

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXII

SATURDAY, MAY 18, 1901

No. 1325



SUMMARY:—

The Relations of Capital and Labor.—Mr. Schwab, President of the United States Steel Co. before the Industrial Commission.—Protecting the Light-and-air Rights of High Buildings.—Revival of the Stone-cutting Industries follows the Repeal of the New York "Cut-stone Law."—Our recent Remarks on the peculiar Actions of Insurance Companies and a Couple of Tales that lend them Emphasis.—Successful Excavations at Aegina.—The Rebuilding of Berlin.—Revival of Building in Chicago.	49
THE COLONIAL THEATRE AND BUILDING.—IV.	51
DOMESTIC ARCHITECTURE IN ENGLAND DURING THE MIDDLE AGES.—II.	52
THE PONTINE MARSHES.	53
LETTER FROM CHICAGO.	54
SOUTH WRAXHALL AND CHALDFIELD, WILTS, ENG.	55
SOCIETIES.	55
ILLUSTRATIONS:—	
Combined House and Office.—Detail of Upper Stories: "Broadway Chambers," Broadway and Chambers St, New York, N. Y.—Staircase in the Foyer: Colonial Theatre, Boylston St., Boston, Mass.	
Ecole des Arts et Métiers, Lille, France.—Church to be built near Washington, D. C.	
Additional: The Foyer: Colonial Theatre, Boston, Mass.—Proscenium-boxes: Colonial Theatre, Boston, Mass.—Ceiling panels in the Foyer: Colonial Theatre, Boston, Mass.—Chaldfield Manor, Wilts, Eng.—Courtyard Front, Wraxhall Manor, Wilts, Eng.—"Broadway Chambers," Broadway and Chambers St., New York, N. Y.	55
NOTES AND CLIPPINGS.	56

THE subject of the relations of capital and labor seems to have been brought into renewed prominence by the formation of the great industrial combinations, and the uncertainty which exists as to how far the workingmen will participate in whatever advantages the new methods of carrying on business may have over the old ones. For some years, the discussion of such affairs has been carried on, so to speak, in whispers, on account of the terror which the walking-delegate has inspired in the whole community, but there have been instances of late in which persons, and even politicians, have defied the walking-delegates, and lived; and now, almost for the first time, we hear workingmen spoken of as men and citizens, and not as portions of a mysterious and terrible thing called "Labor"; while the questions of the best way of keeping them employed, at satisfactory wages, in turning out work satisfactory to their employers, are talked over as if these were really practical subjects, without reference to the "greed" of capitalists, the "oppression" of "the creators of wealth," and the other bogies which have so long served to frighten employers and employed alike.

ONE of the most important contributions to the discussion is to be found in the testimony before the Industrial Commission, at Washington, of Mr. C. M. Schwab, the newly-chosen President of the United States Steel Corporation, who, not many years ago, was himself an ordinary working-man, and now, although his salary is said to be a million dollars a year, may justly claim, if the newspaper accounts of him are to be believed, to be the only man who has risen from the ranks to such a height without exciting anything but affectionate admiration. Mr. Schwab's testimony was to the effect that trades-unionism, as now practised, destroyed the energy and ambition of men, lessened the average earnings of those who belonged to the unions, independent of the heavy union dues, and reduced them to a dull and hopeless uniformity. It will be remembered that, some nine years ago, the labor-agitators succeeded in exciting a great strike at Homestead, the site of a large portion of the great Carnegie works. The struggle was long and fierce, so that the State militia had to be called out to protect persons and property, but the agitators, in the end, were totally defeated, and since that time the vast Carnegie works have been carried on with non-union workmen. According to Mr. Schwab, the change has had some curious results. Before the strike, wages were paid, in the case of skilled labor, by the piece, the price for each piece being fixed by the iron-workers' union. At Homestead, the planning and machinery were so perfect that four times as many pieces of

certain kinds could be turned out by the workman in a day as could be produced by the same workman in the smaller and more poorly-equipped mills; yet the union refused to recognize this difference, insisting that the workman at Homestead should be paid the same price per piece as a man in the small mills, although the Homestead man, by this arrangement, earned four times as much as his brother in the small mill. Mr. Schwab testified that, in consequence of the rule, the Company was obliged, while its mills remained under union dictation, to pay some of its workmen one hundred dollars a day, and even more, while many others were obliged to be content with the union schedule applicable to them who earned, and would have been paid, more, except for the union's dictation. Since the strike, all this has been changed. The highest rate of wages now paid to journeymen is something less than fifty dollars a day; but on the other hand, the less-skilled men receive much more than they would under union rules, so that the average of earnings has risen materially, at the same time that, through the skill of the managers, the ingenuity of the engineers, and the good-will of the men, the price of the product has been reduced.

A NEW chapter has been opened in the history of the New York high buildings by the purchase, by the Mutual Life Insurance Company, of several low structures in the neighborhood of its own building, but on the opposite side of the street, to prevent the land on which they stand from being used for the erection of another lofty building, which would deprive its windows of light. The owners of old buildings, which have been made dark and untenable through the construction of sixteen-story giants near them, will see the hand of Nemesis in the forced purchase, in the interest of the giants, of the modest properties around them, the value of which they have done so much to destroy. We have, in our jurisprudence, hardly a trace of the "ancient lights" theory which gives English architects so much trouble, and very few people in this country would wish to see real property saddled with anything of the kind; but it is quite possible, without creating a system of incumbrances on land, to check, by uniform regulations in regard to the height of buildings, the oppression of many owners for the benefit of a single arrogant "sky-scraper," and many people in New York would be glad to have the experiment made.

A CURIOUS example of the way in which judicial decisions influence industrial conditions, including also, perhaps, a warning against careless legislative interference with such conditions, is to be found in the movements now going on at the oölite quarries in Indiana. It is hardly necessary to say that, for a large stone-cutting firm, the useless expense of transportation of rough stone, which is cut away and wasted on the arrival of the block at its destination, is quite serious. Until now, arbitrary restrictions, like the "New York cut-stone law," in connection with tyrannical trades-union rules, have made it necessary, in the most important work, for contractors to buy stone in rough blocks, ship it to the place where it was to be used, and have it cut there by local workmen. The recent decision of the Court of Appeals of New York, declaring the "cut-stone law" of that State unconstitutional and void, was a matter of vital interest to contracting stone-cutters, and the ink was hardly dry on the text of the decision before several of them had taken advantage of their new liberty to begin arrangements for setting up stone-cutting works at the quarries, where stone can always be cut better and more cheaply than at a distance, while, in the case of limestone, the work cut at the quarry, from fresh stone, is not only cheaper, but much better, than when the stone is allowed to dry, and harden on the surface, before being wrought. Meanwhile, other portions of the limestone region are being developed, and it seems probable that fine stonework will be more popular hereafter than it has ever been.

THE Insurance Press objects to the remarks which we made, in noticing the first appearance of *Insurance Engineering*, about the advantage which there would be to the public, and, incidentally, to the underwriters, in discussing, not

only the causes of the fire-losses from which the country suffers, but a suitable adjustment of premium-rates to actual risk; and characterizes our remarks as "stale abuse." One point, which we gave on the authority of a published interview with an insurance-official, to the effect that insurance-rates are about twice as high now as they were a generation ago, it characterizes as "mere looseness of discourse." Very likely it was something of the kind, but the discourse was that of an insurance official, and not ours, and we carefully refrained from endorsing it in any way, and from commenting upon it except as an assertion open to question. Another assertion, which we acknowledge that we made on our own authority, that "the younger generation of insurance-agents have begun, to a great extent, to look on insurance as a science, rather than a collection of sharp tricks," also excites the displeasure of the *Insurance Press*; and, while we may point out that this assertion cannot logically be interpreted to mean that insurance is, or ever was, a collection of tricks, we may take this occasion to observe, as being interested in insurance from the policyholder's side, that there is a wide-spread feeling in the community that insurance-men, including, of course, agents as well as underwriters, are not so free from "strenuous" ideas in regard to other people's rights as the public would like to see them.

TO illustrate this point, we will relate a little story, as it was told to us, not vouching for its truth, but only observing that it has been extensively circulated—by other people—in a certain community, and that it has not improved the reputation of underwriters in that community. Some time ago, a poor man bought an estate, on which was a large stable. Not using the stable himself, he rented it, deriving for several years a satisfactory income from it. The stable would cost to build, and probably did cost, when built, about two thousand dollars. Some time ago, the insurance having expired, the owner applied to the local agent of an insurance-company of good reputation to insure the stable for him. The agent examined the building, and wrote a policy on it for seven hundred dollars, his attention being called to the fact that it was at the time untenanted. The premium was paid, and, some months later, the stable, which stood near a railroad, was set on fire, presumably by a spark from a locomotive, and totally destroyed, the fact of total loss being certified by the official appraisers of the company. The owner then applied for his seven hundred dollars, but was informed that nothing would be paid, as the company believed that he had set the building on fire himself. As there was absolutely no evidence of anything of the sort, he continued to urge payment, and the company, abandoning its first position, offered him one hundred and twenty-five dollars, in full settlement. He declined this proposition, continuing to urge that either the insured value of the property, as agreed to, after examination, by the agent of the company, should be paid, or the structure should be repaired or rebuilt by the company. The officials of the company refused to do either, and at last the owner, who was dependent for his living on his daily work, and could ill afford to spend his time and money in travelling back and forth from his home to the principal office of the company, compromised his claim for two hundred and fifty dollars. Now, it is quite possible that we have looked through what the *Insurance Press* calls our "spite fence" at this transaction, but we venture to say that many other people, to whom the story has been told, and who have no spite fences, agree with us that, while it may not indicate any "sharp trick" on the part of the underwriters, it would do so in the case of any other business. Nor is this the only recent occasion on which the conduct of underwriters has seemed, to some people at least, unaccountable. A very few days ago, a person, signing himself "Engineer," wrote to the *New York Evening Post*, saying that he had lately moved his office from an "antiquated, dangerous building, with a gas-testing station underneath, and in immediate proximity to the worst block in the city, where the fire-hazard is materially increased by the presence of a fire-trap theatre, to the top story of a modern sky-scraper, with tolerably good fireproof-construction, and protected with the outside fire stand-pipe called for by the Fire Department." Upon moving, he had his fire-insurance policy transferred, and for several weeks could get no rating at all. "When," as he says, "the Board of Fire-underwriters finally met, they increased the rate very much, intimating that I am not as safe in a fireproof building as in the old structure." "Engineer" calls this an "astonish-

ing experience," and it may be observed that architects, to whom the probable insurance-rates form a point of vital importance in the design of the new buildings which they are called upon to construct, especially for mercantile purposes, find in these "astonishing experiences" the greatest difficulty with which they have to contend in persuading their clients to adopt the improved methods of construction which American architects understand so well.

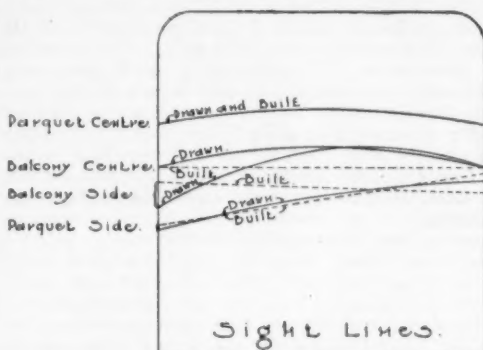
THE pediment-groups of the temple at Ægina have long formed the principal glory of the Glyptothek at Munich, and it is singular that, for nearly a hundred years, no attempt has been made to complete them by a search for missing fragments at the actual site of the temple. This year, however, Professor Furtwängler, of Munich, who has naturally made a long and careful study of the groups in the Museum, was able to arrange an expedition to Ægina, where, on the very first day of his explorations, he exhumed, close to the east front of the temple, two heads, and several other fragments. It is probable, from the style of the heads, that they belong to the group of the west pediment, but this point will, of course, be determined when the excavations are completed, and the fragments compared with the remainder of the group. It appears, according to the *Builder*, that Professor Furtwängler has long cherished the hope that additional fragments of the two groups might still be found at Ægina; and, like Dr. Schliemann, he has been so happy as to find his hopes realized.

THE *Builder* calls attention to the remarkable architectural development which is going on in Berlin. Germany, in general, has been very prosperous for the past twenty years, and German business-men have a commendable taste for saving up their profits, and, when a sufficient amount has accumulated, for investing it in a store, or warehouse, or office, of their own. In consequence of this fancy, the mercantile quarter of the city is being rapidly rebuilt, the stores, even of twenty-five years ago, being pulled down and replaced with larger and handsomer structures. After the successful merchant of Berlin has housed his business in quarters to his taste, he is apt to think of a better dwelling for himself and his family, and very large sums are being spent on houses in the fashionable quarter. From two to three hundred thousand dollars are often spent on the construction alone of a house for a rich Berlin merchant or broker, and the *Builder* speaks of two, in process of erection, the cost of each of which would be more than five hundred thousand. Meanwhile, the stucco-covered construction, once so characteristic of Berlin, is nearly obsolete, almost all new work being executed in real stone, or in brick; so that, in course of time, the stucco of the nineteenth century seems likely to be completely replaced by more durable materials.

THE defeat of the Chicago labor tyrants, after a struggle of more than a year's duration, has been followed by a great revival in building. Tenement-houses, particularly, are in great demand, and the number of building projects now in hand is said to exceed that of any year since 1893. Every one will be pleased at this, except the heartless agitators who live on the sufferings of workingmen. Eight years of decaying business, culminating in more than a year of absolute stagnation, have shown the contractors, as well as the men, the danger of abandoning the principles of liberty and common-sense, at the dictation of reckless schemers, and the lesson is not likely to be lost. According to the newspapers, the amount of money spent on building in the city will probably reach four million dollars a month for some time to come. Supposing half of this to go for labor, which is about the average proportion, the more sensible journeymen in the building-trades will hardly fail to reflect upon the immense sums which have been lost to them forever by their folly, and to make good resolutions for the future. We have no desire to see the incomes of workingmen diminished, but the contrary; and the contractors of Chicago have, we are sure, the same feeling; but a state of affairs in which workingmen are systematically taught to cheat their employer by diminishing the amount of work which he has a right to expect from them, and to take advantage of their knowledge of his affairs to deal him foul and unprovoked blows, has no place in this country; and the struggle in Chicago has shown the results of it with a clearness which will impress the lesson on Americans generally.

THE COLONIAL THEATRE AND BUILDING.¹—IV.

THE sight-lines of the Theatre, of course, had to be worked-out entirely in advance, and the model to which previous allusion has been made, was simply indispensable for this purpose. The drawing shown herewith illustrates the method by which the sight-lines were determined. In laying out the steppings of the floor, it

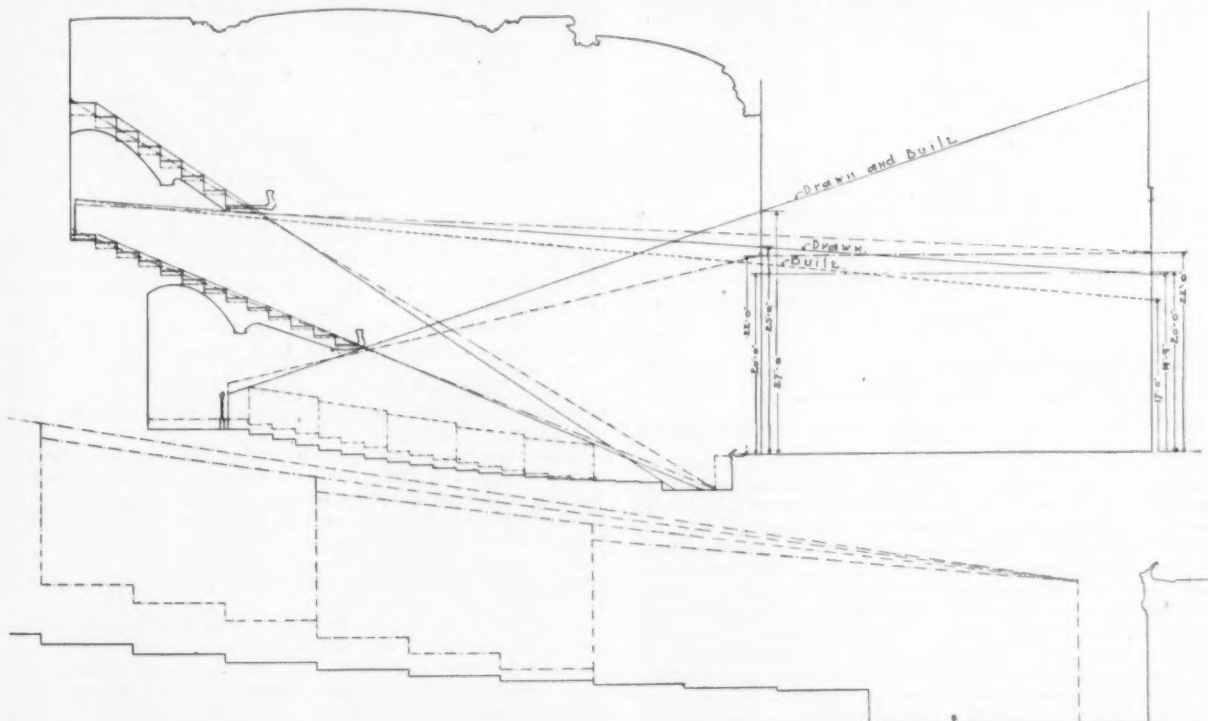


was assumed—which is a fair assumption—that a spectator can, without any serious difficulty, see through two rows in front of him. It is also assumed, as an average, that the eye of a seated spectator is 4 feet from the floor and that the distance from his eye to the crown of his head is 5 inches. Taking these dimensions and setting them off in succession with sight-lines centred on the edge of the apron, a certain curve was evolved. In practice, however, it was thought advisable to dish this slightly more than the curve would seem to indicate, and it is believed that better sight-lines were obtained thereby, considering the parquet as a whole. The drawing shows by the dotted lines the exact section of the balcony which was determined on paper, the sight-lines having reference to a 22-foot flat placed either on the line of the curtain or against the stage-wall at the rear. When these lines came to be applied to the model, however, rigid adherence to the theory was abandoned and the work changed to the section shown by the drawings, as giving better sight-lines. Also, the model made it possible to determine very accurately the pitch sideways which it was necessary to give to the balcony and gallery steppings in order to ensure a full view of the stage from the rearmost seats; but even after the most careful study of the model and working it out again and again in sectional drawings, when the work was built it was again slightly different from the work as planned. A little difference in the formation of the furring, a little higher or lower levelling of the cantilevers, a slightly different slope

The subject of the acoustics of the house was not studied at all. It is the writer's conviction, after having built several large halls of audience, all of which have been acoustically successful, that bad acoustics are the exception; that most halls are good anyway, and that we know exactly but very little of what really produces good or bad acoustic results. I am aware that a great deal of careful study has been given to this subject by those who are certainly qualified to advise as experts, and that in the pages of the *American Architect* have been presented some most admirable analyses of existing conditions, but I can not feel that we yet have reached a point where results can safely be predicated upon any other ground than that of definite special experience. My own practice and such investigations as I have been able to make, combined with such data as I can gather from other constructors, tell me that a theatre in which the proscenium-boxes are set at a slight angle to the normal of the curtain and are connected by a sloping ceiling or sounding-board leading outward to a main ceiling which is practically a level one, is almost invariably good acoustically. Also that a house with a domed ceiling is rarely good, and is sometimes bad. Also that in auditoriums in which fresh air is introduced through the floor, the vertical currents of air do not appear to interfere with the sound-waves, but rather seem to improve the acoustic properties of the balconies and gallery.

Beyond these very simple generalities I have been unable to go. That the time will come when we know any more about it, I very much doubt, and yet it is too fascinating a subject to let alone, and those who are expending thought and time upon the determination of its laws or the analyses of its results are certainly deserving of the warmest encouragement. There is one feature, however, which I have incorporated in several theatres and which has seemed to produce good results, though I could not possibly say why. I build the floor of the orchestra-pit something like a sounding-board. On the under floor, which is of wood, resting directly upon the fire-proofing, I fur up with inch strips spaced 12 inches on centres, and to this I nail a floor of half-inch-thick matched hard pine. This seems to reinforce the music and give it a resonant quality, but I am not prepared to say that the music might not sound just as well without this sounding-board attempt. The acoustics of the Colonial Theatre seem to be perfect, but they present one peculiarity: it is very easy for any one in the audience to distinguish any sound coming from the stage, but I find, especially when the house is empty, it is difficult for any one on the stage to hear sounds of slight intensity proceeding from the balcony in the space under the overhang of the gallery at the rear.

The decoration of the house was studied out in very elaborate detail upon the model, and from the study so made, bids were obtained from decorators for carrying out the work. I was so fortunate as to obtain the assistance of Mr. H. B. Pennell, the fourteenth Rotch scholar, and Mr. Pennell was later on associated with Mr.



of the rear seats, gave results as shown by the diagram of the front of the curtain, which are in some respects quite different from what was planned, though not sufficiently so to be of any vital importance. As a matter of fact, every seat in the house commands an unobstructed view of the whole of the curtain-line and every seat in the house can fairly be called a good one.

Haberstroh in the carrying-out of the work. The general scheme of color is a blue-green and gold. It is impossible to more than outline the general arrangement. The blue, however, is so covered in with gold, green and a little red and a very slight amount of buff that the general effect is green-and-gold. The whole of the mouldings around the proscenium-arch, the box-fronts, the mouldings on the circles of ceiling, are all in gold, but a gold which is heavily toned, except in a few of the high lights, so as to be quite subdued in quality,

¹ Continued from No. 1324, page 45.

the toning being accomplished by a light wash of a size composed largely of body-color rubbed off on the mouldings and high lights. The decorative paintings on the ceiling were entrusted to Mr. H. T. Schladermundt, Mr. Robert Blum, and Mr. Otto Bacher, of New York. Their work includes the large centre-piece and four smaller circles at the corners. The centre-piece measures something like 21 feet across and is decorated with a broad frieze, or band, of figures. There are three standing winged male figures representing, respectively, "Tradition," "Truth" and "Inspiration," between which are pairs of figures representing the "Dances." These are painted very broadly and simply on a stippled ground, which is formed with minute dabs of pure emerald-green and yellow, which seen from below gives a very luminous, atmospheric effect. At the four corners of the ceiling are smaller circles 9 feet in diameter, each decorated by a single large seated female figure painted in strong colors on a gold mosaic ground, the figures representing, respectively, the Muses of "Epic Poetry," "History," "Tragedy," and "Comic, or Pastoral, Verse."

It was a difficult problem to abundantly illuminate the interior, throwing ample light on the painted figures and at the same time avoiding anything like a glare. A large central chandelier, the disagreeable attribute of so many theatre-galleries, is entirely omitted. From the heavy frame surrounding the central panel of the ceiling are suspended forty pendants which consist each of a 16-inch Holophane-glass globe hung about 3 feet below the line of the mouldings and containing one 50-candlepower lamp lighting down, and three 16-candlepower lamps lighting up, the Holophane-glass effectively stopping any glare. The idea of this system of lighting was suggested by the simile of a string of pearls. In addition, there are 59 lights arranged in the moulding immediately surrounding each of the small circles, besides which there is a row of 150 concealed lamps lighting the sounding-board, and there are fifty-two 50-candlepower lamps held by the figures on the fronts of each of the balcony-rails, giving altogether something like 900 lights in the auditorium itself.

The decorations and the details of the foyer were carried out in Louis XV style. On the ceiling there are three large paintings in the style of Boucher which were made by Mr. Newton A. Wells, of the University of Illinois, and are extremely successful in every respect. Over each of the door-heads are Louis XV landscapes, which were painted in tones of green by Mr. Victor Durando, of Boston. The woodwork in the foyer is of satin-wood, a wood which of itself is hardly any more interesting than ordinary curly maple, but which takes carving as cleanly and distinctly as box-wood, and when selected for grain is very handsome. This wood was all stained a deep, strong yellow, that is to say, viewed by daylight the yellow is excessive, though under the effect of the electric-lights nearly all the yellow disappears. Had the wood been left in its natural color, the life would have all gone out of it when exposed to the electric-lights. The walls are so lined with mirrors and paintings that there is very little opportunity for wall-painting. The colors in general are a pale cream and delicate green-and-gold. The pale cream, however, when seen by daylight is really a very strong yellow. The carpet is a deep crimson. The lighting of this foyer is entirely by the brackets on the sides.

In the ladies'-room the decorations are similar in character to those of the foyer, except that the wall-spaces are decorated in two shades of a delicate pink and cream. The panels over the door-head were painted in tones of green by Miss Marion Peabody, of Cambridge, and the centre ceiling-panel, which is lighted by concealed lights around the cornice, was made by Mr. B. Tojetti.

The elaborate stair-rail shown in the photograph of the foyer is of colored bronze treated in antique verdigris-green. The hardware was all of special design, and to obviate the necessity of repolishing, was heavily gold-plated. The gas-fixtures are all in ormolu gold.

C. H. BLACKALL.

[To be continued.]

DOMESTIC ARCHITECTURE IN ENGLAND DURING THE MIDDLE AGES.¹—II.

THE CASTLE, OR DEFENSIVE DWELLING, OF THE NORMAN PERIOD.

MAKING all the circumstances into consideration we see the position of the Feudal proprietor of the Norman period was that of an alien in a more or less hostile country; his title and interest had to be maintained by sword and battle-axe and might be assailed at any moment. It was absolutely necessary that he should build himself a shelter,—rude and devoid of comfort it might be, but walls and roof he must have and have at once. His dwelling must be not only of sufficient extent to meet the wants of his own household but must provide shelter within its precincts for a number of foreign retainers, vassals and followers from Normandy, more or less numerous, a small private army, in fact, with provision for lodging and sustenance, possibly for lengthened periods. His supplies came mostly from Normandy and his dwelling must of necessity be so situated that his line of communication could not be permanently interfered with. These were conditions imposed upon William's Norman followers amongst whom the conquered kingdom was parcelled out as the reward of their services.

Thus, in the latter part of the eleventh century the new proprietors of the land started with one accord and with well-defined plans to build suitable dwellings and to fortify themselves in the land. Each individual proprietor was governed by the circumstances of

his own case, his wealth, his importance, the number of his retainers, his facilities for building, etc.; but, although the details in each case may vary, the principle throughout all buildings, at given periods, was as marked and as uniform as the language they spoke or the dress they wore. We will, therefore, look at these domestic buildings of the Middle Ages, note such salient features as come within the observation of all people and endeavor to trace out their causes.

As a rule, we find the castles of the Norman period situated on or near navigable water, the earlier ones being directly accessible from the sea. There were no roads except the old Roman roads, and no means of land transport except the pack-horse; therefore supplies of all descriptions had to be brought by water and those mostly from Normandy; thus we find all along the Thames, Medway and south of England that the stone used for all work requiring to be cut was brought from Caen, in Normandy, and all other materials, unless close at hand, were brought from some point within easy water communication.

The next salient point we notice is that castles, as a rule, were placed on rising ground, occasionally on the edge of a cliff, as at Dover, Scarborough, etc., either with a clear and open view from the gateway or approached by a narrow and difficult defile, as the circumstances of the site rendered most convenient for the purpose of defence. In many cases, where the natural configuration of the ground did not lend itself to the common standard of defensive measures, the castle was surrounded by a wide fosse, or moat, and in others by a dry ditch of considerable depth. Chepstowe, on the Wye, is a typical example of a castle of the period.



Chepstowe Castle.

Every dwelling-house of any consequence erected during this and the thirteenth century was more or less fortified. The castle, primarily, consisted of a massive tower-like building, square or round in shape, lofty enough to command a view of the surrounding country from which the watchman could descry from a distance the approach of friend or foe. In this building, which when forming a central feature amongst a group of buildings is called the "donjon" or "keep," were placed all the principal or essential apartments (including the well), and it was designed as the last refuge of the beleaguered garrison. The lower story was frequently used as a prison, hence the more modern English term, dungeon. The first step in enlargement or that marked the relative scale of importance of the castle is the number and size of the buildings which clustered round the keep. The broad principles are common to all, though they may vary in detail due to local influences and the rank and consequence of the owner.

The Norman castles were generally surrounded by low walls of great thickness enclosing within their lines a large area of land. These walls enclosed the outer ballium, or baily, and follow the contour of the land, taking advantage of every natural obstacle, as bluff or escarpment, flanked here and there with small enfilading towers or bastions.

Where the site presented no natural points of defence the walls were surrounded by a wide fosse, the excavated material from which was filled-in behind the walls, forming a broad, level terrace. This fosse, whether wet or dry, formed an obstacle to escalading, a usual mode of attack. It was sometimes crossed by a narrow stone bridge leading from the barbican, but more frequently by a timber draw-bridge which, being raised, closed up the gateway and cut off all direct access to the castle.

It must be remembered that the chief arms of attack were the bow and arrow, occasionally the ballista and battering-ram.

An assault usually began by the attacking party endeavoring to fill-in a portion of the ditch with brushwood, fagots and straw, over which the assailants approached the wall, protected by archers stationed on the opposite bank, and with pick-axes proceeded to hack out a practicable breach. Machines, called ballistas (a large kind of cross-bow), threw heavy stones and, by destroying the roofs, drove the defenders to the vaulted chambers below. Large timber-framed towers were frequently used; these were wheeled up to the walls, manned by archers, placed at the level of the parapets, protected by specially prepared leathern curtains; these assailants, fighting hand to hand, endeavored to drive back the defenders.

Undermining the outer walls was frequently resorted to. Galleries or trenches were run in as far as the walls, the subsoil removed

¹ Continued from No. 1319, page 7.

and the walls carried on props; these were subsequently destroyed by fire, when the superincumbent walls fell outwards, opening up a breach in the defences through which the assault was delivered.

Countermining was resorted to by the defenders, and, the contending parties meeting in these subterranean galleries, desperate fights ensued. It therefore became very necessary to protect the foundations of these outer walls of first defence by every possible means.

The moat not only kept back the hostile forces from the face of the wall, precluding scaling, but was also a safeguard against mining. The dry ditch added its own depth to the effective height of the walls and presented elements of difficulty and danger in the attack.

The circumstances of the day made building compulsory. The Feudal system not only compelled the nobles to build in order to shelter and keep together their retainers, but the very nature of the fealty made building practicable. The Lords and Prelates had amongst their vassals the needed labor, rude and unskilled 'tis true; rough material was at hand, and compulsory labor made building possible, even under adverse circumstances in the midst of a population more or less actively hostile.

The walls were built of great thickness, faced with squared rock-faced stone, either from the immediate neighborhood, or obtained from some quarry contiguous to navigable water. The cut-stone, in most of the southern castles, was brought over from Caen, in Normandy, and probably was worked and set by Norman masons. The hearting of the walls was of broken stone and rubble mixed with lime-mortar. In those days mere bulkiness of mass took the place of scientific construction; the stones, too, were small, rarely exceeding a size that two men could handle, as they had at that time no mechanical appliances for moving or hoisting larger stones, and no means of land-transport other than the pack-horse. Patches of old Roman tile and walling may be noticed in buildings of this period, evidencing the proximity of Roman remains, the difficulty of obtaining building-material and the necessity for haste.

This use of small stones and heterogeneous material has a wonderfully charming effect, enhancing the apparent scale of the buildings and, by its broken surface, giving exquisite texture and play of light and shade.

As a curious instance of the survival of ancient methods of building I, myself, witnessed building operations in Paris in the middle of the nineteenth century, where, in hoisting stone, the laborers sat one above another on the rungs of an inclined ladder; the lowest one receiving a stone handed to him, passed it overhead to the next above him, who, bending forward, received it in his hands and passed it overhead to the next above him, and so on, to a height of about 40 feet, to the stone-setters at the top of the wall. This, no doubt, was akin to the methods of building in vogue in the period under consideration.

The style of architecture prevailing was known as Romanesque in its earlier phases, then Norman Romanesque, and later as Norman. Its characteristic features were due absolutely to the well-defined necessities of the day, and, as these necessities were universal, we find the same salient features in all the buildings of that period. It is strictly historic architecture,—true architecture; it was founded upon no precedent, but was the simple inevitable growth evolved out of the necessities of the period.

Thus, the instructed mind, even the superficially-instructed mind, may read the history of the times in the buildings of the period and see it as clearly exemplified as the dress of the Hindoo, Chinese, Turk or European evidence their respective nationalities at the present day.

These notes are made in the hopes that, with the key before them, increasing numbers of observers may be able to extend the sphere of their enjoyment and see something more than picturesque beauty in the remains of the Domestic Architecture of England during the Middle Ages.

THOMAS C. SORBY.

[To be continued.]

THE PONTINE MARSHES.

VERY now and then the purveyors of European news put into circulation a story which, whatever truth there may be in it, is not new, to the effect that the famous Pontine Marshes of Latium are now at last to be drained, and if not rendered eminently fit for human habitation, at least mitigated as a nuisance to their neighborhood, says the *New York Tribune*. Nearly everybody who has written about the climate of Rome and its environs, with the distinguished exception of the late William Wetmore Story, who seems to have regarded Rome as a pleasant and salubrious summer-resort, speaks of it in terms of unqualified reprobation. The Paludi Pontine and the Maremma are equally blamed for the climatic atrocities of Rome. Nor is this all; they cumber the earth in a little kingdom which at best could hardly supply sustenance for its population, and hence they are to some degree responsible for the large and constant influx of poor Italians to America.

The Pontine Marshes proper extend only from Cisterna di Roma, which lies in a southern fold of the Alban Hills, to Terracina, on the gulf of the same name. Along this extent their width is from five to eight miles between the Tuscan Sea and the rise of the Volscian Hills (now known as Monti Lepini). When it is once understood that this tract of Latium is almost perfectly flat from one end to the other; that the soil is peat, or turf, such as covers the Irish bogs, with a subsoil of clay, and that the river Sisto trickles along the

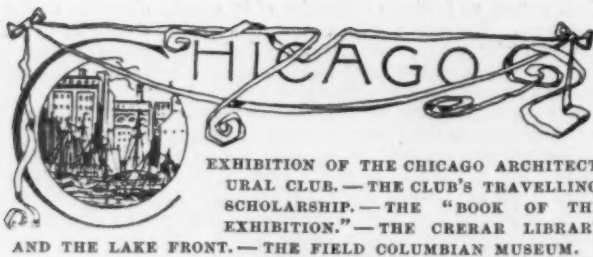
whole extent, no further explanation of its marshy character need be attempted. The only wonder is that this country should ever have been habitable, as, according to Pliny and other ancient writers, it must have been in the fourth century before Christ, when it is said to have contained no fewer than twenty-three towns.

As early as the time of Augustus, however, the Pontine Marshes were a problem to the rulers of Italy. It was in that reign that the earliest well-authenticated report went abroad that they were to be drained and got rid of. Augustus realized this anticipation to the extent of digging a canal along that portion of the marshes which is skirted by the Appian Road, the canal and the road running side by side as far as Terracina, then called Anxur. Horace immortalized the canal by making a journey along it and writing it up in verse. But in spite of this canal the Pontine Marshes outlasted the Roman Empire, growing, indeed, in deadly effectiveness and general intractability as the empire waned, until now, although the whole area officially recognized under that name comprises only 130 square miles, the district infested by the miasmata is set down as 350 square miles. The whole population of the district two years ago was thirty, or less than one to every 4 square miles.

In later times the Papal and the Italian Governments have regarded the Pontine question as only one part of the general problem of improving the whole Agro Romano, that term being taken as including the whole littoral district as far north from Terracina as Civita Vecchia, in the northern portion of which the Roman Campagna stretches from the sea to the southwestern walls of Rome. The history of the temporal power of the Papacy records many well-intentioned projects for reclaiming this vast area of swamp-land, but there is no record of any notable success until three years after the capture of Rome by the troops of Victor Emmanuel.

When, in the year 1873, the scheme was broached of using \$500,000 of the national revenues to reclaim the littoral between Ostia and Maccarese—a tract about fifteen miles long, lying on both sides of the mouth of the Tiber—it was criticised as an impossibility demonstrated by history; the unsanitary character of that region, it was said, was an immutable fact of nature. The money was nevertheless voted in 1898, and applied to the purpose designated. The method chosen was that of mechanical exclusion of water and building up of drained subdivisions, like those known in Holland as "polders." In 1881 another act of the National Parliament appropriated \$1,040,000 and provided for the raising of that amount by taxation. The drainage-machines actually began work at Ostia, Maccarese and Isola Sesera in December, 1889, and succeeded to such an extent that in January, 1899, the *Corriere* of Milan reported that considerable colonies of husbandmen were settled in the district and found it possible to live there "without more fever than in other parts of the Agro Romano"; meaning the less miasmatic sections farther inland. Some of these are actually tilling land formerly occupied by the Lagoon of Ostia. The significance of these facts is better appreciated when it is remembered that until very recently the coasting-steamers between Fiumicino and Civita Vecchia stopped running during the months from spring to late fall, their pilots refusing to expose themselves to the risks of fever on that coast at that season of the year.

The sum appropriated to this work by the Italian Legislature in 1881 has since then been augmented by successive votes to the aggregate of \$1,500,000. It was in the course of a debate on one of these votes, the sum under immediate consideration being \$600,000, that Signor Saracco, then Minister of Public Works, told an anxious Senator that the enterprise might ultimately cost as much as 100,000,000 lire (\$20,000,000). This estimate, however, must be taken to include the cost of much more than mere drainage. Ten sanitary stations have been established for the care of the fever-stricken inhabitants, under the care of Government medical-officers, who, according to one Italian paper, lead "a very grievous existence in shanties . . . within the full sway of the malaria, which strikes them first." All this outlay of money, on the other hand, is doubtless "very grievous" to a people notoriously overburdened with taxation. Patriotic—and, presumably, partly speculative—financial associations ("Consorti Patriotici") have been formed to raise money for the object of draining the pestilential marshes of the Roman coast into good agricultural territory. One plan contemplates the ultimate repayment of the amount subscribed by private persons by means of liens on the reclaimed land, which, it is assumed, must ultimately prove extremely rich. If the wealthier classes of Italy can be made to look far enough ahead, such investments as these may be of great value to their descendants three generations hence. The completion of the conquest, in which the Italian Government has apparently already made considerable progress, would be a substantial reinforcement of that Government's claims to stability in the will of all the Italian people. It would be the accomplishment of what Cæsars and Popes have attempted in vain. To quote Signor Monaco, a distinguished Italian civil-engineer, writing in the *Rassegna*: "The Roman Campagna as it is would become an historical memory, but the new Land of Labor, the new Campania Felix, would not be less picturesque because the ruinous arches and tombs would rise from flourishing fields of grain." The report that the conquest of the Pontine Marsh division of the field is to be begun immediately seems to indicate that this rose-colored vision may be realized before the present century reaches its meridian.



LAST month the Chicago Architectural Club held its fourteenth annual exhibition. The collection was rather smaller than usual, but it would seem as if the interest were better sustained. We missed the dozens of school *projets*, which are such a bore in such an exhibition, take up a large amount of space, and serve to impress the uninitiated with the technical side of architecture, which they know nothing of. Of course, the laymen never look at them, for they cannot understand them, and of course those in the profession never look at them, for they know them too well, and, in fact, they are scarcely of any interest to any one but the student. Therefore we gratefully recognized their absence. There was nothing very startling in the collection, nothing very unheard of or new, not much even "new, novel and—bad," very few flights, which shows that the Western architect in this particular spot is learning to know his limitations.

Much was shown good in design and charmingly rendered, while there was the usual showing of poor designs well rendered, and some so flimsy in design, so careless in execution, that the thought is, was it accepted by the committee as a dreadful warning to all who pass by. Noticeable in this class of extremely careless rendering were some of the large collection of drawings from Willis Polk, of San Francisco. It is to be hoped that his clients are better able to grasp what they signify and stand for than is the average visitor who stood in front of some of them. Wilson Eyre, as usual, had his showing of old-print effects, certainly, and one might almost say fortunately, not in the least true to nature. Some of Myron Hunt's designs are rendered in this deceptive manner, while certain ones by Charles S. & Harvey Ellis, and some from the office of Pond & Pond follow this manner of treatment. It certainly often gives the effect of an extremely unstudied design besides that of a careless rendering, and seems to miss the main object which an architectural sketch should meet, that of showing the client how his work is going to look. And that work can be artistically rendered and at the same time fulfil this requirement, one had only to look around at dozens of examples in the exhibition.

Elmer Grey, of Milwaukee, had a number of examples good in design and execution, and one has only to see photographs of his finished work to appreciate its charm. He has been especially successful in his treatment of open-timber construction. Howard Shaw showed some attractive things, and the rendering of George Maher's designs is very satisfactory. Pennell charmed us with some of his strong pen-and-inks, all foreign sketches. Numerous delightful photographs of finished work gave variety to the exhibition. One

especially charming little one was a pergola placed in a group of photographs not all strictly architectural.

Much interest has been shown over the competitive drawings for the first travelling-scholarship, which in 1900 was founded by the Club. To quote from this year's "*Book of the Exhibition*": "The selection is made by competition, and the scholarship, amounting this year to \$325, is designed to assist the winner in defraying the expenses of a European tour, devoted to architectural study. From the treasury of the club, \$250 is appropriated annually," and this year \$75 further was subscribed. "The competition extends over five months, with a separate competition each month, the subject in each case being a part of the general problem, and the decision is made by ballot of the members of the Club. At each meeting when a competition is hung for judgment, a critic, who has had opportunity to study the designs submitted, reviews the drawings. The subject is then open for discussion by the members, and later the ballot is taken. From the first the interest has been intense, the discussions developing much valuable criticism, and the final competition and decision ending in great enthusiasm. By ballot of the members, the scholarship is this year awarded to Mr. Nelson Max Dunning."

A small but interesting part of the exhibition was that of the applied arts, arts and crafts if you prefer. Several screens shown by Lawrence Buck were charming. They are painted on green denim in yellow and red sunset colors, the green of the denim being utilized for foliage effects. They are entirely naturalistic in treatment, but are so charming that they come as a shock to those who would maintain that conventionalized and decorative effects are the only proper thing for screens, wall-paper, etc., if they would be judged to be in good taste.

One excellent exhibit was that made by the Krayle Company, an associated body of artists who devote themselves to the designing and execution of practical and beautiful objects. Ida J. Burgess had several excellent pieces, as also Christia M. Reade. A leather grille with curtain by Amelia H. Center was decidedly attractive.

The "*Book of the Architectural Exhibition*" is quite an ambitious affair. On the exterior it is light-brown and gold, and stiff-covered. It is printed on very good paper and is generally entirely artistic. The decoration on the title-page is by Birch Burdette Long, and is very attractive, the original drawing for the design



Drawing-room Chimneypiece, Wrexhall Manor.

being among the exhibits. It is charmingly Japanese in effect, — a bit of garden architecturally treated. And this leads one to speak of the growth in this part of the country of the tendency to combine landscape-gardening with some architectural effect. Pergolas seem to be "more necessary than onions in a garden," as a man remarked the other day, and a flight of steps, or terrace, is longed for by many and attained by few. The owners of even small places in Chicago suburbs are now thinking it worth while to employ landscape-gardeners, and the result will be a decided improvement over the old hit-and-miss garden where trees were dotted over the lawn with no thought of grouping, flower-beds sprinkled-in and space wasted. In fact, in a small place no space was allowed at all. Now people realize how much effect of space can be obtained on even a narrow lot judiciously planted.

But to return to the "*Book of the Exhibition*," no vulgar "catalogue" is placed on its cover, that word being reserved for a little

paper-covered pamphlet in which is placed the list of exhibits and patrons. About a quarter of the book is taken up by a very interesting and decidedly sensible paper by Frank Lloyd Wright, on the "Art and Craft of the Machine." It is an address delivered before the Chicago Arts and Crafts Society at Hull House this spring, and later before the Western Society of Engineers. It is a strong and picturesque plea for the elevation of the machine, since it has come to stay, since no one but an impractical dreamer would want it to go. The remainder of the book is taken up with reproductions of the various exhibits. As no advertisements are allowed, the price of the book is naturally high, fifty cents, which is more than the casual visitor at an exhibition cares to pay. For convenience sake the little catalogue might be sold separately, but this I do not think was done. The book itself is a very dignified production, in keeping with an exhibition with a high ideal.

The matter of the location of the Crerar Library on the Lake Front is now a subject of considerable interest to the general public. After years of litigation, the law governing this narrow park is that no building shall be placed on it without the consent of the abutting property-owners. This law seems to act as does a prohibition statute on the usually temperate citizen. There is no other strip of Lakeshore frontage so controlled, and there is no other shore property on which every schemer in town is so frantic to place large structures. Doubtless, could the buildings all be really fine and enough room be left between them to still preserve the park feeling, no city could have a finer setting for fine structures than this could be, but with many schemers, each trying to promote his own selfish plan, with no guaranty as to what the character of the buildings would be, no wonder the property-owners hesitate to allow the entering wedge in the shape of any structure. Space has been grudgingly allotted the Crerar Library in the vicinity of Congress Street. This the trustees consider too far south, and wish for a site nearer the locality of the Public Library. It is rumored that Shepley, Rutan & Coolidge will have the designing of the building, and if so, doubtless, it will be worthy a place by the side of their Art Institute. It seems a pity that bugaboos in the shape of rash promoters or selfishness on the part of property-owners should prevent the erection of such a structure on a site so eminently suited to hold it. But when one reads of first an armory to be placed on the Lake Front, next a large permanent Exposition Building, etc., one cannot wonder that the letter of the law is maintained.

Now Marshall Field comes forward and says, should space be granted to the Field Columbian Museum, he will put up a building suitable to hold this really huge collection. Ever since the World's Fair the weeding process has been continued and much new material has been added till, in natural history as well as in all anthropological branches, this collection has become very valuable and very large. Situated, as it is, at the south of the city, in Jackson Park, in the shambling old Fine-Arts Building of the Columbian Exposition, there are only a small proportion of Chicago's citizens who ever visit it, whereas placed more centrally it would be a source of pleasure and profit to many more.

This general scheme for buildings on the Lake Front requires State as well as city legislation, before obtaining the consent of abutting property-owners, and though such legislation is being pressed forward, from conflicting reports it is hard to tell just what will be the ultimate results.

SOUTH WRAXHALL AND CHALDFIELD, WILTS, ENG.

THE Manor House of South Wraxhall is a very beautiful specimen of Mediæval domestic architecture. The buildings surround a court on three sides, with a gate-house on the south. Facing west is the hall, with Perpendicular windows, and a huge gabled drawing-room, added by Sir Walter Long about 1600, with an



Wraxhall Manor.

enormous square window (left-hand side of photograph). The entrance-gateway, the oriel window above it, the hall, and porch with bays, may be contemporary with Henry VII, or may have been built by another Walter Long, M. P. for Wilts, 1433 [J. H. Parker]. The fireplace of the hall dates about 1598. The chimneypiece of the drawing-room has carved figures of "Prudence," "Justice," "Geometry" and "Arithmetic," with "Pan" in the centre, and

quaint inscriptions. In one of the bedrooms there is a very fine fireplace, with a baboon on a bracket, and three mottoes.

Chaldfield Manor is presumed to have been built by Thomas Tropenell, who died in 1490. He and his wife Agnes are buried under a rich altar-tomb in Corsham Church. The north front of the house has a porch with a groined roof. The gables which flank the centre have oriel windows, one of which is of great beauty.

The little church almost forms a part of the Manor House, as it is within the moat, which encircles the whole.

During the Civil Wars Chaldfield became a military post. A round-tower stands at the corner of the churchyard, and the mill occupies the site of one which is mentioned in Doomsday Book.

S. BEALE.



NEW JERSEY CHAPTER, AMERICAN INSTITUTE OF ARCHITECTS.

I SEND you a copy of a communication which has been sent by the New Jersey Chapter, American Institute of Architects, to the Chairman of the Board of Freeholders of Union County, having in charge the erection of the proposed Court-house in that County.

I have been directed by the Chapter to request you to publish same in your valuable paper.

HUGH ROBERTS, Secretary.

JERSEY CITY, N. J., May 9, 1901.

J. FRANK HUBBARD, Esq.,

Chairman Board of Freeholders of Union County:—

Dear Sir,—The conditions of the competition under which architects have been invited to submit drawings for the proposed new Court-house for Union County have been brought to the attention of the New Jersey Chapter of the American Institute of Architects.

The Chapter is a part of the American Institute of Architects, and stands in the State of New Jersey for all that the national body represents throughout the country. Inasmuch as the Institute has formulated a code under which all competitions, in which its members participate, should be conducted, we respectfully invite your attention to the various sections of your published prospectus which do not conform to the code as established by the Institute, of which code we enclose a copy.

Unless your "Terms of Competition" are modified to conform to the recognized code of the Institute in the following particulars, all reputable architects are debarred from competing:—

First.—The terms should state that the author of the best design shall be engaged to prepare the working-drawings and supervise the erection of the building.

Second.—The terms should state that the successful architect shall be compensated according to the rate established by the American Institute of Architects.

Third.—The name of the professional adviser should appear in the prospectus, thus giving assurance to the competitors that the Committee has proper technical advice.

The remainder of the schedule we deem exceedingly fair and reasonable and should you modify same in accord with the above suggestions, we feel assured that the ultimate results will be far more satisfactory to you. Yours very respectfully,

THOMAS CRESSY, President,

HUGH ROBERTS, Secretary, N. J. C. A. I. A.



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

COMBINED HOUSE AND OFFICE. MR. C. P. H. GILBERT, ARCHITECT, NEW YORK, N. Y.

THIS house is to be built on a city lot, 30' x 115', the materials being red brick laid in black mortar and relieved with brown-stone finish. The open-timber effect in gable and dormers will be rendered in cement and copper.

DETAIL OF UPPER STORIES: "BROADWAY CHAMBERS," BROADWAY AND CHAMBERS ST., NEW YORK, N. Y. MR. CASS GILBERT, ARCHITECT, NEW YORK, N. Y.

STAIRCASE IN THE FOYER: COLONIAL THEATRE, BOYLSTON ST., BOSTON, MASS. MR. C. H. BLACKALL, ARCHITECT, BOSTON, MASS.

[The following named illustrations may be found by reference to our advertising pages.]

ÉCOLE DES ARTS ET MÉTIERS, LILLE, FRANCE. M. BATIGNY, ARCHITECT.

THIS plate is copied from *La Construction Moderne*.

CHURCH TO BE BUILT NEAR WASHINGTON, D. C. MESSRS. E. G. W. DIETRICH AND HENRY LAPOINTE, ASSOCIATED ARCHITECTS.

[Additional illustrations in the International Edition.]

THE FOYER: COLONIAL THEATRE, BOSTON, MASS.

For description of this and other illustrations of this building, see article elsewhere in this issue.

PROSCENIUM-BOXES: COLONIAL THEATRE, BOSTON, MASS.

CEILING-PANELS IN THE FOYER: COLONIAL THEATRE, BOSTON, MASS.

CHALDFIELD MANOR, WILTS, ENG.

COURTYARD FRONT, WRAXHALL MANOR, WILTS, ENG.

"BROADWAY CHAMBERS," BROADWAY AND CHAMBERS ST., NEW YORK, N. Y. MR. CASS GILBERT, ARCHITECT.

This plate shows also, on the left, the building of the Shoe and Leather Bank, of which Messrs. Cady, Berg & See were the architects.



EXCAVATIONS AT MITLA, MEXICO.—Prof. Marshall H. Saville, curator of the Section of Archaeology of the Department of Anthropology of the American Museum of Natural History of New York, arrived in this city recently from Mitla after completing his winter's work there. Professor Saville's work was entirely excavating. The work of reparation and restoration upon the ruins being done by the Mexican Government under the direction of Don Leopoldo Batres, Government Inspector of Archaeological Monuments, will be finished, with the exception of the wall which is to be built around the ruins, within a week or ten days. The work of constructing the wall only requires a short time. The subterranean room found just north of the group of buildings farthest north, now a part of the Catholic church, did not develop more than was described some time ago in the *Herald*. The room was found a few feet north of the large room now used by the curator for his stable. This room was evidently originally the main, or at least the first, room of the palace. On its north side was an entrance of three doorways, similar to the entrance to all the buildings in the main groups at Mitla. An excavation was made in front of this entrance as being the most likely place to find the entrance to a subterranean room, if any existed under the palace. This excavation was rewarded by the finding of a room 5 feet wide and 17 feet long. The walls were made of rough stones covered with adobe. Upon this were two layers of cement. The first layer bore traces of painted designs, but were too much destroyed to make out anything of value. The second, or outer, covering was covered with a coating of plain red. The room was evidently of no particular importance. There being no further indications of a subterranean room about this group no further excavation was done there. The work of clearing away the dirt and debris from the outer foundations of the south group of temples was completed with satisfying results. Traces of the flight of steps leading up from the outside of the platform of the west side of the square were found, enough to show that there had been a flight there, but not much more. On the outer side of the east side some splendid grecque, or mosaic, work was found. This was preserved only on the south half of the face of the foundation. There were three panels of grecque work, the middle one slightly above the two end panels. The designs of the grecques were large letter S's surrounded with scrolls of straight-line geometric figures. The grecques were in a splendid state of preservation, and the panels are among the most beautiful found on any of the ruins. The grecque work ended about the middle of the building at bedrock, and had evidently been continued irregularly, following the rock, on the northern half of the foundation, almost entirely destroyed. The remains of a flight of steps, or, rather, a grand stairway, were found on the outer south side of the north group, or square, leading up to the cement platform, probably used as an audience platform, as previously described in the *Herald*. These steps were found between the outer walls of the two groups. As previously described in these columns, there is a cement floor between the two groups. The finding of the steps shows, however, that they were entirely separated, but that there was probably communication between the two, by descending steps from one, crossing the cement-floored yard and ascending the steps of the other. An excavation was started in a mogote, or mound, south of the village near the base of the mountains, but it early indicated its fruitlessness, and the excavation was abandoned. Since Professor Saville had no further funds or time at his disposal the expedition for this year was ended with this excavation. The work of reparation and restoration under the supervision of Sr. Batres, being, of course, entirely distinct from the work which Professor Saville is conducting, is being thoroughly and completely done. The steps leading up to the Temple of Columns, previously described, have been finished and painted red, as they undoubtedly were originally. The outer walls of the building have been restored so far as is possible. In front of the building, on top of the substructure at a level with its base, or foundation, a narrow strip of cement has been restored, forming a narrow platform. This has also been painted red. Professor Saville expressed himself as being entirely satisfied with his winter's work, or, rather, with his two winters' work at Mitla. The results will be published in book-form and will comprise an exhaustive work on the ruins at Mitla and vicinity, and the ancient civilization of the Toltec or Nahuan tribes.

Professor Saville will begin work upon this book immediately upon his return to New York, and hopes to have it ready for publication by the coming autumn. Professor Saville's family are staying in Puebla for a few days until he is ready to start to New York. He will remain in this city for a short time closing up the final details of his winter's work. — *The Mexican Herald*.

ELECTRIC-LIGHT THIEF PUNISHED.—Those who use the electric-light in their houses know that the electric-meter is far from satisfactory, and this is one of the causes of discussion with the lighting company whenever a bill is presented. The figures furnished by the company for lighting are so complicated that it is impossible for any one not high up in electrical science and in higher mathematics to fathom them, so the resort is a complaint, natural to the man with a bill which he cannot comprehend. A consumer in Paris, who was much disturbed over the constantly increasing bills, conceived the idea of boring a hole through the door of his meter, and of inserting a screw-eye for the apparent purpose of hanging up the note-book containing the record of the meter, but, after the agent of the company had made the inspection and noted the reading of the dial, took the screw-eye out and inserted a long needle which paralyzed the motion of one of the smaller working parts of the apparatus so as to cause a smaller reading, and thereafter the greater the consumption of current, the lower would be the record at the end of the month. A neighbor who knew of the plan informed the company, and a trap was laid for the man who had been stealing the current. Two movable contact-pieces were placed in the meter-box, so constructed that the least push through the hole brought the pieces into electrical contact with each other, thereby establishing a short circuit. The trap had no sooner been set than the consumer began operations again with the needle, which resulted in a blinding flash of light. He was much alarmed and complained to the company of the phenomenon. The result was that complaint was made to a court of justice and the thief was fined 300 francs, and forced to spend three months in jail and to make two announcements in the public press. — *N. Y. Evening Post*.

PROJECTED NEW BRIDGES FOR VENICE.—It is proposed to erect two great bridges in Venice, one to connect the island of San Michele, which is the sole cemetery of Venice, with the city on the north, and one to connect the island of the Guidecca with the city on the south. The former is an easy affair, as the water, though a quarter of a mile broad, is shallow. The other is a serious and difficult matter, as the Guidecca Canal is really an arm of the sea, and the distance at its narrowest part is over an eighth of a mile. The Guidecca Canal is also the highway for all the ships of any size, as it is by it alone they can reach the docks, which are at the railway-station. But the Guidecca Island is becoming of importance as the manufacturing quarter of the city. One of the largest flour-mills in Europe is there. It belongs to Signor Stucchi, and he has promised to subscribe toward the expense of the bridge 400,000 francs, equal to about £16,000. Other manufacturers on the island will probably also offer liberal donations should the work be determined upon. — *The Scotsman*.

INCREASING RENTAL-RATES FOR HIGH BUILDINGS.—That owners of office-buildings in the vicinity of the new Stock Exchange Building, to be erected, have an idea that the present era of prosperity is to continue somewhat indefinitely, was ascertained in rather startling fashion at the beginning of April. At that time tenants of one of the large buildings received notification that if they intended to continue as tenants, they would be expected to pay an increased rental of 60 per cent on and after May 1. As the new Stock Exchange Building is not expected to be completed within a year and a half, and as in the meantime the trading will be done much farther down town, tenants could not exactly see what connection the building of the new Exchange and the sudden increase of rents had to do with one another. Nevertheless, the agent of the building was inexorable and would only say to inquirers who wanted to discuss the reasonableness of his demand: "Pay the increase or get out." That was one reason why it was a very general moving day in one of the down-town office-buildings recently. — *N. Y. Times*.

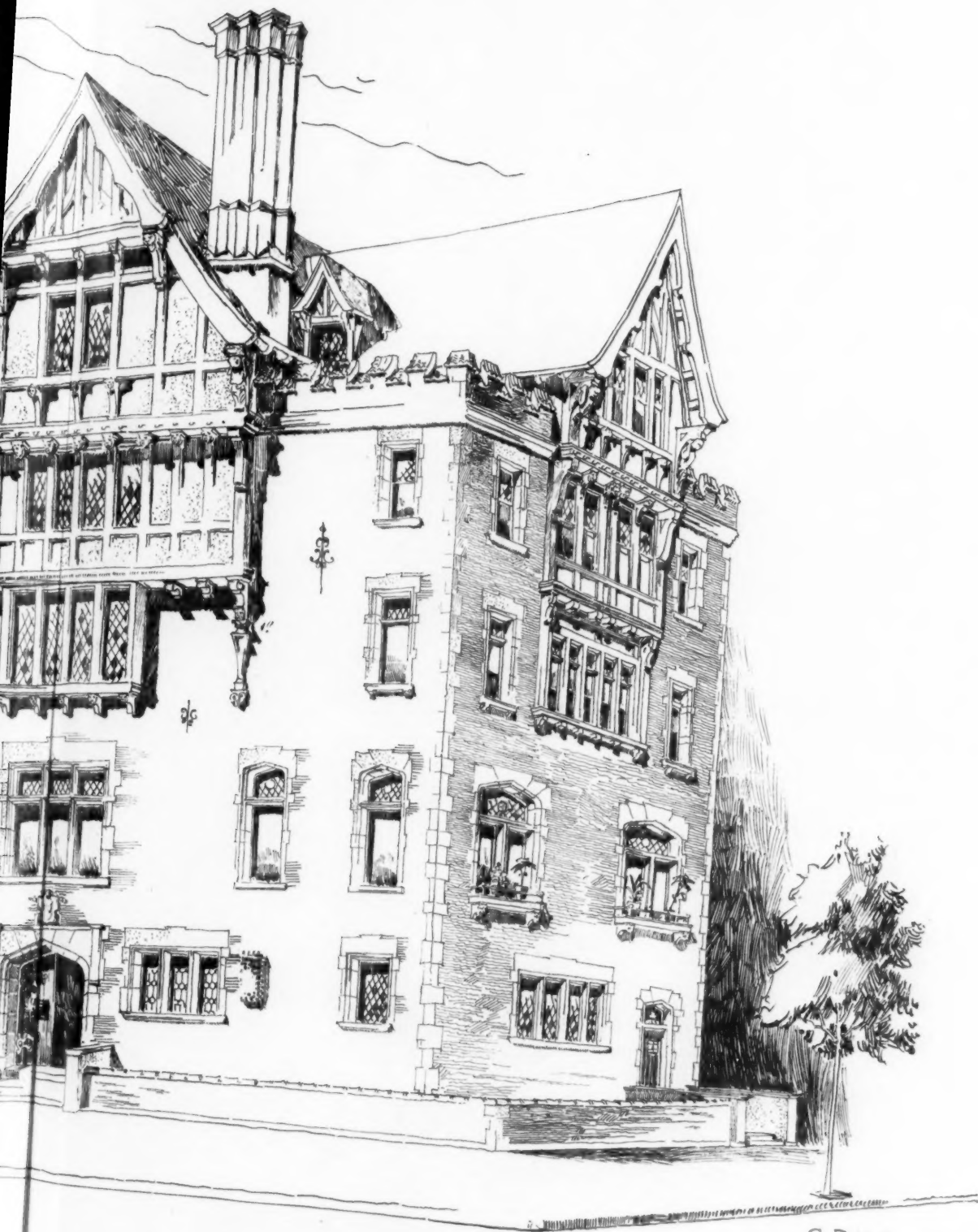
NEW STATUES IN BERLIN.—The German Emperor and Empress were present at the recent unveiling of three new groups, forming part of the series of statues of the rulers of Brandenburg in the Avenue of Victory in the Berlin Thiergarten. The first of the statues to be unveiled was that of Frederick William, the Great Elector (1640-1688), the work of the sculptor Herr Fritz Schaper. The companion busts represent the confidential adviser of the Great Elector, Otto, Baron von Schwerin, the President of the Great Elector's Privy Council, and the cavalry leader Field Marshal George, Baron von Derfflinger. Representatives of the Schwerin family were present, and were warmly greeted by the Emperor. After the unveiling, wreaths were laid at the foot of the statue by the Colonel of the Silesian Cuirassiers, Count Kuno von Moltke, and by Herr Beringer on behalf of the "grateful French colony" which to this day represents in Berlin the Protestant émigrés whom the Great Elector welcomed thither. The second statue, which is the work of Professor Eberlein, represents King Frederick William III (1797-1840). The busts of contemporaries which support the central figure are those of the great Prussian statesman Baron von Stein and Prince Blücher, the renowned "Marshal Vorwärts." The last statue to be unveiled was that of the Emperor William I, King of Prussia from 1861 to 1888, the work of Prof. Rheinhold Begas. The group is in this case completed by the busts of Bismarck and Moltke. The Emperor, who in inspecting the group was attended by Prince Bismarck's two sons and by the three distinguished members of the Moltke family, deposited a wreath at the base of the statue. — *London Times*.

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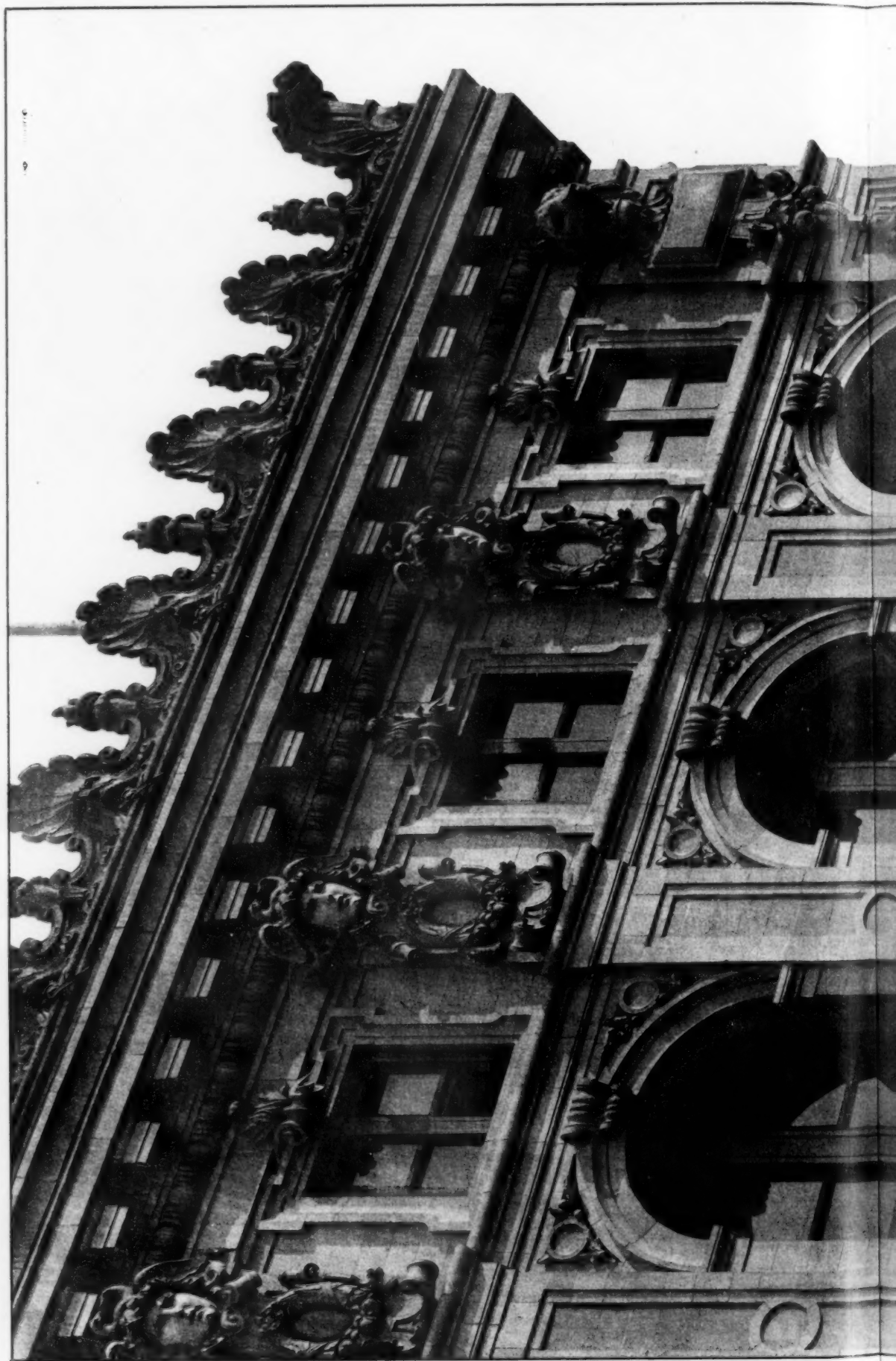


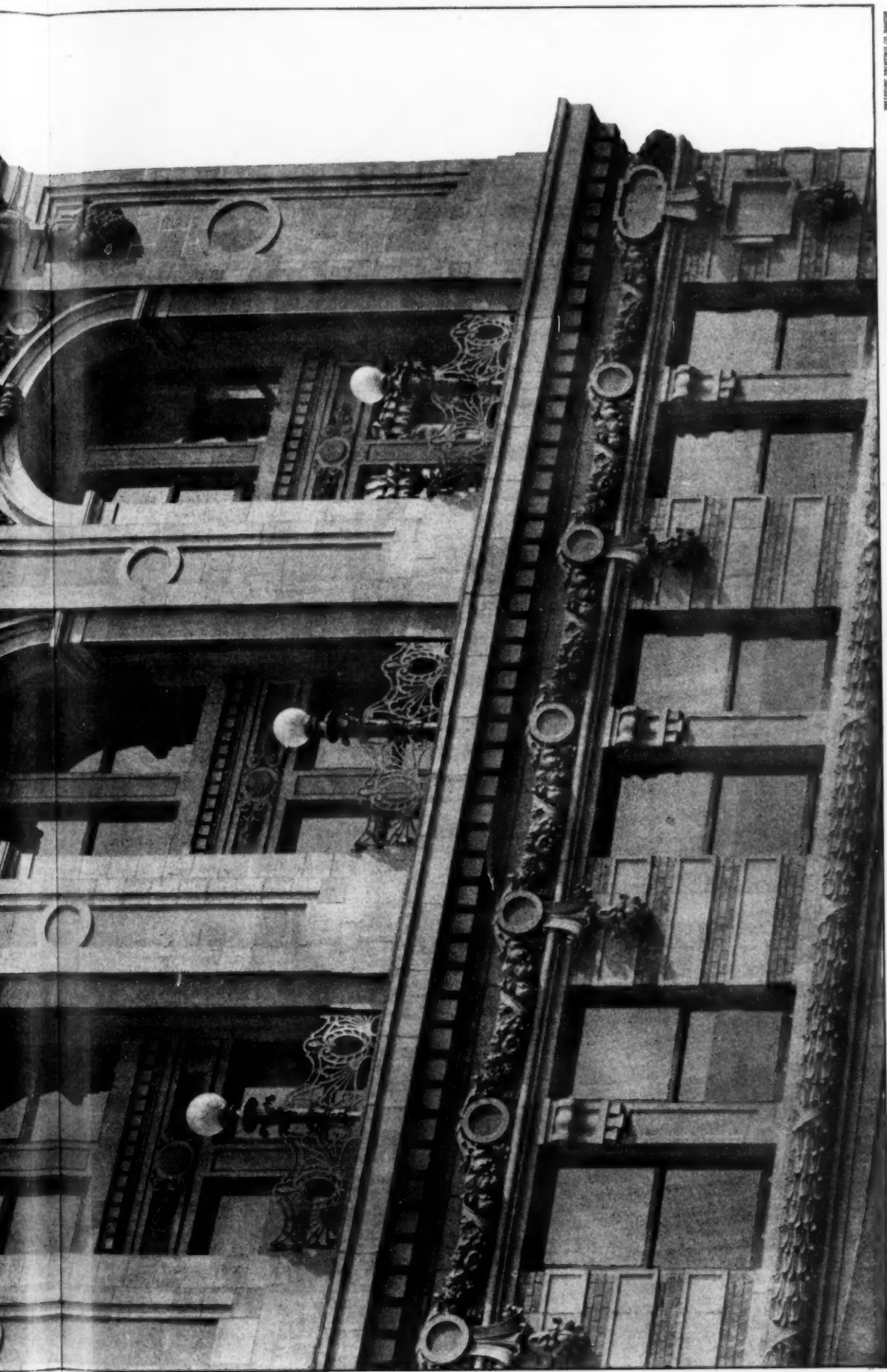
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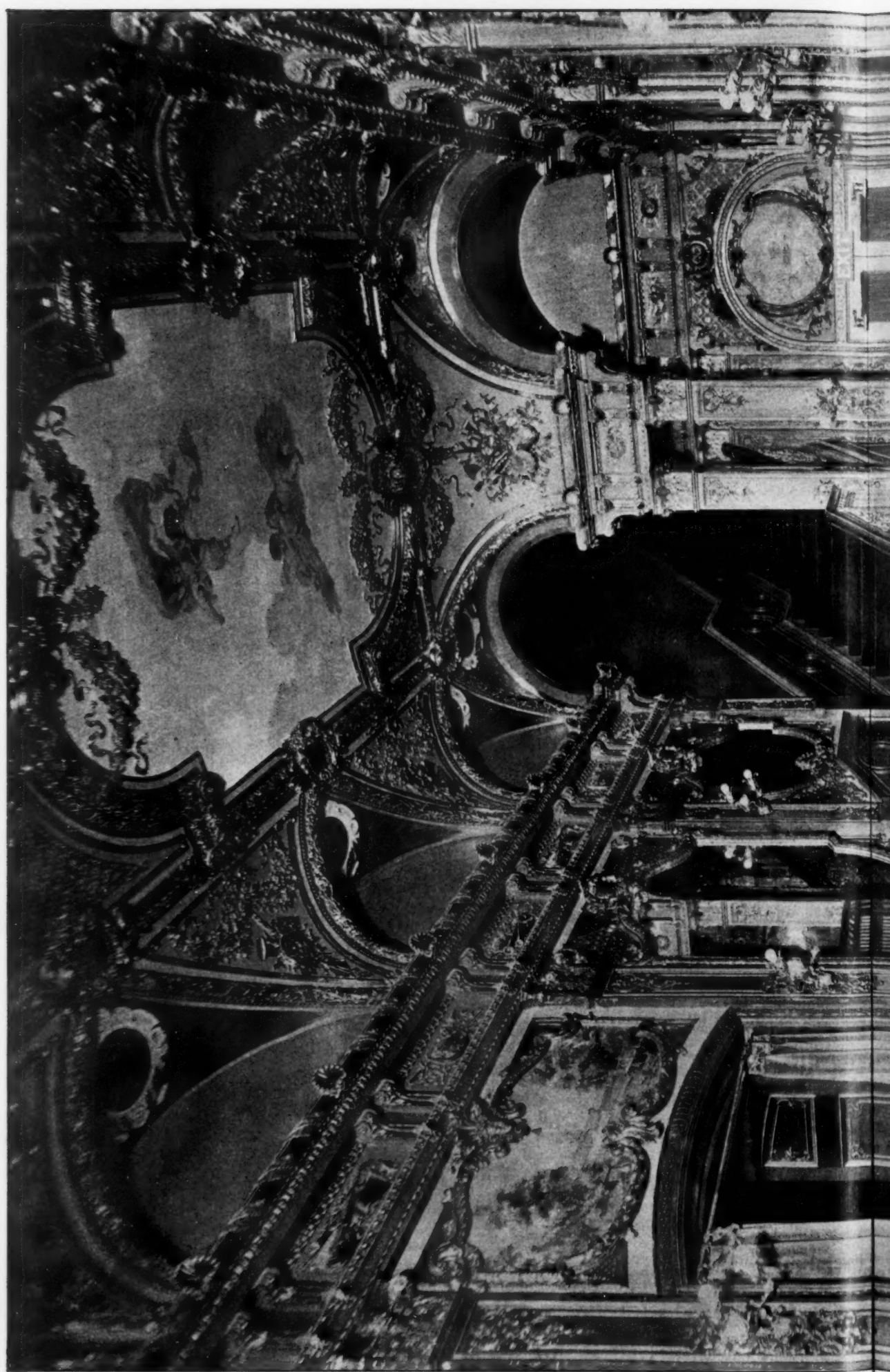


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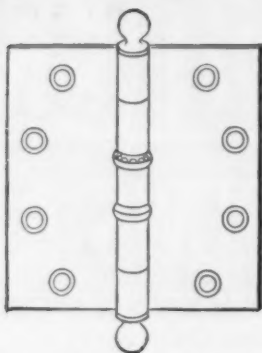
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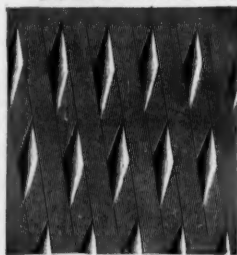
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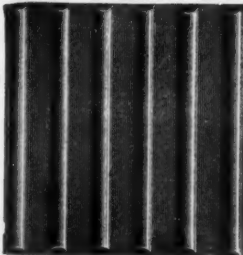
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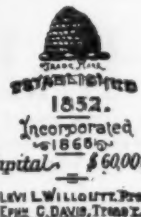
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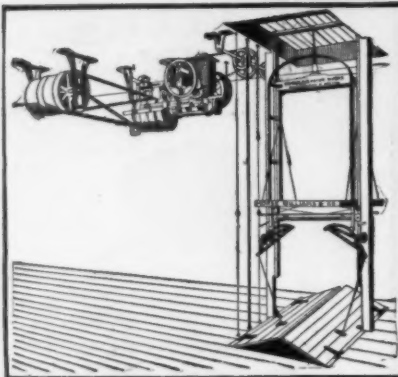
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THE KEASBEY & MATTISON CO., the owners of the patents for magnesia covering, have commenced a suit in the United States Circuit Court for the Southern District of New York against the Philip Carey Mfg. Co., George D. Crabbs, J. E. Breese, Schoellkopf, Hartford & Hanna Co., J. F. Schoellkopf, Jr., James Hartford, W. W. Hanna, C. P. Hugo Schoellkopf and Jesse W. Starr, to restrain the defendants from making and selling magnesia covering for boilers and steam pipes containing more than 50 per cent of magnesia, and especially coverings containing 85 per cent magnesia.

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.

☞ All persons are respectfully requested to refrain from purchasing covering infringing these patents, as such purchasing must of necessity lead to suit. ☞

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Edmonton, Alberta, N. W. Ter.—H. D. Johnson has prepared plans for a \$30,000 brick Presbyterian Church.

Fall River, Mass.—Revised plans for proposed building for the Bradford Duffee Textile School, of this city, have been adopted by the Board of Trustees. Proposed building gives larger space than one contemplated in original plans and cost will not exceed \$70,000.

Findlay, O.—The First Methodist Society is to erect a \$50,000 church.

Fredonia, N. Y.—It is stated that the State Normal School, which was destroyed by fire last December is to be rebuilt at a cost of \$150,000.

Greenwich, Conn.—It is probable that this place will soon have a new stone station and that the approaches will be beautiful and enlarged to accommodate the four-in-hands and other carriages for which Greenwich is noted during the summer.

Lansdowne, Pa.—Rowland W. Boyle, 1630 Chestnut St., Philadelphia, is preparing plans for a rectory for the R. C. Church here, to cost \$20,000.

Lowell, Mass.—The Pickering Knitting Co. is making preliminary arrangements for the construction of a brick storehouse, bleaching and dye-house at an estimated cost of \$100,000.

The old Butler mill, recently burned with a loss of from \$20,000 to \$30,000, will be rebuilt. The plant was occupied by the Lowell Waste Co., Otis D. Spofford, treasurer.

Manistiquette, Mich.—F. W. Hollister, of Saginaw, is preparing plans for a \$35,000 court-house for Schoolcraft County.

Martinez, Cal.—The supervisors of Contra Costa have accepted plans of Havens & Toepke, 55 Flood Building, San Francisco, for the \$150,000 court-house to be erected here.

Minneapolis, Minn.—Ernest Kennedy is preparing plans for a \$50,000 five-story and basement brick and terra-cotta business block to be erected on 7th St., between Nicollet and 1st Aves., for John Martin.

Newark, N. J.—The Newark Board of Health has asked the Common Council for \$100,000 to build an isolation hospital for cases of contagious and infectious diseases.

New Castle, Pa.—H. M. Wirsing has plans for a \$25,000 brick and stone church building, to be erected on N. Jefferson St., for the United Presbyterian congregation. It will have steam heat and slate roof.

New Orleans, La.—A \$75,000 workhouse and jail is to be built here.

New York, N. Y.—McKim, Mead & White, 165 Fifth Ave., have submitted plans to the Department of Buildings for a five-story brick and limestone mansion which Joseph Pulitzer will erect at 7-15 E. 73d St., at a cost of \$200,000.

A three-story building will be erected for John Jacob Astor at the junction of Pelham Parkway and William's Bridge Road. It will combine the features of a road-house and country club, and cost about \$200,000. Mr. Whitney Warren is the architect.

The Republican Club is soon to have a new home on the site of St. Ignace's Church on W. 40th St. It will be a very elaborate structure and will be owned by a syndicate of members who will lease the building to the organization. The cost of the undertaking will be in the neighborhood of \$450,000.

Report states that old Delmonico's at 5th Ave. and 26th St., has been leased for 21 years to John B. Martin of the Hotel Martin, and will be reopened as a restaurant. Thousands of dollars will be expended this summer in rehabilitating the premises.

North Chelmsford, Mass.—Geo. C. Moore, owner of the mills recently burned, will begin the erection of new and modern buildings at a cost of \$75,000 to \$100,000.

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Omaha, Neb.—The Omaha Theological Presbyterian Seminary will erect a three-story building of pressed brick, to cost \$35,000. There will also be a president's residence and dormitory costing \$8,000.

Orange, N. J.—A new church, in the Colonial style, will be erected for the Oakwood Ave. Baptist Society. It will be 45' x 80'.

Philadelphia, Pa.—St. Monica's Catholic Society is to erect a new edifice on Ritner St. It will be a very handsome structure, of stone, granite and terra-cotta.

The Bethany Mission is to have a new chapel and parish-house. The buildings will be erected on 28th and Morris Sts. It is said that Mr. John Wanamaker determined to build the new chapel when his store escaped destruction in the big Market-street fire of four years ago, and the building will stand as a memorial of his thanksgiving.

H. E. Sealey, 1012 Filbert St., mgr. of the Pittsburgh Plate-glass Co., is stated to have purchased a site on 11th and Arch Sts. for the erection of an eight-story warehouse, to cost about \$140,000.

Plans have been prepared for a mill to be built at 56th St. and Lancaster Ave., for the Jas. Dunlap Carpet Co. The building will be two stories high and basement, of brick, measuring 150' x 250', and will cost \$30,000.

Pittsburgh, Pa.—Plans have been drawn by S. F. Heckert, 341 Sixth Ave., for a new building for the Home of the Good Shepherd to be erected on Lincoln and Lemington Aves.; cost, \$500,000.

Beezer Bros., 6202 Penn Ave., have prepared plans for a church, convent and school, to be erected at Penn Ave. and 3d St., at a cost of \$150,000, for the congregation of St. John the Baptist Roman Catholic Church.

Pontiac, Mich.—A \$20,000 school is about to be erected here.

Port Jervis, N. Y.—The proposition to appropriate \$3,000 annually for the maintenance of a public library, provided for by Andrew Carnegie in his offer of \$20,000 for a building, was unanimously carried at a recent meeting of the tax-payers of the town.

Richmond, Va.—Mr. Fritz Sitterling has the contract to erect a fireproof office-building for the Virginia-Carolina Chemical Co. on S. 12th St., between Main and Cary Sts.; cost, \$50,000.

The Methodist Orphanage Society will erect an orphanage in this city at a cost of \$100,000.

Riverside, Cal.—The Indian Bureau has completed plans for a \$135,000 school-building, to be erected at the Sherman Institute.

Saranac Lake, N. Y.—Branch & Callahan's wood-working shops, recently burned, will be immediately rebuilt; cost, \$50,000.

Springfield, Ill.—\$150,000 has been appropriated by the Legislature for the erection of a State arsenal, armory and museum.

St. Louis, Mo.—Ground was recently broken for the new Mary Institute to be erected on Lake Ave., between McPherson Ave. and Westminster Pl., at a cost of \$150,000.

A \$40,000 addition will be built to the factory of the Buck Stone & Range Co. on N. 2d St.

Stockton, Cal.—It is stated that bonds to the amount of \$150,000 will be issued for the erection of a new high-school building.

St. Paul, Minn.—The First Christian Church Society contemplates the erection this season of a new church on their present site on Farrington and Nelson Aves.; cost, \$20,000.

Topeka, Kan.—The will of Mrs. Allan Sells Green-span gives \$200,000 to the Topeka Orphans' Home.

Uniontown, Pa.—The contract has been awarded for the erection of a \$500,000 eleven-story bank-building for the First National Bank.

Urbana, Ill.—\$600,000 has been appropriated for improvements at the University of Illinois. Andrew S. Draper, pres.

Washington, D. C.—It is stated that the Columbia Hotel Co., of which Edw. J. Stollwagen is president, and which owns the Raleigh Hotel, is considering plans for an extensive addition to the hotel at Pennsylvania Ave. and 12th St.

Plans are being prepared by Hornblower & Marshall, 1509 H St., for the Marine Barracks at 8th and K Sts. for the United States Government; cost, \$50,000.

Watertown, N. Y.—The Board of Education has accepted the plans and specifications for the proposed \$100,000 high-school building, submitted by Wilson Potter, an architect of New York City.

HOUSES.

Worcester, Mass.—Alpine St., three-sty fr. dwell., 28' x 54'; \$3,800; o., John Rask; c., L. M. Peterson. Whipple St., three-sty fr. dwell., 28' x 63'; \$4,800; o., William Peterson; c., L. M. Peterson.

Cambridge St., three-sty fr. dwell., 28' x 63'; \$4,200; o., Patrick Hogan; c., Legrenade & Son; a., Chapin & Topanellan.

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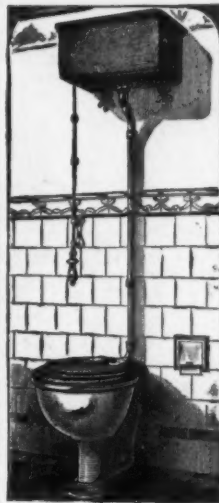
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BUILDING INTELLIGENCE.

(Houses Continued.)

Paine St., 3 two-sty fr. dwells., each 28' x 58'; \$10,000; o., William Banaghan; a., Earle & Fisher; day work.

Mount Ave., two-sty fr. dwell., 28' x 50'; \$3,500; o. & c., C. I. Warren & Co.

Chapin St., three-sty fr. dwell., 28' x 62'; \$5,000; o., M. J. Lynch; c., T. F. Mellean.

Tainter St., three-sty fr. dwell., 28' x 62'; \$4,200; o. & c., Philip Frechette.

Ash St., four-sty bk. block, 39' x 72'; \$10,000; o. & c., Geo. H. Rice.

Eastern Ave., three-sty fr. dwell., 28' x 60'; \$3,800; o., Ferdinand Nyberg; c., L. M. Peterson.

Elm St., three-sty bk. dwell., 29' x 62'; \$21,000; o., Chas. G. Washburn; a., Rositer & Wright, New York; c., J. G. Vaudeuil.

MERCANTILE BUILDINGS.

Butte, Mont.—W. Park St., four-sty bk. business building, 120' x 206'; steam; \$170,000; o., Senator W. A. Clark; a., H. M. Patterson.

OFFICE-BUILDINGS.

Boston, Mass.—Tremont, Bromfield and Bosworth Sts., Ward 7, five-sty bk. office-building, 54' x 58' x 123'; flat roof, steam; o., C. E. Cotting and F. C. Welch, trustees; a., Winslow & Bigelow, 120 Tremont St.; b., G. P. Soule & Son, 166 Devonshire St.

STABLES.

New York, N. Y.—Ninety-second St., No. 434, two-sty bk. stable, 25' 2" x 97' 8"; \$6,900; o., A. R. Holthusen, 1731 Avenue A.; a., L. C. Maurer, 172 W. 96th St.

STORES.

Boston, Mass.—Brighton St., cor. Linden St., Ward 25, one-sty store-building, 36' x 50'; flat roof, steam; \$3,000; o., G. Bradford; a., O. F. Smith, Amherst St.

Main St., No. 638, Ward 4, one-sty fr. store, 18' x 50'; flat roof, steam; \$3,000; o., a. & b., Est. P. O'Riordan, 50 Chelsea St.

Brooklyn, N. Y.—Fulton St., cor. Hanover Pl., five-sty bk. piano store, 60' x 80'; gravel roof, steam; \$50,000; o., Sterling Piano Co., 536 Fulton St.; a., J. Mumford, 189 Montague St.

TENEMENT-HOUSES.

Newton, Mass.—High St., cor. Pettee St., Ward 5, three-sty bk. tenements, 52' x 112'; \$25,000; o., Otis Pettee, Newton Upper Falls; a., Geo. F. Bosworth.

New York, N. Y.—Allen St., Nos. 182-184, six-sty bk. tenement & store, 35' x 77' 6"; \$35,000; o., Gordon Levy & Co., 159 Canal St.; a., John P. Cleary, 1 Union Sq. W.

WAREHOUSES.

Cedar Rapids, Ia.—Four-sty bk. warehouse, 120' x 120'; \$35,000; o., Mrs. C. C. Sinclair; a., Dieman & Fiske.

New York, N. Y.—Rivington St., cor. Lewis St., seven-sty bk. loft-building, 20' x 60'; \$25,000; o., Jacob Cohen, 231 E. 57th St.; a., Geo. F. Pelham, 503 Fifth Ave.

MISCELLANEOUS.

New York, N. Y.—Twenty-sixth St., No. 45, four-sty bk. tower-station, 18' 7" x 98'; \$28,000; o., Edison Electric Ill. Co., 55 Duane St.; a., Chas. F. Hoppe, 55 Duane St.

PROPOSALS.

BUILDING.

[At Minneapolis, Minn.] Sealed proposals for erecting and completing a building for department of physics for the University of Minnesota, will be received at the office of the president of the university until May 27, 1901. J. S. PILLSBURY, president of board of regents. 1325

RECONSTRUCTION.

[At Annapolis, Md.] Sealed proposals will be received at the bureau of navigation, Navy Department, Washington, D. C., until May 29, 1901, for the reconstruction of the old library building at the U. S. Naval Academy, Annapolis, Md. A. S. CROWNINSHIELD, chief of bureau. 1325

NURSES' HOME.

[At Binghamton, N. Y.] Bids are wanted May 28 for an isolation ward and nurses' home, including heating, plumbing and lighting same. I. C. HULL, city clk. 1325



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PROPOSALS.

BUILDINGS.

[At Riverside, Cal.]
Bids are wanted June 5 for 12 buildings; also water and sewer, electric-light and steam-heat systems at the Indian School, near Riverside. Address HARWOOD HALL, Supt. Indian School, Perris, Cal. 1326

BRIDGE.

[At Dubuque, Ia.]
Sealed proposals will be received by the Dubuque and Wisconsin Bridge Co. for the substructure, and timber trestle approach, of a highway bridge over the Mississippi, at Dubuque, until June 1st, 1901. Plans and specifications can be seen at the Company's office, Dubuque, Ia., or at the office of E. C. & R. M. Shankland, Rookery, Chicago. 1326

MASONIC TEMPLE.

[At Mobile, Ala.]
Bids will be received by Stone Bros., Hennen Building, New Orleans, La., until June 1 for a five-story masonic temple, to cost \$45,000. 1326

BUILDING.

[At Fort Miley, Cal.]
San Francisco, Cal. Sealed proposals will be received here until June 5, 1901, for construction (including plumbing and electric wiring) at Fort Miley (Point Lobos, Cal.), of officers' quarters, barracks, non-commissioned officers' quarters, administration building, guard-house and other buildings. Information furnished on application to J. M. MARSHALL, assistant quartermaster general, chief quartermaster. 1326

OFFICERS' QUARTERS.

[At West Point, N. Y.]
West Point, N. Y. Sealed proposals will be received here until June 3, 1901, for construction of two double sets officers' quarters, as per plans in this office. Address Q. M., U. S. M. A. 1326

PLUMBING FIXTURES, ETC.

[At Washington, D. C.]
U. S. Engineer Office, 735 N. Capitol St., Washington, D. C. Sealed proposals will be received here until May 31, 1901, for furnishing plumbing fixtures, steam coils and radiators, for new building for Government Printing Office. JOHN STEPHEN SEWELL, capt., engr. 1326

PROPOSALS.

COURT-HOUSE.

[At Miami, Fla.]
Sealed proposals will be received until June 1, 1901, for the erection of a two-story stone court-house to cost in the neighborhood of \$40,000. WILSON & EDWARDS, architects. 1326

BUILDING.

[At Norfolk, Va.]
Bids are wanted June 1 for a two-story brick and steel fireproof building, 65' x 180', at the Navy Yard, Norfolk. MORDECAI T. ENDICOTT, ch. bureau of yards and docks, Navy Dept., Washington, D. C. 1326

COURT-HOUSE.

[At Reidsville, Ga.]
Sealed proposals for the erection of a court-house are wanted until June 11, by B. F. ALEXANDER, ordinary. 1327

COURT-HOUSE.

[At Alexandria, La.]
Bids are wanted by the Secretary of the Police Jury May 27 for a three-story fireproof court-house. The RILEY GORDON CO., Dallas, Tex., are the architects. 1326

Treasury Department, Office Supervising Architect, Washington, D. C., May 3, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 1st day of June, 1901, and then opened, for the construction (except heating apparatus, electric wiring and conduits of the U. S. Post-office at Okaloosa, Iowa, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Postmaster at Okaloosa, Iowa, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1326

Treasury Department, Office Supervising Architect, Washington, D. C., April 29, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 10th day of June, 1901, and then opened, for the installation of a conduit and wiring system for the U. S. Post-office and Court-house at Beaumont, Texas, in accordance with the drawings and specifications, copies of which may be obtained at this office, or at the office of the Superintendent of Construction at Beaumont, Texas, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1326

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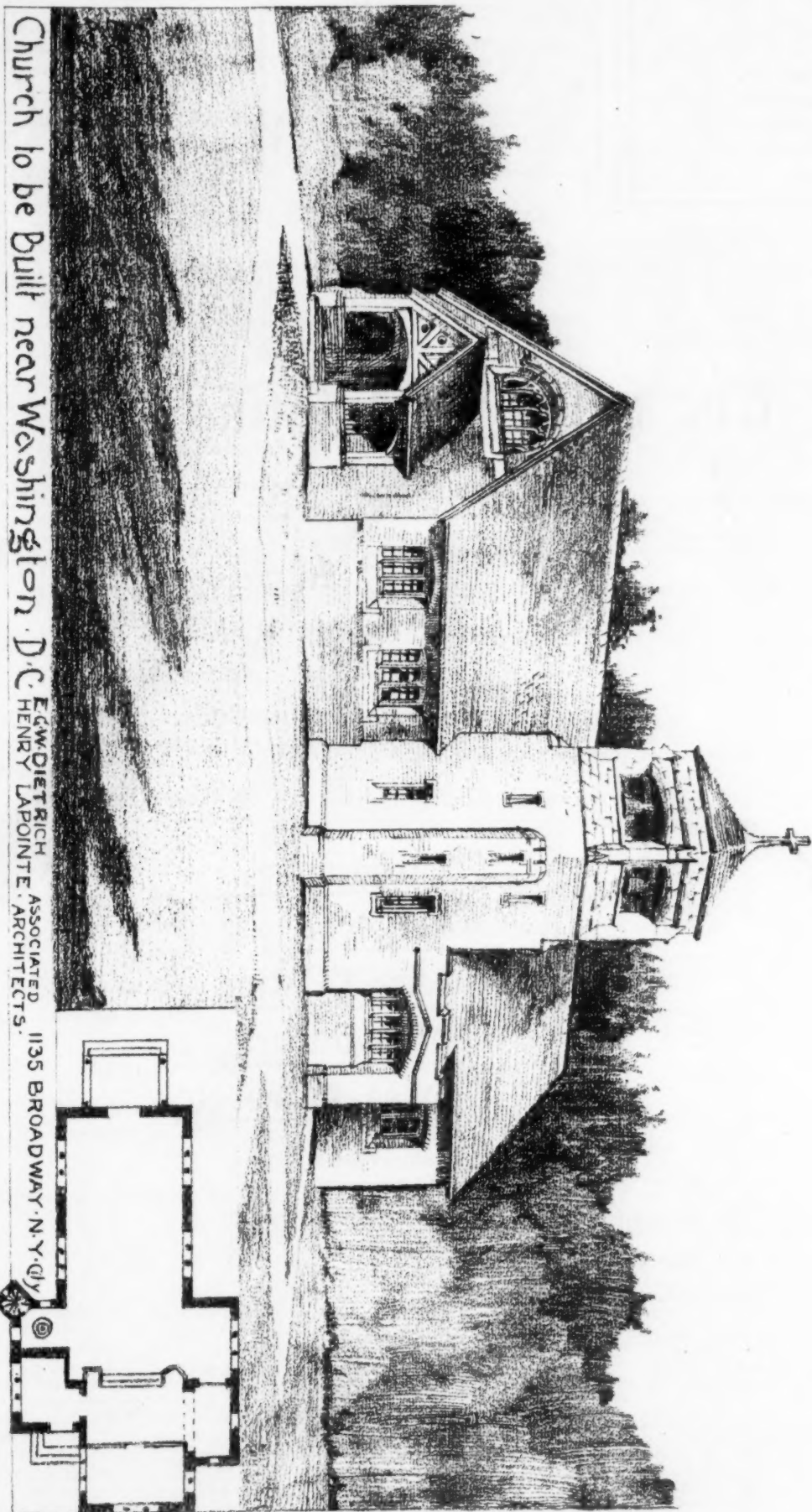
[At Washington, D. C.]
U. S. Engineer Office, 735 N. Capitol St., Washington, D. C. Sealed proposals will be received here until May 24, 1901, for furnishing wrought and cast iron stair work, manhole-covers and hatchway frames and safety treads, steel ladders, steel-plate covers, cast-iron drinking fountain frames, manhole covers and frames, ventilating registers, and two steel tanks, for new building for government printing-office. Information furnished on application. JOHN STEPHEN SEWELL, captain, engineers. 1325

BUILDING.

[At Fort Revere, Boston Harbor, Mass.]
Depot Quartermaster's Office, 170 Summer St., Boston, Mass. Sealed proposals will be received at this office until May 27, 1901, for constructing at Fort Revere, Nantasket Head, Boston Harbor, Mass., one barrack, two single and one double officers' quarters, one hospital, three non-commissioned officers' quarters, one guard-house, one bake-house, one stable, one storehouse, one shop, one fuel shed and one oil-house. W. H. MILLER, depot quartermaster. 1325

SIGNAL STATION.

[At Rockland Harbor, Me.]
Sealed proposals will be received at the office of the Lighthouse Engineer, Room 1017, 25 Pemberton Sq., Boston, Mass., until May 28, 1901, for building a light and fog signal station on the Breakwater at Rockland Harbor, Me., in accordance with specifications, copies of which, with blank proposals and other information, may be had upon application to Lieut. Colonel W. S. Stanton, Corps of Engineers, U. S. A. 1325



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