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INSURANCE ENGINEERING publishes an article describing an interview with Mr. Thomas A. Edison, which has been noticed in the daily papers all over the country, on account of what the average newspaper-reader supposes to be the novel idea that the building of the future will be composed of concrete, moulded, in the case of lofty structures, over a steel frame. Mr. Edison, according to *Insurance Engineering*, thinks that, when the price of Portland-cement falls to a dollar a barrel, it will be possible to "have small palaces, renting for about ten dollars a month." These palaces, in Mr. Edison's opinion, will be constructed of eight-to-one concrete, "poured" by the contractor into moulds, of which the average builder will possess a well-assorted stock; and "the architects will have a fine time, for they can pour statuary and all sorts of ornamentation while they are completing the walls."

WHAT concrete will be used more extensively in the house-building of the future than it has been in the past is very likely, but that any of our readers will ever hire palaces, of that or any other material, for ten dollars a month is extremely doubtful. Eight-to-one concrete, of Portland-cement, sand and broken stone, such as Mr. Edison proposes, would cost, even with Portland-cement at a dollar a barrel, about thirty cents a cubic foot, if made with such reasonable care that the architect would not have a "finer time" in keeping his palace from falling down than in providing for ornamenting it, without including the cost of moulds; while good brickwork costs, on an average, about thirty-five cents per cubic foot, does not need any moulds, and lends itself far better than concrete to the subsequent finishing. In fact, as those who have seen the actual execution of concrete-building above ground will agree, the labor of placing the moulds, trimming off irregularities, and filling the holes left by the bolts necessary for connecting the two sides of the moulds, to prevent them from being forced apart by the tamping of the concrete, bring the cost quite up to that of brick walls of the same thickness, while, in practice, city building-inspectors would always require a concrete wall to be thicker than one of brick. As to the comparative appearance of structures in the two materials, there is room for difference of opinion; but most architects, at least, would prefer a brick wall, artistically, to the mottled and efflorescent surface of Portland-cement concrete. In the neighborhood of Lyons nearly all houses are built, not of concrete, but of the far cheaper *pisé*, consisting simply of earth dug out of the cellar, or the adjoining garden, tamped into moulds, and whitewashed, to protect it from the weather; but these *pisé* houses, owing to the expense of making and shifting the moulds, are not very much cheaper than buildings of brick. We should be glad to see rents reduced in this country to something like the foreign standard, but it is not in concrete construction that this improvement is to be found. On the

contrary, building is already cheaper in this country than in Europe. We once had the pleasure of studying our Laxton's English Price-book with a very distinguished American builder, who assured us, after his examination, that, while some English prices were lower than ours, others were so much higher that he would undertake to contract for any building at the price ascertained by multiplying the quantities by the Laxton prices. Since then, the cost of labor in England has risen, while the cost of American labor has not varied much, and the price of many important materials has fallen; so that the difference is more than ever in favor of this country. That house-rents here are, under such circumstances, so much higher than they are abroad is due partly to the greater cost of land in our cities, and partly, perhaps, to the greater expense, in the way of plumbing, decoration and house-machinery which an American tenant expects for his money, but also, in a material degree, to the difficulties which our laws put in the way of collecting rents, or, indeed, any debts, from people who do not choose to pay. In Paris, for example, the owner of a house expects to get five per cent net on his investment from rents which seem to us very low; but, under the French law, the landlord is practically sure that all the rents will be paid, and he can fix his prices at five per cent, plus insurance, taxes and small repairs, where a New York or Boston landlord is, as a rule, compelled to reckon on a rent of seven or eight per cent, with insurance, taxes and repairs added, in order to get five per cent net, after deducting the average losses from rascally tenants, who can, practically, neither be compelled to pay nor to vacate, and when finally expelled, after a long and expensive legal process, leave the house with a long list of repairs to be made to fit it for another occupant. A landlord who owns, or manages, dwelling-house property is thus compelled, in order to get the same net return as a Parisian landlord, to make his rents, to his honest tenants, fifty per cent higher than would be charged for the same accommodation in Paris, simply because, unless the honest tenants were made, in this way, to pay the rent of the dishonest ones, the building of houses to rent would cease to be a reasonably remunerative investment, and would be abandoned.

THE programme of competition for the Grant Memorial, in Washington, has been issued, and is at the service of any one who wishes to send for it to the Secretary of the Grant Statue or Memorial Commission, War Department, Washington, D. C. The competition is open to all artists who are citizens of the United States. Models, in plaster, at a scale of one inch to the foot, must be submitted, and all models must be accurate, and must show both the pedestal and the statue, or statues, on or about it. The cost of the Memorial must not exceed two hundred and forty thousand dollars, ten thousand additional being allowed for incidental expenses. Two alternative sites are suggested, one in the President's Park, which is an oval tract directly in line with the White House grounds, and the other in a trapezoidal lot, between the President's Park and Seventeenth Street, nearly opposite the new Corcoran Gallery, and forming a pendant to the similar lot, fronting on Fifteenth Street, already appropriated to the Sherman Statue. Competitors are invited to signify their choice between these two plots, and to make suggestions for the treatment of the one selected, this being considered one of the elements in the design. The competition is to be double. For the first, a preliminary competition, the models must be submitted before April 1, 1902. From among the models submitted, the Commission will choose the six which they consider most meritorious, and will pay to their authors one thousand dollars each; and the final selection of the design will be made from among the six thus chosen. The weak point of the competition, so far as appears from the programme, is the absence of any provision for an expert jury of award. The Commission consists of three persons, one being General Grenville M. Dodge, President of the Society of the Army of the Tennessee; the second being Senator George Peabody Wetmore, Chairman of the Joint Congressional Committee on the Library; while the third is Mr. Elihu Root, Secretary of War. Two members, at least, of the Commission are men of educated taste in artistic matters, and there seems to be nothing in the law to prevent the Commission from calling in

experts to assist them in their choice; but nothing is said about such assistance, and our best sculptors, remembering the scandals and disgusts incident to former competitions of a similar sort, carried out without expert advice, are likely to refrain from participation in the present one.

AN enterprise, which has long tempted engineers, is at last, as it seems, to be carried out. Every person interested in real-estate matters, who has been transported across the Hackensack meadows in the trains of any of the numerous railways which intersect them, must have wondered that this vast tract, bordering on the deep water of New York Harbor, and surrounded, on the other sides, by a dense population, should not long ago have been reclaimed, and covered with what might easily be made, with judicious preliminary planning of docks, warehouses and railway tracks, the greatest shipping-station in the world. Compared with such foreign seaports as Liverpool, Southampton, Hamburg or Genoa, our maritime cities are ludicrously antiquated in regard to facilities for receiving, handling and transporting goods. Undoubtedly, our shipping-laws, which, by throwing all Transatlantic trade into the hands of foreigners, have made attempts at improving dock facilities look, to the politicians, like favors to the foreign ship-owners, have shut out of this province the ingenuity and enterprise which have made our iron manufactories the most efficient and economical in existence; but there are signs that Americans are at last to be permitted to engage in foreign commerce, and, as soon as it is found that proper terminal facilities for shipping form one of the most important factors in determining the course of trade, our seaports are likely to follow the course of those in Europe in competing in this way for traffic. Boston has, although as yet mainly in embryo, an excellent system, and, in spite of a shallow harbor, which compels the owners of modern vessels to send them back and forth with only two-thirds of the cargo that they are intended to carry, it has seen, since the establishment of the Charlestown docks, its stated Transatlantic service increase from nothing to some twelve or thirteen regular lines, while New York, although, as a distributing point, far superior to Boston, is said to be losing its Transatlantic business, through the delay, expense and annoyance involved in getting cargoes landed and transferred to their destination. The construction of the new bridge across the Hudson River, and the completion of the tunnels beneath it, while they might help the ocean-traffic of New York if they improved the access to docks with modern equipment on the Hudson River, might, under present circumstances, interfere with it, by the fresh facilities which they would afford shippers in New York and the South and Southwest for reaching the better and more economical system which Boston, with a deepened channel, could offer. The improvement of the water-front of New York itself, on the extensive scale which would be required for bringing together steamships, storehouses and railways in the modern manner, is now impracticable; but the Hackensack meadows afford a clear field for the designing and development of a system unrivalled by anything of the kind in the world, directly connected with all the railroads centring in New York, as well as with the city itself.

THE example of the Carnegie Iron Company, which, after freeing itself from the bondage of the unions, not only paid higher average wages to its men than ever before, but prospered and developed to a degree unexampled, perhaps, in any industry, seems to have encouraged others, and it is announced that the Metal Trades Association has decided henceforth not to recognize any unions of workmen, or any schedules of wages adopted by the Association of Machinists, or to submit to any dictation as to the number of apprentices or helpers, or the manner of payment for work. Judging from the example of the Carnegie Company, and of other establishments, the effect of the change would be to increase the average wages of the men, to encourage attention and goodwill on their part; to improve the condition of the trade, and thereby furnish employment and comfort for persons not directly connected with it, and to enable young persons to learn an honorable profession, by which they may earn a living when the men who are now in it, and who do their best to keep any one else from coming into it, have passed away; but it is sure to be desperately resisted by the unions, or, rather, by the tyrants of the unions, who, as a rule, care nothing for the welfare of the men whom they represent, and will sacrifice them without mercy for the

sake of keeping their own influence and power. Unless these worthies are made to see some personal interest in submission, we may, therefore, expect to see serious strikes of machinists in the States most afflicted by the unions, such as Illinois and Pennsylvania.

BECAUSE of our strong belief that a publication that undertakes any form of public instruction gains greatly by the preservation of the anonymity of its editors and staff writers, our readers have not realized that for a score of years they have benefited by the advice and suggestion of one of the strong men in the profession in England, a man whose architectural work has always been strong, sober and dignified, whose writings have always been sensible and scholarly. The paper on the new Art Gallery in Whitechapel, published a few weeks ago, is, we regret to say, the last contribution we shall receive from John McKean Brydon — perhaps it was actually his last literary effort. Mr. Brydon, Fellow and Vice-President of the Royal Institute of British Architects, died at his residence in Hampstead, on the 25th of May, after a short but severe affection of the heart. His health had been failing for some months, owing to the shock he received by the loss of his only son — an electrician of great promise — during the voyage from Dublin to Holyhead in February, 1900, the unfortunate young man being swept overboard by a sea. Mr. Brydon's warm and genial nature endeared him to all who knew him, whether professionally or in private life. He loved his work, and a hint from him has many a time been of great service to his younger brethren in the profession. Born at Dunfermline in Fifeshire, in 1840, he served his articles in Liverpool; went afterwards to the office of Mr. Bryce, of Edinburgh, ultimately coming to London, where he spent two or three years with Messrs. Nesfield & Shaw, and commenced business on his own account in 1870. Among the public works on which Mr. Brydon has left the stamp of his genius may be mentioned the Town-hall, Public Library and Polytechnic, Chelsea; St. Peter's Hospital, and the new hospital for women, with their medical schools, both in London. The works at Bath — the Guild Hall, Technical Schools, Victorian Art Gallery, and his beautiful restoration of the Roman Bath, with the new pump-room — mark an epoch in the history of the famous city of the West. A melancholy interest attaches to his *magnum opus* — the Government Offices at Westminster — of which only the foundations are laid. The designs for these buildings, which show his masterly grasp of detail, are, doubtless, familiar to our readers.

THE Hunt Memorial Committee make an earnest appeal for additional funds, to complete the payment for the monument to Mr. Hunt in Central Park. The whole cost of the monument was twenty-one thousand three hundred dollars. Of this, sixteen thousand eight hundred have been raised, but forty-five hundred dollars are still due to Mr. D. C. French for his bronze figures. Mr. French's work was done to a great extent as a mark of personal regard on his part for Mr. Hunt, and the profession which he represented, and it would be most ungrateful to allow him to suffer. The Committee only asks for small subscriptions, of five or ten dollars, but it hopes that every architect will be willing to contribute so much to clear off the small remaining debt. Subscriptions may be sent by check to Thomas Tryon, Treasurer of the Hunt Memorial Committee, 41 Union Square, New York.

WE find a result of the new rule, admitting women to all departments of the Paris School of Fine-Arts, in the official announcement that Mademoiselle Morgan, pupil in the *atelier* Chaussemiche, has been awarded a mention in the first class of the Department of Architecture, for a design for a pulpit in a church of the thirteenth century. There is no account in the French newspapers of any riot following the award, nor does it appear that the poor girl was chased through the streets of Paris by her chivalrous comrades, as happened a year ago; so that we may infer that a change has begun to take place in the sentiment of the students toward their fellow-pupils of the softer sex. According to our American notions, a change of this sort would do no harm, and we trust that we may be able to chronicle the award of other school honors to Mademoiselle Morgan, and the other demoiselles of the School of Architecture, if there should be any, without having to accompany the announcement by a description of scenes of violence, of which they were the object.

THE SALON OF THE SOCIÉTÉ NATIONALE
DES BEAUX-ARTS.

AND here the artists are back again at the Champs-Élysées; but in place of the old Palais de l'Industrie, that no one to-day regrets, they have found the magnificent Palais which they so criticised before it had started out of the ground. We have difficulty in France in changing our old habits, and are rather given to criticising everything that is new. We lack a willingness to be indulgent to every effort along a new path, and we would like to have every attempt at progress reach perfection at its first essay.

From the time that the Grand Palais des Beaux-Arts was decided on and the plans made known, the artists measured all its dimensions, its length and its breadth, and, aided by the criticisms of the profession, decreed that the new palace was not worth the old one, that things would be uncomfortable in it and the galleries badly lighted. This latter criticism is given the lie this year. Last year, during the Universal Exposition, the greater part of the halls were overloaded with velums so thick that they unnecessarily, and to too great a degree, excluded the light. Certain halls were plunged into a disastrous obscurity, and because of this ill-devised disposition of hangings, the constructors of the palace, the architects, were accused of maladroitness, which, according to an illustration of the building which still has, unfortunately, a certain circulation, sacrificed, as always, everything to the façades. It is perfectly true that the façades were not stinted, but to-day there is an entire change in the tone of the criticisms. The obscure halls of last year have become too well lighted, and people complain that the light is brutal and crude. The evil is not very great after all; it can be remedied by the choice of some light stuff to be used as a velum, but the interesting point is to be able to prove that the galleries of painting are really very light. I am here speaking of that part of the Palais on the Avenue d'Antin where is installed the Société Nationale des Beaux-Arts, the first to open its doors to the public.

The effect on entering the magnificent rotunda, about which are staged the circular galleries, and upon each side of which shows the

At the time of its foundation in 1890, the Société Nationale des Beaux-Arts did not include an architectural section. It was only in 1893 that a little group of architects, at the head of whom was M. de Baudot, came together for the purpose of representing, in a modest way, architecture. There were only eleven exhibitors, but they

presented new ideas, which since then have been followed in a certain degree, as yet too restrictedly, at the Salon of the Société des Artistes Français. The exhibitors of the Société Nationale had been struck, as had been everybody, by the too technical aspect of the usual exhibits of architecture. The public takes little interest in plans which it does not understand and in geometrical drawings which it finds extremely arid. Why not, then, show more work in perspective, and, in particular, why not accompany these drawings with models in relief, details at full-size of



Dressing-table designed by M. G. Serrurier.

certain portions of the decorations, and even entire articles of furniture, when designed by an architect? This would interest the public, and show it that the art of the architect could be superior to the art of the tradesman-decorator and furniture-dealer. This theory was not new, but the exhibitors at the Société Nationale had the courage to put their idea into execution, and their number increasing, while, nevertheless, remaining very small, one could see each year models of decoration in woodwork, tile-work, office-fittings, bedchamber furniture and the furniture for dining-rooms, all full-size — living, that is — and strongly soliciting the attention of the public.

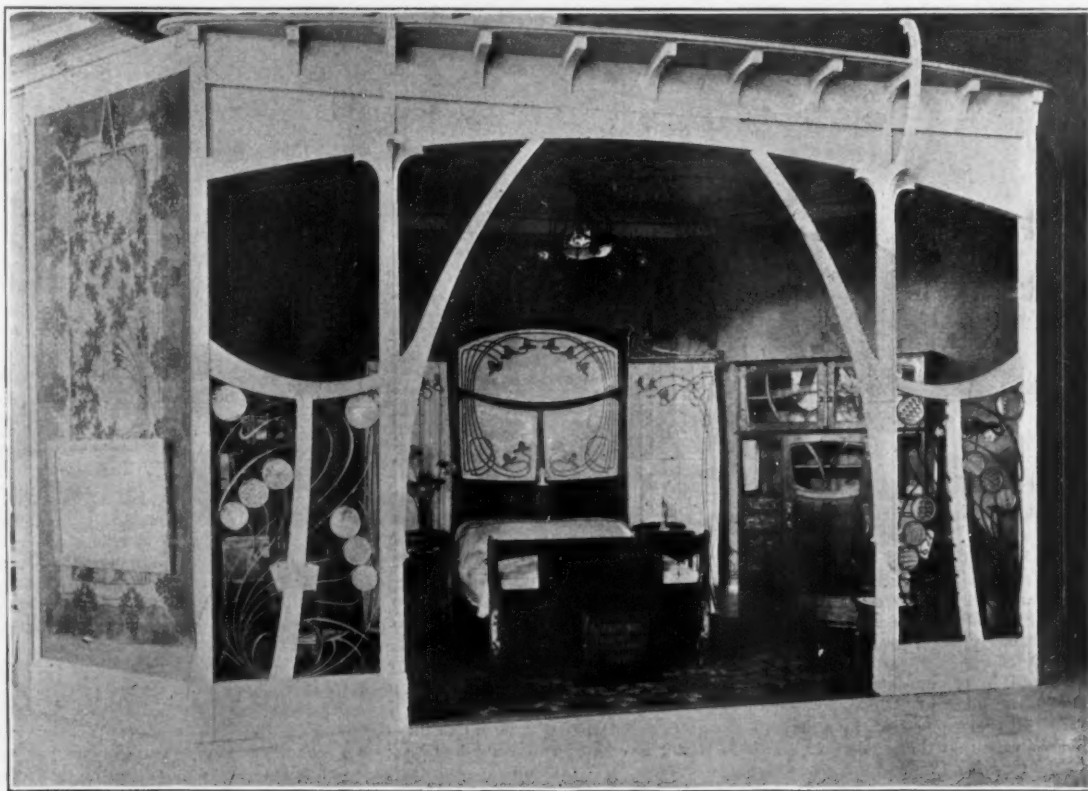


Exhibit of Bedroom Furniture designed by M. G. Serrurier.

perspective of the grand staircase rising to the first story, is admirable. In place of the bare, shed-like Palais de l'Industrie of former times, here at length is a rich frame worthy of French art; here at length is a real Palace of the Fine-Arts.

Carried along by the success of this movement, the architects have a little too much sacrificed architecture proper; the practical *projets* were a little too systematically set aside, and photographs replaced to too large a degree the documentary drawings. At the same time,

the fantastic lucubrations of certain architects smitten with transcendental poetry, and with imaginations wrought to a high pitch, initiated us into the mysterious manifestations of the architecture of dreamland.

The Salon this year shows the reef to be avoided, if it is intended to preserve to the Section of Architecture the special character of our art. One might rather believe one's self at an exhibit of furniture, and that of the most exaggerated kind, than at an architectural exhibition. Several of our *confrères* show only furniture, very interesting in itself, to be sure, and evidence their real profession only by the presence of accessory photographs.

In all the forms presented by the furniture exhibited there reigns that which is to-day called "l'Art Moderne," of which we saw so many specimens at the Exhibition of 1900. England, which is rather the cradle of this new art, and Austria-Hungary have shown us some charming models, ingeniously composed while remaining rational. As a rule, we find these qualities in our own architect-decorator-furniture-designer, and it is interesting to have the evidence that our time is likely to create a style; but it is regrettable from the ethnical point-of-view that this style has no "*patrie*." We find it a little everywhere, in every country, almost identical in its forms, and, if it is true that furniture reveals the character and customs of a people, it follows that these national characteristics and customs are becoming

manifestations of art; still, it is necessary that this art should be of a material and palpable order. M. Guillemonat does not share this opinion, since he has exhibited an "Essai de transposition Architecturale de la tetralogie Wagnerienne et la Damnation de Faust." Wagner and Berlioz translated into architecture! It must be confessed that the attempt is not a success. M. Guillemonat has translated the Walkyrie, Siegfried, the Rheingold, etc., by means of oil-paintings, strange forms in tones stranger yet, which have nothing in common with architecture. It is dream-architecture, they tell us, and they refer us to M. Garas, who also imagines gigantic constructions, evidently impossible of execution, but which, nevertheless, reveal real and constructed forms. He does not pretend to translate music into architecture, he merely arranges "visions" of temples for future religions, and that is quite enough. From the manuscript note signed by M. Garas, I extract this passage, as clear as any, which exhibits the state of his mind and that which he desired to express: "Dominating a fertile country, erected in the form of an immense hive, this hymn of stone sings the labor of the fields. The springs, captured and subdued, bear into the distance their fecundating principles. Minerals, vegetables, animals, collaborate in the harmony of forms, symbolizing the grand harmony of life." In reality, M. Garas shows us, in luminous tones which oil-painting only could render, this immense hive which dominates a landscape



Cabinet de Travail. Th. Lambert, Architect.

more and more uniform everywhere. In any case, at the Salon de la Société Nationale, the greater part of the exhibits belong to the same family, and several have too much the same character; one feels too much the same inspiration and not enough of the essence of originality. The bedchamber by M. Benouville, the dining-room by M. Plumet, the parlor of M. Pierre Selmersheim, and the dining-room of M. Tony Selmersheim are out of the same work-shop, as it were; the dining-room by M. Sorel has the same air of relationship. But this is the only reproach to be made against these artists who, in the study of detail, by the application of wrought-copper on their woodwork, through the ingenuity which they bring to the subordination of the form of their piece of furniture to its practical use, victoriously demonstrate that the science of the constructor is compatible with all the manifestations of art.

Amongst this furniture, there is one exhibit which expresses a very personal performance in which one detects the influence of the Empire style. Here M. Th. Lambert draws attention by the elegance of the sober lines of his compositions. His "*Cabinet de travail*" presents a most unexpected mixture of Japanese decoration with mahogany furniture which, as I say, suggests the Empire. The combination lacks harmony, but the furniture is very carefully designed.

I said that the science of construction was compatible with all the

bounded by mountains. But here, at least, the form is really constructed and answers to a definite plan, more definite than the elevation exhibited beside it. It is admissible as dream-architecture, but what use to waste in this way a talent and imagination whose existence cannot be denied, and which might be employed in a more practical manner? Distraction, *fantaisie d'artiste*! It is under this heading that we speak of it, since it is one of the important works at the Salon de la Société Nationale.

Amongst the architects of dreamland (what an odd specialty, and how little likely it is to bring in commissions) must be cited M. Provensal, whose more practicable designs we have knowledge of, and who here exhibits the tomb of a poet—an oil-painting, giving theatrical effects of light on a monument that is brutally massive, probably symbolic—on the shore of a lake surrounded by the escarpments of a mountain. 'Tis painting; perhaps it may be poetry; possibly it may be literature, but it is not architecture. We, nevertheless, find some frames of architectural drawings, and amongst them some that are charming, as, for instance, the series of very simply-colored drawings representing a dwelling and work-shop after the Norwegian peasant manner, exhibited by Madam Anna Dirik. The plan of this little structure was devised by the painter Dirik, at Droeback, Christianiafford.

We also notice a little house in the outskirts of Paris, designed by M. Goubert, a little in the Norman style, but with a very genteel outline. After having mentioned a barrack for firemen, by M. Brunet, and a commonplace scheme for a villa, by M. Bacilieri, I will speak more particularly of the enlargement of the thermal establishment at Sermaise-les-Bains, by M. Alfred Besnard. This bathing-establishment, much too small, is most charmingly situated and surrounded by pine-trees.

In order to meet the demands of its clientèle, the hotel and restaurant were enlarged. On the ground-floor this latter takes up all the space, together with the café, the private dining-rooms and the kitchen, the latter being separate from the main building. The two stories assigned to chambers are built about a central hall which serves as a common meeting-place and playground for children. M. Besnard has satisfied his programme in an interesting manner. He has decorated his façades with brick and stone by framing his windows in gray ceramic work, quite modern in treatment but not at all eccentric. He has known how to be economical, too, since this construction costs only 510 francs the square metre. It must be further said that since this bath is only frequented in the summer-time, the architect did not have to concern himself with the matter of heating. M. Besnard is one of the few architects who exhibit a complete architectural treatment.

It would be unjust to forget, amongst the architects exhibiting, the collections of furniture by MM. Polti and H. Sauvage. There should also be mentioned the very skilfully executed water-colors by M. Paul Gérard, which represent the restoration of objects discovered in the excavations at Antinoë, and the decorations of the Egyptian sarcophagi, after drawings made at the Imperial Museum at Berlin. These water-colors form a very interesting archaeological record.

Finally, we must turn once more to the furniture, in order to speak of the bedchamber, in natural mahogany relieved with copper, designed in very modern style, by M. G. Serrurier. This designer occupies himself more particularly with furniture, but works in collaboration with an architect, M. René Dulong, whom I am happy to mention here in spite of his *incognito*. That which must be praised in the exhibit of M. Serrurier are the efforts which he has made, while seeking new forms, to reach them so as to involve simplicity of execution, and, consequently, a relative economy of cost. This has also been the object of M. Benouville, whose endeavors are directed to designing modern furniture of low price.

A FRENCH CRUSADE AGAINST WHITE-LEAD.—A vigorous campaign is being carried on against the use of *blanc de céruse* (carbonate-of-lead) in painting. This is in accordance with a resolution passed by the Superior Council of Hygiene of France, which ranked white-lead among the deadly poisons. It is well known that this pigment is the common cause of the lead-poisoning so widespread among painters. The Director of Posts and Telegraphs has forbidden its use in all the offices under his control, and in addition the painters of Grenoble have gone on strike to demand that all employers should use zinc-white instead of white-lead. Zinc-white is far less poisonous, but more expensive, as owing to its want of "body" more coats have to be laid on. The painters have sent out a circular to all medical men in France asking for their support. They also ask for the subscriptions of medical men to be paid into the strike-fund in the name of those principles of hygiene and sanitation upon which medical men are always insisting. — *Paris Correspondence of the Lancet.*

CONCRETE-CONSTRUCTION.¹

THE object of the present paper on concrete-construction is to give a few practical suggestions based on actual experience. I have no new theories to advance, but am a believer in the use of a wet mixture, of such proportions as to give a maximum of strength under compression, always using Portland-cement. Where economy

is necessary, I would introduce large stone in the heart of the mass, or cellular construction, but would not cheapen the concrete.

My remarks will be from the standpoint of the purchaser and contractor, as well as the engineer. As engineers, in our desire to secure good work and uniform results, we are apt to introduce unnecessary refinements, resulting in increased cost, retarding the progress of the work, and often defeating the end in view.

As concrete is almost always used in compression, I would recognize no test but that of the actual mixture to be used in the work, and that under compression. Such a test demonstrates the excellence of all the ingredients and whether they are properly proportioned. Even with excellent ingredients, low results are often obtained by reason of

wrong proportions. To illustrate, last summer I had occasion to test the value of copper-slag and lake-gravel in concrete. The gravel alone, mixed five parts gravel to one of cement, was good for about 60 tons per square foot ultimate compression after seven days. The standard of excellence desired was that obtained by limestone and gravel, mixed 1 cubic foot of cement to 2½ cubic feet limestone (passing a 2-inch ring, pieces ½ inch and under excluded) and 2½ cubic feet of lake-gravel, which gave an average ultimate compression in seven days of 135 tons per square foot.

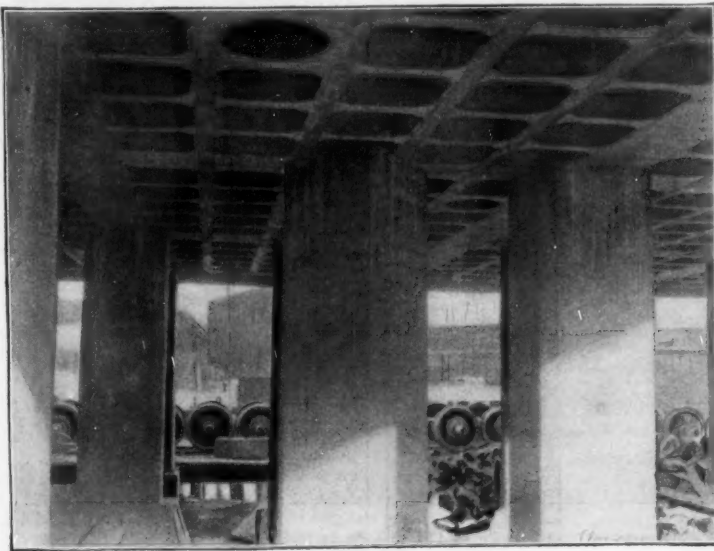
My first tests on the slag-mixture gave only about 80 tons per square foot in seven days, and appeared to demonstrate a low value for the slag; but examination of the fracture showed an excess of gravel and a fracture through the spaces where the most gravel existed. A slight diminution in the quantity of the gravel gave results of over 140 tons in seven days. The copper-slag is shown by analysis to be free from deleterious chemicals, except lime, and its use in work of four years' standing seems to prove the absence of free lime. The slag can be obtained cheaper per cubic yard than

stone, but, by reason of its great weight (about 3,300 pounds per cubic yard for run of crusher, against 2,800 pounds for limestone), the cost of transportation and handling is increased. Owing to its weight and abrasive qualities, the duty is harder on the mechanical mixer and tools, and the slag is more apt than limestone to separate itself from the other ingredients when thrown from a height or used with a large amount of water; and its apparent economy is largely offset by the objections mentioned.

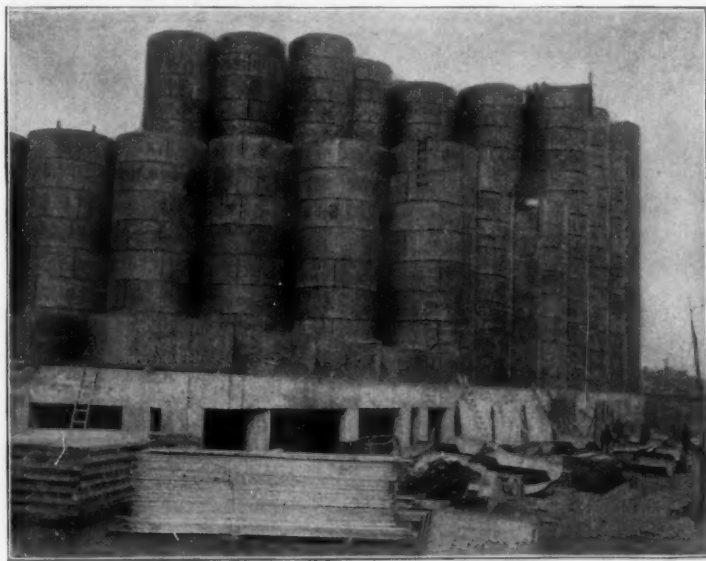
The engineer should seek to obtain greatest strength, complete filling of voids and a smooth exterior; all of which can be obtained by simple means. An excess of fine material, while producing a good finish, weakens the concrete; imperfect filling of voids produces rough work, and is

also an element of weakness; therefore, to define the exact proportions to be used in any piece of work necessitates an intimate knowledge of the exact materials that will be used by the contractor to whom the work is awarded. As stone from different quarries

¹ A paper by C. R. Nohr, read before the Engineers' Society of Western New York, March 5, 1901, and published in the *Journal of the Association of Engineering Societies.*



Under Section of Floor, Eastern Elevator, Showing Beams and Girders. Ransome Concrete Construction.



Thirty-six-inch Floor, Eastern Elevator, Buffalo, N. Y. Ransome Concrete Construction.

does not produce the same fracture or the same amount of fine material, it is seldom wise to state the exact proportions, except that of the cement to the rest of the aggregate, the remaining ingredients to be so proportioned as to fill all voids without an excess of fine material, leaving the exact amounts to be determined by experiment with the actual materials to be used when placed on the work.

Specifications should state the minimum size of broken stone allowed, as well as the maximum, as broken stone is graded in five commercial sizes; and to determine the voids it is necessary to know the sizes included in the coarse aggregate. As a measure of economy, it is well to specify run of crusher, dust removed. This is usually sold at 5 per cent less than the graded sizes, and contains about 20 per cent more material, leaving less fine material to be supplied to fill voids, resulting in a saving of 25 per cent, which will be offset somewhat by greater cost per cubic yard for transportation.

Thorough ramming should always be specified. The general impression among men employed in placing concrete is that little ramming is required if the mixture is wet. This is a mistake. Large voids will show in the face of the work if not thoroughly tamped; and the fact that wet mixtures are seldom tamped enough is one of the reasons why it sometimes does not show up so well in testing as compared with dry mixing, which must necessarily be thoroughly tamped.

Thorough mixing should also be insisted on, and on all work where an amount to exceed 40 cubic yards per day is placed mechanical means should be used. In this way, greater strength and uniformity can be obtained at less expense than by the addition of cement.

A concrete composed separately of several of the commercial sizes of broken stone, gravel, sand, etc., is always expensive. The coarser size stone, passing a 2½-inch ring, with the voids filled by the addition of the smaller sizes, sand, etc., would take 45 cubic feet to make one cubic yard in place, or a yield of 60 per cent; besides adding to the expense of the handling and being very difficult to properly proportion by the ordinary laborer. Equally good results would be obtained by run of crusher, sand and cement, giving only three ingredients to watch, and resulting in a very material saving in expense. As eternal vigilance is the price of success in concrete work, simplifying of methods is desirable. We err when we introduce refinements, which increase the cost and give no corresponding results.

To produce smooth work, the addition of granolithic face or plastered surface is unnecessary. Smooth forms, with concrete well proportioned, will give just as smooth work at much less cost, leaving the whole mass uniform, without a line of separation or difference of compressive strength. As an illustration of this, the concrete foundation and floor of the Eastern Elevator and the foundations of the new Dakota Elevator are good examples, and a cordial invitation is extended to all to examine this work. A large portion of this work was placed in midwinter, proving that good work can be done at all times and seasons, although the expense is about 20 per cent greater.

Another way to produce finish is to joint the concrete to represent masonry, using rough lumber for forms; then bush-hammering the face, which can be done by an ordinary laborer at 1½ cents per square foot. The amount saved by using rough lumber goes a long

way toward paying for the bush-hammering, which removes all impressions from inequality of moulds, efflorescence, etc. The front of the Eastern elevator, facing the dock, is so treated.

The preparation of forms calls for considerable ingenuity, and every contract requires special study, to the end that smooth surfaces be left, with unbroken corners; that the swelling of the wood does not rupture the concrete or leave distorted surfaces; and that the forms be so designed as to be used several times, and readily set up and taken down, and later on devoted to other uses. As the charge for forms against the concrete can seldom be kept below fifty cents per cubic yard for heavy work, there is always an opportunity for the ingenuity of the designer, as few rules can be laid down for his guidance.

The use of matched or tongue-and-grooved stuff is not desirable, as concrete fills in the openings and there is no opportunity to expand from moisture. Unmatched boards dry apart and let the water in the concrete leak out, carrying with it some of the cement. Later on they swell and buckle and, if

used as interior forms, burst the concrete. The best way devised so far is to bevel one edge of the boards, using narrow stuff, not to exceed 6 inches. The sharp edge of the bevel, lying against the square edge of the adjoining board, allows the edge to crush when swelling and closes up the joint, preventing buckling.

A coat of soft-soap, before filling the forms, prevents the concrete from adhering to the forms, which should always be scraped and brushed with a steel-wire brush when taken down.

Square corners should be avoided, as they readily chip off; and where used as interior forms for recesses or cellular construction, a fillet should always be placed in the corners.

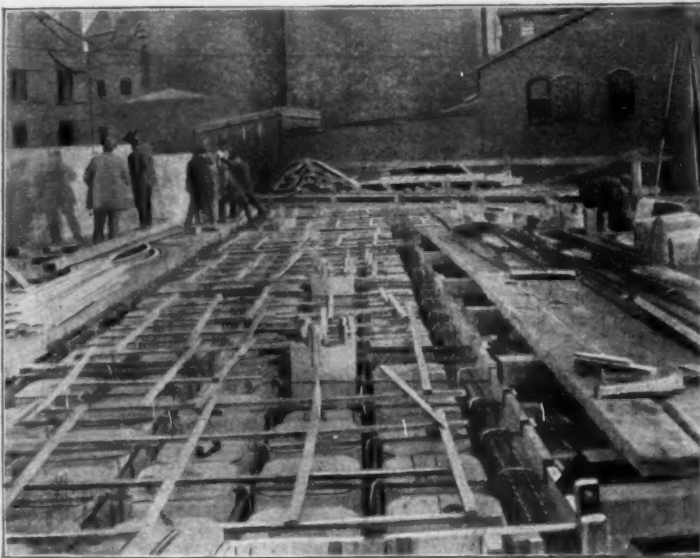
Concrete can often be saved by introducing cells in the mass. These are formed either by cheap hemlock boxes, which can be left in the work, or by collapsible boxes, which can be withdrawn and used over again. Where weight is desirable, one-man stone can be rammed in the heart of the mass, reducing the cost very materially.

Where, for economy in handling or other reasons, it is desirable to dump the concrete from a considerable height, some precaution should be taken to avoid having the coarse aggregates separate from the rest of the mass. This can be accomplished in several ways, — either by chains loosely stretched at intervals across a chute or by

shelves extending part way across the chute at an incline, so as to deposit on a corresponding shelf on the opposite side, so alternating the length of the chute. Either of these methods is a direct benefit, as it more thoroughly mixes the concrete.

Our building-laws, as a rule, show little knowledge of the value of concrete, ordinarily limiting its use to 16 tons or less per square foot, involving a larger factor of safety than is required for any other material. This probably is due to the large amount of poor concrete turned out, and also to a desire to exclude from the building-trades a material that can be placed by unskilled labor.

Regarding the introduction of steel or iron in its various forms in concrete to give tensile strength, there is no question as to its utility if properly used. I claim no special knowledge of any of the systems except the Ransome, which appears to me the best, for the following reasons: It is a perfect system, from which the entire structure, from foundations to roof, can be made without the introduction of I-beams or metal



Arrangement of Forms and Twisted Steel Rods, Thirty-six-inch Floor. Eastern Elevator. Top View.



Concrete Foundations, Dakota Elevator, Buffalo, N. Y.

All made in February, 1901. Thermometer 0° to 40°. Cost 63 cents per cubic yard to heat.

framework of any description, except moulding in the cold-twisted square steel bars.

The cold-twisting which the square bars receive has many advantages possessed by no other system. The twisting prevents the rod from drawing in the concrete, making the grip on it continuous and uniform, rendering the strains all equal. It further decreases the ductility of the metal, making it act more nearly in harmony with the concrete,—a vital point when the nature of concrete is considered. Incidentally, we also gain a marked increase in tensile strength, which in practice we generally throw in as an extra factor of safety. The application of concrete-metal is in its infancy, and in a short time I predict it will be used in many ways not now thought of. Its application so far has been markedly successful. The floor of the Eastern Elevator is, I believe, the boldest application, to date, of concrete-metal construction. The actual load on the floor is 4,470 pounds, and the dead-weight of the floor is 300 pounds per square foot, taking the load as uniformly distributed. When we consider that the grain-load is concentrated on the rim of the tank, and generally taken as two-thirds of the whole load; that the supporting columns, owing to the peculiar layout of the property, have no relation to the position of the tanks, and that in practice some bins are full and others empty, giving eccentric loading, we see that the problem was a difficult one. The efficiency of the construction is still to be demonstrated. Of its success I have no question. The basement floor of this elevator was built for a live-load of 75 pounds, but it has been loaded over almost its entire surface with from 300 to 500 pounds per square foot frequently in seven days after being placed, and that in midwinter.

DISCUSSION.

MR. DIEHL: Mr. Neher, will you give us a description of the work you are doing at the Eastern Elevator, also at the Dakota Elevator?

MR. NEHER: The property of the Eastern Elevator is angular, being a rhomboid in plan. The new site occupies the same position as the old elevator destroyed by fire in August, 1900. So far as possible the old piles and masonry piers were utilized. The piers were placed 12 feet on centres and at right angles to each other and to the long side of the property. The old plans showed 16 piles per pier, a heavy timber grillage, and well-proportioned stone piers, stepped-up in uniform courses, with equal offsets. Excavation revealed the fact that there were only 12 piles per pier, and that the masonry was laid directly on the pile-heads. Many of the piers were of the size of the cap-stones, all the way down to the footing-stone. In 80 per cent of these piers the bottom courses of stone were badly broken. As 12 piles per pier were considered insufficient, four more were added in each case, making the load on each pile about 20 tons. Where the old piers were left in, 4 piles were driven outside, and the whole was surrounded with concrete, and prevented from cleaving from the stone by twisted-steel bars running around the piers. In the cases where the stone was removed, the 4 piles were added. Excavation was extended 3 inches below the pile-heads. One-inch twisted-steel bars were laid across the pile-heads entirely across the width of the pier in both directions, and concrete was then rammed in the forms until it reached a point 24 inches above the rods. Above this, after thoroughly setting, piers with an area sufficient to withstand a load of 35 tons per square foot were moulded to the height of the basement floor, a height over all of about 7 feet. On these piers, columns 9 feet high and 33 inches square were built, and directly on these was placed the heavy floor, 36 inches deep, already mentioned.

THE PRESIDENT: Were the piles driven to the rock?

MR. NEHER: No, sir. Some few brought up on a hard-pan. Most of the piles were driven down from 28 to 35 feet. The hard-pan varies at different depths. Some of the piles seemed to be broken in the soil.

MR. KNIGHTON: How does this concrete-construction compare in price with the ordinary construction?

MR. NEHER: Taking the price of the materials entering into an ordinary wall, I should say the Ransome construction was somewhat more expensive. While this construction is not a substitute for everything, still I think for work such as we are doing at the Eastern Elevator it is much better than the ordinary construction and cheaper than steel.

MR. VANDER HOEK: What is the twisted iron put in the concrete for?

MR. NEHER: To take care of the tension. Where there is to be a great load on a floor I do not think there is anything that will stand like the Ransome system. Before it was taken up by our firm, I studied very thoroughly the matter of the different forms of construction, and I came to the conclusion that this was the best system for heavy loading. For instance, at Bayonne, N. J., there is a borax factory, the floor of which was built to withstand a pressure of 500 pounds per square foot. There are portions of this floor which have been loaded up to 1,200 and 1,800 pounds per square foot.

MR. VANDER HOEK: You spoke of the cement briquettes as breaking at 85 tons after seven days. Were these briquettes of the ordinary form?

MR. NEHER: They were 6-inch cubes, and we used a hydraulic jack. I think in this case it was Atlas-cement. We have used both Atlas and Lehigh, and have got about the same results from each. We sent a boy to the mixer, and he picked out a batch just as it came from the mixer. Where we made tests by hand mixture we did not get as good results.

MR. VANDER HOEK: You used Portland in every case?

MR. NEHER: Yes, sir.

MR. TUTTON: What mixer do you use?

MR. NEHER: The Ransome. We have made some improvements on it.

MR. TUTTON: We are using one, but we have not made any tests.

MR. NEHER: The record made by us is 146 yards in thirteen hours, with the small mixer. We laid on an average forty-one to forty-two batches in ten hours. This could not be done if fed with wheelbarrows. We fed the machine with a rotating-derrick and dump-buckets.

MR. ROCKWOOD: Did you use any salt?

MR. NEHER: We always use salt, a 10-per-cent solution.

MR. ROCKWOOD: Regardless of the weather?

MR. NEHER: Yes, sir.

MR. VANDER HOEK: Did you get the same results in winter as in summer?

MR. NEHER: We used the same materials in summer as in winter, but I do not think any man can say he got just exactly the same results.

MR. ROCKWOOD: Do you use hot or cold water?

MR. NEHER: We use hot water in winter. We find that with a 10-per-cent solution of salt in hot water, the concrete will not freeze for five or six hours. This gives us time to fill the forms before covering them up and heating with salamanders.

MR. NORTON: Did any of the concrete freeze?

MR. NEHER: Yes, some little did freeze on top. This we capped off.

MR. KNIGHTON: What do you consider the best method to follow in leaving off work where you expect to begin next day?

MR. NEHER: So far as I am concerned, I do not like to leave one day's work uncompleted; but when we do, we generally insert twisted bars placed vertically, to give us union with the succeeding work.

MR. KNIGHTON: Have you built any arches?

MR. NEHER: I have not. Quite a number have been built in the South for railroads.

MR. DIEHL: I would move Mr. President, that a vote of thanks be extended to Mr. Neher for his kindness in addressing us this evening.

Seconded by Mr. Tutton, and adopted unanimously by a rising vote.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

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ST. MILDRED'S CHURCH, BREAD STREET, LONDON.—We learn that under a revived scheme for making an underground railway from the West End of London into the City, the church of St. Mildred is again threatened with demolition. Nearly three years ago the vaults were cleared to a depth of from 16 to 17 feet, their contents were removed to the City of London Cemetery at Ilford, and a new floor, constructed of steel-girders and concrete, was laid by Messrs. Dove Brothers, under the superintendence of, we believe, Mr. Charles Innes. The interior of the church—illustrated in our number of July 3, 1880—has been repaired and beautified in 1886, when the cherubim placed in pairs and holding crowns, badly executed in high relief, were removed from the dome ceiling. It has, however, escaped from the untoward fate that has attended many of Wren's London churches, for it stands, undisturbed with mediæval adornments and nineteenth-century rearrangements, just as the master left it upon the completion of the fabric in 1683, at a cost of £3,705. The plan is an oblong with a brick tower, 18 feet square at base, at the southeastern angle. The tower carries a lead-covered spire, rising to 140 feet, comprising a concaved-pyramidal roof above the blocking-course of the tower, above which are a lantern having large openings with a slender spire surmounted with a ball and vane. The roof of the church, too (as constructed by E. Strong the elder), is noteworthy, the cupola, which rests upon four pendentives, being formed within the external roof of the ordinary tie-beam and king-post kind, with slight deal ribs secured to the principal timbers and lathed and plastered, while in order to give space for the swell of the cupola, some of the tie-beams, instead of being attached to the feet of the principal rafters, are lifted about half-way up, so as to constitute collar-beams, and diagonal braces from rafter to rafter are inserted. The beautifully-carved work of the altar-piece, the pulpit and sound-board is attributed to either Grinling Gibbons or one of his pupils.—*The Builder*.

ARTIFICIAL-ICE PRODUCTION IN THE UNITED STATES.—Mr. A. Getty, of H. M. Consulate at Chicago, says that there are two methods in general use in that city for the production of artificial-ice, namely, the "can-system" and the "plate-system." In the can-system the ammonia-coils are placed in a tank filled with brine. The ice-cans, which are made of galvanized-iron, are supplied with distilled water, and placed in the brine between the coil-pipes, the temperature of the brine being about 15° Fahr. Steam-power is employed in this case. The size of the cans varies from 50 to 300 pounds. The length of time allowed for freezing will depend on the quantity of water to be frozen, 10-inch ice taking from 38 to 45 hours with the brine at 15° Fahr., 11-inch ice about 45 to 50 hours. It is generally estimated that 250 feet of 2-inch pipe, or 350 feet of 1½-inch pipe, are required for every ton of ice per 24 hours, according to the temperature of the brine and the capacity of the machine. The cans containing the ice are removed from the tank by a crane, the ice thawed loose by being dipped into a hot-water tank, hoisted up again, and overturned upon a tilting cable, where the blocks of ice slide out into the storage-room. In making ice after the plate-system, it is not necessary to distil or boil the water, for the

reason that the water is made to circulate around the plates by means of an air-pump, and forms by degrees on both sides of the plate to the thickness of from 10 to 13 inches, the air being drawn out as it freezes. The plates vary in size according to the amount of freezing to be done. The usual sizes are 10' x 14' in area. The time for freezing, to make ice 12" x 14" thick, is said to be from 9 to 14 days, the cakes weighing several tons. In the harvesting of ice on the plate principle, the ice is loosened from the metal by the application of hot gas, which enters the plate-coils. The cake is then divided, and grooves cut by circular saws or hand-ploughs, and split up into marketable sizes.—*Journal of the Society of Arts*.

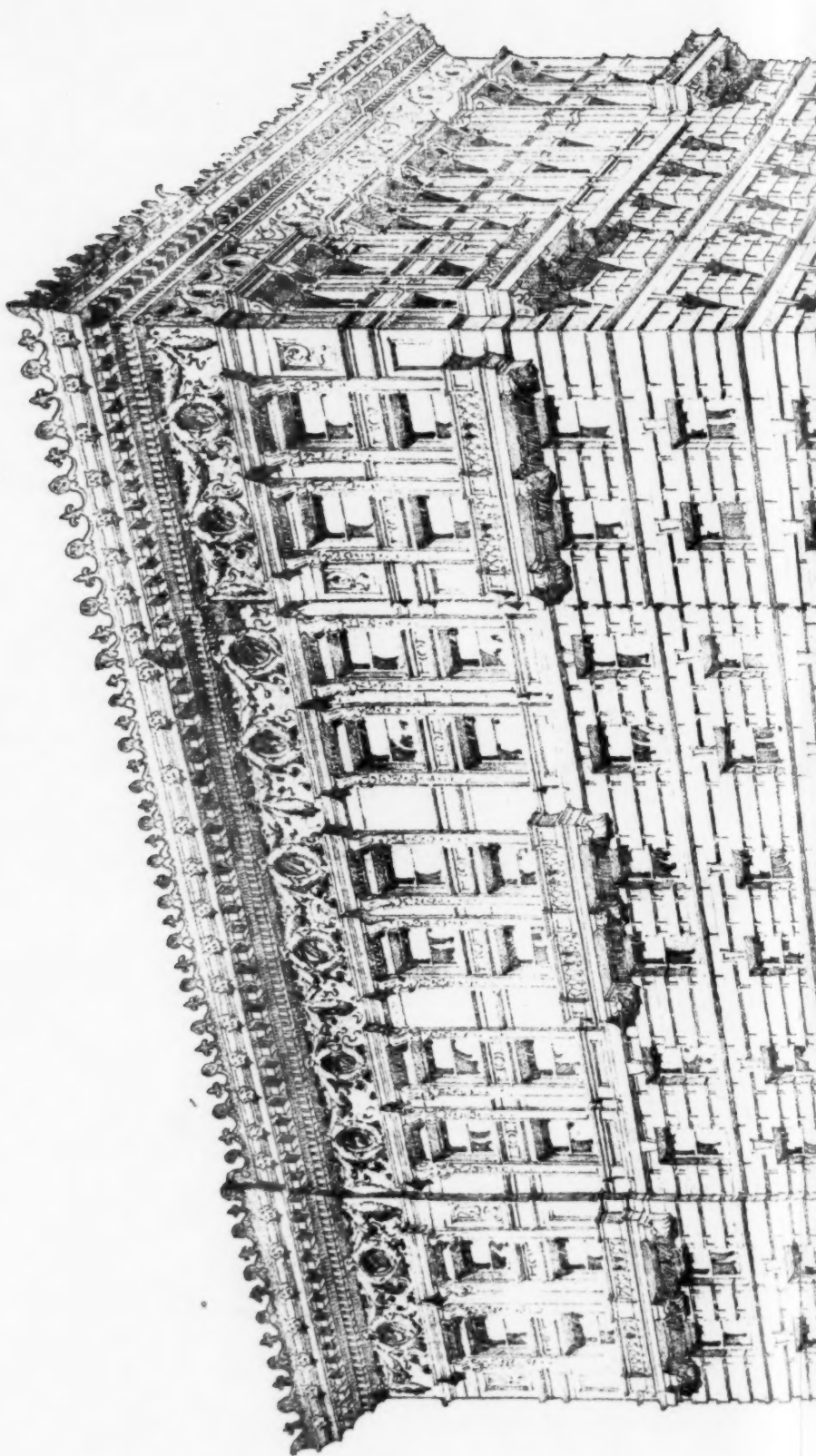
CORROSION OF PIPES IN BROOKLYN.—A paper in the *Journal* of the American Institution of Electrical Engineers by Mr. S. Sheldon, on "Electrolytic Corrosion in Brooklyn," gives many data which illustrate the extent of the damage done by leakage-currents in the vicinity of electric-tramways. Brooklyn spreads over sixty square miles, and is covered with a network of electric-tramways, some of which have been in operation since 1892. At certain times of the day 1,100 cars are running, and they require a current of 47,000 amperes. This current returns to the seven central stations mainly by the rails and return "feeders," but in addition the East River and the iron structure of the elevated railway of the Brooklyn Rapid Transit Company are intentionally employed. There are, of course, large stray currents flowing in the water and gas mains. The wrought-iron service-pipes of the gas-mains have suffered severely. In one block of buildings thirty-eight service-pipes were completely destroyed in three years. The Gas Company also complain of an abnormal increase in the leakage of gas, which is now about 14 per cent of the total output. The lead-sheathing of the Telephone Company's cables is pitted and perforated in many places, and the armoring of the mains of the Edison Electric-lighting Company has suffered very severely from electrolytic corrosion. Mr. Sheldon expresses surprise that the cast-iron water-mains have been very little affected, and suggests that their exemption is due to the non-conducting silicious compound formed on the surface of the mains in the sand-mould in which they were cast. The various companies keep inspectors to measure the difference of electric-pressure between the rails and the nearest gas-mains. When the leakage-current flows from the rails to the mains little harm is done, but when the current is in the reverse direction then trouble ensues. Mr. Sheldon states incidentally that at certain times of the day the difference of pressure between the two ends of Brooklyn Bridge is twenty volts. This paper shows that electrolytic corrosion is very insidious, and many years may elapse before its effects become manifest.—*The Builder*.

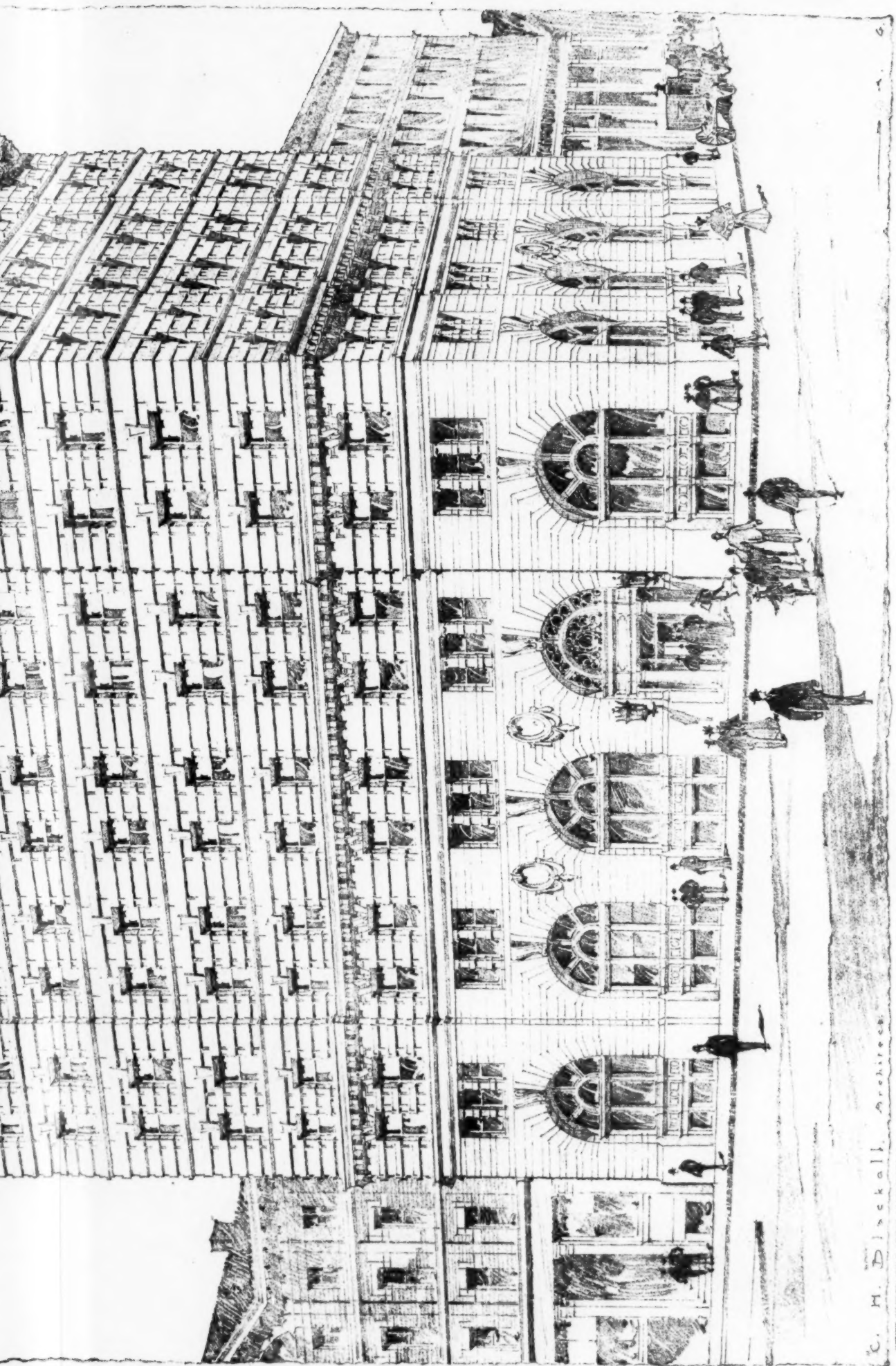
THE PENNSYLVANIA NATURAL-GAS SUPPLY.—Patrons of natural-gas companies in Pennsylvania are assured that the supply will last for years, although ultimately, as in Indiana, the source will be exhausted. The consumption in Pennsylvania is very large, patrons of the Philadelphia Company burning 19,875,238 cubic feet last year, an increase of 3,203,947 feet over the previous year. This company abandoned seventy-one wells last year, and added fifty new wells. In the new West Virginia field it has forty-three rich wells closed for future need. The developed gas-supply is larger to-day than any time since the introduction of gas as a domestic fuel, and more capital is being invested in its development. The field of Elk and McKean Counties in Pennsylvania was the first large field from which lines were laid to supply gas for domestic fuel in an extensive way. The lines were laid to Bradford, Pa., and Olean and Wellsville, N. Y., and later extended to Buffalo. From these lines these cities are still supplied. The first large line was laid eighteen years ago, and the supply from the field, instead of diminishing, has been augmented. The Murrysburg field has been a source of supply for Pittsburgh for seventeen years, and is still producing gas, although in smaller quantities. Neither of these fields had an initial rock-pressure much more than half that of the promising West Virginia fields.—*N. Y. Evening Post*.

A NEW BALTIMORE MONUMENT TO REVOLUTIONARY HEROES.—A Baltimore, "the City of Monuments," is to have yet another. A monument, 60 feet high, of granite, surmounted by the "Goddess of Liberty," in bronze, is to be erected at the intersection of Cathedral Street and Mount Royal Avenue, to the memory of all the Maryland heroes of the Revolution, and will be unveiled and dedicated, if no mishap occurs, on October 19 next. It is to be raised by the Maryland Society of the Sons of the American Revolution, and the date selected for the public ceremonies is Peggy Stewart Day, always patriotically celebrated by Baltimoreans.—*N. Y. Times*.

A STRANGE RECOMMENDATION.—The insane policy followed by some British manufacturers was revealed by Mr. Reeves, the Agent-General for New Zealand, at the annual dinner of the Junior Engineers. The incident was as follows: The Colony wanted some locomotives, and ordered them in England of an eminent firm. The eminent firm said it would be happy to supply them with a certain pattern and a certain weight. The railway authorities thereupon pointed out that the weight was too much for the bridges, which were already constructed. The eminent firm said that they were sorry, and recommended that the bridges should be rebuilt. Mr. Reeves vouched for the truth of the story.—*Indian Engineering*.

CHAN SANTA CRUZ, THE HOLY CITY OF THE MAYAS.—The Mexican Government will immediately send an archaeological expedition to Chan Santa Cruz, the Holy City of the Maya Indians, which fell into the hands of the Government troops a few days ago. Some remarkable documents and tablets which are believed to have an important bearing on the early history of the Maya tribe have already been discovered, and the archaeologists who are to be sent there under direction of the Government will continue these interesting researches.—*Exchange*.





DESIGN FOR AN OFFICE-BUILDING.
C. H. BLACKALL, ARCHITECT.

The American Architect
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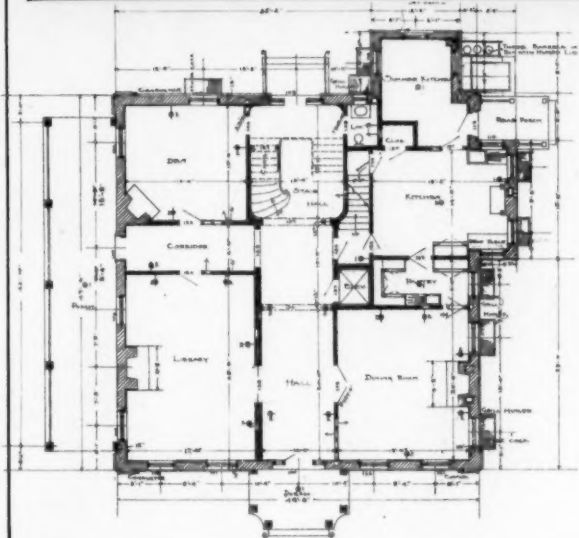
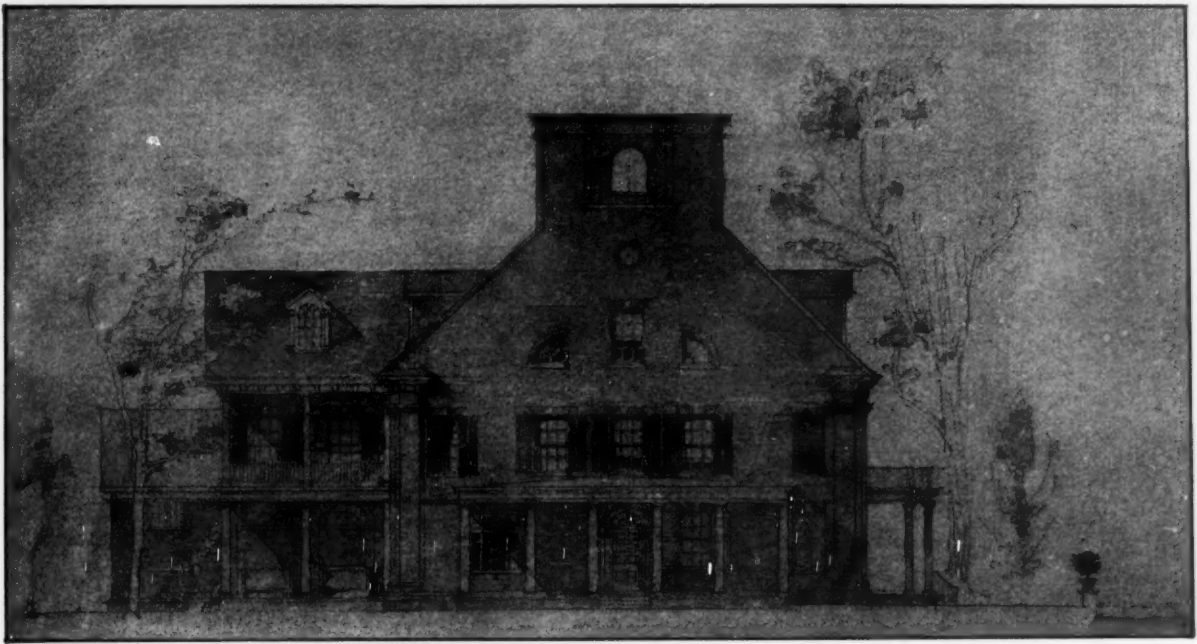
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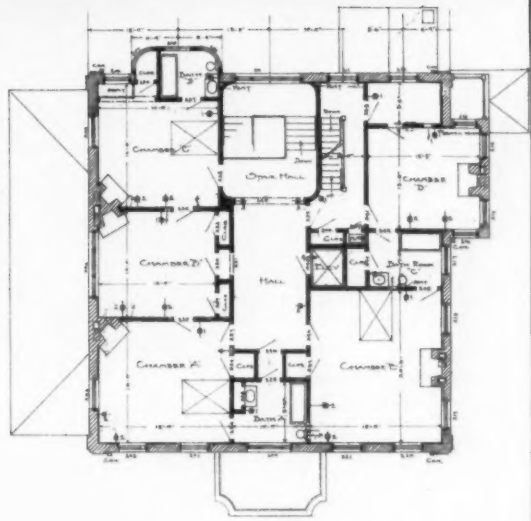
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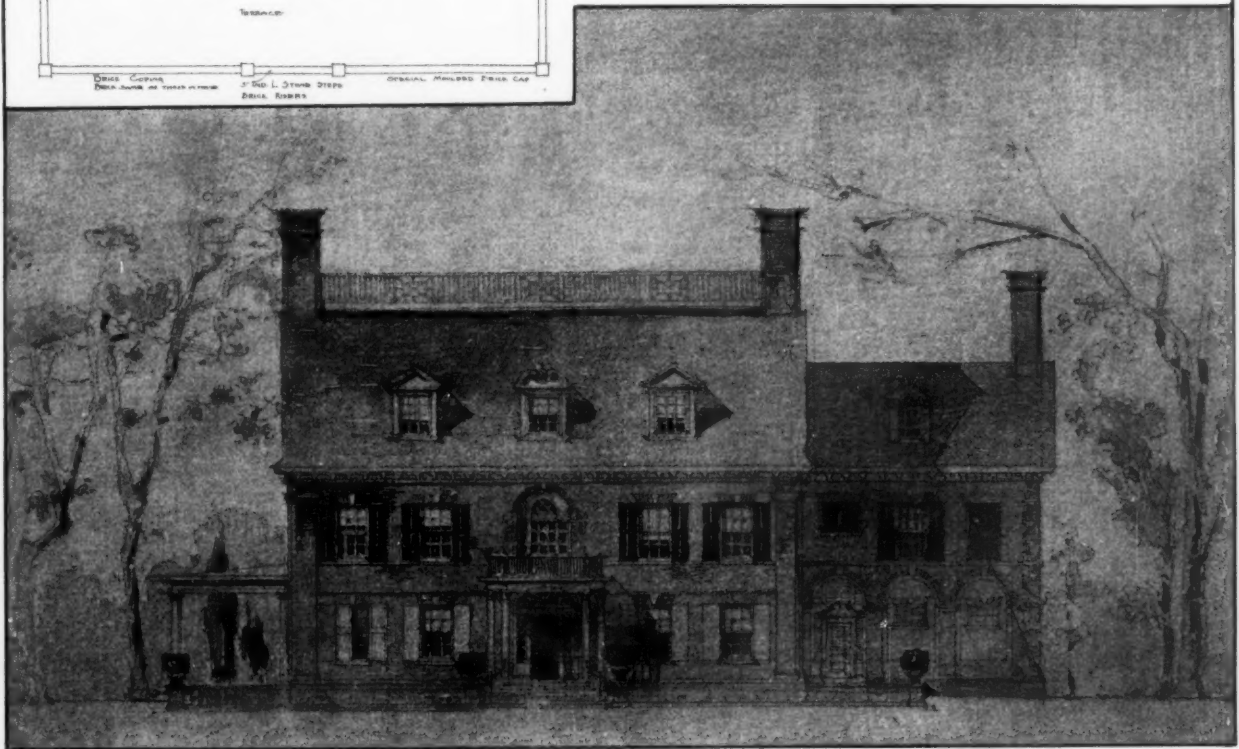
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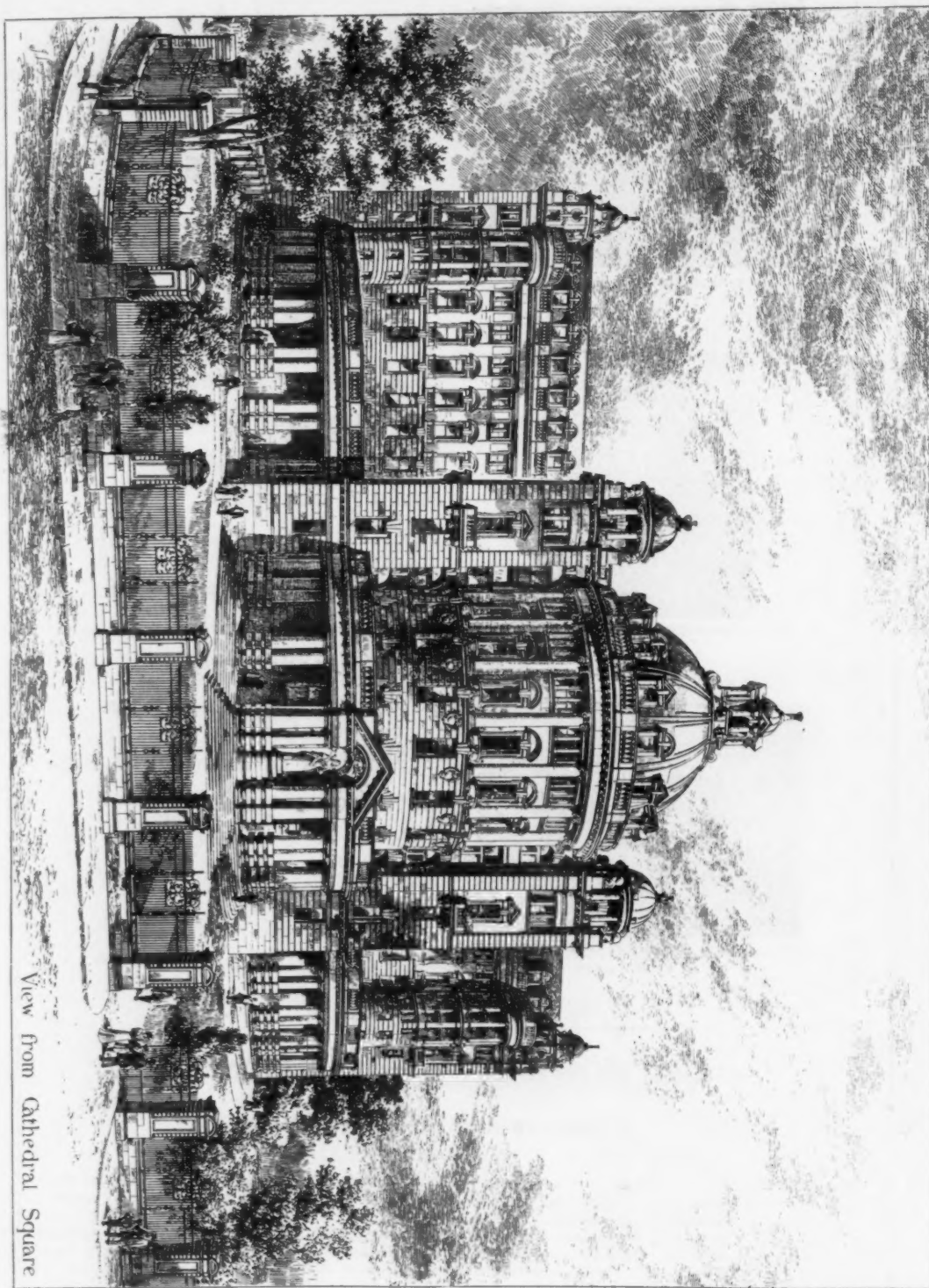
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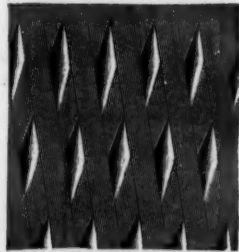
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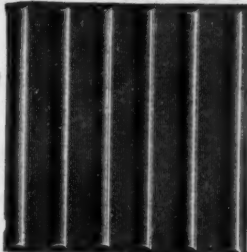
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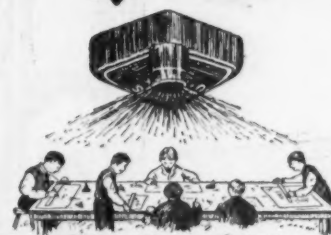
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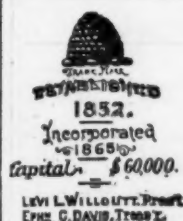
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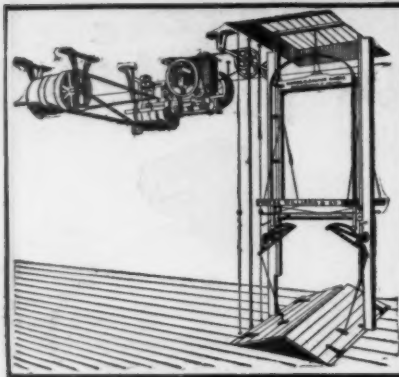
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The Bill prays for a preliminary writ of injunction, to be continued during the pendency of the suit, and upon the final determination thereof to be made perpetual, and also demands an accounting and damages.

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(Advance Rumors Continued.)

Newton, Mass.—The First Congregational Church Society will erect a \$100,000 edifice on Homer and Centre Sts. Architects, Shepley, Rutan & Coolidge, 122 Ames Building, Boston.

A fine two-story residence, 33' x 54', to cost over \$20,000, will be built for Allston Burr on Chestnut Hill Ave., by H. H. Hunt, builder, of West Newton; W. G. Rantoul, architect. Work will include open plumbing and furnace heating.

Norfolk, Va.—A hospital is to be erected at the corner of Freemason and Duke Sts., called "St. Christopher's." It will cost \$30,000.

Oklahoma City, Ok.—The Travelling Men's Protective Association will erect a \$75,000 office-building here.

Peru, Ind.—A \$10,000 brick and stone church will be erected by the First Presbyterian congregation.

Philadelphia, Pa.—George F. Payne & Co., 401 S. Juniper St., have the contract to build a large fireproof printing house to cost in the neighborhood of \$100,000, at 1531 Arch St., for the Stephen Greene Co.

Otto C. Wolf, 1025 Arch St., has drawn plans for a \$75,000 six-story brick, terra-cotta and iron office-building, to be erected on S. Broad St. for the Biddle estate.

Pittsfield, Mass.—Report states that Oystee Bros. have been awarded the contract for building a \$25,000 brick block for Arthur A. Mills on North St.

Providence, R. I.—St. James's Church, on Broadway, is planning to erect a new parish-house. Plans have been submitted by H. K. Hilton, and call for a two-story brick building, 45' x 65', costing \$8,000.

Richmond, Va.—Col. Murphy has decided to spend \$40,000 additional on an extension to the hotel.

The question is raised as to whether the colored people here are to be admitted to the new Carnegie library building on the same terms as the whites. The negroes declare that they pay a part of the taxes which will go to support the library, and therefore their race should have a representative on the Board of Trustees who will be in charge of the institution.

Rutland, Vt.—The cornerstone of the new Masonic Temple was laid recently. It will be finished by next September, costing in the neighborhood of \$30,000.

San Francisco, Cal.—Hemenway & Miller, Hearst Building, have prepared plans for a warehouse to be erected for A. Aronson on Mission and New Anthony Sts.; cost, \$130,000.

Savannah, Ga.—The work of excavation has begun on the site for the new passenger-station here. It will be occupied by the Plant System, Seaboard Air Line and Southern Railways. The new station and its approaches will cost about \$400,000, and will be one of the finest in the south.

Seattle, Wash.—Report states that Capt. P. F. Dundon, of San Francisco, will erect in South Seattle a factory to preserve all kinds of woods; cost of plant, \$70,000.

Shreveport, La.—Messrs. Sannenfield & Eameta have the contract for the \$100,000 building to be erected by the First National Bank.

Statesville, N. C.—The Statesville, N. C., Cotton Mills Co. will erect a new \$50,000 building.

St. Louis, Mo.—A \$40,000 hotel will be erected by the Bradford Realty Co. at the corner of 12th and Olive Sts.

Suffern, N. Y.—It is stated that Thos. F. Ryan, of New York City, will erect a new residence here costing \$600,000.

Weatherly, Pa.—It is reported that Chas. M. Schwab has given this place \$25,000 for the erection of a trade school.

West Allis, Wis.—It is reported that the Browning Manufacturing Co. and the Kempnith Co. have united in the purchase of a tract of land here and will proceed to erect a large manufacturing plant

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

for the united use of both. They will manufacture electric machinery, tools, etc. The plant will cost about \$200,000.

Wheeling, W. Va.—A \$150,000 theatre will be erected here for the Wheeling Board of Trade.

Wilkes-Barre, Pa.—The United States Government Building will be erected at the corner of S. Main and South Sts. Price of site, \$40,000.

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Minneapolis, Minn.—Tenth St., cor. Harmon Pl., four-sty' & base, bk. & st. apart., 50' x 150', pitch roof, steam; \$35,000; o., Heuston Bros.; a., H. W. Jones.

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New York, N. Y.—Forty-sixth St., nr. Broadway, nine-sty' bk. hotel, 37' 6" x 89' 5"; \$150,000; o., John H. Leith, 1871 Seventh Ave.; a., Neville & Bagge, 217 W. 125th St.

Fifty-seventh St., No. 118, nine-sty' bk. & st. hotel, 20' x 88' 5"; tile roof; \$60,000; o., Nathan Michaels, 224 Fifth Ave.; a., Henry Andersen, 1183 Broadway.

HOUSES.

Boston, Mass.—Benton St., nr. Tremont St., Ward 19, 2 three-sty' bk. dwells., 21' x 50', flat roofs, stoves; \$10,000; o., Geo. O. Conant; b., L. Habelow, 52 Savin St., Roxbury Dist.

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Heath St., Nos. 321-327, Ward 18, 4 three-sty' bk. dwells., 23' x 50', flat roofs, stoves; \$25,000; o., a. & b., Thos. F. Kearney, 435 Washington St., Dorchester.

Davenport St., nr. Tremont St., Ward 19, 6 three-sty' fr. dwells., 21' x 50', flat roofs, stoves; \$30,000; o., Geo. O. Conant; a., G. H. Smith, 15 School St.

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Geneva Ave., nr. Bowdoin St., Ward 20, 3 two-sty' fr. dwells., 29' x 38', pitch roofs, furnaces; \$15,000; o., Workingmen's Bldg. Assn.; a., G. W. Pope's Sons, 440 Columbus Ave.

Winthrop St., Nos. 58-60, 2 three-sty' bk. dwells., 20' x 62', flat roofs, stoves; \$12,000; o., Harriet B. Murray; a., J. F. Seavey, 380 Park St., W. Roxbury Dist.

Talbot Ave., nr. Kerwin St., Ward 20, 6 three-sty' bk. dwells., 23' x 39', flat roofs, stoves; \$35,000; o., a. & b., H. J. Ecklund, 113 Devonshire St.

Brooklyn, N. Y.—E. Twenty-second St., nr. Foster Ave., two-sty' & attic fr. dwell., 33' x 38', shingle roof, hot air; \$6,500; o., Mary Howard, 226 Bergen St.; a., B. Driesler, 1432 Flatbush Ave.

E. Twenty-third St., nr. Voorhies Ave., two-sty' & attic fr. dwell., 26' x 39', shingle roof; \$5,000; o., City and Suburban Building Co., 86th St. & 22d Ave.; a., J. J. Petit, 188 Remsen St.; b., A. Kobelt, 84th St., nr. 23d Ave.

Hicks St., nr. Pineapple St., five-sty' bk. dwell., 25' 10" x 80' 4", steam heat; \$12,500; o., W. Davis, 55 Hicks St.; a., L. H. Hess, 65 De Kalb Ave.

Sterling Pl., nr. Underhill Ave., 15 three-sty' & base, bk. dwells., 20' x 45'; \$135,000; o., W. H. Reynolds, 49th St. & New Utrecht Ave.; a., B. Driesler, 1423 Flatbush Ave.

Sixth Ave., cor. 51st St., three-sty' bk. store & dwell., 18' x 61'; \$6,000; o., Olaf Olafson, 315 Forty-seventh St.; a., C. E. Patterson & Co., 33 Monroes Pl.

E. Thirty-fourth St., nr. Avenue L, 10 two-sty' bk. & fr. dwells., shingle roof, hot air; \$40,000; o., Cornelius Dannelon, 849 Carroll St.; a., Benj. Driesler, 1432 Flatbush Ave.

Vanderbilt Ave., nr. Gates Ave., two-sty' stable & dwell., 35' x 48', gravel roof; \$7,500; o., Martha L. Kimball, 436 Clinton Ave.; b., Miller & Schmidt, 394 Waverly Ave.

Avenue F, cor. E. 22d St., two-sty' & attic fr. dwell., 32' x 33', shingle roof; \$7,000; o., T. H. Flood, 3 Erasmus St.; a., B. Driesler, 1432 Flatbush Ave.

Vernon Ave., nr. Lewis Ave., 2 two-sty' & base, bk. dwells., 20' x 45'; \$10,000; o., J. Auer, 809 Willoughby Ave.

Humboldt St., nr. Driggs Ave., three-sty' bk. rectory, 29' x 59', slate roof; \$10,500; o., St. Stanislaus R. C. Church, Humboldt St. & Driggs Ave.; a., L. H. Gield, 129 Hulton St., Jersey City, N. J.

BUILDING INTELLIGENCE.

(Houses Continued.)

Bay Thirty-second St., nr. Bath Ave., two-sty' & attic fr. dwell., 26' x 39', shingle roof; \$5,500; o., F. A. Slocum, 23d Ave. & 81st St.; a., C. S. Haviland, Bay 10th St. & Bath Ave.

Bath Ave., cor. Bay 32d St., two-sty' & attic fr. dwell., 25' 10" x 39', shingle roof; \$5,000; o., F. A. Slocum, 81st St. & 23d Ave.; a., C. S. Haviland, Bay 10th St. & Bath Ave.

Cambridge, Mass.—Marcella St., three-sty' bk. & fr. dwell., 40' x 97', stoves; \$20,000; o., Henry Green; a., Harry D. Joll; b., Rufkins & Syle, Boston.

Antrim St., No. 49, three-sty' fr. dwell., 31' x 61', furnaces; \$6,500; o., Mrs. J. Sullivan; b., Gus. Wilson, 302 Columbia St.

Gorham St., Nos. 57-59, three-sty' fr. dwell., 44' x 65', hot water; \$11,000; o., Gilmore & Creelman; a., J. McAuliffe.

Sparks St., cor. Clement Circle, 2½-sty' fr. dwell., 36' x 44', shingle roof, hot water; \$9,000; o., F. W. Tilton; a., C. H. Bartlett.

Minneapolis, Minn.—Blaisdell Ave., No. 2314, two-sty' attic & base, bk. dwell., 65' x 75'; \$18,000; o., Mrs. C. H. Benton; a., F. B. & L. L. Long.

Franklin and Blaisdell Aves., 2½-sty' bk. & st. dwell., 48' x 63', pitch roof, steam; \$20,000; o., A. T. Rand; a., F. B. & L. L. Long.

Newton, Mass.—Hammond St., Ward 6, two-sty' fr. dwell., 32' x 56', steam; \$19,000; o., A. N. Winslow; a., Winslow & Bigelow; b., Jona. Crowe.

Shorncliffe Road, Ward 7, two-sty' fr. dwell., 27' x 54', furnaces; \$10,000; o., Dr. F. L. McIntosh; a., Hartwell, Richardson & Driver, Boston.

Prince St., Ward 3, two-sty' fr. dwell., 30' x 46', furnaces; \$6,000; o., H. N. Glover; a., Loring & Phipps, Boston.

Franklin St., Ward 7, two-sty' fr. dwell., 38' x 59', furnaces; \$13,000; o., Geo. C. Travis; a., Ralph E. Sawyer.

Valentine St., Ward 3, two-sty' fr. dwell., 41' x 62', furnaces; \$15,000; o., A. T. Maynard; b., C. H. Mead, Boston.

New York, N. Y.—Fifty-third St., nr. 5th Ave., five-sty' stone-front dwell., 43' x 67', tile & copper roof; \$95,000; o., William Barbour, 145 W. 58th St.; a., C. P. H. Gilbert, 1123 Broadway.

Amsterdam Ave., No. 1982, one & two-sty' bk. stores & dwell., 25' x 90'; \$5,000; o., George R. Schieffelin, 8 E. 45th; a., Franklin Baylies, 33 Bible House.

Sycamore Ave., cor. 254th St., two-sty' fr. dwell., 32' x 78', shingle roof; \$30,000; o., D. P. Kingsley, Riverdale, N. Y.; a., Britz & Bacon, 111 Fifth Ave.; b., Smith & Thous, 12 E. 42 St.

E. Fifty-second St., No. 8, five & six-sty' bk. & st. dwell., 22' x 64', tile roof; \$42,000; o., Edward Holbrook, Stamford, Conn.; a., C. P. H. Gilbert, Broadway & 26th St.

Nineteenth St., nr. Irving Pl., four-sty' bk. dwell., 18' x 24' 3", slag roof; \$10,000; o., Joseph A. Faye, 210 W. 85th St.; a., Israels & Harder, 194 Broadway.

Boston Ave., cor. 173d St., two-sty' fr. dwell., 23' x 97' & 99' 6"; \$10,000; o., Arthur H. Hamann, 14 E. 103d St.; a., Stein & Gross, 160 Fifth Ave.

E. Fifty-second St., No. 6, five-sty' bk. & st. dwell., 28' x 64' 6", tile roof; \$57,000; o., Edward Holbrook, Stamford, Conn.; a., C. P. H. Gilbert, 26th St. & Broadway.

North Adams, Mass.—2½-sty' fr. dwell., 36' x 43'; slate roof, steam; \$6,000; o., J. E. Magenis; a., E. T. Barlow.

2½-sty' fr. dwell., 30' x 50', slate roof, hot water; \$6,000; o., J. T. Potter; a., E. T. Barlow.

Roxbury, Mass.—Abbottsford St., 2½-sty' fr. dwell., 30' x 41', shingle roof, hot air; \$5,500; o., John F. Newton; a., C. A. Russell, 504 Warren St.

Somerville, Mass.—Powder House Terrace, nr. Liberty Ave., two-sty' fr. dwell., 27' x 43', hip roof, hot water; \$5,500; o., a. & b., Z. E. Cliff, 345 Summer St.

Beacon St., nr. Waldo Ave., 2 three-sty' fr. dwells., 25' x 60', flat roofs, hot water; \$5,500; o., T. R. & C. B. Sweeney; b., J. A. McIsaac, 5 Washington St., Cambridge.

St. Johnsbury, Vt.—Two-sty' fr. dwell., shingle roof, hot water; \$5,000; o., C. Follensky; a., R. B. Eastman.

Walpole, Mass.—2½-sty' fr. dwell., 28' x 41', shingle roof, hot air; \$5,000; o., Chas. R. Fuller, Dorchester; a., J. M. Brown, 153 Milk St., Boston.

West Newton, Mass.—2½-sty' fr. dwell., shingle roof, hot air; \$6,000; o., A. M. Glover; a., Loring & Phipps.

LIBRARIES.

Belmont, Mass.—Two-sty' & base, bk. library building, 23' x 30', slate & copper roof, steam; \$40,000; o., H. O. Underwood; a., W. K. Emerson, 131 Tremont St.

OFFICE BUILDINGS.

Boston, Mass.—Boylston St., nr. Fairfield St., Ward 11, three-sty' bk. office-building, 35' x 97', flat roof, steam; \$20,000; o., E. A. Bangs; a., A. H. Bowditch, 112 Water St.

New York, N. Y.—Spruce St., Nos. 9-13, five-sty' bk. office-building, tile roof; \$100,000; o., Henry L. Einstein, 38 Park Row; a., A. W. Brunner, 33 Union Sq. W.

PUBLIC BUILDINGS.

Boston, Mass.—Roxbury St., Ward 18, two-sty' bk. court-house, 100' x 100', pitch roof, steam; \$100,000; o., City of Boston; b., W. A. & B. A. Root, 166 Devonshire St.; a., J. L. Berry, 220 Devonshire St.

STABLES.

Boston, Mass.—Gibson St., nr. Adams St., Ward 24, two-sty' fr. stable, 32' x 50', flat roof; \$1,500; o., J. P. O'Connell; a. & b., P. O'Hearn, 14 Arcadia St., Dorchester Dist.

Boylston St., nr. Hereford St., Ward 11, two-sty' bk. stable, 30' x 108', flat roof, hot water; \$16,100; o. & a., City of Boston; b., Howard Bros., 412 Dorchester Ave., S. Boston.

Brooklyn, N. Y.—Degraw St., nr. 3d Ave., two-sty' bk. stable, 25' x 98' 6"; \$4,500; o., Bridget McCauley, 171 Fourth Ave.; a., C. C. Wagner, 555 Fifth Ave.

Lorraine St., nr. Columbia St., two-sty' bk. stable, 32' x 62'; \$1,750; o., Timothy E. Desmond, 449 Columbia St.; a., J. Butterello, 417 Madison St.

Eighteenth Ave., nr. 58th St., 1½-sty' fr. stable,

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BUILDING INTELLIGENCE.

(Stables Continued.)

etc., 30' x 40', shingle roof; \$2,000; o., City of New York, Room 35, Municipal Building; a., J. G. Mackey.

St. Mark's Ave., nr. Underhill Ave., one-st'y bk. stable, 20' x 50', gravel roof; \$1,500; o., Davis & Quick, 315 St. Mark's Ave.; a., G. P. Chappell, 288 Broadway, Manhattan.

Newton, Mass.—*Shorncliffe Road*, Ward 7, one-st'y fr. stable, 27' x 55', hot water; \$4,000; o., Dr. F. L. McIntosh; a., Hartwell, Richardson & Driver, Boston.

New York, N. Y.—*Seventeenth St.*, No. 411, four-st'y bk. stable & warehouse, 25' x 89'; \$14,000; o., Crawford & Popper, on premises; a., Wm. S. Boyd, 561 Hudson St.

One Hundred and Forty-second St., nr. Morris Ave., four-st'y bk. stable & storage, 40' x 65'; \$20,000; o., Fred Hitchcock, 145th St. & 3d Ave.; a., T. W. Ringrose, 142d St. & 3d Ave.

Thirty-sixth St., nr. 1st Ave., two-st'y bk. stable, 59' 10" x 77'; \$1,975; o., Anderson Estate, 25 Broad St.; a., Frank H. Quimby, 99 Nassau St.

W. Twelfth St., No. 1, two-st'y bk. stable, 25' x 48'; \$4,000; o., Mrs. Thos. F. Ryan, 60 Fifth Ave.; Schickel & Dittmars, 111 Fifth Ave.

Broadway, nr. 76th St., seven-st'y bk. stable, 52' x 97' & 111'; \$58,000; o., John L. Miller, Broadway, s w cor. 65th St.; a., Julius Munkowitz, 247 W. 125th St.

One Hundred and Forty-seventh St., nr. Amsterdam Ave., five-st'y bk. stable, 50' x 99'; \$30,000; o., Patrick Gaffney, Broadway, nr. 148th St.; a., John P. Leo, 143 W. 125th St.

St. Paul, Minn.—*Wacouta St.*, nr. 8th St., two-st'y bk. stable, 60' x 90', gravel roof; \$10,000; o., Dickerman Investment Co.; a., A. F. Gauger.

STORES.

Brooklyn, N. Y.—*Thatford Ave.*, cor. Glenmore Ave., five-st'y bk. stores & shops, 24' 8" x 96'; \$15,500; o., Ida Neufeld and Isaac Rudnick, 33 Thatford Ave.; a., L. Danacher, 92 Watkins St.

New York, N. Y.—*Third Ave.*, No. 1058, five-st'y bk. lofts & stores, 17' x 90', plng roof; \$16,000; o. of ground, Estate James W. Beckman, 47 Cedar St.; lessee & b., James E. McLarney, 170 E. 63d St.; a., Thom & Wilson, 111 Fifth Ave.

Broadway, cor. 45th St., two-st'y bk. store, 80' 7" x 83' 3" & 108' 11"; \$25,000; o. of land, Estate Hy. Astor, W. 26th St.; lessee, o. & b., Henry O. Heuser, 249 W. 123d St.; a., T. R. Cutler, 18 W. 43d St.

Fifth Ave., No. 452, ten-st'y bk. & st. lofts & stores, 33' x 110', tile roof; \$100,000; o., Edward M. Knox, 212 Broadway; a., John H. Duncan, 21 W. 24th St.

Seattle, Wash.—*Jackson St.*, cor. 1st Ave., three-st'y bk. & st. store-building; \$28,000; o., Capitol Brewing Co.

TENEMENT-HOUSES.

Brooklyn, N. Y.—*Union St.*, nr. 8th Ave., 3 four-st'y bk. tenements, 25' x 68'; \$37,500; o., N. H. Raymond, 1234 Thirty-eighth St.; a., G. F. Roosen, 189 Montague St.

Union St., nr. 8th Ave., 3 seven-st'y bk. tenements, 53' x 95', steam heat; \$180,000; o., N. H.

BUILDING INTELLIGENCE.

(Tenement-Houses Continued.)

Raymond, 1234 Thirty-eighth St.; a., G. F. Roosen, 189 Montague St.

Dean St., nr. Kingston Ave., three-st'y & base. bk. flat, 25' x 82', steam heat; \$17,000; o., Mrs. Ann Seldner, 217 Jefferson Ave.; a., Ward & Cranford, 16 Court St.

THEATRES AND HALLS.

New York, N. Y.—*Fifty-eighth St.*, nr. 8th Ave., one-st'y balcony & gallery, bk. & st. theatre, 100' x 120', tile roof; \$250,000; o., Albert Flake, care Bowers & Sands, 31 Nassau St.; a., Jno. H. Duncan, 21 W. 24th St.

WAREHOUSES.

Boston, Mass.—*Washington, Thatcher and Lynn Sts.*, six-st'y bk. warehouse, 85' x 159', flat roof, steam; \$20,000; o., Merchants' R. E. Trust; b., Whidden & Co., 43 Milk St.

Malden, Mass.—*Green St.*, three-st'y storehouse, 65' x 65' 2"; \$17,000; o., Robinson Bros. & Co.; b., J. F. Tarbox, 68 Cedar St.

St. Paul, Minn.—*Three-st'y bk. warehouse*, 100' x 115'; \$50,000; o., Towle Syrup Co.; a., Mark Fitzpatrick.

MISCELLANEOUS.

New York, N. Y.—*Bethura Lane*, nr. River Ave., two-st'y bk. convent, 41' x 208'; \$23,000; o., Sisters of Visitation, Riverdale; a., Daly & Gunn, 500 W. 150th St.

W. Thirty-fifth St., No. 414, one-st'y bk. boiler-house, 25' x 42', tar & gravel roof; \$20,000; o., Sisters of St. Mary, 407 W. 34th St.; a., H. M. Congdon & Son, 18 Broadway; b., Jeans & Taylor, 453 W. Broadway.

COMPETITIONS.

COURT-HOUSE.

[At Elizabeth, N. J.]

Competitive plans will be received by the Board of Chosen Freeholders until July 1 for a court-house to cost \$250,000. J. F. HUBBARD, dir. 1330

COURT-HOUSE.

[At Olivia, Minn.]

Plans and specifications will be received by the Board of County Commissioners until June 28 for court-house, including ventilating and heating, to cost about \$75,000. J. T. BROOKS, clk. 1330

PROPOSALS.

Treasury Department, Office Supervising Architect, Washington, D. C., June 6th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 15th day of July, 1901, and then opened, for the new boiler plant and new feed pumps, etc., for the U. S. Branch Mint at San Francisco, Cal., in accordance with the drawings and specifications, copies of which may be obtained at this office or at the office of the Superintendent at San Francisco, Cal., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1330

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PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., June 10th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 11th day of July, 1901, and then opened for the construction (except heating apparatus, electric wiring and conduits) of the U. S. Post office at Hot Springs, Arkansas, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Postmaster at Hot Springs, Arkansas, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1330

SEWERS.

[At Redwood Falls, Minn.]

Sealed proposals will be received by the Common Council of the City of Redwood Falls, Minnesota, until 2 o'clock P. M., July 2d, 1901, for furnishing the materials and constructing sewers in accordance with the plans and specifications on file at the office of the City Recorder of said city. By order of the Council, H. M. Aune, mayor. THOS. C. JONES, city recorder. 1330

Treasury Department, Office Supervising Architect, Washington, D. C., June 5th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M., on the 27th day of June, 1901, and then opened, for a screen for the stamp clerk, document cases, etc., in the U. S. Post-office and Sub-treasury building, Boston, Mass., copies of the drawing and specification may be had at this office or the office of the Custodian of the building, at Boston, Mass. JAMES KNOX TAYLOR, Supervising Architect. 1329

Treasury Department, Office Supervising Architect, Washington, D. C., June 3, 1901. Sealed proposals will be received at this office until 2 o'clock P. M., on the 25th day of June, 1901, and then opened, for the installation of an electric elevator in the U. S. Court-house and Post-office building at Harrisburg, Pa., in accordance with drawing and specification, copies of

["A Hit, a Palpable Hit!"]—HAMLET.

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PROPOSALS.

which may be obtained at this office, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1329

BUILDINGS.

[At Champaign, Ill.]

Bids are wanted June 21 for erecting the gymnasium, mechanical engineering workshop and laboratory at the University of Illinois. N. S. SPENCER, supt. 1329

ELECTRIC WIRING, STEAM HEATING, ETC.

[At Birmingham, Ala.]

Bids are wanted June 25 for electric-wiring and elevator, also for steam-heating, plumbing and gas-fittings for the new city-hall. D. A. HELMICH, archt., 306½ Nineteenth St. 1329

BOILER-HOUSE.

[At Bremerton, Wash.]

Sealed proposals will be received at the bureau of yards and docks, Navy Department, Washington, D. C., until June 29, 1901, for constructing a brick

PROPOSALS.

and steel building about 43' x 50' at the naval station, Bremerton, Wash. For plans, specifications and forms of proposal address Commandant, Naval Station, Bremerton, Wash. MORDECAI T. ENDICOTT, chief of bureau. 1329

CHURCH.

[At Antigo, Wis.]

Bids are wanted June 20 for erecting a church for St. Mary's congregation. REV. F. KOLAR, pastor; W. E. Reynolds, archt., Green Bay. 1329

Treasury Department, Office Supervising Architect, Washington, D. C., May 31, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 26th day of June, 1901, and then opened, for the new high-pressure boiler-plant and the steam-heating apparatus, etc., for the U. S. Custom-house and Post-office at New Orleans, La., in accordance with drawings and specification, copies of which may be obtained at this office or at the office of the Custodian of the building in New Orleans, La., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1329

PROPOSALS.

SEWERS.

[At Washington, D. C.]

Office of the Commissioners, D. C., Washington, D. C. Sealed proposals will be received at this office until June 22, 1901, for constructing sewers in the District of Columbia. Specifications and blank forms of proposals may be obtained at this office. HENRY B. F. MACFARLAND, JOHN W. ROSS, LANSING H. BEACH, commissioners, D. C. 1329

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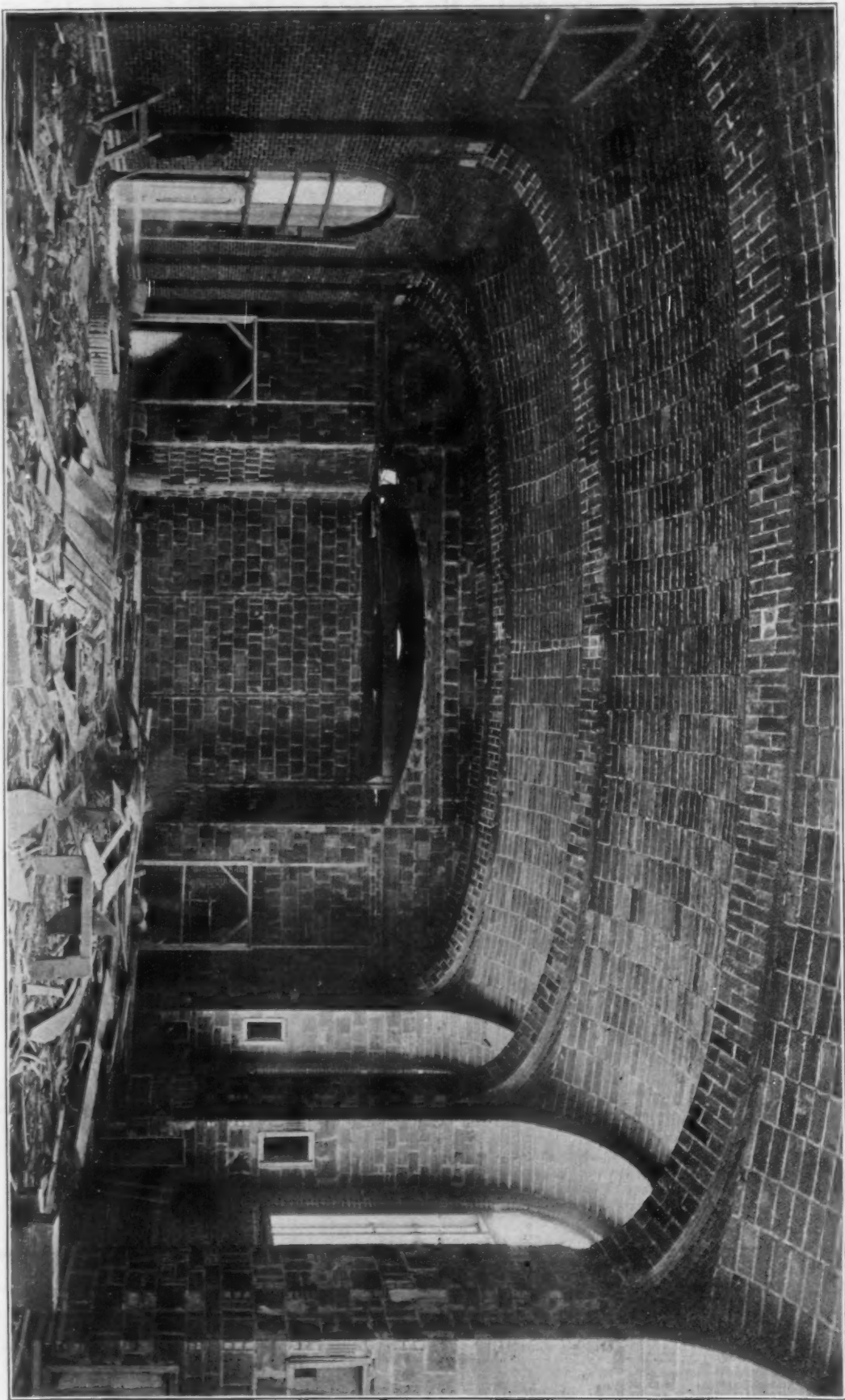
[At Boston, Mass.]

Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, D. C., until June 29, 1901, for constructing a steel roof and two gallery floors, with an electric traveling bridge crane of 40 tons capacity at the navy yard, Boston, Mass. Plans and specifications may be seen at the navy yard, Boston, or obtained upon application to the commandant of that yard upon deposit of \$15 to secure their return. MORDECAI T. ENDICOTT, chief of bureau 1329

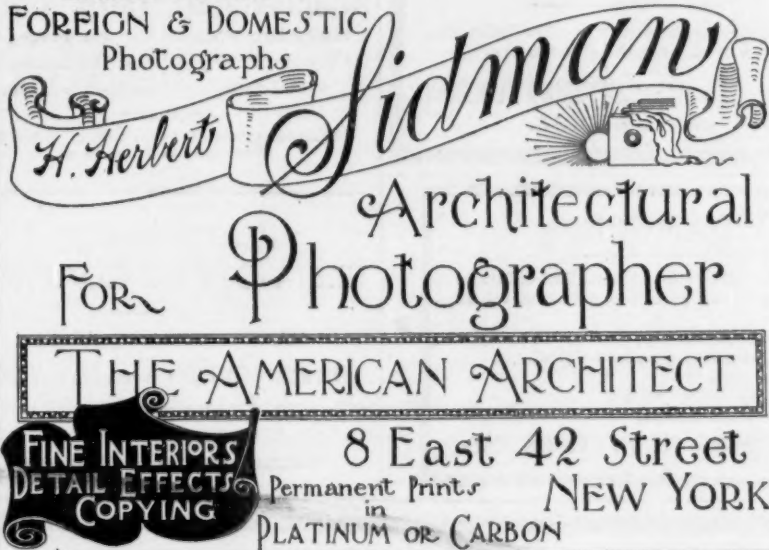
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View of Rough Tile Ceiling of Lecture Hall, forming Library Floor, Span 50 feet, New Horticultural Hall, Boston.
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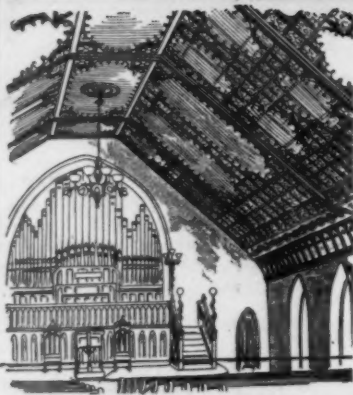
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