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VOL. XXXIII

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DECORATION

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JULY 11, 1891.



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FOR the benefit of those persons who are about to risk their lives by drinking well-water at crowded summer resorts, we will recall the well-known fact that a small dose of alum, added to doubtful water, has a very purifying effect. Particularly against the germs of typhoid fever, the most dreaded contamination of country water-supplies, alum is very effectual. Professor Leeds recently made a careful study of this method of sterilizing water. He added one-half gramme—about eight grains—of alum to a gallon of water swarming with bacteria. This proportion of alum is far too small to impart any taste to the water, or to exercise any harmful effect on the system; but, after a short time, a little of the water was taken, equal to a quantity which, before adding the alum, had shown, under the microscope, more than eight thousand colonies of bacteria, and was found to contain only eighty colonies. By filtration through double filter-paper, this small remnant of animation was removed, and the water came through as clear and as free from germs as if it had been sterilized by boiling. There is so little difficulty about applying this simple germicide that every one should know about it. We are informed, on the high authority of the Massachusetts State Board of Health, that well-water, however clear in appearance, should always be presumed to be polluted, and, in the majority of cases, is so, while typhoid fever is almost endemic at many pleasure-resorts, particularly on the seashore. To have one's drinking-water boiled and cooled is practically impossible at a hotel or boarding-house; but any one can carry a little box of powdered alum in his pocket, and drop a few particles in his tumbler before drinking, and it seems likely that many lives might be saved by the practice.

THE New York Railroad Commissioners have emulated the sensible example of their Massachusetts brethren in demanding from the railroad companies within their jurisdiction drawings of all their truss-bridges, with details of construction and graphic strain-sheets. All these drawings are subjected to the criticism of the engineer of the Board, Mr. Charles F. Stowell, and, where it seems advisable, suggestions are made for the improvement of the bridges. In fact, the good effects of the regulation is felt before the drawings are submitted. It is said that in many instances the examination and measurement of the bridges by the engineers of the railway companies, for the purpose of laying out drawings of them, has brought to notice weak points, which have been strengthened at once, before making the drawings to be criticised by the Board; while some have been entirely rebuilt, and only the

drawings of the new structure submitted. How much need of such supervision of railway bridges there is may be inferred from the history of the Bussey Bridge catastrophe in Massachusetts a few years ago. This important bridge was a mere patchwork. One of the two trusses of which it was originally composed had, for some reason, been removed, and another, of totally different pattern, had been furnished by contract to take its place. The sequence of strains in the two trusses, as trains passed over the bridge, varied in such a way as to test severely structures which might have resisted for many years the same weights if their effect had been uniformly divided between them, and the result was a collapse, with sad loss of life. The impartial and scientific criticism of the engineer of the Board might be trusted to point out such anomalies, even if the railroad companies did not discover and correct them in time to save themselves the shame and loss of business which would follow an exposure of them by the State officials, and the result will undoubtedly be in New York, as it has been in Massachusetts, the radical improvement of railway bridges. There are in the State of New York about twenty-five hundred railway truss-bridges, not including those on the elevated lines in the City of New York. It is impossible to say how many of these were altered or strengthened before the drawings of them were submitted to the Board, but the number must have been very considerable; while on the drawings, as sent in, criticisms were made in six hundred and sixty-nine cases, with the result that five hundred and thirty-five of the bridges criticised have been altered or strengthened by the companies owning them, and one hundred and thirty-four have been entirely rebuilt.

AN abortive strike in the building trades, for an eight-hour day, took place in Pittsburgh last month. The cause of the failure of the strike is said to have been the omission of the officers of the Federation of Labor to pay the strikers the wages they had promised. Naturally, abandoning one's work and income entirely, is a very different thing from the delightful experience of abandoning the work and retaining the income, which forms the allurements to so many strikes; and the men are said to have gone back to their work, on the old terms, with bitterness in their hearts toward the Federation, which had so basely deserted them.

THE *Scientific American* gives in a recent number a miscellaneous collection of recipes, which, as often happens in such cases, are open to a little criticism. Among other things, it says that "Lead pipes are rapidly corroded by water containing quicklime or blue clay; while sand and carbonate of lime give protection against lead poisoning. Hence it has been suggested that potable water should be caused to pass through a mixture of lime and broken flints before it enters the pipes." Why it should be advisable, if "water containing quicklime" "rapidly corrodes" lead pipes, to have drinking-water which is to go through such pipes first "caused to pass through a mixture of lime and broken flints," we cannot conceive. The lime would dissolve in the water to such an extent as to make it undrinkable and unfit for washing, before it entered the pipes; and we do not see what additional desirable quality would be imparted to it by the "rapid corrosion" of the lead which, we are told, would take place as it passed through them.

THE fact is that to dissolve "quicklime" in water is an impossibility, from the fact that the lime is immediately hydrated by the water, and then ceases to be quicklime. If the paragraph means that hydrate of lime, dissolved in water, "rapidly corrodes" lead pipes, it says more than the facts will justify. It has been observed that lumps of mortar, falling into lead-lined tanks, have corroded the lead in contact with them, but, so far as we know, it has never been found that water containing dissolved hydrate of lime, even to saturation, acted upon pure lead. However, this point is not important, as no natural water ever contains either quicklime or dissolved hydrate of lime. We need hardly say that lime occurs in nature practically only in the forms of carbonate or sulphate. The *Scientific American* tells us that "sand and carbonate of lime give protection against lead poisoning," and, so far as carbonate of lime is concerned, this is true, as the carbonate of lime, or rather, the carbonic acid which is associated in the water with the carbonate of lime, coats the inside of the pipes

with carbonate of lead, which is insoluble in some substances which corrode pure lead, and therefore serves to protect the pipes from corrosion, and the water passing through them from contamination. Our authority, however, omits to say that sulphate of lime, which is far more commonly found in spring-waters in the New England States than the carbonate, acts in the same way as the carbonate, by the formation of a protecting film of insoluble sulphate of lead on the interior of the lead pipes carrying it. That "blue clay" "rapidly corrodes" lead pipes will be news to the Water Boards of a good many cities, in which lead service-pipes have been buried, without protection, in blue clay for a hundred years or more; but as drinking-water rarely contains blue clay in suspension, and never in solution, the matter is not of great importance; and the effect of sand in protecting pipes appears to be about as serious as that of clay in corroding them. The simple fact is that all natural limy waters tend to preserve the pipes through which they pass, and not to corrode them. Natural spring-waters do the same, even though they may contain no lime, through the carbonic acid which all cool spring-waters hold in solution, and which forms a coating of carbonate of lead on the inside of lead pipes through which they flow, in the same way as water containing carbonate of lime in addition to carbonic acid. This protecting element of dissolved carbonic acid makes it safe to draw even the purest spring or well water through lead pipes, so long as the water is kept reasonably cool. When heated, however, the water loses its carbonic acid, and, if pure, will then attack lead; so that where very pure well or spring water is used for domestic purposes, the hot-water pipes should be of brass or tin, not only because water for making tea, coffee, or for cooking, will often be surreptitiously drawn from the hot-water faucet, but because lead pipes under such circumstances will sooner or later be destroyed. With pure water which has not absorbed carbonic acid by long cooling underground, such as rain-water, it is necessary to avoid the use of lead pipes altogether, and not to trust to passing it through "broken flints," or sand, before allowing it to enter them, and still less to spoil it for domestic use by making it hard and unwholesome with any form of lime. Rain-water, either in its natural condition or after heating, will dissolve lead to an appreciable extent from the inside of lead pipes in which it is allowed to stand; and the effects of slow poisoning, by many successive small doses of lead, are so serious, that some other material should be used for conveying it. What that material should be, we will not here attempt to say. Architects have to choose, in such cases, between brass pipe, block-tin pipe, tin-lined lead pipe, tin-lined iron pipe, enamelled-iron pipe, galvanized-iron pipe, glass-lined iron pipe and perhaps other sorts, each of which has its merits, while a good many have also demerits; and circumstances must determine what will best meet all the conditions.

THE *Bautechnische Zeitschrift* advises that all objects of iron intended to be painted, should be first washed, and then treated with linseed oil. If the objects are small enough, and will bear heating, they should, after washing, be made so hot that the oil will smoke when it touches them, and should then be brushed over with oil. For large objects, and portions of iron construction, the only available way is to wash them first, and, after drying, brush them with very hot linseed oil. The hot oil soaks into the pores, adhering so closely that no water or air can get through it to attack the surface of the metal; and, if further protected by two coats of paint, the iron will remain a long time unaffected, even by moisture. As a preparation for painting wood, an application of hot linseed oil is much to be recommended. The heated oil soaks into the pores, and hardens there, and the subsequent painting adheres far better than it would if applied without the preliminary treatment.

A NEW system of telephone service has been introduced into Sweden. Already, more telephones are in use in Sweden, in proportion to the population, than in any other country in the world, and, as there are State lines, which compete with those maintained by private companies, the rates are low. Quite recently, an arrangement has been made by which a telephone will be placed in any house or office, by payment of a subscription of about two dollars and a half a year; but an additional payment must be made of two and one-half cents for every message transmitted through it. A meter is attached to every apparatus, which registers the number of calls, and the bills are made out in accordance with the meter indications.

The person called has nothing to pay, and his meter does not record the summons. Except for the immense development of the exchange system which this method of management would probably require, it appears to be very shrewdly devised. Those persons who have a telephone, if they use it at all, generally use it several times a day, so that, while the subscription is so low as to attract great numbers of subscribers, the average meter rates would probably, in most cases, amount to quite as much as the subscription under the old system; while the service would be likely to be greatly improved by the check which the meter would place upon a certain class of subscribers, who appear, in this country, if not in Sweden, to have nothing to do but monopolize the exchanges, for hours at a time, for the transmission of unnecessary and ridiculous messages.

LE GENIE CIVIL, in an interesting study of the project for making Paris a seaport, gives some figures of the sums expended by different nations in promoting commerce, by providing safe and convenient ports. England, naturally, heads the list, but few people, probably, realize how much money the English have spent to preserve their commercial superiority. According to the figures given, the cost of the works for the improvement of the port of London, so far, has been about one hundred million dollars; the docks and other commercial harbor works of Liverpool have cost eighty million dollars; and twenty-four millions have been spent in improving the port of Glasgow. The little country of Holland, with less than four million inhabitants, has spent seventy-two million dollars on the harbor works of Amsterdam and Rotterdam; and Belgium, with a population of a trifle more than five millions has devoted thirty million dollars to the port of Antwerp. The works at Antwerp are quite recent, and the result of them has been to transfer an immense overland traffic, which formerly passed through France, on its way to Havre, Brest and the English ports, to the Belgian railways. Not to be left behind in the commercial race, Germany has spent thirty-four millions on the port of Hamburg, and has brought it, and the railway system connected with it, to a high pitch of prosperity. That these immense sums have been judiciously expended, appears to be proved by the vast increase in business which follows the effort to accommodate. In 1888, the tonnage entering and leaving London was twenty-four millions; Liverpool had sixteen millions; Antwerp, seven and one-half millions; Hamburg nearly six millions; Glasgow six and one-half millions, and Rotterdam four and one-half millions. In two years the increase in tonnage at Hamburg was more than nineteen per cent, and at Antwerp fourteen per cent. Some idea of the magnitude of this movement may be obtained from the reflection that the tonnage which enters and leaves the single port of London every two months is equal to the total tonnage of all the shipping of the United States, which, in 1888, including all steamers and sailing vessels of every kind, coastwise, foreign and lake, was barely four million tons.

THE most powerful electric lamp in the world is in use in the lighthouse of St. Catherine's Point, on the Isle of Wight. The current is produced by three steam-engines, of thirty-six horse-power each, and is carried to a group of carbons in the top of the tower. Under ordinary circumstances, the light produced is equivalent to that of three million candles, but it may be increased to six million candles on occasion. Its power may be estimated from the fact that a newspaper can easily be read by its light at a distance of fourteen miles, and the lamp itself is a conspicuous object at night at a distance of forty-five miles.

THE appearance of a daily newspaper, the subscription price of which is less than a dollar a year, is an event to be noticed, even by foreigners. As we see by an advertisement in the *Bautechnische Zeitschrift*, the *Deutsche Warte*, or "German Observer," as we might perhaps translate the name, is published every day in Berlin, and sent to subscribers for one mark—twenty-four cents, for three months. Its prospectus disclaims any political partisanship, and, indeed, its motto, "Imperium et Libertas," gives it the air of being nicely calculated to suit all parties; but it claims to be well written and edited. It is a little curious to see no mention made in the advertisement of the office of publication, but in Germany, as in France, every postmaster is required to take subscriptions, at the regular rates, for any periodical published in the country, and this appears to be the usual method of subscribing to newspapers.

STAIRWAYS.¹—II.

INTERIOR STAIRCASES.—(Continued.)

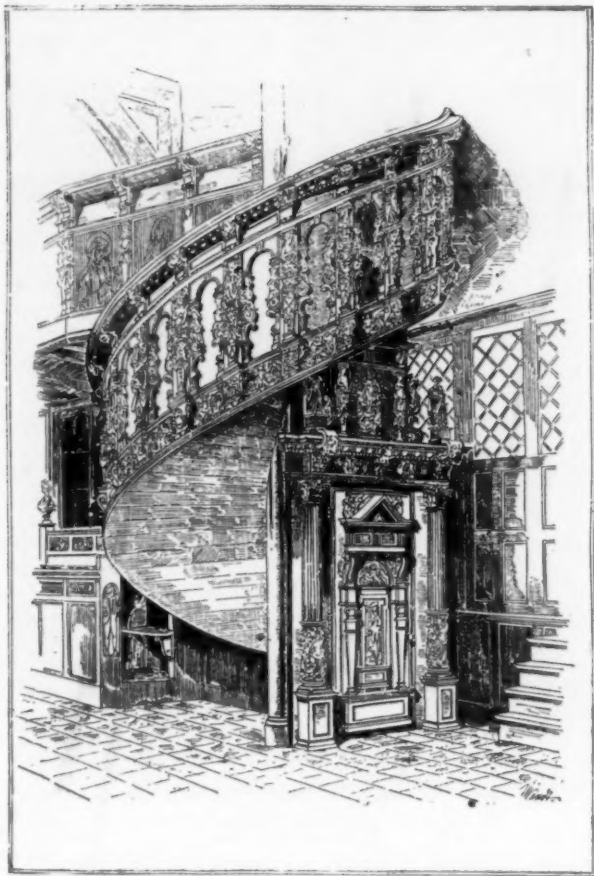


Fig. 6. Church of the Jacobins, Lübeck.

GERMAN architecture furnishes a few examples of Renaissance stairways, as for example, the external staircases at the Castle of Stuttgart and in the town-hall of Göltz and the interior staircase of the Limburg Palace at Frankfurt, which occupies one of the angles of the court. Let us note likewise the interior staircase of the Church of the Jacobins at Lübeck (Figure 6). In our article on Austrian architecture we gave an illustration of a staircase of the sixteenth century from the court of the Porgia Palace at Spital and another from a house in Vienna.

There are some most interesting stairways in Spain, dating from the same period. Figure 7 represents an open stairway in Barcelona, with solid sculptured balustrade and arches resting on twisted carved columns; it belongs to the sixteenth century. In the Cathedral of Pampeluna there is a very curious spiral staircase of the fourteenth century, the development of the inner curve of which forms a spiral seven or eight feet around; the balustrade is very rich.

Lastly, Figure 8 gives the stairway of the Hospital of Santa Cruz at Toledo (sixteenth century). It is decorated with great sumptuousness; on the marble steps rests a richly sculptured balustrade, and our attention is attracted to the curious penetration of the arch supporting the last landing, in the arcade of the ground-floor.

In the court of the old "Casa de la Diputacion" at Barcelona, in which the three estates of Catalonia formerly assembled, and which is a fine specimen of the Gothic architecture of the sixteenth century, there is a staircase with straight runs borne on a boldly elegant and noble arch. The steps are profiled above, and the triangles which they form with the lower line of the balustrade are decorated with small carved figures. The balustrade is divided into solid compartments ornamented with Gothic roses varied in a most ingenious fashion (Figure 9). This edifice is to-day known as "la Audiencia."

The staircase had always been considered wholly from the standpoint of utility without regard to its decorative possibilities, but the successors of the great Renaissance masters swung

around to the opposite extreme and gave an exaggerated importance to this portion of their constructions. Mademoiselle

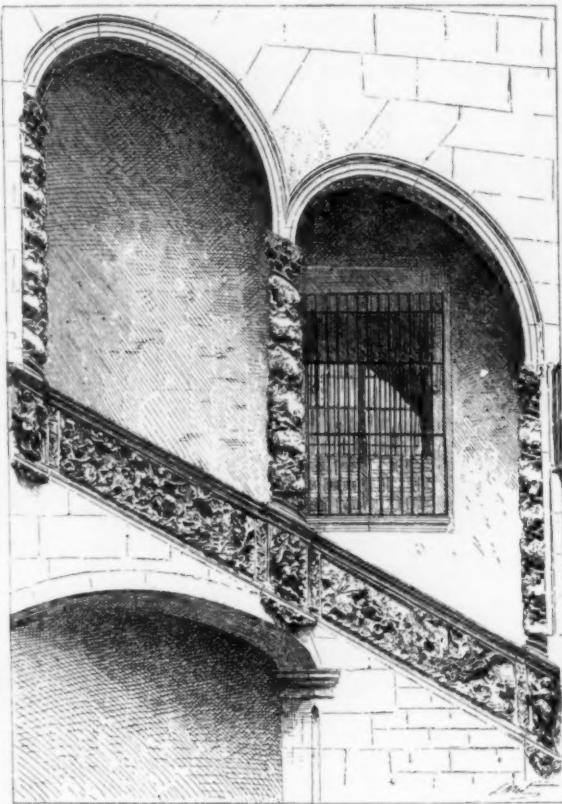


Fig. 7. Casa Dalmases, Barcelona.

de Montpensier complains of this in her memoirs, in relation to the Château de Richelieu.

For centuries the staircase invariably occupied the centre of the edifice, thus dividing it into two parts. Madame de Ram-

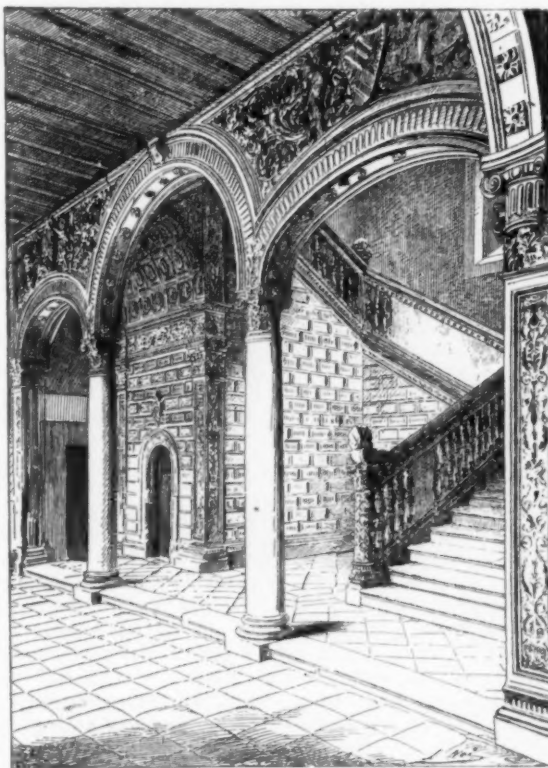


Fig. 8. Hospital of Santa Cruz, Toledo.

bouillet seems to have been the instigator of a change in this respect, for she had the stairs of her hôtel placed at one

¹ From the French of M. Brinscourt, in Planat's "Encyclopédie de l'Architecture et de la Construction." Continued from No. 810, page 5.

extremity of the structure, and when the Luxembourg was in process of building, Marie de' Medici sent her architects to examine into their disposition.

Of sixteenth-century staircases, the one in the castle of Oyron (Deux-Sèvres) is particularly noteworthy; it is among the very finest of those of Renaissance production; the steps,

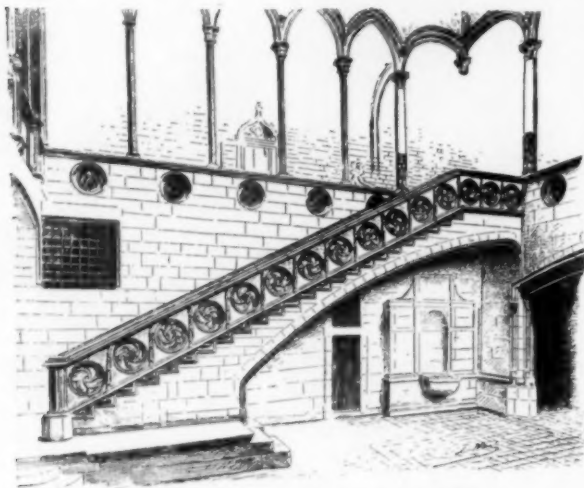


Fig. 9. Audiencia (Supreme Court), Barcelona.

which are ten feet in length, wind about a cluster of four pillars. The grand staircase in the Château de Nantouillet also dates from the same period, and it is one of the earliest French examples of stairs with straight runs.

Many handsome staircases of new types were constructed during the seventeenth and eighteenth centuries. Numerous curious specimens of the earliest of these are to be seen at Rheims; among others, that in the old Jesuit College. In Paris the stairs in the Hôtel Soubise, those in the Hôtel de Toulouse—much praised by Piganiol, because the flights are so broad and easy—and those in the Hôtel Lambert are all of especial interest.

Several staircases may be cited, the noble character of which shows the skill of the architects of this period. Such, for instance, are those at Versailles, formerly four in number: Staircase of the Ambassadors; Staircase of the Queen, called

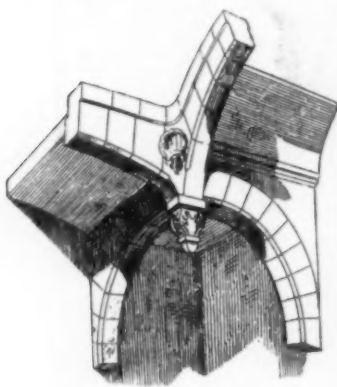


Fig. 10. Staircase at Versailles.

the Marble Staircase after the destruction of the Staircase of the Ambassadors; Staircase of the Princes, and that situated in the north wing. Only two of these, the Marble Staircase and that of the Princes, now exist. A part of the site of the Staircase of the Ambassadors, which was of marvellous richness, but was destroyed under Louis XV, is occupied by a new flight bearing the same name; it, however, by no means equals the first in disposition or decoration. The staircase in the north wing was demolished in 1834; it was one of the most beautiful examples of this kind of seventeenth-century constructions. Another similar stairway, once considered a marvel, has been preserved to us in the Observatory; it was designed by the architect Claude Perrault. In 1851, M. Questel was intrusted with the reconstruction of one of the staircases at Versailles; he made use of a type quite widely employed in the seventeenth and eighteenth centuries: the steps and landings are borne on intersecting arches, the thrust of which is ingeniously and cleverly carried back on the outer walls of the cage (Figure 10).

The staircases of the Théâtre Français and of the Bordeaux Theater, both built by Louis, are also of noble aspect, and the latter is particularly interesting because it seems to have inspired, at least in the *ensemble*, the grand staircase of the Paris Opera-House. Like the latter it is, in fact, entirely open

and occupies the centre of a cage embracing several stories of galleries; as at the Opéra also, the second flights turn back on the first, terminating in two opposite vestibules. Again, as a minor similarity, it is noticeable that the first landing communicates with the corridors leading to the auditorium through a



Fig. 11. Grand Staircase in the Paris Opéra-House.

door, the pediment of which is supported by two caryatides. At a first glance, then, the general arrangement seems to be the same in both structures, but the staircase of the Opera-House is of incomparable grandeur and decorative richness (Figure 11). The noble disposition of the marble columns supporting the order on which the cupola rests, the projecting balconies disposed about the vast open space, the boldness with which the second flights of steps, borne on vaulting, are thrown off above those descending to the circular vestibule, the bronze, the gold, the marbles and paintings, produce a splendid and impressive whole. A most remarkable effect is obtained as one emerges from the circular vestibule under the vaults just referred to, and as, beyond the two flights of the ground floor, the lofty, magnificent cage comes into full view and the eye, gazing through the pillars, reaches the ceiling of the *avant-foyer*, in the first story. The character of the impression made here, is principally due, says M. Garnier himself with too much

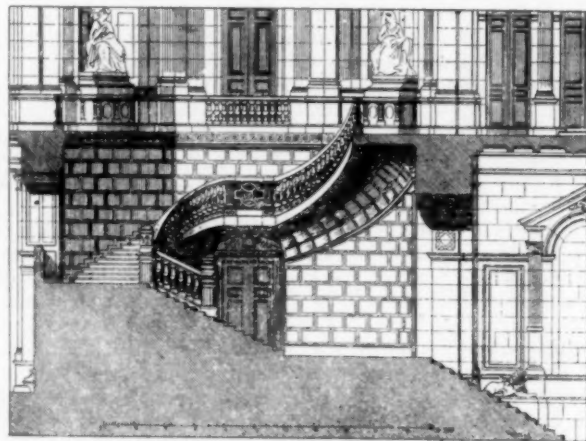


Fig. 12. Tribunal of Commerce, Paris.

modesty, to the contrast naturally resulting from the passage into a spacious and lofty hall from a low apartment. The architect's observation on this point is interesting, but we may

add that talent and knowledge are requisite to a correct interpretation of this law of contrasts, which is the very essence



Fig. 12a. Tribunal of Commerce, Paris.

of powerful and original creations, as M. Garnier likewise asserts.

We cannot quit the Opera-House without a word on the secondary, lateral stairs; these are dwarfed somewhat by their



Fig. 13. House in Rue du Petit-Salut, Rouen.

proximity to the grand staircase, but they are disposed in a remarkable fashion. Composed of five parallel flights with straight runs, they are, in fact, very commodious; and, aside

from their charm of detail and decoration, they possess a merit of essential value and practicality, since they assure to the public, an easy and ready means of exit.

At the present day much attention is bestowed by architects on their staircases, and in public edifices, as well as private dwellings, they constitute one of the chief elements of grand decoration. In the Tribunal of Commerce, at Paris, there is a double stairway thirty-nine feet across, merely to give access to the second floor (Figures 12, 12a); it is embellished with stone balusters, pilasters and statues set in niches; the whole is crowned by a cupola, the inner *calotte* of which is supported by eight caryatides and adorned with panels and sculptures. At the new Sorbonne two grand staircases in the French style are united in the same cage, the walls of which are enriched with decorative paintings. The balustrades, in wrought-iron

and bronze, are marvellously executed and can compete with the finest ironwork of the eighteenth century.

Among the numerous private staircases the one in the Hôtel Potocki combines with its richness of disposition a certain boldness of construction which renders it of unusual interest.

WOODEN STAIRCASES.

Few examples of old wooden staircases remain; but these few make us regret the disappearance of the others, for they bear witness to the ingenuity exercised by mediæval architects in utilizing constructions of this kind. Wooden stairs were especially employed to establish communication between two apartments; and Mathurin Jousse tells us "that there are some so constructed that two persons from different dwellings or rooms can ascend them without being able to get a glimpse of each other; in this way a single staircase performs

the office of two and is common without being so." This peculiarity, which we have already encountered in stone staircases exists, then, in wooden ones; but Mathurin Jousse also describes a still more curious kind of stairs. There are, he says, revolving stairs, which, constructed on a pivot turn easily, so that by a half-revolution all the rooms of a house can be closed by them and passage shut off to apartments to which they before gave access. Viollet-le-Duc describes one of these staircases, which were of great utility in manors exposed to attacks and surprises.

One of the oldest examples of wooden stairs is the flight leading to the gallery of the Sainte-Chapelle, and up whose steps Saint Louis piously climbed to exhibit the holy relics to the people. It is of gilded wood and executed with great delicacy,—a veritable masterpiece of thirteenth-century art. The stairs wind about a central newel and on the outer side are borne by upright supports surrounding them like an openwork

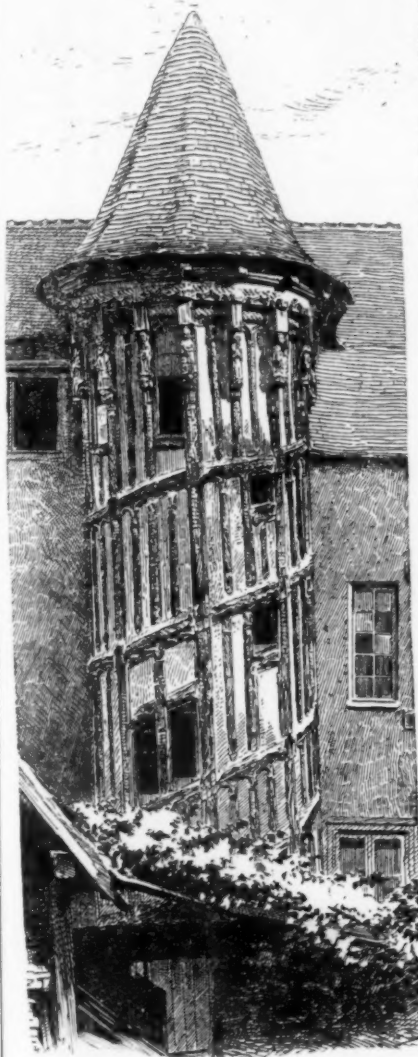


Fig. 14. House of Queen Bertha, Chartres.

cage; the flight on the north side of the shrine, we are assured, is of the time of Saint Louis; the other has been restored.

Figure 13 shows a charming external wooden staircase in an old house in Rouen, Rue du Petit-Salut; other stairs of

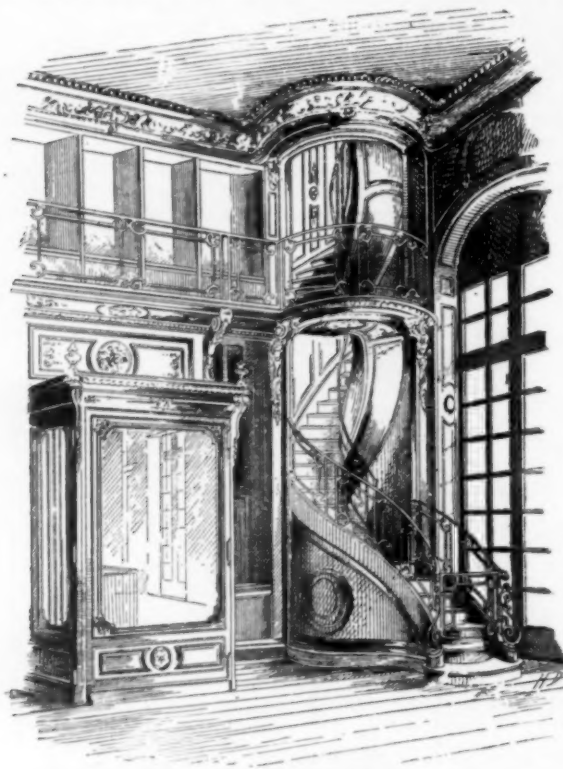


Fig. 15. Salle des Manuscrits, National Library, Paris.

interest may be seen in the church of Dieppe, conducting to the sacristy, and also in the so-called house of Queen Bertha, at Chartres, a fine specimen of fifteenth-century work (Figure 14).

Every one is familiar with the Henry II stairway in the old

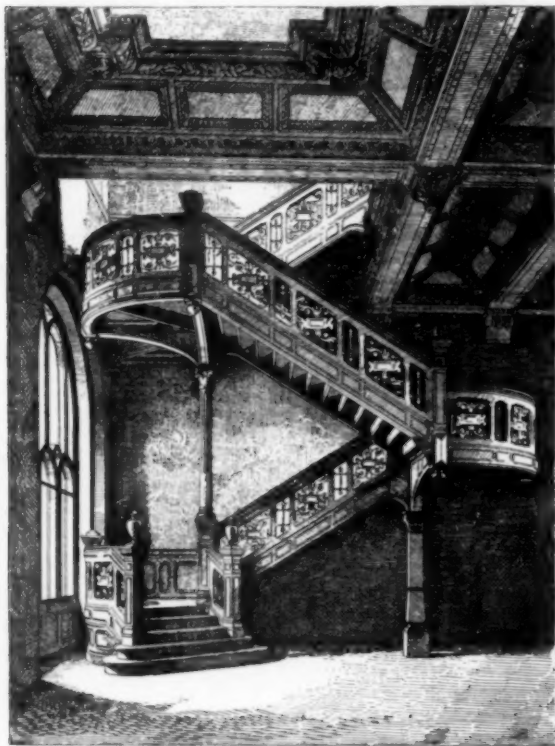


Fig. 16. Salle des Congrès at the Trocadéro, Paris.

Hôtel Cluny at Paris; but we would call attention to a very peculiar flight at No. 24 Rue des Lombards, the string-piece of

which is formed by an arch joining the upright timbers, and which dates from the reign of Louis XIII.

Wooden staircases are at present very common, especially in private dwellings. They often constitute a highly decorative feature of the hallways now so much in vogue and they are, moreover, easily adapted to a great variety of ingenious dispositions. The wooden stairs represented in J. Nash's work on English architecture give the original arrangements of a landing opening directly into a room or vestibule.

In the Salle des Manuscrits at the National Library in Paris, M. Pascal exhibited great skill at decorative effects in the happy manner in which he treated the stairway leading to a circular gallery placed midway between the floor and the ceiling. Figure 15 shows the graceful curves of the whole, which bears the impress of a carefully-studied Louis XV style and the details of which are composed and carved with great artistic feeling.

To close with a quite modern example, we cite the staircase constructed by M. Bourdais in the Trocadéro, Salle des Congrès (Figure 16). It comprises three straight flights, with two intermediary landings rounded so as to form the quadrant of a circle; it is inserted in the wall on one side and on the other rests on a single rather squat pilaster. A slender colonnette supports the third section; the second, as well as the two intermediary landings, are borne on brackets carried by the two supports and form a corbelling which gives the staircase a bold and light appearance. The two balustrades, composed of alternating large and small panels with wrought-iron fillings, have a peculiarly modern aspect.

The various staircases discussed in this sketch are all of stone, marble or wood. Iron staircases are likewise common, chiefly in public establishments, as for example, in the theatre of the Palais Royal. Stairs of this kind are generally supposed to be modern. But it is an interesting fact, remarked by M. Henri Havard, that in the "comptes des bâtiments" for the year 1676, the payment of 300 livres to "Marchand, locksmith, for three iron staircases," designed for the Château de Clagny, is noted.

[To be continued.]

A RUN THROUGH SPAIN.¹—XIV. HOME BY THE EASTERN CITIES OF SPAIN.



TORRE DE LOS PICOS.

THE beauties of the Alhambra have been so often described that a few more words will suffice. We lived within its sacred boundary, and passed in and out to our hearts content, soon becoming known as "The Americans," and greeted cordially

¹ Continued from No. 807, page 166.

even by the guides. We saw people come to this old palace, who went through its chambers and courts as they would go to a circus; who listened open-mouthed to the automatic guide who rattled off the fact that it was surely the Alhambra, founded



by Ibn-lahmar in 1248, etc., and who marched through as if they had another engagement in half an hour, and gave a sigh of relief when they got through. We saw others whose first step was to engage a photographer to pose them with crossed legs in tragic attitude leaning against a Moorish column.

Shade of Boabdil! A derby or a stove-pipe hat against a Moorish column!

We were also enraged one day to hear a terrible commotion which ushered in a troop of boys and girls of all ages, accompanied by nurses and guardians, who raced through the corridors, shinned up the columns, played hide-and-seek around the fountains, and shouted like a troop of Sunday-school picnickers. Perfectly proper, I suppose, but horribly incongruous. These were Spaniards, too, and I was surprised to find that they, of all men, know least about the

Alhambra who had lived near it all their lives. It was ever thus: I lived at the foot of Bunker Hill Monument fifteen years before I climbed to its summit, and sharpened my jackknife on its top rail.

The first night that the moon shone we informed our landlord that we should not return till midnight. "So you are as crazy as all Americans?" he said.

"Oh, yes," we replied, "crazier if anything, for we are bound to see all the hobgoblins and Moorish princesses by the pale light of the moon."

"All right," he said, laughing heartily, "knock three times, turn around three times, and whistle three times, and if the charming Zorayda or Lindaraja is at home she will show you around."

So we went out into the beautiful moonlight, ascended the hill under the huge and dark frowning Arch of Justice, and at nine o'clock knocked at the entrance-door of the patio of the Fish-pond. The moon was just above the horizon, and cast deep shadows around under the arches. There was the pond in the centre, soft and limpid, reflecting from its surface the dark outline of column and arch, and surrounded by its high hedge of myrtles. Even the tiled walls shone under the soft translucent light. It was beautiful in the extreme, but if I record the

truth, little cold shivers ran down my back as we entered the little low-arched opening as dark as night, but which we knew led to the next patio, the glorious Court of Lions. Our own shadows fell upon the pavement and we started at their size. The huge lions seemed to be looking straight at us, and the inscription around the bowl shone out in the moonlight as if demanding attention. Could we have read it we should have been reassured for this is what it said:

"Look on this solid mass of pearl glistening all around . . . Oh! thou who beholdest these lions crouching, fear not."

Thank you, we murmured, as we saw to the right the dark abyss of entrance to the Hall of the Abencerrages, let us look at thee at a distance, but for heaven's sake conjure up no headsman with bloody cimeter at this time of night, for thy very shadows are uncanny! The tender beams that tip the ornamentation, and the



superabundance of shadows is all beautifully romantic, but oh, for a light to shine into that dark cavern and assure us that some dusky Moor is not lurking behind its walls.

How welcome, then, was the tinkle of a guitar and castanets in the distance, as we passed through the beautiful Hall of the Two Sisters, the moonlight streaming down through the balconied walls, then out through the garden of Lindaraja and still on to the Tocador de la Reina, the beauties of which I have before described. Here, we thought, no Moor can surely come, for the moonlight is bright, and the sky above reassuring in its beautiful dome of blue. Again what a sight! the dark Darro opposite, on the banks of which we hear the guitar; the white Genaralife palace on the hillside; even the snow-tipped mountains beyond with a shimmer of soft light upon their very peaks, and away off towards the city hundreds of lights glimmering like the will-o'-the-wisp. Our watches tell us that it is nearing midnight, so we turn about and descend; past the shining lions, quickening our pace, looking back as we pass through the dark passages, and at last out through the entrance-door into the huge Court of the Cisterns.

This experience comes back to me afresh as I write, and seems like a tale of the "Arabian Nights." Was it a reality indeed? and did we really wander through this old palace by the light of the moon?

One day we made a visit to a charming little gentleman, a German photographer, who had settled in the grounds, had seen much of Granada, and who, although a German, evidently loved its very walls and towers. He invited us to go with him and visit some of the numerous towers along the walls, and was never tired discussing the *pro* and *con* of their romantic history.

We enter a little terraced garden whose pavement is in a mosaic of stones, and directly before us, embowered with luxurious growth



of foliage, is a charming building whose doors are thrown wide open to the sunlight. It is the oratory of Yusef I, and, as exquisite inside as outside, is simply a very small covered central *patio*, two stories in height, and all the walls covered with a beautiful tile dado, above which it is ornamented in relief with the arches running up to a stalactite ceiling, where the colors have been wonderfully softened by age; and as we look out of the open casements there is the river Darro far below, the Alhambra opposite, and the caves of the gypsies covered by masses of pomegranates, figs and myrtles.

What a romantic place again is this! Can you help conjuring up to your view the beautiful Christian captive torn from friends by the cruel fate of war, cast away among the Moslems, bitter enemies of her people, and at last demanded by the king as an ornament to his harem?

What can she do? Her honor or her life is at stake! The Roman maiden of old shrank not from plunging the cruel dagger into the breast that would not consider life where honor was at stake, and the Christian captive was no less brave, for, as the legend goes, she called for her royal captor and thus addressed him! "You have asked me to dishonor myself by a union I despise and hate: rather than dishonor I choose death!" and true to her word she sprang from this very window where we are standing, and met her death in the valley below.

Our lovely model's eyes sparkle as she relates her story.

"Señorita," said I, "would you throw yourself over here rather than marry a king?"

"What a fool, Señor," she answered laughing. "Is not a king good enough for a lover?"

But her eyes sparkled meanwhile, and a king might have travelled a good way before meeting such another beauty. I don't think she would have spurned him at any rate.

Passing out of the little garden, we walk along the cliff to another tower, which stands almost isolated. The old woman who had been our guide again leads the way with a huge girdle of keys, and unlocking at last an old boarded door, we are ushered into as charming a little room as one could wish to see. This tower is known as the *Torre de las Infantas*, and was the playhouse of the daughters of the king. It is two-storied, and the roof is decked over, forming a beautiful roof-terrace. Slender columns of alabaster beautifully carved and pilasters of intricate Moorish fret-work uphold the second balconied story, and all the openings are free of any window-sash. Nearly all the ornamentation has been redecorated here, because the effect of the weather blowing through for ages has impaired its brilliancy, and the whole place is a symphony of blue and gold and red. Think of these walls hung with silks and tapestries, and these floors made soft with rugs. A playhouse worthy of any king's children!

Having looked across the valley every day and seen the Generalife in its purity, like a diamond in a setting of foliage, we used up a morning by a visit to it. The meaning of the name is "the garden of the architect," so it must surely be interesting to all who make use of the pencil and quarter-scale.

Wandering down a long avenue of cypress trees a sign greeted us that looked exceedingly business-like. "No admittance without a permit." As the Generalife was not, properly speaking, a part of the Alhambra, my pass was of no avail. But after quite a little diplomacy our native cheek carried the day, and we entered the palace, and thence passed into a beautiful *patio* full of luxurious growth of orange, lemon and high cypress trees, while on all sides were yew trees cut into fanciful shapes. Directly through the centre of this garden is a large tank, through which the water rushes fresh from the mountains above. On all sides of the tank are little streams

spouting high in air, falling into the centre of the tank again and giving a refreshing coolness to the air which is full of aromatic odors.

The palace is long, and divided into three sections, the central one of which from the level of the garden forms a colonnade richly ornamented in Moorish decoration, looking directly down the hillside towards the Alhambra, which looks like the grand sombre fortress-like pile that it really is, notwithstanding its interior beauty. It is one of the grandest and most impressive views in Granada.

The living-rooms are only interesting from their beautifully carved doors and rich ceilings, so we pass again into the gardens where are cypress trees dating from the thirteenth century, and form trysting places that were the delight of many a sultana. A

flight of steps leads up the hillside, flanked with fountains which flow on forever, fed as they are from above. Still the gardens ascend, until at last we are on a knoll, called "the Moor's chair," where is a rustic pavilion from which we overlook the whole scene of our visit. It is from this point that we see the beauties of the setting sun. We cast our eyes westward to the white-capped mountains which blend softly with the sky, while the sun slowly eclipses its huge body, sends its rays out from behind the peaks like rockets of flame, which at last grow dimmer and dimmer until they disappear. Then comes that most wonderful transformation which lends to the whole west its ruddy glow of light. The tops of the Sierra which are white with snow turn to a delicate rose color, intensified each instant until they seem to throw up their very color into the clouds above, tinting them with all the colors of the rainbow, and at last flashing up the whole line of horizon in a glorious mass of light which outrivals the grandest conflagration that could ever be inaugurated by man. For a few minutes it lasts, then gradually growing less and less vivid, leaves the mountain tops cold with snow, and the valleys dark and purple with the approaching night. It is time to wend our way homeward and think over the events of such a day. One feels like breathing the same couplet in regard to Granada as of Venice—See the Alhambra and then die. But we do not die by any means! we pass on down through the glorious avenue of trees, sit upon our balcony like born Spaniards, and listen to the soft murmuring of the flowing waters which gradually dull the senses into delightful repose.

I believe it was De Amicis who remarked that it was possible for one to grow humpbacked in endeavoring to describe the religious monuments in Granada. The Capilla Real with its richly decorated portal is the place of interest and when we consider in entering it,

that therein are the remains of the kingly Ferdinand and the queenly Isabella, the two characters most intimately associated with Spain, one can understand how this very entrance seems to inspire one with the solemnity which the Gothic forms awaken. On each side of the high-altar are two magnificent pieces of sculpture of the king and

queen, masterpieces in marble. Below is the dust which they are meant to embody.

The old sacristan walks around the high railing and suddenly drops on his knees and commences to pull away the carpet. "What are you doing?" I said.

A motion from the old fellow indicated much the action of digging up a corpse. "Ferdinand and Isabella," he said softly, as he placed his fingers across his lips. He raised a grated-door and we saw a hole in the floor. "A small place for so much greatness," remarked Charles V, as he looked down into the cavern.

But the old fellow had disappeared down the steps, and soon a glimmer of light shone out, and we saw his ghastly face peering up at us. Nothing to do but to follow, so we carefully descended and found ourselves under the



altar in a close little space where reposed the caskets on metal horses.

"This is the most interesting place we have seen," said she of the romantic vein.

"It's terribly spooky," from the timid mind.

"They are not at all artistic-looking coffins," from the artist of the group.

As for me I climbed up to the upper stratum of air.

The old sacristan crossed himself and accepted his pesata. We were all satisfied. And, by the way, what a morbid sort of curiosity it is that leads us all to rove around, poking into mausoleums, touching old coffins of saints and sinners, sitting in royal chairs, and getting, I confess, a great deal of enjoyment therefrom.

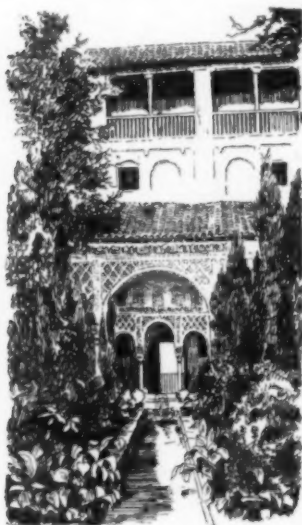
As we came out we passed the old Casa del Carbon, a glorious old Moorish building, now desecrated, but still retaining a beautiful gateway, rich in tracery.

The Zacatin, or market-street, is interesting because it evidently is a good example of an ancient street and its construction. The little alleys are not wide, but consist of a line of Moorish arches upon marble columns with delicate caps, and in long rows. When you consider these arcades all thrown open, but one low story, and each one filled with the treasures of Moorish art one can form some idea of how interesting they must have been. In fact much like Morocco or Tangiers.

The Calle del Banerelo is a place, to borrow another's expression, "where women wash their linen, but never washed themselves." It is a large room on horseshoe arches—a picturesque bit. I think on the whole the above writer's sarcastic remark was not well placed, for certainly one does not wish his washerwoman to bathe in the same bath with his clothes. At least the writer objects to such promiscuous bathing.

The day before leaving Granada, I asked a gentleman if there was any danger in a trip across the country to Valencia or to Ronda. "No, Señor," he said, "the so-called 'gentlemen of the road' are no more, and the days of brigandage are passed."

"I remember" he went on, "the story of the man of unlimited means, who in order to have the sensation of an assault by these picturesque gentry, and possibly to break the monotony of his trip, sent an agent ahead who was directed to look up a man of fierce aspect, who should form an attacking party, dressed in the costume in which romance loves to paint these gentry. Orders somehow miscarried, and when the event occurred it was quite an interesting and



picturesque affair, costumes lacking, however, and he found himself stripped of his belongings and nearly riddled with bullets. The joke did not work, but the mountain robbers performed their part with dispatch, and gave him the sensation of his life-time. But these times have passed and sentries patrol the government roads and

ensure almost absolute safety."

We therefore tried the diligence ride, which gave us beautiful views of the mountainous part of Spain, but very little of any architectural interest.

Returning, we proceeded towards the north, which takes one along the beautiful coast-line of the Mediterranean, through Almeria, Cartagena, Murcia, Elche and Alicante. What a wealth of nature's gifts greets one on every hand! Totally different from the northern sections of the country: spring-time is rich in foliage, flowers and fruit, and



STREET IN SARAGOSSA

the alluvial plains, free from the terrible cold of the northern barren plains, bask in never-failing sunlight, and the farmer knows no repose.

Of course, there is very little remaining of architectural pretensions in these smaller towns; and even in Valencia, the largest seaport town, once the home of the Moors, little now remains of its ancient grandeur.

In 1094 the Cid captured Valencia from the Moors and at that time it was rich in architectural beauty. But a perfect frenzy of demolition took possession of the city less than fifty years ago, and nearly all the parts of architectural interest were destroyed. The Cid was not wanting in a love of the beautiful, for immediately upon entering the city he had conquered, he went to the top of the highest tower of the Moors, and together with his daughters, Sol and Elvira, drank in the beauties which spread out before the eye. That is, it is said that he did, and we must not quarrel with history.

I roamed off by myself one day, and coming to a point of land from which the Huerta could be seen, sat down to rest. The warm sunlight dulled my senses and just as my eyelids were about to close an old man drew near, clad in a velvet jacket with open shirt sleeves, and a sash around his waist. Across his shoulder was thrown a manta, and a wide brimmed hat adorned his head. He doffed the latter and with a smile said in passable English, "You are an Englishman?" "No, Señor," I replied, "farther away, an American." "Ah, so far!"

I found that he had been in younger days a guide, and while interested in all countries had never travelled outside the Continent. He told me of the old city's history, the peasants, the processions, festivals, and the architecture. Yonder is the tower from which the Cid saw the city he had conquered; the top is new, but you can yet see the work of the old Moors, whose hands have long since forgotten their cunning.

"But don't you think" remarked I, as we parted, "that the old Cid was a good deal of a rascal after all?"

"Ah, Señor," replied he, "it might be. *Qu'en sabe.*"

I have not spoken of any architecture in Valencia, because there is little to see. The cathedral is a poor edifice, vilely modified inside and outside. Originally Gothic, the interior has been Corinthianized, and an abominable receding circular entrance bids defiance to any architectural propriety.

The Colegio de Corpus, designed by Herrera, of El Escorial fame, is only interesting in connection with what is known as the Miserere ceremonies on Friday morning. The chapel is dark by reason of smoke of incense, but the darkness is increased by shades during the ceremonies. The whole altar is covered with a purple pall and none approach it save the priest. Low music is heard, its source unseen, as the choir boys chant in rhythm. Suddenly the huge altarpiece descends by means of unseen machinery, and discloses a veil across the background, lilac in color and the chant continues, this in turn, slowly disappears and discloses another, gray in color. The

music continues gradually changing from a rhythmical sweetness to a wailing and moaning cadence as the gray veil slowly changes to a deeper hue and later to a heavy one of jet black.

Of course there is nothing particularly strange in all this, except that the imagination is worked up to an intense strain, and the heart is made tender by the beauty of the music which accompanies the chanting of the penitential psalms. The music grows softer, the voices cease, the black veil slowly descends and the Saviour appears dying on the cross. The figure is of some dark wood marvellously executed by an unknown hand, but wonderfully like the work of Alonzo Cairo. Gradually the music changes, a choir of silvery voices is heard in the far distance, the figure is covered by a white veil and an anthem of praise fills the chapel as the worshippers leave.

One can imagine the effect of this upon the mind, and only a hardened wretch could look upon it without sensations too sacred to be touched upon.

The Lonja de Seda, or silk hall, built in 1482, is a beautiful Gothic edifice, and the Case Consistorial, a noble Doric pile with richly carved ceilings is a good example of the Mudejar style of ornamentation, where the honeycomb pendentives of the Moor show the richness of the style. In truth it is one of the most interesting bits to be seen in Valencia.

I looked long for an old archway known as the Puerta del Serrano and could not seem to find it, but at length, some one told me how to find the object of my search, the tower, and it proved to be an archway flanked by two grand polygonal towers, the upper portions of which are panelled with windows and rich tracery, and the whole surmounted by a deeply machicolated cornice. This leads me to a query and criticism on nearly all our modern work in architecture. Why do we make so little of our cornices, and is it not a fact that the heavy cornice of Spain, and the wide projecting cornice of Italy have much to do with the strength of character of each distinctive architecture?

From Valencia to Barcelona, is a seemingly endless stretch of flat country, where vegetation is rich and verdant; groves of oranges and lemons on every side, each fitted with its bit of architecture in the shape of little balconied houses for storing, some of them very beautiful and picturesque. As in Italy, the knotty, gray olive trees grow in abundance for miles, as the train circles along the shore sometimes running almost on the very beach through masses of cactus plants. All along the coast are little peasant's cottages, yearly whitewashed and covered with thatched roofs supported by large bamboo reeds, where the doorways are hung with mats of straw, telling of hot sun and scorching heat.

The Moors were famous for their systems of irrigation and the old brick waterways are still in existence. Curious wheels like mill-wheels are on every hand, and a patient animal tramps out his life raising the water, that is to flow through these brick channels.

Barcelona is the most prosperous city in Spain, a hive of manufacturing industry, a little Paris. Not particularly interesting therefore, for after Paris all cities are dull, if considered from a Parisian



THE OLD VERMILION TOWER

focus; and falling short of this point of view are lacking the picturesqueness that antiquity would give them. Noise and clamor, mules and horses bedecked with bells, cafés that glisten with crystal tables inside and outside, sidewalks filled with gay folks of all grades, who sip their absinth, like Parisians and, joy of joys, also barbers,

who have chairs to sit in, and razors to shave with, and baths in abundance, which to the unshaved and unwashed southern traveller seemed more interesting than its architecture.

Barcelona was therefore a most inviting place, although lacking in any great amount of interest. Through the centre of the town runs a wide *alamada* lined with trees, the stores on either side full of animation. Bright fans and mantillas are on every hand, jugglers with their carpets and paraphernalia for trickery, and black-eyed maidens with tambourines and guitars form the foreground of a morning's ramble, and back of it I remember the beautiful orange grove of the old cathedral yard and the splash of water from the central font, wherein Moors of old had undoubtedly performed their ablutions before entering the sacred building for prayers. And I remember, too, how we entered the church just at dusk, when the light was so obscured that only a dim outline of the immense height seemed to pervade the place and the deep-set chapels seemed deeper than ever. Again, as always, came the feeling of dissatisfaction at the *coro* which filled up the centre of the church, and forever closed the view of grandeur that must needs have resulted had it been omitted. But therein is the peculiarity of the Spanish cathedral, which lends so much to the charm of the interior when considered aside from the question of size. The church is the type of ecclesiastical architecture in Catalonia, and one of the interesting features is the support of the roof, very slender, tall piers of support, and the semicircular colonnade around the high-altar, which is reached by a high flight of steps, the enrichment of which are bosses and corbels representing Saracens' heads, a decoration common to all churches in Barcelona. The rear of the church is entered through a grand circular archway, and I went out to see if I could find any traces of the ancient method of lighting, that is said to have existed, by piercing the walls of the chapels, and then drawing from the light of the cloisters. But none such exist at present, although plaster may have obliterated the proof of it. Far better it were to be satisfied with the soft light of the large, rich stained-glass windows at either end, for to this fact is due the extremely solemn feeling that steals over one on entering.

An interesting feature is to be seen on the way north. Gerona holds one of the most interesting churches in Spain, not from its size or its particular beauty, but from the width of its nave. Here is a little fourth-rate town with a cathedral whose nave-width is nearly twice that of most of the famous English cathedrals. Guillermo Boffu was a better architect than his name would imply, for he laid out to astound the people by a nave which should with single span cover seventy-three feet. When it is considered that Westminster is only thirty-eight feet, Canterbury forty-three and York fifty-two, the problem was certainly daring. So much so, that it is said that a council of twelve architects was called, who considered the question seriously before starting the work: their wisdom has been shown by the fact that not only was the work started according to the original plan, but that it has never shown any signs of failure, and is to-day one of the most interesting churches in Spain.

We have arrived at the border-land of Spain, France awaits the train as we speed along northward. Paris is the goal of our day's trip, but we cannot help feeling a sense of sadness in leaving the South. Its discomforts, after all, have been few in comparison to the wealth of beauty it has opened to our eyes, and as we roll across the line we cannot help shouting to the poor beggar who watches our departure "*Vaya usted con Dios.*"

It has been impossible, of course, to speak of many of the important towns of Spain. Of Madrid, full of interest for its Armoria Real and its picture-gallery alive with the work of Velasquez, Goya, Ribera and Murillo. Of Saragossa and Lerida with their remnants of Moorish brickwork towers, or of Cuenca perched on mountain tops, and a most picturesque town. We shall leave these to the traveller who follows our advice and sees Spain himself. But a word for students, concerning methods and expense, may not be uninteresting. In the first place, the theory of starting off at random, and looking up what one wishes to see on the way, may be a satisfactory method to the devil-may-care student, who travels because he need not work; but for the student who wishes to get his money's worth in an intelligent acquaintance with the country and its architecture, it is a fallacy. Study several months before starting. Find out what the country contains, what one wishes to see, and note it down carefully. Remember that there are special styles, and noted examples of Spanish work concerning which every student should know. In this way, places of no absolute worth may be skipped, and the time not thrown away. As regards the cost, it seems to me that one can travel for nearly one-half what it would cost him in his native land. And to reduce this to a tangible figure, the writer has calculated his time spent, and divided it by the number of days occupied—leaving out the passage across which is a variable amount according to the tastes of the voyager, also all objects of value brought home, but including everything else from shore to shore—and the cost did not fall far from an even five dollars a day. The travel was second-class, and the hotels the best the small towns afforded, and the medium class in the larger cities. These figures are based on the actual expense, the party consisting of two or four people.

In closing, I quote another traveller who says "View Spain and her inhabitants *en couleur de rose*, and it will go hard if some of that agreeable tint be not reflected on such a judicious observer, for, like a mirror, the Spaniard returns your smile or frown, your courtesy or contumely; nor is it of any use going to Rome, if you quarrel with

the Pope." In other words, when you are in Spain, do as the Spaniards do, and it will go well with you. C. A. Rich.

(The end.)

THE DOLPHIN IN ORNAMENTATION!—III.

THE NATURAL DOLPHIN.



XV-Century Overmantel, at La Barre (Charente), France. From Havard's "*Dictionnaire de l'ameublement.*"

As has been seen by the preceding and the intercalated figures, the dolphin was unreservedly transmitted to us from century to century under two different aspects: sometimes "natural" sometimes "ornamental," that is, modified and metamorphosed under a coquettish ornament. Of these two forms of decoration, the former is the most ancient and well-known; it comes to us from the Greeks, as we have said, and is principally used for allusions, emblems, symbols and attributes; it is the expression of a mystic and lovely mythological language. The latter form dates only from the Renaissance, and constitutes a pure ornament, with no restrictions whatever, having only the laudable ambition to show opportunely its blossoming undulations, its capricious elegances.

The form given by ancient sculptors and ornamentists to the dolphins which accompany Venus, who is driven so majestically by the God Eros—a subject met with every moment on medals, bronzes, lamps, terra-cottas, and the thousand objects of industrial art which have come down to us—seem at first to be rather conventional and offer imperfect resemblances, than to conform closely to reality. But this is only a question of more or less accentuated details, purposely neglected or modified. On the whole, the artist reproduced clearly enough the original type, which he had attentively observed and studied. He did with the dolphin what he did with everything else; that is, he closely studied the model to enable himself to trace out the main lines, the essential shape and thus to show up the type. In this way, the dolphin underwent some slight modifications, although remaining always the



Fig. 1.

true dolphin, in the hands of artists. Truthfulness and likeness were constantly respected. It is thus that an artistic and decorative improvement of the type was created, which was more elegant, flexible and suitable to the qualities with which he was endowed. Still this interpretation was so close to reality that without hesitation, naturalists are able to recognize among the numerous established varieties the specimens which appear the most often on our shores; sometimes the dolphin properly so-called (*Delphinus*), sometimes the common dolphin (*Delphinus delphis*) which is called by French seamen "*bec d'oie*" or "*oie de mer*," on account of his



Fig. 2.

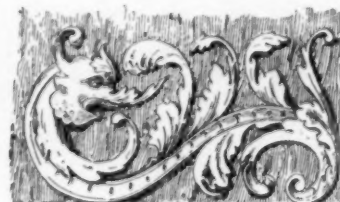


Fig. 3.

prominent forehead and his long and sharp snout. This shape, which can be called "classical," was adopted from the very beginning, and after forming parts of the remarkable Renaissance ornaments, themselves based on Roman examples and both in turn copied by us, it still remains essentially intact. It is only within a short time, at the end of the seventeenth century and especially during

¹ From the *Revue des Arts decoratifs*. Continued from No. 810, page 6.

the eighteenth, that the greatest artists did not hesitate to transform his beak, which was too slender, into a more rounded and fuller mass; in this way forming a face which disfigures the original entirely, but corresponds better to the idea of breadth which ruled at that time, and recalls more directly the well-known head of the common fish. Since then decorators have modified the characteristic shape and have limited



Fig. 4.



Fig. 5.

themselves to the use of a kind of compromise for application to fountains; a form which everybody recognizes and accepts, without comment, as a dolphin although that shape is absurdly remote from the reality.

THE ORNAMENTAL DOLPHIN.

When, during the epoch of the Renaissance in Italy, the dolphin was gradually transformed into an ornament by the artists (although till then his shape was respected and was used as a sacred myth), he lost his natural aspect in order to become a kind of undulating chimera, sometimes very richly ornamented. For that purpose he underwent numerous series of modifications



Fig. 6.



Fig. 7.

and additions in order to give him more lightness and richness; these successive improvements were carried out on different parts of his whole body, the tail, fins, body and head.

On referring to ancient examples we see that, first of all, the head was reduced and embellished. Often the beak is extended, and again more often the lower part remains stationary, while the upper lip grows thicker, rises like a ball as on this Italian stuff of the sixteenth century (Figure 1), or stretches itself out to such an extent as to be rolled up like a delicate volute, as in this head coming from the oratory of Saint Catherine at Siena (Figure 2); elsewhere the beak



Fig. 8.

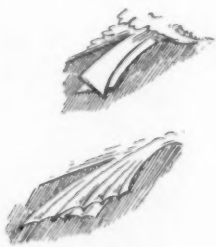


Fig. 9.

is shaped like an acanthus leaf, as on the wainscot of the Church of Essômes (Figure 3); as for the mouth, properly called, it is like the door of the proverb of Musset, opened or shut, sometimes showing the great void of a yawning throat (Figure 4). Design from a brick of Faenza, sixteenth century), and sometimes a full set of sharp teeth. In many cases, whether the jaws are supplied with teeth or not, the artist has furnished this opening with a fantastic tongue, bending either up or down; on some Italian stuffs of the sixteenth century (Figure 5) the tongue is like a pearl-shaped comma; in a composition of M. Reiber, it is a volute by which the fish hangs to an ornament (Figure 6). On a frieze by Nicoletto of Modena, the tongue

is but a leaf; here it is shaped like a straight rod with shepherd's crook at the end; there it curves itself like an S and plunges into a vase; as if it were a siphon used by the animal in order to slake its thirst (Figure 7, Italian Renaissance fragment in the Louvre); sometimes it is shaped like a dart; elsewhere it is a blossoming twig twisted several times or a cornucopia, as on this stone bas-relief from



Fig. 10.



Fig. 11.

the collection of Passalacqua, at Milan (Figure 8). In spite of these transformations, the eye remains almost always the same and presents itself in its natural form, that is, inserted between smooth eyelids; the only modification made by the artist or decorator consists



Fig. 12.



Fig. 13.



Fig. 14.

in the addition of a kind of eyebrow over and surrounding the eye, shaped now like saw-teeth or again like pinnatilobate leaves.

If sometimes (although that happens very rarely) the draughtsman indicates the presence of gills, he does it by means of large leaves split again and again. The front fins were not long spared; almost always they were greatly modified when they were not entirely cut off, and replaced either by falling acanthus leaves, voluted curves or



Fig. 15.



Fig. 16.



Fig. 17.

some other ornamentation. As in the examples given farther on we shall have many opportunities to examine numerous types, we will confine ourselves to pointing out the simplest metamorphoses only. They consisted in turning this membrane, supported by its bony rays, into straight or jaw-shaped appendages, terminating abruptly in a right line, or by inverted scallops (Figure 9); sometimes these

appendages present a series of canals or grooves placed side by side (Figure 10. From a seventeenth-century andiron in the collection of Mr. L. d'Yvon), or a grouping of fins either rounded or pointed (Figure 11. Painting from the ancient palace of the Dukes of Bavaria at Landschut), which presents, on the whole, the aspect of a bird's wing or a pinion, according to the scale of the drawing. While this accessory of the head was more or less neglected, the dorsal fin, on the contrary (to which Cupid, or some winged children, his beloved brothers, clung while riding), was almost always preserved by artists of originality, who gave themselves great pleasure in accentuating, extending, turning, ornamenting and embellishing that membrane to excess (Figure 12. Terra-cotta in the collection Campana). Here, on a brick tile (Figure 13), it is a single leaf inclining itself like a horn over the head; there, this leaf is extended so as to



Fig. 18.



Fig. 19.

form a helmet, and is lifted up in volute at the middle of the back; then the entire body is wrapped in a large leaf, and the spinal fin is replaced by a twig, from which rises a large ornamental scroll (Figure 14. Italian work), or by a spiral with a rose, in the middle of which blooms a flower (Figure 15. From the Oratory of Saint Catherine at Siena), or finally, by a cornucopia, from which flames burst out (Figure 16. From the Oratory of Saint Catherine at Siena). Sometimes



Fig. 20.

even this part of the animal is so much decorated and developed that it becomes more important than the remainder of the subject, and forms by itself a sort of arabesque, like this one (Figure 17) taken from an Italian floor-tile of the sixteenth century.

All this is, as it were, of little importance, a sort of prelude, when we compare these changes with the shapes, contortions and ornamentations which are in store for the flexible body of this animal. In the old times, the good old times of strict etiquette, timid

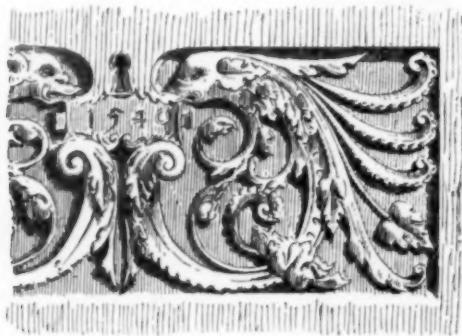


Fig. 21.

artists allowed themselves to ornament only the scales of the royal dolphin with *fleur-de-lis*, and that was sufficient to give a brilliant *eclat* to armor, so much admired in the lists. But, just as soon as the legendary cetacean became, while losing none of his functions of emblem, the property of ornamentists, a simple element susceptible of receiving all possible amplifications and suppressions, then the

door to creative and fanciful imagination was flung open, and many masterpieces were brought to light. These *chef-d'œuvre* remained, and will remain forever, an attestation of the artistic intelligence and fancy of the day. From that time forth every one entered on the search after elegance, and each tried to do better than his

fellow-worker by exerting himself in endeavor to accomplish something new and original.

Some artists ornament and wrap the dolphin with one or several acanthus leaves as a corselet, which shows out the form (Figure 18. Framing of a marble flagstone in the Cathedral of Siena) or as a flowing tunic from which spring out leaves and branches which terminate in a flower (Figure 19. Composition of Mr. Th. Schoop, of Vienna). Other artists replace the body by a great leaf with large denticulated lobes, as on a sixteenth-century stuff (Figure 20) or transform the whole fish into a sort of sheath, which is covered with a thousand trinkets, small leaves, shells with hooks, etc., as the example (Figure 21) furnished by a money-box in carved oak, dated from 1540 and belonging to the museum of the Industrial Arts of Berlin.

Finally, some artists twine the dolphin upon himself and form a twisted spindle, which being stiff and solid, takes the architectural shape of a table-leg or of a baluster, as was done by Jan van Mabuse on an alms-purse in his "Adoration of the three Magi" (Figure 22), and we can find many other examples in Spanish art, especially in furniture and small boxes.

(To be continued.)



Fig. 22.

DANGEROUS TRADES AND OTHER FIRE RISKS.

THE dangers of fire incidental to various trades and industries and the subject of spontaneous combustion in general were interestingly treated in a lecture recently delivered before the Birmingham (Eng.) Insurance Institute, by W. W. J. Nicol, M. A., D. Sc., F. R. S. E., F. I. C., F. C. S. Speaking first on the subject of spontaneous combustion, the lecturer confined himself to cases in which were to be found explosive mixtures, such as in flour-mills, and other places where the air was laden with fine particles. He found it was almost impossible, he said, to speak to them on one part and then go right on to the other. The subject was so interlaced that it was necessary to go backward and forward to bring the points into anything like scientific order. Before they investigated the explosions in corn-mills, or rather the causes of spontaneous combustion — for explosions in corn-mills had not been thoroughly explained — he wished to say a few words on the proportion of gases required in order to make an explosive mixture. A gas had its particles in a state of continual motion in all directions. So much was this the case that if they took a jar of coal-gas — which was lighter than air — and placed over it a jar of air, in a very short



Lantern of the Chateau de Chambord. From Havard's "Dictionnaire de l'Ameublement."

proportion of gases required in order to make an explosive mixture. A gas had its particles in a state of continual motion in all directions. So much was this the case that if they took a jar of coal-gas — which was lighter than air — and placed over it a jar of air, in a very short

time they would find that the coal-gas gradually made its way up into the top jar, and some of the air descended into the lower one. It would be a very difficult matter to label the particles of gas in order that they might see the mixing, but there was a means by which they could discern the actual movement of the particles. The lecturer then performed an experiment illustrating this. To explain clearly the proportion of air with gas required to make the latter explosive, Dr. Nicol said he would take a large glass cylinder and fill it half with air and half with water. Then driving out the water by adding coal-gas, so that there were left in the jar equal parts of ordinary air and coal-gas, he applied a light and the mixture burned in a large flame but without explosion. Then he filled the cylinder one-sixth with coal-gas and the remainder with ordinary air. This burnt with a non-explosive flame, but as it "got up steam" there was an explosion. Again he diminished the quantity of coal-gas placed in the cylinder, this time the proportion being only about one-twelfth to eleven-twelfths of air. On a light being applied, the mixture exploded with a loud detonation. The lecturer remarked that it was not the quantity of coal-gas in the air of a room that made it dangerous. If the mixture was in the proportion of half and half it merely burned, but when they had only about one-twelfth of coal-gas there was an explosion. It was much more dangerous, so far as damages to life and property were concerned, to have only a comparatively small quantity of coal-gas in a room than a large quantity. The same experiments as he had performed with coal-gas might be repeated with hydrogen.

Passing on to explosive mixtures of air with vapors, and not gaseous in the true sense of the word, Dr. Nicol said that the two vapors he intended to deal with for the purposes of illustration were ether and bi-sulphide-of-carbon vapor. The experiments he would make could not be guaranteed to come off at every attempt. Nature probably tried explosion after explosion and failed, but at last there was the successful explosion which found its way into the newspapers. The danger was rather in putting too much ether in than in putting too little. Ether volatilized very rapidly, and ether vapor was very heavy and did not diffuse rapidly; therefore it required shaking. In the first trial the lecturer put in too much ether, and the mixture burned without explosion. Again he tried and there was a faint explosion. He stated that it required a very delicate adjustment of the ether vapor in order to produce anything like a loud explosion. The same difficulty was found with respect to bi-sulphide of carbon. However, here the lecturer obtained a loud explosion.

Continuing, he pointed out that sometimes while they had a mixture of gas and air, which was only feebly explosive, its effect might be greatly intensified by the presence of fine particles in the air. This was especially the case in coal-mines and flour-mills. In flour-mills they had explosions resulting from the mixture of fine particles of flour in the air without the aid of gas. But in the case of coal-mines they had the risk of explosions intensified because, in addition to the presence of an explosive mixture of fire-damp and air, they found fine powdered coal distributed generally throughout the workings. The more serious of fire-damp explosions were really due for their intensity to the presence of that fine coal-dust. In a very exhaustive series of experiments which Galloway made between 1872 and 1882, he found that in every case the explosion was probably propagated by the fine dust in the workings. This was of special interest to his audience, because it showed them how an explosion of gas in a mine was carried on by fine particles, and how in a flour-mill it was originated by the flour-dust alone. If they shook fine dry flour through a sieve into a flame, they would find they obtained an almost explosive mixture of air and flour particles, the latter taking fire and burning nearly like so much gas. What he burned before them was ordinary flour as it came from the dealer, but the particles which caused explosions in mills were very much finer than the finest of particles in the ordinary flour. The finer the particles the more rapidly they would take fire, and burn like an explosive mixture of air and gas. The lecturer then sprinkled a long wooden tube, representing a flour-shoot, with fine flour. Then into a box he introduced some ether vapor. Closing the box he attached it loosely to one end of the tube. Opening the door of the box he applied a light, and the mixture of air and ether vapor caught fire. The fire was propagated the whole length of the tube by means of the flour particles, and they could easily detect the burning of the flour by the smell. There had been many instances in flour-mills where an explosion had originated in one room, and been spread to other rooms by the firing of the flour particles in the shoots. In various works on the subject which he had read, he saw it stated that a mixture of one litre of air with forty milligrammes of fine flour suspended in the air would cause an explosion. If they got just the proper quantity of flour-dust suspended in the air, and at the same time they had a light of any kind, there would be an explosion. The question of spontaneous combustion came in when considering how the mixture was fired. There were certain mysterious causes of fire of which the only probable explanation had been that in the case of the grinding of the stones there had been a piece of iron in the corn which, coming in contact with the stones, had produced a spark of fire. In certain other cases there had actually been a spark of electricity caused by friction. There were some interesting accounts of experiments with explosive mixtures of fine flour and air made by Weber, of the Polytechnic, Berlin, after the explosion at Hameln in 1878. There was also a serious explosion at Minneapolis, but this was not caused by flour, but by oatmeal.

In the paper-making trade, too, there was a danger of spontaneous combustion, as the atmosphere inside the "devil" was generally of an explosive character. The rags were torn up, and large quantities of organic dust were generated, and this dust in the air formed an explosive mixture. In coal-mines, also, they had explosive mixtures. It was found by Sir Frederick Abel that when they had from 2 to 2½ per cent of fire-damp, and a cloud of coal-dust was produced by any sudden concussion of the air, that air became explosive. So that they had air which contained fire-damp, which was not explosive, becoming explosive when mixed with coal-dust, and in some cases they had an actual explosion produced by the presence of dust which was not of itself combustible. Sir Frederick Abel also found that when they had from 2½ to 3½ per cent of fire-damp in air and finely divided silica—which was absolutely incombustible—was added, they had an explosive mixture formed.

First of all, then, there was spontaneous combustion of gases. He would take two well-known gases—silicated hydrogen and phosphureted hydrogen, but would experiment with the latter. Filling a basin full of water, he introduced it into a piece of calcium phosphide. That produced phosphureted hydrogen, and as the bubbles of gas arose from the water they took fire. That was an instance of spontaneous combustion. The term spontaneous combustion was frequently applied to cases of fire where there had been no explosion whatever. When phosphureted hydrogen and oxygen came into contact with one another, they had spontaneous combustion. An instance of a solid taking fire in air was obtained if phosphorus was gently warmed. Then they might have a case where metal in a very finely divided state took fire as it was shaken in the air. The metal he used was lead pyrophorous, the latter word meaning "fire bearer," because it took fire when exposed to the air. It was simply very finely divided lead, and very finely divided iron when exposed to the air would also take fire and burn.

The lecturer then took some chlorine and metal antimony, the latter being perfectly stable when exposed to the air. Directly, however, he brought it into contact with the chlorine it burst into flame. If they took another jar of chlorine and brought into contact with it some turpentine on a dry cloth, the turpentine would burst into flame. If the chlorine was not perfectly dry there would sometimes be a charring, but no flame. These were instances of spontaneous combustion taking place when a solid (antimony) and a liquid (turpentine) were brought into contact with a certain gas. They also had spontaneous combustion when phosphorus and chlorate of potash were brought into contact with one another under certain conditions. Fires might be caused by the contact of a liquid and a solid, and by the contact of two solids. There was a very serious explosion, attended with loss of life at Manchester, a few years ago, when liquid acid came into contact with oxide of lead, forming a very dangerous explosive. Taking a small piece of paper containing chlorate of potassium and amorphous phosphorus, in a fine powder, mixed with alcohol and gravel, Dr. Nicol explained that if properly prepared that mixture would explode when subjected to any friction. A very common example of friction producing explosion was with chlorate of potash and sulphur. To illustrate this he took a small quantity of each, pressed it in a mortar, and a series of crackling explosions was the result.

Dr. Nicol, proceeding, said he did not know that there had been any real attempt to classify spontaneous combustion. He once tried, but he got no farther than the first three main heads. They had spontaneous combustion where the heat was produced by the oxidation of the body; they had it when the heat came from the outside, and they had spontaneous combustion by heat from both causes. The first cause was, therefore, where heat was produced by the union of the body itself with the oxygen of the air, and without the aid of any external heat. In this they had two sub-divisions, where the whole substance was dangerous and where only part was dangerous. A chemical example of the first would be phosphorus, any part of that substance being liable to spontaneous combustion. A more popular example was prepared of finely-ground charcoal. Charcoal was singularly marked out from any other substance by the quantity of gas it was able to absorb. Ordinary box-wood charcoal would absorb ninety times its own volume of ammonia gas, and cocoa-nut would absorb about 150 times its own volume of ammonia gas. Charcoal also absorbed oxygen, and in working its way into the pores the oxygen came into contact with the carbon, and finally took fire. In addition to charcoal, they had also bone-black or animal-charcoal, and there was the heating of bark and tan. The latter was really a process of oxidation, and also, probably, of fermentation. There were briquettes—of which there were many in the south of Scotland—and here they had a coal-dust which was singularly susceptible to oxidation, and a tarry matter also susceptible. Lamp-black was also a cause of fire, and more especially when it was brought into contact with oil. Coffee also absorbed oxygen from the air, whilst cases of hay fires were innumerable. In cloth manufactory, when the cloth, after singeing, had not been properly cooled before being rolled up, a very high temperature was often the result.

With respect to the second sub-division, where in part an impurity was the cause of the heat, the lecturer instanced coal-dust. The general result of observations showed, he said, that small coal was more dangerous than large coal, and this was of especial importance to shippers of coal. In the ten years from 1870 to 1880, there were no fewer than 318 or 320 ships laden with coal which had gone out

and never had been heard of again. This gave about thirty-two ships every year which had disappeared altogether. In addition to these there were 152 cases of spontaneous combustion of coal cargoes. The liability to loss of a ship was directly proportionate to its coal capacity. Only $\frac{1}{4}$ per cent of vessels of 500 tons experienced spontaneous combustion; over 500 tons to 1,000 tons it rose to 1 per cent; in ships of 1,000 tons to 1,500 tons it was $\frac{3}{4}$ per cent; from 1,500 to 2,000, $4\frac{1}{2}$ per cent, and from 2,000 tons upwards no less than 9 per cent. Not only must the coal be carried in large lumps, but in small quantities. Copper ores were also liable to spontaneous combustion, though they only heated and did not burn away. Cotton and woollen waste moistened with oil sometimes took fire. The process of making linoleum was also very dangerous.

A curious case of spontaneous combustion was, a short time since, brought under his notice by Superintendent Tozer of the Birmingham Fire-brigade. At the close of a lecture he (Dr. Nicol) gave to the firemen, he stated that such a spontaneous combustion as was mentioned by Dickens in "Bleak House" was quite impossible. However, Superintendent Tozer had sent him a long series of extracts of reports of cases where people who had been confirmed drunkards, had taken fire and burnt up by spontaneous combustion. The superintendent also informed him that at one fire he attended there was nothing visible to have raised the outbreak but an iron chair. On close investigation he (Dr. Nicol) learned from the superintendent that the chair had probably been tarred, and there was a quantity of sawdust about, so that really the tar and the sawdust had caused the fire. Spectacles, bull's-eyes, decanters and glass-globes for inkstands might cause a fire by the concentration of the sun's rays.

It was said that if a certain quantity of water were poured upon quicklime, sufficient heat would be given out to set fire to gunpowder even on a small scale. On a large scale, and especially when moistened with oil, or when it came into contact with water, it gave out sufficient heat to set fire to inflammable material. A large proportion of fires in certain trades were entirely due to the heat generated by Sheffield lime. Hot-water pipes also apparently set fire to the woodwork in contact with them. The fact of the matter was that the pipes dried the wood and there was a loosening of small particles of the wood. These absorbed oxygen from the air, and grew hotter and hotter until, by spontaneous combustion, the wood caught fire. — *Fire and Water.*



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

HOUSE NO. 589 FIFTH AVENUE, NEW YORK, N. Y. MR. J. G. PRAGUE, ARCHITECT, NEW YORK, N. Y.

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

ODD FELLOWS' BUILDING, LOWELL, MASS. MESSRS. MERRILL & CUTLER, ARCHITECTS, LOWELL, MASS.

SKETCH OF OFFICE-BUILDING, FOR MESSRS. RICHTER, SCHUBERT & DICK, MILWAUKEE, WIS. MESSRS. VAN RYN, ANDREE & LESSER, ARCHITECTS, MILWAUKEE, WIS.

BUILDING, CORNER OF FIFTH AVENUE AND TWENTY-FIRST STREET, NEW YORK, N. Y. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.

PROPOSED RECTORY, HASTINGS, ENG. MR. A. LOWTHER FORREST, ARCHITECT, BOSTON, MASS.

STORE AND OFFICE-BUILDING FOR F. G. HAMER, ESQ., KEARNEY, NEB. MESSRS. FRANK, BAILEY & FARMER, ARCHITECTS, KEARNEY, NEB.

OFFICE-BUILDING FOR F. G. HAMER, ESQ., KEARNEY, NEB. MESSRS. FRANK, BAILEY & FARMER, ARCHITECTS, KEARNEY, NEB.

[Additional Illustrations in the International Edition.]

THE KARLSKIRCHE, VIENNA, AUSTRIA. FISCHER VON ERLACH, ARCHITECT.

[Gelatin Print.]

THIS building was erected in 1716-37, during the reign of Charles VI, after the cessation of the plague, incidents of which are represented in the pedimental sculptures. "The Classic porch and the two triumphal columns plainly indicate the influence of French architecture and French interpretation of Classic forms. The interior exhibits an original and very effective plan, but it has no connection with the façade, the latter is nothing more than a juxtaposed decoration. Yet in a general view of the exterior, the imposing oval cupola above the central space harmoniously dominates the façade, completing the picturesque silhouette." The columns on either side of the porch are 13 feet in diameter and 145 feet high, decorated with reliefs by Mader, illustrating incidents in the life of St. Charles Borromeo.

COLOGNE CATHEDRAL.

[Gelatin Print.]

It was a most unexpected proof of the great altitude of these spires, to find that even from the top of the lofty apartment-house we had been allowed to ascend, we could not get the whole building upon the negative, though lens after lens was adjusted, in the belief that one would be found that would cut the subject. The height of these twin spires is given as 515' 1" from the floor of the church. After standing in unfinished state for centuries, Frederick William IV, of Prussia, ordered the work of completing it from the original design to begin, and in 1842 laid a stone in the tower, at the height of the main ridge of the building. From that time onward, work proceeded with occasional interruption, caused by war and lack of funds, until the last stone capped the north tower on August 14, 1880, the consecration following on October 15, of the same year, the anniversary of the birth of Frederick William IV, then deceased. Including work done between 1823 and 1843, the cost of finishing the cathedral has been about \$5,250,000.

SIXTEENTH-CENTURY TABLE.

[Photogravure.]

THE Museum of Decorative Arts, at Cologne, contains a table of French origin, which must be considered as one of the most rare and interesting examples of sixteenth-century work. Although executed in wood, it is evidently a copy of some Gallo-Roman original in marble, as its construction and detail seem better suited for stone than wood.

GLENLYON FARM-HOUSE, PERTHSHIRE, N. B. THE LATE J. MAC-LAREN, ARCHITECT.

TUTOR'S HOUSE, NEW COLLEGE. MR. BASIL CHAMPNEYS, ARCHITECT.

TWO VIEWS OF THE LIBRARY IN THE HOUSE OF MR. C. E. SCHWARM, PRINCE'S GARDEN, LONDON, ENG. MR. E. P. WARREN, ARCHITECT.

MEASURED DETAIL OF THE FARNESE PALACE, ROME, ITALY.



[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.]

COMPENSATION FOR PLANS REPEATEDLY USED.

SALT LAKE CITY, UTAH, June 25, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Kindly give your opinion in the following case:

I recently furnished and received payment for plans for a dwelling, but did not superintend it. I had no special understanding with the owner in regard to using the plans for other houses, but the specifications read, "The plans, specifications and details are the property of the architect, and are to be returned at the completion of the contract, and are not to be used for any other job."

The owner was so well satisfied with this house that as soon as it was nearly completed, he commenced the erection of another one, and then a third one. These are exact duplicates of the first one and he used the plans, details and specifications in their construction. The owner was told by the contractor, before commencing the second one, that he would probably have to pay for the plans for each of the others.

Am I legally, or otherwise, entitled to compensation, for the use of the plans on these two houses, and if so, to what extent?

Yours truly, W.

[We think you are legally entitled to be paid for the use of the plans for the other two houses. If the owner, before using them a second time, read the clause in the specifications, saying "The plans, specifications and details are the property of the architect, and are to be returned at the completion of the contract, and are not to be used for any other job," and made no objection to it, this would be good evidence of an agreement on his part not to use the plans for a second house; and the existence of the clause in the specification, even if he denied having read it, would incline a jury to believe that he really had read it and assented to it. Even without such a clause, however, a jury would probably conclude, unless the architect were shown to have consented to the use of his plans a second and third time, that the implied understanding between him and the owner was that they should only be used once. In either case, something would be due the architect as damages for the breach of the contract, and the jury would have to decide how much ought to be paid. If they thought there had been a flagrant violation of a well-understood agreement, not to use the plans a second time, and to return them to the architect on the completion of the first building, they would, we think, be disposed to award the architect the value of the plans, thus surreptitiously and dishonestly obtained, for each of the two houses for which they were used without authority, on the basis of the price paid for them for the first house; perhaps deducting the expense to the architect of making them, or perhaps allowing this to the architect,

as compensation for the injury to the artistic effect of his first house, and, consequently, to his reputation, by its duplication in the neighborhood. If the jury thought that the owner innocently and inadvertently used the plans again, they might award the architect lighter damages, measured by such evidence as they could get, as to the compensation customary in such cases.

This question has, so far as we know, never been brought before a court of record, and there are, therefore, no precedents to quote which would be of any authority. It has, however, been tried in inferior courts. The reports of cases of this sort are only to be found in local newspapers, and we could give no references to them, even if they would be worth anything as precedents; but we think the result has generally been favorable to the architect. In one case, where the familiar doctrine that the plans, in the absence of special agreement, are the property of the client, was brought forward as a reason why the latter was entitled to do what he pleased with them, the court ruled that his ownership of the plans did not entitle him to use them to build another house from. In the present case, the architect's position appears to be even stronger, as there is every reason to believe that the client agreed to a stipulation that the plans should remain the property of the architect.

We may remark that this is one of the cases which the American Institute of Architects might, with advantage to the profession, take up and carry to an authoritative decision. We are asked for advice several times every year on just this point. In most instances, probably, the architect, having no time or money to go to law with, simply submits, and in the others, he compromises his claim for a few dollars, rather than go to the expense of pursuing an unsettled point to a decision; but if the representative body of the profession would have the law established, so that over-economical owners could understand the consequences of such conduct, architects, in many places, would soon find themselves considerably better off. — EDS. AMERICAN ARCHITECT.]

THE ST. LOUIS UNION STATION COMPETITION.

BOSTON, MASS., July 6, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In your editorial notice of the St. Louis Union Station Architectural Competition, in speaking of the architects who did their part to sell out the profession, by accepting insufficient compensation, you say: "Probably all these had special reasons for being willing to undertake the work for less than it is fairly worth, and; at least, their decision will be respected by their associates." Will it? In almost every case of the kind, some men, who think they can gain a temporary advantage over their brethren by doing what they well know is against the best interests of all, are found ready to do it. It may be by intrigue and the sly offer of sketches on approval, or by direct solicitation; it may be by cutting rates, just for once, or on private terms; or it may be by disregarding the settled terms for honorable competition which all their brethren remain bound by. There is unwritten and higher law as well as lawyers' law. Is it to be held presently that if a man does not crack a bank or take to the road, his record will remain unchallenged? Or, is there to be a division in our ranks between the "hustling guerillas" and the other sort?

The pity of it all is that the irregular practice is not left to the typical unappreciated and starving genius, who might have his offence condoned; but the men who can afford to adopt higher standards are responsible for the bad odor in which we find ourselves as a body. No one can blame the sharp man of business for breaking through our bond of straw. "The fault, dear Brutus, is not in our stars, but in ourselves, that we are underlings."

J. A. F.

A QUESTION OF COMMISSION DECIDED.

July 1, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I have for some time past been intending to send you a statement of a case I have recently had in court and the judge's charge. The case is very similar to those mentioned in the last two issues of *The American Architect*.

My testimony, as plaintiff, was as follows: In November, 1889, Mr. B. came to me and asked me the cost of a house that had just been finished from my plans, for a Mr. A. I told him that the contracts amounted to \$6,600. He had me make sketches and took them away. In January or February, 1890, Mr. B. came to me with his brother-in-law, who asked me if \$6,600 included everything necessary to finish Mr. A.'s house. I told him no, that the house complete cost about \$7,000. On the evening of February 24 I was at the residence of Mr. B. and he told me to go on with the drawings, and he had made certain notes, in pencil on the preliminary sketch, of alterations that he desired. The next day work was commenced on the drawings, Mr. B. came in every few days and inspected them. On March 19, 1890, Mr. B. came in with his brother-in-law, who is an attorney. The attorney asked me what I thought the building would cost. I told him that I thought the changes made in the elevations would add three or four hundred dollars to the cost. He then asked me if the house could be built for this amount of money (as derived from our different conversations). I told him I thought it could, the other alterations that had been made not happening to come to mind at that moment. He repeated the question several times and I gave the same answer. I testified that the other alterations made amounted to something over \$500, and that the plans were practically complete on March 19, 1890.

In defence Mr. B. testified that he ordered me to make plans for a \$7,000 house; that he made a contract with me to that effect on

March 19. That he did not know that anything but sketches had been made previous to that date.

Mr. B.'s brother-in-law testified that on March 19, 1890, he went to my office with Mr. B. for the sole purpose of making a contract with me to make plans for a house to cost \$7,000. When asked by my attorney why, if he went to my office to make a contract with me, nothing was said as to what I was to receive for my services, he could only say that they knew before they came to me what I charged for my services. He testified that he did not know work had been commenced on the plans.

I further testified that I showed Mr. B. and his brother-in-law the plans on March 19; that I never made a contract to make the plans for a house not to exceed \$7,000 in cost; that I offered to remodel the drawings to bring down the cost and was not allowed to do so.

The bids were about \$8,100. The judge charged that (there was no dispute about 2½ per cent being a fair compensation for the work performed) "if this work was done at the request of the defendant, then the plaintiff is entitled to recover what it is reasonably worth for doing that work, unless there was a condition precedent to his payment, that he was to perform this work within this limit of \$7,000, and if it was not done within this limit he was not to receive anything until he got a contract on plans and specifications that would not cost more than \$7,000 and he had not done it, why, then he would not be entitled to recover unless the defendant had intervened and said to him, after making a test of it by receiving these bids, trying to test it, and the architect is ready and willing to fulfil and complete and reduce it down, if that, now, was the contract, assuming there was such a contract, then if the defendant has refused to let him do the work, so that he could perform the contract, went off and undertook to get somebody else to do it, repudiated the contract, would not give him an opportunity to do it, the reason of his non-fulfilment being the defendant's failure to permit him to do it, then he is not responsible for the failure, and is entitled to recover what the services are worth up to the time he has sued. If there was such a contract in existence he should have performed it, if prevented from performing it he is entitled to compensation for the labor from the time he began, down to the time he is prevented from performing it."

The jury returned a verdict for me of 2½ per cent on the bids received, i. e., 2½ per cent on \$8,100. The opposing lawyer applied for a new trial. The judge called in my attorney and told him that unless he would allow the verdict to be changed to 2½ per cent on \$7,000, he would grant a new trial, as if there was a contract I was not entitled to more than 2½ per cent on \$7,000. My attorney assented and the judge refused a new trial. The defendants' attorney has now filed bonds to appeal the judges ruling to the circuit court which will not be heard till fall.

Very respectfully yours,

C. D. E.

NOTES AND CLIPPINGS

DE HAVILLAND'S ARCH, SERINGAPATAM.—During a recent visit to the former capital of Mysore, one of the sights that attracted our attention was the experimental arch—a flat segment of more than 100 feet span, built of brick and keyed with stone—bearing the name of the erratic genius who proposed to bridge the Cauvery by a single arch of five times that span. As the proposed span greatly exceeded anything that had at that time been attempted, and on his design being set aside as visionary, he resolved to demonstrate its practicability, and thus built the great arch across the garden attached to his own house, where it still stands as a monument of his skill. — *Indian Engineering*.

LEAD PIPE PIERCED BY AN INSECT.—K. Hartmann, in *Gesundheits Ingenieur*, January 15, 1891, relates a case in which a lead pipe was cut through by an insect that was actually found with its head in the hole pierced by it. A workman was called in to repair a defective pipe which had been injured on a previous occasion, as was reported, by a "nail hole" occurring in a soldered joint. This time the worm (a wood wasp) causing the mischief was found *in situ*. The hole on the exterior of the pipe was of a rounded form, about one-quarter of an inch long by one-eighth inch wide, and the penetration was through the entire thickness of the metal. Though of rare occurrence, well-authenticated instances of similar injuries by insects are on record. — *Scientific American*.

FIRE-TESTS OF PLASTER-BOARDS.—In a recent number of the *Centralblatt der Bauverwaltung* was a description of some fire-test of plaster-boards conducted last March at the Royal Testing Bureau for Structural Material at Charlottenburg. These boards which are also manufactured in the United States, were described in *Engineering News* of April 12, 1890. According to the above paper, two models of houses, the dimensions of which are not given, were constructed with walls and ceilings of Mack's plaster-boards. The plastering on the inner surface of the boards was only about 0.4 inches thick. In order to determine the temperature, different metals and alloys were placed in crucibles within these houses, the tests being made with (1) aluminium melting at 620° C., (2) an alloy of 800 parts of silver and 200 of copper melting at 850° C., (3) an alloy of 950 parts of silver and 50 of copper melting at 900° C., and (4) an alloy of 950 parts of silver and 50 of platinum melting at 1,100° C. Within each house was piled about 225

lbs. of split fir, soaked with kerosene. Both fires were started simultaneously and maintained in the same condition as nearly as possible. At first no change in the houses could be detected, but after 30 minutes a few small cracks appeared in the joints, which had become slightly warm to the hand, although no change in the temperature of the plaster-boards was perceptible. These cracks were probably due to the moisture in the joints, which were fresh, having been made just before the tests. In one of the houses a portion of the plaster finish of the ceiling fell after the fire had been burning for 35 minutes, which was probably due to the smooth surface of the plaster-boards and the very short time that the ceiling had to dry before being tested. At the end of 35 minutes more the fires were extinguished, and the plaster-beams, which were nearly 4 feet long between supports, were found to be uninjured, although large stones had been thrown against them and they had been subjected to the weight of a heavy man walking over their surface. Moreover, sheets of writing-paper and pieces of lace curtain which were hung on the outside of the houses remained unchanged in any way. After the fire had been extinguished it was found that the temperature has been over 1,000° C since the first three alloys were melted, and the fourth only very slightly affected.

THE HOLDING POWER OF DRIFT-BOLTS.—A number of experiments on the holding power of square steel drift-bolts have lately been carried out by Messrs. Powell and Harvey, of the University of Illinois. The bolts were 30 inches long and one inch square. The timber used was pine. Holes one inch, 15-16 inch, 14-16 inch and 13-16 in. were bored as nearly as possible perpendicular to the grain of the timber and the bolts driven in for a depth of 6 inches. Five bolts were driven into each size of hole, and the following average results obtained:

Size of Rod.	Size of Hole.	Holding Power in Pounds.	
		Total.	Per Inch of Depth.
Square inch.	in.		
1	16-16	3972	662
1	15-16	4260	710
1	14-16	4660	777
1	13-16	4080	675

After the bolts were withdrawn the timber was split, and the condition of the wood round the hole examined. From this it appeared that in holes larger than 14-16 inch only the corners of the bolts held effectively. Comparing these results with others obtained in similar timber with round rods by Mr. J. B. Tschanner, the following figures may be tabulated:

Kind of Bolt.	Holding Power per Inch of Length.			
	16-16-in. Hole.	15-16-in. Hole.	14-16-in. Hole.	13-16-in. Hole.
Round rod ..	lb.	lb.	lb.	lb.
Square " ..	662	710	777	675

—Engineering.

"PULLING OFF" ALL THE PRIZES.—It is not often that a competitor secures more than one premium in a competition. The extraordinary results of the West of England competition in which the great Burges "pulled off" the whole of the three money prizes, is, I believe, unparalleled. Many thousands of architects who have competed in vain will say that they would be quite content with the first premium only, and covet not the second and third; all the same, there is some credit attaching to the feat of successfully landing more than one prize. There are doubtless very many who consider it a species of sharp practice to submit more than one set of drawings in any given competition; but this is a very narrow view of things. I do not see any valid objection to a competitor sending in a score of sets of designs if he thinks that by so doing he will secure to himself more chances of success. To my own way of thinking he won't; but all people may not consider that it is best to concentrate all one's energies on one scheme, rather than spread oneself over two or three alternatives. As Burges has established an extraordinary precedent in this way, we may take it that nothing unprofessional can be urged against the practice. Providing that a competitor simply and honestly sends in two schemes, I can see no objection. And certainly it seems only a proof of the merit of the competitor that he should find both his sets of designs premiated—providing, of course, that the award has been fairly made by a competent assessor. All of which I am prompted to observe by noticing the result of the Hornsey-road baths competition, where one competitor is reported to have been placed for both the first and second premiums—pulled off, in a sense, a "double event."—*The Building News*.

ANCIENT SHIP-RAILWAYS.—It is more than probable that the Egyptians were in the habit of transporting vessels overland across the Isthmus of Suez, and tradition records that twenty-three centuries ago a true ship-railway, with polished granite blocks as rails, existed and was worked across the Isthmus of Corinth, where the construction of a ship-canal has been projected. In 1718 the well-known Count Emanuel Swedenborg constructed a road and "machines" for carrying laden vessels from Stromstadt to Iddetjord, in Sweden, a distance of fourteen miles across a rough country, and the successful use of this work by Charles XII during the siege of Frederikshall led to Swedenborg being regarded not only as a national benefactor, but as a mechanician of no mean ability for at least a century after his death.—*Iron*.

NEW STATUES FOR PARIS.—Paris will soon be enriched by three new statues. The subscription list for the Meissonier memorial has already reached \$5,000. M. Mercie will be the sculptor. The monument to

Victor Hugo is to be placed in the Pantheon, and will be the work of M. Rodin. It will consist of a pyramid of rocks against which the poet is leaning in an easy attitude. Waves are represented breaking at the foot of the rocks, and on the crest of the waves dance three figures of women, the voices of the sea. At the top of the rock Inspiration, with wings outstretched, descends from the sky, touching with her hand the forehead of the poet. The Municipal Council has given permission for the erection of the statue of Balzac in the Place du Palais Royal. M. Chapu was engaged upon this at the time of his death, and it was intended that it should be finished by his pupils, but the 30,000 francs set apart for this work is insufficient, and 20,000 francs more is needed to finish it. M. Antonin Mercie has been asked to complete the statue.—*New York Evening Post*.

WORK ON THE CHIGNECTO SHIP-RAILWAY.—Orders have been given to cease work on most of the contracts on the Chignecto Ship-railway. The company has already spent \$3,000,000 upon its construction and is understood to be cramped for funds.—*New York Evening Post*.

VIENNESE FIRE-APPARATUS.—Among the most efficient of the European fire-departments is that of the city of Vienna, which is kept under very strict discipline, and commanded by men of progressive ideas—progressive, that is to say, from a Continental point of view. As an instance of the military strictness of the rules under which the Viennese firemen must perform their duties, it may be noted that one of the regulations of the service is that the apparatus must be out of the house within one minute after an alarm is sounded. Not that this would appear a particularly exciting requirement to the members of an American paid fire-department, but it shows the extent of detail into which the rules and regulations of a department run upon a military basis can go, as compared with the system of individual responsibility in vogue here. In Vienna the large public buildings have private fire-alarm systems connected with the fire-stations, and there is also a public electric-alarm system with boxes in many of the streets. The telephone is also at need pressed into service for giving alarms, and in addition a watch for fire is kept over a considerable part of the city from the towers of St. Stephen's Cathedral. Upon the whole, then, the facilities for giving notification of fire may be considered as fairly good. The individual bravery and efficiency of the men is also highly spoken of. For use in smoke-filled rooms or passages a safety suit and mask are employed, while where the smoke is so dense that an ordinary lantern would be useless, an improved torch, invented by Chief Inspector Stritzel, and described as a "zinc flambeau," is said to give most satisfactory results.—*Fire and Water*.



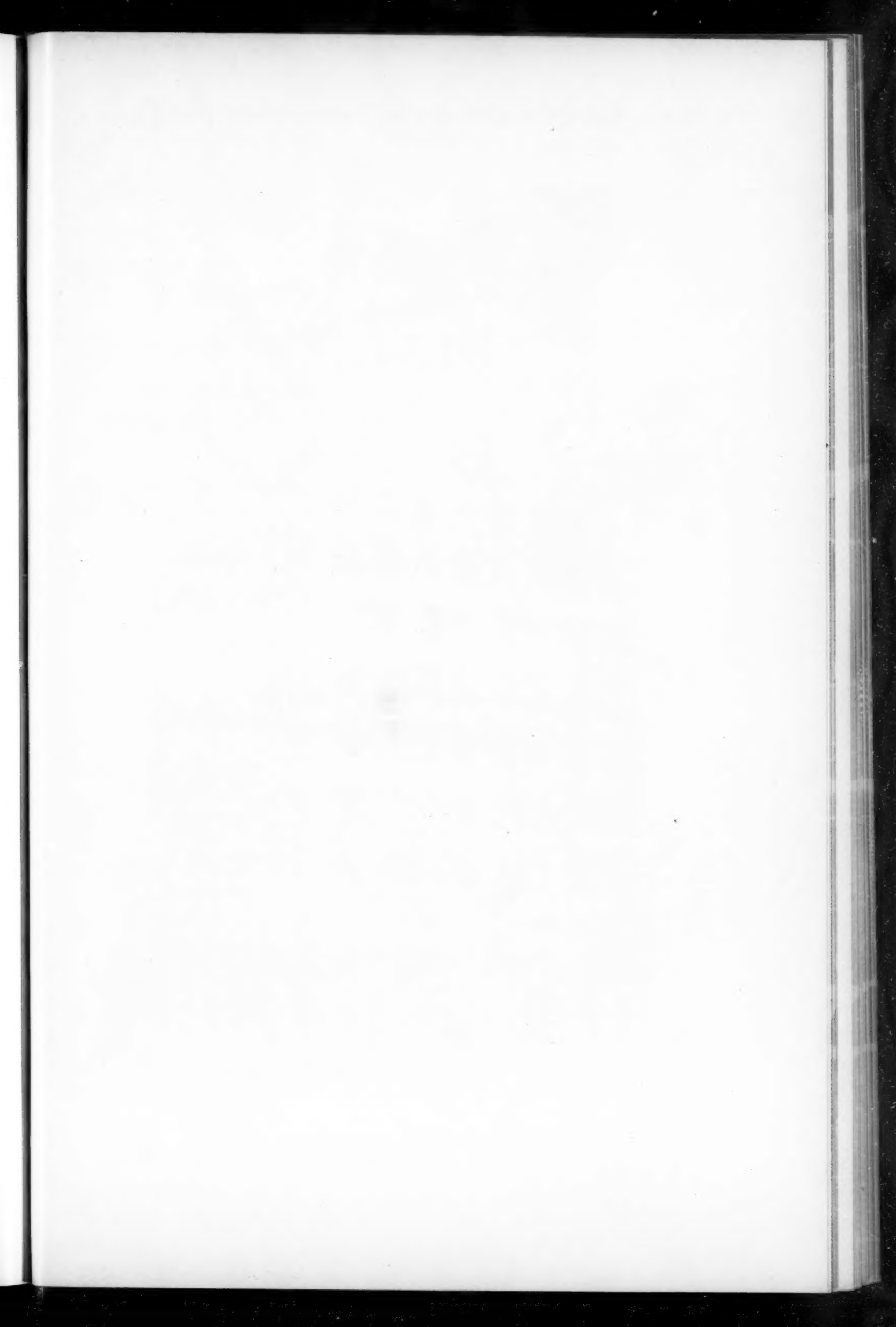
The commercial and manufacturing features for the early part of July are quite encouraging. Financiers are well pleased with recent developments; there is much more confidence in foreign financial circles. The results which have followed the loss, as it is termed, of seventy millions of gold are a subject of much comment upon both sides of the water. Some authorities claim that this gold, or most of it, has gone for good; others draw the inference that, if so, it is destined to "boost" the silver movement, or for making silver more of a currency or legal tender than it ever has been. Be this as it may, it is well to keep in sight the possible and probable results which may flow from this outflow of gold to foreign countries. It is the determination of the foreign financiers to keep it there if they possibly can; they need it for future use, among which may be mentioned the possibility of a general conflict of arms. This scrambling for gold means more than it appears on the surface; it will likely force the United States to assume a new position in regard to silver. Financiers for some time have seen this danger, as they term it, and are preparing, through private conferences, for some sort of concerted action, if concerted action is possible. Of course, the calculation is that much of this gold will come back, that we cannot get along without it, that Europe cannot keep it when it buys provisions, cotton, etc., but all these inferences are tentative ones only. This country is digging out a future of its own; it is getting out of the old rut, and going along at a pace which was not before calculated upon. New necessities are coming up, and it is devising new ways of meeting them. Old standards and rules of action do not count for as much as they formerly did. The country is in far better condition than would have been supposed prior to this gold movement. Manufacturers are preparing to plunge into greater activity during the last half of the year. Carefully culled and considered reports from various industries clearly show that there is no surplus of stocks anywhere. The iron trade is putting itself in shape for another year of great activity. Steel-makers are looking for a very heavy demand this fall. Railroad construction for the half-year has exceeded sixteen hundred miles, the lowest in our railroad-building history, and it is felt that the last half-year will not see the construction of much more than three thousand miles. Lumber manufacturers are preparing to do a big business in the autumn. Prices are slightly hardening in wholesale centres. Architects and builders will now rush through work without further delay. Miners throughout the country are exceeding last year's output of coal. Manufacturers are generally busy, especially those engaged in the turning out of steam-engines, boilers, pumps, forges and equipments for machine-shops and railroad-shops. There is also a heavy demand for equipments for foundries, saw-mills, wagon-factories, planing-mills and shops engaged in supplying material necessary for houses and shop-construction. These are certainly good features. Whatever the condition of the money markets may be, the rank and file of the people are hurrying along, attending to their own business, making money, paying their debts, planning out new work, investing their savings wisely, cultivating land industriously, and pushing ahead in every possible avenue of activity as though there were no Baring's to fail and no more commercial disasters to frighten them. The strongest and most encouraging feature of the present industrial activity is the activity of the little people with small capital starting up in the highways and by-ways and at the country cross-roads, making and finding business where it was not before sought.

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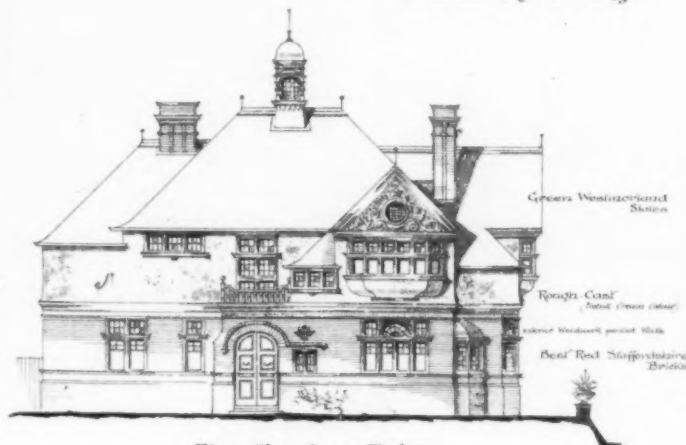






STORE & OFFICE
BUILDING FOR F. G.
HAMER ESQ. KEARNEY NED
FRANK BAILEY & FARMER ARCHTS 90

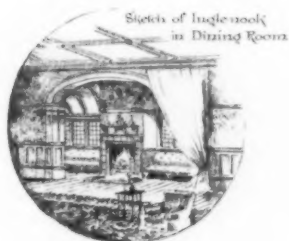
Proposed New Rectory House
Hastings, Eng.



Elevation facing Drive



Elevation facing Sea



Sketch of Inglewood
in Dining Room



Ground Plan

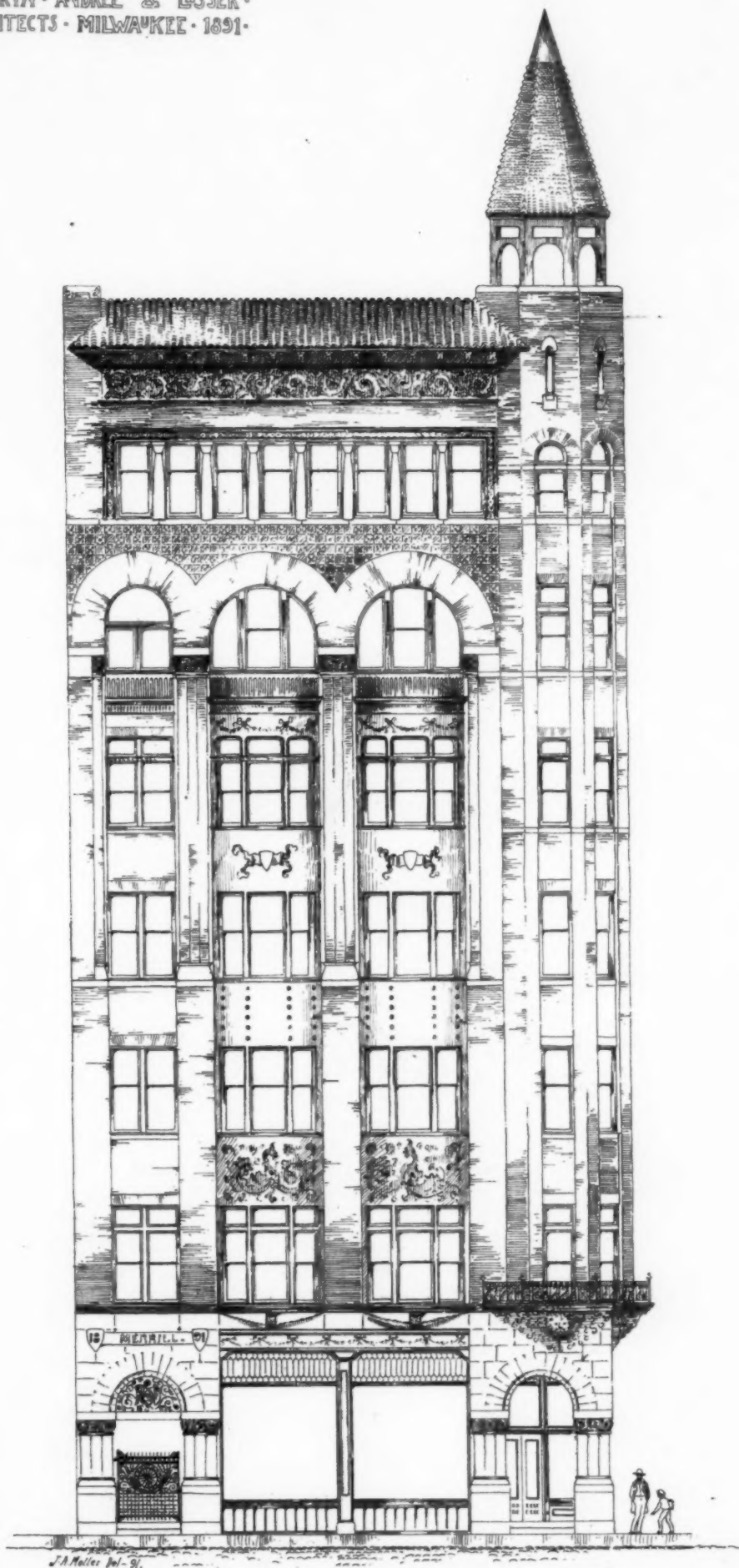
A Lowther-Fortress' Architect
& Pemberton Square — Boston, Mass.



Chamber Plan

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