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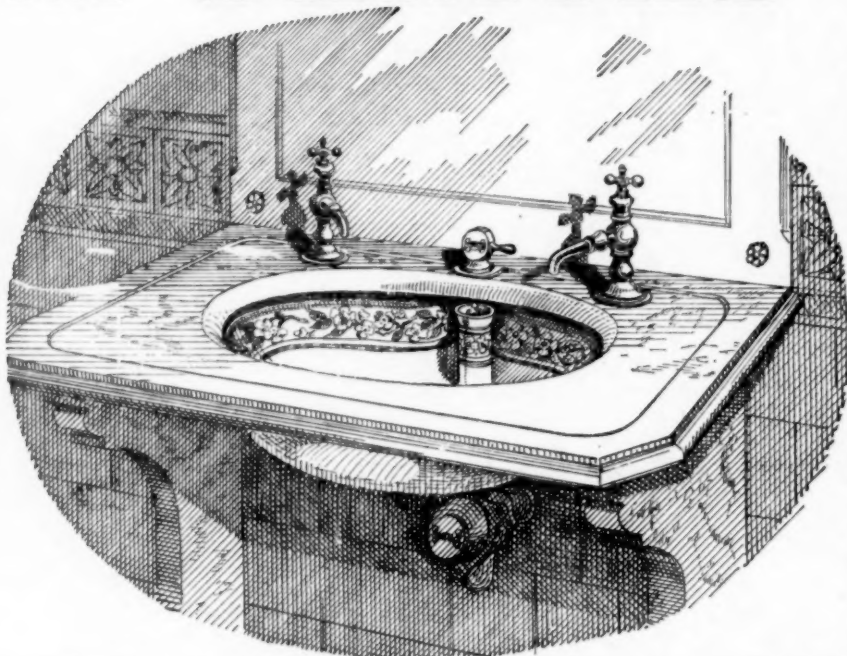
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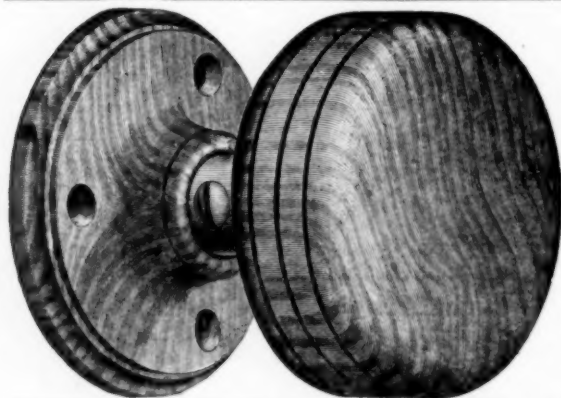


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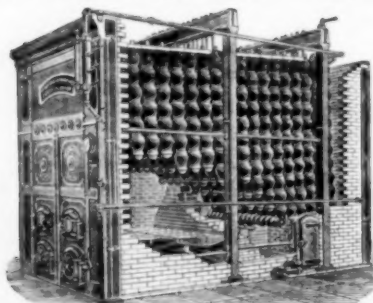
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VOL. XXIX.

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AUGUST 23, 1890.



SUMMARY:—

The Builder on the Incomes of New York Architects.—The Leakage from Street Water-mains.—The Leakage from Gas-mains.—An Illustrator secures Payment for Unused Drawings.—The Recent Explosion of a Cartridge Factory at Antwerp.—The Explosion of a Neighboring Petroleum Tank the Possible Cause.—Cleaning the interior of St. Mark's by Aid of Balloons.—Competition for Government Buildings at Bucharest.—Proposed Monument to Columbus in New York.	109
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ON the other side of the water, there is, it appears, an impression as to the income of American architects which will do very well to contrast with the glowing picture presented not long ago by some of the New York and Pennsylvania papers. The editor of the *Builder* is acquainted with a person "of a somewhat statistical turn of mind," who communicated to him some figures, "for the accuracy of which he vouched," as to the financial condition of at least the New York architects. According to the statistician, who is also an architect, "there are in New York and its immediate vicinity at least eight hundred practising architects—so-called. Of these there are not more than thirty-five whose names can be said to be fairly well-known. That is to say, thirty-five out of eight hundred, or less than five per cent, make good incomes, while the remaining seven hundred and sixty-five starve more or less gracefully." We hope that parents who meditate sending their boys to an architectural school for a few years, or adopting what many think to be the equally effectual, and more expeditious course, of putting them into a carpenter's shop for a summer, in the expectation that immediately after graduation they will enter upon an income of five hundred to a thousand dollars a week, will have their attention called to this statistician's opinion on the subject. For our own part, although perhaps an Englishman would consider graceful starvation what the more hopeful and democratic American would call a modest but comfortable living, we should be inclined to say that somewhere about one-half the people who are mentioned in our city directories as architects, manage to live decently and honestly on the proceeds of their architectural practice. Of the rest, a considerable number have private incomes, or allowances from rich parents, as the profession of architecture is now, in this country, very popular with young men of the wealthy class; while the rest are either architects only in name, earning their real living by some different occupation, or practise architecture when they can find employment, and at other times devote themselves to various kinds of work, by

means of which they can earn an addition to their professional gains.

A CORRESPONDENT of the *Engineering and Building Record* asks a question which is of considerable public importance. Writing from Canada, he asks whether it is true, as he has heard, that the best American engineers, in the construction of systems of water-works, allow for seven leaks in the mains per mile. The editor of the *Engineering and Building Record* thinks that it would be very singular practice in engineering to allow for any leakage, but it does not positively assert that water-mains, as commonly laid, do not leak at more or less frequent intervals, and it is very desirable to know the facts in the matter. Of course, so far as the taxpayers are concerned, the loss of water may not be a serious matter, but householders, as well as architects and plumbers, are vitally interested, on account of the effect of even a small leak in diminishing the pressure in the pipes supplied from the leaky main. Persons who have not tried the experiment can hardly believe how rapidly the pressure in a water-pipe will fall by allowing a little escape at the point where the pressure is greatest. Occasionally, this principle can be turned to useful account, as in a case in our experience, where a country-house and stable were supplied with water from a spring on the side of a mountain about eight hundred feet above the house, and considerably more than that above the stable. The hydrostatic pressure in the pipes would, therefore, have been nearly four hundred pounds to the square inch, or far more than the usual plumbing appliances could resist; but, before admitting water to the pipes, a branch was connected with the supply-pipe, nearly at its lowest point, between the house and the stable, and brought to the surface, and a cock put on, from which a thread of water was allowed to run constantly. The supply was so ample that the loss of water was of no importance, and the pressure was so reduced by the leakage that ordinary plumbing was used in the house without any trouble, the pressure being, apparently, not more than fifty or sixty pounds. In most cases, however, it is desirable to save every pound of pressure possible, and everything that detracts from it is to be avoided. In thousands of houses in New York the water will not run above the second story without pumping, and endless vexation, and even danger, is incurred through the attempt to supply water-closets, cisterns and other fixtures near the limiting level from the service-pipes, with the result that the cisterns only fill at night, and during the day the water-closets are not flushed at all. That the inadequacy of the pressure may, at least in some cases, be due to a loss of head in the mains through leakage, is indicated by the fact that the water in the houses on a certain street will often rise several feet higher in the pipes than it will at the same time in the houses in a neighboring street; and architects and plumbers find themselves obliged, in order to lay out a serviceable plumbing system for a new building, to make careful inquiry about the pressure in other buildings in the vicinity. In many cases it is necessary to put tanks, and a more or less complete double service of pipes, in houses on a lower level than other houses, which enjoy sufficient pressure throughout from the mains; and if it is true that the difference in pressure is due to leakage from a badly-caulked joint in the street-pipes, the owners who have had to go to the expense of supplementing artificially the insufficient head have good cause of complaint against the management of the water-works.

IN regard to gas-pipes, also, the inhabitants of our large and crowded cities have a claim to be heard. It is often said, we do not know with how much truth, that one-quarter of the gas manufactured in the retorts for city supply is lost, by leakage from the mains, before it reaches the meters. If this is true, it is obvious that, as the gas companies continue to pay dividends, every consumer has twenty-five per cent added to his bills, to pay for the gas wasted through the inefficiency with which the company tests and joints its pipes, and in return for this contribution, which amounts in the aggregate to an enormous sum annually in every large town, the citizens get nothing but a soil and an atmosphere constantly pervaded with the noxious smell of gas. That the gas-mains in our streets actually leak, and in many cases very copiously, is evident to every one, and

the only question is in regard to the amount of the leakage. We are inclined to think that this is very large, perhaps as large as it is popularly supposed to be; but it is quite time that some satisfactory determination of the exact quantity should be made, and the waste, the cost of which falls, not on the companies, but on their customers, stopped.

A CASE which has a certain interest for architects was recently decided in England, on appeal. Mr. William Hayes, an artist, sued Mr. Bowles, who was until recently the proprietor of the illustrated newspaper, *Vanity Fair*, for payment for certain sketches. It appeared that Mr. Bowles engaged Mr. Hayes to make drawings for his paper, at twelve guineas each, and the artist travelled from place to place, made sketches and prepared drawings, many of which were used and paid for; but certain drawings had been delivered to Mr. Bowles, but not published, and it was for the value of these that the suit was brought, Mr. Bowles disclaiming responsibility for them, on the ground that they had not been used, and would not be, and that the journal had passed out of his hands. The case was brought some time ago before the judge of the Westminster County Court, who decided, after the airy fashion of English judges, that there was no case to go before a jury, and rendered a verdict for the defendant, with costs. Mr. Hayes then applied to the higher court, which ordered that the case should be tried before a jury, and, as it turned out, the jury took a different view of the matter from the judge, and brought in a verdict, with costs, for the plaintiff.

SOME time ago, an explosion took place at Antwerp, in a cartridge factory, which was, in some strange manner, accompanied by the blowing-up of a petroleum warehouse near by, and the destruction of an entire group of buildings, with the loss of many lives. A long judicial inquiry followed the catastrophe, for the purpose of determining who should bear the responsibility for the losses, and some curious facts were brought out. The cartridge factory was situated between the little river Schyn and a public street, and comprised a machinery and engine room, a work-shop where girls were employed, a packing and store house, and a powder-magazine. All these buildings were separate. The storehouse, at the time of the explosion, contained fifty million cartridges, packed in boxes. On the other side of the street, two hundred feet away, was the petroleum warehouse, comprising three tanks, only one of which contained oil, and an office-building. Just beyond this were two immense sheds, belonging to the city, and used for storing petroleum in barrels. Nearer the cartridge factory was a storehouse, containing guano and sulphates. The explosion of the cartridge factory and the oil tank appeared to be simultaneous, and the most important question to be settled was which blew up first. The appearance of the ruins gave little evidence on this point. Where the cartridge factory had stood, there remained a portion of the lead-melting oven, some pigs of lead, and the remains of the engine and boiler. The place where the work-room had been was covered with earth and cartridge shells, but under the covering of earth was found the floor, and the bodies of the unfortunate girls. The site of the packing and store house was marked by an immense excavation, in the bottom of which was found a piece of one of the petroleum tanks, known as No. 1, while most of the rest of the same tank, torn and twisted, lay on the edge of the pit. Of the guano storehouse, nothing remained but some bags of guano, but near the pile of bags lay several pieces of the petroleum tank No. 1, covered with cartridge shells. The petroleum warehouse was almost completely destroyed, both empty tanks having lost their upper portion, while the tank which had been full of oil was crushed in, and a portion of the top removed. The city sheds, containing petroleum in barrels, were totally destroyed, only a few pieces of the walls remaining, which showed traces, both outside and inside, of having been exposed to a violent conflagration.

FROM the nature of the case, it appeared that the cartridge factory would be likely to explode first; but the explosion of a petroleum tank, throwing the top into the middle of a mass of cartridges primed with fulminate, might fire these, and it was difficult to explain otherwise the appearance of the top of the tank in the middle of the ruins of the cartridge storehouse, or the fact that the pieces of the tank found in the

guano shed were covered with cartridge shells. Several experts, including an architect, a chemist, and two officers of artillery, and one engineer officer were summoned, and decided that the first explosion took place in the cartridge factory. This explosion, as might be supposed, and as the indications showed, took place by successive stages, the roof yielding first, then the walls, and lastly, the floor and the earth beneath the floor; and the remains of the tank were found on top of the earth excavation, which was the last work of the explosion, while the fact that the pieces of the tank found in the guano shed were covered with cartridge shells was accounted for by the supposition that all the cartridges did not explode at once, but that minor explosions followed the first. The most inexplicable circumstance of all, the fact the petroleum tank should have been thrown into the middle of the cartridge factory, the experts accounted for by saying that the first force of the explosion was to crush in the top of the tank, but that, as the pressure was released, the elasticity of the iron plates produced a reaction so violent as to detach the top entirely, and send it two hundred feet through the air. The proprietor of the cartridge factory employed an expert, who argued, very sensibly, that, as the recoil of a piece of elastic metal is always less in force than the blow from which it recoils, the top of the tank could not have been separated and thrown two hundred feet by the reaction from an impulse which was originally insufficient to detach it, and some of the audience in court were disposed to agree with him, that the original explosion took place in the tank, from the detonation of petroleum vapor mixed with air, and that it was the impact of the mass of iron among the cartridges which determined their explosion; but it was acknowledged that the cartridge factory was managed carelessly, and in violation of the law regarding the storage of gunpowder, and, the presumption, or rather the prejudice, being thus turned strongly against its proprietor, he was condemned to pay a fine, besides all damages to other parties, and the costs of the suit, and, in addition to be imprisoned for four years and seven months.

PROFESSOR MELANI writes a letter to *La Construction Moderne* about the restorations in the Church of S. Mark at Venice, in which there is a point of practical interest. The recent restorations do not appear to have been very serious, consisting mainly in washing the marble columns, and clearing away the cobwebs; but the machinery by which the latter work was accomplished merits description. It seems that spiders like the air in the domed ceilings of the church, and spin a good many webs there, and these webs catch the soot from the candles, and the floating dust, and obscure the mosaics. To clear them away by building a staging under each one would have been an expensive operation, and there was no way of attaching a hanging stage; but the architect in charge of the restorations, Signor Saccardo, bethought himself to have some balloons made, about a yard in diameter, and filled with ordinary illuminating gas. A long silk thread was attached to them, and this served to steer them from place to place under the domes, which they swept clear of cobwebs in a short time.

THE Government of Roumania announces preliminary competitions, open to all architects, for two buildings, one for the Chamber of Deputies, and the other for the Senate, to be situated at Bucharest. The competitions for the two buildings will be independent of each other, and three prizes will be awarded for each; the first prize to be five thousand dollars, the second fourteen hundred dollars, and the third six hundred dollars. The programme and conditions for both competitions may be obtained by addressing the Secretary of the Council of Ministers at Bucharest, Roumania, and all designs must be submitted before November 15 next, at 4 p. m.

THE undertaking of the newspaper, *Il Progresso Italiano*, inaugurated in February, 1889, to erect a monument to Columbus in the city of New York, has resulted in the selection, by a committee appointed by the Italian Government, of the design submitted by the Italian sculptor, Gaetano Russo. The design, which has been published in the New York daily papers, shows a rostral column of granite surmounted with the marble figure of Columbus, while the "Genius of Columbus" examining a globe stands in front of the die of the pedestal, and the podium is decorated with bas-reliefs.

RELIGIOUS ARCHITECTURE.¹—XX.

INDIAN ARCHITECTURE.

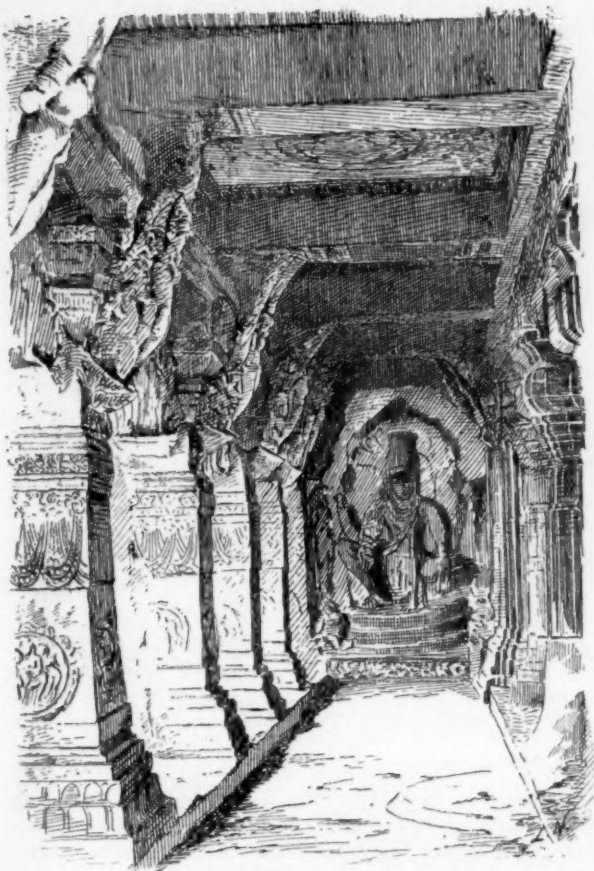


Fig. 1. Interior of the Temple of Badami [6th Century].

THE history of India, even to-day, is very incomplete. Outside of the epic and religious poems of the country and the code of Manu, no historic documents have come down to us from the people of India themselves. The little that is known of their ancient civilization has been learned from the Greek ambassador Megasthenes, who lived about 300 years before Christ, and from two Chinese pilgrims, Fa-Hian and Hwen Tshang, who visited India, one in the fifth century A. D., the other in the seventh; a few later Arabic writings bring us to the threshold of modern history.

Aryan tribes from Turkestan penetrated into India in the fifteenth century B. C. They lived as pastoral peoples and built no temples, since their primitive worship was conducted in the open air.

The Aryans at first subjugated the valley of the Indus, and then gradually made themselves masters of the Ganges. The inhabitants of all this vast region were converted to Brahmanism. In the fifth and sixth centuries, B. C., this Aryan civilization, which seems to have been very brilliant, had reached its zenith.

About the same time Buddha appeared as the founder of a new system of belief, which in the third century B. C., became the State religion. The people were grouped in rival States, whose dissensions paved the way for Alexander's invasion of the country. The conqueror, threatened with desertion by his troops, paused on the banks of the Hyphasis, and was finally forced to turn back. A few fleeting traces of the influence of this occupation were left on the local architecture; a more lasting impression was made on the sculptures of certain edifices in the North, near Bactria, where a Greek colony existed for a long time.

After Alexander's departure, the struggles between rival princes were renewed. The celebrated Asoka conquered all of Northern India, about 250 B. C. He left many architectural works as monuments of his reign.

About the year 50 B. C., Vikramaditya, King of Malwa, took possession, it is said, of almost the whole of India. He

drove out the Scythians, who had occupied a portion of the northern provinces.

Rulers, whose names even have hardly been preserved, founded powerful and wealthy kingdoms, in which, according to the reports of travellers, cities of considerable size grew up; one of these, Kanoje, was at one time three and one-half miles long, though little remains of it to-day.

In the fifth century A. D., Brahmanism regained the supremacy, with a preponderance of the worship of Vishnu in some provinces, and of Siva in others. The Jaina system of belief, however, won the ascendancy in the northwestern sections. It is from this period that the oldest and most beautiful of the Indian edifices date.

The Mussulmans began their incursions into India in the seventh century; but it was not until the eleventh that they succeeded in conquering and occupying the country. They found the territory once more divided into independent kingdoms and principalities. The land was extraordinarily fertile, and the cities thriving and opulent. Mahmud wrote from Muttra, one of the capitals of which he had taken possession: "This marvellous city contains more than a thousand edifices, the greater part of which are built of marble and are as firmly founded as the faith of the true believers. The money expended on all these structures cannot be estimated at less than several million dinars; and such a city could not have been built in two centuries. In the temples, my soldiers found five golden idols, with eyes made of rubies valued at fifty thousand dinars; another image was adorned with a sapphire weighing four hundred miskals, and the figure itself, when melted, yielded ninety-eight miskals of pure gold. We found also a hundred silver idols, representing a burden of as many camels."

At Somnath, the pillars of the temple were overlaid with gold and ornamented with precious stones; the *personnel* of the sanctuary included 2,000 Brahmins, 500 dancers and 300 musicians. The treasury contained the equivalent of nearly fifty million dollars.

Several Afghan dynasties of Arabic origin succeeded one another down to the close of the fourteenth century, the date of the invasion of the country by the Moguls from Central Asia. The Mogul dynasty, which supplanted the Arabic, produced several remarkable rulers, notable among whom was Akbar, who reigned from 1556 to 1605. Although a Mussulman, he was quite indifferent in matters of religion, and encouraged all forms of worship indiscriminately; numerous temples of all sorts were erected during his reign. Delhi was the capital of the Mogul Empire. Mogul power in India culminated with the rule of Aurangzeb, and anarchy soon brought the country under British dominion.

We will indicate briefly the principal edifices constructed during each of the historic periods noted above.

None of the existing architectural remains antedates the third century B. C. During the first Brahminical period, the majority, if not all, of the religious edifices were excavated in the mountain sides. There are, indeed, a few of these artificial caves which evidently belong to a remote age, but they are destitute of all architectural construction and of all ornamentation.

We must come down to the second century B. C.—that is, to the period when Buddhism was in full sway—before reaching the cave-temples of Karli, in Central India, and of Udayagiri, in the north. The oldest temples of Ellora and Ajunta do not date back of the sixth century A. D. The Temple of Badami (Figure 1), in the southern part of the country, belongs to the same epoch. The temples of Elephanta were built in the eighth century.

Throughout the period of Buddhist supremacy the temples were generally subterranean, not only in the north and centre of the country, but in the south. However, the decorative system had already assumed distinct characteristics in the two sections. In the edifices of the north and centre, countless figures, scarcely detached from the stone, were spread all over the surface of the walls; while in the south, as at Badami, the sculptural motives consisted of fantastic beings, and of queer animals in an erect posture or in the act of rearing, standing out boldly as consoles and supports of the most extraordinary shapes.

The plan of these cave-temples was very simple. It embraced a single room, or several halls, supported on short, heavy pillars. At the rear of each apartment was a statue of the Buddha. Sometimes there were several of these images, representing the different Buddhas.

¹ From the French of P. Planat, in Planat's "Encyclopédie de l'Architecture et de la Construction." Continued from page 97, No. 764.

The famous structures known as "stupas" or "topes," which seem to have been designed for religious uses, date from the same period. They are simple conical or ovoid mounds surrounded by a balustrade with several entrance-gates. Under its conical form, a common religious symbol in Asia, the tope appar-

The tope of Sarnath, in Northern India, should likewise be cited.

It belongs to the sixth century A. D. It was built of brick; the stone balustrade was a good imitation of a wooden fence, which would indicate that the method of wood construction

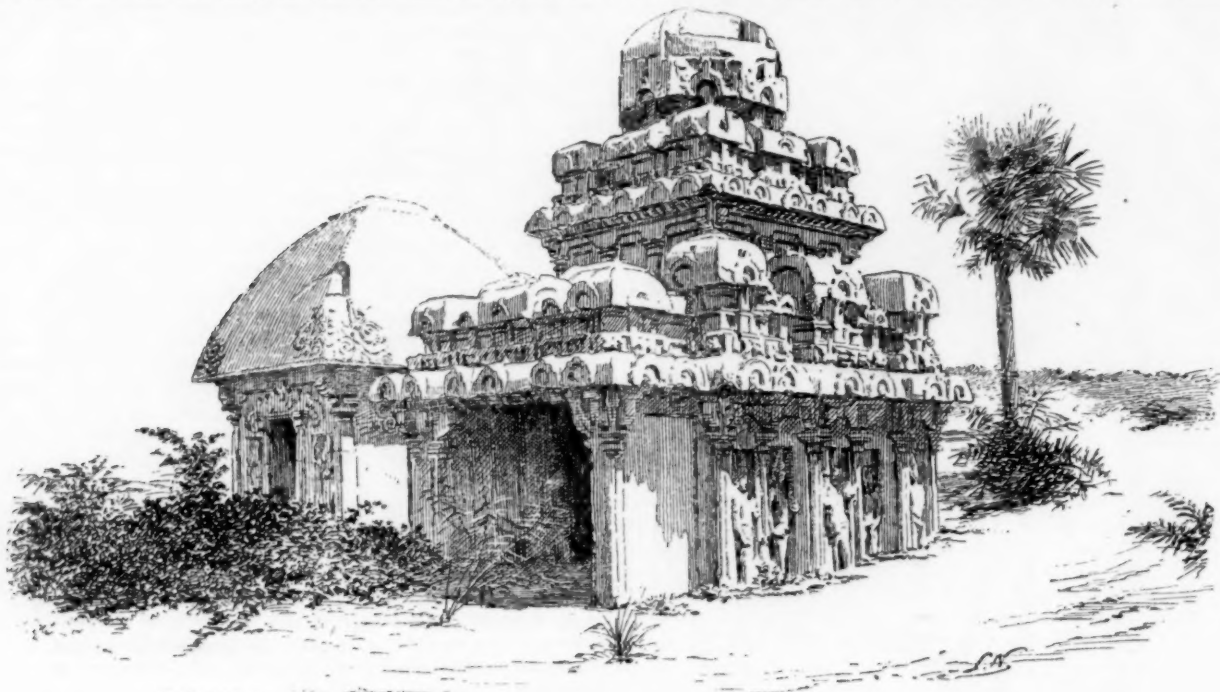


Fig. 2. Temple of Mahabalipur [8th Century].

ently furnishes the original type of the plan which we find universally adopted later for the chief edifice in Indian temples. The tope at Sanchi, constructed in the third century B. C., was

really served for its model. The gates, formed of two upright posts connected by several, generally three, slightly arched cross-pieces, have a Chinese aspect. The gates now in exist-

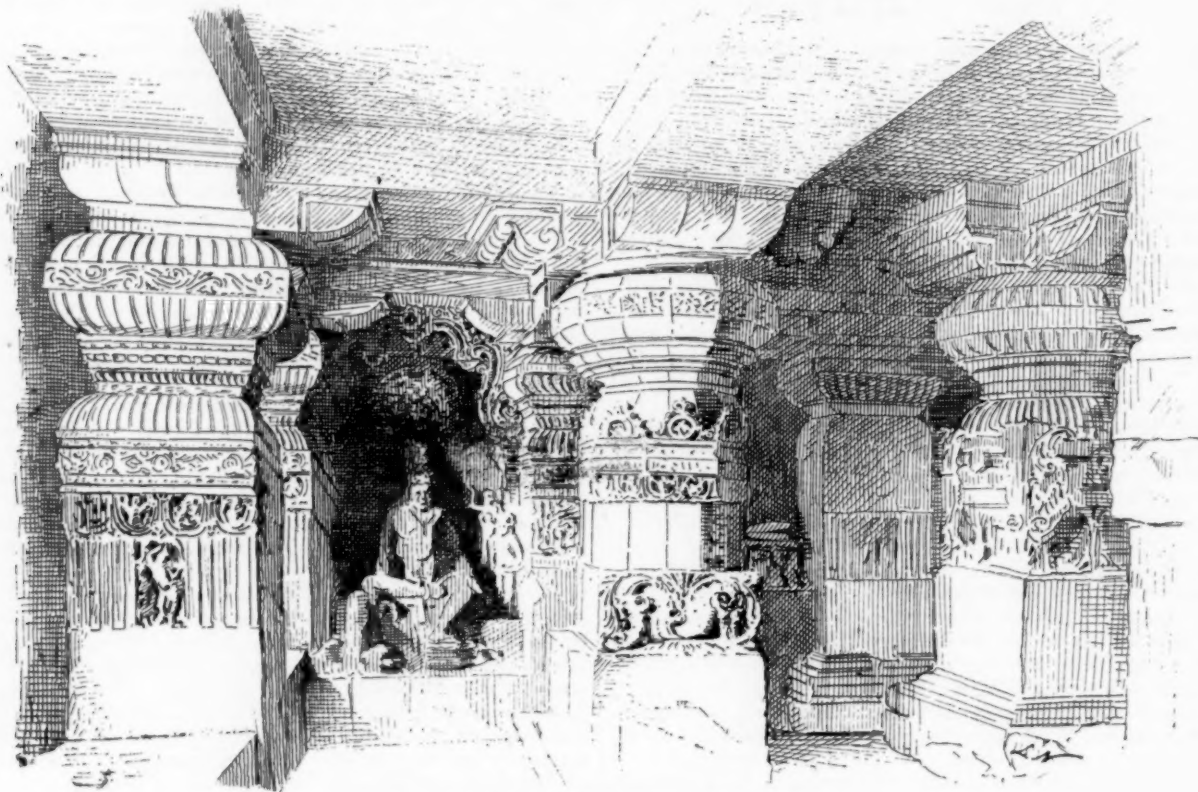


Fig. 3. Interior of the Kylas at Ellora [8th Century].

111.5 feet in diameter at the base, and half as high. At the summit of the tope there was always a sort of altar, formed by a parallelepiped surmounted by three stone flags of continually decreasing diameter, making a kind of dais. This altar is also found in ordinary temples, as well as in the topes.

ence are a little later than the sixth century. The jambs and cross-pieces are alike wholly covered with delicate carvings.

In the cave-temples, also, the pillars are profusely ornamented with graceful sculptures. It is noticeable that the carvings in the most ancient temples reveal a skill and artistic

sense rivalling, and sometimes even surpassing, the skill and art displayed in later structures. This fact proves conclusively that Indian architecture had already reached its zenith in the third and second centuries B. C.; no progress has been made since that time, and the degree of skill then attained plainly points to a long anterior preparation. As the older monuments have, it is true, disappeared, but it is clear that those of the second century B. C. are too perfect artistically to have been produced during the infancy of any style of architecture.

Of a somewhat later date, and in a measure as a transition toward the ordinary temple built above the ground, we find monolithic edifices, constructed by isolating a mass of rock, and then cutting down the interior of this and decorating it with carvings. The rock-cut Temple of Mahabalipur (Figure 2), in the south, was executed in the sixth century. The Kylas of Ellora apparently dates from the eighth century. These temples mark, as will be noted, the period of the restoration of Brahminical supremacy. The transformation in religious belief coincides with an architectural transformation.

The Kylas of Ellora (Figures 3, 4, 5) is about 100 feet high. The interior consists of a large hall, supported on pillars and pilasters, and surrounded by chapels. It is dedicated to Siva and contains, in conformity to the Brahminical rite, niches for all the numerous divinities in the retinues of the great gods. The temple was formerly covered, within and without, with paintings, but these have disappeared.

The court near the entrance is adorned with elephants and obelisks, which are also carved from a single stone.

We reproduce here the plan of the Kylas: the entrance is



THE home of the Romanesque style of architecture in Germany is said to be in Saxony and the neighboring countries, although the style found no less fruitful soil in the districts bordering on the Rhine.

The small Church of St. Jacobs, or Scotch Church, as it is also called, at Ratisbon (which dates from the year 1180), may stand as an example possessing the qualities which we may attribute to the early Romanesque—a degree of rudeness in detail which would seem almost impossible, yet a naïveté in its disposition and an originality in the choice of motifs unsurpassed. But it would go without saying that mouldings and carvings are always very crude, for, during an age when sculpture and painting had attained such a low degree of perfection, one cannot look for anything like beauty in architectural detail. But whatever we say of this quality and other imperfections, we cannot help regarding with pleasure or surprise the wonderful variety and multiplicity of forms used in all decorations, the picturesqueness of general outline, the ingenueness, and, finally, the breaking away from all Classic forms, displayed everywhere. To mention but one example: what better device could have been employed for making the transition from the square

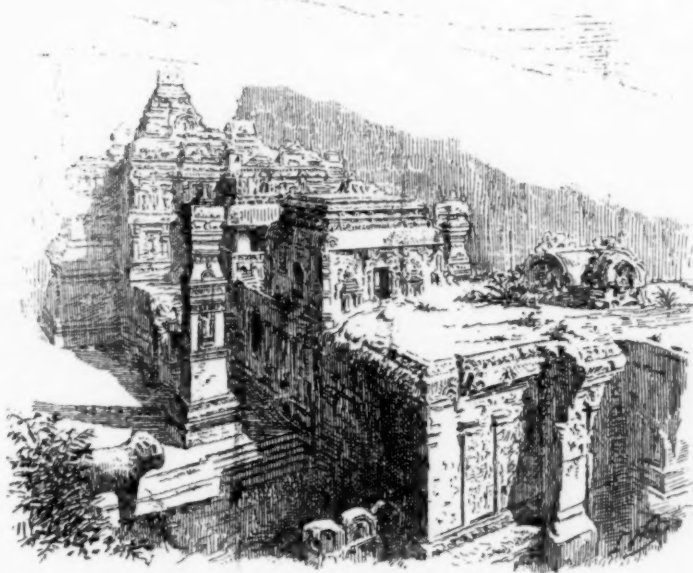


Fig. 4. View of the Kylas at Ellora [8th Century].

at pavilion *d*, on each side of which is a small wing *b, b*; the portico supports a balcony which is occupied by musicians during religious festivals. The passage *Z* leads to the chapel *R*, consecrated to the bull Nandi. Farther on, at *K*, is the entrance to the temple itself.

The elephants to which reference was made above are placed at *a, a*; the obelisks at *s, s*. A gallery *T, V, X*, borne on square pillars, runs around three sides of the court; it gives access to the rock-cut halls *M, N*.

The temple can be entered directly from the court by the stairways *L, L*, which communicate with the large, several-aisled hall *F*, dedicated to Siva; it has two lateral porches *H, H*. In the rear is the sanctuary *E* in which the phallic emblem, or *lingam*, is enshrined. The open terraces *G, G, D* give access to the chapels *A, B, B, C, C*.

We may consider this edifice as the original type, and probably the model of the "gopuras," or monumental gateways which are necessary appendages of all temples in the southern districts, and of which we shall speak farther on.

The temple of Mahabalipur (Figure 2) furnishes us, on the other hand, the initial type of the pagoda, which constitutes the chief building of the structural Hindu temples.

[To be continued.]

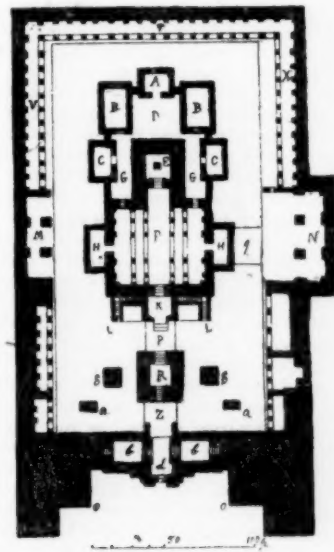


Fig. 5. Plan of the Kylas at Ellora [8th Century].

plinth to the succeeding round torus less harsh and abrupt than that little leaf, or sometimes a head or a grotesque, emerging from the latter member, and gracefully and effectively covering the projecting corner of the lower member—a device which was used, and formed an important member of the base all through the Gothic period.

But to return to the example at Ratisbon: The exterior presents nothing of interest to the architectural student, with the exception of the main portal, which must make a lasting impression upon the minds of all who have seen it; for this round-arched opening, surrounded as it is with groups of sculpture in which grotesques, beasts, birds and chimerical creatures, intermingled with leaf-work, form an important part, presents a most extraordinary and puzzling appearance—one over the meaning of which many an archaeologist has puzzled his brain, for that this maze of ornament does not owe its origin to a mere whim lies upon the surface. Some have sought an explanation of the symbols in the myths of the North; others ransacked the East for an explanation; and others delved into the depths of Hebrew lore, and thought there might lie the solution of this problem. Again, others sought a corroboration of their theories in some equally improbable or probable source, and did not find it, or found it; for what hidden secrets cannot a symbol be made to unfold to him whose mind and thoughts are all intent upon his task of making them reveal and give to the world the tale that he would have them divulge. Nevertheless, it is now granted that this picture from the hands of these early Romanesque stone-cutters was

intended to illustrate the supremacy of Christianity over heathenism, for some of the representations are indisputable, as, for instance, the central figure above, Christ, with the twelve apostles at his side; and a horrible phantom, with a terrible head with most carnivorous teeth and the tail of a fish, out of whose mouth is just emerging the unmistakable Jonah; also, the body of a woman ending in the tail of a fish, a symbol of purity, and many others equally interesting.

The interior, having been restored some twenty years ago, probably, presents a better appearance than it did at any time before its restoration. The nave, as usual, is covered with a flat and panelled ceiling, while the aisles and transepts are vaulted. The exterior, as already stated, is devoid of all architectural embellishment, excepting the portal, and perhaps we may include the plain, square towers, simply covered with pyramidal roofs, which flank the front. The interior is not very attractive, and, indeed, a Romanesque interior, whether German, Italian or French, appears as child's play compared with a Gothic interior where the pier-system and other constructive features of this style are fully developed. And this holds true for any style in which the interior effect is produced merely by surface-decoration and decorated wall-surfaces.

We may now turn towards the Rathhaus, an interesting old structure dating from the fourteenth century, a sombre and dismal exterior enlivened only by a beautiful Gothic bay and an elaborate entrance. But its exterior walls are well in harmony with the dark dungeons behind them and the dreadful scenes that happened within. Of these dungeons there are many; yet they were never empty, and of them and of the chamber of inquisition, which is yet intact, and appearing as it did centuries ago, many a tale is told. Close and dark they all are, not a ray of sunshine having entered since the last stone was put in the vault which covers them. The chamber itself lies far beneath the surface of the earth, and to get to it one passes through narrow and crooked corridors, now and then stopping to peer into some cell beneath the floor, the only opening of which is a small hole, covered with a grating, in the top of it, through which the prisoner was thrown, and when he struck the floor beneath there he might lie until death relieved him, or until, in frenzy, he dashed his head against the walls that enclosed him. Now and then we stoop, or, more correctly, do not stoop, for the warning cry of the old guide invariably comes too late as we pass through some low archway leading into the next corridor. And so, finally, the torture-chamber itself is reached. This is divided into two parts by a screen, behind which the judges used to sit, but where now the visitor rests himself and laughingly shouts: "Give the wheel another turn"; or, "Put on another weight," as his companion stretches himself on the bench or tries to ride the "Spanish mule." The latter is one of the most innocent instruments of its kind, and consists of a thick board, planed to a sharp edge, upon which the victim was compelled to sit while the ever-ready attendant tied huge stones to his feet. There, on one side, stands the physicians' bench, upon which sat those who overlooked the operations. There, along the walls, are the various other instruments of torture. But who has not heard of these, what child has not shuddered and felt that delightful cold chill run down its spine as it listened eagerly to tales and descriptions of them? But probably the most interesting and, at the same time, most effective instrument of this class is to be found in the tower of the old castle at Nuremberg, one which received the name of "Iron Virgin," or the "Maiden." It consisted of the bronze figure of a woman attired in the costume of the peasantry of that day. By touching a spring, the arms and front of the figure would open and reveal a cavity lined with long steel spikes, into which the unfortunate was thrust; then the doors would again close, and he within them would perish in the figure's embrace, or perhaps after an instant would be released, but only to fall through the trap-doors beneath him into the deep well which they concealed.

After we have retraced our steps through the winding passages, we ascend the stairs and enter the rooms above, among which the large Reichstagsaal is the most interesting, the cosy bay on one side of which would seem more in place in some cottage or country-house than in this immense hall where many an emperor has sat and where many meetings have been held, the results of which plunged the whole country into war. Quite low-studded is the hall, with the typical beamed ceiling, begrimed and darkened by dust and time, on which we see the immense yellow and black double-headed eagle of the old Empire, while sixteen windows arranged in groups of four, on each side of the bay, and also some at one end serve to light it. Then we pass through numerous rooms containing old trophies, flags and portraits, and one, the walls of which are covered with old tapestries, which are story-books in themselves, on into the chamber of the models, which holds models of all the important buildings of Ratisbon from the cathedral down to the patrician's palace. And hardly one now bears resemblance to its original, so much altered were they from time to time. They are all in wood and some of them beautifully executed, showing the minutest bit of detail and all the constructive features. To quote the guide, these were the only "drawings" the early architects made. But we must doubt this assertion for one often sees old working-drawings, as for example, the immense drawing of the façade of Ulm Cathedral, which is still preserved in part (a section of it, if I remember correctly, was cut off and stolen by an Englishman), not to mention the well-known drawing of the monastery of St. Gall. But it is true that drawings were always supplemented by models, this was also

the case during the Renaissance times and, as I write, I recall the models which were submitted in the Florence Cathedral competition (for the dome, Brunelleschi's design having been accepted) some of which, four to five feet high, are still to be found in the museum behind the church. Even now it is quite the custom to construct for every building, any size, public or otherwise, a plaster or wood model. I have seen some which were submitted in public competitions at an enormous expense to their authors. If I may transgress a little: the drawing of the cathedral at Ulm calls to my mind the manner in which the mouldings for the completion of the tower were laid out. After the drawings had been prepared the contours of the mouldings were chalked and painted full-size on the cathedral-floor, a tinner, or whatever he might have been, then reproduced them and cut them out in zinc; these plates were then given to the stone-cutters. Why they were not drawn directly on the metal plates I do not know, but it looked amusing to see the draughtsmen, with cushions under their knees crawling over the extensive surface. But, indeed, a better detail-table could not have been procured and it was amply large, 63,800 square feet. As a matter of course all other ornamental work was first executed in clay, plaster-casts of which were given to the stone-carvers.

The old bridge spanning the two arms of the Danube, upon the right bank of which the city lies, affords a very picturesque view and is itself no mean structure. Built in the twelfth century it has always held high rank among structures of that class erected during the Middle Ages. It consists of a series of stone arches and on it is the so-called "Little-man-of-the-bridge," a stone figure of a man shading his eyes with one hand and looking intently upon the spires of the cathedral while in the other he holds a ribbon upon which the inscription: "Schuck, how hot," is cut. This is supposed to be in remembrance of the great heat of that year, 1135, when the river was extremely low, which greatly facilitated the construction of the bridge, but at the same time the grain-fields suffered so from the excessive heat that a famine could not be avoided during the following year. The "bridge-man" was, as it is said, put there by the engineer of the bridge (the latter, by the way, was in league with the devil who gave him this figure, which had strange powers), who had made a wager with the first architect of the cathedral to the effect that the bridge would be the first to be completed. Naturally the engineer won and, in consequence, the defeated architect ended his career by jumping from the heights of the unfinished cathedral into the streets below. As is usual, so also in this case, the devil expected some return for the services he had rendered; but it is said that even he was cheated out of his pay by the shrewd engineer. On the sides of the bridge many mysterious signs are to be found of which several go to show that strife between the capitalist and the wage-worker does not date from modern times alone. Of these, two bas-reliefs, representing a lizard and a dog, are easily interpreted: these are symbols of treachery, dishonesty, meanness and shrewdness. In this manner the masons revenged themselves, for real or imaginary wrongs, upon the engineer, who not only robbed an architect of his wealth by joining with the devil, but had also cut down the wages of his own employes. We cannot help thinking what interesting and ornamental buildings we might have in these days if unsatisfied mechanics chose this way of giving vent to their feelings and troubles. It would be quite innocent amusement, but we fear it will never become popular as unfortunately it would necessitate working "over-time." As with every old monument one sees, so with this one is connected the saying of some great man; and of this bridge Napoleon is accredited with saying: "*Votre grand pont est très désavantageusement construit pour la navigation.*"

Not far from the old Rathhaus, in one of the numerous crooked lanes, is an old mediæval house upon whose outer wall is an enormous fresco-painting representing the fight between the citizen, Hans Dollinger and the barbarian giant, Krako. Many a Christian warrior had met death at the hands of the terrible monster Krako. But Krako, always unsatisfied, seemed to have had a strange desire for the blood of one or several Ratisbon warriors, which desire was soon to prove fatal to him. But, nevertheless, when he entered the walls of the town all fled from him, and it was in vain that the emperor urged his warriors to meet the barbarian. Finally, the brave citizen, Hans Dollinger, stepped from the throng that had gathered and challenged him. Thrice he was thrown from his horse, and thrice unhurt he remounted it. Then, with sudden thought, the emperor produced a crucifix. Dollinger gazed intently upon it, and, without removing his eyes, gave spurs to his horse and plunged headlong towards the giant who, evidently not having seen such warfare before, perished on the spot with, I believe, it is said, no wound or scar on his body.

Attention may also be called to an ancient tower—the Römerthurm, a simple structure, square and covered with a plain pyramidal roof, but of importance, as it shows the manner in which walls were built during three distinct periods: thus the lower part dates from the Roman era, and is built of huge granite blocks; above it is the part which probably dates from mediæval times—this part is constructed of much smaller stones; above this again rises the latest part which was constructed with whatever material was at hand, and plastered on the outside.

Not many miles from Ratisbon, in a lovely spot on one of the hills which line the left bank of the river, stands the Walhalla, so located that it can be seen for miles around. Classic in style and, in fact,

almost a copy, at least in its architectural treatment and detail of the Parthenon, it presents an imposing appearance well fitted for its purpose as a memorial to all great Germans from the earliest times to the present. Here the most distinguished men of the nation are represented by their portrait busts, or in the case of the early thinkers and soldiers whose likenesses have not been handed down to us, by simple marble slabs recording the name, dates of birth and death, and other important facts. Bavaria contains two buildings of this class, both of which owe their origin to King Louis I. The other building, the Ruhmeshalle or Hall of Fame, a term perhaps synonymous with Walhalla, being at Munich; this, however, gives place only to noted Bavarians. Our own Benjamin Thompson (Count Rumford) a naturalized citizen of Bavaria, who was ennobled by King Louis, has found a place in this latter structure, and it may also be stated that a full-length bronze statue of him stands in one of the streets of Munich. This Hall of Fame also is a Classic structure, and was designed by the architect of the Walhalla, v. Kleuze. It, however, is entirely different in plan from the Walhalla, as it consists of a long central hall and two short wings. A double flight of steps leads to the platform upon which it stands, which itself is placed on the side of the hill, terraced and rendered accessible by other imposing flights. And then in front of it stands the huge statue of Bavaria, a noble figure, a very marvel of workmanship. It is entirely of cast bronze, not made of thin sheets hammered to the proper form after the manner in which the statue of Liberty in the New York Harbor was constructed. The hall itself is simply a colonnade, with a solid wall behind (against which the various busts are placed) and a row of Doric columns in front, the whole being covered in the manner of all Greek temples. The Walhalla was planned on a much grander scale. Just twelve years after the corner-stone had been laid, the building was dedicated and formally opened to the public. Over five and one-half millions of dollars were expended to make it a worthy monument to the memory of those who were fortunate enough to have deserved a place within its walls. It stands on the wooded slope of a hill, some 350 feet above the river flowing at its base, which, with the numerous terraces and steps by which the height is reached and the flower-beds and the shaded paths, much enhances the aspect of the whole. The temple is entirely of grayish white marble, and consists of a hall, 50 x 180 feet and 57 feet high, surrounded on the exterior by 52 fluted columns, above which, in the spaces of both gables, are groups by Schwanthaler. The interior is very rich and handsome, and in designing it the architect broke away from the model which he chose for the exterior. The ceiling follows the slope of the roof and is covered with bronze plates, the plastic work upon which is rendered more effective by the blue and gold which was skilfully applied. The roof itself is constructed of iron and, on the exterior, covered with copper. The floor is a fine specimen of modern marble-mosaic. The side-walls, entirely veneered with slabs of polished red marble, are divided by pilasters into six sections, longitudinally, which are again subdivided by a cornice, upon which rest a number of caryatides supporting the upper frieze. The reliefs with which this member is decorated illustrate scenes from the history of the German race. A number of most beautiful allegorical figures stand in the upper spaces, while the lower ones are given up to the busts of the personages in whose honor the building was erected. This brief description can but ill give an idea of the ensemble, for, without the beauty of the surroundings for which the temple is eminently fitted, the structure might only add to the list of thousands of imitations of Greek art, but as it is, amidst the beauties of nature, it stands as a monument well worthy of the name it holds.

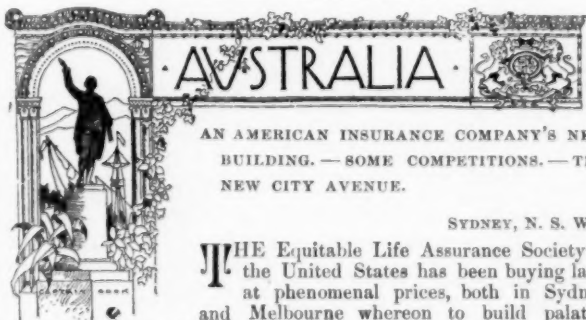
If I have described Ratisbon as quaint, I can find no better way of describing the appearance of Rothenburg-on-the-Tauber than by calling it more quaint. A perfect jewel of picturesqueness, perched high up in the hills above the snow-covered vineyards and the winding Tauber, I saw it. Nothing can ever make Rothenburg modern—the noisy railroad has tried it but failed—not if its very foundations be torn up and cast to the winds. And why? Because if you were to take away the old town and leave but the new, nothing but the hill that commands the loveliest view of a level country would remain to tell the tale. But, I am wrong, outside the city's gray walls, yet uninjured by time, is the new factory to which the worthy fathers, on a Sunday, take their little ones and let them, in mute admiration, wonder at the marvels of the day, while they themselves sadly shake their heads and long for the "good" old times when the factory was not in existence to draw their sons from the fields and vineyards of their fathers. But, if you think from the remark that the sons of Rothenburg have become men of the world, let me put you aright, for not even have they learned the pleasures of a moonlight walk, for at nine the whole town sleeps, even the night-watchman. I hoped to see this important member of the community prowling around after dark with lantern in one hand and a pole in the other calling off the hours and informing, in poetical terms, those members of the community who should happen to be awake that all was well, and that they were under the protection of this ever-watching guardian of the peace. But, as the gentleman in the tower of the town-hall informed me, whose duty it is to ring the bells at the close of the hour and keep a lookout for fires, this custom was abolished fifteen years ago. In answer to my question as to what they now did, he replied, "Oh, just what they do in the cities." I had a curiosity to know what that was, and questioned him further. His answer this time was, "They sleep on their beats," a reply which proved to me that he was a man of literary habits and a

student of human nature. When he recovered himself, he went on to state that they also saw that the saloons were closed at the proper hour, but his chief duty was, he added, to wake those people who wished to take the early train for the neighboring city. He, too, seemed to be prejudiced against modern improvements, which I could not understand, for certainly the old-fashioned telephone in the corner saved him many a trip up the long flight of stairs, and then I noticed, too, he wore a celluloid collar which certainly must have reduced his laundry bill; but when he showed me the "time-clock" with "patent indicator," that had to be wound every fifteen minutes, I understood him and sympathized with him.

Other country youths and lasses may have a longing for the noise and whirl of city life, but for Rothenburg's sons it has no charms, and, if by chance one of her corpulent but rosy-cheeked daughters leaves her *vaterstadt* but for a day, she does not breathe easily until she is again within its walls and in the narrow sphere in which she was reared. Walls which centuries ago were threatened with destruction, but were saved by the heroic (?) action of the burgomaster Herr Nusch. And thus it happened: During the Thirty Years' War, Tilly, the mighty general, besieged the city (Rothenburg was at this time a prosperous free city, and played quite a part in the events of this period, and from these years date most of the monuments interesting to the architectural student), and after a short time victoriously entered its gates. According to the custom of the day, his soldiers were given permission to amuse themselves as best they could, which amusement consisted in stealing, plundering or burning everything they could lay their hands on, and murdering every man, woman or child who did not seem to have any desire to die, while Tilly himself moved towards the Rathhaus to officially demand the death of all the Rathsherren, forming the body which governed the city. Here, in the hall in which even to-day all public meetings are held, a touching scene was enacted. At first, Tilly would show no mercy, finally, however, after much argument, he agreed to grant the lives of all but four of the assembled council. Then came the historical reply of the patriotic Rathsherren, "As one stands for all, so shall we all meet the death that one does meet." Unable to restrain herself any longer, the burgomaster's niece fell upon her knees and begged for mercy, while the burgomaster himself, guarded by the soldiers of the enemy, was about to pass from the room to summon the headsman. At this decisive moment the pretty daughter of the city's cellarer appeared in the room with the goblet of honor, brimful and sparkling with the best that Rothenburg's cellars could boast of—which on all great occasions passed round from honored guest to Rathsherr, and, as each one drank, he spoke words of good will and wished prosperity to those nearest him—which, with a winning smile, she presented to the stern conqueror. Tilly accepted the proffered bumper, drank deeply of its contents and, as he returned it, an idea struck him, his stern face relaxed, and he ordered it filled again, filled to overflowing. Then he spoke and made it known, that he would grant mercy to those whom he had just condemned and withdraw his troops from the city if one of the Rathsherren would, without once taking it from his lips, drink from the goblet until not a drop remained. The goblet, of white glass and painted in the style of the day, is still preserved and holds over six quarts. The burgomaster, stepping forward, demanded the goblet, put it to his lips, and when he again removed it, it was empty. Rothenburg was saved, while the valiant burgomaster, after lying three days in a stupor, recovered and lived some fifteen or twenty years to enjoy the laurels he had gained.

Although this act was, as it was called, his "master-drink," it was not, as may be believed, the first masterly drink he had indulged in. And, as it is said, his roseate countenance vied in redness with the wine that caused it. Nevertheless, when he awoke after his three days' stupor, he dryly remarked that he would never again save a city in that manner, and fortunately he was never called upon to repeat his feat.

T. F. LAIST.

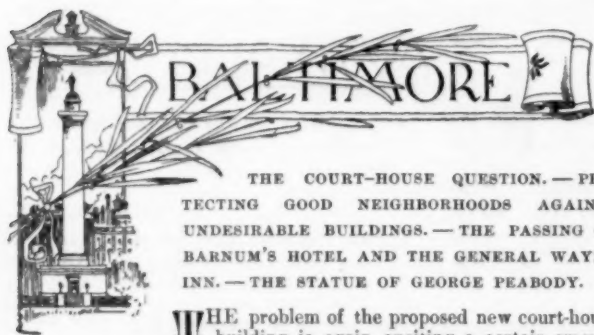


THE Equitable Life Assurance Society of the United States has been buying land at phenomenal prices, both in Sydney and Melbourne whereon to build palatial offices from designs which are to be prepared, it is said, by an American architect imported for this purpose. Both sites are worthy of fine buildings; and if the directors have gone somewhat far afield in selecting their architect, we in Sydney, at any rate, will not grumble if the result should justify their action, and tend to elevate the standard of our street architecture. But all the same, though we acknowledge that we have much to learn, we have a prejudice—absurd perhaps, but very natural—against all professional importations when they interfere with our legitimate business:

we have an idea that because we have studied local requirements and local taste and because we are able to adapt our work to the exigencies of the climate, that we are therefore better suited for the task of designing and constructing our own buildings, than any stranger can possibly be. And if the Equitable Life Assurance in a patriotic mood desires to have some national character imparted to its buildings, there are some amongst us who have already shown a wonderful faculty for adapting whole designs from the American, as well as the English professional journals, with a fidelity which is refreshingly candid in its cool effrontery. Seriously speaking, Australian architects have done sufficiently good work, to entitle them to at least an equal chance with their American or English confrères; in any work carried out in the Colonies. A competition would, at all events, have shown whether we possessed sufficient ability to design a block of offices, and would besides have done much to remove the predilection which undoubtedly exists against "foreign" insurance companies.

It must not be inferred from this that architectural competitions are more satisfactory here than elsewhere. On the contrary there have only been, I think, two, of several large affairs of this kind, held in Sydney during the last three years, where there has been no suspicion of favoritism in the award of the premiums, and each of them was gained, curiously enough, by the same architect. The first of these projects, the proposed State-house (the vain fantasy of a self-willed politician), hampered by impossible conditions was as it were, born dead; the other is being put into execution. The trustees in the latter case had the control of a very large sum of money, which had been devoted to a specified charitable purpose. They therefore offered fair premiums, framed fair conditions and best of all appointed a professional adviser to assist them. As a consequence the premiated designs were, all things considered, undoubtedly the most deserving and though there was, of course, a certain amount of dissatisfaction among the vanquished, the competition was on the whole, eminently gratifying; and it looked as if we had taken the initial step to a new and better order of things. But, the premium having been awarded, these trustees who had just gained for themselves the thanks of our little architectural world, adopted the somewhat unusual course of selecting an unsuccessful competitor—a man whose design had not been thought worthy of a place—and gave him the superintendence of the work. This gentleman is now, it is reported, preparing a totally new design; and the trustees in their wisdom have paid altogether something like £800 in procuring the other drawings to assist him!

A later case of flagrant stupidity is the manner in which the City Avenue Competition is being conducted. This "Avenue" as proposed, will extend from George to Pitt Street, midway between the Post-office and Hunter Street. A double competition was advertised, sketch-plans to one-sixteenth scale being first asked for, and though no premiums were offered for these, it was arranged that from them five designs would be selected and the authors of them requested to prepare one-eighth scale drawings from which the final selections for the premiums is to be made. The first is to receive £300—which, however, is to merge into his commission if he is appointed to carry out the work; the second £200, and the other three £100 each. Thirty-six designs were sent in, the five for the final competition selected and the results published, when the company suddenly resolved to exhibit all the drawings. This has been done, and each of the foremost five knows whom and what he has to compete against; and he also has the further advantage of studying the ideas of the other thirty-five, and incorporating if he wishes anything that may appear good to him, in his second set of drawings, for it has been decided that there is nothing to prevent those taking part in the final competition from preparing totally new designs if they are so disposed. Matters are now still more complicated, since four others have been asked to take part in the second act of this humiliating farce.



THE problem of the proposed new court-house building is again exciting a certain amount of attention, and it is certainly a municipal expenditure and possible improvement of sufficient importance to demand even much more of public interest and careful consideration than it has yet obtained. We say possible improvement, as many things might be done in the way of more additional accommodations and floor-space, that, from the best architectural point of view, both for utility and beauty would not deserve the name of "improvement" or of a satisfactory solution of the problem in any sense; and with the possibilities of the site for a thoroughly successful, practical and imposing scheme, either for immediate completion or gradual development, such temporary makeshifts as are suggested seem to foretell only sad failures, and indeed calamities to the city.

The facts are, briefly, that the existing court-house is an old building totally inadequate to present needs, and, while possessing a certain amount of interest from its historical associations and semi-colonial style, has not really sufficient architectural merit to demand its preservation as a nucleus for the new building, nor even should it be so kept, is it likely that the design for the additions as now proposed would so enter into the true artistic spirit of old work as to accomplish the difficult feat of forming a harmonious and successful group.

Indeed, the location and general conditions, all things considered, hardly call for such treatment. As far back as 1881 a commission was appointed to consider this matter, consisting of several prominent business and professional men, who recommended in a formal report that the city should acquire what remained of the entire block, bounded by Monument Square, Fayette, St. Paul and Lexington Streets, and make the improvements thereon of new and appropriate buildings, at a liberal expenditure. Such is still the opinion expressed now almost unanimously by the daily press, and also recently embodied in the form of resolutions by the Tax-payers Association, looking to the expenditure of at least one million dollars. This seems even all the more called for now than formerly, in consideration of the extensive building operations proposed for the near future by the syndicate owning the old Barnum's Hotel property in the next block, where another million is to be spent. Nevertheless, it is authoritatively stated that the drawings are nearly completed, under the directions of the Building Inspector and a City Council Commission, for alterations, etc., for which \$150,000 have been appropriated. The location and conditions were shown in detail in the *American Architect* for April 20, 1889. The promoters of this makeshift scheme are apparently actuated by the same spirit that moved the faction a short time ago who violently and effectually opposed the injunction to prevent the erection of a most inferior and objectionable class of houses on one of the new and broad avenues, destined for more desirable and valuable improvements, an injunction sought on the very best grounds, that such buildings would lower the value of and be a direct injury to the surrounding property. It was claimed that the erection of such buildings could be prevented by the authority of a sort of general ordinance previously passed by the City Council that no buildings should be put up unless meeting with the approval of somebody in authority—we forget exactly who. The judge, however, decided that the Council had no power to pass such an ordinance and added that: "It may be very desirable to have magnificent avenues with handsome residences, but constitutional rights cannot be interfered with to accomplish the purpose"; an unquestionable fact, and this decision was doubtless hailed as a triumph in the preservation of the rights and liberty of individual citizens. But what is to be said of the rights and liberty of the mass of intelligent citizens who want to have a handsome city and are by such actions debarred from getting it? *Architecture and Building* says in criticism: "According to such a decision a brick pig-pen could be erected on Fifth Avenue, provided the owner complied with the requirements of the Board of Health. It would give an excellent chance for unscrupulous speculators to levy black-mail by purchasing small lots in the best residential neighborhoods, and threatening to erect undesirable buildings unless the adjacent owners paid what they demanded for the land." Baltimore has always felt the lack of any such ordinance giving a certain amount of security to the better streets of the city from the invasion of any sort of trash that barely escapes falling under the head of public nuisances. The present appearance of the whole city is conspicuously injured for want of it. Let something in the right direction be done at once, and, by all means, let the Council so act, legally and constitutionally, that it may be possible to enforce their ordinances.

As we have intimated, old Barnum's Hotel is doomed, and none too soon, as it had long outlived the glory of former days, and, with the exception of gradual increase in size till it had become a huge old caravansary, it had gained few of the attractions that are regarded almost as necessities in the modern hotel,—not even the capacity for cleanliness, nor the exemption from odors of Oriental suggestiveness. The corner-stone was laid sixty-five years ago, and David Barnum was the first proprietor at a time when the immediate neighborhood was the centre of the best social life of the city.

From its doors started the four-horse stages for Washington—as many as twenty or thirty a day when Congress was in session. Well-known guests within its walls have been John Quincy Adams, Henry Clay, Daniel Webster, Martin Van Buren, Andrew Jackson, John Randolph of Roanoke, Lafayette, and a host of others in later days, up to a few years ago, till it is at last forced to succumb to the march of improvement.

A far older land-mark—the General Wayne Inn, on the corner of Baltimore and Paca Streets, has heard its death-knell also within the last few months and the place thereof knows it no more. Built soon after the Revolution, we hear of it in 1789 with one Peter Mitchell as "mine-host," and as the stopping-place for the celebrities of the time, though in those days it was beyond the limits of the town, on the highroad to the South. It has since then been a quaint old

feature, with its hipped shingle roof, its colonial detail and ancient swinging sign, at the intersection of two of the principal thoroughfares of the city.

To the group of bronzes in Mt. Vernon Place has recently been added the statue of George Peabody, a gift from Mr. Robert Garrett to the city. This statue is a reproduction of the original by Story, now in London, and is placed in the East Park, directly in front of the main entrance to the Peabody Institute, and facing the Washington Monument. It is colossal but, as a portrait, almost photographic in the representation of minute details of dress and other attributes, a forcible example of the difficulty of producing artistic or pleasant results in attempting to deal with such a model as the intelligent and successful commercial gentleman of the nineteenth century, in his ordinary business costume, seated in his office chair on a public square, with his benevolent, bearded head exposed to whatever else besides blessings the impartial skies may see fit to send upon it. The Taney statue in the North Park is just saved from an equally disastrous result by the pose of the figure, the heavy draperies of the court gown and the rather classical treatment of the bench and "wool-sack," giving that little touch of sentiment and art which lifts it above the rank of a common-place portrait of a man of to-day, placed amid most unsuitable surroundings. The Peabody statue, however, gains in the simplicity of its granite pedestal, devoid of unnecessary mouldings, but from its position on sloping ground, falling abruptly in the rear, there is something that suggests to the public sense of humor the danger that the great philanthropist may thoughtlessly tilt his chair backward and find himself in the big basin of the fountain just below.



CHEAP ALUMINIUM.—LITTLE PROSPECT OF A COMPETITION FOR THE EXHIBITION BUILDINGS.—THE UNDESIRABLE COURSE PURSUED BY THE DIRECTORS OF THE EXHIBITION.—SELECTION OF A SITE.—MR. OLMSTED DECLARES AGAINST THE SELECTION.—THE CARPENTERS' STRIKE.—THE INSTITUTE OF BUILDING ARTS.

MANY of Chicago's own citizens do not know of the enterprises that are being carried on all around them, and if asked would probably deny their existence.

One of the most remarkable that is about to assume a settled character and one which if successful may eventually bring about great changes even in the art of building, is a factory for the manufacture of aluminium at greatly reduced prices. A Chicago Professor of Chemistry, Joseph H. Hirsch, now asserts that he has discovered a process for making aluminium so it can be put on the market at fifteen cents a pound. He has tried the process with experimental apparatus, turning out in a day from forty to fifty pounds of the metal. A stock company has been formed, two large six-story buildings are being fitted up on the West Side, a good clay-bed has been leased at 64th Street, and it is asserted by those interested in the enterprise that soon three hundred pounds of the metal will be daily turned out from the factory.

Professor Hirsch has been studying the process since 1865 and has only just brought it to a state of perfection. If it can be used in buildings, as elsewhere, wherever iron, tin and zinc are used, it will make a marvellous change in the art of building. As no new thing is invented at present, that some one does not cry out "just the thing for the main building of the World's Fair," so the remark is made about this metal, the process for the development of which looks like a great discovery, which indeed might be well tried and tested before things become settled at the headquarters of the directors of that enterprise.

One of the principal architectural publications here, which is recognized as the organ favoring one firm of architects in the city, as the men for the work on the World's Fair buildings, announces that there is to be no competition for the plans, but that "those architects who have shown decided ability in particular classes of work will be appointed." One of the Directors within the last few days has made a similar statement, that there will be no competition, and this is undoubtedly so, as it is an open secret that the engineering problems are already in the hands of a specialist, while the architectural portion is later to be turned over to those aforementioned appointees. Nevertheless a petition is being circulated requesting the Board of Directors that a fair and honest competition may take place, open to all architects and engineers, not only of Chicago but the entire United States. Could there be any guaranty that such a competition would be carried out without the interference of the Directors the result might be most satisfactory to architects and lead to the best result in the buildings. A competition, however, when the Board of Directors have, for reasons best known to themselves, already decided which firm to employ, would

be worse than a waste of time, and an insult to members of the profession in Chicago as well as out.

The idea suggested is to have a competition between engineers as well as between architects, and the scheme is, to have the different chapters of the national associations send delegates, according to numerical representation, to consult with the Directors at a meeting to be held in Chicago. At this meeting of the representatives of these two professions, the requirements for the building proposed and the outline of an honorable competition could be agreed upon. A chief architect and chief engineer should be elected by the delegates, whose duties would be to superintend the works on the grounds and to pass in consultation with the Board of Directors on the plans submitted for competition. The preliminary sketches should be simple line-drawings and outline elevations: and an adherence to the rules of competition should be compulsory. An able committee could in this way pass on a large number of plans within a short time, and their decision should be final. The ten plans chosen should be handed over to the chief architect and engineer, and the alterations, if any, be made under their direction, and the authors of these plans be commissioned by them on some of the various buildings. The author of any design used outside of those ten should also be paid.

That the chief-engineer and architect were men chosen by the best and from the best members of the profession ought to recommend them to the Board of Directors as men competent to assist them in every way in their arduous undertaking. It was under some such scheme as this that the competition for the late Paris Exhibition was carried on, and it surely would be a most desirable way of doing the work here if it could be well carried out.

The public in general are none too well satisfied with the way the Directors are managing the affairs of the Exhibition, and neither does rumor hesitate to affirm that they have plunged pell-mell into the business of choosing the site, influenced most decidedly by options they themselves have obtained on property adjoining each particular locality that each group of Directors favor. If there is not some such good and sufficient reason for their actions, it is very hard to understand how a set of men, prominent for their business ability, could have been so unbusiness-like, and carried on the work in hand as they have done. Much to the regret of the general public, it learned about two weeks ago that the site was finally settled on as the Lake Front for the chief exhibition, and Jackson Park, three miles south of it, for the agricultural, machinery and live-stock exhibits. All the papers, to the disgust of most of their subscribers, applauded this choice, and seemed to forget all the objections they had heretofore raised to it. This last week the Odd Fellows have been holding an encampment on this same Lake Front, and, strange to say, in spite of the fact that there have been several times, even with this comparatively small gathering, dangerous crowds of people, the papers have ignored all such occurrences. At other times, and in other places, they are only too ready to make the most of a panicky crowd.

Whether the site chosen for the Fair was a wise one or not, the citizens of Chicago had come to the conclusion that it at least was all settled, and resignation was their only course. The Directors have invited Mr. F. L. Olmsted to come out to advise about laying out the grounds. The part of Jackson Park, which was to have been used as an annex to the principal part, was the southern unimproved portion of low marshy ground. Engineers of Chicago have privately expressed their opinion that this ground could only be used for building purposes after immense expense in draining, and that even then the extent of land that could be claimed from the encroachments of the Lake would be limited. Now comes Mr. Olmsted, with an unbiased opinion, and declares the site not practical for the required buildings and live-stock exhibit, as the number of acres that could be made available are far below the demand. So far as the Lake Front was concerned, all was supposed to be settled in that place by the hopeful public, but now news comes to the contrary. The Illinois and Michigan Central Railroads have their tracks along the east side of the Lake Front, so called, and the City Fathers imposed the limitation on the Directors that the railroad companies should reimburse the Association, after the close of the Fair, for the reclaimed land made along the basin of the Lake. This, rumor states, the railroads refuse to do. One would naturally think that these two fundamental points might have been settled by the Directors before this, one way or the other, and a good deal of valuable time saved, but ordinary business precaution in the interest of the Fair seems not the first thing to have been exercised. So, instead of being able to write that all is progressing as it should, both in plans and work, it is hard at present for the ordinary mortal to see what has been accomplished. To take the least pessimistic view of the case, would be to say all may not be as bad as it looks, and that it is only man's general tendency to growl at any system of work of his fellow-beings, that leads to these unpleasant remarks. At any rate, every day brings different and contradictory reports, showing affairs to be in a most unsettled state.

The carpenters' strike is still being carried on in a sickly fashion, although the carpenters maintain that all is flourishing as it should. The old Association of Master Builders still thrives, employing non-Union men in numbers equal to their requirements. However, the Federal authorities pushed on by the Carpenters Union, have gone so far as to send special agents both to Chicago and Canada, to investigate the charges of violation of the alien contract-labor law, and

the Union men threaten to make things very hot for the old Association. This Association maintains that the carpenters have no case against it, and it is sincerely to be hoped they have not. A million of dollars was said to have been lost through the last strike. The new Association of Boss-carpenters and Builders, which was the rival of the old Master-builders, which promised to accede to the demand of the Union in the matter of wages, now refuses to grant this demand, and is about to take the same stand that the old Association has taken. The first of September is the day set apart for final and decided action of the Union men. At a recent meeting of the Union, resolutions were passed to the effect that whereas the Boss Carpenters and Builders Association, individually and collectively, had refused to live up to its part of the agreement of last spring, a general strike was ordered for September 1, at which time eight thousand carpenters would stop work.

A strike of minor importance has been going on for the last two months, namely that of the cornice-makers, and the prospects are at present that they will unfortunately gain their points, though some of the larger firms are still holding out against the men. The demand is for an eight-hour day and wages forty cents an hour.

Mention was recently made, in a Chicago letter, of the fact that the Illinois Chapter of the American Institute had assumed the control of the Institute of Building Arts. Notwithstanding the opposition with which the undertaking was met by some of the architects, it is proving itself to be a useful and satisfactory enterprise and its organizers hope for success for it in the future. In order to make it of the greatest advantage both to exhibitors and architects, it has been decided to have two days a month especially set apart, on which architects shall make a special point of visiting the rooms to examine the new exhibits. The first one of these inspection days was held last week and was a most decided success, not only numerous architects being present, but a number of real estate men, and others indirectly interested in building.



A MONTH or two ago, you may recollect that I gave you an account of the principle of "betterment" on which the London County Council had based their scheme for the widening and improvement of the Strand.

It was calculated that the scheme would cost the Council £800,000, but the adoption of the betterment principle would reduce this cost by one-half. The case was argued out before a Committee of the House of Commons, who, after great deliberation, held that, while not giving an opinion on the general principle of "betterment," it was inapplicable to the particular case before them. Under these circumstances, the Council withdrew the proposal altogether. This turn of affairs, however, placed the Council in a difficult position. Supposing they adhered to their "betterment" notion, a large number of urgently-needed improvements would have to be indefinitely postponed while the question was being argued out, and, worse, probably the Council's tenure of office would expire before anything had been done, and the members would have to face their constituents with the fact before them that they had been three years in office and had not executed a single public improvement, wasting their time and substance instead in discussing an academic question which few really thought practicable. This view of the question influenced the minds of the most sensible of the Councillors, and the Improvements Committee were at length directed to bring up a batch of suggested improvements to the Council for consideration, with the result that several improvements were considered and passed upon their merits, though not without a considerable amount of uproar and regrettable disorder.

The first and most important of the improvements related to the East End of London, and consisted in widening all the bridges and approaches to a sort of island caused by a bend in the Thames, and known as the Isle of Dogs. The case is somewhat a curious one, as when the canal which the bridges span was transferred in 1799 to the West India Dock Company, a provision was made that the Company should construct the bridges and maintain the traffic. Since 1799 the traffic has largely increased, and what was then adequate is now totally inadequate. It would seem that the Dock Company is really the proper authority to meet the exigencies of modern traffic, but it appears that, legally, they are only liable for providing for what was the traffic in 1799, and so the onus falls upon the County Council and the District Board.

Another important improvement is the extension of the Chelsea Embankment. The Thames Embankment is probably known as

one of the most successful pieces of embanking work in the world, and the suggestion is now to extend it for some distance at its extreme western end, reclaiming from the banks of the Thames some three and one-half acres of mud-banks, and utilizing the same for public baths and gardens.

The other improvements consist of two kinds, one being the widening of certain important public thoroughfares which are narrow at certain points, and, therefore, obstruct the traffic, and the other is cutting direct means of communication through obstructing streets crossing what should be the direct lines of traffic. Altogether, the Improvements Committee is to be congratulated on having dealt with a difficult question in a highly commendable way. They have been judicious in their selection, economical in their proposals and impartial in their distribution of favors, and will have succeeded, when the improvements are complete, in materially improving London at the small total cost of £280,117, which represents a charge on the rates of only one-tenth of a penny for the first year, diminishing annually.

An enjoyable *soirée* was given on July 8 by Mr. Alfred Waterhouse, R. A., President of the Royal Institute of British Architects, at the Natural History Museum, South Kensington. There was a large and fashionable gathering of the leaders of the profession, and a good many learned and unlearned amateurs, who generally decide that architecture is a thing to be patronized upon a festive occasion of this sort. Ladies, too, clad in the latest "Liberty" art-shade, turned up in force, and seemed to regard architects as rather interesting, though somewhat singular beings. Altogether, the festivities were a success.

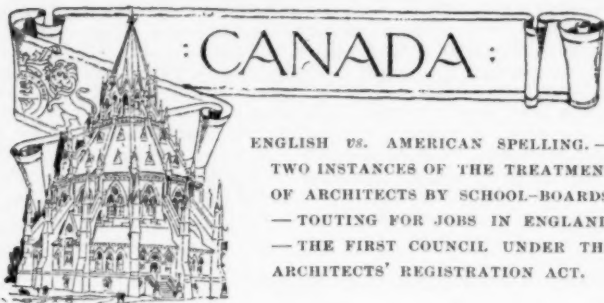
The House of Lords threw out the Bill for the Central London Railway, which I described in a previous letter. The chief objections were raised by persons who occupied houses facing the line of route, but some evidence of Mr. J. C. Penrose, M. A., the architect of St. Paul's Cathedral, had great influence in determining the fate of the measure. Mr. Penrose was not able to say that the railway would not affect the foundations of our great metropolitan cathedral. Another committee of the same House has been engaged in considering a question, which has also been raised by the County Council, as to the "bars" and "gates" of Western London. This is a very curious question. Lord Rosebery, in his address to the Council in his capacity of Chairman, referred to these as one of the "sights" of London. He said that if he had to show the intelligent foreigner over London, he would take him to these remarkable streets, which, though situated in the centre of a densely populated district, and in the direct line of traffic to two of the termini of the great northern railways, were, nevertheless, silent and deserted, owing to their being blocked by bars and gates by the noble freeholder of the surrounding property. This is a curious ancient right, but it has, however, to give way before the advancing tide of civilization, and the House of Lords has decided that the Duke of Bedford must permit his bars and gates to be removed, and not claim any compensation, the only condition being that the streets must be laid with noiseless pavement.

The Architectural Association have been paying their customary visit in their vacation to certain notable country houses. They began with a new house from the designs of Mr. Ernest George at Shipplake, near Henley. It is in a charming situation, and looks out from its front windows over the distant Buckinghamshire Hills, the Thames winding in and out in the foreground. There is nothing very noteworthy in the house, the chief novel points being the use of oak in lieu of stone for the mullions and transoms of the windows. The effect is rather happy, but the fact of large shakes and cracks appearing seems to imply that the material is not a suitable one for the purpose. Where stone is used, the crude white color is being toned down with a solution of copperas. This gives an excellent effect, but I doubt whether this artificial tinkering of new materials to look like old is a justifiable one. A crisp finish was given to the water-tower by building the plinth with a sort of curved batter, formed by making the mortar joints slightly wedge-shaped. An ordinary batter is formed on the plinth to the house, but it is wonderful to note the difference in effect this little curve produces.

The next visit was to a famous old Elizabethan house at Audley End, Essex. It is a magnificent example of the period of transition when Gothic and the renaissance of the Classic were striving for the mastery, and would have been still more magnificent but for a wholesale demolition that was carried out on some subsequent occasion, because, forsooth! the whole building was too expensive for the noble owner to keep up.

The third visit was paid to our English architectural jewel-casket, Oxford—"that sweet city." A hurried glance was made at the various colleges, and the day was an enjoyable one enough, but the proper way to see Oxford is to wander "in and out through cloistered quad" at will, and sketch little pieces here and there as the fancy strikes one. It is wonderful what an influence this city has on England. It is the centre of our intellectual life, and it sways and controls more or less the whole history of England. Under these circumstances, one is forced to regret that it does not see its way to encourage our art by founding a faculty of architecture. Fortunately, it is becoming more and more necessary for the man who wishes to be *au courant* with the conversation of educated people to know something about the art of architecture. I think we may safely persuade ourselves that the few streaks of light we can discern in the horizon are the veritable precursors of much that we

have long hoped for, and that the day is at length coming when our art will be appreciated by those for whose benefit it is conceived.



WHENEVER I have occasion to use the words "labour," "colour" or words similar to these, I invariably spell them with the "u," and every time these words are set up in type by the printer of the *American Architect* the "u" is omitted. Being very conservative, I mentally object as often as the change is made, but as the omission of the humble letter has been described as "one of the vicious practices of Americans," I felt a protest would be of little avail. The question has lately come up in the Dominion Parliament as to the proper spelling of these words, and an order-in-council has been issued directing that in all official documents the "u" should be put in, and the spelling will be the same as used in English blue-books and State papers. Such a proceeding has naturally called forth a great deal of discussion, those who are in favor of omitting the "u" arguing that long usage is no reason against the omission, and that phonetic simplicity is an argument in favor of dropping it. The difficulty is that the text-books of the public schools of the Provinces of Ontario and Quebec omit the vowel in question, and again that the Ontario Government has adopted this manner of spelling, so as to be in conformity with the public schools. I have heard that the origin of the omission was that Americans had no time to put in more letters than were absolutely necessary. Americans are, I believe, usually supposed to be in a tearing hurry, and, therefore, the possible vandalism of such a proceeding never occurs to them. Alas! I fear it is one of the "signs of the times," and, where "bizness is bizness," time for airing our little fads must not be expected.

The school-boards of the Dominion of Canada seem to look upon architects as their natural enemies, to be worried much as a dog worries a cat when it gets the chance. Two examples of the scandalous behavior of members of school-boards are worth recording, as an example and a warning to architects. One which occurred some few months ago was a positive piece of villainy. The Board, having employed an architect to draw plans, etc., for a new school, changed their minds about employing him, and refused to pay him for his services. He sued the Board, and the evidence was entirely in his favor, but the counsel for the Board, who produced no witnesses, exploded a bombshell when he denied the appointment of the architect, on the ground that "the seal of the School-board as a body corporate was not attached to the letter of appointment, and that, therefore, there was no appointment," and this contention of his was upheld by the court. The second case comes under the category of meanness rather than practical villainy. The Parkdale Collegiate Institute Board desired to erect with public money a new building in this suburb of Toronto, and accordingly advertised for plans from architects under conditions so objectionable that the Ontario Association remonstrated with them, and in reply received a good deal of impertinence from the Secretary, and as a result refrained from entering the competition. Some of the men practising as architects in Toronto—men who have very flimsy ideas of professional good feeling, not to mention honor—did compete, but in the meantime the Board had extended their invitation (which originally had been limited to architects practising in the city) to architects in the United States. How many responded from the southern side of the border I do not know, but one who did (we can only suppose in ignorance of the character of the board he had to deal with, although the conditions of the competition might have shown him, had he chosen to think of it) found his drawings stopped by the customs authorities, who required seventeen dollars and fifty cents to satisfy their claim for duty. The School-board refused to pay this, so that the drawings were returned to the author without so much as being looked at. I cannot feel quite so much pity for the author as I should like to do, for if men with their eyes open will try to compete under conditions that are totally unsatisfactory and contrary, even, to the generally-received ideas of the conduct of competitions, they must expect to get their fingers burned. Another point discovered by local architects was that certain members of the Board had, before any competition was thought of, done their best to secure the work each for his own favorite architect, and the Secretary had promised his support under all circumstances to one man, stating that he would do his utmost to secure him the work, so that it is not the least unlikely that each member of the Board was intimately acquainted with the design of his particular friend, sent in under motto and seal for competition. The Secretary, however,

appears to have been voted down, as the man who has won the laurels in this precious matter is not the particular friend he was to vote for, unless he changed his mind in the meantime and voted for somebody else. A building to be erected with public money ought hardly to be left in the hands of such men. I remember years ago in England, in a competition for a town-hall in a small town in the midland counties, one of the competitors, who lived in a neighboring city, sent his clerk the day before the designs were to be sent in, with the designs under his arm, to call upon as many of the committee as he could find, and show each one the design and acquaint them with the name of the author. Some of the members very properly refused to see the designs or hear a word about them, but I know that a few of them did. The result, however, was not what this man had earnestly worked for, and he did not get the work. His excuse, when hauled over the coals for his conduct, was that he knew for a fact that another man in his town had been personally interviewing the members of the committee and promising to do the work for 14 per cent if allowed to carry out his design. This latter was a man who rented a pew in an English church, a Methodist and a Baptist chapel in order to secure the interest of the members in each congregation in case they at any time intended to build, but neither was this man's rascality rewarded. These true stories are very edifying, and perhaps they may serve as examples by which certain men practising this ancient profession will regulate their conduct in future.

According to Clause 6 of the Ontario Architects Act, the Lieutenant-Governor of the Province in council wrote to the Secretary of the Association on July 22 last, appointing nine architects as Council. The qualifications for members of the Council are: first, that they must be British subjects; second, that they must be residents of the Province and practisers of the profession of ten years' standing prior to the passing of the Act. His Honor appointed the following gentlemen:

For three years.—Mr. W. G. Storm, Toronto; Mr. D. B. Dick, Toronto; Mr. F. J. Rastrick, Hamilton.

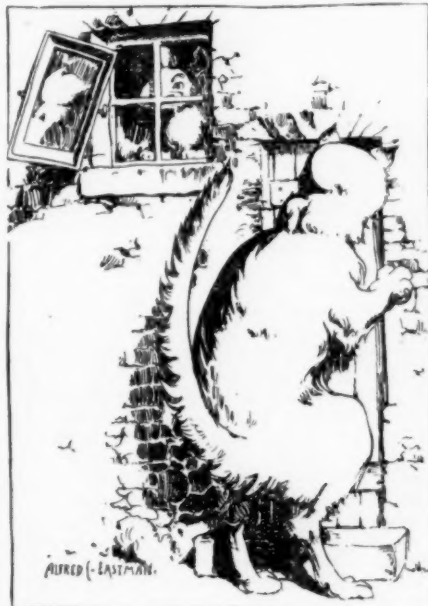
For two years.—Mr. K. Arnoldi, Ottawa; Mr. W. Edwards, Ottawa; Mr. E. Burke, Toronto.

For one year.—Mr. W. Blackwell, Peterboro; Mr. D. Ewart, Ottawa; Mr. S. G. Curry, Toronto.

These gentlemen now have the honor of forming the first Council under the first Act for the registration of architects ever passed.

The new Council met for the first time on August 5 to organize, and appointed Mr. S. H. Townsend who has been the Secretary of the Association, Registrar, and Mr. J. W. Curry who has acted for the Association heretofore, Solicitor. Committees were appointed for the purposes of finance, by-laws and the education of students, which last is to meet and draw up a report upon a system of education, with preliminary, intermediate and final examinations. Mr. G. W. Storm was elected President of the Association for the year, and Mr. F. J. Rastrick, Vice-President. Mr. D. B. Dick continues to hold the office of Treasurer. It was decided that the first annual meeting of the newly formed Association, or rather of the Association, in its new and recognized form under the Act, shall be held in February next in Toronto, the actual day being left for future settlement.

FEATS OF ANCIENT ENGINEERING.



"All the Modern Improvements."—No. 16.

engineering as unworthy of serious discussion. And the public, as ignorant, with less excuse, encourage this view.

It is waste of time to ask him how the boulders of Stonehenge

THE bumptiousness of modern engineers gives little offence, because it is honest and guileless. Perhaps the order of mind which devotes itself to that pursuit is commonly averse to historic reading, and, in any case, the hard mechanic training necessary for an engineer of the present day inclines him to spend his scanty leisure in studies which cannot be turned to account. The result is that he conscientiously believes his art to be the special flower and glory of the age—in which he is not altogether wrong; but beyond that he regards all earlier feats of

were conveyed to their resting-place, how the walls of Fiesole or Mycène were built; these marvels represent the power which lies in the brute force of multitudes, and there's an end of the question. Engineering now is an art and a science, with which the rude work of the savages has no sort of connection. One must not inquire why he takes it for granted that Stonehenge, for example, was built by savages, where the brute multitude came from, how they subsisted on Salisbury Plain, or why it is necessary to assume that they were unacquainted with mechanics. All that is *chose jugée*—beyond dispute. If you cite records of antiquity which tell of works he cannot rival, that fact alone is proof that the record is a lie; for how can it possibly be that mere Greeks and Romans should have been able to do what the builders of the Eiffel Tower and the Forth Bridge cannot accomplish? We had an amusing instance of this feeling lately. The ingenious M. Eiffel and the artistic M. Bartholdi have been gravely pondering the Colossus of Rhodes—measuring it and weighing it as per description; and they conclude that the thing was simply impossible.

It could not have been set up, to begin with, and when set up it could not have stood the pressure of the wind. This is demonstrated by all the rules of modern science, and he who does not admit the demonstration must be prepared to show that two and two do not make four. Those antique personages who professed to have seen the Colossus were victims of an ocular delusion or flat story-tellers, and that greater number who mention it incidentally, as we might mention the ruins of the Colosseum, were credulous gossips. The fact is that Messrs. Eiffel and Bartholdi argue in the fashion usual with engineers. Not all of them would pretend that they know every law of nature which applies in such a case. But very few would listen patiently if it were urged that the ancients knew some laws with which they were unacquainted.

So it appears, however, to the disinterested student, and we can bring forward evidence enough. If it be true that the Colossus of Rhodes is really proved "impossible," according to the best modern authorities, this is a good illustration to begin with, for its existence is as well authenticated as the Temple at Delphi and the statue of Olympian Zeus, or the Tower of London, for that matter, to one who has never seen it. By some means it was set up, and by adaptation of some natural laws it was made to stand until an earthquake overthrew it. One is embarrassed by the number and variety of illustrations to the same effect which crowd upon the mind. Since the Colosseum has been mentioned we may choose examples of that class. Is M. Eiffel prepared to put an awning over Trafalgar Square when the sun shines, and remove it promptly without the aid of a central support, of steam engines, or even chains? The area of the Colosseum is certainly not less. This may seem a trifling matter to the thoughtless because they have never considered it. Roman engineers covered in that vast expanse with some woollen material, and they worked the ponderous sheet so easily and smoothly that it was drawn and withdrawn as the sky changed. The bulk of it must have weighed hundreds of tons, all depending by ropes from the circumference. But the ancients thought so little of this feat that they have left us only one trivial detail of the method.

So Julius Cæsar stretched an awning above the Forum Romanum and great part of the Via Sacra in the space of a single night. Have any of our modern engineers pondered the contemporary descriptions of Alexander's durbar tent before Babylon? That, again, appears to have had no central support. It was upheld, says Phylarchus, by eight pillars of solid gold. Of the glorious plenishing within we have not to speak, since our theme is mechanics. Around the throne and the great courtiers stood 500 Macedonian guards; in a circle beyond them 500 Persian guards; beyond these again 1,000 archers. To fix a tent which held 2,000 soldiers on duty with arms and accoutrements, surrounding, in successive circles, the most gorgeous Oriental Court that ever was, with hundreds of satraps, councillors, generals, eunuchs and slaves, would perplex a mechanician of the nineteenth century. He will reply that the story is false—must be, because he could not match it. Happily, the awning of the Colosseum stands beyond dispute, and Alexander's tent is a small matter compared with that. But we undertook to deal with the engineering of the ancients in connection with the theatre, having chanced on that class of illustration. Pliny tells how Metellus Scæurus, Ædile, built a wondrous edifice, which stirred his rival, C. Curio, to frantic jealousy. It may be worth while in passing—since we are all so much interested in the theatre nowadays and think so much of our new ones—to tell what sort of a building that was which Curio set himself to outdo. It had 360 marble columns, each 38 feet high and 38 feet apart. About 2,000 bronze statues stood among them. The stage had three floors, as was usual; the lowest paved and fitted with marble, the second with glass, the third gilded, boards and all. It held 80,000 people.

This account will seem so fabulous to steady-going Britons that it is prudent to give chapter and verse. The description will be found, with curious details and passionate reflections on the luxury of the day, in Pliny's Natural History XXXIII, 24. Such was the wonder which Curio resolved to beat, and feeling himself unable to vie in outlay, he summoned the engineers of the period to design something which would "fetch" the public. They built two enormous theatres of wood, each to contain an audience of 25,000, which stood back to back.

When the spectators assembled in the forenoon Curio, was chaffed, no doubt, on the issue of his attempt to excel Scæurus. But

the audience returned in the afternoon, for these entertainments were devoted to the manes of Curio's father and lasted a month. In the place of two theatres back to back, they found an amphitheatre holding 80,000 persons, wherein gladiators and wild beasts contended until dewy eve. The two great buildings had been swung round and united; and, day by day for the month following, this colossal trick was repeated. The perfervid indignation of Pliny could not make him altogether indifferent to the ingenuity of the thing. The fact, is, in brief, that those who know what ancient engineers did, with their imperfect means, feel a qualified admiration for the works of the moderns. If Archimedes or Stasicrates had been acquainted with the forces and the laws with which every old woman is familiar in these days, they would have changed the face of the earth and the destinies of mankind.—*St. James Gazette.*

IMPROVED TENEMENTS IN LONDON AND NEW YORK.



Door of Sta. Maria Maggiore, Trieste, Austria. From *Architektonische Rundschau*.

THE problem of providing improved homes for the poor has become one of wide interest in New York. Efforts to work it out have been in progress here for about ten years. It may accordingly be said to have passed the experimental stage, at least in regard to its original purposes. There seems no longer any doubt that the undertaking can be made to succeed. It is equally certain that the conditions in this city are so unlike those that exist in London that, in order to reach the best result, there must be such amendment of the London plan that perhaps in their full development the two systems will have little in common. That the American plan will be superior to its English progenitor, in that it will present to those interested the fascination of philanthropic endeavor in a higher degree than exists in London while providing equal attractions to conservative investors, is hardly a question in view of the prospects already in sight.

The Peabody houses in London were built to serve a humane purpose upon a business basis. It was the intention to help the poor to decent homes without making them in any sense objects of charity. They were simply to get better homes than were before enjoyed for the rents that they had formerly paid. The investors, in other words, were to be content with a smaller percentage of income than satisfied the average London landlord. London was a good field for this kind of enterprise. The permanence and stability of class

distinctions favored it. People of lowly life there expect always to remain lowly. A direct result of this condition was that as soon as it was proposed to give the poor better homes at old rentals the demand for such homes was immediately created, and it has ever since continued active. People who moved into the Peabody houses did so with the expectation of remaining there for life. They had no idea that the time might ever come when there would be such a change in their own affairs as to enable them to provide themselves with better homes.

When the attempt was made to transplant the London idea to American soil, it was soon found that the disposition and temper of tenants in America were wholly unlike what had been encountered in London. People who were willing to go into cheap homes here, even though they moved from the vilest tenement districts, did not take up their new abode with the idea that they were always to remain in it. There was a lurking hope in almost every family that by some chance or stroke of luck better times would be brought about and a corresponding change of domestic conditions.

This was the essential difference between English and American tenants. The managers of the Peabody houses are unable to provide quarters for those who apply, and they are obliged to keep a list of applicants so that whenever there may be a removal they refer to their list and notify the applicant first in order. Those who apply from time to time must take their places at the foot of the list and await chances which are in the majority of cases determined only by death or the breaking up of a family. There has not been an improved tenement in New York yet that has always been full of tenants. In one house there are at present only eight vacancies in a block in which there are accommodations for 218 families. This is doing about as well as any improved tenement-house association can hope to do under present conditions. In other improved tenements there have been somewhat larger percentages of vacant apartments. It has been necessary in every instance to hold out inducements for tenants, and in a sense to prevail upon them to allow the owners of the new property to provide them with better homes. It may be said that such is not the case at present, but the way of the improved tenement in New York has not been altogether smooth. There was no such instant success with any one of them as attended the opening of the Peabody houses in London.

It may seem incredible to all excepting those who have given some attention to the condition of the poor in this city to learn that there are thousands of families who live in squalor and who do not seem content with any other kind of life. The conglomerate population of the tenement district was by no means favorable to the introduction of an improved tenement-house scheme. In certain quarters of the city families are huddled together as if they lived in pens, and are utterly reckless in regard to the rights of property. It seems to be the delight of many of them to deface the quarters in which they live, and perhaps it may not be too much to say that the majority of the tenement-house population would seem to prefer filth to cleanliness.

In London the managers of this enterprise had to deal with a class that was largely native. The London tenement population is composed mainly of people who were brought up either in that city or within the British Dominion, while a very small portion of the tenement population in New York is native to this country. Coming here with ideas more or less exaggerated in regard to the great opening in life which is to be unfolded to them here on the one hand, or reared amid surroundings that are apt to incite a combative or vicious disposition on the other, the tenement population has proved in this city a hard class to deal with for any purpose. They have been as little tractable in the matter of accepting improved homes as in other respects.

The first enterprise of the kind in this city was started in 1882 when a block of improved dwellings was erected on First Avenue, extending from Seventy-first Street to Seventy-second Street, by a company in which some of the stockholders were William Bayard Cutting, Henry E. Pellet, Cornelius Vanderbilt, William W. Astor, J. W. Drexel, R. T. Auchmuty, J. & W. Seligman & Company, William E. Dodge, Jr., J. Pierpont Morgan and Amos E. Eno. These gentlemen organized an association with a capital of \$300,000, and erected a tenement-house on this block. The original plan was patterned after the Peabody houses in London. Provision was made to admit light and air to every room in the building. There were no air-shafts, but the desired light and air were obtained by cutting into the brickwork and making the general form of the building dumb-bell shape. Every precaution was also taken that the building should be fireproof, and so far as possible it should be provided with means by which the tenants might obtain cleanly apartments under the best sanitary regulations.

The scheme of the company was to provide a revenue as dividends not to exceed 5 per cent per annum. It was announced that rents should range from \$6.26 to \$14.50 per month, for apartments in suites of from two to four rooms. Closets, washtubs, sinks and ash-pits were provided on each floor. Special care was taken of ventilation. Room was left for two court-yards in the centre of the building, which children of the tenants might use as playgrounds. A library, a club-room, baths, wash-houses and other accommodations were provided, and the lower floor of the building was arranged for stores, so that tenants might obtain all of their provisions under the same roof that sheltered them.

The location of this building was something against its success in

the start. It was not an easy matter to get tenants to move into that neighborhood from any distance, and those who were already living in the neighborhood were not able to appreciate the advantages extended to them. The building was intended to be thoroughly fireproof. It was felt to be especially important that the halls and stairways should be secure against fire. With that view they were constructed entirely of brick and stone. Although safe, their appearance was not inviting, and, as first impressions went a long way with the people who were expected as tenants, the building was known as "the barracks" for some time after it was ready for occupancy. This name was construed by the average tenant as offensive or opprobrious, and not a few families who went into the building on account of its superior accommodations left it or threatened to leave it because the hallways were not papered or the stairs not carpeted.

In the course of a year or two the provisions thus made for the better comfort of tenants began to have an educating effect, and slowly the building was rented out. The stockholders then had the satisfaction of getting their dividends regularly of 5 per cent and of seeing a surplus fund in their treasury with which to provide for alterations or repairs. Last year a roof was put over the entire building at a cost of \$3,000, and this year the Building Department has insisted that fire-escapes should be put up, which cost \$2,500 more. These expenses have been met out of the sinking-fund, and there is still left a comfortable surplus to provide for other contingencies or to embark in an extension of the enterprise. This is the pioneer building in New York.

Two or three years after this enterprise had been fairly started Felix Adler determined to make a venture upon similar lines in the down-town section on the east side. His original plans were largely philanthropic. He intended that the stockholders of the enterprise should receive 4 per cent on their money, but it was also part of his intention that the tenants should gradually acquire ownership in their apartments, and to this end he proposed either to issue stock to them or to place certain amounts to their credit each year from the rentals that they paid. The building which he erected in Monroe Street was the fruit of this enterprise.

It did not take Mr. Adler long to learn that it would have been better for himself and his friends as well as for the tenants if he had launched his enterprise upon a more strictly business basis, without so much regard for the financial welfare of his tenants as he had originally entertained. Even with the prospect of becoming owners of their apartments, tenants failed to show any eagerness to get into this building, and for a year or two Mr. Adler had the discomfort of seeing a property, into which his friends had put their money, and which was to offer great inducements to tenants, so much unoccupied that it failed to pay expenses. He then modified the original plan by which tenants were to be so largely benefited, and since then the enterprise has been fairly remunerative, although it is still understood that no surplus has been acquired over and above the dividends which were promised.

The Messrs. Cutting have also done something in the line of improved tenements. Mr. Bayard Cutting was the projector of the well-known improved tenements in Cherry Street. His plan in that case was to lease a building and to contract with the owner that after this building should be improved there should be a division of profits over and above the rentals which the buildings had formerly produced. Mr. Cutting then improved the various apartments, and was able to fill them readily with tenants at rates somewhat advanced. The enterprise was so successful that Mr. Cutting, together with Mr. Fulton Cutting, purchased a piece of property at the corner of Avenue C and Fourteenth Street, upon which they erected a new building after the improved style, and with which they have been quite successful. Both the buildings in Cherry Street and Avenue C have kept reasonably full of tenants ever since they were finished, and the Avenue C building, when only one year old, yielded a net revenue to the owners of 3 per cent on \$145,000.

Except in the enterprise founded by Mr. Adler there has so far been no attempt in this city to give to tenants the benefit of any income derived from the property which they occupy. Mr. Adler is still favorable to that idea, although conscious that he has not yet hit upon the means of carrying it into good effect. There is a plan under consideration by the gentlemen who control the stock of the building at First Avenue and Seventy-first Street, which is quite likely to be tried by somebody before the improved tenement system shall have advanced in this city much further. This plan has been suggested to the directors by William H. Folsom, of Folsom Brothers, who have charge of the property for the association.

It provides that tenants may pay some advance in rent, and that such advance shall go to their credit something after the fashion in which shares increase in value in building and loan associations. It is his idea that tenants should become entitled to stock in the building in which they live, and that this stock shall serve them either in reducing rentals at some time or as an insurance fund. He is utterly opposed to any plan which by possibility might vest in tenants the control of the building, but he is convinced that, if they can acquire some sort of proprietary interest in their own homes, and can feel that money saved in this way will increase rapidly and will be a positive assistance to them, they will become better tenants and will be more interested in the care of the building and of their individual quarters than under any other possible scheme.

His idea is that, in acquiring stock in a building, tenants will be

careful that no avoidable damage is done to that building, that its walls or hallways shall not be needlessly defaced, and generally that the building as a whole and by apartments will receive the attention which only owners would give it. With every tenant a part owner, the tenants would constitute a watch upon one another, and the common interest of the large and small stockholders would be ample protection. With the accumulation of the stock, which, of course, should have actual money value, Mr. Folsom would work out his plans so that a sinking-fund should be established for the benefit of the tenants, and whenever that fund might sufficiently increase to justify a new investment for the tenants, they might thereby become owners as a company or corporation in tenement-houses built from their savings.

Mr. Folsom has spoken to several of his Directors in regard to this plan, and says that it meets their approval. He has not been able to bring it to the attention of the Directors as a body, but hopes to do so within a few months, and he is quite sanguine that they will then give it such sanction that he will be able to start the experiment.

It does not seem to have occurred to anybody until within a few months that in this city there is excellent opportunity to provide improved dwellings in apartments for the class of persons who do not occupy tenements, but who are unable to live in expensive quarters. Two buildings have been put up this season in Ninth Avenue, in the vicinity of Harlem, which are intended to meet this need. It is believed that in buildings of this kind accommodations can be provided, with first-class appointments, for people of genteel breeding and habits, who would appreciate comfortable homes well situated, and who would not object to living somewhat upon the community plan as is above outlined. It is believed that clerks, book-keepers, salesmen and persons of similar occupation, whose income is small, would gladly avail themselves of superior quarters at low rents if a company were to organize for the purpose of constructing buildings with this end in view. It would be necessary that all the rooms should be open to light and air, that the quarters should be reasonably commodious and pleasantly arranged, that the neighborhood should be respectable, and that modern appointments should be provided throughout the entire building.

The chief drawback to an enterprise of this kind is that at present families of small means are able to quarter themselves pretty comfortably at rents of from \$25 to \$30 per month on both the east and west sides of the city, and it could hardly be expected that in a building constructed in first-class fashion the rents for apartments fairly commodious should be less than this. The Ninth Avenue buildings have been erected by private enterprise and without this use distinctly in view. It seems not unlikely, however, since the idea of providing such buildings has already taken root, that these or similar buildings may pass into the hands of gentlemen interested in this movement who will be content with moderate interest upon their investment in order that they may be insured a good class of tenants and consequent good care for their property. — *New York Times*.



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

DOORWAY TO HOUSE OF CHARLES T. WHITE, ESQ., 213 COMMONWEALTH AVE., BOSTON, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

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

THE PARLIAMENT HOUSE, EDINBURGH, SCOTLAND.¹

[Issued with the International and Imperial Editions only.]

A ROOM which so many hundreds of thousands have seen and which none who have seen can fail to remember, scarcely needs to be described. The Parliament Hall is of great size and commanding proportions, possessing a kind of rude and simple grandeur characteristic of an earlier age than it can boast of dating from. The sides covered with simple plaster, but once adorned with tapestry and old pictures, are somewhat bare; but this defect is in a great measure obviated by the depth to which the roof, the noblest feature in the building, descends. It rests on ornamented brackets, chiefly consisting of bold sculptured heads, and is formed of dark oaken tie and hammer-beams with cross-braces. The parts are adjusted to the outline of a circular arch, indented by small gilt ball pendants from the hammer-beams. The general effect of this roof would carry one to the date of Westminster or Crosby Hall, but, as will presently appear, it is no older than the seventeenth century. A modern floor of inlaid oak has a good effect, but the other adjuncts scarcely correspond in dignity with the older features of the hall. A large square painted window of questionable Gothic, at the southern extremity, represents a figure of Justice, adopted

from a panel of the great painted window of New College, Oxford. The representation was, no doubt, intended to be symbolical of the proceedings which usually take place within the hall; but it has been justly observed that as the full front of the face and figure are seen from the inside of the hall only by looking out, and they are crossed by the bars of the window, the general effect is to display Justice excluded, and vainly seeking an entrance. Some modern lobbies and corridors branching out from it are in harmony with the old hall, and the several Court-rooms, with the extensive libraries of the Faculty of Advocates, and the Society of Writers to the Signet, are in various styles of architecture, among which the Classical predominates. A great portion of the Advocates' library is crowded into a range of dingy rooms under the great hall. Their walls are, of course, as old as the hall; probably some portion may be more ancient, but the internal architecture is in general painted wooden panelling, apparently no older than the latter part of the seventeenth century. Formerly, the exterior of the Parliament House corresponded with the period and character of the great hall, but it was part of the late system of improvements in the city, to carry a Classical arcade and colonnade round the whole range of buildings occupying the old Parliament Square, and the portions of the edifice adjoining to the square were revolutionized, and made a part of this system. From the new bridge across the Cowgate, some of the square turrets and other characteristic specimens of the old exterior architecture of the Parliament House, not visible of course from the front, may still be seen; and the whole irregular cluster of buildings, old and new, has from this point a fine picturesque effect.

Before the erection of this hall, the National Parliament, with the Courts of Justice, and the Town Council of Edinburgh held their sittings in an edifice built in the middle of the sixteenth century, occupying nearly the same site.² The ground on which both edifices were built, constituted, at a still earlier period, the churchyard of St. Giles; and in the laying of the foundation of some recent additions to the Courts of Law, the remains of many bodies which had been there interred were discovered. Both these edifices were built at the expense of the citizens of Edinburgh, acting under a species of compulsion, in the threatened removal of Parliament, and the Courts, to some other place, if satisfactory accommodation were not provided for them. In 1632 the Town Council began to raise funds for meeting the expense of the new edifice; and in order to try the generosity of the citizens on this occasion, caused books to be made, and appointed certain days for the inhabitants of the several parts of the town, to repair to the Town Council House, to subscribe such sums as they were respectively willing to contribute, to promote the erection of those necessary and desirable works.³ As might have been anticipated, the prospect of partaking in the common advantage was not sufficient to elicit large individual sacrifices for such a purpose; and Maitland in continuation says, 'The expensive work being begun, it was found, that neither the sums subscribed, nor money borrowed, were sufficient to accomplish the undertaking, the said Council determined to borrow a sum of money, sufficient to finish the work, which was to be repaid by a new contribution; but if that should not answer, the money to be raised by a tax on the inhabitants.'⁴

Howell, in his 'Familiar Letters,' writing from Edinburgh in 1639, says, 'there is a fair Parliament House built here lately,' and regretting that Charles I did not open it in person, he continues, 'they did ill who advised him otherwise.' A time had come when revolutions had their first impulse not in the battle-field, but in deliberative assemblies, and the Parliament that met in 1639, was no less unprecedented in its constitution and its powers, than the hall in which it assembled was a new edifice. The prelates ceased to have a voice among the 'three estates.' The actual business was no longer left to the Lords of the Articles, but while this body was made more strictly elective, the sitting of the full Parliament as a deliberative assembly with freedom of speech was established. Thus the new hall speedily witnessed a greater number of stormy debates than the whole history of preceding Parliaments could show. The proceedings that took place within its walls are matter of history, and need not be detailed. It was towards the close of its career, as the assembling place of a separate legislature, and during the discussion of the Legislative Union with England, that its walls resounded to the fiercest war of party. It was on the 25th day of March, 1707, that the Scottish Parliament ceased to sit, and the voice of legislative discussion became silent in their hall forever.

It was by degrees that the hall became exclusively devoted to its present purpose, as a vestibule to the Court-rooms forming the several judicial chambers of the Court of Session. Two small niches near the door, were, until within a few past months occasionally occupied by individual judges of the 'outer house' department of the Court, but the hall now serves for the lawyers of Edinburgh, the purpose fulfilled by an 'exchange' to the merchants of a commercial town, and it is occupied by the counsel and solicitors who are waiting on the proceedings of the Court, or who find it a convenient place for meeting and transacting business with each other. During a considerable portion of the eighteenth century, it was divided by partitions, not reaching so high as to interfere with the general perspective of the roof. Among the purposes for which small portions of it were

¹ It should always be kept in mind that these illustrations from the "Baronial and Ecclesiastical Antiquities of Scotland," (1845) by R. W. Billings, are republished very largely for the sake of giving instruction in one manner of the rendering of architectural drawings.

² Maitland's Hist., p. 21. "Edinburg in the Olden Time," p. 72.

³ Maitland's Hist., p. 185.

⁴ *Ib.*, p. 185.

thus applied, was a shop for Creech, the celebrated bookseller; booths for a few dealers in various commodities, and a small tavern, occupied by the renowned Peter Williamson, whose adventures from the time when he was kidnapped in Aberdeen, to his return, after having been domesticated as an American Indian, form a romance of no common interest."¹

A BALCONY, KRAKOW, POLAND.

[Issued with the International and Imperial Editions only.]

COMPETITIVE DESIGNS FOR A TOWN-HALL IN THE FRENCH RENAISSANCE. BY MESSRS. A. L. NICHOLSON, J. F. JACKSON AND J. W. BRADNEY OF THE BUFFALO ARCHITECTURAL SKETCH-CLUB.

[Issued with the International and Imperial Editions only.]

SKETCHES BY A ROTCH TRAVELLING-SCHOLAR. BY MR. E. A. JOSSELYN.

[Issued with the International and Imperial Editions only.]

BUILDING OF THE AMERICAN PROTECTIVE LEAGUE, TREMONT STREET, BOSTON, MASS. MR. A. H. DODD, ARCHITECT, BOSTON, MASS.

THE American Protective League is a fraternal benevolent order paying sick and endowment benefits. It was incorporated under the Laws of Massachusetts and though only a year has seen it in existence it numbers over four thousand members. The building is to be of iron for two stories while the four above are to be of buff terracotta with brick of darker color.

SKETCH FOR PAWTUCKET INN, PAWTUCKET, R. I. MESSRS. HOPPIN, READ & HOPPIN, ARCHITECTS, PROVIDENCE, R. I.

BINGHAMTON TRUST COMPANY'S BUILDING, BINGHAMTON, N. Y. MESSRS. G. E. HARDING & GOOCH, ARCHITECTS, NEW YORK, N. Y.

DOORWAY OF DALMENY CHURCH, SCOTLAND.

A VIEW of this church was published in the Imperial Edition of the *American Architect* for March 22, 1890.

[Additional Illustrations in the International Edition.]

WROUGHT-IRON GATE IN THE PALACE OF BARON SPRINGER, VIENNA, AUSTRIA. HERR T. M. BAIERLEIN, ARCHITECT.

[Gelatine Print.]

FACADE OF THE PALAIS DE JUSTICE, LIEGE, BELGIUM.

[Gelatine Print.]

THE building here shown completes the quadrangle at the western end of the court-yard which was shown in illustration last week: it is used as the seat of the Provincial Government.

A PAVILION OF THE NEW PALAIS DES BEAUX-ARTS, BRUSSELS, BELGIUM. M. BALAT, ARCHITECT.

[Gelatine Print.]

MEMORIAL KEREDOS, HARROW MISSION CHURCH. MR. R. NORMAN SHAW, R. A., ARCHITECT.

CORPUS CHRISTI PRIORY, MANCHESTER. MR. LEONARD STOKES, ARCHITECT.

MONUMENT OF THE LATE CANON SCRUTON, BRADFORD, ENG. MESSRS. DUNN, HANSON & DUNN, ARCHITECTS.

THIS monument is built into the side wall, and forms part of the adornment of the Scruton Chantry at St. Patrick's Church, Bradford, Yorks. It is of Caen stone, and is beautifully carried out by Mr. Wall, sculptor, of Cheltenham. The recumbent effigy is a very good likeness of the deceased Canon, and represents him in his sacerdotal vestments, holding the chalice and Sacred Host. The Scruton crest, a swan, is introduced in the form of crockets. "Dilexi decorem domus tue" is added after the inscription, in reference to the love the Canon had for ecclesiastical architecture, and of the great interest he took in embellishing so many of our

¹ In Mr. Chambers's "*Minor Antiquities of Edinburgh*," there is a plan of the Parliament House and its compartments, as it was occupied in the middle of the last century.

churches. Besides this tomb there is an elaborate tracery screen in alabaster, with metal gates and grilles, in the archway opening from the north aisle; also, in the opposite side to the tomb and filling the archway between the chantry and sanctuary is a richly carved screen of oak. The Rev. William Benedict Scruton was for twenty-three years parish priest of St. Patrick's Church, Bradford, and was a canon of the diocese of Leeds.

TOMBSTONE OF THE REV. H. C. DUKE. MESSRS. DUNN, HANSON & DUNN, OF NEWCASTLE-ON-TYNE AND BRISTOL, ARCHITECTS.

THIS tomb is erected over the grave of the Rev. H. C. Duke, in Kensal Green Cemetery, where he now rests amidst many other deceased priests, and near the spot where Cardinal Wiseman is buried. Though a native of the south of England, Mr. Duke spent the greater part of his life in the north, and was for many years parish priest of St. Anne's, Keighley, in the diocese of Leeds. It stands upon a granite base, and has polished granite shafts in the arcading of sides. The end panels contain a monogram and a chalice, emblematical of the "Priesthood." A floriated cross covers the top surface of the tomb.

YSTALFYERA CHURCH. MESSRS. J. BUCKLEY WILSON, F. R. I. B. A., AND GLENDINNING MOXHAM, M. S. A., SWANSEA, ARCHITECTS.

THIS church, which is now nearly ready for the opening, is situated in the Swansea Valley, right in the heart of the hills. The walls inside and out are faced with native stone, built in random range, rock-faced, with Bath-stone dressings. It provides for 350 sittings.

SEMI-DETACHED VILLAS, MARLBOROUGH PARK, BELFAST. MR. WILLIAM BATT, ARCHITECT, BELFAST.

THESE villas were erected by the late Mr. Kerr, builder, at the cost of about £1,200.

DESIGN FOR FREE LIBRARY AT MIDDLETON. MR. S. H. DAVIES, ARCHITECT.

THIS design was one of those submitted in open competition for the library at Middleton, near Manchester.



[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.]

WILLIS ON VAULTS.

HUNNELSTOWN, PA., August 18, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Mr. Geo. W. Nettleton will find Prof. Willis's paper "On the Construction of the Vaults of the Middle Ages," in Vol. I, Part II, Transactions R. I. B. A. No. 457 in Batsford's (52 High Holborn, London W. C.) Catalogue. Price 7s. 6d. sterling.

I would advise him to read Lectures XIV, XV, XVI and XVII in Vol. II, "*Medieval Architecture*," Sir G. G. Scott, R. A., on the "Principles of Vaulting."

Yours sincerely,

JAMES M. MACQUENE.



WANT OF WATER IN AMERICA AND RUSSIA.—Although it may seem paradoxical to those who remember the disastrous inundations of the Mississippi, the Missouri, and other great American rivers last winter, the water-supply of the United States, like that of the Russian Empire, is perceptibly decreasing, and, this too, at an alarming rate. In the Czar's dominions the ordinary level of the great waterways has fallen to such an extent that many of the great streams, such as the Dneiper, the Volga, and others, are unnavigable during the present summer, while on the mighty river Don third-class passengers are only accepted on board the regular mail steamers on condition that they undertake to get out and shove behind on the shallow places. Things are quite as bad, if not worse, on the American continent, and the cause is the same as in Russia, namely, the wholesale destruction of the forests. Many of the piers and wharves on the shores of lake and riverside cities can no longer be approached by the shipping as was the case ten years ago. The Des Moines River in Iowa was once navigable to the mouth of the Raccoon Fork, the present site of the city of Des Moines, while now the water is hardly sufficient to float a fisherman's rowboat, and steamers have disappeared from its surface since 1878. Here in New York State the Hudson River is becoming more shallow every year, and the upper portion thereof is almost entirely bare of water just now. The harbor of Toronto in Canada has well-nigh ceased to be of any use, despite the fact that it has been

dredged out to the permanent rock bottom; and all the millions spent during the past few years in attempting to deepen the harbor of New York have failed to produce any satisfactory results. Meanwhile the destruction of timber by the great lumber companies proceeds unchecked, both in Canada and the United States. Thousands upon thousands of square miles of mountains, hills, and tablelands are being daily denuded of their moisture-attracting forests, the lumber companies paying either a nominal sum, or, as in most cases, no money at all to the State. Indeed, the cutting down of a tree seems to be regarded as a meritorious action—a clearing of land—and no thought appears to be taken of the future generations. Here, in New York and Connecticut, a feeble attempt has been made to protest against the evil by instituting a public holiday known as Arbor Day, on which every child belonging to the State schools is expected to plant a young tree. It is not, however, until Congress enacts some national law regulating the devastation of lumber land that any efficacious means can be adopted for dealing with the evil. And by that time remedies will be too late.—*American Correspondence, Manchester Examiner.*

PIPE-LAYING IN MARSHY GROUND.—Herr Johann Friedrich Fischer, of Worms, has patented a method of, and apparatus for, pipe-laying in marshy or swampy ground, during inundations or in other similar circumstances, and for forming foundations in wet ground. *Kühlow's Review* explains that in laying a line of pipes in accordance with this system, a trench is excavated to the water level with a wide bearing on each side for laying the sleepers and rails, on which the machines have to travel. As soon as the trench is ready, a line of pipes is put together and made tight. The next stage is to erect a sinking frame or caisson, constructed of sheet-iron with angle-iron frame and stays, open at top and bottom, and placed above the connected line of pipes, which are suspended in slings. The line of pipe is covered at each end with porous caps, which permit the water to enter, but not the dirt and soil. The pipe and the sinking frame are then lowered by digging away the ground from under them, and when the proper depth has been reached and the end of the pipe joined on to the portion previously laid, the sinking frame is withdrawn by hydraulic power. The caisson is made in sections; so that, while the rests are taken up, the portion covering the pipe ends may be left, if so desired, until the joint is made. Herr Fischer prefers to make the joints with India-rubber rings on a spigot which would allow for any slight irregularity of the ground. The invention has nothing to do with the freeing of the trenches from water, but merely suggests a way for substituting iron framing to keep a trench open, instead of the timbering usually employed for this purpose.—*Invention.*

A QUESTION OF RESPONSIBILITY.—A Persian carpet containing five million stitches, and described by the keeper of the Indian Section of the South Kensington Museum as the most beautiful of the many thousands of carpets which he had seen during his Eastern travels, has been the subject-matter of an action in the Queen's Bench Division. Mrs. Brunton, the plaintiff, paid £1,000 for it, and gave it to be cleaned by the defendants, Messrs. Maple, the well-known firm in Tottenham Court Road. According to her evidence, she told a member of the firm of the great value of the article, but of this circumstance, he deposed, he had no recollection, otherwise the defendants' counsel said they would have taken care to insure it. Ultimately, the carpet was entrusted, through them, to a man who lived in two rooms with his wife and four children. He cleaned it at home with benzoline, and hung it up to dry. It gave off fumes, and, on one of the children striking a match to light the fire, an explosion took place, which irretrievably damaged the carpet, and a far more disastrous result of which was that two of the cleaner's children were burned to death. The plaintiff claimed damages from Messrs. Maple on the ground of negligence. In summing up, Mr. Justice Grantham referred to the discrepancy between Mrs. Brunton's and Mr. Maple's evidence in regard to her statement that she had informed him of the value of the carpet, remarking that its owner was more likely to remember the details of an interview than a person who was engaged in a variety of business transactions. It seemed to the Judge a very dangerous thing to have employed such an inflammable substance as benzoline in the place where it had been used, especially as it was shown that the cleaner had at a prior date a workshop for the purpose of cleaning articles instead of operating on them in his living-rooms. The jury found for the plaintiff, that there had been negligence, and assessed the damages at £1,000.—*London Graphic, August 2.*

CONCRETE AND WIRE-NET ARCH.—A novel arch, concerning which a note appeared in *Engineering News* for February 1, was tested at Matzeindorf, Austria, May 16 and 17. The arch had a span of 32.8 feet, a rise of 3.3 feet, is 6 inches thick at the crown, and 8 inches at the springing line. The material is composed of one part Portland cement and three parts clean river sand. At a distance of 0.8 inches from the soffit is a net of 0.39 and 0.27-inch wire, the thicker wires running transversely to the axis of the arch. The tests were begun by placing a locomotive weighing 40 tons over the crown, and after running this off, placing a 53-ton locomotive over a half of the arch; the deflections were measured at 13 places on the soffit with each locomotive. Then a half of the span was loaded with 110 tons of rails, equivalent to a pressure of 1,000 pounds per square foot, which resulted in a deflection of the crown of 0.12 inches. On the following day it was found that the crown had very nearly returned to its original position. A load of 188 tons, equivalent to 1,741 pounds per square foot, of rails was next placed upon a half of the span; this weight caused the abutments to give way, and, on increasing the load to 2,000 pounds per square foot, the arch sank without entirely breaking.—*Engineering News.*

THE MUNICH METHOD OF PREVENTING PREMATURE BURIAL.—The Rev. John A. Mulcahy of Waterbury is in Europe and will sail for

home August 27. In a letter, received from him lately, in which he speaks of cemeteries in Europe and the way that burials are conducted, he writes: "I was particularly struck with the beauty of the cemeteries in Munich, as regards monuments and well-kept walks and drives. The people here have a great fear of being buried alive, and for that reason when a person dies the body is placed in a receiving-vault, where it is kept for four days, and under the method now used, a sponge is placed in one of the dead person's hands, which is connected by a copper wire with a battery and alarm signal; the hand is fastened tightly around the sponge, and at the least sign of returning animation the alarm is sounded and the sentries, some of whom are always on duty, respond at once. In the last fifty years there have been thirty-four persons resuscitated by means of precautions of this kind."—*Hartford Times.*

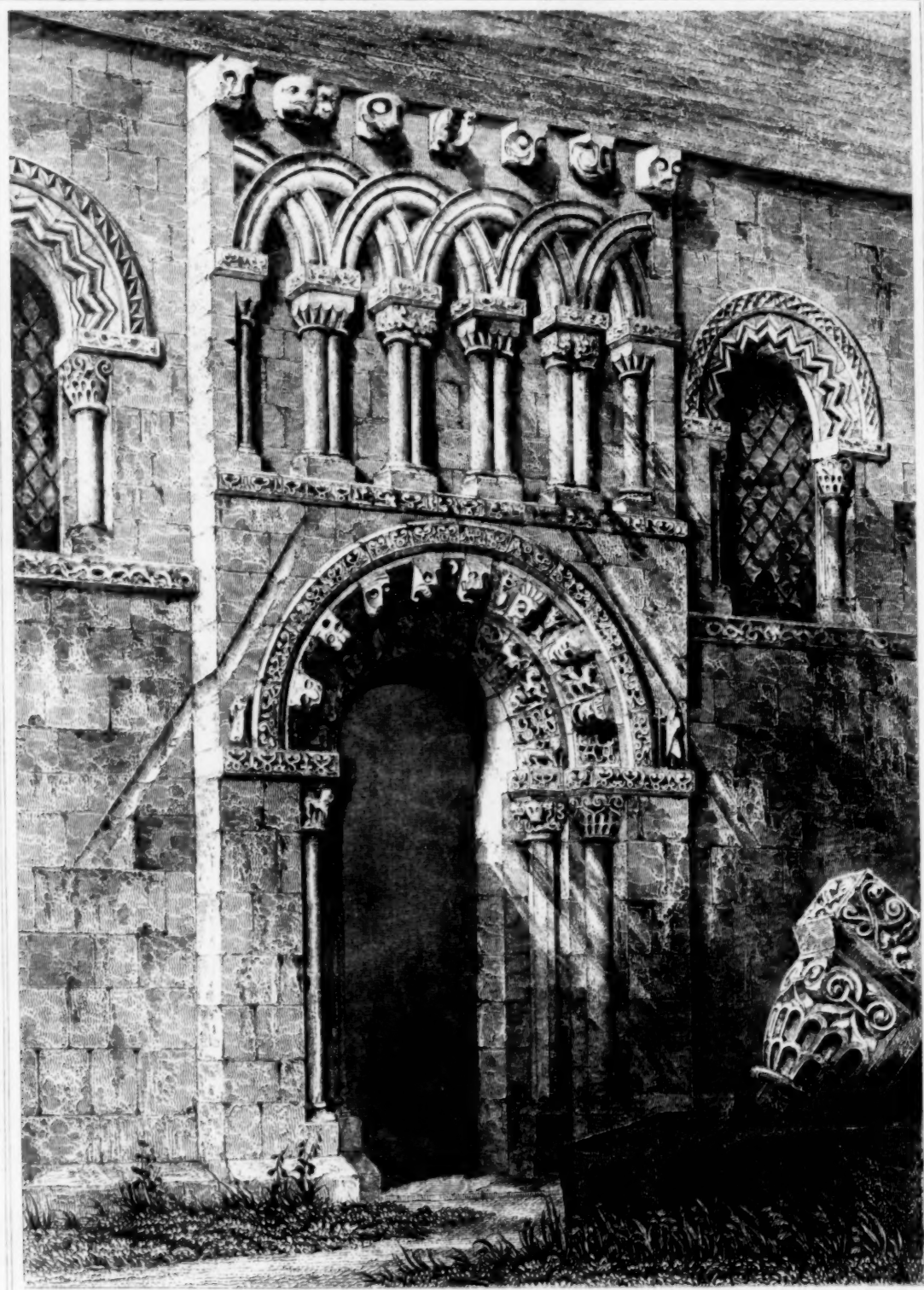
TRADE SURVEYS

FROM information gathered from various sources, it would appear that municipal governments in quite a number of our larger, and even our smaller cities, are beginning to recognize the wisdom, and even necessity, of expending money more liberally in pushing municipal improvements, such as the opening, grading and paving of new streets, the supplying of gas and electric-light plants, the construction of extensive sewerage systems, and in general, the preparation of a great deal of suburban territory for city building operations. This means a great deal. Rapid as has been the growth of our cities during the past decade, there are evidences that future growth is destined to be still more rapid. Builders, contractors and enterprising people have been finding fault with city councils for lack of energy and enterprise in pushing such work; and it would seem that the prodding these bodies have received has stirred up a proper degree of enterprise. A great deal of new work of this character will be undertaken within the coming six to twelve months. A short-sighted policy has long controlled the action of too many city governments. It is now learned that extensive improvements in the matter of streets, light, water and sewerage systems are contemplated, especially in the cities of the West and South; but the larger cities of the East will profit by the movement also. Taxation for such purposes will be readily borne by the people. From such enterprises a demand will be developed for all manner of building materials, equipment and supplies. With the improvement in water, light and sewerage systems, better systems for the transportation of freight and passengers are being studied. In fact, in a half-dozen cities boards have been created for the purpose of devising some general system by which these improvements can be best accomplished. The cities of America have grown in a haphazard way, without system or method, and it is certainly time that some engineering and artistic skill be employed to regulate, direct and control, so far as possible, their future growth. Much is to be gained by the methodizing of their expansion. There are many other things to be considered besides the mere erection of dwellings, factories and shops. Even the real improvements made are too often made in an ill-advised way. The real-estate interests are aroused and calling for some new system. Builders, architects, engineers, manufacturers of building material, and all others interested in the growth of material wealth in cities and towns, are making a laudable effort to bring order out of confusion, and regulate and encourage municipal growth. Manufacturers and business men throughout the country are greatly pleased over the developments of the past few days. Business is good, prices are strong and everything looks bright. The railroads are carrying 15 per cent more freight than a year ago; the banks are urgently called upon for all the money they can spare. The chronic growlers are beginning to sound the alarm of a scarcity of money and consequent danger to business; but, so far, everything looks safe. There may be dangers threatening the business interest, but the oldest and longest heads in the community do not see them. Commercial authorities think that the outlook for the business interests was never so favorable. It must not be forgotten, however, that there is a great deal of complaint coming from the smaller farmers, shop-keepers and also from laborers; but it is difficult to ascertain to what extent things are going wrong. The great business interests are satisfied; the banks are doing a profitable business; the larger manufacturing interests everywhere seem to be thriving.

So far as statistics are available, the country does not seem to be dangerously running into debt. Mortgage indebtedness, it is true, is increasing in many States, but there are corresponding advantages—chiefly the increased earnings and producing-capacity of the borrowing States. In other words, it is better to borrow and pay heavy interest than not to borrow at all, and remain poor and comparatively idle. There is extraordinary activity in all of the leading industries. The lumber trade is as active as at any time this year. The iron and steel makers report increasing activity. So far this year, the sales of steel rails have exceeded one and one-quarter million tons. A syndicate is being formed for the exportation of bituminous coal. Great activity is reported in the mining industry throughout the country. Throughout the South the industries are in a flourishing condition, and the dividends of large corporations are maintained at last year's figures. The investment of capital in new enterprises continues. The latest guess places the wheat crop for this year at 400,000,000 bushels, as against 485,000,000 bushels last year, and the corn crop at 1,600,000,000 bushels, as against 2,030,000,000 last year. Gross earnings of railroads this year are nearly 12 per cent greater than for last year. According to best advices, foreign crops are below the average, and a heavy exportation of American farm-products is probable. One of the most favorable features in our industrial affairs is the fact that production is under better control than it has been for years. Our industries are more thoroughly organized, and the requirements of the country are better understood. There is, therefore, less danger of over-production, and, consequently, less danger of fluctuations and commercial failures. The organization of trade and manufacturing interests still continues, and from many points-of-view this tendency is a favorable one, although in isolated instances harm is threatened, as in the case of trusts and monopolies, whose operations endanger what we are accustomed to consider the legitimate operations of natural laws. It is a question, however, whether the stand against trusts is wisely taken. The extraordinary growth of the country and the extraordinary operations necessary call for enormous combinations of capital and energy, and in this onward movement trusts and monopolies naturally crop out. When properly understood, it will be found that they have their utilities.

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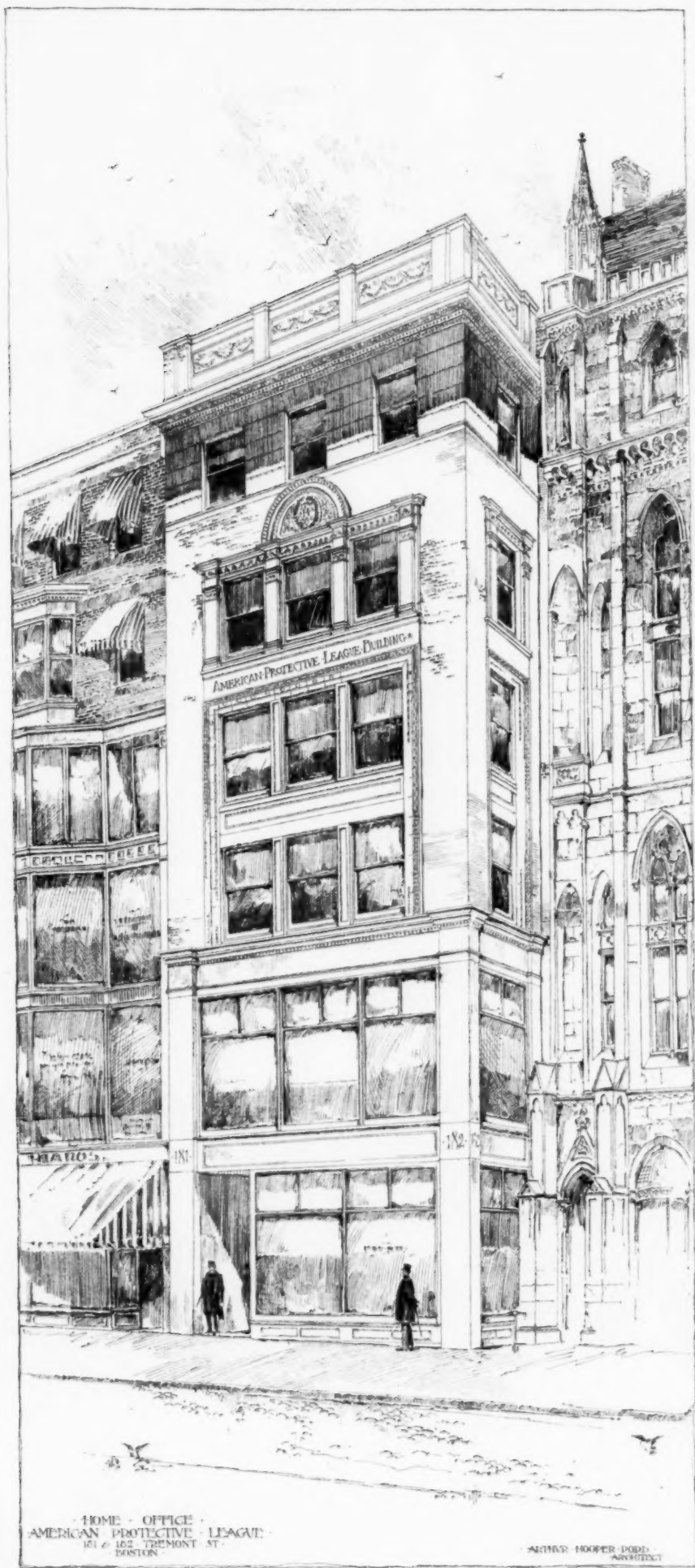


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