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MANY Americans will be interested in the commotion which is just now at its height in the artistic world of Paris, over the dismissal of M. Coquart, one of the most distinguished and honored of French architects, from his post as architect to the School of Fine Arts, and to the Court of Cassation. From what the French journals say, it seems altogether likely that his dismissal was brought about by rivals who wanted his place, and who succeeded in imposing upon the Government officials by means not unknown in public life here. The accusation against M. Coquart seems to be that, being in charge of the enlargement of the School of Fine Arts, he has been at work six years, and spent a hundred thousand dollars, and has not yet completed the proposed changes; and that he has been at work in the Court of Cassation even longer, and spent still more money, and has not yet finished. With our ideas of rapid construction, six years seems a long time to take for almost any building; but M. Coquart's friends observe that nine out of the eleven ateliers which were to be accommodated in the new part of the School of Fine Arts were completed three years ago, and have been in use ever since; and that, although the actual cost will exceed his original rough estimate, the work has been carried on with the utmost economy and skill, and delayed only through the action of the Government. What may be the truth in regard to the Court of Cassation, to which M. Coquart has been adding at least a splendid piece of architecture, we cannot say; but, meanwhile, a large number of artists and architects, and members of the Institute, have united in indignant protests against his dismissal, and have addressed a memorial to the Government on the subject. A circumstance which renders his dismissal in disgrace, as it is felt to be, more to be regretted, is that M. Coquart, honored and distinguished as he has been, is very poor. As the *Courrier de l'Art* very frankly says, he has absolutely nothing. More than that, his mother, now eighty years old, is dependent upon him for support, and to turn him adrift in such a manner, at the age of fifty-nine, is perhaps to cut him off from future employment. We should hardly think that a man like Coquart need have any fears as to lack of employment, and his friends, who will regard him as a martyr, would be likely to see that he did not remain idle; but it must be confessed that under republics the lot of professional men who have the misfortune to work for the public is a sad one. We need not mention the names of the Americans who have suffered in the same way, and M. Coquart is not the first architect of distinction who has been manoeuvred out of his place in France within a few years.

WORK has actually been begun upon the canal and tunnel by which the water-power of Niagara Falls is to be utilized and sold. The scheme, which was originally proposed many years ago, and adopted by the Niagara Falls Power Company, incorporated in 1886, is now in the hands of several of the ablest hydraulic engineers in the country, and will probably be carried out to completion. The present plan is to excavate a tunnel, from a point just below the fall, with its mouth at the water's edge, in a straight line, across the bend which the river forms above the falls, to a point beyond the village of Niagara, and about a mile above the fall. At this place the tunnel will turn slightly, and run parallel with the course of the river, at a distance of about four hundred feet. The grade of the tunnel rises at the rate of about thirty-six feet to a mile, so that it is about one hundred and sixty feet below the surface at the upper end. The land around the upper end is all controlled by the Company, and it is proposed to lay out here a canal, vertically over the tunnel, communicating with the river. On each side of the canal will be wheel-pits, or rather, shafts, extending nearly to the depth of the tunnel, and draining into it. A turbine wheel is to be placed in each shaft, and fed from the canal, so that there will be a series of wheels, driven with a head of one hundred and fifty feet or so, the waste water from which will escape through the tunnel. The only limit to the number of turbines which can be used is the capacity of the tunnel for carrying off the waste water; and it is proposed to make the tunnel large enough to accommodate wheels up to one hundred and twenty thousand horse-power. Evidently, with this enormous power close at hand, the lands of the Company are likely to be soon occupied by mills and factories of all kinds; but, by means of electrical and cable transmission, it is probable that power will be sent at least as far as Buffalo.

MR. REGINALD T. BLOMFIELD made a contribution to the recent discussion in the Architectural Association about its new venture in the education of students, which is worth remembering. Speaking of the need, which we all feel, for developing the artistic power of an architect, at the same time that he is improving himself in construction, sanitation and other practical matters, he suggested that architects should, in the first place, cultivate the society of other artists. They should, particularly, if possible, model under a sculptor's direction, and should try to learn from painters and craftsmen something of their art, and possibly, teach them something of their way of looking at things. Then, as a means of advancing in artistic knowledge, he thought architects should pay much more attention to figure-drawing than they now do. They should begin with the antique, and then study the life incessantly, until they had acquired at least something more than an amateur's knowledge. This, he thought, was the best of all training, not only for developing the feeling for proportion, but for improvement in real draughtsmanship, which was something much more serious than the acquisition of a few little tricks of rendering. Moreover, in practical work, facility in drawing the figure, and in using it to advantage in the decoration of buildings, did much to bring together the architect and the sculptor, and to enable each to comprehend and coöperate with the other, to their great mutual advantage. Next to figure-drawing, Mr. Blomfield thought the young architect should practice modelling. It was hardly possible that he could attain to anything like creditable modelling of the figure, which requires almost lifelong study; but he could easily learn to model many kinds of architectural sculpture, and in this way not only educate himself in the knowledge of those refinements of line and shadow which form the delight of the thorough artist, but provide himself with means of showing his intention with precision to the carvers who would have to execute it.

THE *Wiener Bauindustrie-zeitung* describes a trick which is as yet unknown here, but against which a good many young architects will do well to be on their guard. The method of playing the trick in Germany is something as follows: A young architect, well trained, and with a tolerable practice, has laid up a trifle as the beginning of a fund for building, some time, a house for himself and his prospective family. He cherishes his intention secretly, revolving in his mind, as so many young architects do, the plans for his future mansion. At this stage he meets, in a business way, a man who has the reputation of having made a large fortune in stock speculation.

The speculator and the architect happen to see each other frequently, and become very good friends. Presently the former asks his new acquaintance why he has never built a house for himself. The architect replies that he has often thought of doing so, but has not as yet either money or credit enough to enable him to carry out his intention. The financier inquires further about his plans, which he finds very interesting, and finally suggests that his young friend should carry them into execution at once, calling upon him for the money. In answer to the grateful effusion of the architect, who sees open before him a charming perspective of domestic happiness, he explains that he has plenty of money, and is much interested in building operations, and would enjoy nothing better than to have a little part in realizing the dreams of his young friend, for whom he had taken a fancy from the first, and who might repay the loan at his convenience, with interest at a low rate.

FULL of hope, the young architect finds a suitable lot, which is paid for with his benefactor's money, and sets about his working-drawings and specifications. The contracts are made, and the building goes on rapidly. Every week the amiable financier makes his appearance, expresses his gratification with things in general, pays the workmen, and takes a receipt for his advance. When the house is nearly finished, the roof on, the plastering done, and the doors and stairs ready, the parquetry floor cut, ready to lay, and the finish all fitted, and ready to put up, a change comes over the scene. Instead of the usual Saturday visit, with money for distribution, a letter arrives from the financier, with the information that, owing to losses in the stock market, he is unable to make any further advances. The architect gets his own savings to make up the deficit; but they do not go very far. He tries everywhere to borrow, but in vain, and the contractors become impatient. At this moment the financier makes a demand for interest on his loan, which he has been careful to secure by mortgage. There is no money to be had to pay the interest, and the mortgage is foreclosed, cutting off all claims, not only of the architect, but of the contractors. The financier is now in full possession of the property, and opens negotiations with the contractors as to how much they will complete their work for. The carpenter has his doors, floors and finish ready; they cannot be used in any other house without partial or total loss, and, rather than sacrifice them entirely, he sells them to the new proprietor for one-third their value. The other contractors submit to similar discounts, in preference to getting nothing; and the benevolent speculator soon finds himself provided, at about two-thirds its value, with a charming house, picturesquely planned and thoroughly built, which he immediately sells, at a profit of fifty per cent, while the architect and the contractors, who have sacrificed their little savings for his benefit, begin afresh at the bottom of the ladder.

EVERY one probably does not know that there is a wooden church in England which is more than a thousand years old, and is still in constant use. This is the church of Greensted, in Essex, of which the *Builder* gives an illustration and an account. The original structure, which forms the nave of the present church, is supposed to have been built as a temporary shelter for the body of St. Edmund, who was murdered by the Danes in the year 870, and was buried with great pomp in the place still called Bury St. Edmund's. It has a plinth of brick, on which rests a sill, and on this are set up thick planks, or rather, logs, two or three feet wide, and about four and one-half feet long. These carry a plate, on which the rafters rest. There are no windows in the walls, light being obtained from dormers in the roof. Whether these existed in the original building is uncertain, as the roof was almost completely rebuilt in 1848-9. There is a square wooden tower, with a broach spire, covered with shingles, but the *Builder* does not say when this was built. The chancel is all of brick and was probably added during the reign of Queen Elizabeth. It is remarkable that the walls of the nave are in better condition than the roof. The latter, although put on only forty years ago, was too closely boarded inside, and has so far perished from dry-rot that it must soon be again renewed.

A STORY went the rounds of the daily newspapers not long ago, to the effect that the Swiss Government had discovered that the story of William Tell was a fable, and had ordered that it should be expunged from the text-books of history used in the public schools. The fact is that the Swiss Government has not done anything about the matter.

The discussion as to the authenticity of various parts of the Tell legend has been going on for more than a hundred years, and, while the Austrian records do not show that a Gessler was ever bailiff of Küssnacht, and the apple-shooting story is told of several more or less mythological heroes, there is reason to suppose that an Austrian petty tyrant tormented the Swiss of Uri past endurance, and that some one of the character, and probably the name of Tell, was the first to rebel, and to lead his countrymen in revolt. For these reasons, the people of the shores of the Lake of Lucerne consider themselves justified in keeping alive the somewhat misty legend of their hero, and a new Tell monument, on an important scale, is soon to be erected in Altorf. The commission having the matter in charge has decided to place the monument in the Rathhausplatz, and to have it consist of a colossal bronze statue, on a granite pedestal, adorned with bas-reliefs. The statue is to be ten feet high, and is required to represent Tell, dressed in the costume of a peasant in the fourteenth century, holding a cross-bow in his hand, and having an expression of courage and firmness. The four bas-reliefs on the pedestal are to represent the apple-shooting scene in the market-place at Altorf; the escape of the prisoner from the boat at Tellsplatte; the death of Gessler, and Tell's own death.

WE think we have before spoken of the cork concrete, which is coming into extensive use abroad. It appears to be admirably suited to some of the purposes for which we employ the so-called "terra-cotta lumber," a porous terra-cotta, but to be superior in its capacity for holding nails. It is, when well made, apparently quite as strong as the porous terra-cotta, and almost equally fire-proof, and far superior as a non-conductor of sound. As at present employed, the concrete is made on the spot of ground-cork, mixed with a matrix sold under the name of "liègeine," and moulded in place. What the liègeine is composed of, we are not informed, but it would probably not be very difficult to find several substances suitable for holding the cork together. Ground cork, if there should be any extensive demand for it, would probably be difficult to get here, but it seems likely that concretes of ground tan-bark, bran, straw or other similar substances, not liable to decay, held together by a strong incombustible cement, might be very useful in building.

THERE have been recently a great number of failures among builders in Germany, particularly in Berlin and Vienna, and banks and private individuals, who have lent money too liberally to help along building speculations, find themselves encumbered with useless property, for which they have paid a high price. In Berlin, three of the most reckless speculators, after the fall of one of their miserably-built structures, fled, and will probably turn up sooner or later in this country. In other places, the case has not been quite so bad; but hundreds of innocent workmen have been thrown out of employment, with the loss of wages already due them, and, as no more loans can be negotiated, even by honest contractors, the business of building is at a standstill. A year ago, a somewhat similar condition of affairs led to the collapse of building in Rome, and a year or two before that, a crash of the same sort took place in Paris. Whether we are destined to go through a like experience, it is impossible to say. Fortunately, perhaps, for our contractors, the antics of the Unions during the last few years have kept building down in our cities, and, even if the workmen should, for one or two seasons, follow the dictates of common-sense, instead of the orders of walking-delegates, there is little danger of over-building at present. In former times, no one was allowed to erect a building in Germany who had not proved his practical and theoretical knowledge of his business; and the consequence was that contractors were respectable and experienced men, usually with a solid capital to help them. A few years ago, the building business was made free to all, and contractors appeared in all directions, whom nobody knew, and who possessed neither knowledge nor capital. They, however, as usual in such cases, would generally underbid the old and experienced mechanics, and, in consequence, secured a large proportion of the contracts, which they carried out in their own peculiar style, while the decent men stood by in idleness. Now it is the latter's turn. The mortgagees have begun to find out that a heap of ruins, for which they have paid the price of a first-class house, is not a profitable investment; and they will discover, later, that the only way to get solid and faithful work in building is to go to the men who are known to be able and willing to furnish it.

AUSTRIAN ARCHITECTURE.<sup>1</sup>—VIII.

THE RENAISSANCE OF THE SIXTEENTH CENTURY IN AUSTRIA.



Fig. 1. House at Brixen.

ALTHOUGH there are edifices in Austria which prove that the Renaissance appeared there earlier than in Germany—a fact easily accounted for on geographical grounds—yet it did not find in Austria the same general and popular application or the same degree of original development as in Germany. In many cases the Austrian Renaissance structures were erected by Italian architects who preserved therein, more or less unaltered, the characteristics of the Italian Renaissance. The castles of the nobility, who in many instances belonged to Italian families, constituted the majority of the constructions which were built in this style; the *bourgeoisie* of the sixteenth century either took no very active interest in the architectural movement or clung to Pointed traditions, which were largely maintained in ecclesiastical edifices.

It was only in the Italian cities of Austria, as at Trent, that the Italian Renaissance became the dominant style in the sixteenth century.

We can do nothing more than note in the most general way those social and political conditions in Austria which prevented the popularization there of the Renaissance style and its development on original lines. In the first place there were religious struggles of such a nature as to leave the people neither the time nor the quiet requisite for the accomplishment of great architectural undertakings. Then, scarcely had Protestantism begun its energetic and triumphant march through the country, scarcely had it begun to lay the foundations of a new order of life, when a violent Roman Catholic reaction set in; this reaction, after the meeting of the Council of Trent, was supported by force throughout Austria and ruined the prosperity of most of the burghers, either sending them into exile or stripping them of all their property. Plainly, in such circumstances the civil architecture of the cities must have suffered even more than it had suffered during the religious and social reform movement.

Religious architecture, on the other hand, received a fresh

impulse toward the close of the sixteenth century, under the guidance of the Jesuits and the clergy attached to the court of Rome; but the forms of the Baroque Italian style were slavishly copied; these were brought in by the Italian masters in the service of the Church, the monarchs and the higher orders of the nobility, under whose authority all the churches and sumptuous palaces were erected.

It was not long before the Italian Baroque had become, so to speak, the national style of Austria. It was even adopted by the native masters, who in the eighteenth century appropriated the architectural and decorative forms of the French Rococo.

Having roughly outlined the architectural movement peculiar to Austria, in connection with certain political and social events, we will first examine somewhat in detail the chief Austrian monuments of the sixteenth century.

It was natural that the Renaissance style should take root early in Tyrol, through which direct communication between the empire and Italy was chiefly maintained; and especially would this be true of the southern sections, which by their language and customs were immediately interested in the Italian civilization. It is a fact, however, that the style was adopted there later than in the central divisions of Italy; the old castle of Trent, built in 1475 by Bishop John of Hinterbacher, was treated in the Venetian Pointed style. But the Renaissance did not meet with general recognition in Lombardy, nor in Venice itself, until toward the last quarter of the fifteenth century.

At the beginning of the sixteenth century, the Renaissance style was already well established at Trent and throughout the Italian Tyrol. It exhibits the characteristics of Venetian architecture in the time of Scarpagnino, Bergamasco, Falconetto, and of Moro and Sante Lombardo. The new castle of Trent, constructed between 1531 and 1536 by Francesco Zaffran of Mantua (a fact not yet generally known, but which we have determined from documents that we shall shortly publish), is noted for the beauty of its forms, although the plan is not at all regular; the architect was evidently obliged to adapt his design to already existing structures, as well as to the great unevenness of the rocky site. The fine balcony on the western façade, the magnificent portico in the court, and the various doorways are the portions which give the best idea of the elegance of Zaffran's style.

A similar style may be observed in the Casa Monti, in the Via del Suffragio; in the mouldings and ornaments, as well as the internal distribution of spaces and in the arrangements of the windows and balconies, it is an almost exact reproduction of the Venetian palace of the sixteenth century. The Casa Gremia, in the Via Larga, which was the residence of the Emperor Maximilian I in 1508, belongs to the same Venetian school. The Tabarelli palace, Trent's most imposing Cinquecento mansion, is traditionally attributed to Bramante, but this is certainly an error; its three stories in rustic-work, with gemel-windows, arched, in the centre of the principal story, point rather to a Venetian source; at the same time the height of the stories and the breadth of the wall-space between the windows suggest Tuscan types. We venture no theory as to the identity of the architect of this edifice.

In the decoration of most of the palaces of Trent, with the exception of the Tabarelli, the characteristic feature consists in the mural paintings of the façades; this is a Lombard-Venetian peculiarity. It was, in fact, Pordenone, Romani, Brusaserci, Gianbattista Dossi, Marcello Fogolino, and other North Italian artists renowned in this kind of decoration, who painted the historical, allegorical and ornamental enrichments on the façades of the palaces of Trent. The Garavaglia mansion has similar paintings, executed in 1551 by Brusaserci; there are two other mansions north of the cathedral which were decorated in part by Fogolino.

The same prince-bishop, Bernard de Cles, under whom the new castle of Trent was built and adorned in a manner worthy of the Classical period of the Renaissance, erected or restored a large number of other castles and palaces; for example, Castel Selva near Serico, the castles of Riva, Fermo, and Stenico, and the episcopal palace of Cavalese. As for the religious structures founded by him, the church of S. Maria Maggiore, made famous later as the place where the Council of Trent held its sittings, and the church at Civezzano,—they are noted for the elegance of the architecture and the grace of their decorative sculptures.

The Italian Renaissance passed from the Italian divisions of

<sup>1</sup>From the French of H. Semper, in Planat's "Encyclopédie de l'Architecture et de la Construction." Continued from page 113, No. 718.

Tyrol into the German provinces, but without entirely displacing the German Pointed style, which was perpetuated there down to the invasion of the Baroque style of the seventeenth century.

The seigneurial country houses bear the impress of the Venetian or Lombard architecture nearly as far as Botzen. Some very picturesque structures of this kind, with arcaded loggias, and windows and doors wrought in stone, in a fine Renaissance style, are to be seen at Tramin, at St. Michael near Botzen, at Lana near Meran, and elsewhere. Toward the north the pure Italian Renaissance is gradually abandoned, and it finally gives place to the compromise known as the German Renaissance. Even at Botzen, there are beautiful burgher dwellings in the principal street, in which, although the Italian style clearly predominates, there is, nevertheless, something of the semi-Gothic character peculiar to the early German Renaissance. This element reveals itself in the huge pillars supporting the rather low arches of the ground floor, as well as in the numerous oriel-turrets with which the façades are broken. But in the mouldings the pure Italian style is sometimes encountered. We give an illustration (Figure 1) of an especially remarkable house of this kind at Brixen. There are also a few castles in German Tyrol, constructed or restored in the sixteenth century, in which German interpretations of Italian types are exhibited. We call attention to the castle of Tratzberg, with a beautiful court surrounded by a portico of Tuscan pillars. There is a similar court in the castle of Ambras near Innsbruck; after 1563 Ambras was the residence of Count Ferdinand II and his wife Philippine Welser, who was renowned alike for her rare qualities and her beauty. Here, Ferdinand gathered together the celebrated collection of ancient armor, pictures and curiosities now in the Imperial Museum at Vienna.

The Spanish Hall which Ferdinand built near the castle (Figure 2) is less noted for its architecture and its mural paintings than for the magnificent timber-work of the doors and ceilings, which offer fine specimens of an industrial art in which



Fig. 2. Decorations in the Castle of Ambras.

Tyrol excelled in the sixteenth century. The castle of Velthurns near Brixen is famous for the same reason: it was erected and richly decorated between 1580 and 1587 by the prince-bishop of Brixen, Baron von Spauer, who made it his summer residence. In the castle of Tratzberg there is likewise some magnificent woodwork, but it belongs in part to a later time.

Bronze-founding was also cultivated to a considerable degree in Tyrol in the sixteenth century; it is probable that the Grasmayr family already exercised the art at that period in Brixen; they devoted themselves especially to the casting of bells. At Mühlau, near Innsbruck, the Emperor Maximilian established

a foundry for the casting of the numerous bronze figures for his mausoleum. The principal modellers and founders engaged there during the sixteenth century were Gilg Sesselschrieber,

Stephan Godl, and Peter and Gregory Löffler, who in fact furnished most of these figures; the marble sarcophagus (in the Franciscan church at Innsbruck) and the celebrated marble reliefs with which it is

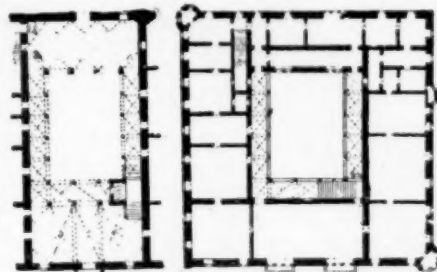


Fig. 3. Plans of the Porzia Palace, Spital.

adorned are by the Belgian artist, Alexandre Colin, and by Alessandro Vittoria. Gregory Löffler, who was an architect as well as a sculptor, constructed Castle Buxenhausen, near Innsbruck; he likewise executed several bronze memorial tablets for the parish church of Schwatz and for other churches. Alexandre Colin was the architect of the Countess Philippine Welser's tomb in the Franciscan church at Innsbruck and of his own monument—architecturally composed—which was afterward partially destroyed. A portion of what remains of it is at present in the cemetery at Innsbruck; the rest is in the museum there. In architecture, Löffler and Colin adhered to the style of the high Italian Renaissance.

The Franciscan church at Innsbruck furnishes also some beautiful specimens of wrought-iron work, in the grilles surrounding the cenotaph of the emperor and closing the mortuary chapel of Count Ferdinand and his wife Philippine Welser. The same kind of ornate work, executed with eminent taste and great technical skill, is to be seen all over Tyrol, in various

forms, as grilles, mortuary crosses, inn-signs, chandeliers, and so forth. The Tyrolean faience stores are equally worthy of praise.

As for decorative sculpture in stone, Austrian Tyrol exhibits some very early examples of more or less pure Italian Renaissance types by the side of Pointed forms; the latter were maintained there until a much later period.

Another route by which the new style penetrated into the Austrian provinces ran from the Venetian mainland into Carinthia and Styria, and thence into the Austrian duchies and the archbishopric of Salzburg.

In Carinthia, we encounter but one remarkable construction of the sixteenth century, but it is a veritable masterpiece of Venetian architecture. This is the castle of Prince Porzia at Spital (Figures 3, 4, 5) on the Drau, erected by a count of

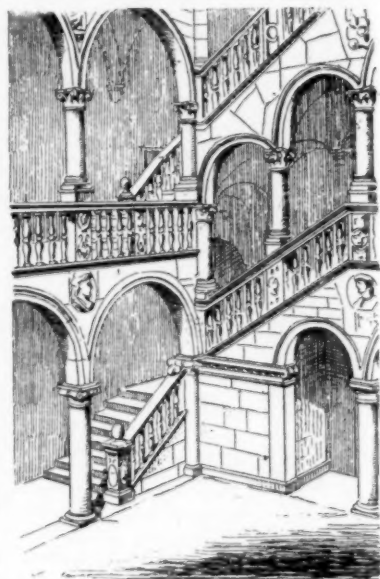


Fig. 4. Court of the Porzia Palace, Spital.

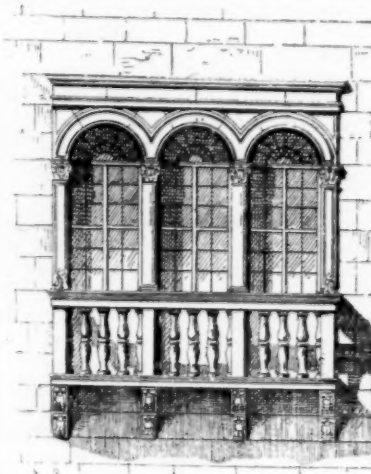


Fig. 5. Window in the Porzia Palace.

Ortenburg. The plan is a faithful reproduction of the plan of an Italian city palace, except for the two barbicans at the diagonally opposite angles of the square edifice. The exterior is treated quite simply, but the systematic composition of the lofty stories is wholly Italian. The walls are merely rough-cast, while the columns, doors, windows, cornices, pilasters and other architectural members are of limestone, executed in an elegant style, with rich mouldings, ornaments and figure sculptures. The main portal, especially, is covered with graceful decorations in the Venetian style; the system adopted for the three central windows—that is columns supporting arches above the bays and a balcony enclosed by a balustrade—is likewise Venetian throughout, even in the details. The same is true of the fine court, which is surrounded by arcades and loggie in the noblest style. This palace was of course constructed by Italian masters, as was also another edifice opposite it, bearing the date 1537, which is treated in the same manner, though less lavishly.

With the exception of the Porzia Palace, Carinthia is exceedingly poor in Renaissance structures of the sixteenth century; the Landhaus and the town-hall at Klagenfurth are nothing more than mediocre buildings. The castle of Hochosterwitz, which stands on an isolated pyramidal rock, was restored in 1575 by Count George Khevenhüller, then governor of Carinthia, and offers a good example of the art of fortification as it was then practised; it is in a monumental style, and some portions of it—the portals for instance—are not destitute of artistic merit. A few sepulchral monuments, erected by the Carinthian nobles, particularly in the cathedral of Villach, deserve mention as examples of the Cinquecento style in this province. The magnificent red marble tomb of Count George Khevenhüller and his family, executed in 1550 by Ulrich Vogelsang, is especially noteworthy. In the same church, the ornate tomb of Sigmund von Dietrichstein, the marble pulpit, and the marble baptismal fonts are all of the sixteenth century. Other tombs of the same style may be seen in the churches of Wolfsberg, St. Leonard, Eberndorf, Millstadt and Friesach. At Friesach there is also a handsome Italian fountain consisting of several basins placed one above the other, the lowest and broadest of which is supported by Atlases. The Lindwurm at Klagenfurth, a fountain representing Hercules slaying a dragon, twenty-four feet in length and carved from a single block of granite, belongs to seventeenth-century types, but the iron grille around it is treated in a beautiful Renaissance style, with no trace of the Baroque.

In Styria also, there are but few Cinquecento architectural monuments; but in the decorative arts this style was applied with much taste. The Landhaus at Gratz (Figure 6) presents a wholly Italian character, especially in the elegant court with

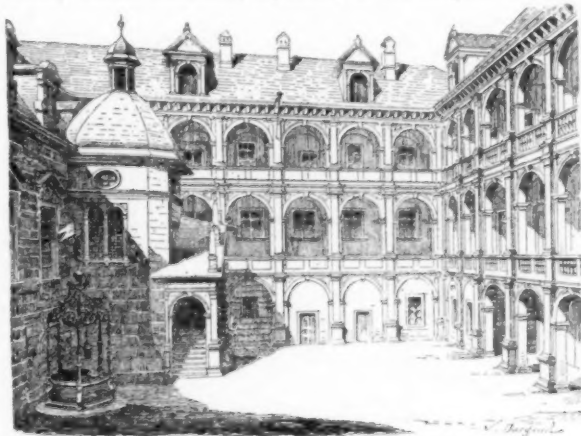


Fig. 6. Inner Court of the Landhaus at Gratz.

three orders of arches supported by pillars; in these a reflection of Bramante's manner can perhaps be recognized, while on the exterior the balconies and arched gemel-windows suggest Venetian types. The town-hall at Marburg, which also has an arcaded court, is an unimportant example of the same style.

There are several castles in Styria which were restored during the sixteenth century. The Schloss of Gratz was formerly distinguished for a magnificent flight of turret-stairs, as well as for a chapel constructed in the best Italian style. These portions were built under the Archduke Charles who, as governor of the province, made the Schloss his residence; he restored it

between 1564 and 1618. The Schloss of Hollenegg, founded in the twelfth century but restored in 1573-1575, by Frederick of Hollenegg, forms an irregular quadrangle with the two old donjons in the diagonal. There are two courts, one of which has fine arcades and stairways in the same style as those in the court of the Landhaus at Gratz. The castles of Riegersburg, Eggesburg, Schrattenberg, Murau, Thalberg and Strehlau likewise have beautiful Renaissance details.

A few Styrian churches, like those of Pollau and of the Benedictine convent of Oberburg, were built in the sixteenth century and in a pure Italian style.

The splendid mausoleum of the Archduke Charles II, in the cathedral of Sekkau, was erected by Theodore Gisius and Alexander of Verdez, both probably Italians. It is adorned with a profusion of sculptures and reliefs in marble, bronze and plaster, and with a wealth of paintings, which it would be impossible to describe in a sketch of this kind. The work was executed in 1587-1592.

In Styria, it is chiefly in the decorative arts that the productions of the sixteenth century are remarkable; their excellence is due as much to technical perfection as to grace of style and fruitfulness of invention. The faience stores of the castles and the wrought-iron work are of superior merit. A fine specimen of the latter is seen in the well at Bruck, one of the best examples of work in bronze; we call attention to the well in the court of the Landhaus at Gratz; here five bronze columns, enriched with figures and other ornaments, support a beautiful openwork bronze canopy on which are represented sirens, acanthus leaves, and so forth: it shows the influence of Bramante.

[To be continued.]

#### A RUN THROUGH SPAIN.—I.



eral knowledge, and every step will be a revelation which grows more interesting the farther he goes.

Furthermore, travel on the Continent is so inexpensive, that one need not be frightened into putting the whole subject out of his mind, a point which I wish to prove by relating the experiences of such a trip, the expense of which was bounded by a few hundred dollars only. How it is possible for any art student of to-day to work and toil in the country of his birth only, and allow his ambition to go no farther, is more than I can understand.

Over against the question of expense, however, some one cries out that it is the universal impression that "the devil cooks the food in Spain" and, hence, even the thought of that country is given up. Such people need not be consulted since eating and not study is their main point. The man whose god is his belly certainly should go to Delmonico's and not to Spain or Africa.

On the whole, however, we disagree with this general complaint, and assert that the cuisine is good enough for anybody. Because one must eat garlic instead of the more fashionable onion, because he must have his steak smothered in oil instead of butter, or because he will invariably have set before him a dish that reminds him of the pickings and leavings of a little of every known animal and vegetable (but a succulent dish nevertheless), or, again, because many Spaniards will persist in lighting their cigarettes and smoking them at the table, or more horrible still, pick their molars behind a napkin; or still again, because some guide-books suggest the idea that "mosquito nets are indispensable," "Persian powders are a necessity," "and flea powders and cholera mixtures are good adjuncts to every travelling-bag." Great Heavens! I have known each of these terrible things to exist in our own country, and must one then, forsooth, never travel in some of the most picturesque and interesting countries of the globe?

I tell you nay! Those beautiful descriptions of Kenelm Digby,

EVERY person with the least bit of Bohemianism in his composition loves travel. The more he travels the more he wishes to travel. The more he sees, the more he longs to see. And since the mother country is so deficient in works of art, he naturally turns his longing eyes eastward. Let him try Spain, and continue his tramps across the sea into Africa. If he is a true Bohemian, he will get an immense amount of enjoyment, no little general knowledge, and every step will be a revelation which grows more interesting the farther he goes.

and Andersen, those stories of childhood, the homes of the grand old Moors, are no myths, neither is Spain an entirely God-forsaken country given up to dirt and vermin; and while it is not my intention to write a history of any country, much less to force others to go there, I wish to urge upon all students the possibility of broadening their stock of general information by study of the glories that exist in other countries than our own; for he who as years pass has not made travel and observation a part of his life-study, has not seen an iota, has not lived in fact, and dying has missed the grandest of this world's treasures.

Since, then, we are writing at present of Spain in particular, I shall take it for granted that we are already on the way to that picturesque country. We have in fact just left Irun on the borderland of Spain, that sticker for every poor wretch who cannot speak Spanish; that place where the porter rushes up to the unsuspecting voyager, and fires off such a volley of language that the heart stops beating, and the face assumes the aspect of an image in front of a tobacco-store; where the porter wildly gesticulates, points up and down, right or left, at you and your baggage, and whirling around clutches the latter without resistance, and carries it off to be torn open, poured out, gloated over, stamped on, and marked with a cabalistic sign in chalk. Then is the time when you realize how very little Spanish you really do know, and of what tremendous advantage is the silver key that reposes in your pocket, and issues forth almost before you know it. Ah! 'tis a wonderful key, this silver one, and opens all kinds of locks throughout the Continent.

Here we are, then, across the border, safe and sound, and in good trim for the roughing trip that we have laid out.

Visions of Don Quixote, the Cid, Ferdinand and his queenly Isabella, and the picturesque and exciting dubbit, "gentlemen of the road" as the Spaniards condescendingly dubb them—all these things have floated before our eyes for years, and cast a veritable halo of romance across the horizon of our studies.

The magnificent scenery of the rocky Pyrenees stretches out before us. Gorges whose bottoms seem to have fallen out and disappeared, hills with everlasting snow, and cities and towns the walls of which have stood the storms of ages, with their towers built for mediæval warfare: narrow tortuous streets full of surprises at every step; palaces, convents and glorious cathedrals in the very heart of nearly all the towns; aqueducts of vast proportions bearing the sure stamp of Roman hands, and oftentimes overgrown with shrubbery and moss; and beyond all the beautiful Alhambra with its Oriental splendor.

If such scenes as these cannot satisfy you, turn back at once; if they are outweighed by the thought that dollars and cents have stopped accumulating as you speed over the road, why simply turn back, and return at once to the drawing-board and quarterscale.

But if, on the contrary, you are getting interested in the fulfilment of your anticipations, and have flung thoughts of business to the wind for the time being, then speed on good train with all rapidity possible, and bear you to the first stage of your journey.

A guard presently appears hanging to the outside of the train and walking from one compartment to another. He presently pokes his head in at our window, pins himself to the outside by hanging his arms over the window-sill, and with a polite bow and smile demands our tickets. We had bought a book of tickets through Spain, and had not even noticed the rules regulating them.

"Ah, Caballero," he says, "your tickets are not punched."

"Surely no," I replied, "how should they be punched before you take them and stamp them?"

"But they are not good! Read, Caballero! Tickets must be stamped at the station of departure."

"Ah, Seignor," I replied, "I did not observe the rule; in our country a punched ticket is worthless. I will observe the rule hereafter, and you will let them pass this time," and with a shrug and a smile he unpinned himself from the window-sill and disappeared, while we proceeded to moralize on the strangeness of a custom that punches a ticket before it is valuable.

But while we talk, the beauties of the Pyrenees mountains are opening before us. Next to an entrance into Switzerland there are no more magnificent views than these which gradually unfold as we climb the mountains. Views of hillsides mount Heavenward, and look like vast pieces of tapestry in greens and browns.

One must not expect scenery however that may be called beautiful in the sense that Italy is beautiful, for after crossing the mountains all is changed. Grass is a rarity, and shrubs and trees may be counted, they are so scarce. No forests exist, but for miles and miles a stony waste stretches out desolate and cold, where all the interest is derived from the silence and solitude of tawny fields, which seem to have influenced the very nature of the Castilian people, and left its impress upon their poetry, its ruggedness upon their architecture, and its grandeur upon their churches and cloisters.

All these impressions are noted as we pass along in pleasant conversation with an old priest who occupies the same compartment with us. We had spoken possibly a score of stock Spanish words and he had possibly spoken as many English words, each gesticulating and making acrobatic contortions with fingers, hands, head and tongue, and yet making, as I have said, a conversation which was not only understood, but extremely interesting. One need not, therefore, be a Spaniard to travel in Spain, far from it indeed.

Twenty-six hours after leaving Paris we approach the old city of Burgos, 3,000 feet above the sea-level, and running back for its

foundation to 800 years after Christ. Here our old priest bids adieu, with many a smile and bow, and we clamber down from the cars, bag and baggage.

Our first introduction, therefore, is to a genuine old Castilian city, the capital of the kingdom, and containing one of the most glorious churches in the whole country.

"A Castilian! Such glory is enough" say they, "for when you speak of a Castilian you speak of a man every inch a man, true to his country, his king, and his faith." Picture him as we see him at



PUERTA S. MARIA

the station of Burgos, tall and dignified, dusky as mother earth, with a tight blue jacket, often embroidered, a huge sombrero, leggings and sandals, and the universal brilliant red sash, wide and voluminous. There he stands before you and is a sketch worth taking. His companion is a donkey. Poor little donkey! Black, brown or gray, fat or lean, big or small, it matters not, the little fellow is

cuffed and poked, carrying terrific loads, yet, nevertheless, the most uncomplaining steadfast friend of the peasant.

As we roll over the old bridge of Santa Maria just at the entrance of the town, odors of garlic float on the air, and a troop of mangy children and beggars run along beside the lumbering stage and watch our movements. Visions of coins on the morrow probably form their sleeping thoughts, for they are apparently all of them at the hotel the next morning as we start out. Beggars with no hope, apparently, either for time or eternity. How hope can enter their hearts now it is difficult to see, and how any visions of happiness for a life to come can find entrance into the least chink or cranny of their miserable bodies, it is still more difficult to imagine. Possibly the story of Dives and Lazarus may be the mainspring of their existence, for they surely live on much less than the crumbs that fall from the rich man's table. As for the traveller, they vow an everlasting love, and swear never to leave or forsake him; and they endeavor to keep their promise like Io's tormenting gadfly. Before we got through with Spain we found that the beggar was a fixture, impossible at times to ignore; just as much so as other insects—you meet one by day, the other by night.

Burgos is not a particularly interesting town, although from an artistic point of view it ought to be so, for it is terribly dirty, and generally where you find dirt you also find picturesqueness. Not so here, a sketch-book finds for its pages few bits, but the little camera created a regular commotion, as followed by rag-tag and bobtail we climbed up the hill. I verily believe the last artists must have departed before the present generation of urchins.

The Cathedral, of course, is the chief attraction of the city, but the picturesque grandeur of the whole can never be seen until it is cleared of its surroundings as was Notre Dame at Paris. Walking around and around gives no idea whatever; but on going to the top of the hill opposite, the grandeur of the mass appears and causes us to wonder that the demolition of the parasites that spoil it is not undertaken at once. The venerable old pile was begun in 1221, the body and each end being in the early pointed Gothic style of architecture, very highly ornamented and of great delicacy and richness. It is readily seen that a German hand must have added the two spires, which rise 300 feet above the pavement, and are marvels of open stonework though somewhat coarse in detail, and it does not seem improbable that John of Cologne was their designer, since the style and general design is nearly allied to many German spires of a like character: and this idea is strengthened by the fact that they were erected in the fifteenth century. There is no trace of anything Moorish in the interior, and the whole work in general is pure and



BURGOS

simple, and not unlike the best thirteenth-century Gothic churches in France.

At the cross of the church is the gorgeous central lantern tower, octagonal in form, and surrounded by eight spires also of open stonework. The interior is more gorgeous still, and were it not for the central *coro* which blocks up the nave, the interior proportions would be simply startling. And when the white-robed priests and acolytes file into the stalls, and the organ peels out its grand column of music, breaking across the aisles and columns in perfect waves of harmony, the whole scene is certainly most impressive.

The *coro* being in the middle of the nave, and a passage being required for the clergy who must minister at the high altar, a low railed screen connects the two, and by having two gateways from transept to transept, the people are allowed to thus pass through while no service is in progress. One is always struck with the seeming unfitness of this arrangement, which so separates choir and altar, but it is one of the distinguishing features of the Spanish method, and is found in nearly every cathedral. It does, however, give great scope for the ingenious metal-worker, and many of the rails and gates as well as the *grilles* found in the churches of Spain are among the finest pieces of work I have ever seen, some being actually of silver.

We went out of one door and walked around to another side. From every point you see the cathedral; here a tower, there a peak, there a dome, and when you turn a corner again the huge mass stares at you, and seems to cover the whole of Burgos, and yet you never see enough of it at one time to say to yourself "There is the cathedral." No! only parts here and there of a grand whole. Oh! for a veritable clearing out of the surroundings! Ascend, however, the magnificent Renaissance staircase leading to the transept, thirty feet above the level of the street; enter here, and there is apparently no end to the interior. Far away to right and left stretch column and arch; far up climb the ornamented shafts till they lose themselves in the halo of light, which comes in from above, you hardly see where, it is so soft and luminous. You step forward well into the church, and again comes the disappointment on account of the *coro*. In your mind's eye the glorious cathedrals of England or France rise with their clear length of nave and transept, and the comparison of planning is strongly in favor of the latter. The *coro* may be ever so beautiful in its wealth of carving, but it is still a disfigurement, totally destroying the otherwise stupendous vista which really exists but cannot be seen. Meanwhile over the pavement shuffles one of the sacristans: you know he is aiming your way; he follows you as you move away, jabbers continually about cloisters and chapels, tombs and paintings. A saint of old brought surprise to his companions, as he asserted that he had seen the Lord, and here before us was a sacristan who boldly led us along with the assertion that "he would show us the Christ."

Watch the old man as he pulls out a huge key, unlocks a huge gate, and entering a chapel pulls aside a curtain with a carelessness born of constant familiarity. A shocking sight greets our eyes, for

where we had expected a picture or possibly a figure, here is before us something that makes the very blood creep. A skinny figure, with actual hair and beard, brutal nails protruding from hands and feet, a gaping wound from which every Friday flows fictitious



blood forced there by the hands of sacrilegious priesthood. A sight so horrible that we turn away, anxious to shut out the vision from our minds. Such a Christ could never have saved mankind, nor commanded the love of a soul! We were glad to get away, and out into the pure air.

A stroll outside of Burgos is not uninteresting, and far from this if one has as the end of the trip the old convent Los Huelgas which he will find much of interest. Like nearly every small place in France the church or cathedral or convent is the nucleus of the town. It derives its nourishment from the people, and by them it is surrounded and nestled up to, so to speak, with a love and reverence that is also touching. So with this old convent, it is dear to the people around it, for kings have been knighted, crowned and buried within its walls, and it has been the guiding star and protector of its people.

There is a simple beauty about the whole place as you approach the little archway topped by its battlemented walls, and as you enter the yard the cloisters are open to you on the right, while a little arched bell-tower crowns the cross of the church. And when you enter under that tower and pass a couple of demure abbesses, they seem to lend a dignity to the very air through which they pass.

But I found upon entering that it was impossible to get into many parts of the church on account of these very abbesses, who were shut off by screens so high that no human eye could hope to see over them. This rather maddened me, and led me to remark that the dignity of atmosphere spoken of disappeared from my mind, and became just common air, much like the rest of the air, and much too good to be shut up and enjoyed by these heretofore sanctified and dignified abbesses.

But we got a general idea of the church after studying the lines of the cornice, and concluded to forgive the abbesses for shutting themselves away from the world.

Going across the old bridge of Santa Maria, as we returned, we strolled out from the town a short distance, and visited a wine-bottling establishment, discovering that the processes were numerous but the outcome much the same. By all means drink wine when travelling; 'tis more healthy, a prettier color, and the custom, but don't ask too many questions as to how it is made. Hold up your glass to-night and see how clear and ruby is the color, then forget those black looking things hanging over the archway of the wine manufactory over the way.



"Well, what are they?" the ladies asked.

"Pig skins, my dear, the veritable skins of a pig, nothing more nor less, and not over clean-looking either."

"Heavens! that is what we have tasted all along!"

"Oh no, not at all, that is owing to your lamentable lack of knowledge in regard to the relations existing between the pig and the wine. Make up your mind therefore that it is ignorance that you taste in your wine, and not pigskin; in other words do not be too particular, the least you know in Spain the better."

I stepped into a little store shortly after passing the wine shop, thinking that a good cigar would tend to dissipate the cobwebs in



relation to the wine question. Visions of Spanish tobacco—or was it Turkish—had often floated before my mind, as being particularly pleasant flavored.

"Cigaro Señor se gusta" I said with hesitation.

"Si Señor," handing me out a handful from which I selected two.

"Quanto vale?" I asked.

"Veinte centimos, Señor."

Four cents for two good cigars! Well, well, I thought, we shall smoke considerably at this rate.

Four minutes later this idea was thoroughly dissipated; four cents for two cigars was just four cents too much, more than they were worth in fact, and I was obliged to succumb to the fearful fumes, and go back to the contemplation of the festive pigskin wine-bottles.

Only about an hour from Burgos is the Monastery Cartuga di Miraflores, and beyond, another one, still more interesting, that of San Pedro di Cordonna where were the remains of Rodrigo Rey Diaz, better known as the Cid, and also his wife and his faithful horse. Over the convent entrance stood the figure of the Cid on his horse Baveica, and for years was guarded by the clergy.

The result is characteristic of the fallen grandeur of this country, for even 'way back thirty years ago only one of its many priests remained, and his efforts were directed towards the proper attendance on a litter of pigs, and a congregation of one old woman, before whom he still said mass in the grand old church. The Cid has left his burying-place, but his faithful steed endears the soil by his ashes, for the will of the old fellow read as follows: "When you bury Baveica dig deep, for shameful thing it were that he should be eaten by curs, who hath trampled down so many currish flesh of Moors."

The Cid was evidently a very practical joker in his day, although not at times over conscientious. One of this worthy fellow's pleasantries was planned much after the fashion of the gentlemen of sawdust fame of the present day. An old trunk clamped with iron is shown us, which the Cid filled with sand, and then pledged to the Jewish fraternity as full of pure gold ingots, for the sum of 600 marks. History does not tell exactly in what light the joke was held by the unfortunate ones, but does, however, assert that in spite of little eccentricities such as the above, no character is more revered in the vicinity of Burgos than the Cid's, and his remains, together with those of his wife are kept in a metallic case, of two compartments, like a modern salt and pepper box, mounted on a pedestal, and opened for the remarkable sum of one pesata.

Bones of the Cid and his wife! Sure enough they are bones, but so mixed up that it is impossible to tell the relative positions. What a harrowing sight it will be in the resurrection day if the Cid should happen by any mistake to immerge with the head of Mrs. Cid on his shoulders! And then if we consider there are scores of bones here, the consequence of any mistake can be easily imagined. There is one consolation to the Spanish, however, in the fact that whereas St. Peter's bones grace so many churches in Italy that the combined whole would make a specimen of wonderful size and many members, the Cid is only pretended to rest in one place, and this place Burgos.

After duly admiring the remains of the Cid we strolled around sketching and photographing. Near the Cathedral is an open square, and a long flight of cobble steps reaching from one level to another. Here appeared a patient little donkey led by a woman with a water-jar, and a bright youth with meat slung over his shoulder, and a little Castilian cap on his head.

"Hi, Hi," he cries as I point the camera at the donkey; he doesn't see the beauty of poor little donkey, and insists that he is a far better object for a picture. Quite a group collect meanwhile, and so placing the donkey in the foreground, I got a photograph of the whole lot much to their amusement as well as satisfaction.

Followed by this little group and half a hundred others who tagged on, we ascended the hill back of the Cathedral to find the little Church of San Esteban. Here also, we started to sketch the exterior of the church, with so much evident success, that they all stood around, laughed, and shouted, clapped their hands, and shouted to every mother's son of a little Spaniard they saw in the distance. Then they wanted to be sketched also, and finding that we were getting into a business that was apt to cover us with more insects than glory, we drove them away down the hill, and looked up the old women who kept the key to the church, and who lived in an old rookery over the cloisters. The interior was of no special interest except for its fine gallery towards the west, and of which we took a sketch. Two octagonal ambones project at the ends of the gallery, and the balustrade is of well-cut stone of good design. The plan is simply that of nave and aisles, with three octagonal apses, common throughout Spain.

Returning to dinner hungry and thirsty, we prepared to eat our first regular Spanish dinner on Spanish soil. I can only say of it that it was not a bad dinner, although full of surprises for us. I shall speak of but one of the dishes, the *punchero*, which is likely to cause some lively remarks to the beginner. To say it is a mixture of a little of everything is not a great exaggeration. To the eye it consists of a large basis of boiled meat, little pieces of sausages and some ham and vegetables cemented together with plenty of lard; the wings of some birds give it the appearance of a Mercury's hat about to fly away, and all around it, filling in the interstices are yellow beans not unlike huge yellow hulled corns, almost tasteless. This mixture redolent with garlic completed the dish, and reminded us much of the Portuguese receipt which says, "take a sardine or rabbit, herbs, two onions, a little red pepper, and bread well soaked in oil; add to this garlic, and burn the whole in plenty of oil." If the dose does not make the face to shine full as much by an internal as external use, I am mistaken.

The environs of Burgos possess some charm but not from any natural beauty. The convent of Los Huelgas which allows male visitors to visit the transepts only, and gives them simply a glimpse of the white-robed nuns, through iron gratings, is interesting but rather aggravating, and the same may be said of the Cartuja de Miraflores occupied by the Carthusian order. From one of the monastic buildings I obtained an old iron-bound jewel-case, covered with velvet and overlaid with beautiful hammered work in the sixteenth-century Gothic style, and of exquisite workmanship.

"How I should like to know the history of it!" exclaimed my fair companion.

"Jewels and gold, love-locks and mystery," I replied, for the white-robed sisters are oftentimes romantic and not half so sedate as they look.

Being in a hurry to get away from Burgos, because we believed grander sights were in store for us the farther south we went, I called at the office of the hotel and asked to have the bill made out as we should leave on the afternoon train. We then went in to take our lunch while waiting for the stage. Spanish hotel-keepers have a very agreeable method of waiting until the last moment, and then surprising you with the tremendous amount of your bill. There is no time to kick; one has not sufficient command of language to swear in an unknown vocabulary, stage waiting, and hands full of truck. Judge of my surprise then, when with the stage at the door, our bill was calmly handed to us with a bow and the hope that we had been well satisfied with their efforts to please. Judge of our surprise on receiving this piece of paper a foot long covered with items and

footing up as follows: Three thousand four hundred and fifty centemos!

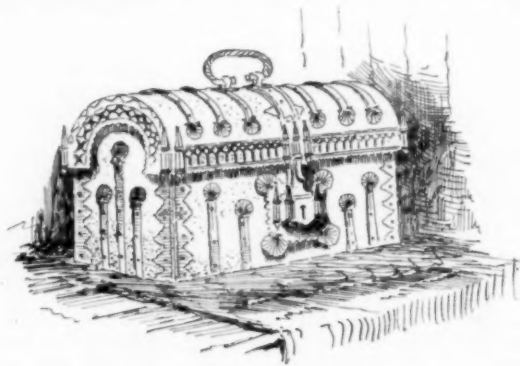
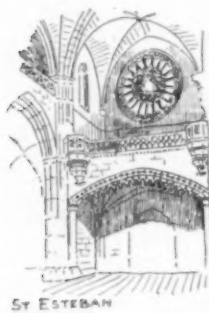
"Great Caesar, man!" I exclaimed, "but we have only been here a day and a half, and what do you mean by such nonsense?"

"Ah, señor, but it is not too much, there are four in your party."

"Yes, but, three thousand four—Oh! I see, thirty-four pesetas—let me see, a little less than eight dollars for four people, two days' time, and stage to the station."

"Not bad at all, señor," I replied as I paid the bill, "I beg pardon, but I thought I was ruined," and with a hearty "*buenos días*," we climbed into the stage and rolled out of Burgos followed by the smiles of our landlord.

Here at the station we get glimpses of all conditions of men: the *Carabineros* with their stiff costumes and guns slung over their shoulders, bold and courteous and not uncommunicative; little urchins and girls half-dressed crying "*agua fría! agua fría!*" with a mournful cadence, as if it was the saddest thing in the world, this being obliged to drink cold water; priests, too, are here, with capacious paunches, telling of good living and far from an abstemious diet, and magnificently formed mountaineers, Basque population, with their large hats, bluish short coats and baggy trousers, but always with



bright red vests—toilers who work hard and seem satisfied with their possession of a hut, a wife and a donkey, the latter not the least important by any means.

Soon the screeching little locomotive draws slowly alongside, we all tumble into our compartments, wait several minutes, a guard walks up and down and locks the doors, assures himself that all is right, goes to his little pen and gets a little bell, walks up to the engine, dings it in the engineer's face and walks demurely back. The engineer, after due consideration, pulls his little whistle, then his throttle opens very gently, and we slowly jog along to the next station.

We shall have no accidents here, surely!

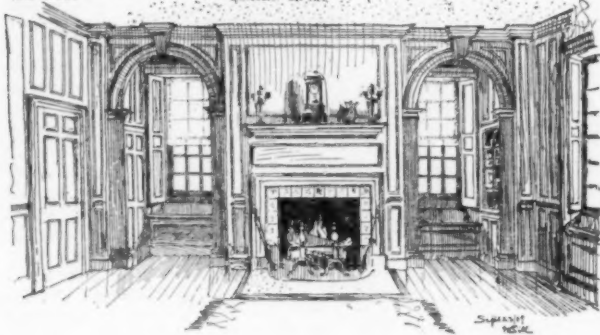
C. A. RICH.

(To be continued.)

PAINTING.—It is found that in painting wood one coat takes 20 lbs. of lead and 4 gals. of oil per 100 sq. yds.; the second coat, 40 lbs. lead and 4 gals. of oil, and the third the same as the second, say 100 lbs. of lead and 16 gals. of oil per 100 sq. yds. for the three coats. The number of square yards covered by one gallon of priming color is found to be 50; of white zinc, 50; of white lead paint, 44; of lead color, 50; of black paint, 50; of stone color, 44; of yellow paint, 44; of blue color, 45; of green paint, 45.—*Railroad and Engineering Journal*.

## ECONOMY OF LIME-CEMENT MORTAR.

Interior of Dining Room at "Tiddsbury"  
Residence of Wm. J. Mott Esq.  
built 1722. Gloucester Co. Va.



### 1. IS it wise to add a small per cent of cement to lime mortar?

It has long been the practice of many American masons to add a small proportion of hydraulic cement to common lime-mortar. For example, the mortar for the "ordinary brickwork" of the United States public buildings is composed of "one-fourth lime, one-fourth cement, and one-half sand." It is claimed that the cement thus added (a) increases the strength of the mortar, (b) "prevents the interior of the masonry from settling," and (c) "gives the mortar more body." Unquestionably the addition of the cement increases the cost of the mortar; and hence it is important to inquire whether the quality of the mortar is proportionately increased.

(A.) To test the effect upon the strength of adding Portland cement to lime-mortar, a series of experiments was made under the writer's direction by one of his students, Mr. D. R. Kinkead—for a graduating thesis—which showed that replacing twenty per cent of the lime-paste of common lime-mortar with Portland cement decreases the tensile strength from ten to twenty-five per cent, and that the added cement is of no material advantage unless the cement exceeds the lime-paste. The age of the specimens when tested extended successively from one to seven days and from one to twelve weeks, and all gave essentially the same results with the possible exception of those tested under five days. With these the cement seemed to add slightly to the strength, but this is probably due to errors of observation. The conclusion is, that the addition of less than fifty per cent of Portland cement to common lime-mortar decreases the strength of the mortar, and, of course at the same time greatly increases the cost.

Another series of experiments was made to determine the effect of adding a quick-setting cement to lime-mortar, but owing to a variety of causes no definite conclusions can be drawn. However, there are some indications that these experiments agree with those referred to above.

(B.) Some masons claim that the addition of a little cement to lime-mortar prevents the interior of the masonry from settling. The writer has been unable to find any evidence, either of experience or experiment, to support this belief. Lime-mortar should contain just enough lime-paste to coat all the grains of sand and fill the voids between them; and if more lime than this is used, the shrinking of the lime in setting will cause a slight decrease in the volume of the mortar. When not restrained by the element of cost, masons have a tendency to use more lime than is required by the above conditions, since the greater proportion of lime makes the mortar work better. It is possible that owing to the use of an over-rich lime-mortar the interior of a wall may settle slightly. But it is much more economical to remedy the matter by mixing the mortar in the proper proportions than to add cement which at once increases the cost and decreases the strength.

Possibly, the settling referred to may be due in part to the flowing of the mortar under pressure. It is well known that lime-mortar sets or hardens by the gradual absorption of carbonic-acid gas from the air; and hence the mortar in the interior of the wall will harden more slowly than that near the outside. Therefore, since the mortar in the interior of the wall remains in a plastic state longer than that near the outside, it has a longer time in which to be forced into the many voids and interstices left in ordinary masonry. If this be the cause of the settling, then the remedy is to omit the lime entirely and use cement-mortar exclusively. In passing it may be said that as a rule it is a good plan to use cement-mortar in all cases; but that phase of the question is not now under discussion.

(C.) Some masons claim that the addition of cement to lime-mortar "gives the mortar more body." The writer has not been able to find any mason who could give any satisfactory explanation of what is thus intended. Apparently it means that if the lime-mortar is mixed in the ordinary way and then some cement is added, the resulting mixture works better than the lime and sand alone; or, in other words, the addition of the cement produces the same effect upon the working qualities of the mortar as the addition of more lime. If this is the explanation, then the proper course is to secure the "body" by adding cheap lime instead of expensive cement.

The conclusion to be gathered from the above discussion is that it is never wise to add cement to lime-mortar.

### 2. Is it wise to add lime to cement-mortar?

Gen. Q. A. Gillmore in his "Treatise on Limes, Hydraulic Cements and Mortars," page 205, article 381, of edition in 1870, in regard to the addition of lime to cement-mortars, says; "Recent experiments show, with a uniformity quite satisfactory, that most American cements will sustain, without any great loss of strength, a dose of lime-paste equal to that of the cement-paste, while a dose equal to  $\frac{1}{2}$  to  $\frac{3}{4}$  the volume of cement-paste may safely be added without producing deterioration in the quality of the mortar to a degree requiring any serious consideration. Neither is the hydraulic activity of the mortar so far impaired by this limited addition of lime-paste as to render them unsuitable for concrete under water or submarine masonry, while for constructions not subject to immediate submersion, or the action of the returning tide, it is to be preferred on many accounts."

To determine the effect upon the tensile strength of adding lime-paste to cement-mortar, three series of experiments have been made under the writer's directions—one each by two of his students using Portland and Louisville cements respectively, and one by the writer personally using Portland.

The first was Mr. Kinkead's experiments referred to above. Concerning General Gillmore's conclusions, just quoted, Mr. Kinkead says: "Apparently General Gillmore bases his deductions on only twenty-eight experiments, consisting of seven sets of four briquettes each. This number of experiments, even if made with the greatest care, is not enough to give reliable conclusions, and farther, the nature of these experiments was such that the above conclusions could not be drawn from any number of the most careful experiments. General Gillmore placed his briquettes in water when one day old. All but four of his briquettes were composed partly of common lime and partly of cement. As common lime will not harden under water, his experiments show only the effect of adding any foreign non-cementing substance—for example, sand or dust—to cement, instead of showing the strength of a mixture of lime and cement in which the lime gives part of the strength. The fact that all his briquettes were moulded at the same time and broken when ninety-five days old, also weakens his conclusions; for two or three sets of my experiments will allow the same deduction, while a study of the whole eighteen sets shows that that conclusion is not sustained." Farther, General Gillmore's specimens were tested by transverse-breaking, and in reducing the modulus of rupture he assumed the neutral axis to be at the centre of the rectangular cross-section. Since the tensile strength of mortar is only about one-tenth of its compressive strength, this method of procedure is certainly open to serious question since the neutral axis is not at the centre of the section and probably is not at the same point for the several mortars of the series. Owing to inexperience in moulding, Mr. Kinkead's experiments are less conclusive for large proportions of cement than for large proportions of lime; but nevertheless the preponderance of the testimony is that the addition of lime decreases the strength more rapidly than it decreases the cost. Owing to a variety of causes no conclusion can be drawn from the series of experiments with Louisville cement.

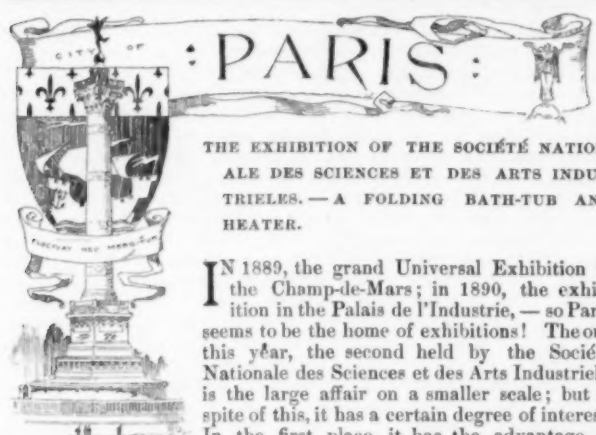
The series last referred to above was simply preliminary to the others, but showed that the strength of a mortar composed of one part Portland cement and two parts sand was approximately 200 pounds per square inch, and that adding one part of lime reduced the strength more than one-half, while adding one part of sand reduced the strength less than 10 per cent. Essentially the same results were obtained with other proportions of cement and sand.

From both of the above series of experiments the conclusion was drawn that when it is desired to cheapen cement-mortar it is better to increase the proportion of sand than to replace part of the cement with lime.

The writer has two still more elaborate series of experiments—one with slow-setting and one with quick-setting cement—in progress, to test the effect of using lime and cement together.

IRA O. BAKER.

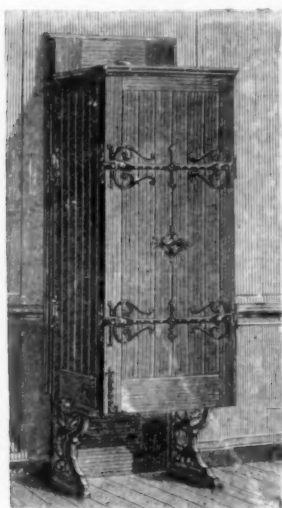
AN OPINION FOR BUILDERS.—Judge Cullen, in Supreme Court yesterday, declared void the health ordinance providing that buildings intended for tenements shall not occupy more than sixty-five per cent of the plot of land on which they are erected. This decision was given on application made by Builder James Finley, who proposed erecting an apartment-house on Second Place, near Court Street, and was denied a permit to build because his plans did not conform to the ordinance quoted. In an opinion which the Judge handed down he holds thus: It is elementary that by-laws or ordinances passed by municipalities, to be valid, must not conflict with the laws of the State. Title 14, Consolidation act, provides how tenement-houses shall be erected, and how much adjacent space shall be left open and clear of buildings. It will thus be seen that the Legislature has acted upon the very subject matter of this ordinance. I think this action is conclusive. . . . The Legislature has legislated on the subject not generally, but in this very city of Brooklyn, and it cannot be imagined that, having exercised its discretion and judgment on the subject, it intended to submit that judgment to review by inferior authorities. When the statute says that tenement-houses shall not be built without a clear space of ten feet at the rear, it in effect says that they may be built if such clear space is maintained, and it is not within the power of the municipality to deny that right. The ordinance is therefore void. Judge Cullen granted the mandamus asked for, with \$10 costs.—N. Y. Daily Paper.



THE EXHIBITION OF THE SOCIÉTÉ NATIONALE DES SCIENCES ET DES ARTS INDUSTRIELS. — A FOLDING BATH-TUB AND HEATER.

IN 1889, the grand Universal Exhibition in the Champ-de-Mars; in 1890, the exhibition in the Palais de l'Industrie, — so Paris seems to be the home of exhibitions! The one this year, the second held by the Société Nationale des Sciences et des Arts Industriels, is the large affair on a smaller scale; but in spite of this, it has a certain degree of interest. In the first place, it has the advantage of bringing before the eyes of the public many things which could not be discovered on the Champ-de-Mars, where the attractions were so many as to deprive the industrial sections in a certain measure of their due attention. With ordinary people, could those great galleries have any attractiveness compared with the Rue de Caïre, the gardens, the Eiffel tower and the Colonial exhibit in the Invalides? And then in these universal exhibitions the extraordinary profusion of products exhibited often prevents their due appreciation according to their real deserts. In short, the average foreign visitor had little time to give them, and as for the Parisians, they know all these things. All this does not prevent them from going this year to the Palais de l'Industrie: added a little music to distract them, and many lunch counters to refresh them, and they run thither without in the least doubting that all these pieces of furniture and tiles and ceramic work and machines were last year exhibited on the Champ-de-Mars. So shall I not myself go thither, the more that I am going to speak more about the exhibiting society itself than about the exhibits.

The object of the Société is to aid in the perfecting and developing of all French industries. To achieve this end, it is proposed to contribute to extending the instruction in the sciences and arts in their industrial applications, and in encouraging the technical instruction of professional societies by every means in its power, notably by the creation in the first place of prizes, rewards, money aids for artists, artisans, apprentices and professional schools or courses of instruction. In the second place, by periodical competitions between artisans, apprentices, and between associations and schools. Third, by conferences between artisans, pupils and apprentices. Fourth, by the making of different collections of books, drawings, and so on, destined to further the purposes of instruction. Fifth, by temporary exhibitions, either periodic or permanent, general or special, national or international. All industrial nations properly occupy themselves with technical and professional teaching. It is by the application of the arts and sciences to industry that they struggle for the supremacy in the field of production, — a field more or less fecund according to the aptitude of those who cultivate it. The future is certainly promising to those who manufacture the best and most beautiful products. It is for the achieving of this end that we see such societies multiplying themselves about us. Museums of industrial art, schools of design, professional schools of every kind spring up even in the country where apprenticeship is practised with the greatest ease. In France, at Paris particularly, where apprenticeship for many reasons tends to disappear more and more in favor of specialization — the logical consequence of rapid production at low cost



Bath-tub closed.

— it is necessary to support courses and schools of science and industrial arts. The courses and professional schools, which have already rendered so many services, are called upon to render others still greater.

It is necessary to take energetic steps to bring about the formation of new schools in order to continue that incontestable superiority of our national industries which rival industries better armed for the struggle are constantly disputing with us. The State has at its disposal a budget too restricted to be able to encourage professional schools. On the other side, the City of Paris, in spite of its incessant efforts, which should be carefully encouraged, can with difficulty increase its sacrifices, and besides a complete technical instruction could not be given more practically and more economically by the State or City than by professional associations. It is absolutely indispensable that through private initiative men caring for the

grandeur of the country, which is inseparable from the prosperity of the country, should resolutely put their shoulders to the wheel. These are the sentiments which have inspired the founders of the Société Nationale. Their appeal has been heard, and they have received from every part the most flattering support from people of note in politics, in science, in art and in industry. The government, seconding their efforts, has granted to them the Palais de l'Industrie for their second exhibition, the programme of which embraces all the



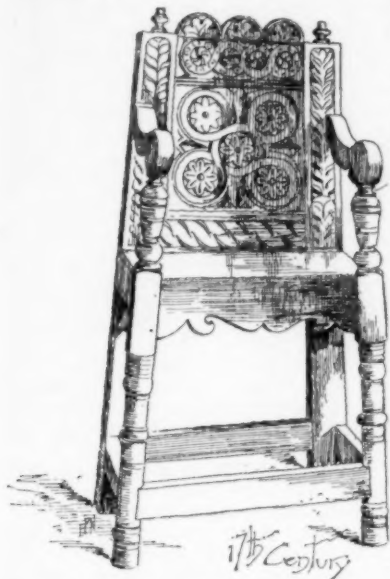
Bath-tub open for use.

scientific and artistic industries, the income from which, added to the first exhibition in 1886, will provide the means of attaining the lofty end which they seek. The first International Exhibition, organized by the Société Nationale, in 1886, left the best of impressions on the minds of numberless artists and manufacturers who took part in it. This was the first exhibition in which a special class was created for the schools of technical and professional instruction, an example which was fortunately followed in the great Exhibition of 1889. In the matter of organization, so far as return for the exhibitors went, it was certainly that one of the exhibitions which have been held at the Palais de l'Industrie which has given the most appreciable results. So at the commencement of the second exhibition, for 1890, support has been abundant, and we note that foreign sections occupy a more important position — Russia, Belgium, Italy, all are represented in a fairly serious manner — and it is to be hoped that this example will be followed. But this year we find nothing new in the foreign sections, built up as they are from the debris of the Universal Exposition, which we studied at that time. We will halt only before a new French invention, by an engineer, M. Chaboche, to whom we already owe the portable stove, the "Salamander," and if I speak of it somewhat at length, it is because this invention is particularly interesting to architects.

People have been particularly busy for some years past with increasing the comfort of our habitations. Hygiene begins to have weight in our manners and customs, sometimes making demands incompatible with the restricted area of our apartments; for frequently it is impossible to set up in our narrow dressing-rooms the smallest hydropathic apparatus, and still more impossible to install a bath with its accessories, the bath-warmer and linen-drier. M. Chaboche, having considered this interesting question, to-day answers it in a very ingenious manner with an apparatus to which he has given the name of the "Siren," which certainly can render a good service from the standpoint of comfort. Here is an apparatus which has the aspect of a cupboard, or rather a wardrobe, of pleasing appearance. It takes up a space of only sixty centimetres square, yet it contains everything that is necessary for the bath — the tub itself, the water-warmer, and space for drying the linen. The annexed figures exhibit the apparatus. The panel which forms the front of the fixture is held at the sides by four pegs. These withdrawn the panel is loosened, and can be tilted forward, for it is in reality a bath-tub which revolves about a fixed axis, that is borne by two iron brackets which seem to support the apparatus when it is closed. When the tub is folded down horizontally there is seen attached to the wall an apparatus for warming the water, which is arranged in such a fashion that the water is heated instantaneously by means of a gas ring, which extinguishes itself automatically if the water is not present, so that it is impossible to burn out the boiler. To empty the bath, it is only necessary to pull the plug from the waste, which is connected by a rubber pipe with the general waste-pipe of the house. The tub when emptied can be turned into place, and the doors folded over it. In the second figure, which shows the apparatus open and the bath ready for use, can be seen the water-warmer and hot-closet above it, which is made of fire-clay, all of which is included within the void of the tub when that is raised, so that the whole apparatus occupies the least possible space. This apparatus seems to me worth mentioning for its novelty, for I believe that it can be of real service in cities where space is parsimoniously distributed. To complete the information, I will say that the price of the simplest form of the apparatus is 500 francs, but there are more elaborate forms which cost as high as 1,500 francs.

M. BRINCOURT.

## THE FIRST ITALIAN ARCHITECTURAL EXHIBITION.



pause with satisfaction before a painting or a marble figure, but will rarely stop to look at an architectural plan or elevation. For this reason, the architects have, as a rule, deserted the halls of public exhibitions, and the few architectural projects in the fine art exhibitions have been scholastic problems, or monumental works from the public competitions, since the Italian architects were persuaded that an exhibition of architecture was impossible, under the conditions of which I speak, without preparing special drawings in a picturesque and striking rendering. Consequently, in the artistic exhibitions of Italy, the architectural section is often nothing but an innocent show of water-colors and drawings of which the execution is the only attraction. In this way, the section neglected by the public is also forsaken by the architects who wish to improve themselves, and architecture suffers.

Notwithstanding this, there have been a few who had endeavored to raise the condition of the architectural part of the fine art exhibitions, by offering premiums for the best works shown, and the architects of Turin, in forming themselves into a society, adopted substantially this plan for favoring the development of Italian architecture, and encouraging its best efforts. The movement was initiated by a few persons of distinction, on the occasion of the artistic and industrial exhibition of 1884, by the offer of prizes in money, offered to the architects who should have presented the best measured drawings of antique monuments; and by the establishment of a small provincial museum of architecture in a house in the old quarter of Turin. But the Society of Turin architects could not develop all its activity, and give form to all the ideas which it cherished, within the narrow limits to which it was confined; and, since there was at Turin a club of artists, painters and sculptors, the architects' society became a section of this club. This connection made it easier for the members of the old society to meet and exchange views, to communicate their own ideas to a greater number of persons, to make their aspirations intelligible to a larger circle, and to find adherents and proselytes. One of the first fruits of the connection was the development of the scheme for a special exhibition of architecture.

The time was short. Preparations were being made for the great industrial exhibition which is to take place at Palermo next year, and the time for arranging an architectural exhibition at Turin was abbreviated in consequence; while the labor to be undertaken was great, since not only must the usual arrangements be made, but the public must be educated into the idea of the importance of the enterprise. The executive committee was quickly organized, and a preliminary circular sent out, with the programme proposed. The principal cities of Italy responded promptly to the appeal of Turin. Illustrious personages, perceiving the importance of the project, supported it earnestly; and so, within a short period, the committee found throughout all Italy faithful and energetic helpers, and was able to form local sub-committees, and to appoint local delegates, who solicited the aid of public bodies, as well as of private individuals; and in this way the first architectural exhibition, supported by the zeal of those who ordinarily would have taken no part in such an affair, was planned and carried out in the splendid manner which I shall describe.

The development of the exhibition surpassed the most enthusiastic anticipations. The energy with which the executive committee went about its work excited hopes which at first appeared too bold, and the proposition was made that to the exhibition of architecture should be joined one of artistic workmanship and decoration.

But here I ought to explain the arrangement of the exhibition, which will show you the courage of the executive committee, and the importance of the artistic event which has so much interested the Italian architects.

NO say that the architectural exhibition in Turin is the first that has ever taken place in Italy will seem to you surprising; yet before the Turin exhibition there has never been here a special exhibition of architecture. In Italy, as you know, there have been many exhibitions of industrial, as well as of fine arts, and in the latter architecture has been included; but architecture shown in connection with painting and sculpture has always made an insignificant figure. Evidently, architectural drawings cannot compete with the attractions of pictures and statues, and the public which visits an exhibition of fine arts will

I have told you that the Turin exhibition is Italian; but I ought to add that it is Italian only for the first two divisions, out of the four into which it is divided, and is international in the other two. The first division comprises architecture properly so-called, and is divided into two sections. Section I is that of antique art, shown by measured drawings and restorations. Section II is that of modern art, including designs and executed work. Into this section have been admitted drawings, engravings, photographs, models, tracings and detail-drawings. In the other section are admitted studies of particulars relating to special services of the buildings considered, such as hygienic apparatus, and details and materials of construction.

The second division includes artistic industry as applied to architecture and decoration, divided into seven sections. In this division have been admitted works in marble and stone, terra-cottas, ceramics, stained-glass, mosaics, enamels, patterns for decoration, works in iron and bronze, intagli, intarsia-work, etc. In this division furniture was not admitted, unless in the shape of fixed decorations, such as doors or windows, for the reason that it was thought best to confine the exhibition strictly to architecture, and not to mix with it any display of industrial objects, which can be seen in connection with all the general exhibitions.

In the international divisions, the first comprises architectural publications. In this, besides books, are admitted collections of photographs and engravings, presented by their authors and publishers. The second is devoted to plans of cities, projects of extension, or partial or complete remodelling, and views of buildings illustrative of the modes of construction and municipal regulations of particular towns. This division would have been very interesting, even if it had not been international, since there is not a city in Italy which has not had such problems to study.

I have mentioned that the first Italian architectural exhibition met with little confidence among those who were not concerned in preparing it, and, indeed, this want of confidence might have had some reason. It was feared that it would turn out to be an academical exhibition of water-color drawings, and poetical, but impracticable designs, like previous displays in connection with exhibitions of pictures and statues; but, as it turned out, it was the reverse of this. The managing committee worked untiringly to avoid such a result, and established for that end special premiums in favor of those companies or individuals who should show the best plans for lodgings-houses of several stories, the best plans for coöperative dwellings, the best designs for scholastic edifices, and the best types of hospital construction. To give a still more modern and practical character to the scheme, it was established that the premiums mentioned should not be awarded to any competitor who should not accompany his plans with data showing the relation of the area covered by the building to that of the lot on which it stood; showing the cost of the building, and giving particulars in regard to the method of warming and ventilation, and so on. I suppose that all this will not seem surprising to you; but to us an exhibition of architecture resting on so positive and practical a basis is a complete novelty, owing, must I say, to the fact that our Italian architects have been generally mere picture-makers.

The plans of the Executive Committee could not have had, therefore, more complete success. The Turin exhibition was one of real architecture, as it was intended to be, and the industrial and decorative arts entered into it only as accessories, which did not distract the attention from the main subject. Indeed, I might fairly say that the accessory part had, in the pursuit of this idea, too small a representation. There was no danger that the modern and practical spirit would fail in an exhibition to which our best constructors exerted themselves to send drawings of intended and executed buildings—some highly rendered, and some on tracing-cloth, with details carefully figured. In fact, the visitor would obtain from the display a high idea of the present state of Italian architecture, both in the matter of scholastic design and practical detail. I mention particularly Italian architecture, as the coöperation of foreign countries, although liberal for Austria, was feeble for England, Germany, Spain and Russia, perhaps because of the shortness of the time between the date of the invitation and that of the opening of the exhibition. However, the international portion awakened the liveliest interest; think of it! even Japan was represented. In general, the affair had received high approval from France, and I cannot imagine why the assistance of the French architects was not earnestly solicited officially through our foreign ministry, as well as by the Executive Committee. I presume that this most deplorable absence must have been due partly to the shortness of the time, and partly to the circumstance that the French architects occupied with their works a large space in the exhibition of 1889, so that perhaps they had not enough new works to show, and did not wish to be represented by things already known.

I have said that the Turin exhibition gives a tolerably exalted idea both of the scholastic and practical side of Italian architecture. In regard to the scholastic part in general, there is not very much on which to pride ourselves. In regard to the practical part, the most remarkable fact to be ascertained from the exhibition is that no region in Italy shows any particularly original method. The whole of Italian architecture moves within the iron circle of tradition, Classical where palaces, villas or public buildings are concerned, mediæval for religious edifices. The same classicism reigns in Piedmont as in Tuscany, Venetia and Lombardy, and this classicism is

replaced by mediævalism in Piedmont, Tuscany, Venetia and Lombardy, assuming in each place a physiognomy derived from the style predominating in that part of the Peninsula. So you will see in Piedmont a modern church, inspired by the style of S. Andrea at Vercelli; in Tuscany a church in the manner of the Cathedral of Pisa, or of S. Martino of Lucca; in Lombardy a church erected after the type of S. Ambrogio of Milan, or of S. Michele of Pavia; and in Venetia one derived from the forms of S. Zenone of Verona.

This fact is significant. If it shows among the Italian architects a knowledge of styles and a love of the past, which is laudable from one point of view, it also shows the complete indifference of our architects to the search for a noble and forcible originality which would do honor to our modern architecture.

In a review like the present I cannot enter into particulars. I have too much respect for you and my colleagues to write summarily and hastily of works which have been the result of infinite research and labor, and to judge them properly would require much space: it will interest you more to have a general idea of the Turin exhibition, and to know what were the intentions of the Italian architects represented in it, than to have a list of names and works, hastily criticised and incompletely described; and this curiosity I think I have satisfied with this letter, written after a careful examination of the Turin exhibition, which represents the greatest artistic event of 1890 in Italy. Its importance is confirmed by two noteworthy facts: First, by the nomination of a Government Commission, charged with the study of the architectural exhibition; second, by this, that as a result of the brilliant success of this exhibition, a committee has already been formed for a second exhibition of architecture, to be held in Rome in 1893. This exhibition will be international in every section, and as the Roman committee has ample time before it, and will certainly have a much larger sum of money at its disposal than the small sum available at Turin, it may be expected that the second Italian architectural exhibition will do honor to our country.

One last word: It was supposed here that an exhibition of architecture exclusively would not excite any public interest, and would be an entirely technical affair, devised by architects for architects. Instead of this, the public in Turin has taken so much interest in it that, in two weeks from the opening of the exhibition, the number of admissions has already surpassed the number calculated upon in the financial scheme. It would be curious if the first Italian architectural exhibition should be a financial success.

ALFREDO MELANI.

#### THE FINE WOODS OF HONDURAS.<sup>1</sup>



Monument to Eugene Delacroix in the Luxembourg Gardens, Paris. From *La Construction Moderne*.

THE Republic of Honduras, as well as the territory known as British Honduras, has long been celebrated for its forests of mahogany and other fine-grained woods. Belize, the capital of the British possessions in Central America, now a city of consider-

<sup>1</sup>Report to the Department of State by United States Consul Burchard, of Ruanan.

able commercial importance, owes its origin and wealth to the mahogany cutters. During the first half of the present century princely fortunes were quickly accumulated in the business, especially by those who had the good fortune to secure contracts from the English Government for the mahogany which was formerly largely employed in naval architecture. Since iron and steel have taken the place of wood in the construction of public vessels the mahogany trade has decreased to a notable extent, although it is still large and profitable. The mahogany cuttings of British Honduras require at present more capital to carry them on than formerly. The expense and difficulty of getting out the wood has greatly increased, as but comparatively few trees can now be found near to the banks of rivers or streams of sufficient water to float the logs to the coast.

In Spanish Honduras, and especially within the limits of this consular district, there are still forests abounding in mahogany and other precious woods, where, undoubtedly, foreign industry and capital might be safely and profitably employed. The rude and primitive system of manipulating the mahogany still practised by the English in felling the trees and in hewing, hauling, rafting, and embarking the logs would be discarded by Americans, who would naturally adopt modern improvements and inventions, and thereby accomplish more work in the same time with much less labor and expense. I will briefly describe the English system as practised by the wood-cutter in Honduras.

Having selected and secured a suitable locality and arranged with one of the exporting houses of Belize to advance the means in provisions and cash to carry on the works, the mahogany-cutter hires his gang of laborers for the season. Nearly all labor contracts are made during the Christmas holidays, as the gangs from the mahogany works all congregate in Belize at that time. The men are hired for a year at wages ranging from \$12 to \$20 per month. They generally receive six months' wages in advance, one-half of which is paid in goods from the house which furnishes the capital. The cash received by the laborers is mostly wasted in dissipation before they leave the city. Early in January the works are commenced. Camps (or "banks," as they are called) are organized at convenient places on the margin of some river in the district to be worked. Temporary houses thatched with palm leaves are erected for the laborers and a substantial building for the store and dwelling of the overseer. The workmen are divided into gangs, and a captain appointed over each gang, whose principal duty is to give each man his daily task and see that the same is properly done. All work in mahogany cutting is done by "tasks." The best laborers are out at day-break and generally finish their task before eleven o'clock. The rest of the day can be spent in fishing, hunting, collecting India-rubber and sarsaparilla, or in working up mahogany into dories, paddles, bowls, etc., for all of which they find a ready market. Game and fish are abundant, the former consisting of two varieties of hogs (warree and peccary), deer and antelopes, tapir (mountain cow), monkeys, two varieties of wild turkeys, armadillos, gibbonets, Indian rabbits, partridges, quail, macaws, parrots, etc. The rivers abound in excellent fish, and the supply of terrapin and iguanas is inexhaustible.

The owner or overseer of mahogany works is a distinguished personage within the district of his operations. He lives well, often luxuriously, and has many and varied sources of enjoyment. His rustic dwelling in the forest is supplied with every comfort and many luxuries. He travels up and down the river in a bateau made of mahogany and fitted up regardless of expense for enjoyment and convenience. He carries everything needful for hunting and fishing, and his lockers are supplied with the choicest viands, wines, liquors, and cigars. His crew consists of from twelve to twenty skilful rowers, generally Indians, and a captain, cook, and waiting-boy. He camps out at night on the bank of the river, where savory dishes are prepared which would puzzle the uninitiated. No menu is considered complete without *entremets* of monkey and iguana cooked *à la criolla*, which even the uninitiated pronounce delicious.

The mahogany-tree hunter is the most important and best paid laborer in the service. Upon his skill and activity largely depends the success of the season. Mahogany-trees do not grow in clumps or clusters, but are scattered promiscuously through the forests and hidden in a dense growth of underbrush, vines, and creepers. It requires a skilful and experienced woodsman to find them. No one can make any progress in a tropical forest without the aid of a *machete*, or heavy bush knife. He has to cut his way step by step.

The mahogany is one of the largest and tallest of trees. The hunter seeks the highest ground, climbs to the top of the highest tree, and surveys the surrounding country. His practised eyes detect the mahogany by its peculiar foliage; he counts the trees within the scope of his vision, notes directions and distances, then descends and cuts a narrow trail to each tree, which he carefully blazes and marks, especially if there is a rival hunter in that vicinity. The axmen follow the hunter, and after them go the sawyers and hewers.

To fell a large mahogany tree is one day's task for two men. On account of the wide spurs which project from the trunk at its base, scaffolds have to be erected and the tree cut off above the spurs, which leaves a stump from ten to fifteen feet high — a waste of the very best wood, which, I am sure, American ingenuity would devise means to save and utilize.

While the work of felling and hewing is in progress other gangs are employed in making roads and bridges over which the logs are to be hauled to the river. One wide truck-pass, as they call it, is made through the centre of the district occupied by the works, and branch

roads are opened from the main avenue to each tree. The trucks employed are clumsy and antiquated contrivances, which no American would think of using. The axles and boxes are imported from England and the other parts of the truck made on the ground. The wheels are of solid wood, made by sawing off the end of a log and fitting iron boxes in the centre. No tire or spokes are needed. New wheels are in constant requisition, and repairs cause frequent and expensive delays. Most of the trucking is done at night by torch-lights made of pitch-pine. The oxen are fed on the leaves and twigs of the bread-nut tree, which gives them more strength and power of endurance than any other obtainable food.

Mahogany trees give, each, from two to five logs ten to eighteen feet long and from twenty to forty-four inches in diameter after being hewed.

The trucking is done in the dry season, and the logs collected on the bank of the river and made ready for the floods, which occur on the longest rivers in June and July and on all in October and November. The logs are turned adrift loose and caught below near tide-water by booms. Indians and Caribs follow the logs down the river in jupans to release those which are caught by fallen trees or other obstacles in the river. No little judgment and experience is required to determine at what exact stage of the flood the logs should be let loose. Should the water rise to what they call "top-gallant flood" before the logs reach the boom, many of them would be carried over the banks and left high and dry in cane-brakes and thickets or covered up by sand and rubbish. From the boom the logs are rafted to the *embarcadero* and "manufactured" for shipping.

The manufacturing process consists in sawing off the log-ends which have been bruised and splintered by rocks in the transit down the river, and in relining and re-hewing the logs by skilful workmen, who give them a smooth and even surface.

The logs are then measured, rolled back into the water at the mouth of the river, and made into rafts to be taken to the vessel, which is anchored outside of the bar. This is a laborious and risky operation, often resulting in serious losses to the shipper or to the owners of the vessel, according to the conditions of the bill of lading. Irresponsible natives construct and conduct the rafts to the vessel, and it frequently happens, especially in bad weather and by gross carelessness, that logs break away from the rafts and are carried away out to sea, to be deposited finally on the shores of these islands or the mainland, where they are eagerly appropriated by the natives and utilized for ship-building, furniture, etc.

The building of sloops and small schooners for the coasting trade is an important industry in this island. The frames of such vessels are made of mahogany, Santa Maria, and other native woods of well-tested durability and proof against the ravages of worms, which abound in these waters.

About the middle of December the mahogany season ends, and the proprietor returns to Belize with his gang of laborers, the former to liquidate his accounts with the house which advanced him the cash, and the latter to squander their earnings in dissipation during the holidays and to get new advances for the next season.

The mahogany is sold in England for account of the house in Belize, which makes a large profit on the cash and goods furnished to the cutter, who often finds himself in debt at the end of the season.

At present the only woods exported from this country are mahogany and Spanish cedar, although the forests abound in other varieties quite as useful and ornamental, which must eventually become known in foreign markets and open new and inviting fields for industry and trade.

At the Centennial Exposition in New Orleans in 1885 some eighty varieties of useful and ornamental woods from the forests of Honduras were on exhibition, and, if I am correctly informed, were afterwards presented to the National Museum, at Washington.

The principal woods employed in ship-building on this island are Santa Maria, button-wood, mahogany, granadillo, and *chuchó* or dog-wood. For cabinet and ornamental work there are a great variety of fine-grained woods, many of which are unknown to the outside world. The most beautiful set of furniture I ever saw was made by a Frenchman in the interior out of wood called by the natives "rourou," which is very abundant. I cannot give its botanical name. When polished it displays variegated colors of red, yellow and orange. The forests of Honduras also contain rose-wood, satin-wood, logwood, Brazil-wood, lignum-vitæ, palms of many varieties, fustic, liquid amber, mangrove (white, red, and black), cam-wood, caray (tortoise-shell wood), ebony, box-wood, iron-wood, oak, pitch-pine, button-wood, carbon (charcoal), granadillo, cocobello, cacique, cortez, quebracho, and blood-wood. Many of the above-named woods, and others not mentioned, are suitable for the finest cabinet-work, and when polished, display beautiful and variegated colors. Others would furnish superior material for house and ship building, for wheelwrights, coopers, and for all purposes where wood is employed.

It is a matter of surprise that no attempt has ever been made to utilize for foreign commerce the immense quantities of bamboo which grow spontaneously on the margins of all the rivers which flow into the Bay of Honduras. These beautiful trees — many of them sixty feet high, four to seven inches in diameter, and straight as arrows — bend gracefully from either side of the stream, their brilliant foliage interlaced with flowering creepers and vines, forming archways under which man and beast find a grateful retreat from the sun. The

joints are used here by the gold and sarsaparilla diggers and the India-rubber gatherers for buckets, kegs, troughs and for the construction of ranches, fences, etc.

In the East Indies the bamboo is an article of prime necessity. Its uses are almost innumerable. I copy the following from a report by Consul-General Denny on the bamboo of China, published in No. 6 of the Consular Reports:

The roots are carved into fantastic images, into divining-blocks to guess the will of the gods, or cut into lantern handles and canes. The tapering culms are used for all purposes that poles can be applied to in carrying, supporting, propelling, and measuring; for the props of houses; the frame-works of awning; for the ribs of sails and shafts of rakes; for fences and every kind of frames, coops, and cages; the wattles of abattis, and the handles and ribs of umbrellas and fans. The leaves are sewed into rain coats and thatches, plaited into immense umbrellas to screen the huckster and his wares on the stall, or into carvings for theatres and sheds. The wood, cut into splints of various sizes, is woven into baskets of every form and fancy, sewed into window-curtains and door-screens, plaited into awnings, and twisted into cables. The shavings and curled threads furnish material for stuffing pillows, while other parts supply the beds for sleeping, the mattress to lie upon, the chair to sit upon, the table to eat on, the chopsticks for eating, the pipe for smoking, the broom for sweeping. The food to eat and the fuel to cook it with are also derived from it; the ferule to govern with, the book to study from, the tapering plectrum for the lyre, and the reedpipe of the *sang* or organ, the shaft of the soldier's spear and the dreaded instrument of the judge, the skewer to pin the hair and the hat to screen the head, the paper to write on and the pencil to write with and the cup to put the pencil in, the rule to measure lengths, the cup to gauge quantities and the bucket to draw water, the bird-cage, the crab-net, the fish-pole, the sumptuous, etc., are, one and all, furnished by this plant, whose beauty when growing is commensurate to its usefulness when cut down.

This precious production grows wild at the very doors of the United States, only three days' easy steaming from our southern ports. It can be had gratis in inexhaustible quantities.

Surely, the bamboo of Honduras offers a new and interesting field for the exercise of the inventive genius and industry of our countrymen.

WM. C. BURCHARD, U. S. Consul at Ruatan.

#### PATENTING PLANS.



idea of patenting the plan of an architectural design is at least somewhat novel; but one well-known firm of Sheffield architects have been venturesome enough to take that step, and they send us a copy of the specification of their patent for "Improvements in arranging the plan of buildings applicable to Government, county, municipal, and other public offices and courts." Messrs. Flockton and Gibbs, whose design for the Sheffield Municipal buildings we illustrated in *Building News* for July 25, of the present year, and which was an ingenious endeavor to make each set of offices for a department complete in itself, and to avoid the confusion arising from a number of offices ranged along a corridor, have patented the principle therein shown. We refer our readers to the plans we gave of these designs, to make more clear the nature of the so-called invention. . . .

Our readers will see that the principle on which Messrs. Flockton and Gibbs have claimed protection is that of grouping the departments of a public building, each complete and separate in respect of its entrances, round one public hall. As the authors invite the members of the profession and the public to take the opportunity of opposing the grant of the patent should there be any ground for so doing, we leave the principle of planning to the attention of our readers; at the same time, at the request of the authors, we draw attention to the following, a section of the Patents, Designs, and Trade Marks Amendment Act, 1885: "When a complete specification has been accepted it is open to public inspection, and notice of acceptance will be advertised in the official journal of the Patent Office. Any person may at any time within two months of the date of such advertisement [29 October last] give notice of opposition to the grant of a patent on the grounds stated in Section 11 of the Patents, etc., Act, 1883." We will not enter here into the alleged novelties of the plan, as we are of the opinion that the same principle has been used, and may be seen on plans of public offices. The main point of Messrs. Flockton and Gibbs's plan is that there is a single public entrance to each department through a general office, which is close to the public hall, the passages being confined to the use of officials of the departments.

The question which most concerns us is the advantage of protecting by a patent any improvement or novel feature of arrangement. As every architectural design is more or less of an invention, it may be asked why should not the architect avail himself of the Patent Act as well as any other inventor? Would not the system be a stimulus to invention? Copyrighting designs is not unknown in America, and we have now before us a series of copyrighted designs of "Modern Rural Homes," arranged and designed by the "National Architects' Union," of Philadelphia. We dread to think of what patenting the elevational features of designs would lead to.

The advantages of protecting by patent a clever plan are, first, that it would be an incentive to invention amongst the few by giving them an individual interest in their design; second, a good idea would be more likely to be perfected; there would be attempts to

improve and patent modifications. On the other hand, there are objections. The patenting of a design would seriously hamper the profession, for they would have to steer clear of existing rights. It would handicap a large proportion of architects who now avail themselves of the common property in architectural ideas. Many very clever plans are a combination of the grouped and corridor principles; but these would be avoided if they were protected by patent. For instance, the "pavilion" system with the isolated lobby has been a commonly-adopted principle in all hospital plans; but if the inventor had patented the idea, so desirable a plan would have been avoided till the expiration of the patent. The radiating, the circular systems of ward construction are ideas that can be made to subserve the purpose of designers; but if they were protected they would be very little adopted.

The "central hall" principle of designing buildings for Congregational churches might have been patented, if ancient examples had not shown the same principle; if it had been, fewer attempts would have been made to utilize the plan. A further disadvantage of the system of patenting would be to introduce a commercial element into design. The few who became patentees of novelties in architecture would take care to make the most of their inventions, and only allow them to be used on payment of a royalty. To the bulk of the profession this would be prejudicial. Independent design could not be encouraged as it is now. But there are besides, practical difficulties in the way of applying the Patent Act to designs or plans of buildings. An architect who had thought out a good plan would have to make a diligent search at the Patent Office to see if he had been forestalled; when a complete specification has been accepted by the Patent Office, it will be the duty of the profession to give notice of opposition to the grant of a patent on any of the grounds mentioned in the Act. How is a man to know whether his idea has not been actually used before? A most costly search would be necessary to satisfy him. The difficulty is in preparing a specification or drawing of any particular arrangement that will be definite enough; as any idea to be of real value must be sufficiently elastic to admit of being varied to actual circumstances. We can understand an architect patenting a new spring-door, a fireproof-floor, or a roof—things that admit of easy definition—but it becomes very problematical to show any order or arrangement of doors, walls, or departments in connection with a central hall that shall entitle its author to a grant of a patent—a mere matter of order in planning departments can scarcely be a subject for a patent. At least it appears to us doubtful whether patented plans may not be more imaginary than real, and there would be many ways of rendering them void. What would prevent an architect from adopting a modification of a patent? In any alteration to an existing building a very slight modification might produce exactly the arrangement for which a claim has been made.—*The Building News.*



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

THE ART CLUB, BROAD STREET, PHILADELPHIA, PA. MR. FRANK MILES DAY, ARCHITECT, PHILADELPHIA, PA.

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

HERE are already in different parts of the city a dozen or more buildings of various classes as different, as night is from day, from what has been the most distinguishing characteristics of Philadelphia architecture of recent years—huge and misapplied details, parts of features abruptly changing to dissimilar parts of other features, distorted and nightmarish outlines and general artistic disorganization. These latest buildings, the work of half-a-dozen of the younger architects in the city, are as refined as many of their neighbors are grotesque. Amongst these is the Philadelphia Art Club Building which, both inside and out, is a remarkably successful and well-sustained piece of planning and designing. The architect was unusually lucky, too, in finding stone-carvers who could carry out his design with proper delicacy, for the work is of such a character that slovenly workmanship in the carving would have greatly depreciated the merit of the building as a whole. The materials used, a light gray sand-stone and a cool, mottled buff brick, harmonize admirably. The building affords in itself all the advantages of a complete clubhouse and is used as such much more freely than is common in the case of other art-clubs. Club-rooms, card-rooms, restaurant, billiard-rooms, chambers and so on, are provided in addition to the large rooms where the club holds its regular exhibitions. A special feature of the arrangement is a small dining-room where members' wives and their escorts may have their lunches when out on a shopping tour.

THE CATHEDRAL, BOURGES, FRANCE.

THE south-east view of this building here shown, exhibits the building to better advantage than when one tries to view it from any other point, as buildings crowd about and up to it on the other sides. The plan of the building is unusual, as it approaches the basilican type, there being no transepts and no line of demarcation between the nave and the choir which terminates in a huge apse, all about

which run the double aisles of the nave. The view shows the manner of lighting through abundant windows in the lower wall of the outer and the upper wall of the inner aisle, reinforced by the usual windows in the nave wall at a still higher level. Yet in spite of the possibility of obtaining an unusual amount of light, the interior is made unduly obscure by the stained-glass which fills these windows. This glass, or much of it, dates to the thirteenth century and has much of the quality of work of that period—its translucent opacity. None of the glass is known to be later than the seventeenth century. The building itself, which measures 405 feet in length, was built between the thirteenth and sixteenth centuries, the northern tower being built 1508-38. The interior is interesting because one has unobstructed views of the building from end to end, from side to side, and because the horizontal lines are carried, unbroken, round the apse. The aisle treatment gives opportunity for the introduction of double triforia as well as a clerestory.

THE DONOHUE BUILDING, SAN FRANCISCO, CAL. MR. A. PAGE BROWN, ARCHITECT, NEW YORK AND SAN FRANCISCO.

THIS building is built of red pressed brick and terra-cotta, and completed will cost \$350,000. Corridors, vestibules, etc., are finished in light Tennessee marble.

SUBURBAN BELT-LINE DEPOT, KANSAS CITY, MO. MR. H. C. LINDSLY, ARCHITECT.

SKETCH FOR A HOUSE FOR GENERAL TREVENIO, MONTEREY. MR. ISAAC S. TAYLOR, ARCHITECT, ST. LOUIS MO.

A CHURCH FOR BERKSHIRE COUNTY, MASS. MESSRS. CRAM & WENTWORTH, ARCHITECTS, BOSTON, MASS.

#### [Additional Illustrations in the International Edition.]

FACADE OF THE NATIONAL POSTAL SAVINGS BANK BUILDING, PARIS, FRANCE. M. J. BOUSSARD, ARCHITECT.

[Copper-plate Engraving.]

PORTICO OF THE NATIONAL MUSEUM, BUDA-PESTH, HUNGARY. HERR POLLAK, ARCHITECT.

[Gelatin Print.]

DOORS OF THE APOSTEL KIRCHE, COLOGNE, GERMANY.

[Gelatin Print.]

MANSFIELD COLLEGE, OXFORD, ENG. MR. BASIL CHAMPNEYS, M. A., ARCHITECT.

HOUSE AT WEYBRIDGE, ENG. MR. THEOPHILUS ALLEN, ARCHITECT, BOSTON.

THE drawing from which our illustration has been taken was exhibited in the Royal Academy of this year. The house, which is now completed, has been erected as the residence of Mr. Henry Yool, J. P., C. C., and is situated on one of the finest sites at Weybridge, backed up by the fir woods of the St. George's Hills. The south terrace, onto which all the principal reception-rooms open, commands a fine view over the undulating park. The materials used are red bricks and terra-cotta, with a limited use of Mansfield stone; the roofs are covered with plain tiles.

ADDITIONS TO RESIDENCE, BROADLANDS ROAD, HIGHGATE, ENG. MR. LOCKE WORTHINGTON, A. R. I. B. A., ARCHITECT, WESTMINSTER, ENG.

A BELVEDERE, staircase, cupboards, bedroom, etc., have just been added on the Hamstead side of this house, for Mr. W. Arthur Sharpe. Looking on the garden a small workshop and garden-house, with a wide corridor containing cupboards, have been constructed.



LOOKING over the "directory" just issued by an advertising agent, we counted this week, a list of fifty-five journals under the heading "Architecture, Building and Real Estate," a phenomenal exhibit considering that fifteen years ago there was not one architectural journal in the country. As the greater part of the journals included in this list have an outward air of prosperity and well-being, we presume they fill a want acceptably to the "wanters" and their several publishers. But the list is so large, the postal facilities are so great and accessible, that one would think that more and more misgivings and hesitation would have to be overcome each year by the projectors of a new addition to the list.

Perhaps they do doubt and hesitate, but they seem to carry their plans to fruition all the same, for a month rarely passes that does not bring to our table some new journal which soon grows to be an "esteemed contemporary."

The birth-rate is so rapid that we may be wrong in calling the

*Architectural News* the newest addition that could be made to the list.

The new comer is a ten-page monthly published in San Francisco, and we imagine it owes its being to the fact that its sponsors are not satisfied with the *California Architect* even in its remodelled and improved form. However this may be, the *Architectural News* presents itself in a very attractive form, with a table of contents and a prospectus of such nature as at once to make plain that the new journal proposes to cultivate the field of architectural art, and to pay little or no attention to architecture as a science. It is possible to do this and perhaps judicious, for in the list of fifty-five journals mentioned, there is only a small percentage that architects find really suited to their needs.

As we examine the attractive appearance and make-up of this journal we sigh, as we think how easy it is nowadays to open the struggle for existence, warned by the failures and aided by the successes of those who have gone before. Imitation is the sincerest form of flattery to be sure, and we do experience a little gratification when we find journal after journal founding themselves on the same lines, and adopting the same features which we established little by little, and tested one after the other.

If the present birth-rate waxes and does not wane, some future writer on architecture will record that "In the United States all architects are divided into two classes, those who edit professional journals, and those who do not; the first class greatly outnumbers the second."

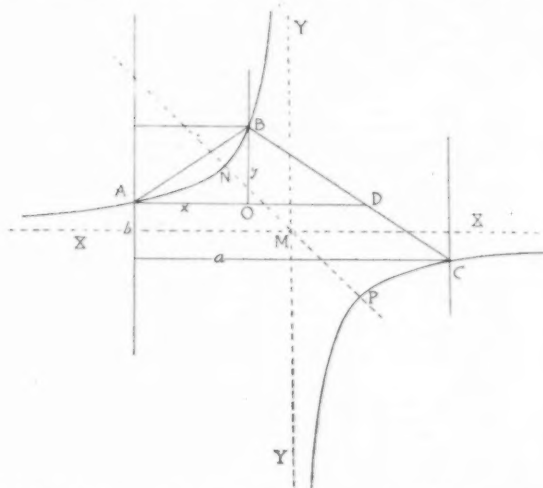


[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

#### THE ROOF OF UNEQUAL EAVES-HEIGHT.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—A slip in Mr. Schroeder's communication (in your Number 775) reminds me that I neglected the second branch of my problem. Nothing was said in it about a "necessary" condition; but it is a possible condition that the horizontal distance  $AO$  might be fixed, instead of the vertical height, by the desire to bring the ridge



over a line of support, or some other cause. Then the construction is still more simple. Produce  $AO$  till  $OD = AO$ . Draw a vertical through  $O$ , and drawing  $CD$  produce it until it meets the vertical and fixes the point  $B$ .

Any of your readers who are interested in geometrical analysis may be amused, and perhaps surprised—as I was—to find that the locus of all the positions of  $B$  (compare Mr. Cramer's diagram of October 18) is a hyperbola. Assuming an origin of co-ordinates at  $A$ , calling  $AOx$ ,  $BOy$ , the horizontal distance between  $A$  and  $C$   $a$ , and the vertical distance  $b$ , we get an equation:

$$2xy + bx - ay = 0,$$

which is the equation of a hyperbola.

If we transfer the origin to a point  $M$  half-way between  $A$  and  $C$ —I spare you the algebraic work—the equation becomes

$$xy = -\frac{ab}{4}$$

This is the equation of a hyperbola referred to its asymptotes, which are the axes  $XX'$  and  $YY'$ ; and since these are at right angles the hyperbola is equilateral. It passes through the point  $A$  and its transverse axis is the diagonal  $NP$ . The opposite branch will pass through  $C$ , and will represent, of course, the locus of the vertex of a symmetrical construction, reversed or hanging.

W. P. F. L.

PORT TOWNSEND, WASH., November 10, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In the issue of the *American Architect* of November 1, on page 75, under the heading "To lay off a roof of unequal eaves-height," there is an error, which I should like to see corrected:

$$AO = OD = \frac{OB \times AE}{CE \times 2OB} \text{ is wrong; it ought to be:}$$

$$AO = OD = \frac{OB \times AE}{CE + 2OB}$$

Yours respectfully, J. C. SCHROEDER.

#### A SUGGESTION AS TO ARCHITECTURAL EDUCATION.

NEW YORK, October 22, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—As the time of the annual convention of the American Institute of Architects is drawing near, it appears to me that it might not be out of place to suggest something which might be favorably considered by some of the members of the Institute.

It is a well-known fact that architecture has only been recognized as a profession in recent years, and at about the same rate in which the facilities for its study have been increased. Now in order to increase the standard of the profession it is primarily necessary to enlarge the facilities for the proper study of architecture, as the few colleges and schools at which architecture is now taught do not meet the demand. We have no national schools such as L'Ecole des Beaux-Arts of Paris, the Academies of Architecture at Vienna, Berlin, London, and in fact in all the principal cities of Europe; and as a natural consequence find poor substitutes for them in our sketch-clubs, students' leagues, etc., which associations, however good the intentions of their members may be, cannot compete with the systematic training obtained in one of the foreign schools.

As the Institute is now beginning a new era with increased vigor, nothing perhaps would add more to its importance and general interest among the profession than if it took an active part in the training of our future architects. This might easily be done by appointing a board or committee on education such as the old Institute has had for years, and have this board take entire control of the courses of study, which when once definitely decided upon could be carried into effect by each Chapter in its own territory, thus having identical courses all over the country.

A course such as the R. I. B. A. has inaugurated in England, together with the final examination for admission to the Institute might be suggested.

The Board of Education might also have charge of one or more travelling-scholarships which in all probability would soon be founded and be open to all draughtsmen of the Union, the present scarcity and extreme limitations of travelling-scholarship being well-known.

These scholarships might in a measure substitute the celebrated Prix de Rome of L'Ecole des Beaux-Arts of Paris, and would certainly add to the interest taken in the courses of the chapters as well as in the Institute itself. The expenses occasioned by these courses could be easily overcome by charging a nominal fee for tuition, and as the lectures might be given voluntarily by the members of the Institute, the expenses might be kept at a low margin.

If a scheme similar to this were properly carried out it would not be at all necessary to establish laws licensing architects (such as the Institute tried to have passed in New York last year), as draughtsmen would come to think it an honor to gain admission to the ranks of the Institute, and in a short time the A. I. A. would be in America, what the R. I. B. A. is in England.

Several Chapters have had in past years and some have even now courses of study for their younger members, but if a regular course were laid out by the Institute proper, and pursued by all the Chapters together, the results would assuredly be much more beneficial, and we would have something as good, if not better, than a national school established by the Government.

Most respectfully yours, "A DRAUGHTSMAN."



LADY ARTISTS IN PARIS.—Under the Directoire, Hortense Beauharnais set the fashion among her mother's ladies of taking lessons from Prud'hon and Isabey. A lithograph of the First Consul signed, "Hortense de l'Augsbourg, 1822," remains as a specimen of her skill. Under the Restoration, the Duchesse de Berri seems to have been taught flower painting by a certain Mme. Hautebourg, but of all the royal ladies who have ever cultivated art, Marie d'Orleans is the greatest and worthiest example. She was the favorite pupil of Ary Scheffer, who always rigidly refused to teach where talent seemed to him to be lacking. Working quietly at her little studio at Neuilly she created the "Jeanne d'Arc," which at once became, and has remained, the popular incarnation of France's peasant heroine. There was a grand simplicity and purity in all her work, albeit intensely human. Small reproductions in plaster, wood, and stone of her "Jeanne" are to be found in countless French homes. After her marriage to the duke of Wurtemberg she was persuaded to put aside her art for a time, but when dying the old longing seized her, and she asked for a pencil. After a few fruitless efforts she let it fall, saying: "The time has gone by; see, my hands

are stiffening, and I must give it up." She was more appreciated and understood after death than she had been in life, and it was to her that Alfred de Musset wrote the lines beginning:

"Alors ces nobles mains  
Qui du travail lassées  
Ne prenaient de repos  
Que le temps de prier."

With the exception of Mme. de Mirbelle, who was unrivalled as a miniature painter, there was a singular dearth of women artists in the first part of this century. Although something remains to show the exquisite delicacy and finish of her work, Mme. de Mirbelle used some medium which caused her carmines to fade and her whites to become discolored, and the numerous specimens of her art which can be seen in the Louvre have lost much that constituted their former charm—rich, pure coloring and depth of tone. Her mantle fell on the pretty shoulders of Mme. Herbelin, who painted most of the beauties of the Imperial Court, including the Empress Eugénie when she was still Mlle. de Montijo. Miniature painting was supposed to be a peculiarly feminine form of art, but every obstacle was thrown in the way of any woman who wished to become a painter. There was literally no studio in Paris where lady students could study under the eye of a master, excepting by taking private lessons at a prohibitive expense. Rosa Bonheur overcame this difficulty by going straight to nature; but every woman gifted with a sense of form and color has not the energy of Rosa Bonheur.—*Murray's Magazine*.

**THE USES OF CORK.**—Although what gives most value to cork are the bottle-corks, still it has other applications, some of considerable importance, such as plates or slabs for use on boilers, room-carpets, the making of rugs, life-preservers, cork-dust bricks, hats, album-covers, picture-frames, jewel-boxes, bracelets, and other objects of adornment; soles for shoes and boots, wheels of small dimensions for railroad cars, in the grease-boxes of the wagons; and recently it is applied as "Corcho laminado," or ornamental slabs, the invention of Don Buenaventura Reull (of Barcelona), which is employed to cover plain surfaces and curves, employing them as carpets and for other uses. They make, moreover, according to what I read in the number of the *La Reforma Agrícola* of the 5th February, 1883, huts for those who work at cork, and in Turkey they make cork coffins. In Italy they make images and crosses, shoes, horse-saddles, horse-shoes, arms, blacking, fortifications, furniture, soles for shoes, wadding for mortars, and to obtain lamp-black for printing in the United States. A very noteworthy artistic piece of work which was exhibited at the Universal Exhibition of Barcelona was the "Cuadro heráldico cronológico de España," engraved in cork, and the result of fourteen years of persevering work of Doctor Don José Martí y Vinto (of Palafrugell). It is a matter of anxiety to know whether this precious work of art will be bought by the Government, or allowed to pass into the hands of strangers. The round or hollow cork is especially employed in the province of Valencia to husk rice. It is also used for bee-hives, pans, and pails to deposit or carry milk; in ornaments in gardens, for relief maps to form the elevations, for floats in fishing apparatus, for pails where they cool water with ice or snow, etc. From the imperfect combustion of cork is obtained Spanish black, a product much esteemed for making printers' ink. The fire-place to heat water in which cork is boiled is supplied with the refuse of cork.—*U. S. Consul, F. H. Schenck*.

**THE WORK OF THE DAUGHTERS OF THE AMERICAN REVOLUTION.**—An organization has been perfected in Washington under the name of "Daughters of the American Revolution." Its purpose is to secure and preserve the historical spots of America and to erect thereon suitable monuments to perpetuate the memories of the heroic deeds of men and women who aided the Revolution and created constitutional government in America. Mrs. Benjamin Harrison has been elected president-general of the society and Mrs. Flora Adams Darling, vice-president-general-at-large, in charge of organization. A list of vice-presidents-general and a number of other officers, including an advisory board, were also elected. The first undertaking by the society will be the completion of the monument to the memory of Mary Washington, mother of President George Washington, and every American is asked to send in a contribution to the treasurer, Mrs. Colonel Marshall McDonald of Washington. Resolutions were adopted favoring the passage of the bill introduced in the House by Representative Sherman of New York, arranging for the marking by the government of the historical spots of the Revolution; setting apart the 11th of October as the permanent anniversary or meeting day of the society in commemoration of the discovery of America, and requesting that a special building or space be set aside in the world's Columbian exposition for the exhibition of relics and other things illustrative of the period of the American Revolution, under the care of the woman managers, which exhibit shall afterwards be taken to Washington and be permanently continued there.—*N. Y. Commercial Advertiser*.

**PREHISTORIC REMAINS IN POLYNESIA.**—The *Asiatic Review* for October contains a remarkable account, by Mr. H. B. Sterndale, of the Cyclopean remains in Polynesia. They are far more numerous and extensive than is imagined, and sometimes include gigantic defensive works. In the island of Lelé, for example, in the Seniavines (9° S. lat., 160° E. long.), "a volcanic island has been scarped and walled to the summit, while on the neighboring shore is a wilderness of ruinous castles, the walls in some cases 12 feet thick, and from 30 feet to 40 feet in height. They are in the form of parallelograms 200 feet by 100 feet, some very much larger. Many of them are erected upon islands entirely artificial, surrounded by canals lined with stone, crossing each other at right angles, into which the tide flows." Mr. Sterndale's theory is that early Hindus reached not only Polynesia, but Central America, and he points to the use by Polynesians of the word *Meru* for "Paradise," and the word *dewa* for "spirit," as distinct evidence of this truth, which it would be if there were many such words. This subject needs a much more careful inquiry, and we rather wonder that, with so many millionaires seeking occupation, it has not been the object

of a special expedition, which would not be very costly, and would be, to yachtsmen tired of the upper world, most interesting. The evidence that the races of southern Asia in their most vigorous time made long voyages, and then abandoned maritime enterprise, begins rapidly to accumulate. They must have steered by the sun and stars; but so did the pirates of the North.—*London Spectator*.

**USE OF BLASTING GELATINE.**—An instance having recently occurred in which some cases of blasting gelatine, stored in a railway magazine, caught fire, from what appears to have been spontaneous combustion, the Director-General of Railways has recommended to all railway administrations that the use of blasting gelatine should be restricted to occasions when it is required to blast under water. About a year ago, the Government of India had recommended that, whenever blasting gelatine is stored in India, it should be kept in water. The lids of the boxes should be raised, the waterproof bags in which the gelatine is enclosed should be opened, and the boxes then placed in tanks filled with water. Blasting gelatine possesses the important advantage over nearly all other explosives of not deteriorating in the least when kept under water. A small quantity of water will be absorbed by the surface of the gelatine, and this will somewhat alter its appearance, but it will not in any way interfere with its susceptibility to detonation. A case is on record where blasting gelatine had been under water for nearly seven years without its strength or susceptibility to detonation being in any way affected.—*Indian Engineering*.

**THE STREET-SWEEPINGS OF BOMBAY.**—Eight hundred tons of street-sweepings are daily carted out of the city of Bombay—a city with a population of about 800,000 only—and dumped on the "flats" which are now nearly filled. It is now proposed to build a railway and equip it solely for the performance of this most useful sanitary service; so that one thousand tons daily may be taken to a dump farther from the city.



In financial circles, the phrase, "the worst is over," is pretty well worn out. So far as the causes intended to be referred to, the worst is yet to come. The recent disturbance was only the first danger-signal. General business conditions and land values and commercial credits have not as yet been affected, and need not be if the lesson is not lost on those who shape policies and legislation. In the Western States, the movement in favor of free coinage is taking stronger shape. The Chinese Government proposes to borrow a few millions to establish a silver monetary basis more firmly, and to meet increasing needs. The managers of the great European banks suddenly manifest deep anxiety to gather in all the gold possible. The leading American banks have made a crutch to hobble over the present difficulty with, but in both these cases, viz. home and foreign borrowing, repayment has to be made in some shape or other. Grasping after and even securing more foreign trade settles nothing. The great underlying want is not yet perceived. It is not a comforting prediction to make, but all history, experience and logic point to commercial depression unless our financial systems are placed in harmony with the world's necessities. In railroad circles, a brighter horizon shows itself because of the appearance of a strong hand. The centralizing tendency recently developed raises hopes of a concentration of interests which will render petty wars practically impossible. This event has been anticipated for years. It is only through centralized control that harmony can come. Many see in it one step to government control, and, while there are possibilities of that character visible, it by no means follows that the railway systems of the country cannot remain under the control of ten or twenty individuals as well as under the delusive control of one or two hundred. The earnings of reporting railroads so far this year are twelve million dollars in excess of last year to this date. In general manufacturing and trade circles but little of an unfavorable nature has developed. Prices have not broken. Stocks, as a rule, are not accumulating. Market requirements are kept clearly in sight. Forward buying is less general, because of the possibility of a decline in values. It is surprising how little commercial and manufacturing interests have been affected by the disturbances outside. It is perhaps largely due to the great changes which have taken place in business methods. Haphazard production has taken the place of organized production, and systems of exchange have been improved and cost of transportation reduced practically to a certainty. The percentage of unreliable business men has been greatly reduced. The interests of bankers have become so bound up that all rush to the support of endangered ones. The same applies in a measure to other interests. Competition is under more intelligent control. Combinations, it is now recognized, can do much less harm than it was thought at first they could do. Monopolies, in following the laws of their existence, develop certain counteracting forces which the public did not see when monopolies first raised their giant arms over them. Progress dissipates threatened evils, or evils which were imagined would arise. Business conditions continue favorable. Markets are loaded with products, factories are busy, a very trifling percentage of the wage-workers are idle, capital has not taken flight at recent happenings. No doubt new enterprises will multiply and investments continue to be made with a lavish hand until some very strong evidences of danger arise. The cost of living does not appear to be increasing, despite much prediction to the contrary. Capital stands ready, by increased production, to equalize prices and values, and to thereby reduce margins. The industries are prosperous. Textile manufacturers in all branches are busy as usual, and dividends of manufacturing corporations are good. The iron trade is active, and production is increasing. Locomotive and car builders are booking orders for winter and spring delivery. All the ship and boat yards are crowded. Western shop and factory work is plenty, especially all those industries well supplied with work which provide farmers with manufacturing products and equipments. A few recent failures in the South show more mismanagement than depression. More or less lavish investment is to be expected in a time like this, but the failures are few compared to the successes. The industrial condition throughout the South is surprisingly sound. The work of centralization will no doubt begin there in a year or two, and the same upheaval will occur in these newer States as has taken place in the older. Large manufacturing corporations will ultimately control the industries of the South and West, but not until such a change will be to the advantage of all.

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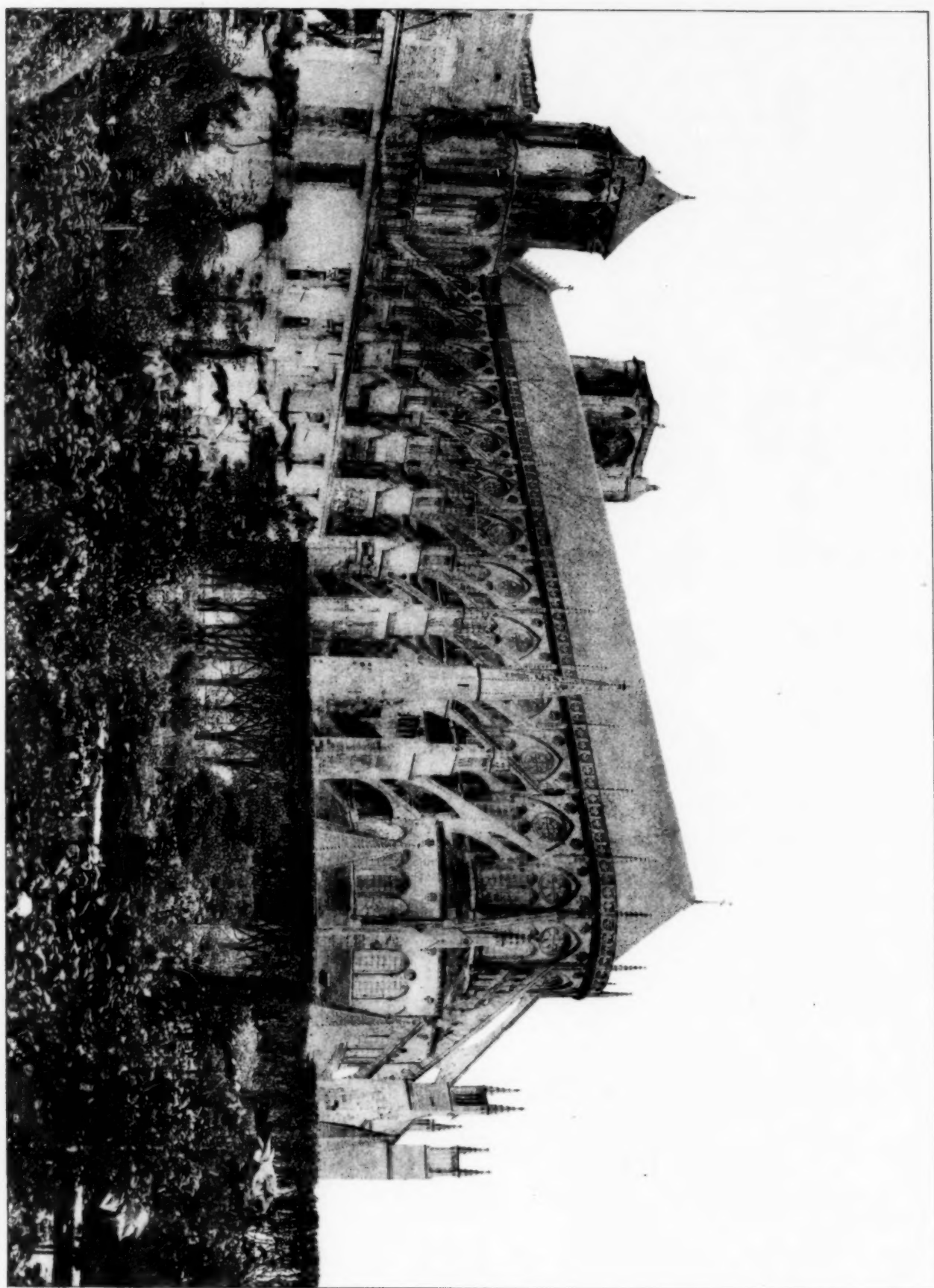


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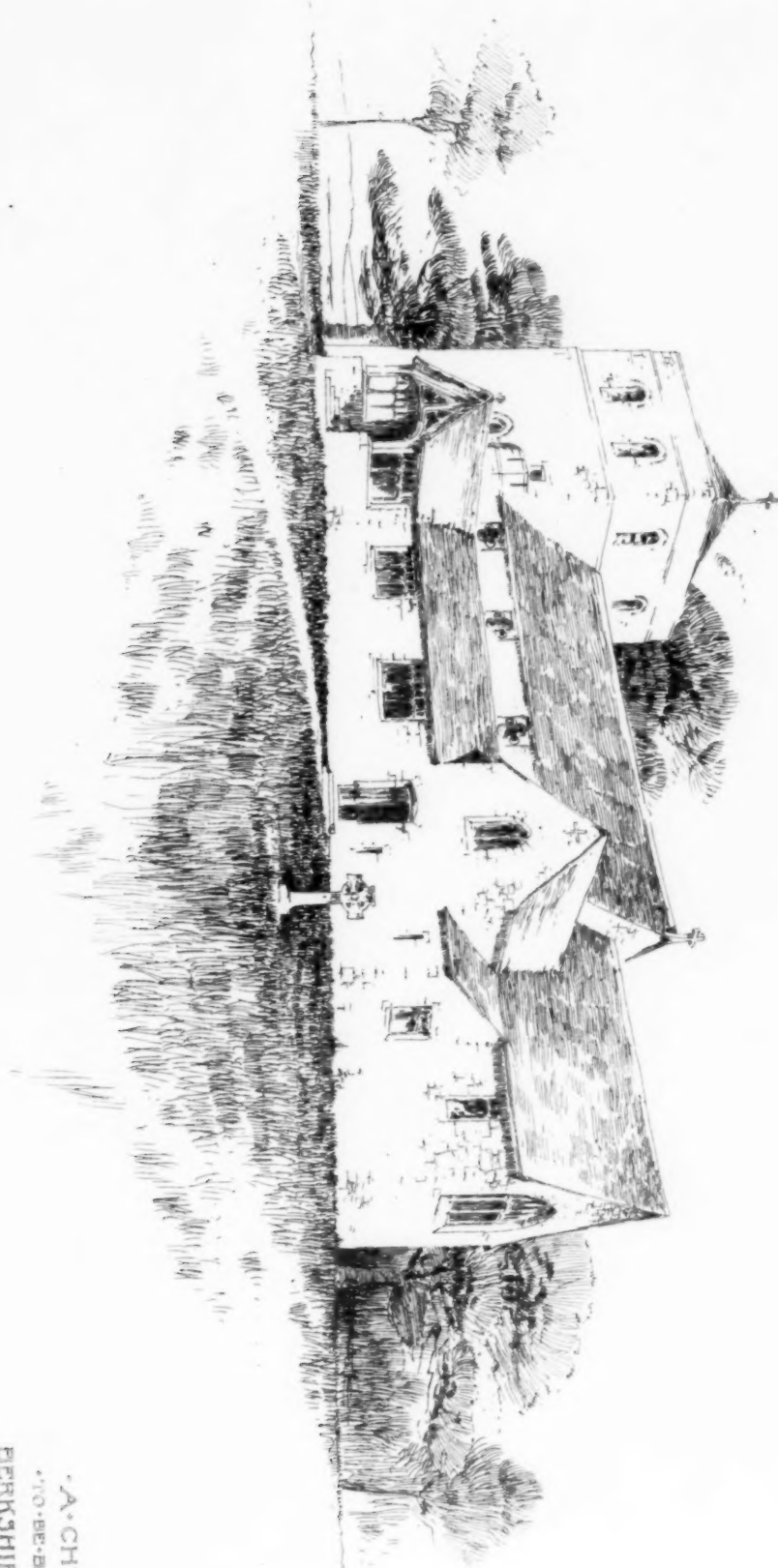


SKETCH FOR A RESIDENCE  
NEAR THE CITY OF MONTEREY  
FOR GEN. TREVENIO  
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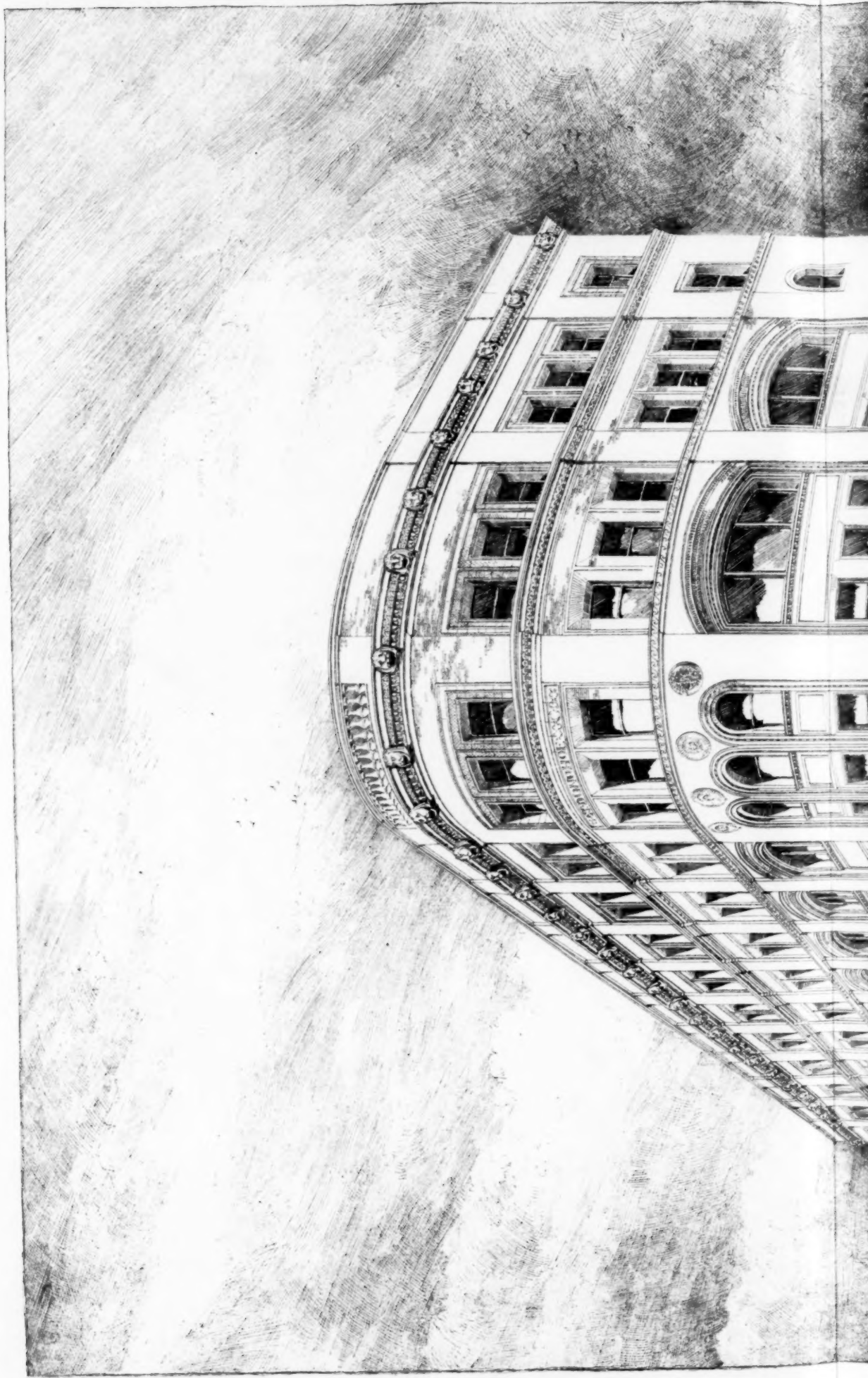
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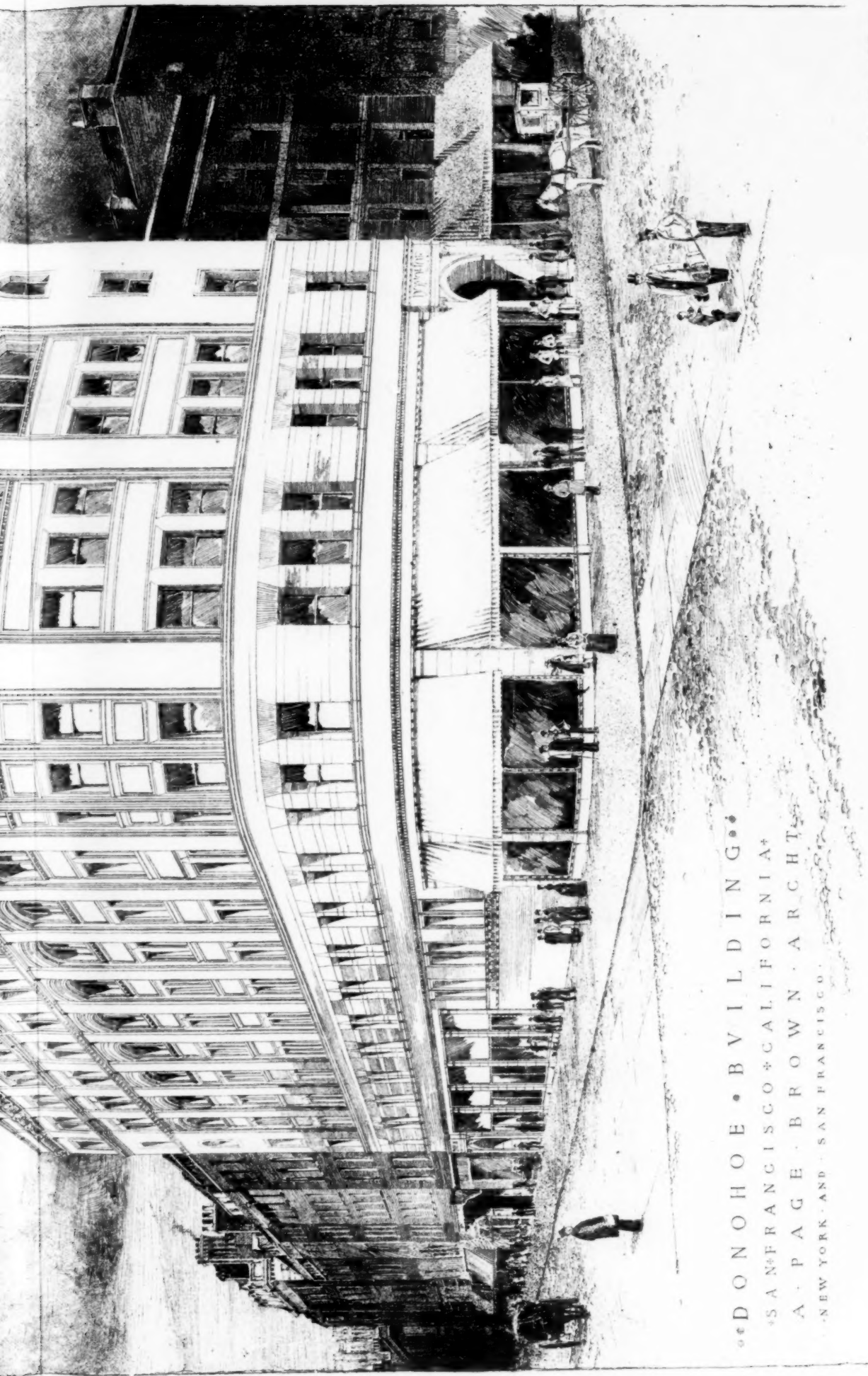
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