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A PHILADELPHIA judge has devised a method of dealing with walking-delegates and other mischief-makers which may profitably be borne in mind. A certain Emil Suvers was brought before him the other day for a breach of the peace, consisting in hanging about a furniture-factory in which there had been a strike, and hooting and yelling "scab" at the non-union workmen who had been employed. It was proved that Suvers received high pay from the Cabinet-workers' Union for services of this sort, and Judge Finletter, of the Quarter Sessions, after expressing with considerable emphasis his opinion of the foreign schemers who try to shut every one except their own constituents out of honest employment, ordered Suvers to find bonds in the sum of one thousand dollars for good behavior for one year, and informed him that interference with other people would cause the forfeiture of his bond.

A VERY curious case was tried in New York not long ago. Under the New York law, any person who wishes to excavate beside an existing building in such a way as to endanger the latter is obliged to ask the owner of the building for permission to shore up his walls. He may refuse permission if he chooses, but, if he refuses, he cannot maintain an action at law for damages if his walls fall down; and, if he chooses to shore them himself, he must pay the cost, instead of having it paid for him. A firm of clothing-dealers pulled down their store on Broadway, which immediately adjoins a store belonging to a man named Ketcham. The clothing-dealers, Messrs. Cohn & Newman, are said to have asked permission of Ketcham to shore his walls. At all events, they did shore them, and were proceeding with their own building when a suit for trespass was brought against them by Ketcham, who alleged that the shoring was done without his consent. The law of trespass being very peculiar, it would hardly be possible for a layman to say just what the penalty ought to be for running, uninvited, on a neighbor's land, and putting up braces to keep his house from falling down; but the jury estimated the injury at five thousand dollars.

IT is proposed to make, at the Chicago Exhibition of next year, a special exhibit of roadways, pavements and road-making methods and materials, for the benefit of the myriads of our own intelligent countrymen who will visit the exhibition, and who have never seen a decent road, and have no conception of the method of making one. If the Exhibition should contain nothing but this, it would be worth holding, for it is no exaggeration to say that the question of roads is the

most important one to be solved in this country. The people who live in our paved cities have no conception of the badness of the principal roads over nine-tenths of this country. At the time of the war a story was current of a regiment of soldiers, who were discovered marching through a street in Washington, with their heads just visible above the mud. One of the bystanders remarked that the soldiers had done well to secure such a good footing, as a man marching in a Washington street was usually completely submerged; but the soldiers explained that there was another regiment underneath them, and they were walking on their comrades' heads! Since the war, Washington has come to be a well-paved city, but south and west of it a decent road is hardly known, and where in France, Germany, Italy, England or India the poor farmers and traders, at all seasons of the year, carry their goods to market in light wagons, drawn easily and rapidly over a smooth, hard road, the much richer and more intelligent Ohio or Virginia farmers, during certain months, must stay at home, from the absolute impossibility of navigating the hopeless sloughs which do duty for country roads.

NOR are these horse and wagon-destroying longitudinal bogs by any means cheap, either in the beginning or the end.

Enough labor is expended upon our roads to make and maintain, in most of our States, good, hard and smooth ones, if the labor could be properly directed; but it is rare to find any scientific knowledge of road-making whatever in rural communities, and we have no Royal Commissioners, or State Engineers of Roads and Bridges, to specify how the work shall be done, and see that it is done properly. In most professional work, the unskilled layman is constantly surprised with the results which the expert can obtain with simple, and perhaps novel means; and in no branch of professional work is the enormous value of science and skill more conspicuous than in road-making. To one who knows how to use them, nearly all materials can be turned to good account. We have seen a smooth and firm road of considerable length, made through a soil consisting of soft sand, by covering the sand with scraps of leather, which could be had in abundance from the neighboring shoe-factories, and many curious materials can be employed for such purposes, which the plodding gravel-spreader would never think of, and would not know how to use if he did think of them. Probably the most crying want of our roads is drainage. It is the tradition that a ditch must be made on each side of a road, to catch surface water; but the idea of removing water from the road-bed, and intercepting that which would soak from the sides into it, by means of a deep drain under each side of the road itself, rarely occurs to highway committees, or road commissioners, and thousands, perhaps millions, of dollars are annually spent in macadamizing streets with thick layers of broken stone, which are nearly saturated with standing water after every rain; and, of course, are then little better than pulp, which every wheel breaks through. However, we do not propose to write an essay on road-making, but only to say that every mile of hard, smooth road, good in summer, spring and winter, means many thousand dollars in the pockets of those who use it, and he who, at Chicago or anywhere else, can interest the public in learning how to build such roads, will be a national benefactor. If we might offer a modest suggestion, it would be to arrange for a cheap reprint of General Gillmore's little book on Roads, to be scattered broadcast over the country. Many country journals would gladly publish at length, as a *feuilleton*, a work so practical and sensible, on a subject of such vital importance to their readers, and the value of the ideas which it would spread would be incalculable.

THE *Builder*, speaking of the model of the Parthenon, which has just been set up in the Metropolitan Museum of Art in New York, as one of the most important parts of the collection formed by the trustees of the Willard bequest, makes some rather severe criticisms upon it. The gravest fault which it finds is the exaggeration of the entasis of the columns. In the actual building the variation from a straight line is about half an inch in a height of thirty-one feet; but the *Builder*, judging from the photographs of the model, says that in this the swelling of the entasis must be at the rate of four or five inches in thirty-one feet. It bases this estimate, apparently, on the fact that, as it says, the entasis is not visible to the eye on the actual building, while the photograph of the model, in which the height of the columns is reduced to about

three and one-half inches, shows it plainly. What may be the actual state of the case we cannot say, but, whether the entasis of the real Parthenon columns is visible to the eye on the building itself or not, it is certainly visible in the photographs of it. The ordinary stereoscopic or lantern-slide views of the Parthenon, in which the columns are only about two inches high, show the entasis distinctly, as any one can prove to himself by applying a straight-edge to the photograph; and if nothing more than this appears on the photographs of the New York model, it would be very rash to assume from it that the curve had been made eight or ten times too pronounced. However, Penrose's measurements are accessible to all architectural students, and perhaps Professor Ware's pupils at Columbia may find it edifying to make an exhaustive examination, tape in hand, of M. Chipiez's work. Another fault pointed out by the *Builder*, which is probably due rather to a mistake in setting-up the model than to what it calls "the light-hearted indifference of French archaeologists to accuracy," is that, in the model, the metope sculptures of the east front are put under the pediment group of the west front, and *vice versa*. The *Builder* says, with unnecessary sarcasm, that information as to the proper position of the sculptures "is easily accessible at the British Museum," but it presumes that "it could not be supposed possible that a French *savant* could learn anything from English sources." As photographs, engravings and restorations of all sorts, large and small, of all sides of the Parthenon, are to be found by hundreds in French, German and American libraries, it would hardly be necessary for M. Chipiez to visit the British Museum for the "information" required for setting the metopes in their proper places, if he had any antipathy to doing so; and the English share, aesthetically speaking, in the Elgin marbles is so microscopic that the most violent hater of perfidious Albion would scarcely be able to discover it.

IT seems that M. Chipiez has replied to the criticisms of the *Builder*, but he does not much improve his side of the case by his defence of it. As to the exaggeration of the entasis of the columns, he says that the entasis was taken from a photograph, and is no greater than was shown in the photograph; but the *Builder* says that, owing to the decay of the upper part of the columns, a photograph of them at first sight produces the effect of a considerable entasis, which, however, does not really exist. A model of the Parthenon in the British Museum, perhaps also taken from photographs, shows a similar exaggeration of the entasis; but the *Builder* says that on a large photograph, showing the columns six inches high, a straight edge, applied to the arrises which still remain nearly perfect, shows their lines absolutely straight. It seems not impossible that M. Chipiez may have been deceived in some such way as is here suggested into giving too much entasis to his columns; but we are not ourselves quite satisfied with the *Builder's* explanation. In the photographs that we have seen of the Parthenon, it seemed to be quite easy to distinguish between the weathered parts of the shafts and those with arrises still sharp, and the unchanged arrises have appeared to us distinctly curved beside a straight-edge. Moreover, in photographs of the Propylæa, which show columns in better preservation than those of the Parthenon, a similar curvature is visible; while photographs of well-preserved antique Corinthian columns, like those of Baalbek, show the entasis very accurately. However, M. Chipiez acknowledges that he profiled the columns in his model from photographs, instead of Penrose's measurements, and this acknowledgment is in some degree an admission that the *Builder's* criticisms are justified. As to the arrangement of the metope figures, M. Chipiez believes that any mistakes which exist were probably made in putting the model together in New York, and this is very likely to be the case.

AMERICAN architecture, like everything else American, has a perennial interest, not only for the French and Germans, but for our cousins, the English, and, although we cannot help smiling at what appear to us the naive remarks which are made about it on the other side of the water, we cannot say that our work is not appreciated there. Not long ago, Mr. Brodie, who had spent some months in the United States, read a paper before the Architectural Association in London on "Frame Houses." It must be confessed that Mr. Brodie's experience of American frame houses does not appear to have been very extensive, and he acknowledged that he supplemented it by reference to Palliser's specifica-

tions. Speaking of the plan of the ordinary American frame building, he explained that, besides wine and beer cellars, the basement usually accommodated a heating-chamber, containing either a boiler for steam, or a furnace for hot-air heating. His audience appeared to take the "wine and beer cellars," of which probably not one frame house in five thousand in this country contains the slightest trace, as a matter of course, but the idea of the furnace and the "heating-chamber" puzzled them greatly. Mr. Brodie, to illustrate this singular contrivance, had a sheet of pictures of hot-air furnaces, and also of steam radiators, cut from advertising circulars, hung on the wall of the room; but, as he said, "it would take an engineer to fully explain" them. During the discussion which followed, Mr. Brodie remarked that the thermometer sometimes fell to 40° below zero in the "States," and one of the audience asked him "how it felt in bed at three or four o'clock in the morning with such temperature?" or, as he said, "In other words, was the heating-apparatus kept going all night, so as to keep up the necessary warmth?" To the American reader, accustomed to houses warmed by furnace fires which are never allowed to go out from October to April, such a question appears ludicrous, but it is quite characteristic of the incapacity of the English to understand the American climate, and it is, at least, not so bad as the piece of information volunteered, on a similar occasion, by an auditor who deplored the American custom of heating by steam radiators, because "it was found that if a cold draught of air struck on hot steam-pipes, they were only too apt to go to pieces."

MR. BRODIE had also ascertained, probably from Palliser, that the floors of all the best rooms in American houses are "pugged," or deafened, and had discovered from his own observation that "wood laths are now rarely used." He had never seen any wooden laths at all, and explained that plastering was put on wire or metal lath. It is curious to find an Englishman informing his hearers that flat roofs in the "States" are "mostly covered with tin," which, as he explains, is really tinned sheet-iron. While it is perfectly allowable for an English architect to prefer lead for such purposes, one would think that, in the island where nearly all the roofing-tin used in the world is manufactured, it would hardly be necessary to describe it at length. The plumbing of American houses Mr. Brodie found to be well and thoroughly done; but one of his auditors criticised the omission of the common English "disconnecting chamber," forgetting, as usual, that the circulation of air between the main drain and the house-wastes which this disconnecting chamber provides would keep both main and branch pipes frozen for a large part of every year. Mr. Farrow, who made some sensible and complimentary remarks about American architecture, said, what must be true, that the American frame house was, as to construction, nothing more than the common English house of the beginning of the last century. Every one who has examined our frame houses of the last half of the seventeenth and first half of the eighteenth centuries must have been convinced that our Puritan ancestors did not invent them. There is no sign of novelty or development about the construction. On the contrary, the studs, corner-posts and braces, cornices and clapboards, or shingles, are used in the same way in the houses of the early colonists from Maine to Virginia, and it is plain that all these colonists must have been perfectly familiar with structures of the same sort at home. Mr. Farrow, in confirmation of this view, said that there were plenty of such houses still left in England, and he could show his hearers an example of the same construction within two miles of Conduit Street. In addition to the construction, however, the square two-story frame houses, with low "hopper" roofs, of our earliest architectural period must have had their prototypes in England in regard to plan and general aspect; and it would be curious to know whether the "gambrel roof," or the "story-and-a-half" construction, gambrel-shaped on the south side, which was usually the front, and showing a long, uniform pitch on the north, which succeeded the more stately, but colder, two-story pattern, was also copied from English or Dutch originals, or was evolved to meet the exigencies of our climate. With the help of Mr. Farrow, an American architect familiar with the architectural history of our Colonial period could add to that history a very interesting chapter in relation to the transatlantic sources from which the architecture of that period was derived; and we commend the undertaking to any one who has time and inclination for utilizing a visit to England and Holland for such purposes.

BYZANTINE ART.¹

Fig. 1. Capital from Saint Sophia.



Fig. 2. Capital from San Vitale, Ravenna.

AS Byzantine art originated at the moment of the downfall of the Roman Empire, it was long looked upon in later times as a decadent style; it is, however, a transitional style of a character which is unique in history and which has exerted a considerable influence. Owing to its exceptional situation at the entrance to the Bosphorus, that is, on the dividing line between Europe and Asia, ancient Byzantium, newly christened Constantinople, formed a connecting link between the arts of the East and the West. The traditions of

provinces, fine examples are also found in the islands of the Mediterranean, in Asia Minor, Armenia, central Syria, and even in Sicily and certain Italian cities, notably Ravenna and Venice.

Down to the fifth century the style was unsettled and presented a rather poorly-balanced mixture of corrupted Greek, Roman and Syrian forms; the productions of this period are ordinarily termed Greco-Byzantine. But under Justinian, when Christianity had become triumphant, Byzantine art is seen asserting itself in the construction and decoration of the basilica of Saint Sophia, where it acquired at a single stroke, as it were, its most perfect expression. (See *American Architect* for June 21, 1890.)

Borrowing from Rome its vaulting system, its massive brick masonry faced with marble, and from Asia its pierced domes, its enamel mosaics, and its glass-work, Byzantium subjected these various elements to radical modifications, evolving therefrom new ideas of constructive stability and original principles of decoration. In architecture, pendentives were invented to connect the circular dome with the lower supports; and the exterior abutments were converted into narrow but thick piers, representing the mediæval buttresses. The semicircular arches, as well as the barrel or groined vaulting, which had until then always had the springing of their summers plumb with the supporting piers or columns, began now to jut over considerably, — a disposition resulting from a rational constructive principle, and not from any necessity of economizing materials, as was the case in certain Latin basilicas. For the first time we find arches of small dimensions carved in trefoils and the *œils-de-bœuf* in quatrefoils.

The ancient orders were not simply disfigured as in the Latin period, they were wholly transformed; their function no longer existed under the same conditions. Thus entablatures disappeared, figuring merely as string-courses embellished with

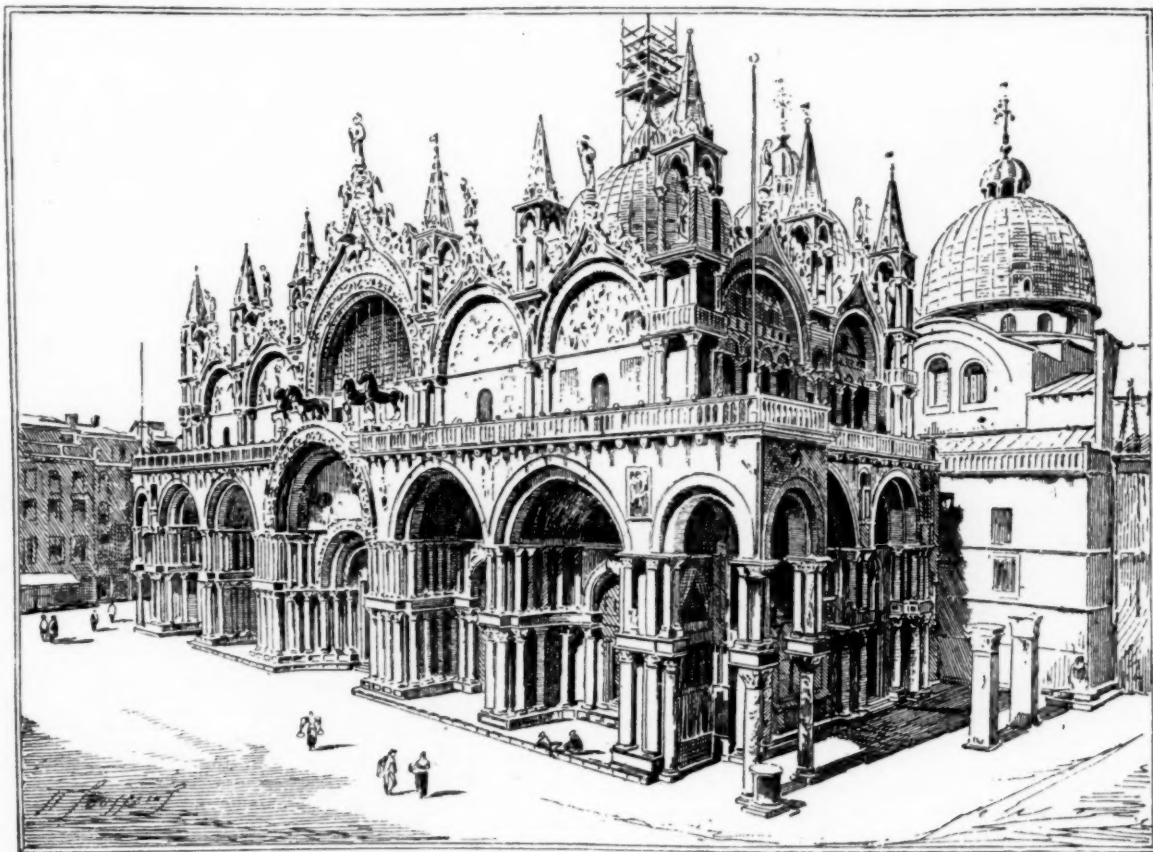


Fig. 3. View of St. Mark's, Venice.

Assyria, of Persia, and even of India blended there with those of Greece and Rome; and yet, out of elements of such wide diversity was constituted one of the most interesting styles for the student. Though its earliest productions are to be sought in the capital of the Eastern Empire and in neighboring

mouldings of flat profiles; there was no longer any excuse for the maintenance of friezes or even of architraves, for the arch was universally employed. The thin, useless abacus of the Roman capitals was replaced by a broad, powerful one, which received directly the springing of the arches or vaults. The vase of the capital adopted the inverted pyramidal form common with the Sassanian Persians, being massive and in

¹ From the French of H. Mayeux, in Planat's *Encyclopédie de l'Architecture et de la Construction*.

harmony with the general effect (Figs. 1, 2). The superimposed orders now appeared as simple columns with a square drum as their only intermediary. The boldness of the construction was carried so far that a single column was made to bear a group of five others, as at the angles of the façade of Saint Mark's at Venice (Fig. 3).

In the architectural details we detect other transformations; the cornice modillions disappear, being replaced by corbels having a better defined office of support. The denticles are regularly spaced, the eggs are rounded into pearls, interlaced and plaited patterns become very common, and the geometrical designs begin to exhibit clearly that tendency toward complication which Arabic art, schooled in the Byzantine, essayed to carry to its farthest limit. Lastly, in addition to the facings of variegated marbles disposed in cleverly arranged compartments, mosaics with a gold background under transparent enamel were introduced. These played an unprecedented part in architecture, imparting a mysterious brilliancy and glow to the ornamentation. Decorative sculpture, on the other hand, underwent modification in one way: whether owing to the want of any direct imitation of nature or to the absence of such original intention, the elements derived from the flora and fauna lacked any life-like expression and acquired a typical accent. The acanthus, ivy, vine and grains, which were still copied from nature in the bas-reliefs of the Roman



Fig. 4. Sarcophagus at Ravenna.



Fig. 5. Angel from a Diptych (British Museum).

period, lost their modelling, being made so flat as to indicate merely the carved outlines of the patterns, which rose abruptly in a prominent relief. Sometimes the plain part of the background swelled out in a manner to set off the flat decorative details (Fig. 4). The running floral ornamentation was either very thick or very slender, but ordinarily curled around in multifold spirals interspersed with cruciferous symbols, chalices, peacocks, doves, mystic stags and Christian emblems. The palmettes spread out geometrically, exhibiting only the outlines, and the circle was assigned a rôle of unusual importance in all the compositions. The stone or marble *claustra* with curvilinear designs, contrasted with the rectilinear *plutea* of the Romans, furnish evidence of this fact.

The reproduction of the human figure in sculpture had already greatly degenerated under the last emperors; it is rarely introduced into Byzantine sculpture, and when it does appear is generally awkward and stiff; it is of marked interest hardly anywhere except on consular diptychs in ivory (Fig. 5). In painting, and especially in mosaics, it, however, makes up in size for what it lacks in lifelikeness, and, with the aid of color, the artist often succeeds in giving it a very imposing character. Executed on a broad scale, on a conventional gold background, it is almost devoid of modelling, but the effect is obtained by the vigorous treatment of the outlines of the form. Although these figures are often represented in the most improbable conditions, they are nevertheless interesting and even

impressive. Gigantic Christs seated on superb thrones, or in half-figure in the act of benediction, are depicted at the centre of the dome, while the field of the dome and the transverse ribs are adorned with processions of saints, apostles, and worshippers, broken here and there by stalks of palms or by



Fig. 6. From the Cathedral of Monreale.

vertical inscriptions, and in bands one above the other or in horizontal zones. Six-winged cherubim, or apocalyptic animals usually fill in the triangles of the pendentives. The basilicas of Rome, Venice, Ravenna, and Monreale exhibit remarkable examples of such decoration (Fig. 6).

The same features and the same defects are naturally encountered in the illuminated manuscripts of the Byzantine period; their decorative borders and storied initials offer a very curious subject for study. Among the secondary arts that attained an important development at this time, the goldsmith's ranks first. Never had such luxury been displayed in the design and composition of crowns, diadems, necklaces and earrings (Fig. 7); and the imperial table-couches (*triclinium d'or*) the vases and cups of state, the covers of manuscripts, etc., were of extraordinary richness. The peculiar characteristic of these sumptuous productions is the profusion of pearls, cameos and intaglios, the precious stones, polished, but uncut, and disposed in quincunx order, as well as the *cloisonné* enamels of Persian origin with which the metal portions are in part covered. The *pala doro* of San Marco at Venice exhibits one of the rare and rich specimens of Byzantine gold work.

Judging from the mosaics and paintings of the manuscripts, the furniture and vestments must have been of great magnifi-



Fig. 7. Cross of Justin II (Vatican).

cence at the court of the Eastern Empire. Thrones, altars and stools seem to have been incrustated with ivory, mother of pearl and fine woods, inlaid with precious metals studded with precious stones. Embroidered cushions, covers and dorsels, woven of gold and silver, usually accompanied them. Oriental splendor reappears in the Byzantine court costumes. The imperial dalmaticas, the tunics and cloaks of official personages are no longer bordered, as in the Roman period, with simple *limbi*, but with gold and silver embroideries, likewise studded with precious stones, pearls and spangles. In spite of the exaggerated sumptuousness of these garments they must have been extremely ornamental, as the mosaics of Ravenna testify.

The Byzantine style left deep traces in the Western arts which were visible down to the twelfth century; in France, in the Romanesque productions of Provence, Angoumois and Périgord; in Germany, in the Rhenish provinces; and during the Lombard period, in Italy. It pointed the way to the Arabs, in Egypt, Spain and Persia; India was indebted to it for certain architectural elements; and lastly, Russia and the monasteries of Athos still perpetuate its traditions, though wholly decadent, it is true.

The historians of the Crusades describe in glowing terms the splendors of the court of Alexius Comnenus, and the palaces, fortresses, baths and circuses which, together with the churches, made Constantinople an exceptional city. But in the thirteenth century, after intercourse had been established with Venice, Byzantine art came under Italian influence, while at the same time Persian art, then in full flower, must have modified it perceptibly. Artistic remains of the greatest interest might have been preserved, had not the Turks, in taking possession of the city in 1453, completely destroyed most of the monuments and works of art of this remarkable period.

H. MATEUX.

SCALES AND IMBRICATIONS.¹—I.

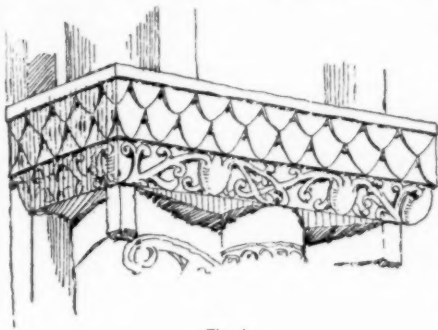


Fig. 1.

THOSE ornaments composed of regular plates overlapping each other, which are called "scales" (Fig. 1, abacus of a Roman capital in the Musée de Cluny) received their inspiration directly from nature, as feathers, waves, roses, palm-leaves, etc.

The most ancient records point them out as copies or interpretations of the many models before us in daily life, either in the animal or vegetable kingdom. Thus fish-skin was used as the basis of decoration for a cloth found in a tomb in the valley of the Nile (Fig. 2). There were also small scaly leaves which surround the bulb or buds of certain plants which occupied, on account of their regularity, an important place in the ornamentation of the Egyptians, and were also sometimes used by the Assyrians, Figure 3 showing an enamelled brick from the palace of Asshur-bani-pal. Although artists seem to have borrowed almost at the same time from these two sources, it is really to the imitation of the scales which cover the fish's skin and form its beautiful, flexible and shining robe, enamelling the water with changing reflections, that the origin of this elementary style of ornamentation must be attributed. From observation of the structure of this envelope the conception arose: at first the idea was only put in practice in constructing shelters and roofs; next it was carried out in military equipments in order to obtain armor. To avoid wounds and to ward off blows, the warrior thought to screen himself with a carapace which did not impede his movements, and which was flexible and resisting at the same time, like the tough integument of the great vertebrate aquatic animals,

"The body of which is armed with yellowing scales."

The warrior copied the Creator, and adapted to his own use the natural defense of a living creature with whom he sometimes had to

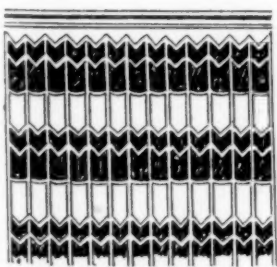


Fig. 2.

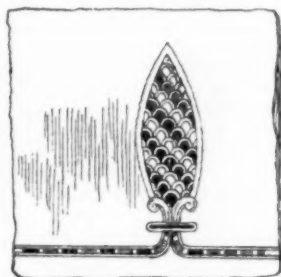


Fig. 3.

fight, and whose advantages he appreciated. Thus it was that, after a few experiments and improvements, he came to wear the long leather clothing, a little full, trimmed with bronze scales sewed over the other. Such was the clothing worn by Rameses Meiamoun

¹ From the *Revue des Arts décoratifs*.

in the battle against the Ketas people (Picture in the Ramesseion). Later on, this clothing was imitated by the Greeks for the cuirass of the phalangite, by the Romans for the "lorica squamata" of the standard-bearers, etc.

Then the decorators took hold of the thing, and appropriated it to themselves in a most wonderful fashion. Out of it they created a type, which was not only often used but also very quickly applied to various things. Would that they might have sought for their inspiration from nature exclusively; would that they might have seen

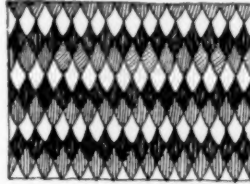


Fig. 4.

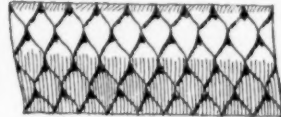


Fig. 5.

fit to ingeniously imitate the armor worn by the heroes, pharaohs and gods of their country, as illustrated by this fabric, (Fig. 4), taken from the royal tomb of Biban-el-Smoluk. During the time that the papyrus and lotus styles remained indigenous to the country, the scales, so called, brought from the East, were more commonly used elsewhere, and especially in Greece, not only for the covering of roofs, (as for instance the small cupola of the choragic monument of Lysicrates) but for clothing, vases and little things as well. This design was abundantly used in Rome for every kind of thing, in almost all of the art industries as well as in architecture. Thenceforth this ornament, the origin of which was as it were forgotten, was designated by other names, on account of its similarity in shape and aspect to those of other things. Therefore the decorative disposition of scales made of slightly thick or convex plates,

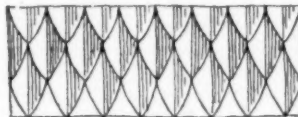


Fig. 6.

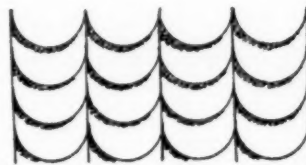


Fig. 7.

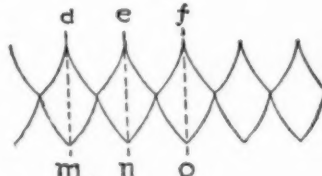


Fig. 8.

giving the appearance of hollow tiles of cover-joints or ridge-tile imbrices. So we have come to call "imbricated" every object covered with scales, and these specially were called imbrications (*imbricationes*). Later, on account of the disposition of the scales, the term "*opus pavonaceum*," or "*tectum pavonaceum*" was sometimes applied to them; because, when they were ornamented with small, graceful designs, they presented something of the appearance of the feathers of the peacock's tail.

From all these different designations, two have reached us and are used most often—scales and imbrications. Some authors, however make a distinction between the two: they call scales the flat ornamentation, (Fig. 5) and imbrications (Fig. 6) the same ornamentations, only modelled, having a real projection, and showing distinctly the overlapping as of the tiles on a roof. As the ornaments remain essentially identical in both cases, even considering the dispositions, modifications or transformations they may have undergone, we think it would be preferable to designate them by one name only, "scales." By so doing we should have a unique appellation which would have the merit of explaining the thing perfectly, and at the same time (and this is very important) of keeping its true origin in remembrance.

Scales, with but very few exceptions, preserve in decoration the disposition and symmetrical shape they have in nature; that is, their contour is the same on each side of a middle axis: all of them are, on the same line, tangentially juxtaposed like a festoon; and they are in ranks, either crossed or one above another. They are called crossed (Fig. 8), when the tangential points *d e f*, of the scales of the first rank correspond to the middle points *m n o* of those of the second rank: and superposed (Fig. 9), when the designs of the second rank are placed directly above those of the first. Of the

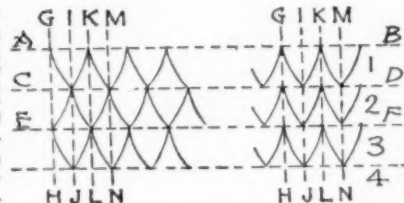


Fig. 9.

two distributions, the arrangement in crossed scales is much the more graceful, therefore more used.

In both cases, in order to outline a design in the shortest and most accurate way, the surface to be ornamented must be sketched-in with all the lines required for the development of the symmetrical ornament. This auxiliary sketching-in should be composed, first, of horizontal parallel lines (Fig. 9), equidistant according to the distance which should be left between the extremities of the scales.

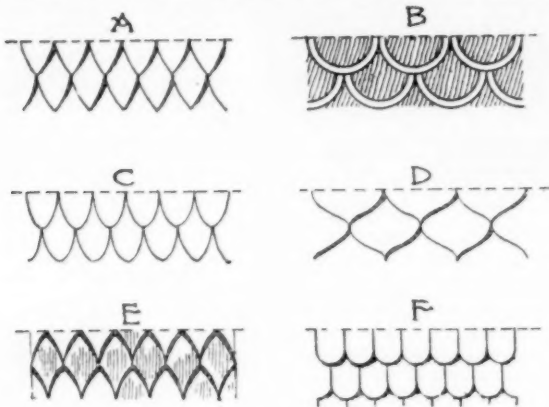


Fig. 10.

These lines, *A B, C D, E F*, etc., are the guide for the remainder of the plan, and at the same time indicate how many ranks are to be made. These straight horizontal lines must be cut by other perpendicular lines, *G H, I J, K L, M N*, etc., indicating half of the width of the scales, and at the same time the axis of symmetry of the design and the points of tangential juxtaposition will be obtained. Indeed, when the scales are crossed, the verticals of the odd ranks 1 3 5 are the axes and at the same time indicate on the even ranks the lines of separation of each scale 2 4 6; and when they are superposed the vertical lines remain, two by two, *G H* and *M L* as



Fig. 11.

Fig. 13.

lines of separation, and *I J* and *M N* as middle lines. On this checkered surface it only remains to trace by hand, or with a compass (for this is really geometrical), the curves adopted for the design.

These curves are of several kinds, showing always the cycloid or angular types of nature; they are (Fig. 10), either ogival, as *A*, or semicircular, *B*, or elliptical *C*, or bracketted, *D*. Sometimes indeed, in order to create new varieties without changing the appearance too much, the decorator replaces these generally adopted curves either by similar curves traced in the opposite way, as *E*, or by axes extended with a straight line, *F*. The sketch too, at first horizontal, is sometimes vertically placed, in order to accentuate



Fig. 12.

some particular shape of scale; sometimes in the fashion of a moulding. This disposition was long ago adopted for ornamenting the torus and mouldings, and was also used as a base for the twisted leaves and laurelled imbrications so often used in the ancient arts (Fig. 11). Sometimes also for the same reasons, or for mere fancy, the outline is made obliquely.

Finally, when instead of being distributed to follow straight surfaces, the scales are fastened upon curved surfaces, as for instance, the roofs of turrets, or on curvilinear surfaces like a cup, the horizontal lines of the outline become naturally concentric curves, and the vertical lines radii of the curve of direction. Therefore, in this way the scales decrease in width in proportion as they approach the centre, and in order that the design may look perfectly graceful, the proportions must be re-established; that is, the height of the scales must diminish at the same time that the width is reduced. The numerous pieces edged or covered with



Fig. 14.

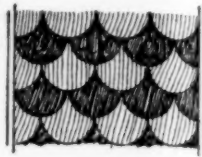


Fig. 15.

this light ornamentation, as Grecian vases, Persian dishes or Japanese cups (Fig. 12) are full of charm and elegance. Whether the scales are indicated by small lines, or projected by bands and delicate decorations shown later on, the effect is the same.

Under other circumstances, the artist makes use of only one line of the scale, placed either one after the other, like a festooned border (Fig. 13) or row on row, in order to furnish a band or line of separation, as on the moulding, Figure 14, taken from a mural fountain in sandstone composed by M. Keller-Leuzinger.

Scale ornamentation, being thus constituted by the almost servile imitation of the scales which cover the fish or protect the bulb, has been used by almost every people, and at all times by a great number of industries. The roofer in terra-cotta, wood or slate, the sculptor, the cabinet-maker and joiner, the zinc and copper worker, the jeweller—in short, all those who, with a thin, flat, curved body, can cover surfaces by superposition of the material used, this elementary type of ornament keeps the coquettish, brilliant and protective aspect of the natural decoration whence it comes. On domes,

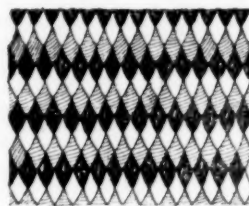


Fig. 16.

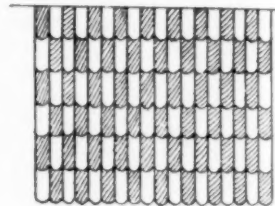


Fig. 17.

vanes, slender roofs, shafts of columns, capitals, pavilions and kiosques, it is a casing on which the slant of daylight produces effects sometimes moderate, sometimes powerful, according to the thickness of the relief, but always remarkable for the air of fragility and elegance given to the object. On reliquaries, ewers, shrines, armor, chandeliers, etc., it is a protection, a defensive envelope, the curved pieces of which are of changing colors, fine shades and sparkling reflections which increase its richness and brilliancy. Everywhere the substance takes on an additional amount of color and flexibility, without overloading. This was thoroughly understood by the architects of the Middle Ages, and especially by those of the Renaissance. In the products of those arts and industries where relief does not exist, as in cloths, ceramics, mosaics, book-bindings, flat stone pavements and paintings, scale-decoration is well displayed, and that too, from the remotest times. Remarkable samples are to be found among those primitive people, the Egyptians; in the far East, Greece, Rome, Byzantium, West, North, South—everywhere the same process has been used to distinguish the scales one from another. At first it was one or several bands of separation that we shall find later on, with their graceful results. Almost at the same time, some one conceived the idea of putting every scale in a conspicuous position, almost in relief, by means of color. Some of these compositions show tones one above the other, or tones on tones, others with polychromatic



Fig. 18.

effects more or less sharply defined. The different methods used in disposing the coloring are as follows: (1) Colors are alternated by rank, as on this band with two tones (Fig. 15) and on this Egyptian stuff with three ranks of different color (Fig. 16); (2) Colors are alternated by scales and by rank, producing a kind of checker-board with a very queer effect, as on this other Egyptian blue and yellow stuff (Fig. 17); (3) Scales can be found all of same color, pale

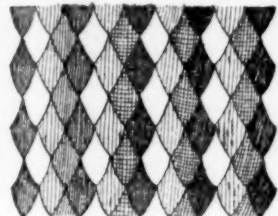


Fig. 19.

blue, water green, etc., the edges of which are bevelled, and the middle accentuated by a deeper color, as may be observed on some fishes. It is a mode of decoration very much used for backgrounds and borders, and especially for backgrounds of Persian ceramics, as indicated (Fig. 18); (4) Scales are alternated in color in the same rank; and the ranks are also alternated as example (Fig. 19); (5) Finally one can see also combinations such as the antique flat stone pavements of the Thermae of Caracalla (Fig. 20) in which scales are divided each in two different colors, and alternately placed one over the other. Although it divides the design, this decoration does not fail for lack of charm.

The important part which color plays in this ornamentation is welcome and necessary in order to introduce an element of variety and richness; so much so, that hardly had the ancient architects restored, and as it were discovered anew the system of roofing by overlapping scales, than they at once tried to add to the already rich effects of the relief, those coming from polychromy. Thus they adorned their first decoration with a second one in mosaic, sparkling and coquettish. This application began little by little in the thirteenth century, on the primitive roofs covered with slate, thanks to the fact that the scale of schist has a different reflection according to the way it is presented to the sharp light of the sun. This combination furnished them at once with borders, ways of intercalation or separation, geometrical net-works, which, although in two tones only, still gave numerous and varied designs.

The few examples here included are amply sufficient to show what can be obtained on a net-work of scales; the drawings are but little different from those formed on the rectangular net-work of enamelled

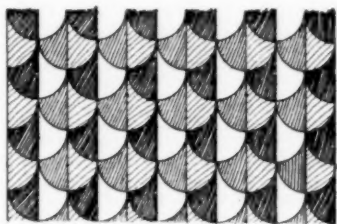


Fig. 20.

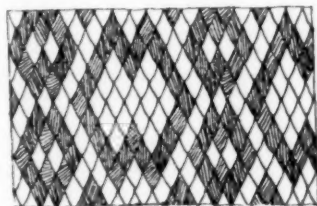
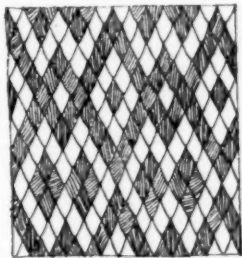
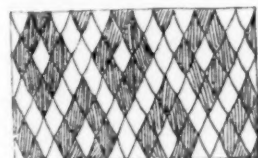
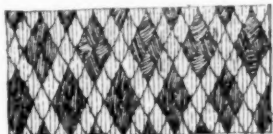
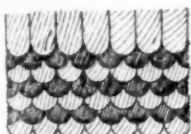


Fig. 21.

tiles which covered and still decorate, with too delicate grace sometimes, cathedrals, hotels, villas and beautiful embroideries. The number of colors alone makes the difference. But in their turn come the enamelled tiles, chiselled according to the several shapes

of scales, and with sharp, simple strong tones. The richness of these roofs became uniform at the same time that they were enriched by the elegant carvings.

L. PASSEPORT.

(To be continued.)



COLLAPSE OF BUILDING SOCIETIES AND THE DEPRESSION OF BUILDING INTERESTS. — NEW BUILDING FOR THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK. — THE NEW EDITION OF FERGUSSON'S "Modern Architecture."

SYDNEY, N. S. W.

A LONG period of commercial depression in Sydney and Melbourne has culminated, during the last few months, in the collapse of nearly all the Building Societies and kindred institutions in these cities.

It is evident from what is now revealed, that many of them existed solely for the purpose of enriching the promoters at the expense of the credulous people, who, lured by bogus balance-sheets and promises of high rates of interest, were led to entrust their money to the care of utterly unprincipled scoundrels, without capital or conscience, and apparently with very little business capacity; for notwithstanding the ruinous interest charged to the unfortunate borrowers, the securities have in most instances been found to be absurdly overvalued. That most of these societies have been blotted out of existence and the rest shown in their true colors will have a wholesome effect on the community. Of course the immediate results will be ruinous to many of the investors; but the lesson though sharp cannot fail to be salutary. By buying and cutting up into fifteen and twenty foot allotments all the available ground about the cities, and by holding out the usual baits of "easy terms and assistance to build" these institutions have forced a mushroom growth of miles upon miles of hideous insanitary tenements, "the plastered and whitened sepulchres" of our suburbs, which, being inhabited principally by poorer classes who are compelled to take what they can get, tend to depreciate the rental value of all the other properties in the immediate neighborhood. It is, therefore, not to be wondered at, that capitalists are unwilling to invest money in any building speculation. Good houses, too, with the ground on which they stand, may be purchased, on account of the general depression, for less than the actual cost of the building. This being so, it will easily be inferred that business in the architects' offices is not too lively.

The competition drawings for the new Government Asylum for the Insane near Goulburn, and those for the new bridge over Darling Harbor, have been sent in and are now being judged; the adjudicators appointed in the former case being the Government Architect, Mr. Horbury Hunt, President of the Institute of Architects of New South Wales, and the Government Medical Adviser, Doctor Manning. The number of drawings for the Asylum is said to be larger, and their average merit greater, than in any previous competition.

Some American engineers, it is rumored, have drawings competing for the Darling Harbor Bridge.

A great crowd, including many architects on the look-out for prospective clients attended the sale of the land lately resumed by the Government in front of the Sydney Post-Office, and now known as Martin Place. This land is situated between George and Pitt Streets, and has a frontage of over seventy feet to each of these busy thoroughfares besides a main frontage of about three hundred and fifty feet to the Post-Office, from which it is separated by a sixty-six foot street, and a broad, open piazza. Three lots only were sold, however, the purchaser being the Mutual Life Insurance of New York. The price given (£126,000) was not excessive, considering the prominence of the site. The society has secured the Pitt Street corner block, having one hundred feet frontage to Martin Place and about seventy-three feet frontage to Pitt Street, and they intend, it said, to build palatial offices upon it which will outdo the building, now in course of erection for the Equitable Life Insurance Company of New York, which is situated not more than one hundred yards away, in George Street.

Just as I am closing this letter I have received a copy of the new edition of Fergusson's "Modern Architecture," edited and brought up to date by Professor Kerr. It is to be hoped that the examples of American architecture given in its pages, are happier than those illustrating the progress of the art in Australia. The principal building referred to in the Sydney section is the design for Houses of Parliament, designed many years ago by a firm of Irish architects, and which is never likely to be put into execution. And yet Professor Kerr refers to the "playful Gothic" of this example, and contrasts it with the severe classicality of the Melbourne Houses of Parliament, as if he fully believed the former was an actual fact, instead of a mere design which only exists in some mouldy drawings in the offices of our Government architect.

I shall, perhaps, have something more to say about this book, in its relation to the Colonies, in my next letter.

COMPARATIVE MUNICIPAL BUILDING LAWS.—VII.

[Note:—In these tables bracketed letters invariably refer to preceding passages in the same column.]

Piers & Buttresses.

Boston:—*a.* Amount of material specified for external walls may be used in piers or buttresses.

b. Provided wall between them is less than 50' high, with minimum thickness 12", or from 50' to 100' high, with minimum thickness 16".

c. Provided external walls between window-caps and top of floor above it shall be of thickness prescribed for external walls.

Baltimore:—
Brooklyn:—
Charleston:—

Chicago:—*d.* When solid buttresses with sectional area of 300 square inches, not less than 18' apart, extend nearly to roof, 4" can be deducted from thickness of walls between.

Cincinnati:—

Cleveland:—

Denver:—*(a).* Provided in buildings less than 40' high minimum thickness is 13"; in buildings from 40' to 80' minimum thickness 17"; in higher buildings minimum thickness determined by the Inspector.

Detroit:—
District of Columbia:—

Kansas City:—*(a); (b).* for 12 read 13, for 16 read 17. *(c).*

Louisville:—*(d).*

Memphis:—Buildings 30' higher than grade with pilasters of 27" face and 4½" projection not more than 8' between centres, may have wall between reduced 4" in thickness.

Milwaukee:—*(d).*
Minneapolis:—*(a).* Provided, *f.* the wall between have minimum thickness of 12". *(d).*

Nashville:—
Newark:—*(a).* Provided, *(f).*

New Orleans:—
New York:—*(a).* And the curtain-wall 4" less than otherwise required provided it is not less than 12".

Walls of Churches, Theatres, Foundries, Machine-shops, and other buildings of a public character shall have such additional piers or buttresses as the Superintendent judges needful.

Omaha:—*(d).*

Philadelphia:—
Pittsburgh:—
Providence:—*(a).* Provided, *(f).*

St. Louis:—*(d).*
San Francisco:—See "Cases Requiring Increased Thickness of Wall."

Wilmington:—

Recesses and Openings in Walls.

Boston:—*In external walls:* *a.* Recesses and openings must have backs with a minimum thickness of 12".

b. The maximum area of recesses and openings must not exceed one-half the wall surface.

c. Restrictions *(a)* and *(b)* do not refer to iron fronts.

In Party-Walls: *d.* A continuous vertical recess or flue must have a back 8" thick.

e. No such recess in an 8" wall.

f. No opening cut through Party-Wall of Brick Building without permit from Inspector and shall not exceed 8' 6" wide by 10' 0" high.

All Walls: *g.* No horizontal recess without special permit from Inspector.

h. No continuous vertical recess, other than flues in stacks, nearer than 7' 0" to any other recess.

Baltimore:—(Not regulated.)
Brooklyn:—(Not regulated.)
Charleston:—(Not regulated.)
Chicago:—See "Flues."

Cincinnati:—*j.* Party, External or Division Walls being bearing walls and the openings or recesses exceeding half the wall area, see "Special Cases Requiring Extra Thickness."

k. Party and external walls; minimum thickness of the backs of recesses and chases, 9".

l. Division-Walls; minimum thickness of the backs of recesses and chases, 4½".

m. Chases to be so spaced as not to weaken the wall.

Cleveland:—*(j); (k); (l); (m).*

Denver:—*(f); n.* Party-Walls; No recess shall be made in a 9" wall.

p. No Party-Wall cut more than 4" unless more than 13" thick.

q. No opening into a smoke or air flue shall be less than 12" from any wooden partition, wooden beam, girder or floor timber.

Detroit:—(Not regulated.)

District of Columbia:—*External and Party Walls:* *(n).*

Party-Wall: Shall not be cut in more than 4½" unless more than 14" thick, nor recessed continuously more than 4½".

r. No door or window shall be placed in a Party-Wall except by consent of the adjoining owner and by special permit from the Inspector.

Kansas City:—*External Walls:* *(a);* with minimum thickness of back 13".

(b); (c).

Party-Walls: *(d);* with minimum thickness 9". No such recess in 9" wall. *(f).*

All walls: *(g); (h).*

Louisville:—See "Flues."

Memphis:—*s.* No recess for pipes made in any wall more than one-third its thickness.

Recess around said pipe filled solid with masonry for space of one foot top and bottom of each story.

Milwaukee:—See "Flues."

Minneapolis:—*External walls:* Recesses may be made, provided backs of recesses are 8" thick.

In Party or Division Walls separating two buildings, openings shall not be made until application has been filed and permit received from the Inspector.

All walls: No recess in an 8" wall. No continuous vertical recess more than 4" deep in a 12" wall.

Nashville:—(Not regulated.)

Newark:—*t.* All openings shall have a sufficient arch of brick or stone, well built and keyed, with proper abutments, or a sufficient lintel of stone or iron.

New Orleans:—

New York:—*(f); (s).*

Recesses for alcoves and similar purposes shall not be deeper than 8", and with not less than 8" thickness of back, provided, such recesses shall not be more than 8' wide, shall be arched over, and kept 18" below bottom of beams of floor next above.

Aggregate area of recesses in any wall not to exceed one-quarter of the area of wall on any story.

Recesses in the same wall not less than 6' apart.

There may be recesses in foundation or cellar walls for stairways or elevators, but such recesses shall have back of thickness equal to that of second story walls.

Omaha:—*Party-Walls:* *(d); (e); (f),* from Superintendent.

All walls: *(g); (h).*

Philadelphia:—See "Flues."

Pittsburgh:—See "Flues."

Providence:—*(d); (e).*

St. Louis:—See "Flues."

San Francisco:—No recess for pipes shall be made in a 10" Party-Wall.

No recess shall be made in any wall more than one-quarter of its thickness.

Openings in Party-Walls shall not exceed 6' wide, shall have solid brick arches with three rollocks, not more than two openings in each story.

Wilmington:—See "Flues."

Strength of Materials (Including Strength of Floors).

Boston:—*a.* The Factor-of-Safety for Beams and other pieces subject to cross-strain, 3.

b. The Factor-of-Safety for Posts and other pieces giving compressive support, or subject to tensile strain, 6.

c. The dimensions of each piece to be computed by rules given by the best authorities.

d. Constants employed in such rules, only those deduced from experiments on material of like kind to that used.

e. Temporary supports shall have the same strength as the permanent ones there required.

f. Material other than brick, stone or wood shall have dimensions and be so employed as to have the approval of the Inspector.

g. All floors shall be constructed so as to safely bear a load, exclusive of the weight of materials, per superficial foot:

Dwellings, tenements and lodging-houses, 100 pounds.

For light mechanical purposes and public buildings, 150 pounds.

For storehouses, warehouses, machine-shops, armories, drill-rooms and riding-schools, 250 pounds or more.

Baltimore:—
Brooklyn:—
Charleston:—

Chicago:—*j.* Joists and girders shall be of proper dimensions to sustain the load designed to be put upon them.

Cincinnati:—

Cleveland:—

Denver:—*k.* Girders or iron beams and columns shall be of strength to bear safely the weight they are intended to support in addition to weight of material employed in their construction.

l. Floors shall be constructed to bear a safe load per superficial foot, exclusive of the weight of material:

Dwellings, tenement and lodging houses, 75 pounds.

Public buildings, theatres, etc., 125 pounds.

Buildings for light mechanical purposes, 150 pounds.

Detroit:—

District of Columbia:—

Kansas City:—*m.* The Factor-of-Safety for Beams and other pieces subjected to cross-strain shall be 4.

(b); (c); (d); (e); (f); (g); (h); (i); (k).

Louisville:—

Memphis:—*n.* The dimensions of each piece or combination of material shall be computed according to rules given by Trautwine, or in treatises on the strength of materials used at the United States Military Academy at West Point.

o. Floors shall be constructed to bear safely, exclusive of the material in the construction, per superficial foot, at least 75 pounds.

If used as a place of public assembly, 120 pounds.

If used as store, factory, warehouse, manufactory or for commercial purpose, 150 pounds.

Milwaukee:—*(j).* Sizes of materials to be such as are determined by the best authority to be proper, and so demonstrated to be by experiment. *(m).*

The Factor-of-Safety for material loaded for shearing or tensile strain, 5.

The Factor-of-Safety for piers and columns (less than 5 diameters high), 6.

The Factor-of-Safety for piers and columns (more than 5 diameters high) increased in strength according to formulae of best authorities.

Floors shall be constructed to bear safe weight per superficial foot:

Dwellings, tenements and lodging-houses, 50 pounds.

For light mechanical purposes and public buildings, 100 pounds.

(i).

g. Flat roofs, 50 pounds.

[For iron beams carrying sidewalks, see "Girders."]

Nashville:—*Buildings of a Public Character,* roof shall be self-supporting; floors constructed to carry 40 pounds per superficial foot, with Factor-of-Safety of 3.

Newark:—*r.* Every floor shall be of strength in every part to bear safely, in addition to weight of floor, upon every superficial foot, 75 pounds.

s. If used as a place of public assembly, 125 pounds.

t. If used as a store, factory or warehouse, 150 pounds or upwards.

New Orleans:—

New York:—Temporary supports of any part of a building shall have strength to safely carry the load placed thereon.

(a); (b); (n); (p); (r); (s); (t).

u. If used as a place of public assembly, 120 pounds.

Omaha:—*(a); (b); (g); (h); (i).*

Philadelphia:—*u.* Materials to be suitable for purpose.

x. Work of sufficient strength and solidity to answer the purpose for which designed.

Pittsburgh:—*(w); (x).*

Providence:—*(q).*

Floors (except of attics) shall be constructed to bear a safe load (exclusive of materials) not less than per superficial foot:

Dwellings, tenement and apartment houses, hotels, boarding-houses and stables, 70 pounds.

Rooms for ordinary schools and light mechanical purposes, 100 pounds.

Churches and all rooms liable to be crowded, 125 pounds.

Stores, factories, mills, business buildings, 150 pounds.

St. Louis:—*(e).*

San Francisco:—The requisite dimensions of each piece of material shall be determined by rules given by Treadgold, Hodgkinson, Barlow or *(n)* and *(d).*

The Factor-of-Safety shall be 3.

The Factor-of-Safety for cast-iron, 4.

The Factor-of-Safety for wrought-iron, 3.

(b) and where subject to vibration, 8.

The floors of all buildings shall be constructed to bear safely (exclusive of weight of floor), per superficial foot, 75 pounds.

For tenement-houses, 100 pounds.

For places of public assembly, 120 pounds.

For jewelry stores with safes, 300 pounds.

For dry-goods stores, 310 pounds.

For flour stores, mills, sugar refineries or storehouses, 500 pounds.

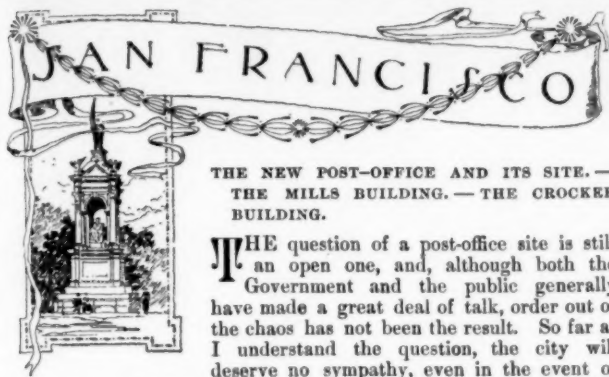
For warehouses for miscellaneous goods, 400 to 600 pounds.

For roofs, 50 pounds.

In store, warehouse or factory over 25' wide between walls, the intervening supports shall have iron, wood or masonry columns of strength to carry all weight of construction and 250 pounds per superficial foot of all floors carried by them.

Wilmington:—Material to be of quality and size to make building safe for purpose for which designed.

COMPILED BY H. A. PHILLIPS.



THE NEW POST-OFFICE AND ITS SITE. —
THE MILLS BUILDING. — THE CROCKER
BUILDING.

THE question of a post-office site is still an open one, and, although both the Government and the public generally have made a great deal of talk, order out of the chaos has not been the result. So far as I understand the question, the city will deserve no sympathy, even in the event of the future post-office being located in one of the most out-of-the-way parts; for in the beginning (several years ago) the city showed so little interest in securing a good site that the Government might be said to have gone a-begging, and even now, after party, if not public, spirit has been aroused, the public generally has not determined, and in all probability does not know, which would be the best site to select. But ignorance and indifference will not acquit the people, and, indeed, they will deserve no sympathy if, perchance, four or five millions of public money be buried in a locality which the generality of residents never have occasion to visit, and where the dwellers who will surround the new building will be so lacking in an appreciation of the beautiful, and so engrossed in the anxieties of life, that the massive walls and deep shadows of a great building will not bring joy into their hearts, but rather they will wander to and fro around it, as cattle grazing at the foot of a great rock, and perceive not that the mists of morning have shed their halo of sanctity around it, or that the evening sun has dyed its summit with a flood of crimson glory.

We claim to be a democratic community and, no doubt, in theory we are, but we do not seem to understand that democracy implies not only that we may take a part in the management of national affairs, but that we shall. This seems to be the normal condition of society, and it is only when there is an individual advantage to be gained, or money to be made, that party, if not public, spirit is aroused. Friction results, and enlightenment advantageous to the public follows.

The site, all but decided on, and which, in fact, was accepted by the Government, is in a part of the city that every one admits will for a long period of years be devoted to second-class retail business, and is, consequently, not the place for the post-office. Market Street is now, and, no doubt, will continue to be, the dividing line between the rich and the poor, between utilitarianism and that which is not only useful, but also beautiful; and so the fact that the site is south of Market Street is, in itself, a sufficient condemnation. Viewed from a practical or utilitarian point-of-view, the principal post-office of a large city ought to be placed at a convenient centre for receiving and distributing mails from and to all parts. It is not, however, very important that it should be within a mile or so of such centre, for the few minutes thus lost can well be overlooked if all other necessities are present; nor is it necessary, as argued by some, that the post-office be in the heart of the mercantile part of the city, for mercantile men do not require to interview the chief postmaster in the ordinary course of business any more than do the general public, and, in order that the latter may be well served, a number of commodious branch offices appear to answer the purpose best.

Out of the four or five millions who inhabit London, probably not one in a hundred has ever visited the principal post-office, nor have they any occasion to, for within ten minutes' walk of probably every house in the metropolis you can transact postal business as well as if you were at headquarters.

When, however, we come to consider the matter from an æsthetic point-of-view, we tremble lest so magnificent a chance of adding something really beautiful to our city be thrown away, and four or five millions of public money be expended in erecting a fine building amidst the desert and desolation of mean wooden houses that lie to the south of Market Street, where it would be what the cactus is to the mojave.

Union Square is, in all probability, without question the most suitable location in every way. Being in the centre of the city, it fulfils the desideratum as to convenience in collecting and distributing mails, is but a few minutes distant from the railroad termini and docks, and, from an artistic standpoint, is all that can be desired. Union Square covers an area of one block, and is prettily laid out with shrubs and trees, and bids fair, from the fact that even now it has several of the most important club buildings overlooking its gardens, and is close to the theatres and principal hotels, to become shortly the very heart and fountainhead of that portion of a city that is gay, wealthy, artistic and fashionable.

Seldom, indeed, do we have the opportunity of spending several millions on a single building, and it would be a matter much to be regretted if only in the years that are to come, when it will be too late, San Franciscans find that, as Jacob of old, they have sold their birthright for a mess of pottage, and the heritage of those who shall follow them for that which will bring them as little joy as the blasts

of autumn to the withered leaves, or the heat of summer to the long grass of spring.

The Mills Building, of which I spoke in a former letter, is now all but complete externally, and comparisons and criticisms between it and the Crocker Building are becoming less and less fervid; but, generally speaking, of the two, the Mills Building excites the most favorable comment, and the reason probably is to be found in the fact that a bad thing curses a building more completely than a good one redeems it. If a certain part be good, we pass it by with a shrug, as much as to say: "Well, it is not bad, but it might have been better, and, after all, we expect to have it good." Whereas, if it is bad, we do not say: "Well, it might have been worse!" Man is but human and fallible; but we say: "Monstrous! atrocious! the man who designed that building was, indeed, no architect."

The Crocker Building, as I said before, has a heterogeneity of qualities—strikingly good and strikingly bad, and thus far fails; the Mills Building, on the other hand, has neither good nor bad in any marked degree, and fails to please because it is weak and insipid.

This building is by Burnham & Root, of Chicago, and is mammoth in size, having a frontage on Montgomery and Bush Streets of about 175 feet.

As is usual in these modern buildings, the first story does not count, as it consists simply of a row of stilts about two feet square and fifteen feet high, spaced at regular intervals and carrying the building proper above.

However, the necessities of the times may have something to do with this, and the architects may be said to have made the worst of the situation. From the top of the second and third story as a base, moulded piers, many in number, dividing the various window openings, rise to the height of the eighth story, where they are arched over. Flanking this central treatment the wall-space at the several corners, which is ample, is pierced by plain, rectangular openings, which give to the extremities of the building a greater appearance of strength, which is good. Above these arches is a mass of teased-up clay, which reminds one of the corner of a ploughed field in which cattle have been tramping. It is what is generally known as Romanesque carving, but I think that this must be a misnomer.

Above these arches rises the ninth story, and there, as a sill-course for the last story, stretches an ornamental band of many small arches. This band is the first interesting thing that the eye has to rest upon from the ground upwards, and, had the designer bound this interesting feature to the main cornice that surmounts the tenth and last story, and made the final story sufficiently rich in architectural effect to count altogether as a head to the whole building, he would have in a large measure redeemed the design from its place among things mediocre.

Many of the Italian towers, with which in some measure this building is sympathetic, owe their beauty wholly to their heads. The architectural effect is concentrated so at the summit, that the eye being there continually engaged, never dreams of moving earthwards, but is content in happy contemplation of so beautiful a thing, inquiring not the nature of the pedestal that lifts it to the sky.

Instead, however, of thus binding the whole upper story from ornamental sill to cornice in one, they are kept beautifully apart, arm's length, as one might say, by a multiplicity of narrow, stilt like piers, which, in arrangement, are about as interesting as the rows of piles that support the beams of a wharf.

In reference to the custom so much in vogue in this modern Romanesque of running-up piers through many stories, concealing the floors by the introduction of a simple transom or lintel, I have my doubts, for in most cases it, to me, appears to falsify the internal meaning of the building by giving it an appearance of great height instead of that of horizontality of division which is in harmony with the facts. It is not that such treatment is fundamentally wrong, but, as usual, is a matter of disproportion in the assignment or importance to the various elements. In this case the piers cannot be called shafts, or buttresses strengthening the wall, in which case they would be all right; they are simply the division between a series of high window-openings that one would naturally expect to be placed there to light some lofty hall within; and it is thus because they do not stand out as shafts or buttresses, but are simply the piers dividing these long window-openings, that I do not think their application is good.

I am told by some that it is because I do not like Gothic that I cannot appreciate the anatomical lines of this building, but, indeed, the accusation is ill-founded, for I love all good things, and as much, if not more, the masterly building, with its studied anatomy and vigorous strength of the Gothic, as I do the quiet, peaceful delicacy of the Renaissance.

The main doorway of this building is beneath a great arch of white marble, which, in its sweep, includes two stories. This cutting of stories in two in order to try and give grandeur to that which is in reality but ordinary, is, as a rule, not happy, and an arch about twenty feet in diameter and only about two feet thick has an appearance of meanness about it that should not be.

This building is exceedingly pleasing in color, which atones largely for its lacking of architectural magnificence, and, among the dull gray, painted stucco that surrounds it, it forms a pleasing contrast, and in a large measure increases the picturesqueness and interest of the humbler roofs, on which, from its great height, it looks calmly down.

But, to prevent any misapprehension, it is not because this building is bad that I thus criticise it; far from it. It is because it is good, comparatively speaking, that I do so, and, if there are others that escape my criticism, it is because I deem them to be unworthy of it.



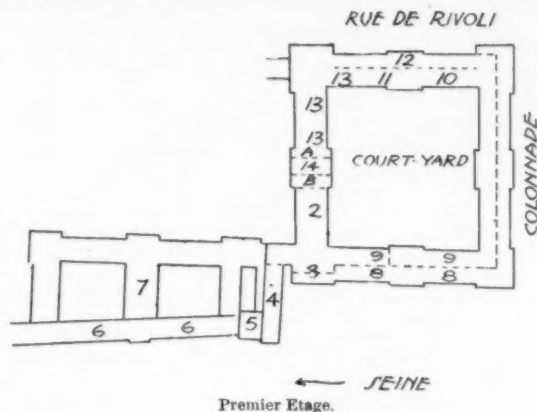
PARIS:

THE SMALLER EXHIBITIONS. — NEW STATUES. — HISTORY OF THE DIFFERENT PARTS OF THE LOUVRE.

It appears that we have not had enough in the *Salons* of the Champs Elysées and the Champ de Mars. Beginning with the month of January, the fashionable *cercles* opened their little exhibitions of painting, to which it is quite the thing to go and suffer suffocation before mediocre canvases, or those which are afterwards to be seen at the *Salon* itself. Even this is not enough. To-day there exist several schools (I ought to call them *coteries*) of art, each one of which organizes its own little exhibition. So it happens that at the present time we have at Paris the exhibition of the Rose + Croix (Rosicrucians), where a band of mountebanks, sustained by some talented madcaps, under the pretext of idealism, return to the primitive jumbles of Japanese work. At the exhibition of the Independents, the impressionists and the dabsters (*tachistes*), who "decompose" light on their palettes and render it by means of little multi-colored dabs placed one beside the other, are *en évidence*. It seems that there are people who like that sort of thing. The exhibition of the aquarellists and pastelists also has made its annual appearance at the Gallery George Petit. Here, at least, there is talent—talent that is knowing, oftentimes even academic—with the exception of M. Besnard, who, as always, seeks too much after strong tonalities. Nevertheless, his pastels have real charm, and he it is who has made the most interesting contributions. The Blanc-et-Noir is now holding its fifth exhibition. Originally founded with the intention of exhibiting only drawings and engravings, to-day it holds a vast exhibition of pastels and water-colors, which occupy a great portion of the Palais des Arts Libéraux. Moreover, we have still at the École des Beaux-Arts the exhibition of the works of Pelouse. Ah! this exhibition is indeed interesting. This master of landscape knows how to interpret Nature in all her naïveté as he saw her and as we see her, almost all of us. He didn't pay any attention to the "decomposing" of light. He simply painted it. The sentiment and sincerity of his work rest one in very truth after the chemical compositions of the Independents and the lucubrations of the symbolists. Just look, what a crowd of paintings! and the *Salons* themselves just about to open! In truth, painters are pitiless. The sculptors lend a hand also, and one hears nothing but talk about statues; and one asks one's self, if this continue, where will it stop? Our streets already contain a certain number, and yet it will be necessary to find places for the statues of Balzac, by Rodin; for one of Alfred de Musset, by

What! in the museum? This is indeed to pass from bad to worse. Your correspondent must have lost his head.

Nevertheless, that is what I mean. But this time we are going to pass through the halls without regarding either paintings or statuary. We are going to look at the walls. Yes, the walls. And we will demand of them what they enclosed before they were covered with



- Premier Etage.
- A Escalier Henri IV.
 - B Escalier Henri II.
 - 1 Pavillon de l'Horloge.
 - 2 Salle Lacaze.
 - 3 Salle des Sept Cheminées.
 - 4 Galerie d'Apollon.
 - 5 Salon Carré.
 - 6 Grande Galerie.

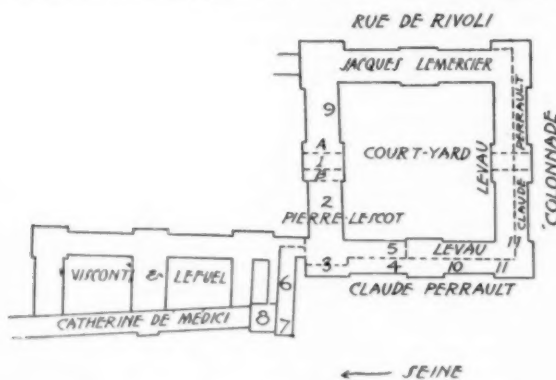
- 7 Salle des Etats.
- 8 Céramique antique.
- 9 Antiquités grecques.
- 10 Terres cuites italiennes.
- 11 Pastels.
- 12 Musée Thiers.
- 13 Dessins.
- 14 Bronze antiques.

frames; from what epoch they date, and whom they have sheltered. The administration of the Louvre will help us, since for some little time it has exhibited in each room a little tablet recounting the history of that room. It is an excellent idea, and we will profit by it.

Let us enter the Louvre by the doorway in the Pavillon de l'Horloge. We pass by the staircase of Henri II, which ascends to the picture-galleries, and will enter the museum of antique sculpture. The first room is that known by the name of Salle des Cariatides (or Jean Goujon). This room was begun in 1546 by Pierre Lescot on the site of the chapel and the great hall of St. Louis. Under Charles V, this hall was divided into two parts, the Salle St. Louis and the Grand' Salle. It was here that the royal table was spread on gala days. The altar and the chapel were found at the end in the semicircular space reserved by Pierre Lescot, where to-day is found the prone figure of the Hermaphrodite.

In the time of Louis XIII, Florentine comedians gave their representations in this room. During the regency of Anne of Austria a theatre was set up here. On October 24, 1658, the "Nicomède" of Corneille and the "Docteur Amoureux," by Molière, a piece to-day lost, were given before the king. It is here, at the end of this representation, that Louis XIV authorized Molière's troupe to assume the title of "Troupe de Monsieur," and to play in the Salle du Petit Bourbon alternately with the Italian comedians. In 1550, the cariatides were ordered of Jean Goujon and were made of stone from Trossy. The chimney-piece at the end of the room was executed by Belloni, a mosaic-worker. Later Percier and Fontaine placed above the cariatides a figure styled the "Nymph of Fontainebleau," by Benvenuto Cellini, with which Diana of Poitiers had ornamented her château at Anet. Leaving the Salle des Cariatides, we enter the room styled the Salle du Tibre, so named from the most important piece of sculpture which it contains. One portion of this room dates from the time of Pierre Lescot. Here was the bath-room of Anne of Austria, decorated by Lesueur. The other portion, as well as the next rooms, as far as the Salle de Melpomène, date from the time of Claude Perrault, and have been erected on the lines of the old moat of the Louvre. All these rooms make a gallery along the side of the Seine. On the side of the court-yard of the Louvre, the gallery in which is found the Venus de Milo is contained in the portions erected by Pierre Lescot and those by Lemercier. This portion of the Louvre was the apartment of the queen-mothers in the times of the Valois and the first of the Bourbons. The rooms were decorated with paintings by Rosso, Primaticcio, Niccolò Delle 'Abate, etc. Unfortunately these paintings have been destroyed. The present decoration, which consists entirely of a lining of marble, dates from the time of Percier and Fontaine. We next reach the rooms, under the Gallery of Apollo, which are devoted to Roman sculpture. These rooms were built by Catherine de' Medici. At that time they consisted of only a rez-de-chaussée covered with a flat roof. The garden which stretched before them was called, in the time of Louis XIII, "Le Petit Jardin de la Reine;" the sojourn at the Louvre of the Infanta of Spain, when her marriage to Louis XV was pending, gave it the name of Jardin de l'Infante. The last hall, that of the Antonines, facing the quai, was divided into two rooms. The one with a balcony opening over the Seine was the cabinet of Anne of Austria; the other was her sleeping-room. Her apartments occupied this entire gallery.

Returning on the quai, the hall in which is found the statue of



Rez de Chaussée.

- A Escalier Henri IV.
- B Escalier Henri II.
- 1 Pavillon de l'Horloge.
- 2 Salle des Cariatides.
- 3 Salle du Tibre.
- 4 Salle de Melpomène.
- 5 Salle de la Venus de Milo.
- 6 Salle de Sculpture romaine.
- 7 Salle des Antonins.
- 8 Salle d'Auguste.
- 9 Salle de Puget.
- 10 Salle de Jean Goujon.
- 11 Salle Sculptures moyen-âge.

Mercié and Falguière; one of Messiaen, by Mercié; one of Raffet, by Frémiet. The monument of Banville also demands a little resting-place, and so does the statue of Ricord, the celebrated physician. How many statues! How many statues!

To escape this inundation of marble and oil, let us take refuge in the Louvre.

Augustus was begun for Catherine de' Medici and finished under Henri IV. Retracing our steps, we will take the grand staircase of Henri II, which makes a portion of that part of the Louvre built by Pierre Lescot, and which under the Valois and the first of the Bourbons was the staircase to the royal apartments. It takes us to the first story and to the Salle Lacaze. This room, once forming a part of the apartments of Charles V, is the ancient audience-chamber. It is above the Salle des Cariatides. In the times of the Valois, fêtes and balls were held here. From 1820 to the end of the Restoration the ceremonies of the opening of the Chambres were held in this room, which has been revamped by order of Louis XVIII. The Salle Henri II, which opens out of it, was built on the site of the principal chapel of Charles V. It made a portion of the apartments of the Valois and the first of the Bourbons, and was decorated with paintings of Primaticcio, of which nothing is left.

Next, we come to the room called Salon des Sept Cheminées. It is within the perimeter of this room, itself contained in the construction of Pierre Lescot, that used to be found the bedchamber of the king and the "chambre de parade" under the Valois and the first of the Bourbons. It was loftier then than it is to-day. A second story, long since destroyed, was inhabited by Cardinal Mazarin. The decoration now in place was done about 1850, after designs by Duban.

Enter now the Gallery of Apollo, which was built under Henri IV. On the 6th of February, 1661, a fire destroyed it, and left standing only the walls. LeBrun was at that time intrusted by Louis with the new decoration; but the building of the palace at Versailles brought about the abandonment of the reconstruction of the Gallery of Apollo. After the beginning of the eighteenth century it was cut up into apartments. Here were placed the paintings of the king. Later, works ordered from sundry artists were here exhibited. Carl Vanloo had his studio here, and in 1749, it was thrown open for students, for whom little *loges* were built, which remained here until 1766. From the 28th Thermidor of the year V, until the time of Charles X, the gallery was devoted to the exhibition of drawings from the collections in the Louvre. The ceiling threatening to fall, the architect Fontaine erected, for the sake of supporting it, a scaffolding, which did not disappear until 1848. During this time the public had access to the Salon Carré by a narrow passageway made of planks, and on the walls of which were exhibited the drawings, engravings and lithographs of the annual *Salon*. In 1848, the National Assembly voted for the restoration and completion of the gallery, and Duban was intrusted with the work. The sculpture and painting of the vault were removed by Desachy, so as to allow of the repairing of the woodwork above, and then put back in place without any change in their original arrangement. The central compartment of the ceiling was intrusted to Eugene Delacroix. The "Triomphe des Eaux" of LeBrun was restored by Mr. Popleton. At length, on the 5th of June, 1851, the gallery was thrown open to the public.

From the Gallery of Apollo entrance is had to the grand Salon Carré, which forms a part of the building erected in the time of Henri IV. During a portion of the last century it was devoted to the exhibition of works of the Academicians, the first exhibition taking place in the year 1725. Here on April 2, 1810, between 3 and 4 o'clock, was celebrated the religious marriage between Napoleon and Maria Louisa. Decorated after designs prepared by Duban, the Salon Carré was opened to the public at the same time as the Gallery of Apollo. The grand gallery on the side of the Seine was begun in 1596, the work continuing under Louis XIII and during the regency of Anne of Austria. The architect Lemercier started the interior decoration. Later, Poussin was intrusted with the work by Louis XIV, and he undid a portion of the work of his predecessor, but after all he himself abandoned the work which he had undertaken. During the First Empire, Percier and Fontaine modified the internal arrangements, divided the gallery into bays, and lighted it from the top. Under Napoleon III, its length was divided to provide the hall for the ceremonial of the opening of the Senate and Corps Legislatif, this room later becoming the hall of contemporary painting. This hall was a part of the building of the new Louvre, finished by Lefuel after plans prepared by Visconti. Practically speaking, it has no historical interest.

Let us now return to the buildings which front the court-yard of the Louvre, beginning with those which front the Seine, and are devoted to antique ceramic art. These are portions of the building erected by Claude Perrault: about the middle of the last century, with the exception of a very small portion, the space which they now occupy was not covered. It was under Louis XVIII that the architectural arrangements were finished. The decoration had been ordered by Charles X, and this portion of the museum was opened only in 1863. The intervening halls on the side of the court-yard, which are consecrated to Greek antiquities, were decorated under Charles X by Percier and Fontaine. One portion is included in the buildings erected by Pierre Lescot, another in that portion designed by Levan. It is in this last part that are found the "*ateliers des menus plaisirs du Roi*," where were prepared the material necessary for the public and private fêtes of the Court and for all funereal ceremonial. The halls which back upon the colonnade of Claude Perrault are included in the portion of the building erected by Levan. The first rooms, those nearest the Seine, are lined with woodwork brought from the new Château de Vincennes and from the old apartment of the King (the Salon des Sept Cheminées spoken of

above). The building of these apartments was decided on at the time of the Restoration, but was not finished until later. The old wainscoting of the vestibule and the ceiling were once used to decorate the apartments of Anne of Austria at the Château de Vincennes. The rooms which follow *en suite* have little or no historical interest. Two staircases, which are at the end of the colonnade, were built by Percier and Fontaine. In the space occupied by that which is on the side of the Rue de Rivoli, the painter David had one of his studios in the upper part, while above him his pupils worked.

Of the buildings which line the Rue de Rivoli, those which front the court-yard of the Louvre were built by Levan, and were not roofed-in in the middle of the eighteenth century. One portion was occupied by the studio of Coypel, the first painter to the king. Afterwards François Boucher had his apartments there. Under the Restoration, the Council of State, which had its sessions in the Louvre, had its minor offices there. Now these rooms are occupied by Italian terra-cottas, pastels and a portion of the drawings. The Musée Thiérs, on the Rue de Rivoli, occupies a part of the buildings begun by Claude Perrault, continued by Gabriel and Soufflot, and finished by Percier and Fontaine. The other halls of drawings, returning on the Pavillon de l'Horloge, are portions of the work begun by Lemercier and continued by Levan. Here, about the middle of the last century, were found the apartments of the attendants on the court and the king's household. The Council of State was established here in 1825.

On the first story there is only left the hall of antique bronzes, which comes between the staircases of Henri II and Henri IV, which, in spite of its name, dates from the time of Louis XIII. This hall, which forms a part of Lemercier's work, was formerly a chapel, where, on the 25th of August of every year, the Académie Française used to say a mass in honor of St. Louis. On the ground floor in the court-yard of the Louvre, the halls of sculpture by Puget, were, between 1672 and 1793, occupied by the Académie, which here held its public sessions. It is here that, at its first grand seance, were received Racine, Flechier and the Abbé Gallois. This portion of the ground floor is part of the work of Lemercier. The one which stretches along the Seine, in which to-day are exhibited the sculptures of Jean Goujon and Mediaeval sculptures, was built on the site of the Hôtel du Petit Bourbon, which was demolished in 1660. In the great hall of this hôtel, Louis XIV danced the "ballet de la Nuit." In the middle of the eighteenth century, the portion under the colonnade was divided into several workshops, occupied by Pigalle, Le Moine, Vinache and Falconet, sculptors to the king.

At this point the walls of the Louvre cease to recount things of interest to us. But their example might well be followed by those of other ancient monuments which have any historical value. Such an arrangement will interest everybody — artists, archæologists, historians and tourists.



DAMAGE AT THE FAIR GROUNDS BY WIND.
— WORLD'S FAIR NOTES. — COLLAPSE OF
A SEVEN-STORY BUILDING UNDER CON-
STRUCTION. — LICENSING ARCHITECTS. —
GEN. W. SOOY SMITH ON HIGH BUILDINGS. — PILE FOUNDATIONS.
— FIREPROOFING STONE PIERS. — ATTEMPTS TO DISABLE THE
ELECTRIC-CAR SYSTEM. — A WOMAN'S STREET-CLEANING CRU-
SADE.

ALTHOUGH we are now fairly launched into the spring months, cold storms seem to be the order of the day, and the wind blows very much where it listeth, paying no heed to the fact that seven-story buildings may seem to have a prior claim to the spot which it especially selects for its passage.

In the early part of the month considerable damage was done to some of the buildings on the World's Fair grounds by an energetic gale. With a fitting conception of the laws of *meum* and *tuum*, this aspiring *cyclonette*, as being on this occasion a purely local production, took the greatest liberties with the Illinois State Building, damaging it to the amount of twelve or fifteen thousand dollars. An eye-witness reports that the wind must have entered the building and forced its way to a point about midway in the northern wall of Memorial Hall. The wall collapsed immediately. Sixteen-by-sixteen inch timbers were shattered into fragments, and a two-by-four timber came crashing down through the flooring, cutting a way for itself as if with a knife. One of the iron arches supporting the roof was considerably sprung and, had it not been safely fastened, would have toppled over against a long row of others, completely demolishing the roof of the eastern end of the building.

Another wreck was that of the pumping-station. This was a brick building and had reached a height of fifty feet. It was seventy by seventy feet in extent, its walls being about eighteen inches thick. The wind crushed these walls like egg-shells, the entire structure falling to the ground. The loss of this will amount to about twelve thousand dollars.

A high staging was thrown down, everything that was in any way loose about the ground was carried about by the wind and Machinery Hall sustained slight damages, to the extent of a few hundred dollars.

Fortunately the storm was at its height before 7 A. M. Had it occurred during working-hours a large loss of life might have been the result of the accidents. The other buildings on the grounds happily sustained no injuries, many not coming in the direct path of the gale, though in their unfinished condition having a severe test. The way they withstood this test has been most satisfactory to all concerned, as proving that in their final and finished state they will be as strong as desired.

Work on the Electrical Building, which has progressed more slowly than on any other, is now being pushed night and day, a double force of men being employed.

The design for the mammoth fountain at the foot of the main basin has been accepted and report says the fountain will be one of the largest in the world. The idea is that of the apotheosis of modern liberty. Columbia will assume the shape of a triumphal barge, guided by Time and heralded by Fame. There will be eight standing figures, representing on one side the Arts and on the other Science, Industry and Commerce. Eight big sea-horses will form a circle directly in front of the fountain. They will be mounted by eight stalwart outriders. The shape of the basin is circular, about one hundred and fifty feet in diameter and flanked on each side by columns fifty feet high surmounted by eagles. The water will rise from a half-circle of dolphins in the rear, and form a system of jets surrounding the barge and figures. At night the fountain will be illuminated by electricity. The smallest figure will be twelve feet high. The work for the fountain is now being done in Paris under the supervision of the sculptor, Mr. McMonnies, of New York. It is expected the work will all be accomplished by the close of this year. All bids for the privilege of operating passenger-boats on the canals and lagoons have been rejected. The Committee realize how important it is to have safe water transit through the grounds and it has been decided advisable that all parties wishing to place pleasure-boats on the small lakes should provide models of such boats for a thirty day's trial before any action could be taken by the committee. They are limited in length to from thirty to forty feet and in breadth of beam from six to nine feet. This is a serious decision to some of the bidders, as it is estimated it will cost from twelve to fifteen thousand dollars to build and operate a trial boat. The motive power can be either steam, electricity or naphtha.

As mentioned in last month's letter, permits to visit the grounds, it was decided, should only be issued by the directors. This plan, however, proved to be such a nuisance to men already busy that it has been decided to charge an entrance-fee of twenty-five cents and let all visit the place who wish to.

The chief excitement in architectural circles this month has been the collapse of a partially finished building on the evening of April 1 in the western portion of the city. A severe storm occurred at the time, the wind moving at the velocity of fifty-four miles an hour. The structure, which covered two city lots, is now a mass of the most thoroughly and completely mixed building-material possible to arrange or conceive. Not a chimney, nor so much as a tottering corner of a wall remain to hint that any one part of the edifice made even a feeble attempt to resist the general downfall. Underneath the mass of brick, iron and timbers lies what was originally a small frame-house, and it is the fact that six of the inmates lost their lives on the night of the accident, that has made the investigation as to the cause of the collapse most thorough and far-reaching. The structure was a seven-story brick building, and in falling crushed the frame-tenement above mentioned, entirely wrecked three other small houses, killed six people and injured fourteen or fifteen others. The building fortunately collapsed after the workmen had left for the night, otherwise the loss of life would have been much greater. At first thought, the wind was considered the main cause of the accident, but at the coroner's inquest new points have been brought to light, which would indicate that the building might have fallen later had its fate not been settled on this first day of April.

When cross-questioned on the trial, the owner made the following statement: "I told the Building Department we wanted to eventually build a seven-story building, but only three stories at that time. A permit was issued for a three-story building. In the meantime I consulted friends and they advised me to build the seven stories. I never thought of notifying the department. We complied with all the regulations. I understood that all the plans were satisfactory and I had confidence in my architect."

The building inspector who was appointed February 1 of this year for that district and who has been a carpenter and builder for twenty years, showed most plainly the farce that much of the building inspection is. He commenced bravely in his testimony, but became decidedly involved before the end. He began by telling the jury that he inspected the Young Building, March 14.

"Whom did you see there?" was the first question.

"Nobody."

"Did you ask any questions?"

"No. I spoke to no one."

"What did you do there?"

"I looked at the building. It was five stories high then. I saw that the brick and mortar were all right and that the walls were of proper thickness."

"Did you know how high the building was to be?"

"No."

"Did you ask to be allowed to look over the plans?"

"No."

"Without knowing how big the building was to be, how could you tell whether or not the walls were of proper thickness?"

The inspector at this point became confused and said he saw that all the ordinances had been complied with.

"Did you know whether a permit had been secured?"

"I supposed all those points had been covered by the inspector who was in the district before."

"Without knowing anything about the height of the building and other details could you really inspect the building intelligently?"

"No."

"How thick were the walls?"

"The east wall was twenty inches and the west wall sixteen."

"Would they have been thick enough for a ten-story building?"

"No."

"How could you, not knowing the height of the walls, tell whether or not the walls were of proper thickness?"

"I could not tell."

This finished the examination of the inspector.

The man employed by the owner as architect was a contractor, with architectural aspirations. Very likely he did not look upon himself as a bona-fide architect, as he had not had his name placed in the city directory amongst those of that profession. The testimony as to the condition of the building was very conflicting, as well as that on the kind of material used. The bricks on the scene of the disaster are assuredly of a very ordinary grade, and the almost total absence of any mortar adhering to many of them is a silent but telling witness.

Of course in the state in which the building was the full force of the wind would have been felt. The walls were roofed over, but all of the window-openings being unprotected the sweep of the gale through the building must have been tremendous. There were even some witnesses brought in by the defence who testified that they saw the building struck by lightning. This evidence is not convincing, however, as in a case like that one is apt to *wink* at the all important instant. However conflicting the evidence may have been, and it must of necessity be so in a case like this, the result of the inquest is that the coroner's jury brought in a verdict, holding to the grand jury on a charge of criminal carelessness the City Commissioner of Buildings, two of the Inspectors of the City Building Department, the owner of the fallen building, and the architect and superintendent of the work.

This accident has also revived a topic of frequent discussion in architectural circles: the desirability of licensing architects after compelling them first to pass an examination. At a recent dinner of the Illinois Chapter of the American Institute of Architects some of the anchors used in the Pearce Street building were shown, and were so small that they caused a good deal of laughter, and it was the opinion of some of the members that the cause of the collapse was due to improper anchorage. The discussion turned on building ordinances and the efficiency of the Building Department of the city. A certain architect told how he had reported a building of faulty construction to the Inspector and was told by the official he had not time to look at it. That might have been true, but if such were the case then something ought to be done to make it possible for him to find time. It was the general feeling of the meeting that the Pearce Street disaster, though one much to be deplored, would not be without a beneficial influence for the architectural profession here in the city, as tending to show the necessity of employing architects of thorough education.

A recent addition to the literature which bears on the question of high buildings has been made by Gen. William Sooy Smith in an address delivered at the University of Illinois. He feels that the tall buildings have come to stay, that necessity demands them, and that the question of how most safely and wisely to construct them is one that could well occupy the minds of many of the most thoughtful of the kindred professions of architecture and engineering.

In order, this distinguished engineer takes up the questions which arise in connection with the construction of these high and large buildings, aside from the possibility of incorporating into their bulk any architectural features. He first considers the much-discussed topic of foundations. Touching lightly on successful methods already employed, he proceeds to advance his own theories.

After alluding to the different strata of mud and clay of our soil, with its underlying rock formation from sixty to one hundred feet below the surface, he says: "Wherever it is practicable, the foundations of heavy buildings should rest upon the rock, or upon the hard-pan immediately overlying it." He also continues: "As timber is everlasting under water, excavations can be made for foundations well below water-surface in the Lake, and piles can be driven in the bottom of such excavations down to the rock, or into the hard-pan. These piles should be cut off at a level below that of any conceivable deep-drainage system that may become desirable or necessary in the city (say fifteen feet below city datum). Platforms of timber and concrete should be laid on the piles, and on these platforms pillars or walls of masonry or concrete should be carried up to the level of the basements or sub-basements of buildings. In this way, sub-basements could be provided in which the machinery necessary for operating elevators, etc., could be accommodated,

leaving the first basements free for other uses, and thus making them rentable at high rates.

"Where rock is within easy reach, the excavations can be made to the rock, and the masonry or concrete construction can be carried up from the bed-rock without use of piles."

To the very great surprise of many, he stated that "Careful estimates show that these foundations will cost less than those which are now generally employed; namely, platforms of steel and concrete resting on compressible soil."

"Some elevators and warehouses, the shot-tower and other structures, rest upon pile foundations simply, but I know no instance in which wells or pits have been sunk and piles driven in the bottom of them in order to reach rock or its equivalent, and to place the pile heads below the level of perpetual moisture, when the deep drainage the city so sorely needs has been secured."

"There is no instance in which foundations of stone masonry or concrete have been carried down, as here suggested, to the bed-rock."

With suitable foundations, General Smith considers that three of the four problems—foundations, the question of weight of the building and unequal settlement—have been solved, and there only remains to combat the difficulty arising from the expansion and contraction of metal employed in construction. This trouble could be overcome by the use of a different kind of column from that at present in vogue.

The author of the address states that first-class cut-stone masonry laid in hydraulic-cement mortar, has about one-fourth the compressive resistance of the stone of which it is composed, and acting on this principle he made experiments which seem to have proved to him that a more successful system of construction than that of the tile-clad steel columns could be used. He says:

"To test the truth of this supposition I had a square pillar of Lemont limestone made one square foot in cross-section and about nine feet high. It was composed of seven stones, taken from the thickest stratum, and so cut as to lay on the natural bed in the pillar when this was set up. The bearing-surfaces of the blocks were planed perfectly true. I sent this pillar to the government testing-machine, at Watertown, Mass., and asked that it be set up by simply washing the beds with a very thin grout of English Portland cement. This pillar was subjected to the entire crushing-power of the machine, eight hundred thousand pounds, and it was only when the full strength of the machine was employed that the pillar showed the slightest symptom of yielding. Then small flakes were chipped off of an outside surface of two of the blocks, which is proof conclusive that the pillar was on the point of yielding."

"If, however, we assume that the strength was increased in that simple ratio, a pillar two feet square, of Lemont limestone, made as already described, would sustain a weight of three million two hundred thousand pounds. One-third of that load or say one million pounds would be a safe load for such a pillar."

To protect these pillars from fire he would cover them with a coating two inches thick of a mixture composed of one part pulverized talc and three parts plaster-of-Paris. A sheet of this mixture an inch thick he had exposed on one side to a white heat for half an hour, and a man could let the other side rest on his hand, such was its non-conducting properties. With such pillars he would use the Guastavino system of flooring, thus avoiding the general use of iron beams.

In summing up the advantage of this method of construction he says the building in which it was adopted would be "practically unchangeable in its dimensions, indestructible by fire, abundantly strong, and as durable as the materials of which it is composed."

Fortunately for the profession of architecture and engineering there seems to be no deep-rooted aversion to a wise and steady growth in ideas, and all new thoughts are at least given consideration by those best able to use them.

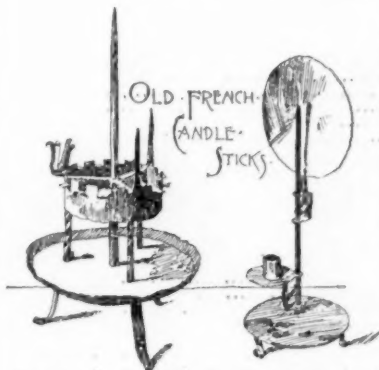
An opposite example of this attitude has been recently displayed in connection with the electric-road system to which Mr. Yerkes has been giving a trial on one of his North Side branches. As before stated in these letters the one to be used is called the Love system, an underground-conduit one. It seems that most of the present overhead-wire systems have in their contracts a clause that should any satisfactory underground system be developed, the overhead should be replaced by underground wires, a process always attended with considerable expense. This experiment on Fullerton Avenue has been so successful that attention has been drawn to it and many exhibitions of spite against it have been the result. The cars had not been running three days when some one drove several ten-inch spikes into the slot, apparently with the intention of breaking the rod that carries the electricity up through the slot-rail to the motor. A few weeks later, seventeen ten-inch spikes were discovered driven into the slot, to prevent the car making one of its night trips. Finally, trouble became so frequent that it became necessary to attach a steel plow to the front of the car to clear the slot of the obstacles that were constantly being inserted. Iron straps were then forced into the slot, but these could not hold their own against the plow. New devices have been tried to disable the running power of the road, boards have been crowded into the slot, other planks being laid across these to make them more secure, and success might have crowned these efforts had it not been discovered in time that a man-hole had been pried up and a steel bar laid across the conducting wires for the purpose of cutting off the current.

A new movement has been put on foot by the women this month. It is no less a one than the undertaking to clean the streets of our at present dirty city. A mass meeting was called of the association which is known as the Municipal Order League, and there the matter was talked over and worked up. It was a Sunday afternoon mass meeting, that all classes might attend. A powerful sermon on "Cleanliness is next to Godliness" was preached; an appeal was made by several of our women who are accustomed to speak in public, one for recruits for the new army, and another an appeal for public baths, in which our city is sadly deficient. No definite plan of action was given at the meeting, but money was solicited for the cause, and, as above stated, new members for the League. A good deal of enthusiasm was aroused, but enthusiasm is a dangerous thing to keep over night, as it were, and, unless a figurative broom and hoe were immediately thrust into the hands of the audience, might go astray.

Much work is needed, however, in this direction, and it is to be hoped that this enterprise, which would have met with such approval by those devotees of the broom, Mrs. Lecks and Mrs. Ailshine, may be successfully carried out. The Commissioner of Public Works was at the meeting, and admitted he had much the feeling of a prisoner at the bar. He read statistics showing that the city was doing all it had the money for. He and his staff seemed ready to grant all honor to the "Mothers in Israel," who would begin their spring house-cleaning in the heart of the city, and finish it on its farthest limit. Time will alone show what they can accomplish.

The local art club, known as the Artist Club, has been having serious internal dissensions, which have resulted in a withdrawal of a large number of its members. A new club has been formed under the name of the Cosmopolitan, which wisely admits to its ranks women as well as men, in this way securing some of the best talent of the city. The Club has recently had an exhibition, wherein more excellence has been displayed than in any exhibition of local art in the city heretofore, the grade being a very high one.

ACCIDENTS TO WORK-PEOPLE.¹



THE unofficial report of Professor Béchaux, of the University of Lille, upon the work, scope, and aims of the international congress which met at Berne in September last to discuss the question of accidents to workingmen is at hand, and it contains some points that may be considered with profit in the United States.

The key-note of the convention was sounded in these words:

In spite of all precautions to prevent and to reduce the number of accidents, the field of human industry is as a field of battle, having its victims, as war does, counting by the score its slain and grievously wounded and by the hundred its injured and temporarily incapacitated persons. Statesmen, philosophers, employers and workingmen are daily occupying themselves more seriously with the problem which these misfortunes present. Everywhere the remedy for these evils is sought in vain.

The question of accidents to laboring people must be viewed from many points. There must be considered: (1) Measures of precaution—legal, technical and manner of the organization of the various industries; (2) statistics of accidents and the conclusions to be drawn from them; (3) responsibility for accidents, professional risks, etc.; (4) treatment and aid for the victims; (5) insurance against accidents.

FACTS AND FIGURES AT BERNE.

The analysis, marshalling and general treatment of statistics bearing on the subject of accidents to workingmen seems to have been very thorough, skilful and scientific in the congress at Berne. The question is far more complex than one is apt to fancy, and the scientific use of statistics has played an important part in the movement towards its solution. Statistics showing three important facts were examined, namely, the fact and number of accidents, the causes of the accidents, and their consequences. It was shown that there are 100 accidents for each 10,000 workingmen, one-half of which are fatal, one-fourth of which produce permanent injuries, and the remaining fourth of which cause lighter physical ills.

The general statistics furnish each year the number of industries, the number of accidents and the number of workmen. They show for each 1,000 workmen and for each one thousand working days the total number of accidents in all lines of labor—mines, quarries, chemical industries, manufactories, breweries, buildings, railways, tramways. Such results, however, can only be obtained by a complete system of statistics. How is that to be had? In countries

¹ Report by Commercial Agent Loomis, of St. Etienne.

where the official administrations do not give these statistics, those otherwise furnished are not always reliable.

While France, England, Belgium and Italy give, to a certain degree, information on mines and railways, Switzerland, thanks to its Federal board of statistics, published in 1890 a detailed statement of all the accidents reported, from April 1, 1888, to March 31, 1889. But Germany and Austria alone, where insurance against accidents is obligatory, furnish really complete information. Thus in Germany the imperial office of insurances, of which the learned Doctor Bœdicker is the director, gave in 1889 the following classification: Out of 15,970 victims, 2,956 were mortally wounded and 13,014 received injuries rendering them incapable of returning to work under three months. The fatal accidents are classified as here given:

TABLE SHOWING CATEGORY OF ACCIDENTS.

Cause of accident.	Number.
Crushed under masses or objects.....	801
Falling.....	512
Machinery.....	469
Molten liquid or irrespirable gases.....	295
Cars, carriages, etc.....	236
Railways.....	149
Weights.....	139
Drowning.....	117
Explosives.....	86
Animals.....	42
Steam boilers.....	36
Tools.....	30
Other causes.....	53
Total.....	2,956

CAUSES.

We learn in this way the causes of the accidents. There are material and moral causes. These latter are produced by the fault of the employer, the workman, or by unforeseen means. The material causes are often difficult to determine. In France there exists at the office of the Minister of Public Works a central committee, whose business it is to inquire into the causes of explosions of steam-boilers. In 1889 the presumed causes of such explosions were reckoned as follows:

	Number.
Defective condition of construction and installation.....	15
Wear and tear.....	17
Defective repairs.....	3
Want of water.....	8
Overpressure.....	5
Other causes.....	3

The following statement, which is very instructive, is borrowed from the German statistics of the 15,970 accidents already mentioned. It shows the proportion of the responsibility on employers and employés.

Accidents imputed to employers:	Per cent.
Defective construction.....	7.05
Insufficiency of rules.....	2.69
Insufficiency of preventive measures.....	10.01
Accidents imputed to employés:	
Neglect of using preventive measures provided.....	1.76
Infraction of rules.....	5.17
Manifest imprudence.....	1.93
Awkwardness, inattention, etc.....	10.73
Accidents where both parties were to a certain extent at fault:	
Simultaneous negligence.....	7.73
Dangers inherent to the industry.....	43.4
Unknown causes.....	3.47
Total.....	100

CONSEQUENCES.

The consequences of the accidents are worthy of the most careful consideration. The workman is wounded; what will become of his family if the man is temporarily or permanently disabled? And, if he dies, what future is in store for those who were dependent on him?

Experience has shown that, in most of the accidents, the savings of the workmen are far from being adequate to guarantee the necessary resources for the family, and if the generosity of the employer is often called upon it would be presumptuous and unjust to count solely on that. Consequently, it has been the custom in Europe to have recourse to a special system having a triple object in view:

- (1) To collect individual savings under the form of subscriptions.
- (2) To create a common purse with these subscriptions, destined to cover the risks to which the workman is more or less exposed.
- (3) To compensate the victim of an accident according to fixed rules.

One man subscribes 10 francs yearly, and will receive 1,000 francs if he be permanently disabled; another pays 100 francs per annum to receive 10,000 francs under the same circumstances.

How many ignore the fact that insurance thus understood was put into practice as far back as the fourteenth century by the Flemish, Italian and Portuguese navigation companies? In the present century, however, insurance has developed wonderfully.

Personal insurance has long been the privilege of the wealthy classes, but by degrees generous employers and industrial companies have extended this boon to their personnel. The idea has made such progress that public men are now thinking of insuring the immense majority of workmen.

Thanks to the researches of the statisticians, the members of the Berne congress were able to study thoroughly the question of accidents. Some of them rightly observed that if it were necessary to compensate for accidents, it was still more necessary to prevent them. They called to mind the numerous associations created with a view to reduce the number of accidents and to insure against them. The first society of the sort was founded at Mülhausen in 1867 by Mr. Engel Dolfus. A similar society was founded in Paris by Mr. Émile Muller, and in 1887 this same society extended its influence to the provinces, so that to-day it is known under the title of "Association des Industriels de France contre les accidents du travail." Branches have been formed in twenty-seven departments, giving its benefits to 120,000 artisans. Similar societies exist now in Belgium, Holland, Austria, etc.

It cannot be denied that the contemporary economical transformations, the installation of thousands of workshops, and the concentration of workmen in exceedingly narrow limits have increased the chances of accidents and even provoked appalling catastrophes. One thing is certain, however, and that is, the French civil code, as well as the foreign civil laws, are no longer in harmony with the modern needs of the workmen. Accidents are daily happening, and are due to one or the other of the three causes already mentioned, viz, negligence of the employer, negligence of the workman, unknown causes or those beyond control. Now, the civil code provides only for the first cause; but how difficult it is to establish the responsibility of the employer! How often will the employer insist on the accident being due to hazard!

It was demonstrated before the Conseil des États de la Suisse that the proof showing that the employer was at fault failed to be established seventy-five times out of one hundred. It must, then, be admitted that the modern workman is insufficiently protected.

OBLIGATORY INSURANCE.

The new and seductive formula of the obligatory insurance of workmen has obtained many partisans. It is no longer believed that individual initiative or private associations can guarantee sufficient provisions against accidents. The bill proposed by the French Government is clear on that point. It says:

It is not sufficient to facilitate insurance by a number of ingenious measures; it must be rendered obligatory in the interest of employers and employés. To leave to employers the liberty of not insuring would be to evade the principle of the responsibility established by the law. The most of them would hesitate to pay the high policy demanded by the companies, and later on would be ruined by the obligation of contributing on the day of the accident the capital of an indemnity which might be considerable. Frequently their whole resources could not suffice. Where, consequently, would be the guaranty of the workmen?

Obligatory insurance becomes, consequently, imperative if workmen are to be guaranteed the compensation promised by legislation and if employers are to be prevented from ruining themselves.

This idea of obligatory insurance originated in Germany, but was for a long time disputed in France. It had been endeavored to point out that, if the State should hinder abuses, it had no mission to impose its authority in matters affecting the relationship of employers and their workmen. It was said that forced insurance, far from disarming socialism, would increase the discontent, and, after claiming a decrease in the subscriptions paid at the commencement by the workman, it would soon claim the entire payment of the policy by the employer or by the State. And, while several complain that the great industries transform the workman into a veritable machine, they pretend that the individual would be but a passive instrument or a slave of legal restraint.

These reasons did not prevail, however, in the congress of Berne. On the contrary, the success of the partisans of obligatory insurance was complete.

The principle once fixed, the congress of Berne examined the question whether the insurance should be totally organized by the State or left to the free choice of private individuals or societies. A warm discussion took place on this point. Messrs. Bœdicker and von Mayr, the representatives of Germany, showed with considerable energy the necessity of official organization in the German Empire. In that country exists a triple protecting institution of the working-people—a law of June, 1883, on insurance against sickness, a law of July, 1884, against accidents, and a law of June, 1889, on insurance against incapacity and old age.

The German delegates endeavored to show that the State alone could properly take in hand the defence of the working-classes, and that was, in their minds, the real social organization.

The representatives of the Latin and Anglo-Saxon countries, and particularly the French delegates (MM. Cheysson and Gigol) although recognizing the importance of the German insurances, remarked that, the principle of obligatory insurance being recognized by all, it was preferable to leave to each State the liberty to organize the insurance system according to the habits of the respective nations. In France especially, where the large industrial companies already insure their employés, it would be wise not to destroy the existing organizations, but to institute new ones appropriate to the interests of the workmen. This view met with approval in the congress.

After listening to over thirty orators and being compelled to come

to a definite decision, the Berne congress accepted unanimously the principle of obligatory insurance, but decided to leave to each country the choice of applying it according to its customs and its already existing institutions. Some of the Swiss delegates desired that the congress should accept partially, if not totally, the German system, but finally they gave their adhesion to the following resolutions proposed and voted by the congress:

(1) It is an imperative duty at the present time to prevent by every possible means accidents and diseases incident to labor and to provide for the consequences.

(2) As regards preventive measures, it is desirable to combine the action of individual enterprise with that of societies and the State.

(3) In reference to compensation, it is preferable that it should be by the insurance system, and each State should be free to organize and apply it as best suited to its needs.

(4) In organizing these systems, it would seem to be advantageous to detach the slight accidents and enroll them under the classification provided for sickness.

(5) The attention of States which desire to organize a system of insurance against incapacity and old age is called to the propriety of combining it as much as possible with that of insurance against grave accidents and disease incident to certain forms of labor.



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

HOUSES, NOS. 283-289 GARFIELD PLACE, BROOKLYN, N. Y. MR. GEORGE P. CHAPPELLE, ARCHITECT, NEW YORK, N. Y.

[Hello-chrome, issued with the International and Imperial Editions only.]

THE SHARON BUILDING, SAN FRANCISCO, CAL. MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL.

R. C. CHURCH AND PAROCHIAL RESIDENCE, BLYTHEBOURNE, L. I. MR. J. G. GLOVER, ARCHITECT, BROOKLYN, N. Y.

CENTRAL BAPTIST CHURCH, NORWICH, CONN. MR. J. L. FAXON, ARCHITECT, BOSTON, MASS.

STORE AND APARTMENT BUILDING FOR BETTS BROS., BROOKLYN, N. Y. MESSRS. E. S. BETTS AND C. S. FULLERTON, ARCHITECTS, NEW YORK, N. Y.

PILGRIM MEERSTEAD, PLYMOUTH, MASS. SKETCHED BY MR. P. G. GULBRANSON.

HOUSE FOR MRS. CATHERINE WILL, ROCHESTER, N. Y. MESSRS. BLOCK & BARNES, ARCHITECTS, ROCHESTER, N. Y.

[Additional Illustrations in the International Edition.]

WATER-TOWER, MANNHEIM, BADEN.

THIS subject is reproduced from the pages of *Zeitschrift für Bauwesen*.

PLAN AND SECTION OF THE SAME.

ABREUVOIR AT MARLY-LE-ROI, FRANCE. AFTER AN ETCHING BY GUILLAMOT, PERE, IN *L'Art*.

ELECTRIC-LIGHT LUSTRES.

THESE designs were submitted in competition for the Prix Rougevin and were published in the *Revue des Arts décoratifs*.

WROUGHT-IRON GRILLE TO A PORTE-COCHERE.

THIS plate is copied from *La Construction Moderne*.

CAFÉ.

THIS plate is copied from *Architektonische Rundschau*.

MONUMENT TO THE SCULPTOR CARPEAUX IN THE CEMETERY AT VALENCIENNES, FRANCE. MR. ERNEST THIBEAU, ARCHITECT. M. E. HIOLLE, SCULPTOR.

THIS plate is copied from *L'Architecture et la Construction dans le Nord*. This monument was erected in 1881, the cost being defrayed from a national subscription which amounted to \$3,600. The face of the *stèle* bears the sculptor's name and the dates of his birth and death, while on the reverse is inscribed the list of his works. The materials are bronze and stone.

SCULPTURE: "JEANNE D'ARC."

THIS group, entitled "Jeanne d'Arc entend ses voix," represents Joan of Arc in the act of listening to the "voices" which inspired her to arise and save her country. The figures above represent St. Michael, St. Catherine, and St. Marguerite. The group, which is by M. André Allar, was commissioned for the new church in course of erection at Domrémy to the memory of Joan of Arc, and is to be placed over the porch. The group formed a conspicuous object among the sculpture exhibits at the *Salon* of 1891. The figures are of life-size. The plate is copied from the *Builder*.

STATUE OF LIEUTENANT HAMILTON, V. C. MR. C. B. BIRCH, SCULPTOR.

THERE are very few statues in Dublin which can be taken as testimonials of the admiration of the Irish race for their brave countrymen, although they have distinguished themselves in all parts of the world. One of the latest heroes was Lieutenant Hamilton, a native of Dublin, who upheld the fame of his country by his courageous contests with the wild races of the north of India during the last great struggle. It was decided to erect his statue in Dublin.

MONUMENT IN CEMETERY, CORK, IRELAND.

THE figure which is seen in this illustration was modelled by Mr. J. Lawlor, and executed in stone by Mr. J. A. O'Connell. The pedestal was executed by Mr. S. Daly, from the design of Mr. Arthur Hill, architect, of Cork.

HALL IN MANOR HOUSE, WANDSWORTH, ENG.

HOUSES, ST. CATHERINE'S ESTATE, BROXBORNE, ENG. MESSRS. NEWMAN & NEWMAN, ARCHITECTS.

THE two small houses illustrated this week were designed for Mr. J. A. Hunt, of Hoddesdon, Herts. It was the aim to make the houses look as much unlike two houses as possible; and consequently the division of the two is disguised so as not to be striking. All the external walls are covered with rough-cast and the roofs with Wisbech tiles. The internal sketch is of the drawing-room mantelpiece in the upper of the two houses on plans.

KINGSWOOD REFORMATORY, NEAR BRISTOL, ENG. MR. H. C. M. HIRST, A. R. I. B. A., ARCHITECT, BRISTOL, ENG.

THE first and larger portion of this building is now on the point of completion. The view shows the whole building as it will be when complete. The old Reformatory being in a dilapidated state it was decided to build new buildings and the designs were selected in a limited competition. The plans received the approval of the Home Office, and the contract for the first portion of the building has been carried out at a cost of 6,050l. The new buildings are necessarily of a plain character, the purpose of a Reformatory rendering plain and substantial work absolutely imperative. The work is carried out with local stone and Bath-stone dressings, and all the rooms and corridors are well lighted and ventilated, stone staircases being provided at each end of the buildings, giving access to the dormitories. The new buildings provide accommodation for 100 boys, including a house for the superintendent, and also a hospital.



CURIOSITIES OF GLASS-MAKING.—The art of glass-making is said to have been discovered by accident says an American exchange. Pliny states some Phœnician mariners, who had a cargo of *nitrum* (salt, or as some have supposed, soda) on board, having landed on the banks of the Belus, in Palestine, and finding no stones to rest their pots on, placed under them some masses of *nitrum*, which being fused by the heat with the sand of the shore, produced a liquid and transparent stream. Now the sand which lay about half a mile around the river was peculiarly well adapted to the making of glass. The Sidonians, in whose country the discovery was made, took it up, and in process of time carried the art to such perfection that they are even said to have invented glass mirrors. Yet the manufacture of glass was a few years since unknown at Sidon, where it is reputed to have been first invented. The above account by Pliny, is, in substance, corroborated by Strabo and by Josephus; yet it was long asserted that the ancients were unacquainted with glass, properly so-called. Nor did the denial entirely disappear even when Pompeii presented evidence of the skill of the ancients in glass-making. The process of manufacture detailed by Pliny appears to be very much of same as that practised at the present time. And Sir Gardner Wilkinson gives the representation of two glass-blowers inflating a piece of molten metal by means of hollow tubes, taken from a painting of Beni Hassen, executed during the reign of that monarch, who lived about 3,500 years ago; and adds that glass vases, if we may trust to the Theban paintings, are frequently shown to be used for holding wine as early as the Exodus, about 1,400 years before the Christian era. Such was the skill of the Egyptians in glass-making that they successfully counterfeited the amethyst and other precious stones worn as ornaments for the person. Winckelmann, a high authority, is of opinion that glass was employed more frequently

in ancient than in modern times; it was used by the Egyptians not only for drinking vessels, but for mosaic work — the figures of deities and sacred emblems — in which they attained excellent workmanship and surprising brilliancy of color. The remains of Alexander the Great are said by Suetonius and Strabo to have been delivered to Augustus, when he was in Egypt, in a glass case in which Seleucus had deposited them after removing them from a golden urn. Glass was used by the Egyptians for coffins, and in 1847 a process was patented in England for making coffins of glass. It would be reasonable to suppose that the Hebrews brought glass and knowledge of its manufacture out of Egypt, were not the evidence of history so explicit that it was actually discovered and wrought at their own doors. — *Invention.*

NEW WORLD'S FAIR FIGURES. — In connection with the Chicago Exhibition a few words about preceding exhibitions may be of interest. The first international affair of the kind was held in London in 1851, the building covering a little more than 18 acres, and the average daily attendance being about 42,000. The next was held in New York two years later, but it was mainly a private enterprise. The third was held in Paris, in 1855, the building area being 29 acres and the daily attendance being nearly 25,000. In 1862, the second London Exposition took place, the space roofed over being 25 acres, with an average of 36,322 visitors each day. The Paris Exposition of 1867 was the fifth, with a daily attendance nearly double that of its predecessor. The main buildings of the Vienna Exposition of 1873, the next in order, had an area of nearly 35 acres, and a daily attendance of 39,000. At the Centennial Exposition of 1876 in Philadelphia, the main buildings covered almost 51 acres, and the attendance averaged nearly 63,000. The Paris Exposition of 1878, occupied a floor space of 46 acres, and the number of visitors reached a daily average of about 83,300; and at the latest Paris Exposition, 1889, the average attendance reached the enormous number of 192,281, the area under roof being 75 1-2 acres. The average number of visitors per day at each of the exhibitions mentioned, except that of New York, is shown graphically in the following table:

_____	London, 1851.
_____	Paris, 1855.
_____	London, 1862.
_____	Paris, 1867.
_____	Vienna, 1873.
_____	Philadelphia, 1876.
_____	Paris, 1878.
_____	Paris, 1889.

The area covered by the main buildings at each of these exhibitions, and also that of Chicago next year, is shown in the same manner, as follows:

_____	London, 1851.
_____	Paris, 1855.
_____	London, 1862.
_____	Paris, 1867.
_____	Vienna, 1873.
_____	Philadelphia, 1876.
_____	Paris, 1878.
_____	Paris, 1889.
_____	Chicago, 1893.

It may be added that the total area of the grounds devoted to the Columbian Exposition of 1893, is very nearly the same as the area devoted to the three preceding expositions, that of Philadelphia in 1876, and those of Paris in 1878 and 1889 combined. — *Electricity.*

A SUBSCRIBER asks us to reprint this extract from the *Building News*. "There are other architects, again, who, while they adopt mediæval or post-mediæval styles, do not strain after antiquity of appearance. They seek to do modern work, though they use ancient types of detail. Their problem is a difficult one, but their attempts at a solution are interesting. They see that the old builders, whether of the twelfth and thirteenth, or of the now more fashionable fifteenth and sixteenth centuries, fairly faced the difficulties that met them. If a new want sprang up, it was provided for in new ways; if an old want ceased to exist, it was provided for no longer. It does not follow that they altered their style; but they altered their ways of using the style, and the architects of this second group try to follow them in that respect. Mr. Street, for instance, in the middle part of his career made a good many innovations in this spirit on established modes of church-planning; and the same may perhaps be said also of Mr. Sedding. So far they tried to do what a thirteenth or fifteenth century architect would have done had he been called upon to fulfil the requirements of the present day; and they managed to bind the new ideas and the old ones together by a certain unity of artistic feeling. It is in this last point that men less artistic or less in earnest are likely to fail. As long as they can keep close to ancient models they do fairly well; but when they are called upon to make new forms architectural, their powers disappear."

THE PRAIRIE DUGOUT. — The dugout is the first home of the settler. There are various styles as suits the taste and purse of the builder. But we will endeavor to describe two styles. First, the bachelor's dugout is about thus: A hole dug in the ground 12 by 14 by 3 feet deep. A shed put over it 14 by 16 by 4 feet high, plank set up endways and dirt thrown up around the side about eighteen inches high, covered with boards, a window in one end or side, and a door in one side with steps dug out of the dirt and a lid fixed to fit down over steps and door. On the inside in one corner is fixed a bed, which has generally a mattress and blankets; a cook-stove, a water-keg, a box put up for dishes, etc., a table with one leg, under which are all the eatables, which are a sack of flour, bacon, beef, canned goods, etc.; a stool or two made out of barbed-wire spools, a few books, papers, novels, etc. This is very warm and comfortable. Second: The nice family dugout

is a house of any size about two feet in the ground, with dirt thrown up on the sides about eighteen inches. The roof is of boards bent over the top with a layer of about three or four inches of dirt thrown on it. — *Canyon City, Tex., Keystone.*

A NEW LIGHT. — A German inventor has devised a means of producing a light superior in strength to either oil or electricity. It is by means of air driven through pumice-stone, the latter having been impregnated with benzine. The benzine gas thus obtained is then carried through a fine magnesium powder, and proceeds upward through a pipe, to be consumed in a small flame of a claimed 400,000 candle-power. The apparatus for producing this light consists of a blast-engine for driving the air through the pumice, and a number of other accessories, all of which take up but a small space, and which are enclosed in a glass case for protection from the elements, as the light is especially designed for coast illumination. The arrangement is especially adapted for giving an intermittent light, the consumption of magnesium being small, depending on the power of the light required. — *English Mechanic.*

THREE DECISIONS ABOUT THE STATUE OF EROS. — Henry G. Marquand imported a bronze statue of Eros, eleven inches high, from England not long ago. It was made about 250 B. C., and he paid \$1,100 for it. The Collector assessed a duty of 45 per cent on it, classing it as a manufacture of metal. Mr. Marquand appealed to the Board of Appraisers and they decided to admit the statue free as an antiquity. The Collector appealed to the United States Circuit Court from this ruling and the case came before Judge Lacombe. He decided that the object was dutiable at 15 per cent as a piece of metal statuary. — *New York Tribune.*

TRADE SURVEYS

THOSE who are familiar with what is going on behind the scenes in railroad circles are aware of the intention among railroad managers to make a general advance in freight rates at the first opportunity. This is not a new purpose or scheme at all, but only a revival of an intention that has long slumbered. Conditions have not been favorable for the maintenance even of scheduled rates for two or three years past, and, according to popular understanding, there is but little probability of firm rates, to say nothing of an advance, notwithstanding such a scheme has been under serious consideration, and more than one conference has been held by some of the leading magnate railway men of the country. These conferences have been held, not so much for the purpose of effecting an actual advance as for thoroughly going over the ground and understanding the situation, and finding out how one and another felt regarding the possibility of higher rates. It may be said at the outset that the scheme or programme will prove a very difficult one; that railway managers understand. It is difficult for outsiders to see the reason for anticipating success in such a thing at this time, but railway men who understand the entire problem believe that, if the time is not near at hand, it is not very remote when it will be possible for two-thirds of the railway mileage of this country to secure better compensation for most of the tonnage hauled. Of course, their reasons are not made public, but some of the considerations have reached the outside, and may be very briefly classified as follows: In the first place, the railway managers and banking interests behind them are satisfied that the country has almost caught up with traffic facilities. It may be a year or more before the fact will be clearly proved, but a year is a very short time in railroad manipulation and railroad-building enterprises. Capitalists, bankers, railroad managers and others interested in the development of the railroad system are now carefully studying the problem at long range, intending to take such steps far in advance as circumstances may seem to warrant. The construction of a good deal of additional mileage is also recognized as within the probabilities of the next year or two. There is a vast amount of capital in foreign countries ready to seek investment here when conditions are favorable, and railroad builders expect to be assisted very much from this source. There are a number of questions to be settled, chief of which is the silver question, but those in control say that all merely political questions will be adjusted before or soon after the presidential campaign before us. The country is ripe for a grand step in advance, these managers say. The smaller manufacturing interests are content to wait until a general improvement sets in before taking any steps toward the enlargement of capacity; in fact, the manufacturers feel there are too many wheels turning, too great an output, too great a risk and too little money. The volume of business since the first of the year, as compared to last year same time, shows that the corner has been turned, and that the business of the country is steadily gaining. Exports continue heavy. There are also heavy shipments of gold to Europe, but this outgo has no perceptible effect upon market conditions. Many writers and thinkers advocate the restrictive policy with reference to gold exports, but the apprehensions are theoretical rather than practical. Agricultural conditions continue favorable; manufacturers are enjoying moderate prosperity. Railroad traffic is increasing. The net earnings of 133 railroads for February and March show a very remarkable and satisfactory increase. Considerable railway building is to be done this year by some of the main lines between New York and Chicago, and Chicago and the Northwest. Nothing of an unsettling nature has as yet arisen in trade circles. Collections are slow and difficult, as a rule. Business men are keeping as close to urgent market requirements as possible. In some lines there is a surplus of goods, but not of sufficient magnitude to depress prices. The policy which is maintained in the iron trade with reference to production is followed in many others. Raw material of all kinds is selling at very low prices. A stimulus is certainly needed, but the oldest heads are unable to suggest what is best to be done. Opinions are divided on nearly all questions of a commercial or business character. Failures are kept within safe limits. So far this year, it does not appear that the country at large is running into debt. Banking interests maintain a pretty rigid control in the lending of money. Much of the security and safety enjoyed is due to the rapidity with which money is made to perform its functions in the channels of trade. The spirit of combination is still strong, but it is less active than, perhaps, for two or three years. Labor agitations are threatened in some parts of the country, but nothing serious is likely to occur.

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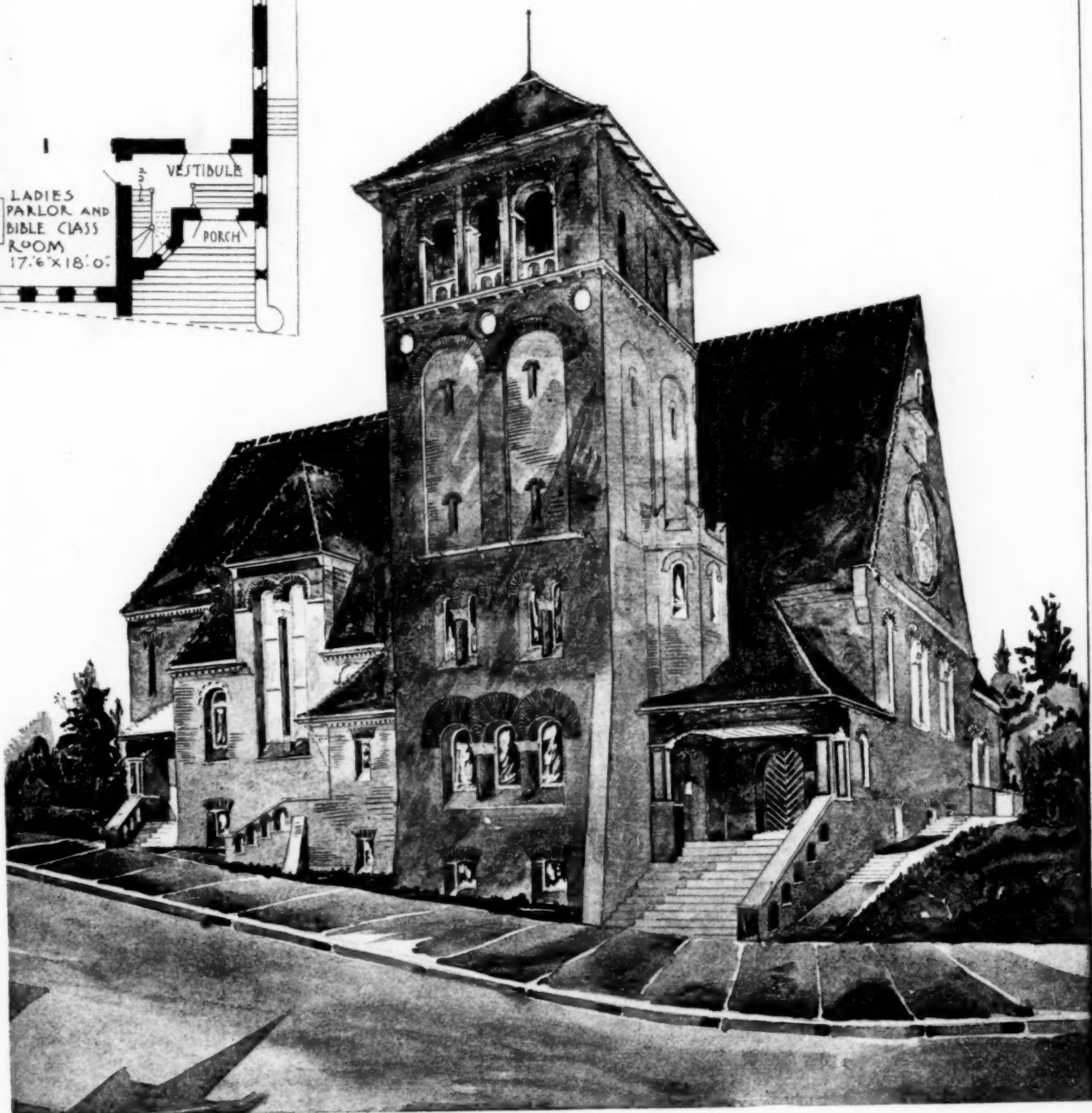
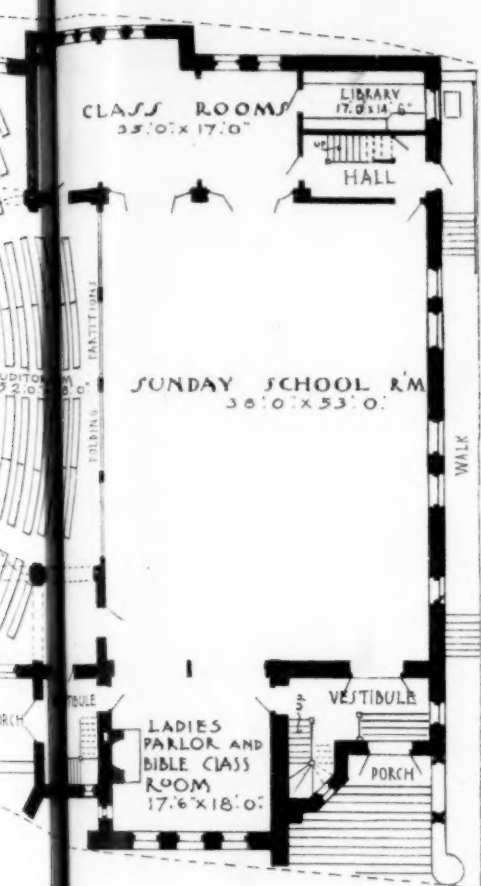
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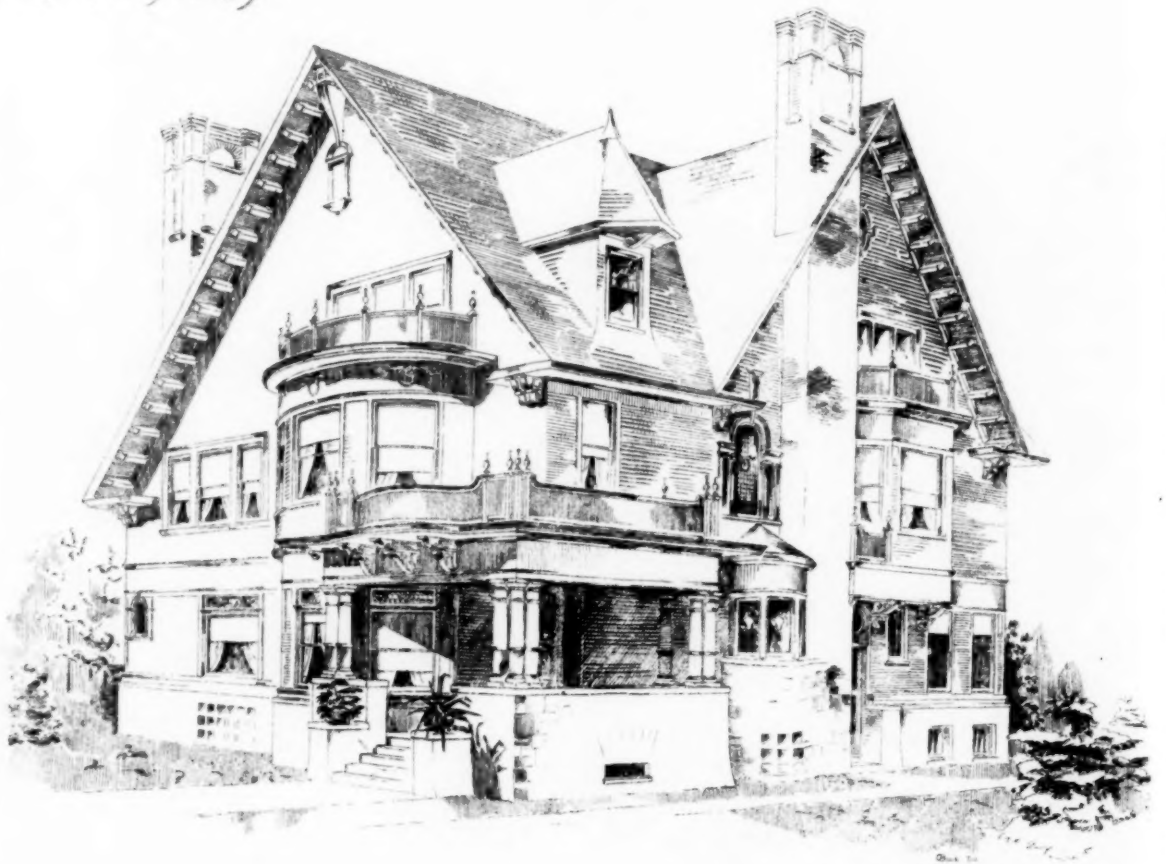
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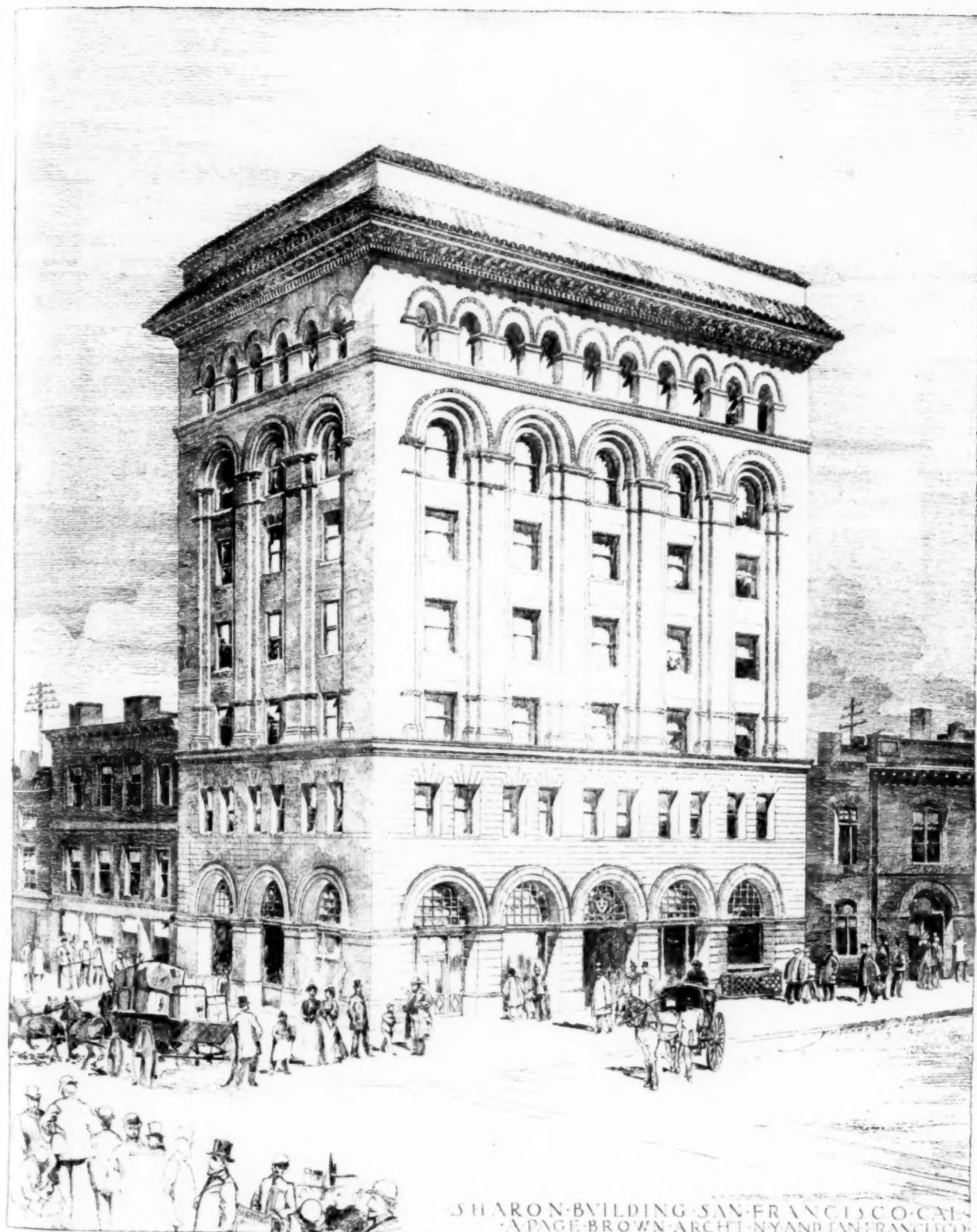
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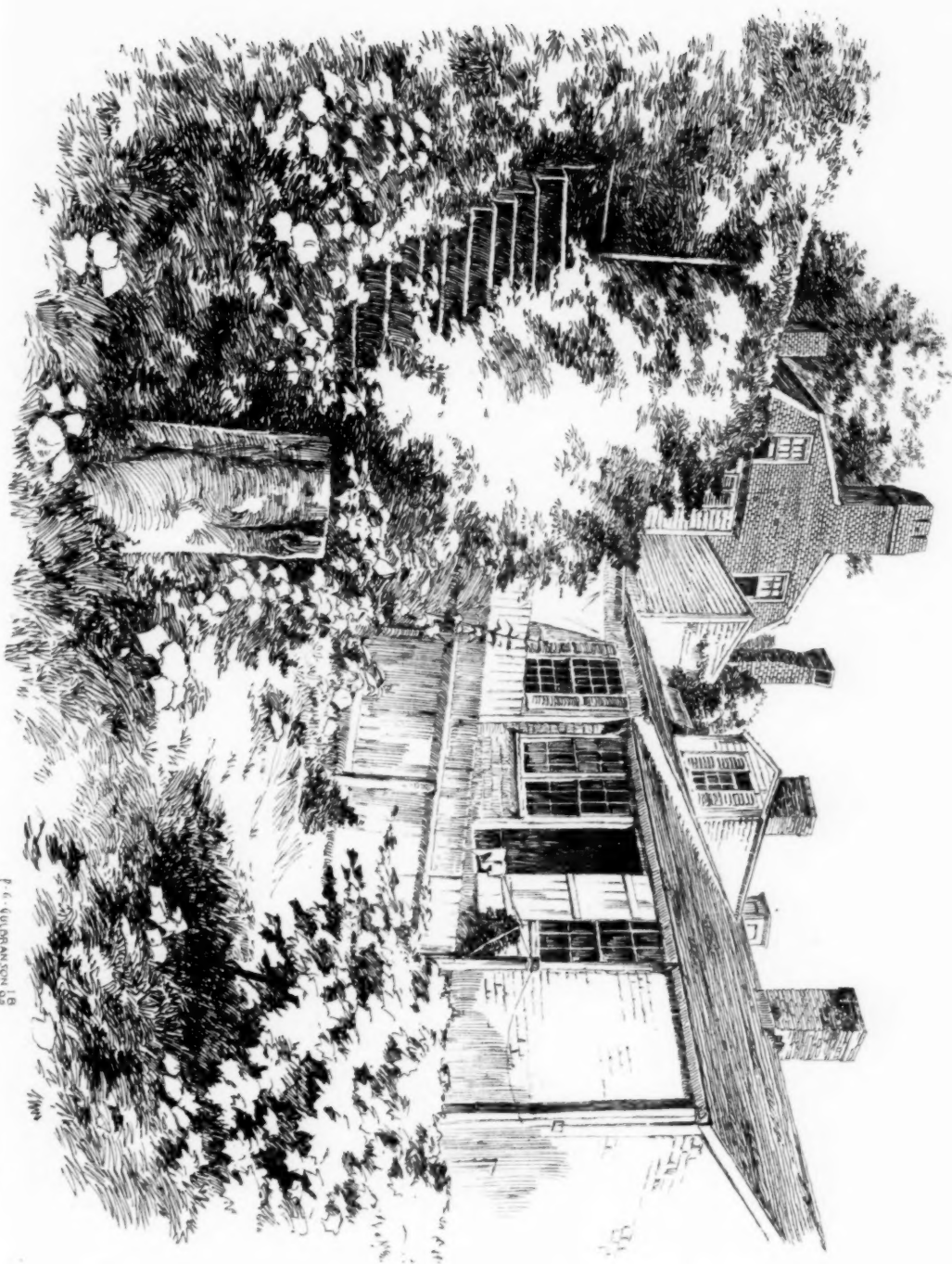


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