THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XV. Copyright, 1884, JAMES R. OSGOOD & Co., Boston, Mass. No. 433.

APRIL 12, 1884.

Entered at the Post-Office at Boston as second-class matter.

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A CURIOUS result of the Cincinnati riots appears in an advertisement, dated March 31, and inserted in a number of daily papers, which bears the heading "To the Architects," and proceeds to announce that "Bids will be received" "as to the lowest price for preparing plans and specifications and estimates for erecting a complete fire-proof Court-house, with fire-proof vaults, to take the place of the Court-house destroyed by fire." It is amazing that an official board in so enlightened a city as Cincinnati should lend its name to a proposition so foolish as this notice conveys. If a private individual were to issue a circular, inviting all who wished to compete to name the lowest price for which they would undertake the medical charge of himself and his family, or the legal charge of his affairs, he would be the laughing-stock of the community for a month, at least; but the Hamilton County Commissioners go farther than this, and call publicly for the man who will undertake, at the cheapest rate, to direct the expenditure of perhaps half a million dollars of the citizens' money. There is no doubt that the invitation will meet with ample response. The number of persons who are willing to make very liberal terms for the temporary control of so much of other people's money is large, and the value which they, as well as other people, set upon their time is generally inversely proportional to their desire for undertaking new responsibilities; so that there is practically no limit to the modesty of the sum for which some of the applicants will be ready to promise the plans, specifications and estimates required.

EVERY architect and builder knows that a large portion of those who would respond to such an invitation would be glad enough, if they could be sure of filling the usual confidential relation of architect, to furnish the designs and specifications for nothing, or even to offer a slight *douceur* to any one who would gain for them the privilege of presenting these documents to the county; while another portion, including some of the more honest candidates, would undertake for ten dollars, and at twelve hours' notice, to furnish designs of any building whatever, accompanied by specifications and estimates, which, to the uninitiated eye, would bear a plausible resemblance to the papers prepared at a much higher cost by architects of reputation. Even the County Commissioners probably understand this well enough, and there is very little reason to suppose that the work will be entrusted to any of the persons who advertise their incompetency or dishonest intentions by offering their services at a low rate. Even in this country public opinion would prevent the employment on such important commissions of any but architects of established reputation, and the real object of the Commissioners in this advertisement is, without doubt, to beat down the price of skilled professional service by a show of competition. It is in meeting such astute attacks as this that professional association is so valuable, and we hope that the Cincinnati architects have resorted promptly to this powerful weapon in defence of their interests. If they have not already done so, we will suggest that there should be as little delay as possible. They may be sure of one thing, — that the new Hamilton County Court-house will not be built under the direction of a conceited office-boy, or of a builder's clerk, or of a person whose integrity is publicly questioned, but of a reputable architect; and if the reputable architects prefer to receive for their services in such cases the established commission of five per cent, instead of a smaller sum, they have only to say so, and they will receive it, whatever the commissioners may advertise. The services which they are able to furnish can be given by no one else, and a customer, Hamilton County, desires those services. The customer has the money to pay for them, but thinks it can perhaps gain an advantage by some preliminary sharp practice. Let the architects do as a merchant, having a monopoly of the goods wanted, would do under the circumstances; that is, attend quietly to their other affairs until their customer accedes to their terms.

THE circular letter in regard to competitions issued by the committee of the Royal Institute of British Architects, to which we referred last week, and which is sent to every member of the profession in Great Britain, contains a slip, which the person receiving it is requested to sign and return, pledging such person "not to take part in any architectural competition unless one or more professional assessors of established reputation are appointed to advise the promoters on the relative merits of the designs submitted in the competition." A list of the architects signing this agreement is to be sent to promoters of competitions, so that they may be warned in time of the principal condition which must be observed on their part to give them any hope of interesting the architects named in the list; and as the intention of most competition committees is, however mistaken may be the means they adopt for that end, to secure the services of competent and respectable architects, there can be no doubt that the mere fact of finding the names of the great majority of the profession appended to an explicit demand for the observance of certain terms will result in the general acceptance of those terms. In case any architect who has once signed the agreement should wish to withdraw from it, he is at liberty to do so by giving three months' notice to the committee of the Royal Institute; so that the restriction imposed by it will, at most, be but a temporary burden upon those who might, after signing, repent of their action; and the publicity given to the list will alone be sufficient to maintain the fidelity of the signers to the professional standard of character which they thereby adopt, so long as their names remain attached to it.

AN inquiry is made in a recent number of *La Semaine des Constructeurs*, whether the contractor for the mason-work of six houses of considerable value is justified in claiming to be repaid his outlay for plumbing fixtures, and for water consumed in making mortar, and for use in the boiler which furnished steam for his hoisting engine; also, whether he can claim to be repaid the cost of keeping lanterns lighted at night to show the obstruction to the street caused by his operations; as well as that of building and removing temporary water-closets for his workmen; and that of hiring a watch man to guard the premises at night. With us all these items are almost invariably noted in the specification, so that there could be no question about them, but in the absence of any stipulation in regard to them there is room for reasonable doubt as to what justice would require. In answer to the first question the editor of *La Semaine* holds that in default of any special agreement concerning water for building the owner should pay the cost, both of water for mixing mortar, and of the plumber's work necessary to bring the water within easy reach; on the general principle that where there is any doubt in regard to the meaning of a contract, it should be interpreted contrary to the interest of the one who prepared and presented it for the other to sign. Moreover, the pipes and faucets for supplying water, being equally useful to the other contractors for the building, and being left to the owner, at the completion of the work should, he thinks, be at the charge either of the owner, or, by special agreement, of all the contractors in proportion to their use of them, rather than of the single contractor for the mason-work.

IN relation to water for the boiler, on the contrary, the editor is clearly of opinion that the cost of this should fall upon the contractor, who is paid for hoisting the stone and mortar to its place, without regard to the means which he takes for carrying out this service. As to the lanterns on the guards, the editor thinks that the occupation of the street being in itself of no utility to the owner, but simply a convenience to the builder, who is thereby enabled to deliver and store materials with less trouble, the cost of maintaining and guarding the enclosures should fall upon the one who uses them; that is, the contractor. The construction of water-closets for workmen is also simply an item of the contractor's business expenses, relating to the care of his men, with whose convenience the owner has nothing to do; as is also the salary of the watchman, who only serves the interest of the contractor, in protecting against robbery or injury the materials and work for the safe delivery of which the contractor is responsible. In the last three cases other contractors besides the mason profit by the guards or conveniences established by him, and might fairly repay him a part of the cost; but that is a matter with which the owner has nothing to do. With all deference to the opinion of so good an authority, we cannot avoid saying that these principles seem to apply with just as much force to the supply of water for mixing mortar as to any other item of the cost of construction; and we do not see why, if a man contracts to build a certain house, he would be any more justified in claiming that the owner should pay extra for the water to temper the mortar than that he should furnish sand and lime for it. It seems to us that the question is rather one of local custom than of abstract right. In cities, where the service-pipe can be, and generally is, laid into the cellar as soon as the excavation is made, it is usual for the owner to order this done as early as possible, and the mason then enjoys the benefit of it, and might reasonably claim, in the absence of any stipulation, that he counted in making his contract on the observance of the usual practice; but in the country it is certainly most common for the contractor to include in his proposal the cost of procuring water, which is often a very considerable item. However, it is best not to leave such matters in doubt, but to specify clearly just what each contractor is, or is not, to include in his proposition.

THE *British Architect* refers to a somewhat novel suggestion for solving the great problem of the time, the decent housing of the very poor, which has been made by Mr. Clement Dunscombe, the City Engineer of Liverpool. Liverpool is said to furnish a great number of the worst examples of tenement houses to be found anywhere in the civilized world, except perhaps, in Glasgow, and Mr. Dunscombe seems to have kept in mind with great care the practical conditions which it is necessary to fulfil in securing an efficient reform of those habitations which most need such reform. His efforts have been accordingly directed to the design of dwellings which should rent for a much lower price than any of the improved tenements that have yet been constructed, and some of his plans provide for single-room tenements which can be rented at a profit for one shilling a week. It is needless to say that no great luxury of construction is possible in such buildings, but in Mr. Dunscombe's plans all is neat, substantial, and capable of easy and thorough cleansing and renovation. All the walls are intended to be of brick, the bricks for three feet and a half in height above the floor of each room to be either salt-glazed or pressed, so as to form a clean and vermin-proof wainscot. Above this wainscot the wall would show common bricks, colored in distemper. With good bricks, neatly laid, such a wall would be far from disagreeable to look at, and there is no reason why a similar construction should not be adopted here, with the difference that such walls, where exposed to the outside air in this climate, should be built hollow, to prevent condensation on the inner surface, and unwholesome dampness.

A GOOD lesson in regard to the value of trees as an agricultural product is now being taught the farmers of certain sections of Ohio and Indiana. As most of our readers know, this portion of the country has for many years been the principal source of the black walnut lumber, long so fashionable here, and still very highly prized abroad. Twenty or thirty years ago the black walnut trees nearly covered the ground in some counties, and although the beautiful color and grain of the wood caused a steady demand for it, and at good prices, the process of cutting down and sawing the logs was too slow for the ignorant and improvident settlers, who burned over thousands of acres of forest to save themselves the trouble of thinking how to clear the land intelligently. The more sensible of them sawed and split the beautiful timber for framing their houses, and building fences, which are worth to-day nearly as much as if they were of solid mahogany; but by far the larger portion was dispersed in smoke and ashes. As the supply of the timber diminished, the value has advanced, and a combination of speculators is said to have been formed within a few months to secure all the remaining available stock, and hold it at its own price. The agents of this combination, which is supposed to have been formed in England, are now engaged in buying the timber still standing, and are said to have secured already about five million dollars worth of trees, which are being rapidly cut down and shipped across the ocean. The sudden demand caused by these extensive operations seems to have opened the eyes of the farmers for the first time to the irreparable loss which they have inflicted upon themselves in the reckless destruction of twenty years ago. One, in particular, informed a correspondent of one of the New York papers that he worked almost incessantly for eight years to clear the black walnut trees off his farm, burning more than eighty acres of timber on his own ground. During the thirty years since this wholesale destruction was effected the farm has been constantly cultivated, and is now valued at about eight thousand dollars. If it could be put again in the condition in which it was before the clearing commenced it would be worth more than one hundred thousand, so that the old farmer's eight years of toil were practically devoted to throwing away his money at the rate of a thousand dollars a month. It is true that by this means his land was cleared for crops, but the experience of other countries shows that judicious thinning, in place of indiscriminate destruction, would have reduced the producing capacity of the farm very little, if at all, and would have increased the value of the timber reserved so much as to compensate in a great degree for that cut away, so that the owner might have secured both profits instead of one. The advantages of such thinning, it must be remembered, would be greater with black walnut than with almost any other timber, for the irregular twists which are apt to affect a forest tree deprived of its companions, while they would injure the value of pine, much increase that of the so-called fancy woods, by the variety in grain which they produce; and the gnawing of cattle, or the effects of wind or lightning, to which trees standing in open fields are liable, are all sources of new beauty, and consequent enhancement of price. As we have said before, we have seen a single black walnut log for which five thousand dollars was paid, and one gnarled and crooked tree of this species to the acre would give such a farm a great value.

THE great inventor, or, as he prefers to call himself, the "originator" of the Keely motor, has sent a communication to the directors of his company, announcing that the "focalizations" of the machine are now being made by his own hand, and on the tenth of the present month a test will be made before the directors, to be followed by public experiments in the hall which has already been engaged for the purpose. One cannot avoid a certain regret that the ingenious mechanician should not have selected the first of the month as the most appropriate day for the revelation of his secret, but ten days will make no difference in the practical result. Which of the machines is to be tested we do not know. A few months ago it was announced that the Board of Directors had been invited to ride over the Pennsylvania Railroad on a certain day, drawn by a locomotive of enormous power, from Philadelphia to New York, and on the appointed day a credulous director is said to have actually made his appearance at the station, bringing a friend with him to enjoy the novel sensation which had been promised; but no private railway train, or cold-water locomotive, or great inventor were anywhere to be seen, and the director went home disappointed. It is most unfortunate that this engine should not have been "adjusted" in time for the April exhibition, at which it would appear to much greater advantage than the stationary mass of cranks and levers which seems to constitute the other variety of Mr, Keely's machinery, but perhaps the great inventor is reserving that for his personal use, in case the result of the promised "showing up" of his devices should render it advisable for him to seek seclusion with as much rapidity as possible.

THE OSSUARY AND MORLAIX.

HAVE you ever seen an ossuary?" asked a young Englishman, on the train from Dinan to Morlaix.

"Well, no; we had not yet come across the animal."

"Oh, no, no; not an animal, but an ossuary — a bone orchard, you know."

We were obliged to admit that we had not even come across any bone orchards which had any particularly marked characteristics.

"Very well; what do you say to stopping off at Guingamp to-night, and making a little visit to this olfactory institution?"

"Agreed," said we, and then commenced a very pleasant acquaintance with our fellow-traveller.

It being evening, we went directly to the little hotel and called for our supper, of bread and butter, washed down with hot milk, a veritable *elixir vitæ* to tired and cold travellers. You have undoubtedly been in just such dining-rooms: a long table ornaments the centre of the room, upon which are a half-dozen black bottles which serve for the daily *vin ordinaire*. Of course there is no stove — there seldom is — and thus it is chilly. The walls are of that old-time, cold gravy-gray color, made by a white-wash in other generations, and are enlivened by pictures or lithographs. On one side is St. Sebastian in tropical costume, pinned to a tree by a dozen or more arrows; on the opposite wall hangs a mammoth oil painting by Rubens (all hotels have a mammoth oil painting by Rubens), representing a score of fleshy beings, also in tropical attire, and evidently performing the Virginia reel or something of a like nature. Bearing them company, also, was good Pope Pius, with that peculiarly saintly, Burton's-Anatomy-of-Melancholy expression; and, if I mistake not, beside him was a printed order of the Church, either an indulgence or a bull of excommunication, it matters not which. Without further observation we got to work at our bread and milk, and soon found that we were not the only guests, for in the little parlor was evidently a trio of the would-be actor class, who were having private rehearsals, no doubt, but which my chum declared were convulsions. A friendly crack allowed us to see the performance. Their exertions were continued until late into the night, while we, fairly tired out, rolled into bed after hearing the three hundred and sixty-fifth verse, the burden of which seemed to be continually: "*Je vous aime, je vous adore*," etc.

The next morning found us out on a tramp, and heading our steps towards the ossuary or charnel-house. Passing the old Church of Notre Dame, on towards the outskirts of the town, past old timber houses quaint with dormers, buttresses and angle turrets, we came at last to the object of our search, the burying-ground.

At one side, and near the entrance, is a low stone building, whose window-spaces contain no sash, and whose doorway is always unimpeded. Before entering, if you are of a nervous disposition, take a good pull at your vinaigrette, for the odor is not good, to say the least. The building is not large inside, and if you are not careful in stepping about, you may stumble over the skull of some old patriarch who years ago went to the world of cleaner surroundings, and, let us hope, sweeter air. Hundreds, yes, hundreds of little boxes lie scattered about, pell-mell, topsy-turvy, bottom up, some of them rank and not a little disgusting. From holes in the boxes, often heart, club, spade or diamond shaped, a "full hand" may be picked out, and from these holes protrude or peer skulls, grinning from ear to ear, and looking as if they were having the merriest time possible; sunken eye-sockets of men and women, who once walked and talked, and were of like fashion as ourselves, and many of whom are now, no doubt, held in sacred remembrance by those living in the little town. Even while thus pondering, a little girl runs up, and, seeing strangers, looks in with rather a timid glance. "What are you looking for, little one?" we ask. "Only for my papa," answers the little maiden, and she soon picks out one of the boxes from the pile, sets it up upon a little pedestal, counts her beads, probably asking the good Lord if it is not possible to have the place he had gone to prepare for his people in a little better odor of sanctity. Having done this duty before the boxed skull of her deceased parent, she slips away to her play.

We, too, had best withdraw, but not before sketching a dozen or so of these ghastly memorials, just as they lay in the pile. *Chef de Madame Boel; Chef de Henri Hamme*, 1860; *Chef Dame Derne; Chef de M. Roulle*, 1840, etc., etc. Thus we read the names of the occupants of the little boxes and withdraw.

And now, what does all this seeming mockery mean? Simply that an old form of religion among the Bretons, but now fast disappearing, allowed the dead to be buried in decent order for a few months only, after which they were exhumed, any desired part saved, and boxed as we see them, labelled with the name they bore in life, and kept as a perpetual remembrance of the departed—short and simple, but not sweet. Such barbaric treatment shocks us, and we wonder wherein was the comfort or consolation afforded by such an act. The only explanation is in the simple fact that the whole neighborhood was the centre of superstition and ignorance such as was nowhere else known in Europe. It shows itself in a dozen places, both by the beliefs of the people, by their ossuaries, by such curious festivals as the *pardons*, wierd pagan dances performed both by pilgrims and natives, and in some sections of the country kept up to the present day.

But we must hurry along to Morlaix, which we reach by crossing a high, massive, and double-arched viaduct. Look out of your window as you glide across, and you will get a charming view. A long and wide boulevard runs through the new portion of the town, branching off at last into a number of more picturesque ones, which are of course filled with dwellings. The town being in a narrow valley, many of these old houses are backed up by the heavily wooded hill-sides, not a few of them verifying the old adage of "stepping from the garret to the garden, as they say at Morlaix." In the market-place are gathered together groups of peasants, with broad-brimmed hats, thick, loose trunk-hose, bear-skin

clothing, and long hair hanging down their backs. Just place them now, in their different attitudes and employments, as on a market-day, back them up by the medley of houses, framed in open-timber work, covered with slate-work in patterns, overhanging story above story, the whole adorned with carvings of saint and sinner, bag-pipers or priests—place them thus, I say, and you get a picture, both in coloring and material, such as one never forgets, and which has been the basis for many a painting of old Breton life. The writer is not likely to soon forget this old place, I can assure you. His note-book runs somewhat thus: "Stayed three weeks at Morlaix; not that I wanted to stay so long, but I stayed. In fact I could n't help staying, for, like the old lady, I 'enjoyed poor health'; having the typhoid fever."

The night of arriving, such a rain-storm set in as only occurred once before — in the lifetime of Noah and his family. The beautiful old street running through the Morlaix valley became exceedingly damp, then actually wet, and at last each house became a bathing-house with water on tap; the furniture commenced floating, tubs, boards, chairs, tables and débris drifted through the street, until at last, many were the people who were obliged to flee for their lives from the second story windows, and escape by means of boa s The little stream which ran up from the sea only a few miles away had risen, and Morlaix was under water, and separated into two parts by the raging torrent. Meanwhile I had been, from the hour of arriving, three days before, running into typhoid fever, with no medicine procurable, and no doctor, save a Doctor of the Horse Marines, who, however, kindly offered his services, and nearly killed me with horse physic. Turn on now the full fever, and go with us, as bundled up in half a dozen robes, and carried by two men, I was placed in an ambulance, accompanied by my chum as a kind of pall-bearer in case of need, and driven to the *Maison de Santé*, or town hospital. Here numerous questions were asked as to my pedigree, and directions taken in case I need to be *sent* home, rather than go in the ordinary and more pleasant way.

A view of this French hospital may not be uninteresting. A long, whitewashed room, with twenty beds on a side, presents itself, nearly every bed holding some poor unfortunate. Number Twelve to-night gets an occupant, which fills up the complement on that side. On my right, within six feet, lies a woman; on my left another woman; beyond a man. Heavens, thought I, an American thorn between two French roses, and with many a sober thought, and a sickness at heart, tossed about all night long.

I cannot help thinking of three things in regard to that sickness. First, of being starved to absolute weakness, to kill the fever. Second, of the operation of cleaning the floor, performed three times a week, and in the night-time, when quiet ought to reign. The *modus operandi* was for two lusty fellows with huge rubber shoes to stamp up and down the aisle, with a motion somewhat like a horse in a mill, who walks and walks, but never gets ahead. Heaven help us! What a racket for a man or woman with only a small percentage of reasoning power left, and racked by a burning fever.

And lastly, would that I might sufficiently sing the praises of those Sisters of Charity, who, casting aside the allurements of the world, its pleasures and its homes, have dedicated themselves to watch those sick-beds, to anticipate the needs of all, and each morning and evening in the little chapel adjacent to tell over their beads in prayers for those under their care. I care not of what religion they be, their fidelity and kindness have touched many a stranger's heart, and caused him to exclaim somewhat after the manner of Tiny Tim, "God bless them every one."

Time passes on rapidly however, and sitting up in bed one watches eagerly for the bugler, who goes around three times a day sounding his *reveille*, and calling the troops to the barracks. I can seem to hear it now, away in the distance, gradually approaching, passing directly under my window, then gradually growing less and less distinct, until at last it is gone for the day.

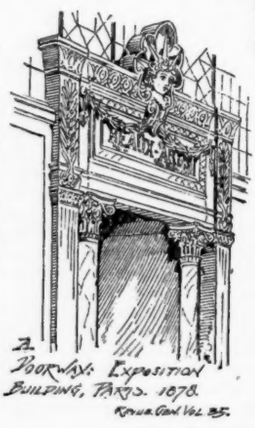
And then that Hospital Library, brought in by request, for my edification. Shall I ever forget it? The history of St. Cecilia, St. Paul, St. Peter, Pope Pius and the Romish Church; interesting reading, this, for the son of a Protestant clergyman. However, right here came the good offices of two monks, who made a daily visit. Upon seeing my dilemma, they brought me works of fiction, the hue of whose covers was of a beautiful golden yellow, and whose contents were far removed from the annals of the church, and of that airy, romantic, rich, and rare kind, calculated to warn (?) one from the world, the flesh and the devil. Sick on my back, and having before me visions of several hearty and rubicund monks, whom we had met before, I could not help thinking it might be even as the old adage puts it: —

"When the devil got sick, the devil a monk would be,
When the devil got well, the devil a monk was he."

As has already been noted, the architecture of Morlaix is mainly made up of the picturesque. The public buildings are few, and the churches fewer. One, however, reached by a long flight of steep, stone steps up the hillside, has some good glass, and a beautiful Renaissance font-cover. Like nearly all others, this church was injured at the time of the Revolution, while another, a Dominican Church, was so far destroyed that it was given up, and became a military store-house. Note opposite, a charming old bit, a tower with slate-work, in patterns, which was once a gateway, but now is in a dilapidated condition. Hundreds of little bits like the above are observable, indeed a sketch-book could be filled with them, for Morlaix is to Brittany, what Nuremberg is to Germany, the queen of picturesque places.

C. A. R.

PICTURES OF THE SEASON IN NEW YORK.[1] — II.



At the seventeenth annual exhibition of the Water-Color Society more than six hundred and fifty works were shown. Though there were none which can be said to have "made a sensation," few which shone out brightly as the indisputable gems of the collection, yet the average was very good indeed, and there were dozens which any school might have been glad to acknowledge. Figure pictures were more numerous, and more ambitious than ever before. Some of them were among the best things on the wall, while others, of course, were the most conspicuous failures that distressed us. Mr. Alden Weir held the place of honor in the large gallery with a life-size three-quarter figure of a Dutch girl going to church. It is rather a mistake, it seems to me, to paint an aquarelle on quite so large a scale, and Mr. Weir seemed, moreover, to have lost sight a little of the more specific charm of his medium in an effort after the solidity and strength of oil; yet it was an admirable work — securing that solidity and strength to a remarkable degree, and giving in the girl's face a true and striking piece of portraiture, instead of the unvital prettiness we more often find in figures of the sort. We felt that he had had a real individuality before his eyes or in his imagination — not merely a studio model. Mr. C. Y. Turner also showed a nearly life-size figure of a girl arranging flowers, which was good, though rather too uniform, in color, and very cleverly painted. Mr. Hamilton Hamilton's "Harvest Field" was a large drawing with many figures, well composed, but trying for this medium, and beyond the artist's power to carry out successfully.

[1] Continued from page 137, No. 430.

Mr. Kappes showed some negro figures that were equally admirable in character and in breadth, and deftness of execution. Few of our *genre* painters have so unmistakable a gift as he, and he is especially at home in water-colors. Fortunately, too, he is one of the ever-growing band who feel the wisdom of seeking material at home instead of among the traditions of foreign studios. Mr. Millet, who is always doing things one would not expect from him, sent a small Greek figure, "The Cymbal Player," that was beautifully drawn, and charming in color, but minutely worked up in a style which seemed an anachronism in an American workman of to-day — in the style of the English Pre-Raphaelite school. For those who prefer this sort of execution it was an unusually charming thing.

We had looked with pleasure to seeing on these walls a number of Mr. Winslow Homer's recent drawings — of those that were shown not long ago in Boston — since few of them had ever been publicly exhibited in New York. But he vouchsafed us only two—fine things, but not such as would have been most attractive to the general eye. One was a group of figures on the seashore seen through a thick mist —a marvellously beautiful work, both in the statuesque yet natural grouping of the figures, and in the way the fog was rendered. The other showed an overturned boat in the breakers, with several figures clinging desperately to its edge, and was valuable as proving that dramatic suggestion is another of this artist's many gifts.

Mr. Weldon, who made a great popular success last year at the Academy exhibition, with his pictures of Japanese dolls, here touched a similar note again. He had two large drawings called "The Flirtation" and "The Elopement," with a Japanese doll and a Parisian puppet as their *dramatis personæ*. Real dramatic talent was shown in their characterization; real skill in their composition; much instinct for a decorative sort of color, and a charmingly dainty touch. It is all the more to be regretted, therefore, that the painter should have allowed himself to prefer the instant but shallow fame he will doubtless get by the treatment of such trivial subjects, to the worthier appreciation that would have followed a more sensible and artistic choice of theme. If incapable artists choose to spend themselves on foolish subject-matter we do not greatly care. Indeed, we would rather have it so than see them fail more grievously in attempting better things; but we have so few really clever workmen that we cannot composedly see one of them thus throwing away his gift.

The two young Morans were again prominent with work which if it did not show much thought showed an extreme felicity of hand; and Leon Moran's "Outpost, 1776," deserved even higher praise than this; in drawing it was extremely good. Mr. C. Y. Turner also sent a very good "Study of a Head;" Mr. Mente's "Bavarian Interior" was especially good in its management of light; and Mr. Newell's rustic figures were well conceived, but painted in a rather streaky way that once seemed the fault of a beginner, but now appears to have grown into an unalterable mannerism. It is a pity, because he has genuine power of characterization.

Mr. F. S. Church showed one of his curious, eccentric yet always artistic fancies in a figure called "Pandora." As usual he had remodelled his myth to suit himself. The very American little figure in soft pink draperies was kneeling on a large carved box, trying to confine a cloud of hideous little imps, made in the likeness of newly-hatched birds, who were escaping rapidly in spite of all her efforts. The power of characterization, both in Pandora's face, and in the impish figures, redeemed the work from triviality, and the execution was quite masterly in the solid impasto method Mr. Church has made his own.

One of the most charmingly painted figures in the rooms was Mr. Dielman's "Between Sittings." Conventional in subject — merely a pretty girl in rather old-fashioned dress looking at her half-completed portrait—it was admirable for its drawing, its color and its rendering of textures. A trifle more of — what shall I call it? earnestness, imagination, thought? — would put Mr. Dielman in the first rank of our painters. His work is charming, but it has not depth of intention or originality of mood, and so we never feel that he is doing all he might or should.

These are by no means all the good figure pictures that were shown, but all, perhaps, which call for special mention. I may note, however, for another reason a group of frames in one corner of the gallery, which contained some of the most amusingly atrocious bits of work it was ever my pleasure to inspect. So bad were they, so original and entertaining in their badness — not so much to the student of art as to the student of humanity in suggesting the curious souls that must have given them birth — that we suspected the hanging committee had placed them "just for fun;" indeed, I have heard it whispered that such was actually the case. No one with a sense of humor could regret their presence; but we made a mental protest, nevertheless, on general principles, against such a way of fulfilling one's obligations to artists and the public. The sense of humor is not one which should be cultivated by a hanging-committee while at work — especially as a large proportion of the public is devoid of it where pictures are concerned, and many certainly took these curiosities as seriously as their authors meant them. It was in still worse taste, however, to hang over twenty little pictures of wind-mills all together in another portion of the corridor. This, doubtless, was also intended for a joke, but it was a poor one, doing great injustice to those among the drawings that were worthy of attention. A score of renderings of any subject might have mutually killed each other, but with a score of straggling wind-mills this result was certain. While I am on the subject of hanging I will add that in the large gallery, on the other hand, a serious and well-intentioned effort had been made to show the pictures to the best advantage, and give the room as harmonious a look as might be. The drawings which were palest in tone, many of them almost white, were hung at one end, and at the other those that were darkest, a graduated series being placed between them. There was a difference of opinion as to the success of the device, but to me it seemed better than the usual careless juxtaposition of pictures quite unlike and mutually detrimental in their tone.

Going back to my proper theme now, I will say that the landscape work was very good. We missed Mr. Currier's eccentric but imposing strength, and Mr. Muhrmann's and Mr. Twachtmann's strong individualities; but Mr. Homer Martin repaid us in part by some exquisitely artistic and tender landscapes, full of feeling, and full of power as well; simple in theme, but handled with a soberly delicate skill that few aquarellists in any land can equal. Mr. Farrer always paints in the same mood and the same manner, and this year his examples were very good after their own kind. Mr. Harry Chase's sea views, too, were much as usual. He is so good a workman that we always wonder he does not do something more important — something that has less the look of the pot-boiler, and more of serious conviction. Perhaps it is the public's fault, however, and not the painter's. Mr. William Chase had a very strongly handled sketch of a Dutch seacoast, in which the water was powerfully given, but in which the white sabots of a fisherman struck a discordant note of color. Mr. Frank Lent sent a small snow scene, which in spite of its inconspicuous simplicity was one of the best landscapes on the wall. Mr. Dewey, Mr. Harry Fenn, Mr. Gifford, Mr. Quartley, Mr. Tryon and the brothers Smillie were all well represented. Mr. Ross Turner was one the notabilities of the exhibition, by reason of a large and admirable drawing called a "White Study," showing under a very pale sky a large white steamer drawn up by a wharf. In subtile management of tone, and in delicacy of handling it was alike remarkable; and I can never refrain from admiring comment when a painter chooses the better part, and brings artistic beauty out of a theme which is local and characteristic, and so most often is regarded as useless for his purpose.

Such themes are indeed difficult to treat, since a man must depend so much upon himself and so little upon precedent and example. But this fact makes a success like Mr. Turner's doubly valuable, since what we want in art is not repetition, but variety of outlook, and what we want from an artist is himself, and not an echo of another brush. I was glad to see that this picture was among the very first ones sold. Architectural subjects were more prominent than usual, and very charming they are in water-colors, whether treated from an architectural or a merely pictorial point of view. Mr. Hopkinson Smith had some admirable examples from Spain and Venice, the "Entrance to the Alhambra" being especially good. Nor should I forget his spirited view of the Hague as seen from the water. Mr. Henry P. Smith, well-known for his minutely handled yet not inartistic sea views, had this year turned his eyes inland and painted some large pictures that were almost impossibly full of detail. We felt almost as though we were looking at the real thing through a glass which diminished size, instead of at a picture — not the best feeling to have, of course, in front of a work of art. Yet there was so much verity in these works and so much skill of a certain labored sort in their execution that we could not condemn them as we commonly must condemn attempts of this description. Mr. Colman was another portrayer of architecture, working rather more elaborately than Mr. Hopkinson Smith, yet not without sufficient breadth and sometimes with much charm of color. Mr. Charles Platt, who made his earliest reputation as an etcher, appeared now as an aquarellist of no little strength. His Dutch views were especially good in composition and very free and strong in touch. Mr. Thomas Moran showed much interesting work, some of it marred, as usual, by an attempt to give very strong color, which resulted in a pyrotechnic and unnatural gorgeousness. Perhaps I should say inartistic rather than unnatural, for nothing could be farther from average natural truth, I imagine, than the extraordinary intensity of color in the scenes Mr. Moran so often chooses — scenes from the fantastic world of Mexico and our own southwestern land.

The flower paintings were numerous, but not very remarkable except in a few cases. By far the most remarkable, one of the two or three fine works in the exhibition, indeed — was Miss Kate Greatorex's "Incense." It was a very large picture showing a smoking incense-lamp overturned on a table amid a mass of gorgeous roses. One hardly knew which to admire the most, the careless-seeming yet effective composition, the splendid color, or the very free and sympathetic touch. It was water-color painting in its most characteristic shape, pushed to its utmost limit of breath, rapidity, and "blottiness," yet not losing itself in the least in carelessness or confusion or mere decorative effect, but securing all at which it aimed — color, atmosphere, texture, vitality and strength. Truly, from every point of view it was a masterly piece of work. I am not sure that I ought not to have said it was the very best thing in the collection, without any compeer whatsoever. Mr. Weir displayed once more his peculiar art of painting flowers in a dainty, reserved, and spiritual way. But he was beaten on his own ground this time by M. C. W. Reid's tiny "Roses." I do not know the name — it is a lady's, doubtless, and possibly she may have been trained by Mr. Weir himself.

I must not forget to add that a very distinct success was made by Mr. Monks with his pictures of sheep. His landscape settings were delightful in color, his composition was as natural as it was artistically telling; and his rendering of his awkward, scrubby, yet pathetic little beasts was so vividly truthful that we wondered how the world could ever have tolerated the conventional travesties to which it has so long been used, and for which, perhaps, Verboeckhoven is largely to be blamed. Tiny as were Mr. Monks's figures there was more life and vigor and nature in one of them than in a whole gallery of average paintings of so-called sheep.

The etchings of the year were shown, as usual, in conjunction with the water-colors. They were more in number than last year and better in quality as well. Some new practitioners appeared and gave much promise, and the well-known reputations were worthily sustained. Mr. Thomas Moran showed a notable advance in strength of touch and unity of composition. A large plate showing an old orchard was a really admirable thing. It seemed to me that Mrs. Moran, on the other hand, had lost ground — had fallen into a confused way of conceiving her subject as well as of treating it. Mr. Platt sent some charming things, and Mr. Pennell others as charming in his very different way. But he sometimes loses sight of the truer qualities of his art, and gives us results which, attractive indeed, are more akin to pen-and-ink in their quality than to typical etcher's work. Mr. Parrish was as usual — and that is very good. Altogether we had no reason to be discouraged over the condition of this branch of our work, or to fear that our new love for etching is (as has been more than once proclaimed), merely a passing fashion with no deep and serious root. More than ever before the work this year *was* serious.

Financially the water-color exhibition was not a great success. The attendance was good, but the sales were chiefly confined to works which were marked at modest prices. A large number of these were disposed of, but the total mounted up only to some $15,000. I do not think this proves that the public took less interest than usual in the art — only that its pockets were less deep than of yore they had been, for, I repeat, the number of works sold was about as large as usual — only the chosen ones were less expensive. Nor is this to say that poor art flourished while good art was neglected — for much of the best work in the rooms was unpretending both in size and price. The etchings, too, sold very well.

M. G. van Rensselaer.

THE ASSOS EXPEDITION.

THE following correspondence between Professor Charles Eliot Norton, President of the Archæological Institute of America, and Edward C. Cabot, Esq., President of the Boston Society of Architects, regarding the work and financial condition of the Assos expedition, will be read with interest: —

Boston, March 20, 1884.

Charles Eliot Norton, Esq., President of the Archæological Institute of America: —

Dear Sir, — The Boston Society of Architects has charged me with the agreeable duty of conveying to you, as President of the American Institute of Archæology, the congratulations of the profession upon the work accomplished by your expedition to Assos. We desire, also, through you, to thank our brethren, Messrs. Clarke and Bacon, and the other members of the expedition, by whose skill, energy and fine spirit of self-denial this valuable acquisition to our knowledge of Greek architecture has been rendered possible. The contribution of the Boston Society of Architects to the expenses of Mr. Clarke's first expedition in search of new evidence concerning the Doric order was intended as an expression of its desire to know more of the principles underlying the development of Greek architectural forms; for to these principles, in the midst of the complications and sophistications which inevitably beset all modern works of design, we must continually repair for correction, inspiration and refreshment. The later and more fruitful expedition was the logical continuation of the first.

These successes, therefore, are grateful to this society, not only because they seem in a manner to justify its first expenditure of means, but principally because this new exposition of the Greek spirit has proved far more complete than the most sanguine friends of the enterprise had anticipated. It has shown us the Greek architect experimenting with forms, and profuse in invention, yet always with self-denial and a just reserve of force; it has given us, perhaps, the best lesson yet derived from Greek antiquity in the grouping of buildings; it has thrown new light upon the divine virtue of simplicity in art; it has given us substantially the only examples of the practice of the Greeks in domestic and civic works; and, in short, it seems to have brought nearer to our sympathies and comprehension that spirit which the conditions of modern architecture require as a corrective and purifying force. We therefore anticipate with interest the moment when the results of this expedition shall be made practically available to the profession in the forthcoming report, which we hope may be as full and complete as possible, especially in respect to drawings.

This Society, in continuation of its policy of contributing to the extent of its limited means to the advancement of architectural knowledge, has authorized me to convey to you its offer to appropriate the sum of $500 towards defraying the expenses of printing the report of the expedition to Assos, and to indicate its intention to raise such additional sum, if any, as may be needed for the purpose, it being understood that the total amount is not to exceed $1,000.

Respectfully yours, Edward C. Cabot, President.

Cambridge, March 25, 1884.

Edward C. Cabot, Esq., President of the Boston Society of Architects: —

Dear Sir, — I had the pleasure to-day of laying before the Executive Committee of the Archæological Institute of America your letter to me of the 20th instant, and I am charged by them with the expression of the gratification which its contents have given them, and of their grateful acknowledgment to the Boston Society of Architects for the substantial and timely contribution it proposes to make toward defraying the expense of printing the second report of the expedition to Assos. The income of the Institute is so much narrower than its opportunities for service in its field of work that such a contribution is especially welcome. Its chief value, however, is in the testimony it affords of the sense of your society of the importance of the work accomplished by the expedition to Assos, of the novel character of the acquisitions made by it in the domain of Greek architecture, and of the permanent worth of its results to students of the art.

This testimony, coming from a body so eminently qualified to speak with authority on the subject as the society over which you preside, and expressed by you in terms at once decisive and convincing, while it is in the highest degree gratifying to the Institute as a proof that it has succeeded thus far in accomplishing one of the chief ends of its existence, is equally stimulating to it to undertake fresh investigations upon classical soil that may make still further additions to knowledge of that ancient art which remains so full of instruction and interest to students and artists of the present time.

The Executive Committee of the Institute recognize their past debt to the Boston Society of Architects for its contribution to the original expedition of Messrs. Clarke and Bacon, and their further indirect but essential obligation to it in the fact that these gentlemen were members of the Society — a fact which gave assurance of their character and ability. The Committee will have pleasure in transmitting a copy of your letter to each of these gentlemen. They venture to request you to bring the services of Mr. Robert Koldeweij, of Hamburg, who has had charge of some of the most important investigations at Assos, to the attention of your Society, in the hope that it may think proper, upon consideration of his part in the joint labors on the site, to convey to him a distinct expression of the appreciation of the excellence of his work.

The Committee desire me to state that the fact that the means for the publication of the forthcoming report have been provided by your Society will be stated upon its title-page, and your letter to me will be printed as prefatory to the report itself. The great mass of material to be digested, and the large number of drawings to be prepared for the report, will probably delay its appearance for at least a year.

I have the honor to be, with great respect,

Faithfully yours, Charles Eliot Norton,
President of the Archæological Institute of America.

THE ILLUSTRATIONS.

RESULTS OF TESTS OF THE TRANSVERSE STRENGTH OF BEAMS. — PLATE IX.

For description see article on the "Transverse Strength of Timber."

ACCEPTED DESIGN FOR THE CITY-HALL, ERIE, PA. MR. D. K. DEAN, ARCHITECT, ERIE, PA.

HOUSE AT BUFFALO, N. Y. MR. J. L. SILSBEE, ARCHITECT, SYRACUSE, N. Y.

"THE PORTLAND," WASHINGTON, D. C. MESSRS. CLUSS & SCHULZE, ARCHITECTS, WASHINGTON, D. C.

THIS building, the property of Mr. Edward Weston, is situated on Vermont Avenue to the south of Thomas Circle. It has six stories above the basement. The basement contains all the desirable accommodations for a caterer and superintendent of a building, such as a kitchen with six French cooking-ranges, steam-tables, oven, pastry and store-rooms, scullery, china-rooms, wine cellar, laundry, steam-drying and ironing rooms, trunk-rooms and meter-room, with separate gas-meter and piping for each flat, tubular boilers and pipe system for a low pressure steam-heating apparatus; steam-boilers and steam-pumps for raising the water supply for the upper stories and for two hydraulic elevators to huge iron tanks on the roof. This basement communicates with the story above by but two carefully-guarded doors, in fire-proof wells, and is otherwise completely cut off. The first story is reached by three main entrances from both adjoining streets. Then two suites of rooms, each consisting of parlor, dining-room, three chambers, kitchen, pantry, servants' room and bath-room, which are grouped around a private hall. Also a smaller suite of rooms, and a tastefully-arranged and æsthetically-decorated drug-store, with the proper appendages. The second, third and fourth stories contain each three large suites of rooms, as described before, and three smaller suites, embracing parlor, one or two chambers, library, bath-room, etc., around the private passage. The fifth and sixth stories contain each nine of the smaller suites just described. This aggregates thirty-nine suites of rooms of various sizes. All the larger suites communicate with the basement by dumb-waiters and by dust-shafts in solid brick shafts.

Two sets of main stairs lead from first to sixth stories, with ventilating sky-lights. These stairs are constructed with wrought-iron carriages, have steps and landings of slate or cast-iron, and ornamental metallic railings. The service stairs are similarly constructed,

reach from basement to the roof, are enclosed by heavy brick walls, and are accessible from each story. Their ceiling on the level of the roof is formed by the bottoms of the wrought-iron water-tanks for house service and supply for the elevators.

The elevators are of the most approved make, and combine the most valuable improvements in safety appliances. The one in the southern part of the building is of the make of Otis Brothers & Co., of New York, and the one lately put in in the north part is by the Whittier Manufacturing Company of Boston. Under the latter machine there is a so-called air-cushion, consisting of a slightly-tapered square shaft of heavy brickwork, by which the speed of a falling cage is gradually arrested by air-pressure, so as to land any passenger safely below the level of the basement. The first-story floor, which cuts off the basement, is constructed of concreted brick arches, spanned between rolled-iron beams. The platforms and corridors around staircases and elevators consist of marble tiling upon fire-proof arches through all stories. The floor-joists of the rooms and halls, from second story all the way up, are protected underneath by ceilings formed of slabs of porous terra-cotta, and above by double floors, with an intermediate heavy stratum of plaster-of-Paris.

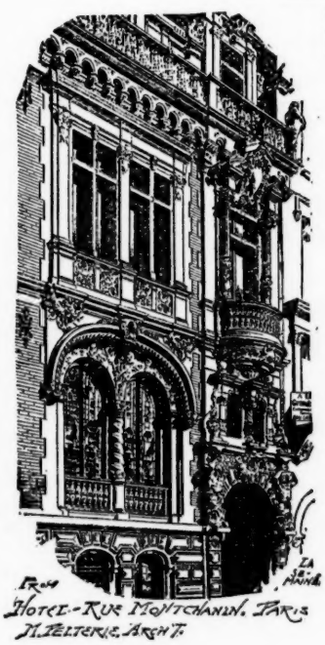
The bay windows, five and six stories in height, are all secured in themselves, and to the main walls, by cradle work of flat iron, repeated twice for each story. There are no studded or lathed partitions in the building; these are supplanted by light walls, composed of fire-proof blocks. The tower is constructed of solid brickwork up to the slates of the cupola. In a courtyard, a double system of vertical iron ladders is extended along the walls up to the roof.

The exposed wood-work of the interior is framed of combinations of cherry, oak, ash, and white pine, with occasional frieze ornamentations in color, all oiled and rubbed to dull faces. Most of the rooms have open fire-places, fitted with iron facings, andirons, and movable half-low down grates. Those in the parlors have rich ebony mantels, ornamental tile borders and hearths, and are surmounted by beveled mirrors. Where suitable, modern Turkish portières are hung in the place of doors.

The external architecture of "the Portland" is kept in modern Renaissance based upon the traditions of Italian art during the *cinque cento*. The walls are about 82 feet high, and are relieved by a rich attic above the fifth story. The extreme height of the tower above the green sward surrounding the building is 130 feet.

This enterprise represents an investment exceeding $350,000.

COLORED GLASS.[1]—II.



So long as this so-called white glass was mainly as low in tone as the colored, only one object was attained, but it was attained without a sacrifice of harmony; directly the white glass admitted the light freely the whole window was out of tone, and the spectator was blinded with the patches of light. The third cause was the insane attempt of the glaziers to vie with the painters, when they could already produce more divine things. They lost the reality to seize the shadow; accuracy of form, roundness, shadow, perspective and aerial tints, so proper and excellent in a picture where the light is reflected, were absurd in a transparent material where the light came through the figures, and where the sun blurred or destroyed every outline; but for all that the glaziers came down with their glory in the heavens to strive on earth with the painters, and to be ignominiously beaten, and until the end of the fifteenth century we gradually pass from poetry to prose. A round or a cusped line in the old glass was a sort of note that a niche was meant, but afterwards the architecture was nicely drawn, at first gilt and colored, but gradually it became white, with the carving only in pale gold, and filled more than half the window; the figures, too, became better drawn, but their white mantles filled the larger part of the space left, the under-dress, the background of the niches, and the little left of sky beyond the architecture were alone deeply colored; even the flesh became at last white; and this preponderance of white threw the whole scheme of color out of tone. There were, of course, clever fellows amongst the glaziers, and the velvety quality of the white, like the texture of a cumulus cloud, is fascinating, but the capacity of raising emotion was gone.

In the twelfth and thirteenth centuries the sun adds additional glory to the windows; in the fifteenth and sixteenth it rather spoils them, though you must understand that this does not apply to the fifteenth-century windows of Florence cathedral.

By some stroke of luck Florence was to raise again the art to something like its pristine glory, and yet the Tuscans were no colorists. Ghiberti gave some designs for windows in the cathedral; an Italian gentleman had been studying the glazier's art in Lubeck, and is believed to have been putting windows into Holyrood Palace when he was sent for to execute these windows. He established himself in Florence, and executed these and other windows in the cathedral designed by other artists, those in the chapels being the most lovely. Here, again, white was banished, but gold and emerald were the predominating colors, instead of crimson and azure. When the sunlight streams through these windows you ask yourself if they are the rivers of health that cure all human ills, and fancy that the angels come to bathe their wings in this emerald and golden glory. Nothing is so beautiful as the windows at Florence but those at Chartres.

I must not omit a notice of the fourteenth-century windows. The most glorious of these that I have seen are those of the Chapter-house at York; subjects in patterns filled in between with jewelled grisaille, of so low a tone, and so lovely and varied in color that it vies in beauty with the colored glass. Unfortunately one window was destroyed; it was replaced with a modern one copied from the old, but of such a wretched quality of glass that the light admitted differs but little in intensity from that which would come through ground glass, and makes a painful blot in the building; there are, too, some finely-colored subjects in the aisle windows of the nave, but set in white, with clear glass borders much too wide, and patched with rubbish, so that the windows look like a caliph's coat that has been worn by a beggar; you are so blinded by the sun coming through the slits, holes and patches that you can scarcely see the beauty of the original stuff. The large west window and the large south window of the first transept of Canterbury Cathedral are glazed with panels of the old windows, some oblong, and some of the form of the *vesica piscis*, but with pure white borders, and apparently white tabernacle work in the tracery of the heads. These have a very good, though perhaps a curious, effect; the white is not the translucent velvety white, but jewelled white, and at a distance the effect of the windows is that of white jewelled windows, with a slight introduction of color — an effect by no means to be despised. At Fairfield Church the windows are of the end of the fifteenth century, and though of unequal merit, contain many beautiful harmonies, and their drawing elicited the admiration of Van Dyck; one window on the south side is very beautiful, nearly all white, but the shading, which is of a rich brown, gives towards evening the effect of brown mother-of-pearl, all the figures have white mantles, and only small pieces of the colored dresses are seen — crimson, claret, deep yellow. There are also many deep harmonies in the north clerestory of the nave, but generally much lighter in tone; but windows of the north side must necessarily be more transparent, as they get no sun.

There are beautiful and original harmonies in some of the clerestory windows of the choir at Cologne, in the side chapel at Strasburg, and in the transept at St. Maurice, Angers, at Pisa Cathedral, in St. Petronio at Bologna, Sta. Maria Novella at Florence, and elsewhere.

One of the most beautiful windows I have seen of the clear variety is the one of the fifteenth century by Vivarini in St. Giovanni e Paulo, at Venice; the subject is St. George killing the dragon. St. George is in steel armour, on a chestnut horse, transfixing the green dragon in a green field, behind him the blue distance, purple mountains and blue sky. Signor Boni was kind enough to get this copied for me by Signor Alessandri, as I could not find that it was published.[2]

In a choir at the Cathedral of St. Maurice, Angers, there is a window of the giant St. Christopher carrying the infant Jesus on his shoulders and wading through a stream; the sky is blue, and so is the water, and the saint has a mantle of deeper blue, with a bit of apple-green vest showing above it, and a crimson scarf; his face and limbs are bronzed with the sun, his hair and beard are tawny, and with his staff of golden brown he steadies his steps; the infant has a fair chubby face with Italian features, a little light golden curling hair, and a nimbus, and is dressed in black; the black robe cuts against the blue sky, the blue mantle, the bronzed face, the tawny beard, and also against the crimson scarf, and altogether is one of the most striking and original harmonies I have seen, although it is clear and uniform in tone, and consequently misses all the jewelled glow and sparkle of the finest glass.

Von Linge's enamel windows may be fine when strong sunshine is on them, but in ordinary daylight they are nearly as opaque as a canvas.

If you want to see the effect of churches wholly lighted by stained glass go to Fairford, to Strasburg Cathedral, to St. Etienne du Mont at Paris, and thence to Florence and Chartres, and to some of the mosques and houses in Egypt.

As to the application of glass it is needless to say we do not want a brilliant light in cathedrals, in churches, in the halls of the courts of justice, so pathetically called by the French the halls of wasted footsteps; in the halls and staircases of great public buildings, palaces and private mansions; and the size of the windows in such

[1] From a lecture by Mr. G. Aitchison, A. R. A., delivered at the Royal Academy, on Monday, February 25.

[2] We shall give a drawing of this window shortly.

places may be enlarged to make up for loss of light. In these, stained glass of the most splendid quality may be put, glass of the quality of the finest of the twelfth century, or of that of Florence; but of course, as far as the figure drawing and composition go, we want to have the best that can be got, and I may here remark that when this jewelled brilliancy and depth of color is got, all decorative wall-painting must be simple and unobtrusive, and not try to vie with the gorgeous colors of the glass, but leave spaces comparatively plain for the eye to rest on. I never saw the windows of the Ste. Chapelle in Paris lighted by the early morning sun, but in ordinary daylight the effect of the rich painting and gilding lighted up by the still richer windows is oppressive, and we long for plain stone-work or white windows.

But this quality of colored glass is not suitable for living-rooms; in these we want but little deep or positive color. If the outlook is pleasant or necessary, the coloring must be confined to window borders, and the colors must be sober, such that will not dazzle, fatigue or annoy us. Slight color may be successfully used where a blank wall or an unpleasant prospect is to be shut out. In picture galleries and other places where pure white light alone is wanted, we must banish color if we cannot so blend it as to make pure white light; still, there is ample opportunity for much to be used, if it be but to give a little interest and warmth where half the year the prospect is most dreary, chilling and forlorn. Nothing is prettier than to turn a skylight into a pergola, with vines and grapes, or to cover it with leaves of the Virginia creeper, or even with some pleasant pattern. A little color with much human skill is mostly a pleasant object.

It is mainly owing to the Gothic revival that stained glass has been awakened from its long sleep, and has spread itself to such an amazing extent. Not only are the churches and cathedrals being filled with it, but it is rare occurrence to find a new building or house of any pretension without some specimen of stained, painted or enamelled glass.

Where the avowed object of the promoters of stained glass was imitation we cannot blame those who executed it for producing imitations. The stereotyped phrase of one at least of the great deceased architects was: "What would a thirteenth-century architect say of this?" and if it was not the phrase it was the thought of many other deceased architects, who, if less able, were more influential. Though we are now beginning to deplore these forgeries, whether in stone or stained glass, we must bear with what has been done, at any rate when it is not too abominably bad, and only hope that in the future the glass and the stone may bear the stamp of the century in which they are fashioned, that the figures should at least be well drawn, and the writing be that of our own day. The present European costume is so ignoble that I fear it is beyond the power of art to fit it for a picture. To the best of my belief I have never seen a modern imitation of a twelfth or thirteenth century window that could be mistaken for a first-rate old one. The best imitations I know are those of the Ste. Chapelle, and, possibly, they might be taken for bad windows at the time, though the whole tone is too uniform. I do not say this out of any love for antiquity. I would, on the contrary, much rather think that the modern windows are the best. "The past is nothing, and at last the future can be but the past," but we must not shut our eyes to facts, and we must so use the works of the past as to enable us to excel them.

The glaziers tell us that the glory of old glass depends on its age, the decay of the glass, and its being partly covered with dust, the particles and oxides of the metals and lichens. But hear this from a glass-maker: "Decay, undoubtedly, tends to harmonize the colors of glass, but there are specimens of ancient glass which show no signs of decay, and which, nevertheless, possess a softness and depth of color which have seldom been attained by modern manufactures. . . . . The effect of old glass lies deeper than the surface, and depends upon its chemical and physical nature. . . . It resembles in its physical nature horn rather than glass. It is translucent, but neither appreciably refracts nor disperses the rays of light, merely sifting them, and suffering them to pass."[1]

Viollet-le-Duc also has some remarks to the point: "The inequality of thickness in the glass which renders it so hard to fix in the lead is one of the conditions of the harmony and vivacity of the tones; when the pieces of glass are flat and of equal thickness, the light strikes all the pieces in a window at the same angle, and a uniform refraction ensues; but when these bits of glass are full of knobs, and unequal in thickness, they present to the light surfaces which are not on the same vertical plane, from which result varied refractions, adding peculiarly to the brilliancy of the tones and contributing to the harmony; thus it is that in matters of art the perfection of the product is often in inverse ratio to its effect."[2]

It is only necessary to see the best modern imitations of twelfth and thirteenth century glass in the same building, with fine old glass of the time, to be convinced that the statement is the result of a hallucination; the inferiority is too marked, the colors are less rich and less deep, and consequently no amount of obliteration will raise them to the level of the old glass.

Still, no one who has examined old glass can deny that it is generally nearly covered with dirt, that its outer surface looks worm-eaten, and some of it is often semi-opaque; chemical changes have added to its beauty, they have changed white into opal, and stress of wind and gravity have bulged the surface into hills and hollows, and so added to its tones, and dirt has contributed to its jewelled effect.

The most successful imitation of early fourteenth-century glass I have seen is the large north window in the transept at Durham, by Messrs. Clayton & Bell, which has the throb and sparkle of old glass; but when we come to a later period, to the velvet white, and to the still more beautiful pale-brown mother-o'-pearl, the imitations are excellent.

The clergyman of a country parish, even if he be a man of taste, cannot always prevent an abominable stained-glass window being put up by some wealthy parishioner; but surely in London, with a Royal Academy of Arts for an umpire, our public monuments should not be disgraced by the admission of abominations, about which they are not even consulted, though there may not be a professed glass-painter amongst them.

The south windows of the transept of Westminister Abbey might well have been enlarged from those in the plaster churches with a candle in them that are hawked about, and must make us a laughing-stock to all people of taste. Are they even equalled by the modern stained glass in Cologne Cathedral?

As to the prospects of stained glass, I said before that its extension has become vast, and of the prose sort there are beautiful and original varieties containing new harmonies of restrained color, or, to say the least, harmonies that are new to me, and even if they have been extracted from minor harmonies in old glass, we should be none the less thankful; to bring into prominence overlooked beauties is a genius in itself. I may point to some of the windows in the eating-rooms of the South Kensington Museum; graceful designs may be found in the Holborn Restaurant and the First Avenue Hotel. Still I must say that, in comparison with the glorious deep-colored jewelled glass, these prose varieties are like reading mellifluous poetry to yourself in comparison with hearing divine music sung by a genius. There is, however, one development that is absolutely new and lovely; three east windows in the aisles of Christchurch, Oxford, by Messrs. Morris & Marshall, designed by Mr. Burne Jones; the upper tracery of one window is filled with sage-green foliage, almost opaque at a distance, the tracery being only marked out by the white edges of the glass, so that our attention is not called away from the main subjects. In the lights are saints and prophets all in white, each one nearly filling the space between the mullions, the deepest color being the flesh and hair, and the whole of them are crowned with streaky pink nimbuses; the figures are walking on yellow gravel, and the background is of drapery in indigo and dull red, and semi-opaque; the other windows have angels, also wholly in white, whose blue wings form the background; below are slightly colored subjects on a white ground. It is something to say that we have found an original genius in stained glass.

It is scarcely necessary for a rapturous admirer of stained glass, who never looks on the windows of Florence or Chartres without feeling that if the dreams of youth could be realized, instead of being a saint, a hero, a poet, or a lawgiver, he would be a glazier, to defend the word; but there seems to be a notion that this word has something derogatory in it. No artist is shocked because he is called a painter, and it seems foolish when we have the word "quince" to call it an "apple of Cydonia." The master glazier was once as well paid, and consequently as well thought of, as the master builder or architect, and is probably very much better paid now than the architect. You will bear with my being prolix and discursive if by so doing I can save hurting any man's feelings.

I think no painter but Mr. Dicksee has ever given us a stained-glass window, and it is curious if stained glass has appealed more to the poets than the painters, but it may be that these have felt how impossible it is to give this colored light. It is needless to say that the ordinary sketches, drawings, and chromo-lithographs only give vague hints of the colors, still they are useful and occasionally interesting. Some wags have published books of old stained glass, where nothing is given but the outlines in black and white; as color is *the* point in stained glass we might as well have a book on the Greek statues in which the color is given without the shape.

The poets have naturally been much struck with the beauty of stained glass. It is unnecessary to speak of "storied windows richly dight," or the Laureate's:—

> "And thunder-music, rolling, shake
> The prophets blazon'd on the panes."
> *In Memoriam*, canto 86, stanza 2,

for you all know them.

But possibly Keats's lines are not so well-known:—

> "And diamonded with panes of quaint device,
> Innumerable of stains and splendid dyes,
> As are the tiger-moth's deep-damask'd wings;
> And in the midst, 'mong thousand heraldries,
> And twilight saints, and dim emblazonings,
> A shielded scutcheon blush'd with blood of queens and kings."
> *The Eve of St. Agnes*, stanza 24.

Painters are nothing if they are not colorists, and I often wonder how it is that more of them do not turn glaziers, when I think of the delight magnificent stained-glass windows can bestow upon mankind; it is not only that they can give us a feast of color unattainable by other means, but that there is an infinite field for Scripture, historical and portrait subjects, that is unfortunately almost closed to any other form of art, in which the noblest forms, the most subtle composition, and the most original harmonies may be indulged in, if they will not forget that it is light they are dealing with, and not a canvas,

[1] Technological Handbook, "The Principles of Glass-making, 1883," pages 95, 96.
[2] Viollet-le-Duc, "Dict. Raisonné," art. "Vitrail."

and remember Theophilus's remark that he had sought "by what subtlety of art and variety of color a work may be adorned and may not exclude the light of day, nor the rays of the sun."

Painters do occasionally give cartoons, even colored ones, but unless the painter is a glazier too, the color is not much more than a hint that the colors indicated may be tried to see if they will make a harmony in glass. The cartoon will tell him neither how the colors will be mutually affected when the light streams through them, nor how the whole will look 50 feet above the eye; much less will it tell him how the window will look in sunshine. If it takes ten years to learn the art of using oil-paint, to use colored glass will not come by instinct.

Although the designing and making colored, stained, and painted glass windows is artist's and not architect's work, I trust that the remarks I have made to-night on this splendid adjunct to your buildings may not be looked upon by the architects as a useless waste of their time.

If our art should be fortunate enough to attract to it a man who, like your President, shines in all the arts, glass-painting may be a subject worthy, not only of his consideration, but of his talents; it may afford, too, an almost unlimited scope to artists for employing their skill, from the slightest suggestion in enamel to the glorious richness of transcendental color, and without debarring them from the use of noble form and masterly composition, if they will only deign to consider that the paramount object, at least in the fuller variety, is lovely color and not bad pictures.

Colored glass is, undoubtedly, for the colorist, the means by which the highest effects of color may be reached, and, for the lover of color, the means of producing a rapture analogous only in its effects to that produced on musical devotees by the finest music without words.[1]

TRANSVERSE STRENGTH OF TIMBER.[2] — IX.

No. 53.— Hard-pine (Savannah), 3½″ x 14″; span =24′ 6″.
Weighed 342 pounds.
Large ring shake about 12′ long at centre.
Straight grained; no knots.
Tested by Messrs. Chase, Gale & Hutchings.


53

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
276	.0000		
576	.0797	.0797	
1076	.3326	.2529	
1576	.5468	.2142	
2076	.7559	.2091	
3076	1.1887	.4328	
3576	1.4172	.2295	
4576	1.8533	.4361	
5076	2.0738	.2200	
5576	2.3126	.2393	
10076	—	—	Breaking weight.

Modulus of rupture, neglecting weight of beam = 7255 lbs. per square inch.
Modulus of rupture, taking into account weight of beam = 7378 lbs. per square inch.
Modulus of elasticity = 1784426 lbs. per square inch.
Max. intensity of shear at neutral axis, neglecting weight of beam = 173 lbs. per square inch.
Max. intensity of shear at neutral axis, taking into account weight of beam = 179 lbs. per square inch.


54

No. 54. — Hard-pine (Port Royal), 3″ x 12½″; span 24′; about one year on wharf; weighed 279 pounds.
Tested by Messrs. Chase, Gale & Hutchings.

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
276	.0000		
576	.1546	.1546	
1076	.3834	.2288	
1576	.6024	.2190	
1576	.6194	.0170	Load fallen; raised again.
2576	1.0856	.4662	
3076	1.4964	.4108	
3376	1.6455	.1491	
4376	2.1122	.4667	
4676	2.2888	.1766	
9576	—	—	Breaking load by compression.

Modulus of rupture, neglecting weight of beam = 9380 lbs. per square inch.
Modulus of rupture, taking into account weight of beam = 9653 lbs. per square inch.
Modulus of elasticity = 2146821 lbs. per square inch.
Max. intensity of shear at neutral axis, neglecting weight of beam = 197 lbs. per square inch.
Max. intensity of shear at neutral axis, with weight of beam = 203 lbs. per square inch.

[1] I have to return thanks for the kindness I have received at the hands of Sir P. Cunliffe Owen and the South Kensington authorities for the loan of the Arab window; to Messrs. Burke & Co. for their slabs of onyx and alabaster; and to Messrs. Clayton & Bell for the magnificent series of drawings showing the examples of stained glass of different periods. — G. A.

[2] By Gaetano Lanza, Professor of Applied Mechanics, Massachusetts Institute of Technology. Continued from page 140, No. 430.

No. 55.—Oak, 3″ x 13½″; span = 13′ 8″; wane at top near middle; weighed 180 pounds.
Tested by Messrs. Chase, Gale & Hutchings.


55

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
1071	.0000		
2071	.1638	.1638	
4071	.4906	.3268	
4571	.5895	.0989	
6571	.9458	.3553	
8871	1.3892	.4434	
10671	—	—	Breaking load by tension.

Modulus of rupture, neglecting weight of beam = 4984 lbs. per square inch.
Modulus of rupture, taking into account weight of beam = 5068 lbs. per square inch.
Modulus of elasticity = 853098 lbs. per square inch.
Max. intensity of shear at neutral axis, neglecting weight of beam = 201 lbs. per square inch.
Max. intensity of shear at neutral axis, taking into account weight of beam = 205 lbs. per square inch.

No. 56.— Hard-pine, Brunswick, Ga.; cut one and one-half years; water-seasoned six months; thickness, 3 1-16″ at top; 3 3-16″ at bottom; depth = 14″; heart both faces; span = 15′ 4″; weighed 209 pounds.
Tested by Messrs. Kerr & Bryant.


56

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
272	.0000		
572	.0362	.0362	
1072	.0967	.0605	
2072	.2184	.1217	
3072	.3265	.1081	
4072	.4468	.1203	
5072	.5728	.1260	
6072	.7143	.1415	
7072	.8229	.1086	
8072	.9505	.1276	
9072	—	—	
10572	—	—	Beam braced up; deflection apparatus taken off. Breaking load; broke by tension at about 2′ 6″ from centre; during fractures, and even afterwards, beam gave out a continuous uniform crackling sound, unlike that noticed in the case of previous beams.

Modulus of rupture, neglecting weight of beam = 4764 lbs. per square inch.
Modulus of rupture, with weight of beam = 4811 lbs. per square inch.
Mean deflection per 500 lbs. = .0609 inches.
Modulus of elasticity = 1490396 lbs. per square inch.
Max. intensity of shear at neutral axis, without weight of beam = 181 lbs. per square inch.
Max. intensity of shear at neutral axis, with weight of beam = 185 lbs. per square inch.

NOTE. — Piece was cross-grained and knotty at point of fracture.

No. 57.—Hard-pine, 2 15-16″ x 12″ = span; 19′ 2″; loaded at centre; upper edge sappy.
Tested by Messrs. Kerr & Bryant.


57

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
272	.0000		
572	.1371	.1371	
1072	.3293	.1922	
1572	.5316	.2023	
2572	.9351	.4035	
3572	1.3756	.4405	
4572	1.7838	.4082	

Broke at 8472 by tension; estimated weight = 209 lbs.
Modulus of rupture, neglecting weight of beam = 6910 lbs. per square inch.
Modulus of rupture, with weight of beam = 6995 lbs. per square inch.
Modulus of elasticity = 1444521 lbs. per square inch.
Max. intensity of shear at neutral axis, neglecting weight of beam = 180 lbs. per square inch.
Max. intensity of shear at neutral axis, with weight of beam = 182 lbs. per square inch.

No. 58.—Flitch-girder, tested for Mr. Edward Atkinson; two pieces of hard pine, respectively 3 1-16″ x 12½″ and 3″ x 12½″, with plate of iron ¼″ x 12½″, strapped between; span = 15′. Timber all heart on both sides. From G. L. & L. Co., St. Simon's Mills, Ga.; weighed 529 pounds.
Tested by Messrs. Kerr & Bryant.


58

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
583	.0000		
1583	.0549	.0549	
2583	.1122	.0573	
3583	.1669	.0547	
4583	.2223	.0554	
5583	.2782	.0559	
6583	.3373	.0591	
7583	.3953	.0580	
8583	.4584	.0631	
9583	.5141	.0557	
10583	.5715	.0574	
11583	.6331	.0616	
12583	.6960	.0629	
13583	.7559	.0599	
14583	.8216	.0657	
15583	.9462	.0746	
16583	1.0274	.0812	
17583	1.0952	.0678	
18583	1.1667	.0715	
19583	1.2467	.0800	
18483	—	—	Load next morning; yoke had stretched so much that the weighing beam could not swing, necessitating the load being taken off and yoke shortened by blocking under the clevis.
—	—	—	
—	—	—	
—	—	—	
—	—	—	
—	—	—	

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
18583	1.2651	——	Load raised again.
19583	1.3437	.0786	
20583	1.4227	.0790	
21583	1.5020	.0793	
22583	1.5939	.0919	
23583	1.6958	.1019	
28083	——	——	Breaking load; lower fibres of iron plate tore apart; one beam broke by shearing in two places, the other by tension, and both by crushing.
——	——	——	
——	——	——	
——	——	——	
——	——	——	
21283	——	——	Load on after breaking.
22583	——	——	Additional breaking.
19583	——	——	Load after second break.

Note. — After the load had become considerable, the upper edge of the iron plate began to buckle and fold up, the beam in the meantime yielding and the rate of deflection being increased. This action continued in the case of each fold until its sides began to bear heavily on the wood, when the beam suddenly seemed to stiffen up and the rate of deflection to decrease, only to rise again as a second fold was formed.

An inspection of the column of differences will give an idea of this action.

Assuming 1700000 as the modulus of elasticity of the timber, which its quality would seem to warrant, if the iron plate had not been present we should have had for an increase of load of 10000 lbs. a deflection of 0.7690 inches.

Actual increase in passing from 583 to 13583 was 0.5715 inches, showing that the beam as constructed was stiffer.

Actual deflection between 583 and 20583 = 1.4227 inches.

Computed deflection between 583 and 20583, = 1.5380 inches if plate were not present.

If no allowance were made for the presence of the flitch, we should have: —

Modulus of rupture = 8388 lbs. per square inch.

It is estimated that the timber from its quality would probably have given a modulus as high as that alone, a fact which argues that the iron plate increased very little, if any, the ultimate strength of the beam.

No. 59. — Hard-pine, from G. L. & L. Co., St. Simon's Mills, Ga., 9″ x 13¾″; span = 24′; length =24′ 6″; weighed 827 pounds.

Tested by Professor Lanza and E. F. Ely, assistant.

Loads in lbs.	Deflection in inches.	Differences.	Remarks.
1083	.0000		
1583	.0858	.0858	
2083	.1773	.0915	
3083	.3538	.1765	
4083	.5339	.1801	
6083	.8931	.3592	
7083	1.0810	.1879	
8083	1.2585	.1775	
10083	1.6206	.3621	
11083	1.8000	.1794	
21083	——	——	Breaking load by tension and compression.

Modulus of rupture, neglecting weight of beam = 5352 lbs. per square inch.

Modulus of rupture, with weight of beam = 5563 lbs. per square inch.

Modulus of elasticity = 1417793 lbs. per square inch.

Max. intensity of shear at neutral axis, neglecting weight of beam =128 lbs. per square inch.

Max. intensity of shear at neutral axis, taking into account weight of beam = 133 lbs. per square inch.

SANITARY PLUMBING.[1] — XIX.

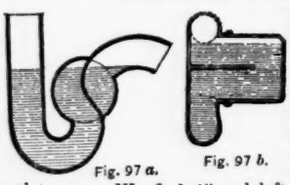
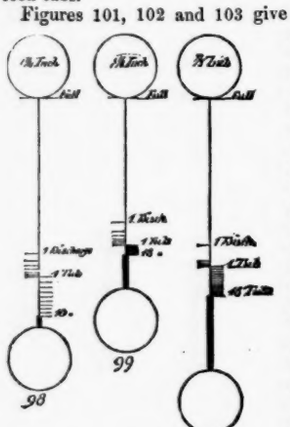


Fig. 97 *a*. Fig. 97 *b*.

FIGURES 98, 99 and 100 represent in diagram the effect of siphonage as tested by the discharge of the tub on anti-siphon traps having the central partition 3½″ long, the three traps being respectively, 1¼″ 1⅛″, and ⅞″ in diameter at the contracted points of the inlet and outlet arms. We find ¼″ seal left in the first after a discharge of ten tubs, while in the second ⅝″ seal is left after a discharge of sixteen tubs, and in the third 1⅜″ are left after the discharge of sixteen tubs.

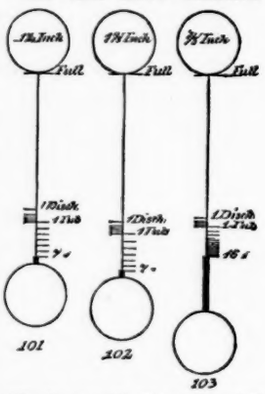
Figures 101, 102 and 103 give the same tests on traps having shorter partitions; *i. e.*, 2½″ long. The first two withstand the tests equally well; the last offers greater resistance. Figures 104, 105, and 106 give the tests on traps having side outlets as shown in the initial cut, and curved partitions 3½″ long. The curved partition is found to present certain advantages in respect both to self-cleansing properties and to resistance to siphonic action. In these tests the trap having the 1¼″ contraction resisted siphonage even better than that having a contraction of 1⅛″. This was due to certain minor peculiarities in the form of the trap, which it is not necessary here to enter into, inasmuch as they have nothing to do with the general principles under consideration. The trap having the greatest contraction showed again a somewhat greater power of resistance, the seal left after sixteen discharges of the tub being ⅞″, while with the first ¾″ and in the second ½″ were left after the same number of discharges.



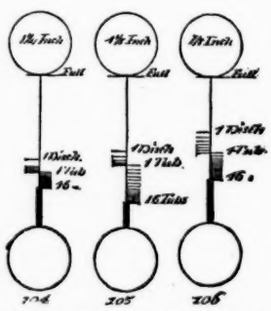
Effects on Anti-siphon Traps with contractions of 1¼″, 1⅛″, and ⅞″ respectively, and partitions 3½″ long.

Tests of Siphonage caused by the Discharge of Water-Closets.

The tests above described are more severe than are likely ever to occur in ordinary practice; but there are conditions which may frequently be met with in practice capable of producing siphonic action almost as powerful.

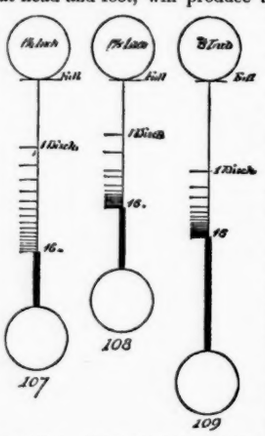


Effects on anti-siphon traps with partitions 2½″ long.

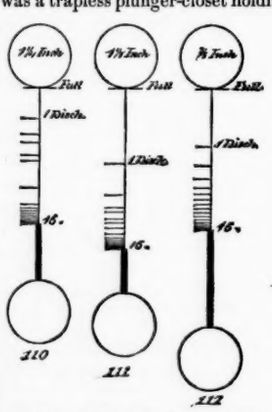


Effects on anti-siphon traps with side outlets and curved partitions 3½″ long.

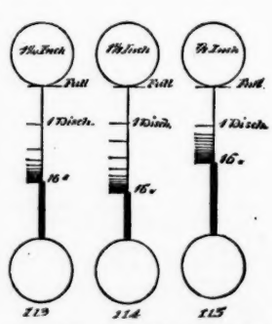
Many plunger-closets now in use are so constructed as to discharge suddenly into the soil-pipe at each use as much as four and one-half gallons of water. Under certain simple conditions often met with in practice such a discharge, even with a soil-pipe properly ventilated at head and foot, will produce an exceedingly powerful draught on the traps of fixtures below. It will siphon out a 3½″ pot-trap in thirteen discharges, or a 4″ pot-trap in sixteen discharges. It will destroy the seal of a 1½″ S-trap, 1½″ deep and having *a vent-opening at the crown ¾ of an inch in diameter*, in seven discharges. If a rubber tube 9′ long and ¾″ inside diameter is attached to the vent opening, *a single discharge will completely empty the trap.* An S-trap with a 1¼″ vent opening to which is attached 16′ of new 1¼″ (inside measure) lead pipe *will lose its seal under this test in four discharges.* (See hereafter Report to the Boston City Board of Health on Siphonage and Ventilation of Traps.) It is no disadvantage in a water-closet to have this strong flushing and scouring power. It is rather a merit, the closet serving as a small flushing-tank to cleanse the drains and soil-pipe at each discharge. Traps can and should be constructed in such a manner as to withstand their action. Figures 107, 108, 109, 110, 111, 112, 113, 114 and 115 represent in diagram the result of the same water-closet test on anti-siphon traps of 1¼″ 1⅛″ and ⅞″ contraction respectively. The water-closet used was a trapless plunger-closet holding four and one-half gallons of water.



Effect of the discharge of a plunger water-closet through a ventilated soil-pipe on anti-siphon traps.



Effects on anti-siphon traps with partitions 2½″ long.



Effects on anti-siphon traps with side outlets and curved partitions.

The soil-pipe was ventilated through the roof, and the traps were tested on a branch entering the soil-pipe 11′ below the water-closet. After the first two or three discharges the loss of water in the trap was scarcely

[1] Continued from page 115, No. 428.

perceptible, over an inch of seal remaining in the trap in every case. This seal was practically indestructible. In Figures 107, 108 and 109 the central partitions were 3½″ long. In Figures 110, 111 and 112 the partitions were 2½″ long; and in Figures 113, 114 and 115 the traps had side outlets and curved partitions 3½″ long. *

If now, while the water-closet is discharging, we empty into the same soil-pipe another fixture, such as, for instance, a bath-tub, we shall have a still more powerful siphonic action on the traps below. To illustrate this a 3″ valve in the tank was opened, to discharge through a 1½″ waste-pipe into the same soil-pipe while the water-closet was discharged. The effect on the 3½″ pot-trap is shown in Figure 116. Figure 117 shows the same trap as tested with the water-closet alone.

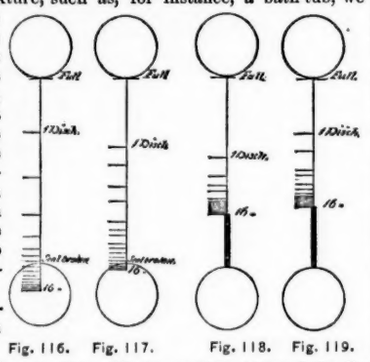


Fig. 116. Fig. 117. Fig. 118. Fig. 119.

Fig. 116. — Effect on a 3½″ pot-trap of the discharge of a water-closet and bath-tub simultaneously.

Fig. 117. — Effect on the same trap of the discharge of the water-closet alone.

Fig. 118. — Effect on an anti-siphon trap of the discharge of a water-closet and bath-tub simultaneously.

Fig. 119. — Effect on an anti-siphon trap of the discharge of the water-closet alone.

The effect on the anti-siphon trap is shown in Figures 118 and 119.

Thus we see that an ordinary S-trap may be siphoned out under conditions frequently to be met with in plumbing, even though it be properly ventilated at the crown with an opening and ventilating pipe 1¼″ in diameter, or, if the trap be of this size, *of equal diameter with the bore of the trap.* Hence trap-ventilation, even when newly and properly applied, is no certain protection against siphonage.

A FAIRLY GOOD TRUSS.

New York, March 31, 1884.

To the Editors of the American Architect: —

Gentlemen, — My attention was lately called to "Subscriber's" roof-truss in your issue of the 15th inst., wherein you comment most favorably on a truss that is really *no truss* at all; furthermore adding the tension-rod to be an unnecessary member. Now I beg to differ with you, and maintain that "Subscriber's" truss without a tie-rod of fifty-six feet span can hardly keep its own rigidity with any ordinary load.

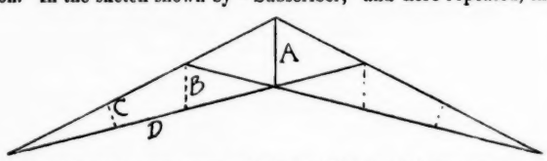
Mr. Hartwell's criticism is both timely and sound, and has left me nothing further to add. Edward C. Oppenheim,
Constructing Engineer.

April 1, 1884.

To the Editors of the American Architect: —

Gentlemen, — The surprise that you anticipated would be caused by the expression of your opinion that the roof-truss sketched on page 129 of your issue of March 15, was not limited to "Subscriber," nor to Mr. Hartwell, and as, in your comments upon the last-named gentleman's communication, you ask for other opinions upon the stability of the truss in question, the following is offered: —

In a perfect truss every member does its part to convey the load toward the abutments, and the strains in each member should be longitudinal, either tensile or compressive; any part of the structure not so strained is not a portion of the truss, but an extraneous addition. In the sketch shown by "Subscriber," and here repeated, the



full lines show the true truss, which might be loaded even to rupture without causing a pound of strain upon the pieces B and C, represented by dotted lines, and I think I can show that the structure is not a "pretty good" nor even "a fairly good truss."

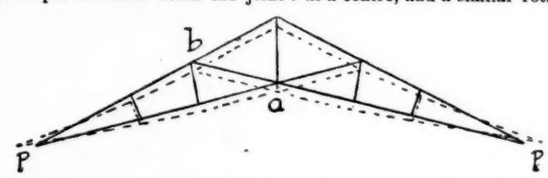
Should the feet of B and C be brought together as you suggest, the truss would then be a good one in *form*, as those pieces would then act as component parts, but it would no longer be the structure illustrated by "Subscriber," and not even then would it be "good for its purpose," as the dimensions given are entirely inadequate.

As constructed, the principal, from the plate to the head of the piece B, has to act not only as a member of the truss, compressed *longitudinally*, but also as a beam which the weight of the roof strains *transversely*. A beam so strained and of the dimensions indicated is far from rigid, and the load it is to bear would cause a deflection or sag of several inches from a straight line. The strut C serves to connect the principle with the tie-beam D, and communicates to it the transverse strain, enabling the two beams to act together in resistance.

The function of the piece B is to suspend the tie-beam from the actual truss, thereby reducing the length exposed to transverse strain.

This combination gives us two beams to carry the weight of the superincumbent roof, the upper being uniformly loaded throughout its length, and the lower having the load concentrated at a point near its centre.

The ensuing flexure would in effect cause the lower end of the principal to rotate about the joint *b* as a centre, and a similar rota-



tion of the lower end of the tie about the point *a*, so that their junction *p* would move to a new position as indicated by the dotted lines in the sketch. In other words, the truss would spread, thrusting out the walls and lowering the apex.

This spreading of the feet of the truss would bring a strain upon the iron tie, as indicated by Mr. Hartwell. A calculation of the strains caused by the weight of the roof, described by "Subscriber," with a snow and wind load of twenty pounds per horizontal square foot, shows that the one-half inch tie would be subjected to a tensile strain of more than 70,000 pounds per square inch, which would certainly wreck the structure.

The same load would give a weight of about 1,800 pounds uniformly distributed over about twenty-seven feet of length of the principal, which is far in excess of a safe limit.

Pursuance of the same analyses clearly shows that while this "fairly good truss" might be expected to stand long enough to be shingled, it is reasonably certain to be destroyed by a decent snow-storm.

The figures are at your disposal, but I will not burden your space or your reader's patience with them. L. Frederick Rice.

[No sketch that we have seen shows with anything like definiteness the relative position of the feet of the two pieces B and C in our drawing. If the feet were close together, as of course they should be, this point would be fixed, and C would act, just like any ordinary strut, to sustain from this fixed point the middle of the long stretch of the lower rafter. If the feet of the pieces were not close together, the portion of the tie between them would be subjected to a cross-strain, but we have no means of ascertaining that this cross-strain would be sufficient to break or even bend the tie, and there is certainly a presumption that common-sense would lead the constructor to keep them as near together as possible. The strain brought upon a principal rafter, where the purlins do not come properly over the points of support, is of the same kind, but is one constantly imposed with safety.

So far as we can see, it is impossible to calculate the strains upon the lower portions of either the rafter or the tie without knowing the relation of the two pieces B and C. Mr. Rice assumes that they are so far apart that one gives no support to the other, and his conclusions follow logically enough from this assumption, for which he has perhaps as much reason as we had for ours, that the two pieces did practically connect the whole frame to fixed points, from which our conclusion was perhaps equally reasonable.

As it seemed to us that the original communication showed a misapprehension of the qualities of such a truss, even if properly framed, confounding it with the miserable cross-tie roof once so much in vogue for village churches, we insisted particularly on the propriety of the general design of a roof furnished with an adequate vertical tie from the apex to the intersection of the cross-ties, instead of entering into an investigation of the actual strains on parts of the specimens in question, for which the data were hardly sufficient. — Eds. American Architect.]

PNEUMATIC SEWERAGE.

New York, March 26, 1884.

To the Editors of the American Architect: —

Gentlemen, — Will you kindly inform me if any reliable information can be obtained in this country in regard to the pneumatic system of collecting matter from water-closets, etc., as it is in operation in Berlin, Prussia, as well as a description of same, and also the arrangements of the closets. If so, you will confer a favor by letting me know either by letter or through the columns of your most valuable paper. Yours very truly, I. W. Harrison.

[See Bailey Denton's "*Sanitary Engineering*" for description and illustrations of the Liernur pneumatic system of sewerage, which, by the way, is in use, so far as we know, only in Amsterdam, of the large European cities.— Eds. American Architect.]

PAMPHLETS ON LIBRARY CONSTRUCTION.

New Haven, March 31, 1884.

To the Editors of the American Architect: —

Gentlemen — Will you be kind enough to inform me how I can obtain copies of the "*Suggestions on Library Architecture,*" and Mr. W. F. Poole's recent pamphlet, both alluded to in your issue of March 29; also the pamphlet or pamphlets on the same subject published by Mr. Spofford, and greatly oblige, Your subscriber,
H. W. Lindsley.

[The "*Suggestions on Library Architecture*" can probably be obtained by addressing Mr. J. L. Smithmeyer, Washington, D. C. Mr. Poole's pamphlet, and that of Mr. Spofford, are published by the Government, and can be had gratuitously upon request, addressed to the Department of the Interior, Washington, D. C.—Eds. American Architect.]

PAPERED HARD-WOOD VENEERS

St. Louis, April 4, 1884.

To the Editors of the American Architect: —

Dear Sirs, — Can you give me the results of experience with the paper-backed hard-wood veneers made and sold in Boston? Are they easily applied by workmen without special skill? Are they not liable to crack in application? Can they be depended on to keep their place and not loosen in damp weather or from other causes? Can they be filled and polished after they are put on the same as solid woods.

I would be glad also to know how the pebbled surface is produced on the cement plastered work which is sometimes used as an outside finish to walls, gables, etc., in place of siding on shingles.

Very respectfully,

C. E. Illsley.

[In our own experience, the paper-lined veneers are rather apt, unless put on with skill, to blister. Well put on, they stand very well. They are filled and polished just like solid wood, but take rather less material to get the effect.

The pebbled surface to plastered walls is still often produced in the old-fashioned way, by mixing rather thin lime mortar with pebbles, and throwing upon the wall, which must, of course, be well wet. If much projection is desired, the pebbles must be imbedded by hand in the soft mortar.—Eds. American Architect.]

THE CINCINNATI COURT-HOUSE.

To the Editors of the American Architect: —

Dear Sirs, — I suppose you will want to say something about our row — well, we have had a terrible time, and it is a little too soon to say what will be done Of the Court House the interior is a total wreck, nothing can be saved of it. The outside walls are standing but are spalled and disfigured by the heat. The building was built (commenced) 1855, finished in '59; architect, the late Isaiah B. Rogers. James K. Wilson was also one of the original architects; cost $1,500,000, including jail, I believe. It was supposed to be fire-proof. Joists were of wrought-iron lattice construction with wood centres between, with concrete; just what it was, I have not yet found out—at any rate it was just fire-proof enough to destroy the entire building and contents. The law library alone was estimated as worth $150,000.

Within two days after the fire the County Commissioners issued an advertisement (which I send with marked copy of *Commercial Gazette*), to architects. The members of the Chapter met and agreed to pay no attention to the advertisement until it was put into some decent shape. We consider it, as it is, a direct (though perhaps unintentional) insult to the profession. I will let you know if the Commissioners met with any response.

As to the rebuilding there are too many schemes on foot now to venture as to the final result. There is a strong feeling, however, looking toward the erection of one building to accomodate City and County officers, the court-house being now a necessity and the city-hall almost a necessity. One thing looks to me certain, however, and that is that the court-house will not be rebuilt as it was, but as I say, you can't say what may be done.

The destruction of County records was not as bad as was first supposed. C. C.

[We have already said what we thought of the invitation of the County Commissioners. Of course, we do not imagine that any slight to the profession was intended. Architects do not always remember the rest of mankind knows little, and cares less, about their customs, circumstances or feelings; and if they do not stand up for their rights, both as individuals, and especially as members of the general body, they need never hope to have them respected. — Eds. American Architect.]

THE LIGHTING OF A VAULT.

Columbia, Pa., March 29, 1884.

To the Editors of the American Architect: —

Gentlemen, — I am building a vault in which a small amount of light is desirable, which will have to be led through a cylindrical opening about six inches diameter and some eighteen inches long. For security we must have a heavy glass plug at the top, and it is suggested that we use an ordinary pavement light at the bottom for distribution. My clients insist that an inverted cone is the proper shape for the plug, while I think a cylinder with convex top and concave bottom is best. I think the cone-shape will deflect the rays so they will be thrown on the sides of the opening, leaving the distributing medium comparatively dark, while a cylinder will collect and project them perpendicularly on the fixture below. I am in doubt, however, whether the under surface of the plug should be concave or plane. It is a subject that I have not hitherto had presented to me, and I feel a little hesitation in pressing my view of the case. Which in your opinion is right? I append a rough sketch of both.

Truly yours, P. E. Gruger.

[The best shape would be convex on top — the more convex the better — and flat at the bottom. The convex upper surface will then collect rays falling obliquely upon it, and refract them downward, in the same direction as those which fall vertically, to pass through the flat under-surface with the least possible loss from reflection. A concave lower surface would cause some loss of light by the dispersion of the rays refracted vertically down upon it, which would waste them on the sides of the opening; and in the conical form a considerable number would be reflected from the surface of the glass and lost in the same way. For distributing the light through the vault, we should hardly recommend a sidewalk-light, the iron frame of which would totally intercept about a third of all light falling upon it, while the reflection from the two additional glass surfaces would take off something more, and the dispersion would at best be rather inefficient under the circumstances. A better plan would be to use a roughly-made plano-concave lens, which would disperse the rays, and would intercept only those reflected from its two surfaces. Still better would be a silvered conical reflector, hung below the opening, which would receive and distribute nearly all the rays. In default of these, a piece of fluted rough plate-glass, with large flutes, four to the inch, and set with the fluted side down, would answer very well, transmitting more than three-quarters of the rays, and scattering them well on all sides. — Eds. American Architect.]

USING OLD FOUNDATION-WALL.

Allegan, Mich., March 28, 1884.

To the Editors of the American Architect: —

Dear Sirs, — Please state your opinion of placing new brick walls on old foundations; the original buildings having been burned.

Yours respectfully, D. Bearce.

[We should not hesitate to put walls on old foundations, provided the stone or brick work of the foundation showed no signs of having been cracked by the heat or thrown out of plumb by the fall of the walls above them. — Eds. American Architect.]

THE SAFE LOAD IN AN IRON COLUMN.

Helena, February 23, 1884.

To the Editors of the American Architect: —

Gentlemen, — Will you be kind enough to state in your next issue the greatest weight and safe load that a 6″ x 12″ square and hollow column will carry, supposing the column to be 14′ 0″ long, cast-iron, and of $\frac{3}{4}$″ metal? Also the weight a cast-iron lintel will carry, 12″ wide, of 1″ metal, with a face-plate cast on to lintel of $\frac{3}{4}$″ metal and 14″ wide, to be 5′ 0″ long. Yours truly,

A Subscriber.

[If the column has both ends planed, with planed plates at top and bottom, the safe load will be ninety-six tons. If the ends are not planed, the safe load will be only half as much. The lintel described may have forty tons distributed load, if properly cast and of good metal. — Eds. American Architect.]

ANOTHER COMPETITION.

March 25, 1884.

To the Editors of the American Architect: —

Dear Sirs, — Apropos "Competitions," I enclose letter received by me this morning. As the firm of Gambrill & Richardson has not been in existence for the last six years, the "Trustees of the Lawrence Public Library" evidently used a very old list of architects to tempt with their munificence.

I may perhaps do Mr. Richardson a great professional injury in not forwarding it to him, but he must blame the post-office authorities here, who send everything for the late firm to me.

Truly yours, H. Edwards-Ficken.

Lawrence, Mass., March 24, 1884.

Messrs. Gambrill & Richardson: —

Dear Sirs, — The Trustees of the Lawrence Public Library desire competitive plans for a library building. The building is to be erected upon a rectangular lot 200 by 100 feet. It is to consist of two stories and a basement and must be fire-proof, the cost not to exceed $40,000. There must be book-room for 100,000 volumes, a reading-room and reference-room, each containing at least 1200 feet flooring, a librarian's-room, director's-room, delivery-room and minor offices.

A portion of the second floor will be devoted to a hall or picture-gallery. The whole building is to be heated by steam, and must have thorough hot-air ventilation. If you would like to compete please let me know as soon as possible. It is perhaps unnecessary to state that the Trustees will not pay for rejected designs.

Yours truly,

F. H. Hedge, Jr., Librarian.

[It is not often that such insulting communications are addressed to respectable architects east of the Mississippi River. We trust that before the Trustees of the Lawrence Public Library obtain the plan they desire, they will be taught a wholesome lesson as to the value of competent professional service and the manner in which it can be secured. — Eds. American Architect.]

NOTES AND CLIPPINGS.

Honor to an Architect. — In Brooklyn, on March 23, the Very Rev. Wm. Keegan, Vicar General of the Diocese, made the presentation to C. P. Keely, a well known architect, of an illuminated address and medal, presented now annually by the University of Notre Dame, at South Bend, Ind., to the literary man, artist or architect who may have become most marked in his special work during the previous year.

Artisans' Co-operative Societies in London. — "The attempt to establish in London a coöperative society of artisans on the lines of the famous Maison Leclaire in Paris promises to prove a success," says the *Pall Mall Gazette.* "The Directors of the Decorative Coöperators' Association, of whom Mr. Albert Grey is chairman, have just issued their first annual report. The balance sheet shows a loss of some £26 on the first year's working, to which must be added £60 for interest due to share capital. On the other hand, the last six months taken by themselves show a distinct profit; and the fact that out of the total sum expended in wages, amounting to nearly £3,000, three-fourths were paid during the last half of the year, will show how the concern is growing. Regarded simply as an experiment towards solving the question of capital and labor, the guild of decorators deserves encouragement."