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AMONG the many schemes which are to be brought before the next Congress is one of the erection of a Hall of Records, to contain the papers and documents belonging to the Government, which are now stored in various private warehouses. As they are, in such places, of course almost inaccessible, and therefore practically useless, there can be no doubt that it is desirable to keep them together, where they can be indexed, and consulted conveniently, and a building for the purpose need not be a very expensive affair. Probably two or three hundred thousand dollars would give sufficient space for the present; and, as the Government is already paying eight thousand dollars a year rent for a single storehouse for papers, it would be economy in the end for it to have its own building.

THE City of St. Louis has a smoke-ordinance, similar to that in force in many cities, prohibiting the owners of steam-boilers from allowing smoke to issue from their chimneys, and requiring the use of appliances to prevent this. Recently, a case, in which a pork-packing company had been pursued by the city officials for violation of this ordinance, was carried to the Supreme Court of Missouri, which decided that the ordinance was unconstitutional and illegal, and that it could not be enforced. The ground for the decision was that smoke, alone, is not, at common law, a nuisance, nor has it been declared to be one by any statute of Missouri; and that a mere city ordinance could not constitute it one. It is likely that this principle would apply to the smoke-ordinances of many cities besides St. Louis, and people interested in them will be anxious to learn how far other Courts will agree with that of Missouri.

THE New York Brotherhood of Electrical Workers, under the rule of Thomas Keating, who has for some time been conspicuous in labor matters, has given notice of a demand for an increase of wages from three dollars a day to four; and, as the demand has been refused by the electrical contractors, a strike is threatened, which may have serious results. It seems that the Brotherhood, which has about eight hundred members, has for some time refused to admit any new “brothers,” and having, by the usual tactics, shut out every one else from employment, proposes to monopolize the trade, and to

charge whatever wages the employers and the public will pay, rather than dispense altogether with electrical appliances. Of course, in the City of New York more electrical work is done than eight hundred men can attend to properly; but the Brotherhood is firm in its determination to keep the trade to itself. The Electrical Contractors’ Association, after long subservience to the demands of the Brotherhood, has at last threatened feebly to employ non-union men, unless the Brotherhood enlarges its circle so as to admit members enough to do the work waiting for them within a reasonable time; but the men are said to be obstinate, and it remains to be seen what will be done.

THE designs for the new buildings of the College of the City of New York will be selected in limited competition. Messrs. George B. Post; McKim, Mead & White; R. H. Robertson; Cady, Berg & See; C. C. Haight; J. R. Thomas; W. B. Tuthill and George Martin Huss have been invited to compete. The buildings will be situated on One Hundred and Thirty-eighth Street, not very far from the spot where Alexander Hamilton lived, in what was then an extensive country estate, overlooking the Hudson River, far removed from the noise and bustle of the city.

M. BRINCOURT writes us from Paris that we were in error in reporting, in our issue of October 9, the death of M. Ferdinand Dutert. We hasten to correct the mistake, with all due apologies for having been misled, and rejoice to learn that M. Dutert, although for the moment not in the best of health, is, so far as any one can see, likely to live many years, to add fresh honors to those which he has already gained.

THE death of Sir Henry Doulton, the head of the great firm of Doulton & Co., potters, of Lambeth, England, recalls the period when, as a younger man, he rendered singular service to the cause of art. Henry Doulton was born in London in 1820, and was apprenticed to the potter’s trade while a boy of fifteen. His faithfulness and intelligence brought him steadily, though not rapidly, to the head of his profession, and when he reached the age of fifty his firm was the most renowned in the world in the manufacture of drain-pipe and sanitary earthenware. It has often been observed that most men who reach great distinction in business or the professions have something of the artist about them; and, probably, the imaginative power, and faculty of observing with precision, which are necessary to an artist, are also useful to people of other professions, and, where they exist, find gratification in similar ways. However that may be, Mr. Doulton took it into his head, after he had become rich and famous by the manufacture of drain-pipes, to try to do something for pottery as an art. He collected good examples, and employed promising young people, whom he trained as well as he knew how in the paths of originality and good taste; and the artistic Doulton ware soon became as famous as the humbler sanitary goods of the establishment. It would be interesting to know where Mr. Doulton found the principles which he impressed upon his workmen; but, whatever may have been the source from which they were derived, they were excellent ones, and faithfully carried out. For many years it was the rule that no two pieces of the artistic Doulton ware should be alike; and even in pairs, or sets, of vases, candlesticks or other objects, there was always some variation of form or decoration. This alone would have made the Doulton ware interesting; but, besides, the pieces were always modelled with taste, and sometimes with exquisite grace, while the colors were not only different from any that had been applied to pottery before, but were delightfully soft, and, within a limited range, varied, much use being made of tones modified by a covering of half-transparent glaze. Moreover, the decoration was always wrought by hand, and possessed the charm peculiar to such work, in addition to that of good drawing and tasteful arrangement. These qualities were so highly appreciated by the world at large that the artistic Doulton ware was soon known everywhere, and the workmen who produced it were extolled in the newspapers to an extent, in some cases, rather beyond their deserts. Whether this flattery produced its usual effect in paralyzing the talents of the men, or whether advancing age

curbed the energy of the real leader of the movement, we cannot say, but the Doulton-ware fever passed away like other artistic epidemics, leaving, however, a well-marked trace in the general improvement of the design of pottery all over the world, which has lasted to this day.

MR. JOHN E. RUSSELL, of Massachusetts, a member of the United States Waterways Commission, has made some interesting suggestions on the probable development of canal systems in this country. As all architects and engineers know, the United States is far behind Europe in interior water-communication. Paris, although situated hundreds of miles from the sea, on a river navigable only by small boats, is said to receive more water-borne freight than any Continental port, simply through the extension of the canal system of which it is the central point. No one who has not seen the canal basins can appreciate the value of this vast but unpretending commerce, which brings provisions of all kinds, stone and marble, lime and cement, at trifling expense, from nearly all parts of the Continent to the great Parisian market. It is quite possible to go from Amsterdam, by the way of Brussels, to Paris, and thence, if we are not mistaken, to Lyons and Marseilles, and eastward almost to the Swiss frontier, by a boat on the canals and rivers, and every day sees new canal mileage added to the system, and improvements made in methods of traction. Quite recently, a canal has been carried, in France, through a mountain, by means of a tunnel, and electric traction for canal-boats is now the subject of careful experiments. In our vast country, although canals would be long, the cost of excavating them, using modern appliances, is now far less than it would have been twenty or thirty years ago. Mr. Russell describes a steam dredge which operates upon rock, grappling the submerged ledges and tearing off huge fragments; and excavation of other kinds is much more cheaply done now than ever before. Whether the canals of the future will be mainly shallow, for navigation by light-draught boats with electric traction, or deep and wide, for ocean steamers, is uncertain; but it is probable that the minor waterways will be first the subject of experiment.

THE stockholders in the Niagara Falls Power Company will probably not be pleased to hear that the Canadian Government is said to be considering a plan to divert the Niagara River away from its present course, through Canadian territory, so as to leave the Falls dry. It seems that the Welland River, which flows into Niagara River, on the Canadian side, about two miles above the Falls, flows through a channel so nearly level that a little dredging would make it serve as a canal, through which the water of the Niagara could be diverted, if another outfall were provided. This outfall it is proposed to secure by cutting a canal to the Canadian bank of the Niagara River, a few miles below the Falls; and, by forming a basin at the end of the new canal, and letting the water run down the bank, through iron pipes, to turbine wheels at the bottom, an enormous water-power can be secured, at very little cost, and distributed by electric transmission, in the way now in use on the American side. According to the description, there is nothing impracticable about the scheme, but it remains to be seen whether international law will approve the diversion of the whole or a part of a boundary river. Considering that the Horseshoe Fall, which is by far the most important portion of the cataract, is exclusively Canadian, and that the abstraction of water above by the American Company undoubtedly affects it to some extent, it will not be easy to determine just how far the Canadians can legally go in carrying out proceedings precisely similar on their side, and it is not impossible that serious disputes may arise over the matter. It is unfortunate that the two Governments could not have joined, years ago, in reserving the entire district about the Falls as an international park; but the encroachments which have already been made on what should be public property do not render it necessary to suffer others; and it is not too late to declare that no more canals, or flumes, or turbines, or pipes, shall mar the most impressive piece of scenery in the civilized world.

THE coöperative glass-works at Albi, about which so much has been said recently, is in fresh trouble. It will be remembered that the establishment of these works was due to a strike at a glass-factory in the neighboring town of Car-

maux, where a workman was discharged for absenting himself without leave, to attend, as it appeared, a Socialist Convention. The most prominent Socialist politicians took up the matter, and contributed oceans of eloquence to the strike, which, however, utterly failed, the Carmaux works soon securing new men, and receiving back the more sensible of the old ones. The men who could not get back, aided by public subscriptions, established a coöperative factory, which proved unprofitable. The men, however, with the characteristic good sense and unselfishness of French workmen, persevered, depriving themselves and their children of bread, rather than encroach upon their little working-capital, until, with experience in management, and in the manufacturing economies which workmen know so little about, they began to make moderate wages for themselves. When this time arrived, the Socialist politicians, who had celebrated the opening of the works with fervid eloquence, followed, later, by a coldness, as the profits, which were to be devoted to "the Socialist propaganda," failed to appear, began to take a renewed interest in the matter. One Guéritas, a skilled workman, who had been connected with the establishment from the start, and had endured his part of the privations by which it had been kept alive, happened to be present at a meeting of the Glass-makers' Union, of which he was a member. During the meeting he took occasion to say that, in his judgment, the Union interfered too much with the management of the coöperative factory, and that he did not think that the factory ought to be carried on as an attachment to a political party. Three other workmen in the factory agreed with him. They attempted no revolt or disorder of any kind; but, for simply expressing an opinion in a convention of a body of which they were members, they were denounced as rebels, and the Glass-makers' Union ordered the Administration of the coöperative factory, which, it must be understood, was not responsible to the Union, but represented simply the workmen in the factory, to discharge the offenders. No pretence was made that they were not good workmen, or that they had broken any rules, or committed any misdemeanor; yet their own brethren and companions, at the command of outsiders, drove them away. All four of them sued the Administration for damages for wrongful discharge, and were awarded five hundred francs each. Guéritas alone refused to be satisfied with this award, and appealed for an increase of damages to the Tribunal Civil of Albi, which changed the award to fifteen hundred francs, and "reserved expressly" for him, in addition, a claim to a share in all gifts that had been made to the workmen to help them to establish the factory, and in all real or personal property, rights and privileges belonging to the coöperative corporation.

A STORY is circulating through the foreign papers, to the effect that the Russian Government, not content with building a railroad from St. Petersburg to the Pacific Ocean, now proposes to cut a ship-canal, navigable for the largest steamers, from Riga, on the Baltic, to the Black Sea. The distance is about a thousand miles, and the cost is estimated at about five hundred million dollars. As the country through which it passes is nearly level, only two locks will be necessary, — one at each end. Considering that such a canal would probably be frozen, at least at its northern end, during a considerable part of the year, and that it would be necessary to construct innumerable drawbridges over it to accommodate the land traffic, it is hardly credible that such an idea should be seriously entertained; but the energy displayed of late by the Russians in developing their country seems to tempt people to speculate upon the ways in which it will be manifested in future.

THE *Revue Industrielle* gives an account of the manufacture of India ink in China. As every one knows, this substance is made by mixing lamp-black with gum. It seems that the lamp-black for the purpose is produced by burning oil, colza or lard oil being generally used, and it is mixed by stirring and beating with sticks and steel hammers. A little musk is put in to perfume it, and we are told that gold-leaf is incorporated with it to give the "gold" reflection so well known to draughtsmen; while sepia is undoubtedly added to the better qualities, giving them the brownish tinge by which they are known. The very best sorts bring thirty-five dollars a pound in China, and are never exported, but genuine ink can be had for fifty cents a pound.

ICE-HOUSES.¹

Monument to Gaudenzio Ferrari, at Varallo, Italy, by Rasario.

YOUR committee appointed to report on the subject, "Designs for Ice-houses," feel that their work would be but begun were we to present as our report merely a collation of designs showing ice-houses, either proposed or constructed. We therefore beg your indulgence in a rather fuller discussion of the subject than the mere title of this report would suggest.

As the necessity for one or more ice-houses for railroad purposes presupposes the use of ice by the carrier, it seems desirable at the very outset to give some consideration to the question from the standpoint of the traffic and transportation departments. Let us consider, therefore,

(1) for what purposes, in what quantities, and where ice is needed; (2) how it is proposed to obtain it, and how delivered to the house;

and (3) how distributed to meet the needs. This information must be given in order that the subsequent designs shall meet, as nearly as possible, the requirements without necessitating too great an outlay, and permit of handling the ice at the lowest possible cost for labor, and the smallest percentage of waste or loss.

The ice may be used in refrigerator and dining car service, station, office, and coach water-coolers, and station and coach urinals; the quantities of ice used for each purpose vary widely on different roads. The point or points where the ice is needed is determined by the transportation and traffic departments, usually to best serve the needs of the refrigerator-car service.

The supply may be obtained by manufacture, by cutting from ponds, etc., in season, and storing the entire year's supply, or from contractors as needed. It may be brought to the storehouse on endless belt, wagons, cars, or boats.

The distribution is usually made from large or main storage-houses by periodical shipments in box or refrigerator cars, to points of minor distribution—in frequently in baggage-cars of passenger trains, though in the latter case, of course, with much loss.

The location of the ice-house is practically independent of the location of the proposed source of supply; the need of a large storage-house becomes apparent only when the use of natural ice in considerable quantities is contemplated, and at the time the crop is harvested the temperature (in the central and northern parts of the country) will be so low that the ice can be hauled long distances, if necessary, with slight loss, the main part of which will be from breakage of the cakes.

But your committee feels that attention has not been sufficiently directed to the manufacture of its own ice by the road needing a supply. While on Southern roads especially such a proposition would in many cases be most forcibly presented by the traffic department in the light of the influence of a sufficient supply of ice in controlling, or even handling, the dressed meat, dairy and fruit trade, it still devolves upon the engineer to prepare estimates of cost as between the two plans.

The cost of the natural ice supplied will vary so much in different localities that it is impossible to take any figure as an average cost to cover the case generally. Where in one case it may be 50 cents per ton put in the house, in another house on the same road the cost may run up to \$1.25 or more in the house, and that although the different contracts were all placed at the same time, prior to or during the winter season. At other times of the year, of course, prices run much higher. Until the stock is actually housed there is in this latitude much cause for worry whether a full supply can be secured at any reasonable price. The demand for ice varies much as between different years, the main causes therefor being differences in severity of seasons and fluctuations in volume of refrigerator-car business handled. Of course, a full supply must be stored during the cold season, but in the event of but little ice being used during the ensuing year, a heavy loss is entailed. The shrinkage of such a stock we have known to amount to about 55 per cent of the total.

¹ Report of a Committee consisting of Messrs. W. B. Yearance and C. M. Large to the Officers and Members of the Association of Railway Superintendents of Bridges and Buildings.

With the manufacture of its own ice the road is independent of the season, can control the output to suit the requirements, secure an article sanitariously pure and avoid the expense of large storage-houses, keeping only sufficient in storage to be prepared for emergency calls. We deem this question of the manufacture of ice by the road of sufficient importance to warrant the submission herewith of a plan, specifications and estimate for a 25-ton and 50-ton plant under the conditions to be met in New York City. These figures of cost include the plant complete (except the land on which it stands), including storage-rooms of each 250 and 500 tons' capacity respectively and refrigerating apparatus for keeping the ice in these rooms. This estimate is for a plant of the absorption type, but no discrimination is intended as against the compression system; each has its field of greater usefulness and higher efficiency. The main point to which we wish to call attention is the cost per ton of the ice as shown; this cost includes all items except water. Of course, such an installation would be even more profitable to operate where as a side issue refrigerating effort could be supplied to cold-storage rooms such as certain roads now operate. One large road running out of New York has now in operation a 50-ton ice-making machine (compression type) which, with slack coal at 66 cents per ton and common labor at 12 cents per hour, will, when running at full capacity, turn out the ice at a cost for operation of between 50 cents and 55 cents per ton.

Although the showing made by refrigerating plants is attractive, we shall assume in our further discussion the use of natural ice by the carrier, as that is the more commonly used.

There are relatively very few points where a small ice-house is needed. For general station purposes a plentiful supply of good water is necessary; this is secured in small outlying towns and villages by either a pump or well at the station or from the local water-system; here ice for station water-coolers is not needed, and for sanitary purposes in the toilet-rooms some such agent as chloride of lime answers better than ice. Where the size and importance of the town demands the use of ice it may be found cheaper to procure this small supply from local dealers as needed; but should several such places be grouped together on the line it may be found desirable to locate at one of these points a small house; this will certainly be the case if local passenger trains are started from that point, as ice in coach water-coolers is, during the summer season especially, practically necessary, and in coach urinals is highly desirable. It almost goes without saying that an ice-house should be located at or adjacent to each division terminal. Such a house should be built on the same design as the larger houses, with dimensions so altered as to meet the requirements of that particular locality.

Ice-houses for storing ice to be used for special purposes, such as icing refrigerator cars, are built according to the standard design, but are further equipped with special appliances for handling ice, breaking and carrying it, and mixing with salt. Where the ice is to be used for but the single purpose, machinery for its handling may be introduced which will prove, if properly designed or adapted to the needs, highly economical.

In all ice-house construction the most important consideration is the:

Insulation.—The ideal ice-house is simply a storage-chamber absolutely protected on all sides against the absorption of external heat and supplied with well-designed drains for the prompt removal of all water resulting from the little melting that, in spite of all practicable precautions, will occur. Heat travels or is conveyed by radiation, conduction and convection. For the purpose of this discussion the outside of the building and the ground (however themselves heated) may be assumed to be the source of the heat against which it is desired to insulate the storage-chamber. Experiment has shown that cells or small chambers of dry, dead air form the best insulator. In the proportioning of these air-spaces two facts must be borne in mind, (1) the intensity of radiant heat varies inversely as the square of the distance from the source, and (2) soon as a current, however slight, of air is formed in any air-space, heat is carried by convection around in that chamber. Of course, two air-spaces are more effective than one, and three more than two, but there is an economic maximum dependent on the circumstances of each case.

Material of Construction.—Wood is best adapted for use in buildings of this character, being of itself a non-conductor of heat, and not retaining the heat as does either natural or artificial stone, it permits the cheapest and at the same time the most efficient construction. In some municipalities certain regulations have been established governing the construction of all buildings within the "fire-limits," and such laws usually are directed first to the materials of construction; at such a point it will be well to consider the advisability of locating the proposed ice-house beyond these fire-limits to conserve the use of wood in the construction.

Plan.—All ice-houses should be built in sections, the size of section being governed by the quantity of ice used; in some cases it is advisable to construct across each section lateral partitions which will still further reduce the amount of ice exposed to contact with the outer air while part of the stock is being removed. The building should stand with the gable end of the sections to the track, the doors then coming in the ends of the sections. At the centre of each section and at about the level of the first door should be placed a platform, say 6' x 10'.

Proportions.—Assuming that a cubic foot of ice weighs 57.2 pounds, a ton of solid ice would occupy about 35 cubic feet. Some

years since, 40 cubic feet were considered ample in which to store a ton of ice cut in such sized cakes as are usually stored, but that allowance has been increased to 45 and even 50 cubic feet. In storing ice, good practice requires each cake to be stood on edge, leaving at least an inch air-space on four sides of the cakes. Ice less than 10 inches in thickness, or not perfectly solid, it does not usually pay to store; the thicker it is the better, but the cakes in any one layer should be all of the same dimensions to secure the best results. The layers should be crossed. The practice of laying each cake on the flat and as close as possible to those adjacent and filling all interstices with finely-broken ice is to be condemned—it costs more for labor, the wastage is greater than in the method before described, and when the ice is to be taken out it is difficult to get good, merchantable cakes.

No covering should be placed on the ice after it is in place in the house; an inorganic substance, such as asbestos, would make the ice dirty and be too expensive to use; any organic matter, such as that generally employed—hay or sawdust—not only dirties the ice, but, being dampened by the melting, soon begins to rot, decompose, and become foul. For this reason, the use of any organic matter between walls is to be deprecated. The use of short-fibre asbestos in the outer air-space has been suggested, but not, to our knowledge, tried; however, at a weight of 12 pounds per cubic foot and at a cost of \$16 per ton in car-load lots, f. o. b. New York, the expense is practically prohibitory. This asbestos, if used loosely, as it should be if at all, settles after being wet, and though it still retains its spongy character, is reduced in volume, leaving the upper portion of its confining chamber empty.

Site.—While little scope is usually given in the selection of a site, there are certain precautions to be taken in order to secure a good bed. If the site chosen be on a little rise above the adjacent ground-level, surface drainage will give no trouble; otherwise, provision for it, as well as for the water from the melting ice, must be made.

Preparation for the Bed.—Assuming the ground to be good, the excavation below frost-line is made for the house foundations, and about two feet in depth inside the foundation for the reception of the bed. If the digging shows a clay soil, drains should be provided to carry off the water from the ice, and these drains should be air-trapped.

Cinders or gravel should then be placed in the excavation, as a bed whose top should be raised slightly above the surrounding ground-level and inclined with an easy and gradual slope to the centre. On this bed, before ice is stored, rough hemlock plank should be laid with, say, two-inch spacing to keep the ice off the bed itself, yet permit the water to pass through readily. A good concrete floor, well drained from the centre, would make a better job and be more satisfactory, but its cost precludes its general use in construction of this class.

Foundations.—The foundations, also, whether of wood, brick or stone, should contain an air-space as a further insulation; heat may reach the storage-chamber as well under as through the walls; in some cases this, we know, is the case.

Construction.—It is claimed by some that the side walls should be constructed with a batter, but your committee do not approve this idea; the idea is evidently to relieve the side walls of any pressure that may be brought upon them by the spreading of the mass of ice as it melts, but if the slightest care has been exercised in the storing of the stock, that condition will not be found to exist, especially as the ice naturally melts most on the outside of the mass; at any rate, in order to be effective, assuming such a condition to exist, the batter would have to be increased over any we have yet heard proposed.

If considered necessary, to resist wind-pressure, etc., the sills may be tied to the foundation. They should, on a brick or stone foundation, be laid in a lime mortar in any event. The sheathing, with the exception of the outside, may be rough. While there will be three extra courses of this rough sheathing over what is usually found, the lumber is cheap and the results obtainable will fully warrant the slight increase in cost.

The paper used should be saturated (not painted or coated) and laid with laps to the centre of the sheet, virtually giving, then, two thicknesses of the paper in each lining. The sheets should be well cemented together, and the paper tacked securely to the sheathing. A paper similar in character to the "Giant" of the Standard Paint Company is recommended, which running, say, 80 to 85 pounds per roll of 36 inches' width and containing 1,000 square feet, will cost about \$6.25 per roll in place, including cement and tacks. With this paper should be used a cement similar to that used for roofing purposes, which must be flexible (not brittle), strong, inodorous and lasting. The job, when properly done, will make each space air and water tight. The construction here recommended is the best practice of commercial cold-storage houses, only so modified as to be cheap to construct, while yet retaining practically all the advantages of a more expensive construction.

At each gable end ample ventilators should be placed, permitting a free and full current of air over the ceiling of the storage-chamber. The roof should be shingled and the valleys between sections well lined. There is nothing, apparently, gained by having the doors, through which to handle the ice, vertically continuous. A stiffer frame, freedom from excessive sag of the lower doors, and a closer, tighter fit of each door are secured by introducing a stiff sill framed under each door.

As may be inferred from the foregoing, we do not approve the

use of tie-rods to "stay" the sides of the sections, because of their unreliability; they must of necessity sag under the weight of the superimposed ice and then they either spring the side walls in, or, because of the low temperature and tension to which they are subjected, break; even in the latter event they spring the side walls more or less before they let go.

A rigging amply stayed should be located over each line of doors to take the hook of the pulley for the hoisting rope in handling the ice in and out of the house.

A couple of coats of a good, light-colored, zinc paint should be applied to the outside of the house.

In a general report, to cover such a variety of conditions as are to be met in the service of the roads here represented, it is manifestly impossible to give any proportions that may be used in all cases. We, therefore, are unable to give an estimate of cost for such a house as is herein discussed for all localities. However, that will be no difficult matter for any one familiar with the conditions to be met, to compile. Should three or even four air-spaces be found necessary, sufficient data is here given to enable the one in charge to make his estimate on the design recommended.



NEW CHURCHES: ST. MARTIN'S.—CHURCH OF THE HOLY ANGELS.—CHAPEL FOR THE FIRST UNITARIAN CHURCH.—BIOLOGICAL LABORATORIES FOR CHICAGO UNIVERSITY.—WORK ON THE NEW POST-OFFICE.

CHICAGO, having established a reputation for great wickedness, now seems to be spending a great deal of her surplus energy in the erection of churches. Within the last six months two or three unusually beautiful ones have been completed and still there seems to be more to follow.

Standing quite alone, as to its special style, the Catholic Church of St. Martin, on Fifty-ninth Street, is a structure which would attract attention anywhere, but it is doubly a surprise to come upon it in the particular neighborhood where it is situated. The church belongs to a German Catholic Congregation and was designed in Germany, certainly by a man of cultivation and ability. Unpatriotic as it may seem to have turned to the old country for help, the result in this case justifies the means, and possibly the good pastor of the flock may have seen rocks ahead on which his ideal church would be wrecked if he resorted to any other means. The church, which is, fortunately, situated on a corner, is of buff Bedford stone, and in style is late fourteenth or early fifteenth century Gothic. A high spire rises at the corner, well managed and composing well with the other broken outlines of the building. In the southern transept is a rose-window with stone tracery, a feature which until recently would have singled out the church as something unique in ecclesiastical architecture in our city. The whole design of the church both as to detail and general outlines is altogether charming, and on the exterior is essentially Gothic and is an actual delight to look at. Every leaf design of the detail is true to its character, and not some mongrel mixture, which one feels is as likely to end in a Classic anthemion shape as in anything else. The mouldings are fine, true to their character every time, and sharp and clear cut, showing that the man who designed them was sure of himself and them.

The interior, as far as it goes, is fairly satisfactory, but is only the beginning. A groined arched roof springs from long-shafted Gothic columns, excellent in form, though poor in material, for the whole interior is iron and plaster. The window openings, as assured by the exterior design, are good and the wood-carving which has been designed for the church is beautiful. But here evidently the money fell short and everything is left glaringly white and cold. It is to be hoped that the good pastor, if he it was who arranged this much of the work, will live to see the interior scheme completed, for with such a beautiful beginning it would seem sacrilegious to have a mistake made in the decoration. At present the windows are simply of white ribbed glass and the carving on the seats and the confessionals is about the only feature which attracts attention. Evidently the heating of the building was not a problem which came into the special province of the German architect as much as the simply artistic features. Horrible radiators, with ornamentation designed in a sort of bastard Renaissance, stand directly out in prominent places against the walls all around the building. There is none of that air of cozy comfort seen in most American churches, no matter how simple they may be. First, our forefathers debarred all art and comfort from their houses of worship, then the comfort came back to stay, for the average American might love his Creator but he saw no virtue in making himself uncomfortable when he worshipped Him. Now art is coming into ecclesiastical architecture, as elsewhere, and let it be hoped that it may be an art true enough to endure.

Quite opposed to this Church of St. Martin, with its essentially foreign feeling, is another Catholic church on the South Side, recently completed, the Church of the Holy Angels, designed by Egan & Prindle. This structure is as strictly American as the other is

European. The church is built of Bedford stone in a so-called Romanesque style and is pleasing enough in its general outline. The chief fault which impresses itself on the beholder is a lack of strength, which, as every one ought to know, is the very essence of the Romanesque. This is felt throughout the whole façade as the chief, though not a glaring, defect. The square tower is good in proportion, the three arches over the triple entrance have no other fault than this, and the only feature which assails with any violence any canon of good taste is some carving under the rose-window—cat-tails, two storks, pelicans, or some water-fowl treated with a sort of commonplace conventionality. As they are not things of beauty their *raison d'être* is not apparent, directly above the frieze of angel heads which extends across the entire façade. Though the exterior may lack that touch and spirit which is shown in a perfect composition, certain it is that the interior is very successful, though much of this success is due to the scheme of decoration. The roof is treated as a barrelled vault with great ribs spreading from the western to the eastern wall, and this treatment is the chief architectural feature which gives dignity to the interior. The transepts are small, but a large apse at the southern end holds the high-altar, of white Carrara marble, of a rather pretentious character. At the north end of the church two galleries extend across the entire space, one, the wider and lower, intended to hold part of the worshippers, while the higher is destined for the organ-loft and choir. A particularly good effect is gained by these double galleries. The rose-window appears to be raised without leaving beneath it the usual bare space. The decoration of the church has been completed and, as said before, is very successfully done. Green, red and gold enter into the scheme of color, but are very harmoniously treated and form a very agreeable whole, which does credit to the decorators, the W. P. Nelson Company. On the face of the arch which separates the nave from the apse is some really fine mural painting by a Chicago artist, Oliver Dennett Grover. At the highest part, the heavenly host are seen. This is the weakest part of the picture, for at the height from which it is seen it does not carry well. On either side of the arch are groups of figures most successfully managed: slightly conventionalized in treatment, they are strong in drawing and charming in coloring. On the right a group of monks, pilgrims to the Holy Land, eagerly look forward towards their Mecca, while to the left nuns of various orders toil along the shores of a tractless ocean, while far above, surrounded by bright clouds such as envelop the angelic host on high, an angel reaches down to them a crown. It is in the interior that the truly American character of the church is most strongly noticed. The roof alone bears 400 electric-lights, not noticeable in the day-time as they are so combined with the decoration. The ventilation apparently as one enters the church appears perfectly adequate, and the heating equally so, space being arranged for the radiators in the walls. The confessionals, though not artistic, as they are in St. Martin's, are arranged in recesses designed for their reception and seem to afford the greatest amount of comfort at the smallest sacrifice of space.

Not many blocks away from the Holy Angels a very charming little piece of ecclesiastical architecture has just been completed. It is a small English Gothic chapel, eventually to be connected with the church of the First Unitarian Congregation, when they shall leave their present quarters, the Church of the Messiah, farther up town. The chapel is strictly and purely English Gothic, adhering in great purity to the style which it has adopted. A very beautiful rose-window in its southern façade, with its stone tracery, is characteristic of the entire edifice, wherein the whole aim of the architect, William A. Otis, and the builders, Mr. Morton J. Hull and his sister, has been not ostentatious display but excellence of the taste in the design and materials used. Both on the exterior and interior the little building is charming. The interior is finished in brick, a darker color being used in the lower part, till a lighter, warmer shade is reached above, which harmonizes with the oak of the open-timber roof, not lavish in the carving: all that is there is in excellent taste and keeping, the designs being all carefully studied, whether for actual carving on the building, or only on the furniture, chandeliers or metal work.

A group of buildings comparatively recently completed are those known as the Hull Biological Laboratories. They are very near the Hull Chapel, but are part of the Chicago University, having been a gift to it, from an entirely different family of Hulls. The group which is at the northern end of the Campus consists of four large structures, the two northern ones facing Fifty-seventh Street being joined by a short covered arcade and connecting gate, while from them to the two southern ones a longer covered arcade extends.

The early buildings of the Campus are English Gothic in style and, as has before been noted in these letters, are, as a whole, extremely well carried out and carefully studied by the architect, Henry Ives Cobb.

Of this later group no such thing can be said, for they are wanting in much of that refinement of design which Mr. Cobb has the ability to give when he chooses to do so. Possibly, with an idea of the biological purpose of the buildings, the style has been changed from the English to the French Gothic, using the uncouth animal forms most common in the French as a feature of ornamentation. The introduction of the finny tribe, with their more or less distant relatives, as a scheme of decoration in the Romanesque Fishery Building at the World's Fair was certainly an inspiration, especially as it was so exceptionally well done, but to introduce a new style into the Campus simply out of regard to the future contents of these buildings seems trivial. To have clung, as originally intended, to the

English Gothic, tracing it through all the changes which marked its development, would not only have made a charming but most interesting group of buildings. Aside from the fact that there is a change of style, the new Hull buildings are not nearly as satisfactory in themselves. The mouldings testify to a lack of study, the window openings are simply commonplace, and the railing of the balconies are far from bearing a favorable comparison, say, with those of the Physical Laboratory, just south of the eastern portion of the group. The form of opening used both in the gate and the covered arcade is unsatisfactory and weak. The gate, as mentioned above, is most horribly ornamented with the uncouth French Gothic animals. These are finely carved, but out of all proportion as to size, when their position is considered. The little arcades which, if they had followed their prototypes in France might have been charming little creations, are bare of any ornamental moulding at the eaves, where such carving is often seen, and the openings of the windows, unsatisfactory in shape, are in plain wooden frames. To have enriched the arcades both at the north and south sides might have been impossible, but to have dispensed with a little less of the "grotesques and horrors" around the actual gateway and to have spared a little for the arcade would certainly have produced something more refined if, at the same time, less striking.

The excavations for the foundation of the new Post-office are going briskly on. In some parts the excavations are being made, in others piles are being driven, the iron is being laid and in one part the actual foundation masonry is being worked upon. One curious fact has been developed in the course of this work, and this is that, though forty feet below the surface of Lake Michigan, no water has been reached. This is indeed a surprise to every one. To the contractors this means a saving of thousands of dollars, but what the effect may be on the wooden piles driven into dry soil, and not to remain submerged in water, it is difficult to say.

ARCHITECTURAL PHOTOGRAPHY.

TIME was when the average architect knew little or nothing of photography, and when the art-science was not the valuable adjunct and aid to his profession that it is now. But since the practice of photography has become more general and all classes of society use the camera, architects have also taken up the art-science and use it daily in the practice of their profession. It serves them in various ways. By means of it the progress of a building may be recorded. In fact, as regards large structures, photographs in the course of building are almost an absolute necessity, as they may be introduced as indisputable evidence in case of an action at law, should any contention arise.

Photographs perpetuate the memory of impressions received by the travelling architect. Instead of being obliged to make a laborious sketch, the camera enables the architect to preserve the contours and details of an edifice in a short time, providing him with a method by means of which he may "take" a score of grand buildings in a day, with comparatively little trouble. What architect, about to travel abroad, would now think of leaving his camera at home? The stately palaces of France, the picturesque old houses of Nuremberg, the slender minarets of the Orient and the relics of the past in Rome and Athens, these are all the legitimate spoils of the architect's camera. Nor need he go so far from home to find suitable material, as he may place on record pictorially the colonial mansions of New England or the splendid old adobe missions of California.

In the study of architecture photography has also been of great service. Ruskin said the greatest service photography could render was the careful reproduction of architecture and its details from the beginning of the twelfth to the end of the fourteenth century. The photographic literature of architecture, if it may be so called, is already large and growing daily. Photography has done as much for architecture as it has for art in general, as it enables the student to see what distant buildings are like, down to the most minute details and most intricate design, without leaving his home.

An architect about to take up photography will naturally want to know something about the necessary apparatus. Any ordinary camera will do, so long as it has square bellows, a raising and falling front, a swing-back and a rectilinear lens. As for size, an 8" x 10" box is preferable. A front extension is also desirable. A projecting tail-board is a nuisance in an awkward corner and especially in the way in taking interiors. The swing-back should swing from the centre. The use of the raising and falling front explains itself: if the novice looks through the ground-glass and raises and lowers the front board, he perceives at once what he can do with it. A doublet lens is indispensable, as a single lens will produce marginal distortion. A single lens may, however, be employed when the centre of the field only is used. For photographing buildings in a confined situation recourse must be had to a wide-angle lens, but otherwise preference should be given to the rectilinear. In taking tall buildings, the raising of the front board will sometimes prove insufficient and the photographer be compelled to get on higher ground. Generally it will be preferable to photograph a building from the level from which it is ordinarily seen. When a tilting of the camera, either up or down, in taking tall buildings, is unavoidable, the swing-back should be used to correct the distortion which would otherwise appear.

Care should be taken to see that the tripod stands firm. In ecclesiastical structures, where the floor is not infrequently slippery, the

tips of the legs may have to be provided with cork in order to prevent them from giving way. In order to obtain a perfectly horizontal position of the camera, a small weight attached to a string may be used as a plumb-line, or a spirit-level had recourse to, but ordinarily the judgment of the eye is quite sufficient in levelling.

A building should never be taken full face, nor with the sun directly in front or behind the camera. A side view and side lighting produce far better effects. As regards exposure, of course, no definite directions can be given, as so much depends upon the light and time of the day and year. An actinometer will be found of service. Wherever fine carving or tracery exists, as in many old cathedrals, the exposure must be somewhat prolonged in order not to lose any details. A longer exposure should also be given when people are continually passing in front of the camera, which frequently occurs in photographing buildings in crowded thoroughfares. Under such circumstances the smallest stops should be used, which will permit of a prolongation of the exposure and at the same time obliterate the passing multitude. Another way to photograph structures where the traffic is great is to break the exposure frequently, but this is not as practicable.

Plates of medium rapidity will give the best results. For development, metal is preferable to pyro, in my opinion. The aim should be to obtain thin, delicate negatives that are full of detail. For this purpose I have also found eikonogen and hydroquinone serviceable. In printing, too, care must be taken to bring out all the detail. The negative being thin, it naturally follows that the printing should be done in the shade. Sometimes a covering of tissue-paper may even be necessary in order to produce a perfect print. There is, of course, no difference in toning and fixing, although I notice that most architects prefer a black tone. When a print is intended for reproduction by the half-tone process, a brown tone is preferable.

DR. HUGO ERICHSEN.

BUILDING REGULATIONS IN GERMANY.



PROPOS of the much-discussed and widely agitated subject of tenements and high buildings in the United States, especially in the City of New York, where many of the new office-buildings are 300 feet or more in height and built on the steel-skeleton plan, veneered with masonry, and in view of the assertion that the exclusion of light and air from the narrow streets must affect the health of the city, a few of the recently adopted laws governing the building of tenements and dwelling-houses for those of moderate means in Germany may be of opportune interest to Americans.

The Government of Saxony is making every endeavor to better the condition of tenements and moderate-priced dwellings in Saxony, from a sanitary point-of-view as well as in a social-political respect. These efforts are due to the increase of population in many of the cities and their neighboring communities. In a recent decree, the Boards of Public Works, or "Baupolizeibehörden," have been instructed to prevent as much as possible the building of ordinary tenement-houses, and also to take all possible measures to provide the man of small means with good, healthy and comfortable lodgings. The Ministry of the Interior has therefore thought it appropriate, after hearing the arguments of the Board of Health, to form a set of resolutions, the most important of which will be of general interest. The Saxon Government directs that in the laying-out of new streets and sites for dwelling-houses, builders must choose a position where direct exposure to sunlight may be had, not only in front but at the rear of the site as well; therefore, closed streets (streets with houses built in rows) shall be laid out from northeast to southwest or from northwest to southeast. Of course, in laying out building plans for the arrangement of street lines the special local conditions and hygienic demands are always first considered. Another important feature in the plans for building, especially in the erection of large dwellings, is the provision of squares in a sufficient number and size, as well as front gardens, with the culture of trees. Above all things, the Boards of Public Works shall prevent, under all possible circumstance, the erection of new tenement-houses, although they cannot in all cases be entirely excluded. For this purpose, the authorities have arranged certain measures for the width and depth of a dwelling-house of about 15 by 13 metres (about 49' by 42'), which, as a rule, must not be exceeded. The regulation governing the supervision of sleeping-apartments in all kinds of dwelling-houses, small hotels and lodging-houses, in order to guard against and prevent overcrowding and to promote sanitary conditions, is also important. It is required by law that a family lodging shall comprise at least a sitting-room that can be well-heated, a bedroom, and, when practicable, a kitchen, as well as the necessary space for cooking utensils, wood, etc. Sitting and bed rooms combined must have, at the smallest calculation, 30 square metres (323 square feet) of ground space, and must be provided with movable windows. The total surface of the bedroom windows shall in every case and at the lowest estimate amount to one-twelfth of the ground-surface space of the room. All windows must open into immediate air, and at least one shall open onto the street or a sufficiently large yard or garden. It is most desirable that every lodging, when the arrangement of rooms so warrants, should have two windows facing each other, so as to render a thorough airing of the apartments practicable. An apartment-house is to be condemned as overcrowded and unhealthy when it

does not afford at least 20 cubic metres (706 cubic feet) of breathing-space for every adult, and at least 10 cubic metres for every child. The given capacities are the lowest estimates of space demanded by the new laws governing the building of dwelling-houses. These rules are enforced by constant inspection by agents of the Imperial Board, and the law is carried out to the letter for the protection and comfort of the German people.

The problem as to "sky-scrapers" is not a new one, for in ancient Rome it was necessary to curb the zeal of land-owners and builders by decrees limiting the height of buildings on the principal streets. As the architects of those days dealt only with solid masonry, their structures were certainly lofty enough. How one of those old Romans would open his eyes if told that nineteenth-century America could bargain with a great ironmaster for the skeleton of a twenty-four-story edifice at so much per ton, delivered and put together on his site in any big city, the various parts being brought together and fitted like a child's puzzle, so that the towering structure is reared with the speed of magic — in a night, as it were! Germany will have none of this new architecture, preferring the old, more substantial and solid styles. The Germans, with a desire to obtain the full worth of every penny expended, argue that the iron or steel in contact with mortar will inevitably become honeycombed with rust, and ultimately will be unable to sustain the weight of brick and stone placed upon it. Considering, also, the danger to life and limb, the elevator accidents, etc., the conservative German is not enthusiastic regarding "sky-scrapers."

GEO. SAWTER, U. S. Consul.

GLAUCHAU, July 20, 1897.



THE point-of-view has to be considered in judging of any art production, and when a volume undertakes to deal with stained-glass as an art,¹ and treats the subject almost wholly from an English standpoint, one cannot avoid a feeling of regret that the scope of the treatise should not have been more comprehensive; for although the work which Burne-Jones and others have done is most admirable in its way, and possibly is, from one standpoint, vastly superior to much of the mediæval glass which is found in the old French cathedrals, the difference between what modern English taste accepts as the best manifestation of this department of art and the spirit of the mediæval work is too marked not to be noticed by the most casual observer. The tendency of modern stained-glass has been towards the picturesque; while the ensemble, the general color-scheme, the surface appearance, so to speak, which so charmingly characterizes the glass of Chartres and the rose-windows of Notre Dame at Paris, are in our modern works subordinated to correctness of drawing, to a systematic, studied and balanced composition and to mechanical excellence in detail, qualities which are admirable as far as they go, but are conditions of the picturesque rather than of the mosaic treatment which is found in the best of the mediæval stained-glass. One cannot examine any work of the Burne-Jones order without feeling a great deal of enthusiasm for it. It is full of poetry, delightful in composition, and charming as a picture, but when considered as a decoration, as a means of filling a window through which the light is to shine and intended primarily for light, it may seriously be questioned whether, if it is to be considered as typical of our modern work, we are not on the wrong tack and whether, in spite of all the beautiful stained-glass which has been produced of late years, we are not departing farther and farther from the ideal rather than approaching it. But that, again, is a question of point-of-view. The book in question is certainly admirably prepared and is full of exceedingly interesting drawings and photographic reproductions of modern work together with a relatively small quantity of the mediæval. In the reproduction, the old work naturally suffers and the more modern productions, with their brilliant technique and precise drawing, certainly leave little to be desired from a pictorial standpoint. But in nearly every instance the decorative sense seems subordinated to the idea of presenting a picture or telling a story. We have all felt the temptation to so design our window that it shall tell a story, and tell it in the most beautiful, clear-cut, and finished manner possible, and if stained-glass is to be considered as on anywhere near the same plane as mural painting, then the English, or the Burne-Jones, style of design in this medium is an eminently proper one and the results are obtained in a perfectly legitimate manner; but no one can study the old stained-glass without feeling that the makers thereof absolutely subordinated themselves and the details of their ideas to the one purpose of producing a harmonious blaze of color, and though pictorial representations were introduced in nearly all of the old glass we never find it dominating in the slightest degree the general effect.

But, as we said before, this is largely a question of point-of-view, and from the standpoint of, we admit, a large majority of our modern glass-workers, the Burne-Jones, the Tiffany and the La

¹ "Stained-glass as an Art." By Henry Holiday, with a colored reproduction of the drawing for "The Creation." Twenty colotypes, and many illustrations in the text from designs by Sir Edward Burne-Jones, W. B. Richmond, R. A., and the author. London: Macmillan & Co., Limited. New York: The Macmillan Company. 1896. All rights reserved. Price, \$6.50.

Far glass sounds the last uttered word in this art. Surely from whatever may be the standpoint, a study of this excellent work of Mr. Holiday's is sure to set one thinking, and though one might differ from the apparent teaching of the pictures therein, the principles laid down in the text are those which govern all true art and can be read and followed with full accord. And we can fully agree with the author in his statement that: "The strange infatuation so generally prevalent that it [glass] should be mediæval has kept too many of the best artists from having anything to do with it (happily not all, as the beautiful designs at the end of this essay will show); and some who were not misled by this error have fallen into the equally fatal blunder of imitating oil-paintings. Between these two pernicious errors, one striking at the root of all art, the other at the root of all technical art, stained-glass has been passing through a perilous experience. The few artists who have designed for it have succeeded in keeping the art alive, and the specimens of their work, which two of them have kindly allowed me to reproduce, are such as the nineteenth century may be proud of."

THOUGH perhaps no country in the world is more richly endowed with variety of building materials than our own, yet the actual choice which is offered the architect is quite small, and for the average practitioner it is generally a question of either sandstone, limestone or granite, and we limit our selection so exclusively to the samples which are brought to our offices that we forget the stores of excellent building stone which might so easily be made available. The value of these stones is better appreciated after a perusal of a work by George P. Merrill,¹ which not only gives a very concise synopsis and statement of the geographical distribution of the various building stones but also considers them chemically and mechanically. It will be a surprise to many of our readers to learn that not until the early part of the present century was granite used at all extensively in and about Boston, and that the material was first introduced in considerable quantities by canal from Chelmsford, thirty miles distant. The apparently inexhaustible supply of timber and possibly also the abundance of field stone which was ready at hand were doubtless the reasons for the late organization of such an important department of building-operations, and the extent to which the stone, granite and marble industries have grown marks an interesting chapter in our national development. Mr. Merrill's book is not in any sense local, however, but takes up the principal building stones throughout the whole country, and the whole volume of some five hundred pages forms a very valuable addition to an architect's library and places readily in his hand a mass of information which he is very apt to ignore, though it should be within easy reach on many occasions.



DETROIT ARCHITECTURAL SKETCH-CLUB.

AT the meeting of the Detroit Architectural Sketch-Club, held at the Club's room at the Museum of Art, November 1st, Mr. John M. Donaldson, of the firm of Donaldson & Meier, criticised the drawings submitted in the competitions for "An Art Club Building" and "An Artist's Country House." Nine applications for membership were received and the election of officers took place, Mr. Emil Lorch being again reelected to the *Presidency*. The other officers chosen are, *Vice-President*, Richard Mildner; *Treasurer*, John W. Maer; and *Director*, Fred'k C. J. Barnes, the Club electing four members of its Directory at the October meeting and three at the one in April.

There has been very satisfactory work done by the Summer Class in water-color, an exhibition of which will be given at the Museum of Art.

The Saturday afternoon work, during the present winter, will consist of cast-drawing and clay-modelling. An evening class in drawing from life is also open to Club members. In addition to the above and the regular competitions in design and criticisms thereon, our president is trying to arrange a course of illustrated lectures on Architectural History, to be given by local architects. Messrs. John W. Case, Albert Kahn, H. J. M. Grylls, Louis Kamper and Emil Lorch will each prepare a paper. A series of reading and tracing references will be given out in connection with each style as it comes up for consideration. This course will be of great value to the draughtsmen and an effort will be made to interest the public in the lectures.

The competition upon which the Club is now working is: "A Store Front."

ALEX. BLUMBERG, *Secretary*.

DROUGHT IN A TREELESS COUNTRY.—The terrible nature of the drought in Spain is illustrated by the fact that the province of Valencia had no rain for seven months. In many places the wells dried up, and at Sagunto a gallon of water costs twenty cents, while a gallon of wine costs less than half that sum. — *N. Y. Evening Post*.

¹"*Stones for Building and Decoration*." By George P. Merrill, Curator of Geology in the United States National Museum. Second edition, revised and enlarged. New York: John Wiley & Sons. 1897.

ILLUSTRATIONS

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

FRONT ELEVATION OF THE CHAMBER OF COMMERCE, CLEVELAND, O. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

[Issued with the International and Imperial Editions only.]

DETAILS OF THE SAME.

[Issued with the International and Imperial Editions only.]

ROSE-WINDOWS: PLATE VII.

THE CHAMBER OF COMMERCE, CLEVELAND, O. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

DETAILS OF THE SAME.

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

"HOLMWOOD," NEAR WIMBORNE, DORSET, ENG. MESSRS. CRICKMAY & SONS, ARCHITECTS.

This plate is copied from the *Builder*.

PORTICO OF THE COLLEGIO DI SPAGNA, BOLOGNA, ITALY [XIV CENTURY.]

NICHED STATUES.

[Additional Illustrations in the International Edition.]

LIVING-ROOM: "WOODCOTE," CHURCH STRETTON, ENG. MESSRS. R. BARNEY PARKER & R. UNWIN, ARCHITECTS.

This plate is copied from the *Builder*.

NEW CHAPEL FOR GIGGLESWICK SCHOOL, YORKSHIRE, ENG. MR. T. G. JACKSON, ARCHITECT.

This plate is copied from the *British Architect*.

STONE ROOD-LOFT IN THE CATHEDRAL, LIMOGES, FRANCE.

This plate is copied from the *Building News*.

THE CATHEDRAL AT RODEZ, FRANCE, AFTER A RESTORATION BY M. PAILHÉS.

This plate is copied from *La Construction Moderne*.

THE TOWN-HALL, HAMMERSMITH, ENG. MR. J. H. RICHARDSON, ARCHITECT.

DOCTORS' CONSULTING-ROOMS AND RESIDENCES, BIRMINGHAM, ENG. MESSRS. ESSEX, NICOL & GOODMAN, ARCHITECTS.

COMMUNICATIONS

[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE WEST PORCH OF ST. OÜEN: A CORRECTION.

HARRISBURG, PA., October 20, 1897.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The plan of St. Ouen, Rouen, in your issue of October 16, 1897, illustrating "An Architectural 'Summer School' Abroad," also shown in "Apsidal Treatment, No. 21," April 17, 1897, and in "Religious Architecture" from Planat's "*Encyclopédie de l'Architecture, etc.*," August 16, 1890, so far as it relates to the

façade is not correct. A glance at the illustration of west front in the same issue, or at view in *American Architect*, April 25, 1891, illustrating (Fig. 319) "Equestrian Monuments," will show that the towers are not now placed diagonally. "Fergusson," Vol. I, page 560, refers to this arrangement of the towers being "ruthlessly obliterated" in recent years. I have never seen an illustration of the façade as it was previous to the alteration: can you refer me to one? Yours respectfully, JAMES M. MACQUEEN.

[We have delayed the publication of this correction in the hope that either Professor Homer or ourselves could supply the reference our correspondent seeks. Apparently book-makers follow in one another's tracks, for, though the west porch of St. Ouen was altered as long ago as 1846-52, so late an authority as M. Paul Planat gives the plan in its original form in his "Encyclopédie d'Architecture," published in 1889. — EDS. AMERICAN ARCHITECT.]

ANCHORS FOR MARBLE ASHLAR.

ST. PAUL, MINN., November 17, 1897.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — I would like to make inquiry through your paper as to the use of anchors, clamps, etc., securing thin marble ashlar facing to brick backing.

Do you think that if such members are galvanized and painted this would insure the face of marble from possible rust stains striking through the ashlar?

I would ask if, in securing marble ashlar of this character, the use of copper anchors is considered better than iron treated as above specified? Yours truly, CASS GILBERT.

[COPPER anchors are far superior to iron for securing marble ashlar, but galvanized-iron is generally used. How long it will be before these stain the marble with rust depends on the perfection of the galvanizing, and the character of the marble, some varieties being much more porous than others, and therefore more disposed to absorb and retain water. — EDS. AMERICAN ARCHITECT.]



DENSITY OF URBAN POPULATION. — London has 196 inhabitants for each square kilometre, Paris 265, Rome 280, Turin 340, Naples 939, and in her Pendino quarter 1,254. — N. Y. Evening Post.

WORKMEN'S HOUSES EXEMPT FROM TAXATION IN BELGIUM. — Consul Morris, of Ghent, under date of September 3, 1897, says: The common council of Courtrai, Belgium, has just voted the exemption from certain taxes for workmen who build dwellings for their own use. The conditions in brief are: There shall be exempted from the building, paving and sewerage tax — (1) the workman who, not being an owner of real estate, erects or transforms a building destined to be used by him as a dwelling, and who has secured the property in accordance with certain conditions accorded to workmen; (2) all societies associated with the Savings Bureau of the Government which erect or transform buildings by one of the methods prescribed by the said Bureau, thereby assisting workmen to the ownership of a dwelling-house; (3) incorporated associations, organized for a period of at least ten years, which erect buildings destined to be rented to workmen and which agree in their charter that their dividends shall not exceed 3 per cent. The taxes are payable: (1) If the workman does not actually occupy this house within three months after it becomes inhabitable; (2) if, before the expiration of five years, he ceases to occupy it or transfers the property to another party not entitled to the exemption; (3) if he establish in it the sale of liquors. The corporations mentioned must be chartered and must publish their by-laws. If they do not fulfil all details of law, they forfeit their rights to exemption. At Bruges, in 1896, the common council voted the abolition of these same taxes in favor of all properties the annual income of which was less than \$27.80.

PRESERVING CANADIAN FORESTS. — The government at Ottawa, Canada, last month decided on a change of policy regarding timber regulations applicable to the northwest and Manitoba. Timber reserves will be maintained. With this object in view, the heavier timber belts will be withdrawn from settlement and the young trees will be preserved so as to foster a growth for the future. Guardians will be appointed to protect the reserves, particularly in the Turtle and Moose Mountain regions. Fires will be prevented as far as possible, and the settlers will be restrained from cutting young trees. Another step in contemplation is the devotion of labor and money toward the laying out of an effective fire-guard. A fund for this object was voted at the last session of Parliament. At the summit of the reserves mentioned are numerous lakes. These are to be connected by wide roads, which, when completed, will form an effective barrier to the progress of fire, it is thought. The theory is that the open spaces and the lakes will constitute an efficient fire-break. — Northwestern Lumberman.

THE PANTHEON AT GUANAJUATO, MEXICO. — Guanajuato is a city of Mexico built in a hollow where three gorges dip and meet. It is noted for the Pantheon and its fine buildings, built with variegated stone which seem to have all the colors of the rainbow. The Pantheon covers over ten acres of grounds, which are inclosed by walls perhaps 10 feet high, and there bodies are laid in chambers, as in the vaults of other cemeteries. Below is an immense sub-cemetery, where the bones

are carried at the expiration of the chamber leases, or when nothing remains of the dead but whitened bones. A winding stairway descends into this great charnel-house, which is nearly 900 feet long, 20 feet wide and more than 20 feet high. The bones and skulls of over 30,000 Mexicans are piled up at either end of this "storehouse," indiscriminately without reference to ownership. The Pantheon was at one time said by archaeologists to contain the tombs of kings, but without doubt the notion of burial in caverns was taken from the historical facts surrounding the Catacombs beneath the basilicas in Rome, the city of traditions and noble men. — Providence Journal.

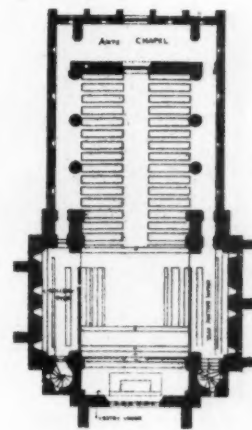
THE METALLIZATION OF WOOD. — The following process, invented by Mr. Rubennick, for metallizing wood, is thus described by *Les Mondes*: The wood is first immersed for three or four days, according to its permeability, in a caustic alkaline lye (calcareous soda) at a temperature of from seventy-five degrees to ninety degrees. From thence it passes immediately into a bath of hydrosulphite of calcium, to which is added, after twenty-four or thirty-six hours, a concentrated solution of sulphur in caustic potash. The duration of this bath is about forty-eight hours, and its temperature is from thirty-five degrees to fifty degrees. Finally the wood is immersed for thirty or fifty hours in a hot solution (thirty-five degrees to fifty degrees) of acetate of lead. The process, as may be seen, is a long one, but the results are surprising. The wood thus prepared, after having undergone a proper drying at a moderate temperature, acquires, under a burnisher of hard wood, a polished surface, and assumes a very brilliant metallic lustre. This lustre is still further increased if the surface of the wood be first rubbed with a piece of lead, tin or zinc, and be afterwards polished with a glass or porcelain burnisher. The wood thus assumes the appearance of a true metallic mirror, and is very solid and resistant.

STREET PAVING IN CHICAGO. — Chicago's experience in street-paving is a story of misdirected energy. It is only a duplicate, of course, of conditions elsewhere, but it seems the more startling in Chicago, because of the larger sum wasted. Within the last eight years the Western city has expended for pavements over \$32,000,000, and yet, according to one of its prominent and well-informed citizens, it has the unenviable distinction of having the most poorly paved streets of all the large cities in the world. This result is ascribed more to ignorance than to venality. There has been some stealing. Chicago papers admit that in a matter-of-fact way, and one of them estimates the thefts at 10 per cent of the appropriations. Another 10 per cent of the appropriations is estimated as affording some return for the investment, while \$800 in each \$1,000 is regarded as having been thrown away on poor work. Through incompetent engineers and incompetent or venal inspectors, the city funds have been used to enrich the contractors, while poor paving remains as a tax on commerce and a menace to health. — N. Y. Evening Post.

A LEGEND OF COLOGNE. — The legend concerning the plan of Cologne Cathedral may not be known to every one. It is related of the designer (Heinrich Sunere or Gerhard von Riel) that in despair of finding any plan sufficiently great, he was walking one day by the river, sketching with his stick upon the sand, when he finally hit on one which pleased him so much that he exclaimed, "This shall be the plan." "I will show you a better one than that," said a voice suddenly behind him, and a certain black gentleman, who figures in many German legends, stood by him and pulled from his pocket a roll containing the present plan of the cathedral. The architect, amazed at its grandeur, asked an explanation of every part. As he knew his soul was to be the price of it, he occupied himself, while the Devil was explaining, in committing its proportions carefully to memory. Having done this, he remarked that it did not please him and he would not take it. The Devil, seeing through the cheat, exclaimed in his rage, "You may build your cathedral according to this plan, but you shall never finish it." This prediction long seemed likely to be verified, for though the building was commenced in 1248, and continued for 250 years, only the choir and the nave and one tower to half its proposed height were finished. The towers were not completed until 1883. — The Architect.

PAINTING WITH COMPRESSED AIR. — Painting gas-holders by a compressed-air spray has recently been tried by the Turner Machine Company, of New York City, with complete success, and, it is stated, says *Engineering News*, with considerable economy over painting by hand. The painting was done on the gas-holders of the Equitable Gas Company of New York, which are located at Fortieth Street and Avenue A. In doing the painting the holders were first lowered and the top and three 2-foot sheets of the sides were painted, working from the ground. The holder was then gradually raised as the painting of the sides progressed. Owing to the necessity of using the tanks for storage, it is stated that the work was frequently interrupted, and there was only one day during which the work progressed steadily. On this day the top and 18 sheets of the sides were painted on a holder 90' x 90' and 24 sheets high. The work was carried on from 9.50 a. m. to 5 p. m., and the area painted was between 16,000 and 17,000 square feet. Three men, using two sprays, did the work, at a cost for labor of \$6.25, or less than half-a-cent per square yard. About the same amount of paint was used as would have been the case in painting by hand. A man with a brush can paint only from 1,200 to 1,500 square feet per day. — Scientific American Supplement.

LUIGI AMICI, SCULPTOR. — The sculptor Luigi Amici, who produced the tomb of Gregory XIV in St. Peter's, died recently at the age of eighty-four in utter destitution in a hospital at Rome.



New Chapel
Giggleswick School
Yorkshire
T.G. Jackson R.A.
Architect

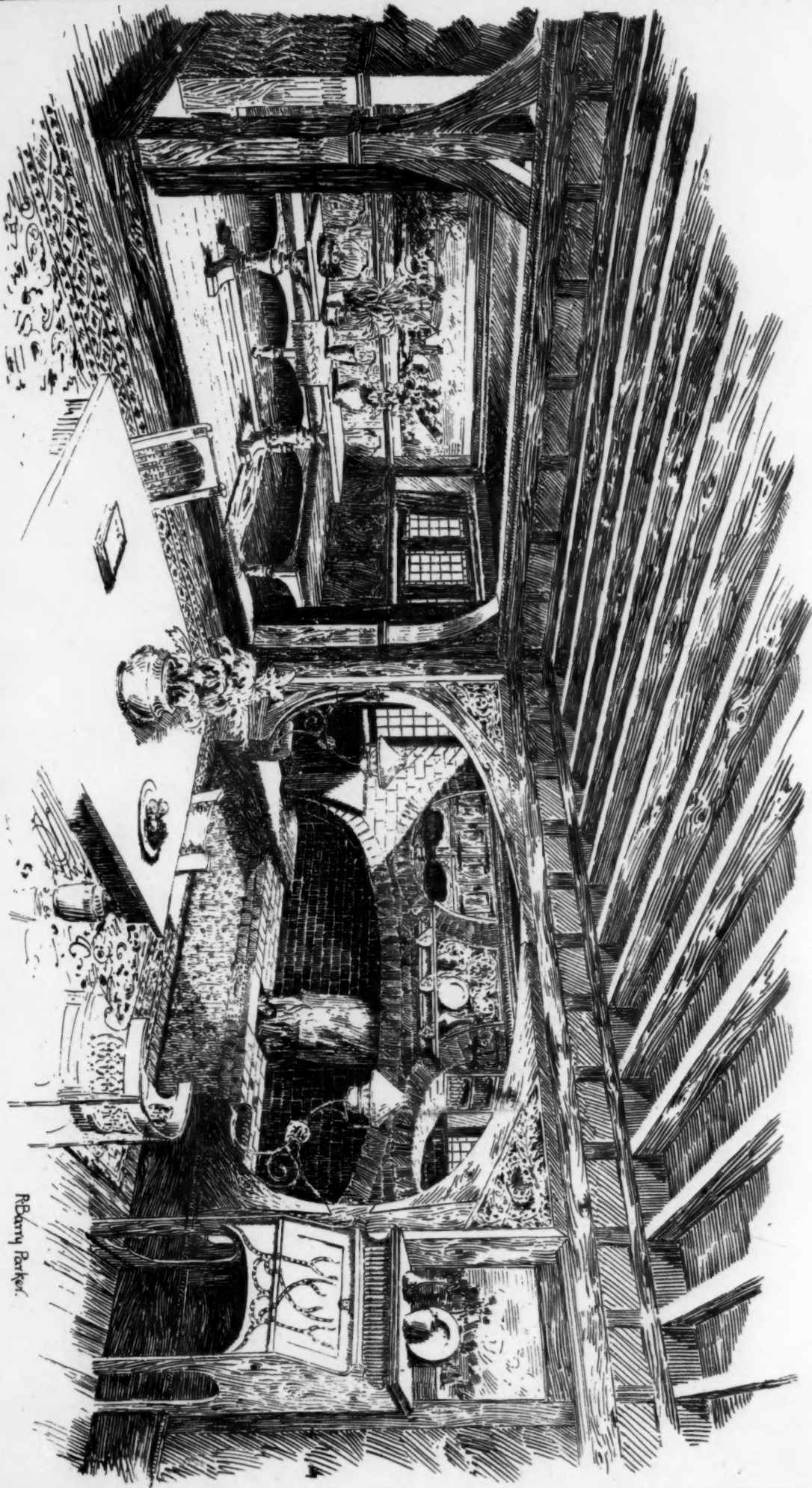


From La Construction Moderne.

CATHÉDRALE DE RODEZ.—RELEVÉ DE M. PAILHÉS.

ELLIOTT & FRY, N.Y. & LONDON.

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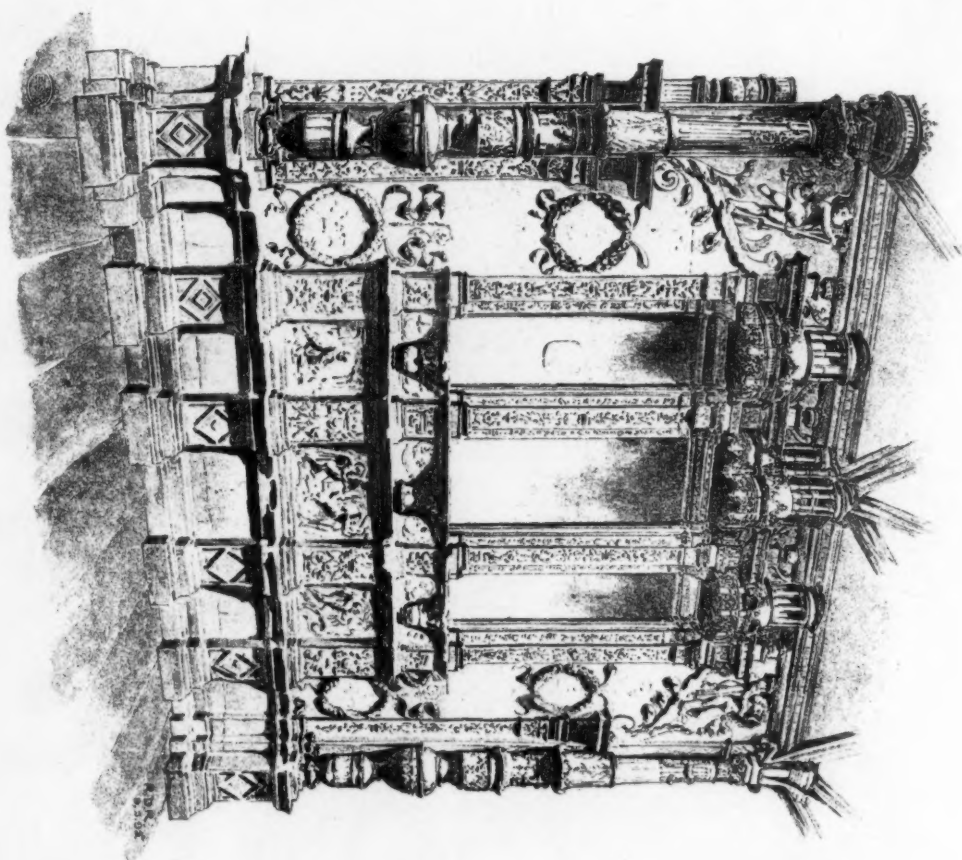
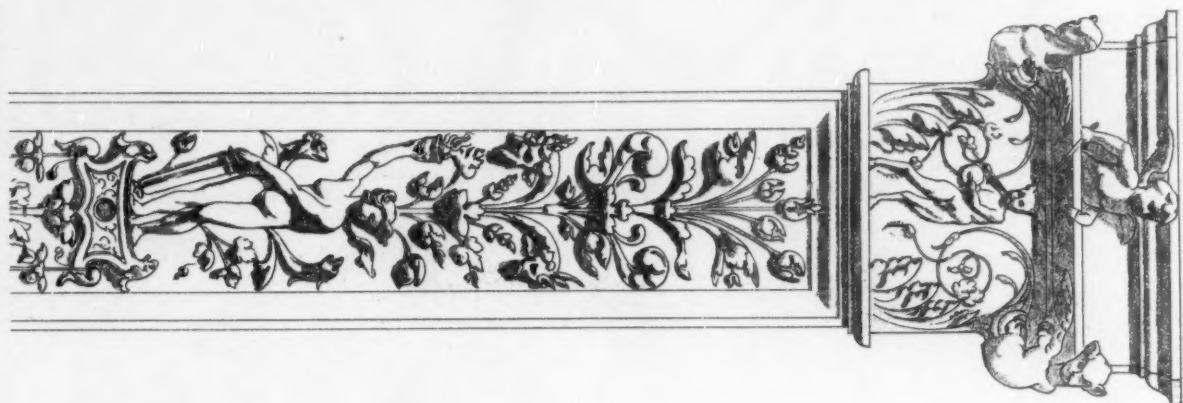
R. Barry Parker.

THE LIVING-ROOM, "WOODCOTE," CHURCH STREETON—MESSRS. R. BARRY PARKER AND E. UNWIN, ARCHITECTS

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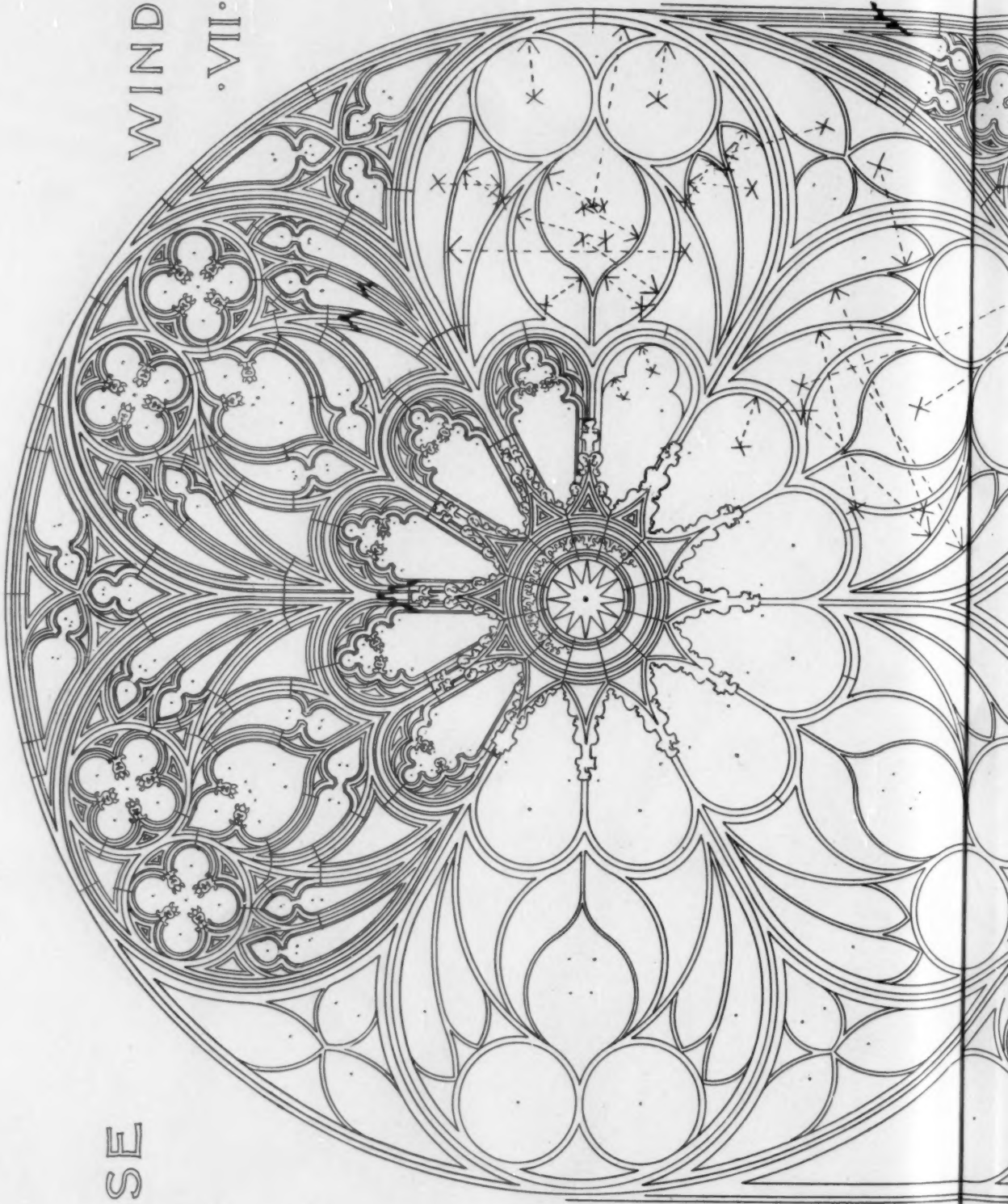


NATIONAL SILVER MEDAL. DRAWINGS: STONE RODD-LIFT LIMONCE CATHEDRAL.
BY ROBERT D. RANCLIFFE.



° ROSE

WINDOWS °
° VII °



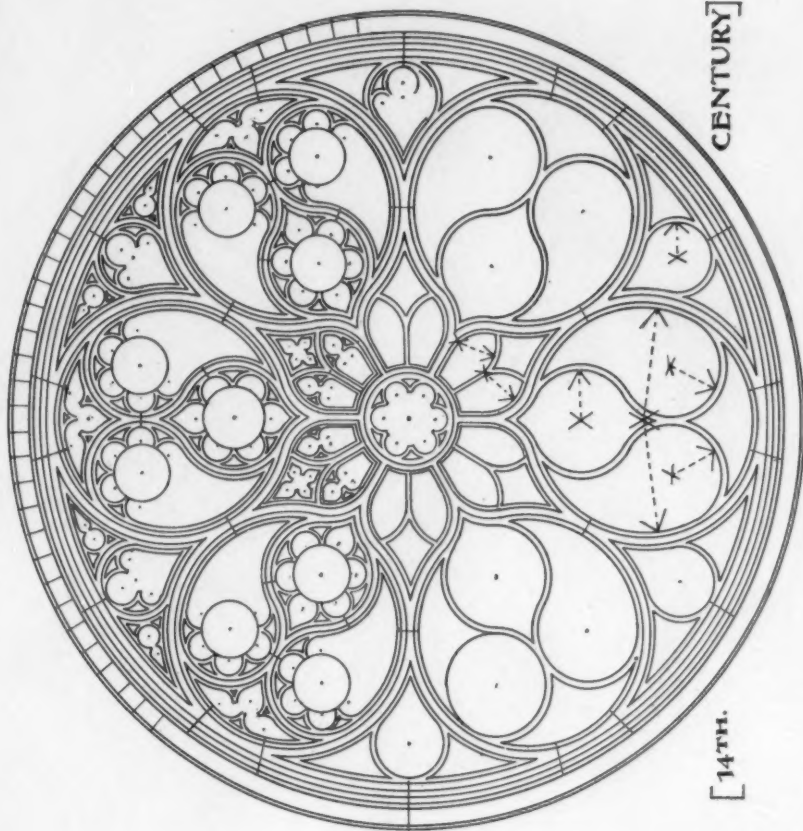
CENTURY]



[13th.

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SCALE 0 1 2 3 4 5
10 FEET.

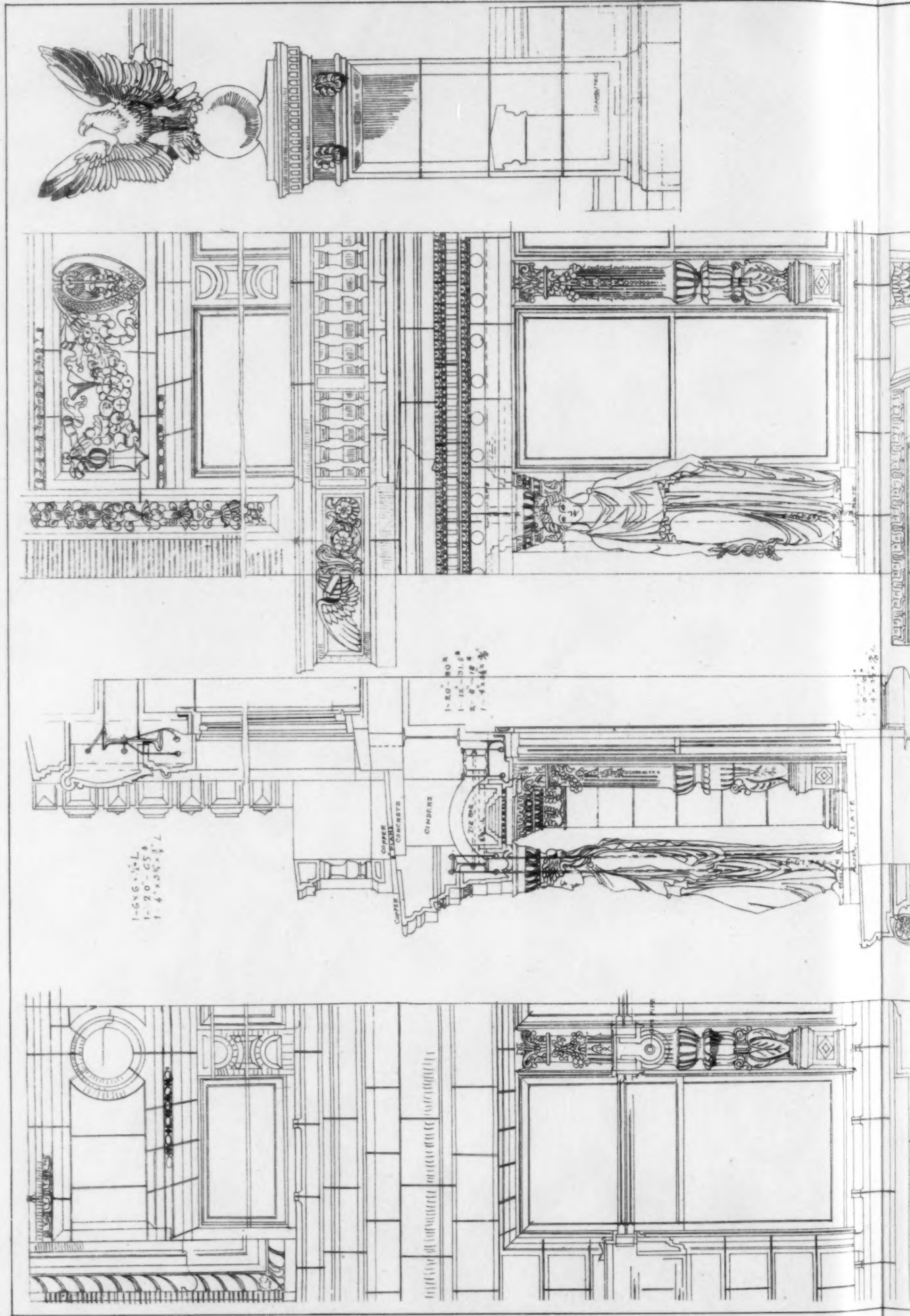


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[14th.

• WEST WINDOW •
• RHEIMS CATHEDRAL • FRANCE •

• LYONS CATHEDRAL • FRANCE •

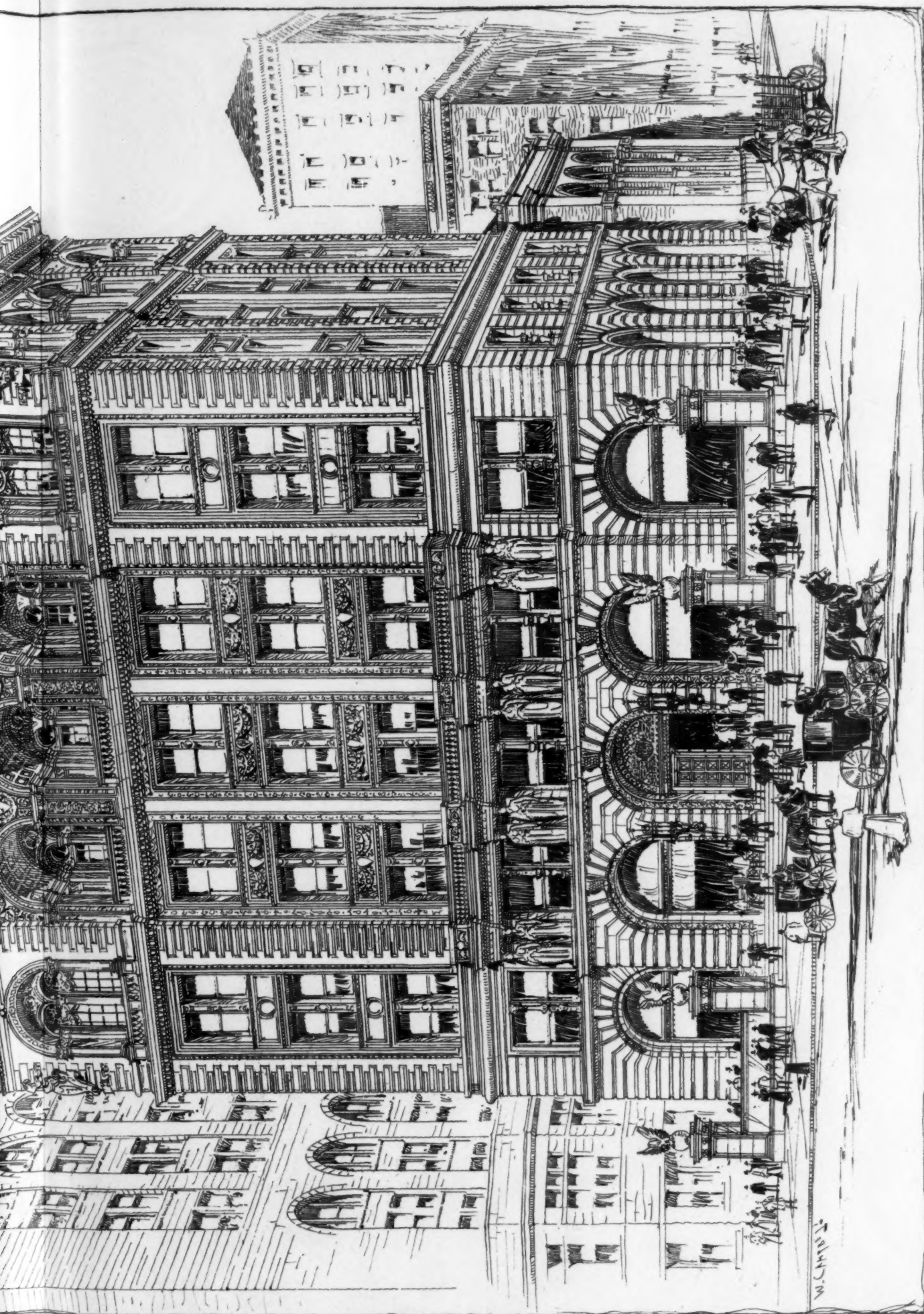


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BOSTON, MASS.

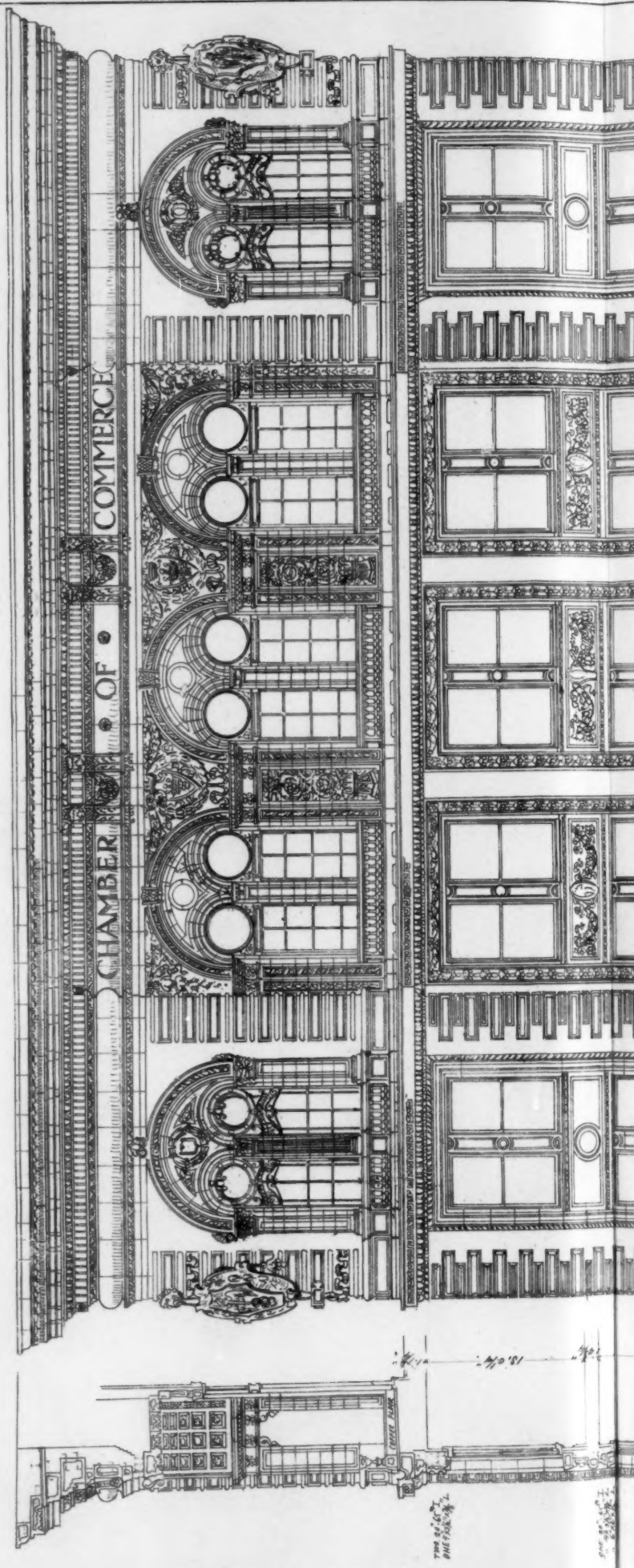
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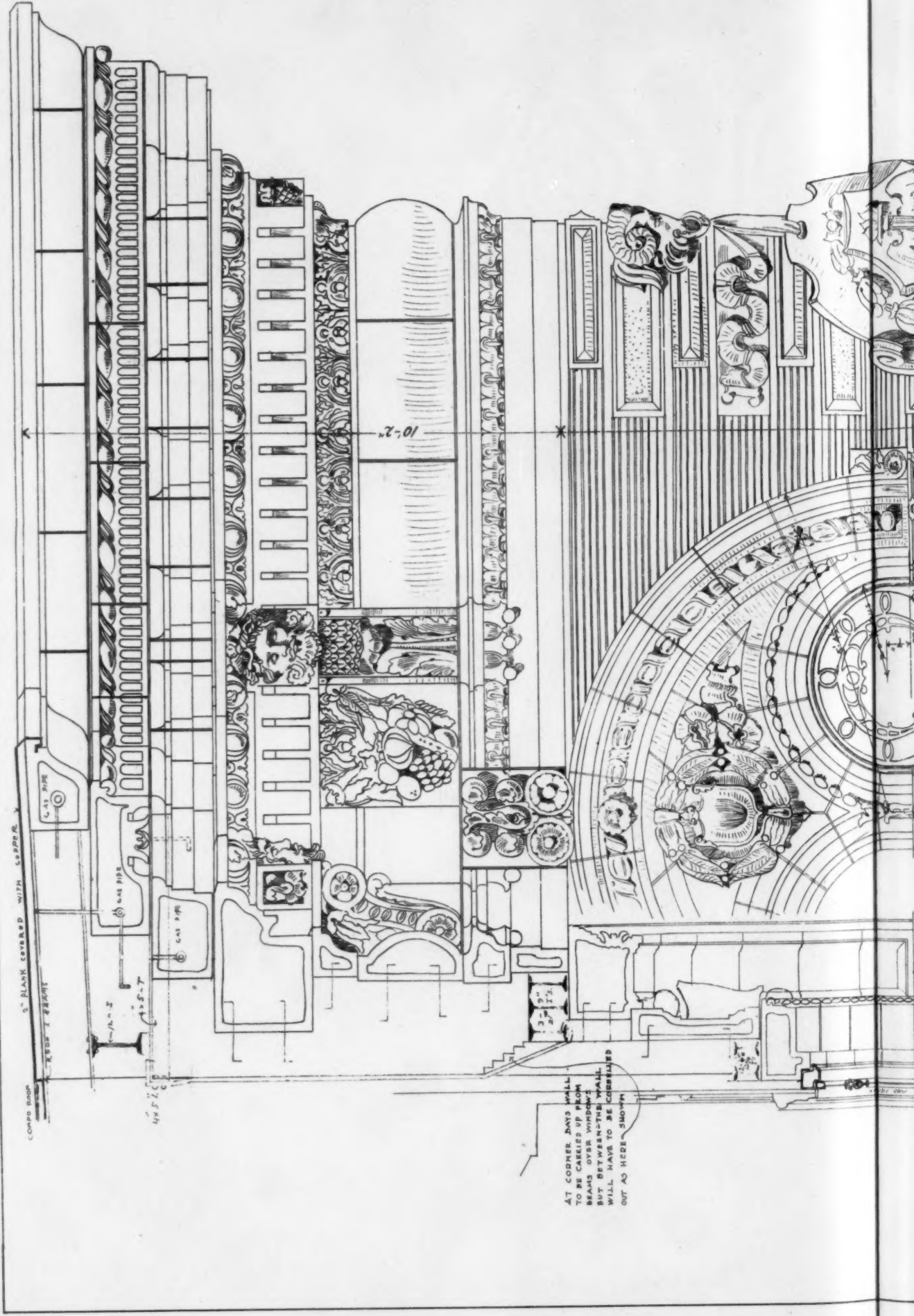


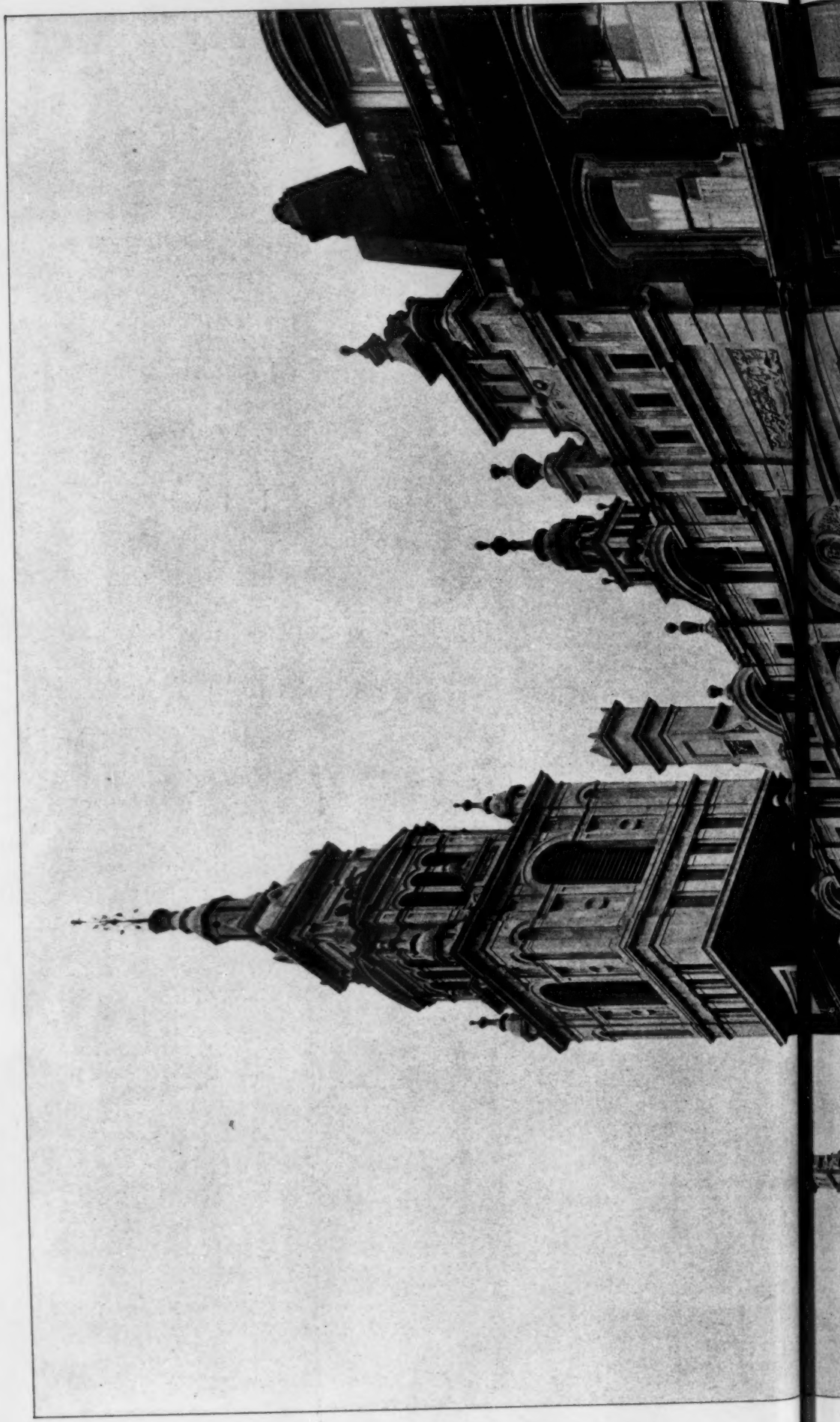
W. C. H. 1851

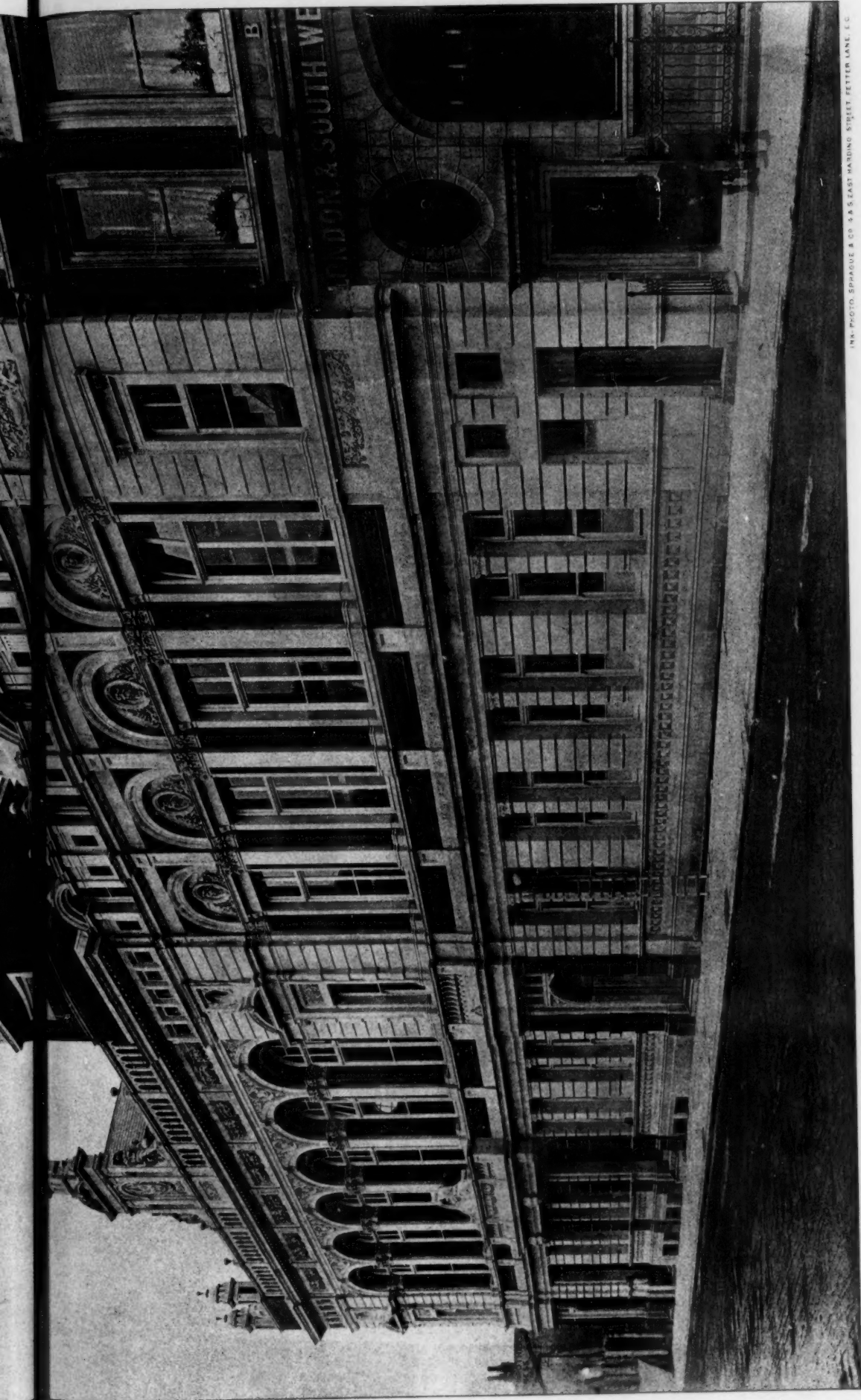
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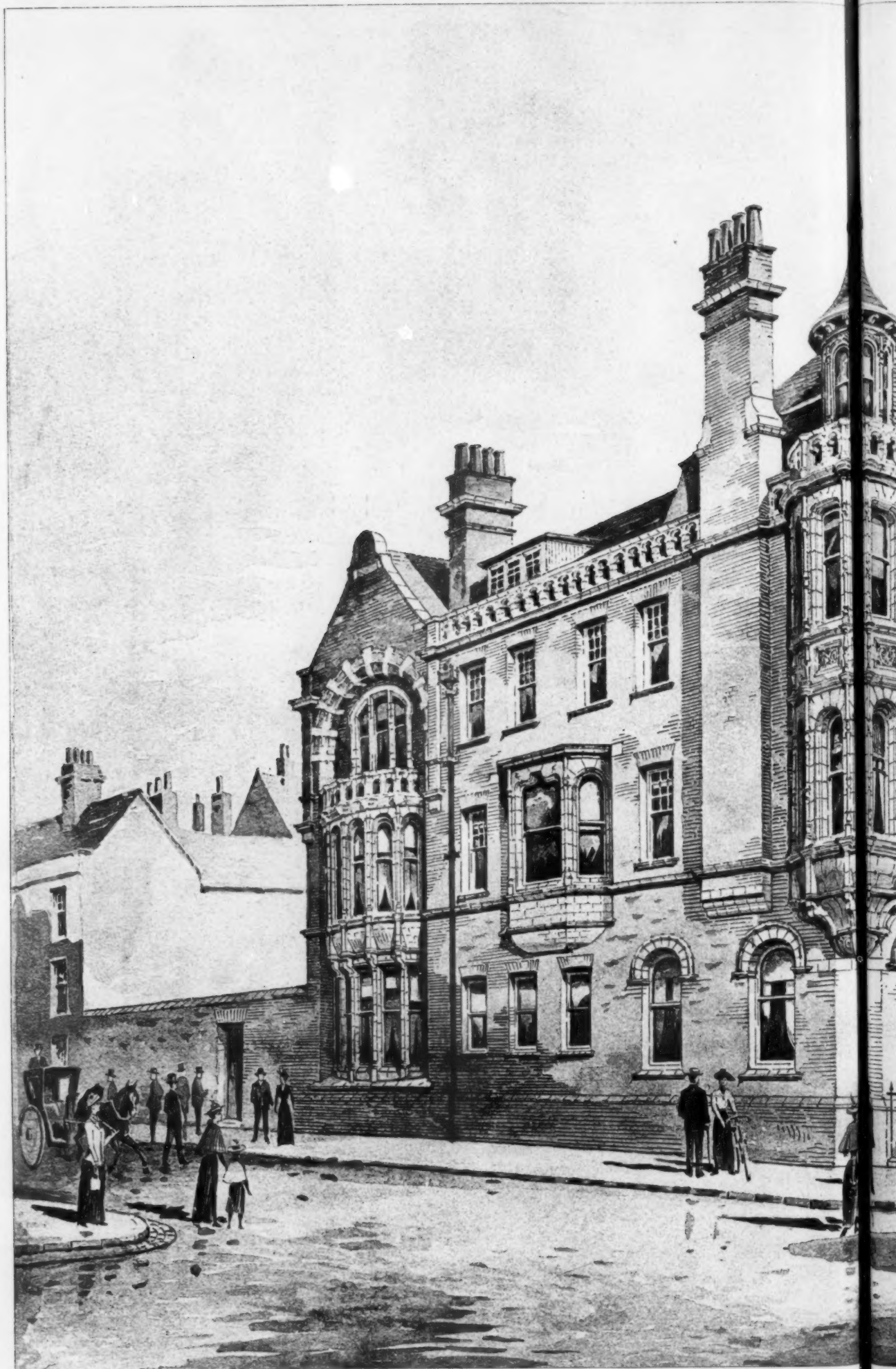




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