

The AMERICAN ARCHITECT



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BISHOPRIC SHEATHING



First 40 Houses; Then 10 Houses; Then 50 More Houses

Irrington, N. J.

Gentlemen:

Have specified and used your stucco board on some 40 or more houses built in the Weequahic Park section of Newark and elsewhere and have always obtained the best of results.

We did not hesitate to again use same on 10 houses of the 60 for the Mesa Housing Proposition that are now nearing completion at Irrington, N. J.

When your representative first spoke to us about your Bishopric Sheathing we kept it in mind. As you know, we ordered two carloads of it, enough for the other 50 houses for the above-mentioned Mesa Housing Proposition.

We are using it under shingles, wide and narrow clapboards, etc. Although somewhat skeptical at first about placing shingles over your sheathing, thinking it would be springy, we are no longer, this idea having long since disappeared. We find it everything ordinary sheathing could be and more. Being easy to handle, the carpenters liked putting it on.

Seeing its possibilities and the economy in using it, we will not hesitate to bring it to the attention of any of our clients who, in the future, expect to build.

Yours truly,

STROMBACH & MERTENS,
Engineers and Architects,
Victor H. Strombach.

An Engineering and Architectural firm which does big things in New Jersey has written us regarding its experience with Bishopric Sheathing on 50 houses it built in connection with the Mesa Housing Project at Irrington, N. J. Read the letter. It is more significant than anything else we could say about this modern Sheathing Board.

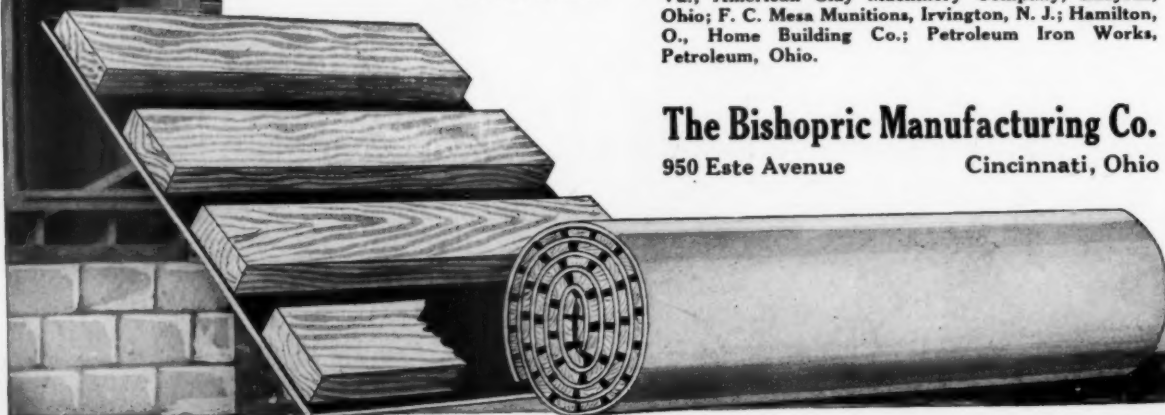
Note the list of institutions which have used Bishopric Sheathing either on Industrial Housing or Home Building projects:

Youngstown Sheet & Tube Company, Youngstown, Ohio; Virginia Shipbuilding Corporation, Alexandria, Va.; American Clay Machinery Company, Bucyrus, Ohio; F. C. Mesa Munitions, Irrington, N. J.; Hamilton, O., Home Building Co.; Petroleum Iron Works, Petroleum, Ohio.

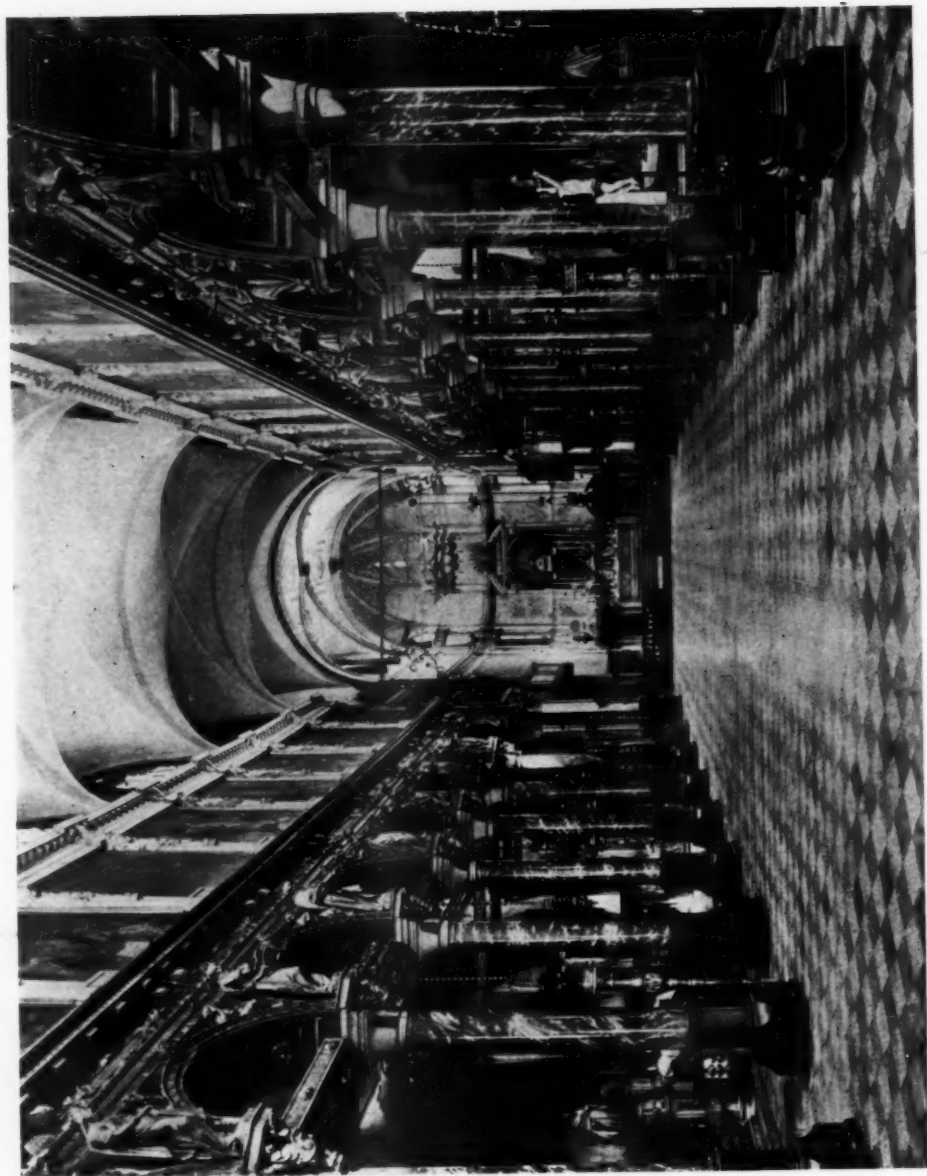
The Bishopric Manufacturing Co.

950 Este Avenue

Cincinnati, Ohio







NAVE OF THE CARMELITE CHURCH, VENICE

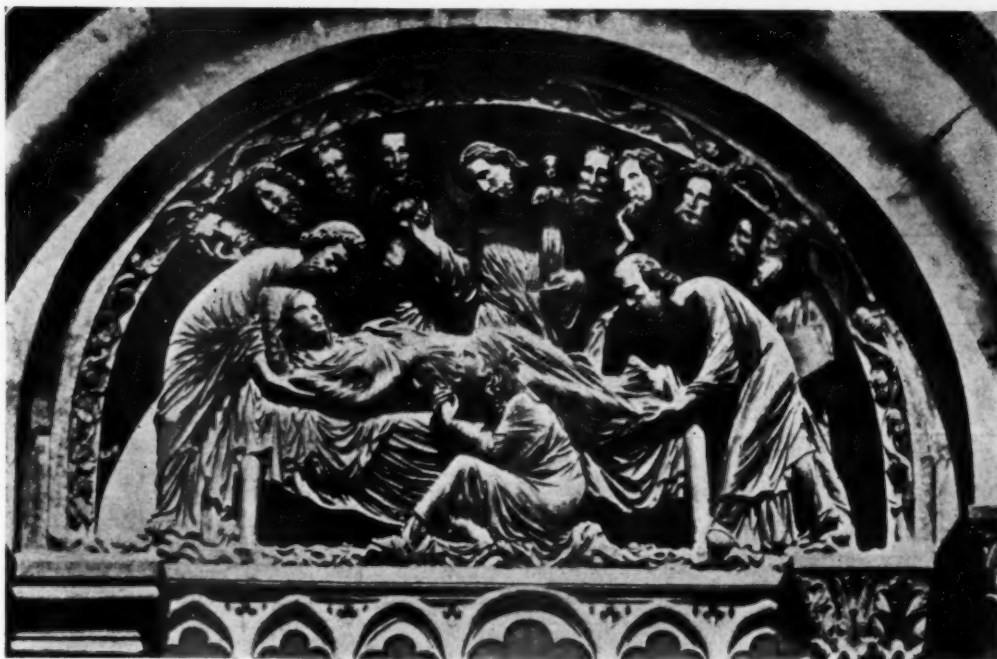
THE AMERICAN ARCHITECT

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VOL. CXVI

WEDNESDAY, AUGUST 27, 1919

NUMBER 2279



DEATH OF THE VIRGIN, STRASBURG CATHEDRAL

Notes from London

(Special correspondence to THE AMERICAN ARCHITECT)

THE R. I. B. A. CONFERENCE ON BUILDING INDUSTRY

THE conference arranged last month by the Royal Institute of British Architects was of the first importance, as affecting the Building industry, and less directly, the architectural profession. The idea itself was an excellent one, that architects, surveyors and builders, in the persons of the representatives of all their leading societies, should get together, should have a frank and friendly discussion and see if any way could be suggested out of the present difficulties—one had almost said "*impasse*"—of the building trade.

The conference, which met in the third week of May at the Galleries of the Royal Institute, was

formally opened by Dr. Addison, the president of the Local Government Board, who approached his subject rather too much as if he were presiding at a housing conference, but the series of papers which followed and occupied the rest of the morning were interesting and often illuminating.

Briefly summarized, they dealt with the Finance Act of 1909-10 (by Mr. A. A. Hudson, K. C.), and the paralysis of private building through Government interference; with the present and future effect of Government housing on prices and employment, treated by Major Harry Barnes, M. P., who took a favorable view of Government action; with the competitive contract system, and the question whether it should be retained, abolished, or modified, which was

THE AMERICAN ARCHITECT

treated by Mr. Hudson, as well as Mr. Hardcastle, A. R. I. B. A., F. S. I., and Mr. Frederick Dove, president of the National Federation of Building Trades Employers, and, lastly, the mutual relations of architect, builder and workman, in four very interesting papers read by Edmond Hill, president of the Institute of Builders; Paul Waterhouse, F. S. A.; Harry Gill, M. S. A., and J. Murrey, secretary of the Building Trade Operatives.

Without going into these in detail I may mention that Mr. Hill made the excellent suggestion, while accepting the proposal of conferences between the two institutes, that "in order to obtain a better understanding of the difficulties to be faced by the builder and his workmen, the training of the young architect should more often include a period of practical training in the workshops." "The same remark," he added, "applies to the builders. . . . The would-be master builder should include in his training some period in an architect's office, which, in my opinion, is as important as a period at the bench."

Mr. Waterhouse did not believe it would be good for either builders or employers if the competitive system in contracts were swept away, and, in dealing with the relation of architects and builders, pointed out the practical impossibility of eliminating either. "The function of the architect as intermediary between client and builder is a very real function, a function for which there is a need, and a function worth the shilling in the pound which is usually paid. Most practical people understand this: it is enough to remind the building trade of this one consideration. The employment of a builder for any large building is a very important matter, involving the risk of waste or misapplication of an appreciable sum of money. The relationship between owner and builder during such a transaction is one in which countless misunderstandings can arise: is it not well that this relationship should be eased by the intervention and assistance of a skilled go-between, intimate with the needs of one party and with the capacities of the other?"

Major Barnes' paper on the "Present and Future Effect of Government Housing" has been freely criticized by *The Architect*. "His paper consisted of a general eulogy and apology for what most of those connected with building know to be an evil thing—the Government control and interference with the building industry, of which we have had so much, and the Government attempt to interfere with the operation of the laws of supply and demand in the essential matter of housing. Major Barnes says that building for housing is for

the next five years to be a Government enterprise, and he is doubtful whether it will ever again be a private one. We think otherwise: for forces stronger than ministers have already doomed state interference and control to shipwreck."

Even more interesting, however, than the papers themselves was the discussion which followed in the afternoon sitting. Trade Unionism, its merits and defects, were freely discussed, and even criticized. "It was an old axiom," said Mr. Hubbard, "that an army had to march at the pace of its weakest man," and he was afraid it was the weakest man in trade unionism who set the pace. That was not a desirable state of affairs either for employers or employed. His suggestion was that members of various trades should be divided into "A" and "B" categories. An architect who wanted a first-class job would specify for "A" men, who would receive a higher rate of wages. He believed there were plenty of jobs where "B" men could be usefully employed.

Mr. Watkins said "I would like to see the Institute arrange for a deputation of architects, builders and employees to visit the United States and thoroughly investigate the conditions of the building industry in that country, to see whether they could learn anything which would be of value to them at home," and Mr. Butterworth, in supporting this last suggestion, remarked that "one thing which would reduce the cost of brick-work was the lessening of motions necessary in erection, and a great deal had been done in that respect in the United States." The age of concrete had arrived and he warned the bricklayers of this country that the very existence of their craft was threatened unless they materially reduced the cost of laying bricks. In a recent article in *The Builder*, to which I may return later, Mr. Butterworth has given a most interesting account of the labor-saving arrangements effected in America by Frank Gilbreth in brick-laying, reducing the motions required from eighteen to five, and enabling his men, instead of 120, to lay 350 bricks per hour, the traveling scaffold being here of material assistance.

In conclusion, Mr. Murrey's proposal for an adjournment of the conference was set aside and withdrawn by that gentleman in favor of Mr. J. W. Simpson's suggestion that the Royal Institute of British Architects, the National Federation of Building Trades Employers, and the Federation of Building Trades Operatives should be appointed to set up a joint consultative board, a proposal which was carried unanimously, and the proceedings terminated with a vote of thanks to the president.

THE AMERICAN ARCHITECT

THE CHARING CROSS IMPROVEMENT SCHEME AND NATIONAL WAR MEMORIAL

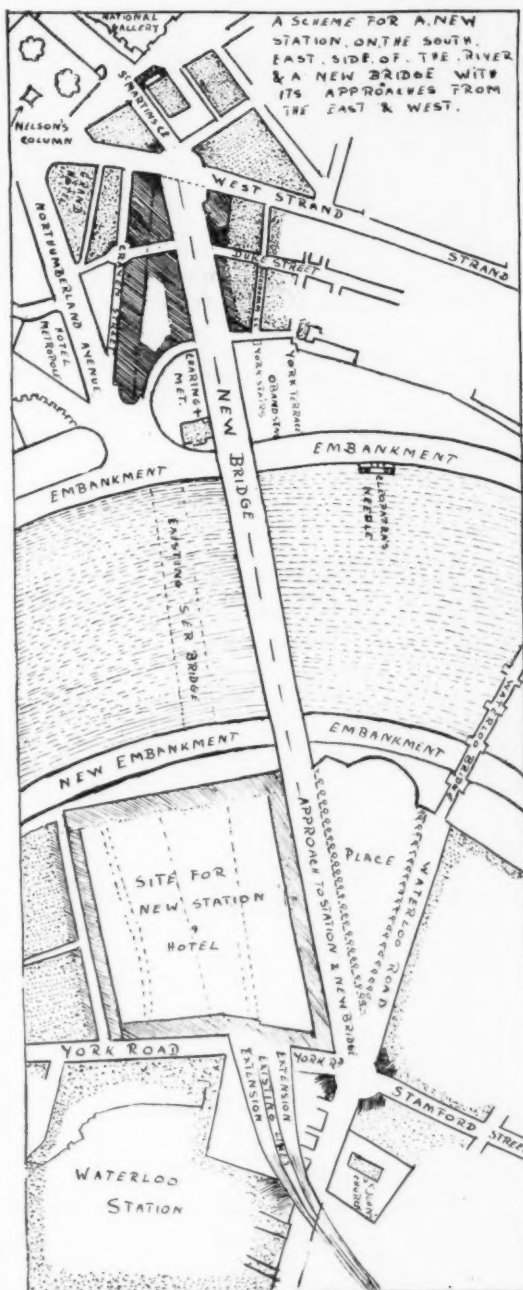
The scheme for transferring Charing Cross Station to the Surrey side of the Thames, and of making a new road bridge between the Waterloo and Westminster bridges to replace the present ugly and insufficient Southeastern Railway bridge has been for some time before the public; but the recent pronouncement of Sir Aston Webb puts this important scheme on a new footing in two directions, both as to bringing it into prospective actuality, in a not distant future, and as making this scheme form a leading factor of our great National War Memorial. Speaking at the Royal Academy banquet the President said that the Academy had recommended that a great road with a memorial arch and 'place' at Charing Cross should be constructed as a National and Imperial Memorial, just as Waterloo Bridge and Trafalgar Square were reminders of the great war a century ago.

This question is now therefore definitely before the nation as not merely a part, but the most important part, of our National War Memorial, and as having the official sanction of the Royal Academy and, I understand, the entire sympathy of the London Society.

The proposed site for the new station would be to the west of the bridge approach, between Waterloo and the river. Incidental to this really fine scheme would be the creation of a "place" at the intersection of the new roadway with the West Strand, where the existing Charing Cross monument might be located; and still more the opening up, and laying out in Embankment form, of the unsightly Surrey side of the Thames, which is at present a perfect eyesore. Mr. John Murray, F. R. I. B. A. F., F. S. I., writing in *The Architect* on improvements in Central London, gives the new scheme his approval, especially in these last features. "The improvements I suggest"—he says—"would provide a large open 'place' at the Strand suitable for the adequate circulation there of the extensive traffic, in which the existing Charing-Cross Monument could remain undisturbed, and a Monument of Victory could also be erected. Comprehensive street improvements on the other side of the Thames could also be planned, and sites provided for a large War Museum, a new South Eastern Railway Station and palatial hotel, while a dignified high-level bridge could be designed as the essential connecting link across the river."

I have wished in this necessarily brief description of a project, which will effect a real transformation of this old London, to give special attention to that city's actual business needs. But there

are higher things in life than even business; and this side of the problem has been eloquently expressed by Sir Reginald Blomfield, who has done so much for its furtherance. "In advocating the



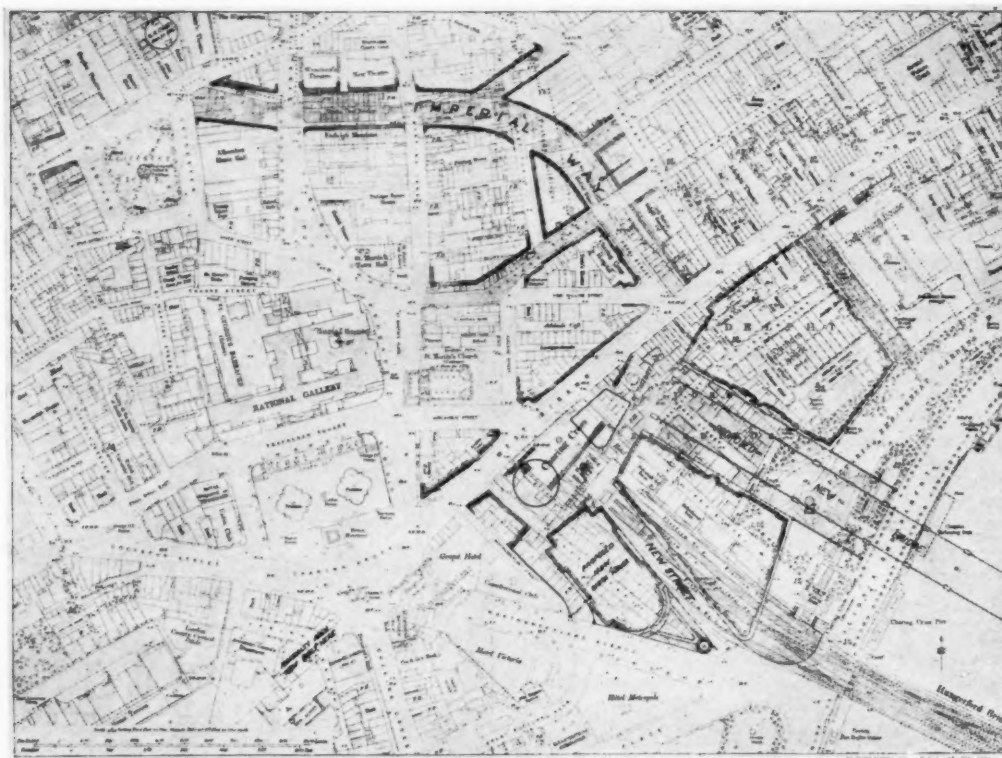
GENERAL PLAN, CHARING CROSS

THE AMERICAN ARCHITECT

(From The Architect)



VIEW FROM THE STRAND, LOOKING OVER THE RIVER THAMES



PLAN OF IMPROVEMENTS IN CENTRAL LONDON
SUGGESTED BY JOHN MURRAY, F. R. I. B. A.

THE AMERICAN ARCHITECT

bridge as the national memorial the Academy had it in view that this should be the great civic memorial. . . The bridge, with the 'places' at either end of it, with the best that our architects and sculptors can give us, would be the memorial, *urbi et orbi*, of the heroism of all our soldiers and sailors, and of the sacrifice of our unnumbered dead. For this purpose, this expression of an abstract idea, no merely utilitarian bridge would do. It must be a great and a splendid thing, worthy of those who died for their country, answering splendor with splendor."

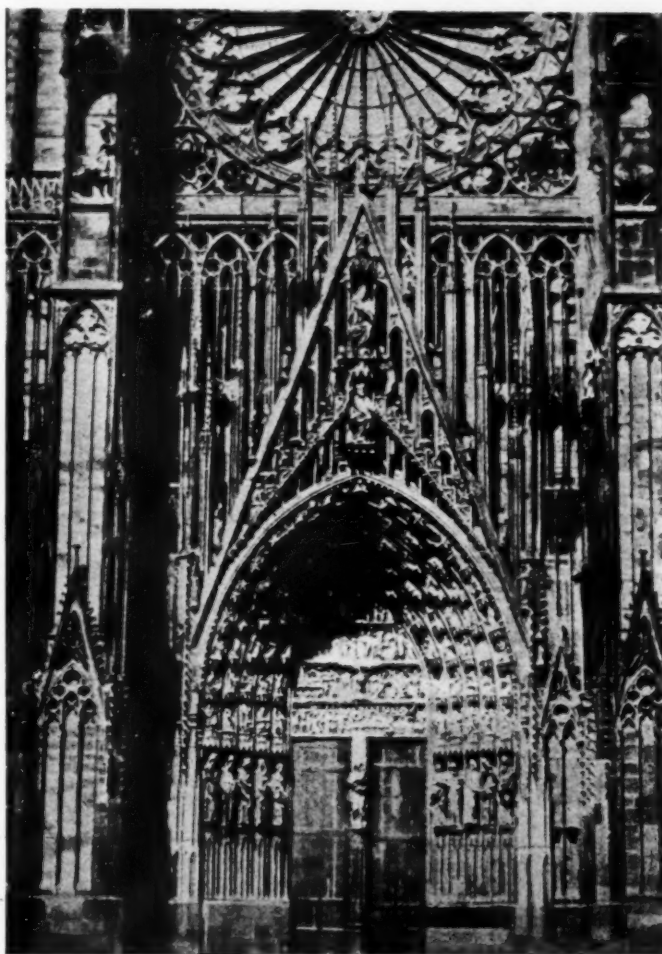
FAMOUS SITES ON THE BATTLEFRONT IN FRANCE— THE FAIR CITY OF STRASBURG

In a recent notice I gave some account of the work of rural reconstruction in France. While that work is in progress along some 380 miles of the French front a special commission has selected a number of famous sites to be preserved as they now are as monuments of the war. These sites extend from La Bassée to Upper Alsace: they number some 140 in all, and include every variety of interest in dug-outs, underground galleries, observation points, ruined forts—several of those at Verdun being preserved as they are—and the battlefields themselves, including the entrenchments on both sides of the Meuse, in the Champagne, the Soissons and Noyon areas.

In what was formerly the British sector it has been decided to keep the ruins of Bapaume and Peronne, the Chateau de Thiepval and several other castles in a state of devastation, the Butte de Warlencourt, the underground maze of Combles, the Givenchy battlefield, and other points of interest or special importance. After the campaign of 1870 the public, soon after peace was concluded, visited Metz and the battlefields; and we may be certain that later, when the existing restrictions are removed, these spots which are landmarks in the great struggle for human liberty, will be objects of pilgrimage, not only to English people, but also to many Americans.

The crowning monument, however, of the victorious effort of France, is to be found in her recov-

ered provinces; and the crown of those two provinces is the ancient city of Strasburg. "Oh! belle ville de Strasburg!"—sang an old popular ballad of France; and the beauty of the recovered capital of Alsace is very appropriately celebrated in a recent number of "Les Arts Français". But the glory of the old city of Strasburg, "Ville de Beaute", centers, finds its ultimate, its completed expression in her grand old Cathedral. Like that of Burgos in Spain, it dominates the city and completes her being. "In these streets of Strasburg, all decked with flags, at whatever spot we pause to look around we perceive the Cathedral. It seems to us the sovereign of the region—the genius of the place—the ever-present guide. It is the divine leading 'motif' of that incomparable symphony of architecture which this old town affords."



THE GREAT DOORWAY, STRASBURG CATHEDRAL

THE AMERICAN ARCHITECT

The Cathedral occupies, in fact, the highest point of the ancient Roman city, where once there had been a temple consecrated to Hercules, then a wooden Christian church, to be followed in the century by the Romanesque building whose traces still remain. These may be found in a portion of the crypt and of the choir, and in the north and south transepts; and in the transept wall near the nave, we can lay our hand on the spot where Gothic took the place of the Romanesque. "It is, in fact, the end of one springtime replaced by another spring. The great Gothic nave, in all its magnificence, was completed in twelve years, toward 1275. On the 25th of May, in 1277, the façade and the towers were commenced. This façade is a miracle of the French poetic spirit. Its three stories,

separated by galleries, display a wealth of ornament of turrets, arcades, mullions, little columns, which, so far from weighing them down, upraise them to heaven. The delightful rose-window of fourteen metres was the "last thought" of the architect Erwin, who died on January 17, 1318. Had he lived longer he would have raised the two towers from the base of the second story. His plan was abandoned. The Southern tower was given up. That of the North side was raised, and, with an irresistible upspring, upon this tower was thrown up across the clouds that spire which is the triumphant jewel of the city.

I remember the wonderful impression which this old Cathedral with its spire climbing the skies, made on me when, coming from Frankfort, I visited Strasburg, now more than twenty years ago. The city was then a part of the powerful German Empire, and, though France never ceased to mourn the wound, who could have thought that in my lifetime I should see Bismarck's work undone, and Alsace restored? From Strasburg I had made my way to the Vosges mountains, traversing their highest points with a French friend, who as an officer in the French army, had been taken prisoner in the Franco-German war. It was scarcely to be expected that his sentiments to the new masters of Alsace should be very friendly; but I found his sentiments on this point pretty general through the annexed provinces.

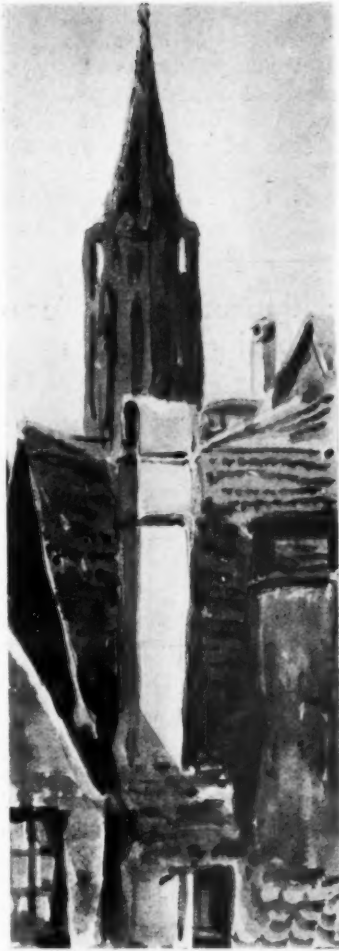
But returning now to the Cathedral we find the work continuing from the Master-Architect Erwin, whose date I have just given, through three other architects. to Hulz (1419), whose special achievement, the spire, was completed on St. John's day of 1439, a marvel of beautiful Gothic design, composed of six stages arranged pyramidally, on the last of which is placed the lantern which pierced as for fine lace work, leads to the summit.

Without, this Cathedral is extraordinarily rich in sculpture. It possesses, as M. Hinzelin remarks, "for its brodered veil a whole encyclopædia in stone: the Creation of the World, the Deluge, the Burning Bush, the Last Supper, the Death of



THE HOUSE CALLED KAMMERZEL, STRASBURG

THE AMERICAN ARCHITECT



THE SPIRE, STRASBURG CATHEDRAL

(From a sketch by Selwyn Brinton)

Judas, the Death of Jesus. The blood which flows from the wounds of Jesus sprinkles the skeleton of Adam and brings life to Humanity! See here, too, the Virtues and Vices! The Virtues stand erect, pure and splendidly alive, the one more contemptuous of evil, the other more outraged at its presence. All of them, with frowning brows and bitter lips pierce with their lances the demons who represent the Vices, one of them struck in the cheek, another in the temple. Ah! lovely, pitiless Virtues! Near them the Prophets and Patriarchs, equally eloquent and proud, are characterized by an infinite variety of attitudes, expressions and hidden sentiments.

While above these Prophets Solomon is seated on a throne guarded by lions, and yet above Solomon is the Virgin and Child. Our Lady of Strasbourg seems to smile on our banner of France restored to her."

What, in fact, impresses itself upon us here is the remarkably high quality of much of this external sculpture: this quality is not confined to this building, but appears throughout this period in the church building of Europe. Prior and Gardner, in their "Account of Mediaeval Figure-Sculpture in England", a work which I had to review some seven years ago, say very truly, "In the first half of the thirteenth century, when the building art had become dexterous and supple, the sculptor's craft, too,

grew fine and sensitive. For the fifty years from 1250 to 1300 the Gothic art of sculpture in England achieved representative works that were the triumphant expression of a craftsmanship new in the history of the world. The generation living about A. D. 1300 saw a golden age in the arts of West Europe: a purity of idea, a perfection of exact execution pervade the works of the sculptor."

We might apply these very words to the figures of Strasbourg Cathedral—notably to those which I have just mentioned, and to the grand series here of the Wise and Foolish Virgins. It is not merely the religious conception,—which these men felt so profoundly—but the actual proportion and modeling of the figures, the facial type, often almost Greek in its pure outline, the fine treatment of the drapery, caught in tight above the broad hips by a single cord, or falling in a grand sweep from shoulders to feet—as in Andrea Pisano figures of the Florentine Baptistery.

In this connection the figures on either side of the south doorway of the Church Victorious, as representing the New Law of Love, and the Synagogue, turning her bound eyes to earth, are especially to be noted: the figures themselves are as fine as their conception. And this applies, though less directly perhaps, to the sculpture work within.



"THE SYNAGOGUE," STRASBURG CATHEDRAL

(From a sketch by Selwyn Brinton)

THE AMERICAN ARCHITECT

which impressed me so much when I visited the Cathedral, and of which I give an illustration of that relief of the Death of Mary Virgin, over the South door, which legend attributed to Sabina, daughter and assistant of the architect Erwin, and the cast of which Delacroix, when dying, wished to pass over with his hands.

The more pompous and inflated monument of Maurice de Saxe, victor of Fontenoy, hero of France in the great days of her Monarchy, belongs to a later age: this is in the church of Saint Thomas.



TOMB OF MARSHALL DE SAXE
BY PIGALLE

The interior of the Cathedral is simple and most impressive—the transept still Romanesque in its grand lines—the nave entirely Gothic. Within the city are many buildings of interesting design; near the Cathedral the house called Kammerzel, with its seventy-five windows exquisitely carved in wood—

a reproduction of which appeared in the Paris Exhibition of 1900; elsewhere the old Palais de la Préfecture is a good building of its period.

The German masters had added barracks,—everywhere barracks,—and the vast Imperial Palace, which cost five millions of marks, or yellowish stone, “une sous-préfecture boche enflée jusqu’à crever”; but these are ugly memories which will soon disappear.

S. B.

The Inter-Relation of Labor Turnover and Housing Facilities

The labor turnover in Niagara Falls in 1917 in plants employing 5249 was placed at approximately 13,600 employees, or an average of 260 per cent. This percentage, applied to the total number of employees which it is estimated are engaged in industrial work in the city, would mean that the total labor turnover in the community in 1917 was about 38,000 persons.

It is the belief of a Housing Committee whose members have carefully studied conditions that a labor turnover reduction of up to 25 per cent might be effected if the housing conditions were first class. This committee found that it had been difficult to attract the right kind of labor, that many men have refused to stay in the city because of inability to secure proper houses or adequate boarding facilities and that a reasonable proportion of the high and costly labor turnover has been due to insufficient housing.

If 25 per cent of the present turnover, as was estimated, could be reduced by excellent housing conditions, it would mean a saving of about 10,000 employees. If the cost of turnover per employee averages the conservative figure of \$50, the saving to employers in Niagara Falls resulting from good housing would amount to something like \$500,000 a year.

As a result of these investigations, the Niagara Falls Chamber of Commerce has taken steps to establish a housing corporation which would help finance the erection of dwellings in the city. According to estimates 10,000 will be needed within the next ten years.

New Architecture for New France

NEW necessities are producing a new architecture, states a writer in *Arts and Decoration*. Reconstruction, in France, is a matter of new methods, new materials, new problems. These things must produce new esthetics and a new beauty. Artists and architects of France are keenly alive to the great problems they must solve: the problem, perhaps first of all, of time to be gained, of healing the wounds of the devastated countryside without delay. There is the great problem of economy; they must save the labor and expense. There is, moreover, the problem of transportation. Flanders, Picardy, Lorraine, Ile-de-France, Champagne—each province faces these problems. Each has its own traditional and beloved architecture, its own style. Architects must respect these styles, yet esthetic considerations must not obstruct the agricultural and industrial reawakening. Fortunately, the artists and architects of France are practical men, completely alive to the exigencies and the multiple possibilities of the situation.

Cement and reinforced concrete had even before the war, gained a foothold as a building material in France. Among the academic architects there was a prejudice against its use. This prejudice was based upon a misconception of the nature of concrete and its architectural possibilities. It is not adaptable to the older and classical "types" of architecture. But even before the outbreak of the war, as well as during it, a number of striking and successful buildings have been erected both in Paris and the provinces which are worthy specimens of the artistic possibilities of cement and concrete.

Paul Huillard and his associate, M. L. Sue, have been eminently successful in designing houses of reinforced concrete. The house and studio of the artist, Lucien Simon, as well as the residence of the artist, Moreau, are excellent examples of the achievement of these architects. The celebrated Théâtre des Champs-Élysées, erected under the direction of the Perret brothers, shortly before the outbreak of the war, is another striking example of the new architecture of concrete. The strikingly modern terraced houses in the Rue Vavin, designed by Sauvage and Sarrazin, reveal an unusual but attractive departure from the usual façade of the modern apartment house. In the new railway stations at Rouen and Biarritz, Mr. Dervaux has achieved excellent and thoroughly satisfactory results. Later examples are the recently completed cinema or moving picture theater in the Avenue

du Maine, Paris, and the new toy factory, the Jouet de France, on Puteaux Island, just opposite the Bois de Boulogne. Concrete steamboats are to be noticed in the Seine nowadays. Younger architects are experimenting in the new medium. Sculptors and decorators are taking notice.

Let us give up that too common fallacy, Léandre Vaillat recently urged upon the artists and architects of France, of calling everything "*Boche*" which happens to be new, which belongs to our own day and age. If cement and concrete are not adaptable to the old ideas, let us not forget that beauty is never the result of superimposed ornamentation, of the abundance and the number of decorations, whatever the nature of the building or façade to which they adhere. This gingerbread idea, which dates from the second half of the nineteenth century, is to be found in any number of dreadful houses in Paris. It is, moreover, the fundamental error of the Municipal Council of Paris in organizing contests among constructors in the creation of façades, thus following the prejudices of property owners in conceiving architectural soundness to be a matter of "front." Let us draw our inspiration, this authority went on, rather from those charming old houses in the Marais quarter, or of the Faubourg St. Germain—houses with façades as simple and frank as an honest face. These are houses with respectable and aristocratic faces, so to speak. There is a restraint in the use of ornamentation, of jewelry and "make-up." But the little bit there is is authentic and effective. Each detail of decoration had been the result of the most careful artistic discrimination, always with attention to the unity of effect.

Leaving aside the question of ornamentation and decoration, the beauty of the new architecture in concrete must be the essential beauty of all building—beauty of proportion, beauty of harmony, beauty of feeling, beauty of relations; in short, of that mysterious bond which, in some strange way, join a building with the soil in which it is growing, with the countryside which surrounds it, and the light and shade of the sunlight in which it lives, with the people who live in it or work in it. This is the beauty of intelligence one must look for in the great architecture of the past and the present and of the future likewise. Now, it is a noteworthy fact that most of the new buildings constructed recently of reinforced concrete in France do partake of this essential beauty. If it is the great rôle of the architect to *dignify* the needs, the labor

THE AMERICAN ARCHITECT

and the habits of men, by designing their houses, their workshops, their factories and all their habitations, then we must conclude that the architects of French reconstruction are progressing in the right direction.

A splendid example of this work is the toy factory on the Ile de Puteaux, just outside Paris. This workshop was built for soldiers mutilated in the war. Le Bourgeois and Rapin were the artists and decorators who here solved many difficult problems. The practical hygienic necessities in building a workshop for crippled men were, of course, the first consideration. Then a large part of the building was to be used for storage purposes, because the distribution of toys is largely limited to the weeks preceding Christmas. Furthermore, the most rigid financial economy was necessary.

The foundation floor, upon which the workshop was placed, was constructed of reinforced concrete. The upper floor was constructed with a framework of wood, while the roof was of slate. In their use of cement and concrete, the artist-designers succeeded admirably in exhibiting the possibilities of the medium as a decorative background. Not the least interesting feature of the atelier, from this point of view, are the entirely appropriate sculptures in cement made by M. Le Bourgeois. At each side of the building stand concrete pilasters, about two meters high, surmounted by these concrete birds. Colored cement also plays an attractive part in the decorative scheme. Using the least costly materials, the architects devised a scheme of contrasting colors that has worked out with striking effect.

In the washrooms, tiling in bright tones, presenting a rich and gayer impression than the ordinary white, was used in effective juxtaposition to the gray of the concrete. Throughout, the woodwork was painted in white and bright colors to increase the cheerfulness of the environment. It is also a noteworthy fact that in all these departures from the academic and the conventional, the artists were aided by the intelligence of the builders.

In the new depot at Rouen, built under the supervision of Mr. Dervaux, concrete has been used with no impairment or loss of architectural beauty. Mr. Dervaux has attained fine simplicity and cleanness in structure. There is no masking of the construction. It is, in fact, accented and emphasized. Without resorting to any of the thread-bare devices of ornamentation, without concealing the utilitarian nature of the great railway station, the architect has achieved a dignity and richness in design. The Rouen depot, it should be added, was designed and built during the actual course of the war.

But it is also in the great problem of rural re-

construction—the rebuilding of farmhouses, inns, taverns in Flanders and Picardy, in Champagne, in Lorraine, that the economy and esthetic value of reinforced concrete is emphasized by the architects of France. If the character of building in these various provinces has long been marked and will, to follow the ideas expressed by Paul Léon, of the department of Beaux-Arts, remain in the same character, the materials of building must change. Cement and concrete, this authority believes, are the most economical, the most durable, and the most adaptable to esthetic considerations in the rehabilitation of the devastated regions. Under the direction of the architectural department of the Ministry of Fine Arts a constructive campaign of education is now well under way, architects and agricultural experts co-operating with the Ministry of Public Works in the attempt to solve these complex problems of sanitation, industry and esthetic value.

Hygiene in School House Construction

IN Milwaukee at the meeting of the National Education Association, Section in School Hygiene, Frank Irving Cooper, Architect of Boston, Chairman on Schoolhouse Standardization and Planning, spoke about the problem in hygiene involved in schoolhouse construction. It was a story of unscientific, unco-ordinate work, in school buildings planned without much knowledge of principles, and developed in each section without much reference to the experience of other sections.

Mr. Cooper spoke of the important relationships of the school building to the health of the pupil. He called attention to the necessity of clean, airy, well-lighted structures, which will create an atmosphere of healthfulness and cheer, which must influence every thought and word of the child in this, the formative period of his life.

In illustration of some of the conditions that exist, Mr. Cooper gave the figures secured by his committee with reference to the lighting of existing schoolrooms. Great irregularities have been found in this vital feature, rooms presenting intense lighting near the windows and comparative darkness back in the room.

A very striking discrepancy was pointed out by Mr. Cooper in the lack of uniformity in ventilation methods. Here there is the belief that skilled men are planning, yet the various states are wide apart in their legal requirements and farther apart in the actual provision made. It is true that the states that have paid attention to the matter at all

(Concluded on page 273)

Editorial Comment

The Goat

NEW YORK CITY last week experienced the most complete "tie-up" of its traction lines that has ever been known.

The executives of the railway companies and the leaders of the labor unions were engaged in acrimonious debate over matters that directly relate to their own selfish interest. Meanwhile the class that did, and does, most suffer from the recent chaotic conditions—the public—was entirely ignored.

The New York *Tribune* in an editorial discussing labor conditions in New York, and incidentally in other cities, remarks:—"as always, and even more so, the travelers of New York City, constituting some millions of people, are the plain, unmitigated goat."

Much eloquence was out-poured by our municipal authorities, a spectacular effort was made to provide emergency transportation, but there was nobody for the public to sympathize with except itself.

The building trade employers' association in New York are feeling the effect of this selfish attitude of labor, and threaten that if the strike process, commonly known as "snowballing," is further employed by the unions, they will close down on every job they have in hand. Here again the public becomes the goat, in fact it is a constant rôle that only varies in its intensity with the acuteness of the situation.

The time has arrived when the public should assert its might, its rights and its privileges in these matters. They have been too long ignored. These rights, that should properly be championed by the authorities duly elected or appointed for that service, are only perfunctorily performed. The opportunity for professional bodies to get into these discussions and to assert their rights to recognition was never better presented.

A pioneer in this practice is the Illinois Chapter of the American Institute of Architects.

President Holsman has sent a letter to the president of the Chicago Real Estate Board. In that letter he so clearly presents the case of the public and so intelligently argues it that, to serve a good purpose and to provide a model for action by other chapters, it is printed herewith.

The letter states:—

In the present building trades disaster, as with all trade disputes, there is no organized body caring for the interests of the third party, the public. The State does nothing.

The only influential and disinterested organizations who are conversant with the situation are the real estate organizations. Can they not find a way to protect the public interests? All the increased cost of living, due to continual decreased production, on account of the disputes and connivances between the labor unions and their employers, must be paid by the public, including the ten per cent of the public directly involved.

Strikes of employees or of employers are strikes against the public. The process hurts the striking parties themselves in the proportion that they are a part of the whole public. Each strike, or price agreement, being in effect a curtailment of production, does not solve the trouble, but only drives it further up the pyramid of high cost of living. As soon as the public approached an adjustment on the shoulders of the strikers of their proportional share of the burden of the last strike settlement, the process must be repeated by a new strike.

All those who would disturb industrial peace by strikes, lockouts, or other restrictions on cost of production, should be made to realize the following self-evident facts:

1. No relief for increased cost of living can be obtained without a general increase of production for the labor expended.
2. All limitations on the amount of work performed or the skill attained in production increases general costs and should be eliminated.
3. All inventions, or labor-saving devices, or methods of production tending to reduce cost, increase production and reduce the cost of living for the laborers themselves and should be encouraged by employee as well as employer.
4. Freedom of trade, as between cities, states or localities favorably situated for production decreases general costs of living and should be encouraged rather than discouraged by both employers and employees.
5. Attractive systems of apprenticeship in skilled trades tend to a selection of the most skillful, thus increasing production, and should be encouraged by organized labor, as tending to reduce costs of living.
6. Collective bargaining and open prices should be encouraged and safeguarded by the public and jurisdictional disputes settled by authoritative courts of arbitration for the public good, including the good of the disputants themselves.
7. The continued imminence of strikes in the building trades not only reduces production and increases costs, but discourages the best quality of building and the beauty of the city to the detriment of all citizens.

The peace-loving, middle-class, cultured citizen is deterred from building because he feels sure of a fight if he builds. As man becomes more civilized, more cultured, the more he loves to build a home for his family and the more he enjoys making his street or city more beautiful, home-like and healthful. He hates strikes, bribes and controversies, and, fearing a fight, he declines to build to suit his cultured tastes and rents or buys from the only class who will build—the class who will risk a fuss or a fight for a profit—gets along with poorer things than he would to the great detriment of himself, his family of future citizens, and the State. So long as fights, hold-ups, and outrageous waste accompany building operations, only those who are led into it unawares, or those to whom fights and outrages are not particularly repulsive, will build, and this state of affairs, everyone will admit, does not produce the most desirable state of mind in our citizens and does not produce the most desirable buildings.

These things the public must somehow bring to the understanding of those who disturb the building peace.

I know of no body of men so well qualified as the pro-

THE AMERICAN ARCHITECT

professional real estate fraternity to take up this "white man's burden". I pledge the co-operation and assistance of the organized architects and urge you to take this matter up seriously and comprehensively.

Every one of President Holsman's seven points will meet with positive approval by men engaged in the building industry. The logic of these premises cannot be questioned.

How shall the public bring to the understanding of those who retard the progress of building by strikes that curtail production the error of their methods? Every group of organized architects may, with the assurance of the performance of a valuable service, follow the example of the Illinois Chapter.

Labor's Folly in Retarding Production

IT becomes apparent to the thoughtful observer that the transition from war to peace is even more slow and fraught with more vexatious problems than that from peace to war.

In the more than nine months since the armistice was signed, comparatively little constructive work has been accomplished. Committees of investigation have been appointed, and the majority of them are not even yet organized to take up the work assigned.

Labor, the vital element in the resumption of building operations, is restless and insistent in its demands for what capital believes is the height of unreasonableness. The worst possible tendency in the struggle of labor for what it thinks is the solution of its right, is that to restrict production, on the absolutely untenable position that it will aid in maintaining the present high scale.

It is inconceivable that the men who represent labor in this country should be so poorly informed on this matter, and that they have been unable to learn by the experience of their fellow workers in Europe the fallacy of any agreement in favor of decreasing output.

President Wilson has for the second time vetoed the measure to repeal the daylight saving law, and accompanying his second veto, he stated in a memorandum, "the immediate and pressing need of the country is production, increased and increasing production in all lines of industry."

The cost of war to any nation is not really represented by what it spends, but what it wastes.

Commenting on this, *American Goods and Foreign Markets*, issued by the Guaranty Trust Co. of New York, states:

"Accumulated evidence gathered by competent observers leaves now little room for doubt that the lowest point in the economic state of the world was passed some time back and that whatever may be the temper at the present moment, from this time forth progress must be ever more rapid toward stability and prosperity.

"To support this view there is in the first place this obvious fact: That while production may not have increased at a rate sufficient to make the entire satisfaction of the World's needs a matter of less than years, yet the great waste of staple commodities, which the continued prosecution of the war involved, has been almost entirely stopped. The destruction of life, too, has ended, and the men engaged directly or indirectly in such destruction are now, each of them, an asset for constructive effort. During the years that the war lasted the world was able to feed itself and clothe itself, despite the great proportion of its resources that were being consumed in the struggle. That toll is no longer being exacted and has not been exacted since November 11. The world is, therefore, richer by the amount it has saved by merely ceasing to fight."

The resumption of normal trade relations between this country and Europe largely depends on our ability to produce those things in which Europe now stands sorely in need.

During the war the United States was in a position to supply Europe's needs, and in doing so was forced to extend credit to the purchaser until normal exchange relations were completely disrupted. It will require a further extension of credit to continue this supply of all sorts of materials, and as Europe is undoubtedly solvent, the problem that is now presented to the American manufacturer is one first of production, and then careful consideration upon what terms the credit may be supplied.

From every angle in the economic adjustment of our post-war condition the question of production looms up as the first and most important thing to be considered.

Labor will find that if it casts into this discussion the contention that restriction of production is necessary to maintain the present high wage scale it has thrown a boomerang that will return and strike with disastrous results.



CRITICISM AND COMMENT

Designing the Low Cost House

The Editors, THE AMERICAN ARCHITECT:

For purely business reasons the architect with an ordinary practice does not take an active interest in designing the low-cost house. It is the architect desirous of improving a community and assisting people of small means to solve their problems as economically as possible to whom it appeals as a question of very great importance.

Probably nine out of ten of the small houses in our cities are built from stock plans printed in some so-called Bungalow publication. Most of these are mediocre in character, both as regards design and plan. Usually the buildings are suited neither to the environment nor other conditions peculiar to the section in which they are erected.

Another difficulty is the fact that even if the average architect were anxious to obtain this class of work he finds that the man of small means is unwilling to pay the architect's fee, especially as stock plans can be obtained for almost nothing. The further fact that it is difficult for the average builder to discriminate between a well designed bungalow or small house as compared with the usual stock plan introduced into our cities by the thousands is an additional obstacle.

Busy architects might produce from ten to twenty or more well designed bungalows suited to their own location which would cover the field thoroughly for the average small house. These could be called a stock type of plan for the average office, from which a prospective client could suggest changes, using one of the stock plans as a basis. In doing so the changes would not cost the architect a great deal and he could dispose of the plans for an attractive small house for considerably less money than he would have to charge if the house were designed in the usual way, starting with the making of preliminary sketches.

This, of course, is a suggestion for cutting the architect's fees but some such plan as suggested will have to be evolved and the price of plans greatly reduced before the clients desiring attractive homes will be willing to pay what an architect would regard as a fair price.

Regarding the chapter plan proposed in a recent editorial in *THE AMERICAN ARCHITECT*, it is undoubtedly a good one, provided architects have sufficient time to go into the matter of production of plans of this type.

W. E. FISHER.

Denver, Colo.

The Dollar Savings Bank, New York

RENWICK, ASPINWALL & TUCKER, *Architects*

THE new banking building of the Dollar Savings Bank illustrated in this issue, located on the triangular block bounded by 147th Street, Willis Avenue and Third Avenue, New York City, and designed by Renwick, Aspinwall & Tucker, architects, presents an exceedingly interesting solution of conditions and the physical requirements due to a location so unusual in New York City.

As will be noticed by reference to the plan, this building has three street fronts, and as two of them, Willis and Third Avenue, are important thoroughfares, the clients desired two entrances, one on each avenue. Due to this fact and to the necessity for providing the maximum of counter space for the transaction of public business, the island type of working space was adopted in order to permit free circulation by the public around the entire working space of the building. Between Willis and Third Avenues there is a difference in grade of three feet and this difference has been taken advantage of by the architects to work out an interesting solution both from the artistic and utilitarian aspects of the problem.

The first or main banking floor was placed practically at the sidewalk level of Third Avenue and continues level to the east end of the building for the entire length of the banking room where on either side of the working space, broad, low flights of stairs have been located at the end of the two public spaces. These stairs lead down into an entrance hall and vestibule at Willis Avenue and from this hall the public has access to the various utilities and also to a rest room which has been provided. Further, on this lower level, there are stenography and typewriting rooms where the disturbing noise from many writing machines is withdrawn from the banking room proper and officers' balcony, which latter is situated directly over these rooms and occupies the entire side of the Willis Avenue front.

The difference in level of Third Avenue and Willis Avenue permits the placing of this officers' platform only 6'0" above the main banking room floor. Two stairways lead from banking floor to this platform, one from the public space and one from working space, allowing easy communication from both quarters. The vault is situated between these stairways. There is an unobstructed view over the entire banking room from the officers' platforms. There is a 6'0" base of Hauteville marble around this entire banking room and the walls are treated above in Caen stone with arched windows

THE AMERICAN ARCHITECT

and pilasters. The counter screen is of cast bronze and is placed on a counter of Hauteville marble. The cornice of screen conceals the reflectors for the indirect lighting of the entire banking room.

Due to the irregular shape of the property on Third Avenue, and in order to use the space to the best advantage, the banking room wall at the Third Avenue end was laid out with a curve tangent at the property line on Third Avenue. This scheme gave a generous vestibule and space between the outer and inner faces of this wall to permit the use of double windows that would effectively keep out the noise of the elevated railway on Third Avenue. This has been accomplished far better than the officers of the bank anticipated. Access to the Boiler Room is had from the Third Avenue vestibule, permitting the man in charge of the heating plant to enter and attend to his duties without entering the bank proper. There are slop sink closets in both vestibules for general cleaning purposes. The basement is generously lighted through areas and provides clerks' toilet, lunch room and locker room, storage space, book vaults, boiler room and coal vaults.

A stairway leads from the officers' platform to the trustees' floor, situated above the officers' platform and across the Willis Avenue front, where a large room is provided for trustees' meetings. Off this room there is a coat room and toilet.

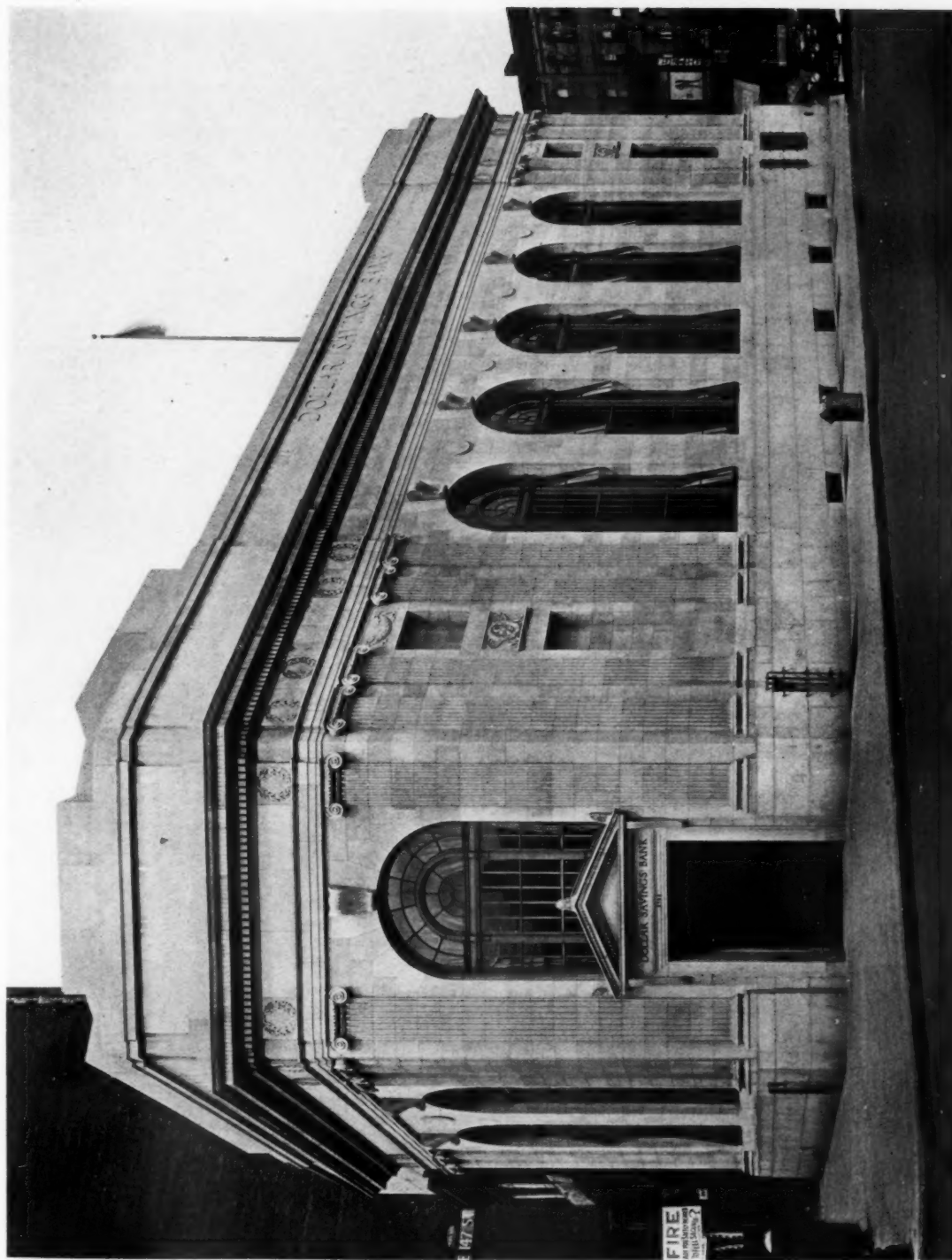
The exterior of the building, with the exception of the granite base, is of Indiana limestone.

The Subdivision of England's Great Estates

DECIMATION of great estates goes on with but little intermission, states *The Architects' Journal* of London. Notable among several recent instances is that of the Thixendale portion of the Sledmere estates, in Yorkshire. Sledmere seemed inalienably associated with the Sykes family, of whom the most prominent was, of course, the fourth baronet, Sir Tatton Sykes, who did much to improve it. Moreover, he caused schools to be built in many of the villages, and he "restored old churches and built new ones." One of them is in Thixendale, and whether it can be sold with the rest of the village without committing sacrilege, or simony, or some other deadly sin, may be a question for casuists, but more probably depends on

whether the tenure is secular or diocesan. One shudders at the mere possibility of its coming under the hammer of the auctioneer and being knocked down to the highest bidder, though churches in the war area have been worse profaned. At the worst, the church, it may be supposed, will not be perverted from its present use, and will remain to proclaim to future ages the generosity of its pious founder, hearty old Sir Tatton, who was almost the last of the old English squires—of the robustious red-cheeked men who contrived to combine, not altogether inharmoniously, a passion for the racecourse with a due regard for religion, especially if the parson rode straight to hounds. One can hardly suppress a sigh on seeing the good times of coaching and hunting melt away like a dissolving view, with "Yoicks!" and "Tally-ho!" dwindling echoes, Sir Roger de Coverly, Sir Tatton Sykes with him, mere memories of a vanished—and, when one comes to think of it—decidedly curious phase of civilization.

Richard Jefferies was rather fortunate in his opportunities. If he had been born half a century later, he would have lacked the materials for his peripatetic (too frequently pedestrian) philosophising "Round About a Great Estate." If the present tendency toward subdivision continues—and it seems to be rapidly increasing—there will soon be no great estates: they will all have been parcelled out into ten-acre lots. These changes, over which it is fatally easy to wax sentimental, are of profound interest to the architect and the builder, to say nothing of the surveyor, who will get very busy staking out the plots. No more will miles upon miles of cultivable land be kept idle for the pleasure of the American deerstalker. But while there will be less need for the widely scattered shooting-boxes, there will be an enormous demand for the buildings essential to the small farmer. Monumental domestic work must diminish with the acreage of the estate, but the demand for the small country house will be unprecedented, and the opportunities for construction and equipment will be correspondingly multiplied a hundredfold. It is, then, only for purely sentimental reasons that one regrets the subdivision of great estates, which should imply greater prosperity for all concerned, because it means a busier Britain, more wealth got from the land, and an increase of building and all that pertains to it.



THIRD AVENUE ENTRANCE, LOOKING EAST ALONG 147TH STREET
THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
RENWICK, ASPINWALL & TUCKER, ARCHITECTS



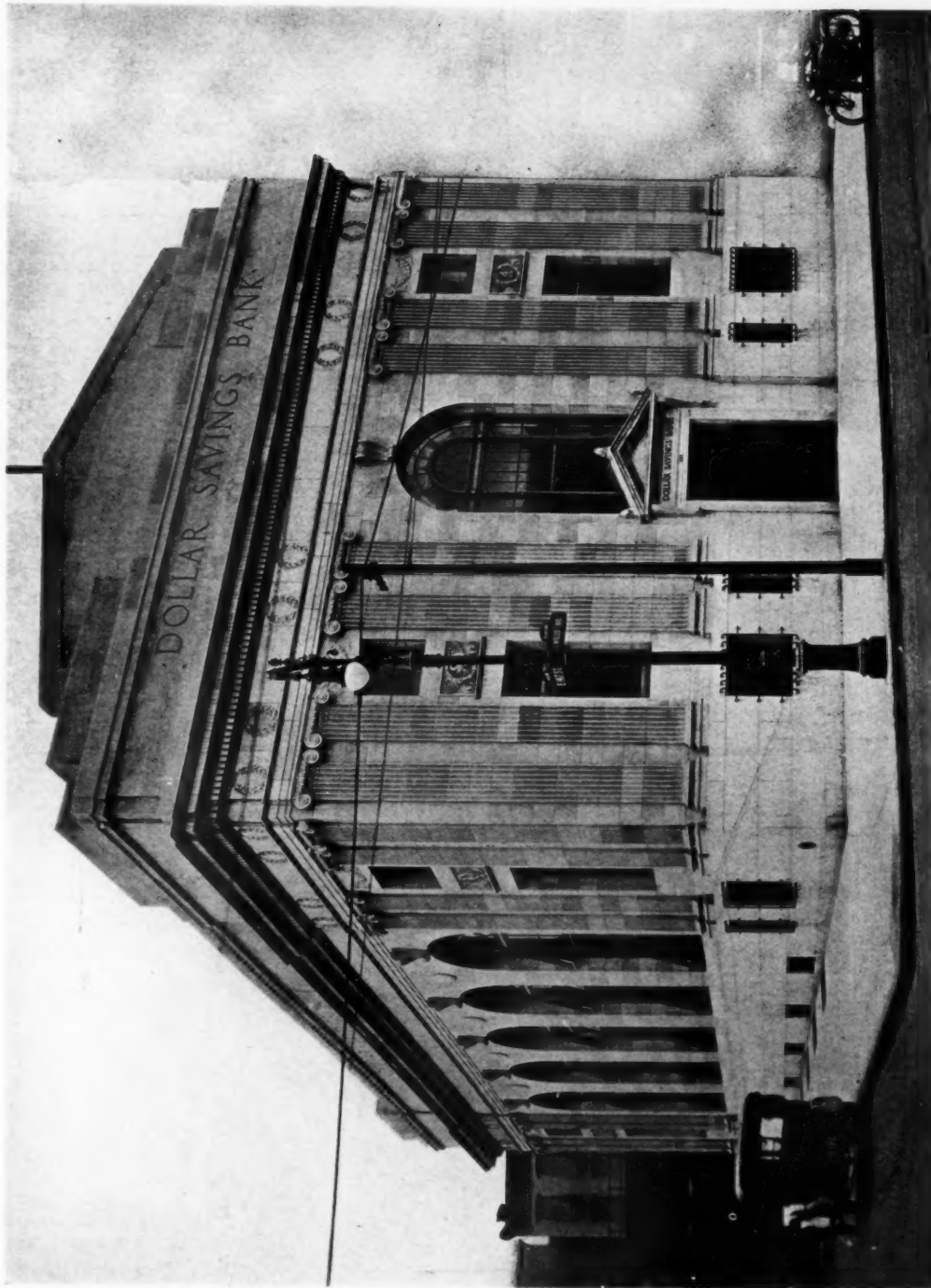


PLATE 75

WILLIS AVENUE FRONT, CORNER 147TH STREET

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
RENWICK, ASPINWALL & TUCKER, ARCHITECTS

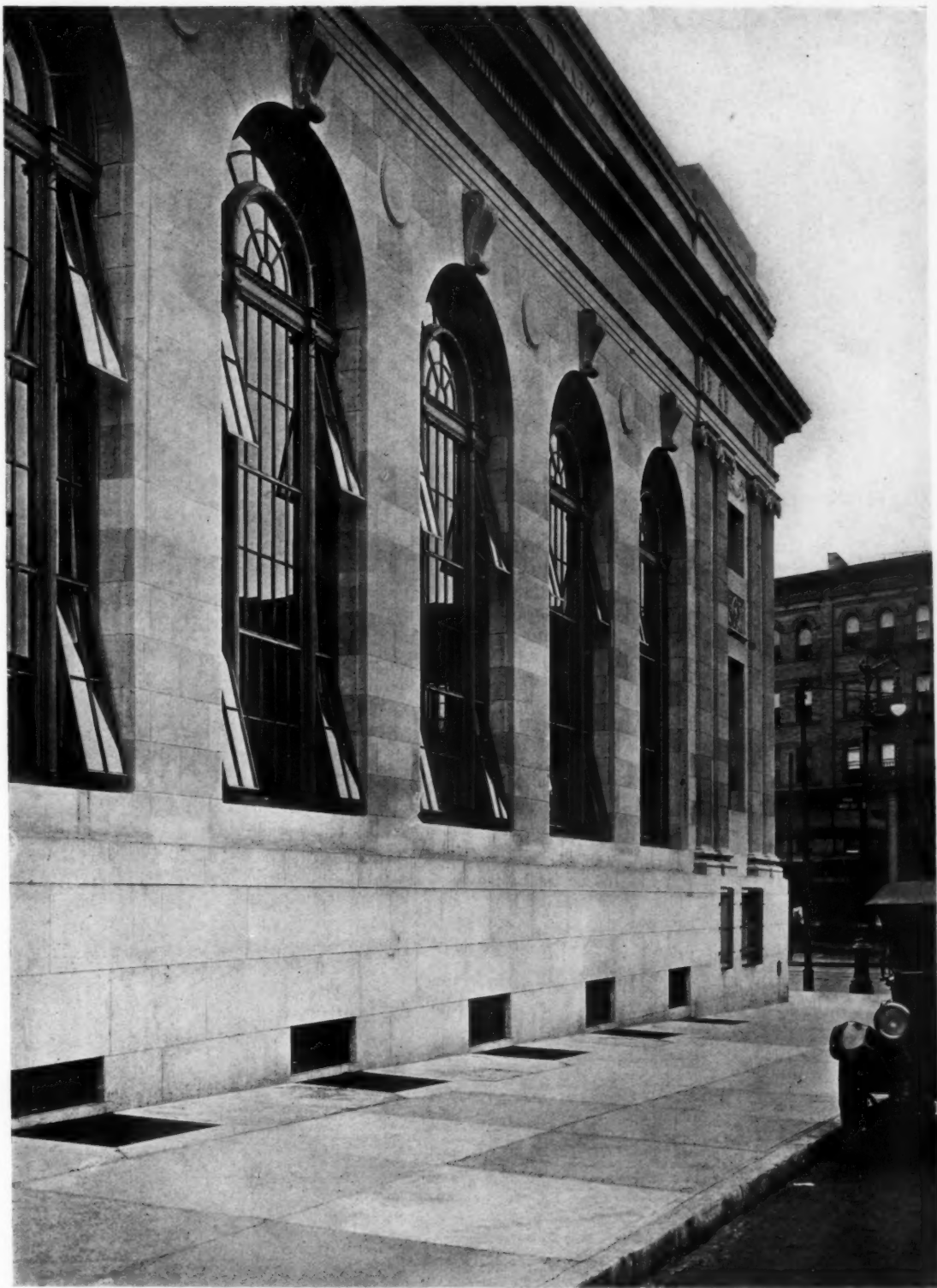


PLATE 76

147TH STREET FRONT, LOOKING EAST

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
RENWICK, ASPINWALL & TUCKER, ARCHITECTS

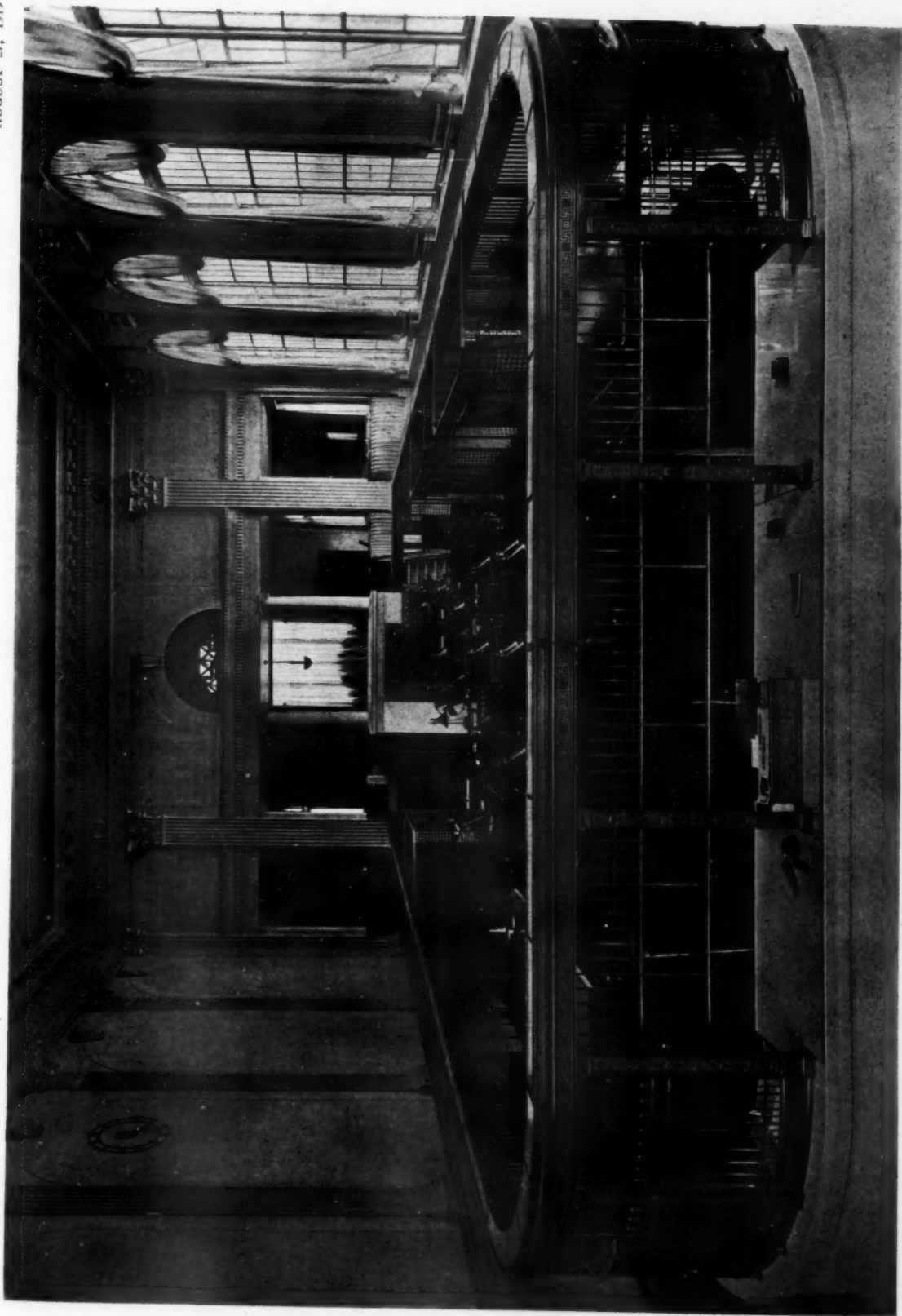


PLATE 77

MAIN BANKING ROOM, LOOKING EAST
THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
RENWICK, ASPINWALL & TUCKER, ARCHITECTS

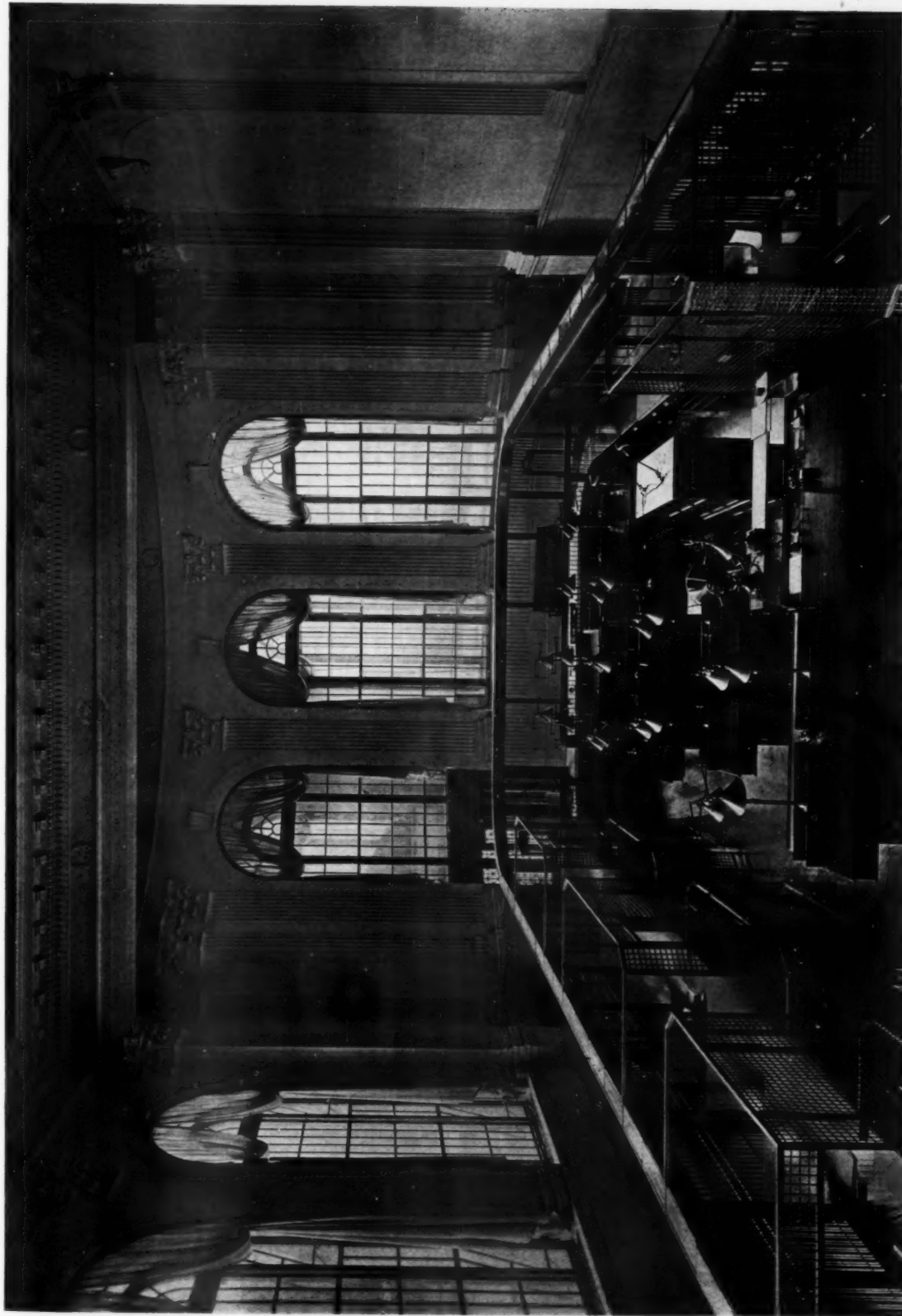


PLATE 78

MAIN BANKING ROOM—VIEW FROM OFFICERS' BALCONY, LOOKING WEST

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK

RENWICK, ASPINWALL & TUCKER, ARCHITECTS



PLATE 79

LOOKING WEST INTO MAIN BANKING ROOM FROM WILLIS AVENUE



MAIN BANKING ROOM, LOOKING EAST ALONG SOUTH PUBLIC SPACE

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK

RENWICK, ASPINWALL & TUCKER, ARCHITECTS

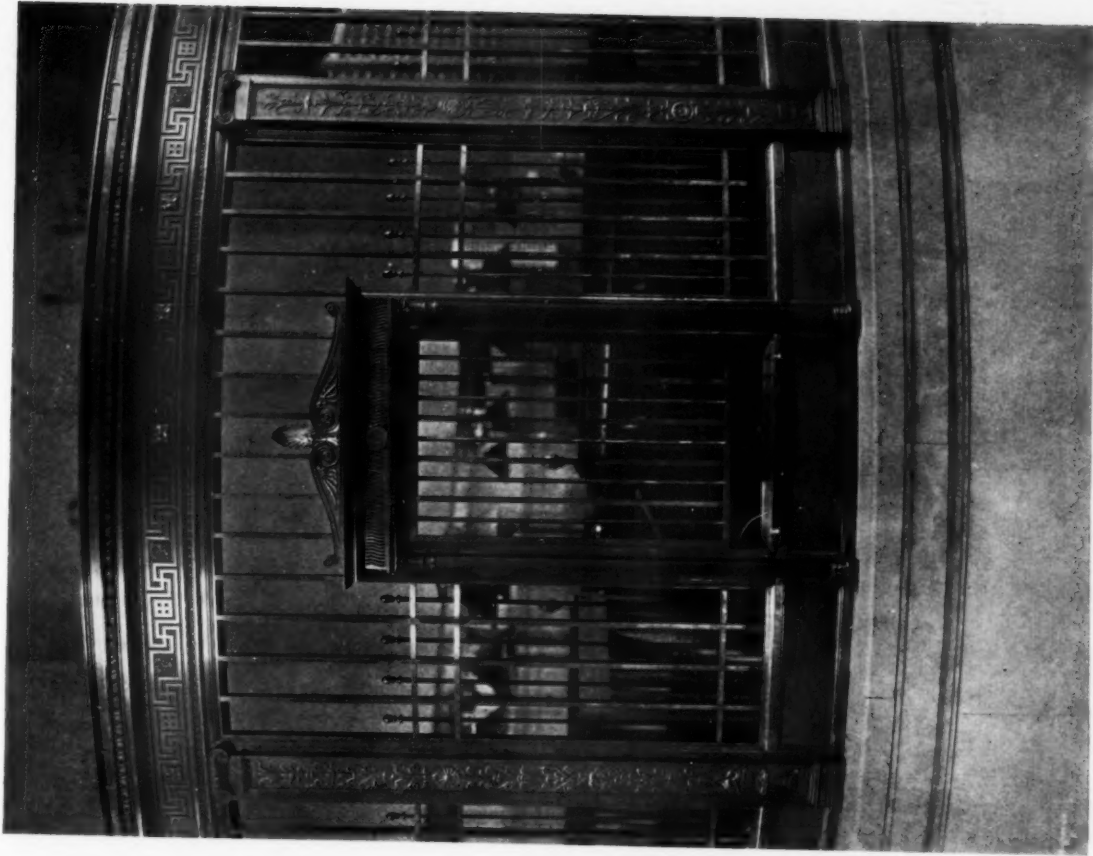


PLATE 80

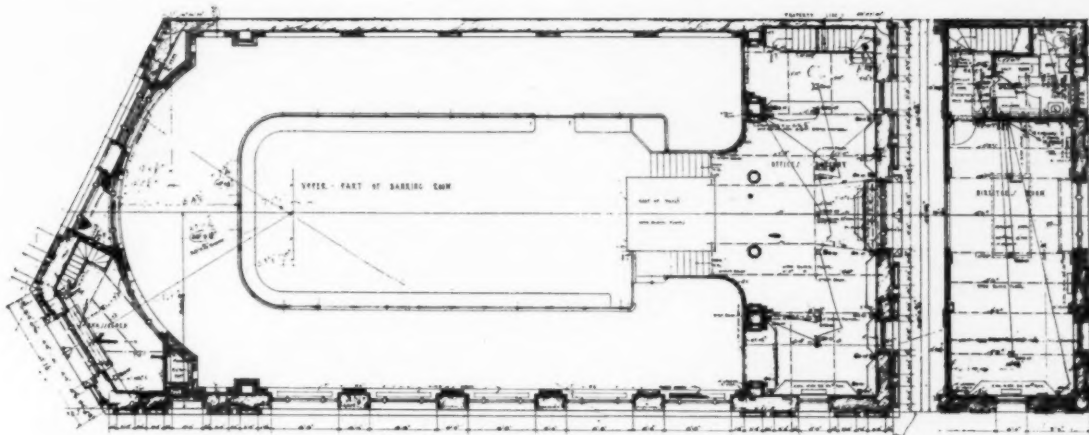
DIRECTORS' ROOM

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK

RENWICK, ASPINWALL & TUCKER, ARCHITECTS



DETAIL OF COUNTER SCREEN AT CURVED END



OFFICERS' BALCONY FLOOR

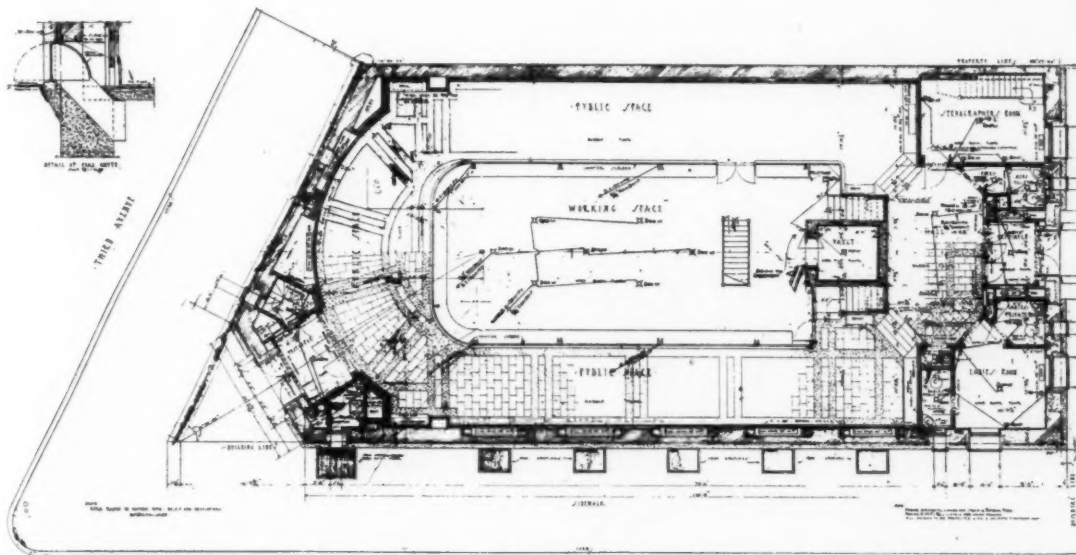


PLATE 81

MAIN, OR BANKING FLOOR PLAN

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
RENWICK, ASPINWALL & TUCKER, ARCHITECTS

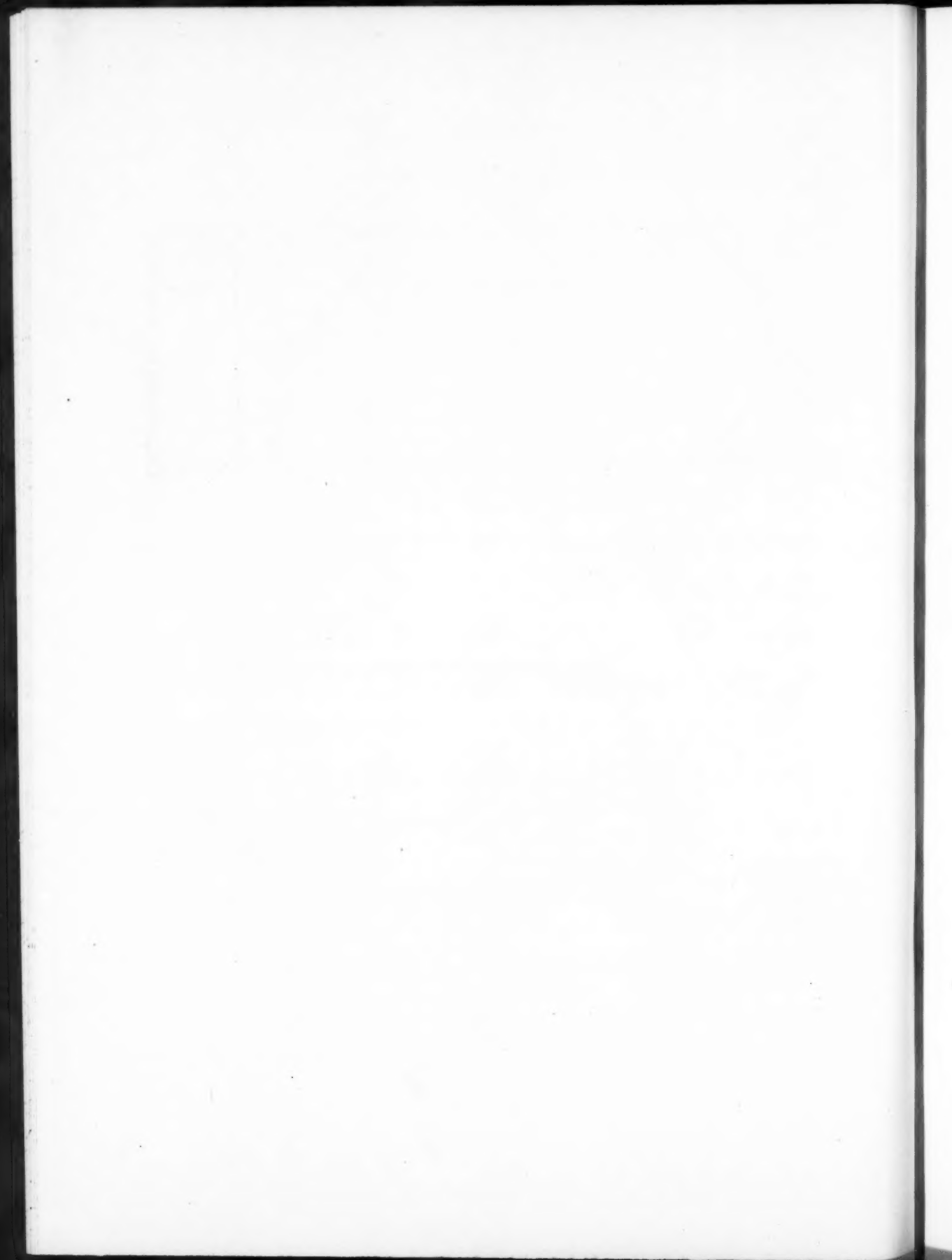
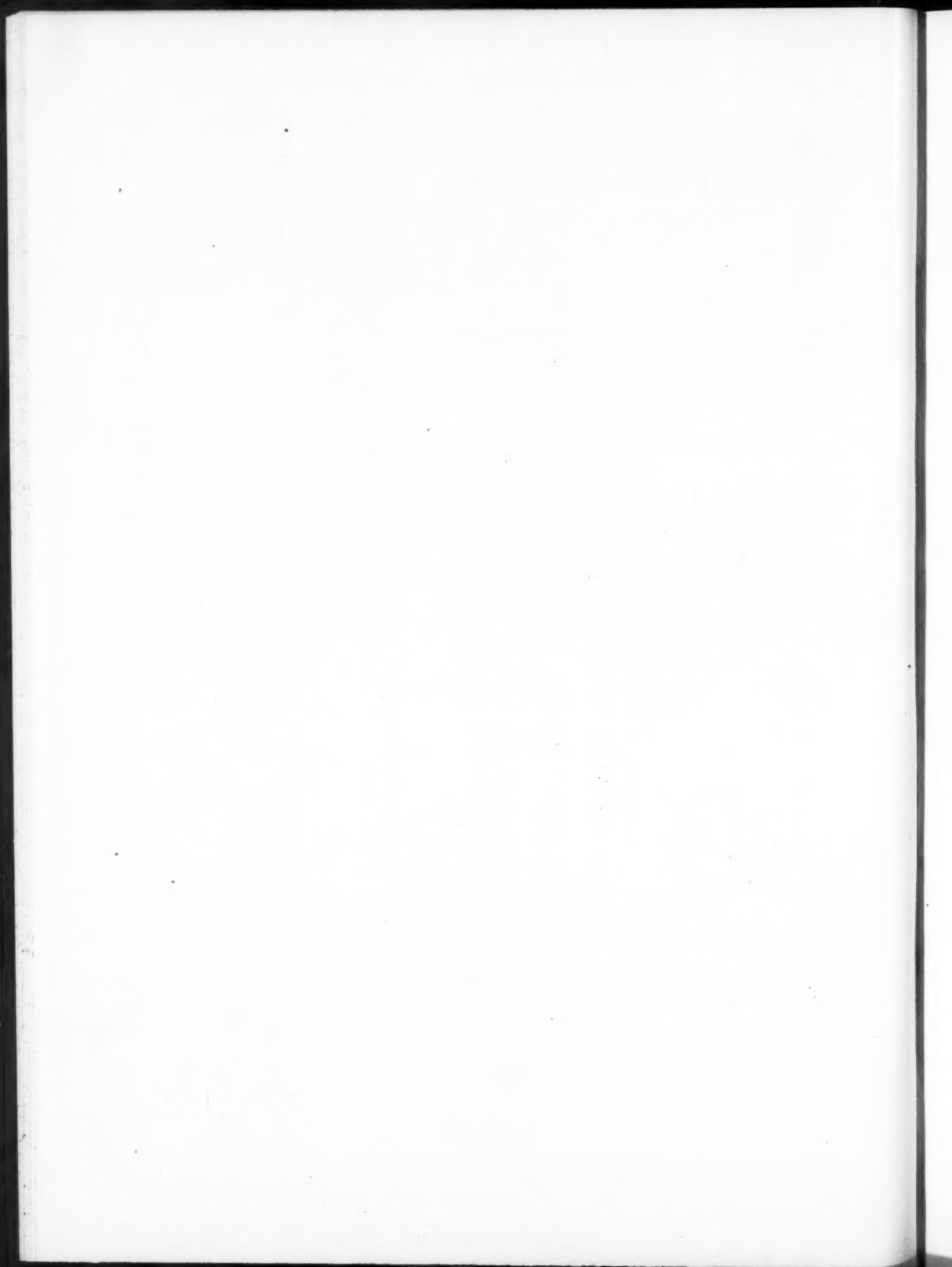


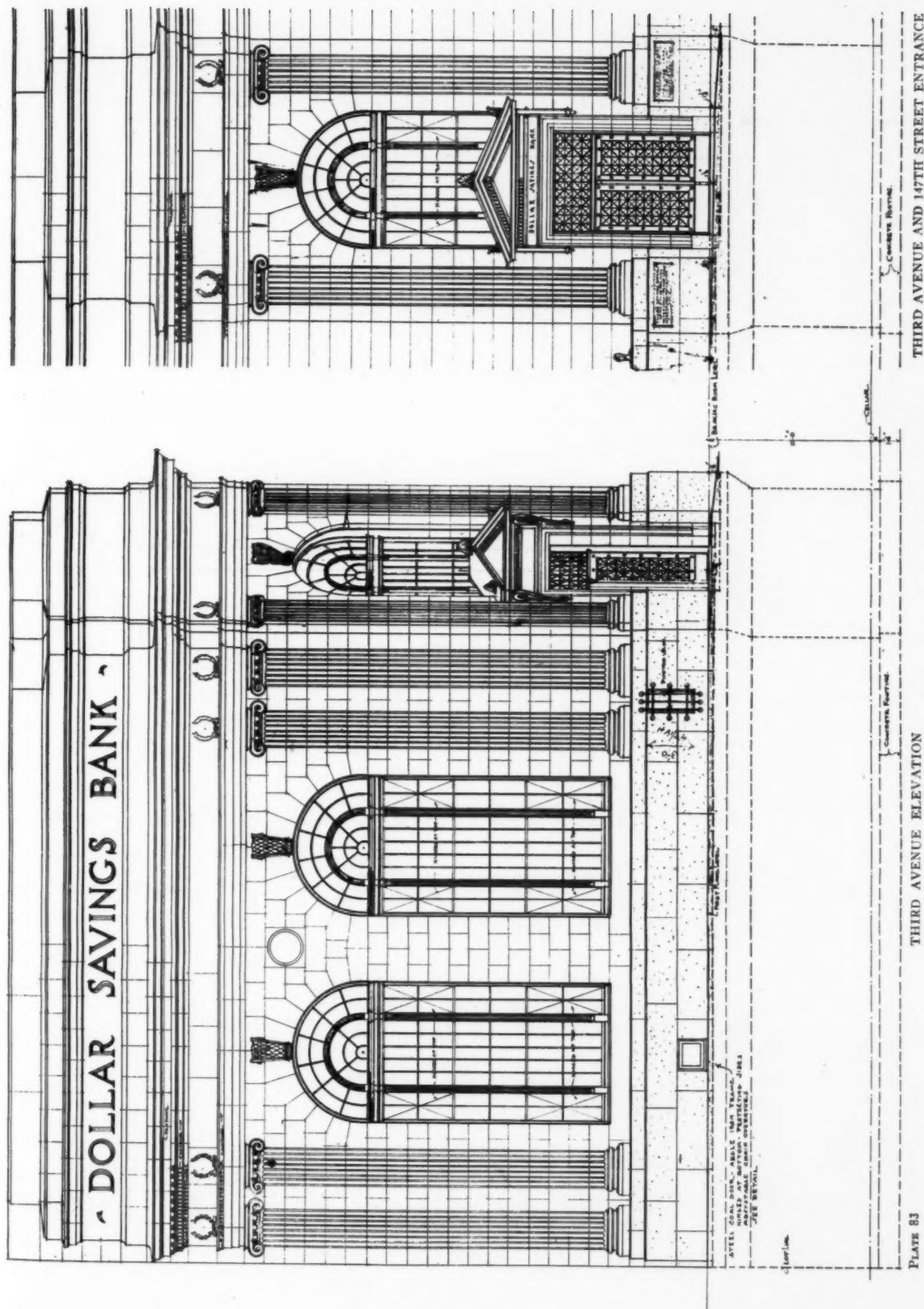


PLATE 82

WILLIS AVENUE ELEVATION

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
 RENWICK, ASPINWALL & TUCKER, ARCHITECTS

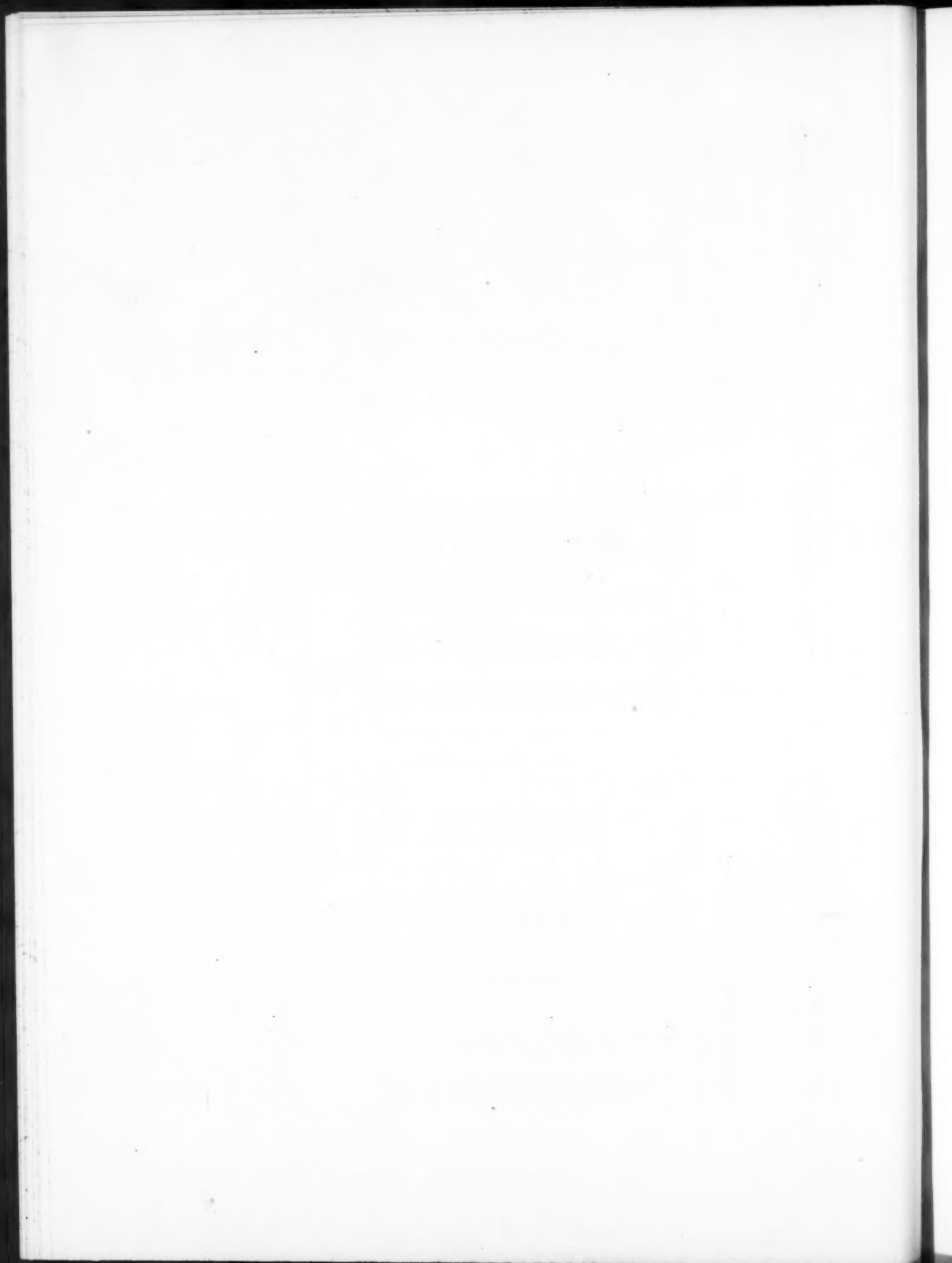




THIRD AVENUE ELEVATION

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
RENWICK, ASPINWALL & TUCKER, ARCHITECTS

THIRD AVENUE AND 147TH STREET ENTRANCE



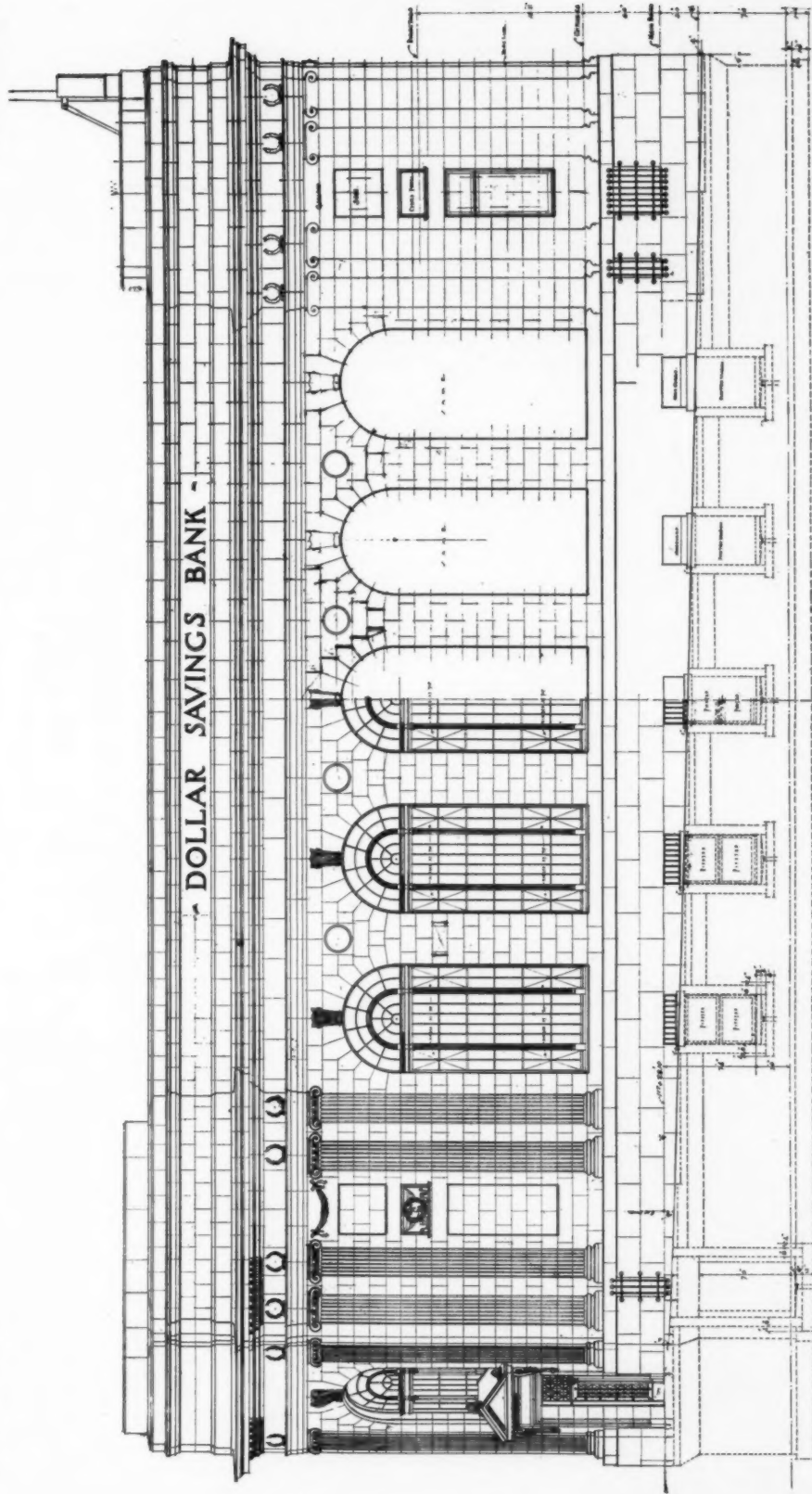
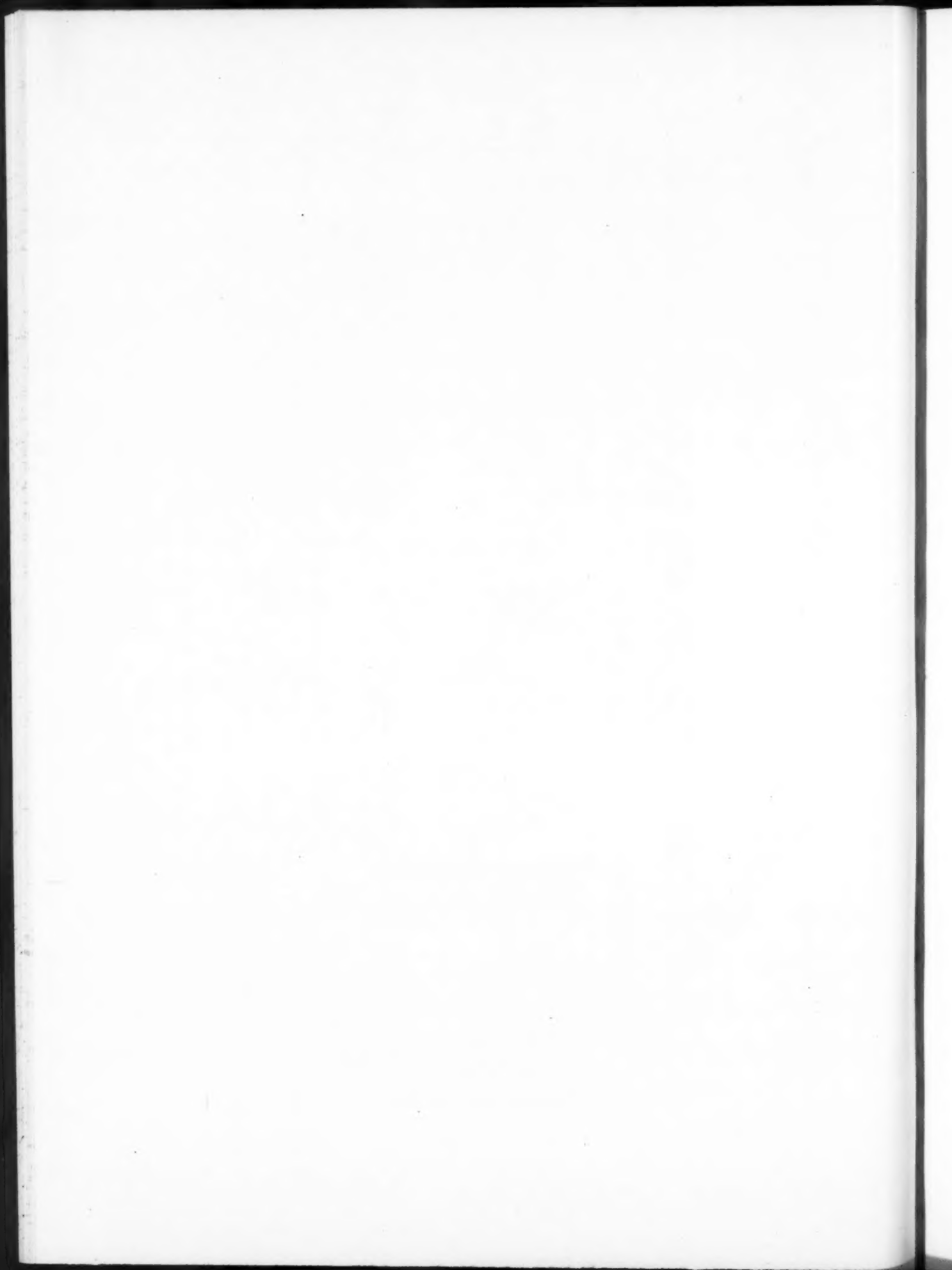


PLATE 84

147TH STREET ELEVATION

THE DOLLAR SAVINGS BANK, WILLIS AVENUE, NEW YORK
RENWICK, ASPINWALL & TUCKER, ARCHITECTS



THE AMERICAN ARCHITECT

Hygiene in School House Construction

(Continued from page 268)

have adopted practically the same requirement for the number of cubic feet of air furnished, but no consideration has been paid to the efficiency of different systems of ventilation, and apparently little to insure construction up to the standard.

"In no department of the school building," said Mr. Cooper, in touching upon another general lack of hygienic consideration in school buildings, "is there less uniformity than in that pertaining to sanitation. Most large cities have regulations, but the larger political divisions, the states, have not realized the terrible significance of the lack of direct control over adequate arrangements for the privacy of the school children." There are but five states that have any regulations with reference to the number of toilets for a school building, and only one that considers space requirements. The number of toilets is fairly constant in the states

that have any regulation, although Wisconsin requires one-fifth less toilets for the boys than do the other states. Massachusetts alone has gone into the matter scientifically, and suited its regulations to the mathematics of the matter.

Mr. Cooper spoke further concerning the surprising lack of rooms providing modern hygienic conditions. In 122 of the school buildings tabulated by his committee, 16 have no provision for special rooms for women teachers, emergency rooms, rooms for physicians; 40 buildings have a room for the teachers, but lack the other requirements, and only 18 school buildings have a room for the school physician.

In closing Mr. Cooper emphasized the need that exists for a new specialist in the form of a consulting school architect, who could prove to be a clearing house of information concerning school buildings, and could supplement the skill of the local architect with the technical skill of an expert on the requirements of school construction.

Current News

The Work of the Bureau of Standards in Testing Materials

WASHINGTON, D. C., Aug. 22.—The Bureau of Standards has been highly successful in testing building materials. While many of these experiments are in their infancy, the results have been gratifying to the scientists. Every effort is being made to expand the work of the organization. Great care is being taken in the construction of the new laboratory, as a considerable quantity of the material used will be frequently inspected in weathering and other tests.

The Bureau has issued the following technical bulletin, emphasizing that the tests were not conclusive. The Bureau is conducting mechanically controlled weathering tests on samples of various building stones and has already obtained disintegration of some specimens in less than 100 successive freezings and thawings, while others show practically no signs of disintegration after 300 such exposures. These tests are so arranged as to simulate quite accurately actual weather conditions. In connection with the investigation of oil storage in concrete tanks, which has been in progress for some time and upon which final results are not yet available, examination of one tank storing lard oil for one year, shows that the surface of the concrete had disintegrated. To date lard oil and coconut oil are the only ones of the series being investigated which have attacked the concrete. The specimens of concrete stored in various oils and other specimens stored under normal conditions were tested in compression after one year and those submerged in oil were found to have approximately the same strength as those stored normally. A paper, presenting the results of this investigation was read before the annual meeting of the American Concrete Institute.

The cracking of stucco surfaces is largely due to the volume changes in the mortar, which occur during the time of its setting. In order to determine, if possible, methods by which this injurious cracking may be eliminated, the Bureau is carrying out an investigation of the nature of shrinkage occurring in various mixes of lime and cement mortars. It is found that a high humidity may, to a considerable extent, offset contraction and will produce less shrinkage than would otherwise have taken place, even if the high humidity has lasted only for a short time; moreover, if expansion is produced by retention of water at the surface, this expansion will perhaps permanently offset a similar contraction. The results obtained at the present time are somewhat masked by the high atmospheric humidity and cannot yet be considered as conclusive.

The Magnetic Section of the Bureau has been studying the possibility of correlation of the magnetic and mechanical properties of steel, with the ultimate object of developing methods for testing the quantity and homogeneity of steel articles without in any way injuring the specimens. A member of the staff participated in a topical discussion on magnetic analysis at the recent annual meeting of the American Society for Testing Materials. A paper was presented also giving a discussion of the specific application of magnetic analysis to the testing of ball-bearing races. It appears that such an application is of commercial promise. Another paper describing an investigation of the location of flaws in rifle barrel s. and by the methods of magnetic analysis has been prepared.

This investigation was initiated in connection with the specifications applying to aircraft parts, in order to determine, if possible, the nature of the harmful effects of pickling and plating in the case of wires and thin rods and sheets of various grades of steel. Alternating stress test of 0.30 carbon steel in rods $\frac{1}{8}$ " to $\frac{3}{8}$ " show that the resist-

THE AMERICAN ARCHITECT

ance to fatigue, that is its endurance under repeated application of a load insufficient to cause immediate failure, is reduced by more than 30% by pickling in sulphuric acid. Rods of 3/16" diameter with carbon content varying from 0.09% to 0.87% show similar reduction in fatigue resistance. In the Erichson test on sheet steel of varying thickness and hardness, which gives a measure of the resistance of the material in the cold state, to plastic deformation, analogous results were obtained. The brittleness resulting from the pickling gradually decreases at room temperature, but recovery is not complete. Partial recovery can be hastened, however, by heating for 2 hours at 100°C or 10 minutes at 200° C. The failure of the material to recover its initial properties completely, coupled with the character of the broken surface of a pickled sheet, indicates that the brittleness is due to the combination of two effects,—the first a temporary one due to the roughening or etching action of the acid which increases the stress intensity at the surface.

At the request of the Navy Department, all of the Testing Machines materials at the Washington Navy Yard have been calibrated by means of the Emery proving levers. The machines tested include: 1—200 lb. compression machine; Universal testing machines of the following capacities: 40,000, 80,000 and 150,000 lb., and two machines of 100,000 lb. capacity.

The Bureau's investigation of the unsoundness of lime plasters has thus far resulted in two definite conclusions: First, the plaster sand should contain not over 1% of sodium chloride, 2% of magnesium chloride, and 10% of red clay; and, second, specimens made of twelve different plastering sands from as many different cities indicate that inferior quality of sand is frequently responsible for the so-called "popping" of lime plaster. Eight of these twelve sands made unsound plasters, and there is evidence that this was not due to the lime. This effect is seen in the expansion of small particles of the plaster, so that they finally push themselves out of the wall, leaving pin holes or "pops."

Roosevelt Memorial Campaign

Immediately after the death of Theodore Roosevelt there sprang up all over the country a demand for a memorial to this ardent patriot and great man. It seemed to be the opinion of people of every class and interest that, while his place in history was assured, and his place in the hearts of his countrymen could never be lost, there should be erected, without loss of time, a memorial to express the affection in which he was held and to perpetuate for the benefit of future generations the ideas and ideals for which he stood.

The result of this demand was the formation of the Roosevelt Memorial Association, with headquarters at No. 1 Madison Avenue, New York City, a non-partisan organization in the creation of which personal friends of the late ex-president took the lead. This association met in March and decided by formal vote to conduct a campaign to raise \$10,000,000 by popular subscription, to erect in Washington, seat of the Government and scene of Colonel Roosevelt's most important labor for the public good, a national memorial monument; and to create at Oyster Bay, his home for so many years, a park which may ultimately include his estate of Sagamore Hill, to be preserved like Mount Vernon and the Lincoln home at Springfield.

The campaign for the fund to establish the memorial will be held in every State during the week of October 20-27, and will be directed from the offices of the association, at 1 Madison Avenue, New York.

In Heart of Moorish Cities

Through the narrow lanes of Moorish cities the water carrier, who has filled his goat-skins at the nearest fountain, plies his trade from house to house, writes the *Asia Magazine*. The town of Morocco does not extend open, welcoming arms to the stranger. The houses present cold, forbidding fronts. The winding, irregular streets twist and turn in a bewildering fashion, and the low arches often linking house with house, convert the streets into a series of high-walled, semi-open courtyards, still more confusing to the uninitiated. But if one is privileged to enter through the massive gates formidably reinforced with heavy iron bands and heavily bolted, one may step into courtyards inlaid with mosaics and ornamented with laced arabesques, surrounded with arched passageways, richly carved and covered with luxuriant hangings; into a melancholy garden flagged with ancient white stones, where a marble fountain plays softly and great orange trees are outlined voluptuously against the white walls and the unclouded sky.

House Building in Korea

When a Korean begins to build a house, writes a correspondent to a Bethlehem, Pa., paper, he first lays down a system of flues where the floor is to be. These flues begin at a fireplace, usually built in an outer shed or in a closed alleyway connected with the house. From the fireplace the flues branch out like the ribs of a fan and end in a trench at the back of the floor space. This trench, in turn, opens into a chimney, usually built at some distance from the house. When the flues are completed the builder carefully covers them over with flagstones; he then cements the whole floor and covers it with a sort of thick oiled paper for which Korea is famous. The rest of the house is then built round the completed floor.

The heating system works in this way: When it is time to cook the rice for the morning meal the housewife lights a little straw or brushwood in the fireplace in the outer shed. While the rice is cooking the heat from the fireplace passes through the flues, heating the stone flags of the floor and diffusing a pleasant warmth that lasts until it is time to prepare the next meal. Two heatings a day generally suffice to keep the floor warm. On the floor the people sit by day and sleep by night. The heavy oiled paper that covers the floor prevents any smoke from entering the room.

Urge Adoption of Metric Units

In a recent address before members of the Advertising Club, of Baltimore, Md., H. D. Hubbard, of Washington, D. C., secretary to the U. S. Government Bureau of Standards, made an earnest plea for the adoption of metric units of measurement in the United States.

Mr. Hubbard pointed out that, during the war, American manufacturers were forced to use the metric system in the manufacture of guns and other ordnance, and two principal American locomotive works had to use it in the building of locomotives. If the work on the blueprints for these locomotives had to be done in feet and inches, Mr. Hubbard said, the locomotives would never have been built. He further said that America, by refusing to adopt the metric units, is keeping herself as far behind in the matter of proper standards as was China, who has now adopted metric units.

THE AMERICAN ARCHITECT

Architects Meet to Discuss Plans for New State Capitol

At the request of Thomas R. Kimball, president of the American Institute of Architects, and professional adviser to the Nebraska State Capitol commission, the president of the Nebraska chapter of the American Institute of Architects, Alan McDonald, has called a special meeting of the chapter to discuss the competition to be held for the selection of an architect for the new state capitol, authorized by the last legislature.

To this meeting all architects in the state, whether members of the Institute or not, are cordially invited. It is hoped that a competition will be outlined as a result of this meeting which will assure the best possible building for the housing of the legislative and executive activities of the state.

The Omaha architects will also discuss the proposed ordinance limiting the height of buildings in the city.

New York State Association Gains New Members

Rapid gains in membership in the New York State Association of Architects have been scored in the past month, several large architectural firms in New York City having come forward with whole hearted support. Every architect and draftsman in the office of Trowbridge & Ackerman, nineteen in all, have joined the recently organized association. Sixteen new memberships have also been received from architects and draftsmen associated with Robert D. Kohn.

New Conditions As to Housing Revealed in New York

Since the housing shortage has become so serious in New York City that three different agencies have been appointed to deal with the problems due to it, many suggestions for the prevention of profiteering have been made. While the mayor's committee, the state reconstruction commission, and a joint legislative committee are making surveys and investigations public-spirited citizens are discussing methods by which homes at reasonable rentals may be provided for wage earners.

One of the ideas presented by Herbert R. Limburg is that a fund of \$10,000,000 be provided for the purpose of building model houses. According to an outline of this plan, sent to the United States Department of Labor, Mr. Limburg would have bankers, representatives of insurance companies, and civic organizations co-operate in a project that would assure sanitary conditions, fair rentals, and general comfort for persons of moderate means. He believes that architects and engineers who have had experience in group construction at the war industry plants should be employed in working out the best construction schemes for what is now known to be the biggest city in the world.

In this connection the fact that many model tenements built in recent years have been found to be occupied by childless families and unmarried persons who desired to economize, instead of by families with many children, is much discussed. In place of the workers for whom the model tenements were planned, investigation committees have found that professional men and women rented

them and made them popular for persons who were willing to save money and thereby promote a fad for the simple life at the expense of wage earners that really needed the comfort and convenience provided at reasonable rentals. The state reconstruction commission, which made a survey of 1,000 houses occupied by approximately 15,000 persons, has announced that the present condition of the tenements cannot be relieved except by wholesale building operations, which should be carried on during the summer with a view of assuring shelter for many thousands before the beginning of winter.

The Meaning of America to Ten Million Immigrants

Ten million is the circulation of American foreign language newspapers, going into homes where three times as many people dwell. Social settlements reach a few thousands in this city and that, public schools are reaching about one in a thousand and patriotic societies still fewer, largely because native born agencies are used to carry the message of America.

For the first time in the history of America nearly a hundred per cent of our non-English speaking foreign born are hearing the message of America. The Interracial Council has seen the great value of the American foreign language newspaper as a medium for America to use, and in millions of immigrant homes to-day Slovak and Pole, Italian and Syrian, Scandinavian and Russian, and all the other forty-two races issuing papers in this country, are reading of American ideals and standards of living and the meaning of America is made plain enough for all to understand. The anti-American agitator has no chance when these millions of readers have acquired an understanding of the spirit and purpose of this country.

The main purpose of the Inter-racial Council is to promote better relationships between native and foreign born people and among the various races in America to encourage the use of the English language and to promote national unity; to develop a realization among the foreign born of the benefits, advantages, duties and obligations of citizenship and to promote loyalty to the purposes and principles of our government; to promote American standards of living; to improve and stabilize industrial conditions and to secure the investment of immigrant savings in America.

London's House Shortage

Grave fears are entertained in responsible quarters as to the housing situation in England next winter.

It is estimated by government officials that by the beginning of winter there will be an excess of population over housing accommodations, even at the low pre-war standard of about two million adults.

During the summer months, when a great deal of time can be spent in open air, the worst consequences of overcrowding are not apparent, but the crisis may be expected about next November.

In the judgment of those whose business it is to face the problem in all its aspects, one of the most alarming possibilities is the outbreak, in epidemic form, of diseases of the worst kind. The war cabinet is now considering a plan which it is estimated would serve at the beginning to house about 100,000 of those who need homes most urgently.

National Highways Proposed

The movement to construct a national system of trunk line highways, intersecting each state, the cost of construction and maintenance to be borne by the Federal Government, is gaining throughout the country, according to reports received by the Federal Highway Council.

The national highway bill, introduced by Senator Townsend, chairman of the Senate committee on post offices and post roads, is an entirely new piece of legislation. Its object is to build in each state, trunk line highways to the extent of not less than two per cent, nor more than five per cent, of the total mileage of the state, and to join them with the main trunk lines of other states, thus creating a national system connecting the entire country.

The decided trend in public opinion in favor of Federal construction of a national highway system is due, according to those having the measure in charge, to the fact that such mileage as each state will receive will put the state that much nearer to a complete and well-connected state system, at the same time insuring logical connections with adjoining states. It is admitted that such connections are necessary to a properly co-ordinated system and that such co-ordination is logically a federal function.

The net result to each state, it now begins to appear, will be a strengthening of forces behind road development. The states, on the one hand, are to be aided by relieving them permanently of the construction and maintenance of the heaviest traveled inter-state routes, thus permitting the concentration of state effort on routes having their terminal points within the state. In other words, more effective co-operation of federal and state power is to be gained by each having its specific work laid out, one applying its efforts to national connections and the other to the development of local or intra-state roads and their proper connections.

Supporters of the national highway movement are increasing their activities in the expressed belief that in the pending measure they are working for a plan whereby a comprehensive system of national highways may be constructed and put into permanent operation within the next few years, and at less cost to the public than under any other plan.

Housing Problem Helped by Dry Law

A striking example of how war-time prohibition is aiding in solving the acute housing problem of Harrisburg was pointed out at the office of the Harrisburg Chamber of Commerce as a result of activities of the Housing Bureau established there. At the same time it was noted that among the results enumerated as attendant upon the closing of the saloons, the alleviation of the housing problem has not been stressed.

This information came to light when M. C. Taylor, real estate agent, registered at the offices of the Chamber of Commerce, the data concerning seven moderately priced apartments now being prepared for occupancy at the Hotel Sullivan, Second and Washington streets. With the passing of the sale of intoxicating liquors, it was stated, the hotel is being converted into a modern apartment house.

With the exception of the first floor, occupied by what was formerly the bar room, it was stated, the entire building is being converted into apartments, to be modern in every detail, and to rent at from twenty-five dollars to forty dollars per month. It was stated by the housing secretary of the Chamber of Commerce that the apart-

ments will be available within ten days, and that they will be rented only to occupants who can furnish reputable references. The former bar-room will be retained by the present incumbent for the dispensation of soft drinks.

But the housing problem is more particularly affected in other ways. Housing facilities *per se* may increase, but in substituting a dignified and decent structure for the corner saloon, values will change and indirectly the housing situation will benefit. Sociologically, too, it is safe to say that housing conditions will grow more wholesome and satisfying as time passes.

Want Commission to Supervise Erection of War Memorials

WASHINGTON, D. C., Aug. 25.—Authority is given in a bill introduced in the House, by Representative Gould, of New York, and now referred to the library committee, for the appointment of a commission, with the Secretary of War as chairman, to supervise the erection of memorials and the entombment of bodies in the Arlington amphitheater. A proviso prevents erection of any memorial unless authorized by Congress. The commission will be empowered to pass upon the character, design and location of such memorials after consultation with the Commission on Fine Arts.

Progress in England's Big Housing Scheme

Those who have criticised the apparent slow progress which has been made with the government's housing schemes in England must have been rather confounded when they read Dr. Addison's statement on this subject in the House of Commons, says the *Liverpool Post*. What the new Minister of Health had to tell the country was probably a good deal more satisfactory than many, even his friends, had imagined. It is quite clear that not only has a good start been made to meet the pressing want of houses, but that quite excellent progress is being made. Up to the moment the sites sanctioned amount to 12,000 acres. Prices for this land have been agreed, and it provides ten houses per acre, for 120,000 houses. Sites applications are for 18,000 acres. At the present time the plans and full details sanctioned represent 17,720 houses. Although of plans of houses only 16,000 have been sanctioned, the schemes involve many times that number; the houses will be duplicated.

Dr. Addison naturally had something to say on the cost of these houses. Unfortunately this is a rather serious item. The present high prices are the dominating factor. He had a group of tenders for 1,100 or 1,200 houses, in which the cost varied from £500 to £800 per house. That had nothing to do with the cost of the land, but he thought it included a proportion of the cost of the road and sewers. The average was about £700.

House Passes Contractors' Bill

Contractors engaged in government building whose bids had been accepted prior to the declaration of war will be reimbursed for any losses suffered by them through increased cost of material, delay on the part of the priority board or to commandeering by the government, under a bill passed by the House and sent to the Senate.

Important Topics to Be Discussed At National Safety Congress

Some of the most important problems before American industry today, such as the anticipation of labor unrest, increasing plant efficiency and production, decreasing manufacturing costs and the whole subject of labor management, will be discussed in connection with the general subject of accident prevention at the Eighth Annual Safety Congress of the National Safety Council in Cleveland, October 1 to 4.

The great bulk of the accident prevention talent of the country—160 scheduled speakers and approximately 3,000 men and women who direct the safety work of the nation's greatest industries—will come together for a four-day exchange of ideas and experiences.

A nation-wide campaign to make the street and the home as safe for the workman and his family as is his factory will also be launched at the meeting.

Though not generally known, it is a fact that from two to three times as many fatal accidents occur in American homes, streets, and roads each year as in the industries of the country.

New Apartment Type Is Developed in Servant Dearth

Out of the servant problem there has grown increased demand for apartment hotels, according to S. W. Straus, of S. W. Straus & Co.

As a result of the shortage of servant labor, higher rentals and the increasing cost of all household supplies, a distinctively new tendency has developed in the building industry which is manifested in an unprecedented demand for large apartment houses of the residential hotel type. Modern ingenuity has created this form of construction to the end that many of the objectionable features and inconveniences of the individual homes are eliminated.

The servant problem has been a vexatious one for some time and is likely to become more acute with restricted immigration and a higher scale of wages in other lines of activity. The newly developed type of apartment hotel furnishes maid service and meals, so that in the family there is saved the inconvenience and expense of marketing, preparing meals and maintaining a kitchen. As the supply of household servants becomes more scarce and the density of population in our great cities increases, there will be a continued strong tendency toward the reconstruction of apartment houses and family hotels.

Historic Houses Being Torn Down

The relentless law of physics prohibiting two bodies to occupy the same space at the same time continues oblivious of artistic well being.

Now the older residents of Washington are lamenting the necessity of displacing the historic Corcoran house with the new Chamber of Commerce building. The Corcoran house, at Connecticut Avenue and H Street, was erected nearly a century ago, although the original building has had several additions made to it. Today it is considered one of the most picturesquely appealing residences in Washington.

W. W. Corcoran, who resided in the house, was one of Washington's great philanthropists. It was he who, by will, founded the Corcoran Art Gallery in that city,

one of the great galleries of the country, the Louise Home for aged and dependent southern gentlewomen, and several other foundations intended for good.

Prior to the time that Mr. Corcoran bought the residence which is now about to be torn down it had been occupied by Moses H. Grinnell of New York City, a merchant prince of the old days. Daniel Webster lived in the house for a long time and so did General James Breckinridge of Kentucky and Chauncey Depew. Now this old place must go.

It is said that the Chamber of Commerce will try to buy the residence and ground which are next to the Corcoran home on H Street. The house next door to the old Corcoran home is a fine old brick residence, occupied from time to time by men of note in American history.

Millions for Wayside Inns

The California Hotel Association, of which Mr. D. M. Linnard is president, is planning to spend several million dollars in constructing wayside inns to accommodate the automobile travelers along the Pacific Highway from the Mexican line to British Columbia. It is announced that the first inn will be built at a point midway between San Francisco and Los Angeles, construction to start early next year. The name of the architect has not yet been announced. The association will also build two inns in Oregon, each of which will cost not less than \$1,000,000.

The intention is to have them so spaced that tourists may have a convenient place to stop at nightfall. At present these are lacking, and the tourist is put to it to find shelter at the end of the day.

A. E. F. Engineers Seek Employment

Army officers are registering with the United States Employment Service for positions at the rate of more than 100 a day, and special efforts are being made by the service to place them in suitable employment. Engineers, office managers, teachers, lawyers, doctors and other professional men are applying in large numbers for aid in obtaining employment.

According to Prof. William F. Turnbull, formerly of the University of Pennsylvania, who is acting-director of the soldiers' employment division of the Federal Employment Service, those hardest to place are the engineers and other men of technical training.

"This is due to the general holding up of new projects requiring the services of technical men and executives," he said today. "Many engineers are now forced to take positions as draughtsmen or clerks in engineering offices pending the beginning of these projects. Heads of large engineering firms in New York and other cities with whom I have talked lately, believe that as soon as the peace treaty is ratified and the financial situation settled, engineering work will be undertaken on a large scale, thereby opening many opportunities to technical men."

Under arrangements with the War Department, all officers resigning from the Army fill out a blank, stating whether or not they wish Government assistance in obtaining employment. Those who ask for assistance are referred to the Federal Employment Service by the Adjutant-General's office.

Prof. Turnbull estimated that approximately 85 per cent of the officers registering with the Federal Employment Service are being placed.

Tells of Early English Homes

English people of the poorer class for centuries made their homes in wooden huts of one room. When a family increased in number or wealth, another hut was built to it, or rather a lean-to was added and another and another, as needs required, according to the *New York Sun*. Sometimes they followed a straight line; other times they were built out from the central hut at various angles. The roofs of these huts were thatched. In the center was left an opening for the fumes and smoke of the fire to escape. The fire was always built in a hollow in the center of the room.

Beds were straw, often a shake-down in a corner. Occasionally the straw was held in a frame like the ribs of a ship.

Houses built by Saxon knights were much more pretentious. They were big halls, like the Roman atrium, with a lofty roof thatched with slate or wood shingles. The floor was hard clay. In the middle was a great fire of dry wood. The thin, acrid smoke from the fire escaped through an opening in the roof directly above the hearth.

Around the fire were long benches on which hearthsmen and visitors sat when not fighting or at work and talked and drank the hours through.

Sudden Shifting of Land Ownership Menaces England

So tremendous have become the sales of land in England that the *London Times*, in a recent issue, referred to the situation as a "silent revolution." Whether the transformation being brought about means a permanent breaking up of great estates is not clear. It may merely mean the transference of the land from one class of rich men to another class.

Under the caption "England Changing Hands," a writer in the *Times* declares that it is clear that a great number of substantial land holders are of the opinion that liquid money is a safer investment than indestructible land, and that the reverse view is held by men who are presumably of keen business capacity. The former class evidently thinks that land taxation and land burdens, including the burden of death duties borne by settled estates unsupported by free capital, are likely to become intolerable, while the latter class have decided that land, with the scientific development of agriculture, coupled with large housing schemes and the better distribution of population, is likely to prove a paying investment, which no sensible government would willingly destroy or even handicap.

There is a good deal to be said for each of these views; but it has to be noted that, while vendors are basing their policy on pre-war conditions and the burdens thrown by death duties on settled estates, purchasers are basing theirs on pre-war likelihoods and especially on the fact that the Government has announced its determination to make England more self-supporting in the way of food. This is not possible if land-owners are unduly hampered. It may be that it is unwise to speculate on Government promises, but there are actualities as well as promises. Immense agricultural and forestry developments are in hand. Motor traffic almost immediately will be opening up districts that have hitherto never touched in any true economic sense the markets of the world. Roads and canals are likely to find enlarged economic purposes, while air-traffic may soon be carrying perishable goods very rapidly to any desired market.

So while there is a class of business men who see their way to offer high prices for land in view of ultimate large profits, there is also a class of vendors who are thankful to get a high price, clear off their mortgages as well as their moral responsibilities, and be left with an income which may be respectable, and is, at any rate, in the hands of trustees, normally certain.

Campaign to Promote Good Taste in Furnishings

Dr. James P. Haney, writing in *Good Furniture*, sets forth an outline for a campaign to better the standard of home furnishings. His premise is that the home-maker is judged by her home, and emphasizes the appeal to the housewife. Everyone lives somewhere, and therefore has a very fundamental interest in conditions connected with his immediate surroundings. No appeal probably, reaches wider audience than one which invokes a keener interest in the home.

Twenty millions of American homes serve to house our hundred million inhabitants. Each of these homes is a potential center in which the movement for better furnishings may be carried forward. More than a hundred trades cater to these homes, and more than a hundred trades should therefore lend their aid to carry forward the association's service.

Our standards of taste in woman's dress have reached high levels. The American woman is held to be the best dressed in the world. She realizes that her taste is judged by her dress. No long step is required to show her that the home-maker is as truly judged by the taste displayed in her home. While not a long one, this will be an impressive step forward. Once the great mass of American women decide that their homes shall declare their good taste there will come a forward movement in the art trades such as these trades have never known.

This proposal may to some give pause, because of the numbers it contemplates. Yet in these very numbers lies its importance. It need be no vain wish. It is something which can be directly stimulated and governed. It is an end which can be definitely brought about. Indeed, it is amazing that so obvious a step has not already been taken. No home is recognized as the first center of interest with the American family, yet the thousands of agents which cater to the home have never yet set about joint action to enable them to help the home-maker. Each has gone about his own business, and, seeing no mutual interest in mutual service, has viewed his neighbor in trade with jealousy and apprehension. Such a harmful and distrustful attitude this organization seeks to destroy. It teaches union in peace as in war.

It stands as an axiom of this organization that any activity that helps develop interest in better home furnishings helps all other agents working toward the same end. Thus, those who make fine furniture and interest many to possess it, aid those who make fine hangings and fine carpets, and also aid those who furnish the china and silver which go into the finely furnished room.

One home-maker has her interest developed in one way and another in a different way, but the interest once created leads both to better and still better decorations in many different lines. Every one knows the effect upon the householder of introducing a single good piece of furniture into a room otherwise badly furnished. The pride in that which is good has acted in innumerable cases to cause the redecoration of a room, and even the refurnishing of an entire home, as standards of taste have been raised.

THE AMERICAN ARCHITECT

News from Various Sources

Airplane sight-seeing tours have been inaugurated at Washington.

Regular airship service between London and New York is planned. Trip will be made in 2½ days and fare one way will be \$250.

Pacific Aero Club, San Francisco, is engaged in urging municipalities of State to establish aviation fields large enough to handle business sure to develop.

Government fiscal operations and their effect on banking conditions, also latest developments in foreign exchange market, are discussed in forthcoming number of Federal Reserve Bulletin for August.

Forced by prohibition legislation to seek new fields of endeavor, many growers of wine grapes in California have made inquiries concerning opportunities for grape lands in Mexico. Most of these inquirers are foreigners, mainly Portuguese.

Figures from London, disclosed in statistical tables now issued by Lloyd's register, show that, as compared with five years ago, shipping owned in the United Kingdom has decreased by 2,547,000 tons, gross. American sea-going tonnage has increased by as much as 7,746,000 tons, gross.

Monthly Labor Review states that tide of emigration of aliens from U. S. has been steadily swelling during present year. Figures compiled show that 17,203 emigrant aliens left U. S. during April. Immigration of aliens into U. S. during month of April exceeded that of any month since May, 1917.

As a result of agreement between British representatives of employers, of trade unions and of Minister of Labor, acting as National Industrial Conference, two bills are being prepared for action in Parliament. These will propose provision of adequate living wages and set a limit of 48 hours as a week's work.

Chamber of Commerce made public a statement to effect that the tabulation of a referendum of the 1,120 commercial and trade organizations, representing 670,000 business men affiliated with national organization, just completed, showed that 99 per cent of votes cast were opposed to Government ownership of railroads.

Rep. Sweet introduced bill proposing amendment and modification of War Risk Insurance Act, making term insurance permanent and giving insured right and privilege upon application to have his term insurance converted into such form or forms of insurance as may be prescribed by rules and regulations of Department and as insured may request.

Complete statistics of iron-ore mining in 1918, compiled under direction of E. F. Burchard, U. S. Geol. Sur., show decrease in output and in shipments but an increase in value. Iron ore mined in U. S. in 1918, exclusive of that containing 5 per cent or more of manganese, amounted to 69,658,278 gross tons, compared with 75,288,851 tons in 1917. Average selling value of ore per gross ton at mines was \$3.39, compared with \$3.15 in 1917.

A dispatch from London states that it is estimated that an increase of \$2 to \$2.50 in weekly wages of all shop clerks will cost merchants in the United Kingdom \$125,000,000 to \$150,000,000 a year.

Senator Calder stated before the Senate that 1,000,000 homes to cost about \$4,000,000,000, are needed in the United States. With both material and labor short, he said, the Government should provide a system for easy loans to home builders.

Personal

Louis J. Laskin, architect, has opened offices at 409 Proctor Bldg., Mount Vernon, N. Y. Catalogues and samples are desired.

Marcus R. Burrowes, architect, announces the removal of his office to suite 612 McKerchey Building, 435 Woodward Ave., Detroit, Mich.

T. P. Barnett Co. announce removal of their offices from the Central National Bank Building, St. Louis, to a suite at 1564 Arcade Building, same city.

J. Howard Hess, architect, Moorhead, Minn., has opened a branch office in Hodgson Block, Fergus Falls, Minn., and desires manufacturers' catalogs and samples.

Dennis & Knowles, architects, 1151 Plymouth Building, Minneapolis, have established a branch office in the Berse Block, Fergus Falls, Minn. They desire manufacturers' catalogs and samples.

Franklyn J. Kidd and William Andrew Kidd have opened offices for the practice of architecture under the name of F. J. and W. A. Kidd, Delaware Court, 232 Delaware Ave., Buffalo, New York.

Peter Oliver Moe, architect, has established an office at 616 New York Life Building, Minneapolis. Since leaving government service, several months ago, Mr. Moe has maintained a temporary office at his residence, 3425 Harriet Avenue, South.

Mr. John E. Davis and Mr. V. J. Ingold have opened offices at 2311 Dime Bank Bldg., Detroit, under the firm name of Davis & Ingold, Architect and Engineer.

Messrs. Davis and Ingold were both previously with Louis Kamper, architect.

Appointment of Lauder W. Jones as dean of the college of engineering and architecture at the University of Minnesota has been announced by President Burton. Dean Lauder was formerly dean of the school of chemistry. He succeeds Dean John R. Allen, resigned.

Ernest Coxhead, California architect, who was in charge of the field work which was a part of the large plan of art instruction given to the A. E. F. in France during the period of the armistice, has returned to this country. He will be in New York until Sept. 1, when he will return to San Francisco and resume the practice of architecture.

Delano & Aldrich and Charles H. Higgins, Associated Architects and Engineers, announce that they have discontinued the association of the two firms, made during the war, and that each firm will continue its practice independently. Delano & Aldrich will remain at 126 East 38th St., New York, and Charles H. Higgins will remove to 19 West 44th St., New York City.

Financial and Commercial Digest

As Affecting the Practice of Architecture

New Method of Financing Church Construction Proves Successful

Architects all over the country, and particularly those in the smaller communities, are watching with great interest a new method of financing the building of churches which is being tried out in certain sections where there has been difficulty in obtaining sufficient funds to enable construction to proceed. So far results have been highly satisfactory and there are several instances on record where bids have been accepted and the work of breaking ground has been commenced through the issuing of this new type of church loan.

One example in particular is worthy of comment in that it perhaps will best explain how the method may most successfully be worked out. Several years ago the combining of two churches, the First and Second Dutch Reformed, at Poughkeepsie, N. Y., made it necessary that a new place of worship be erected to meet the needs of an enlarged congregation. Both of the old churches had become, through long years of service, inadequate to meet new requirements. A plot of land was purchased in a rapidly developing section of the city; but when it was decided to build it was found that subscriptions from the members were not large enough to enable building.

The project remained in this dormant state until the close of the war, when it was revived by an active campaign for more money. A member of the committee, a prominent banker of that city, decided to appeal to the congregation for money with a new plan. He asked members to turn in their Liberty bonds for church bonds, which would pay $\frac{1}{4}$ per cent more interest. For instance, if the Government bonds were of the issue paying $4\frac{1}{4}$ per cent the interest on the church bonds would be $4\frac{1}{2}$ per cent. The plan was immediately successful. There was prompt response to the new appeal. Enough bonds were soon obtained to enable the committee to get a loan of sufficient size to allow the work to go promptly toward conclusion.

Other cities are having satisfactory results, and the new church financing plan will doubtless prove an aid in many other communities where difficulty in obtaining loans for new construction is being experienced.

Freer Loans for Apartment House Construction

That there is plenty of money to finance the erection of apartment houses in New York City was intimated this week by Frank Bailey, vice-president of the Title Guarantee and Trust Company; but the houses erected, according to Mr. Bailey, must be of a type that will appeal to renters, thereby making them good propositions from the lender's point of view.

Mr. Bailey's company recently advanced \$500,000 to help erect a group of garden apartments at Jackson Heights, on the Corona extension of the dual subway system into Queens, and it was in this connection that Mr. Bailey made his remarks on apartment building. The Title Guarantee and Trust Company was one of the first to recognize the

efforts of the Queensboro Corporation at Jackson Heights, and, besides financing the first operations there, has loaned up to this time a total of about \$1,200,000.

"Some people have accused us of withholding funds for home building in greater New York," Mr. Bailey said, "but I think this loan to the Queensboro Corporation refutes any such statement."

Report High Rentals to Continue

In a report concerning housing conditions the Merchants Association of New York says that the only remedy for the present lack of homes in the city is the construction of new houses under normal building conditions. Building and construction materials will, in the opinion of the committee, continue to sell at the present high prices.

Fair financial returns must be assured prospective builders if the situation is to improve with any rapidity. The committee suggests the elimination of excess profit and income taxes on mortgages held to the extent of \$40,000. This will aid the landlord in obtaining a fair return.

The committee also points out that while there have probably been many cases of profiteering in rents, the mere fact that higher rentals are charged does not mean that the landlords have not found them necessary.

Urges Budget Need for United States

"The United States is confronted with the task of paying off billions of dollars of war debts, establishing credits for foreign nations, and at the same time refitting herself for peace time activities. Only by the severest form of administrative economy can she hope to meet the obligations imposed upon her by these demands. The adoption of a national budget system by Congress will help keep national expenses within the limits which economy demand."

This was the statement made to-day by Joseph P. Day, real estate expert, in commenting upon the need for thrift during the post war reconstruction period. Mr. Day, like many other American business men, believes that its success as a leader of industry will depend in a large measure upon its ability to save.

"The war helped teach us how to save," Mr. Day continued, "but it did not teach us how to spend wisely. The immediate necessity for equipping an army of four million men did not permit national leaders to weigh the expenditure of every dollar. We had to have arms, munitions and food in enormous quantities and we had to have them in a hurry. We got them. Now that the war is over, we must take inventory of ourselves as a nation."

"America for years has been known as the spendthrift nation. This was largely due to the open handed fashion in which Congress meted out appropriations to the ten major departments in making up their annual estimates for Governmental expenses work independently and without considering the total income of the United States. As a result, waste and extravagance creep into money appropriation bills."

"If we are to save money, it would seem the logical thing to revise, legislative procedure effecting money bills at this time.

"Party leaders have long favored the adoption of a national budget system to cut down expenses, but Congress has never passed a budget bill. The important feature of a budgetary system would be to place in the hands of a non-partisan organization the power of drawing up estimates by which all Governmental departments are run. This organization, with no axe to grind, or no incentive to favor private interests, would be in a position to supply Government units with sufficient funds to carry them over the fiscal year. It would not leave a wide margin to be spent wastefully and extravagantly.

"As a business man, with a keen appreciation of efficiency in business methods, I believe that the country will save many hundreds of millions of dollars annually in adopting such a plan."

Liquidating War Contracts

The War Department has liquidated almost one-third of the contracts which were suspended as a result of the cessation of hostilities. Out of a total of \$3,809,110,000 in contracts suspended, the liquidation aggregates \$1,223,591,000, or 32.1 per cent. On this liquidation the settlement costs to the Government, according to the announcement of the War Department, aggregated \$151,562,000, or 12.4 per cent.

Up to May 31, according to a statement of the War Department, a total of 16,711 suspended contracts and agreements had been liquidated. More than half of these, 8937, were settled without cost to the Government, a suspension in these cases having caused the contractors no loss. The fact that a large number of such contracts are included in those liquidated to date partially accounts for the comparatively high rate of saving, or 88 per cent.

Seek Wage Scale Stabilization Plan to Aid Building

IN view of the sudden revival of major building operations in many of larger municipalities of the country, efforts were made this week by architects and builders to work out some plan for stabilizing wages of skilled building labor so that the present boom may continue uninterrupted. The narrowing of the at one time wide discrepancy between the volume of building plans filed and actual work started has made it apparent that if the housing situation is to be further relieved that the uncertainty over the future trend of wage scales must be remedied. It is generally believed that now building material prices are holding firmly at present levels, that the only retardance to construction on a big scale comes from the lack of stabilization of labor wage scales.

Reports from many sections show much talk of radical wage increase demands from skilled building artisans. For some time this has deterred builders from going ahead with long-planned projects. In Boston the situation became so serious that the Mayor, realizing that if the housing situation was ever to be met, something must immediately be done, called a conference of the employers and artisans. It was proposed that a general wage scale, applying to all lines, be fixed and that the agreed-upon top price hold for a definite period. This, it was figured, would be for a time sufficiently long to enable owners to proceed with their building operations.

So far the Boston plan is working out admirably and a big increase has already been shown in the number of houses on which construction has started. Other communities, it is hoped, will try out labor stabilizing plans of their own very shortly, for the Boston Mayor's practical suggestion has brought out the fact that there is real hope for increased building activity in the fixing of a flat wage scale for artisans. Increased need of getting building work more rapidly under way has been caused by the possibility of a stampede for building materials in view of the light stocks carried by supply houses. Fear is also expressed that when the wheat crop begins to move there will be a shortage of box cars and this will hinder quick shipments of materials from the mills to supply houses.

However, it is the demands of labor that are blocking construction. It is the persistent talk throughout the build-

ing trades of an \$8. day for all classes of skilled labor that has made the builder pause before entering new undertakings and calculate the increased costs before going ahead. Unskilled labor, too, has been similarly effected. Laborers are now demanding 65 cents an hour for eight hours and time and a half for overtime. They go so far even as to select jobs where they are permitted to work nine hours, so they can get pay for nine and a half hours at the rate of \$6.18 per day. The present price of 55 cents an hour is from a third to a half more than before the war.

From every point it is certain that the extreme demands of labor cannot be met. The builder had thought that with the stabilization of prices at the present level he could go ahead and take a chance. He found mortgage companies willing to lend up to \$55,000. He figured that with material prices up 60 per cent he could proceed if labor was to be no higher than \$4.50 for laborers, \$7.50 for bricklayers and plasterers and not over \$7.00 for carpenters, painters, and others. But even at these levels it was easy to see that the day of the \$10. a room apartment was a thing of the past and unless \$15. per room was assured he would not take a chance. Even at this rate per room present costs precluded building on any but the cheapest lots. Land alone of all the essentials of construction can be had in locations at prices which compare favorably from the builder's viewpoint the pre-war prices.

There is no question but that labor is to blame for the development of the spirit that has led to excessive demands for compensation. It has not been considered that if laborers were to receive \$5. for a full day's work they could have no ground for complaint about the high cost of living. Also builders would feel they could proceed without such big odds against them of going into debt.

Labor should take into consideration that the inevitable reaction from the condition that is bound to develop if a labor wage stabilizing plan is not soon adopted will first be felt by the laboring classes. Still higher rents and living costs will hit the working man the harder. Their suffering will be the more severe because they will be unable to withstand the privations that come from idleness. It affects not only the laborer of the job but the man in the factories and plants where building materials are produced.

Late Building Material Market Reports

(From Our Special Correspondents)

Builders Plan to Stop Work as a Means of Meeting Strikers

Complete cessation of all building activities in New York, with the possibility of the tieup spreading throughout the entire country, is predicted as the result of a conference held by the members of the Building Trades Employers' Association for the discussion of a proposal to close down their business entirely.

"Snow balling" by the various organized trade unions was said to be the cause of this contemplated action. "Snow balling" is the calling of a strike by one union until higher wages are obtained, with the other unions taking turns in succession until a higher wage level is reached by all.

The method of the union, say the building men, is a great menace to investors in new buildings tending to relieve the scarcity of dwellings in the city and to interests of householders seeking living space.

Effort to settle the strike of the bricklayers, who quit work last Friday because their demand for \$10 a day was refused, although they have an agreement granting them \$7 a day, which does not expire until Jan. 1, 1920, is to be made.

An official of the Building Trades Employers' Association said the bricklayers asked for a wage increase about July 1. In view of the high cost of living the employers offered the men the extra dollar.

The bricklayers said they would have to submit this proposal to the union, and last Thursday night replied they could not accept the offer, but made the \$10 demand. The Mason Builders then offered to arbitrate, but the bricklayers are said to have refused, unless they received \$8 pending an arbitration. When this plan fell through the bricklayers went on strike.

A union official says a general building trades strike is planned which would involve four crafts and 18,000 men in this city, with the probability of the walkout extending to other branches. A strike of 1,500,000 men throughout the country is threatened by Peter G. Cook, vice-president of the Operative Plasterers and Cement Masons' International Union, unless the Employers' Association yields to the demand of his organization.

More than 65 per cent of the striking members of the Painters, Decorators and Paper Hangers' Union have returned to work, says a statement issued by Philip Zausner, international secretary of the council.

"This does not mean that the strike is won," he explained, "but it does show that many members are breaking away from the employers' association to get the men working on the large number of big decorating contracts awaiting completion. Those employers who remain obdurate may stick out a while longer, but they are losing the big business of the season."

An agreement on an increase of a dollar a day between the Stone Masons' Union and the Stone Contractors' Association probably will be consummated shortly.

Louis Mazzola, president of the union, however, said the Stone Masons Helpers' Union contemplates demanding a similar increase as soon as the masons return to work. The helpers now receive \$5.20 a day.

Wide Demand for Manufactured Building Products

CHICAGO, ILL., August 25.—Stagnation in the building industries because of strikes is by no means halting business in this city. It is a most unusual situation in that regardless of the fact that the building material yards are closed and thousands of men engaged in the building trades are idle there is a local and outside demand for all manufactured products which is increasing in volume each week, notwithstanding present prices and the agitation against further soaring in values.

Manufacturers and jobbers say that in the smaller cities throughout Illinois, Wisconsin, Michigan, Indiana and Iowa business conditions are good and that there is liberal buying, not only on the part of the dealers, but also by the general public. They say that with the close of the war there has come an era of spending which to a great extent is one reason for high prices. It is this continuation of demand—the demand which was pent-up during the war because of Government restrictions—together with a shortage in the supply, also due to the war, that is responsible for the upward price tendency. A panic is impossible because of the creation of the Federal Reserve system, say the business and financial leaders, yet they say the time will come when there must be a readjustment not only in wages, but in the costs of all commodities. None will predict when or how the end of present conditions will come.

The demand for lumber at the present time is far in excess of the supply. Lumber prices are the highest ever known in the industry. Stocks are scarce and the manufacturers are unable in many instances to accept business offered. Prices are soaring. Dealers in every section are complaining because of high prices. They say prices have reached a point where they will curtail consumption. But lumber is moving to the industrials, and it also is moving from the yards for use in building in sections outside of Cook County.

This also is true of brick and all clay products. Officials of the American Radiator Company say that while business is at a standstill in Chicago there is an exceptionally good demand for boilers, radiators and all heating supplies from the outside distributing centers. Pipe and all plumbing material is moving in heavy volume. The paint business is in an exceptionally prosperous condition, and there also is an exceptionally good demand for all roofing material from the country districts with prices holding firm on all items.

It is explained in this market that while there has been a recession from the enormous building activity of June there is a marked increase in industrial activity, all of which creates a demand for material of almost every description. The railroad contractors, for instance, are not idle because of the railroad situation. They have gone into highway construction. Similar conditions prevail in other industrials hard hit because of the sudden ending of the war and labor disturbances.

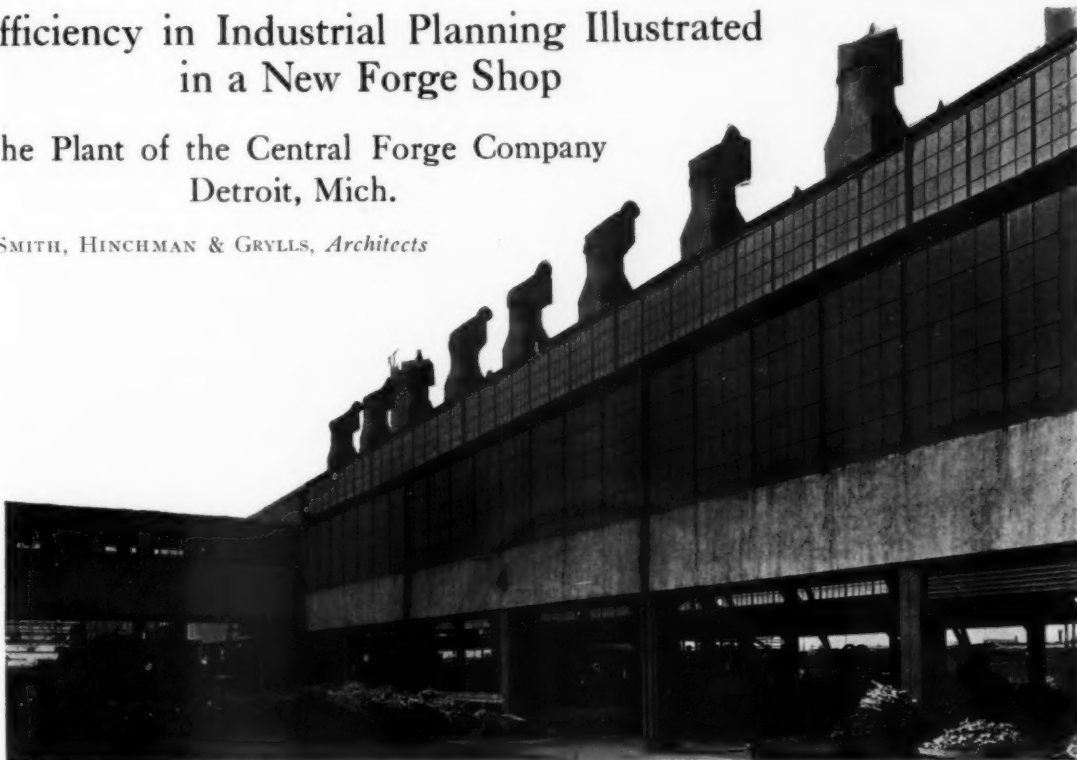
(For Late Building Material Prices See Page 292-A)

Department of Architectural Engineering

Efficiency in Industrial Planning Illustrated in a New Forge Shop

The Plant of the Central Forge Company
Detroit, Mich.

SMITH, HINCHMAN & GRYLLS, *Architects*



The Board Hammer Shop, Cooling Dock and one of the overhead connections between two buildings of the Central Forge Co., Detroit. This illustrates the general character of the buildings and the open space provided on all sides by the use of rolling doors.

TO plan an industrial building that will operate at maximum efficiency requires an intimate fore-knowledge, by the designer, of the process of manufacture contemplated in the finished structure. Intimate co-operation between the architect and those who will operate the plant is also essential in order that the practical knowledge possessed by them may be utilized to the best advantage.

A notable example of such co-operation is witnessed in the new drop forge plant of the Central Forge Company, Detroit Michigan. An important feature of this plant is the general arrangement of the buildings and equipment which give minimum distances in the straight-line routing of ma-

terial during the manufacturing processes. Movements of materials in the process of manufacture are crosswise through the shops. The layout is arranged so that extensions can be made without in any way disturbing the plan of routing. This is important for future development.

The plant is designed for high production and continuous operation. Stock passes in a straight line from the steel yard to the shears, to the steam forge shop, cooling dock, heat treating department, straightening machines and inspection, and the finished forgings pass on to the loading platform. When the forging bars are sheared the stock is placed on racks supported on legs that are moved

THE AMERICAN ARCHITECT

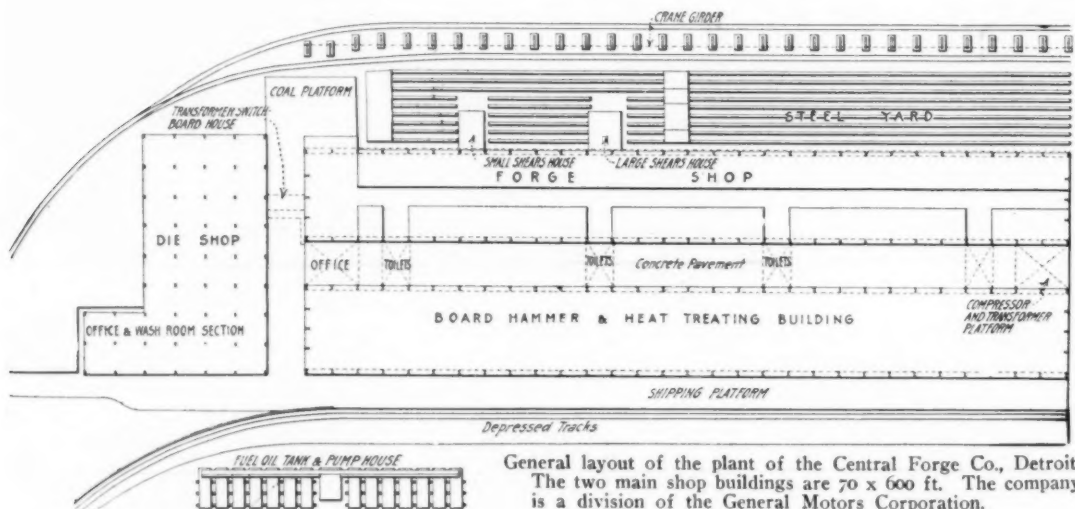
with elevating platform storage battery trucks, on which the material is moved to the hammers and to other points for succeeding operations, being placed back on the racks after each operation, thus eliminating handling by hand and wheel-barrows. The arrangement of the steam and air lines and the lubricating and fuel-oil systems are features that have resulted in high efficiency.

The Central Forge Company is a division of the General Motors Corporation, and the plant, which was erected in 105 working days was placed in operation Oct. 10, 1918. It supplies forgings for the various automobile plants of the parent corporation, having a daily output of finished forg-

from the other two buildings. The two areaways have 8 in. concrete floors.

The forge and heat treating shops of the original plant were 300 ft. long, but these have been doubled in length, and forge equipment is now being placed in the extensions. Further extensions are contemplated to make each building 900 ft. long.

Adjoining the steam forge shop is a steel yard 80 x 600 ft., served by a 5 ton Milwaukee electric traveling crane with a 75 ft. span, the runway being 25 ft. above the yard level. Another crane of the same capacity will shortly be installed. The inner crane girder is supported on the columns of the forge shop. Two railroad sidings



General layout of the plant of the Central Forge Co., Detroit. The two main shop buildings are 70 x 600 ft. The company is a division of the General Motors Corporation.

ings in excess of 50 tons. With extensions that are now nearing completion, the capacity will be increased to 85 tons per day. The product includes crankshafts, connecting rods, gears, camshafts and various small forgings. Axle forgings will be added shortly.

There are three main buildings. A steam forge shop occupies a building 70 x 600 ft., and in a parallel building of the same dimensions is a board hammer shop and heat treating department. At the front end of these two buildings is a die shop, 96 x 192 ft. The two forge buildings are separated by a 40 ft. areaway that is used for a cooling dock and driveway. Two of the bays of the die shop building, or 48 ft. at one end, are partitioned off for offices, lavatories, lockers and shower baths, and in front of this section the erection of a two-story office building, 48 x 48 ft., is planned. A 32 ft. areaway separates the die shop and office

extend the length of the steel yard, one on each side of the outer crane girder. Cars are unloaded from the inner track under the crane, the outer track being used for the storage of loaded and empty cars. The crane is equipped with a lifting magnet for unloading steel and with a clam-shell bucket for unloading coal in the storage yard at the end of the steel yard. The present boiler room occupies two bays at the corner of the forge shop, adjoining this storage yard.

Two shear houses adjoin the forge shop in the steel yard. These are equipped with two Cleveland guillotine-type bar shears with a 6 in. capacity and two Canton alligator shears. Several concrete bins are provided in the steel yard for the storage of heavy scrap, flashings, scale, etc.

On the opposite side of the plant is a shipping platform 30 ft. wide on a level with the forge shop floors, and covered with a creosote wood block

THE AMERICAN ARCHITECT

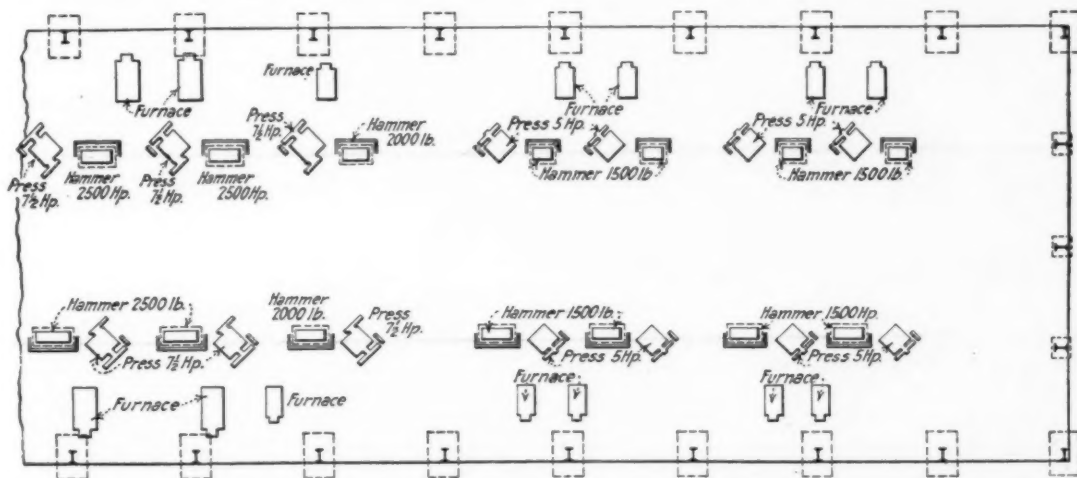
floor. Alongside this is a depressed railroad siding for loading, the platform and track extending the length of the plant.

The steam forge shop and the board hammer and heat treating shops are generally similar in construction. The frames are built of 24 in. steel columns on 20-ft. 1½-in. centers. Both have standard type monitor roofs with gypsum block roofing. The steam forge shop is 37 ft. high to its roof truss and 63 ft. high to its peak, and the other shop 24 ft. high to the roof truss and 50 ft. to the peak. Between all the building columns on the four sides of each shop are steel rolling doors 20 ft. wide, with a clear height of 10 ft., so that the space is entirely open through the two shops all the way from the stockyard to the loading dock. The rolling doors are supported by trusses between the columns. This section, occupying a space 5 ft. wide, is filled in with cement plaster on metal lath. The truss also supports the bottom of the sash above. Continuous glass surface is provided above the 5 ft. of plaster up to the roof truss. The sash is fitted with factory ribbed glass. Above the areaway are four sections connecting the two buildings, used as toilet rooms by the employees of both shops. These are of steel and concrete construction, being supported on

board hammer shop, and illustrates the general type of construction. One of the toilet rooms connecting the two buildings appears in this illustration.

The steam forge shop is served by a 10 ton Milwaukee crane for changing piston rods, handling dies, etc., and the board hammer shop by a 5 ton crane. The extensions will necessitate the installation of additional cranes. Storage battery trucks are used in the handling of material on the floor. The steam forge shop has an 8 in. concrete floor, except around the hammers where the hot metal falls. Here firebrick is used. The board hammer and heat treating shop each has a firebrick floor laid on a 6 in. concrete slab.

The forge shop equipment includes 17 steam drop hammers of from 1500 to 12,000 lb. capacity. Twenty-three additional hammers of the same range of capacity and the requisite press and furnace equipment will be installed in the extension. The furnaces are along the outer walls, and the hammers are 18 ft. back from the walls, there being an 8 ft. space from a line at the front of the furnace to the center of the hammer. The presses are in line with the hammers. These will all be set at an angle of 22 deg. with a view of making the work easier for the men, although only a part of them are in that position at present.



Manner in which the equipment is installed in the Steam Forge Shop. The 17 steam drop hammers range from 1500 to 12,000 lb. capacity. The presses are at an angle to make work easier for the men.

the building columns, and the floors are 15 ft. above the areaway, leaving a clear passage beneath.

Each building is equipped with sixty 72 in. Swartwout ventilators, that provide a displacement of 10,200 cu. ft. of air every two minutes. The photograph on page 283, taken in the areaway between the forge shops, show the exterior of the

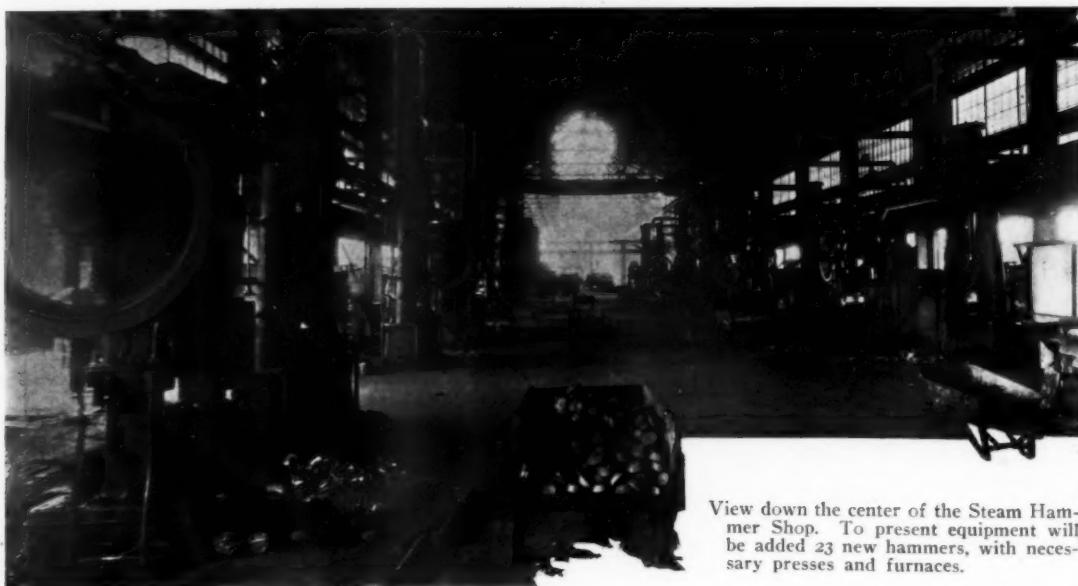
The board hammer shop is equipped with 16 board hammers with a capacity of 800 to 1200 lb. and 16 trimming presses. The furnaces are located along the walls and the trimming presses are in two rows in the center of the shop, one row serving the hammers on each side. Each hammer is driven by a 75 h.p. motor.

THE AMERICAN ARCHITECT

Complete equipment for heat treating and finishing forgings is provided in this department. From the hammers the work passes to the cold trimming presses, and from there to tumbling barrels and grinders, to final inspection and to the shipping dock where the forgings are accumulated and shipped in carload lots. Crankshafts go from the presses to the centering machines, and then to hydraulic straightening presses, of which there are three of 5 ton capacity, and then after indexing are ready for final inspection. Grinding operations are performed on a battery of motor-driven grinding machines. The heat treating department is located at the lower end of the building.

lines is taken care of by looping the lines between the columns at stations on each side. The method of looping is shown in one of the illustrations.

The method of distributing air through the two shops is of considerable interest. Each building has an air loop 20 in. in diameter, extending entirely around the building. The air line is made of 14 gage welded sheet steel with a flange joint. The main air supply header is 36 in. in diameter. In the steam forge shop the air line is carried on brackets underneath the steam lines, and in the board hammer shop on brackets 13 ft. above the floor. The two loops are connected at three points in order to insure an evenness of pressure. The



View down the center of the Steam Hammer Shop. To present equipment will be added 23 new hammers, with necessary presses and furnaces.

Additional equipment to be installed in the extension to this shop will include three board drop hammers of 1000 to 1200 lb. capacity, four board drop hammers with a capacity of 1200 to 1500 lb., a 2 x 3 in. upsetter, and two 4 in. and two 5 in. upsetters, and additional straightening presses and a modern heat treating plant. A hammer with 2000 lb. capacity is being installed for straightening crankshafts after coming from the drawing furnace, taking the place of a straightening press.

The steam hammers are supplied from an 8 in. high pressure header, and the exhaust is carried in a 12 in. exhaust header, each making a loop side by side around the entire steam forge shop. Both headers are carried on brackets 16 ft. 5 in. above the floor level. Expansion in the steam

advantages claimed for the loop system are that smaller main ducts are used than would otherwise be required, equal pressure is provided, and loss is eliminated. Gates are provided so that the air can be turned off in any section of the shops. Air at 1 lb. pressure is supplied by four General Electric centrifugal compressors, each with a capacity of 7200 cu. ft., and each driven by a 50 h.p. motor. Two compressors are located at each end of the plant.

Fuel oil is stored in 14 tanks, each 10 ft. 6 in. in diameter and 31 ft. long, mounted on a concrete saddle 3 ft. above the ground. Each tank is equipped with a heating coil, float valve and gage. Oil is pumped or siphoned from tank cars into a concrete settling tank with a capacity of 16,000

THE AMERICAN ARCHITECT

gal., located under the pump house. After remaining in the settling tank 12 hours the oil is drawn into the storage tanks, leaving the heavy oil and dirt in the bottom of the settling tank, which is then flushed out. By this method the oil is kept clean and the danger of burners becoming clogged with dirt or other foreign matter is eliminated. So far no trouble has been experienced with the impurities in the oil.

From the storage tank the oil for the furnaces is pumped into pipes that run through a concrete trench located around the two shops just inside the building columns and back of the furnaces. These trenches are 2 ft., 6 in. wide and the same depth, and have cast iron covers. The oil is carried in a 4 in. main and in $1\frac{1}{2}$ in. distributing loops to both buildings. The oil line has a return to the settling tank. The total length of the system is 2000 ft. The Bowser system is used for the circulation of oil. A live steam line is carried in the trench to keep the oil warm in winter.

The pump house is equipped with three centrifugal pumps, each with a capacity of 50 gal. per min., and each driven by a $2\frac{1}{2}$ h.p. motor. The pumps are so interconnected that each may be operated independently or all together.

The boiler room is equipped with three 400 h.p. water tube boilers fired by underfeed stokers. These supply steam for the steam hammers in the portion of the plant that is now operated. The exhaust steam is used for heating purposes throughout the plant, a vacuum heating system being provided. A new central power plant is now being



Showing the location of the steam lines that extend around the Steam Forge Shop, and the method of looping these lines to care for expansion and contraction. Under the steam lines is the air line.

built a short distance away. This will be equipped with five 1000 h.p. boilers, automatic stokers and complete coal and ash handling equipment. In addition to supplying steam for the forge shop hammers, this will furnish steam for heating other general motors plants that will be grouped on a large factory site. The new power house will have a 225 ft. brick stack.

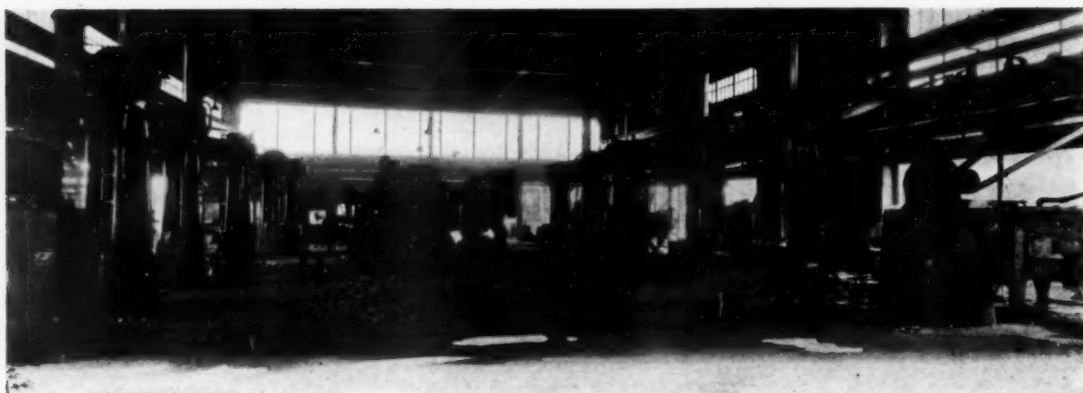
The die shop has a steel frame, monitor roof, and continuous window in steel sash from 3 ft. above the floor to the roof trusses. It is provided with the latest types of sinking and profiling machines. The shop is divided into four bays, the first of which is devoted to the manufacture of forging dies, and contains profiling and die sinking machines and finishing benches. Raw material and finished dies are stored in the second bay. The third and fourth bays are used for making trimming dies, and are equipped with 24 to 36 in. planers, surface grinders, lathes, shapers, die sinking machines and cold saws.

The electrical equipment includes three 150 kva. transformers for power and one 75 kva. transformer for lighting. In the enlarged plant there will be added three 400 kva. and one 300 kva. transformers for power, and one 75 kva. transformer for the lighting circuit.

Smith, Hinchman and Grylls, architects and engineers of Detroit, designed the plant, co-operating with the general manager of the company.



The Die Shop, showing bay in which forging dies are made. A battery of Becker profiling machines is shown at the left. Along the wall at the right are benches.



Interior of the Board Hammer Shop. The cold trimming presses, 16 in number, are located in two rows in the center of this shop, which contains 16 board hammers of 800 to 1200 lb. capacity.

New Paint Exposure Tests At Atlantic City

By HENRY A. GARDNER*

A NEW series of test panels recently exposed at Atlantic City are expected to afford considerable information on certain paint problems of general interest. While the tests are not of a competitive nature, as have been most of those heretofore made, some of the panels are coated with products which have been developed in recent years and not included in previous tests. The panels have been arranged on the upper deck over the old wave motor located near the outer reaches of Young's Million Dollar Pier.

The tests are in groups which are described below. Among them are some which are designed to show the comparative life of uncoated and coated structural materials. As is well known, the durability of such materials depends on surface protection. Bar steel, wood or other structural materials of the lowest or of the highest grade are all rapidly acted upon by the elements, but all may be preserved indefinitely if their surfaces are protected by occasional renewals of paint or varnish coatings. In order to show the actual effect of surface coatings, some of the panels have been exposed to the trying conditions existing along the sea coast with half of their surfaces uncoated, the area of the other half being given surface protection. Exposure over a short period will indicate the comparative value of the untreated and treated surfaces.

*Director Scientific Section, Educational Bureau, Paint Manufacturers Association of the United States.

SERIES I—TIN PLATE PANELS 1 TO 6.

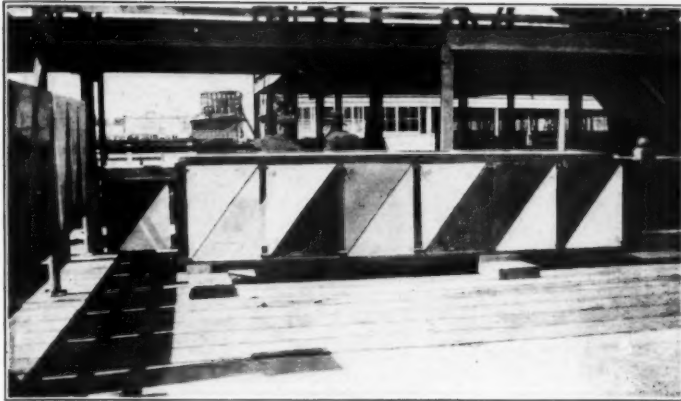
The sheet tin roofing plates are exposed in a horizontal position. The vermilion paint contains 50 per cent basic chromate of lead, 40 per cent raw linseed oil, 5 per cent turpentine and 5 per cent drier. The spar varnish is W. D. 6.† The dopes used are collodion dopes containing substantially 6 oz. of nitrocellulose per gallon of solvent. No. 3 contains approximately 6 per cent castor oil, and No. 6 contains approximately 6 per cent treated tung oil.

SERIES II—BLACK SHEET STEEL PANELS 7 TO 10.

Aluminum and zinc powders have high protective action when placed in contact with iron and steel. They are strongly electro-positive and protect the underlying ferrous metal from corrosion. In this series, exposure will indicate whether spar varnish, linseed oil or collodion dope is the most satisfactory vehicle for their application. Because of the viscous nature of spar varnish and dope, smaller quantities of the metallic powders are required than when raw linseed oil is used. Only 20 per cent of aluminum powder was used with 80 per cent of either spar varnish or dope, whereas 40 per cent of aluminum powder was required with 60 per cent of linseed oil in order to make a paint that would not show running. The drying of linseed oil is apparently greatly retarded through the use of aluminum powder. For that reason, better results

†W. D. Stands for War Department formulas published in War Department Paint Pamphlet No. 1.

THE AMERICAN ARCHITECT



VIEW OF METAL PANELS

might have been obtained by the use of boiled linseed oil, which is more viscous and rapid drying than the raw oil and better suited as a carrier for the aluminum powder.

With 50 per cent of zinc powder, 50 per cent of spar varnish or dope was used, whereas 86 per cent of zinc powder was required for 14 per cent of raw linseed oil in order to make a paint of brushing consistency. For this reason, boiled linseed oil would be preferable to raw linseed oil for use with zinc powder, as a lower amount of zinc dust could have been used.

SERIES III—GALVANIZED IRON AND STEEL PANELS 11 TO 19.

The same type of vermilion paint and spar varnish as in Series I were used in this series. The copper brush treatment consisted of applying an aqueous solution of copper salt (6 oz. copper acetate to 1 gallon of water). This was applied in order to remove the highly spangled surface of the galvanized iron, which in some cases will cause flaking of paint after exposure.

SERIES IV—WAR PAINTS ON BLACK SHEET STEEL PANELS 20 TO 27.

In this series are included many war-time paints such as were specified in Paint Pamphlet No. 1 of the War Department. The red lead hand-mixed paint consisted of 22 lbs. red lead, 5 pints linseed oil, 2 gills drier, and 2 gills petroleum spirits. The helmet paint consisted of 60 per cent of pigment composed of:

	Per Cent
Ochre	60
Lithopone	30
Magnesium silicate.....	10

The liquid consisted of:

Linseed oil, tung oil and varnish resins.....	40
Drier and thinner.....	60

The Navy Camouflage Gray consisted of: 65 per cent of pigment, composed of zinc oxide, 47 per cent; white lead, 23 per cent; magnesium silicate, 30 per cent. The liquid consisted of linseed oil, 40 per cent; spar varnish, 20 per cent; mineral spirits and drier, 40 per cent.

SERIES V—WOOD PANEL TESTS— PANELS 50 TO 57.

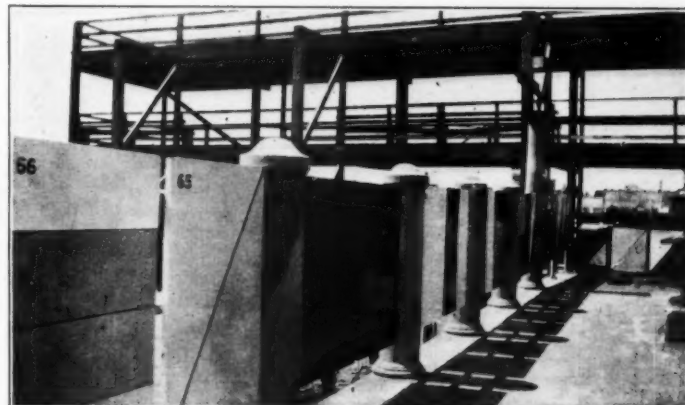
In this series consisting of panels of white pine, yellow pine, cypress and red wood, the upper diagonal half of each panel was coated and the lower half left uncoated. Spar varnish (W. D. 6) was used on one set, and a prepared lead and zinc paint (W. D. 50) on the other.

SERIES VI—WAR PAINT ON WOOD— PANELS 58 AND 59.

In this series special war-time paints were included. As will be shown by Pamphlet No. 1, many of the War Department paints were of a quick drying nature, necessitating the use of spar varnish in the liquid portion. Since linseed oil paints have heretofore been used by the War Department, it will be interesting to observe the degree of durability to be obtained with varnish paints.

SERIES VII—SPECIAL PRIMER TESTS ON WOOD— PANELS 60 TO 62.

The object of these special priming tests was to determine the results to be obtained through priming yellow pine and cypress with a hard drying primer made of basic chromate of lead, or with a



VIEW OF WOOD PANELS

THE AMERICAN ARCHITECT

primer made of lampblack. Over these primers white paint (W. D. 50) and varnish (W. D. 6) were applied. Exposure will determine whether the results obtained through the initial priming treatment are as good as or superior to those which are sometimes shown when this special priming treatment is omitted. It is the writer's theory that practically any type of wood may be painted with greater success if it is primed with a very fine pigment, such, for instance, as lampblack.

SERIES VIII—SPECIAL TESTS ON WOOD— PANELS 63 TO 68.

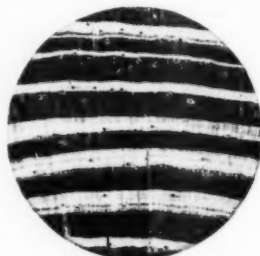
In this series are included tests of various colors on which temperature readings will be made to determine the heat absorption and comparative degree of solar radiation. Panel 64 was coated with two paints of exactly the same composition, one being machine ground and the other mixed by hand from the raw ingredients. It is believed that exposure will demonstrate the value of machine grinding. On panel 65 there were applied two paints of exactly the same composition, using in one a pure raw linseed oil free from moisture and foots and in the other a linseed oil with considerable foots and a high moisture content. The use of oil of the latter type has in the past been responsible for cases of washing.

On panel 66 was applied a titanium oxide paint containing 60 per cent of pigment and 40 per cent of liquid. The pigment consisted of "titanium-barium sulphate" pigment, 70 per cent, and zinc oxide, 30 per cent. The liquid portion consisted of linseed oil, 85 per cent, and combined turpentine and drier, 15 per cent. In order to determine the wearing value of this paint, there was applied on panel 67, for control purposes, a high grade lead and zinc paint consisting of 66 per cent pigment and 34 per cent liquid. The pigment consisted of 47 per cent white lead and 53 per cent zinc oxide. The liquid

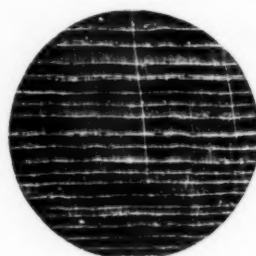
consisted of 85 per cent linseed oil and 15 per cent combined turpentine and drier. The titanium oxide pigment used in the paint applied to panel 66 is a pigment made by precipitation somewhat in the same manner as lithopone. It contains 16 per cent of titanium oxide and 84 per cent of barium sulphate. The hiding power of this pigment is comparable with that of white lead and zinc oxide. Its durability to severe exterior exposure is high. Both paints 66 and 67 were in white, yellow, gray and green of the same tints.

Additional wood and metal test panels have been finished and will be exposed shortly. These will be designated as wood panels 69 to 71 and metal panels 28 to 31.

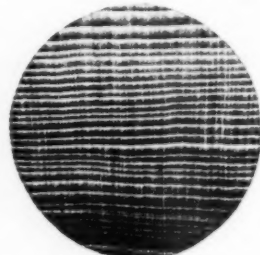
Panels 28 and 29 (sheet steel) of these new test panels were treated by a rust-proofing metal process, the surface of the metal being black, due to the iron phosphide formed by boiling with dilute phosphoric acid compounds. The panels were dipped in a mixture of 1 part linseed oil and 7 parts naphtha to give them the customary finish. After drying, they were painted. The vermilion paint and spar varnish were of the same grade as used in Series I. Paints No. 1 and No. 2



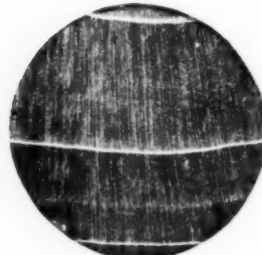
YELLOW PINE



WHITE PINE



REDWOOD



CYPRESS

PHOTO MICROGRAPHIC REPRODUCTION OF WOODS

were reinforced to red leads containing a small amount of red iron oxide to increase their hiding properties. Paints No. 3 and No. 4 were black and gray finishing coats.

A panel of special aluminum alloy with one-half of its surface coated with 3 coats of spar varnish W. D. 6 is also to be exposed shortly. After these test panels have been exposed for a period of time deemed sufficient to demonstrate the relative merits of the different paints used thereon, a careful survey will be made, and an analysis of the results published.

This should be of considerable value to architects, guiding them in their selection and specification of paints for surfaces having various degrees of exposure.

Reasons for a National Department of Public Works

By M. O. LEIGHTON

I. THE SUPERVISING ARCHITECT'S OFFICE

THE Supervising Architect's Office—now subordinate to the Department of the Treasury—is charged with the design, construction, care, operation and repair of Federal buildings which are devoted to miscellaneous Governmental purposes.

The 1918 Report of the Supervising Architect's Office listed these buildings, both completed and occupied, and those authorized, to the number of 1680. The construction cost alone of these buildings aggregates \$228,584,379. Included in this list of buildings are post offices, customs houses, court-houses, quarantine stations, marine hospitals, assay offices, appraisers stores, immigrant stations, treasury, sub-treasuries, wharfs, barge offices, jails, sanitariums, exposition buildings, monuments and mints.

The Sundry Civil Bill now before Congress carries appropriations for construction work in 120 different cities and towns. The amounts authorized therefore in this bill, including those set aside for purchase of sites, amounts to approximately \$7,300,000.

The expenditures involved range from \$7,000 for a post office at Front Royal, Virginia, to \$849,000 for a building in Honolulu.

The office has two well defined activities: one, "design and construction"; the other "the care, operation and repair of buildings now completed." The principal department expenditures are as follows:

Design and construction for personal services:

Supervising architect; foreman draftsmen; architectural draftsmen, and draftsmen at rates of pay from \$840 to \$2,500 per year. Computers and estimators at rates ranging from \$1,600 to \$2,900 per annum.

Structural engineers and draftsmen at from \$840 to \$2,500 per year; mechanical, sanitary, electrical, heating and ventilating and illuminating engineers and draftsmen at rates of pay from \$1,200 to \$2,400 a year—\$176,500.

Supervising superintendents, superintendents, junior superintendents and inspectors at rates of pay from \$1,600 to \$2,900 per year—\$206,650.

Contingencies of every kind and description—\$489,050.

For the design and construction activities of this

office then, \$870,000 are required. The personnel consists of strictly technical men, embracing every phase of architecture and engineering. This office conducts more building operations than any other organization in the United States.

So far, the activities discussed have been purely technical ones and there is no apparent reason why they should be performed under other than a technical bureau.

The second phase of the activities of this bureau comprise "Care, operation and repair of public buildings."

The appropriation provides for this branch:

For personal services in connection with care, operation and repair of all public buildings (except as hereinafter provided, including assistant custodians, janitors, watchmen, laborers, and charwomen, engineers, firemen, elevator conductors, coal passers, electricians, dynamo tenders, lampists and wiremen, mechanical labor force in connection with said buildings, including carpenters, plumbers, steam fitters, machinists, and painters—\$3,650,000.

This work is engineering work; the men employed are members of the engineering trades. There is still no apparent reason for placing this work under a cabinet officer whose chief concern is with the finances of the Nation.

The other funds provided for this bureau are as follows:

For furniture and carpets and repairs of same; for gas and electric fixtures and repairs of same—\$555,000.

For operating supplies: For fuel, steam, gas for lighting and heating, water, ice, lighting supplies, electric current, telephone services, removal of ashes and rubbish, snow and ice, cutting of grass and weeds, washing towels, etc.; for miscellaneous tools and appliances required in operation of mechanical equipment—\$2,300,000.

The work of this office then is straight architectural and engineering work; its personnel are members of technical professions and trades; its interests are technical interests. It is not a financial bureau, but an architectural and engineering one, and belongs, not to the Treasury Department, but in the Department of Public Works, where it will include in its functions all other architectural-engineering work of the Government, and thereby co-ordinate all such Federal activities under a common authority.

THE AMERICAN ARCHITECT

Random Notes on Lime

BEFORE the advent of Portland cement, lime was almost universally used in mortars for masonry walls. Due to the superior strength and quicker setting properties of cement, it rapidly replaced the older material. Provisions were incorporated in many building codes requiring cement mortar for certain classes of masonry. While cement has its good qualities, there is no reason for unfair discrimination against lime. Investigation has shown that from five to ten per cent of hydrated lime added to cement produces a better and stronger mortar than would be the case without this addition.

A recent survey of building codes reveals that in many cases the use of lime products for mortar of brick chimneys is prohibited. Such requirements are due to a belief that lime disintegrates in time, is unable to resist the action of heat and flue gases, and thus is liable to fall out of the brick joints, producing gaps through which fire may penetrate.

Investigation of the subject brings out the fact that many of the large chimney constructors of the country use a mortar composed of one part Portland cement, two parts lime, and from three to five parts sand. It is their opinion, based on many years of experience, that a chimney built with a mortar of this composition exhibits decidedly less tendency to crack than when mortars of other mixes are used.

The prohibition against the use of lime in chimney construction is also contained in the building code recommended by the National Board of Fire Underwriters. The Lime Association have recently taken this matter up with the Prof. Ira H. Woolson, consulting engineer of the Board, and have submitted to him letters from many firms of unquestioned standing engaged in tall chimney construction, in which they state that a liberal proportion of lime is always used by them in the mortar for such chimneys, as they believe more desirable results are obtained thereby. In originally drafting this code, the very high chimney was not considered so much as that occurring in the ordinary building, where it was believed cement mortar was preferable. As such chimneys should always be lined with burned clay flue lining, and as the larger "power house" type of chimney is always lined with fire brick laid in fire clay, there

seems to be no good reason for retaining the requirement for a straight cement mortar, and in the contemplated revision of the Underwriters' building code, this provision will be modified to permit the use of lime.

An investigation of the use of lime in stucco work has been under way by D. Knickerbocker Boyd, member A.I.A. and chairman of the committee on Lime of the American Society for Testing Materials. Specifications will be prepared by this committee in the near future covering the use and proper application of lime in stucco work.

Several test sections of roads have already been laid in which a proportion of lime has been used. These are now under observation.

Probably the most novel use to which lime has yet been put was adopted by the Interborough Rapid Transit Company in the New York subways. Here many barrels of crushed lime have been placed on the tracks along the stations to act as a germicide and overcome the danger of infection due to the practice of the public in expectorating on the tracks while waiting for trains. There is probably no other chemical having germicidal properties along this line sufficiently cheap in price to be effectively used for this purpose.

Durability of Untreated Piling

In tidal waters the portions of piles above mean low tide, although completely immersed only part of the time, may be practically saturated all the time. Wood constantly saturated with water is not subject to decay, and this fact makes the height to which saturation extends above low tide a question of considerable interest to the designing engineer.

The opinion of a number of engineers and construction companies, expressed in response to inquiries by the Forest Products Laboratory at Madison, Wis., is that untreated piling in water not infested with marine wood-borers will remain sound indefinitely if cut off at half tide. This height ranges in various ports from 2.3 to 4.5 feet above low water. At certain places on the Atlantic coast, piles cut off at the height of half tide are still sound after from 50 to 100 years of service.

Untreated piling is destroyed by marine borers more rapidly than by decay, and the information given would, of course, have no practical use where these organisms are active.



Brick Chimneys and Wall Shingles finished with Cabot's Old Virginia White
John Russell Pope, Architect, New York

Cabot's Old Virginia White

ON BRICKWORK

The soft, brilliant "whitewash white" effect of Old Virginia White is wonderfully appropriate for brickwork, giving the flavor and texture of age combined with the cool, clean freshness of new whitewash. Also for stucco and stone.

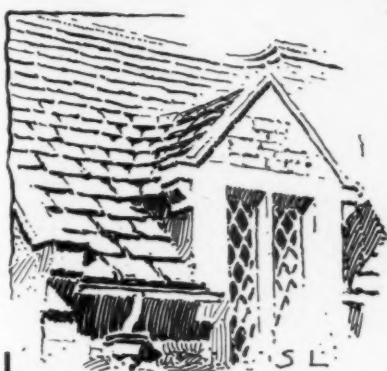
Sample for trial sent on request.

SAMUEL CABOT, Inc., Manufacturing Chemists
BOSTON, MASS.

1133 Broadway, NEW YORK 24 West Kinzie St., CHICAGO

Cabot's Quilt, Waterproof Cement and Brick Stains, Conserve Wood Preservative, Damp-proofing, Water-proofing

5-1



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TUDOR-STONE

Roofing Slate

is available in a great diversity of satisfying blendings. Greens, grays, browns, mottled shades, purples, russets, etc., and all with the remarkable Tudor-Stone texture.

THE RISING & NELSON SLATE CO.

Since 1869 Miners and Makers of High-grade Roofing Slates

Quarries and Main Office, West Pawlet, Vermont

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ARCHITECTURAL WOODWORK
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Ozone, Like Nature Purifies

Its Cheapness of Operation, for Churches and Public Buildings

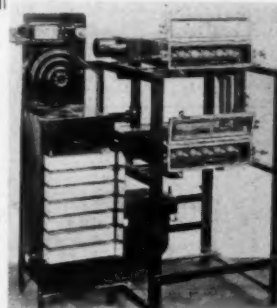
On account of the almost absence of running cost, Ozonating equipment is very doubly attractive to churches, libraries, and any other place where crowds assemble in closed space. Ozone supplies additional oxygen. Keeps interest awake, not to mention its remarkably germicidal properties.

Ozonated air is pure and bracing. Bacteria present are not only killed but consumed by oxidization.

Ozone has a use in every building using either air or water.

Information or Estimates supplied on request. Send for Booklet.

Pitts & Kitts Manufacturing & Supply Co.
50 PARK PLACE
NEW YORK CITY



Typical Ozonating Unit used in the London, Eng., tubes, for freshening and sterilizing the air.

Late Quotations in Building Material Markets

(Price quotations now current on building materials and supplies as quoted by dealers and jobbers for delivery in New York and Chicago follow. The quotations set forth are placed before readers of THE AMERICAN ARCHITECT to afford an accurate review of market conditions rather than for use as a basis for actual purchase. They will not only provide knowledge of the exact state of the market as to items quoted, but will also present a basis to judge conditions as affecting correlating materials. Items marked (*) indicate an advance over last week, while those marked (†) record a decline. Other prices did not fluctuate during the week.)

BRICK		New York	Chicago
Face brick (delivered on job):			
Common (Delivered at job in Borough of Manhattan only), per thousand.....	\$17.85	\$12.00	
Rough red	37.00	40.00	
Smooth red	38.00	40.00	
Rough buff	42.00	40.00	
Smooth buff	42.00	40.00	
Rough gray	45.00	42.00	
Smooth gray	47.00	42.00	
Colonials	26.00	30.00	

BROKEN STONE		New York	Chicago
(Delivered on job):			
1½ in. per cu. yd.....	\$2.75	\$2.50	
¾ in. per cu. yd.....	2.75	2.50	

BUILDING STONE		New York	Chicago
(Delivered on job):			
Indiana limestone, per cu. ft.....	\$1.23		
Kentucky limestone, per cu. ft.....	1.35		
Brier Hill sandstone, per cu. ft.....	1.50		
Gray Canyon sandstone, per cu. ft.....	.95		
Buff Wakeman, per cu. ft.....	1.50		
Buff Mountain, per cu. ft.....	1.50		
North River bluestone, per cu. ft.....	1.05		
Seam-face granite, per sq. ft.....	1.00		
South Dover marble (promiscuous mill block), per cu. ft.....	2.25		
White Vermont marble (sawed), New York, per cu. ft.....	3.00		

BURNED CLAY		New York	Chicago
(Delivered on job):			
Block partition:			
3 in., per sq. ft.....	.13	.10	
4 in., per sq. ft.....	.15	.11	
Chimney tops:			
12 x 12 for 8 x 8 flues.....	\$3.50	\$2.25	
Flue lining:			
4½ ft. x 13 ft., per lin. ft.....	.24	.12	
4½ x 8½, per lin. ft.....	.18	.16	
8½ x 8½, per ft.....	.24	.16	
8½ x 13, per ft.....	.35	.20	
13 x 13, per ft.....	.60	.45	
8½ x 18, per ft.....	.60	.50	
13 x 18, per ft.....	.95	.75	
18 x 18, per ft.....	1.25	.85	
Wall coping (double slant):			
8 in., per lin. ft.....	.18*	.14	
12 in., per ft.....	.33	.26	
18 in., per ft.....	.54	.30	
Wall coping (single slant):			
8 in., per lin. ft.....	.16	.14	
12 in., per ft.....	.26½	.30	
18 in., per ft.....	.54	.30	
(Corners and angles four times the price of one foot of coping the same size.)			

Hollow Tile		New York	Chicago
(Delivered at job, in New York below 72nd St.):			
2 x 8 x 12 partitions, per 1,000 sq. ft.....	\$70.15		
3 x 12 x 12 partitions, per 1,000 sq. ft.....	102.00	\$67.90	
4 x 12 x 12 partitions, per 1,000 sq. ft.....	114.75	72.50	
6 x 12 x 12 partitions, per 1,000 sq. ft.....	153.00	99.60	
8 x 12 x 12 partitions, per 1,000 sq. ft.....		135.80	
10 x 12 x 12 partitions, per 1,000 sq. ft.....		167.50	
12 x 12 x 12 partitions, per 1,000 sq. ft.....		194.60	
2 x 12 x 12 split furring, per 1,000 sq. ft.....	63.75	45.30	

CEMENT		New York	Chicago
Per bbl. in 20 cent bags (Rebate 80c. per bbl. for bags in New York), 15 cent bags in Chicago (Rebate 60c. per bbl.):			
	\$3.45	\$3.00	

COPPER SHEETS		New York	Chicago
At the mill, hot rolled, 16 oz. base-price, per lb...33½c.			
(From jobber's warehouse add 2 to 3 cents.)			
Cold rolled per lb.....	34½c.	35½c.	
From stock in 100 lb. lots and over.....	35½c. to 37½c.	37½c.*	
For less than 100 lb. lots 2c. per lb. advance.			
Polished, 20 in. wide and under, 1c. per sq. ft. extra; over 20 in. wide, 2c. per sq. ft. extra. Planished, 1c. per sq. ft. more than polished.			
Bottom, pits and flats, 1 oz. and heavier, per lb.....	.44c.	.44c.	
Tinning one side, per sq. ft.....	.06c.	.06c.	

CORNER BEAD		New York	Chicago
Per foot		.02	.05

EAVES TROUGH		New York	Chicago
(Discounts from list):			
Galvanized steel.....		.60 & 10%	
Galvanized charcoal iron.....		.50%	
Copper		.20%	

FIBRE		New York	Chicago
Per bushel	.36	.30	

FINISHED IRON AND STEEL		New York	Chicago
(Mill Shipments)			
Bar iron, refined grade.....	2.77c.	2.62c.	
Bar iron, double refined.....	3.77c.	...	
Soft steel bars.....	2.62c.	...	
Shapes	2.72c.	...	
Plates	2.92c.	2.65c.	

GALVANIZED SHEETS		New York	Chicago
No. 12 and 14 gauge, per lb.....	\$6.10	\$5.95	
No. 16	6.25	6.05	
No. 18 and 20	6.40	6.37	
No. 26	6.70	6.67	
No. 27	6.85	6.82	
No. 28	7.00	6.97	
No. 30	7.50	7.35	
(No. 28 and lighter, 36 in. wide, 20c. higher.)			

GLASS		New York	Chicago
(Discounts from manufacturer's price lists)			
Single strength, A quality, first three brackets.....	.77%	.77%	
Single strength, B quality.....	.77%	.77%	
Double strength, A quality.....	.79%	.79%	
Double strength, B quality.....	.81%	.81%	
Plate—up to 5 sq. ft.....	.82%	.80%	
Plate—over 5 sq. ft.....	.84%	.80%	
Plate—up to 10 sq. ft.....	.84%	.80%	
Plate—over 10 sq. ft.....	.80%	.80%	
Polished plate glass (commercial run of thickness and quality) sizes to 5 sq. ft., inclusive.....	.80%	...	
Sizes over 5 sq. ft.....	.82%	...	

GRAVEL		New York	Chicago
1½ in. (Borough of Manhattan only), per cu. yd.....	\$3.25	\$2.50	
¾ in. (Borough of Manhattan), per cu. yd.....	3.50	2.50	

GRIT		New York	Chicago
(Delivered at job in Borough of Manhattan and Bronx)			
	\$2.50	\$2.25	

GYPSUM		New York	Chicago
Plaster Board:			
Delivered at job, Boroughs of Manhattan and Bronx.			
27 x 28 x 1.....	.37c.	...	
27 x 48 x ½.....	.34c.	...	
32 x 36 x ½.....	.22c.	25c.	
32 x 36 x ¾.....	.22c.	27½c.	
32 x 36 x 1.....	.24½c.	...	

Plaster Blocks:		New York	Chicago
Delivered at job, Boroughs of Manhattan and Bronx.			
2 in. solid, 12 x 30, per sq. ft.....	.11c.	...	
10 in. hollow, 12 x 30, per sq. ft.....	.11c.	...	
4 in. hollow, 12 x 30, per sq. ft.....	.12½c.	.11c.	
6 in. hollow, 12 x 30, per sq. ft.....	.18c.	...	

LATH		New York	Chicago
Eastern spruce, per thousand.....	\$8.00*		
No. 1 white pine, per thousand.....		\$7.50	
No. 1 hemlock, per thousand.....		6.50	
No. 1 yellow pine, per thousand.....	8.25*		

LEAD		New York	Chicago
American pig, per lb.....	6½ to 7c.	6¼ to 6½	
Bar, per lb.....	8 to 9c.	6½ to 6¾	

LIME		New York	Chicago
Common, 200 lb. bbls., per bbl.....	\$2.50	\$1.50	
Finishing, 300 lb. bbls., per bbl.....	3.70	...	
Hydrated, in paper bags, per ton.....	18.50	17.50	

LUMBER		New York	Chicago
(Retail prices per M, delivered.)			
Yellow pine, 2 x 4.....	\$68.00	\$52.00	
Yellow pine, 2 x 6.....	65.00	50.00	
Yellow pine, 4 x 4.....	70.00	55.00	
Yellow pine, 8 x 8.....	68.00	60.00	
Yellow pine, 12 x 12.....	75.00	65.00*	
Yellow pine, No. 1 boards, 1 x 6.....	75.00	60.00	
Yellow pine, No. 1 boards, 1 x 12.....	80.00	65.00	
Yellow pine, B and better flooring (plain).....	85.00*	75.00*	
Yellow pine, B and better flooring (quartered).....	100.00	85.00	
Douglas fir, 6 x 6 to 12 x 12.....	67.50	60.00	
Douglas fir, 12 x 12 to 14 x 14.....	82.00*	75.00	
Norway pine, 2 x 4.....	60.00	55.00	
Norway pine, 2 x 12.....	75.00	60.00	

(Continued on page 292-B)



WINDOW-WALL
For the Sleeping Porch de Luxe

is worthy of the most carefully planned structure. It is the highest development of the sleeping porch idea, combining thorough ventilation with privacy and protection from light, rain and cold winds.

The metal All-Weather sash, fitting in the same frame with the glass sash, is adjustable to all weather conditions. Both glass and All-Weather sash can be lowered out of sight into the Tuck-Away casement and covered with the hinged sill.

Adaptable not only for sleeping porches but for sun parlors, detached sleeping quarters, outdoor tea houses—any place requiring ventilation with protection from weather.

Write for architects file of blue prints and views of installations. See Sweet's Catalog.

The Window-Wall Company
Marietta, Ohio



THE AMERICAN ARCHITECT

Building Material Market Reports

(Continued from page 292-A)

	New York	Chicago
Hemlock, 2 x 4.....	\$58.00*	\$52.00
Hemlock, 2 x 12.....	60.00	54.00
Oak flooring, 13/16 quartered white.....	220.00*	188.00*
Oak flooring, 13/16 plain white.....	215.00*	165.00*
Oak flooring, 13/16 plain red.....	150.00*	125.00*
Oak flooring, 13/16 plain red.....	150.00*	128.00*
Maple, 1" F. A. S.....	85.00	80.00
Basswood, 1" F. A. S.....	90.00*	85.00*
Maple flooring, 13/16 clear.....	95.00	85.00
Maple flooring, 13/16 select.....	85.00	82.00
Maple flooring, 13/16 No. 1 factory.....	75.00	62.00
Mahogany, 1" F. A. S.....	300.00	300.00
Quartered oak, 1" F. A. S.....	220.00*	205.00*
Plain oak, 1" F. A. S.....	150.00*	135.00*
Red gum, 1" F. A. S.....	100.00	95.00
Sap gum, 1" F. A. S.....	75.00	65.00
Chestnut, 1" F. A. S.....	95.50	90.00
Poplar, 1" F. A. S.....	140.00*	120.00
Birch, 1" F. A. S.....	85.00	80.00
Spruce, random 2".....	65.00*	60.00*
Spruce, wide 8".....	65.00	60.00
Spruce, 10".....	70.00	65.00
Spruce, 12".....	75.00	70.00

METAL LATH

Under 100 sq. yd., per sq. yd.....	40c.	35c.
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MORTAR COLORS

Red, per lb.....	.05	.05
Brown, per lb.....	.05	.05
Chocolate, per lb.....	.05	.05
Black, per lb.....	.05	.05

OILS

Linseed, city, raw.....	\$2.25	\$2.48
Linseed, boiled, advance, per gal.....	.01	.02
Out of town, American seed, at.....	2.25	2.48

PAINTS

Leads:		
American white, in oil, kegs; lots over 100 lbs.....	13c	13c
White, in oil, 25-lb. tin pails; add to keg price.....	34c	34c
Red, bbl., 1/2 bbl. and kegs; lots over 100 lbs.....	13c	14c
Dry Colors:		
Red Venetian, American, per 100 lbs..\$2.00 to \$4.50	\$2.00 to \$4.00	
Metallic Paints:		
Brown, per ton.....	\$32.00 to \$36.00	\$24.00 to \$32.00
Red, per ton.....	35.00 to 40.00	24.00 to 32.00

PIPE

Cast Iron:		
6 in. and heavier.....	\$52.30	\$53.80
4 in.....	55.30	56.30
3 in.....	62.30	68.80

(and \$1 additional for Class A and gas pipe.)
(Discounts to jobbers for carload lots on the Pittsburgh basing card; freight rates from Pittsburgh to New York, and also from Pittsburgh to Chicago, in carloads, per 100 lbs. are 27c. An additional 5 per cent discount is allowed to large jobbing interests over those listed below.)

	F.O.B. Pittsburgh	F.O.B. Chicago
Wrought:		
Steel:		
Black, 3/4 to 3 in.....	50 1/2 to 57 1/2 %	42.6 to 49.6 %
Galv., 3/4 to 3 in.....	24 to 44 %	14.6 to 34.6 %
Iron:		
Black, 3/4 to 1 1/2 in.....	29 1/2 to 34 1/2 %	19.6 to 29.6 %
Galv., 3/4 to 1 1/2 in.....	2 1/2 to 23 1/2 %	9.4 to 11.6 %
Steel:		
Black, 2 1/2 to 6 in.....	53 1/2 %	45.6 %
Galv., 2 1/2 to 6 in.....	41 %	31.6 %
Iron:		
Black, 2 1/2 to 6 in.....	34 1/2 %	24.6 %
Galv., 2 1/2 to 6 in.....	21 1/2 %	9.6 %
Steel:		
Butt Weld, Extra Strong, Plain Ends		
Black, 3/4 to 3 in.....	46 1/2 to 56 1/2 %	33 to 43 %
Galv., 3/4 to 3 in.....	29 to 44 %	10.6 to 18 %
Iron:		
Black, 3/4 to 1 1/2 in.....	28 1/2 to 39 1/2 %	
Galv., 3/4 to 1 1/2 in.....	11 1/2 to 24 1/2 %	
Lap Weld, Extra Strong, Plain Ends		
Steel:		
Black, 2 to 6 in.....	48 1/2 to 50 1/2 %	35 to 37 %
Galv., 2 to 6 in.....	37 to 39 %	10 to 12 %
Iron:		
Black, 1 1/4 to 6 in.....	25 1/2 to 34 1/2 %	
Galv., 1 1/4 to 6 in.....	10 1/2 to 22 1/2 %	

	New York	Chicago
Rebate for bags 15c.		
Neat wall cement in 15 cent bags, per ton.....	\$21.30	\$19.00
Finishing plaster.....	24.00	19.00
Lath mortar, in cloth bags, per ton.....	15.05	
Brown mortar, in bags.....	15.05	14.00
Finishing plaster, per bbl. (250 lb.).....	3.50	
Finishing plaster, per bbl. (320 lb. bbl.).....	4.35	

PUTTY

In bladders, per 100 lb.....	\$6.25	\$4.25
In 1-lb. to 5-lb. tins, per 100 lb.....	6.75	6.50

RADIATION

(A further discount, effective April 4, of 15% on direct radiators, 12 1/2% on wall radiators, and 10% on steam and hot water boilers is announced. This approximates a drop of 36% on radiators and 33% on boilers from prices in effect before the 1st of January, 1919.)
Chicago reports a 57% discount on standard heights.

REGISTERS

	New York	Chicago
Cast iron semi-steel or steel, in black or white japan or electro plate and small faces and borders.....	40%	40%
Wall frames.....	40%	40%
Large faced, 14 x 14 in. and larger.....	60%	60%
Base board registers.....	40%	40%
Base board intakes.....	40%	40%
White enameled goods.....	15%	15%
Solid brass or bronze goods, except grilles.....	net	net
Grilles in black and white japan or electroplate in cast iron, plain lattice design—smaller than 14 x 14 in.....	40%	40%
—Larger than 14 x 14 in.....	60%	60%

REINFORCING BARS

High carbon steel from mill.....	\$48.50	\$49.50
Medium steel from mill.....	48.50	49.50

ROOFING MATERIAL

Tarred Felt Paper:		
No. 1—25 lbs. to 100 sq. ft., per ton.....	\$62.00	\$75.00
No. 2—16 lbs. to 100 sq. ft., per ton.....	63.00	75.00
No. 3—12 lbs. to 100 sq. ft., per ton.....	64.00	75.00
Rosin sized sheathing, per ton.....	60.00	65.00
Corrugated roofing, galvanized, 2 1/2 in. corrugation, over flat sheets, 30c. per 100 lbs.		

ROSIN

Common to good, strained (wholesale), 80 lb., per gal.....	\$18.75	
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SAND

Mason, per cu. yd.....	\$1.80	\$2.50
Torpedo, per cu. yd.....	1.80	2.50
White sand, per cu. yd.....	4.00*	

SHINGLES

Red cedar, 5 to 2, clear, per thousand.....	\$11.00	\$7.00
White cedar, extra star, A star, per thousand.....	11.00*	7.00

SLATE ROOFING

	F.O.B. cars, Quarry Station	F.O.B. Chicago
Pennsylvania:		
Best Bangor.....	\$7.75* to \$9.00	\$10.20 to \$11.45
No. 1 Bangor Ribbon.....	6.75 to 7.00*	9.20 to 9.70
Pen. Avgyl.....	6.50 to 7.25*	9.70 to 10.45
Peach Bottom.....	10.50* to 12.50	12.45 to 14.45
No. 1 Chapman.....	6.25 to 7.25*	8.70 to 9.95
Vermont:		
No. 1 Sea Green.....	4.25 to 6.75*	5.95 to 9.00
Unfading Green.....	9.00 to 10.50*	9.40 to 12.50*
Mottled Green Purple.....	9.00 to 10.50*	
Red.....	12.00 to 20.00*	14.80 to 22.80
Maine:		
Brownsville, U'fg Black, No. 1.....	12.00	14.10 to 15.10
Slates felt, 30 lb. roll.....	.92	
Slates felt, 40 lb. roll.....	1.22	

SPIRITS TURPENTINE

	New York	Chicago
Per bbl.....	\$1.75	\$1.10

STONE SCREENINGS

Lime, per cu. yd.....	\$2.35	\$2.50
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STRUCTURAL STEEL

Beams and channel, 3 to 15 in., per lb.....	2.72c.	3.47c.
Beams and channel, over 15 in., per lb.....	2.72c.	3.57c.
Angles, 3 to 6 in.....	2.72c.	3.47c.
Zees and tees.....	2.72c.	3.47c.
Steel bars, half extras, from mill.....	2.35c.	3.37c.

STUCCO

In cloth, per ton (white, mixed).....	\$22.50	\$19.50
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STUCCO BOARD

Medium weight stucco board, plain, per M sq. ft.....	\$42.50	\$45.00
Medium weight stucco board, creosoted, per M sq. ft.....	50.00	50.00
Heavy weight stucco board, plain, per M sq. ft.....	55.00	55.00
Heavy weight stucco board, creosoted, per M sq. ft.....	60.00	60.00
Medium weight stucco board, plain, narrow key, per M sq. ft.....	50.00	50.00
Medium weight stucco board, narrow key, creosoted, per M sq. ft.....	55.00	55.00
Insulating board, heavy felt background, per M sq. ft.....	50.00	50.00

SHEATHING BOARD

Heavy weight sheathing board, per M sq. ft.....	\$50.00	\$50.00
Medium weight sheathing board, per M sq. ft.....	45.00	45.00
Stucco or plaster board, sheathing board and insulating board are in rolls containing one sheet 25 ft. long and 4 ft. wide (100 sq. ft.)		

WALL BOARD

Wall board, shipped any length, 4 ft. wide, per M.....	\$45.00	\$45.00
Packed flat in cars if ordered in less than car lots. Add \$5.00 per M ft. for crating.		