installations where it is desirable to economize space.

Costs of installation can be greatly reduced by adhering to standard speeds. Contrary to the generally accepted idea, the cost of a motor of 1,800 RPM is less than that of a 1,200 RPM motor of the same horsepower. The 1,800 RPM motor is also smaller and lighter in weight.

The G-E service is available to all in connection with motor problems, and only those best adapted to the service required will invariably be furnished.

Publications:	G-E Bulletins
Induction Motors	41302
Direct Current Motors (constant speed)	41013
Direct Current Motors (variable speed)	A-4130
Direct Current Motors (crane and hoist)	48018

G-E7 Transmission of Electrical Energy—Wiring and Conduit Data

It is a well-known fact that electricity is the simplest and easiest form of power to transmit. An old building is readily provided with a system of concealed wiring. A new building should be designed to accommodate the future as well as the present uses of electricity. One of the most important movements in this regard is the increasing use of electrical devices which consume more power than allowed on lighting circuits and, therefore, require heavier wiring. In any event, these devices can usually be operated at a lower cost if a separate wiring system on a power circuit meter is installed. Most electric companies give a lower rate when current is consumed on a special circuit in this manner, because such use represents a service furnished during the day when their equipment is not required to furnish current for the lighting service.

(*A*) *Power Plugs on Separate Circuits*

All power receptacles should be designed to take the same plug, and these should be made to fit only the power outlets, so as to prevent their attachment to the lighting circuits, which are not designed to carry the relatively heavy currents required by the power-consuming devices.

(*B*) *Locate Distribution Centers in Easily Accessible Places*

In planning various circuits, one should endeavor to locate distribution centers in easily accessible places, so that cutouts and switches controlling circuits can be grouped for convenience and safety of operation. The load should be divided as evenly as possible among the different circuits, and all complicated and unnecessary wiring should be avoided.

(*C*) *Provide for Future Uses in Installing Wires*

When installing wires, ample outlets should be provided in all rooms for future use, to take care of the rapidly increasing use of electric devices of various sorts, included in which may be mentioned: electric vacuum cleaners, portable lamps, all kinds of heating apparatus and electric ranges and cooking utensils, small motors for various industries in office and other buildings, and for silver buffing, ice-cream making, sewing-machine operation, dishwashers and washing-machine operation and for other conveniences in the home.

(*D*) *G-E Motor-driven Office and Home Devices*

As an indication of the almost unlimited possibilities in small electrically driven devices for home and office use it is of interest to note that there are on the market over three hundred of such with G-E motors attached.

(*E*) *Study the Standard Symbols for Directions and Suggestions*

For the greatest ultimate convenience and economy in the use of electricity, switches should be freely installed and receptacles placed at frequent intervals. Not only in the interest of standardization, but for the suggestions which will be afforded through the various conveniences which they provide for, it is recommended that the Standard Symbols for Wiring Plans as adopted by the National Electrical Contractors' Association and the American Institute of Architects be carefully studied at the time each installation is contemplated as well as followed in the marking of plans. These Symbols may be obtained or seen as indicated in the Index to this Industrial Section of the Journal.

(*F*) *Consult our Engineers about Present and Future Uses of Electricity*

The National Electrical Code, in the General Suggestions which preface the Code, distinctly urges architects, when drawing plans and specifications, to make provisions for the channeling and pocketing of buildings for electric light or power wires as well as for all other means of transmitting electrical energy. To this the General Electric Company, in the interest of affording all architects and owners the satisfaction which will eventually come with the fullest utilization of electrical energy in manners not now fully foreseen, repeats the further recommendation that a new building should be designed to accommodate the future as well as the present uses of electricity. The General Electric Company also offers the facilities of its engineering forces in forecasting these and in drawing attention to every present advantageous utilization.

(*G*) *The Question of Wire*

For the transmission of electrical energy wire in one form or another is invariably the conductor. From the source to the outlet, for whatever form of use, current must pass through insulated wire.

Not only architects, but owners of buildings are now more fully alive to the desirability of calling for wire by a given name or brand. The National Electric Code formulates the basis of manufacture which the Underwriters' Laboratories elaborates upon in its requirements which become a precedent to its label service signifying compliance. But discriminating architects and appreciative clients are no longer content to specify or pay for wire or conduit that is the "best quality or equal." In addition to requiring the use of that which has passed the code and received the label, they encourage the use of that which in the competition of service and not of price aims to excel in one point or another the product that does not identify itself or its maker.

More and more frequently a distinction is being made as to quality in materials of building construction, and stronger encouragement is being given to those producers who, in spite of competition, adhere to their standards of manufacture and make names for themselves under established brands.

(*H*) *Open Wiring and Conduit Work*

Whether run "open" or in conduits, the quality demands of the wire must remain the best. There is an ever-increasing trend toward the use of conduits, whether flexible or rigid, in which to incase the wiring in all buildings—on this point the General Suggestions of the National Electrical Code state "The use of wire ways for rendering concealed wiring permanently accessible is most heartily

endorsed and recommended; and the method of accessible concealed construction is advised for general use."

The *Quarterly* and other publications of the National Fire Protection Association are replete with instances where open and inferior wire has been the accredited cause of fires. In *Electrical Data*, one of the latest publications of Underwriters' Laboratories elsewhere referred to in the Journal, other instances are given. In the interests of safety and ultimate economy, conduit work is invariably recommended. Many cities now require this form of construction.

Nelson E. Thompson in "Mechanical Equipment of Federal Buildings" described under 6L in his chapter on "Conduit and Wiring Systems" states that all wiring in Federal buildings is run in rigid metal conduits.

(*J*) *G-E Wires and Cables*

Wires and cables are manufactured by the General Electric Company in varieties suitable for all uses of the architect. This product includes cable with weatherproof, flameproof rubber (National Electric Code and better grades to meet severer requirements), paper, varnished cambric, or asbestos insulation, and with all special finishes.

(*a*) *Rubber Insulation.*—Three types of rubber insulation have been standardized; Red Core, Tricoat and 30 per cent Para (black or white core). In addition we are prepared to manufacture special types and grades of rubber-insulated conductors to meet unusual conditions.

(*b*) *Red Core* is a high-class insulation used primarily on wires for house-wiring, and exceeds the requirements of the National Board of Fire Underwriters.

(*c*) *Tricoat* insulation was designed for those desiring a very high-grade wire, somewhat better than Red Core, but less expensive than the 30 per cent grade.

(*d*) *30 per cent Para* insulation meets the Specifications of the Rubber-Covered Wire Engineers' Association and is the best rubber compound for absolutely high-grade work. The core may be white or black, as desired.

(*e*) *Braided Wire.*—All wires and cables No. 8 B. & S. and smaller carry a single braid, while No. 6 B. & S. and larger are regularly made with either 2 braids or a tape and 1 braid; which, in accordance with Underwriters' requirements, is equal to double braid and suitable for conduit work. If tape and 2 braids are required, an extra charge will be made.

(*f*) *N. E. Code, Red Core*, braided, twin wire is finished with talc, which assures ease in pulling wire into conduits; no extra charge made for this feature. All our braided, rubber-covered wires may be finished in this way, if desired, without additional cost.

Our rubber-covered braided wires and cables are distinguished by 1 red and 1 black thread woven parallel in braid.

(*g*) *Weatherproof and Underwriters' Cable.*—Standard weatherproof wires and cables are manufactured strictly in accordance with the requirements of the National Board of Fire Underwriters, with 3 braids placed directly over the copper core, thoroughly impregnated with a black, weatherproofing compound, and then polished to remove all superfluous compound and give a smooth exterior finish. Double-braid weatherproof wire furnished on order.

When the number of braids is not specified, wire with 3 braids commonly called triple braid, is always furnished; if double braid is required, requisitions or requests for quotations should so state. A stock of triple-braid wire is carried.

(*K*) *Steel Armored Conductors: A Safe and Economical Method of Wiring Old Buildings (also New)*

These consist of insulated wires with interlocking convex and concave galvanized steel strips wound spirally over the insulation.

Recognizing the necessity for a system of wiring which would be flexible, safe, economical and easily installed without disfiguring walls, ceilings, or decorations in existing buildings which were not originally wired for electricity and in which it became desirable to have the comforts and conveniences which electrical appliances afford, the Sprague Electric Works of General Electric Company eighteen years ago placed on the market a line of flexible armored conductors under the trade name "B. X." These have been constantly adding to a well-earned enviable reputation.

Specify Greenfield "B. X." flexible steel armored conductors, which in addition to use in existing buildings are equally well suited for new work as they make a safe, economical wiring system.

This Greenfield Sprague product is also made in cables known as "B. X. L." which are covered by a continuous lead sheath over which the steel armor is wound. These are admirably suited for use in wet places and when embedded in concrete.

Publications: Sprague Bulletin No. 49600.

(*L*) *Flexible and Rigid Conduits*

(*a*) *Greenfield Flexible Conduit* is equal in flexibility to the above mentioned armored wires or conductors and can be used in a great many cases where it would be impracticable to use rigid conduit, particularly in finished building work.

This is made in Single Strip type and Double Strip type and is invariably furnished galvanized inside and out. For existing buildings the use of Double Strip Conduit is recommended on account of its extreme flexibility.

See Sprague Bulletin No. 49600 for all data on these conduits and for couplings, outlet, junction and switch boxes, covers and all fittings for conduits and armored conductors.

(*b*) *Greenfielduct* is a rigid pipe or conduit developed by Sprague Works. It is treated on both the interior and exterior by a patented hot galvanized wiped process making the galvanization of both surfaces and pores thoroughly effective. The interior is afterward given a black Japan finish the accidental removal of which will not impair the integrity of the conduit. This conduit is easily bent for installation and is proof against rust, cracking, flaking, and caking.

The enameling on the interior is *not* for the purpose of rust prevention as in some makes of galvanized conduits, but merely for identification of the product as an electrical conduit as required by the National Electrical Code, Rule 58-f.

(*c*) *Sprague duct* is a black enameled rigid conduit of the highest type to be used where item of expense is a consideration. The use of the galvanized or Greenfielduct is recommended as the cost is but approximately 7½ per cent more than the black pipe.

See Sprague Pamphlet No. 117 and other folders for data on (*b*) and (*c*).

(*M*) *Sizes and Methods of Installing Conduits*

(*a*) *Code and Underwriters' Requirements*

The National Electrical Code prescribes the sizes, methods of elbowing, cutting, supporting and installing

conduits, and the Underwriters' Laboratories, standards obtain in manufacturing and labeling.

For the convenience of architects and engineers the National Electrical Contractors' Association has published a chart diagrammatically illustrating the Code requirements. This may be obtained as mentioned under 6A4*b*.

The brief summary and the table which follows will be of help in familiarizing readers with the more detailed requirements of the Code.

(*b*) *Circuits Permissible in One Conduit*

The same conduit must not contain more than four 2-wire or three 3-wire circuits of the same system, except by special permission of the Inspection Department and must never contain circuits of different systems.

No conduit tube having an internal diameter of less than 5/8 inch shall be used. All elbows or bends must be so made that the conduit, or lining of same, will not be injured. The radius of curve of the inner edge of any elbow not to be less than 3½ inches. Must have not more than the equivalent of four quarter bends from outlet to outlet, the bends of the outlet not being counted.

(*c*) *Supporting Conductors in Vertical Conduits*

In tall buildings special provision must be made to support the conductors in the vertical conduits, to remove their weight from their connections, and spacing of supports in such cases is prescribed in the Code.

In laying out conduit work, first ascertain the size and number of wires required, then take the size of conduit from the table in next column.

SIZE OF CONDUITS FOR THE INSTALLATION OF WIRES AND CABLES

NUMBER OF CONDUCTORS IN SYSTEM

Size B & S	One Conductor in a Conduit Size Conduit, Ins. Electrical Trade Size	Two Conductors in a Conduit Size Conduit, Ins. Electrical Trade Size	Three Conductors in a Conduit Size Conduit, Ins. Electrical Trade Size	Four Conductors in a Conduit Size Conduit, Ins. Electrical Trade Size
14	½	½	½	¾
12	½	¾	¾	¾
10	½	¾	¾	1
8	½	1	1	1
6	½	1	1¼	1¼
5	¾	1¼	1¼	1¼
4	¾	1¼	1¼	1½
3	¾	1¼	1¼	1½
2	¾	1¼	1½	1½
1	¾	1½	1½	2
00	1	1½	2	2
00	1	2	2	2½
000	1	2	2	2½
0000	1¼	2	2½	2½
CM				
200000	1¼	2	2½	2½
250000	1¼	2½	2½	3
300000	1¼	2½	2½	3
400000	1¼	3	3	3½
500000	1½	3	3	3½
600000	1½	3	3½	
700000	2	3½	3½	
800000	2	3½	4	
900000	2	3½	4	
1000000	2	4	4	
1250000	2½	4½	4½	
1500000	2½	4½	5	
1750000	3	5	5	
2000000	3	5	6	

G-E8 Local Centers of Distribution—Panel Boards and Cabinets

The next step in installation is the local distribution through the various circuits of the current brought by the feed-wires from the main source of control.

(*A*) *Panelboards*

G-E panelboards are compact and well finished, possess high-grade features throughout, and represent the latest and most satisfactory devices on the market. We can furnish a complete line of standard panels and are prepared to furnish promptly special panels to meet the most exacting specifications.

(*a*) *Switches.*—Individual circuits with the following arrangements can be supplied:

Fused terminals. Knife switches, punched clip or sweated and pinned. Rotary snap switches, moulded covers. Push button switches, moulded covers. Safety type rotary snap switches. Safety type push-button switches.

Any of the above types may be fused between buses and switches, or outside of switches, with NEC enclosed, Edison plug or open link fuses.

Publications: See Supply Catalogue, and for Remote Control Switches, G-E Bulletin A-4070.

(*b*) *Mains and Branches.*—Highest grade copper, having 98% conductivity, is used for the mains and branches. The main terminals, bus bars, switches, and fuses are designed for a capacity of 6 amperes per circuit on 2 to 2 wire and 3 to 3 wire 125-volt panels, and 3 amperes per circuit on 3 to 2 wire 125-volt and 2 to 2 wire 250-volt panels. Mains can be arranged for lugs only, NEC enclosed or open link fuses, or with fused or unfused main switch.

(*c*) *Frames.*—By the use of a slate frame or set of barriers around the panel, a more finished appearance is given, as it separates the wiring in the cabinet from the active part of the panel.

This frame consists of four pieces of slate mounted on the face of the panel and fastened to the back of the cabinet by adjustable corner irons. The slot in the frame opposite each terminal, through which the wire passes, permits the complete wiring of the panel before the slate frame is placed in position and simplifies the work of connecting the circuit wires.

(*d*) *Finishes.*—Any finish desired or called for in specifications can be furnished, but the General Electric Company strongly recommends its No. 1, or dull black slate, with satin finished bar and branch connections. This is a very durable finish and renders the appearance of the panel very attractive.

(*B*) *Safety-type Panels—*

This type of panel has been developed by Sprague Electric Works of the General Electric Company to meet an increasing demand for a strictly high-grade safety type of panel. It is so arranged that the switch compartment is covered by a door, fastened with a spring catch, while the fuse compartment is covered by a larger door, supplied with a lock. By this construction only authorized persons may have access to that part of the panel which is alive.

These panels are arranged for either push-button or

rotary-snap switches, and NEC enclosed, open-link or Edison plug fuses in the branches.

Salient features.—Switches operated without opening door exposing current-carrying parts.

All live metal parts covered by locked door, eliminating possibility of shock to operator.

Unit switch construction.

Plates may be engraved with name or number of circuit controlled.

Recommended for use in all public places, department stores, private residences, factories, or any place where the switches are likely to be operated by persons unfamiliar with the damage or possibility of personal injury caused by short circuit or accidental contact with live conductors.

G-E9 G-E Switches for Every Use

(*A*) *G-E Lever and Knife Switches* are constructed to withstand severe and constant usage, and they will carry their rated capacity indefinitely without overheating. Moreover, they embody certain other minor details of construction which, though not essential, add considerably to their efficiency.

(*B*) *Snap Switches.*—The General Electric Company manufactures a line of mechanically and electrically efficient snap switches in all standard rating, too numerous to be listed here.

(*C*) *G-E Flush Switches*, both push-button and rotary types, are known for their absolute reliability. They are furnished with adjusting nuts, which feature insures accurate alignment. The locking type is recommended for use in public buildings, to prevent the switch from being operated by unauthorized persons. Flush switch plates can be furnished in any finish required. White enameled plates should be used with delicately tinted walls and woodwork, and in bathrooms and toilets.

(*D*) *Luminous Radieye.*—The self-luminous "Radieye" pull-socket pendant or switch-plate attachment enables one to locate the exact spot for turning on the light, even from across the room.

These attachments contain an actual radium composition protected by glass. The luminosity is thus practically permanent. The body is made of brass with all standard finishes and can readily be attached to either pull-socket chain or switch-plate without the aid of tools.

(*E*) *Removable Mechanism, Flush Push-Button Switch.*—Constructed especially to comply with the restriction of the Underwriters in regard to having loose wires in buildings during erection. With this type of switch, only the porcelain box, with a temporary fiber cover, is installed with the wiring during plastering and other rough building operations. The removable mechanism, separately packed, is retained, ready for insertion as soon as there is no longer any danger of injury to it.

(*F*) *Remote Control Switch.*—The Type R, Form C-2, electrically operated remote control switch can often be used to advantage to connect and disconnect lighting circuits, motors not subject to heavy overloads, vacuum cleaners, or other electrical devices located at a distance. It is especially adapted for use in large buildings, libraries, theaters, halls, stores, etc., where control from a central point is desired.

Publications: See Supply Catalogue. For Remote Control Switches, see G-E Bulletin A-4070.

G-E10 Sockets and Receptacles

The standard and special lamp sockets made by this Company cover all possible requirements in electric installation.

(*A*) *G-E Quick Make and Break Socket*, 660 watts, 250 volts, fills a long-felt need for a key or pull socket which can be used interchangeably with keyless socket and switch control where electric heating devices and other small portables are used on lighting circuits.

(*B*) *G-E Locking Sockets and Receptacles* afford a positive protection to lamps and also prevent the theft of current. When the key is removed, the screw shell of the socket swivels freely, preventing injury to either the lamp base or the socket if an attempt is made to remove the lamp without the key.

(*C*) *Double Door Flush Receptacle.*—When installed in the wall or baseboard, only the small porcelain flange of the plug is visible. Two perfectly fitting doors in the plate open to allow the insertion of the plug.

(*D*) *Flush Receptacles for Electric Portables.*—This flush receptacle will take any medium screw base attaching plug. Catalogue No. GE002, for instance, is a miniature swivel plug, and is particularly well adapted to use with small electric portables in connection with receptacle, Catalogue No. 36817. The swiveling feature prevents the cord from twisting when the plug is screwed into the receptacle.

The very complete line of wiring devices manufactured by this Company includes a variety of other flush receptacles for use as outlets for various electric portables. For suggestions for use see Wiring and Conduit Data, G-E 7*C*.

Publications: See Supply Catalogue.

GE11 Utilization of Electrical Energy

(*A*) *Cooking and Heating*

A wide range of domestic appliances is now practical for the modern building. These devices are of vital interest to the architect in two ways. First, because the value of the complete structure as a working unit can be vastly increased by their use, and, secondly, because special wiring is invariably required and should be provided for

in the original plans of the building. By installing separate wiring circuits and meter, as before stated, the charges for current consumption will be much lower than for lighting circuits.

Since the limit established by the Underwriters is 660 watts from a lighting circuit wire, the architect can readily determine the advisability of a separate circuit by noting the wattage of the various devices which will probably be used. Kitchen ranges, three-unit and four-unit radiators, circulating water-heaters and air-heaters, for instance, are above the 660-watt limit, and must, therefore, be connected to the special power circuit wire.

The General Electric Company offers a complete line of electric heating and cooking appliances for domestic, hotel, and restaurant installations and industrial applications.

(*B*) *Electric Ranges.*—Are easy to operate, the heat is quickly available, and is readily regulated. They are clean, safe, and labor-saving, and their use promotes comfort and cleanliness. There is no fire requiring constant attention; no excess heat, smoke, or fumes to vitiate the atmosphere. There is no longer need of continued scouring and scrubbing to keep cooking utensils clean and free from soot. Dust and dirt, together with the bother and burden of handling and storing coal and ashes, are entirely eliminated. The same current will always produce the same temperature; therefore, other things being equal, uniform results are obtained.

The electric range performs all kinds of cooking and baking. Ordinary cooking utensils are used with them. The broiler is combined with the oven, the meat being broiled by radiant heat from above. The cooking top is equipped with hot plates for boiling and frying and electric cookers for steaming and slow cooking.

(*C*) *Flatirons.*—3-, 6-, 8-lb. sizes. With separate or attached stand. Full nickeled or with barffed base.

(*D*) *Tailors' Irons.*—For tailors, clothing houses, and pressing-rooms in private residences, etc. Made in 12-, 15-, 18-, and 24-lb. sizes.

(*E*) *Stoves.*—Portable disks for many purposes. 4-in., single heat. 6-in. and 8-in., 3 heats each.

(*F*) *Hot Plate.*—Does the same work as the ordinary gas hot plate.

(*G*) *Toaster.*—Convenient and ornamental for use on the dining-toom table. Makes fresh toast as needed. Ten slices cost but one cent.

(*H*) *Air-Heaters.*—Particularly adapted for the heating of rooms in buildings or residences where the heat is to be used continuously. The heating units are so constructed as to allow a free passage of air over the heating element, the heat being rapidly conducted away to the surrounding air. Heating units easily renewable. Snap-switch heat-control.

(*J*) *Glower Radiators.*—Adapted for intermittent service, particularly in removing the chill before or after the heating system is in use. Ideal for nurseries and bathrooms. Consists of a handsomely finished ornamental metal frame with a highly polished reflector, and two, three, or four luminous heating units. Safety from danger of fire or fumes.

(*K*) *Circulating Water-Heater.*—The circulating water-heater may be readily connected with the ordinary kitchen hot-water tank.

It is designed for low wattage continuous heating, but the larger wattages adapt it for intermittent use.

No tank, piping or switches furnished.

Publications:	G-E Bulletins
Ranges, Domestic	B-3353
Disk Stoves, Domestic	B-3410
Radiant Grill, Domestic Table	B-3278
Ranges, Hotel	Y-898
Broiler, Hotel	Y-898
Ovens, Hotel	Y-898
Toaster, Hotel	Y-898
Air Heaters, Domestic	B-3423
Luminous Radiator	B-3329
Irons, Flat, Domestic	B-3318
Irons, Flat, Tailors'	B-3394

G-E12 *Hotel Equipment*

The complete G-E line consists of ranges, boilers, bake-ovens, toasters, and all other desirable utensils. Information in detail may be obtained from the nearest G-E office.

G-E13 *Special Transformers*

For small devices, such as bells, toys, small lamps, etc., the use of batteries has been replaced by small transformers which give the required low voltages at a small cost and without attention. Transformers can be used only on alternating current systems.

(*A*) *For Night Light.*—A miniature transformer (the All-nite-lite) is screwed to the lamp-socket in place of the ordinary lamp, and transforms the supply voltage to operate a 6-volt 2-c.p. bayonet base Mazda lamp, the same as used for automobile rear and speedometer lighting.

Publications: G-E. Bulletin B-3341

(*B*) *For Bell-Ringing Systems.*—The Wayne bell-ringing transformer serves every ringing requirement. Catalogue No. 179541, for instance, is adapted for operating household type electric bells, annunciators, door-openers, thermostats, etc. It has sufficient capacity to operate three 3-inch bells simultaneously. It has been approved by Fire Underwriters.

A bell-ringing transformer should be included in all wiring specifications.

Publications: G-E Bulletin B-3400

G-E14 *Fans*

Fans for residences and offices are made in three sizes, 9, 12 and 16 inches in diameter, and with three-speed control except the 9-inch, which has a two-speed control. Can be furnished for desk or wall mounting, either oscillating or non-oscillating. These fans are quiet in running, light in weight, very efficient and durable. Made for different voltages for both alternating and direct current.

Publications: G-E Bulletin B-3402. *For Ventilation of Buildings* by use of electric blowers, fans and exhaust fans, ask for Special Bulletin devoted to this subject.

G-E15 *Battery Charging Outfits*

Electrically propelled vehicles demand reliable charging equipments of high commercial efficiency. Battery charging equipments of all kinds can be furnished by the General Electric Company, either as individual charging sets with control panels for private garages or in large equipments for charging vehicle batteries in public garages.

Publications: G-E Bulletin B-3374

(*A*) *Individual Vehicle Charging Sets* may be used for charging either Lead or Edison vehicle batteries.

(*B*) *Ignition Battery Charging Outfits* can be supplied for home or garage use in charging automobile starting and ignition batteries. In the case of large garages it is best to take up individual requirements with the engineers of the General Electric Company.

G-E16 *Moving Picture Apparatus*

Fort Wayne Compensarcs for the production of voltage incident to the operation of moving-picture machines. Used for transforming direct or alternating current and transforming alternating to a usable direct current voltage. Simple to install; no sub-base or special foundations required; easily connected into circuit.

G-E17 Illumination—Interior and Exterior

Illumination has become one of the modern sciences. Its practice has developed the profession of illuminating engineering. The commercial demands for lighting efficiency, the varied effects both on the exterior and interior of buildings which may be produced by artificial lighting and the development of a wide range of methods and devices for diffusing and directing light have necessitated specialized study such as now comes within the province of the illuminating engineer. There still remain the simple problems of modern lighting practice.

It is not here possible to explain the comparatively easy calculations involved in the design of a simple lighting installation. For information on this subject the reader is referred to the numerous handbooks and publications listed under the subdivision 6H in this issue of the Journal. Further information is always obtainable from reputable manufacturers of lamps and lighting appliances who issue such data in convenient and reliable form.

Publications: The Ivanhoe-Regent Works of the G-E Company issues a complete catalogue on this subject, which is sent on application. See Bulletins of Edison Lamp Works of the G-E Company on Modern Lighting Methods in various Industries.

(*A*) *Arrangements of Lighting Systems—Interior*

Under the three following designations the lighting systems in modern practice are briefly outlined:

(*a*) *Local Lighting.*—Denotes concentrated illumination under small spaces, such as a lamp over a tool or machine or a piece of furniture.

(*b*) *General Illumination.*—Denotes an attempt to diffuse the same intensity of light throughout an entire room.

(*c*) *Localized General Illumination or Group Lighting.*—Denotes, roughly, a compromise between the two previous systems and suggests the placing of lamps to give proper direction of light and maximum intensity at important points.

(*B*) *Types of Lighting Units*

(*a*) *Direct Lighting.*—Denotes a type of lighting unit such as the clear or frosted incandescent lamp, where the light is not deflected by the ceiling or other reflective surfaces.

(*b*) *Indirect Lighting.*—Denotes a lighting unit, such as cove lighting or lamps concealed by inverted opaque reflectors, which reflect all the light on a ceiling or some other large surface, whence it is re-reflected in desired directions.

(*c*) *Semi-indirect.*—Denotes a light in which a translucent reflector is used. By this means most of the light is reflected to the ceiling or any other large surface, while a small portion of the light is transmitted directly through the reflector.

(*C*) *Choice of a Semi-indirect Unit*

The type of lighting unit which is best is a matter which does not fall within our province and upon which we express no opinion. Present practice tends toward the use of the semi-indirect method which is susceptible of wide variations according to the density of the bowl or reflector which governs their translucent quality. This density, in its direct application, is of course governed by the needs where it is used and each problem requires different treatment. In order that the lights may be evenly deflected from the bowl to the ceiling, the fixture or hanger should be carefully calculated as to length, and the proper position of the socket accurately determined. Wherever feasible, glass should be used which is smooth on the inside and on the outside also, if possible. Rough glass collects dirt and is not easily cleaned. The suspension should be such as to eliminate all danger of falling glass and should provide convenient means for cleaning. Decorations should be very simple, avoiding deep crevices, which invite dust accumulation.

(*D*) *Exterior Lighting*

The G-E Novalux ornamental units are well designed and are practical units built to accommodate the Mazda C lamp. They are used for lighting streets and sidewalks and for throwing light upward to illuminate building fronts. They combine lighting efficiency with an attractive appearance and are made for all standard lighting circuits and candle powers.

Publications: Information may be obtained at our nearest office; see page XII*b*.

(*E*) *Flood Lighting Projectors*

Since the extensive use of flood lighting as applied to the exteriors of the buildings at the Panama-Pacific International Exhibition, the illumination of building exteriors has attained considerable prominence and popularity, due to the fact that the building and not the lighting method is presented to the eye.

The G-E Flood Lighting Projector is made expressly for this work and accommodates either the 200- or 400-watt Mazda C lamps, which also are made expressly for this purpose.

Publications: See G-E Bulletin No. 43850

(*F*) *For all Types of Illumination*

Complete equipment, including glassware and lamps, is furnished by the General Electric Company and its subsidiaries.

For Opal Glass Reflector, Regent Semi-Indirect Bowls, Holophane Prismatic Reflectors and all other lighting units, as well as for general information on the subject of illumination, including that from concealed sources, consult various General Electric publications.

(G) *Lamps*

The Mazda is the standardized lamp for all general uses. Mazda is not the name of a thing but the mark of a service, centered in the General Electric Research Laboratories at Schenectady, N. Y. The trade-mark, which is the property of the G-E Company, can appear only on lamps which meet the standard of Mazda service.

G-E18 Generation, Transmission, Distribution and Application of Electric Power Everywhere

Other products meeting every known requirement in electrical installation, as well as the equipment of buildings, are produced, including those for all industrial establishments, power-houses, hotels, apartment houses, residences and all other types of structures.

As before mentioned, the engineering staff and various departments of the General Electric Company are available to all architects and engineers through the principal works and sales offices of the General Electric Company which are established through the United States, Canada and foreign countries. See below.

The principal manufacturing plants of the General Electric Company are located at Schenectady, N. Y.; Lynn and Pittsfield, Mass.; Harrison, Newark and Watsessing, N. J.; Cleveland, Ohio; Erie, Pa.; and Fort Wayne, Ind. The total floor space is nearly 15,000,000 square feet.

To insure correspondence against avoidable delay, all communications to the Company should be addressed to the sales office nearest the writer.

THE SALES OFFICES OF THE GENERAL ELECTRIC COMPANY ARE AS FOLLOWS:

Atlanta, Ga.	Third National Bank Building
Baltimore, Md.	Lexington Street Building
Birmingham, Ala.	Brown-Marx Building
Boston, Mass.	84 State Street
Buffalo, N. Y.	Electric Building
Butte, Mont.	Electric Building
Charleston, W. Va.	Charleston National Bank Building
Charlotte, N. C.	Commercial National Bank Building
Chattanooga, Tenn.	James Building
Chicago, Ill.	Monadnock Building
Cincinnati, Ohio	Provident Building
Cleveland, Ohio	Illuminating Building
Columbus, Ohio	Columbus Savings & Trust Building
*Dallas, Tex.	Interurban Building
Dayton, Ohio	Schwind Building
Denver, Col.	First National Bank Building
Des Moines, Iowa	Hippee Building
†Detroit, Mich.	Dime Savings Bank Building
Duluth, Minn.	Fidelity Building
Elmira, N. Y.	Hulett Building
*El Paso, Tex.	500 San Francisco Street
Erie, Pa.	Marine National Bank Building
Fort Wayne, Ind.	1600 Broadway
Hartford, Conn.	Hartford National Bank Building
*Houston, Tex.	Third and Washington Streets
Indianapolis, Ind.	Traction Terminal Building
Jacksonville, Fla.	Heard National Bank Building
Joplin, Mo.	Miners' Bank Building
Kansas City, Mo.	Dwight Building
Knoxville, Tenn.	Bank & Trust Building
Los Angeles, Cal.	724 S. Spring Street
Louisville, Ky.	Starks Building
Memphis, Tenn.	Randolph Building
Milwaukee, Wis.	Public Service Building
Minneapolis, Minn.	410 Third Ave., North
Nashville, Tenn.	Stahlmann Building
New Haven, Conn.	Second National Bank Building
New Orleans, La.	Maison-Blanche Building
New York, N. Y.	120 Broadway
Niagara Falls, N. Y.	Gluck Building
*Oklahoma City, Okla.	Terminal Building
Omaha, Neb.	Union Pacific Building
Philadelphia, Pa.	Witherspoon Building
Pittsburgh, Pa.	Oliver Building
Portland, Ore.	Electric Building
Providence, R. I.	112 Turks Head Building
Richmond, Va.	Virginia Railway and Power Building
Rochester, N. Y.	Granite Building
Salt Lake City, Utah	Newhouse Building
San Francisco, Cal.	Rialto Building
Schenectady, N. Y.	G-E Works
Seattle, Wash.	Colman Building
Spokane, Wash.	Paulsen Building
Springfield, Mass.	Massachusetts Mutual Building
St. Louis, Mo.	Pierce Building
Syracuse, N. Y.	Onondaga County Savings Bank Building
Toledo, Ohio	Spitzer Building
Washington, D. C.	Evans Building
Youngstown, Ohio	Stambaugh Building

†General Electric Company of Michigan.
*Southwest General Electric Company.
For Hawaiian business address
Catton Neill & Company, Ltd., Honolulu.
For all Canadian business refer to
Canadian General Electric Company, Ltd., Toronto, Ont.

For business in Great Britain refer to
British Thomson-Houston Company, Ltd., Rugby, Eng.

General Foreign Sales Offices: Schenectady, N. Y.; 120 Broadway, New York City; 83 Cannon St., London, E. C., Eng.

FOREIGN OFFICES AND REPRESENTATIVES

ARGENTINA: Cia. General Electric Sudamericana, Inc., Buenos Aires; AUSTRALIA: Australian General Electric Co., Sydney and Melbourne; BRAZIL: Companhia General Electric Co., Brazil, Rio de Janeiro; CENTRAL AMERICA: G. Amsinck & Co., New York, U. S. A.; CHILE: International Machinery Co., Santiago, and Nitrate Agencies, Ltd., Iquique; CHINA: Anderson, Meyer & Co., Shanghai; COLOMBIA: Wesselhoeft & Wisner, Barranquilla; CUBA: Zalso & Martinez, Havana; ENGLAND: General Electric Co. (of New York), London; INDIA: General Electric Co. (of New York), Calcutta; JAPAN and KOREA: General Electric Co. and Bagnall & Hilles, Yokohama; Mitsui Bussan Kaisha, Ltd., Tokyo and Seoul; MEXICO: Mexican General Electric Co., Mexico City; NEW ZEALAND: The National Electric & Engineering Co., Ltd., Wellington, Christchurch, Dunedin and Auckland; PERU: W. R. Grace & Co., Lima; PHILIPPINE ISLANDS: Frank L. Strong Machinery Co., Manila; SOUTH AFRICA: South African General Electric Co., Johannesburg, Capetown and Durban.

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General Index to Structural Service Department

Classified Index to Industrial Section

Industrial Section Index

Wiring an Apartment House For Telephone Service

There are two ways to wire an up-to-date apartment house so as to run telephone lines to each apartment. One is to use a conduit system and the other is to place the wires in a molding.

The conduit layout is now generally preferred. It safeguards the user of the telephone by providing maximum protection for the wiring against mechanical injury and it conceals the wires and makes possible the installation of service with a minimum of inconvenience to tenants.

By planning carefully with the coöperation of telephone engineers, a conduit system can be installed just about as economically as can a system in which molding is used to contain the wires.

When you plan for telephone service in an apartment house, just remember that you can have the benefit of the advice of our engineers without charge.

NEW YORK TELEPHONE COMPANY

Institute Publications

(*Of a Permanent Nature*)

The Journal of the American Institute of Architects. Monthly, 50 cents, $3.50 yearly.

The Monograph on the Octagon. $12.50.

The Standard Contract Documents.

The Standard Form of Agreement between Owner and Architect (Percentage Basis).

Circular Relative to the Size and Character of Advertising Matter.

A Circular of Advice Relative to Principles of Professional Practice. The Canons of Ethics.
A. I. A. Document, Series A, No. 107

A Circular of Advice and Information Relative to the Conduct of Architectural Competitions.
A. I. A. Document, Series A, No. 114

Standard Form of Competition Program.
A. I. A. Document, Series A, No. 115

Proceedings of the Fiftieth Convention (1916).
A. I. A. Document, Series A, No. 121

Annuary (1917). A. I. A. Document, Series A, No. 122

Constitution and By-Laws.
A. I. A. Document, Series A, No. 123

Schedule of Proper Minimum Charges.
A. I. A. Document, Series A, No. 124

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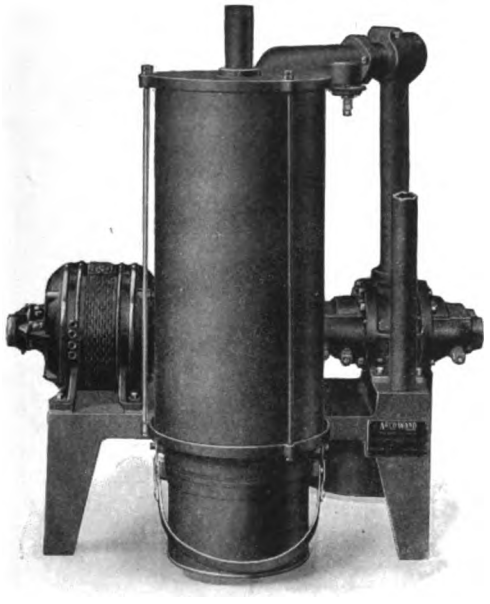
It is general practice for the architect to specify for vacuum cleaning in buildings of any appreciable size, just as he specifies for heating requirements.

These 26 apartments, equipped with an ARCO WAND Vacuum Cleaner. Owner says machine after two years' use gives perfect satisfaction. Used with equal success in hundreds of apartment buildings

ARCO WAND VACUUM CLEANER

may be specified for small or large buildings of any kind. Made in one or two sweeper capacity and with tool equipment to fill any need. The ARCO WAND has given universal satisfaction and has never failed the architect's judgment when he writes in his specification "Vacuum Cleaner to be the ARCO WAND, manufactured by the American Radiator Company."



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We are pleased to give the architects and owners all possible help by furnishing vacuum cleaning data and full information

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AMERICAN RADIATOR COMPANY

Sales branches and showrooms in all the large cities

A. B. SEE ELECTRIC

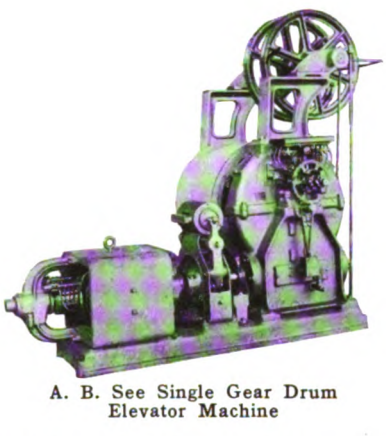
The A. B. See Electric Elevator Company Manufactures and Installs all Types of Electric Passenger and Freight Elevators:

Single and Tandem Gear Drum Type, Single and Tandem Gear Traction Type Heavy Duty Freight and Automobile Elevators, and Sidewalk Elevator

(All of the above may be operated by direct or alternating current)

Direct and 2-1 Gearless Traction Elevators

(For operation under direct current only)



A. B. See Single Gear Drum Elevator Machine

THE DIRECT CONNECTED DRUM TYPE ELEVATOR

The Direct Connected Drum Type Elevator machine consists of a winding drum connected by worm gearing to an electric motor, all mounted on a cast-iron bed plate. A brake placed between the motor and gear housing is released electrically in operating the car and in the event of failure of current from any cause brings the car to a stop gradually and smoothly.

Control. The elevator is operated by a controller, placed on or near the hoisting machine, connected by conducting cables with a switch in the car. A safety switch in the car releases a circuit breaker on the machine, when opened, cutting off all current from the motor and stops the elevator. Freight elevators are frequently operated by means of a flexible hand-rope passing through the car and attached to the operating mechanism on the machine.

Speeds. This type of elevator may operate at speeds of 100 feet to 400 feet per minute, the size of machine depending upon the lifting capacity, type of building, and character of service required.

Location and Installation. The drum machine may be placed in the basement or over the elevator hatch, the latter arrangement being preferable. In an installation of this character steel guides are erected at the sides or corners of the hatchway attached to the building construction.

The car is suspended in a steel channel girdle or frame, to which is attached the iron hoisting cables, the other end being fastened to the drum. Counterbalancing is effected by means of weights, running in steel guides, connected by cables to the opposite side of the drum. When the counterweight is in two sections the top section is connected to the car. In this arrangement two hoisting and four counterweight cables are used. A car safety is placed under the platform connected by means of a cable to a centrifugal governor at the top of the shaft. When the car exceeds a predetermined speed the governor acts and operates the safety, bringing the car to a gradual stop.

An automatic stop motion on the machine provides means for stopping the car at the limits of travel. A slack cable safety is also provided to stop the motor if the car is obstructed in any manner while descending.

Coiled spring bumpers are placed under the car and counterweight in the elevator pit.

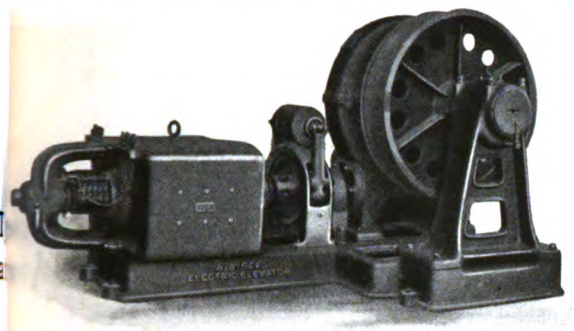
Safe Hoisting Attachment. In an office building, the character of which does not warrant the installation of a freight elevator, it is advisable to equip one of the passenger elevators with a safe hoisting attachment. The car girdle is equipped with a locking device to hold the car at the floors when loading and unloading safes.

Automatic Push-Button Control. In residences and for private use the Automatic Push-Button controlled elevator is installed. This type is operated by push-buttons placed at each landing, with corresponding buttons in the car. The elevator shaft doors are provided with locks and switches so that only the door at which the car has stopped may be opened. The car can not run unless all the shaft doors and the collapsible gate on car are closed. Pressing a button in the car or at any floor will send or bring the car to the desired floor. This type of elevator is also suitable for use in small apartment houses where a regular operator is not required.

GEARED TRACTION ELEVATOR MACHINE

The Geared Traction Elevator machine is designed for installation over the elevator hatchway. A wide grooved sheave is bolted to the worm gear, both of which are mounted on a shaft running in large bearings. The general arrangement of the motor and gearing is similar to the drum machine. An idler is fastened under the machine foundation beams.

ELEVATOR INFORMATION



A. B. See Single Gear Traction Elevator Machine

The Cables, usually six, of mild steel, are attached to the car girdle, pass over the driving sheave, around the idler, return over the driving sheave and continue to the counterweight, to which they are fastened by means of adjustable shackles, providing equal tension on each cable.

The Counterweight is composed of a steel frame fitted with adjustable weights and having suitable guide shoes.

Compensating Chains, or Cables, are attached to the car and counterweight to compensate the changes in the weight of cables due to the varying position of car and counterweight in the shaft.

Oil Buffers are provided in the pit under car and counterweight to bring the car to a stop at the extreme limits of travel.

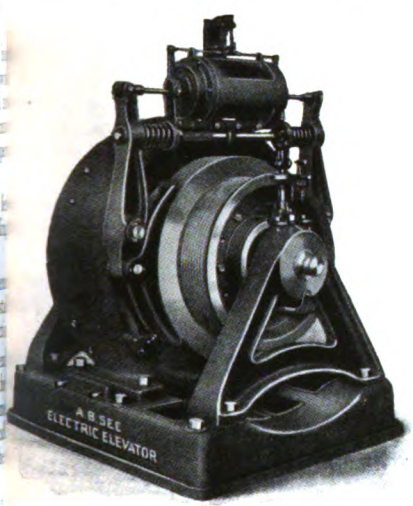
The Car Safety Speed Governor at top of shaft is equipped with a switch connected with a circuit breaker on the machine which disconnects the main line current in the event of the governor's tripping.

An Automatic Stop Motion, consisting of a series of switches built as an integral part of the elevator car controller, is operated by cams in the hatchway in such a manner as to gradually stop the car at upper and lower limits of travel independently of the operator. Ultimate limit switches are provided at top and bottom of hatchway, to prevent car overrunning in either direction.

A Controlling Switch is placed in the car for starting, stopping, varying the speed, etc. A safety switch also is provided for operating the circuit breaker to stop the car in case of emergency.

Independent conducting cables connect the car switches with the machine controllers.

The Speed of this type of elevator may be 150 feet to 450 feet per minute, depending upon the load and size of machine used.



A. B. See Gearless Traction Elevator Machine

GEARLESS DIRECT TRACTION ELEVATOR

The Gearless Direct Traction Elevator consists of a multipolar slow-speed motor. to the armature of which is attached the driving sheave and brake wheel, compactly mounted on a cast-iron bed plate, placed directly over the elevator shaft.

The power from the motor is transmitted to the car without gears by cables connecting the car and counterweight, passing over the driving sheave on the armature shaft, around an idler underneath and again over the driving sheave, to secure ample traction. Adjustable shackles are used to obtain proper tension on each cable.

The Car Control, counterweight, oil buffers, etc., are similar to those outlined for the Geared Traction Elevator.

This type of high-speed elevator runs 450 feet to 600 feet per minute. A magnetic speed governor regulates the revolutions of the motor. If the speed is excessive the governor operates the car safety device in the usual manner.

The 2 to 1 Gearless Traction Elevator is adapted for department stores or for lifting heavy loads at speeds of about 400 feet per minute. In this method a sheave is provided on the crosshead of the car and counterweight under which the cables pass, the ends being anchored in adjustable shackles attached to the overhead beams.

GENERAL INFORMATION GOVERNING INSTALLATIONS

On Gearless Traction Installations a hand traveling crane with chain fall should be provided over each bank of elevators to facilitate handling when making repairs. A trapdoor should also be placed in the penthouse floor so that the machinery may be lowered to the upper car landing, if necessary.

Ample room should be provided in the penthouse or machine-room to provide access to the machinery for oiling and cleaning.

When machines are placed overhead, it is very important that sufficient means of ventilating the penthouse be provided to prevent motors overheating. On overhead installations it is recommended that a concrete floor be placed over the hatchway, openings being left for the cables to pass through, to eliminate noise and prevent dust in the shaft from settling on the machine.

The owner's work usually covers the following items: Provides shaft, enclosure, doors, and pit of proper depth at lower landing, supports for sheave beams or overhead machine foundation, track and support for traveling crane on traction installations; furnishes proper electric power, wiring and switches to bring current to elevator controller; provides outlet in shaft midway between bottom and top landings for light in car.

Architects are urged to consult our nearest office for information concerning elevator problems.

A. B. SEE ELECTRIC ELEVATOR COMPANY

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Switch and Socket Testing Machine

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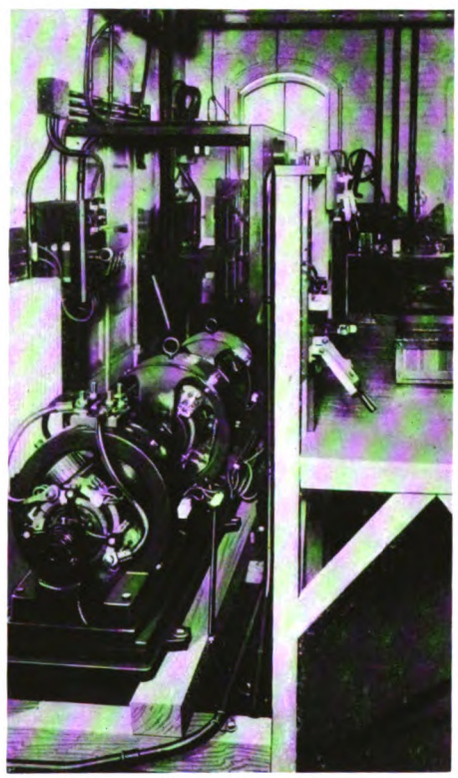
Underwriters' Laboratories' service on electrical materials and appliances had its beginning some twenty-five years ago. For electric wiring materials and electrical appliances, laboratory investigation before installation is an indispensable part of the work of deciding questions of safety and suitability. It was desirable that there be provided an institution of such a character that it could secure and retain the confidence of the electrical industry and of the inspection authorities throughout the whole country, thus safeguarding the public against the costly confusion of unnecessarily conflicting opinions. And it was quite as necessary that the institution provided be one that could plan and operate the service needed at a cost so low that it would not appear as a burden on the electrical business and the public that it serves. Underwriters' Laboratories' electrical department was established to meet this need.

Two electrical laboratories are maintained. The older one is part of the principal testing station of Underwriters' Laboratories at Chicago; the other is in New York. The New York branch was established for the convenience of the Eastern and New England States. The institution undertakes to maintain the same service in electrical matters in New York that has so long been available at headquarters in Chicago.

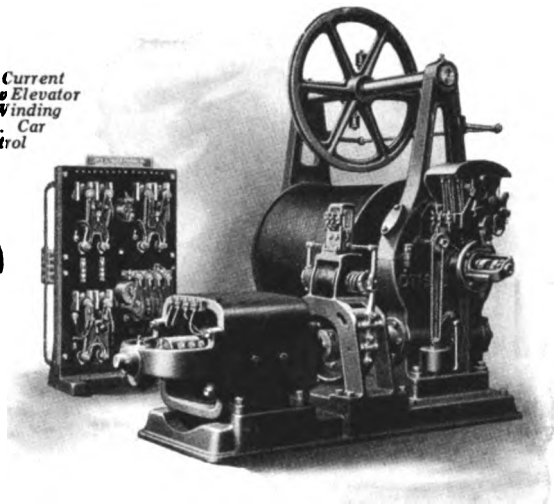
Suitable supervision of run of goods at factories and field follow-up are employed on electrical products, as on other products. Except in the case of a relatively few lines in which labeling is impracticable, electrical wares passed by Underwriters' Laboratories may be indentified by means of labels on the goods themselves. The label may be attached, or it may appear as a permanent marker in the material.

For list of publications see Structural Service Department 6A7.

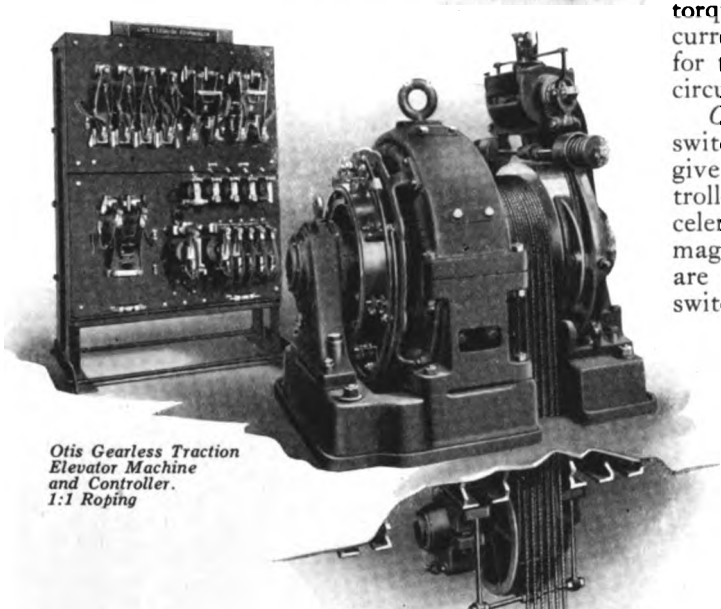


A Corner of New York Laboratory

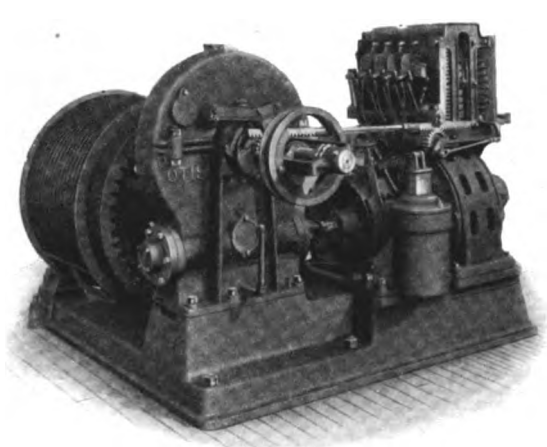
ELECTRIC ELEVATOR INFO



Otis Direct Current Single Screw Elevator Machine. Winding Drum Type. Car Switch Control



Otis Gearless Traction Elevator Machine and Controller. 1:1 Roping



Otis A. C. Internal Geared Elevator Machine. Winding Drum Type. Hand Rope Control

Electric Winding Drum Type Elevators

With the winding drum type elevator the car is raised an lowered by winding and unwinding the hoisting ropes on cast-iron drum. This type of elevator is used for high-grad service, passenger or freight duty. The machines are made operate on alternating and direct current circuits and can b provided for light and heavy capacities.

In this type of elevator, a worm and gear reduction is use between the motor and winding drum. Worm gear elevat machines are built in what are known as the single-screw an double-screw types. In order to preserve alignment, th nachine parts are mounted on a continuous heavy iron be When it is desired to lift heavy loads at comparatively lo speeds, a spur gear reduction, usually of the internal ge and pinion type, is provided between the worm gear drive an winding drum.

Motors.—For direct current circuits, moderate speed com pound wound motors are used, combining high startin torque with reasonably low starting current. For alternatin current circuits induction motors are used, which are woun for the proper voltage, phase and frequency of the suppl circuit.

Control.—This type of elevator can be provided with ca switch, push button or hand-rope control, so arranged as t give the attendant complete control of the elevator. The con troller boards are provided with the necessary direction, ac celerating and speed switches, all of which are of the electr magnetic type, except with hand-rope type controllers whic are usually provided with mechanically operated reversin switches.

Safety Devices.—This type of equipment is pr vided with all necessary complete and effective safe devices to suit the respective equipment. These devic include machine automatic terminal stopping devic hatchway limit switches, slack cable device, car safe device, overspeed governor, etc.

Automatic Push-Button Electric Winding Drum Elevator

This type, with which many of the finest residenc throughout the world are equipped, affords all th safety, comfort and convenience so long demanded f transporting persons from one floor to another. It also applicable to small apartments, private busine houses, banking institutions, and for freight and pa senger service where an operator is not desired.

A series of push buttons automatically controls starts and stops and does away with the necessity of operator.

At each floor there is a button similar in appearan to the ordinary call-bell, which is pressed momentaril by the person wishing the car. If unoccupied, the c will start from whatever point it last stopped, come t the proper floor, stop and unlock the door. All th doors except the one opposite to which the car stops a automatically locked.

These elevators are built to operate on either Direc or Alternating Current Circuits.

MATION FOR ARCHITECTS

Traction Sheave Type Elevators

With the traction sheave type of elevators, power is transmitted from the motor to the hoisting ropes by traction (friction) existing between the hoisting ropes and the traction driving sheave. One of the particularly prominent and inherent advantages resulting from this arrangement of ropes and method of driving them is the practical loss of traction obtained if either car or counter-balance is obstructed in its descent or bottoms on its respective oil buffer, causing complete cessation of further car motion, even though the driving member may continue to revolve. Another striking advantage of the traction sheave type of elevator results from the fact that the faces of the sheaves are entirely independent of the height of the building, and the machines may be used for any rise whatsoever.

Gearless Traction Elevator, 1:1 Roping

This type of elevator is the logical result of the present tendency to the greatest simplicity, combined with maximum operating economy and the highest possible degree of safety for high-rise, high-speed elevators.

The machine for this type of elevator consists of a motor, traction driving sheave and electro-magnetic brake compactly grouped and mounted on a continuous heavy iron bed. The motors used are of the slow-speed, shunt-wound, multi-polar type, especially designed for elevator service, and have a remarkably high efficiency. The compact and extremely desirable arrangement of parts permits of the greatest simplicity of installation and relative economy of space. Machines of this type are preferably located at the top of the hatchway. To date it has been built for direct current only.

Gearless Traction Elevator, 2:1 Roping

This type of elevator represents an adaptation of the 1:1 gearless traction type in which lower car speeds are obtained by roping the car and counterbalance 2:1, and by means of which the high efficiency of the gearless traction machine is combined with the lower car speeds. These elevators retain all the safety and controlling features of the 1:1 gearless traction elevator and are usually installed for car speeds ranging from 250 to 450 feet per minute.

Worm Gear Traction Elevators

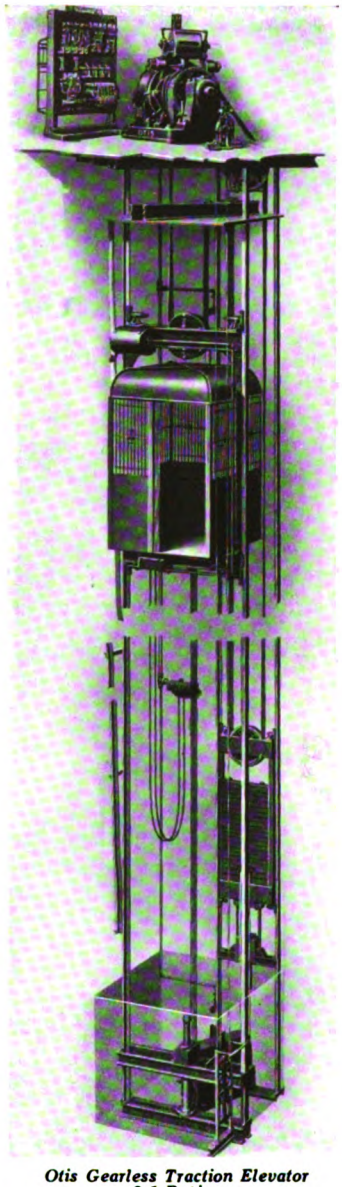
The machine used with this type of elevator is essentially the same as the winding drum elevator machines, the main difference being the substitution of a traction driving sheave for the winding drum. This type of elevator will give very satisfactory service in moderately high buildings requiring moderately high-speed elevators.

Coöperation, Specifications and Estimates

We cordially invite all architects to call upon us in laying out their elevator requirements. Because of the wide range of elevator apparatus which we manufacture and the diversified conditions of installation measurements, we find it impossible to show here exact construction requirements. We are willing at any time to lend our experience and facilities to work out with the architect plans for economical space arrangements and to submit estimates of cost.

Organization

Our complete organization, with offices in one hundred cities in the United States alone, makes this full coöperation possible. No matter in what part of the country the architect is situated, he will find an Otis office nearby. This element of personal attention, aside from the excellent quality of our elevator machines, makes the architect's dealing with this Company, a most profitable and pleasing connection.



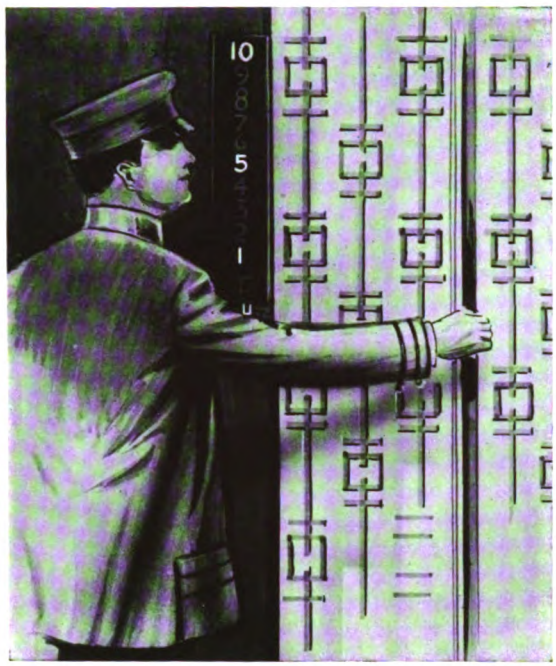
Otis Gearless Traction Elevator 2:1 Roping

OTIS ELEVATOR COMPANY

Eleventh Avenue and Twenty-Sixth Street, New York, N. Y.

OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD

Manufacturers of Passenger, Freight, and Sidewalk Elevators, Electric Dumbwaiters, Incline Railways, Escalators, Inclined Elevators, etc.



Illustrating a three-car installation in a ten-story building. Note Car No. 1 first floor, Car No. 2 fifth floor, Car No. 3 tenth floor.

Something New!

A Practical, Reliable and Economical Elevator Signal System

The popularity of a modern office building or apartment house is oftentimes determined by its Efficient Elevator Service.

The McNABB SIGNAL SYSTEM

will bring about the desired efficiency.

It has the approval of some of the best authorities on elevators and elevator service, and of ALL who have seen it in operation.

WHAT IT WILL DO

Do AWAY with the *starter*.

LOCATE definitely for each *operator* the positive position of every car.

REDUCE to a minimum the time consumed at a landing.

PREVENT duplication of stops at one floor.

PROPERLY space cars and prevent overcrowding.

PREVENT an indolent *operator* from trailing a loaded car, thereby distributing traffic equally and bringing about perfect running order.

PROVIDE the *supervisor* with means of communication with each *operator*, and information as to the exact location of each car in the building.

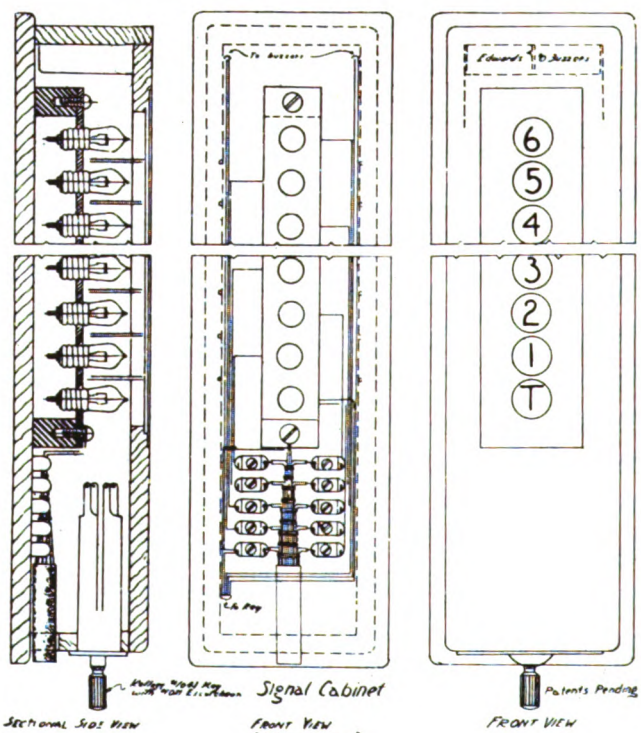
DO AWAY with floor numerals.

HAS the effect of making *passengers* call their floor upon entering the car.

FURNISH a check on the *operators* and insure better service on their part.

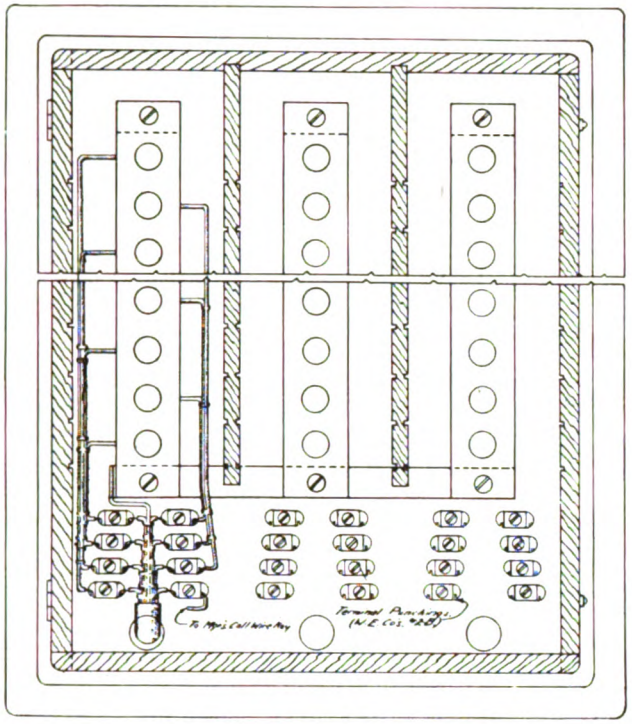
IN EVERY WAY MAKE BETTER ELEVATOR SERVICE.

DETAILS OF SIGNAL CABINET



Each car is provided with a Signal Cabinet as shown in the above drawing, which operates automatically, showing the exact location of all the cars by means of appearing and disappearing lights.

DETAIL OF SUPERVISOR'S CABINET



SECTIONAL FRONT VIEW
Supervisors Cabinet

SUPERVISOR'S CABINET

This may be located in any desirable place in the building, and enables the manager or his assistant to tell at a glance the exact location of each car.

By means of an auxiliary signalling system intercommunication between the manager and the operators is established.

The entire system is very simple and its maintenance cost is almost negligible.

CONTACT BOX

The contact device is operated by a small cable line extending up the elevator shaft. Through the agency of reduction gears operated by the car hoist the cable line is given a limited movement in the direction in which the car is moving. In a twenty-story building the movement of this line will not exceed two feet in either direction. The contacts are not over two inches square, each, and may be located at any convenient point in the elevator shaft. They do NOT have to be located at each floor.

All contacting and wearing points are made of phosphorbronze and will last for years.

If you will furnish us with the following information we will gladly quote prices for complete installation:

Number of passenger elevators in building.
Number of elevators in each battery.
Number of floors served by each elevator.
Number of elevators serving same floor.

Supervising Cabinet in Manager's Office

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For the discriminating architect, who wants competent and efficient service in face brick, Hy-tex offers the ideal conditions. By specifying Hy-tex he can get *what* he wants and *when* he wants it. Twenty-two plants and fourteen offices are at his call.

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Cost Not Too High

Among all the stone buildings of America and Europe an astonishing proportion, including many of the oldest, are built of limestone, and among limestones the world but rarely, and America nowhere affords the equal of INDIANA LIMESTONE, "The Aristocrat of Building Materials," in beauty plus physical excellences.

In spite of its age—long durability and great strength, Indiana Limestone is very easily worked. The quarries are fortunately located for shipment to every State and to Canada. It is, therefore, *not a costly building material.*

Whether for a cathedral, an office building or a small dwelling, it is frequently able to meet, or even better the price of much less desirable materials.

May we suggest that you figure "both ways" and compare.

SAMPLES AND SUGGESTIVE BOOK ON REQUEST.

Indiana Limestone Quarrymen's Association

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MILFORD MASSACHUSETTS GRANITE

WEBB PINK MILFORD WEBB WHITE MILFORD WEBB BUFF MILFORD

WEBB PRODUCTS

Milford, Mass. Granite for Commercial and Monumental Buildings and Memorials. Rough, Cut, Rubbed or Polished.

DESCRIPTION OF WEBB GRANITES

The WEBB PINK MILFORD is a distinctive, warm-toned PINK granite, having a uniform distribution of clear, black spottings, which contribute to the clean, clear-cut appearance, which has made Milford Granite a famous building material. This granite does not take on a cold appearance, but grows warmer, more pleasing, as it ages.

The WEBB WHITE MILFORD has the same characteristics as the Webb Pink, except that the general cast of color is Creamy White, producing a clear, white appearance in the mass, without losing its warmth of tone. This granite does not darken with age, because of its unusual hardness and low absorptive tendency.

The WEBB BUFF MILFORD is a new product, similar in characteristics to the Pink and White, but having a predominating, soft-toned Buff background, which is peculiar to itself. This granite is adapted more particularly to special work, rather than to large work, as it requires careful selection and matching.

GENERAL CHARACTERISTICS

These Granites are hard, compact, close-grained granites, adapted equally well to fine mouldings and carving, or to bold members and large spaces.

COMPRESSIVE STRENGTH

WEBB MILFORD GRANITES rank as the strongest of building granites, having an average compressive strength of approximately 30,000 pounds to the square inch.

FACILITIES AND SERVICE

The WEBB PINK GRANITE COMPANY owns about 350 acres of Quarry Land in Milford, Mass. All the quarries are fully equipped with Electric Power, Compressed Air, and Heavy Duty Derricks.

The large Cutting Plant is fully equipped with electric cranes and crane cars, for handling, and the most modern devices and tools for Cutting, Sawing, and Polishing granite.

The Plant and Organization are planned for Service and Fine Workmanship. Time schedules are maintained religiously, Service being our specialty.

SPECIAL NOTE.—Monoliths and blocks of large size are readily quarried and finished; the only limit as to size and weight being that of transportation.

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McKIM, MEAD AND WHITE

WILMINGTON PUBLIC BUILDINGS, Wilmington, Del.
JOHN D. THOMPSON, Jr.
PALMER, HORNBOSTEL & JONES, Associated

NEW EQUITABLE BUILDING, New York City.
E. R. GRAHAM

LEXINGTON STREET BUILDING, Baltimore, Md.
PARKER, THOMAS & RICE

UNION STATION, Baltimore, Md.
KENNETH MURCHISON

U. S. NATIONAL BANK, Johnstown, Pa.
MOWBRAY & UFFINGER

PEOPLES GAS BUILDING, Chicago, Ill.
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CENTENNIAL MEMORIAL MONUMENT, Chicago, Ill.
HENRY BACON

WEBB PINK GRANITE COMPANY

WORCESTER, MASS.

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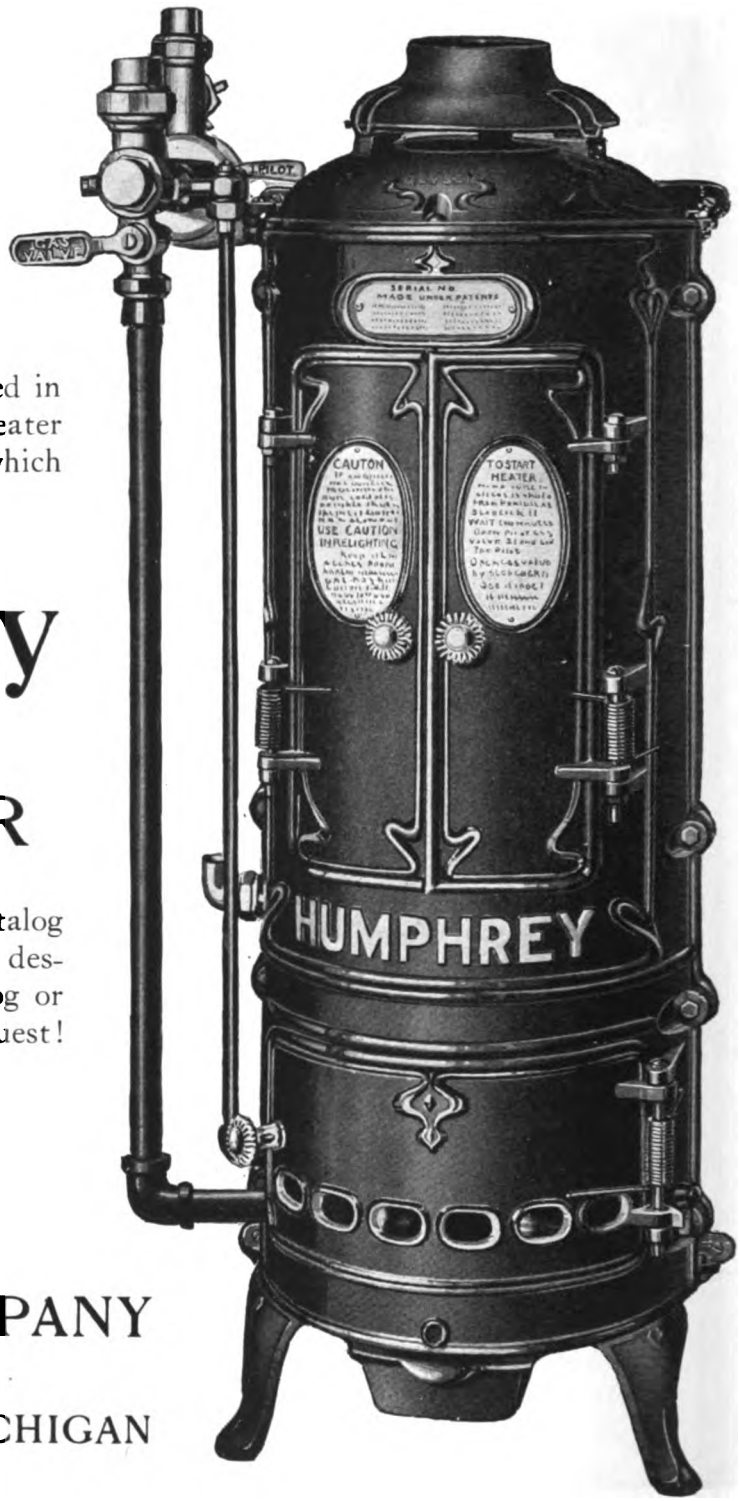
In Gas Water Heaters

depends largely upon three vital factors—the valve, the burner, and the pilot.

These essential parts have been perfected in the Humphrey Automatic Gas Water Heater to a point of mechanical preciseness, which makes successful service a certainty.



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On pages 5 and 6 of our attractive catalog fifteen important Humphrey features are described in detail. We will send the catalog or any other information required, upon request!

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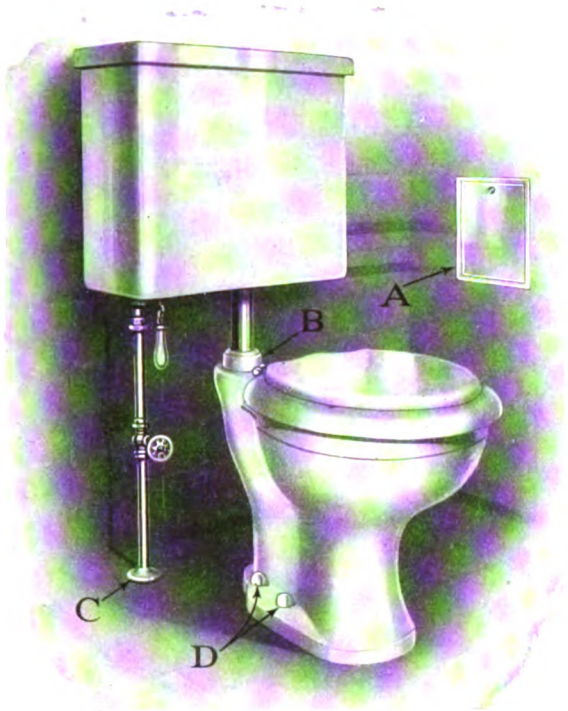
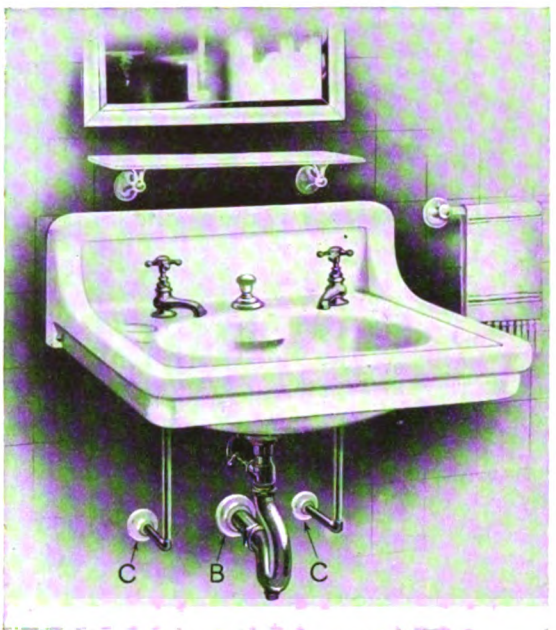




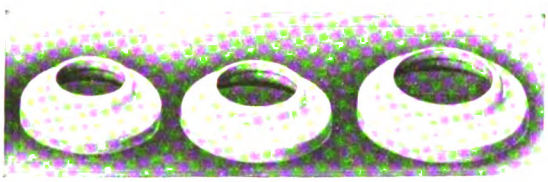
To Architects:

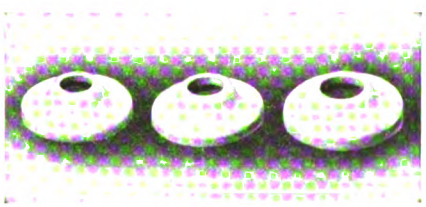
The discordant note in plumbing fixtures, otherwise attractive, has been the shabby pipe escutcheons of metal. Dented, green, and tarnished, they detract from a worthy fixture.

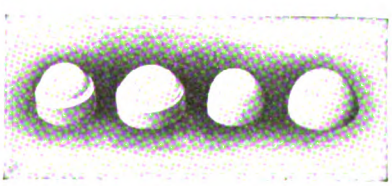
FAIRFACTS CHINA ESCUTCHEONS are the embodiment of sanitary excellence.

Incidentally, they cost no more than the obsolete metal escutcheons.

SPECIFICATION: All exposed waste and supply pipes to all plumbing fixtures shall be finished at the wall or floor with FAIRFACTS CHINA PIPE ESCUTCHEONS of a suitable size.







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A Message and a Suggestion

From a group of manufacturers to the Architectural profession:

When designing Metal Lath and plaster construction you figure the strength of the re-enforcement upon the weight as well as the gauge of metal.

To insure the use of what YOU require SPECIFY BY WEIGHT as well as by gauge.

The manufacturers are standardizing Metal Lath at the following weights:

24	gauge	3.4	lbs.	per	square	yard
25	"	3	"	"	"	"
26	"	2.5	"	"	"	"
27	"	2.3	"	"	"	"

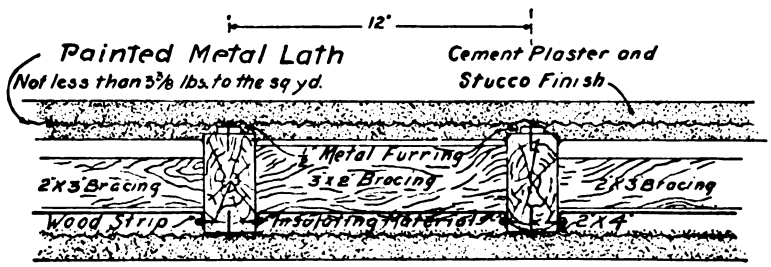
The manufacturers recommend 3.4-lb. Metal Lath.

See the Metal Lath Handbook.

SEE TECHNOLOGIC PAPER No. 70

Entitled "Durability of Stucco and Plaster Construction," which was referred to under 3-E-3-f on page 144 of The Journal for March, 1917. This is a progress report of the U. S. Bureau of Standards on test of Stucco for permanency.

THIS CONSTRUCTION IS GIVING RESULTS



Detail Showing Section of Exterior Wall

Full details and complete specifications are given in the Metal Lath Handbook, pages 90 to 97. Overcoating Frame Buildings is fully treated on pages 88 to 91.

A copy of the Handbook will be sent you by any of the following Member Companies:

The American Rolling Mill . Middletown, Ohio
The Berger Mfg. Co. . . . . Canton, Ohio
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Consolidated Expanded Metal Companies Braddock, Pa.
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OR FROM THE OFFICE OF THE

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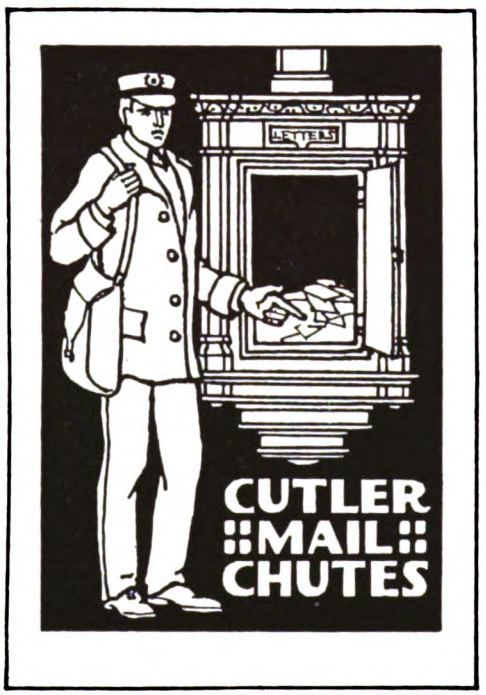

is used in thousands of buildings in every part of the United States, and abroad; has been for more than a quarter of a century, and will remain, the standard of excellence in every respect.

It has received the highest award wherever exhibited, and is being furnished to all those who consider quality as well as price, at exceptionally low figures.

The construction developed in long experience as the only safe one is protected by litigated patents, which have been sustained and which counsel advises are being infringed.

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Sweet's Index Pages 1726 and 1727.

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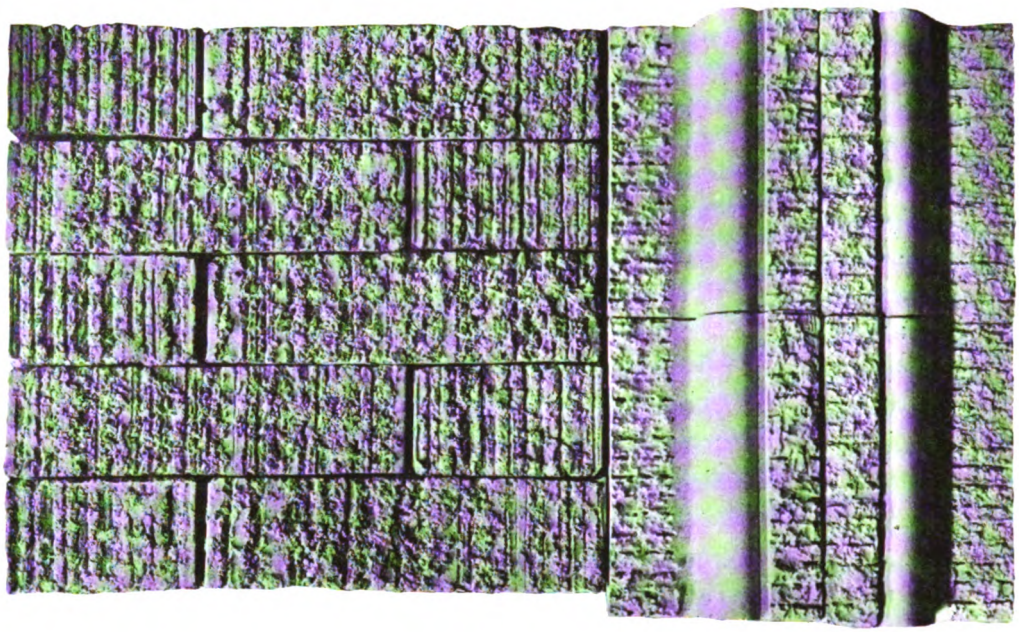

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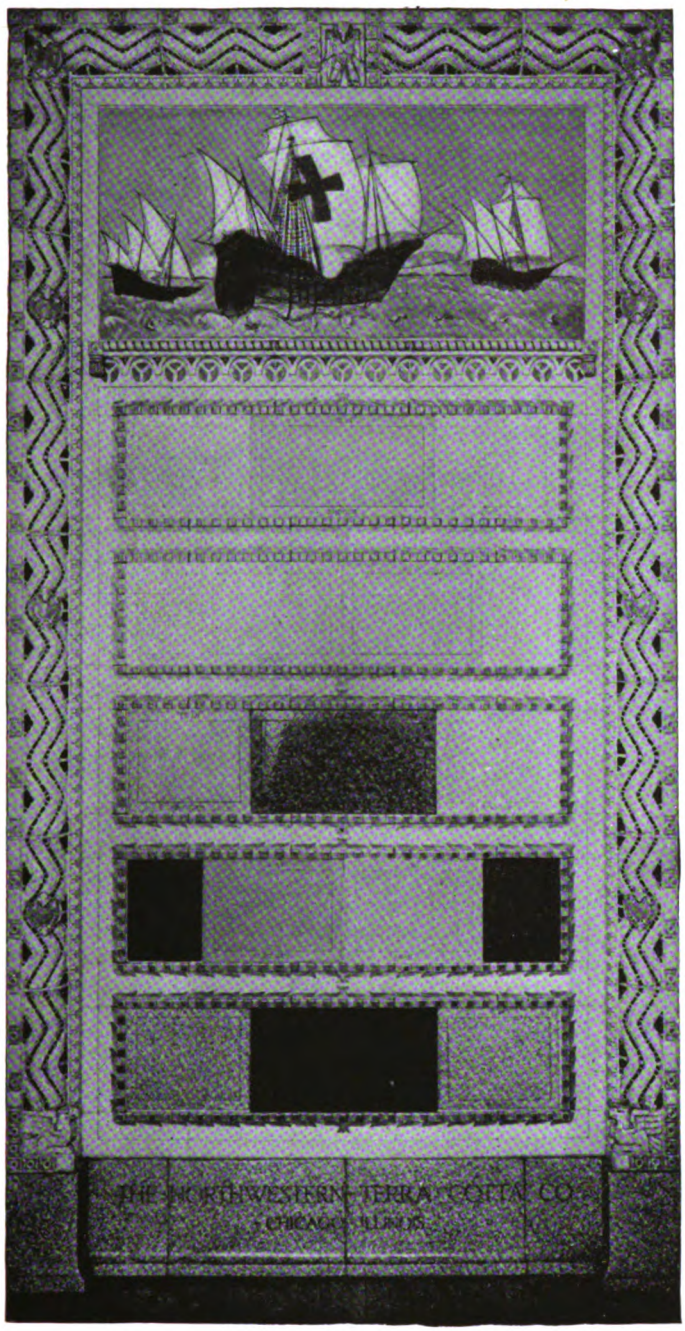

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Vol. V JANUARY, 1917 Number 1

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that guarantees your
roof for 20 years

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MANY people have asked: "How can you afford to give a 20-Year Guaranty on thousands of roofs all over the country laid by hundreds of different local roofers?" Well, the answer is simple.

First, We know the materials are right because we manufacture them.

Second, The Barrett Specification, while it may seem complex to a layman, is straightforward, plain-sailing to experienced roofers.

Third, Under the guarantee plan the roof must be constructed under our supervision and receive our O. K. both as to materials and workmanship.

We further know from 50 years' experience that a Barrett Specification Roof, properly laid, will last a good deal longer than twenty years *without maintenance or repairs.*

A Barrett Specification Roof is constructed of five plies of Specification Felt, with a liberal quantity of Specification Pitch (the greatest waterproofing material known) between each layer.

No other type of roofing approaches a Barrett Specification Roof in the amount of protective waterproofing material used in its construction.

The weight of this waterproofing is not less than 235 lbs. to 100 sq. ft. compared with 75 to 125 lbs., at most, in other types of roofs.

And on top of all this waterproofing material is laid a wearing surface of gravel, slag, tile or vitrified brick. *That's why it lasts. That is why we can safely guarantee it for 20 years.*

The 20-Year Guaranty is now given on all Barrett Specification Roofs of 50 squares and over in all towns in the United States and Canada with a population of 25,000 and over, *and in smaller places where our Inspection Service is available.* Our only requirements are that The Barrett Specification dated May 1, 1916, shall be strictly followed and that the roofing contractor shall be approved by us.

We believe the broadness of the proposition is without parallel, not only in roofing, but in the whole building industry.

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They all have Barrett Specification Roofs.

Most permanent buildings in the country carry this type of roof, and their popularity is not to be wondered at when you consider the following features:

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Second: Guaranteed for twenty years, with a record which shows that they last much longer.

Third: Freedom from maintenance expense.

Fourth: Approved as "Class A" construction and take the base rate of fire insurance.

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Whereas,
Whereas,
Now, therefore,
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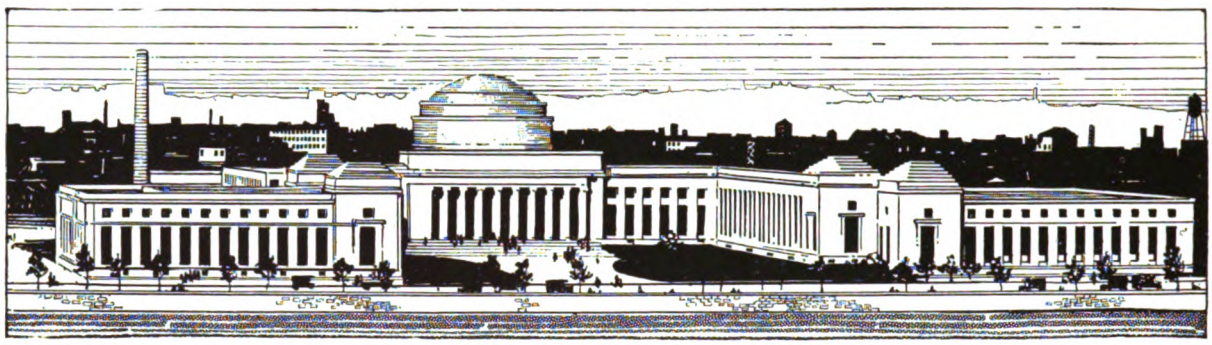

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