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ILLUSTRATIONS.

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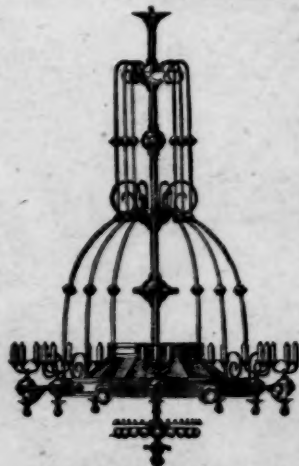
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SUMMARY:—

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A SILLY story is circulating among the newspapers, to the effect that there is "war" among the architects of St. Louis in regard to the competition for the new Union station in that city. The facts appear to be that the company which is to build and own the station invited Messrs. S. S. Beman, of Chicago, Walters, of Louisville, Van Brunt & Howe, of Kansas City, Shepley, Rutan & Coolidge, of Boston, Bruce Price, of New York, and Messrs. T. C. Link, George R. Mann, Grable & Weber, J. Stewart & Co., and Peabody, Stearns & Furber of St. Louis, to submit competing designs, promising two and one-half per cent on the estimated cost, four hundred thousand dollars, to the architect whose plans might be accepted, with money prizes to the others. Messrs. Shepley, Rutan & Coolidge, and Peabody, Stearns & Furber, and Mr. Beman, immediately replied, declining to compete on these terms. The station company invited Messrs. Eames & Young to take the place of one of the firms which had declined, but they refused, and three other architects, whose names are not given, were found to fill the number. Evidently, the terms offered are not in accordance with the schedule of the Institute of Architects, and the newspapers have taken up the mistaken idea that the schedule is compulsory on the members of the Institute, and that "some disagreeable things" will happen to those members of the Institute who consented to compete on the terms proposed. It is hardly necessary to say that this notion is totally unfounded. The members of the Institute believe, collectively as well as individually, that such service as they think it proper for an architect to give his employer cannot be given at less than the schedule rates without depriving the architect of the very modest compensation with which he is satisfied; but no compulsion whatever is exerted upon members, nor is the slightest penalty attached to a departure from schedule rates. That the official opinion of the Institute is fully shared by its members is shown by the fact that of the eighteen architects whose names appear among those who received the invitation, only four members of the Institute are to be found among those who accepted it, these being Mr. Van Brunt, Mr. Link, Mr. Bruce Price, and Mr. Mann. Probably all these had special reasons for being willing to undertake the work for less than it is fairly worth, and, at least, their decision will be respected by their associates.

Whether it is for the advantage of the station company to get its architecture as cheaply as possible is another matter. The General Manager of the Company, Dr. Taussig, is reported to have said, "The terms of this competition, I know, are not in agreement with the rules of the architects, but what is that to us? We make our offer, and they can take it or not." The idea of letting out professional service to the lowest bidder, although highly favored by certain business men, always strikes an architect, who knows what a skilful and responsible man in his situation can do for his client, as a little ridiculous. Men do not inquire what lawyer will take the job of defending their property at the lowest rate, or look around for a half-price doctor to cure their maladies; but when they come to spending the accumulations of a lifetime on a building operation, they think themselves extraordinarily intelligent if they can find an architect who will direct the expenditure for half a cent less commission on the dollar than is found to be reasonably remunerative by their experienced and responsible brethren.

A STRIKE took place the other day in London, at the new Imperial Institute Building. The union bricklayers at the building undertook to force a non-union man, who was working with them, to join the union. They first applied to the contractors to discharge him, unless he joined the union forthwith. The contractors declined this proposition, and the men then left their work. They were paid off, the non-union man, with a few others, remaining. In the evening, the non-union man, as he left the building, was attacked, and would probably have been seriously injured, but for the arrival of the police. However, the desired result was attained, for the victim did not venture to show himself at the building again. The next day, two delegates from the union called on the contractors, and apologized for what had occurred, saying that it was against the rules of the union for men to strike against a non-unionist, and asking that the men might be allowed to resume work. As there were now only union men left in the field, the contractors started work again, and gave notice that they would receive such men as they needed. The union bricklayers, however, refused to go to work unless all those who struck were taken back, and as the contractors had no longer sufficient employment for the whole force, the whole body continued the strike. It is generally understood that the influence of the unions in the building trades in England has greatly declined of late years, but this demonstration indicates that the days of folly and violence are not yet over. The idea of the workmen dictating how many bricklayers shall be employed, and refusing to let any one work until the whole number designated by them had been engaged, is a novel one, and might obviously be very extensively applied. If a contractor can be compelled to hire twenty-five men to do the work of twenty, there is no reason why he should not be compelled to have ten men to do each man's work, and when "capitalists" have been reduced to employing nine men regularly to sit around all day, at good wages, and see the tenth man work, it is obvious that the "labor" millennium will be near at hand.

THE New York Institute of Artist Artisans, under Mr. John Ward Stimson's earnest and enthusiastic direction, seems to have passed a prosperous year, and a circular and chart, certain portions of which we find somewhat unintelligible, announce the plan of work for the next twelve months. We are able to extract from the rest the information that a Normal Course, for teachers, is arranged to occupy Saturdays throughout the year, and the whole of the first six weeks of summer; and we find that in other respects the excellent programme of last year is to be carried out again, with, apparently, better resources and instructions than ever. Pupils are admitted at any time, and we sincerely advise those who wish to become artists in decoration, modelling, glass-staining, goldsmith's work and textile industries to communicate with the Director, at 140 West Twenty-third Street, New York.

MR. C. POWELL KARR, a well-known architect of New York, has, for the past four or five years, been carrying on instruction in architecture by mail, conducting courses in architectural drawing and design, architectural engineering, technical design, and decorative art and design. The courses occupy

from two to four years, and may be begun at any time. The tuition fee is fifty dollars per annum for any full course. For students who cannot conveniently attend a regular architectural school, such tuition as this is infinitely preferable to any attempt at self-instruction, and Mr. Karr's own attainments give sufficient assurance that his pupils will be carefully and skilfully directed. Those who wish to learn the particulars of the courses given, and the requirements for entering them, should address Mr. C. Powell Karr, 23 Warren Street, New York.

A CURIOUS story is related by *Le Génie Civil* to illustrate certain points in regard to the responsibility of railway companies for accidents. Some time ago, a train was thrown from the track at the bridge of Étumières, near the station of Epône, on the Western Railway of France, and the postal-car was rolled down an embankment, more or less injuring six postal-clerks in the car. These sued the railway company for damages, and the final decision was rendered a few weeks ago. Meanwhile, arrests had been made, and a criminal trial held, which showed that a certain Durand had been employed by the company, first as a section-hand at the Epône station, and later as a brakeman, but had been removed by the company, although not formally discharged. After his wages were cut off, Durand went to Paris, and, when all his resources had failed, and he had spent his last sou, concocted with his mistress, a girl named Robert, a scheme for wrecking and robbing a train on the railway with which he had been connected. He knew what trains in the evening carried the cash collected from the local stations, and was perfectly familiar with the ground about the Epône station, and was, besides an expert track-layer. In accordance with their plan, he and the Robert girl boarded a train in Paris, late in the evening, which would carry them to Epône. Neither of the poor wretches possessed a penny, but Durand had two old workman's passes with his name written upon them. However, no ticket-taker appeared, and they reached Epône without having been asked to show either tickets or passes. On reaching Epône, they descended from the car on the side farthest from the station-platform, without being seen by any one, and made their way to a tool-house which Durand was familiar with. Knowing where the key was hung, he easily found it, opened the tool-house and took out a wrench, a hammer and a crowbar. With these tools the pair made their way along the track, passing in front of the station, and crossing a highway, where the flagman was asleep, to the bridge of Étumières. Here there was a high embankment, down which they proposed to precipitate the train which would soon be due on its way from Havre to Paris. Durand then pulled up a rail, and turned it over on its side, and wedged two fish-plates crosswise in the chair nearest the approaching train; and he and the girl climbed over the hedge, and hid themselves in the bushes to await the result. The train arrived, but passed over the obstruction in safety, although it was terribly shaken, so that the engineer telegraphed from the first stopping-place, some miles beyond, back to the station-agent at Epône, that there was something wrong on the track at the bridge of Étumières. The officials at Epône seem to have taken no notice of the telegram which was proved to have been promptly sent; and Durand, meanwhile, set his trap again, to catch another train, coming from Cherbourg, which would soon be due, and which, as he knew, also brought money from the local stations. This time he removed the rail entirely, and laid it on the embankment. In a few minutes the train arrived, and all the cars but one left the track, while the body of the postal-car was separated from the trucks, and pitched down the bank. What Durand and the girl did next we are not informed, but they were soon after arrested, tried and convicted, and both sentenced to twenty years' imprisonment, with hard labor.

WHO the demand of the postal-clerks for indemnity, the railroad company answered that it was not responsible for the accident, this being the result of *force majeure*, for which it was not liable; while the postal-clerks, it claimed, were travelling in the Government car, for the safety of which the Government assumed the responsibility. The court, however, decided that, even if the company was not liable for the consequences of the criminal act of another, it became responsible for them, by reason of its negligence, which made it possible for the act to be committed. The first negligence was the

omission to ask Durand and the girl for their tickets. If this had been done, their failure to produce them would have brought upon them the close scrutiny of the officials, and perhaps alone have prevented the attempt. Further negligence was shown in permitting the pair to alight on the side of the car furthest from the station platform at Epône. It is contrary to the statute law in France for passengers to leave the car on that side; but railway companies are bound to exercise proper surveillance to prevent the infringement of the statute, and it was shown that no such surveillance was exercised at Epône. Moreover, the fact that the culprits were able to walk half a mile up the track with their tools, without being observed by the station officials, or by the slumbering flagman, showed a lack of proper vigilance on the part of the company; while the leaving of track-layer's tools in huts of which the key could be obtained by any one, was not only negligence, but a violation of the plain intention of the railway ordinances, which prescribe that all track-laying tools shall be kept in locked houses. If the company had exercised proper vigilance, the court said, Durand and the girl, with no money, and only the worthless passes, would not have been able to travel on the train to Epône; they would not have been able to slip out unobserved, or to get at track-laying tools, or to get to the bridge with them, and the crime could not have been committed. These collected negligences, the court said, were amply sufficient to make the company responsible for the damage, and it was accordingly condemned to pay sums varying from six hundred to three thousand dollars to the injured persons, none of whom had any bones broken; and to pay all the costs of the suit.

THE Administration at Washington has been called upon to decide a somewhat nice question. Not long ago, a certain Dr. Dougherty went to England, and there engaged two professional pugilists, for the sum of ten thousand dollars, to come over to this country and give exhibitions, for his and their joint benefit. After their arrival some one, reading in the newspapers about this arrangement, notified the Commissioners of Immigration in New York, who, not being able to reconcile it with the provisions of the Contract-Labor Act, hunted up the pugilists. They proved to be about to return to England, disappointed at the prospects which awaited them, but, before their departure, they signed an affidavit, giving the story of the making of the contract with them. With this affidavit, Dr. Dougherty can be called to answer for his proceedings. Under the law, "artists" only may, with impunity, be hired abroad for service here, and the question now is whether a prize-fighter is an artist, in the legal sense of the word. It has already been held that a clergyman, who edifies an audience with his earnestness and eloquence, is not a proper subject for clemency under the law, and a heavy fine has been imposed upon some church officials who ventured to import one under an agreement as to his salary; but, on the other hand, a person who can kick and caper on the stage, no matter with how little grace, is indubitably entitled to the artistic privilege. To which of these two categories the prize-fighters should be assimilated it will, indeed, be difficult to determine. On the one hand, inasmuch as they thrust out and brandish their limbs in an interesting manner, they resemble the artists whom Terpsichore and Congress favor; on the other hand, inasmuch as they aim at something in their muscular movements, they display a certain amount of mental effort, which allies them with the prohibited pulpit orators; and the decision would seem to depend on whether the muscular or intellectual quality preponderated.

COLONEL NORTH, whose splendid new house at Avery Hill, in England, was shown in some fine photographs at the Exhibition of the Architectural Club in Boston, a year or so ago, has, it appears, quarrelled with the architect and the builder, both of whom have sued him to get their pay. The builder's contract was nearly four hundred thousand dollars, and the usual counter-claim for delay and inferior work has been set up. What will be the result, it is impossible to say. It does not take much litigation over a four-hundred-thousand-dollar building to absorb the whole of the architect's small percentage, and most architects, in such cases, conclude that it is better to submit philosophically to the loss of a part of their money, than to spend the rest in trying to get their rights by force.

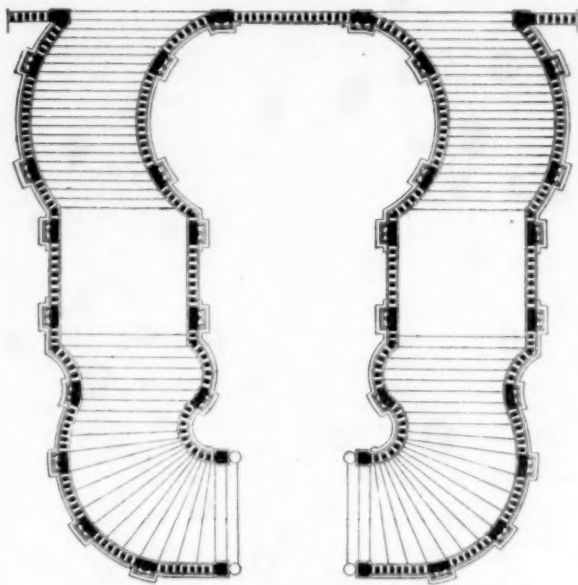
STAIRWAYS.¹—I.

Fig. 1. Stairway in the Court of the White Horse, Fontainebleau.

ACCORDING to the present dictionary definition of the term, a stairway is a flight of stairs or steps; but in early times such means of ascent and descent must have consisted in easy slopes and inclined planes. This was, at least, true of external stairways of monumental proportions; the others were for the most part very simply treated by the ancients, who looked upon them as necessities destitute of decorative possibilities.

The Pelasgian and Etruscan monuments exhibit stairways of remarkable proportions, like the celebrated ascent to the Acropolis of Sipylus in Asia; there was also a staircase of noble dimensions which gave access to the Temple of Jerusalem on Mount Moriah. To these may be added the stairs of the Propylæa, the flight leading down to the Forum from the Capitol, and the stairway of the Giants in the Doges' Palace at Venice. The last, constructed about 1485 by Rizzo, is of precious marbles, and owes its name to two colossal statues at the foot of the flight representing Mars and Neptune. In the court of the Bargello at Florence is an external stairway dating from 1367, the landing of which, midway of the flight, is adorned with a triumphal doorway, added in 1408.

Among the most curious ancient external staircases, Viollet-le-Duc mentions the one at Canterbury Cathedral: "This staircase, built in the twelfth century, led to the reception-hall. It is composed of a broad flight of steps perpendicular to the entrance, with a landing at the top; it is covered, and the roof, resting on horizontal wall-plates, is supported by a very rich double open arcade, the columns of which diminish in height according to the elevation of the steps." Viollet-le-Duc also cites the three-flighted stairway, with a gallery of communication supported on arches, in the great hall of the Castle of Montargis, dating from the second-half of the thirteenth century, and the one which Louis XII, who was gouty and unable to climb to the Sainte-Chapelle by the stairs from the palace, had constructed for his accommodation along the southern wall. It was massive, vaulted and roofed, and so easy that the king's litter could be borne by the porters right into the porch.

Among stairs of easy slope may be mentioned those still to be seen at Amboise and in the Town-hall of Geneva, as well

as the quite modern staircase in the Cour Caulaincourt at the Louvre. All these are known as *escaliers à giron rampant*; that is, with sloping tread and small risers, so that horses can ascend and descend them.

The two splendid straight stairways in the gardens of Versailles of one hundred and three steps sixty-six feet wide, and constituting, with the constructions of the Orangery, a magnificent ensemble, are well-known. Within the palace itself there

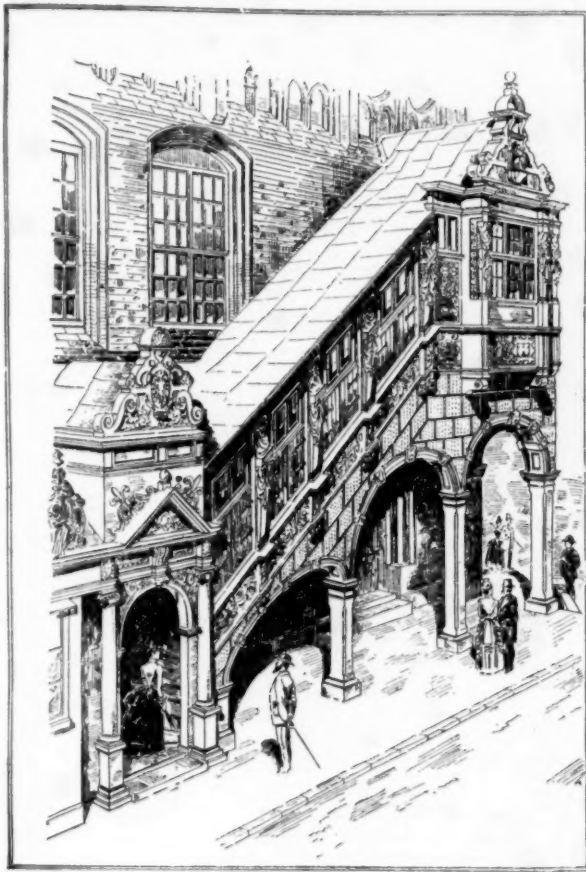


Fig. 3. Town-hall, Lübeck.

are some remarkable staircases, but these will be noticed farther on, when a more detailed examination has been made of external stairs. One of the finest examples of the latter may be seen in the court of the White Horse at Fontainebleau (Figures 1, 2). It was built in 1634, under Louis XIII, and is said to have cost one hundred thousand livres. It took the place of a construction which was much simpler, although comprising two semicircular flights. It projects sixty-nine feet

from the main façade, and has a total width of fifty-nine feet. The open arches supporting it give free circulation to carriages and riders; the decorated motives are executed with great care.

The old two-flighted staircase at the Tuileries, which was executed by Visconti and removed by Lefuel to secure direct communication between the emperor's study and the gardens, is worthy

of notice here: the two flights terminated on a common landing, and this was connected to the palace by a small bridge, so that light could be admitted to a bay beneath. One of the most recent external staircases may be seen on the west front of the Palais de Justice, toward the Place Dauphine; it gives access to the Salle des Pas-Perdus.

An interesting example of the few external covered stairways which now exist is to be found at the Town-hall of Lübeck. It dates from the Renaissance, and leads up to a landing forming a façade motive at the first story (Figure 3).

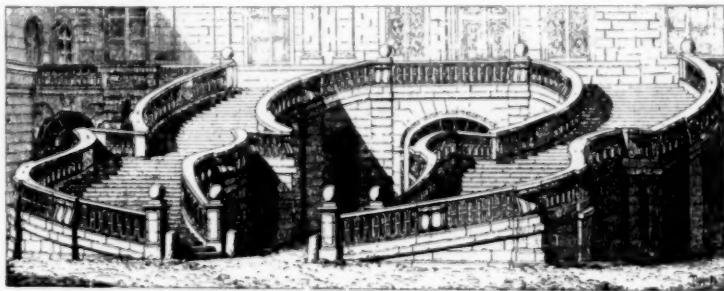


Fig. 2. Stairway in the Court of the White Horse, Fontainebleau.

¹ From the French of M. Brincoirt, in Planat's "Encyclopédie de l'Architecture et de la Construction."

INTERIOR STAIRCASES.

Inside their edifices the Romans generally employed straight stairs, taking care that the flights should not interfere with the disposition of the bays, a principle which was scrupulously observed during the Middle Ages and the Renaissance, but

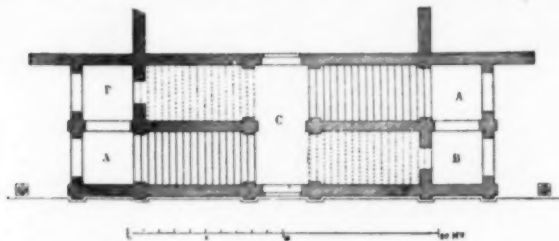


Fig. 4. Stairway, after Palladio.

which has, unfortunately, been disregarded in modern dwellings and even in important public structures, where the stairs are often allowed to cut a window and sometimes to prevent one from being opened.

The Romans usually built their straight stairs in two flights divided by a partition, with an intermediary landing. The two-flighted staircase under the Pavillon de l'Horloge of the Louvre may give some idea of these. But Blondel calls attention to the fact that the remains of stairs discovered in most of the ancient Roman ruins have very high risers, and are ill-suited to civil constructions, on account of the steep inclination of their string-pieces.

Palladio presents a disposition for facilitating communication, consisting of two stairways side by side, with a common intermediate landing (Figure 4). There are two starting-points: one at A, the other at A'; the landing is at C. It is clear, then, that a person starting indifferently at A or A' can make his exit at B or B', or *vice versa*. In the old Hôtel de Ville, at Paris, there were two magnificent straight flights of stairs running from the vestibule on the ground-floor in opposite directions, thus accommodating two sections of the edifice.

Among straight stairways having successive landings, with a string-wall receiving in turn the two flights, we may cite those of the Châteaux of Azay-le-Rideau and Saint Germain. In the latter, the rampant barrel-vaults consist of a stone framework with brick filling. The landings all communicate with loggie overlooking the park, the whole forming a projecting body on the façade.

The Romans made use also of winding or circular stairs, like those in Trajan's Column. Staircases of this kind became



Fig. 5. House of Charity, Strasburg.

common during the Middle Ages, offering, as they did, a great many advantages to the architect: they occupied but little space, they made it possible to establish communication between living-rooms in different stories, and in fortified castles they could be easily defended. Many fine examples of them still exist, and we still find in the "*Théâtre de l'Art du Charpentier*," by Mathurin Jousse, a description of revolving stairs most ingeniously arranged for purposes of defence. They will be discussed in connection with wooden stairways.

One of the most celebrated winding staircases is that of the Romanesque Church of Saint-Gilles in Gard, which has given its name to that kind of circular stairs in which the steps are supported on a continuous spiral barrel-vault reaching the whole height of the stairs, with a newel which is sometimes solid, sometimes open. In the latter case the newel may even be reduced to a series of columns, as in the Barberini Palace and at Caprarola.

This disposition was very frequently employed in the Middle Ages, though without the vaulting, one end of the steps being inserted in the main wall, the other resting upon the newel. Circular stairs were introduced quite generally into the castles of the eleventh and twelfth centuries. Aside from such as communicated with the entire house, private apartments in different stories were often connected by special flights. Joinville informs us of the use to which Louis IX put a staircase of this kind. Queen Blanche of Castile "would not suffer, so far as her power went, that her son should keep his wife's company; so they held their converse on a spiral staircase which led down from one chamber to the other."

Winding stairs were often constructed in the thickness of the walls; sometimes they projected into the apartment at one of the angles, and were even open at the top; in some stairways of small diameter a well-hole took the place of a solid newel; again the stairs were sometimes enclosed in partially or wholly openwork cages. At Notre Dame in Paris there is a stairway of this kind dating from the thirteenth century, in the first story of the southern tower.

The Cathedral of Rheims has a stairway in the upper part of the towers winding between colonnettes and possessing the peculiarity that three steps are cut in each course of stone. The Cathedral of Mayence also has a similar staircase.

We will cite likewise as an example of open interior staircases the one with successive flights in the Cathedral of Rouen, a masterpiece of elegance and delicacy, and that which gives access to the rood-loft of Saint-Etienne-du-Mont, and which winds about one of the columns of the choir.

In the so-called House of Charity at Strasbourg, there is a stairway dating from 1581; it is a curious and bold construction, the vise being supported on colonnettes crossing the balustrade of the inner spiral (Figure 5). Staircases of this kind were very common in Alsace in the sixteenth century.

Down to the fifteenth century the castles were provided with numerous staircases, but they were very narrow. This is accounted for by the fact that at that time only the utilitarian aspect of this indispensable construction was considered, which, for mediæval architects, meant merely a means of reaching the upper stories of a dwelling and of connecting private apartments. The magnificent circular stairs built for Charles V at the Louvre furnish a rare exception to the rule. Sauval, in his "*Histoire et Antiquités de Paris*," gives a long description of them, which will also be found quoted at length in the dictionary of Viollet-le-Duc. They were wholly separate from the palace, being joined to it by only a landing.

The same disposition was adopted for the ancient staircase of the Château de Gaillon, known as "la grant viz," and leading up to the chapel from the southwest angle of the court. It was considered one of the noblest ornaments of this court, if the tales of the times can be relied upon, for the staircase itself was entirely destroyed. The wealth of the external decorations and sculptures, the pendentives of the interior and the Saint George in copper crowning the summit won especial praise.

Sauval also speaks of the spiral staircase, with double newel, which formerly existed at the establishment of the Bernardines at Paris; it was begun in 1336 by Pope Benedict XII; "there were two doors of admittance and two ways of ascent neither of which could be seen from the other." The same peculiarity of construction occurs at the Castles of Chambord and Pierrefonds. At Chambord the staircase is at the centre of a Greek cross, the arms of which form four great guard-rooms. "It is a monument of itself," remarks Loiseleur, — the cage which is completely isolated and open, is composed of pilasters which follow the incline. Two superimposed flights winding like a helix pass alternately one above the other without uniting. At the Merchants' Exchange (formerly the Corn Exchange) in Paris, an old staircase of similar disposition has been preserved. It comprises two independent flights running one over the other, with an open newel.

Toward the fourteenth century a certain luxuriousness began to appear in the staircases of seignorial dwellings; the stairs as well as the newels were constructed on a larger scale and the latter were adorned with fine sculptures. The Castle of Châteaudun contains one of the most beautiful examples of sixteenth-century staircases. It is inscribed within a square cage, the angle steps being borne on squinches which reduce the square to an octagon. Corbels at the angles of the octagon support a spiral cornice and the newel is decorated with ornaments of great delicacy.

As interesting specimens of fourteenth and fifteenth-century dispositions may likewise be cited the stairs in the court of the Hôtel des Ambassadeurs at Dijon, an external staircase at Riom (Puy-de-Dôme), the staircase in the house of Jacques Cœur at Bourges, as well as the pretty winding flight which leads to the old chapel in the Hôtel de Cluny.

At the Castle of Blois, which spans three different architectural epochs and exhibits three different styles, there are several remarkable stairways. In the inner court are two square towers, at the angles of the Louis XII portion, which enclose circular stairs. The largest is very beautiful. Its newel consists of engaged colonnettes bearing the rampant vault which springs from heavier columns projecting from the wall. The upper part is decorated with a sort of ducal crown out of which rise the vaulting ribs; between these, alternate layers of brick and stone can be seen. But the staircase of Blois which surpasses all the others in grandeur and richness is that at the centre of façade of François I; its superb decorations, open-work balustrade and delicately sculptured niches, adorned with elegant statues of women in the style of the school of Jean Goujon, are familiar to every one.

[To be continued.]

THE DOLPHIN IN ORNAMENTATION.¹—II.



Ivory Coffer, XVI Century. From Havard's "Dictionnaire de l'Aménagement."

IN the first centuries of the Catholic Church we see a great many conventional symbols and images, but few, almost no, figures. This either indicated that to the early Christians the figurative myth possessed in the highest degree the qualities which make a distinction between such or such animals, such or such attributes; or that respect towards the venerated object forbade its realistic representation.

Christianity itself, like any religion in its infancy, had recourse to comparisons and emblems, and seems at the outset to struggle by means of symbolisms with the idolatry of Rome and Athens. She even appropriated a great number of pagan symbols, among which the dolphin must be especially pointed out; this was done, sometimes, in order to impress the imagination of the common people and fishermen, as is asserted by Saint Clement of Alexandria; at other times through mere conciliatory concession to ideas already received, according to Saint Paulinus of Nyssus.

The dolphin, which was long considered as the friend of men, who were protected and helped by him in their enterprises; as the rapid messenger of Divinities and Cupid, and as the true expression of kindness and sincere affection, was used at once by the Fathers of the Church to represent the love of God, the faithfulness, the zeal and eagerness to accomplish one's duty—the virtues of the true Christian. All was described in a figurative language entirely religious, or in spiritual decorations very easy to be understood. In allusion to the service rendered by this kind cetacean to the poet Arion, when he brought him to the shore, the dolphin used to represent the migration of souls, whom he draws towards the anchor and port of salvation, our Saviour. Many monuments represent him and especially those furnished by the catacombs and tombs. On the tombstone of the Christian woman Redempta, the dolphin guides a dove, image of the soul of the deceased, towards a chrismatory representing Jesus; on an inscription in the cemetery of San Sisto, we find the conviction and aspiration of the neophyte represented by a vase upon which two peacocks are resting, accompanied symmetrically right and left by dolphins swimming towards an anchor. Elsewhere, the dolphin alone represents the Christian, coming out victorious from this life of trial and rapidly nearing his Creator, the abode of the Blessed. In this case the dolphin holds the palm of the martyr, he is impatient and swims with swiftness. On the epitaph of Culimora, which has been preserved to us by Father Lupi, a dolphin can be seen with his fins spread out and his mouth open, contemplating with affection the monogram of Christ, X P, towards which he is swimming.

Glancing over the precious relics of that epoch, at every step this

symbolic fish appears in the mystic figures of the primitive Church; thanks to his legendary qualities and numerous allusions, we see him on tombstones, on painted or engraved decorations, onyx, carnelian stones or jewels. At the side of the common fish, which call our attention to Jesus Christ and the Apostles, the dolphin occupies a place similar to that held by the lamb, the dove, ship, vase, anchor and palm; emblems well-known and many of them still cherished and respected. However, although he was classed or ranked among the attributes of St. Luke and used to recall the profession of the first disciples (besides his other numerous applications), the dolphin seems to have been cast out of sight and entirely forsaken at the very moment when the Church triumphant rejects little by little the conventional, to venture shyly upon the personification of the Divinity and sacred things. Then on all sides basilicas were built, covered with the figures of Christ and the Blessed Virgin; scenes from the Old and New Testament, and the history of the prophets and martyrs. This new mode of decoration and language, in which expression and sentiment are especially sought for, in preference to perfection of form, is more impressive than that using conventional signs, and, from that time on we do not meet the dolphin, save in some indispensable emblems, during the long Latin, Byzantine and Medieval periods.

It is only at the very first glimmerings of the Renaissance that the dolphin, true friend of the poets, medium between love and soul, long forgotten by artists and even by those for whom he was a sacred symbol, is piously taken up, as a precious waif of that antiquity just beginning to be so dearly loved. Soon, Dante, the most learned man of his century, praises him in verse, as was done by the old writers; the divine Raphael harnesses a dolphin to the shell-car of his superb Galatea; the innumerable decorators, who vie with each other in covering metals, woods, stones, jewels and books with graceful ornaments and fanciful arabesques, under the fertile inspiration of the great masters, render him his entire heathen and catholic significations. His body is rounded with supple and graceful curves; he is ornamented with coquettish scrolls and varied leaf formations; elegance and grace are given to him, and thus embellished and exalted, he comes to us and enters the world of ideal ornamentation where he will remain forever.

To these ardent and fertile artists of a unique epoch, it was allowed to create, as in the heyday of antique art, by the aid of an animal insignificant in itself, little adapted to please and devoid of everything attractive, a *motif* light, rich and expressive, which by rejuvenating the poetical myths of early times, will pass down the ages unchanged and will always lend itself admirably to the whims of the ornamentist. From that moment, the dolphin became an elementary and classical form of ornament. He was used unceasingly with numerous modifications, through simple inspiration or symbolism, for the church as well as for the convent, for the palace as well as for the castle, because, thanks to the flexibility of his body he yields himself easily to the most diverse forms and combinations; he accompanies perfectly the flattened bases or slender vases which are used as the starting-point to grotesques, so picturesquely pointed out by Piccolpasso under the name of "*candelieri*"; he terminates or begins very well the numerous voluted combinations, the numberless friezes in strong or nervous ornamentation, delicate interlacements and graceful foliages. The Italian Renaissance made frequent use of the dolphin with a superior tact and he was used in great profusion. He is everywhere, in paintings and sculptures, fountains and cascades, designs and engravings, bronzes, and goldsmith's works, stuffs, book-bindings; in the ceramics and remarkable stone pavements, furniture and incrustations, iron, carving and the chasing on beautiful arms; upon all these things, which we admire and study daily as wonderful models, yet find difficult to equal.

Thanks to the rapidly established general fancy this decorative element rapidly and easily spread from Rome, Florence, Milan, Siena, etc., to Spain, Germany (where it was very skillfully put to use) and France, where the dolphin was already known and where for a long time he had had the great honor, thanks to chance, to be chosen as a figure for coats-of-arms by powerful lords and the eldest sons of kings. Every one remembers, of course, that the province of Dauphiné draws its name from one of its rulers called Delphinus; that the descendants of this lord were called Dauphins, and through allusion and analogy, took as coat-of-arms the dolphin, with which their parade casques or helmets were ornamented; and that finally in 1349, one of those lords, Humbert II, master of the Viennois, transferred his patrimony to Philippe de Valois, with the condition that the heir presumptive to the crown of France should be called thenceforth the Dauphin. Consequently, when the legendary cetacean reached us from over the mountains, richly adorned and ornamented with rare perfection, he was already known to the artists of our country; he was already famous from north to south and had even undergone some happy modifications or improvements, during the time we had made use of him. However, in spite of timid trials of embellishment, he had not yet lost his natural and consecrated aspect, for up to that time he seems to have been exclusively reserved for royal attributions, emblems, mottos, arms, etc., in short for everything which demanded a certain respect for tradition and a faithful observance of the laws of ceremony and heraldry.

When Louis XII, the archbishops Georges d'Amboise and Francis I, (the latter bringing a new mode of dressing as his most precious conquest) came back from their respective Southern expeditions, and

¹ From the *Revue des Arts décoratifs*. Continued from No. 807, page 164.

brought some Italian masters into France, the dolphin truly became in France a *motif* of pure and current ornamentation, with his capricious allurements, freely used after the Italian fashion for civil and religious decorations. Thenceforth, pilasters, columns, wainscots, furniture, armor, etc., are covered with dolphins, ornamented with graceful additions unknown to us till that moment. They can be seen even now on the remains of the church of Essômes (Aisne) and on the rich panels in carved wood from the Château de Gaillon. One of the most interesting sacred vases of the sixteenth century is the beautiful chalice of the church of Saint Jean du Doigt, in Brittany, which has its upper part decorated with two dolphins facing each other; their heads are covered with acanthus leaves shaped so as to form a helmet and their tails are terminated by flowering trunks and fruits; among animals used to form the handles of guns, the dolphins are again preferred, whether they indicate royal power or form an allusion between the rapidity of their course and that of shooting. After this brilliant period, during which Du Cerceau presented the dolphin unceasingly in all positions and in all possible aspects amidst his wonderful arabesques, ornamentation gradually lost its refinement and exuberance; it became by contrast more sober, we were about to say darker, with the war of religion, to such a point indeed, that under Henry IV and Louis XIII, the leafy foliage and the arabesques where the dolphins played so harmonious a part, no more exist. This poor fish is immediately put aside; he is no more a decorative element which is adorned freely and emulously with rich ornamentations; he becomes again, under his natural aspect, a symbol consecrated to royalty; he becomes a slave.

In Italy he continues to be petted, embellished and used unceasingly, while with us, he is used only with the liquid element; we find him amidst the foaming masses of waters of our parks; on the fountains, on the borders of ponds which he feeds, or he decorates the vases of the basins; he still accompanies Amphitrite, Venus or Cupid. Thus he goes back into his antique environment and near his beloved masters, till the great decorators of the reign of Louis XIV, Lebrun, Berain and Lepautre, come to seek him and bring him back again, in order to introduce him once more into charming arabesques and by so doing render to him a little of his old splendor. After these masters he was taken up especially by Bouchardon, who made use of him many times for his vases and sceneries; next Valadier, remembering the old Christian symbol, ornamented with dolphins the upper part of the bell of Saint Peter's at Rome; and finally he was used by the cabinet-makers of the court, who formed with him, amidst reeds, the principal or unique design for the ornamentation of the furniture to be used by the royal family.

From that time on, in spite of his political dethronement, the dolphin preserved the place he deserved and maintained an honorable place in decorative art.

Although he underwent again sometimes the fluctuations of mode and the exigencies of style, he was constantly coming back under the hand of artists, whom, according to the legend, he loves and never forsakes. Finally he remains among us as an elementary type of ornamentation, a type always growing younger and more attractive, flexible and fantastic; adapting himself to all materials, wood, stone, iron, bronze, painting or stuffs, and always offering numberless chances of interpretation to those who make use of him.

Such is the sketch of the march and transformations undergone by this ornament in the West.

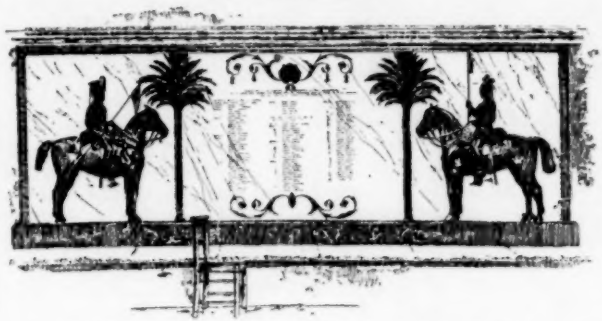
The dolphin born, as it were, of Asiatic hordes, developed in the Latin world, thanks to fortunate circumstances. However, he did not forsake his antique origin completely; and in the arts of the East, he can be traced, although at intervals. Thus, we find him, amidst numerous creations of dragoons and monsters, in several Chinese and Japanese pieces, for the decoration of which he offers the same attractions and capabilities that he had with us. The costume only is different; the acanthus leaves and numerous flowers have made room for a special system, very much loved by artists of those countries, consisting in a succession of scrolls or waves, appendages shaped like commas and hooks in volute. The most remarkable example that we know, comes from a cloisonné enamel (collection of E. André) representing an ornamented head, the hair and mustaches of which are made of dolphins.

(To be continued.)

L'ÉGLISE DU SACRÉ CŒUR, PARIS. — The Church of the Sacred Heart on Montmartre, Paris, has been consecrated by Cardinal Richard in the presence of the Comtesse de Paris, the Duc d'Alençon, the Duchesse de Montpensier, and a great crowd of lesser folk. In 1873 Cardinal Guibert solicited the sanction of the Government to the erection of "a temple destined to invoke the Divine protection of France," the site being obviously chosen as one overlooking all Paris, and as being the legendary scene of the martyrdom of St. Denis. The Republicans objected to the scheme as implying an act of penitence on the part of Paris for its irreligion, and as attributing thereto the disasters of 1870; but the Assembly sanctioned it by 382 votes to 128. The site was purchased for 722,000 francs, and a subscription was opened which has now reached £1,000,000. M. Abadie's Byzantine design was accepted, and the first stone was laid in 1875. The edifice is 230 feet long by 160 feet wide. It will have a grand dome and a lofty tower. The crypt, nave, and gallery will accommodate 10,000 persons. Subscribers of from 300 francs to 10,000 francs have their names inscribed on the walls or pillars. — *New York Evening Post*.

EQUESTRIAN MONUMENTS. I.—XL.

THE EAST INDIANS.



Bas-relief in Honor of the Queen's Ninth Lancers, Exeter Cathedral.

THE Queen who so respected the Duke of Wellington is now, by the grace of God and the shrewdness of Disraeli — who foresaw how disagreeable it would be for her to go out to dinner behind her own daughter, the wife of the future German Emperor — Empress of India; and little by little the English people are ceasing to smile at this secondary title, and consider it wholly justified by the closeness of the connection which binds the British Islands with the great Indian empire. It is felt to be an enduring title, too, for in whatever way or howsoever soon the other colonies of England may arrange a more or less complete independence of the mother-country, there is a general conviction that India can be separated from England only by force of foreign arms, and to resist these England can always count not only on her own resources, but upon the assistance of former colonies who may have severed all actually binding ties save those feelings of sentiment which would probably bring this country, too, into alliance with her in such need.

Outsiders do not know much about the intimate relations between England and India, and it is a constant source of surprise to encounter Englishmen who seem to have the most intimate knowledge of that Eastern land, its past and present history and its trade relations with the mercantile world of England. How England came

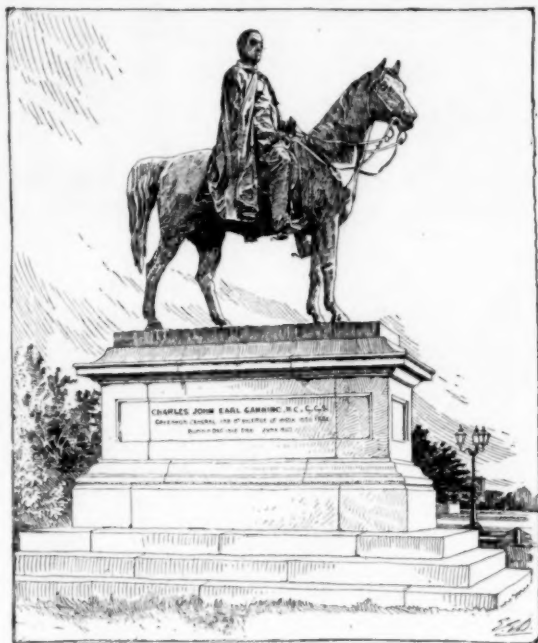


Lord Gough, Dublin. Foley, Sculptor.

into possession of the country by degrees, the first voyagers reaching it by passing round Cape Horn, because the Pope had granted to the Portuguese the exclusive privilege of proceeding eastward around the Cape of Good Hope; how Henry Hudson, in seeking a northwest passage to India, only found the vast land-locked bay that bears his name; how other adventurers, under letters granted by Queen Elizabeth and her successors, were little better than pirates capturing Portuguese and Spanish caravels when they had a chance, and never taking any prisoners, though ship and cargo were always retained, are matters related to the early maritime history of England with which we have no concern. The growth of England's

¹ Continued from No. 806, page 152.

interest in the East was slow, and it was for long less in magnitude than that secured by the Dutch and the Portuguese; but it grew steadily, and whenever Dutch phlegm and Portuguese arrogance would not readily yield to British persistence, there was never



Earl Canning, Calcutta. Foley, Sculptor.

any hesitancy in resorting to force, which was later as unhesitatingly applied to the French, who had gradually secured a footing in Southern India.

In the course of two hundred years, the great East India Companies, who were seeking only the evasive sixpence, had secured for England a vast empire over which any queen might be proud to rule, even without the more imposing title invented by the famous "Jingo" diplomatist. In accomplishing this, John Company had been forced to organize not only a complete civil service, but a standing army — whose deeds and misdeeds make no small part of England's military history — and, when things got beyond the control of the civilian government, the home authorities lent a hand, and finally, in 1859, abrogated the Company's charter and assumed entire control.

Even to Americans there are Indian names as familiar as household words — Delhi, Cawnpore, Trichinopoly, Pondicherry, Lucknow, to say nothing of names made familiar by modern commercial relations. So, too, there are men's names as well-known as any of our own: Clive, Napier, Havelock, Colin Campbell, Warren Hastings and a host of others all more or less surrounded by the glamor that overhangs all things Oriental.

No more than History has Art neglected these Eastern heroes, and many of them have been honored with equestrian memorials, which range in interest from the stiff bas-reliefs in Exeter Cathedral that honor the memories of the officers of the Queen's Ninth Lancers who fell in India to Foley's splendid statue of



Viscount Hardinge, Calcutta. Foley, Sculptor.

General Outram at Calcutta, unquestionably the best piece of equestrian sculpture ever produced by an English sculptor, and one of the best pieces in the world.

Most of these statues have been erected on Indian soil, but there are some in the British Islands. Before the gateway of the Castle at Chester stands the statue of Stapleton Cotton, Viscount Comber-

mere, member of an illustrious family noted for its able military service, who himself served in Flanders, Spain, the West Indies and in India, and very probably deserved a much better statue than Marrochetti succeeded in creating, for this is inexpressibly feeble and characterless. The Duke of Wellington, too, may be considered as belonging to the Indian group, though his closest connection is with



Sir Thomas Munro, Madras. Chantrey, Sculptor.

the Napoleonic incident. It may be remarked that some of the Indian might have been included with the Napoleonic soldiers, for English armies are migratory bodies, and in time of need an able leader is often called from one scene of activity to another. So, in place of including in a former group the statue of Hugh, Viscount



Lord Mayo, Calcutta. Thomas and Hamo Thornycroft, Sculptors.

Gough, who served with Wellington in the Peninsula, it seems best to consider it here, for his most important service was rendered in China and India, between 1830 and 1849.

In 1880, eleven years after his death, there was unveiled in Phoenix Park, Dublin, an equestrian statue of Lord Gough which has the unusual merit of being mounted upon a bronze pedestal, in

casting which ten tons of metal from cannon captured by his lordship were used. The statue was designed and in the main modelled by Foley, though left by him incomplete at his death, so that it had to be finished by his pupil, Brock. What Foley's original sketch showed is not known, but a lack of money prevented his first conception being carried out. The human portion of the group had, of course, to be original, but it was not essential that the equine portion should also be new and unused, so, as Foley had some twenty years before made a very excellent horse for the statue of Lord Hardinge at Calcutta, a replica of that horse was secured for the Dublin statue, as it was reasoned that it was not likely that a large percentage of Dubliners would ever see the original in India. As to the merits of this horse, it is said that the original in Calcutta is intensely admired by those Arabs who visit that city, and they, at least, should be able to know whether or no the sculptor was true to nature. Gough is represented bareheaded, in the uniform of a Colonel of the Royal Horse Guards. The entire statue, with its pedestal, is 13½ feet high.

These are the only statues of Indian worthies to be found in Great Britain, the others having been placed in the country where their deeds brought them fame, and taken altogether they form, from a sculptural standpoint, one of the most satisfactory groups that can be found in any country. Foley, Chantrey, Boehm, Thornycroft, and Brock make a quintette which would take good rank anywhere and, as just said, the statues they executed for India make a group of more than average excellence.

Besides finishing Foley's statue of Gough at Dublin, Brock had to render the same service for Foley's unfinished statue of Canning, who was Governor-General at the time of the Sepoy Mutiny. Why a civilian statesman should be handed down to posterity on horseback is not plain, but, granted the necessity, it must be conceded that the sculptor acquitted himself fairly, for in no way would it be

would admit, it was not to be expected that a transitory and shifting population would pay much attention to its surroundings except from purely materialistic standpoints. So far as any craving for artistic surroundings may have existed, it may be supposed they were abundantly satisfied by the wondrous specimens of Indian architecture

and sculpture that could be seen on all sides. But as the European population increased in number, more and more of the accessories which accompany life in the other continent began to accumulate and the cities began to take on a semi-Europeanized air, and with it, perhaps, came a desire for some of the accustomed civic adornments, and what could be more characteristic than an equestrian monument? So, though history had offered earlier abundant subjects worthy of illustration in this mode, it was not until 1859 that the first equestrian statue was set up in Calcutta—where one would look for an early statue. This statue, too, is the work of Foley, and represents Viscount Hardinge, whose claim to commemoration rests on a long and reputable military and civic career—which, in some ways,

was very similar to Wellington's—the chief event of which, so far as it concerns his connection with India, was his successful handling of the great Sikh war in 1845, when he was Governor-General.

As to the statue itself, we have the testimony of Arab visitors as to the life-like character of the horse, but others who do not have the same opportunities for observation as these children of the desert, may be excused if they find the animal, good as it is, rather theatrically represented. Lord Hardinge's figure, on the other hand, is capably treated, and on the whole the general effect, if not



Sir James Outram, Calcutta. Foley, Sculptor.



Sir Jung Bahadur, Khatmandu. Brock, Sculptor.

possible to imagine that Canning was anything but a civilian. The statue which was unveiled in 1878 is in Calcutta, and the commission was very likely entrusted to Foley because the first equestrian statue erected in that city was modelled by him.

India was for long years merely a place where business-men suffered temporary banishment for the sake of gain, and though personal comfort was always attended to as thoroughly as circumstances



The Maharajah Runnoo-deep-Sing, Khatmandu. Brock, Sculptor.

entirely dignified, is good. As to the pedestal, it was seemingly designed with no thought for the place where it was to stand, though it suits the statue upon it better than many.

Chantrey was the only sculptor who seems to have designed his work with a remembrance that it should be harmonized more or less with its surroundings, and in the lofty pedestal that supports his statue of Sir Thomas Munro is seen the only endeavor to Orientalize

the work, and as this was the first equestrian statue erected in India, being unveiled about 1839, it is strange that his suggestion was not taken up by his successors.

In this statue, which stands at Madras,—the proper place for a statue of the Governor of that State—Chantrey again employed the standing pose for his horse, and again followed his strongly academic method. In fact, the work of no one sculptor is so easily identified by its individuality, one might almost say its sameness, as Chantrey's. His "George IV," "Wellington" and "Munro," might almost be interchanged without any one's discovering the substitution. Munro might guard the Royal Exchange and Wellington the National Gallery, and of all the thousands that passed them not one would note a difference in the group his eyes had rested on daily for years; while George IV, in his light classic attire, would really look more comfortable under a hot Indian sun than he does under London fogs. The pedestal of the Munro statue is said to be fifteen feet high but it has all the air of being much higher. The statue cost £9,000.

Of the statue of Lord Mayo at Calcutta, by Thomas Thornycroft and his son Hamo, which was unveiled by the Prince of Wales during his visit to India in 1876, little can be said on the score of its appropriateness to its surroundings. In spite of the sword at the rider's side, one instinctively feels that Lord Mayo was a civilian and had put on his uniform—really the official dress of a Cabinet Minister—merely for the purpose of having his portrait taken. How much the younger Thornycroft had to do with the work cannot be told, possibly much, for the statue is very different in character from the insipid statue of the Prince Consort in front of George's Hall in Liverpool, the work of the elder sculptor; but still it is not just the sort of thing which we now would expect Hamo Thornycroft to do—but then in the years that have passed since 1876 there has been ample time for development. It is, perhaps, the least interesting of the Indian groups.

Boehm's statue of Lord Napier of Magdala, at Calcutta, the best equestrian group that prolific sculptor ever modelled, has been illustrated in an earlier paper.¹

The one incident in Indian history with which all the world is familiar is the Sepoy Mutiny in 1857, with the siege of Lucknow for a central incident. The stubborn heroism of our own early settlers in face of as bloodthirsty and numerous foes was, in countless instances, as pathetic in its results as were the efforts of the gallant English band, who, for five months, endured the assaults of the fanatic mutineers—during which time it is estimated one shot was fired upon the besieged for every second of that long period—the attacks of cholera and small-pox and the pangs of hunger, yet of all similar sieges not one has excited as widespread an interest as the siege of Lucknow. One consequence of this is that the men who at that time made names for themselves have secured a more enduring fame than falls to the lot of even the most deserving.

On the twenty-fifth day of September, twelve weeks after the siege began, Sir James Outram and General Havelock forced their way into Lucknow, only to be themselves there besieged and to await the deliverance effected, at last, by Sir Colin Campbell on November 17. But though Outram and Havelock were not successful in raising the siege—and they hardly hoped to do so—their forcing their way to the city was an extraordinary performance, and the ultimate success of the resistance was due largely to Outram, who after his arrival assumed command. The siege of Lucknow was but an incident of Outram's extremely active career, which spanned more than forty years of service in India and the countries adjacent, during which he showed all the best qualities of a dashing military leader, whose impetuosity was well under control, and an able civil administrator, qualities which brought him advancement and honor both in India and at home. Here, then, in Outram was the best possible subject; a sculptor could hope to have, one whom History properly demanded Art should honor, one whose career was full of suggestive incident, one whose personal appearance and character offered salient points which could hardly escape the sculptor. Such a man deserved to be honored with an exceptionally good statue and, happily, he has met his deserts, for Foley's statue of Sir James Outram is beyond question a fine conception admirably rendered; it offers, too, a refreshing change from the hackneyed forms usually adopted. Possibly a similar pose might be found in some statuette antedating Foley's work, but there was certainly no large equestrian statue which in any degree was posed in a similar way.

It is rather a pity that so fine a work of art should be in so inaccessible a place, but it is likely that Englishmen who may remember how well the statue looked in Waterloo Place, London, where it was exhibited for some time in 1873 before it was shipped to Calcutta, may sometime take steps to procure a replica for erection in London. If they do not, still those interested in such matters will find the cast of the statue in the Crystal Palace at Sydenham a satisfactory substitute.

Foley has the merit of devising a really original pose in the Outram statue, and as it proved a signally successful invention it was to be expected that it would be copied; but it could not have been foretold that the first copy should be so close to the original as is the statue of Sir Jung Bahadur, Maharajah of Nepaul, which now stands at Khatmandu in that State. The explanation of this singular duplication is as simple as it is singular. The Maharajah took a fancy to have a statue erected to his own glory in his own capital city, and as

he had seen and been immensely taken with Outram's statue he sent to England an order for a duplicate of Outram's statue so far as pose and action went, but changed in costume and the personality of the rider. The work was placed in Brock's hands, in entire ignorance that he was Foley's pupil and successor, and had assisted the elder sculptor in preparing the Outram model. He was therefore entirely familiar with his subject and was able to produce a faithful copy which yet has enough of his own work in it to remove it from the category of sheer copies. His highness could not sit to the sculptor so he sent him his portrait and the gorgeous costume in which he desired the figure should be arrayed. Whether the sculptor had to give bonds while the wardrobe was in his possession does not appear, but Thackeray's amusing account of the Maharajah's appearance at the public dinner given in his honor by the P. & O. Company, during his visit as ambassador to London in 1850, indicates that there may have been propriety in such a course. Thackeray writes:

"O fair the girls and rich the curls,
And bright the oys ye saw there was;
And fixed each oye, ye there could spoi,
On Gineral Jung Bahawther, was!

"The Gineral great then tuck his sate
With all the other ginerals,
(Bedad his trout, his belt, his coat,
All bleezed with precious minerals)
And as he there, with princely air,
Reclinin on his cushion was,
All round about his royal chair
The squeezein and the pushin was."

Personally, judged from the standpoint of civilized Europeans, Sir Jung Bahadur—he was probably knighted in 1858, at the time he was made a grand Cross of the Order of the Bath, by Queen Victoria—was a most unamiable and bloodthirsty wretch, when the exigencies of his career obliged him to think of himself first; for he secured his position as prime minister to the Rancee of Nepaul, by murdering his uncle, the then incumbent, and later banished the queen, deposed the king and promoted the heir apparent to the throne, these steps being accompanied with more or less bloodshed. But as a political character the English hold him in high esteem, as he has always been a firm friend and ally of theirs, and during the Sepoy Mutiny joined Campbell and Outram with a force of 9,000 Gorkhas shortly after the relief of Lucknow; and after that revolt was quieted, came forward with similar assistance whenever his aid was needed. The personal friendship he formed for Outram probably had more to do with his admiration for the statue of the latter, and his ordering a copy to be made for his own statue, than did his appreciation of it as a work of art. Nominally the statue was erected by the order of the Nepaulese Government, but with such a prime minister at the head of it, it may be assumed that the instructions emanated from himself.

Sir Jung Bahadur was succeeded in power by his brother-in-law, Rannoo-deep-Sing, who accepted the traditions of behavior, which his famous predecessor had formulated, not only as regards the maintaining of close friendly relations with the English and carrying on the promotion of English manners and customs, but even imitating him in his rôle as patron of art, for Brock was shortly called upon to make an equestrian statue of the new prime minister, also for Khatmandu.

This one is the only equestrian statue which this sculptor has entirely originated, though he modelled the statue just mentioned, and completed Foley's unfinished statues of Gough and Canning, and one would naturally expect to find in it the evidence of the sculptor's considerable experience in this kind of work, and of his unquestioned ability. But it is rather a disappointing piece of work, and has the air of being done in a perfunctory way, by one who felt that it would never be seen or heard of after it left England. The feeling is natural enough and, really, one would not like to know that away off under the shadow of the Himalayas was buried, away from those who would best appreciate it, a veritable masterpiece.

GOUGH.—Hugh, Viscount Gough, an eminent British general, was born at Woodstown, Ireland, in 1779, and entered the army in 1794. After seeing service at the Cape of Good Hope and in the West Indies, he served as colonel in the Peninsular War, 1808-1814, and became a major-general in 1830. He commanded the army operating against the Chinese in 1841, and took Canton. Receiving the chief command in India, he defeated the Mahrattas at Maharajpore in 1843, and gained victories over the Sikhs in 1845 and 1846 at Moodkee, Ferozeshah and Sohraon. He was made Baron Gough in 1846. The war broke out again in 1848, and he again took the field, defeated the Sikhs at Ramnagar and Chillianwallah, and won the decisive battle of Goojerat in 1849. Returning to England, he was made Viscount and given a pension, and did not again see active service. In 1862 he was made field marshal. He died near Dublin in 1869.

MUNRO.—Sir Thomas Munro was born at Glasgow in 1761. In 1779 he went to India and entered the army of the East India Company, where he served with distinction through several campaigns. In 1804 he was made a lieutenant-colonel and in 1817 a brigadier-general, after which he brought to a successful conclusion the Mahratta War. He was appointed major-general and also Governor of Madras in 1819, and elevated to the baronetage in 1825. He died in India in 1827.

HARDINGE.—Henry, Viscount Hardinge, an English general, was born in 1785 and entered the army in 1798, becoming a captain in 1804. He served with credit in the Peninsular War and was made brigadier-general, being knighted soon after Waterloo. Elected to Parliament in 1820, he was appointed Secretary of War and member of the Privy Council in the ministry of Wellington in 1828. Secretary for Ireland in 1834-35, in 1841 he accepted the office of Secretary of War in Peel's cabinet, and in 1844 was made Governor-General of India. He repelled the invasion of British territory by the Sikhs in 1845, and for these services was pensioned and raised to the peerage as Viscount Hardinge. In 1848 he was superseded by Lord Dalhousie, and in 1862 he succeeded Wellington as commander-in-chief. In 1865 he was made field marshal. He died in 1866.

¹ See the *American Architect* for January 10, 1891.

MAYO.—Richard Southwell Bourke, Lord Naas and sixth Earl of Mayo, was born in Dublin in 1822. He was elected to the House of Commons in 1847, was Chief Secretary for Ireland in 1852, and held a seat in Lord Derby's cabinet during his three administrations. He succeeded to his father's title in 1867, and was appointed Viceroy of India in 1869. While on a visit to the Andaman Islands in 1872, he was assassinated by a Mussulman convict.

CANNING.—Charles John, Viscount Canning, son of the eminent statesman, George Canning, was born in London in 1812. He entered Parliament in 1836, was appointed Under Secretary of Foreign Affairs in 1841, and in 1853 was made Postmaster-General and a member of Lord Aberdeen's cabinet. He succeeded Lord Dalhousie as Governor-General of India in 1855. His conduct during the Sepoy Mutiny was severely censured in 1858 by Lord Ellenborough, then a cabinet minister, but Canning vindicated himself so effectually that his opponent resigned his office. Canning was succeeded by Lord Elgin in 1861, and died in London in 1862.

OUTRAM.—Sir James Outram was born in Derbyshire in 1803. He went to India as a cadet in 1819, and commanded several native corps. He served in the war against Dost Mahomed, and was British Resident at Hyderabad when the war of 1843 against the Ameer of Scinde broke out, in which he gained much distinction. In 1856 he was made commander of the successful expedition against Persia. He was ordered to supersede Havelock as commander of the army at Lucknow during the Indian mutiny. In 1858 he was made a baronet and lieutenant-general. He died in 1863. His chivalrous qualities and bearing gained him the title of the Bayard of the East.

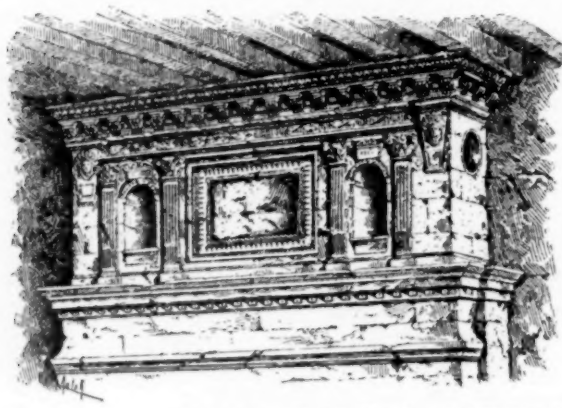
JUNG BAHADUR.—Jung Bahadur was a nephew of Matabar Singh and the son of a state official. He rose rapidly in the army and in favor at court, being made a colonel in 1844. In 1845 he effected the murder of his uncle, and immediately after took a prominent part in the government. The next year he determined to get rid of his enemies at one blow, and did so effectually by what is known as the Kot massacre on September 15, 1846. From that time until his death Jung Bahadur was in reality the ruler of Nepal. In 1850 he visited England as ambassador from Nepal, and was ever after a staunch friend of the British, to whom he was of great assistance during the Indian mutiny. For this he was well rewarded. He made many reforms in the administration of Nepal, and whatever were the means by which he came to power, he proved himself the greatest benefactor his country ever possessed. He died in 1877, aged about sixty years, and was succeeded as prime minister by his brother, Runnoo-deep-Sing. He showed himself in turn as prompt in thwarting the plots of his enemies as was his predecessor, for shortly after his accession he caused to be seized and executed nearly forty conspirators.

FOLEY.—John Henry Foley was born in Dublin in 1818, and studied art there and in the schools of the Royal Academy, where he first exhibited in 1839 with "The Death of Abel." He was elected an Associate in 1849 and Academician in 1859. His principal works are statues of Hampden and Selden in Westminster Hall, of Lord Herbert in front of the War Office, and of Prince Albert (with the group of "Asia") on the Albert Memorial in Hyde Park, London; of Burke, Goldsmith and Grattan at Dublin, of Lord Clyde at Glasgow, of Father Mathew at Cork and of Stonewall Jackson at Richmond. His equestrian statues are of Hardinge, Outram and Canning at Calcutta and of Lord Gough at Dublin, where is also his O'Connell memorial. His ideal works include "Ino and Racheus," "Youth at a Stream," "Caractacus" and "The Muse of Painting." Foley died in London in 1874.

THORNYCROFT.—Thomas Thornycroft was born in Cheshire in 1816, and was a pupil of John Francis. His works include equestrian statues of Earl Mayo at Calcutta, of Queen Victoria at Liverpool and of Prince Albert at Halifax, Wolverhampton and Liverpool. With his son Hamo, he designed the fountain in Park Lane, London. He also executed statues of James I and Charles I in Westminster Palace, "Melpomene," "Thalia," "Clio" and many portrait busts and statues. He died in 1885.

(To be continued.)

ANCIENT ARCHITECTURE FOR STUDENTS.¹—X.



XVI-Century Overmantel, Manoir de Hulex, France. From Havard's "Dictionnaire de l'ameublement."

SOLOMON'S KINGDOM.

CHRONOLOGICAL NOTES.

Solomon began to reign	1013 B. C.
Temple begun 1009 B. C., finished	1002 B. C.
Palace begun 1002 B. C., finished	989 B. C.

CUBIT MEASURES.

Common Cubit 6 times width of a hand = 21 inches.
Sacred Cubit 7 times width of a hand = 24 inches.

FOLLOWING up the history of the architecture of the ancient monarchies, one is apt to overlook the splendor of the Kingdom of Solomon which for a time actually eclipsed the magnificence of the Assyrian Empire. This is but a natural consequence of the absence of architectural remains by which the art of the country of Judea of Solomon's time, might have been preserved to us, but both the Temple and Solomon's palace were utterly destroyed by Nebuchadnezzar, who caused them to be burned after removing all that was valuable in them to Babylon, about the year 564 B. C., during the reign of Zedekiah or 416 years after the completion of the temple. Ancient historians differ considerably

¹ Continued from No. 805, page 133.

about the date of the destruction of the temple by the ruthless Nebuchadnezzar, Josephus putting it down as occurring 532 B. C., and Ruffinus stating it was in 632 B. C. It was, at any rate, prior to 558 B. C., when Cyrus began to reign in Persia, and as further evidence, it was in 534 B. C., that the second temple by permission of Cyrus was commenced; to be completed during the reign of Darius.

The temple was situated on Mount Moriah, the summit of which was of too small an area to admit of the great buildings that Solomon designed to put there under the inspired revelation given to David his father. Consequently, the area of this site was enlarged at immense cost and labor, for as Mount Moriah was a precipitous cliff, immense buttresses and walls had to be constructed, the foundations of which were taken down to an extraordinary depth, formed, as we are told by Josephus, of immense stones ingeniously dovetailed into the solid rock. At the summit of these walls or of each tier of walls earth was filled in between them and the Mount itself, thus forming additional level surface for the reception of the building, and no doubt it was for these really stupendous works that Solomon appointed so great a number of men for masonry work as we are told in 2 Chron. ii: 1. Seventy thousand laborers, eighty thousand masons and three thousand six hundred overseers or foremen, in all one hundred and fifty-three thousand six hundred men.

Solomon began to build the temple or "House of the Lord" in the fourth year of his reign and it is no easy matter to reconcile the various descriptions handed down to us by ancient writers or those given by modern historians. Fergusson attempts to make the design fit in with his theories of Assyrian architecture which have since been proved to be incorrect, while other commentators of the Bible account, have altered and twisted the dimensions to meet their own notions. All the description that it is possible to give must be taken as probable, but cannot be considered authentic. As the result of the comparison of many writers the following description would appear to be the nearest to the truth. Although the temple and the whole of the works in connection with it occupied seven years in building, the temple itself was of no great size, it was remarkable rather for the beauty and magnificence of its workmanship and the effect produced thereby. Its actual length was 105 feet and its width 35 feet and its height (inside measurements) was 52½ feet. In addition to the temple proper, was the "Holy Place," 70 feet long and same width and height as the body of the temple. Beyond this again was the "Most Holy Place," a square of 35 feet. In front of the temple on the eastern side was a porch of the same width as the temple and 35 feet deep, rising to a height of 210 feet. This great height may be accounted for by the probability of chambers for the priests existing above the porch. We are told that the Temple, the Holy Place and the Most Holy Place, were surrounded by a building of three stories high, probably for the accommodation of priests, stores and treasure, each story 8 feet 9 inches high, the outside walls of each story being thinner by 10½ inches than the walls of the story below, so that the lower rooms being 8 feet 9 inches wide, the next above was 10 feet 6 inches wide and the topmost story 12 feet 3 inches wide. It is particularly pointed out that the joists of the floors of the upper stories rested on the thicker walls of the story below and were not carried into the walls of the upper story. The upper stories were reached by winding stairs but no mention is made of any entrance to the lowest story, and this was more probably on the outside rather than from the interior of the temple, as no mention is made of any doors opening into them in the description of the interior. The total height of this enclosing building allowing for roofs, joists, etc., could not have been more than 36 feet allowing plenty of space, 16½ feet for the admission of light and air to the temple over this roof. The height of the Most Holy Place is not given, but it would appear that it was a low building without any window or other opening than the two-leaved doors before which hung a curtain or "veil." It is certain that whatever its height there were no rooms above it (as there probably were over the porch of the temple) because we are told that after the dedication of the temple of Solomon "the Glory of the Lord" descended upon it and "filled the whole house." (2 Chron. vii: 1, 2.)

All round the temple was a court for the use of the priests which in its turn was surrounded by a fence of cedar beams, on stone foundations in three courses, and 5 feet 3 inches total height. There was also a great court, situated to the east before the entrance of the temple porch and especially dedicated to the service of God, and in this court stood the two famous pillars "Jachin and Boaz," 61 feet 3 inches high made of brass, with capitals measuring 6 feet 9 inches "high" as the text says, but more correctly "long," as the margin says, or wide as we call it. The pattern of these caps must have been something of the Ionic type borrowed from the proto-Ionic of Egypt, they are described as having "two pommels," as being wreathed with chains and pomegranates and the "belly" covered with "network" is spoken of, alluding to what we should call "cushion." Possibly and probably the example of the capital from Kitron may be something of the kind only a little more ornamented. The pommels would be a suggestive name for the higher parts of the volutes and the wreathings with the pomegranates hung from the eye of the volutes. These columns were still standing when Nebuchadnezzar besieged Jerusalem: they were broken up by his orders and carried in fragments to Babylon.

Two doors are spoken of to every entrance. It may be as many suppose, that this means, the doors were hung in two leaves, or it may be that there was a door on each face of the wall which there

is no reason to suppose, were thinner than the walls built by other nations at the same date. The doors of the Most Holy Place were of olive wood and all were overlaid with gold. All the buildings of the temple were lined with wood overlaid with gold patterns, cherubim or "winged-bulls," palms and flowers, being engraved upon the surface.

The porch of the temple was lined round with wood and overlaid with gold. Then comes the temple, walls, ceilings and doors lined and overlaid, and then the Holy Place treated likewise and the Most Holy Place, also, in which were two very singular objects known as the "Cherubim." These, of whatever form they were (probably bulls, as we have seen, already), stood on their feet and faced towards the temple and had great outstretched wings. They were so placed that the outside wing of each, measuring 8 feet 9 inches in length touched the side walls of the chamber and the inside wings met in the centre; they were of olive wood overlaid with gold. The four wings together just equalled the width of the chambers, but the width of the bodies of the figures in addition would allow of a slight rise in the wings so that they would not be perfectly horizontal.

The descriptions of the palace that Solomon built for himself when he had finished the temple, have given us problems of a much harder nature to solve than the accounts of the temple. However, it was commenced in the year 1002 B.C., and after thirteen years' steady labor, was completed in 989 B.C. It consisted of several distinct buildings, the private residence of the king, his porch or hall-of-judgment, the house of the "Forest of Lebanon," or the audience chamber, and the palace of his wife, Pharaoh's daughter, together with the open courts.

The audience-hall, romantically called the house of the "Forest of Lebanon," measured internally 175 feet long, 87 feet 6 inches wide, and 52 feet, 6 inches high. It had no less than forty-five posts or pillars of cedar in three rows of fifteen each, supporting the flat roof on beams with boards on the top, which were no doubt thickly covered with mud to keep out the rain and the heat of the sun. There seems to have been an enclosing wall; the side walls were pierced in three places exactly opposite each other, and between the pillars "so that light was against light in three ranks" (1 Kings vii: 5), a simple description far more likely to be correct than Fergusson's or any one else's elaborate theories. It appears that in addition to the forty-five pillars in three rows, against the outer walls were three tiers of galleries supported by "four" rows of cedar pillars with cedar beams upon the pillars (vii: 2). This verse has caused great confusion, but this is the simplest translation of the text and there seems to be no evidence against it. These galleries would probably be reached by a staircase, perhaps winding stairs like the upper stories of the chambers round the temple. The outside wall was of masonry though the rest of the work was of wood. Fergusson is altogether wrong in saying that the Palace of Solomon was altogether of wood, for, we are distinctly told, all these buildings are of carefully hewn stone from foundation to cornice, the interior fittings and the columns being of wood, even the dimensions of the stones are given, being 14 feet and 17 feet 6 inches (1 Kings vii: 9, *et sub.*).

Solomon also built a porch or hall-of-judgment wherein was the magnificent throne of Egyptian manufacture, which he imported from that country. Except that it was lined with cedar we have no further information about it: there is no reason to suppose it was a square building with four columns supporting the roof, which idea Fergusson endorses, making it like a Persian gate-house. It is more likely that it was without pillars, for the Bible historian seems to have been very much struck with the use of pillars, and where they occur he describes them at length, and he does not mention any in connection with this hall-of-judgment, simply remarking that it was lined "with cedar from one side of the floor to the other." Another porch of pillars is mentioned 87 feet, 6 inches long and 52 feet, 6 inches wide. This may very likely have been the approach to the hall-of-judgment, and was probably a colonnade roofed in with the "beams," that are mentioned, but open at the sides and one end, the other being against the wall of the hall. Inside the entrance porch and the hall-of-judgment was a court round which were erected the residential chambers of the monarch.

The palace of his wife, Pharaoh's daughter, was here, and a great court enclosed by a wall or fence similar to that of the priests' court of the temple.

[To be continued.]

ENGINEERING SUPERVISION OF BUILDING OPERATIONS.



IN opposition to the suggestion to place the building operations of Chicago under the control of a public official, essentially a supervising engineer, Mr. Dankmar Adler writes as follows to the *Economist* of that city:

"It is but little more than four years since one whom we all honor as master in the science and art of building made the official and public announcement that, upon careful consid-

eration of the capabilities of Chicago soil, thirteen stories was the utmost limit of height to which a building might be carried in Chicago without overstepping the limits of safety. At the time this dictum was published, and while it was being gravely discussed as the last word of the final authority upon a subject of vital importance to the business world, the foundations of the Auditorium tower were in course of construction, and within two years there was completed an office-building 65 feet, or the equivalent of five stories higher, than the limit of safety set by our honored friend. And the successful completion of the Auditorium tower, without irregularity of settlement or movement within its limits, and with disagreeable effect upon adjacent structures so slight as to warrant the assurance that a study of their causes would reveal means of entirely preventing their recurrence in future structures of the kind, the actual erection of an office-building 41 x 71 feet on the ground and 210 feet high above the sidewalk, and the entire absence therein of even the slightest vibration during the heaviest gales, became at once the practical refutation of the dictum of high authority quoted at the beginning of this letter and a warrant for the inauguration of a new era in the utilization of valuable reality in Chicago.

"Almost simultaneous with the erection of the Auditorium tower was the conception of the first tall building in Chicago in which the 'skeleton' construction was used. The fears expressed in private and in public by 'experts,' real and alleged, as to the safety of the Tacoma building would have been sufficient to have prevented the carrying out of the plans of its architects by any but the most intelligently venturesome. But again, as in the case of the Auditorium tower, the unimaginative conservatives were shown by actual results how groundless had been their fears.

"Now these two buildings—both in a certain sense experimental—supplement each other. The designers of the Auditorium tower followed the old and well-established theory that mere dead weight of structure was the only safe means of resisting the destructive tendencies of heavy wind-pressures, and in applying this principle, and using a very large factor-of-safety in connection with its application have so increased the weight of the structure as to strain to its utmost limit the safe bearing-capacity of the underlying and adjacent soil. On the other hand, the designers of the Tacoma building, being more conservative in the determination of height, expended their radicalism upon the solution of the problem as to how much within the limits of safety the walls of a tall building might be reduced in weight, and the load upon the soil thus reduced to a minimum.

"It having been demonstrated in the case of the Auditorium tower that the limit of safe construction as to height is far beyond the demonstrations of the expert and in the case of the Tacoma building that the limit of dead weight of structure is far within the figures determined by the calculations of the theorists, it remained for the real-estate owners and the architects of Chicago to profit by and to apply these lessons, not forgetting to utilize the contribution to the art and science of building involved in the introduction of the concrete-and-steel foundation. In the case of this also there had been mutterings of discontent and predictions of failure when it was applied in the Rialto, Phoenix and Rookery buildings, its previous successful application on a small scale in the Montauk block having been lost sight of.

"It thus appears that the architects of Chicago are working, in their conception of the designs of the buildings which are most prominently characteristic of the architecture of our city, upon lines all of which had been considered unsafe before practical demonstration to the contrary had been made.

"But the end is not yet. There are further possibilities of development and progress, some of them arising from further combinations of the principles already adopted, others based upon the discovery of principles and methods as yet untried and existing only in the imaginations of intelligently progressive men.

"When twelve years ago I designed for the Central Music-Hall block, two iron trusses spanning Fairbank Hall—50 feet wide—and carrying two stories, and also three iron trusses spanning the Music-Hall itself—82 feet wide—and carrying two stories of rooms, I found the timidity of the public so great that I abandoned the upper one of the stories designed to have been carried across the larger span. Now I am successfully carrying four stories of infinitely heavier construction across a span of 120 feet, and eight stories across a span of 40 feet, all at the Auditorium building, and am about to carry a structure containing 125 rooms and three small halls on trusses

PRINCE NAPOLEON'S POMPEIAN HOUSE, PARIS.—The Paris correspondent of the *London Times*, says: "The famous 'Pompeian palace' of the Avenue Montaigne, built by the late Prince Napoleon, has just been sold by its owner, Count Palffy of Hungary, to M. Porges, who is about to pull it down for the construction of a private house. The site originally belonged to Mlle. Mars of the Theatre Français, and the architect, who is now a member of the Institute, M. Normand, designed his plans after the famous House of Diomedes at Pompeii and that belonging to the poet Pansa. The house, about which clusters a number of memories, sometimes odorous of the Roman decadence, is associated with the names of Théophile Gautier, Nestor Roqueplan, Arsène Houssaye, Sainte Beuve, and Paul de Saint Victor. There were played Augier's pretty comedies, 'Le Joueur de Flûte' and 'La Femme de Nicomède.' After the sale of the house in 1896 to the Comte de Quinsonnas for 600,000 francs, it was bought by MM. de Lesseps, de Beauregard and Arsène Houssaye for the purposes of a museum. Count Palffy has owned it since 1875, and preserved it intact as originally constructed."

of span of from 60 to 80 feet at the new German Theater on Randolph Street, while Mr. Post is carrying over the rooms of the Union Trust Company at New York an office-building eight stories in height.

"The foregoing was called to my recollection and notice by your article 'Make the High Buildings Safe.' Of course our high buildings must be made safe. But how is this to be accomplished? You recommend the appointment of a city engineer with power to control their erection. But if such official is selected by popular suffrage, by suffrage of the Common Council or by appointment of the Mayor, is it at all likely that the guiding motive of his selection will be so free from taint of political partisanship as to give us a person of the unusually high efficiency demanded by the importance of the position? And supposing it possible that the means employed for filling official positions would give us a man of sufficient attainments and strength of character for this important office, what remuneration can the city offer him? Consider the fees earned by experts of high standing in their private practice. My firm does not perhaps enjoy a sufficiently wide-spread reputation to obtain the highest fees, and yet it has received \$500 for a mere expression of professional opinion upon a set of plans and in another case \$1,000 for similar services, although in both cases its knowledge, not its time, were called into service, while in a more recent case it has received \$10,000 for services as consulting experts, extending, however, over a period of two years. Many cases are within my knowledge where other experts have been paid, for but a few hours' or a few days' service in examining building plans, sums ranging up to \$2,000 or \$3,000. Will men who earn a large income in the pursuit of their regular professional work, and to whom occasionally these large fees are paid, be willing to serve the city at any salary it can possibly be expected to pay? Could such men as Gen. William Sooy Smith or E. L. Corbelle (and men of less eminence could hardly be entrusted with the powers that would devolve upon such an official) be induced to abandon their private practice and enter into the employ of the City of Chicago upon any terms that could possibly be offered them?

"Again let us take another view of the case. It is a principle of law that legislative powers cannot be delegated to an individual official. Hence such engineer inspector would have to work within the letter and spirit of a code of laws and regulations governing the erection of high buildings which would have to be passed by the State Legislature or the Common Council. Such code would naturally be based upon the status of the science and practice of building as found at the time of its passage. It could not anticipate progress. The official charged with the carrying out of the ordinance would have no freedom of action, and before long there would be a popular clamor for the removal of restrictions on free and full development. Had there been such an official and a conservative and conscientious discharge of duty by him, there would not be in Chicago to-day a building exceeding 100 feet in height. The doubts and misgivings entertained by the conservatives as to the safety of the Auditorium tower, the Tacoma building, the foundations of the Rialto, etc., would have prevented the adoption of all the improved and advanced lines of thought and construction embodied in these works.

"An illustration of the inhibitive nature of progress incident to legislation of this kind is found in the ordinances under which the regulation and inspection of plumbing are conducted in this city. Many years ago these ordinances were made in accordance with the science and best practice of that day. These for the past five years have outlived their usefulness and are no longer in harmony with the discoveries and inventions at the disposal of the sanitary engineers of the day. But for three years, now, have the constant efforts of those architects and sanitarians who endeavored to utilize to the utmost, on behalf of their clients and the general public, the results of advanced thought and the most recent developments of human ingenuity as applied to plumbing practice, proved unavailing as against official conservatism, self-sufficiency and self-complacency backed by the letter of the law.

"That we build better to-day than we did ten years ago is partly due to the easy-going, happy-go-lucky administration of the building-inspection department of this city for many years. Had we had an extremely efficient administration of this department, there would be no tall buildings to-day, for all of them are in one respect or another violations of paragraphs in existing ordinances.

"We, as a community, shall always build well or ill as the case may be, not because city ordinances or city officials insist upon it that we shall build well, or because they permit us to build with criminal recklessness, but we shall determine the character of our buildings in obedience to the demands of the more enlightened public sentiment, and in the erection of even the poorest and cheapest buildings the influence of this and the example of the better and best buildings will be felt. Therefore the more freedom is given to the most progressive and enlightened of our real-estate owners and architects, the higher will be the standard, the more certain will it be that our buildings will embody in them the most advanced thought and the latest discoveries.

"To make the calculations and drawings of the structural iron-work of the Auditorium required the constant labor of several men for nearly two years. To determine the same items for the new German Theater the equivalent of nearly one year's time for one man was required. How can one official verify these calculations for so many buildings in reasonable time? Again, the interdependence of parts of many buildings is such that a slight change of plan or construction

in one place may influence a hundred others. What may we not expect under these conditions from official interference, no matter how well meant?

"Under the present system, the owners of a building are solely and fully responsible to themselves and to the public for the safety of their buildings. They will be driven by self-interest to select architects of high standing and great skill. How will it be if the city assumes a guaranty of the safety of these buildings? Can the city afford to go into the business of insuring the stability of all buildings erected within its limits? Can the municipality afford to supply for owners of buildings the brains, the skill and knowledge which they ought themselves to secure in the selection of good architects?

"I wish also to protest most particularly against the assumption that a good architect is not also an engineer. The engineering problems solved by such architects as those of the buildings hereinbefore mentioned are as great as those placed in charge of men building railroads and bridges, and their solutions of the same are equally successful. If architects find it necessary to employ in their offices men with the training of engineers, they are employed the same as their draughtsmen for the purpose of carrying out under their own supervision and according to their own instructions the conceptions and ideas as to the designs of the buildings entrusted to their charge. All parts of a building, if it is to be successful, must be designed together; all phases and features of the design are dependent upon each other. You cannot leave the designs of the plan of a building to one person, the devising of its structural features to another and its artistic development to still another. To produce even an approximately fine building, there must be throughout, from foundation to roof, in the arrangement of all parts, in the design of every line the imprint and all-pervading influence of one master mind. If you separate the functions of architect and engineer, you insure the erection of a hybrid structure full of contradictions and imperfections.

"To return to the subject matter of the beginning of this letter, I wish to predict that we have not yet arrived at the utmost development of the high buildings. The conveniences to the business public resulting from the concentration of business into small areas are too great to permit the permanence of any legislation restricting such concentrations. The ingenuity of man in devising improved methods of transit, vertical as well as horizontal, will eventually dispose of the objection to a greater multiplication of tall buildings based upon fears of congestion of street traffic. A combination of the system of skeleton construction with that of heavy walls will enable us to maintain sufficient stability for structures higher than any yet contemplated, and concentrations of ownership of large blocks of ground will give expansions of base area of buildings that will permit still further upward extension of the building of the future, particularly as these ownerships of large tracts covered by large and high buildings will give rise to new solutions of the elevator problem and will permit consideration of the light-and-air problem which will embrace at once the individual building and the adjacent streets and neighboring buildings. So long as we permit freedom of development and avoid the evils of ultra conservative municipal interference, the struggle for supremacy of real-estate owners and architects will continue with the result that there will be a survival of only the fittest and a justification for the motto 'Excelsior' not only in the altitude but also in the artistic, structural and utilitarian qualities of our buildings.

DANKMAR ADLER."

"WHO IS REMBRANDT?"



BRIEF notice has already been made in our columns of a remarkable work which appeared recently in Breslau under the title, "Who is Rembrandt?" The author is Max Lautner, a professional art-student, and his object in writing it was to prove that Rembrandt was a rascal and a roustabout, and did not paint the pictures which to-day pass for his.

The pictures which bear the initial R. and are attributed to Rembrandt's brush are, Lautner says, the works of Ferdinand Bol, the most celebrated of Rembrandt's scholars. The swindle has been brought to light, Lautner explains, by means of recent developments in the photographic art. In two cases the name of Bol has been found on a concealed portion of a picture bearing Rembrandt's initials. The big R. moreover, has been shown to be, in some fifteen or twenty cases, only an altered B. On many pictures there are evidences that efforts have been made to obliterate the B by means of paints, other preparations, and scratching with a knife; nevertheless, the relics of Ferdinand Bol's mark are still visible.

For the purpose of proving the truth of his claim to all readers of his book, Lautner has illustrated many of these mutilated initials. Especially notable among the Rembrandts which he seeks to discredit, are "Rembrandt and Saskia," Dresden; "Portrait of Himself in 1665," Vienna; "Joseph accused by Potiphar's Wife," "The Jewish Bride," Amsterdam; "Family Picture," Brunswick; "Simeon in the Temple," The Hague; "The Adoration of the Magi," "The Holy Family," St. Petersburg; "Nicholas Tulp in the Dissecting Room," "The Night Watch," and many portraits of women in the National Gallery in London.

Having accomplished thus, to his own satisfaction, the demolition of Rembrandt's fame as an artist, Herr Lautner devotes several chapters to ruining his reputation as a man. The records of the Amsterdam magistrates furnish him with most of his material. Between 1631 and 1639 hardly a year passed, Herr Lautner says, without registering the name of Rembrandt as the principal actor in some more or less shady bit of business. After he had squandered the property of his first wife, Saskia Van Ulenburgh, he was obliged to resort to all sorts of unscrupulous and reprehensible devices for the purpose of placating his creditors and finding new victims.

By a codicil to his wife's will his inheritance of her fortune was made dependent upon the condition that he should not marry again. To enjoy the fruits of her generosity, and at the same time to escape all inconvenience which might result from the observance of her memory, he lived in open adultery with Hendrickse Stoffels, who bore him two children. For the purpose of eluding his creditors he invested the small sums of money which he saved from time to time from his extravagant debauches in property which was subsequently placed in the name of a son of his first wife.

Rembrandt was declared a bankrupt. His possessions were inventoried by magistrates, and the guardianship of his son was removed from him. His pictures and collections of antiquities came under the hammer. His house was sold, and the fifteen-year-old son founded with his father's mistress a firm of art-dealers in which Rembrandt, Sr., in return for free lodging and food, engaged to act as the expert. In the legal papers concerning this transaction, in 1660, Rembrandt promised to make good the expenses which he might cause the firm in case he should come again into the position to make a living with his brush.

In this second array of facts Herr Lautner finds new proof of his conclusion that Rembrandt could not have painted all the pictures bearing his mark. The sixty-nine pictures which are supposed to have been painted by him between 1650 and 1660 would have rendered him rich. The world-famed group, "The Staalmeester," of the year 1661, for instance, would have brought him a tremendous amount of money for those times, and would at least have freed him from the necessity of selling the grave of his dead wife to the gravedigger of the Oude Church. At his death Rembrandt left nothing except his brushes and a couple of suits of clothes.

How, then, could Rembrandt have attained to such great celebrity, while Bol has remained all these generations in comparative obscurity? Herr Lautner answers the question somewhat as follows: In Rembrandt's time the Netherlands were rich, and all sorts of devices were invented for the purpose of deceiving open-handed patrons of art. Every one was anxious to pay out his money for something that was supposed to be fine. That artists were not above taking advantage of this state of affairs, Herr Lautner regards as self-evident. Rembrandt was the most fashionable painter of portraits. His studio was the most famous, perhaps, in Europe, on account of the popularity which he enjoyed among the wealthy and educated people of Holland. His house was supposed to contain untold treasures of ancient bric-à-brac. His reputation penetrated to foreign countries.

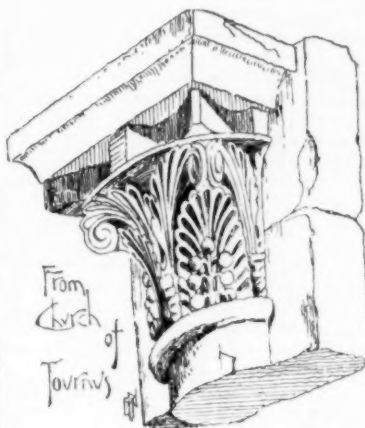
All this hocus-pocus or humbug, as Herr Lautner is inclined to consider it, was cultivated painstakingly by the artist himself, who was far from being above the devices of a modern advertiser. Hence the old story. The meritorious man in need of money became the tool of the montebank. Rembrandt fattened on his pupil's fine work, and allowed him but a pittance for the pictures which were sent out into the world under the name of the master.

All this is supposed to have been more or less an open secret in Amsterdam before Rembrandt's death, and the artist, Herr Lautner says, was already in a bad way for admirers or patrons. Meantime, however, Rembrandt's reputation continued to increase abroad, and Holland in time became gradually subject to the reflected delusion of other nations. Picture-dealers, moreover, in response to the constant demand for Rembrandt's pictures, were willing to foster any kind of a swindle for the purpose of making sales at big prices.

Throughout his work, Herr Lautner invites investigation of the pictures bearing the scratched initials as well as the official records of Amsterdam upon which he has drawn. He says his proofs are irrefutable. — *Philadelphia Telegraph*.

PROVING-HOUSES.—There are in Europe five "proving-houses" or testing-places for fire-arms. Of the Birmingham and London proof-houses many people have heard; the others are at St. Etienne, in the South of France; at Felling, in Austria, and at Liège, in Belgium. The latter, however, is by far the largest establishment of its kind. It is officially stated that the Liège proof-house now consumes between 3,000,000 and 4,000,000 of cartridges and over forty tons of gunpowder a year. — *N. Y. Evening Post*.

THE PRESERVATION OF IRON AND STEEL STRUCTURAL WORK.



THE Government specifications for iron work in the new Library Building of Congress provide that "all the work not Bower-Barffed must be given one coat of pure red-lead paint—not metallic paint of any kind, but pure red lead—before leaving the shop and before becoming rusted."

The experiments of the Navy Department on the preservation and fouling of plates covered with different pigments may be interesting. A plate of iron covered with asphalt paint was immersed in seawater for eight months and six days at the United States Navy Yard, Ports-

mouth, N. H. At the end of that period it was found to be covered with scum and mud and very badly rusted. A plate coated with iron paint immersed at Key West, Fla., was found to be covered with branch shell and coral, but little paint remaining, and very badly pitted and rusted. A plate with two coats of red lead, at the Norfolk Navy Yard, was found to have a few barnacles attached, but to be in fair condition, with no rust whatever on the iron after the paint was removed. It will be seen that not only did the red lead protect the iron better than the other pigments referred to, but that the plates were in far better condition as regards barnacles and fouling. The superiority of red lead being thus established, it is adopted for use on hulls of Government war ships.

On the Dutch State railroads a series of experiments extending over a period of three years were made with the above pigments on scrubbed plates, as well as those which had been pickled in acid to remove the scale. It was found that the red lead was superior in each case to the others.

If red lead is thus proved to be the best pigment for preserving iron and steel structures, what is the proper method of applying it? We have seen above that the value of red lead depends upon its forming a hard, elastic coating having a great tenacity for the iron. This is owing to its forming certain combinations with the oil and actually setting very much the same as plaster-of-Paris or cement sets when mixed with water.

To successfully work with the latter substances it is necessary to put them in shape as quickly as possible after mixing with water before the setting takes place. If the chemical action of setting has partly taken place the material may be moulded, but it is well-known that good results will not be obtained. Red lead, like these substances, must be applied to the work before it sets with the oil. It is on this point that failures in the use of the pigment have generally occurred, because if it be applied after the combining or setting process has taken place, the hard, elastic clinging coating will not be formed on the iron surface.

The following is the practice of one of our largest shipbuilding establishments in applying red lead to the hulls of Government vessels: The plates are first pickled in a dilute solution of muriatic acid, then passed through rapidly revolving wire brushes, which remove all scale and dirt, leaving the iron with a bright, smooth surface; then thoroughly washed with pure water and rubbed entirely dry and immediately coated with red lead and pure raw linseed oil. The red lead is first thoroughly mixed with just enough linseed oil to form a very thick, tough paste, which will keep for several days without hardening. This paste as wanted for use is thinned down to the proper consistency for spreading with pure linseed oil, and applied at once, care being taken to leave paint-pots empty at night. A gallon of paint thus prepared contains about 5 pounds of oil and 18 pounds of red lead, and will cover on first coat about 500 square feet, the second coat about 600 square feet.

In this way the red lead and oil get their initial set on the surface of the iron, and the closer the pigment is brought to the iron the more durable will it be found. Some parties prime iron with iron-oxide paint or metallic brown before applying red lead, which I believe to be a mistake, as this paint readily scales from iron, and, of course, carries the lead with it. Others coat the iron with oil before applying the red lead; this, too, prevents the adhering paint from coming in contact directly with the surface, and should be avoided, provided the iron is properly prepared, by thorough cleaning and removal of any scale and moisture, which is a matter of the greatest importance. In priming wood surfaces which are absorbent of oil, the best practice favors the putting on of a coat of pure oil, or oil thinned with turpentine, which shall penetrate the surface and form a binder for the subsequent coats. With iron the case is quite different, provided we have a paint which, from its very nature, can attach itself firmly to the surface, because it is out of the question for it to hold on to the surface of iron by any process of absorption into

the pores of the metal, as linseed oil will not penetrate to any extent. Such a paint should be put directly on the surface of the clean, dry metal—as it is done in the cases of Government vessels referred to—without the intervention of a coat of oil or other substances.

The rusting of iron before the application of paint, which is sometimes recommended, should by all means be avoided, as it not only prevents the contact of the paint with the metal, but induces a chemical action which may go on with its corroding work under the applied paint.

As to the relative cost of iron-oxide paints and red lead, there is no doubt that the first cost of painting structures with iron oxide is somewhat less than with red lead. The best railroad authorities state, however, that labor in painting structural work costs twice as much as material. The true economy must, therefore, be sought in the durability of the paint as well as the preservation of the structure from rust. Actual experiments have shown that structures painted with iron paint had to be repainted the third or fourth year; those with red lead not until the sixth year. In the second painting with iron paint the old material must be entirely removed before a fresh coat can be properly applied, entailing considerably increased cost, whereas with the red lead no such expense is necessary, but, as before stated, a portion of the pigment remains on the iron, continuing to protect the surface, and is the very best base for the new coat, besides contributing materially toward it, thereby lessening the expense of each repainting.

It will, therefore, be easily seen that, although in first cost red lead may be slightly dearer than the iron paint, yet in the long run it will be greatly cheaper, besides giving assurance, for the reasons above stated, that the structure is not deteriorating from the effects of the atmosphere and paint.

Before closing this article it might be well to allude to the effects of lamp-black when mixed in small quantities, say an ounce to the pound of red lead. It changes the color to a deep chocolate, a possible advantage in some cases, and also prevents the red lead from taking its initial set with linseed oil as quickly as when mixed with oil alone. Experiments recently made showed that this compound would remain mixed in paste form with linseed oil some thirty days without hardening. Thorough mixture is of the greatest importance and should be done in the dry state before adding the oil. If rapid drying is desired, japan dryer can be mixed with the oil used in thinning the paste before application with the brush.

Too much stress cannot be laid on the great importance of having the metallic surface perfectly clean and as free as possible from scale and rust before the application of the paint. Where pickling with acid is impracticable, as is frequently the case in railroad and other structural work, thorough brushing with wire brushes should be resorted to.—Woodruff Jones in the Railroad and Engineering Journal.



ENGINEERING ASSOCIATION OF THE SOUTH.

THE regular June meeting of the Engineering Association of the South, was held at the Y. M. C. A. Building, Nashville, Tenn., on Thursday evening, June 11.

The programme of the evening comprised the following papers: "Some Notes on Mining Operations in the Sewanee Coal Seam," by Mr. J. J. Ormsbee, Superintendent of the Thomas Mines of the T. C. & I. R. R. Co., Whitwell, Tenn., also a paper on "Street and Highway Traffic," by J. M. Heiskell, Assistant Engineer of the Memphis Bridge, Memphis, Tenn., also a paper on "Tests of the Capacity of Sewer Pipe Line to withstand Internal Pressure," by R. L. Johnson, Graduate Fellow in Engineering Department, Vanderbilt University.

Mr. Heiskell's paper was directed principally to the argument that economy of street and highway traffic could best be improved by paying attention to improving the vehicle, rather than the road-surface, and to accomplish this, recommended strongly the introduction by proper legislation the following features in the construction of vehicles.

(1) Width of tire to be dependent on weight of load. (2) Length of axle to be dependent on weight of load in order to insure non-tracking of vehicles. (3) A difference of length between front and rear axle to insure non-tracking between front and rear wheels. (4) The introduction of springs for heavy draft wagons. The paper presented estimates based on quotations from paving companies, giving their prices for guaranteeing the maintenance of their pavements for terms of years under present existing circumstances and also under conditions to be secured by legislation as to the above improvements in vehicles.

Mr. Johnson's paper presented an account of some experiments conducted at the Engineering Department of Vanderbilt University, to determine the bursting-strength of different sizes of ordinary glazed sewer-pipe, with the view to determine the ability of sewer lines and conduit lines made of this pipe to sustain internal pressure without bursting or blowing out the joints. The paper gave an account of the character of the pipe and the materials employed, and the manner of conducting the experiments. The experiments were

made with three sizes of pipe, viz: 8, 15 and 20 inches in diameter, and the results showed internal pressures running from 10 to 18 pounds per square inch, the pipe and joints both failing at about equal pressures.



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

SIDE FACADE OF THE TIFFANY HOUSE. MESSRS. MCKIM, MEAD & WHITE, ARCHITECTS, AND ST. JAMES'S LUTHERAN CHURCH, NEW YORK, N. Y. MR. W. A. POTTER, ARCHITECT.

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

MEMORIAL CHURCH, POMFRET, CONN. MESSRS. HOPPIN, READ & HOPPIN, ARCHITECTS, PROVIDENCE, R. I.

THE church and rectory are built of rough rubble-stone, trimmed with brick. Hammer-beam open truss roof of chestnut. Walls, gold bronzed; walls of chancel in gold leaf; carpets and cushions, dark blue; all trimmings and fixtures of brass.

TRINITY CHURCH, CHAPEL AND PARISH-HOUSE, HARTFORD, CONN. MR. F. C. WITHERS, ARCHITECT, NEW YORK, N. Y.

THE chapel and parish house are now in course of erection, the Reverend Francis Goodwin having generously offered to put them up at his sole expense, it being the intention to hold services in the chapel and parish house when they are completed, and for this reason all the partitions are, for the present, to be omitted in the latter building. The church will then be torn down, and work begun on the new one, which, it is hoped, will be early in the ensuing year.

The chapel, which is to be also the Sunday-school room, will be 50' x 26', with an open-timbered roof. In the parish-house, when completed will be a parish-room 40' x 26', with a lavatory and small kitchen adjoining. A vestry-room 19' x 18', a Sunday-school library, and infant class-room, 18' square, and on the floor above will be arranged rooms for the assistant clergy, ladies' rooms and for the janitor who will have a separate entrance in the rear.

The church is intended to seat about 1,000 persons in open benches, and will consist of a nave 121' long by 34½' wide with aisles 11' in width on either side. A chancel 34' long by 28½' wide with a large organ-chamber, robing-room for the clergy, etc., and a choristers' robing-room 30½' x 15'. This latter room, with lavatories and separate entrance, for the use of the choristers, is now being erected by the same contractors who are putting up the chapel. The main entrance to the church will be on Sigourney Street, through a large doorway, 8' wide, which will open into a vestibule of the whole width of the nave by 11', with another entrance to it from the south through a porch 12' x 11'. On the north of the vestibule will be arranged a stairway which will lead to a gallery over the vestibule, and of the same size. The tower, which will be 22' square on the outside and 120' high to the top of the parapet, will be built some feet from the church on account of the nature of the ground, which is soft clay. A third entrance is designed between the tower and the body of the church, and over it a parvise or room for the sexton, will be arranged. The nave will be divided from the aisles on either side by an arcade of seven arches, over each of which will be a two-light traceried clerestory window. The piers and arches on the inside are intended to be built of a light-colored stone, and the walls lined throughout with buff-colored brick, so that there will be no plastering in it. All the roofs will be open-timbered, the principals being carried by arched braces resting on carved-stone brackets. The floor of the chancel will be elevated three steps above that of the nave, and in it will be arranged stalls for an antiphonal choir of thirty voices; and in the chancel aisle on the north side, there will be seats for an auxiliary choir of twenty-eight more. The whole of the outside walls will be built hollow, and faced with selected brick laid in red mortar, and all the dressings of buttresses, doorways, windows and tracerics of same, and all moulded work throughout will be of Long Meadow stone.

The church which is in the style of the English Gothic of the middle part of the fourteenth century, commonly called "Decorated," was designed by Mr. Frederick C. Withers, of the firm of Withers & Dickson, of New York. The total cost of all the buildings is estimated at about \$175,000.

NEW INN, RIDGEFIELD, CONN. MR. W. A. BATES, ARCHITECT, NEW YORK, N. Y.

HOUSE FOR MRS. L. B. CHILDS, SHADY SIDE, PITTSBURGH, PA. MR. W. ROSS PROCTOR, ARCHITECT, PITTSBURGH, PA.

[Additional Illustrations in the International Edition.]

CARVED WAINSCOT PANELS FROM THE CHATEAU DE GAILLON.

[Photogravure.]

FOUNTAIN IN THE OLD RATHHAUS, VIENNA, AUSTRIA. RAPHAEL
DONNER, SCULPTOR.

[Gelatine Print.]

BANQUETING HALL, WHITEHALL, LONDON, ENG. INIGO JONES,
ARCHITECT.NEW SCOTLAND YARD, LONDON, ENG. MR. R. NORMAN SHAW,
ARCHITECT.

NEW SCOTLAND YARD, FROM WESTMINSTER BRIDGE.

NEW SCOTLAND YARD, FROM THE WEST.

NEW SCOTLAND YARD, THE PRINCIPAL ENTRANCE.

DRAWING-ROOM IN HOUSE OF MR. C. E. SCHWARM, PRINCE'S
GARDEN, LONDON, ENG. MR. E. P. WARREN, ARCHITECT.

BACK DRAWING-ROOM IN THE SAME HOUSE.

DINING-ROOM IN THE SAME HOUSE.

BACK DINING-ROOM IN THE SAME HOUSE.



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

BONDING NEW BRICK WALLS WITH OLD WALLS.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In erecting a two-story and basement brick building to which additions are to be made in the future, what do you consider the best manner of providing for connecting the future work with the present so as to avoid cracks in case of settlement? Some walls will come together in a straight line, others at right angles. Do you consider a perpendicular groove with a timber built in preferable to bonding the bricks in the usual way? The foundation is compact clay with a little gravel, but high and dry, and not liable to settle much.

ARCHITECT.

[A slot, or groove, 4" deep, should be built in the brickwork, perfectly plumb, smooth and uninterrupted from top to bottom, into which the new walls should be fitted; where the new and old walls will come together, end to end, the groove can usually be only 4" wide; but where the walls meet at a right angle, the groove should be as wide as the thickness of the new wall, which can then be built directly into it, without breaking the bond. Timber should not be built in under any circumstances, as it will soon rot out, leaving the walls without any connection, and admitting water and frost to the interior of the masonry at an important point, while the brickwork cannot be built up neatly against timber, and pointed perfectly smooth, so as to make a suitable groove, even after the timber is taken out. No toothing of the old brickwork to bond in the new should be permitted, unless the new work is to be laid in cement, without lime, and it is hazardous even then, as the new wall, being held fast at one side by the toothing, and settling, even slightly, at the other, is almost sure to crack, even in a two-story building.—EDS. AMERICAN ARCHITECT.]

ANOTHER QUESTION OF COMMISSION.

BRIDGEPORT, CONN., JUNE 15, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—A rather interesting question has recently come up in my practice as to whether an architect's commission should be taken out of the money appropriated by a town for the alteration and addition to one of its buildings. The facts are as follows: About two years ago, a certain town in this State appropriated \$70,000 for the alterations and additions to its town-hall; a committee was appointed, who, with the selectmen, were to have charge of the work and I was employed by them as architect. The plans were duly prepared, bids advertised for and a contract entered into with a reliable party for the sum of \$67,000. The work was forthwith commenced and continued with no unusual friction, until it is now completed. Some extra work was found necessary, owing to poor foundations and the Committee have from time to time made changes and additions as they deemed expedient, being extremely careful always to keep the amount of these extras within the limit of the

appropriation. This they congratulated themselves they had succeeded in doing, as the total amount expended upon the contract and the extra work was about \$69,550.

When, however, the final payment was to be made on the contract, the first selectman of the town claimed that he could not make it as there was no money in the treasury for that purpose, he having charged the amounts paid to the architect from time to time—amounting to \$3,202, to the amount appropriated for the building. He stated, furthermore, that the Committee had not kept within the appropriation, but had exceeded it by the amount of the architect's bill, less the balance of the \$70,000 after the contractor had been paid.

The Committee on the other hand claim that they never considered that the architect's commission should be included in the \$70,000 appropriation, but that he was to be employed and paid by the town, through them, independently, the same as counsel or any other professional man. In support of their position they say that if the architect's commission was to be included, they exceeded the appropriation the day they signed the contract, for his regular commission on \$67,000, would carry the amount to be expended, over the sum appropriated.

What is your opinion in the matter? If it should be against the Committee, are they, as signers of the contract, liable for the amount expended in excess of the appropriation or had they as agents of the town, the right to employ the architect for whose services the town must pay.

Very truly yours,

[EVERYTHING, in such a case as this, depends upon the wording of the vote of the town. Strictly, the architect's fees are not considered to be a part of the cost of the building, and if \$70,000 were appropriated to pay the cost of the building, and a committee appointed to carry out the work, it would seem that the Committee was sufficiently authorized to employ an architect, as an indispensable adviser, and to bind the town for his payment; but the vote may have been made in such a way that the appropriation was intended to cover all expenses. Again, whether the members of the Committee are personally responsible to the contractor, in case the town is not, is also a matter of the interpretation put on the words of the town vote. It will be seen that there is generally, in such cases, opportunity enough for different interpretations to furnish a comfortable living, at the expense of the parties, to several lawyers, for a considerable time, in case an amicable settlement is not reached before they are called in.—EDS. AMERICAN ARCHITECT.]



HOW GRANITE COLUMNS ARE TURNED.—Granite for columns, balusters, round posts, and urns is now worked chiefly in lathes, which, for the heaviest work, are made large enough to handle blocks 25 feet long and 5 feet in diameter. Instead of being turned to the desired size by sharp-cutting instruments, as in ordinary machines for turning wood and metal, granite is turned or ground away by the wedge-like action of rather thick steel disks, rotated by the pressure of the stone as it slowly turns in the lathe. The disks, which are six or eight inches in diameter, are set at quite an angle to the stone, and move with an automatic carriage along the lathe-bed. Large lathes have four disks, two on each side, and a column may be reduced some two inches in diameter the whole length of the stone by one lateral movement of the carriages along the bed. The first lathe for turning granite cut only cylindrical or conical columns, but an improved form is so made that templates or patterns may be inserted to guide the carriages, and columns having any desired swell may be as readily turned. For fine grinding and polishing the granite is transferred to another lathe, where the only machinery used is to produce a simple turning or revolution of the stone against iron blocks carrying the necessary grinding or polishing materials. Blocks are prepared for lathe-work by being roughed-out with a point, and by having holes chiselled in their squared ends for the reception of the lathe-dog and centres. This principle of cutting granite by means of disks revolved by contact with the stone has been also applied to the dressing of plain surfaces, the stone worked upon being mounted upon a travelling-carriage and made to pass under a series of disks mounted in a stationary upright frame.—*Census Report.*

BELGIAN WORKING-MEN'S DWELLINGS.—The results of the official inquiry into the condition of the dwellings of the working-classes in Belgium have just been published. According to the return there were in Brussels on December 31, 1890, 49,619 families, of which 19,284 were the families of workmen. The number of houses in the city was 19,594, inhabited by 168,168 persons. There are 4,601 houses, inhabited by the working-classes, 105 common lodging-houses, and 3,436 places of business. The rent of a room for a workman averages 11f. 68c. a month. The average daily wage of a working-man is 3f. 14c. Of the 19,284 working-class families in Brussels, 10,462 have occasional recourse to public charity. Of working-class families, 491 occupy an entire house, 1,371 occupy three rooms, 8,958 have but two rooms, and 6,978 have to be content with only one; 2,186 families lodge in garrets, 1,200 in cellars. In 1,511 cases, a family of five persons live in a single room. In 406 families the boys and girls sleep in the same bed.—*New York Evening Post.*

FOUNDER OF CALIFORNIA MISSIONS.—A number of people went to Monterey recently to attend the ceremonies incident to unveiling the Serra Monument. The monument is the gift of Mrs. Stanford, as a tribute to the memory of Father Junipero Serra, the founder of the California missions. It has been erected on a hill near the old wooden cross that marks the presumed spot where the padre first landed. The monument

is of granite, and represents Father Serra standing by the prow of a small boat, from which he has apparently just landed. Father Serra was born in the island of Majorca, November 24, 1713, and was educated in the school of the Franciscan Fathers at San Bernardino, where even at an early age he was remarkable for his piety and zeal in all religious duties. He took high rank as a scholar, and all the honors and dignities of the Church were open to him, but he preferred the life of a missionary, and in 1749 he set sail for Mexico. In that country he spent many years, partly as a teacher in a Franciscan college and partly in missionary work, but in 1767 his great opportunity came, and he was sent out to establish those missions which began the civilization of California. For fourteen years he carried on these apostolic labors with tireless energy. He died at Monterey, August 28, 1784. — *San Francisco Bulletin*.

DAMAGE DONE BY THE MAGAZINE EXPLOSION NEAR ROME. — The explosion at Rome wrecked the doors of the church of S. Sabina on the Aventine. They are carved in cedar wood and supposed to have been made in the fifth century. The panels, which give scenes from the Old and New Testaments, are fortunately unbroken, but the doors themselves are smashed. The stained-glass windows in St. Paul's-outside-the-Walls have been blown to pieces. This is, however, by no means the irreparable loss that some people imagine, because the stained-glass of this costly edifice was not particularly good. One of the frescos of Bonfigli in the palace of the Conservatori has been injured by flying glass, and the same sort of missile has hit and scratched a fresco by Pinturicchio in a chapel of S. Bernadino da Siena. — *N. Y. Times*.

THE DUODECIMAL SCALE. — The disadvantage of the decimal scale is that the number ten can be only once divided without leaving a fraction. A duodecimal scale of numeration would have been much better, and, in fact, is much more in accordance with our present system of weight, measure, and coinage. Had the Chaldeans or Arabs, who instituted the decimal scale of numbers from their ten digits, only taken it from the giants among them, who, like the giant of Gath, had twelve digits as well as toes, the result would have been much more satisfactory to all calculating individuals among succeeding generations, as well as those of our civil service. — *Temple Bar*.

INTERFERENCE OF SPIDERS WITH ENGINEERING WORK. — Ever since the story of Robert Bruce and the spider, that insect has been proverbially held up to view as an example of pertinacious skill. An attempt to establish instinct as a guide to reason is, however, a fallacy. The setting hen is an example of instinct, not maternal constancy. This perseverance of spiders may have been an encouragement to Robert Bruce, but it is often a discouragement in engineering work. In sinking plumb lines down shafts for middle headings in tunnelling, in order to obtain an alignment for the tunnel, the accuracy of the work is often seriously impaired by spiders attaching their webs to the lines and drawing them towards the walls with sufficient tension to introduce material errors in the position of the plumb bobs. In fixing the alignment of Hoosac Tunnel, Massachusetts, U. S., at the bottom of a shaft 1,028 feet deep, the spiders prevented accurate work with plumb lines, until two cases were made enclosing the whole length of these lines. For shallow pits the spiders' webs can be broken by raising the lines and then lowering them to position shortly before fixing upon points; but in this instance the distance was so great as to require several hours before the vibration of the lines would cease even with the bobs in vessels of mercury. The suggestion is made that the lines might be freed from similar interferences by insulating the suspended apparatus and the bob from the earth and attaching a grounded electric-light circuit to the wire, relying upon the dampness in the pit to give sufficient conductivity to the cob-webs to cause them to be seared by the escape when any cobweb connected the earth to the plumb-wire. Many years ago when the writer used the level in an engineering party there were frequent difficulties with the instrument. Curved lines like arcs of circles would appear in rapid sequence across the field of vision, which would be nearly eclipsed at times. These difficulties would arise at irregular and generally inconvenient intervals. The instrument was carefully examined without revealing any cause. The writer, distrustful of his own eyesight, visited an eminent oculist, receiving some vague advice and paying a realistic fee. It was afterwards discovered that a minute spider had ensconced himself in the cover of the eyeglass of the telescope of the level. Recently it was found that the meter in the store of a patron of an electric-lighting station in America was recording what was a small fraction of the electricity known to be used. The meter was of the revolving-fan type, and it was found that a spider had entered the case through a screw-hole and spun a web in such a manner as to prevent the free revolution of the fans. If gas-meters were susceptible to similar treatment it is feared there might be a tendency to perforate the cases and imprison spiders therein. — *Engineering*.

A MODEL PRIVATE FIRE-SERVICE. — The Rasin Fertilizer Company, whose works are situated on the Patapsco river, just below the city of Baltimore, Md., is one of the largest enterprises of its kind in the world. The factory proper covers some five to six acres, with acid-chamber, concentrating-house, machine, carpenter, blacksmith, millwright shops scattered over the twenty-three acres comprising the grounds occupied by this concern. The power required is derived from a nest of boilers of the capacity of 400 horse-power, driving a powerful Corliss engine of the latest and most improved pattern. The precautions used by this company against fire are most thorough. There is a regular, drilled fire-corps. The supply of water is drawn from the Patapsco River by a Blake pump with 8-inch suction and 6-inch discharge. Six-inch mains run to all desirable portions of the works, tapped by 1 1/2-inch pipes, which carry the water in all directions, so that in case of fire seven streams of water can, at a moment's notice, be turned upon the conflagration. Five thousand feet of 1 1/2-inch rubber hose is attached and ready for use at all times, and steam at all times ready for the

operation of the pump. In addition, stand-casks filled with water are placed in the most desirable and convenient places, whilst a bucket-brigade is drilled to be ready, with buckets in hand, taken from the numerous racks properly placed throughout the works. Reels with additional hose are kept ready for use at all times. This apparatus cost the company over \$10,000. There are auxiliary boilers, so that steam is always up, day and night, without intermission, and as the work is carried on throughout the twenty-four hours, the workmen, who are all disciplined firemen, are always ready. They are stimulated to discovery and giving alarm of fire by the standing offer of double wages afterwards as a reward. In this way, during the history of the establishment, three fires have taken place, and they were so quickly detected and extinguished that no loss followed. — *Fire and Water*.

USES FOR ALUMINIUM. — Among the uses for aluminium suggested by Mr. Eugene H. Cowles, President of the Lockport Company, according to *Modern Light and Heat*, are the following: At 50 cents per pound the new metal will compete with copper at 17 cents, the latter being 3.56 times as heavy as an equal bulk of aluminium. But the electrical conductivity of aluminium that is 98 per cent pure is only 75 per cent that of copper, so that one-third more area would be required to do the same work. A reduction of forty-five per cent in weight of motors for electric cars can be secured by using the new metal, which, in itself, is no small advantage, seeing that the latter promise to come into extensive use in the near future. The coating and lasting qualities of aluminium far surpass those of tin, and it will cover three times as much surface for equal weights, making it necessary to sell tin at 16 cents per pound in competition with the other at 50. Nickel at 70 cents would no longer be used for plated ware or coinage, the new metal being much cheaper and cleaner. He expects to see it sell at \$200 to \$300 per ton, and at these figures it will be the cheapest metal next to iron and steel. The price must fall lower and lower as the facilities increase for making the material and the market adapts itself to the absorption of larger quantities of the new metal.

THE MEXICAN PICTURE NOT A TITIAN. — For some years past American artists and tourists have been visiting the remote little Indian town of Tzintzuntzan, on Lake Patzcuaro, where in a church there was said to be a genuine painting by Titian of the burial of Christ, a really fine canvas. Among other American artists who have visited the town were Mr. Edward Russell Butler, who made color sketches, and Mr. Curtis Perry, both of New York. The theory of Titian being the painter has received a bad blow from Dr. Nicolas Leon, Director of the Michoacan Museum, who has carefully studied the matter. He asserts in a long article, that the painting is the work of Bathasar de Echave. — *New York Times*.

TRADE SURVEYS

The country is developing unexpected capabilities in the way of regaining lost ground, recuperating lost energies, and putting itself into shape. The facts which have been developed during the past two or three weeks afford every one who studies national commercial questions a great deal of satisfaction. It is true the volume of business is considerably behind the volume of last year, and financial writers make a great deal of this fact, but there is after all very little in it. The point they overlook is that the consumptive capacity of the country is not much behind the capacity of last year, and if at all behind, is so little as to not call for much notice. The deficiency is to be found chiefly in house building. There is greater activity in many other directions concerning which very little notice is taken. All statistical information is of the right kind; too many people are in the habit of gauging the prosperity of the country by the amount of speculation indulged in, and the amount of stocks bought and sold. Nothing is more deceptive; legitimate prosperity comes from different sources. The general features of the past week have been commented upon in the numerous papers, and are enumerated as follows: The continued exportation of gold, the favorable crops coming in, the large surplus above the legal limit, now nearly twenty million dollars; the low condition of stocks in consumer's hands everywhere, the control manufacturers and producers have over production, the determination of promoters to not do more promoting than the country will bear, etc.

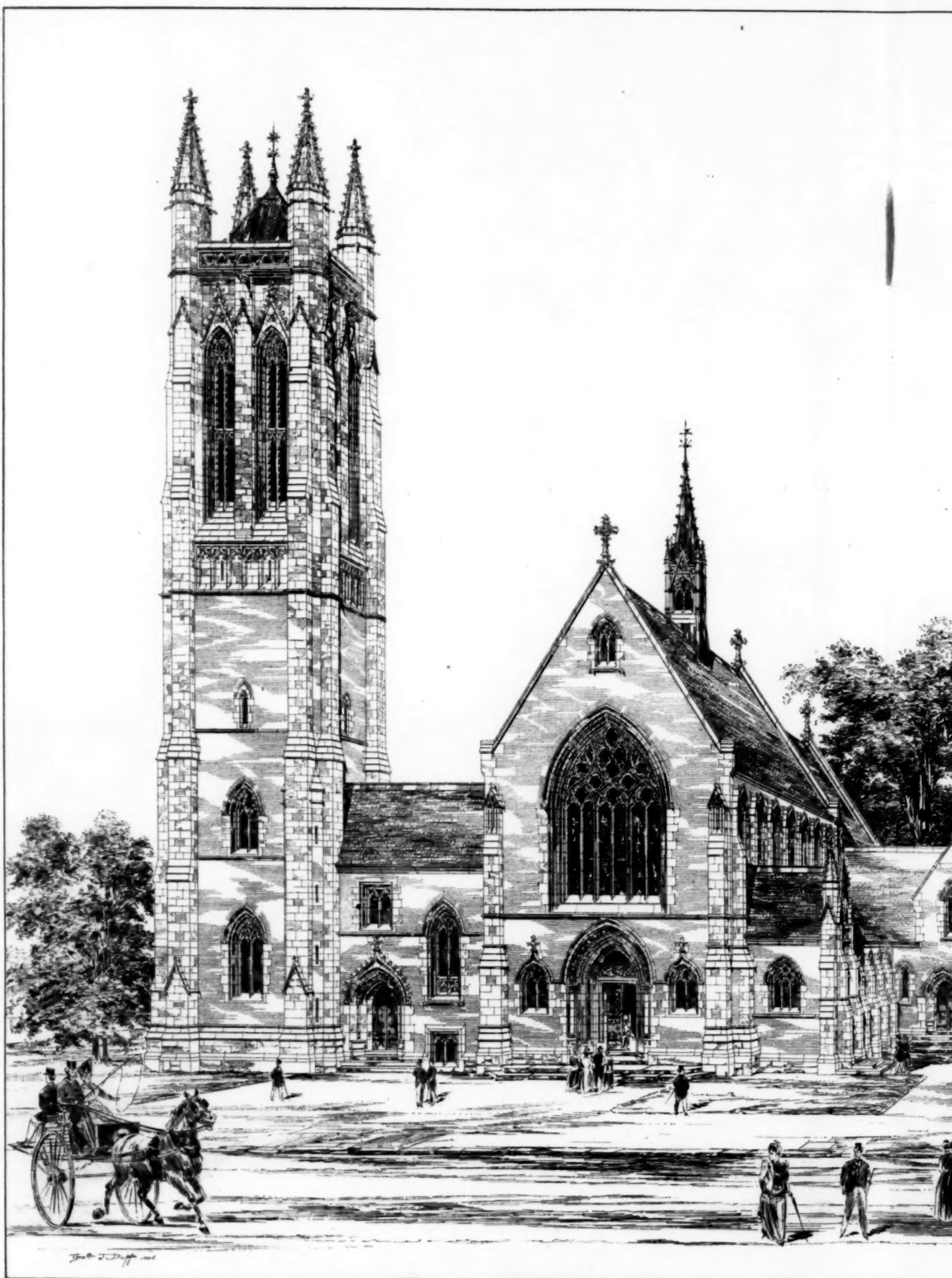
New industrial enterprises in the South show a falling off, compared to last year, of twenty-five per cent in principal, but in the amount of investments there is no falling off. This is a significant point. Careful investigations have been made during the past month to ascertain approximately how much manufacturing capital in the South has not been making money for its investors; the inquiry develops the fact that the percentage is too trifling to take into account. Another favorable feature in the South and Southwest is the establishment of banks; this is a very important matter to the people of those sections. The cotton-crop conditions continue most favorable. Speculators are getting ready to take a slice this fall and winter, but they will probably be caught because of the abundance of the crop and the restricted demand in many countries for cotton goods. It is true, this restricted demand may not continue long, and that next year it may assume its usual proportions, but, taking the South and Southwest generally, there is not a single unfavorable influence at work. In Eastern Pennsylvania the puddlers are disposed to strike, but probably will not, at least, not generally. In the Connellsville region, coke-production has now reached its maximum output. The furniture manufacturers throughout the West, and especially through the Ohio River valley, are all working full time. Coal-production has not fallen back, excepting in anthracite. The production of lignites in the far West is rapidly increasing, and mechanical engineers are rapidly devising methods by which it can be utilized for manufacturing and domestic purposes to better advantage. There are many symptoms of improvement in the commercial and manufacturing channels of New England. Machinists, electricians, engine-builders, paper-makers and the manufacturers of shop equipments have no occasion to find fault with the present market. The improvement that is taking place is due to the sensible management of business men throughout the country.

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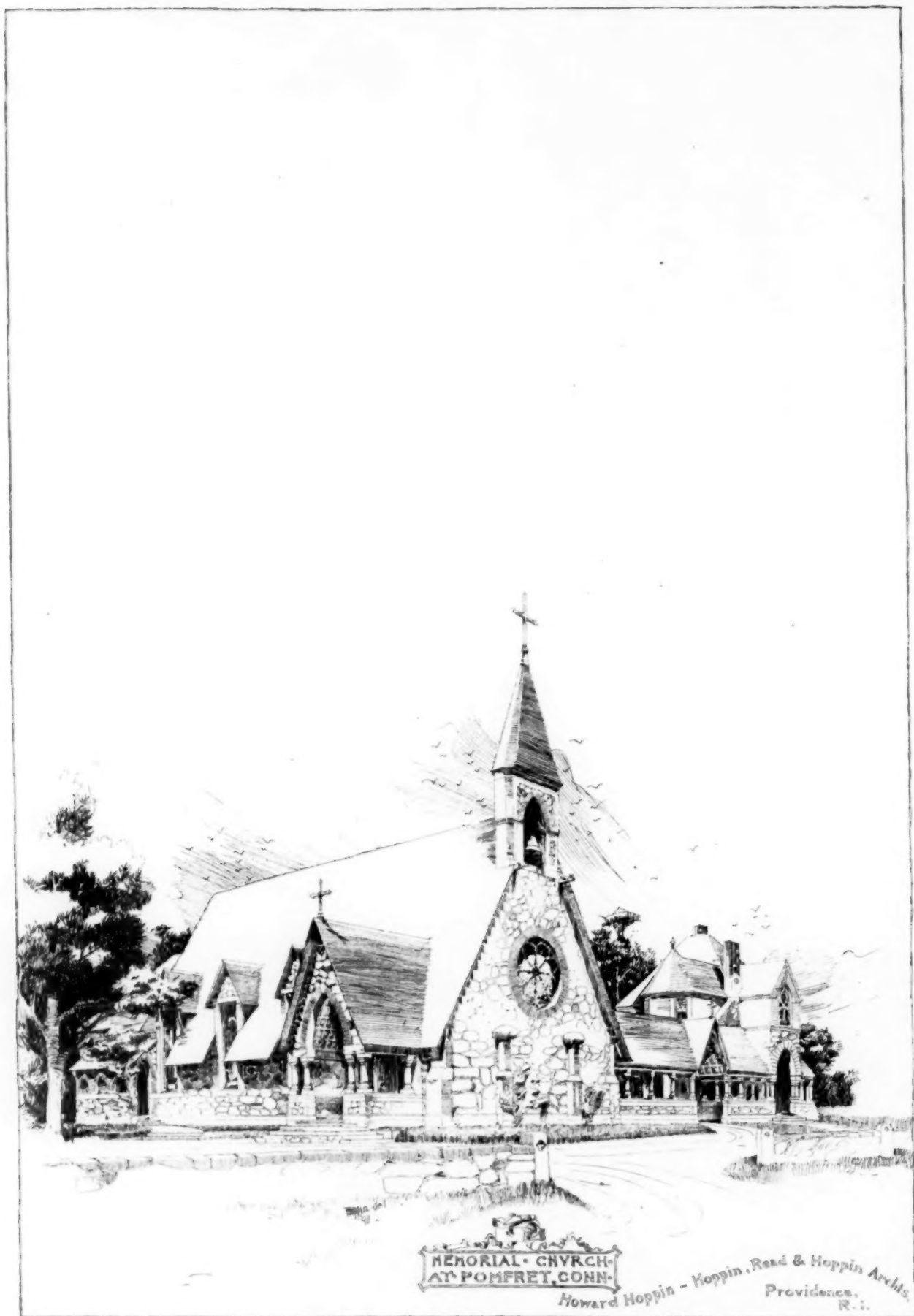


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