THE AMERICAN ARCHITECT AND BUILDING NEWS.

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CONTENTS.

THE Trustees of the Pennsylvania Museum and School of Industrial Art have issued their report for 1877, the first since the opening of the School and of the Museum. They report that the School, which has included classes in drawing and design, in geometry and projections, and in needlework, with lectures on art, has been well attended and prosperous, while they discreetly warn their friends that decisive results are not to be looked for at once in such an undertaking. The Museum has proved popular, — nearly a hundred and fifty thousand people having visited it between the tenth of May and the first of January, — and the attendance on Sundays exceptionally large, especially during the favorable months, the number of Sunday visitors in September being over ten thousand. Among the articles in the Memorial Hall, and in addition to the things purchased at the time of the Centennial, are cited a collection of English pottery and porcelain from Daniell & Co., one of French and one of Spanish, all loaned at the instance of Mr. Cunliffe Owen, and a Persian collection purchased through him. To these are added the collections of the American Institute of Mining Engineers, a private one of lacustrine archæology, and many valuable private possessions, all loans; which with the old purchases, and the inevitable cork models of Windsor Castle and the Tower of London lately presented, should make up a valuable and useful exhibition.

WHEN will people learn that the design of a monument, instead of being the easiest of architectural tasks, is one of the most difficult? If we consider the crop which has sprung up since the war, we have to concede, that however it may be in other architectural work, we have by no means improved in the quality of our monuments in the last twenty years. The reason of this is probably, in part, that in the emancipation from rule which has followed the abandonment of traditional architectural forms everybody has come to think that he can design a monument; partly that this same emancipation has led incompetent designers to trust to any idea that occurs to them; and partly that in like manner the eye of the public or of those who select designs has lost the sense of propriety it derived from seeing only the severer and more monumental if commonplace forms of an older time, and is now pleased with vulgarities that in its days of greater fastidiousness would have shocked its sense of propriety. Yet we have very many more good designers, and better trained, than we had twenty years ago; the power to do good work has increased greatly: the difficulty is that the number of bad designers has increased in a still greater ratio, with their freedom. The public, pleased with the new idea that everybody can do every thing, and judge of every thing, and deprived of its old standards of propriety, bestows its favors with a catholicity that makes no distinctions between the capable and the incapable. We are led to say this by seeing in a recent number of the Baltimore *American* the design of a soldiers' monument which a committee of the Grand Army of the Republic is proposing, with the help of the Maryland legislature, to set up in Baltimore. It has been the custom to call Baltimore "the Monumental City." Its monuments are many, and though they are not strikingly fine, most of them have a degree of dignity and elegance which gives the town, as one in walking about it sees them in vistas right and left, a charm that is not to be found in another American city. There is the more reason then that this city should be careful what it adds to their number. The design we speak of, the work of Mr. G. Metger, has a kind of square battlemented pedestal, with four curiously convoluted corner buttresses, upon the feet of which rest trophies, and between which are steps leading up to inscribed tablets that cover the faces of the pedestal. The top of the pedestal is dressed flat, and in the middle of it lies what the author calls a dome, octagonal and studded with stars. Out of this rises an octagonal column of half the diameter of the dome. It has no base, but a wreath conceals its junction with the dome, and it has a high capital composed of American eagles with scrolls and shields. On the top stands a soldier, holding a flag. It will be seen that the designer has attempted an extremely perilous task; and he has not succeeded. The monument is thirty-five feet high, and the details are of the kind usual with the manufacturers of cast-iron stoves. It is to be hoped that the members of the legislature will think carefully before they help to occupy any square of their fair city with this undignified and illiterate performance.

THE lesson of the Tariffville bridge ought not to be lost; but there is a great deal of work to do in applying it. Professor Vose of Bowdoin College has been writing to the Portland *Argus* to complain of a bridge on the Maine Central Railroad, which he says has been in a very doubtful condition for six years. The railroad commissioners have in three successive years advised its removal, but it still stands, though it has been shored up in one or two places. Last month it was reported to have been tested by running a heavy engine over it at speed, — a test which, as Professor Vose says, is simply that which is constantly repeated on every bridge till it falls, and means nothing more than that up to this time it stands. It is a pity, by the way, that when apprehension leads to testing a bridge, some means should not be found which does not risk two men's lives and a valuable engine. It is probable that the country is bestrewn with bridges no stronger than this or than the Tariffville bridge. Most of them were built for a lighter traffic than that they are now required to carry; hundreds built by unskilful constructors and of perishable material are already falling into decrepitude. It is without doubt a severe tax on the roads to replace them, and will go hard with dividends. Most American railroads were undertaken with insufficient capital, and many on routes where there was not business enough to support well-equipped roads; so that they had to be built as cheaply as possible, and can barely struggle along with dividends, or even without, by the most economical management. But then, roads should not be built unless they can be made and kept safe; and the security of travellers must be preferred even to dividends.

We learn since the above paragraph was in type that plans have already been made for a new bridge on the Maine Central road, an example of improvement which we hope may be followed elsewhere. We have also heard of an ingenious invention for testing shaky bridges, which consists of a tender loaded with eighty tons of water, that is to be drawn across by a rope, at some distance behind the engine, and is so constructed that on the first intimation of an intention to yield on the part of the bridge, it can be opened and the water instantly discharged. The test ought to be admirable; but the management of it would be, we should think, a panicky business for the operator, — one into which the personal equation, as it is called, would enter largely, — and which, considering the promptness with which many bridges go down when they have made up their minds, would require the steadiness of an artilleryman, and the quickness of an astronomical observer.

UNDER these circumstances it is an encouragement to know that Mr. Garfield has brought up again in Congress the bill

presented by him at a previous session, and prepared by Mr. Adams, Massachusetts Railroad Commissioner. It authorizes the President to appoint a board of three general railroad commissioners, who shall be engineers in the United States Army. They are to investigate into and report upon railway accidents throughout the United States; inquiring into their causes, the number of lives lost, the means of prevention which have been, and which might have been, employed; and making a special study of important cases. Special reports are to be made as promptly as possible on these particular cases, and general reports annually to Congress. The bill, as we remember it, does not go so far as to provide any penalties for accidents, or to give the commissioners disciplinary powers, and so could be considered only as the beginning of precaution in railroad matters. But such a commission as it proposes would at least be likely to be fearless and impartial. Its recommendation would carry a certain weight, and its blame would probably produce a certain effect; though with the experience of England before us, where the people are better used to exacting responsibility than here, and where nevertheless the earnest representations of very able and efficient railway inspectors have failed to move the Government against the opposition of the great corporations, it is not worth while to expect too much.

Mr. Norman Shaw, who has won laurels by his cleverness in the use of old forms in architecture, and to whom, perhaps, more than to any other, we owe the complicated revival which has gone under the name of Queen Anne, has lately been reviving an old appliance which had escaped the attention, or else failed to attract the admiration, of his fellow architects. Most travellers in France notice, and seldom without more or less offence, we fancy, the outside drain-pipes which sometimes cover the walls of houses in the old towns, in complicated lines, with hoppers under each window, into which the occupants pour their chamber-slops. Stimulated by the sanitarian enterprise of the day, Mr. Shaw has found a use for these contrivances which is abreast of the wants of this generation. He uses them for soil-pipes, making a break for the entrance of air as soon as a pipe passes through the wall (which is as early in its career as possible), where it leads into a hopper, the break and the hopper being repeated at the surface of the ground. This keeps the pipe out of doors, and open to a free passage of air whenever air will pass through it, and by a free use of water he thinks that it is kept entirely void of offence. This discovery has provoked much discussion, and some admiration, in the English building-journals, but to our surprise we have not seen it either attacked or defended on the æsthetic side. From this point of view we cannot admire it, any more than we can admire the disposition, which we have seen in some English plans of considerable pretension, to fix the source of this adjunct in a place of honor near the front door, or the French habit of arranging it half way up the principal stairs. However absolutely successful Mr. Shaw's device may be, and we have some doubt whether it can be altogether so, it could at least do quite as well in a shaft of its own, we should say, as displayed on the façade of his house, and to greater satisfaction of the beholder. He has many admirers in the United States, but we are glad to think that in the greater part of the country his invention would receive no encouragement, at least from the climate.

We learn by telegraph the death of Mr. Joseph Bonomi, a noted English archæologist, the author of *Nineveh and its Palaces*. He was of Italian descent, his father, whose name he bore, being an Italian architect who emigrated to England in the latter part of the last century, and won distinction there. Mr. Bonomi was born in London in 1796. He studied sculpture at the Royal Academy, and in 1822 went to Rome to continue his studies. Travels in Syria and Egypt directed his interests to archæology. He attracted notice by discovering in Syria the triumphal monument, described by Herodotus, which Sesostris set up on the coast. After fifteen years' absence he returned to England, and continued his archæological work. He became the curator of the curious and interesting museum bequeathed to the English nation by Sir John Soane, the architect of the Bank of England, and still preserved in Soane's house in Lincoln's Inn Fields. He devoted a good deal of time to the study of the great alabaster sarcophagus brought from the neighborhood of Thebes by Belzoni, and enshrined in the crypt of the Soane Museum. In conjunction with Mr. Samuel Sharpe, he published in 1864 a description of this relic, with a translation of its hieroglyphics. These, curiously enough, prove it to be the sarcophagus of Ormanepthah I., father of the Rameses II. that is commonly identified with the Sesostris whose monument Mr. Bonomi had discovered in his early travels. He made the drawings on the blocks for a work on Egypt, Nubia, and Ethiopia, illustrated also by photographs, for which in connection with Mr. Sharpe he prepared the letterpress; and published several small works on Egyptian archæology. He was a fellow of the Royal Society of Literature and of the Royal Asiatic Society, to the Transactions of both of which he contributed.

Our columns have been for some time past under a pressure of material for which we cannot be too grateful; but which makes it reasonable that we should apologize to our contributors for delays and irregularities in our use of their favors, and to our readers for the omission and backwardness of things which they may expect to see. We shall be glad when we are able to enlarge our paper permanently: till then some delays and much compression are inevitable. Meanwhile, to any of our contributors who feel themselves aggrieved at the freedom with which we are obliged to treat them, we can say that if they could only be aware of the putting off, the rejections, and the rough handling to which the editors' contributions have to be subjected, they would feel themselves amply avenged.

THE CONSCIENCE OF A CONTRACTOR.

It happened not long ago that a certain contractor in Brooklyn, who had put in a bid of twelve thousand dollars for some city work, being found testifying against a confederate with whom he had quarrelled that the bid was a "steal," and that the work could be done for six thousand, was confronted with his declaration before a committee at the time the contract was awarded, that it was a reasonable bid. This he accepted so cheerfully that the cross-examiner asked him how much conscience he had; and he answered, the conscience of a contractor, no more. What the conscience of a contractor is according to the idea of this person may probably be inferred from one or two cases of special iniquity, which have lately occupied the attention of the Board of Health in New York. One of these, the trial of a builder named Buddensick on the complaint of the Board, has been conspicuous in the New York papers. The inspector who examined two apartment-houses on East Fifty-Second Street, built by Buddensick and containing some eight families, testified that he found in one an opening in a soil-pipe, through which its contents oozed out; a lighted candle held near it was almost blown out by the escaping air; higher up in the same pipe another opening let out more gas. Two persons were ill in the house, and one had just died, — of what diseases was not reported. In the adjoining house the condition of the plumbing was substantially the same; and the inspector who had visited the house could thrust his fingers into the crevices at the joints of the drain-pipes. The builder was held in bail for trial. It is to be presumed that his case will be in some sort a test case, as his manner of building is apparently a fair sample of what is common in the cheaper apartment-houses of New York. The New York *Sun* published some time ago a report of an examination made by the same inspector, Mr. Nealis, of another block of apartment-houses. These were five houses of some pretension, with stone fronts, and arranged in suites for six, eight, or more families in each. The plumbing here was a little worse, it would seem, than in the Buddensick houses, the soil and waste pipes being thrust without any packing into the branches of the drains, the waste-pipe being only calked where it was in sight; and with holes here and there, where lighted candles and matches were blown out.

There is a plenty of evidence, that it would be simply tedious to cite, which shows that this sort of work is by no means exceptional, and that thousands of people in New York are pretty steadily poisoned by the criminal negligence,

— no, negligence is not the word, — by the criminal care of builders and speculators in slighting their work. These faults are difficult to trace, for plumbing is work easily concealed, and it is the habit in these houses to case the pipes sedulously in such a way that they can only be reached with great difficulty. In the five houses just mentioned, the system was carried out with artistic breadth and completeness by ornamenting the walls and ceilings with gas-plugs here and there, which were simply ends of pipe thrust into the plaster, the houses not being piped at all. What the building-contractors do in their way, other contractors do in theirs, until in many minds contract-work is become a synonym for bad work, and the whole contract system is coming into bad odor.

The most obvious cause of the growth of bad building is the conversion of building into a business instead of a trade, the substitution of the speculative spirit for the spirit of the workman. The cheap work of the day is done mostly by men who have never properly learned their trades, often by men who have never pretended to, and who therefore have neither the capability, nor the pride in good work, that belong to the well-trained mechanic. Men go to building, not because they are mechanics or wish to be, but because the chances of trade allow them to make money out of it. Workmen have found out that enterprise and shrewd calculation will bring them to the top — that is, will enable them to fall to building on their own account, and to making money — faster than skill and faithful work. The commercial element instead of being the servant of the mechanical is its master. The contractor (of this class) does not buy his material and hire his men for the sake of his work, and expect to get his payment for doing it well: he regards the work simply as an opportunity for making certain trades in material and labor on which he hopes to be lucky enough to get a good profit. Since he neither understands his work thoroughly, nor takes any interest in it, of course he does it badly. There has thus grown up a class of builders who are in responsible positions, who control a very large amount of building, and exercise a great influence by the work they do, by their example, and by the training they give their workmen, and whose whole intent it is to turn out bad work. If we add to their influence that of a fever of speculation and eagerness for quick profit which leave but few men in business patient of the deliberate gains which make business safe; the pressure of capitalists who are in haste to invest their money in buildings for the quickest and largest return; and the pressure even of those who wish to build for their own use, but whom the luxurious habit of the day makes universally eager to put more things into their houses than their money will properly pay for, — we have a conflux of influences which is enough to account for almost any degree of decadence. Finally, when we take into account a popular disregard of commercial and political honesty, which it is not our business to discuss, but which has spread over our country till no honorable man outside its influence can either forget it or think of it without dismay, and remember the kind of adventurer that comes to the surface in politics and commerce, we must confess that the cheap and reckless contractor is not such an exceptional monster, after all.

That the kind of conscience claimed by the New York witness was a kind which pervades a large class of men who build houses, as contractors or speculators, must therefore be acknowledged. It is the kind of conscience which many people take for granted in those they deal with, and the expectation of it naturally encourages its growth. Fortunately there are contractors and contractors, and every architect knows that it is always possible to find contractors who will fulfil their engagements squarely and honorably, and will take pride in doing their work well. If all buildings were directed by architects who respected their profession, or by other capable persons, dishonest contractors might be commonly restrained from mischief or avoided. If everybody built or ordered his own house, the speculative builders would be driven from the field. If contracts were abolished, houses might be better built by day's work at greater cost. But the contract system is not likely to be done away with, even by the legislation of the working-men's party, and there will still be contractors, the dishonest as well as the honest; nor will they always or commonly have architects to choose or control them. People will build houses for other people to buy and inhabit, and the speculative builder will still infest the land. What, then, is the protection to which we must look? for protection is clearly become necessary.

For that part of the public which cannot protect itself, since it takes its houses ready made, buying or hiring what it can get, with an enforced preference for cheapness and an innate preference for what is showy or promises the rudiments of luxury, there is no protection possible, so far as we see, but by legislation. The building-laws in our cities deal too exclusively as yet with such parts of buildings as concern their stability and their security against fire. To make them adequate they should contain stringent regulations as to the quality of plumbing and draining work in them. They will not be made duly efficient, in our opinion, until the severe penalties which are affixed to manslaughter are declared against persons to whose bad building fatal accidents or deadly illnesses can be traced. Such rigor of law is not unknown elsewhere, and is found salutary: the public safety seems to require it here.

As to men who get their own houses built for them, the remedy is chiefly in their own hands, or their architects'; for as we have said there are always trustworthy contractors to be had, and for all kinds of work. The men who go deliberately into a trial of skill with contractors whom they do not trust deserve what may befall them; though unhappily the casualties which follow are not likely to injure them alone. But it concerns architects to use all their influence not merely against bad building, but against the business connections which lead to it. They ought to do their best to make patent the distinction between good and bad builders, which cannot easily escape them; to set their faces against the employment of the incapable and those of questionable honesty. Especially it behooves them to distinguish those who have jumped into their employment for the sake of speculation, from those who have properly learned their calling and honor it, and to turn them the cold shoulder. We know the difficulties that beset architects in this matter. We know how clients constantly urge them to build more cheaply than they ought, how often they are pressed to employ mechanics whom they distrust. We know that in the eyes of many clients the architect earns his fee in a great part as a champion against the expected knaveries of contractors. We remember a case where a man of business, of mark and influence in his city, said to his young architect, who objected to pressing a certain contractor for a very low estimate, on the ground that it would lead him to try to cheat, — "You can let him estimate as if he were going to cheat, and then take very good care that he doesn't." One cannot easily imagine a more demoralizing precept, short of a downright recommendation to dishonesty, than this; but it probably represents the more or less unthinking attitude of a large class of clients. Architects need to resist it continually and firmly. The architect is in a certain aspect the servant of his client, as a lawyer is or a physician. But he is a good deal more than this. He is the director of one of the great departments of civil industry, and in this aspect is responsible for his influence on the community, — which may be and should be very great. It is his chief office as an architect to provide his community with good houses, churches, and the like, to live, work, and worship in. To this end he and the builder ought to work in honorable fellowship. It is a poor condition of things if their common occupation degenerates into a struggle to outwit and to detect. When the architect accepts a position in which his chief duty is to keep the conscience of a contractor, it is a lamentable descent from his honorable place.

DI CESNOLA'S CYPRUS.[1]

Gen. di Cesnola's discoveries in Cyprus, if of less curious interest than those of Dr. Schliemann at Mycenæ, are not of inferior importance as a contribution to the history of ancient art, and as affording material for the solution of some of the most perplexing questions in respect to the influence of earlier civilizations upon that of the Greek race.

Though the position and history of Cyprus might well have tempted explorers, very little had been done for the investigation of its antiquities previous to Gen. di Cesnola's researches. His

[1] Cyprus: Its ancient Cities, Tombs, and Temples. A Narrative of Researches and Excavations during ten years residence in that island. By Gen. Louis Palma di Cesnola. With Maps and Illustrations. New York: Harper & Brothers, 1878. 8vo.

narrative of his ten years work is written with such animation and simplicity as to make his book attractive to the general reader, while his lucid and comprehensive description of the progress of his discoveries, and of the works brought to light by his energy and intelligence, is such as to give to his work a higher quality than mere entertainment.

We commend the book to all our readers. It has already been so widely noticed, that we may assume that its general character is already known to the mass of them; and we therefore do not propose to give a summary of its contents, but to point out the nature of the more important contributions to the history of ancient art made by its author's discoveries.

So far as regards architecture, Gen. di Cesnola's investigations show that little is to be learned from Cyprus. The character of building here, as elsewhere, was determined by the materials at hand. Cyprus was not rich in good building-stone. The intimate relations of the island with Assyria, both directly and through Phœnicia, gave to its people acquaintance with the use of wood and sun-dried brick in structures of great size and splendidly adorned. These materials the Cypriotes seem generally to have adopted; but in the plan of their edifices they followed Greek rather than Egyptian or Oriental designs. And the main interest of all the Cypriote antiquities lies in the fact that while they exhibit a native tendency of no great force of expression, they show the intermingling and counteracting effects of three great currents of African, Asiatic, and European influences, here where, more than anywhere else in the ancient world, the streams of these widely separated sources met. The result of their mingling affords most instructive illustration of the obscure facts concerning the relations of ancient peoples, and the transference of the arts from one land to another. If, for instance, the works of art discovered by Dr. Schliemann at Mycenæ are remnants of the civilization of the Achæan race in the Peloponnesus, the similarities between many of them and the productions of Egyptian or Assyrian art become more easily explicable when we find precisely similar conformities in the earliest Cypriote works, at a period before the record of history begins, when the Greek race was already settled in the island. Cinyras, the legendary hero of Cyprus, may not have been of Greek origin, but his myth was wholly Greek: according to it, he sent armor to Agamemnon, which Homer (Il. xi. 19) describes; but failing to send the ships he had promised, Agamemnon, on his return from Troy, landed at Cyprus, expelled the king (who, according to another version of the myth, was slain by Apollo), and settled a band of Greek colonists at Amathus. Now, this tradition may or may not have a basis in prehistoric facts; but no one who will compare the figures of pottery and of gold and silver work in Schliemann's and Di Cesnola's volumes can fail to recognize the essential similarity, not only of execution, but also of design in the early work from the island and the mainland. The Assyrian and Egyptian influences show themselves with more force in Cyprus, as was to be expected; but they do not there, any more than at Mycenæ, control the character of the work. In both there is a new spirit, which after many centuries was to find expression in what is known as Greek art.

Much is still left to be ascertained concerning this primitive period; but if the remains discovered by Di Cesnola and Schliemann be studied in connection with the antiquities recently found by the late Herr Salzmann and Signor Biliotti at Rhodes, and with such fragments of the work of the same period as have been found in Crete and elsewhere, it will be seen that we already are in possession of material sufficient to afford a tolerably wide and exact view of the characteristic features of Greek art in its earliest conscious stages. We have got behind the archaic period of historic art, to the productions of a period of indefinite dates and uncertain duration; behind the Dorian invasion, to a time when the Achæan civilization was reaching the height that is indicated by the Homeric poems. To the student of the meaning of lines, and of the indications afforded by ornamental design, there is abundant evidence in the decorations of the pottery, and in the shapes and motives of the gold and silver work, of an art distinct from those of Egypt and Assyria, though still affected by their traditions; distinct also from that of Phœnicia, and, on the other side, from that of Etruria; an art that gives evidence of independence and capacity of growth, and which has in it the seeds of highest ultimate excellence.

The very fact which has led to the disappearance of all the ancient architecture of Cyprus has been the means of the preservation of much of the sculpture. The falling in of the walls of the temples when their wooden columns were destroyed, or their stone columns overthrown, did not injure the sculptures within them as if the walls had been of stone. Indeed, the fallen mass of clay formed a protection to the works buried beneath it; and Gen. di Cesnola's animated and graphic account of his difficulties in unearthing the hundreds of marvellously preserved sculptures from the Temple of Golgoi shows how completely effective that protection had, in the course of time, become. Few works of such ancient date have come down to us in such perfect freshness, and so free from defacement of any sort, as these statues. In looking at them it is hard to believe that they are old; and one cannot compare them with the mutilated fragments of the splendid statues which the Germans are discovering at Olympia, without a certain resentment at the freak of fortune in subjecting these latter works to a harsh treatment in such inverse proportion to their merit as works of art and their interest as monuments of history. For though the Cypriote sculptors reached a considerable excellence in the delineation of individual characteristics, and, owing to the quality of the stone in which they worked, succeeded in an often exquisite rendering of detail of wreath or hair, there is no work of their hands, among the multitude discovered by Gen. di Cesnola, that belongs to the higher regions of art, or that adds to the types of ancient beauty or ideal character. In the long line reaching in a series of extraordinary archæological interest from the comparative vigor of an archaic period to the decrepitude of late Roman centuries, the art rarely breaks through the enfeebling limits of conventionalism. Cyprus was never wholly Greek: Tyre was nearer to it than Athens.

The most remarkable of Gen. di Cesnola's discoveries was that of the treasury at Curium; "a discovery," says Mr. Newton of the British Museum, than whom there could be no higher authority, "to which there is perhaps no parallel in the annals of archæology." Here in a series of underground chambers, beneath the fragmentary ruins of what may once have been a temple, was found the richest store of articles of gold and silver and of other precious materials that has ever been at once unearthed. The question when this treasure was accumulated and deposited cannot yet be determined, and nothing is known of the circumstances under which the knowledge of its existence was lost. The multitude of precious articles of which it was composed — bowls, vases, cups, dishes of gold and silver, rings, ear-rings, necklaces, bracelets, armlets, gems, etc. — are of various periods from seven or eight hundred years B.C., to perhaps even later than the time of Alexander the Great, and are of different origin and workmanship, Egyptian, Assyrian, Phœnician, Greek, and Cypriote. Many of them are of exquisite design and execution, and among the gems are some which belong to the very highest class of ancient works of the glyptic art.

In a long appendix to Gen. di Cesnola's narrative, Mr. C. W. King, the well-known authority on ancient gems, has given an interesting and detailed account of the rings and gems in the treasure of Curium. This treasure is now the chief adornment of the Metropolitan Museum of the Fine Arts in New York, and, together with the other antiquities discovered by Gen. di Cesnola, forms a unique collection, of the highest interest to the student of ancient art. The possession of such a collection involves a heavy responsibility; and the trustees of the Museum should lose no opportunity to add to their present invaluable store the works of other regions by which a consecutive view of the progress and character of classic art may be obtained by the student who has not the opportunity of visiting the great European collections. It is a great pity that the Castellani collection of ancient art has been allowed to leave the country. The Italian pottery is of no worth in comparison.

THE ILLUSTRATIONS.

THE MUTUAL LIFE INSURANCE COMPANY'S BUILDING, BOSTON, MASS. MESSRS. PEABODY AND STEARNS, ARCHITECTS.

SKETCHES FROM ROTHENBURG BY MR. L. S. IPSEN, ARCHITECT.

PERSPECTIVE STUDY. — PLATE V.

See the "Paper on Perspective" in this number.

DESIGNS FOR A STAIRCASE. — COMPETITION NO. I.

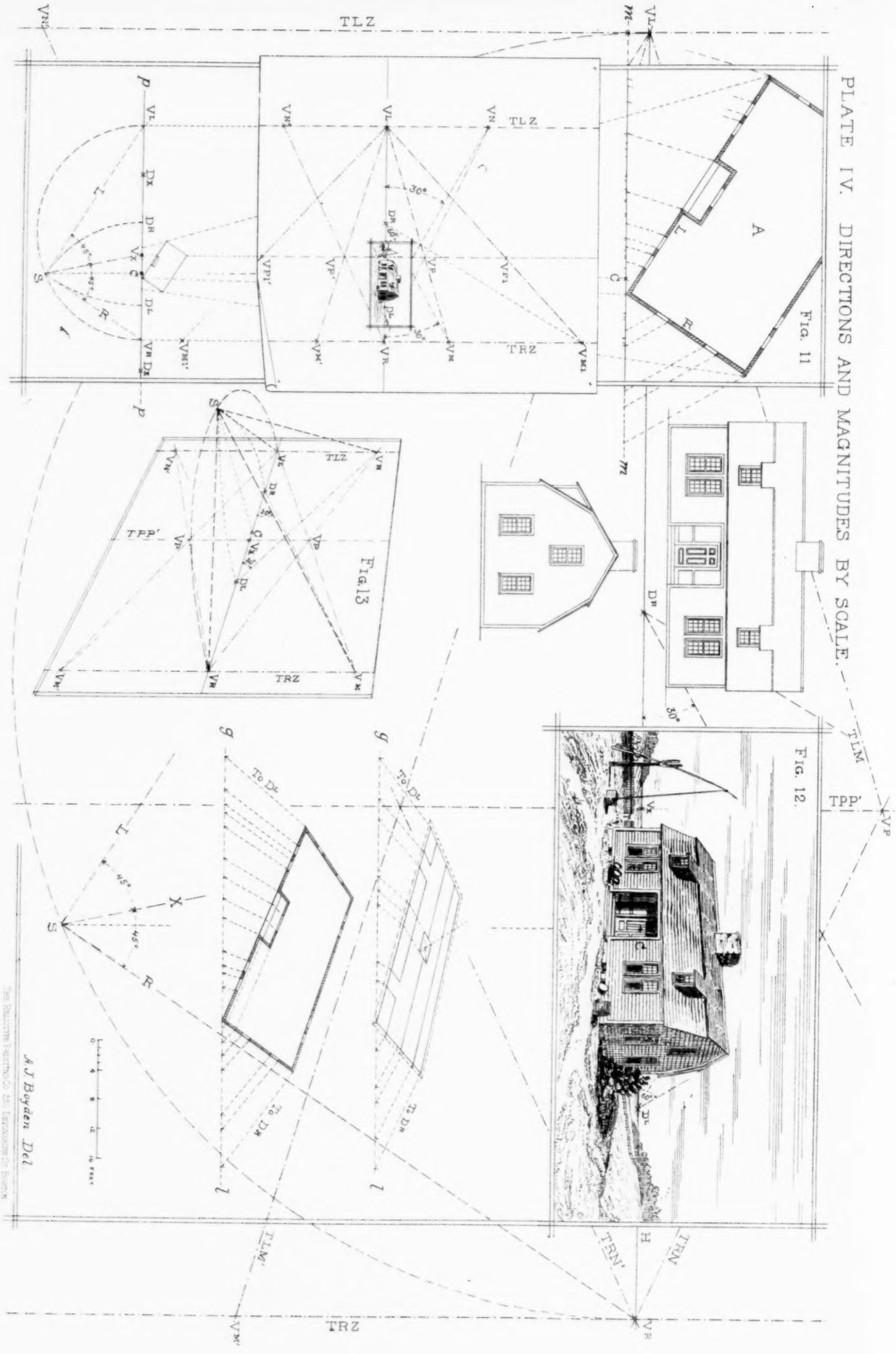
The committee, after much consideration and considerable difference of opinion among themselves, agreed at last to recommend the sketch signed "A. B. C." for the first prize, and that signed "1878" (surmounting a shield) for the second.

Of the twenty-eight designs submitted to them, they found seventeen to be good, and eleven to be poor; drawing a line that separated those good enough to build from, or to receive a prize in the absence of any better ones, from those that were not. Of the whole number, there were seven that distinctly affected mediæval details, and seven that were equally influenced by some sort of classical precedent, mostly of the modern Elizabeth-Anne fashions; two were in a nondescript style. The rest, twelve in number, seemed free from any particular historical influence, being designed on general principles, with more or less reliance for effect upon the forms suggested by the handling of the material employed, such as brackets, sheathing, panels and posts, chamfers, sinkages, and turned mouldings. There was, in general, a marked absence of merely decorative carving, the treatment being highly architectural.

In giving their judgment, the committee were influenced by the excellence of the draughtsmanship, and the elegance or picturesqueness of the composition, as well as the principles of design involved, and apparent novelty of invention. But without an exhaustive knowledge of precedent, to which they could not pretend, they could not, of course, tell whether things were really original, or only new to them.

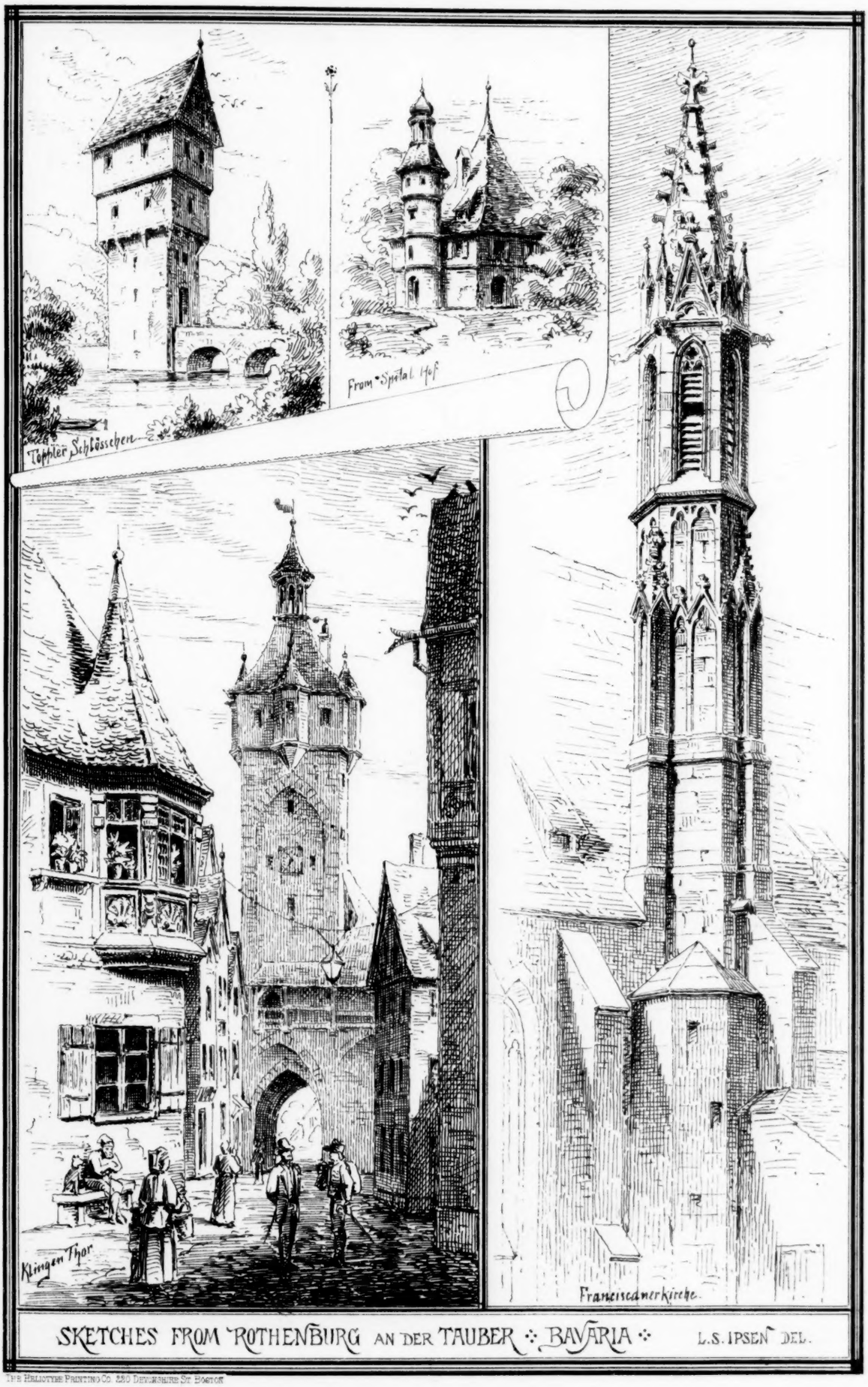
In addition to those which the editors have selected for publica-

PLATE IV. DIRECTIONS AND MAGNITUDES BY SCALE.



BUILDING OF THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK • BOSTON MASS

THE HELIOTYPE PRINTING CO. 220 DEVONSHIRE ST. BOSTON



SKETCHES FROM ROTHENBURG AN DER TAUBER ⁘ BAVARIA ⁘ L.S. IPSEN DEL.

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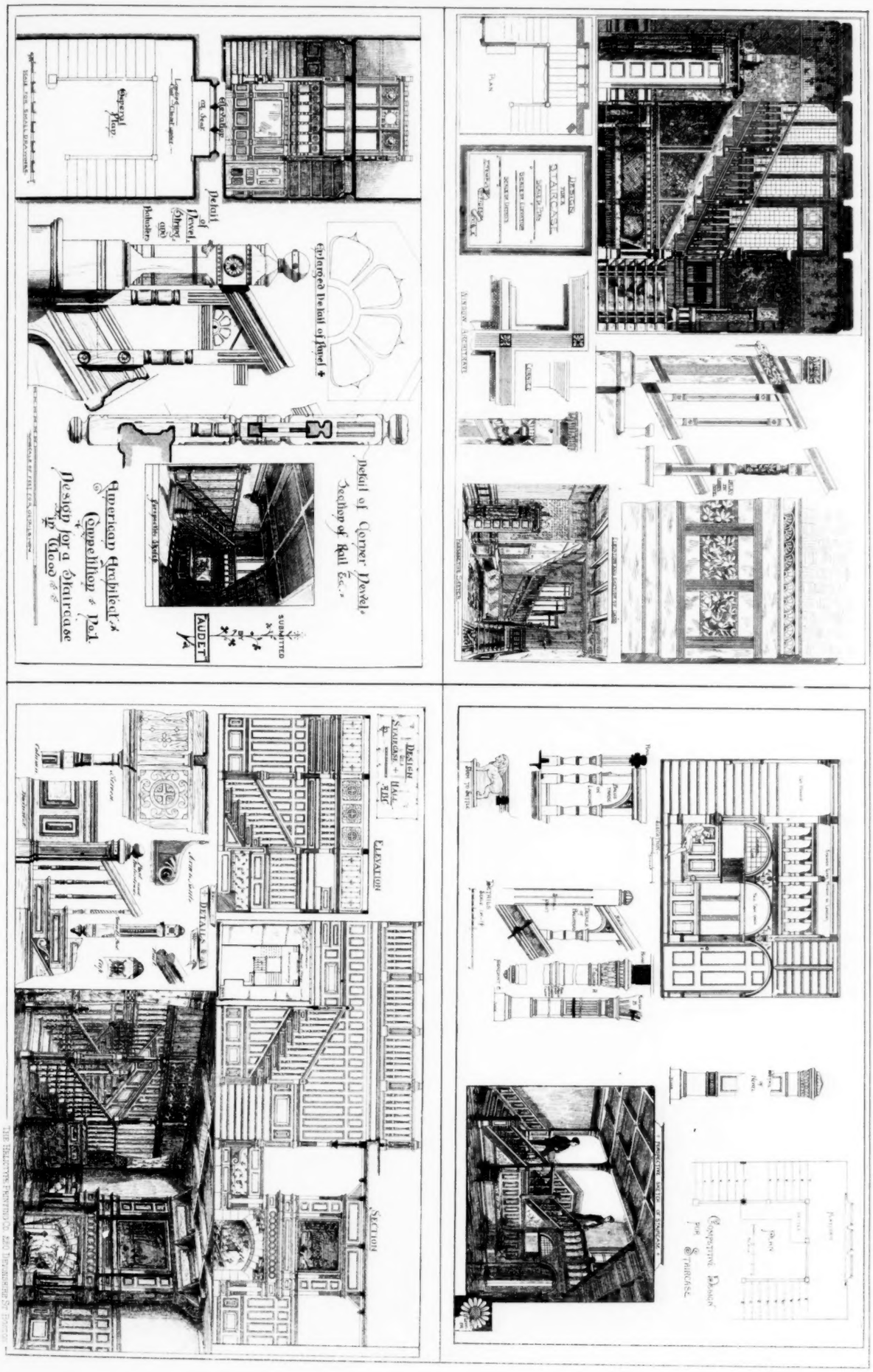
COMPETITIONS IN INTERIOR DECORATION
NO. 1 A WOODEN STAIRCASE.



COMPETITIONS IN INTERIOR DECORATION.
NO. I. A WOODEN STAIRCASE.

THE HELIOTYPE PRINTING CO. 330 DEARBORN ST. BOSTON

tion, the committee mention with commendation those marked "St. Austell," "Essayon," "T-Square Pasha," "With Hope," and a fifth signed with a Japanese fan. The design by "Tempus Fides Vis," although published, was ruled out of the competition, because of the date of its receipt.

PAPERS ON PERSPECTIVE.

V. — ON THE EXACT DETERMINATION OF THE DIRECTION AND MAGNITUDE OF PERSPECTIVE LINES.

THE first two of these papers were given to a general observation of the phenomena of perspective, in nature and in drawings, and the last two to an explanation of the practical making of such drawings, certain data being assumed. It was assumed that the position of the principal vanishing points, giving the direction of the principal lines, had been already determined, with more or less accuracy, by the eye or by the judgment, and that their length had also been fixed in the same way. The discussion showed how the position of other vanishing points and the length and direction of other lines could then be determined, and how any of the lines thus drawn could be divided up in any desired manner, that is to say, in any given proportion.

It is necessary, in order to conclude this part of the subject, to show how these data may be more precisely determined. It is necessary to show how, when the real direction of lines is exactly known, their vanishing points may be fixed with precision, and how, when their real length is known, the exact length and position of their perspective representations may be determined. The position of the object to be drawn, the position of the picture, and the position of the spectator's eye, must of course be known also.

85. Plate IV. shows how these questions are answered: Fig. 11 showing in plan, and upon a reduced scale, the position of the spectator at the station point S; that of the picture at *p p*, which shows the plane of the picture edgewise as it would appear looking down upon it; and that of the object to be represented at A. Two elevations of this object, which is a small house, showing its vertical dimensions, are given alongside; the plan and the two elevations together giving exact information as to the magnitude and direction of the lines defining it. The picture itself is shown between the plan of the house and its own plan, just as if the plane of the picture, *p p*, had been revolved backward into the plane of the paper.

86. The object is here represented as being about six times as far from the station point as the picture is, the picture being about eighty feet from the station point, and the nearest corner of the house about thirteen feet. It is this relation that obviously determines the *scale* of its perspective representation, which would be greater if the picture were farther from the station point, or the object nearer, and *vice versa*. But we shall come to the question of scale presently.

87. The first question is that of the direction to be given to the various perspective lines; we must determine the vanishing points of these various systems of lines, horizontal and inclined. The horizontal lines belong to three systems, the directions of which are indicated in the plan of the little house as R and L, going off to the right and to the left, at right angles to each other; and X, dividing the angle between them, and making an angle of 45° with each. If now the spectator, standing at S, looks in a direction parallel to R, he will see the vanishing point of that system of lines directly before his eye; that element of the system which passes through S is in fact seen endwise, appearing as a point covering and coinciding with the vanishing point of the system of right-hand horizontal lines, which is in the infinitely distant horizon. The perspective of this vanishing point, V^R, in the plane of the picture, will be found exactly where this element pierces the picture, that is, where it crosses the line *p p*. V^L and V^X can of course be found in the same way; and the centre of the picture, C, the point nearest the station point and at the other extremity of the axis S C, is easily determined at the same time. Since R and L are at right angles, the triangle V^R S V^L is a right-angled triangle, and S lies on the circumference of a semicircle of which V^R and V^L give the diameter. In the picture itself, just above, these points of course appear on the Horizon; for since these lines are all horizontal, their vanishing points lie in the trace of the horizontal system of planes. T R Z and T L Z, the traces of the vertical planes parallel to the sides of the building, can now be drawn, as usual, through V^R and V^L; and T P P′, the trace of the diagonal planes, through V^X. The vanishing points of any other horizontal lines and the traces or horizons of any other vertical planes could of course be found in a similar manner.

88. It only remains to find the vanishing points of the inclined lines M and M′, N and N′, and thence, as before, the traces of the roofs, and the vanishing points, P and P′, of their hips and valleys. This is easily done by the aid of the elevations, which show the real inclination of these roofs and gables to be 60° for the lower slope, and 30° for the upper. If the spectator at S, then, while looking at V^R in the direction R, should raise his eyes at an angle of 30°, he would see V^M, the vanishing point of the upper slope of the gable, directly before him, the triangle V^M V^R S being right-angled at V^R. If now this triangle were revolved about the vertical side V^R V^M, so as to bring the station point S into the plane of the picture at D^R, it would appear in the picture above as the triangle V^M V^R D^R, the angle at D^R being 30°.

Fig. 13 gives a perspective view of the plane of the picture *p p* with the eye at the station point S in front of it; the triangle in question is shown both in its original position and also as it appears when swung round into the plane of the picture.

89. It follows from this that if from V^R the distance V^R S is laid off along the Horizon, we obtain the point D^R, and if from this point we draw a line at an angle of 30°, we shall obtain V^M at its intersection with T R Z.

In the same way D^L and V^N may be obtained by setting off the distance of S from V^L along the Horizon from V^L, and drawing the line D^L V^N, also at an angle of 30°.

The points D^R and D^L are called the right-hand and left-hand points of distance; they show the distance of the station point from the right-hand and left-hand vanishing points. It is to be observed that D^R is found on the left and D^L on the right of C.

90. $V^{M'}$ and $V^{N'}$ will of course be seen as far below the Horizon as V^M and V^N are above it, and V^P and $V^{P'}$ will be at the intersection of the traces of the inclined planes R N, L M, R N′, and L M′, as before.

In the same way the vanishing point of every other horizontal line, as, for example, of V^X, has its corresponding point of distance, found by setting off along the horizon its distance from S. Thus we have V^X D^X equal to V^X S.

91. By a reverse process, when the vanishing point of inclined lines is known, their real inclination can be discovered by drawing a line from this vanishing point to the point of distance of the horizontal line beneath them. Thus in the figure a line from V^P to D^X gives the angle V^P D^X V^X, which is the true slope of the line of intersection of the roofs.

92. If the lines M and N have different inclinations, the point V^P will of course not come over V^X, and the distance must be measured from the point of the horizon that it does come over.

The vanishing points of the steeper slopes of the lower roofs are found in like manner at $V^{M'}$, $V^{N'}$, etc.

93. The exact direction of perspective lines being thus determined, since the position of their vanishing-points is thus exactly fixed, it now only remains to determine their length, and the position of some one point in each. For such lines as are parallel to the picture this is easy. For every such line may be considered to lie in a plane parallel to the picture, the centre of which, or point in the plane nearest the eye, will have its perspective at C, the centre of the picture; the perspective of the line in question will be parallel to the line itself, and its length and its distance from the centre C, and all other lengths and distances taken in that plane, will be less, as we have just seen (86), in proportion as the distance of the plane from the plane of the picture is greater. If, as in Fig. 11, the plane *m m* is six times as far from the spectator at S as the picture *p p*, all lines in *m m* will be drawn at one-sixth of their original size, and be at one-sixth their distance from the centre. The front corner of the house, for instance, which lies in the plane *m m*, is so drawn.

This imaginary plane *m m*, which is generally drawn through the nearest part of any object to be represented, is called the *plane of measures*, and, like the picture, is defined in position by the length and position of its axis, which coincides with that of the picture, but is generally a great many times as long.

Its relative distance behind the plane of the picture is commonly, of course, much greater than that shown in the figure, in which, for perspicuity's sake, the picture is represented as being about eleven feet across and about thirteen feet from the spectator. The picture is commonly set only a few feet off, while the object represented is often a hundred times as many.

Fig. 13 gives further illustration of most of these points. To prevent a confusion of lines, the centre, C, is taken on the left-hand side of the picture instead of on the right-hand side, as in Fig. 11.

94. It follows from what has been said that any line drawn in the plane of measures in any direction, horizontal, vertical, or inclined, is also parallel to the picture, and that its perspective will be parallel and proportional to it, but on a smaller scale. This scale depends on the relative distance of the picture plane and the plane of measures from the eye, or station point. If the latter is twice or ten times as far away, lines drawn upon it will be presented in the picture one-half or one-tenth full size. *All lines in the plane of measures have their perspectives drawn to the same scale.*

It is common, in the case of large objects, such as buildings, to set the picture at just $\frac{1}{96}$, $\frac{1}{144}$, or $\frac{1}{192}$ of the distance of the plane of measures, i. e., of the object. Lines in the plane of measures are then represented $\frac{1}{96}$, $\frac{1}{144}$, or $\frac{1}{192}$ full size, etc.; that is to say, on a scale of $\frac{1}{8}$, $\frac{1}{12}$, or $\frac{1}{16}$ of an inch to the foot.

The centre of the plane of measures coincides in perspective with the point C, the centre of the picture (93). The perspective of any other point in the plane of measures may be found by laying off its distance, according to the scale, in its real direction, in the plane of the picture.

95. Fig. 12, in which the various vanishing points and traces, and the points of distance D^R and D^L, are determined as in the

previous figure, illustrates this practice. The picture is supposed to be about six inches from the eye, as in the case of our previous illustrations. This is less than is desirable, but is as much as the scale of these illustrations permits. The front corner of the building, through which the plane of actual measures is taken, is supposed to be a hundred and ninety-two times as far away, that is to say, ninety-six feet from the spectator, or ninety-five feet and a half behind the picture, the scale of the perspective of that corner being one-sixteenth of an inch to a foot. This corner, being eight feet high, is drawn half an inch high. All other lines in the plane of measures are drawn to the same scale, which is indeed the same scale as that to which the plan of the building is drawn in Fig. 11, and the elevations alongside. Dimensions can then be transferred directly from these drawings to Fig. 12, so long as the lines to which they apply lie in the plane of measures, as the front corner does. The line *g l*, for instance, called the ground line, or line of horizontal measures, in which the plane of measures intersects the horizontal plane on which the perspective plan is taken, is such a line, and any dimensions can be laid off upon its perspective at the same scale as upon that of the vertical line; as it is parallel to the picture, the divisions of its perspective are proportional to those of the line itself.

The front corner of the house is the line in which the planes of its front and end walls intersect the plane of measures: by prolonging the planes of the other walls until they intersect the plane of measures, additional lines of vertical measures are obtained. In the same way every horizontal plane gives a line of horizontal measures, as is shown in the case of the two perspective plans below.

96. For very small objects the plane of measures, and with it the object itself, is brought nearer, and may even coincide with the plane of the picture. In this case lines lying in it are drawn full size.

Sometimes, instead of taking the object of its real size at its real distance, we suppose a miniature of the object to be set up near at hand, of any convenient scale. In this case the object may be supposed to be close to the plane of the picture, and the plane of the picture to coincide with the plane of measures.

This is illustrated in Fig. 11, in which a small plan of the house is drawn in contact with the plane of the picture, *p p*, just as a large plan, representing full size, is drawn in contact with the plane of measures *m m* above, the whole being drawn at a scale of sixteen inches to the foot. Or we may regard Fig. 11 as drawn on the same scale as Fig. 12, that is to say, full size, considering the plane *m m* to be the plane of the picture, six inches from the eye at S, with a miniature of the building, a model made to the scale of a sixteenth of an inch to the foot, just behind it.

97. Having thus the means of drawing in any horizontal or vertical plane a line, lying in the plane of measures, upon which dimensions can be laid off by scale, we have now to transfer these dimensions to other lines in the same plane.

If these lines also are parallel to the picture and to the plane of measures, the case presents no difficulty. It is only necessary to draw parallel lines from one line to the other. In the figure, for example, the heights laid off on the front corner are transferred to the other corners and to other vertical lines by parallel lines directed to the vanishing points V^R and V^L. In this way the vertical dimensions of every part of an object, and the position of its horizontal lines, may be determined.

The length of any other lines parallel to the picture, horizontal, vertical, or inclined, may be obtained in a similar way from lines in the plane of measures parallel to them, and lying at the intersection of that plane with the planes in which they lie.

98. To determine the length of the horizontal lines not parallel to the picture, and to lay off given dimensions upon the perspective of such lines, we can employ a method similar to the method of triangles described in the last paper. By that method we laid off upon such lines parts *proportional* to parts taken upon a line of *proportional* measures. We now propose to lay off upon such perspective lines parts *equal* to parts taken upon a line of *real* measures. Any triangle will do to transfer proportional parts, but to transfer equal parts we must have an isosceles triangle; for it is only in isosceles triangles that the parts into which the adjacent sides are divided by lines drawn parallel to the base are equal, each to each.

This is illustrated by Fig. 11, in which the line *m m*, at the top, is the line of horizontal measures. The actual dimensions of the sides of the house and of the doors and windows are laid off on this line, and connected with the inclined lines of the plan by means of lines drawn parallel to the base of an isosceles triangle.

99. It is plain that what is here done in the orthographic plan could be done in a perspective plan if we knew in what direction to draw these parallel lines; that is to say, if we could find the vanishing point of the base of the isosceles triangle.

And this is, in fact, very easy, for a simple inspection of the figure shows that the *point of distance* is the auxiliary vanishing point in question. If the spectator at S looks in the direction of the parallel lines by which the right-hand line R is divided, he will see D^R, and in like manner D^L is the vanishing point of the parallels by which distances taken on the line of horizontal measures are transferred to L.

And that this is as it should be, is plain from a further inspection of the figure. For the sides of the isosceles triangles at the top are by construction parallel to the sides of the triangles $SV^R D^R$ and $SV^L D^L$. These last are accordingly isosceles too, and their two long sides should be equal. The auxiliary vanishing points, then, should be just as far from the vanishing points as these last are from the station point; as the points of distance are (89).

100. The points of distance, then, are the vanishing points of the parallel lines which will intercept upon a perspective line parts equal to those intercepted upon its line of measures.

This is illustrated in Fig. 12, where, in the perspective plan parts laid off by scale on the ground-line, or line of horizontal measures, are transferred in their true dimensions to the perspective lines R and L. In this way the length of the walls and the position of the doors and windows is exactly determined. These dimensions being already shown at the given scale in the little elevations, it suffices to transfer them directly from those drawings to the ground line with a measuring strip.

In this way a complete *perspective plan* can easily be constructed; the length of all horizontal lines and the position of all vertical lines will then be known. The length of vertical lines, which gives the position of horizontal ones, is easily obtained, as we have seen, from vertical lines of measures.

The second perspective plan, above the other, gives the plan of the roof and dormers.

101. Fig. 11 affords an alternative method of obtaining the horizontal dimensions; that is to say, the position of the vertical perspective lines. If we again regard the plan at the top as the plan of a miniature house, or model, set six inches from the eye at S, and regard *m m* as the plane of the picture, in contact with it, we can, by drawing lines from every point in the plan to the station point, find just where every point will appear in the picture; the horizontal dimensions thus obtained can then be transferred directly to the picture in Fig. 12. They are shown by marks on the lower side of *m m*, and will be found to agree exactly with the dimensions obtained from the perspective plan.

This method, which is called that of *direct projections*, is often more convenient than the other, especially when the orthographic plan has previously been prepared, and when, as in the present case, the subject is simple. But the method of the *perspective plan* is more convenient for designing in perspective, or for making a perspective drawing, as often has to be done, from mere sketches. It takes up less room, in the vertical direction; it is less laborious, though requiring perhaps more knowledge and skill; and it has the advantage previously pointed out, that it enables the position of points at different levels to be separately determined, by the use of separate perspective plans, and enables several successive drawings to be made, if necessary, without repeating the bulk of the labor, since the perspective plan can be made on a separate piece of paper, and used more than once.

Moreover, the points established on a perspective plan explain themselves: it is clear at a glance, and after any lapse of time, which denotes the door, which the window. In working by direct projection from the orthographic plan, on the contrary, it is almost impossible to remember which point is which, and much labor is caused by this confusion.

AMERICAN INSTITUTE OF ARCHITECTS.

BOSTON CHAPTER.

The regular monthly meeting of this Chapter was held on Friday evening, March 1, the President in the chair.

Messrs. Longfellow and Peabody were appointed a committee to audit the Treasurer's accounts.

The committee appointed with power to take action for the Society with reference to the proposed completion of the Washington Monument at the national capital, reported that they had prepared and despatched the following letter: —

Boston, Feb. 28, 1878.

Hon. Henry L. Dawes,

Chairman of the Senate Committee on Public Buildings and Grounds.

Sir, — The Boston Chapter of the American Institute of Architects take the liberty of addressing you, and through you the committee of which you are chairman, in regard to the Washington Monument.

It is understood that there is now before the Committee on Public Buildings and Grounds, a bill to authorize the use of the appropriation voted by Congress last year, in strengthening the foundations of the monument, and that without such authorization, in consequence of the report of the United States commission on the condition of the monument, the appropriation cannot be so used.

In view of the responsibility which thus rests on the committee, we venture to call your attention to some considerations which seem to us important.

The official discussions on the appropriation of money for the monument have been chiefly confined to the question of its security; the question of its propriety, which if not more urgent is at least precedent, has been until very lately entirely overlooked.

The design was adopted before the progress in art began which has distinguished the last generation of Americans, and when the artistic resources of the country were slender. It was apparently selected with

little consideration, we believe also with little general approval. The work, originally a private undertaking, has been interrupted for many years, until it is now proposed that Congress, which has many times declared its own intention of building a monument to Washington, shall assume the burden of its expense, and the greater responsibility of presenting it to the world as its choice.

We believe that we represent the general judgment of our profession and of the great body of artists throughout the country, whose judgment on such a question should be of value, when we say that if the structure is finished according to the published drawings, it will be altogether unworthy of its purpose.

A national monument to Washington is the most important monumental undertaking which has been begun in the United States, and, when it is to be built out of the resources of the country, becomes the concern of all its citizens.

To make a mistake in it will be a conspicuous and irretrievable misfortune, for once built there is no probability that it will ever be replaced.

We would earnestly suggest, therefore, that this questionable work should not be adopted and the responsibility for it accepted by the government, in the face of what we believe to be the general disapproval of persons who have studied the question of its design, and the general indifference at least of the public at large, without a serious inquiry whether the proposed form is the best for the monument, and is worthy of its object; and whether, if the present structure is retained, it cannot be turned to some more suitable form than is now intended: otherwise we believe it is right that the government should decline to lend its hand to it.

Very respectfully,
THE BOSTON SOCIETY OF ARCHITECTS,
By their committee,

(Signed) EDW. C. CABOT, *President.*
JOHN H. STURGIS, *Vice-President.*
HENRY VAN BRUNT, *Secretary.*
W. P. P. LONGFELLOW.

A report was then laid before the Society from the committee to which was referred the application made on behalf of Mr. J. T. Clarke, junior member of the Chapter, for assistance in enabling him to make some original researches among the unedited remains of the Doric order, chiefly in Sicily, Corfu, and the islands of the Greek Archipelago, with a view to their publication under the patronage of the Professor of the History of Art at Harvard University. This report commended the enterprise, and for its furtherance proposed the appropriation of $300 or $400 out of the funds of the Society now in the hands of the Treasurer. At a late hour, after a long and animated discussion on this subject, the meeting adjourned, to meet at the office of the President at noon on the 7th of March, when the matter will be finally disposed of.

CORRESPONDENCE.

A COLLEGE SOCIETY BUILDING. — THE NEW POST OFFICE BUILDING.

HARTFORD, CONN.

A NEW phase of architectural work has recently been developed in this city, by the erection of a college secret-society building. Designs of this character are new to Hartford. In the present instance, the building is due in part to the late action of the authorities in placing the new Trinity College buildings at a distance from the heart of the city.

The building — or "hall," or "lodge," or whatever it may technically be styled — is from designs by Mr. J. Cleveland Cady of New York, a former member of the college, and a "brother" of the organization which is the first of the several societies in the institution to build itself a lodge. The building stands upon a high bluff, a few rods north of the boundary-line of the college property, and commands from any of its sides an extensive reach of country, being at the same time a particularly prominent object from the railroads entering the city on the west. It faces the street which runs along the ridge, and extends back fifty-six feet, presenting a frontage of twenty-nine feet, with an extension on the south containing a vestibule with entrance-hall beyond. It has two stories with a high basement, the water-table being six feet from the ground. On the north side a circular tower, thirteen feet in diameter, rises seventy feet, and is embellished with a chimney corbelled out and built at an awkward angle. The chimney breaks the lines of the tower-cornice, and is carried up less than half the height of the roof, and capped by graduated capstones; the escapes for smoke being arched openings in the four faces. The material of the building is New Hampshire granite. This is laid up in regular courses with rock-face, while the water-table, the bands, string-courses, etc., are of the same stone, axed. It stands upon natural rock, and is underpinned with a brick wall two feet thick.

The architect has taken a wide departure from the stereotyped rules which, by a sort of tacit consent, seemed to govern the construction of many of the early society buildings at the older colleges in the country, and has done away with that tomb-like expression which was thought to be part and parcel of a good and appropriate design for such a building. Instead, we have numerous windows of ample dimensions, a modest gable, high-pitched roofs, a lofty tower, a prominent entrance, and, at various points, some bad carving. The whole study is a happy example of the value of careful design in any building, great or small. The front of the lodge is apsidal, and affords within an octagonal apartment; the exterior walls finding their counterparts in the interior brick partitions, in one of which is a roomy fireplace; the corresponding angle-wall of the apartment on the ground-floor containing the entrance-doors opening from the hall in the extension, or wing. From this hall a passage-way, extending the width of the main building, connects directly with the staircase-tower. The rear room on the ground-floor has two of its angle-walls treated like those of the octagonal room; and this portion of the building externally is marked by a very wide opening under a segmental arch filled with a series of wooden-mullioned windows. The roof is double-framed, hipped, finished with iron cresting or ridge-tile. The extremities of the ridge bear enormous finials six or eight feet high, embellished with rosettes. A symbolic piece of design — the "*crux ansata*," or the Egyptian symbol of life — is placed upon the stem of the finial, and has both its faces highly gilded. The effect of the roof-finish on the tower is most excellent; but the same criticism can hardly apply to the finials on the main building.

The extension or wing on the south of the lodge presents a gable, finished with a coping and roughly-wrought finial; the main walls being pierced by two pointed windows with a circular window above. The three angle-walls of the front of the building have each upon the ground-floor double windows of ample dimensions, whose tympana show specimens of symbolic carving which are subjects for comment, even if the windows themselves are not open to criticism. Like many others of smaller dimensions on this floor, they suggest the old question, Shall pointed arches be finished with a keystone, after the manner of classic work, or with a joint at the vertex? Mr. Cady adopts the former method in this instance, while but a short distance off is an example of the latter treatment, in the pointed windows and doorways in the new college buildings. The lodge-windows on the first floor are arranged in groups of three, the width of a single window not exceeding ten inches; the heads are trefoiled, and the jambs slightly splayed. The tower-windows are narrow, and follow the rake of the stairs, with the exception of the upper ones, which are at a level, and afford a view in all directions. The building will be finished in hard woods, and, when completed, will cost more than $30,000.

It has been rumored that the new Cheney block, built in this city from plans by Messrs. Gambrill and Richardson, and described in a former letter, is to undergo some alterations next season. The square tower, forming the prominent feature upon the principal corner of the block, now finishes at a slight distance above the main building, by a pyramidal roof, conspicuously covered with red tile. This roof, it is said, will be removed, and the walls of the tower carried up. The change will unquestionably enhance the architectural effect of the building, which is now one of the finest in Hartford, as well as one of the costliest.

The new post-office in this city was bravely begun, is now partially finished, and will be completed in the near future, if the present bill before Congress asking for an appropriation of $240,000, is passed. The post-office is irregular in outline, the length being 112 feet and the width about 100 feet. The material used is granite from the quarries at Clark's Island, where the stone is cut to measurement and forwarded. The building was one of those designed by Mr. Mullett. It is severely classic in detail, and is crowned by a roof of the orthodox style, two large towers serving to break up any chance of monotony of roof-lines. The work has been under the able superintendence of Mr. G. H. Gilbert, a local architect; and the building had been carried up to the first floor, when it was covered over, although immense quantities of stone were on the site, ready to be unboxed and put in place; but this was an impossible step, as appropriations had been exhausted. The post-office is centrally located, and occupies a prominent angle on what is known as "State House Square," directly behind the time-honored building in which for so many years the Connecticut Legislature has met, and which is soon to be deserted for the more commodious and elegant quarters in the Capitol on Bushnell Park. Already three appropriations have been made for the post-office; but of the large sums granted less than $150,000 have been expended in Hartford.

CHETWOOD.

SPALLING OF BRICKS.

ST. LOUIS, March 1, 1878.

EDITOR AMERICAN ARCHITECT.

Dear Sir, — Your Cincinnati correspondent explains the cracking and spalling which he reports in the stock-brick facing of the walls of the new Shillito Building in that city, by the hypothesis that the backing of common brick must have settled more than the stock-brick, because of the greater thickness of the mortar-joints in the backing. This explanation hardly seems satisfactory in view of the facts that in this city, as doubtless in most others, it has long been the almost universal practice to back up stock-bricks laid with a very fine joint, with smaller common bricks laid with a much thicker mortar-joint; that such buildings have stood for many years, and that we have yet to learn of a case in which the stock-brick has cracked and spalled as reported at Cincinnati.

One is tempted to question the quality of the stock-bricks used in the Shillito Building, or of the manner in which they were laid. A well-known cause of spalling in new bricks is the presence of

limestone pebbles in the brick-clay, which are converted into caustic lime by the process of burning, and then, expanding on exposure to moisture, burst and spall off the face of the brick.

Very respectfully yours,

C. E. Illsley.

BUILDING IN KANSAS.

The dug-out is the primitive house of Kansas. In Minnesota, at an early day, a dug-out meant an Indian canoe hollowed out of the trunk of a tree. In Kansas it means a habitation for a new settler. Its name is indicative of its construction. An excavation is made to about five feet below the surface, and large enough to furnish the requisite room for the family. Usually it is located at the edge of a ravine or depression, so that the approach can incline from instead of to the entrance. In other cases, it is dug on level ground, — the entrance descending four or five steps, as in entering a basement. The walls above the surface of the earth are built up of stones or sods to the requisite height of ceiling, and banked up by the earth dug out. The windows are necessarily above ground, which makes them high from the inside, and pretty low from the outside. The roof is given a sufficient inclination or pitch; covered with one thickness of common boards or poles, and above that with earth packed down so smooth and solid that no water will penetrate it. The sides are so solid and firm that they can be whitewashed or plastered, as is sometimes done by the extra fastidious, — some even going to the extravagance of a brown muslin ceiling tacked to the under side of the roof-timbers, and whitewashed. Where these extravagant ideas do not enter into the construction of a dug-out, one with one room, say sixteen by twenty feet, can be built with a cash outlay for lumber, nails, and windows, of about twenty-five dollars,— the owner doing all the labor himself. Other rooms can be added as needed, though the resident of a dug-out usually has aspirations for a more imposing residence, and expends no more on these temporary structures than absolutely necessary. The dug-out furnishes a cheap and really comfortable cabin for the new settler of small means, — being warm in winter and cool in summer, rarely if ever damp; and hundreds of intelligent, well-educated, Eastern-raised people are to-day living in them, improving their farms, and increasing their live stock,— who in a few years will build comfortable houses, and surround themselves and their families with all the comforts and conveniences of life. The sod-house is another style of cheap house. This is made by running a breaking-plough about three or four inches deep, till a sufficient amount of material has been turned over, when it is cut into convenient lengths with a spade, hauled to the building-site, and laid up in walls like stone, only requiring no mortar. The door and window frames are set and built in the same as in a brick or stone house. When the walls have reached a sufficient height, a plank is laid on each side for a plate, and to this the bottom of the rafters are spiked. The gables are built up under the end-rafters, of the same material as the rest of the walls. The roof is made in the same manner as that of the dug-out, care being taken to have it properly supported in the centre. High-toned people trim the walls down smooth, and plaster them outside and in, which makes a very respectable-appearing as well as comfortable house. The cash outlay for a sod-house is about the same as for a dug-out. Concrete probably furnishes the cheapest material from which to construct a house of a permanent character, since all the materials requisite for the walls, except the small quantity of cement required, are found in abundance ; and in their construction no special mechanical skill is required, so that the settler of ordinary intelligence can mainly build his own house. The process of building concrete walls has been so often published, that it is not necessary to now give it in detail. Brick have been but little used, because stone is so abundant and is cheaper. — *Letter to the Chicago Tribune.*

NOTES AND CLIPPINGS.

Reredos. — A new reredos is building for Grace Church, New York, which will cost about $30,000. The altar of white marble, with eight red marble columns surmounted with white foliated capitals, will be twenty-five feet long. The reredos will be twenty-one feet high, and Gothic in style. The front of the altar will be divided into three panels, which will be richly inlaid with colored marbles. The base will be of green Genoa marble, and the columns on either side of it will be inlaid with Sienna and black marble. The cornice will be of carved marble of a dove-color, and above it will be a heavy string and sill course supporting the panels of the reredos. The institution of the sacrament will be represented in mosaic on the central panel, and on either side will be figures of two of the four Evangelists. All the panels will be surrounded with tracery, and the buttresses will be surmounted by white pinnacles with columns of Mexican onyx.

A Singular Phenomenon recently happened at La Clappe, in France. A plat of ground planted with vines and olive-trees slowly sank in and disappeared, leaving a gulf of a funnel-shaped form about 120 feet in diameter at the surface and 40 feet at the bottom. At the depth of 100 feet may be seen a sheet of water, in which the earth, estimated at a quantity of 16,000 cubic yards, has been swallowed up.

The Light-House at Atlantic City. — We mentioned in our first volume that the authorities were taking measures to preserve the light-house at this point from being undermined by the action of the tides. Cribs were built outside, but were washed away, and the tides have been crawling steadily inland. In 1857 the light-house was 1,300 feet beyond low-water mark: now it is only one hundred feet beyond it, so that the water washes about its base, and is slowly undermining it so that its fall may happen at any time. The light-house is 170 feet high, and marks one of the most dangerous points on the New Jersey shore, where, in spite of it, many vessels have been wrecked of late.

Railroad Bridges. — A writer in *Engineering News* thus classifies the causes of 183 bridge accidents that have occurred in the United States and Canada since 1872, which he has been able to investigate. Accidents have befallen 57 pile or trestle bridges, 38 Howe truss bridges, 5 combination bridges, 17 iron bridges, and 66 bridges whose construction is indeterminate. The following causes are assigned: fire, 6; hurricane, 3; freshet, 26; undergoing repairs, 7; floor broken by train, 27; bridge knocked down by train, 54; square fall, i.e., lack of strength to support the weight of a train, 8; unknown, 52.

Sipontum. — As was recorded by a notice in No. 106 of the *American Architect*, Sipontum, another subterranean city, another Pompeii, is being disentombed in Southern Italy. It was discovered while cleaning a well, situated not far from Monte Gargano, in Apulia, on the Adriatic coast. The building first struck upon was a temple, apparently dedicated to Diana; then followed the long *porticus*, and an extensive necropolis has very recently been unearthed which is said to cover not less than four acres. Many important inscriptions have already been brought to light here, most of which luckily find their way to the National Museum at Naples. The extensive excavations receive the full support of the citizens and the archbishop of Manfredonia, which latter city, one of those founded by the son of Frederic the Second, is built in part over the remains of the antique Sipontum, exactly as Dr. Schliemann found one town superimposed upon the yet existing remains of another at Hissarlik. Sipontum was originally a Greek colony, the foundation of which is of uncertain date. It was old when the Romans resettled all that country after the second Punic war. The name of the place then was Sipom, given to it, most likely, from the cuttle-fish (sepia) cast up on the neighboring shore; from this the later Romans formed Sipontum in the same way as Tarentum, Hydruntum, etc. Sipontum, like other Apulian cities, never recovered from the awful devastations of the Punic war; still it managed to preserve its existence, while other ancient cities were disappearing so thoroughly that no tradition lingers even of their site. By the middle of the thirteenth century it was considered very unhealthy on account of its sunken position, and the marshes by which it was surrounded, the effect doubtless of the depression of the ground which had already taken place; so in 1251 King Manfred transferred its population to a new town, which he built in a higher and more healthy situation. Thenceforth old Sipontum was deserted, and handed over to the earthquakes, which seem to have dealt with it tenderly; not rudely shaking it into ruin, but wrapping it in clay and tufa sand so effectively as to hide it away for six centuries. Many relics have been found in the houses; but the city of the dead, with its immense number of tombs, promises to be the most fruitful field for research. Sipontum is generally associated in one's mind with its neighbors Apina and Trica, towns lying near by, whose names (*Apinæ et Tricæ*), since their destruction by Diomede, have become proverbial for nothingness. Let us hope that Sipontum will not prove thus empty. Even though the matter may not be so momentous as it is represented by the Italian journals, we may still expect from this discovery important additions to our knowledge of Roman antiquities and civilization.

An Elevator Accident. — Elevators seem to be as productive of accidents as stairs; for as it is as possible to tumble up stairs as to tumble down stairs, so one cooped up in an elevator can vary the excitement of a breathless drop through four or five stories, by taking an equally breathless flight through the same space, and finish as fatally in the second case as in the first; this was the case in Paris, where, a short time ago, three persons were carried from the bottom of the elevator-shaft in the Grand Hôtel Paris, and crushed against the ceiling. The accident was caused by the loss of the balance.

A Loan Exhibition. — The Woman's Art Museum Association of Cincinnati have decided to hold during the month of May a loan collection exhibition, Mr. John Cochnower having generously tendered the use of his house (now unoccupied), No. 166 West Seventh Street, for that purpose. The objects desired for exhibition are bronzes, mosaics, ancient armor, carved ivories, gold, silver, and brass work, enamelled metals and porcelain, antique furniture, pottery, artistic embroideries, pictures, engravings, statuary, glass, lace, tapestry, wood-carvings, etc. As it is well known that Cincinnati is rich with articles above mentioned, with others of like nature, the exhibition will no doubt be one of great interest.

The Florentine Water-Works. — Among the most important enterprises of modern Italian engineering, are the new water-works of Florence. The object of the undertaking is thus stated in *Giornale del Genio Civile:* "To collect in a gallery, excavated near the city, the subterranean waters which filter through the sand and gravel which form the subsoil of the great valley of the Arno; to convey them into ample basins, from which, by means of powerful pumps, they may be distributed in canals, using the water of the Arno and Corliss steam-engines for motive force; and to establish ample reservoirs, above the level of the city, to receive the excess or supply the deficiency of hourly consumption, the reservoirs acting like the governors of a steam-engine."