PRICE 15 CENTS

JUNE 13, 1891.

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. XXXII

* REGULAR EDITION *

NO. 807.

ARCHITECTURE

ENGINEERING

DECORATION

CONSTRUCTION

TICKNOR & COMPANY

BOSTON MASS.

CONTENTS.

ILLUSTRATIONS.

Additional Illustrations in the International Edition.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XXXII. Copyright, 1891, by TICKNOR & COMPANY, Boston, Mass. No. 807.

Entered at the Post-Office at Boston as second-class matter.

JUNE 13, 1891.

CONTENTS.

MRS. CANDACE WHEELER, of New York, still clings to her favorite idea, of having an apartment-house erected exclusively for women, of whom many thousands now live alone in the city, rather uncomfortably, for want of suitable accommodation. The late A. T. Stewart, who understood the importance of some such provision, built an immense structure for the purpose, but, for some reason, it was not popular, and, after his death, it was devoted to other objects. Mrs. Wheeler has gone so far as to lay out a scheme for a fireproof building, to cost about four hundred thousand dollars, exclusive of the land. Such a building would comprise two hundred apartments, including from one to five rooms each, with baths, some of the apartments having kitchens, and others not. On the first floor would be a restaurant, with stores, and the second story would be occupied by rooms for transient guests. It seems that there are persons sufficiently interested in the scheme to provide the money for carrying it out, if they can be sure of a return on their capital large enough to pay them reasonable interest, with a proper margin for repairs, depreciation, and changes of tenants. Such a return Mrs. Wheeler appears to be hardly able to promise. She is, naturally, anxious that the rents should be low, as comparatively few of the women for whom it is intended earn enough to pay a large rent, but she is quite sure that the two hundred apartments will rent steadily for thirty-two thousand dollars a year. Besides this income, the owner will have the profit from the restaurant, the rent of the stores on the first story, and of the rooms for transient guests on the second story. We should be very sorry to throw cold water on the plan, but we imagine that people who have money to invest will need to be tempted with rosier prospects than this before the plan can be carried out as a business operation. It seems to us that skilful planning will be necessary to get all the accommodation proposed, in a fireproof building, for four hundred thousand dollars, exclusive of the cost of the land, but, supposing this to be possible, the land, in any situation where stores could be rented, or rooms let to transient guests, would cost at least a hundred thousand more, making the total investment half a million dollars. The income from the apartments, at Mrs. Wheeler's calculation, will be a little over six per cent, gross, on this investment, and, to cover loss of rent, cost of heating-power, service, taxes, insurance and depreciation, with the large allowance which must be made for the cost of furniture and service for the portion to be occupied as a transient hotel, most persons would say that the gross rent of the first and second stories ought to be, at the very least, thirty thousand dollars more. The net income from a restaurant frequented only by women living in the building would be so small that it might safely be neglected, and, to make up the necessary amount, the stores, if of the ordinary size, would have to be rented for about three thousand dollars a year each, and the rooms in the second story must be constantly occupied, at about a dollar and a half a day. Whether all these conditions would be likely to be fulfilled is very problematical.

IT seems to us that the scheme is too large and gloomy to attract women, or to be financially successful. In the first place, unless the building is to be erected on such costly land that it must be made seven or eight stories high, there is no need of making it fireproof, and, as a small contribution to the object in view, which we should all like to see attained, we will suggest that what seems to us a pleasanter and much cheaper scheme would be to construct a sort of aggregation of little apartment-houses, with separate outside doors, arranged something like the college dormitories at Oxford, and, perhaps, placed in the Oxford manner, so as to surround a quadrangle, which could be made into a pretty garden, The sections should be separated by brick walls, so that fire could not spread from one to another, and each section could then, with perfect safety, be built in the ordinary manner. With four stories, and two front and two rear rooms on each story, each section would accommodate sixteen tenants. Two bathrooms would answer for each section, and there would be ample storage room in the basement for trunks, firewood and extra furniture, and space for a kitchen if desired, and there are plenty of pleasant and accessible situations in New York where such a building could be erected, and the sections rented, at a good profit, for a thousand dollars a year each, or even less, including a proportionate part of the rent of a common restaurant, which would occupy the first story of one or two of the sections, and the necessary steam heat. To our mind, the little households of sixteen friends, separated entirely from their neighbor's pianos and visitors, would be much pleasanter, particularly for women, than a house with four or five hundred tenants, with its never-ending movement and noise, and, as there would be no stores to seek tenants, land on a cross street would be perfectly available, and much cheaper than on a main avenue.

THE *Inland Architect* has the merit of suggesting that the Chicago Exhibition ought to include an Architectural department, in which should be systematically shown the development of American architecture, as well as the historical progress of by-gone styles, and the present work of the civilized countries of the world; with this, it thinks, should be connected an exhibition of modern building appliances and modes of construction. The Chicago Chapter of the Institute of Architects has taken up this admirable scheme, and has secured the approval of the Director-general of the Exhibition, so that it seems altogether probable that the plan will be carried out. If so, it is much to be hoped that the profession throughout the country will work earnestly for its success. No such opportunity for showing the value of American architects as a professional class, and of their work, is likely to occur again for many years, and it should be taken the fullest advantage of. The earliest opportunity should be seized, also, for securing an adequate representation of foreign architecture, which can only be had by earnest personal solicitation, but which is very necessary to complete the interest of the whole. If we may make a little addition to the *Inland Architect's* plan, we would suggest that it would accord well with the present idea of the correlation of the arts, and would add immensely to the general interest of the department, to show furniture, draperies, interior decoration and bric-à-brac generally with the architecture, as is done in the League Exhibitions in New York. Many of our readers will remember that perhaps the most attractive part of the Philadelphia Exhibition was the collection of little furnished rooms, contributed by various manufacturers of furniture and draperies. Such exhibits as these properly belong in an architectural department, and might, with great advantage to all parties, be subject to the approval of a committee of

architects, who would see that the rooms were not overloaded, and that the architecture and the furnishings mutually enhanced each other.

AT the time of the passage of the McKinley bill, we estimated that the effect of the new tariff would be to increase slightly the cost of the humbler classes of buildings, leaving that of the most expensive structures unchanged, or possibly lower, in case of buildings consuming a large amount of iron, the duty on which is somewhat reduced by the new tariff. There are, however, various circumstances besides the tariff to be considered in regulating business affairs, and it may, we think, be regarded as certain that the average cost of cheap dwellings is no greater for a given amount of accommodation this year than last, and is possibly a little less. Some of the materials, such as lime, are higher, but the principal material of all, lumber, is lower this year than last by an average of perhaps five per cent. The change is not due to any tariff laws, for the old tariff, although a new one is provided for under certain contingencies, still applies to most of the stock used in house-building, but to the lack of demand, which forces dealers to make sacrifices in order to sell their goods. Whether inactivity in building is general throughout the country we cannot say, but it must be very widespread. In Boston, for the first five months of the year, the number of permits issued from the Department of Buildings was only one hundred and thirty-seven, while last year the number, during the same period, was two hundred and seven; yet last year was considered a very poor year by contractors. Moreover, the buildings of the present season in Boston are, as an average, smaller than those of last year, so that, although the estimated cost is not given in the files of the Department, it is probable that the amount of building business in the city this season, so far, is not more than one-half of what it was last year. Naturally, the reduction to one-half of a business by which so many people live as that of building causes inconvenience throughout a wide circle of mechanics and dealers, and persons dependent upon them for custom or employment. According to the daily papers, the depression is seriously felt in Maine, the source of the greater part of the building timber used in New England. One account says that "the lumber trade has not been so blue since the first years of the war," and adds that a very large amount has been cut, but is left in the mill-ponds, as there are no orders for it. In New York, where the antics of the walking-delegates have greatly injured the building business within the last two or three years, the situation appears to be hardly more cheerful. One of the great stone quarries at Portland, at the mouth of the Connecticut River, has put its men on half-time on account of the lack of orders, and the other large quarries are expected to do the same within a few days. As Portland stone is a staple material in Connecticut and New York, this indicates a singular slackness in building during what is usually the busiest season.

WE are requested to mention that the Department of Architecture of the Brooklyn Institute, of which Mr. Louis De Coppet Berg is now President, proposes next autumn to open a school for draughtsmen, in which men already engaged in offices can acquire the theoretical knowledge necessary to complete their architectural training. Every one who has had any experience in architectural schools knows that there is a serious demand for such a school, but, so far, the demand has not been exactly met. Some of the great architectural schools receive special students, who are allowed to take the portions of the course in which they feel themselves deficient, but, as a rule, these special students, not being eligible for degrees or prizes, have not much incentive to make the best use of their time, and the course, at best, is not prepared with reference to them, but to the regular students only. Under Mr. Berg's skilful direction, we may be sure that the new draughtsmen's school will not suffer from any of these imperfections. It will be a very different affair, we are assured, from the evening drawing-schools, which do not pretend to do more than teach people whose hands have been accustomed to wielding the mallet or the shovel, how to manage a pencil with what an architectural draughtsman regards as the most rudimentary dexterity, and the men who enter it will have work offered them which will fully exercise their powers; but it will be the work which they know that they need, and most of them will be glad of the opportunity to do their best.

IT is gratifying to learn that the great Hudson River Tunnel, the longest submarine tunnel in the world, will be opened through from Jersey City to New York in about six weeks. Of course, it will be a long time yet before the railway tracks are in place through it, and the twin tunnel must be completed before much traffic can be accommodated, but the fact of the opening of communication under the river is a very important one. It will be remembered that this great enterprise passed into English hands a year or more ago, and that the work has been prosecuted since under the general direction of English engineers, who seem to have shown great efficiency. The total length of the tunnel is more than two miles and a half, of which a little more than a mile is under the bed of the river. It is settled that electrical locomotives will be used to haul cars through the tunnel, and before next winter it is expected that trains will pass through regularly in one direction, at least.

THE competition for designs for the new silver coins of the United States which closed last week resulted in nothing. As usually happens, the protest of the most distinguished sculptors in the country was too late to be of any use, and the competition therefore was restricted to artists of the second rate, as very few professional artists nowadays will have anything to do with competitions where their designs are not to be judged by an expert jury. The Director of the Mint, however, deferred so far to the opinion expressed in the sculptors' letter to him as to select Mr. Augustus St. Gaudens, with Mr. Henry Mitchell of Boston, and Mr. C. E. Barber, the engraver to the Mint, to advise with him upon the selection. This intelligent jury found their task made easy by the inferiority of all the designs submitted which compelled their unanimous rejection.

AN Episcopal Cathedral is to be built in Washington. A considerable sum of money has already been presented for the purpose, and it is supposed that a donation of the necessary land has already been arranged. The condition of Washington, with its brilliant, but constantly changing society, is a peculiar one, and a cathedral church would have to be adapted to it; but the difficulties of the problem will only add to its interest.

ARCHITECTS, like other people, will undoubtedly be glad to hear of a way by which they can ascertain, by the inspection of their morning cup of coffee, what the weather is going to be for the day. According to the bright little Spanish building journal, the *Gaceta de Obras Publicas*, a cup of pure coffee, with the addition of a lump of sugar, forms an excellent barometer. The sugar should be put into the coffee without stirring, and, a moment afterward, a quantity of bubbles, due to the air contained in the sugar, will be seen to rise to the surface of the liquid. If the bubbles collect in the middle of the cup, the weather will be fair; if, on the contrary, they leave the centre, and adhere to the sides of the cup, forming a ring of bubbles, with a clear space in the middle, there will be rain; if they scatter themselves indifferently on the surface, the weather will be variable, while a cluster of bubbles at one side of the cup indicates rain. No one, apparently, has attempted to explain the connection between the behavior of the bubbles and atmospheric conditions, but it is said that the indications of the coffee-cup barometer generally agree with those of a mercurial barometer placed near by.

OUR readers will remember the invention of the brothers Mannesmann, by which tubes of soft steel are drawn directly from a solid ingot, the outer portion of which is forced over a mandril, which holds the central portion in place. The operation of forcing the outer part of the metal over the rest is performed by rolling cones, or frustums, which give the finished tube a spiral fibre, adding much to its strength. In fact, the Mannesmann tubes are much stronger than any welded pipes, and they are coming rapidly into use. The German military officials, always quick to adopt improvements, have already modified the manufacture of army rifles, so as to employ Mannesmann tubes for the barrels, and all the new magazine rifles for army use are made in this way. Larger and heavier tubes of the same sort are employed for the lining of cannon both in Germany and England. A still more curious use is made of them for military purposes in the former country, where the lances of the cavalry are now fitted with shafts of Mannesmann steel tubing in place of wood. The hollow steel shaft is lighter, stiffer and stronger than the wooden one, and, of course, much less liable to accidents in use.

SPANISH ARCHITECTURE.[1] — III.

POINTED STYLE.

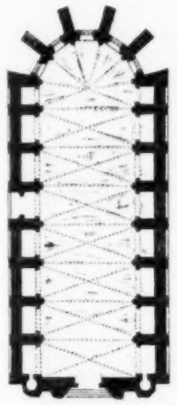


Fig. 11. Santa Maria del Pi, Barcelona.

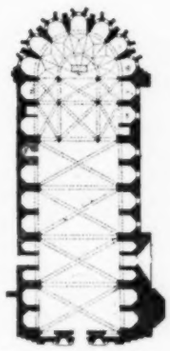


Fig. 12. Cathedral of Gerona.

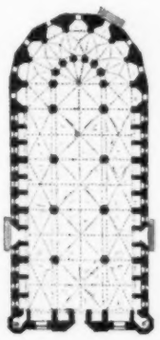


Fig. 13. Santa Maria del Mar.

THE continuous warfare in which the Christians of Spain were engaged from the moment when they undertook to reconquer the country from the Arabs was not conducive to the development of the arts. Frequently, therefore, the Spaniards turned to France, not only for their inspirations, but also for their models and perhaps even, from the thirteenth century, for their architects. So from the outset, the Pointed style in Spain exhibited the elements characterizing it in France. The decorations are the same, the spirit of the sculpture and statuary is identical and, in the productions of the goldsmith's art, as well as in works of inferior importance (tombs, sarcophagi) and in furniture, the French technique and and ornamentation are clearly discernible. In the plans of the churches, the influence of the Aquitanian school is at once recognized, as in Santa Maria del Pi, at Barcelona (Figure 11), in the cathedral of Gerona (Figure 12) and even in the three-aisled edifices, such as Santa Maria del Mar (Figure 13). Here are the same interior buttresses supporting the nave [old part of the Cathedral of Toulouse, churches of Montpezat, Carcassonne and Moissac] which have been characteristic features

Fig. 14. Count of Superunda's Palace, Avila.

of the architecture of southern and southwestern France since the twelfth century, — a fact fully accounted for by the constant intercourse maintained between Languedoc, Gascony and Spain.

Civil architecture developed at this period, but it was hardly until the fifteenth century that it began to be of much interest; the palaces, the Exchanges (*lonjas*) of Barcelona and Valencia and the seigneurial mansions take on more importance; we will examine a few of these here.

The portal of the house of St. Hermandad at Toledo, furnishes a typical example of the style of these constructions. The façade, which runs off from the main façade, on a small square, comprises nothing but the portal itself; this is characterized by two powerful shafts supporting statues and spanning both the ground floor and first story. The whole is surmounted by a projecting roof with exposed rafters. The rectangular door is studded with heavy nails similar to those seen in Arabian doors. The lintel, which is destitute of ornamentation, bears up huge escutcheons, and above these opens a rectangular, grated window; the tympanum of the pointed arch, framing in all the upper portion of this *ensemble* is adorned with a spread eagle, which serves as a support to the arms of the kingdom; there are emblems on either side of the window, — a yoke and a sheaf. The architecture of the seigneurial dwellings, exemplified in the Count of Superunda's palace at Avila (Figure 14), is often full of energy and even brutality. As the illustration shows, the great arch of enormous voussoirs imparts a peculiar aspect of strength to this entrance; the decorative motives, the heavy, luxurious mouldings about the window and

Fig. 15. San Marcos, Seville.

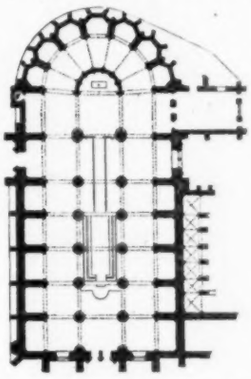


Fig. 16. Cathedral of Segovia.

door, the large escutcheons bearing the arms of the proprietor, give an air of grandeur to the edifice; the same features also appear in the Casa de los Momos at Zamora, another structure of the same period. In religious architecture we see the perpetuation of French influence; and, though in the church of San Marcos at Seville (Figure 15), for example, the Pointed portal departs somewhat from French principles; this may be attributed to Arabian influence which, at the time, still predominated in Toledo, and which was often such as to make the transition between the Mudejar style and contemporary Pointed art almost imperceptible; nearly everywhere the impress of the arts of the northeast can be detected. The plan of the Cathedral of Segovia (Figure 16) includes the interior buttresses referred to above. The enclosed *trascora*, the elongated choir, the rows of stalls (*silleria*) so characteristic of the Spanish rite, appear here in all their exaggeration, occupying nearly all of

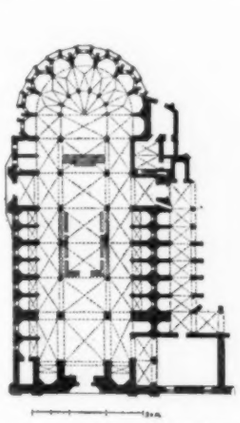


Fig. 18. Cathedral of Barcelona.

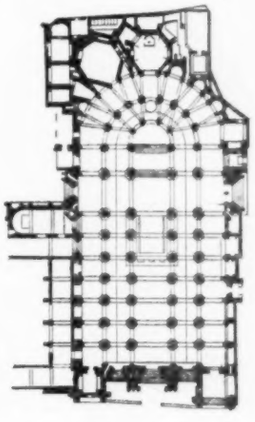


Fig. 19. Cathedral of Toledo.

the nave; the cloister, which belongs to the fifteenth century (Figure 17), is very beautiful, and is in a perfect state of preservation. The decoration (fifteenth century, as at Valladolid and Burgos) is often quite heavy, for in the elements of

[1] From the French of H. Saladin, in Planat's "*Encyclopédie de l'Architecture et de la Construction.*" Continued from page 144, No. 806.

the mullion and balustrades the semicircular arch is more frequently employed than the broken.

The Cathedral of Barcelona (Figure 18) also has

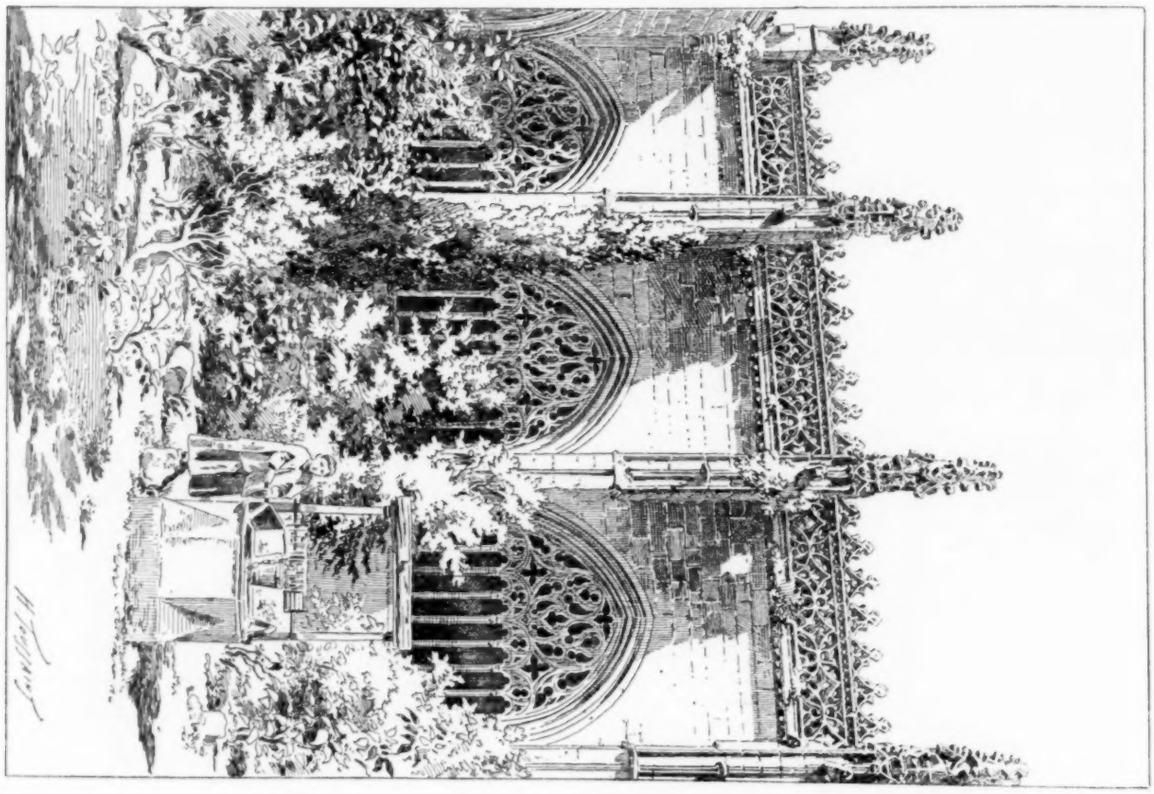


Fig. 17. Cloister of the Cathedral of Segovia.

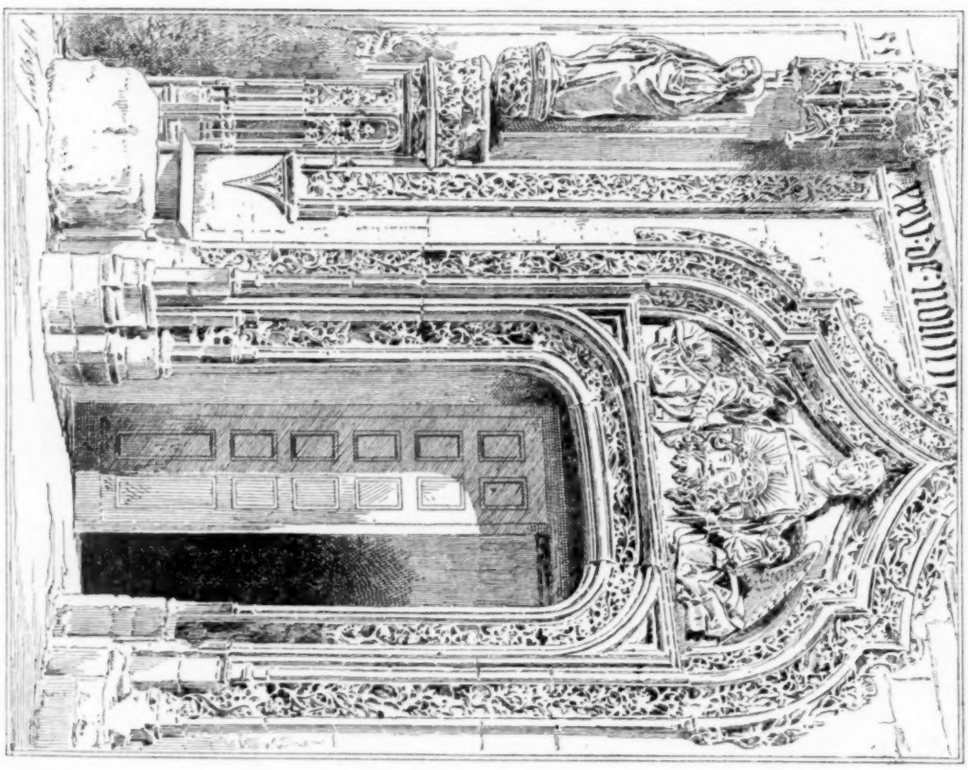


Fig. 22. Doorway from the Cloister of San Juan de los Reyes, Toledo.

of a boldness which is well indicated in the plan by the slenderness of the supports. Along with this slenderness, dry, harsh forms occur, which give the edifice a singular resemblance

interior buttresses, which form deep lateral chapels; but its style is nearer that of the north, and the resistant properties of the materials used in its construction admit

to the structures reared by the Flemish and German architects in the fifteenth century. This likeness is striking in the door of the Pieta. On the tympanum, the sculpturing of which is

remarkably well preserved, the figures are stiffly draped in ample folds, and the whole produces the impression of a church of Bruges or Cologne rather than of a Spanish monument.

The Cathedral of Toledo is, on the contrary, thoroughly French in its ground plan (Figure 19), which is evidently patterned after the plans of the cathedrals of Paris and Bourges. One part of it belongs to the fourteenth century; the other is of the fifteenth, and is vaulted in the Angevine fashion, that is

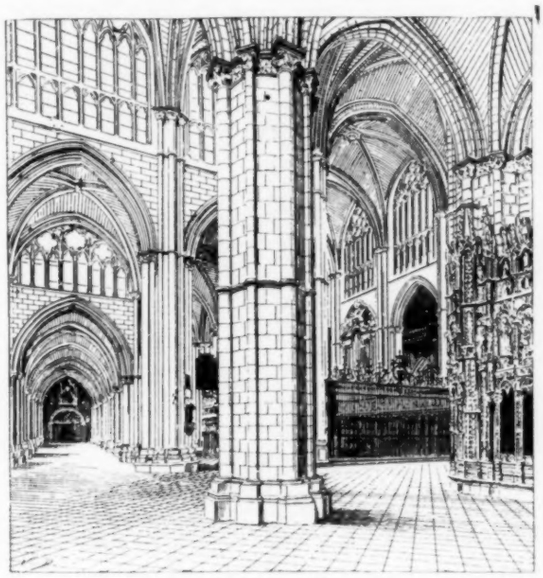


Fig. 20. Interior of Toledo Cathedral.

to say, in accordance with the principle of the dome rather than of the groined vault. The five lofty aisles constitute a magnificent whole. The choir (Figure 20) is developed on both sides of the transept and is terminated by a magnificent reredos in carved wood, painted and gilded; on the right is the tomb of the kings, on the left, that of Cardinal Mendozo, and on each side of the enclosed portion of the nave are wooden stalls of remarkable richness, which give the edifice a peculiarly grand appearance.

San Juan de los Reyes (1476), also at Toledo, built by the architect Juan of Guas, to receive the remains of the royal family, offers an example of the style of the north imported full-fledged. The vaulting of the church (Figure 21) exhibits all the most intricate complexities of *lierne* and *tierceron* ribs; the vaults of the cloister and the chapter-house are traced after the same model. The interior composition of the church displays great originality. The false transept forming a choir is surmounted by an octagonal lantern, the angles of which are filled-in by squinches with radiating ribs, similar to the shell-shaped squinches employed by the Arabs at Kairwan in the

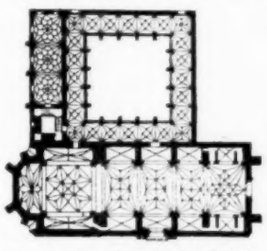


Fig. 21. San Juan de los Reyes, Toledo.

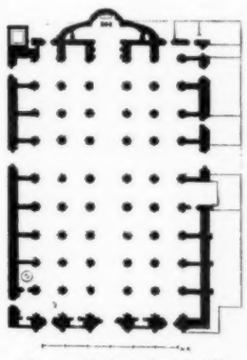


Fig. 23. Cathedral of Seville.

mosque of Okba. The interior balconies, the wonderful wealth of sculpture, corbellings chiselled with extreme care and broad decorative inscriptions inspired by analogous Arabian embellishments, make this chapel a real gem of architecture; but in style it is Flemish or German: the accompanying view of the cloister doorway (Figure 22) gives an idea of the edifice. Is it not a Flemish or German construction, with its somewhat harsh mouldings, its deep-cut ornamentation and its tympanum adorned with a head of Christ, surrounded by little winged angels that seem to have stepped out of a painting by Memling or Albert Dürer?

The Cathedral of Burgos, which is one of the finest in all Spain, has a thoroughly French aspect. The enrichment of the spires and façades — the edifice, begun in 1221, was not completed until 1571 — offers many points of resemblance to the Pointed architecture of Bordeaux. Yet the peculiar Spanish interior disposition, the great altar-screens, the sumptuous chapels, the choir walls, give it an essentially Spanish character. The interior is somewhat massive; the transept pillars supporting the lantern, or rather the central tower, are cylindrical and adorned in the upper part with statues placed in niches. The octagonal lantern borne on shell-shaped squinches, which are flatter than those of San Juan de los Reyes, rests upon a basement on which is a broad decorative inscription surmounted by a frieze of shields: next come the windows. Above these spreads an octagonal vault with *lierne* and *tierceron* ribs on a star plan, comprising two concentric stars about an octagonal *oculus* with ribs converging to its centre. The spaces between the ribs, instead of being filled-in with plain stonework, are enriched with openwork carvings of most varied designs. We are reminded of the

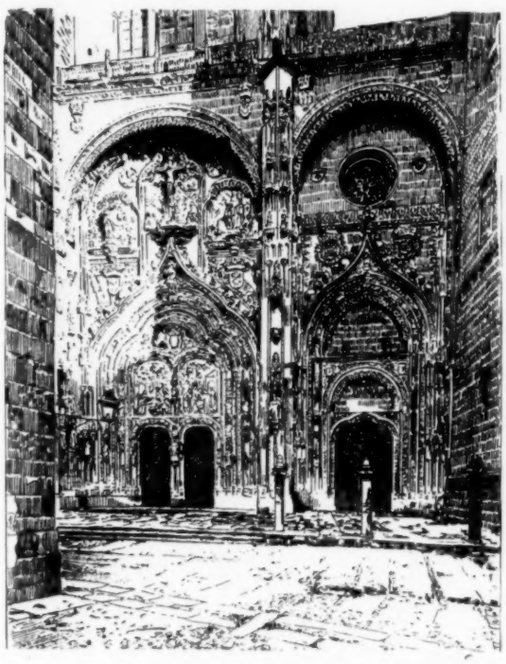


Fig. 25. Portal of the Salamanca Cathedral.

stalactite form of the cupolas of Arabo-Spanish art, of which this church certainly offers an interesting adaptation to the Pointed style. The vaults of the church itself also have *lierne* and *tierceron* ribs, which are sometimes rectilinear, sometimes curvilinear; at the springing they display a certain analogy to the English vaults preceding the conoid vaults with curvilinear generatrices, as seen, for example, in Westminster and Peterborough.

The exterior of the central tower is very ornate; the story containing the windows is embellished with projecting balustrades which completely encircle it, passing even around the buttresses. The top is flat and surrounded by a rich balustrade, at the angles of which rise lofty pinnacles surmounting the buttresses. The horizontal line of the balustrades is broken at the centre of each side by an equestrian or a standing figure. Like the French abbeys of the Middle Ages or the great sixteenth-century mosques at Constantinople, the cathedrals of Burgos and Toledo are surrounded by cloisters, libraries, sacristies, chapter-houses and episcopal palaces, forming, as it were, religious cities which are still almost complete.

In the Capilla de los Veles at the Cathedral of Murcia, all the interior sculptural decoration is in a pronounced German-Gothic style; the ornamentation of the mullions and of the niches and arches exhibit the twisted moulding with cylindrical section which is so characteristic of the German-Gothic; we

find also the curved-back gables of the Lorranian Gothic. The exterior is, on the contrary, wholly Spanish, with its cornices carved to imitate heavy chains, and its disproportioned escutcheons forming rich decorative points on the façade.

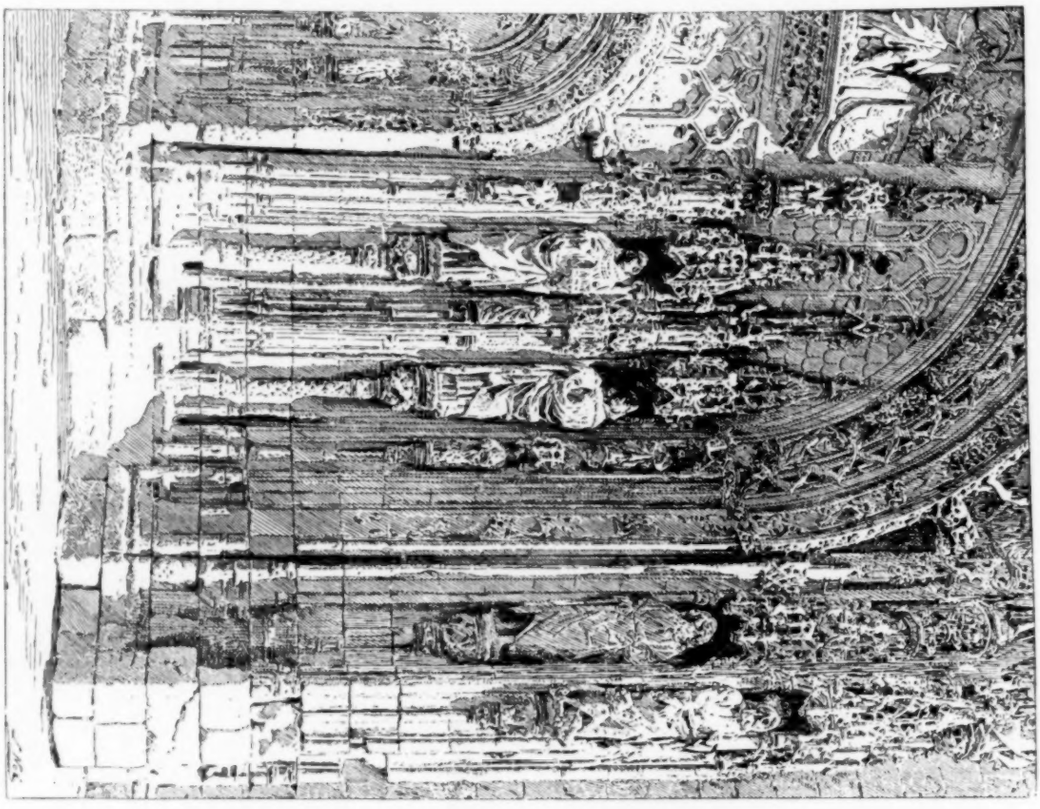


Fig. 24. Façade Portal of San Pablo, Valladolid.

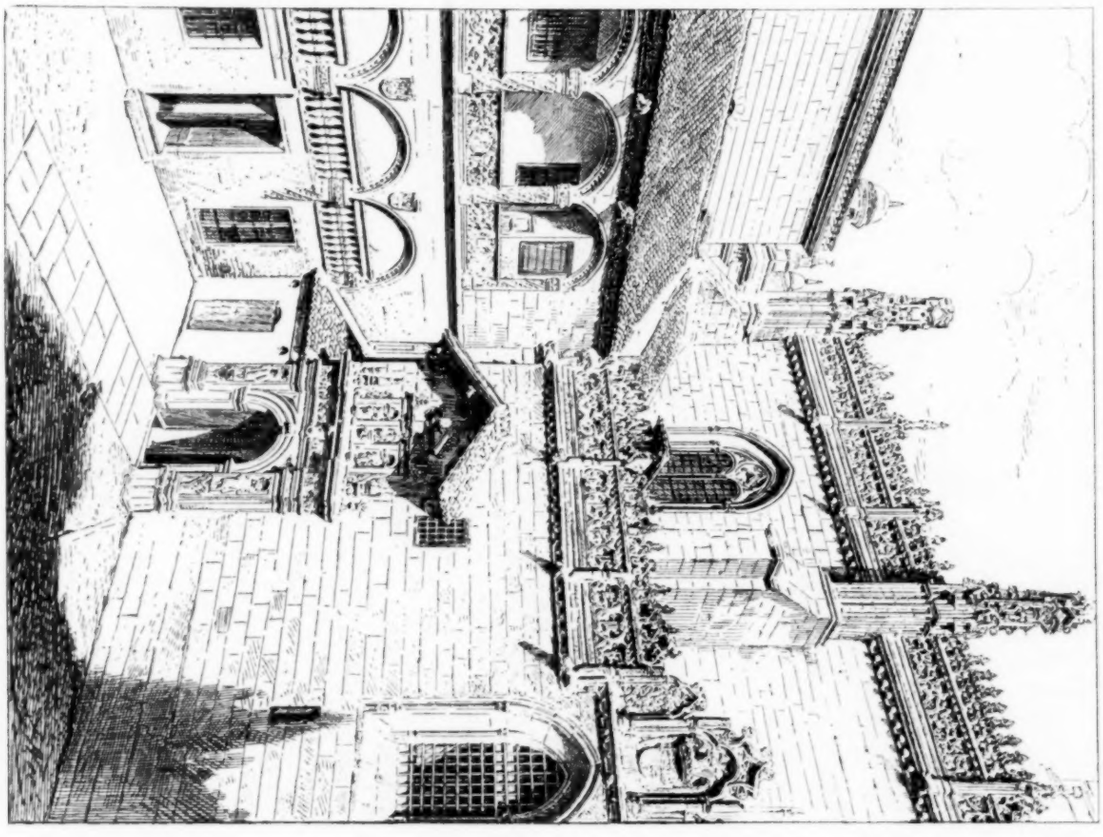


Fig. 26. Royal Chapel in the Cathedral of Granada.

This German influence is attributable to the architects John and Simon of Cologne, who were summoned to Spain by the illustrious prelate, Don Alonso of Carthegena. They constructed the Chartreuse at Miraflores, near Burgos (1442), in which are the tombs of the founder John II and his queen. These tombs are of wondrous richness and, singularly enough, are on a star plan. Still other Spanish architects of the fifteenth century are known; Velasco, architect of the Capilla del

Condestable, at Burgos; Anequin de Egas, Guillermo Sagrera, Guillermo Villasolar; Juan of Guas, architect of San Juan de los Reyes; Pedro Compte, Macias Carpintero and Pedro Gumiel. Many of them not only executed monuments in the Pointed style, but they frequently, and almost simultaneously, employed the Plateresque. Among the remarkable edifices of the Pointed period, we should also cite the cloister of Montserrat (1476); the Cathedral of Seville (Figure 23) whose five-aisled plan has an Arabian aspect, and may, in fact, be said to be almost that of a mosque, with its columns set in quincunx order; the church of the Hospital del Rey, at Burgos; the chapel of San Iago, at Santa Maria de Alcala de Henares; the church of San Gregorio at Valladolid, founded by Don Alonso of Burgos, archbishop of Palencia; and San Pablo at Valladolid (Figure 24). This last is also a northern work; the portals are so enriched with deeply chiselled and ornate sculpture as to suggest wood carving rather than stonework; the lack of proportion is emphasized by the juxtaposition of statues of different sizes. This construction is one of the most interesting illustrations of the rapid decadence of ogival art occasioned by the exaggerated complexity which the fifteenth-century artists introduced into their compositions; this fact comes out clearly in the German School; but here, where the Flamboyant style was transplanted without having passed through the imperceptible transitional changes of the different periods of Pointed art, these overloaded structures are executed with still less judgment than in Germany; in the portal of the Cathedral of Salamanca (Figure 25), for example, the intricacy and exaggeration of the enrichment make it all the more offensive to the eye.

The church of Villena, with its twisted columns and lierne-ribbed vaulting, recalls the Exchange of Valencia. We close our long list of Pointed structures in Spain with the royal chapel in the Cathedral of Granada (Figure 26); the balustrades, in open stonework, although somewhat heavily burdened with decorations are broadly and richly executed.

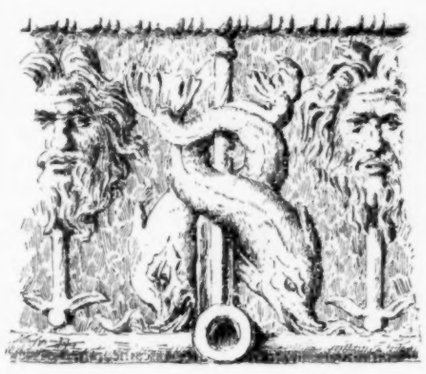
(To be continued.)

THE DOLPHIN IN ORNAMENTATION.[1]—I.

Bronze antique.

'AMONG those aquatic creatures or animals very often used as models and types for the graceful creations of the ornamentists, none is so well known and so carefully preserved as the dolphin. Especially was he dear to the poets, being consecrated to Neptune and Apollo. However, this happy circumstance had nothing to do with the physical or moral advantages of this fish, for they are far from attractive. Through modern science he is presented to us in the most doleful aspect. The naturalists compel us to believe, nowadays, that the dolphin has none of the godlike qualities attributed to him in times of old, and which were transmitted to us from century to century in the legendary accounts of ancient authors. To these naturalists, he is a vulgar, common and insignificant mammifer of the great family of the ordinary cetacea; he is a blower and as such has given the name to a species, the delphini . . . nothing more.

Here are the principal characteristics of these animals, of which there are several species: the body fusiform, that is, tapering towards the tail; the jaws set with common and generally conic teeth; the gills (through which they blow out the water they have breathed) have but one aperture, at the top of the head. Moreover, some dolphins (only those living in countries where they are noticed and hold the same rank they occupy in the mythologies) have a very large cranium and a voluminous brain. From this fact, great intellectual faculties were attributed to them. Thus the dolphin, with his waving, playful and quick motions, was, according to the ancients, considered the model of gentleness; an intelligent animal, fond of music, very docile, and seeking after the society of man, whom he respected, loved, and often helped in noble enterprises. Unfortunately nowadays, observers have ascertained nothing of this kind; on the contrary, instead of these superior gifts, they discover decidedly bad traits. He is proclaimed to be stupid and voracious; knowing nothing, save to satiate his gross appetites; good for nothing, save to eat and reproduce; indeed an animal of the lowest class in the true meaning of the word. Then, his unceasing evolutions, which were looked upon as childish and graceful; his rapid cleaving of the waves, which was considered as a special favor granted to the steed and messenger of the divinities; his stubborn inclination to follow the galleys and triremes in spite of threats, the noise of the oars, or the songs of the sailors, which was explained by his ardent need of society and his passion for music; his immobility or quietness, when men approach him, which was considered as a proof of friendship; all these exist no more, it is but a tissue of illusions which fall one after another and are explained away by the anatomic and special conformations of this kind of cetacean. If he be quick in his motions, it is in order to seize his ordinary prey, composed of small, quick and lively fishes; if he surround and obstinately follow ships, it is only to find a profusion of this small fry crawling in the refuse and living on the débris constantly thrown into the sea during the voyage; finally, if he do not attack man, it is because he cannot; his structure does not allow him to do so. Otherwise, he would do like the shark, which, as well as he, follows ships, for according to Cuvier, he is the most carnivorous, and, in proportion to his size, the most cruel of the cetaceous class.



Terra-cotta Gutter, from the Campana Collection.

Therefore, we see, we are far from the charming and alluring stories which were often the subject of our tasks when we went to school, and read Pausanios, Pliny and the poets. These positive declarations from learned men, which caused so many charming stories to tumble down suddenly, were not accepted without strong protestations. Some men, with the courage of their convictions, were found who tried to refute what had been demonstrated with the aid of scale and scalpel. But it was useless; they were obliged to acknowledge well-proved facts and to learn that some of the qualities ascribed to dolphins could only belong to the seals, which are a kind of hyphen between quadrupeds and fishes. However, the difference of aspect between dolphin and seal is very great indeed: the Greek and Latin authors could not have made such a mistake as to confound them.

We must, with regret, forsake henceforward the legends and fables concerning the dolphin, however attractive and charming they may be; they are irrevocably condemned. But there remains to us—supreme consolation for ornamentists and writers!—the invention, the poetical creation which gave birth to so many beautiful conceptions in the arts: poetry, painting, sculpture and decoration—that harmonious music of a new kind, which remains for the pleasuring of the sight and of the intellect.

This marvellous theme, which embellished so many graceful and skilful designs, which rival the best in nature in beauty and elegance, is a splendid gift which Hellenic genius has bequeathed to us, the everlasting glory of which is to have known how to metamorphose in the name of the muse, even the coarsest types. It is ancient Greece, primitive and direct heir of the Eastern civilizations, which, better than any other, has called out these symbols and created emblems by her ingenious and passionate spirit for fable, and, by a certain method of abstraction, she has peopled the whole universe with deified beings. As she caused the woods to be inhabited by the joyous Faun, the brook by the timid Nymph, the sea by the Triton and nimble Nereid, she conferred on the latter a companion worthy of them, and, by preference, chose the dolphin, to which her thoughts had been already turned by the legend of the barbarous and credulous Pelasgians.

Italian Decoration from the Cathedral of Orvieto.

This fish, the intrepid, supple, rapid swimmer, became for all of them a rapid messenger; to his long and voluminous body was granted the required strength to draw the car of the marine deities or to convey them on his back. His custom of coming near men, following the ships or making a thousand turns in the harbors and along the shores, was sufficient proof to them that he was a medium between the earthly world and the inhabitants of the fathomless

[1] From the *Revue des Arts decoratifs*.

waters. Moreover, it was noticed that the songs and the noise of musical instruments did not frighten him; therefore he was considered a lover of melodious sounds, and, being already consecrated to Neptune, god of the waters, he was consecrated also to Apollo, god of art, and, as such, was venerated by poets and artists, who were supposed to be inspired and helped by him in their works. Add to these numerous qualities the wonderful gifts that the old fables attributed to him, and which were increased by numerous local variations, and we have an idea of the great importance that the dolphin had, and of the great part he played. He has had all advantages and honors.

Thus it was that these fables, remarks of uneducated men, and trifling, unauthentic observations, were largely instrumental in creating a superior being, a kind of myth, which ran through the poetry of the civilized Hellenes, and which the arts of designs multiplied under all aspects as soon as they were in possession of suitable means of expression. Painters, mosaic-makers, sculptors, ceramic-makers, jewellers, medallists and workers in gems studiously emulated each other in reproducing mythological incidents in which the dolphin and his legendary exploits figured, and he contributed toward the creation of symbolic allusions and the delicate ornamentation of many remarkable objects. A dolphin shown as an animal for the daughters of Nereus to ride may be seen on numerous ancient monuments: frequently painters of vases represent Poseidon, the Jupiter of the sea, with a dolphin in his hand; still more often the modellers show us Eros transported by this sacred fish; again he is shown to us drawing Neptune in the midst of a magnificent court to meet Amphitrite, whom he is going to marry, etc. The adventure of the poet Arion of Methymne, who, when robbed by seamen, was thrown into the sea, where

> "Un dauphin, traversant les plaines de Neptune,
> Attiré par ses chants, prend soin de sa fortune:
> Il l'aborde, il l'emporte, il lui sert de vaisseau,
> Et donnant aux mortels un spectacle nouveau,
> Il le fait à leurs yeux, sans péril et sans crainte,
> Naviguer sur les mers de Crète et de Corinthe,"

became the subject of numerous artistic creations in all kinds of material. In accordance with the same order of ideas, great quantities of terra-cotta ware are ornamented with a dolphin, upon which rides a child armed with a trident or a whip: a plastic reproduction of the story brought down to us by authors, where it is said that a wounded dolphin was nursed by a child, and that the dolphin showed his gratitude in many ways, among others by conveying the child on his back over a river in order to prevent his walking too long a distance to school. As it was alleged that Apollo, in order to found the town and oracle of Delphi, had taken the form of a dolphin, the coins of that sacred place were decorated with one of these cetaceans, both as a souvenir and as a play upon the name of the place. To take a part for the whole is often done, and it emphasizes the genius of that people, in that the Greek artists were often satisfied to indicate the sea by a fish only, principally the venerated dolphin, just as for them a tree was enough to represent a forest: this summary fashion was largely employed in the decoration of vases. In the same way, coins were stamped with a dolphin, like a coat-of-arms, to indicate a port, a settlement of fishermen or a maritime colony. The coins of Ægina are stamped with a dolphin in the hollow square of the reverse; likewise at Messina and Syracuse, several of these animals surround the head of Arethusa.

From Holbein's Alphabet of Death.

Finally, the dolphin as a true comrade of fishermen and seamen is twisted around oars and tridents; is shaped for the use of jewels and engraved on the ring of the navigator Ulysses. When consecrated to the god of day, he is the guardian of the lamps, the handles of which are formed by him or he decorates their chains; an inhabitant of water, he is used in the decorations of fountains and to ornament the roof gutters. We might multiply quotations and examples; for this petted cetacean seems to be everywhere and is to be seen at every step, because he represents facts, ideas, feelings, passions, so often has the Greek applied him to the ordinary things of life, to a series of mythological conceptions, borrowed from the abundant sources of his lively imagination, always on the alert.

We all know that following the intestine wars of the Greek cities the emigrations *en masse* of the vanquished not only favored the creation of numerous colonies, but also that these new centres became so many towns similar to those they had forsaken. These people worshipped the same god, although they were far from their fatherland, preserved the same customs, rules, fables, emblems and symbols. It is through these migrations that the dolphin, very well-known in Southern Italy, was naturally implanted in Rome, thanks to the numerous objects furnished by commerce; there he enjoyed nearly as much consideration as elsewhere and was used to express the same ideas.

In a similar way, he was used as an attribute of the gods of marble and bronze, he accompanied the secondary divinities, he impersonated the liquid element, and was used to ornament and particularize jewels, cameos, utensils and the thousands of industrial products executed by Romans (or rather by the Grecian artists sought after by the sovereigns of the world, overburdened with wars and conquests.) In architectural ornamentations he appeared, as a matter of course, in certain temples and in the decoration of the circus: at one of the extremities of the spina there was a porch on the entablature of which were seven dolphins and which was called "Delphinæ" or rather "Delphinorum columnæ"; On the banks of the canal of Euripus, which separated the arena from the spectators, dolphins were fixed from place to place, and served to feed this miniature sea, as is mentioned by Cassiodorus:

"Euripus maris vitrei reddit imaginem; inde illinc Delphini æquorei aquas confluent."

[To be continued.]

A RUN THROUGH SPAIN.[1] — XIII.

ON THE WAY TO THE ALHAMBRA.

GATE OF JUSTICE

NOTWITHSTANDING I have heard voyagers and writers speak of Malaga as being a beautiful town, I affirm that Malaga is a dirty, hilly, rough town, with only the glorious sunlight reflected from the blue sea to give it life and beauty, and containing very little of interest. We arrived there early one morning on a steamer of the line that runs around the coast from Cadiz to Gibraltar and thence up around the Mediterranean shore. Our getting away from the latter place was picturesque, to say the least, and not without some excitement. Opposite the old fortified town of Gibraltar is a little place known as Algeciras from which the boats start. With the perversity of the Spanish race they will not start from the English town, and I don't know as one can blame them for their semi-hatred of a country that has so treated them. At any rate, we were obliged to get aboard a little tea-kettle kind of a boat and cross the bay in a drenching rain-storm, where the only cover was a little box-like cabin capable of holding only half the number of people who were on board. The storm beat into the bay heavily, and amidst anxious prayers for safety from some Spanish women, and various symbolical contortions from some Moors, the little boat bobbed along half covered with water. Now one might reasonably suppose that this boat would land us on board the steamer in regular order; but not so did it turn out. The low black docks came in view, and a number of row-boats totally without any cover from the storm took us to the piers. Our tickets had to be looked over, and our baggage examined lest some diabolical English luggage should be found therein. Then again we entered the open row boats and were slowly taken to the steamer which lay a half-mile off shore.

Thus like drowned rats we scrambled aboard saying to ourselves that at last we should get dry quarters, and a good supper. But behold! not a light in the cabin, and every state-room taken by officers of the steamer, leaving only a little room, with toilet attachment, for the women, and this for the accommodation of a dozen or more!

This was altogether too much, and, so, mixing up a literary bomb composed of Spanish, French, English, Volapuk and cuss-words, we prepared to fight for our night's rest. Happily we were joined by a courier and his family, who were enabled to make good grammar of

[1] Continued from No. 806, page 149.

our compound; but had it not been for sheer pluck and fight on our part, I verily believe we might all have slept on the cabin seats, for we were obliged to take forcible possession of the staterooms, pile in our baggage and prepare to fight for our places. The officers gave in with ill grace, and left us severely alone: whether they were accustomed thus to work every voyage, supposing they could force a fee from all hands, I do not know. At any rate, we were equal to their trick that time, and enjoyed a good night's rest.

Our landing in the Bay of Malaga was made early in the morning of a beautiful day, and the bay scene was interesting in the extreme. Here, by reason of the arrival of African boats, were to be seen bare-legged and dusky Bedouins in white *burnooses* mingling with peasants in sandals and *mantas* and Jews in embroidered *caftans*, while sailors from every isle of the sea in their native costumes ran hither and thither, shouting and yelling in all kinds of languages.

Although Malaga is, of course, purely a Spanish seaport town, in the little crooked streets are yet seen remnants of the Moors and their work. Here and there one sees a bit of stonework where the whitewash has come off and disclosed some Moorish signs. Over a doorway is a Moorish sign, and a glimpse inside shows the remains of a horseshoe arch with its raised decoration partly colored. One enters a store and finds wares of all kinds hanging to slender columns capped with arabesque capitals: the store was once a palace and the columns adorned a beautiful *patio* within. Here are broken bits of tile and an old iron grille, and beyond a garden where once was a luxurious growth, now overgrown.

You ask the owner to whom it belonged? He does not know, and he shrugs his shoulders towards the old Moor who enters and speaks gravely as he sighs and thinks of past ages. Remember, that to him these sights may have been those of his ancestors. Can you not fancy this old place alive with voices? Can you not conjure up before you the rippling of the water in yon old fountain, and the tinkling of the guitar? Surely the soft waving of palms has been heard here, and the intoxicating aroma of incense has permeated these halls lending life to the smiles and laughter of Moorish maidens. And lovers have been here and sworn their troth to eyes that were brighter than the stars. And all this has passed away, the grave Moor has disappeared, the merry maiden's eyes are dim, the font is broken and empty, and from its source no water——

Some one stops me right here and insists that this is all bosh, pure bosh, that we can design just as beautiful a fountain as the old one yonder, that the water of to-day is just as fresh and can flow with just as much bubbling and rippling as ever, and that there are eyes just as brilliant and eyelashes just as long in a species of maidens known as Americans. It may be so, and I think on the whole it is so, but one cannot help dreaming about these Moors in going through their old palaces, just as we do ourselves when we visit the old homestead of our boyhood's time, and moralize on the vicissitudes of life.

In order to hurry through this town and get on to Granada, we hired a carriage and proceeded to ride through the streets. Not a strange proceeding anywhere else, but in Malaga it brings on a shrug of the shoulders and the exclamations of the knowing ones "What fools they are, actually riding in Malaga!" when to ride through such horribly uneven streets is a sure sign of softening of the brain, no less than a cause of absolute dislocation of the vitals. Yet we hailed a cabby, who seemed to size us up much as a coroner would his subject, and after driving a bargain with him entered his rattley carriage. If there is any place less interesting than Malaga, we had not yet found it; even Medina with its questionable eggs, and its rum in the coffee, was more interesting, since there you expect nothing, and you find nothing, while here you expect something yet find nothing — but dirt. If again, there are any streets in the wide world that are rougher and dirtier we should be pleased to find them. We rode a dozen blocks and descended in a state of shakes, since every bone in the body had grated against its neighbor, was disjointed, unstrung and generally knocked out. The smile of the passer-by was fully understood.

One may, however, be interested in seeing the raisin-curing depots, for the Malaga raisins are noted and remembered from childhood.

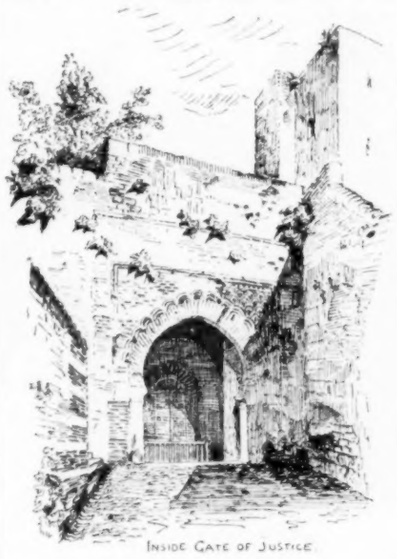
We were glad to leave Malaga and if we had been asked at the station by any Spaniard disgusted with our remarks, why we had ever come to Malaga, probably we should have slung back at him his own talismanic words "*Sabe Dios*," God only knows. Then on to Granada and the glorious Alhambra.

One arrives in the dark simply because one must do so. Spanish trains travel more by night than by day, for no reason under the sun apparently, unless it be to guard against a sunstroke to the engines: at any rate, one is often deterred from visiting the interior because of this strange practice. Possibly in this case it is better however, as we ride through a dirty town in the dark, are simply conscious of passing up a hill, through a beautiful forest of tall elm trees, where water trickles and bubbles continually, and where the end is a hotel, dark and silent, and a bed that is welcome after a long and tiresome journey. Sweet slumber follows this entrance into Granada, and morning brings the consciousness that the darkness of the night before was simply like a veil hiding the gates of Paradise, and that the sunlight now draws aside the veil and discloses such beauties as it is difficult for the mind to conceive.

To write in human words of the Alhambra seems almost like sacrilege; language cannot well convey ideas of such beauty, and if it could, no pen can ever better describe it than that of the immortal Washington Irving. Yet since every eye sees with a different focus as it were, and since a trip to Spain without Granada is like Hamlet without the ghost, I must jot down my impressions in a few words, hoping that the reader may but see it for himself in all its romantic beauty.

Yes, we certainly awoke in an earthly paradise, with which but few places can be compared, and while visions of Moorish tales were floating through the delicious dreams of our morning naps, we were rudely brought to a realizing sense of our exact surroundings by the waiter, who must needs suggest that he was ready to serve breakfast, and who was, no doubt, much disgusted that we should rush through it without ceremony. Poor fool, he no doubt wonders what could be more beautiful than a well-spread table at which one can sit and eat, eat, eat, until one is filled: we, however, think of food only as a means of existence, and count the wonders of the Alhambra far in advance.

The long shaded walk is before us as we emerge, lined with stately elms planted by the Duke of Wellington, who should have the everlasting gratitude of the world for his part in beautifying this far-away spot. On either side of the walk are water-courses, down which we had heard the water bubbling the evening before. Large stone fonts spout forth their golden streams, which overflow and splash away in foaming rivulets. The birds sing gaily, the sun shines brightly, the blue sky peeks through the tree-tops, the mossy walls covered with foliage loom up beside us, and ere long we approach a gateway which gives us the first impression of the Alhambra. It is the Gate of Justice, rough, broken, rugged and splintered, yet sublime in all the beauty of a Moorish mass, with simple horseshoe arch, glorious with the warm orange tints which flicker down through the trees and play upon its high wall.



INSIDE GATE OF JUSTICE.

Your first question is, of course, where are the key and hand so often spoken about?

Away up on the keystone is the mystical symbol that has puzzled savants for ages, and is looked upon with awe by every true Moor. Here is the first indication of their mystical character, and also the indomitable faith in themselves as a nation. Only when the hand should clasp the key should the Alhambra be taken from them, was a precept inculcated of old by its occupants. But ages have passed; the hand has not advanced a hair, only time has chipped its sharp surfaces and eaten away a part of the key, while others have occupied their palaces and gone in and out beneath its symbolic characters.

Just before we enter, however, there is an old moss-grown font to the right, and beside it sits an old fellow sunning away his time, and ever and anon glancing at the stray passer-by. It will give us a good opportunity to sit down and recall a few facts in regard to the Alhambra.

The old fortress palace of the Moorish monarchs was erected and added to at various times between 1250 and 1350, but it is fair and just to give Yusef I the credit for that which to us seems the most interesting and beautiful.

When the poor Moors were expelled, the vandalism of the conquerors destroyed much of the carving and fine work of the courts; and later, Charles V, coming along with all the pomp of a French court life, did all he could to destroy the remaining beauty by clearing out a space, and erecting a large circular façade in a modern style of architecture, and directly in the centre of the group. Years passed, and the Spaniards soon forgot the gem in so lovely a setting, and the French, upon an invasion in 1812, blew up parts of it, which later still suffered from the thunders of nature and lay shattered in the dust, unknown and uncared for. Not until Isabella II appeared was anything done to prevent its absolute dissolution, and yet the remains stand much as they once did, in all the beauty of an exquisite setting; a very mine of Oriental design.

As we sit here by the old font a delicious sensation of quiet and repose fills one's soul; the old man who stands beside the gateway seems metamorphosed into a Moor of old, whose very life depends upon his faithfulness to the hand and key above his head. A woman advances and fills her jug with water as clear, and running just the same, as a hundred years ago, and as she turns away some gypsy girls appear and endeavor to dispel our thoughts by dancing a gay fandango.

But the grand old Gate of Justice is before us, the hand and the key rivet the attention and cast a spell over the mind, which is only disturbed by the approach of that well-known character, Mariano, a veritable king of the gypsies, "the model of the immortal Fortuny," to evade whom we start on and enter the gateway through which the tricky astrologer once led the beautiful Christian princess, with whom he suddenly disappeared into subterranean caverns much to the chagrin of her rightful lord and master, the king.

The sketch shows the exterior rough and broken, with the arch high in air, but it does not show the fact, which the plan discloses, that an abrupt turn is made under this arch, so that one emerges on the other side by a smaller and, to my mind, much finer arch, which still retains some of its tile-work in the spandrels, and over which the moss and lichens cling with loving tenacity.

After passing the arch the path ascends between high walls for a few steps, and at last brings one to a large court plateau, surrounded by the ruins of the old buildings. Directly in the foreground, however, is the huge, circular Palace of Charles V, in the style of the Renaissance, which is unsightly only because so perfectly out of keeping with the beautiful and refined delicacy of the old Moorish work.

This court is known as the Court of the Cisterns, and under the ground is a huge cistern of water, which comes directly from the river Darro, and is as cool and clear as of old when the stately Moor quaffed it from his golden vessels. But to-day here are the little donkeys accompanied by a charming little "*chico*," so many examples of which are found in every painting of Spanish life. The old staircase at Rome is not more prolific in Italian models than is the Court of the Cisterns in Spain, and taken all in all, surrounded as it is by all its beautiful palaces, one must be indifferent indeed, who does not itch to get hold of this little fellow and cover a page or two with sketches of his character. Ah, for the pencil and brush of a Murillo!

The question must arise in the mind of every one, Where is the entrance to the Alhambraic portions of the palace, for there is nothing to guide one? You try the right side, and find yourself in some underground passages and vaults seeming to have no outlet. And here is the pleasure of this Chinese-like puzzle, for no one shouts at you, no one is in sight, silence reigns supreme, and there are no unpoetical guide-boards painted with directions. One may follow his own inclinations and roam at will. But who would ever suppose from the outside that behind these low walls were the priceless treasures of the Alhambra! It is ever thus with Moorish work, the simplicity of the exterior never tells of the richness of the interior. At length one draws near a common everyday-looking-doorway fixed in an equally everyday stone wall. Surely this cannot be the entrance, there is no arch, there is no carving, no anything but a blank door. But it is, and within are a dozen guides who will seize you one by one, or two by one, or three by one as it may be, and will rush you through the court and tower, and with phonographic correctness tell you all about it, and will lead you out, pocket their pesata, and show you the door with a "God bless you man, you have seen the Alhambra! *A Dios, Señor.*"

We had made up our minds that no guide should accompany us, and having arranged for an entrance at will we were unmolested.

As one emerges from the corridor and stands in the sunlight of the first court, with its beautiful hedge of myrtle, and its rectangular pond of clear water fed by a font at each end, and which in the stillness of the air reflects a colonnade of arches and arabesques with a background of azure blue, he stands entranced.

I have written a hundred lines to describe the scene, but I have scratched them all out, and admit that as the artist cannot paint its beauties on canvas, no more can I describe that which in its beauty seems almost immortal, and which in general characteristics is known to all.

But if the view before us is entrancing, how much more so is the effect as we cross the court and enter the Sala de Embarjadores which rises seventy-five feet in height, being only about thirty-seven feet square, and whose ceiling is a mass of little bits of stalactite woodwork, so that it looks like a hanging honeycomb highly ornamented in bright colors. The walls also are literally encrusted with this beautiful Moorish ornamentation in relief, with the base of *azueljo* mosaic which glitters and glistens with the entering light.

I said to myself, I must copy some of this tile-work and ornamentation, so I opened my sketch-book and commenced.

"Those lines are wrong," say my friends.

"No," I insist, "it has a triangle as a base, and it will soon repeat itself, thus."

"But that is wrong, as you see from the original," say they.

"Ah, there is the fault," and I correct it. But there is another, and another, and still another, until I give it up in despair. It is not so easy as it looks.

Before seeing the remainder of the halls, one is led to think of the decorations and the hall itself as a delicate piece of architecture. But after coming back several times to it one is also struck with its massive strength and dignity. Justice was here meted out from the throne of an empire, and justice has nothing of delicacy about it. The thick walls, the high ceilings, the precipitous depths below seem now to frown on us notwithstanding their beautiful decorated surfaces, and we look back to those olden times, and find that the men who were educated enough to form such beauty were also educated enough to lay the foundations of power by wise and righteous laws.

From this hall went forth the decrees of a nation, which rose to the highest point of civilization, and shed its beams over the whole of Spain. And yet it is no more. We had seen a few Moors in Africa who yet held these memories dear, who lived in the stories of the past, and still held the veritable keys to many of the houses in Granada, with a faith stronger than would seem possible in the light of the last hundred years. They yet believe they shall be brought back to the lovely Alhambra.

Sad hope, never to be realized. They are dead to the world, a nation without a name or an abiding-place.

Day after day may you wander through the walks and *patios* of this beautiful place, building up romance on romance, simply because it is impossible not to do so. And you never tire of it either. One point of exquisite beauty is known as the Tocador de la Reina, a little room perched up on a point of land a hundred feet or so above the sloping hillside, and several hundred feet above the Darro which flows below. There the queen and her ladies made their toilets, talked up this and that bit of gossip, listened to the tinkling guitars played by the gypsies below, and possibly performed their devotions as a sort of *entr'acte*. Can you help romancing about such a place? The little room is about nine feet square, and although modernized by Charles at the time that he started the huge palace, it yet shows what a beautiful little bit it must have been. The walls had been decorated by Julio Aquiles with subjects of a mythological order, but are now scratched up by names of visitors whose only object in travelling seems to have been to leave a record of their vandalism where it can be seen by all. One notices an orifice in the floor at the entrance, and for a moment supposes it to have been like a register for the introduction of heat. Not so, however, for we are told that the room was perfumed daily for the queen, the odors being wafted up from a perfume-room below.

The little room is surrounded by a beautiful colonnade of marble, and in walking around one is struck with the beautiful views. Below, the Darro and its suburbs of gypsies. To the right the Generalife, white in the sunlight, and nestling among groves of tropical beauty. To the left are the massive walls of the Tower of Comares, and a balcony leads from one to the other. All the roofs are covered with the glazed Spanish tile, soft with age, with here and there strips of green and blue, which, however, add nothing to the beauty, unless it be a touch of Orientalism.

It may be well to call attention to the decoration of this old palace. The forms of *patio*, court, hall and font are in general like other Spanish palaces, but who can describe the decorations? They seem endless, yet are simply geometrical designs elaborated. Owen Jones says of Arabian architecture that "it is essentially religious, and the offspring of the Koran, as Gothic architecture is the offspring of the Bible. The prohibition to represent animal life caused them to seek for other schemes of decoration, and they thus used inscriptions from the Koran interwoven with geometrical ornaments and flowers not drawn decidedly from nature, but translated through the loom; for it would seem that the Arabs in changing their wandering for a settled life, in striking the tent to plant it in a form more solid, had transferred the luxurious shawls and hangings of cashmere which had adorned their former dwellings, to their new, changing the tent-pole for the marble column, and the silken tissue for gilded plaster."

The architectural part of the work, the arches, the *azulejo* dados, the *artesonado* roofs, and more than all, the beautiful white marble and alabaster columns, are no less beautiful than their decorations. Especially is this so of the capitals of the columns, each one a different design and in general ornamented in gold upon a red or blue ground, while the columns themselves were left in their purity.

To the architect who has studied the groining of a dome, the ceilings are wonderfully interesting. They look like honeycomb stalactites yet are cut on mathematical principles, and are capable of an infinite variety of combinations, just as it is possible to form a grand symphony from the fundamental seven notes of a musical scale.

While sketching some of their motives and necessarily inquiring somewhat into their construction, a gentleman passed and looked over the book.

"You are an architect or artist? he said inquiringly. "Yes, *Señor*," I replied, "and I was thinking what a wonderful effect these old fellows obtained by a repetition of the most simple forms." "Ah, yes," he replied, "I am the architect in charge and never cease to wonder at the same fact."

"Indeed, then you must give me a pass to see this glorious palace by moonlight, for it must be entrancing."

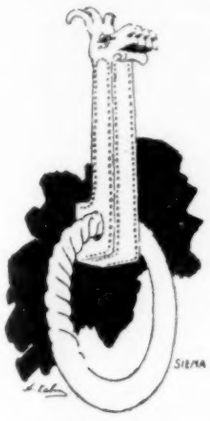
"Granted, *Señor*," he said, as he passed on, "better than that, I shall send you a permit that will allow you to go and come at will as long as you please."

And he kept his promise. Charles A. Rich.

[To be continued.]

Uneven Floors in Fireproof Buildings. — There is one peculiarity in the construction of fireproof buildings that few people have noticed. I refer to the impossibility of keeping the floors level. This applies to all buildings in which iron is used for supporting floors, but particularly to those in which steam is extensively applied to heating. The steam-pipes running near the iron girders cause them to expand, and as the walls are always strong enough to resist the pressure, there is a forcing up of the iron. This causes regular hills and valleys in the floor, although, of course, they are not very apparent. — *St. Louis Globe-Democrat.*

DRAINING THE EVERGLADES OF FLORIDA.



A STAFF correspondent of the *New York Tribune* writes as follows from Kissimmee, Fla., concerning the results that have been thus far obtained by Mr. Disston's interesting attempt to reclaim the vast area of swamp lands in that State: —

A startling transformation is taking place in the Florida peninsula. A gigantic drainage system, whose ultimate object is the reclaiming of the Everglades, has already lowered the level of the big lakes, turned oozy swamps into dry land, put farms, houses and mills where alligators once dived and cattle waded and ferrymen plied in dugouts, and made this town, in the heart of the peninsula, a seaport. Several hundred thousand acres have been added to Florida's taxable property and made available for profitable cultivation. In the next ten years this will become the greatest rice and sugar region in the country. The thing has been accomplished with characteristic American effectiveness. Hamilton Disston, its moving spirit, who makes more saws and files at Philadelphia than any other man in the world, has not "stood around," like the great De Lesseps, saying "Gentleman, for me the canal is finished." He has simply laid careful plans and employed a competent force to carry them out on business-like principles.

The Florida peninsula slopes to the south. Along the centre is strung a chain of considerable lakes, some entirely isolated, others united by tortuous streams. The southernmost lake, Okeechobee, the biggest of all, is also the largest within the bounds of any one State. Its waters inundate the mysterious Everglades, where the shy Seminole retreats before the advance of civilization. During the Seminole war General Harney, General Jessup and other officers learned something of the character of the country, and occasional expeditions have brought back stories of its dreary inaccessibility. But no white man has ever been able to make his home there. The upper or northern Everglades next south from Okeechobee are a wet jungle of dense saw-grass, populated by snakes and insects. In the rainy season one may paddle up the intersecting creeks and bayous in a light skiff, but in dry weather the soil is exposed. The lower Everglades, running down to the point of the peninsula, are also a saw-grass jungle, but cut up by countless water-avenues into thousands of islands. Toward the southern end there is a perceptible tide, and the Gulf and Atlantic shores are lined with a rock rim that impounds the waters.

Many people believe this vast territory utterly useless to man. The drainage companies are proving that it isn't. Centuries of decaying vegetation have gradually raised the earth-level of the Everglades, storing them with deep layers of rich, dark soil that makes husbandmen green with envy. A four-foot reduction of the water-level would make all this available for cultivation. General Harney in a letter, reported to the United States Senate, suggested that canals cut east and west from Okeechobee and the glades would give the required reduction. Mr. Disston, as the story goes, after careful examination and consultation with Colonel James M. Kreamer, his engineer, decided that it was also necessary to diminish the water-supply from the northern lakes that serve as feeders. These lakes, moreover, he knew, were bordered by marshes worth draining for their own sake. So he went to the Legislature and in 1881 secured permission to reclaim all lands below a line drawn across the peninsula a few miles north of Kissimmee and east of Peace Creek, which debouches in Charlotte Harbor. The tract embraced 8,000,000 acres. Four million of these, however, Mr. Disston was compelled to form a separate company to buy, to lift a State mortgage.

Then the work began. As the map shows, the lakes, as they occur southward on the sloping peninsula, are Tohopekaliga, Cypress, Hatcheenehaw, Kissimmee and Okeechobee. The water-level follows the land-slope. Tohopekaliga is sixty-four feet above the sea, Hatcheenehaw sixty, Kissimmee fifty-nine, and Okeechobee only twenty. Canals cut southward to Lake Kissimmee and the straightening of the very crooked river that links Lakes Kissimmee and Okeechobee have therefore relieved the upper lakes by a steady flow, while cuts from Okeechobee southward into the Everglades and eastward to the Caloosahatchie, that empties into the Gulf near Panta Rassa, have lowered four feet the surface of that great lake. The piercing of the rock rims on the coast is expected now to release the water accumulated in the Everglades. Then the engineers will make predictions as to the running of the first through train from Jersey City to Cape Sable. Meanwhile, in the north end of the chain a lake east of Tohopekaliga has been connected with the northern Atlantic coast by way of the St. John's River, to relieve the pressure there. So far about eighty-five miles of canal are cut. The trenches vary from 25 to 105 feet in width, and hold from 6 to 10 feet of water.

Kissimmee owes its existence to the drainage company. A few years ago the shore of Tohopekaliga at this point was a cypress swamp. But Captain R. E. Rose came here to build a dredge, the water-level was lowered seven feet, a wide beach was uncovered, docks and shipyards were built, and now the town has a big hotel, a brick court-house, and 1,500 inhabitants. The company has made this its field headquarters. At Southport, at the opposite end of the lake, you can ramble through a large banana plantation and see tobacco and sugar-cane growing where the land was once all under three feet of water. The plantation is now in bad hands. Grass and weeds overgrow everything, but the soil is evidently wonderfully rich and capable of high production at small cost. A Scotchman here recently declared that it looked like so many acres of barnyard manure. The Kelly brothers, whose Louisiana mill could handle more rice than they were able to produce, have established themselves in this neighborhood and declare that the soil beats that of the Mississippi. They have yet to produce their first crop, though as the land is said to yield twenty barrels to the acre, worth $5.35 a barrel, and costs only a tenth of the sum to cultivate, their outlook is encouraging.

The neighboring sugar plantation at St. Cloud, is however, a revelation. Several hundred acres annually yield a large growth of cane, where the water once stood six feet deep. There are a large sugar-mill, with tall chimneys, storehouses, shops and dwellings, and a line of railroad. The cane sprouts there seven years from the same stubble. In Louisiana it has to be replanted every two years.

"If I were your age," Claus Spreckles told a young man the other day, "I'd buy up all the muck land I could get in South Florida and plant sugar. It's as rich as any I've ever seen."

The canal mouths are protected by wooden jetties. Sand-bars form across them, but are easily removed. The current is about three miles an hour, and in the wet season there is water enough for light-draught navigation. A Mississippi steam-boat in 1884 ascended to Kissimmee from the Gulf, a distance of 360 miles. When East Lake and Tohopekaliga were first united (I think in November, 1884), the difference of level was six feet six inches. When the dams were cut, in the presence of a crowd of visitors, the first rush of the waters carried away the last vestige of the rubbish in the canal and scoured out the bed below the line of excavation. For ten days the current was unabated. Then the reduction of the lake water diminished the flow. The lake surface fell thirty-six inches in thirty days. The receiving lake rose only half an inch a day and that for only a short period. Only white men have been employed on the dredges. Their uniform good health is remarkable. Although they work for hours every day in the hot sun turning up green slime, there is no mortality. Not a case of malaria has been recorded since the first dipperful was taken from the marsh, and long life and service with the drainage company are now said to be synonymous. Mr. Disston's original contract with the State endowed him with every alternate 640-acre section of the land reclaimed. The Legislature subsequently appointed a committee to make better terms for the State. The committee showed its genius by formulating a new contract requiring the drainage company to spend $50,000 a year, and to pay the State 25 cents an acre for the land. The company is, however, relieved of the obligation of confining itself to alternate sections, and the 25-cent payments are balanced out of the $50,000, so that it takes a man of brains to see what the State has gained. The land costs 50 cents an acre to drain and sells for $25.

One curious result of this great engineering work is its effect on plant life. About Lake Okeechobee, for instance, the margin is covered with great areas of morning-glory vines, which have all sprung up since the tapping began to destroy aquatic vegetation. From the look-out of a dredge, as she ploughs through the marshes, the contrast is striking. Before her stretch green tangles of saw-grass and aquatic plants, with the brown water pouring in a spumy torrent over the head of the canal. A few marsh-birds rise from the quaking bogs and flutter off in alarm at the strange intruder. Otherwise, the wilderness is unbroken by signs of life. In the rear, where the dredge has cleared a watery path, the canal banks are firm, rushes and water-lilies lie browned and dead in the sunshine, green edible grass sprouts spontaneously, and herds of cattle graze in placid contentment. On one side is desolation, on the other endless promise. It is the story of the peninsula, the difference between the old and the new.

E. L.

AMERICAN CONSTRUCTION THROUGH ENGLISH EYES. — I.

THE MANHATTAN ATHLETIC CLUB, NEW YORK.

THE Manhattan Athletic Club of New York has recently erected a building of noble proportions and added to the architectural beauty of Madison Avenue. The façade is imposing, and the general architectural design is of the Renaissance period dashed with a little Flamboyant Gothic.

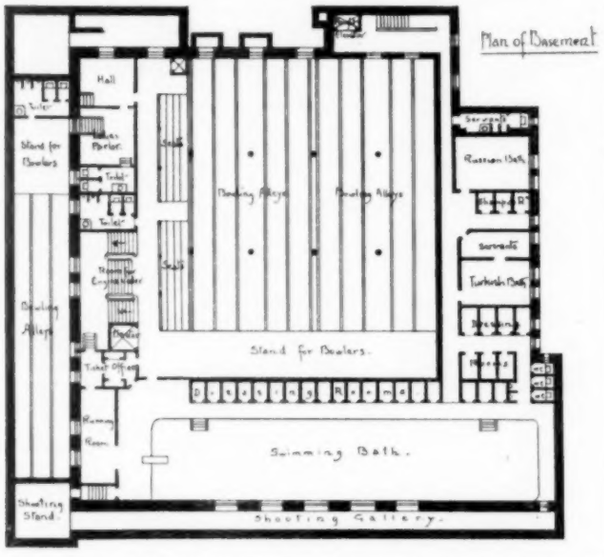
The building, about 125 feet square, which is absolutely fireproof, is six stories high, with a roof-garden, which is covered by a high peaked tiled roof.

In describing the arrangement of the interior, I will go first to the lowest point of the structure. The sub-cellar on the Forty-fifth Street side is taken up by the boiler and engine rooms. Here is the dynamo which furnishes electricity for 2,500 lights in the building, and here also is the large pump which draws the water from the artesian

well, at the rate of 100 gallons per minute for all the uses of the building, except drinking.

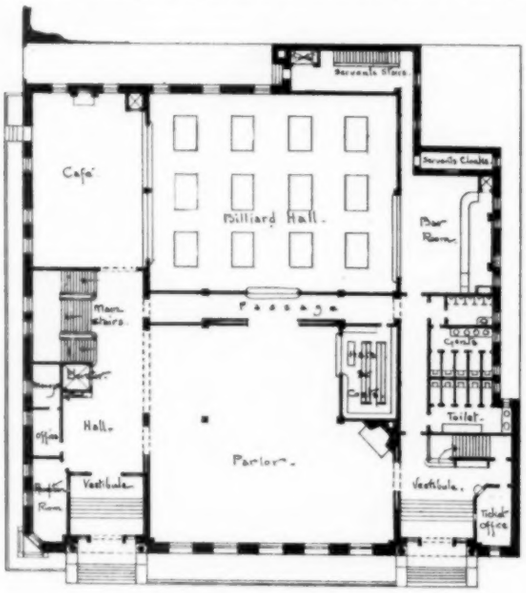
From the engine-room the basement is reached by one flight of stairs. In the rear of this floor are eight regulation-size bowling-alleys, and on the Forty-fifth Street side is the café and lounging-place for bowlers. These alleys are so constructed that between each of them are platforms which will seat, during match games, a large number of spectators.

In the front, and separated from the bowling-alleys by a solid wall, is the swimming-bath which is 100 feet long and 21 feet wide. This



superb plunge-bath is 8 feet deep at one end, gradually decreasing until it reaches the depth of 5½ feet at the opposite end. Upon the platform, and between the bath and the division wall, are a number of dressing-rooms and several rubbing-rooms. On the south of the building, back of the swimming-bath are the Turkish and Russian baths, where the most approved system of bathing can be had; and at the north end of the swimming-bath, directly in front of the bathing-master's office, is a lounging space for the bathers, and seen through a door opening back of that is the shooting-gallery. This room is underneath the sidewalk and has a range of 125 feet.

Entering the building from Madison Avenue, on the parlor floor is found the reception-room, in the rear of which are the offices of the Club and the manager's room, an Otis elevator capable of carrying a



Plan of First Floor.

load of 15,000 pounds, the grand staircase, the café and the grill-room. On the right of the entrance is the parlor 62½ feet long by 38 feet wide with five windows, each six feet wide, opening out upon Madison Avenue.

Behind the parlor is the large smoking and lounging hall, at the south end of which is the hat and coat room. In the rear is the billiard-room, with twelve standard-size billiard and pool tables.

At the extreme south, on Madison Avenue, is the private entrance to the concert-hall which is on the second floor. In the rear of this entrance and approached only through the Club proper, are the boot-blacking-rooms, lavatories, retiring closets, barber shop and bar-room, which has an entrance directly into the billiard-room.

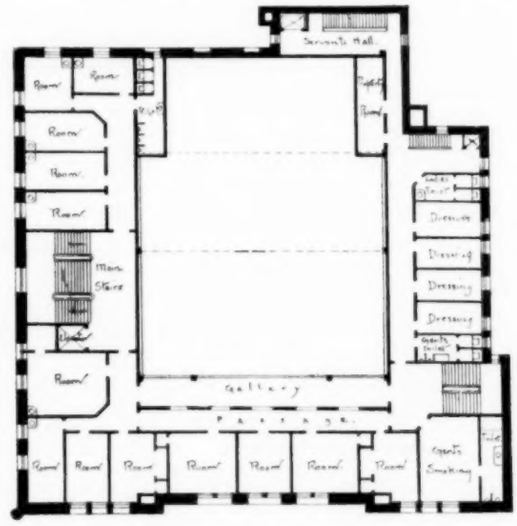
On the second floor in the centre of the building is the concert-hall, with a seating capacity of 1,500 persons. The length of the hall is 107½ feet by 62 feet, with a stage 38 feet 10 inches by 24 feet, dressing-rooms and proscenium-boxes on either side, and a balcony

Plan of Second Floor.

at the Madison Avenue end. At the back of the stage is an iron stairway to the alley leading to Forty-fifth Street. On ascending the main stairs and on the floor with the concert-hall, are the reading-rooms, the writing-room in the rear of that, the Governor's room and the card-room. On the same floor is the ladies' parlor and toilet-room, two large parlors and a pantry for the use of those wishing refreshments during entertainments. This hall is expected to net a large revenue for the Club, and is separated from, or opened into the club-house by two large folding-doors opposite the main staircase. The ceiling is 25 feet high, the rooms on either side having ceilings only 12½ feet.

As we ascend the main staircase we come to what is called an intermediate floor which contains eighteen large sleeping apartments and the gentlemen's smoking-room, at the back of which are dressing-rooms for the use of those occupying the concert-hall.

On the third floor is the gymnasium, the dimensions being 109 feet by 47 feet 6 inches. This floor is fitted up with the most modern



Intermediate Floor.

apparatus, and is one of the best rooms and most perfect of its kind in the United States.

On the south is the boxing-room, 29½ feet by 25½ feet, toilet-rooms, lounging-rooms, locker-rooms, dressing-rooms, a drying-room and three needle-baths. Behind the bath-rooms is a short stairway ascending to the floor and running-track above.

The running-track is 10 feet wide and 14 laps to the mile in length.

On the south side of running-track is the fencing-room 29 feet 7 inches by 25 feet, lounging and retiring rooms and a room for lockers.

Over the gymnasium is a skylight 50 feet by 40 feet, which furnishes sufficient light for the gymnasium and for rooms on the floors

Plan of Third Floor.

above, where windows open into it, and its height allows the introduction of climbing-ropes and upright ladders, 41 feet long.

On the floor above the gymnasium is the dining-hall, private dining-rooms, and their dependencies, the housekeeper's apartments, servants' sleeping-rooms, etc. The dining-hall is 63 feet by 23 feet, and the private dining-rooms at either end are so arranged that they can be thrown open and become part of the main hall.

Arriving at the landing on next floor we enter an enclosed room which leads to the roof-garden, which is surrounded by and covered with a roof of iron construction. On the south side is a pantry from which refreshments are served, and in this pantry is an Otis hydraulic dumb-waiter running through the kitchen to the bar-room on the first floor.

All the several materials used in the construction of the building have been in accordance with the plans and details prepared by the architect, Mr. P. J. Lauritzen, of New York.

In excavating for the foundations a natural-water spring was struck which, for some time, was a source of trouble to the progress of the work. It was, however, eventually arched over with brick in cement

The Madison Avenue front in first-story, to top of second-story window-sills, is laid with alternating courses of light-red and Seneca sandstone partly tooled and carved, and partly left rock-face. The shafts of two columns at each of the main entrances are of red granite, polished. All stones have been carefully selected, laid in cement and pointed with putty of a salmon pink.

The terra-cotta used is of a reddish-brown color, corresponding

Plan of Fourth Floor.

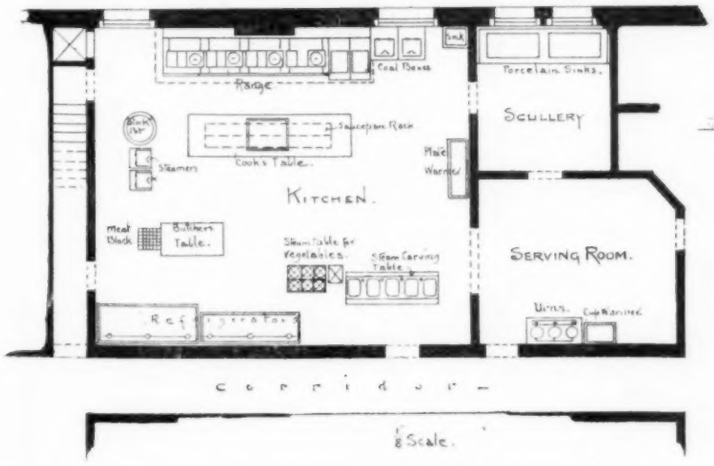
with the stone dressing. The manufacturers supplied models for all enrichments and a complete set of diagrams for the workman's use when setting.

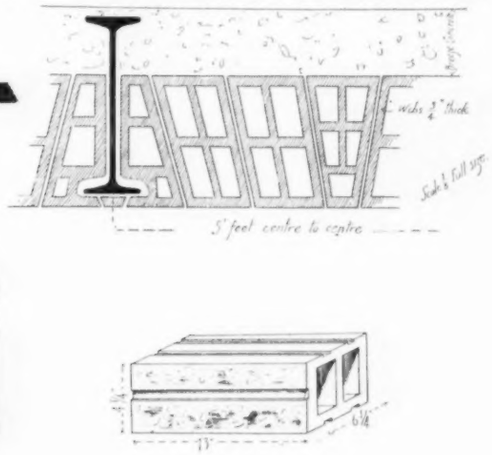
The boilers are placed in the sub-basement in one battery with outside and division walls of the required thickness. The fire-boxes are lined with fire-bricks laid in just enough fire-clay mortar to give them an even bearing. The setting is so arranged that the flames and gases pass to the rear of boilers, thence returning to front through the flues and again to rear through a flue formed by the top of boilers and a brick arch concentric with top of boilers.

All the floors are laid with 8-inch terra-cotta tile blocks projecting 1½ inches below the bottom flanges of the floor-beams. The partitions are of hollow tiles with the necessary porous tiles for nailing trimmings to other woodwork. All outside walls are lined with hollow bricks laid up with the walls, with a line of headers in every sixth course.

The steep roof over front of building is covered with composition

Plan of Kitchen, Scullery Etc, shewing positions of Fittings.





and asphalted, and upon this was spread a thick bed of concrete. The concrete used in the foundations and under all walls, piers, and columns, is made of the best Portland cement, in the proportion of one of cement to two parts clean, sharp grit-sand and five parts hard-stone, thrown into trenches in two or three layers, each layer rammed solid until free cement appeared on the surface.

The two street-fronts are faced with Seneca red sandstone up to top of first story. The bases and sills are tooled and the other work is left rock-faced without tool-marks — except where margins occur.

blocks (Lyon's patent) two inches thick laid on the angle-irons and afterwards covered with Spanish tiles.

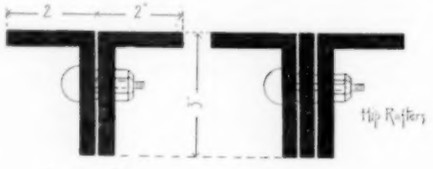
The bottom of swimming-bath is laid with best Rosendale cement concrete, six inches thick, well-rounded and rolled to a surface, finished with a smooth top-dressing of 1½ inches thick, best Portland cement, and the platforms around it are treated in a similar manner; the sides of the pool are cemented with best Portland cement, measuring one inch thick on the brickwork. The edges of platform are finished with a shallow gutter.

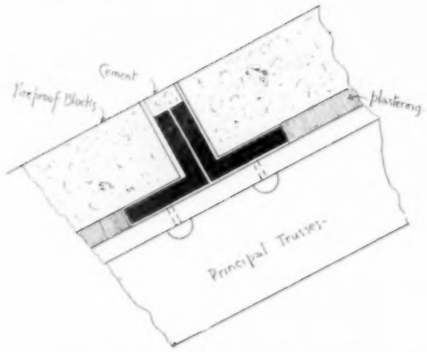
All dressing-rooms, and Turkish and Russian baths are concreted in same manner, also the shooting-gallery on Madison Avenue front. The balance of basement floors, as also all the other floors have arches filled up with concrete to top of beams and spaces between sleepers filled up likewise, well rammed and finished level on top of sleepers.

The entire flat portion of the roof and also the roof-garden, is concreted above arches and covered with best Trinidad asphalt concrete measuring two inches thick above the top flanges of beams and girders and is finished with a smooth surface and properly graded to rain-water leaders.

The sidewalks are laid with Mat. Taylor's granolithic pavement, the bed being four inches thick and the top finishing layer two inches thick, left smooth. All walls, partitions and ceilings are plastered with three-coat work. All projecting girders, where lathing was necessary, are covered with galvanized-wire cloth, of 1½-inches mesh, put up to the shape required.

The roofs are constructed entirely of iron, copper, concrete-blocks and Spanish tiles: the blocks are placed between the flanges of small T-iron bearers or battens and all joints carefully made in Portland cement. The blocks are composed of breeze and cement and form a light fireproof covering; each block measures 20 inches by 15 inches by two inches, and upon these is laid a covering of thin felt or roofing paper, which is secured to blocks with galvanized-iron nails and buttons of tin. The paper is used not so much for protection to weather as for the use of the workmen, who require a good even surface for lining-out, when laying the roof tiles; the tiles are fixed each with two galvanized nails and bedded and jointed with colored-cement putty, all making a very clean and sound roof. The tiles are





corrugated and measure 12 inches by 8½ inches. The hip tiles are semicircular, of seven inches diameter, each fixed to a wood roll with one nail and cement joints.

The skylight is constructed with T-iron wrought trusses sufficiently strong to support the heavy glass skylight laid upon it, and two of the trusses are sufficiently strong to carry the trapezes which may hereafter be suspended therefrom. The skylight proper is made of copper ribs and ¼ inch thick ribbed glass in large squares and is provided with moveable sashes, likewise of copper, in the upright sides. The roof ventilator on top of skylight is entirely of copper and is well secured against weather. The well-hole of this skylight has been formed under difficulties. The clear space on floor of gymnasium being of much importance, no uprights could be used, the sides of the well are, therefore, made of two immensely deep girders of lattice type, the full depth of one story, the spaces between the lattice is filled-in with fireproof blocks serving the purposes of girders and partitions.

The roof over the roof-garden is proportioned for 50 pounds per square foot in addition to the weight of the structure. The general scheme of the framing is this: a heavy truss is placed parallel with Madison Avenue, supported by side walls and one row of columns; from this truss and at right angles to it are placed three trusses which receive support from it and from a rear row of columns, two of these trusses form the sides of the light-shaft and are constructed to receive fireproof filling.

The bottom chord consists of two 10-inch channels, 7-inch vertical beams and diagonals of two 7-inch channels. The front slope of roof is supported by jack-rafters spaced not over six feet apart covered by 4″ x 2″ T-iron purlins, 20½″ between centres. The rear and side slopes are constructed in a like manner. The wrought-iron principals are composed of two angle-irons 3″ x 2″ bolted together: the hip-rafters are of double angle-iron 3″ deep, bolted between to receive other short rafters and as extra stiffening.

The roof-garden is so arranged that it can be used as a promenade, with plants and trees arranged as in a garden or conservatory. The whole surface can be flooded with water in winter and in freezing weather the natural ice can be used for skating, at the same time giving opportunity for other outdoor winter pastimes as desired.

The view of landscape from any side of the garden is grand and impressive.

The main staircase to roof is constructed with wrought-iron strings covered with cast-iron casing: the outer strings are 12″ iron, the centre carriage a 12″ I-girder to which cast brackets are bolted to receive the steps.

The fascia round the well-hole and on strings is ornamented with panel-work and relief ornaments, and the newels and railing, of cast-iron, are highly enriched. Steps and platforms constructed of slate of even color: the other stairs are similar in construction but more or less ornamental as the case requires. Those of the best floors have Italian mosaic inlays in treads at the value of $3 per square foot. The risers and nosings in the two entrance vestibules are of bronze metal.

The running-gallery is constructed of wrought-iron beams 8″ deep built into walls and 15″ channel-beams for the front curb, the curb is supported by suspenders of wrought-iron from the girders over. The iron railing has a wood hand-rail on top.

The base for the flag-pole at the corner of the block is constructed of wrought-iron framework which extends up inside the terra-cotta dressings from one story below the cornice to the point where the pole begins to show. It is well anchored and tied to iron girders at the floor and eaves level, and is covered with bronze metal. The height of finial from top of terra-cotta work is 40 feet and the total height of flag-pole from the main cornice is 85 feet; the total weight of the finial-ironwork and pole exclusive of outer metal casing is about three tons, and considering that the axial line overhangs the vertical angle of the building by several inches, it is a very daring piece of construction.

A. A. Cox.

[To be continued.]

THE ILLUSTRATIONS

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

WEST SIDE OF MAIN HALL IN THE HOUSE OF I. V. BROKAW, ESQ., FIFTH AVENUE AND 79TH STREET, NEW YORK, N. Y. MESSRS. ROSE & STONE, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print issued with the International and Imperial Editions only.]

DESIGN FOR A CLUB-HOUSE, CREVE CŒUR LAKE, MO. MR. I. S. TAYLOR, ARCHITECT, ST. LOUIS, MO.

THE MABEL TAINTER MEMORIAL, MENOMONEE, WIS. MR. L. S. BUFFINGTON, ARCHITECT, MINNEAPOLIS, MINN.

THE MISSION CHURCH OF ST. AUGUSTINE, PHILLIPS ST., BOSTON, MASS. MESSRS. STURGIS & CABOT, ARCHITECTS, BOSTON, MASS.

HOUSE OF ARTHUR L. SWEETSER, ESQ., IPSWICH, MASS. MR. JAMES T. KELLEY, ARCHITECT, BOSTON, MASS.

HOUSE AT RIDGEFIELD, N. J. MR. F. W. BEALL, ARCHITECT, NEW YORK, N. Y.

THE HOOFATOREN, HOORN, HOLLAND.

[Additional Illustrations in the International Edition.]

HOUSE OF ISAAC V. BROKAW, ESQ., FIFTH AVENUE AND 79TH STREET, NEW YORK, N. Y. MESSRS. ROSE & STONE, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

THE building is 52′ x 9′ 0″. The façades are Hallowell granite. The roof is covered with Ruabon tiles: the woodwork of the first story, halls and stairways is English oak; all other woodwork throughout, is American quartered-oak.

The parlors 20′ x 24′ (on Fifth Avenue) are furnished with Siena marble mantels; papier-maché ceilings and frieze; the walls covered with satin.

The main hall 16′ x 40′ (east of parlor). The walls and stairs are Siena marble with bronze joint, mosaic frieze and papier-maché ceiling, decorated in gold and color; on the north a large window by Mr. Lathrop represents Industry, Hospitality, Abundance. The library 20′ x 22′, on the right of entrance, is furnished with Siena marble mantel; papier-maché ceiling and cornice decorated in metal and frieze walls covered with stuff.

Dining-room 20′ x 30′, finished with carved English oak cornice and ceiling, Siena marble mantel and illuminated leather frieze.

Five chambers on each (2d and 3d) floor, with dressing-rooms, bath-rooms and closets; ceilings and cornices of papier-maché, walls and ceilings decorated in oil.

The fourth story is given up to servants' quarters. In the basement are the billiard-room, butler's room, laundry, servants' hall and kitchen. In the cellar is the steam-heating plant, the entire house being heated by indirect radiation, each room having an independent heat source and fresh-air inlet; the temperature is regulated by an automatic device. Every room in the house has an open fireplace; all fireplaces being of cast bronze with mosaic hearths. The gas-fixtures of the parlors are cut-glass; all other fixtures are bronze, with cut-glass globes for gas and electric lights. The parlor and dining-room furniture and gas-fixtures are made from the architects' designs.

DINING-ROOM IN THE SAME HOUSE.

[Gelatine Print.]

EAST SIDE OF MAIN HALL IN THE SAME HOUSE.

[Gelatine Print.]

NEW SCHOOLS AT KNOWLE, BRISTOL, ENG. THE LATE J. D. SEDDING, ARCHITECT.

FARNESE PALACE, ROME, ITALY. DRAWN BY THE LATE H. R. RICARDO.

ST. ANDREW'S BOARDING ESTABLISHMENT, DROITWICH. MR. JOHN ROBERT NICHOLS, M. S. A., ARCHITECT, BIRMINGHAM, ENG.

THE above establishment, which forms the subject of our illustration, is just completed for Mr. John Corbett, M. P. The site, which forms an important position, is adjacent to the St. Andrew's Brine Baths, Salters' Hall and the Old Raven Hotel, and occupies the whole frontage of the southwest side of Bath Road in connection with St. Andrew's Road and the Worcester Road.

The style of building is in accordance with some of the old buildings noted in the town of Droitwich and the surrounding parts of Worcestershire. The advantages of the brine springs of Droitwich have been utilized by Mr. Corbett in a most liberal manner by the erection of the St. Andrew's Brine Baths. The swimming-bath may be classed as one of the finest in the kingdom, and to follow up Mr. Corbett's liberality he has erected the above attractive establishment to accommodate the numerous visitors who are resorting to Droitwich as a health resort.

The building is designed on the corridor principle, and will accommodate about one hundred and twenty visitors, including several suites of rooms for families and servants. The dining-hall and drawing-room are central and well arranged for convenience. The principal staircase forms a very attractive feature. The external portion being octagon in shape is constructed entirely of timber and glazed with stained-glass, and forms the entrance to the garden quadrangle. On the ground floor and first floor there are two extensive lounges at the west end of the main corridor, forming the circular end of the campanile, together with separate writing-rooms for ladies and gentlemen. A spacious billiard room and smoke-room are provided with a separate approach from the garden quadrangle. The culinary arrangements have been well studied, both for position and convenience. The kitchen is in direct communication with the dining-hall by means of a serving-room and buttery. Designs have been prepared by the architect, which will shortly be carried out, for a subway for direct communication from the establishment to the brine baths.

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.*]

A QUESTION OF COMMISSION.

ST. LOUIS, MO., May 24, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — Will you kindly give your opinion on the following case through the *American Architect*.

Suppose an architect is employed to make plans for a residence to cost $4,000, and after having received assurances of perfect satisfaction from the owner regarding their merits, and that they are the "very thing wanted," the architect in order to satisfy himself as to the cost of building the structure from these plans, applies to a competent contractor, to whom he is referred by the owner, for an approximate estimate of cost. That this contractor estimates the cost at $5,000. That the owner expresses surprise at this estimate, refuses to consider it saying that through malice or other cause the estimate was unreliable. That owner orders architect to proceed to write the specification, keeping the cost as low as possible. That finally the bids all come in, ranging in cost from $4,000 to $5,000 and each of them is rejected by owner. In this case can the architect hold owner for making the plans and specification — can he collect by law the amount of his fee according to the regular "schedule of charges." The owner had a reasonable knowledge of the cost of the structure, not only from the approximate estimate, but from the assurance of the architect who informed him that the plans which suited him could not be executed for the amount of money he wished to invest. Could it affect the case if the architect explained to owner that the estimate was only an approximate one; that it was high rather than low, and that the structure could be built for less, but that it would still cost over $4,000.

I shall be grateful for your opinion.

Yours, E. H. O.

[IF the architect was employed to make plans for a house to cost $4,000, and it proves, after reasonable inquiry, that the plans made by him cannot be carried out for that amount, the owner is entitled to return the drawings and pay nothing for the architect's services. If the owner elects to use the drawings, he waives the condition that they must be capable of being carried out for a certain sum, and is then bound to pay for them. — EDS. AMERICAN ARCHITECT.]

FRÉMIET AND RENAISSANCE SCULPTURE.

BOSTON, MASS., June 8, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — In admiration of the genius of Frémiet, I yield to few people. Still, I think Mr. Bartlett, in the last chapter of his extremely interesting papers on that great sculptor, goes a little too far when he says that none of the subjects which Frémiet has treated "bear any special or general relationship to any phase of Renaissance . . . growth and development" and that he "needs no encouragement or sympathy from any source, save nature, and from that he has got everything." Without doubt Frémiet is honest in declaring that he cares nothing for other sculpture than that of the Parthenon, but none the less, he has sometimes, if unconsciously, been influenced, I think, by Gothic or Renaissance models. Witness his "St. Michael," which certainly is a very close parallel to the statuette of "St. George" in the Museum at Dijon (the native town of Frémiet's master, Rude), a work of the fourteenth century.

A wood-cut of this may be found in Charles Knight's "*Old England*," Volume I, Figure 875.

AN ADMIRER OF FRÉMIET.

THE MONTREAL EXHIBITION OF [ALLEGED] OLD MASTERS.

MONTREAL, CAN., May 26, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — Your Canadian correspondent has evidently not seen the paintings by "Old Masters," mentioned in your valuable publication of last week, but has taken for granted that an exhibition promoted under the protection of the archbishops of Montreal could not possibly include any but meritorious works of art, as set forth in the catalogue. *De facto*, the said paintings were such a lot of old rubbish as has never before been foisted on any gullible public under similar pretences. Charity, as object of the exhibition, prevented the disgusted in Montreal from demanding the closing of the "Exposition de peintures antiques."

Its purpose having been accomplished and the affair over, I thought it well not to let such an interesting account of a Canadian Exhibition of Old Masters go down to posterity uncontradicted in your usually well-informed journal.

Respectfully yours, E. COLONNA.

A CORRECTION.

NEW YORK, N. Y., June 8, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — I notice in your journal for June 6th, in which appears my drawings for the American Fine Arts Society's Building, that you wrongly state that "this design was placed fourth, etc." I beg to state that there were but three designs selected for elaboration as the result of the preliminary competition open to the members of the Architectural League. My design, though not adjudged the final award, was one of these three.

Will you kindly make this correction, and oblige,

Yours truly, EDMUND B. WELLS.

NOTES AND CLIPPINGS

UTILIZATION OF SMOKE. — So much has been said and written upon the smoke-abatement question that the idea of utilizing this dire enemy of public health and cleanliness so as to actually make its existence a source of profit is somewhat attractive. In a lecture recently delivered by Professor V. B. Lewes, reference was made to certain facts in this connection, of high interest. One was that at three or four Scotch ironworks the Furnace Gas Company are paying a yearly rental for the right of

collecting the smoke and gases from the blast-furnaces. These are passed through several miles of wrought-iron tubing, diminishing in size from 6 feet down to 18 inches, and as the gases cool there is deposited a considerable yield of oil. At Messrs. Dixons', at Glasgow, which is the smallest of these installations, they pump and collect about 60,000,000 cubic feet of furnace-gas per day, and recover on an average 25,000 gallons of furnace oil per week, using the residual gases, consisting chiefly of carbon monoxide, as fuel for distilling and other purposes, while a considerable yield of sulphate of ammonia is also obtained. In the same way a small percentage of the coke-ovens are fitted with condensing gear and produce a considerable yield of oil, for which, however, in its crude state, there is but a limited market, the chief use being for Lucigen and other lamps of the same description, and for treating timber for railway sleepers. In view of such arrangements Professor Lewes is not unnaturally sanguine that the smoke-fiend may eventually be dealt with in a way quite as satisfactory, but far more profitable than mere self-consumption. The oil above described can, for instance, be greatly improved in quality by ridding it of the large percentage of watery particles it contains when freshly condensed. Mr. Havely, of Baghill, near Pontefract, has devised a process whereby not only the water, but the paraffin, cresol and phenol, are removed from the crude oil, leaving the residuum in better condition, and of high value for timber. This oil, Professor Lewes asserts, can be used as an enricher of gas, enabling gas of a higher illuminating power to be produced at a reduced cost. If this be true it will not be the least remarkable instance of waste-products of a process becoming even more valuable than the original article manufactured. — *Invention.*

Paraffin for Clearing Rusted Flow-pipes. — A correspondent has recently contributed to the *Decorators' Gazette* details of some experiments made by him, with a view to clearing hot-water pipes by the aid of a paraffin oil. His hot-water pipes had become choked until only a stream of water about the size of a pencil would run through. After going to a plumber for advice and then to a firm of specialists, he mentioned paraffin to them, but they thought it of no use, and to convince him produced several pieces of pipe (in which the substance still remained) and which they had cut out to replace with new ones, and to show how hard this substance was, they took a hammer and chisel and chipped several pieces off. This was, however, not done without a pretty heavy blow. He tried paraffin on these pieces, and found that in an hour or so the paraffin was through and through them, and although hard, not so hard as they had been. This was enough to encourage him to try the experiment on the pipes, and so he at once poured about one-and-a-half quart bottles into the pipes between boiler and bath, etc., and allowed the same to remain for about half-an-hour. He was, however, in too great a hurry, for after turning on the water again there was no improvement. Next morning found the small pieces referred to still softer. Eight days after they were so soft that they could be crushed between the fingers. He was again encouraged, and led to believe that the substance in the pipes might have absorbed some of the paraffin during the half-hour it remained in the pipes, and that the softening process therefore might have gone on all this time also. He therefore made a pump, but instead of forcing the water back into the boiler, drew it out from the pipes at the bath. He had only given one or two "draws," when a very strong smell of paraffin convinced him that his supposition regarding the substance having retained some of the paraffin was correct. He continued drawing, and the water became first red, then thick and muddy, and all of a sudden with a rumbling noise down the pipes the water came full and free as well as ever it did. — *Specialties.*

Wood and Iron under Fire. — In his recent lecture on fire prevention Professor Goodman states that, generally speaking, wooden joists are better for buildings than steel or iron joists. The two latter materials, he explained, lose their strength at a not very high temperature, whereas wood would sustain a heavy strain for a much longer period when exposed to great heat. Besides, when wood has once been charred it does not burn so readily again. Iron and steel soon expand under the influence of heat. Brick and stone are objectionable, the former become fused under great heat, and the latter is liable to crack or fly when suddenly cooled after heating. The drawback to tiles is that when fire plays upon the joists of floors fitted with them, the joists expand and allow the fire to play upon the joists through the tiles. Portland cement is objectionable, as it flakes off when heated, but if wire-netting or bars are embedded in concrete this defect is remedied. A joist padded with silicate of cotton and encased in Salamander plaster (a mixture of silicate, cotton, and plaster-of-Paris), the professor holds, is a splendid fireproofing material. Such a material is not only a non-conductor, but it is elastic, and would yield with the joist. In an experiment undertaken by Professor Goodman it was found that a joist of this kind withstood very fierce heat for eight to nine hours without sustaining any serious damage. — *Builder.*

Excavating with the aid of Dynamite. — We recently witnessed a very interesting mode of obtaining a foundation for a new building. A hole was bored in the ground (which was previously damp), from 10 to 12 feet deep and 1 1-2 inches wide and a string of cartridges was lowered into it: the subsequent explosion not only produces a cavity a yard in diameter, but also drives the water out of the surrounding earth by means of the expansive action of the gases. The water does not return to its former place for fully an hour, so that an opportunity is afforded to fill up the cavity with quickly setting concrete and a rapid rate of working is thus attained. — *Indian Engineering.*

TRADE SURVEYS.

It is, perhaps, better for all concerned that the country has been subjected to the checking-up policy which it has suffered for the past six or eight months. The depression has been one of those blessings in disguise which it is not easy to recognize as beneficial. A number of unfavorable symptoms began to manifest themselves last year in the direction of over-production, speculation and demoralization of certain avenues of trade which might have developed into actual evils. Speculative schemes began to multiply, and town-building enterprises began to attract a great deal of attention. It is certainly correct to say that a great many plans entertained last year have been dropped. A good many schemes have been nipped in the bud; quite a multitude of enterprises are hanging fire. Many look upon the dropping of these things as disadvantageous, and as the symptom of declining activity. The other side of the question is that capital was being invested faster than needed; that more towns were being started than could be built; that more countries and corporations were springing into existence than there was need of. The correct opinion, perhaps, lies half-way between these two. Since last autumn, the process of liquidation has been in quiet progress; a great deal of trade organization has been going on; weak spots have been discovered, weak places in business strengthened. Better methods of doing business are being developed, and a broader comprehension of the wants and needs of the community at large is had. A number of improving tendencies are at work which are not easily observed or even defined when noticed. Despite what rash writers say to the contrary, we are dropping into more correct and safer habits of doing business; the commercial agencies testify to this; so do the banks. The managers of large commercial and manufacturing corporations know that the country at large is drifting in the right direction as regards the safer transaction of business. There are some features, however, which studious care and application to business cannot influence; these are fundamental, and one or two of them have been frequently referred to. The most important is the establishment of a safe, elastic and sufficient financial system; while there is no dangerous speculative tendency at work, the seeds are being sown for a crop of speculative ventures, which may spring up in a year or two; just what these are it is unnecessary to point out at this time. There is a general desire to keep values even and steady, but the history of trade and commerce shows that it is impossible to prevent violent fluctuations. As heretofore pointed out, trade organization has made extreme fluctuations less probable, but, on the other hand, circumstances are developing opportunities for future speculation on a grand scale. This is one of the evils which the active business men of the next two or three years have to guard against. The ratio of commercial failures is keeping within prescribed limits. The July failures will, it is announced, fall below the usual average; dealings are restricted to almost actual necessities. The declining volume of business is warning buyers and sellers to keep out of danger. The manufacturing interests are all in pretty good shape. A heavier July demand is generally looked for to compensate, in a measure, for the dull months of the first half of the year. The iron trade is improving slowly. Last week, sixty thousand tons of rails were ordered. Between forty and fifty thousand tons of structural and plate iron and steel were also contracted for. In the lumber trade, there is general complaining over small orders. In planing and saw mills work is not up to the average of the past two or three years. The manufacturers of farming implements are having a busy season. Fortunately for all interests throughout the West and South, practically, values have reached a point which secures buyers against fluctuations in a downward direction. During the past year, a good many coal-mines have been opened in coal-producing States. This is the outcome of the overflow of smaller industries from the older States. Sites are being sought for with even greater earnestness by small manufacturers than last year. This is partly due to the fact that competition is crowding the smaller manufacturers and little business men from a good many Eastern cities; trade combinations are partly responsible for this. Business men with limited capital are finding it impossible to hold their own against the machinery of large trade and manufacturing organizations; they are compelled to get farther away, and in this outflow are drifting into new localities in the newer States, where they are making markets for themselves. In the textile trade, a further decline in activity is reported in the cheaper lines of goods. American manufacturers have not yet gained confidence in themselves sufficient to warrant them in carrying large stocks, as is the custom among foreign manufacturers. American makers desire to see buyers at their doors almost before accumulating goods. The Southern cotton-goods manufacturers are reporting a declining trade for the past month or so. Their foreign trade is growing, but the percentage of goods exported is trifling. The projection of new mills would go to indicate that the industry is in a thriving condition generally. Within the past few months, an unusually large number of hosiery establishments have been projected West and South. In fact, the multiplication of little industries is one of the most encouraging features of those sections. The capital involved in individual cases is small, and, so far as a record of their progress has been kept, the great bulk of them are making two ends meet.

The subject of providing rapid-transit facilities for cities is engaging the attention of engineers, capitalists, municipal authorities and many others interested directly and indirectly in the increase of transit facilities from the business centres to suburban localities. There are several difficulties in the way of a practical and immediate solution of this question. Engineers are unable as yet to suggest or provide an economic system. The application of electricity has not yet been developed to a practical point. The obstacles in the way of a greater utilization of steam are well known; elevated roads cost too much, and tunnels are too expensive. The world is waiting on the mechanical engineer and the electrician. There are, perhaps, two or three score of companies now organized, and either engaged in construction of rapid-transit facilities or awaiting some more acceptable method of rapid transit before entering upon work. There is a feeling that some better system is needed, and engineers are and have been hard at work upon this problem. The underground system of London has been referred to frequently, and the adoption of that system strongly recommended. A recent statistical statement shows that between sixty and seventy cities and towns in the United States are discussing the question of rapid transit, and, in fact, are awaiting some perfected system before adopting any of the suggestions made. The subject is a very important one, and engineers evidently manifest a lack of confidence in themselves to efficiently deal with it. The adoption of Mr. Gould's idea in New York shows that the solution of the problem must be delayed for an indefinite period. The difficulties in New York, however, are exceptional; other cities and towns can adopt some of the existing methods with profit. Still, the whole question is one which will bear a great deal of study, and it, in fact, is awaiting a solution at the hands of some inventor or engineer who can take a decided step in advance of anything that has yet been proposed. In Philadelphia, Pittsburgh, Chicago and several other large cities more or less progress has been made toward the adoption of rapid transit, but there is a hesitancy manifested everywhere against even the best methods that have been suggested. Residents of cities are anxious to reach the suburbs. Mighty interests are to be subserved by the development of some efficient system. The ablest engineers admit that the best plans are open to serious objection.

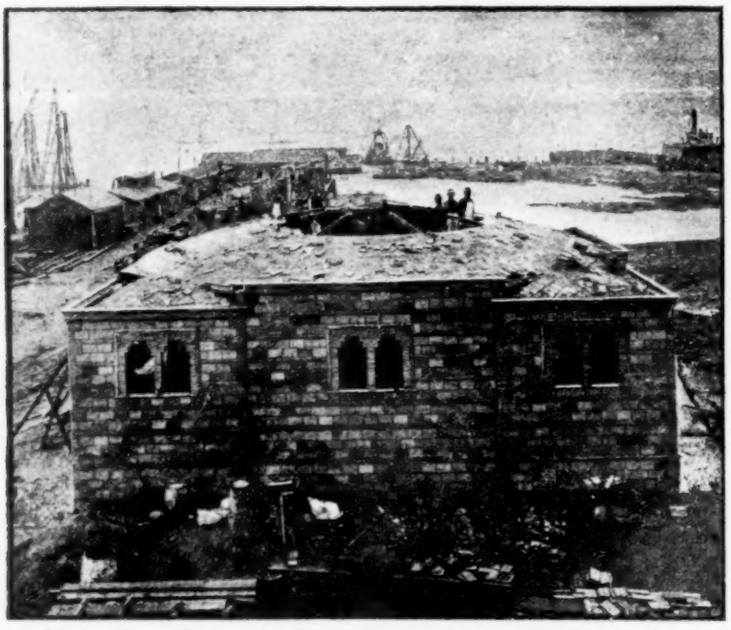
S. J. Parkhill & Co., Printers, Boston.

Guastavino Fireproof Construction Co.

MAIN OFFICE, 57TH STREET, NEAR 11TH AVENUE, NEW YORK.

BOSTON, MASS., PIERCE BUILDING, BACK BAY, TELEPHONE CALL.

PROVIDENCE, R. I., SWARTS BUILDING, ROOM 42.



CHICAGO, ILL., PHŒNIX BUILDING.

MILWAUKEE, WIS., NEW INSURANCE BUILDING.

Buildings in which the GUASTAVINO FIREPROOF CONSTRUCTION COMPANY or R. GUASTAVINO has obtained Contracts.

AMONG THE LARGER CONTRACTS COMPLETED ARE THE FOLLOWING:

Music Hall	New York, N. Y.	Manhattan Brass Foundry	New York, N. Y
Arion Club	" "	LaConcha Baths	Syracuse, N. Y.
Plaza Hotel	" "	Atlantic Brewery	Staten Island.
Lion Brewery	" "	W. Fellows's Residence	Montclair, N. J.
Corbin Building	" "	Matthiessen Vaults	Woodlawn, N. Y.
Sidenberg Building	" "	Morgan Stables	Newport, R. I.
Mt. Sinai Hospital	" "	Exeter Chambers	Boston, Mass.
Edison Electric Illuminating Company,		Cox Stable	" "
26th St. Station	" "	Bay State Gas Company Building	" "
39th St. "	" "	Colorado Telephone Co's Building	Denver, Colo.
Sun Fire Company Building	" "	Dover City Hall	Dover, N. H.
Lyons Building, Bleecker Street	" "	Philadelphia Market	Philadelphia, Pa.

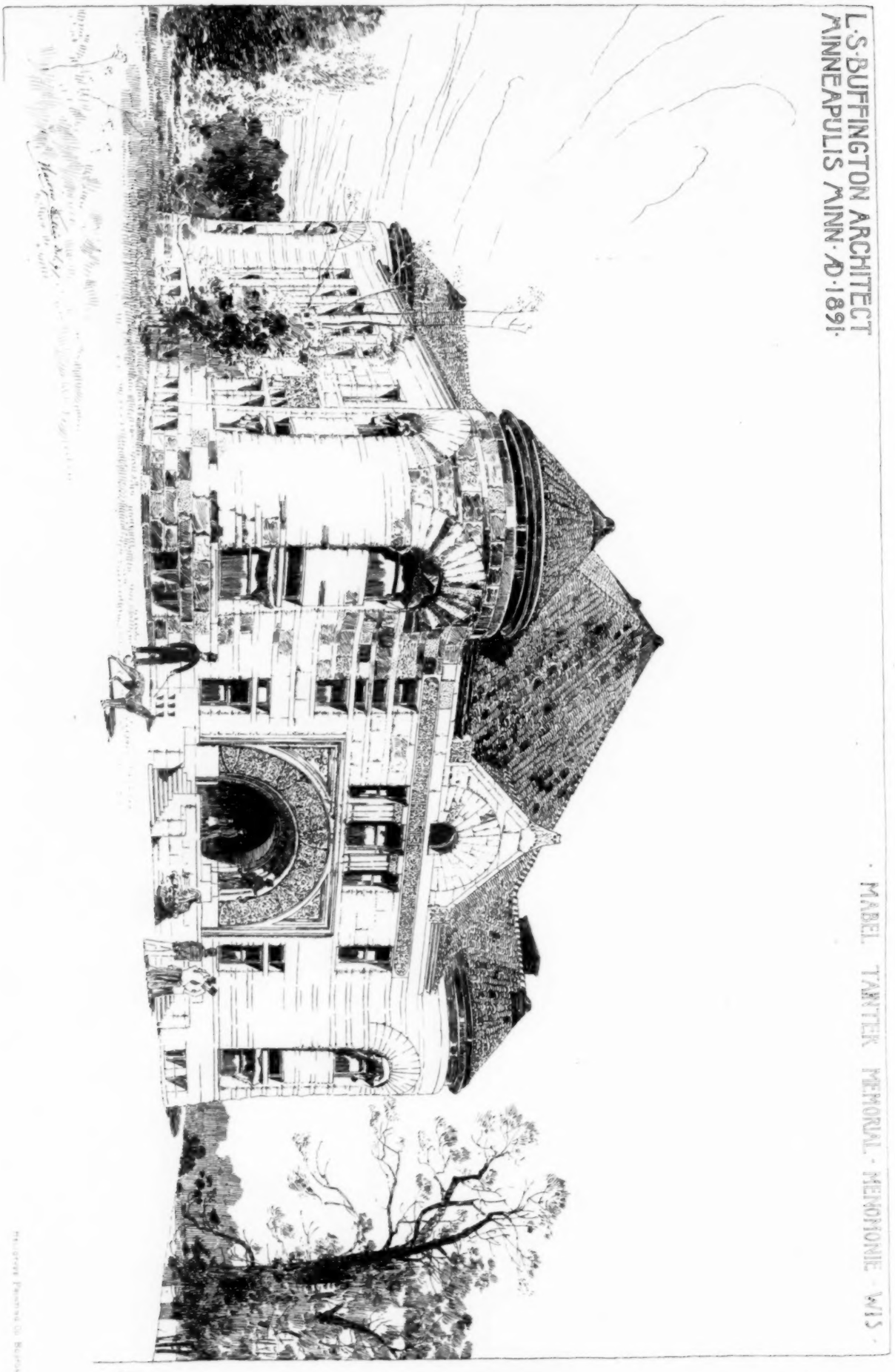
AMONG THE CONTRACTS NOW ON HAND ARE THE FOLLOWING:

Havemeyer Building	New York, N. Y.
Howard & Childs Brewery	" "
Arcade of Madison Square Garden	" "
Edison Electric Illuminating Company, Cor. Elm and Pearl Sts.	" "
Paterson Savings Bank	Paterson, N. J.
Lowell Library	Lowell, Mass.
Boston Library	Boston, "
Massachusetts State House Extension	" "
American Legion of Honor	" "
Boston Gas Light Company Building	" "
Hitchcock Hospital	Hanover, N. H.
Ansonia Library	Ansonia, Conn.

This Company gives Estimates and takes Contracts for Fireproof Buildings, Floors, Ceilings, Partitions and Staircases, under the System called, GUASTAVINO TILE ARCH SYSTEM.

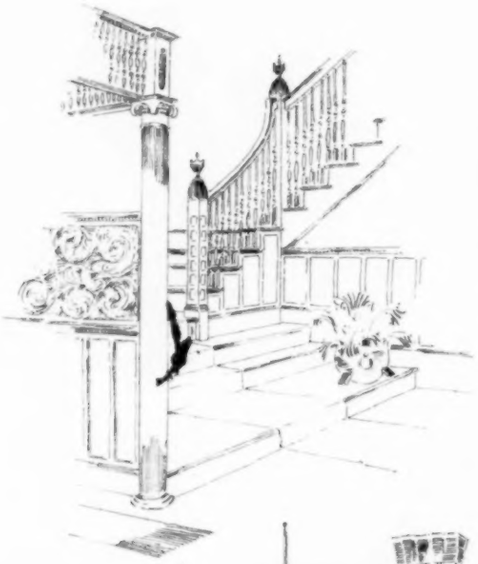
THE HOOFTATOREN, AT HOORN, HOLLAND.

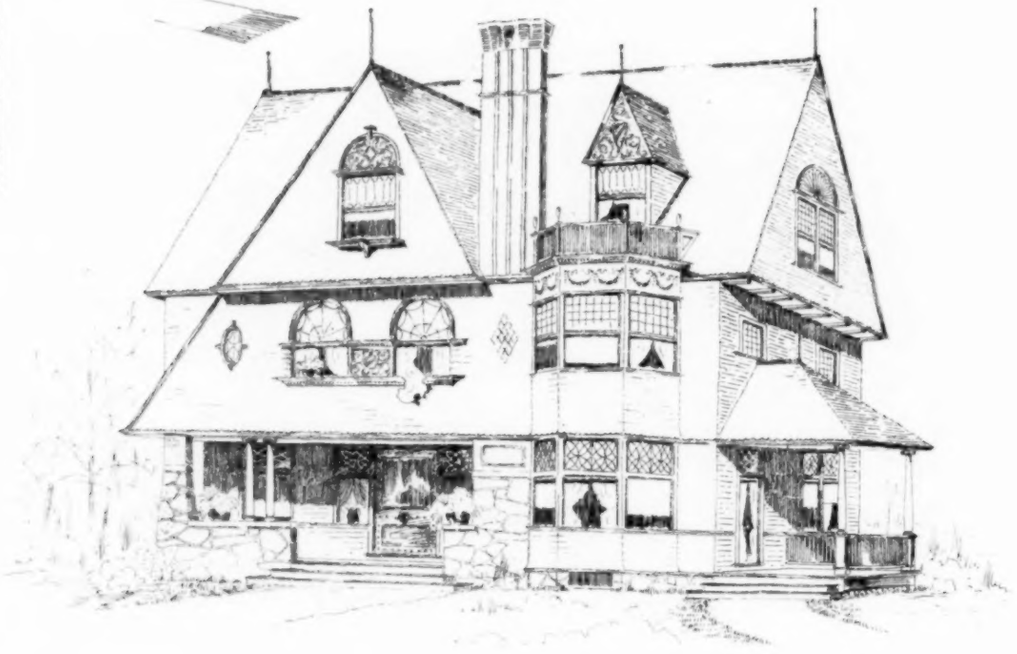
Heliotype Printing Co. Boston.



L. S. BUFFINGTON ARCHITECT
MINNEAPOLIS MINN. A. D. 1891.

MABEL TARNTER MEMORIAL - MENOMONIE - WIS.

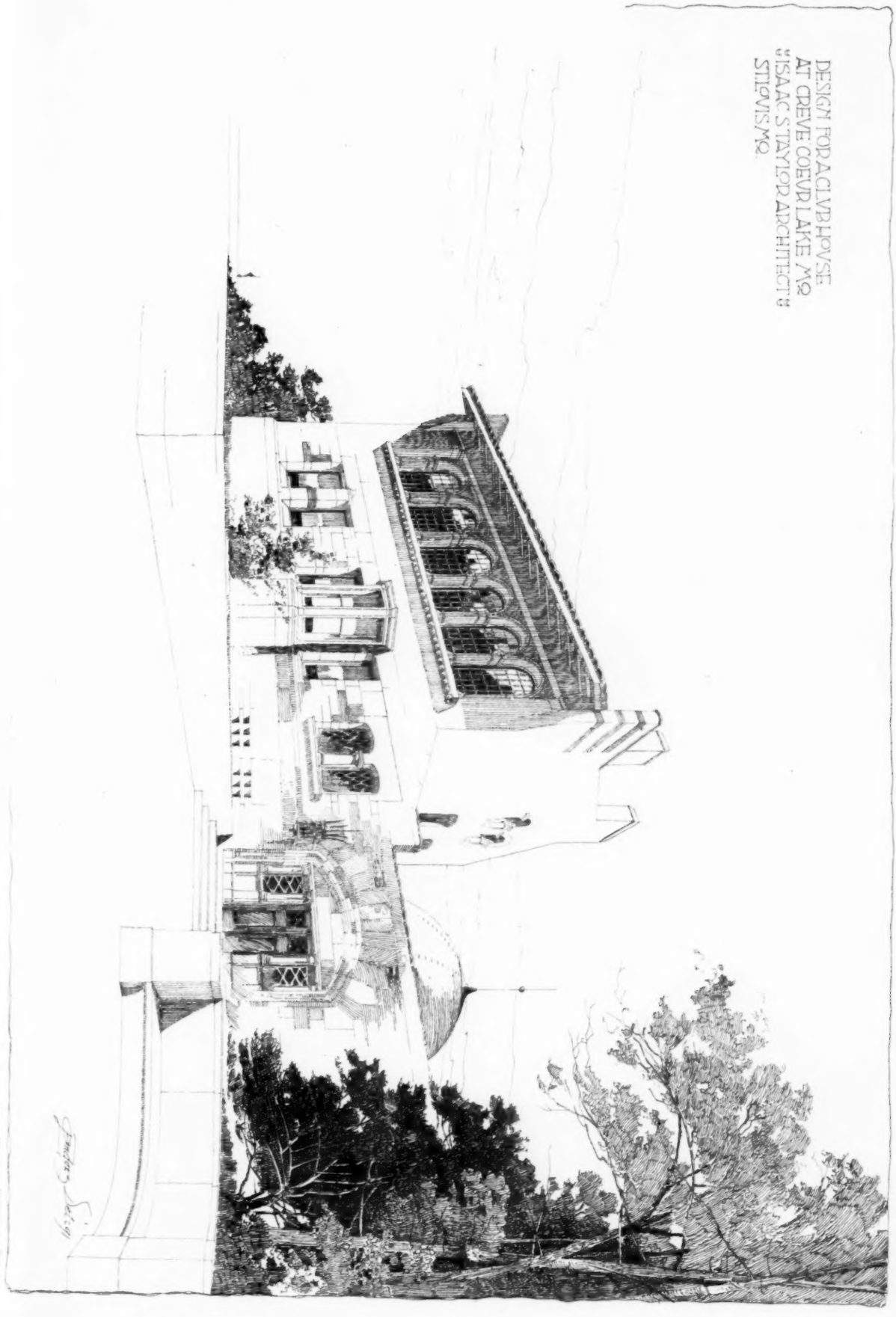




HOUSE AT RIDGEFIELD, N.J.
F.W. BEAIL, ARCHT.
318 B'WAY, N.Y.

HELIOTYPE PRINTING CO. BOSTON.

DESIGN FOR A CLUB HOUSE
AT CREVE COEUR LAKE, MO.
ISAAC S. TAYLOR, ARCHITECT,
ST. LOUIS, MO.



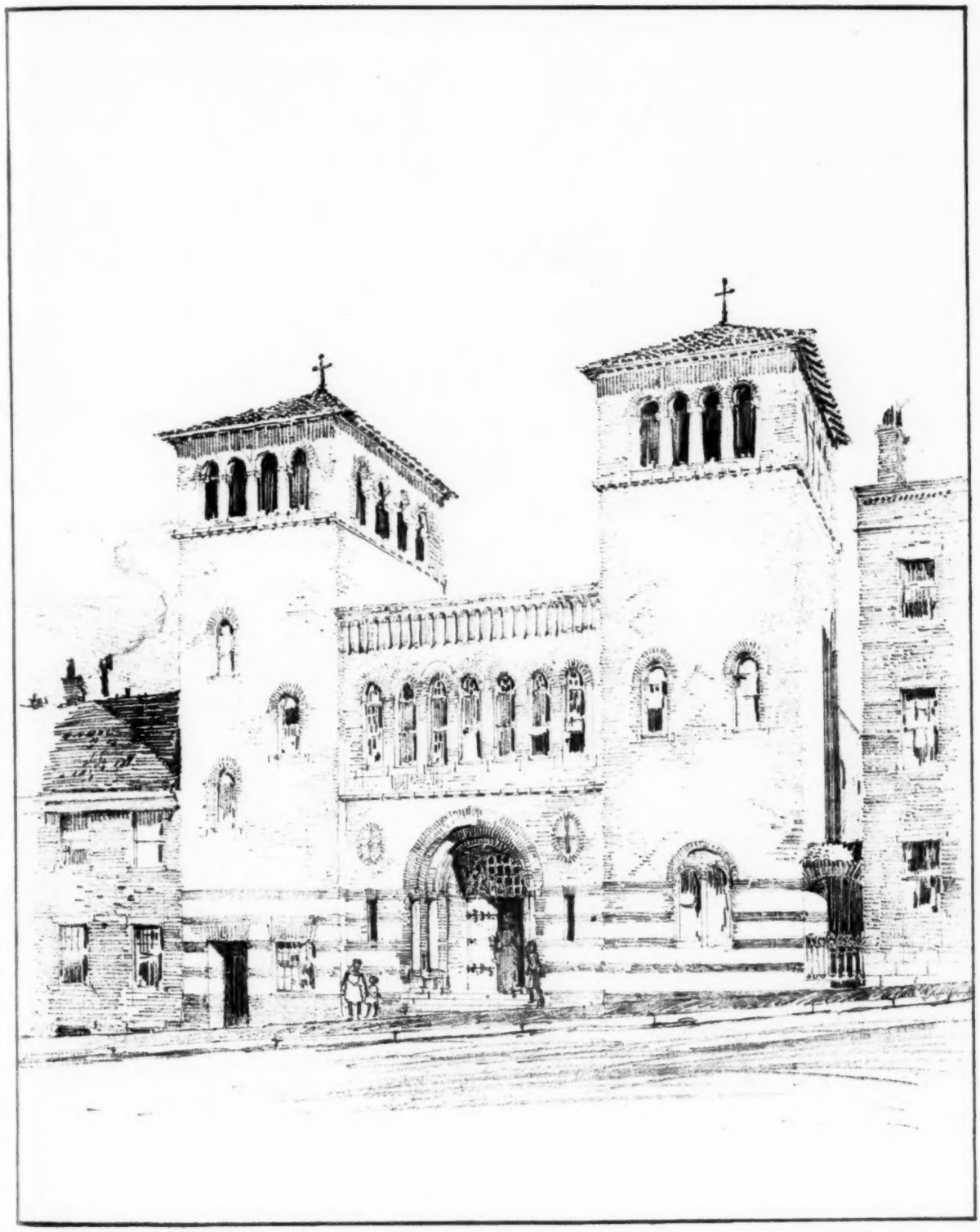
American Architect and Building News, June 13, 1891. No. 607.

House at Ipswich, Mass.

for Mr. Arthur L. Sweetser.

James T. Kelley, Architect · Boston.

Geo. F. Bodwell Del '91

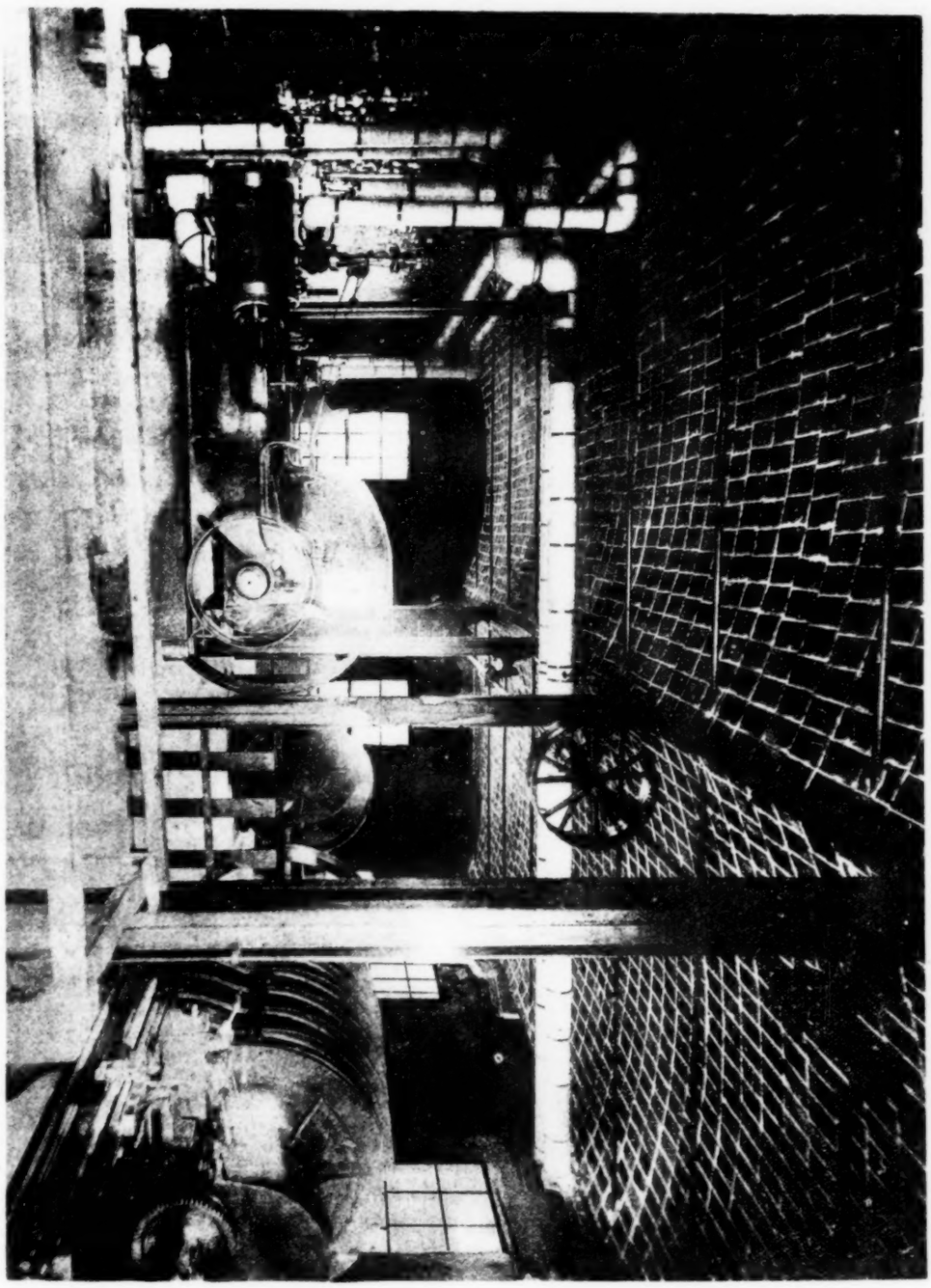


The Mission Church of
S. AUGUSTINE ≈ Phillips Street –

Sturgis + Cabot Archts
19 Exchange Pl Boston –

A SAMPLE OF TILE VAULTING ERECTED FOR THE BAY STATE GAS CO: BOSTON ··

W. R. ADDICKS, ENGINEER.



BOILER FLOOR AND CEILING ARCHES OF ENGINE ROOM B