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WE have received a courteous and well-written letter from a certain party who thought himself referred to in a paragraph on "Illegal Commissions," published three weeks ago. We have asked leave to print some extracts from the letter, and will venture to make some comments on a portion of it, premising that the writer has no occasion to feel himself especially pointed at in these or any other remarks we may make on the subject, since his position is, if we are not much mistaken, only that of the great majority of dealers, and also that we are very far from condemning any of them if in their efforts to influence trade they make the mistake of regarding architects in the same light as retail dealers or commission merchants. Such mistakes are natural enough, and the notion that they are to be regarded as covert attempts upon the virtue of architects is one which we are little inclined to favor. Nevertheless, although we believe that few architects are tempted by them, we know that many find them a very serious annoyance, for a reason which can be inferred from a consideration of our correspondent's letter. He says that the commissions, discounts or rebates which the manufacturers or dealers in building appliances find it for their interest to offer are open to all. If the architect himself does not wish to pocket the difference between the ostensible and the real price, he is free to give his client the advantage of it, and would, of course, secure it for him. All this is very true, but the result of the system is that the conscientious architect must either allow his client to pay more for many goods than they are worth, or must learn and keep in mind the ever-varying discounts on an infinite variety of articles, to make sure of obtaining the net price on the bills which he approves.

THIS is no light task, as all experienced architects can testify. We have among our reference books a price-list of a single class of goods, and these used in large amounts in every building, on which the discounts vary from zero to seventy-three per cent, and the checking of an account containing some hundreds of items of this class is a tedious operation, every separate entry having to be compared with its list price, and corrected by its appropriate discount. Besides this, it is not always easy for architects to obtain the discount sheets, and we sometimes meet with a contractor for this sort of work who submits bills for materials, all charged at the list price, in the hope that we may be too innocent to know about the discounts, which would in many cases reduce them one-half, so that a disagreeable struggle has to be gone through with him. In another line of goods, where the discounts vary from thirty to sixty per cent, we have known dealers refuse under any circumstances to allow the rebate to appear on the bills. The account would be sent, with all the items charged at the list price, but would be receipted in full on payment by the client, under a hint from the architect, of one-half or two-fifths its face. Still another kind of commission is often offered in terms so vague that the sharpest architect would have difficulty in claiming the benefit of it for his client, as, for instance, in a circular, quite similar to hundreds

of others, which now lies before us, and which closes with the pointed remark that "your influence in placing these goods would be appreciated, and we shall hope to make it an object for your personal interest." In this case, even our correspondent must acknowledge that it would be a little embarrassing for the architect to inquire how much his "influence" was valued at. These annoyances are more serious than one might at first imagine. They tend continually to create distrust between a client and his adviser, whom he knows to be in a position to make large profits at his expense without detection, and they unquestionably often prevent architects from making trial of new goods, even though they consider them meritorious, because they dislike to encounter a fresh set of discounts and suspicions.

THE war between General Di Cesnola and Mr. Feuardent, as the former chooses to consider it, still goes on, the latest military events being a well-aimed shot from Mr. Feuardent's batteries in the form of a comparison of the testimony furnished to different reporters by Mr. Balliard, the Museum repairer, which he finds contradictory; and a lively flank movement on the same side, consisting in an assertion that many of the bronzes in the collection have been covered, after cleaning, with a false "patina," which, he says, although it makes them attractive to the public eye by its pretty green color, gives to experts the impression of their being forgeries. He thinks it is "curious" for a museum to try to make real antiquities look like imitations. As to this, we may remark that if the assertion is correct, it is by no means to be inferred that ignorance or intentional deceit is to be attributed to the person who directed the coloring. It is a very common theory among archæologists that modern work should be made to harmonize with its antique surroundings by any possible means,—hence the clever forgeries which continually exasperate the student of mediæval art in France,—and an enthusiastic antiquarian may be excused for wishing to cover up as quickly as possible the newness of a recently scraped bronze. In fact we do not see any evidence of evil intention on either side. At the worst, nothing more is attributed to those who arranged the Cypriote antiquities than a few possible mistakes in putting together the pieces sorted out of the vast jumble of heads, limbs and trunks on which they operated, and perhaps an unconscious over-restoration of one or more objects in the desire to see them conform to a certain theory of what they ought to be, and the proposed solemn inquest, and still more a libel suit, seem out of all proportion to the gravity of the offence charged.

MR. FEUARDENT is beginning to find support in the testimony of other witnesses who have visited the Museum and observed what they think to be unmistakable traces of recutting on several of the figures in the Di Cesnola collection. If these observations prove to have been correct, it must be acknowledged that although the cutting was probably done innocently, with the intention only of removing what appeared to be a "crust," Mr. Feuardent is quite justified in calling public attention to proceedings which must inevitably alter to some extent the character of the objects. To our mind, the testimony which was given at the beginning of the controversy by Mr. Balliard, to some reporters, in regard to his labors in soaking the sculptures and removing the "hard crust" which covered them, seemed to give grounds for suspicion that the operation might occasionally have gone too far. We all remember Michael Angelo's recipe for making a statue out of a block of marble by knocking away the "crust" which concealed the form; and the most conscientious restorer might easily push his tool unduly in the direction of a line which he imagined to exist under the covering. Some of the restorations of the Di Cesnola curiosities, if Mr. Feuardent's criticisms are well founded, have gone farther than this comparatively harmless treatment, but at the worst, no great damage has been done, probably no more than must be expected in committing to an ordinary repairer a mass of objects far too large to allow of the director's minute supervision of the treatment of each article, and if Mr. Feuardent's assertions should be substantiated, General Di Cesnola's friends, to say nothing of himself, will have only themselves to thank for putting him in an unnecessarily unpleasant position by their talk about libel suits, "charges against the integrity of the Museum management," and so on,

to say nothing of the want of ordinary courtesy with which they have carried on their side of the discussion.

APPROPOS of the Cesnola controversy, the following abridged extract from the *Journal des Débats* is interesting. In 1651 a statue was found in the ruins of the ancient theatre of Arles, then supposed to be a temple of Diana, much mutilated and without arms. After resting a few years at Arles, the statue was presented to Louis XIV, who directed that it should be restored, and committed the task to the sculptor Girardon, under the direction of Le Brun. Thereupon began a series of disputes as to the identity of the deity which it represented. All attributes being lost, there was no certain means of deciding the question, and pamphlets, satires, and letters on both sides began to circulate. The ladies of the Court of Versailles took part, and as the *Débats* says, "*Un moment on put craindre qu'il n'y eut des chignons arrachés.*" To put an end to the conflict, the King called upon the Académie Française to decide the question. This august body pronounced the effigy to be a representation of Diana. Meanwhile Girardon had been pursuing his own course of reasoning, unmindful of the tumult about him. He reflected that the statue was clothed in flowing draperies; it would be impossible to pursue the chase among the forests in such a costume; therefore, thought he, the statue could not represent Diana, the huntress. If it was not Diana, probably it must be Venus, — the modest variety of that goddess, — and having satisfied his own mind on that point, Girardon proceeded to make the evidence conform to his opinion, by supplying the image with arms, in one of which he placed an apple, and in the other a mirror. Thus repaired, the goddess was presented to Louis XIV, as a veritable Venus, and the King approved the reasoning. The statue was therefore "officially" named, and still figures as a Venus in the collection of the Louvre. The mirror only has been removed, being thought too heavy.

A CORRESPONDENT writes us in regard to the competition for the Morton monument lately decided at Indianapolis. In his judgment the award was not made to the most meritorious, and he mentions the existence of a rumor that the competition was virtually decided before the drawings were submitted. He complains also, that no expert was employed to assist the commission, which consisted of the Hon. John C. New, late Treasurer of the United States, Col. Dudley, United States Marshal for that district, and the Postmaster of the city, and asserts that one competitor who asked that a committee of sculptors and architects might be invited to assist the judges in making their choice was unceremoniously excluded from the competition for having the temerity to question the taste of the commissioners. With the exception of this last incident, the whole narrative is simply a repetition of the well-worn history of all open competitions decided by unprofessional judges: servility and unscrupulousness on the part of some of the competitors, contemptuous rudeness on the part of the judges, an ignorant or ill-considered award, and a long train of subsequent recrimination, ridicule, threats and general discredit to all parties concerned. We can assure our friend that there is nothing he can do to help himself in this case, and we hope he has learned the lesson which seems to us very obvious, not only from this, but from the similar experiences which are constantly brought to our notice, that any reputable architect who lowers himself so far as to engage in one of these reckless scrambles after the favor of ignorant judges must expect to see their award influenced either by outside considerations or by some unaccountable freak, in place of enlightened judgment, and we are inclined to add that he deserves all he gets for the evil service he does his profession in lending his name to perpetuate such scandals.

It would seem that the re-invigorated Washington Monument enterprise is to be nourished with rather doubtful aliment, to judge from the latest intelligence respecting it. Some of our readers will recollect the so-called Tell's Chapel, at Altorf, on the lake of Lucerne, which is said to have been erected on the spot where that hero escaped from the tyrant Gessler. This edifice has fallen into decay, and a proposition was recently made to restore it, with fine frescoes about its interior, and so on. As a result of this determination, probably, a stone from the structure has been put at the disposal of the United States consul at Zurich, who offers it to be built into the Washington Monument, and the offer having been accepted, the stone is to have a suitable inscription cut on it, and to be shipped to Washington. What will be the tenor of

the inscription it is hard to guess. The story of William Tell himself is positively ascertained to have been a myth, and a stone described as having once stood on the spot where a certain fabulous personage did not escape from another hardly less fabulous would be an object of just derision; and if it is offered at its true value, it is hard to see why Mr. Consul Byers could not have chosen other curiosities to be found in the neighborhood, equally authentic and even more interesting. Bluebeard's castle, for instance, is still standing not very far from Altorf, and the sill of the famous window, or a piece of the secret closet would be a relic well worth incorporating in any monument.

IN spite of the doubts of the inhabitants of Cape Cod, who say that the only traces of a canal across that peninsula which posterity can ever discover will be the lines of empty champagne-bottles and sardine-boxes left by the various engineering parties who have surveyed the different routes, it appears that a contract has actually been made for excavating a channel one hundred and forty-five feet wide and thirty-five feet deep, between the two great bays which indent the Massachusetts coast, and that five hundred men are probably already at work on the ground, with two thousand more to follow before the end of the month. It would seem rather late in the season for commencing extensive operations, which might be checked by frost in a few weeks, and if abandoned would be likely to suffer from the winter storms. But the sandy soil of the Cape is so light and dry that it is perhaps expected to continue the work through the year. Some interesting observations on ocean currents may be looked for during the construction of the canal. According to the popular notion, a portion of Gulf Stream water finds its way into Buzzard's Bay, while it is certain that the so-called Arctic current skirts the shore of Massachusetts Bay, so that the average difference in temperature of the water on the north and south sides of Cape Cod is said to be no less than seventeen degrees Fahrenheit. The preponderating influence of the currents in the midst of which the Cape lies is in a direction from south to north, as is shown by the steady wearing away of the southern shore. If, then, this pressure of the warmer water is afforded an outlet by a channel cut at the neck of the peninsula, it would seem possible that a perceptible change of climate might be observed in places such as Plymouth and Duxbury, situated within the range of the new currents. So small a stream would have, at best, a feeble influence, but light would be thrown on larger problems, such, for instance, as the proposed Nova Scotia breakwater for diverting the Arctic current entirely from our eastern shores.

THE greatest of all the schemes for rapid transit in New York, the tunnel road under Broadway, is actually to be carried out, notwithstanding the enormous expense which it involves. Mr. Hugh J. Jewett, the distinguished receiver of the Erie railroad, Mr. S. L. M. Barlow, General McClellan, and Mr. Geo. Ticknor Curtis are among the incorporators. Such men do not trifle with what they undertake, and we are assured that excavations will begin in October or November. The line commences at the Battery, already the terminus of four elevated roads, and runs under Broadway to Twenty-Sixth street, where it divides into two branches, both of which run to the Central Park, one by the way of Broadway, and the other by Madison Avenue. The engineering difficulties to be encountered are very great. The soil under the lower part of Broadway is gravelly, and moderately elevated above tide-water, but at Canal street the road must actually plunge under water, the city being completely traversed at that point by a tidal stream which, though covered over, still ebbs and flows a little below the pavement. Above this point, the tough and hard rock on which New York principally stands is soon reached, and excavations of a very costly description will be needed for the remainder of the route. To all this must be added the shoring and walling up of the sides, and the protection of the roof by arches capable of resisting the effects of a traffic scarcely equalled in the world. That the enterprise will be successful hardly admits of a doubt. If the unwholesome and disagreeable smoke from the locomotives can be got rid of, as it probably will be, the difference in the exertion of ascending and descending between the short stairs to the underground road and the comparatively lofty ones which lead to the elevated lines will perceptibly affect even the through business, while the local traffic of that wonderful street would pay interest on almost any conceivable outlay.

HOW TO LEAVE PLUMBING FOR THE WINTER.

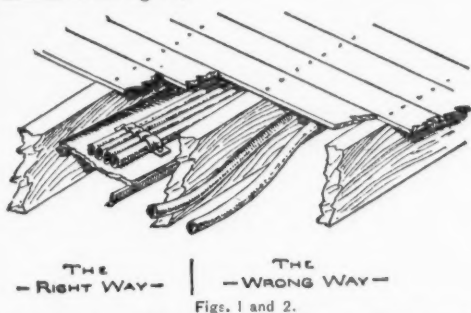
THOSE who have ever owned seashore or country cottages of the better class, which they, or their tenants, occupy only during the summer months, do not need to be told that an important item in the annual cost of such an establishment is generally the plumber's bill at the beginning of each season, for putting in order the pipes and traps which have burst or become in some way disabled during the winter. Notwithstanding thorough inspection of the apparatus, and emptying of all pipes and traps by a competent workman on closing the house in the autumn, leaks will often be found at turning on the water again the next year.

To a great extent, these mishaps may be avoided, and the annual tax to which they subject the owner saved, but it is not every plumber who understands all the contingencies which must be provided against, and the many householders who are sufficiently good workmen to take care of their own plumbing may be glad of some hints as to the best manner of accomplishing what they wish.

Where plumbing work is left to take care of itself for the summer, the main object is to insure that the traps shall not dry out, and thus allow foul air to diffuse itself over the house; but in leaving such appliances for the winter, a still more imperative requirement must be fulfilled—that they be left in such condition that no part of them can freeze, and the penalty for neglect of this requirement is the certain weakening, if not actual bursting, of anything in which ordinary water is allowed to remain during a severe frost.

There are some houses where the plumbing is so badly arranged that the pipes cannot all be drained, and many more where they are so feebly supported—especially in places where they run on ceilings or between floors—that their own weight causes them by degrees to sag, very slightly, perhaps, but still enough to form a dip in which water may stand after it has run out of the rest of the system. These dips are more common and more serious in hot than in cold water pipes. In any case they are sure, sooner or later, to freeze and burst.

As all other precautions will be in vain if such dips or dead ends are suffered to remain in the pipes, the first task of the householder desirous to have his plumbing secure will be to look out for and remedy them. If any supply pipes run beneath the floor, the boards, which ought in such cases to be put down with screws, should be taken up for inspection, and such as are found hanging loose should be lifted, and pieces of board fitted in and nailed between the beams under them as in the figures.



Figs. 1 and 2.

This is rather a troublesome job, and it is to be hoped that no defects of the kind will be found, but they are liable to exist, especially in country plumbing, and nothing short of such treatment will remedy them. Where the pipes are exposed, it is much easier to straighten them, if necessary. Very commonly, poor workmen string them along a ceiling, with a hook or tack once in three or four feet, and a bend soon forms itself between the points of support. By gentle pressure, the loop may be raised, and another tack soldered in the middle, or a brass or zinc band placed around it, and secured to the ceiling thus:



Figs. 3 and 4.

As will be seen by the figures, even if the pipe is not completely straightened, the division of the bend into two loops instead of one will reduce its capacity for retaining water to a safe point.

The same principle will apply to all curves and ends of pipes which, intentionally or not, descend and then ascend, without any means of emptying them at the lowest point: they must be made to ascend continuously, or a cock must be put in to drain them at the lowest place.

The pipes having been put in proper condition, if not already so, the process of emptying the system should begin by shutting off the supply in the cellar, then pulling up the waste-plug or standing-waste in the tank or cistern in the upper story, if there be one, followed by the opening of all wash-tray, bath, sink and basin faucets throughout the house, not forgetting the "sediment cock" of the boiler, which may be either on the bottom of the boiler itself, or, more usually, on the lower of the two pipes which connect it with the water-front of

the range. It is hardly necessary to say that the shutting of the supply-cock at the cellar wall opens the little tube waste in the side, through which the water is emptied from the ascending house-pipes, so that unless some other means is provided for disposing of it, pails will be needed to catch and remove the water until the pipes are drained, or else the cellar floor will be flooded.

Next, the water-closet handles should be held up until the water ceases to flow through them. If the waste-preventing cisterns or valves are used, as is now quite common, which permit only a certain quantity of water to pass at a time, the handle must be repeatedly dropped and raised again, in order to be sure of emptying them. There will then remain only the traps to care for, these being the bends, or receptacles of other shapes, which are found beneath sinks, closets, baths, basins, pantry sinks, and sometimes under tanks, and which contain the water which prevents the reflux of foul air from the drains into the rooms. The emptying of the supply-pipes, however thorough it may be, still leaves these full of water.

If simple S-bends are used, such as are most common under wash-basins, a brass screw should be found at the bottom, with a head which can be grasped with a wrench, and turned. This will allow the contents to escape. Country plumbers not unfrequently put in these traps upside down, with the screw on top. In this case after removing it, a sponge tied to the end of a stick must be used to dip out the water in the bottom of the bend. Water-closet traps are generally similar in shape to the S-traps, but have no screw. They can only be emptied by the stick and sponge, which may be inserted through the bowl of the closet, after lifting the handle. Care must be taken not to punch holes through the lead. In some improved closets the cup and handle must be unscrewed, and the plug lifted out and the water poured out of its interior, in addition to the emptying of the trap.

Sink traps, if not bell-traps, are often cylindrical or of the so-called D-shape, having in either case a large screw on top, which can be removed with a wrench, and the stick and sponge used to empty them. Sometimes two or more waste-pipes enter a single trap, and frequently traps are hidden beneath floors, so that some ingenuity is necessary to find and open them.

The bell-traps which are often screwed into ordinary sinks lose their water by evaporation so quickly as hardly to need special protection: if any is desirable, the trap can easily be unscrewed or lifted up, and the water dipped out. Tank wastes have often a very similar form of trap, into which the standing waste is set, and this may also be dipped out.

Of course, the removal of the water from the traps opens a clear passage through them for foul air from the drain, and that this may not diffuse itself unobstructed into the rooms, the overflows and waste orifices of all apparatus should be stopped up, first, however, throwing down a handful of salt in each. Baths, basins, pantry sinks and wash-trays are usually provided with plugs or "waste-cocks," which should be tightly closed. The overflows of the same may be either plugged with corks, or covered with several thicknesses of strong brown paper, pasted on with copal varnish, or rubber cement. Sink strainers may be covered in a similar manner. Water-closet wastes cannot be so protected, and if, as is usual, the traps are emptied entirely, it is impossible to prevent some escape of effluvia from them, which can be only partially kept back by shutting the covers tightly down.

It is, however, better not to empty these traps, but instead of doing so, to throw a quart or more of coarse rock-salt into the closet, after lifting the handle, so that the salt may fall directly into the trap. This will dissolve in the water of the trap, forming a saturated brine, which still serves to seal the trap, and will either remain unfrozen, or will freeze into a soft, incoherent mass, whose expansion in so large a trap is little to be feared. With the common pan-closets, it is well also to fill the pan with a similar saturated brine, which will keep back the effluvia from the filthy interior of the "container." By using crude rock-salt, which has a large proportion of chloride of potassium, and perhaps of calcium, the hygroscopic properties of these impurities serve to reduce the loss of water by evaporation, which, if there were no means of restoring it, would soon leave a solution of pure salt nothing but a mass of crystals. For this reason it might be well to add a certain quantity of calcium chloride, to increase the deliquescent character of the salt. It is, however, found that in cold days the interior of waste-pipes which communicate with a sewer, cesspool, trap or other source of moisture, condenses watery vapor from the air, frequently in the form of a hoar frost so thick as nearly to choke the pipe, and this, when the weather moderates, melts and runs down, finding its way into all the traps, but particularly the larger ones, where it often collects in quantity sufficient to overflow them. Many traps are filled during the winter in this way, and are subsequently frozen and burst, although they were thoroughly emptied in the autumn, and the partial filling of each small trap with salt, which will dissolve in the condensed water as it collects, is a valuable safeguard against such accidents, while in the case of the large water-closet trap additions of moisture may be expected sufficient to keep the brine in a state of solution during the cold weather.

On returning to the house in the spring, water should be rather cautiously allowed to flow into the waste-pipes until any obstructions from masses of half-crystallized salt, if such exist, have been dissolved and washed away, and the water-seal of the traps renewed. The opening of the overflows will then put the whole apparatus in working order without further trouble.

THE VENTILATING FIRE-PLACE.¹—IX.

THE following simple arrangement for the improvement of the range-flue in dwelling-houses has frequently been tried by the writer with success; the particular form illustrated by the figure 226 having been adopted in a wooden cottage built by him at Nahant during the present year. The flue proper is constructed of tile, and around it is built an ordinary brick flue, leaving an air-space between, in such a manner that it may act in summer as a hot and foul air exhaust, both ventilating the room and carrying off the heat of the range-flue, and in winter as a warm-air supply. In the ceiling of the upper bed-chamber a bent pipe containing a damper is constructed as shown, the damper register-faces being in the ceiling close up to the chimney-breast. The flue in this case stands between two bedrooms. The right-hand valve is shown closed and illustrates the manner in which the flue acts as a fresh-air supply. The left-hand valve is shown open and the flue acting as an exhaust, removing the troublesome heat of the range from the walls.

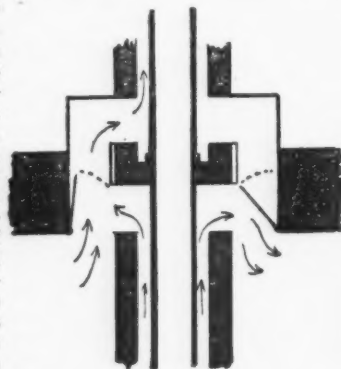


Fig. 226.

In Fig. 129 a model of a furnace is sketched constructed after the principle of the distributors shown in Fig. 187. The furnace-flue shown in this latter figure was connected with the lower pipe of the lower distributor, and valves were so arranged that the smoke of the furnace could be turned into the distributor or allowed to ascend direct in the furnace-flue proper as desired. When the smoke was caused to pass through the distributors, the furnace became at once an example of the one represented in Fig. 129, and described in connection therewith. The heat of the smoke was saved without injury to the draught. By using a furnace regulator in connection with this arrangement the combustion is automatically controlled, and the maximum of safety and economy obtained without the necessity of constant supervision.

Like the open fire-place regarded from an economical standpoint, the ventilating register, index of the popular feeling in sanitary matters, remains, from an artistic point of view, in a worse than primitive state of rudeness. Its design is left to the care of the furnace-maker and foundry-man. The artist appears to consider it generally unworthy of his notice in the decorative treatment of the room. It is put in anywhere, in an obscure corner if possible, and painted black, so as to attract no unnecessary attention. The utmost notice that is taken of it in the usual building specification is a wholesale summary of sizes for the several rooms. Had Nature, in the design

indifferent design and color, we should have lost the feature most prominent in giving the wonderful power of ever-varying expression, the distinguishing characteristic of human beauty. If an amount of

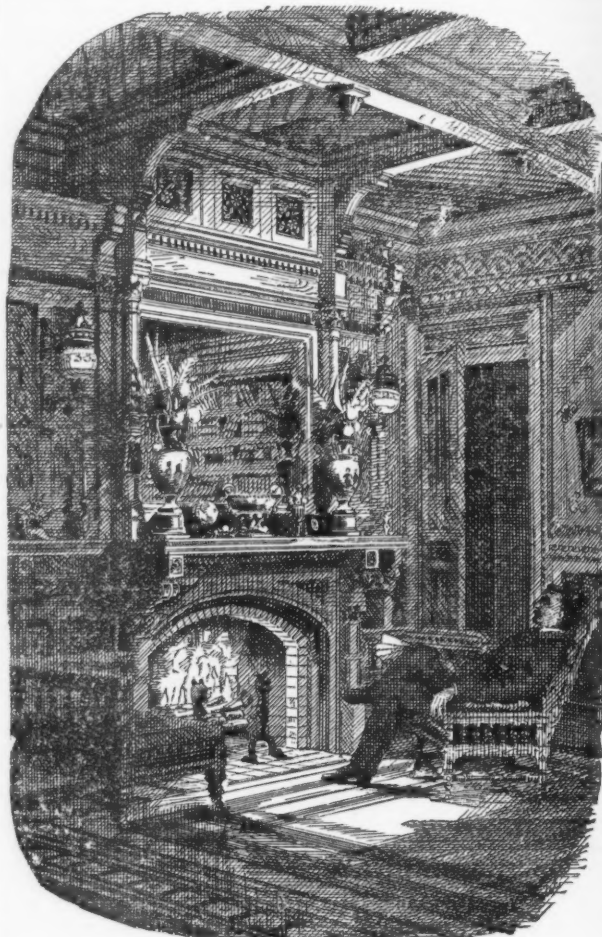


Fig. 227.

care were given to each object corresponding to its importance, the ventilating register would no longer stand at the foot of the list.

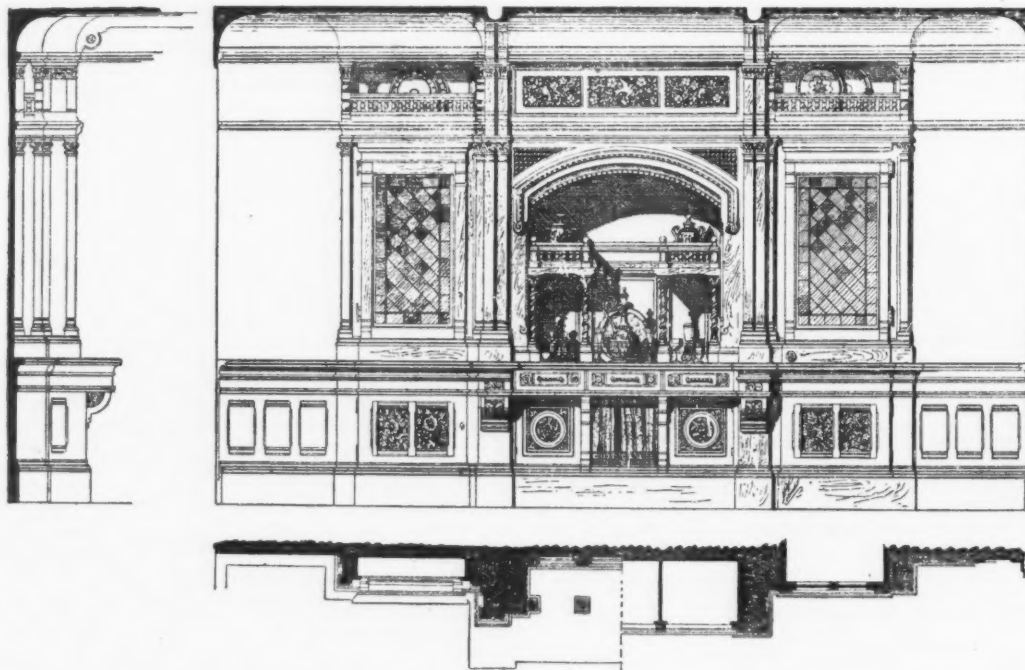


Fig. 228.

of the human frame given so little attention to the inlets for the supply of fresh air, throwing them in anywhere at random, and covering every opening with a casting taken from the same mould, of

¹ This paper, by the writer of the Open Fire-Place articles, will be incorporated with them in their separate form.

No time spent in elaborating its design would be considered wasted, and solid gold would scarcely appear too costly for its material.

After so much of a peroration, allusion to the following examples should only be made protected by the knowledge that even failure in an attempt made in the right direction is better than

no attempt at all. Figs. 203, 208 and 209 give three methods of treating the registers in cut brass. Fig. 227 shows the effect of three square registers of brass, fire-gilt, over a fire-place in the parlor of the Hotel Cluny, Boston, and Fig. 228 of three larger registers over the side-board of the house on Marlboro' street referred to in connection with Figs. 203 and 209. The fresh-air is in this case warmed by an iron range-flue behind the breast of the fire-place, of corresponding design, opposite this side-board. It is conducted across the ceiling in tin flues shown in section in the beams over the registers to the right and left. By this means the china-closet behind the side-board may also be warmed by the same flues.

Having found that it is no longer necessary to throw away nine-tenths of the heat generated by the consumption of our fuel, we may now reasonably interest ourselves in the one tenth unconsumed; namely, that which escapes in the form of smoke. In reviewing the various forms of smoke-consuming fire-places hitherto invented, the best for modern purposes, all things considered, seems to be that of Touet-Chambor (Figs. 42 and 43). But, in this, the two upper openings to the flue are not well placed either for appearance or for use. It would be better to adopt here the ordinary long and narrow chimney-throat at the top of the fire. In other respects the form of the fire-place might remain as it is, except, that of course the fresh-air pipes behind, forming no necessary part of the device, may be omitted, or placed above the mantel in the form of a distributor. When the fire is first lighted the upper outlet may be opened if necessary by means of a simple damper, arranged to operate easily from the front of the mantel after the principle of that shown in Fig. 83. But if the draught is good this may always remain closed, and the smoke will then pass out behind and below the coals and be consumed in its passage. Such a form of smoke-consuming fire-place has the great advantage of being simple, and practically automatic. The lower outlet is always open ready for use, and with a good draught the upper one need never be opened, or it may be left partially open, enough for the first moments when the heat of the fire and flue is feeble, but not enough to carry off the products of full combustion, which will then find their outlet chiefly through the lower opening.

When some admirer of the manners and customs of the olden time yearns for the colossal proportions of the mediæval fire-place to produce in his modern cottage the effect of the baronial hall, he does it with heroic indifference to personal comfort, believing that the use of such a fire-place necessarily implies blackening his timbered ceilings and tapestried walls with smoke, at the least provocation.

But this annoyance is quite unnecessary. With proper construction one may be assured of a good draught at all times, even when but small quantities of fuel are burned in the fire-place. The peculiar construction necessary to secure this result is as follows: We will suppose the fire-place to be two meters square. In the first place the chimney-flue should be of the proper size in proportion to the opening, to allow of a free passage of the products of combustion and the accompanying air. The top of the chimney should be surmounted by a Van Noorden ventilator. A portion of the back of the fire-place should be recessed slightly, so as to form a smaller shallow fire-place within the large one. A recess similar in form to this is sometimes formed in the backs of mediæval fire-places to receive an ornamental slab carved with heraldic or other devices. The small fire-place then has its own independent chimney-throat and flue connecting with the main flue above the level of the top of the larger fire-place. A damper operated like that shown in Figs. 69, 71, 80, or 83, is built in the throat of the larger fire-place, so that it may be closed when but a small fire is wanted, and the lower chimney-throat (also provided with a damper) only is in use. An improved form of

The depth of the alcove is two meters. The large fire-place is one meter, and the small .33 meters deep, decorated with a carved slab of terra-cotta at the back. The entire floor of the alcove is tiled, forming a large hearth for both fire-places. The alcove is entirely constructed of stone, including the sculptured arch. The fire-places are of terra-cotta, tile and mosaic work.

THE MEMPHIS SEWERAGE SYSTEM.—I.

[From the New York Herald.]

DURING the little over half a century of her existence the city of Memphis has been the theatre of no less than twenty-two epidemic visitations of disease. Smallpox, cholera, yellow fever, dengue, erysipelas, puerperal fever—the whole catalogue of punitive indications for violations of sanitary laws and hygienic observances—had been exhausted before her citizens were aroused to a sense of the fact that only by cleanly and decent conditions of life could they expect to escape utter annihilation. Her annual death rate, even during non-epidemic years, has rarely fallen below 35 in the 1,000—something more than double the attainable standard of modern cities—while during such epidemic years as 1873 and 1878 the mortality rose to the appalling figures of 101 in 1,000 of all ages. To the student it seemed entirely possible that history should repeat itself, and that on the banks of the Mississippi in the nineteenth century there should be an abandoned Memphis as utterly lost as its ancient namesake, or its sister cities Luxor and Tadmor.

It would, doubtless, be premature to assert that all this has been changed—to admit that, as her press and people claim, she is now the most radically cleanly city on the Mississippi River—and that, as a result, there shall be no more sickness, neither pestilence nor premature death within her borders. But there still unquestionably remains, due allowance being made for the natural exaggeration of those interested, a substantial foundation upon which to base an expectation of future immunity from epidemic disease and of an increasing healthfulness, which is of direct concern, not alone to Memphis, but to the country at large. If the promise and the expectation are realized the whole civilized world will be indebted to the Bluff City for a lesson in practical sanitation, which will far outweigh whatever of charity and assistance may have been extended to her in the past.

At the height of the epidemic last year, the National Board of Health, through its vice president, Dr. John S. Billings, of the United States Army Medical Corps, who had made a study of the situation from the beginning, suggested to the authorities of Memphis that it was desirable that a thorough sanitary survey of the city should be made, and a comprehensive plan for its regeneration be framed and carried out. The suggestion was adopted, and the National Board was solicited to appoint a commission for such purpose. That commission, consisting of Surgeon Billings (chairman), Drs. H. A. Johnson, of Chicago, and R. W. Mitchell, of Memphis, members of the National Board of Health, met in Memphis early in November, having associated with it as expert counsel Dr. Charles F. Folsom, of the Massachusetts State Board of Health; Colonel George E. Waring, Jr., sanitary engineer, of Newport, R. I., and Mayor W. H. H. Beuyard, of the United States Engineer Corps. In addition to the foregoing, Dr. Charles Smart, United States Army, was detailed to make an exhaustive analysis of the water-supply of the city, and Dr. Frank W. Reilly, of Chicago, with a force of inspectors, was intrusted with the duty of a critical house-to-house inspection and general sanitary survey. Before the month of November had closed sufficient had been accumulated upon which to base a series of recommendations, of which the following are the more important:—

1. The systematic opening up and chilling throughout the winter of every house within the city limits; the thorough exposure to sun and air of all textile fabrics, bedding, clothing, carpets, upholstered furniture, etc.; the destruction by fire of every article suspected of being infected by exposure to yellow fever during either 1878 or 1879, and of all accumulations of rags, paper-stock and second-hand clothing, the usual contents of junk shops and second-hand stores.

2. The absolute destruction of about five hundred specified houses and groups of buildings as unfit for occupancy and infected beyond the possibility of renovation; the vacation of a still larger number, pending alterations necessary to fit them for healthful occupation; and the passage of an ordinance forbidding the future erection of buildings unprovided with proper means of sub-ventilation and other sanitary requirements.

3. A radical change in the water-supply, involving the total abandonment of all existing wells and many of the underground cisterns, and the substitution of Mississippi River water for the water of Wolf River supplied by the water-works.

4. An equally radical change in the disposal of excremental and other refuse, and domestic and manufacturing wastes—this to be begun at once by emptying, disinfecting and filling with dry, clean earth all existing privy vaults, and substituting therefor some cheap and convenient form of dry earth closet, pending,

5. The complete sewerage and subsoil drainage of the town.

6. The reclamation of Bayou Gayoso and its tributaries by the acquisition of the ground on either side for a sufficient space to prevent fouling of the contained waters, and the erection of a dam, with suitable valves and a steam pump, to keep the Mississippi River from flowing up into the town in high water,—a potent source of soil saturation.

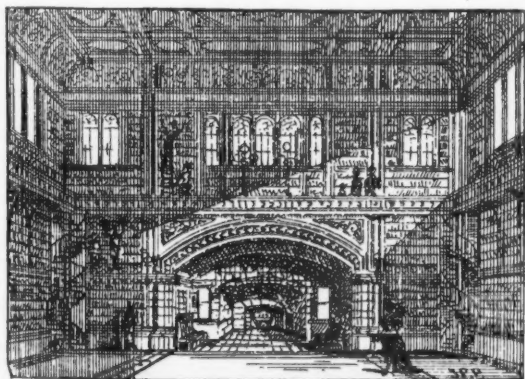


Fig. 229.

smoke-consuming fire-place is the result. The appearance of the large fire-place so arranged is shown in Fig 229, designed for the library building before referred to. This recess in the back of the large fire-place may be made an ornamental feature, but when a fire is burning in the large one proportionate to its size, the recess will be covered by the fire and fuel. An arched alcove at the end of the reading-room encloses both fire-places, and forms a retired and sheltered niche, lighted by windows at the right and left, for the convenience of readers. The small fire-place is .80 meters, the large 1.80 meters, and the alcove 3 meters high to the springing of the arch.

These, with some suggestions as to sanitary superintendence, street and alley conservancy, outlined a decidedly formidable task for a community bankrupted by years of maladministration, by downright plunder, and by two successive epidemics of unparalleled severity. Nevertheless, the recommendations of the commission were accepted in good part by the majority of the municipal officers and by the more intelligent and public spirited among the citizens. Plans and estimates of cost, in detail, were prepared, published and discussed in every conceivable way, on the street corners, in offices, stores, counting-rooms, in the columns of the daily papers, and in public meetings. The present civic government of Memphis is vested in a legislative council of seven citizens appointed by the Governor of the State. This council prepares annually a budget of the estimated expenditures for the coming year, and this budget is presented to the State Legislature, which body authorizes the levy of taxes for the specific amounts comprised in the budget, and beyond which no expenditure may be made or indebtedness incurred under heavy penalty. In order to raise the money necessary to carry out the recommendations of the commission a special session of the State Legislature was necessary; and this, after some delay, was secured. At first a ten per cent levy was talked of for sewerage and drainage alone. The various amounts necessary for these purposes were fixed at from \$1,500,000 to \$3,000,000, or even more. The commission, however, relieved the community of this serious rate of taxation by specifically recommending what is known as the Waring system of small pipe sewers. This system, it was estimated, could be thoroughly carried out for about one-tenth of the average cost of the system hitherto discussed. Finally, and only after bitter opposition, the recommendation of the commission on this point was adopted, and it was determined to ask the Legislature for authority to raise the sum of \$228,500 out of which to defray not only the expense of a complete system of sewerage, but also of over forty miles of subsoil drainage, and of the elaborate plan for the bayou conservancy.

At the meeting of the American Public Health Association in November, 1879, at Nashville, the proceedings were opened by the reading of a paper by Colonel Waring [which was published in the *American Architect* for December 13 and 20, 1879].

It was the system here outlined which was adopted by the National Board of Health Commission for application in Memphis, and which has since been carried out.

The recommendation of so novel a method of sewerage, of which there is no example in practice of sufficient magnitude to serve as a precedent in the case of a large city, was only reached after much discussion, and such an experiment would probably not have been risked but for the pressing need for economy, which made it practically impossible to carry out the usual system, which would have been enormously more costly. Although the recommendation was at once accepted by the Citizens' Committee, and later, after full discussion, by the government of the city, the opposition to it was so strong that the work was finally determined upon only after it had been again fully discussed with its projector in meetings of the Council and of the Citizens' Committee. Ground was not finally broken until January 21, and much delay was caused by the failure to secure pipes and to make plans in advance.

THE ILLUSTRATIONS.

ITALIAN STREET LANTERN.—SWISS FOUNTAIN.

THESE illustrations are reproduced from the pages of *Le Moniteur des Architectes*.

COMPETITIVE DESIGN FOR THE COURT-HOUSE AT CAMBRIDGE, O.
MR. THOMAS BOYD, ARCHITECT, PITTSBURGH, PA.

CHANCEL FURNITURE FOR THE CHURCH OF ST. JOHN IN THE WILDERNESS, DUNBAR FURNACE, PA. MR. M. N. CUTTER, ARCHITECT, NEW YORK, N. Y.

The panels of this furniture, which is of oak worked to a brown color, and some other parts are painted by Mr. Day. The cabinet-work is being done by Mr. Gatchell of Newark. Cost, \$200.

THE WEBSTER HOUSE, AT MARSHFIELD, MASS.

(See last week's issue).

We regret that the following description did not reach us in time for publication with the illustration to which it refers:—

The old mansion and home of Daniel Webster was, during a winter night of '77-'78, burned to the ground, and though rich in historic relics but very little was saved from the flames. The original portion of the old homestead,—to which many additions were from time to time made,—dated from the last century. In rebuilding a portion of the cellar-wall a bottle of cherry rum was found under the lowest course, and some coins. Its occupants were two or three times besieged within its walls in the "good old colony times." The present building is rebuilt directly upon the old cellar-walls, but covering a smaller area than the old mansion, and though exteriorly unlike the latter, the panelled ceilings, wainscoted walls, dormers and overhanging story recall some features of a colonial treatment. A fine portrait of Daniel Webster, surmounted by his staff and felt hat, hold the place of honor over the hall mantel. The widow of Fletcher Webster is the present owner of the property.

CONCRETE TOWERS.

It may be useful to draw attention to a communication addressed to the [English] Institution of Civil Engineers, by Mr. Imrie Bell, C. E.

Mr. Bell commences by remarking on the use of concrete by the Romans, on its gradual disuse, on its re-introduction as a foundation, and on the introduction of *béton*, or hydraulic concrete, by the French engineers, followed by our own (among whom the late Mr. John Hughes may be cited as one of the earliest to introduce the French practice). He then refers to the valuable and exhaustive researches of Vicat, and to the improvements made in the manufacture of cements. It would be desirable here to introduce a short account of the use of concrete in England by the house-builder. For this, however, we are as yet without full materials; although, having been for a short time resident in a house built, in a very exposed situation, of concrete, we are able to speak of one unexpected excellence which it possessed in common with others more generally known,—that is, the great quiet and silence which prevail in it in a high wind. Before rising in the morning, no idea was obtained that a gale was blowing. The cause we take to be the absence of those joints through which the wind rushes as in confined channels, which are thus indicated as the cradle of noise.

Mr. Bell tells us that he has been much struck by the want of attention paid to the art of producing a fair and finished surface in the exposed faces of concrete, as exemplified in many of the large engineering works in the course of construction, where the exposed face has a honeycombed appearance, as well as showing the marks of the rough timber planks forming the frames in which the concrete had been placed. In this remark of an engineer every architect will agree. Nor is it a question of appearance only. These unsightly hollows and projections retain damp, and offer needless resistance to wind, thus at the same time hastening the ultimate decay of the artificial mass, as well as destroying that quiet to which we before referred.

The result of the study given to this part of the subject by Mr. Bell is, that this objectionable aspect of a concrete building arises simply from neglect or indifference. It is possible, nay, even easy, with due attention, not only to produce a fair surface, but to form mouldings, and even tracery and ornament, and at the same time to make the face-work as durable as any other part of the block. It is evident that this is a view of the case which, if worked out, is likely to result in the very general introduction of concrete as a material for house-building. It is to be regretted, with reference to this, that although Mr. Bell has given the cost of the light-house of which we have to speak, in block, he has not given the price per cubic yard of the concrete, applied after this method.

When it has been attempted hitherto to give a face to a concrete structure, it has usually been done either by rendering with plaster, or by grouting with liquid mortar, both of which are more than questionable modes of effecting the object. The best result that can thus be attained is that of a veneer, liable to sudden decay, and particularly liable to destruction by frost. Failure is said to have so often occurred as to prevent recurrence to this imperfect and unworkmanlike finish; so that the concrete surface yet retains in general its natural roughness.

The method adopted by Mr. Bell is one that, on the first blush, recommends itself to the architect. He has provided moulds, made of smooth-planed board, to act like the matrix of a seal, or the mould of a metal cast. Immediately before applying the mould, he coats it over with a mucilaginous soap, to prevent the adherence of the concrete. In filling the frame, or mould, care must be taken that a mixture of fine concrete or cement is laid in with a trowel close to the face-board, as the work proceeds, so that the mixture is carried up uniformly with the body of the work, and the whole forms one homogeneous mass. The face is thus like the skin of an iron casting; and if the mixture of materials be judicious, it will be really the strongest part of the whole structure. Mr. Bell tells us that he has followed out this process in harbor walls, both above and below water, exposed to frost, heat, storm, and rain, and that he has done so with complete success, and at an inappreciable increase of cost.

The first example, so far as we are aware, of the application of this method of construction to a light-house tower, is the Corbière light-house, in the island of Jersey. This light-house was erected in 1873-74, on the design of Sir John Coode, C.E., by Mr. Imrie Bell as executive engineer. It stands upon the Corbière rock, off the south-western point of the island of Jersey, at a distance of about 1,600 feet from the mainland. The spot might be thought to have been designed for the purpose by Nature herself, as here exists, reared above the fury of the waves, that very substantial rocky basis for the light tower, the artificial construction of which has so taxed the efforts of the light-house architects in less favored localities. At high water, in all tides, La Corbière is isolated; but from shortly after half-ebb to a little before half-flood it is accessible, when the sea is smooth, over the crest of a ridge of rocks which forms a narrow causeway. The range of the tide on the coast is 23 feet at ordinary neaps, and 32 feet at ordinary springs, and the locality is much exposed.

The first operation commenced was the construction of a road of access, of above half a mile in length. Together with this work, dwelling-houses for the light-keepers, with necessary store-houses and outbuildings, were constructed on the main land; but there is nothing particularly worthy of notice as to this part of the scheme. The

tidal causeway, however, constructed on the ledge of rocks above mentioned, required more consideration. The ledge was intersected by deep fissures and pools of water. Owing to its regular submergence the time for work was very limited, as the operations could only be proceeded with from the shore end. The cross section of the road has a top width of 6 feet, and is formed by two walls built of granite blocks, with a batter of 2 to 1, the height of which varied from 1 foot to 8 feet. The space between these walls is filled up with Portland cement concrete, mixed in the proportion of eight parts of shingle and coarse sand to one of cement. The upper layer, 8 inches thick, was made stronger and finer, in the proportion of four parts of shingle and sand to one of cement.

The action of the sea during gales has been enough to prevent any great accumulation of seaweed upon the surface of the causeway; and a sprinkling of hot lime in calm weather was found sufficient to prevent growth of vegetation.

The materials for the road and light-house were conveyed by sea from St. Helier's, and landed in an accessible and sheltered place near the site of the light-house. A patch of rocks formed a sort of natural wharf, from which an overhead rope railway was constructed to the site of the stores and workshops on the main rock; a wheel with grooved tire running along the rope supporting a block and tackle for suspending the basket or bag containing the material. This wheel and tackle were pulled along the ropeway by a small endless wire rope, wound round a drum, and worked by two men at a windlass.

An inclined tramway, on a 3 foot gauge, was laid on longitudinal timbers, from the workshops to the site of the tower, and worked by a steam-engine. Details of all these contrivances are given by Mr. Bell; but their interest is chiefly special. What we have to regard with most attention is the method of building in concrete employed, which possesses a very general interest.

The base of the tower,—it is to be regretted that we do not find the level of the sea referred to in any of the drawings accompanying the paper,—was roughly quarried, leaving a core of about 13 feet in diameter, and 7 feet in height. The frame used for forming the exterior face of the concrete was a segment of one-eighth part of a circle, 3 feet in height, dressed in face to a radius of 15 feet 6 inches, with a batter of 1 in 12. This was fixed in place by means of tiebolts lewisied into the rock. The concrete was composed of six parts of shingle and sand to one of cement. It was thrown into the segmental frame, the face being prepared as before described. The frame was removed on the third day, when a solid block of concrete was exposed, with a face equal to dressed ashlar, and a hardness about equal to that of a soft brick. A batten was fixed upright at each end of the frame, so that when the concrete hardened and the batten was removed, there was a vertical slot at each joint, about 9 inches deep by 4 inches wide; when the frame was shifted, and the next segment was filled in, the fresh concrete entered this slot, and formed a natural joggle or dovetail, holding the two blocks together. A concentric channel, 9 inches broad by 4 inches deep, was left in the top of each course for the same purpose. This was in its turn filled up by the concrete of the course above, so that the whole structure was bound together in its own substance. From the drawing it appears that there were three of these courses, the joints of which are marked by a chamfer. On the top of the third course is a recess of 4 feet, and within this the base of the tower itself is placed. This structure rises vertically for about 6 feet 6 inches, where there is a moulded soffit. From this the wall of the tower rises with a curved batter, and is topped with a heavy torus moulding. However much credit may be justly claimed for the engineering of the building, we cannot but hold that the elevation of the tower, so far as we can judge from the drawings, is not characterized by any architectural elegance. The stepped base and heavy top moulding seem to contain a not inconsiderable amount of material, the structural utility of which we fail to perceive. In the drawings attached to the paper a section of the lantern is given; but the sections and elevation of the tower show the masonry, that is to say, the concrete alone. It is thus not possible to speak with certitude as to the architectural effect of the complete building, and we may hope that the criticism provoked by the lines of the tower alone may be qualified by the addition of the lantern.

On the top of the platform, which is formed of a solid mass of concrete over the whole area, the tower was carried up in a mode very similar to that before described, with the exception that the mould frames were made to radiate from an iron centre, firmly secured in the true axis of the tower. Two blocks, forming opposite sectors, were filled in at the same time, so that each circular course was completed in four shifts.

The height of the tower and platform together is 44 feet. The well of the tower is 11 feet diameter. The structure of the concrete circular wall diminishes from 4 feet 3 inches at the plinth mouldings, to 2 feet 6 inches under the cavetto at the top. The interior is divided into two chambers, although there is a landing and preparation for an intermediate floor. These floors and landings are supported on T-iron girders, built into the walls, and filled in between and above with fine cement concrete.

A hollow cast-iron column, 13 inches in diameter, and $\frac{5}{8}$ of an inch thick, is built into the platform in the axis of the tower. On the top of this is secured the pedestal of the optical apparatus. For further details we refer to the paper, which will be found in vol. lix. of the Minutes of Proceedings of the Institution of Civil Engi-

eers. The total cost of the work is given as 8,001*l.*, of which 1,606*l.* was expended on the half-tide causeway; 2,976*l.* on the structure; 2,255*l.* on the lantern and apparatus, including fog-bells and clock; and 864*l.* on dwelling-houses and store-rooms. As far as we can collect by scaling from the drawings, the total height from the lowest part of the platform wall to the top of the ball supporting the vane is 62 feet. If we take the height of the centre of the light at 50 feet above the foundation, we find that the total cost of the whole work, excluding the causeway, comes to 128*l.* per foot vertical, or to 160*l.* per foot vertical, including the causeway; a figure which may be advantageously compared with those which we have already given for the cost of this class of buildings.

The interest of the paper of Mr. Imrie Bell is far wider than that which concerns the construction of light-houses. That he has been alone in his treatment of concrete we are not prepared to admit. But that his paper has been the first to call the attention of his own section of the structural profession to the true mode of procuring a good, durable, and workmanlike finish to a building composed of this material, we think is the case. Nor can it be denied that by this treatment the value of concrete as a building material is very considerably enhanced. We may regard the compound as an artificial stone, which possesses the quality that it is in the power of the maker to vary the composition at will, and not only to do so block by block, but to give to the exterior of the block a fine and slightly skin; while the bones of the work,—like the human skeleton,—are composed of a more rough and cheap material.—*The Builder.*

ART IN PARLIAMENT.

ON Monday night the attention of the House of Commons was directed to the cry which is coming up from the country for a supply of objects of art for local museums. In the larger country towns it has suddenly been found necessary to supply workmen in all branches of art with adequate instruction, and, as a consequence, we are asked for specimens to satisfy the demand thus created. The country folk seem to think that the British Museum should supply a part of this want. It is credited with the possession of large quantities of duplicates. As Mr. Rylands observed, "in the case of duplicate specimens, great good might be done by their distribution among the large towns where museums existed." Mr. Beresford Hope, in reply on behalf of the trustees, pointed out the true state of the question, and probably insisted much more than the *Times* reported him as having done, that the British Museum is a central and universal storehouse, to which specialists can always refer with confidence; and also that the very existence of the duplicates, of which so much has been said, may be doubted. We hear that, as a familiar illustration of what did and what did not constitute a duplicate, the House was referred to the well-known variant in the frontispiece of the first edition of the *Leviathan*, in one of which the symbolical figure of the giant despot has the face of Charles I, and in the other of Cromwell. With respect to the idea of spreading duplicates over the country, it is, no doubt, as was observed, of a very attractive nature, and, speaking in the abstract, every one would be glad that the treasures possessed by the great central institution at Bloomsbury should be made as widely useful to the country as possible. But, as a practical matter, it is assuredly true "that the collective wisdom of mankind would conclude that it is more convenient that the many Mahomets should go to the various mountains than that the various mountains should go to the many Mahomets." The British Museum contains many such mountains. The Egyptian collection, for example, or the Ninevite, or the Elgin marbles, or the prints and drawings, or the manuscripts—all these are mountains which it would be in the highest degree imprudent to scatter or separate, even for a short period. The country student who has by the help of his private collection, or that of the local museum, worked up a subject to a certain point, must be able to look forward with certainty to finding what will complete his labors in some one place, and what better place can there be than a centre of population like London? The number of such serious students who are permanently banished from London, must be very small in comparison with those who reside within reach of the great national collections. It would be in the highest degree inconvenient if, by loans or otherwise, the certainty of finding what we want when we want it should be taken away. As Sir John Lubbock remarked, "persons would be very much disappointed if, when they had come from a distance to see particular objects, they found those very things were away on loan." We have all experienced, even in the case of books which are not out of print, the difficulty of obtaining what we want in a library where loans are permitted.

With regard to duplicates, two questions arose in the course of the short debate. Presuming that duplicates exist, a separate staff would be required for their selection and distribution. But it has been asserted in well-informed quarters that very few such duplicates do exist. It often turns out that books or prints which for years have been thought to be duplicates, have in reality been totally different. Some years ago a party of enthusiastic bibliographers obtained the loan from Windsor Castle of what had always been considered the duplicate of an early Psalter in the British Museum. When the volumes were compared, and a third with them, it was found that all three, although printed at the same date, and at the same place, and by the same printers, yet differed from each other in many important particulars. The only real duplicates are perhaps two copies of the same edition of a modern book; but there may be,

and in many cases there is, a necessity for keeping both. Besides, even among well-printed books slight differences do occur. The first copies of a recent theological work contain a dedication in which two great "living" divines are addressed as "lying." In fact, in a world in which no two blades of grass are exactly alike, there are many similar examples. An eminent collector was lately heard to say that no two impressions of an etching could be considered duplicate. And in one large collection it was recently discovered that some thirty or forty prints which had been put aside many years ago as duplicates, were, in reality, different states. The authorities of one of the University museums recently sold their so-called duplicates, and were considerably mortified to discover, when it was too late, that they had parted, in many cases, with copies and early states, and diminished the value to the student, of the prints they retained. Every manuscript is unique, and no collection, however large, can be said to contain duplicates in this branch. It would be easy to enlarge indefinitely upon the danger of parting with any but worn-out or inferior objects, and it is obvious that such specimens will not fetch a price sufficient to pay for the trouble of selecting and cataloguing. It is no secret that the sale of duplicate prints from the collection in the British Museum, which took place last winter, failed to satisfy the expectation of the trustees. We must be poverty-stricken indeed if we cannot afford so small a sum as 3,000*l.* for such a collection as that of Mr. Crace, without endeavoring to make it up with a paltry 600*l.* or 700*l.* derived from the very questionable expedient of a sale of duplicates.

South Kensington divided with the British Museum on Tuesday night the attention of speakers. There was the usual amount of grumbling at the way in which the accounts of that institution are presented. We have adverted so often in past years to this subject that it is only necessary here to express our regret that an improvement has not been made. But at South Kensington the duplicate question arises with greater force than in the British Museum. A list of the duplicates suitable for circulation on loan was printed in 1872, and can, as Mr. Mundella observed, be readily made complete to the present time. Duplicates at South Kensington really mean things between which a certain similarity of manufacture exists, as, for example, in pottery or in metal work, or in the case of pictures by the same artist. But of duplicates, in the strict sense of the word — that sense in which it must be applied to the British Museum — there probably exist as few at South Kensington as elsewhere. Referring to the National Gallery and the National Portrait Gallery, Lord Frederick Cavendish said he had consulted the trustees, and found that there were no duplicates in either collection, except one among the portraits; for copies of a picture are on a very different footing. Yet at the present day there are so many means of obtaining casts and reproductions, sufficiently faithful to be of use to the student, that it is much to be hoped that Mr. Beresford Hope's suggestion may be taken up by the Treasury, and a small sum granted "which would make it possible to reproduce and scatter broadcast, through the local institutions, copies of originals which should be kept in some separate place." — *The Saturday Review*.

SANITARY SCIENCE THREE HUNDRED YEARS AGO.

TOWARD the beginning of the sixteenth century a terrible malady made its first appearance within our island, causing the greatest danger to life wherever its pestilential breath infected the multitude. The origin of the evil was supposed to be wrapped in mystery; the disease was looked upon as one of those visitations which have so often been attributed to an offended Providence instead of to the true causes of their existence — the ignorance and negligence of a people as to the first principles of sanitary science. Illuminated by the light of modern teaching, we can entertain but little doubt that the dreaded sweating sickness — the *Sudor Anglicus* — which created such havoc throughout England in the reigns of Henry VIII, and his son, was entirely due to the almost Eastern condition of things then apparent in our system of drainage and ventilation. The houses, even of the great, harbored filth and dirt which were allowed to remain unremoved, and thus to exhale their noxious gases in fatal freedom. The narrow streets were the receptacles for all garbage, whilst open sewers on either side slowly rolled their contents toward a polluted river. Pure water for drinking purposes was scarcely to be had; the brewers monopolized the springs for their trade, whilst the conduits, which even a century before the accession of bluff King Hal had been insufficient for the wants of the people, now simply mocked the requirements of the town. Meat was cheap, and the English were notorious for their robust appetites. It is not, therefore, surprising that men, breathing in their own homes and out of doors a fetid atmosphere, with their blood heated by heavy consumptions of animal food, should fall easy victims to a pestilence which their own offensive habits had helped to engender and encourage. The subject did not escape the notice of one of the keenest observers of his day.

I am frequently astonished and grieved (writes Erasmus to Wolsey's physician) to think how it is that England has been now for so many years troubled by a continual pestilence, especially by a deadly sweat, which appears in a great measure to be peculiar to your country. I have read how a city was once delivered from a plague by a change in the houses, made at the suggestion of a philosopher. I am inclined to think that this also must be the deliverance for England. First of all, Englishmen never consider the aspect of their

doors or windows; next, their chambers are built in such a way as to admit of no ventilation. Then a great part of the walls of the house is occupied with glass casements, which admit light but exclude the air, and yet they let in the draught through holes and corners, which is often pestilential and stagnates there. The floors are in general laid with white clay, and are covered with rushes, occasionally removed, but so imperfectly that the bottom layer is left undisturbed, sometimes for twenty years, harboring expectorations, vomitings, ale-droppings, scraps of fish, and other abominations not fit to be mentioned. Whenever the weather changes a vapor is exhaled which I consider very detrimental to health. . . . I am confident the island would be much more salubrious if the use of rushes were abandoned, and if the rooms were built in such a way as to be exposed to the sky on two or three sides, and all the windows so built as to be opened or closed at once, and so completely closed as not to admit the foul air through chinks; for, as it is beneficial to health to admit the air, so it is equally beneficial at times to exclude it. The common people laugh at you if you complain of a cloudy or foggy day. Thirty years ago, if ever I entered a room which had not been occupied for some months, I was sure to take a fever. More moderation in diet, and especially in the use of salt meats, might be of service; more particularly were public edifices appointed to see the streets cleaned and the suburbs kept in better order.

One of the strange features of this disease was its partiality for Englishmen. Wherever Englishmen congregated, there it attacked them, "following them, as the shadow does the body, in all countries, albeit not at all times." In Calais, Antwerp, and Brabant it generally singled out the English residents and visitors, whilst the native population escaped unaffected. The chief victims were the robust and the powerful, whose sound digestions permitted them to indulge in the pleasures of the table; "thin-dieted" men it rarely attacked. The illness began with a fever, followed by severe internal struggles, which caused a profuse perspiration to break out. If the constitution proved strong enough to expel the poison, the sufferer escaped. One of the chief results of the malady was to cause such an utter prostration of the nervous system that the patient often yielded without a struggle. — *The Cornhill*.

MEDIEVAL BARN IN ENGLAND.¹

As the Society propose, at their Stroud meeting, to make an excursion to Frocester Barn, I send you a few notes which may be interesting as illustrating the subject of medieval barns, many of which are very remarkable buildings, both as to appearance and also as to construction, and which are now fast disappearing. I send these notes as I have paid considerable attention to the subject for some years. The Glastonbury Barn is probably the best known, and is the most ornamental of all such buildings I am acquainted with. It is so well illustrated by Pugin that it is needless to refer further to it. The Abbey Barn at Ardennes, near Caen, is also well known and illustrated. It has two aisles and nave, and measures 154 feet 6 inches long, the nave being 22 feet span, the aisles being 5 feet 8 inches, and 11 feet 6 inches wide respectively. The arcades in this case are of stone; the English examples are generally, when consisting of nave and aisles, formed of oak posts. The great barn at Peterborough, now destroyed, was about 150 feet long by 36 feet wide, and consisted of nave and two aisles, the posts being of oak. It appears to have been an early barn, with the roof to a pitch of about 55 degrees in one span, with two well-proportioned transepts. Remains are still existing of a very remarkable barn at Abbotsbury, which has a parapet upon the exterior, evidently for the purpose of defence. Unfortunately I had no time when there to make a plan, but judging from the roof, which is hammer-beam, and the niche which terminates the gable end, I should judge this building to be fifteenth century work. The barn at Bredon, Worcestershire, is well worth a visit. It consists of nave and two aisles: nave 20 feet wide, aisles 8 feet 6 inches each, oak pillars about 13 inches square. The aisles have collar-beams at springing of gables, from which spring large curved braces to support collars of centre roof. The roof is of one span on the exterior, as usual, and there is a remarkably beautiful stone chimney to a chamber formed in one of the transepts. The length of this barn is about 130 feet, and the exterior effect is quite equal, if not superior, to many churches. There is no straining for effect; everything is natural, and fitted for the work it has to do. The gables of transepts are formed of oak and plaster. There is nothing to mark the date. At Winterbourne, in this county, near the church, half the ancient barn still remains. It consisted originally of ten bays, and measured about 26 feet span in the interior. The roof is in one span, with collar-beam and king-post, and large curved braces brought down to within a few feet of the ground; the walls are 3 feet 9 inches thick, and built battering. There are two transepts with granaries in gables, and with the Jacobean stables built with gabled end between the transepts it forms a very picturesque building, and one regrets the loss of half of it. A fine barn remains at Clach or Braidenstoke Abbey of nine bays, with transepts. The roof is very good, of one span. This roof has the peculiarity of having a row of windows between the tops of buttresses and eaves. I should think it is of fifteenth century date. The Abbey Barn at Lacock is curious in plan, having evidently been built to suit the streets which bound it upon two sides. I can give the scantlings of the timbers of this barn, which will afford our members some idea of

¹ A Paper by Mr. Pope, read at the Meeting of the Bristol and Gloucestershire Zoological Society.

the profuse use of oak in these old buildings: plates, 6 inches by 6 inches; principals, 18 inches by 10 inches; purlins, 9 inches by 6 inches; rafters, 4 inches by 4 inches. The width of this barn is 24 feet 6 inches, by 95 feet long, with one transept 35 feet by 20 feet, height about 32 feet, walls from 3 feet to 2 feet 6 inches thick; the curved braces are brought down to about 6 feet from ground level. The way the natural bend of the timbers is utilized is interesting. Most persons have noticed the Bradford Barn in going by railway from Chippenham towards Salisbury, with its elegant early detail and transepts. It appears to me to be about fourteenth century date, but it is difficult to assign any date without mouldings or documents to guide you. At Coxwell, near Shrivenham, is a remarkable barn commonly called Shrivenham Great Barn. It consists of nave 17 feet 6 inches wide, and two aisles each about 7 feet 6 inches wide. Transepts, one on either side, are about 24 feet by 18 feet, and the other shallow. There are seven bays in this barn, oak pillars resting on freestone square basis, about 6 feet above ground: and here it will be well to remark how careful the builders were to avoid any projection that might injure the cattle; every corner is chamfered or rounded. At Woodspring Priory, near Weston-super-Mare, the jambs are rounded evidently for this purpose. The construction of the roof at Shrivenham shows how good a carpenter must have framed it, angle ties at the corners, and ties whenever there was the slightest chance of pressure upon the walls. The corbels supporting the principals in this barn look almost like Early English work, but may possibly have been re-used from some other building. The walls are about 4 feet 6 inches thick and buttressed. The roof is in one span to the exterior. There were formerly remains of a fine barn at Llanthony, Gloucester Docks. A portion of the barn attached to Abbots of St. Augustine's country residence, still remains at Almondsbury, in this county, one rather interesting at English Combe near Bath, and no doubt the members of this Society will be able to mention many others of which it would be interesting to make sketches before they disappear. There is a sketch of a fine barn, said to be Early English, at Rameds, Northamptonshire, in Turner's Domestic Architecture. At Calcot, in this county, is a fine barn decorated in style, with transepts, in form of two towers; this barn I have never seen, but perhaps some of our members may be able to add to our knowledge by furnishing us with other examples worth studying and illustrating. The chief interest in the Frocester Barn is to me the excellently framed trusses brought well down towards the ground, and the wind braces so formed as to strengthen the rafters and to give support the lower one to the upper one; you will notice also the short ties between the curved braces and collar-beam, for the trusses only go half way up the roof.

ILLEGAL COMMISSIONS—THE OTHER SIDE.

THE equitableness of the position which we adopted in our issue for August 21, in the matter of illegal commissions, is shown by the following extracts from the letter of a manufacturer who found that our coat, to use his homely phrase, fitted:

Dear Sir:—In the copy of the *American Architect and Building News* of 21st inst., which has just come to hand, we notice an article, on first page, which we think fits us (if not intended for us, allow us to state that the coat fits and we have put it on). The case is as follows: On the 14th inst., we received a postal-card from an architect, asking for catalogue and prices of goods. We mailed catalogue and offered him 50 per cent discount, from list, on goods he might purchase, and twenty per cent commission, on what others might purchase, where he recommended them. Our reason for so doing was as follows, viz., on examination of our mercantile reporter we found him quoted "—D" which is "no capital, credit fair" and is not a very high quotation, and such that, were he engaged in trade, we should refuse to fill his orders till further information was received. We therefore insinuated, that we should prefer to sell some reliable dealer at 50 per cent off and allow him a commission of 20 per cent, (which, by the way, he was not obliged to take), or he could give the 20 per cent to dealer, making 50 and 20 per cent (equal to 60 per cent) off, or could give his customer advantage of this amount offered him. In either way he turned it (provided he did not receive it himself) he would, as far as we can see, be obtaining the goods at an extra discount for the benefit of the person or persons who employ him. He since wrote us stating, "did not ask for commission on your goods; I am not doing a brokerage or commission business." We then quoted him a price without alluding to commission.

It strikes us that, did this gentleman not desire commission, but had an eye to the interest of his customers, he could have, with great ease, written us something like this—"I cannot take any commission for my personal benefit, but will accept your proposition if you will give the discount you propose (commission to me included) to parties ordering goods." The fact is, we sell very few goods that are not subject, in one way or another, to what might properly be termed a commission; and in our experience (some fifteen years) we have never had it before refused.

THE DENVER COURT-HOUSE ONCE MORE.

DENVER, COLORADO, August 25, 1880.

TO THE EDITOR OF THE AMERICAN ARCHITECT:—

Dear Sir,—About six months since, our County Commissioners advertised for competitive plans for a court-house. They published a general description of the building, with instructions to the parties competing, and confined them to the limit of \$150,000. A number of plans were presented within the limit prescribed, but a finer plan was also presented, costing more; this was adopted, and the contract is to be let for this plan at a cost of \$180,000. Now I wish to inquire, as architects were induced to put in plans by the request of

the Commissioners, at a certain price, if these are rejected and a more expensive plan taken, have they not a claim for pay for their plans, as they acted in good faith and the Commissioners did not? I was not a competitor, and ask only for information.

Respectfully yours,

E. A.

[The grievance mentioned by "E. A." is one that those who take part in public competitions are sure to encounter sooner or later, and we cannot give any hope of redress. Nominally, the parties advertising for plans are bound by their advertisement, but there are many ways in which they can escape their obligations if they wish, and those who suffer from this kind of fraud will generally do better to content themselves with charging the cost of their drawings to profit and loss, and resolving never to meddle with another competition in which a professional referee is not employed. In the case in question, the variation in prices has been great enough within the last few months to account perhaps for a portion of the excess of cost over the limit. Besides that, extra work may have been added, or special contractors employed, so that it is by no means certain that a *bona fide* estimate might not have been made, if not within the limit, at least within the ten per cent margin which is usually allowed to architects, so that the competitors would not have the smallest prospect of success in enforcing a claim for damages. We are sorry for them, but those who involve themselves in these disreputable scrambles have only themselves to blame if they suffer by it. —Eds. AMERICAN ARCHITECT.]

BLACK MORTAR STAINS.

PHILADELPHIA, September 1, 1880.

TO THE EDITOR OF THE AMERICAN ARCHITECT:—

Dear Sir,—You would confer a favor on the profession at large if you will ascertain through the *Architect* the recipe or preparation for removing "black" mortar stains from brickwork.

By giving this your early attention, you will oblige

Yours truly,

J. J. D., Architect.

[We know of nothing which will entirely remove such stains. The muriatic acid which is used to dissolve the lime stains will carry off a part of the black, but not all, especially if the bricks are porous. Perhaps some of our readers may be able to help us. —Eds. AMERICAN ARCHITECT.]

VIOLLET-LE-DUC'S DISCOURSES.

TO THE EDITOR OF THE AMERICAN ARCHITECT:—

Dear Sir,—Will you kindly inform me, through your paper, what the prospects are of the publication of the second volume of Viollet-le-Duc's Discourses? By so doing you will greatly oblige

A READER.

[We regret that we cannot hold out to "A Reader" a very definite prospect of the publication of the second volume of Mr. Van Brunt's translation. —Eds. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS.

THE EXCAVATIONS AT NINEVEH.—Mr. Rassam has not been allowed by the local authorities at Nineveh to continue his excavations for the British Museum. He will probably go to Armenia.

A RIVAL OF THE OBERAMMERGAU THEATRE.—Some peasants at Erl, a village in the Tyrol, jealous of the success of the peasants of Oberammergau, who up to July 10 had received no less than 300,000 marks, have built a vast theatre in the open air, and the actors are recruited exclusively among the villagers. The pieces they play are not religious.

RELATIVE STRENGTH OF WOODS.—An eminent engineer, Mr. J. C. Trautwine, has been experimenting upon the relative strength of tree-nails, or wooden pins, and speaking of the imperfectness and unreliability of previous tests says: With a view to supplying this deficiency in some measure, I have recently tested several American woods, in the shape of cylindrical pins .64 of an inch, or full five-eighths of an inch, in diameter. I used one of Richles well-known and accurate testing machines, in connection with an iron holder, and through a cylindrical hole in which the closely fitting wooden pin to be tested was placed. Two specimens of each were tried. Where their difference did not exceed 10 per cent, the mean is given. Greater differences must, of course, be of frequent occurrence, even in good sound specimens. All the specimens were fairly seasoned and without defects. The central pieces sheared off were five-eighths of an inch long. The single circular area of each pin was .322 of a square inch, and that of the two areas that were sheared at once .644 of a square inch; and since .644 by 1.55 equals one square inch, it follows that if the results in the table be divided by 1.55, the quotient will be the actual double shearing strength found for each pin of full five-eighths of an inch in diameter. The following table gives the results in pounds per square inch of total sheared area:

Ash.....	6,280
Beech.....	5,223
Birch.....	5,595
Cedar—white.....	1,372 to 1,519
Cedar Central American.....	3,410
Cherry.....	2,945
Chestnut.....	1,535
Dogwood.....	6,510
Ebony.....	7,750
Gum.....	5,890
Hemlock.....	2,750
Hickory.....	6,045 to 7,285
Locust.....	7,176
Maple.....	6,355
Oak—white.....	4,425
Oak—live.....	8,480
Pine—white.....	2,480
Pine—yellow northern.....	4,340
Pine—yellow southern.....	5,035
Pine—yellow, very resinous.....	5,035
Poplar.....	4,418
Spruce.....	3,255
Walnut—black.....	4,728
Walnut—common.....	2,830

GIGANTIC LUMBER SCHEME.—A cablegram from Scotland states that a joint stock company which has been forming in Great Britain for the purpose of purchasing timber and controlling the lumber market has been completed, and has now control of Messrs. Cooke & Grant's "limits." This is a beginning of a gigantic scheme, which will throw a large amount of British capital into this country.

A NOVEL CHURCH TOWER.—An Episcopal church recently built in Tacoma, the western terminus of the Northern Pacific Railroad in Washington Territory, is said to have the oldest tower on this continent. The building is of rude logs, and was put up in less than three weeks. The tower is an immense fir tree which has been cut off forty feet above the ground and surmounted with a bell and cross. The rings of the tree show that it is at least two hundred and seventy-five years old.

JUVENILE STRIKES.—In all the coal breakers of Pennsylvania small boys are employed to pick the slate and bad coal from the slides after the broken fragments have left the hopper; and often a single breaker will employ as many as fifty boys. They are little ragged urchins, black from morning till night with the soot of coal, but withal merry, mischievous, bright-eyed little fellows. The law prohibits the employment of any under ten years of age, but it is not uncommon for a miner to put his six-year-old boy into the chutes for the 30 cents a day he can earn. These little fellows have something of a protective organization of their own, and play the Molly Maguire on a small scale occasionally just to show the power of the strike. Insignificant as their labors appear to be, they have it in their power to stop the work of the whole company from the loft of the breaker to the stables of the mules in the mines below. There is no use of mining the coal if it cannot be lifted to the breaker and sorted by the boys; and hence all work ceases when the lads prefer to play. Just now the coal mining companies are in trouble with their boys, for Coup's circus is making the tour of the coal region, and mining must stop while the boys go to the circus, and sometimes for a few days afterward, until they have tired of hanging by their legs to trees, walking fence rails and otherwise indulging in imitations of the circus acrobats. When a circus approaches a mining town the mining company takes steps to corral the boys in the top of the breaker, but usually their quick wit and nimble legs are more than a match for the company. — *New York Times.*

COUNTERFEIT TANAGRA FIGURINES.—It may interest the admirers of the latest discovered form of Greek art, the so-called figurines of Tanagra, to know that they are so extensively and successfully counterfeited that there are probably not more than three persons in Athens whose judgment is absolutely trustworthy in regard to them. The most experienced amateurs have been deceived by demonstrated forgeries, and the law has already been successfully invoked to reclaim guarantees of the dealers. In one case a figurine sold to a well-known collector for 2,000 francs was discovered to be a copy of an Apollo found at Pompeii; and what is even more glaring, an entirely new type of ornamented terra-cotta has been introduced, fabricated in Crete, and successfully palmed off on collectors as a novelty for considerable sums—in one case I know of as much as £30, for one broken vase, broken intentionally to give it an air of unquestionable genuineness. I was offered in Crete a pair of them in perfect condition for £50, and the owner did not seem in the least surprised when I told him I would not give him ten shillings for them, but put them back laughingly in his basket as if he thought it a good joke between us. In Athens the usual mode of taking in the stranger is to send to the hotel a peasant—an apparently unmistakable rustic—who pretends to have found a couple of figurines in his own field and to be anxious to sell them secretly, as the Government claims the half of all the antiquities found, and to escape this tax he is willing to sell them for a small price. Or, perhaps the *valeur de place* informs you with great secrecy that a peasant has been about the hotel with some figurines or vases which he wants to get out of the way of official attention, etc. The result is, in general, that in no city I have ever been in are there so many forgeries of antique objects of all kinds as in Athens. It would seem as if something of the old Greek art-feeling had broken out in this vein. Neither coins nor terra-cottas can be bought with any kind of certainty here except by the most capable experts, and for genuine articles the prices are enormously higher than in Italy for the same class of articles, the excavations in Magna Græcia affording much more abundant results than those in Greece proper. — *W. J. Stillman, in the Nation.*

EFFECTS OF LIGHTNING.—Mr. J. Johnstone writes to the *Edinburgh Daily Review*: "On the 7th of July, about 4:15 p. m., the lightning struck the Craig which is named on the plan of Edinburgh 'The Dasses,' which overhangs the Hunter's Bog on the east. The rock struck is of the hardest basalt, commonly called whinstone. The lightning did not strike the sharp, serrated front edge of the Craig, as might have been expected, but, on the contrary, it struck the flat top covered with sod at a distance of three feet from the present edge, and that must have been between six and eight feet from the edge before the accident, for the lightning detached several tons of the rock from the front of the Craig, and sent six large masses of rock down into the Hunter's Bog; the largest of these measures four feet long by three feet broad and one foot thick, but of irregular shape. On the edge of the Craig the lightning detached a mass of rock, which now stands in a very precarious position. This large mass measures four feet nine inches long by three feet broad and one foot four inches thick. The top of the Craig, a short distance from the front of it, is covered with a coating of angular pieces of basalt, and on the top of these a covering of sod. It was on the sod the lightning struck, and made a hole two feet six inches long by one foot six inches broad. On placing a compass near the hole made by the lightning I found that the needle deviated from the N. to the E., and when the compass was in the hole the needle stood at E.S.E., instead of N., proving that the rock is still powerfully electrical at the spot where the lightning struck it. But, except in the vicinity of the hole, the Craig does not affect the needle."

PNEUMATIC DISPATCH IN PARIS.—The pneumatic tube system of letter telegrams in Paris now operates through fifty miles of piping, from six central stations, where motive power is supplied by steam engines of 153 horse-power. About 400,000 dispatches are sent per month, the average charge being less than ten cents.

THE PRALL HEATING SYSTEM.—Hitherto the Prall Steam Heating Company of New York, has offered, in consideration of the franchise, to pay 20 cents per lineal foot of pipe laid and 5 cents for every lineal foot of repairs, and to relay the pavement under the direction of the Commissioner of Public Works. This has always been opposed, for the reason that the founders of the project did not propose to make a sufficient return to the city treasury for the right ceded. The company has recently offered better terms—namely, to pay 20 cents for every lineal foot of pipe laid, 5 cents per foot for repairs, and 3 per cent of the gross receipts into the city treasury. The company further binds itself to give a penal bond of \$50,000 for the proper execution of the work, and to deposit with the Comptroller money enough to pay for repairing the streets disturbed, the same to be forfeited if they do not repave the streets. In addition to these conditions a restrictive clause has been inserted in the ordinance giving the company the right to lay but one mile of pipe, and leaving it then with the Commissioner of Public Works to authorize or stop the work. The company also agrees to furnish heat to the public buildings at cost. At these terms, according to the *Metal Worker*, the franchise has been granted.

ASPHALT AND AMBER IN THE MUD OF NEW JERSEY.—The Proceedings of the Academy of Natural Sciences of Philadelphia contain a description of a mass of asphaltum, weighing about a hundred pounds, which was found near Vincenttown, New Jersey, in the ash-mud, a layer above the green-sand proper, about sixteen feet below the surface. It is the first specimen of this peculiar kind of hydrocarbon that is known to have been observed in New Jersey. It is very brittle, black, with a resinous lustre, uneven fracture, inclined to conchoidal, melts easily, and burns with a yellow, smoky flame, leaving a voluminous coal and but little ash. It is soluble in chloroform and oil of turpentine, in ether with difficulty; insoluble in alcohol, water, and solution of caustic potassa. Oil of vitriol dissolves it into a black liquor, of which a part is retained in solution in water, a part subsides as a dark-colored powder. Nitric acid reacts upon it at an elevated temperature, forming with it soluble products of oxidation. Near the pit from which the asphaltum was obtained a specimen was found of a yellow mineral resin, which occurs frequently, but not regularly, in the mud of the cretaceous formation. It is usually called amber, or succinite, but differs from the typical amber of the Baltic in being lighter than water, fusing into a very fluid, mobile liquid, and in having a less strong cohesion, qualities which indicate its analogy to the variety of succinite called krantzite. It burns easily, with a yellowish, strongly smoking flame, leaving but little coal; it may be vaporized into a gray cloud of strongly penetrating odor, which condenses into an oily liquid, and some crystals. It is freely soluble in chloroform, bisulphide of carbon and oil of turpentine, sparingly soluble in water, alcohol and ether, and is partly dissolved by caustic potassa. Cold nitric acid affects it but little. Oil of vitriol makes with it a red solution. The yellowish powder becomes orange-red on warming.

ORIENTAL TOGLES.—Fannie Roper Feudge thus writes in the *Independent*: "Several Oriental nations, the Japanese and Chinese especially, have many rare and beautiful carvings in ivory, called *net suke* or togles. These are handed down in families from generation to generation as precious treasures—heirlooms of birth and dignity that money cannot buy—and they are nearly always memorials of strange or interesting events of family history. In size the togles are extremely minute, generally not more than an inch and a half in length, plum-shaped, and the delicate carvings of most exquisite workmanship. But so extremely petite are the figures that time and study are required to enable one fully to grasp the artist's idea, although in the end he feels himself more than repaid by the numberless beauties that are gradually unfolded to his perception. Of all the togles I have ever seen, the one that most interested me was exquisitely carved of rose-colored ivory and designed to portray the grotto of a mermaid. The interior is octagon-shaped, each side but a single inch in length, and its concave ceiling thickly studded with gleaming pearls. The robes of the dainty mermaid, who reclines upon a couch of sea-foam, no words can describe, so incomparably lovely are they in the transparency that reveals the perfect contour of every dimpled limb. Her maidens, five in number, their garments fairly encrusted with flashing jewels, kneel reverently before their queen, their joined hands lifted high above their heads with the most graceful poise imaginable. This is all one sees at first, even with careful scrutiny. But as the eye becomes accustomed to the minute carvings, a tiny form is seen in the rear—that of a maiden, with long dripping hair and the countenance of an angel. Her white robes have the clinging aspect of one just taken from the water, and the delicate form lies limp and lifeless among the flowers of which the mermaids have formed its fragrant couch. This exquisite carving commemorates the death by drowning of a fair young girl, in her tenth year, an only and much-loved daughter, and the betrothed bride of a royal youth. There is, combined with the lustrous beauty of this scene, a tender, subdued air, quite in accord with the sad event it memorializes; and the observer, mute with loving sympathy, gazes as in a dream upon a spectacle that would afford almost a life-long study. In these wonderful togles one scarcely knows which most to admire—the ingenious conception of the artist or his perfect execution; the exquisite carving or the warm, live tints that make the scene so real. Their rarity, too, adds to the appreciation for the number of both carvers and painters who are able to do this minute work is extremely small. In consequence, togles (fine ones, at least) are very scarce and expensive, being seldom found except in old aristocratic families. Nor do I remember ever seeing one of any considerable merit offered for sale. The use of a good magnifying glass greatly adds to the enjoyment of these togles, and is, in truth, almost indispensable to a full conception of the exquisite coloring and rare symmetry of the human forms."

BUILDING INTELLIGENCE.

[Reported for The American Architect and Building News].

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

- 231,649. WINDOW-SCREEN.—Allen M. Burrell, A. R. Miner, and J. W. Bodge, Canisteo, N. Y.
- 231,655. HINGE FOR AWNING-BLINDS.—Charles P. Dearborn, Boston, Mass.
- 231,662. FIRE-PROOF MATERIAL FOR LINING SAFES, DOORS, SHUTTERS, etc.—Nathaniel C. Fowler, Boston, Mass.
- 231,677. SHUTTER-WORKER.—Patrick K. O'Lally, Boston, Mass.
- 231,684. WATER-CLOSET.—John Ross, Boston, Mass.
- 231,686. DOOR-HANGER.—Samuel Shreffler, Jr., Morris, Ill.
- 231,687. TANK AND FLUSHING-CONNECTION FOR WATER-CLOSETS.—William Smith, San Francisco, Cal.
- 231,696. CHEMICAL FIRE-EXTINGUISHER.—James R. Wilson, Buffalo, N. Y.
- 231,711-12-13-14-15-16. AUTOMATIC FIRE-EXTINGUISHER.—Frederick Grinnell, Providence, R. I.
- 231,722. STEAM-RADIATOR.—Thaddeus C. Joy, Titusville, Penn.
- 231,728. AWNING.—Gustavus S. Perkins, Hartford, Conn.
- 231,743. ELECTRICAL SAFETY DEVICE FOR ELEVATORS.—William E. Sawyer, New York, N. Y.
- 231,758. DAMPER REGULATOR.—Abel D. Catlin, Bay City, Mich.
- 231,763. WRENCH.—William C. Coddington, Baltimore, Md.
- 231,766. VAPOR-CONDENSING AND AIR-WARMING APPARATUS.—Johnathan Creager and Anderson Evans, Cincinnati, Ohio.
- 231,771. CISTERN-FILTER.—Samuel Day, Ann Arbor, Mich.
- 231,772. SAW-SET.—David G. Davison, Paris, Ill.
- 231,783. METHOD OF SEASONING WOOD.—Henry Flad, St. Louis, Mo.
- 231,784. PROCESS FOR PRESERVING TIMBER.—Henry Flad, St. Louis, Mo.
- 231,785. ROCK-DRILL.—Henry W. Fleming, Denver, Colorado.
- 231,805. ILLUMINATING-TILE.—Jacob Jacobs, New York, N. Y.
- 231,817. CURTAIN-FIXTURE.—Christopher C. Kerr, Springfield, Mo.
- 231,819. STOVE.—James T. Lambert, Detroit, Mich.
- 231,820. SHAVE OR ROLLER FOR SLIDING DOORS.—William J. Lane, Millbrook, N. Y.
- 231,831. WRENCH.—James A. Mell and Wesley Wortenbe, Moline, Mich.
- 231,836. WEATHER-BOARD GAGE.—Geo. W. Mills, Vincennes, Ind.
- 231,872. LATCH.—Lorenzo Wallace, Leavenworth, Kansas.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS.—The following building permits have been issued since the last report:
Joseph Riddlemoser, four-sty brick building, 93 West Fayette St., between Charles and Liberty Sts., 30' x 95'.
J. M. Cone, 7 three-sty brick buildings, on Franklin St., between Pine and Pearl Sts.
B. L. Menchen, three-sty brick building, 364 Cross St., near Warren St.
James H. and John F. Pfeister, 13 two-sty brick buildings on Canton Ave., commencing cor. of Cannon St.
James R. Clark, 4 three-sty brick buildings on Baltimore St., between Pine and Fremont Sts.
J. B. Clark, 5 two-sty brick buildings, on Raborg St., between Pine and Fremont Sts.
Jos. H. Keiman, 1 four-sty and 8 three-sty brick buildings, with mansard roofs, on Lexington St., between Pearl and Arch Sts.
H. S. King, 1 four-sty iron and brick warehouse, on Sharp St., near Lombard St.
Stock Exchange.—Two-sty brick and stone building, on German St., between South and Calvert.
Houses.—Mr. Chas. E. Cassell, architect, is preparing drawings for 27 new three-sty brick buildings on Jefferson Place, for Mr. Hiram Woods, each 18 feet front.
Church.—Mr. Chas. E. Cassell is also remodelling the Unitarian church, cor. Charles and Franklin Sts.; to cost \$2,000.

Boston.

BUILDING PERMITS.—*Brick.*—Spring St., near Bay St., for Old Colony R. R. Co., 1 passenger depot, 25' x 42'; N. K. Randall, builder.
Clayton St., opposite Leonard St., for Samuel B. Pierce, 1 manufacture of chromos and lithographs, 42' 8" x 110' 8", two stories; Sweet, Morse & Co., builders.
Commonwealth Ave., near Fairfield St.; for H. O. Roberts, 1 dwell., 25' x 68', four stories; Jas. Smith, builder.
Commonwealth Ave., near Fairfield St., for N. B. Mansfield, 1 dwell., 26' x 68', four stories and mansard; James Smith, builder.
Commonwealth Ave., near Dartmouth St., for E. Rollins Morse, 1 dwell., 30' x 80', five stories; Vinal & Dodge, builders.

Washington St., near East St., for Harriet Sigourney, stores and storage, 20' x 65', two stories; Charles Chipman, builder.
Eustis St., Nos. 13-17, for Joseph Dorr, dwell. and stores, 39' x 42', three stories; Chas. Chipman, builder.
Wood.—Pond St., cor. Elliott St., for F. F. Downes, 1 dwell., 31' x 40', three stories; Wilson Bros., builders.
River View St., near Adams St., for Jos. W. Pratt, 1 dwell., 21' x 28', two stories; Jos. W. Pratt, builder.
Trenton St., No. 173, for Samuel Doane, 1 dwell., 23' x 48', two stories and mansard; Harvey Snow, builder.

Brooklyn.

BUILDING PERMITS.—Woodbine St., No. 141, two-sty frame dwell., 18' x 30'; cost, \$2,000; owner, Samuel Johnson; builders, J. Lambert and F. Marryatt.
Diamond St., No. 39, two three-sty frame tenements, 25' x 54'; cost, \$3,500 each; owner, David Atkins, 115 West Thirty-Fifth St., New York; builder, Jos. T. Gately.
Huron St., No. 65, three-sty frame tenement, 25' x 50'; cost, \$3,400; owner, Thomas Keller, on premises; architect, Fred Webber; builder, John Fallon.
Boorum Place, No. 11, four-sty brown-stone store and flat, 44' 8" x 68'; cost, \$14,000; owner, James Gildersleeve, cor. Fulton St. and Red Hook Lane; architect, M. J. Morrill; builders, Geo. Phillips and John S. McKee.
Partition St., three-sty frame store and tenement, 20' x 48'; cost, \$3,000; owner, Henry Anderson, 81 Patchen Ave.; builder, C. M. Dettlesen.
Vernon Ave., cor. Marcy Ave., 3 two-sty brown-stone dwell., 16' 8" x 42'; owner and builder, John C. Rustin, 159 Hall St.; architect, John H. Rustin.
Utica Ave., two-sty frame dwell., 20' x 40'; cost, \$2,000; owner, John Burgess, 539 Herkimer St.; architect, Anzi Hill.
Union Ave., three-sty frame store and dwell., 25' x 50'; cost, \$3,500; owner, Bentley Lenz; architect, S. S. Place; builders, B. Mills and J. Triasse.
Bushwick Ave., two and a half-sty frame dwell., 22' x 38'; cost, \$3,000; owner, Augusta Bauer, 20 Stanhope St.; builder, H. C. Bauer.
St. James Place, 4 four-sty brown-stone dwell., 20' x 43'; cost, \$7,000 each; owner, etc., S. E. C. Russell, 556 Grand Ave.
Ninth St., 3 two-sty brick dwell., 16' 8" x 40'; cost, \$2,000 each; owner, Peter Kelly, 359 Van Brunt St.; architect, John J. Kelly.

Chicago.

BUILDING PERMITS.—C. Hitchcock, two-sty brick dwell., 22' x 50', 431 Morgan St.; cost, \$2,000.
J. M. Watte, two-sty brick dwell., 24' x 45', Hurlbut St., near Belden Ave.; cost, \$5,000.
Josephine Kilian, three-sty brick dwell., 57' x 55', Schiller St., cor. North Clark, cost, \$12,000.
P. Upton, two-sty brick dwell., 22' x 50', 3658 Indiana Ave.; cost, \$2,500.
J. Schumacher, two-sty brick dwell. and shop, 24' x 46', 442 Fourteenth St.; cost, \$2,000.
S. B. Williams, six-sty brick flats, 87' x 83' 6", North State St., cor. Ontario; cost, \$40,000.
C. Kierke, two-sty brick store, 24' x 70', Milwaukee Ave., near Wood St.; cost, \$4,000.
J. T. Portier, one-sty brick dwell., 22' x 50', 3427 Auburn Ave.; cost, \$2,000.
J. Sedlack, two-sty brick dwell., 24' x 74', Nineteenth St., near Throop; cost, \$3,600.
A. B. Linn, two-sty brick dwell., 20' x 38', 182 Dearborn Ave.; cost, \$4,500.

Cincinnati.

BUILDING PERMITS.—During the month of August and since our last report, the following building permits have been issued:—
John P. Pfeil, two-sty brick; cost, \$2,400.
Isaac Adler, 4 two-sty brick; cost, \$4,650.
Mohr, Mohr & Co., two-sty brick; cost, \$4,000.
Jacob Fritz, three-sty brick; cost, \$6,000.
Geo. Sluniner, two-sty brick; cost, \$5,000.
Adam Stock, three-sty brick; cost, \$3,000.
L. L. Armstrong, two-sty brick; cost, \$3,700.
Gambrinus Stock Co., ice-house; cost, \$5,000.
Geo. Hetz, two-sty brick; cost, \$2,500.
H. Lakamp, two-sty brick; cost, \$2,500.
J. H. Behrens, three-sty brick; cost, \$2,500.
Chas. Espich, 2 two-sty frames; cost, \$2,500.
Chris. Wernong, two-sty brick; cost, \$2,200.
F. Kohlkueter, three-sty brick; cost, \$6,800.
C. Hauke, two-sty brick; cost, \$2,700.
John H. McGowan, four-sty brick; cost, \$12,300.
H. Neave, 2 brick stables; cost, \$4,000.
B. Bohmert, three-sty brick; cost, \$4,500.
F. Bechhausen, two-sty brick; cost, \$4,500.
J. Jones, two-sty brick; cost, \$2,000.
John Carlisle, addition to hotel, cor. Sixth and Mounds Sts.; cost, \$10,000.
Mrs. Belter, two-sty brick; cost, \$1,500.
Peter Knabe, four-sty brick; cost, \$9,500.
38 permits for repairs; total cost, \$21,320.
Total permits for the month, 64.
Total cost for the month, \$127,770.
Total cost to date, \$1,247,050.
Total permits to date, 501.

New York.

BUILDING PERMITS.—Greene St., No. 100, 1 five-sty iron store, 25' x 100'; owner, H. Wilson, Greenwich, Conn.; architect, Chas. Mettam.
One Hundred and Fourth St., 3 four-sty brick apartment-houses, 25' x 55'; cost, each, \$8,000; owner, C. Trimble, 113 Suydam St., Brooklyn; architect, Joseph Mayer.
Fifty-Seventh St., 1 five-sty brown-stone tenement, 30' and 21' x 83'; cost, \$14,000; owner and builder, John Ruck, on premises; architect, J. M. Dunn.
Eighth Ave., No. 164, 1 four-sty brick store and tenement, 22' x 50'; cost, \$9,500; owner and builder, Thomas Muir, 238 West Twenty-First St.; architect, R. Pugsley.
East River, between Grand and Broome Sts., 2 one-sty frame sheds, 190' and 175' x 40'; owner, New York & Brooklyn Ferry Co.; architect, W. B. Dittmars.

Alexander Ave., cor. One Hundred and Fortieth St., 3 three-sty brick dwell., 17' 8" and 16' 8" x 40'; cost, each, \$5,000; owner, A. J. Odell, 78 Tompkins Market; architect, J. Rogers; builders, C. La Coste and Jno. Knox.
One Hundred and Thirty-Third St., 3 three-sty Connecticut brown-stone dwell., 16' 8" x 46'; cost, each, \$7,000; owner, John Hart; architect, Andrew Spence.

Fulton Ave., two-sty brick dwell., 40' 6" x 36'; cost, \$4,000; owner, John Eichler, cor. Third Ave. and One Hundred and Sixty-Ninth St.; architect, A. Pfund.

Montgomery St., cor. Henry St., 1 five-sty brick and iron store and tenement, 21' 6" and 23' 9" x 69'; cost, \$9,000; owner, G. Graham, on premises; architect, G. Inslee.

Third Ave., 1 five-sty brick factory, 35' x 96'; cost, \$12,000; owner, J. L. Mott Iron Works; architect, Thos. H. McAvoy.

West Sixteenth St., No. 332, four-sty brick tenement; cost, \$6,000; owner, J. J. Champion, 20 East Tenth St.; architect, L. J. O'Connor.

Fifty-Ninth St., one-sty brick store and bowling-alley, 25' and 21' x 134'; cost, \$5,000; owner, the F. & M. Schaeffer Brewing Co., Fifty-First St., cor. Fifth Ave.; architect, Julius Kastner; builders, R. Huson and Hoffman & Schwartz.

One Hundred and Forty-First St., two-sty frame dwell., 16' 8" x 36'; cost, \$2,000; owner, Mrs. S. West, One Hundred and Forty-Fourth St.; architect and builder, Jno. Knox.

One Hundred and Twenty-Second St., 4 three-sty brown-stone dwell., 15' x 45'; cost, each, \$8,000; owner, Joseph Murray, 215 East One Hundred and Sixteenth St.; architect, J. H. Valentine.

One Hundred and Twenty-Sixth St., 6 three-sty brown-stone front dwell., 16' 8" x 50'; cost, each, \$10,000; owner, Peter Johnson, 2293 Second Ave.; architect, J. H. Valentine.

One Hundred and Twenty-Seventh St., 3 three-sty brown-stone dwell., 16' 8" x 50'; cost, each, \$10,000; owner and builder, S. O. Wright, 159 East One Hundred and Thirtieth St.; architect, J. H. Valentine.

One Hundred and Sixth St., 9 three-sty brown-stone dwell., 16' 8" x 45'; cost, each, \$9,000; owner, A. E. Davis, Lexington Ave., cor. One Hundred and Fifth St.; architect, J. H. Valentine; builder, J. B. Davis.

Seventh Ave., cor. One Hundred and Twentieth St., 6 four-sty Ohio stone dwell., 16' 8" x 50'; cost, each, \$15,000; owner and builder, O. B. Birdsall, 2375 Second Ave.; architect, J. H. Valentine.

One Hundred and Twenty-Seventh St., 3 three-sty brown-stone flats, 16' 8" x 50'; cost, each, \$9,000; owner and builder, Joseph Murray, 315 East One Hundred and Sixteenth St.; architect, J. H. Valentine.

One Hundred and Twenty-Seventh St., 2 four-sty brown-stone flats, 18' 9" x 65'; cost, each, \$14,000; owner and builder, Jas. E. Ray, 322 East One Hundred and Twentieth St.; architect, J. H. Valentine.

One Hundred and Ninth St., 9 four-sty brick flats, 19' 4" x 60'; cost, each, \$10,000; owner and builder, M. J. Moore, 408 East One Hundred and Eighteenth St.; architect, J. H. Valentine.

Avenue A, four-sty brick flat, 27' 2" x 50'; cost, \$10,000; owner, John H. Heckman, Ave. A, cor. Seventy-Seventh St.; architect, J. H. Valentine.

ALTERATIONS.—Montgomery St., cor. South St., interior alterations, roof raised if necessary; cost, \$10,000; owner, Glen Cove Starch Manf'g Co.; mason, Wright Luryea; carpenters, J. C. Hoe & Co.

Mulberry St., Nos. 145 and 147, interior and wall alterations; cost, \$7,000; owner, J. Schmitt; architect, Wm. Jose.

St. Mark's Pl., No. 18, front and interior alterations; cost, \$3,000; owner, S. Schuster; builder, H. Downs.

Thirty-Seventh St., near Tenth Ave., one-sty addition to rear, cost, \$2,500; owner, F. E. James; architect, S. D. Hatch.

Thirty-Ninth St., rebuilding front and rear walls; cost, \$3,000; owner, W. Wilkins, 217 Pearl St.; builders, Commisky & Fee.

Fourth Ave., No. 412, two-sty brick extension, 20' x 19'; cost, \$3,000; owner, Thos. F. Jeremiah, 470 Broadway; architects, D. & J. Jardine.

East Forty-Second St., No. 129, front altered; cost, \$2,250; owner, Jas. W. Pinchot, 212 Madison Ave.; architects, D. & J. Jardine.

Henry St., No. 204, four-sty brick extension, 23' 9" x 16'; cost, \$3,500; owner, Thos. B. Brady, 204 Henry St.; architect, B. McGurk; builders, P. Doyle and J. White.

Fifth Ave., No. 1, interior alterations; cost, \$7,500; owner, Mr. Duncan, Staten Island; architect, B. Price; builder, D. H. King, Jr.

One Hundred and Forty-First St., near Willis Ave., frame two-sty and basement dwell., 16' x 36'; cost, \$2,000; Mrs. S. West, owner.

One Hundred and Thirtieth St., near Eighth Ave., brick stable and office, 50' x 20'; cost, \$2,000; Charles Baxter, owner; Charles Baxter, architect.

West Fifty-Fifth St., No. 517, brick workshop; 25' x 50'; cost, \$200; John Etzel, owner.

STORES.—At No. 29 Leonard St., a store 100' x 50' is to be built from designs of Mr. J. Morgan Slade.

Mr. Mettam is the architect for a store to be built on premises No. 29 Bleeker St.; size 25' x 100'.

BARNUM'S MUSEUM.—Plans have been submitted to the Barnum's Museum Company, at their request, by Mr. G. E. Harding. Other architects have expressed their wish to prepare plans, and some are already "on the boards."

BUILDING MATERIALS.—Some change in prices had been anticipated about the first of this month, but they have so far proved remarkably even. At present figures there is no doubt the fall business will be as large as in the spring, but the rates for building materials cannot be considered satisfactory to the manufacturers.

CHURCH.—Among the improvements proposed in the upper part of the city are a new M. E. church on One Hundred and Ninth St., near Madison Ave., and a picture-gallery and library, corner of Thirty-Ninth St. and Madison Ave.; the latter to be built by Mr. William E. Dodge, at a cost of \$25,000.

MODEL TENEMENT-HOUSES.—The block of 13 model tenement-houses to be built on First Ave., at Seventy-First St., will cost \$184,000, and will provide 218 tenements of two to four rooms each.

FERRY-HOUSE.—A new East River ferry-house, to cost \$15,000, is to be built between Broome and Grand Sts.

THE DEPARTMENT OF BUILDINGS.—The offices of the Department of Buildings will be removed to the headquarters of the Fire Department, No. 155 Mercer St., October 1.

Philadelphia.

BUILDING PERMITS.—*D St.*, No. 2923, two-st'y dwell., 16' x 10'; Jacob Faerber, contractor.
Waterloo St., No. 2622, two-st'y dwells., 12' x 25'; Jacob Faerber, contractor.
Fifth St., near Dickinson, front alterations; Henry Shaw, contractor.

Thompson St., near Marshall St., three-st'y stable, 36' x 92'; Ellen Maher, owner.
Green St., Nos. 420 and 422, third-st'y addition, 20' x 20'; Henry Koch, contractor.

Eighth St., cor. Cherry, two-st'y addition to store, 17' x 25'; I. S. Steel, contractor.
Eighth St., No. 11, three-st'y brick building, 16' x 20'; Yarnell & Cooper, contractors.

Market St., near Ninth St., front alterations and internal alterations; Yarnell & Cooper, contractors.
Fortieth St., near Baring St., three-st'y dwell., 20' x 58'; W. Dougherty, owner.

Sargeant St., near Trenton Ave., 8 two-st'y dwells.; Thos. Baker, owner.

Dickinson St., cor. Tudor St., three-st'y dwell., 16' x 48'; W. F. North, contractor.

Brown St., near Twenty-Fifth St., three-st'y dwell., 18' x 52'; Chris. Schreiber, contractor.

F'd Rd., No. 1751, three-st'y brick building, 19' x 32'; Samuel Hall, contractor.

Pritchett St., No. 1350, two-st'y brick building, 11' x 9'; Hannah Wilhelm, owner.

Rundle St., No. 1828, one-st'y addition to stable, 21' x 32'; Richards & Thomas, owners.

Terrace St., between Adams and Hermit, 2 three-st'y dwells., 15' x 40'; Harner & Gillett, owners.

Hermitage St., cor. Washington St., two-st'y dwell., 15' x 28'; Harner & Gillett, owners.

Maria St., near Fifth St., 4 two-st'y dwells., 12' x 57'; P. McCullough, owner.

Steenway Ave., cor. Seventieth St., two-st'y dwell., 18' x 48'; Geo. Patchell, contractor.

Mt. Maria Lane, opposite Cemetery, 4 three-st'y dwells., 11' x 28'; Geo. Patchell, contractor.

Carpenter St., No. 912, stable and wall; Chas. Sweeney, owner.

Twenty-Fourth St., cor. Ralston St., three-st'y shop and dwell., 26' x 30'; I. Beatty & Son, contractors.

Fishers' Lane, cor. Stenton Ave., three-st'y addition to brick building, 15' x 24'; Jas. Kinnear & Son, owners.

Cresson St., between Hermit & Adams, three-st'y dwell., 16' x 43'; John Weinman, owner.

Venango St., No. 508, two-st'y addition to brick building, 15' x 24'; Henry Kerr, owner.

Hancock St., No. 1015, two-st'y dwell., 15' x 44'; C. G. Harris, contractor.

Meadow St., near Paul St., one-st'y planing mill, 40' x 45'; Jas. Comly, owner.

Deal St., No. 1650, two-st'y brick building and front alterations, 9' x 10'; Jane White, owner.

Adams St., No. 32, two-st'y brick building, 16' x 20'; Chas. Gilman, owner.

Center St., near Hancock St., 2 three-st'y dwells., 16' x 32'; McLaughlin & McNamara, owners.

Tenth St., cor. Christian St., 1 three-st'y store and dwell., 16' x 27'; B. Ketchum & Son, owners.

Front St., cor. Canal St., school-building, 40' x 118'; for Church of Immaculate Conception (Catholic); F. Durang, architect.

Pennsylvania Ave., near Fifteenth St., factory-building, 49' x 70'; owners, the Baldwin Locomotive Works.

Marriott St., near Third St., two-st'y building, 24' x 25'; owner and builder, Wm. Nice, Jr.

ALTERATION.—*South Seventh St.*, No. 26, is being altered, and a new front, of brick, stone and terra-cotta, built from designs of Messrs. Wilson Bros. & Co.; Mr. Wm. C. McPherson, contractor.

DEPOT.—Work has been commenced on the depot of the Pennsylvania Railroad, at Merrick and Filbert Sts. It is intended to have the structure completed by January 1, next. It will be four stories high, and will run from Merrick to Fifteenth St., and 190 feet south from Filbert St. This is the Elevated Railroad depot.

The same company is also tearing down 500 feet of the old shedding, south of Walnut St., and putting up a more commodious structure.

SUGAR REFINERY.—Harrison Havemeyer & Co., sugar refiners, are replacing their old boiler-house and filtering room with a large brick structure, eleven stories high, having a front of 102 feet on Swanson St., and a depth of 68 feet on Bainbridge St.

SCHOOL OF DESIGN.—The old Forrest mansion, cor. Broad and Master Sts., has been purchased by the Philadelphia School of Design for Women at a cost of \$45,000, and the new improvements to be made will cost about \$50,000 more.

WAREHOUSES.—The lot on the corner of Carpenter, Twelfth and Thirteenth Sts., having a front of 110 feet on Twelfth and Thirteenth Sts., and 336 feet on Carpenter St., has been purchased by Messrs. Arnott & Williams, who propose erecting extensive business establishments thereon.

STORE.—Mr. James McGill, of the firm of Wm. Wood & Co., is building, at the corner of Twenty-Third and Hamilton Sts., a fine three-st'y building, 40' x 50'.

HOUSES.—Messrs. Wm. Wood & Co. are building a row of three-story dwelling-houses on Twenty-Third St., below Pennsylvania Ave.

PUBLISHING-HOUSE.—The Public Record Publishing Co., of this city has purchased the old Markoe House on Chestnut St., above Ninth St., and will soon build a six-story granite building thereon. The plans are being made by Willis G. Hale, architect, of this city.

St. Louis.

BUILDING PERMITS.—Thirty-eight permits have been issued since our last report, of which seven are for frame structures of slight importance. Of the rest, those worth \$2,500 or over are as follows:—

OWNERS' NAME.	USE.	St'ys.	Wds.	Cost.
J. H. Kleekamp,	Dwell.	1 1/2	5	\$5,000
St. Louis Elevator Co.,	Elevator,	1 1/2	5	4,000
M. Leger,	Dwell.	2 1/2	9	3,000
E. A. Wilson,	Dwell.	2 1/2	8	5,000
C. Hofmain,	Dwell.	2 3/4	10,000	

General Notes.

ARLINGTON, MASS.—A residence is being built for Mr. Albert Teal, to cost \$7,000; Mr. C. P. Wyman, builder; Howe & Dodd, of Boston, architects.

BILLERICA, MASS.—The building committee of the Bennett Library Association advertise in the usual unsatisfactory way for plans for a library building.

BRATTLEBORO, VT.—At a special town meeting a vote was passed, authorizing the selectmen to expend \$2,000 in the improvement of the town hall.

CATSKILLS, N. Y.—Ground has been broken for a new hotel on the top of the Catskill Mountains. Its frontage will be 350 feet, with a wing of 150 feet. It will be four stories high. The principal stockholders are Philadelphians.

DORCHESTER, MASS.—McNeil Bros. are building a house for J. P. Appleton, Esq.; cost, \$7,000. Messrs. Howe & Dodd, of Boston, are the architects.

EAST GREENWICH, R. I.—Mr. Roland King is making an addition to the old "Casey" mansion; Stone & Carpenter, of Providence, architects.

ERIE, PA.—State St., No. 834, 1 three-story brick store and dwelling, 36' x 147'; cost, \$11,000; owner, N. Cohen, 810 State St.; architect, Ernst E. W. Schneider, corner of Eighth and State Sts.; mason, R. Sherk; carpenter, H. Kamsay.

East Eighth St., 1 two-story brick dwelling, 23' x 51'; cost, \$4,000; owner, Miss S. Becker; architect, Ernst E. W. Schneider; builder, Henry Sherk.

Corner of Twelfth and Chestnut Sts., 1 two-story frame machine-shop, 46' x 151'; cost, \$4,000; owners, Skinner & Woods; architect, Ernst E. W. Schneider.

Corner of Second and State Sts., 1 two-story brick street-car depot, 72' x 83', and 1 two-story brick stable, 57' x 83'; cost of both buildings, \$9,000; owners, Erie Street Car & Passenger Co.; architect, Ernst E. W. Schneider; masons, Salow & Johann; builder, F. W. Mueller.

East Seventeenth St., 1 frame cottage, 22' x 32'; cost, \$1,200; owner, David Schlosser; architect, Ernst E. W. Schneider; builder, F. W. Mueller.

State St., between Eleventh and Twelfth Sts., front and interior alterations on United States Hotel; cost, \$3,500; owner, M. Liebel, West Twenty-Sixth St.; architect, Ernst E. W. Schneider; masons, Salow & Johann; builder, C. Kerner.

FALL RIVER, MASS.—The custom-house and post-office that has been building here during the past five years, is now all completed except the inside finish. It is built of Hurricane Island, Jonesboro', and Red Beach granites; size, 86' x 125', four stories, and will cost \$350,000; designed, in 1876, by Wm. A. Potter, who was then supervising architect. Mr. Edward T. Avery is superintendent of construction. A special feature of this building is the very fine examples of granite carving, \$30,000 having been spent for carving alone.

A frame school-house is being built on Broadway and Division Sts., 50' x 90', two stories and basement, costing about \$15,000; from plans by Edward T. Avery.

The city is building a brick stable, with granite finish, on Second and Morgan Sts., 58' x 85'; cost, \$7,000; Edward T. Avery, architect.

Mr. Henry T. Buffington is building a frame house on French St.; Walter J. Paine, of Providence, R. I., architect.

Mr. Geo. Borden is also building a frame house, from plans by Mr. Walter J. Paine.

Mr. Clark Chase is building a frame house on Highland Avenue, costing \$4,000; Geo. T. Powell, of New York, architect.

M. Geo. Googan is building a frame house, costing about \$3,000, from plans by A. M. Marble.

Mrs. Trafford is building a fine frame house on Rock St., costing \$16,000; Ichabod B. Burt, architect.

Mr. Chas. Anthony is building a frame house on Durfee St., costing \$10,000, from plans by I. B. Burt.

Mr. Samuel Flint is building a frame house on South Main St., costing \$10,000; from plans by I. B. Burt.

HAMILTON, N. Y.—Miss Nott has established a free library as a memorial to the late Joel B. Nott, and intends to erect a stone building for the library.

LOUISVILLE, KY.—Jas. T. Drummond is to build a two-story brick dwelling, on Green St., between Tenth and Eleventh; cost, \$1,200.

LANCASTER, N. H.—A stock company has been formed to build a new hotel on Bunker's Hill, to cost \$75,000, exclusive of furnishing.

It is also intimated that a new house is to be built between the Glen House and Gorham, though nothing has yet really been decided upon.

LONG BRANCH, N. J.—The New York Tribune says that besides the three hotels to be built by Mr. John Hoey, R. J. Dobbing and Judge Hilton, Messrs. Samuel A. Lewis, of 294 Broadway, and David Davies of the New York Cotton Exchange are now examining plans for the erection of a large hotel on Helmbold Block. The structure will be of brick, 500 feet long and four stories in height, and on the side street it will present a front of 400 feet on Ocean Avenue, and will be three stories in height. The ground floor is to be used for stores.

A \$10,000 frame house, Queen Anne style, 72' x 56', is to be built for Mr. Herrman, from designs of Mr. Arthur Crooks, of New York.

Six cottages are to be built for Mr. Sternberger, to cost about \$15,000; Messrs. H. J. Schwarzmann & Co., of New York, are the architects.

LEWISBURG, PA.—An aqueduct is now being built for the Pennsylvania Canal Co., at Pine Creek; Messrs. Wilson Bros. & Co., architects and engineers.

LYNN, MASS.—Rev. Father Harrington, of the St. Joseph's Church, is having plans prepared for a new residence, to be erected on Green St.

MIDDLETOWN, N. Y.—Bishop Foss has laid the corner-stone of a new Methodist chapel at South Farms, near Middletown.

MONONGAHELA CITY, PA.—Messrs. Drum & Steen, of Pittsburgh, are the architects of the new school-house; cost, \$20,000.

McKEESPORT, PA.—The new school-house will cost \$22,000; Messrs. Drum & Steen, of Pittsburgh, are the architects.

MEDINA, O.—A Congregational church is being built of brick and Grafton sandstone; cost, \$12,000; contracts were let on the 26th of August; B. J. Bartlett, of Des Moines, Io., architect.

MILTON, PA.—Mr. Frank E. Davis, architect, of Baltimore, Md., is preparing drawings for a church to be built at Milton, Pa., 116' x 50', of brick, with stone trimmings; cost, \$25,000.

MORGANZA, PA.—Mr. T. D. Evans, architect, of Pittsburgh, Pa., is building a workshop and barn for the Pennsylvania Reform Schools; cost, \$17,000.

MIDDLETOWN, IND.—A three-story brick hotel is building for F. Tykile; cost, \$10,000.

NEW PALTZ, N. Y.—An addition to the Lake Monahawk House is to be built, consisting of the hotel-office, bakery, and sleeping rooms; Messrs. Wilson Bros. & Co., of New York, architects.

NORTHAMPTON, MASS.—Mr. W. F. Clement is building a three-st'y brick house on Elm St.

OLDENBURG, IND.—Mr. D. A. Bohlen, of Indianapolis, is the architect of the new addition to the convent of the Sisters of St. Francis. It will cost \$35,000.

PITTSBURGH, PA.—Messrs. Drum & Steen are the architects of a house building on Centre Ave., for G. E. Chester, Esq.; cost, \$7,000.

A house is building for Mr. Jacob Snyder, from the designs of T. D. Evans; cost, \$8,000.

Messrs. Drum & Steen, architects, are building a house and stable for W. H. Mohrman; cost, \$12,000; The same architects are building a carriage-house for A. A. Hutchinson; cost, \$5,000.

PROVIDENCE, R. I.—The Plymouth Congregational Society have just broken ground for a frame church on Richardson St.; seating capacity about 600; Walter J. Paine, architect.

Mr. Paine also has plans in hand for the North Congregational church, to be built on Walling St.

A frame school-house is being built on Peace St., costing about \$6,500, from plans by Mr. Walter J. Paine.

Billings Bros. are commencing a block, on the corner of Eddy and Worcester Sts., 109' x 36', three stories high. The first story is to be of iron and the upper stories faced brick and Rutland blue and white marble; to be occupied for stores and offices; Stone & Carpenter, architects.

ROCKY HILL, CONN.—Bishop McMahon laid the corner-stone of a new Catholic church at Rocky Hill, last Sunday.

ROXBURY, MASS.—A house and stable is being built for Maj. Wm. A. Couthouy; Samuel T. Waters, builder; E. A. P. Newcomb, of Boston, architect; cost, \$6,500.

SHENANDOAH, PA.—A large reservoir is building, to supply the Girard estate collieries with water; it will cost \$25,000, have a capacity of 25,000,000 gallons, and is located 1,595 feet above tide-water.

SARATOGA, N. Y.—It is reported that the stockholders of the Congress Spring Park are to build a hotel larger than any now existing, and are disposed to spend \$1,500,000 on their enterprise.

SPRINGFIELD, MASS.—A school-house is to be built near the "Dry Bridge."

TURNERS FALLS, MASS.—A chapel is being built, in brick and open timber style; cost, \$10,000; Hitchcock & Farnsworth, builders; E. A. F. Newcomb, of Boston, architect.

WALTHAM, MASS.—Messrs. Howe & Dodd, of Boston, are the architects of a church for the Universalist Society. It is to be built of wood, and will seat 600, and cost \$9,000.

WARWICK, R. I.—Mr. Chas. H. Welling, of New York, is building a frame summer residence at Pojac Point, 67' x 40', from plans by Messrs. Stone & Carpenter, of Providence.

Industrial.

BRIDGEPORT, CONN.—The Warners, corset manufacturers, are building an addition, 40' x 120', three stories, to their works; all day work.

The Bridgeport Brass Co. will erect an addition to their offices; Palliser, Palliser & Co., architects.

CHICAGO, ILL.—The Hopkins Manufacturing Company is to build at South Lawn, on the southern outskirts of Chicago. The two main buildings will be each 100' x 60', and three stories high, with an engine-room, 60' x 25', and a foundry, 100' x 60', all constructed of brick.

FALL RIVER, MASS.—The stockholders in the Shove Mills have voted to build a new mill of 21,000 spindles, on land owned by them in Rhode Island. The mill will be erected at once, and probably be in operation before January 1, 1881.

NORTHAMPTON, MASS.—The Florence Furniture Co. is to build a brick extension, 50' x 30', three stories high.

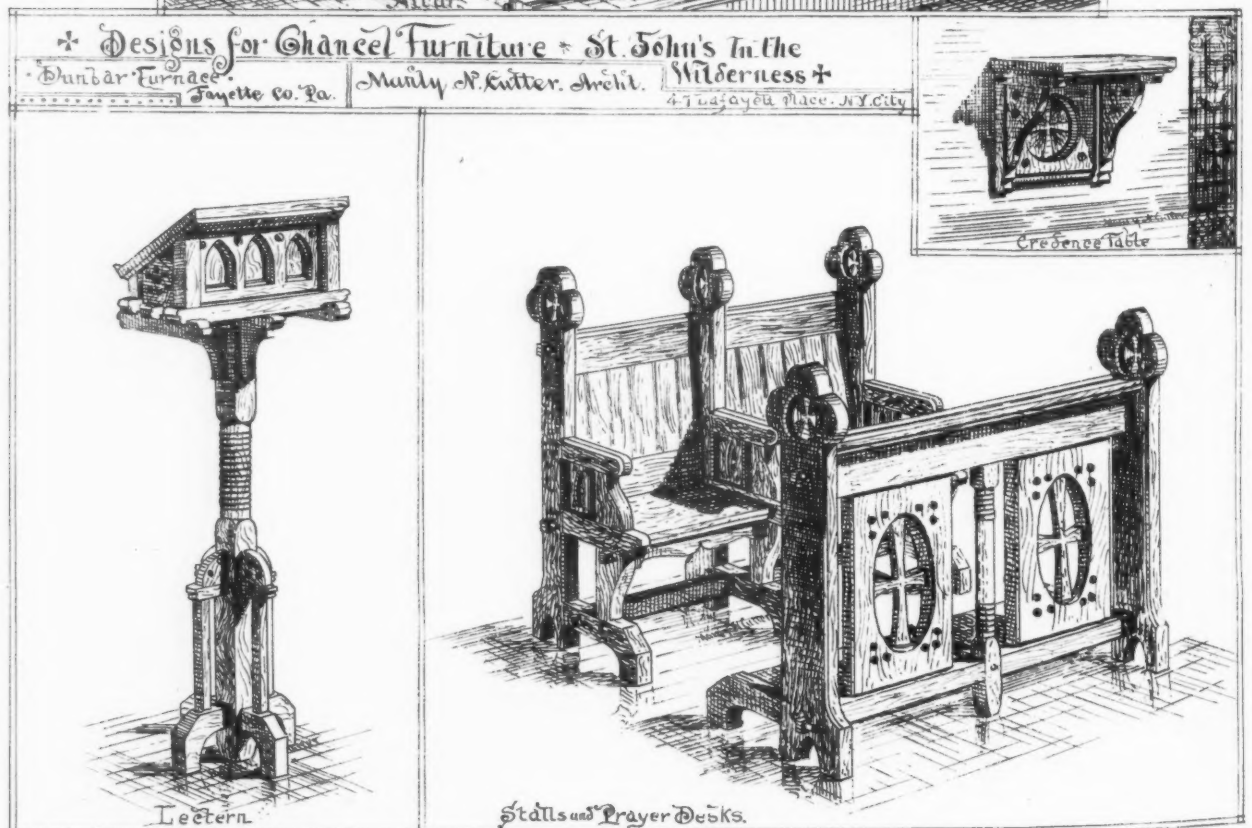
OMAHA, NEB.—Mr. Geo. Paterson is to build a cottage in Queen Anne style, from designs by Palliser, Palliser & Co., architects, Bridgeport, Conn.

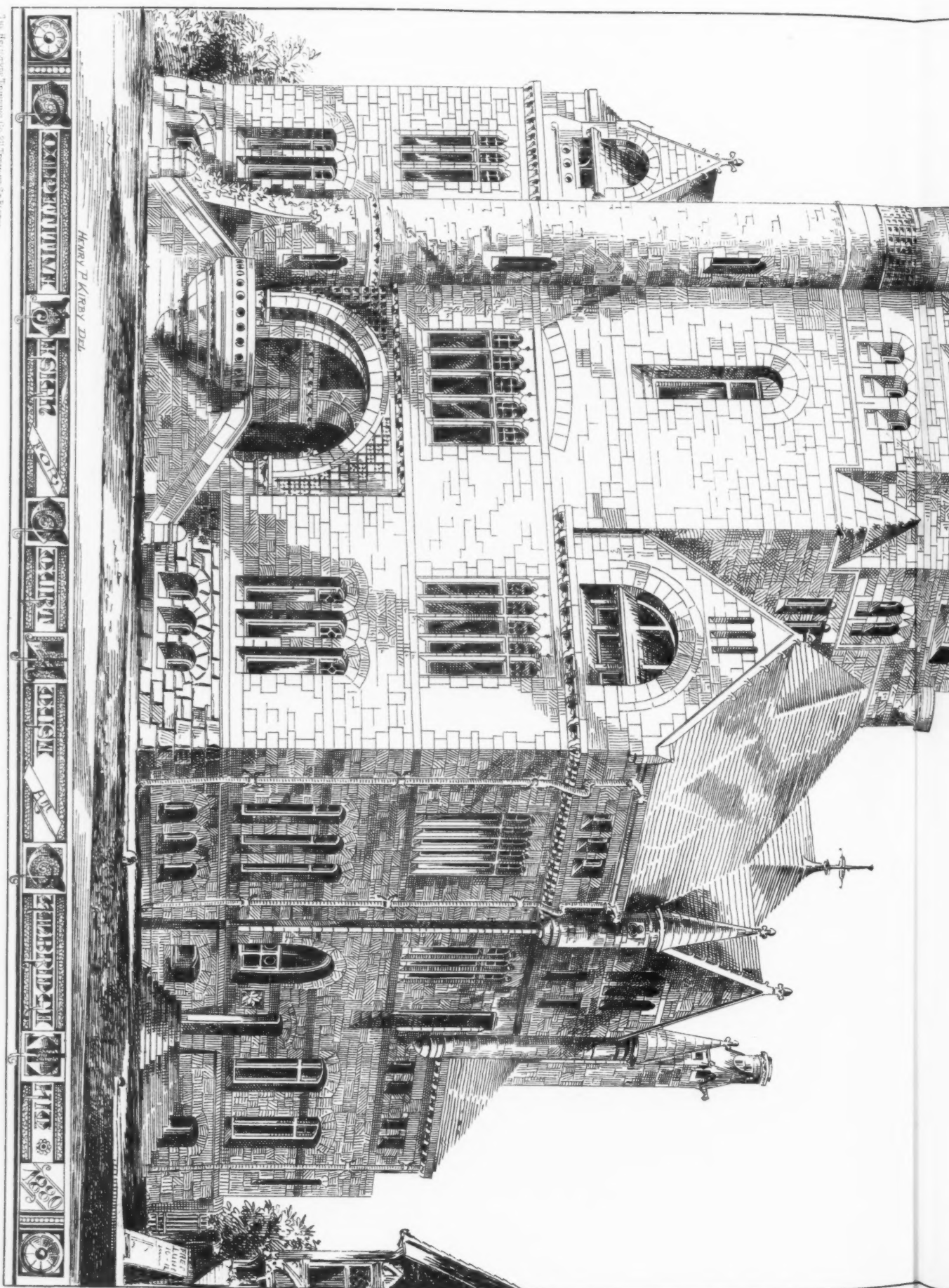
PHILADELPHIA, PA.—A planing-mill, to replace one recently destroyed by fire, is to be built for Mr. Wm. Nice, at 305 Marriott St.; Messrs. Wilson Bros. & Co., architects; Mr. Jno. A. Decker, contractor.

RODNEY, MISS.—A cotton factory is projected. Forty thousand dollars have been already subscribed.

READING, MASS.—The Mayall Rubber Co. is putting up buildings for manufacture of rubber. The buildings include the main edifice, 500' x 60'; also, boiler, engine and wash-house, 60 feet square.

STILLWATER, MINN.—J. H. Duell is building a two-st'y cottage; cost, \$1,500; Palliser, Palliser & Co., architects, Bridgeport, Conn., prepared the design.



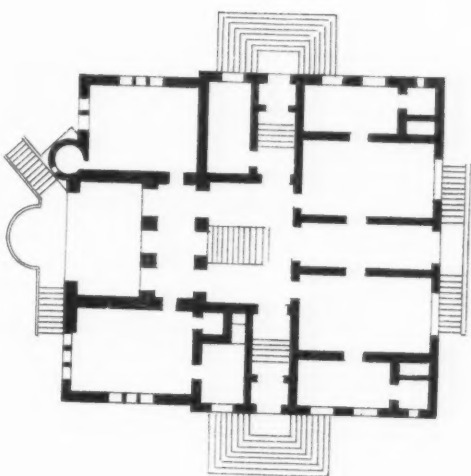
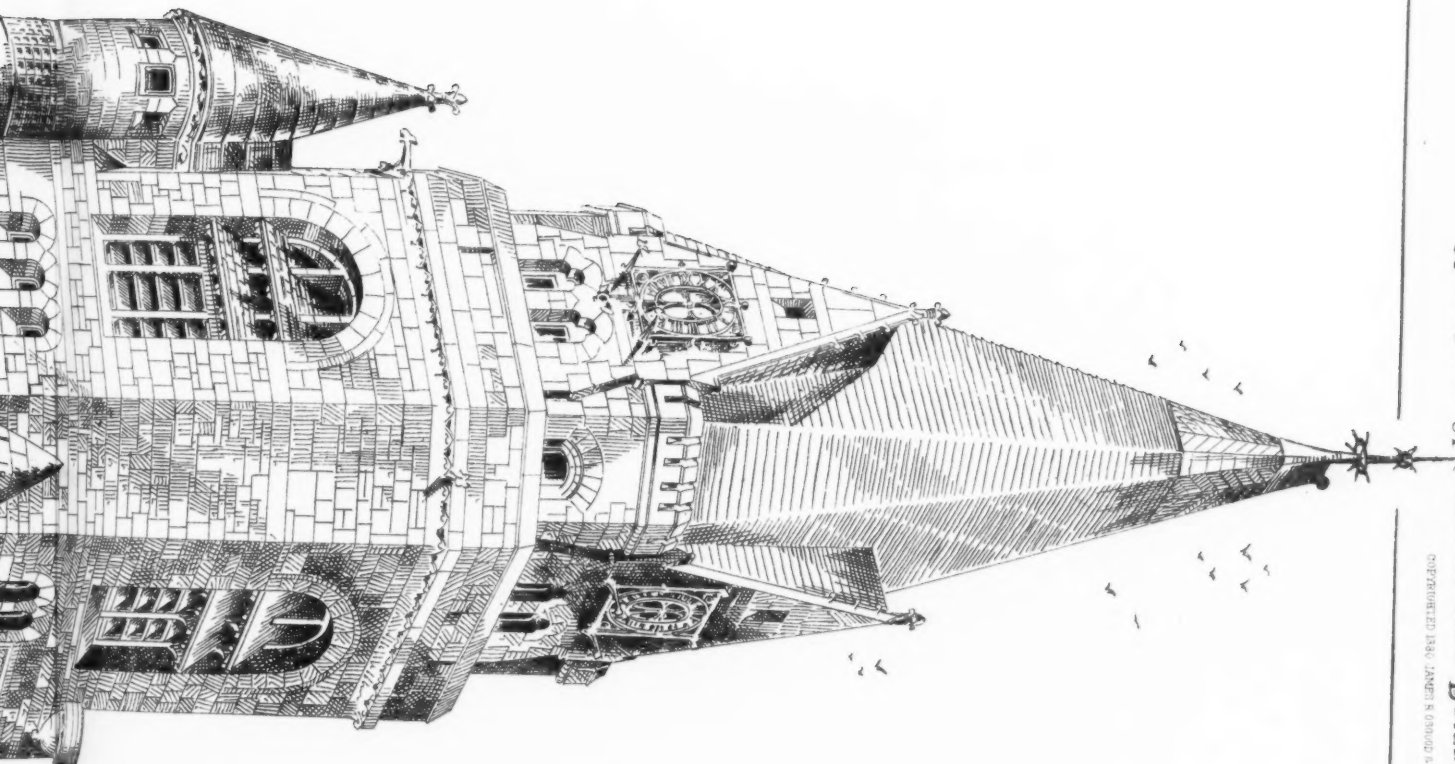


HENRY P. KIRBY DEL.

The Halfway Tavern in the Town of Boston

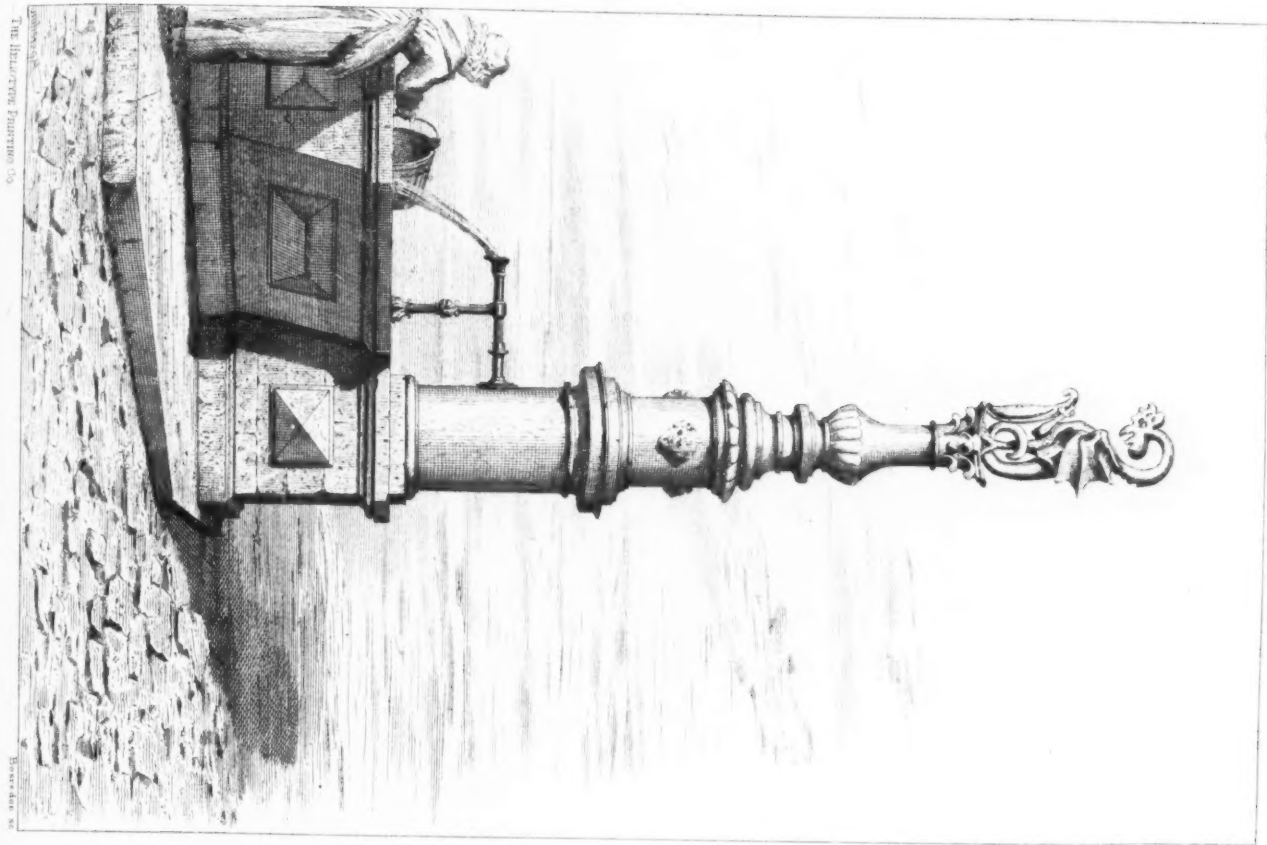
AMERICAN ARCHITECT AND BUILDING NEWS SEPT. 11, 1880.

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Wheeler, Maynard & Co.
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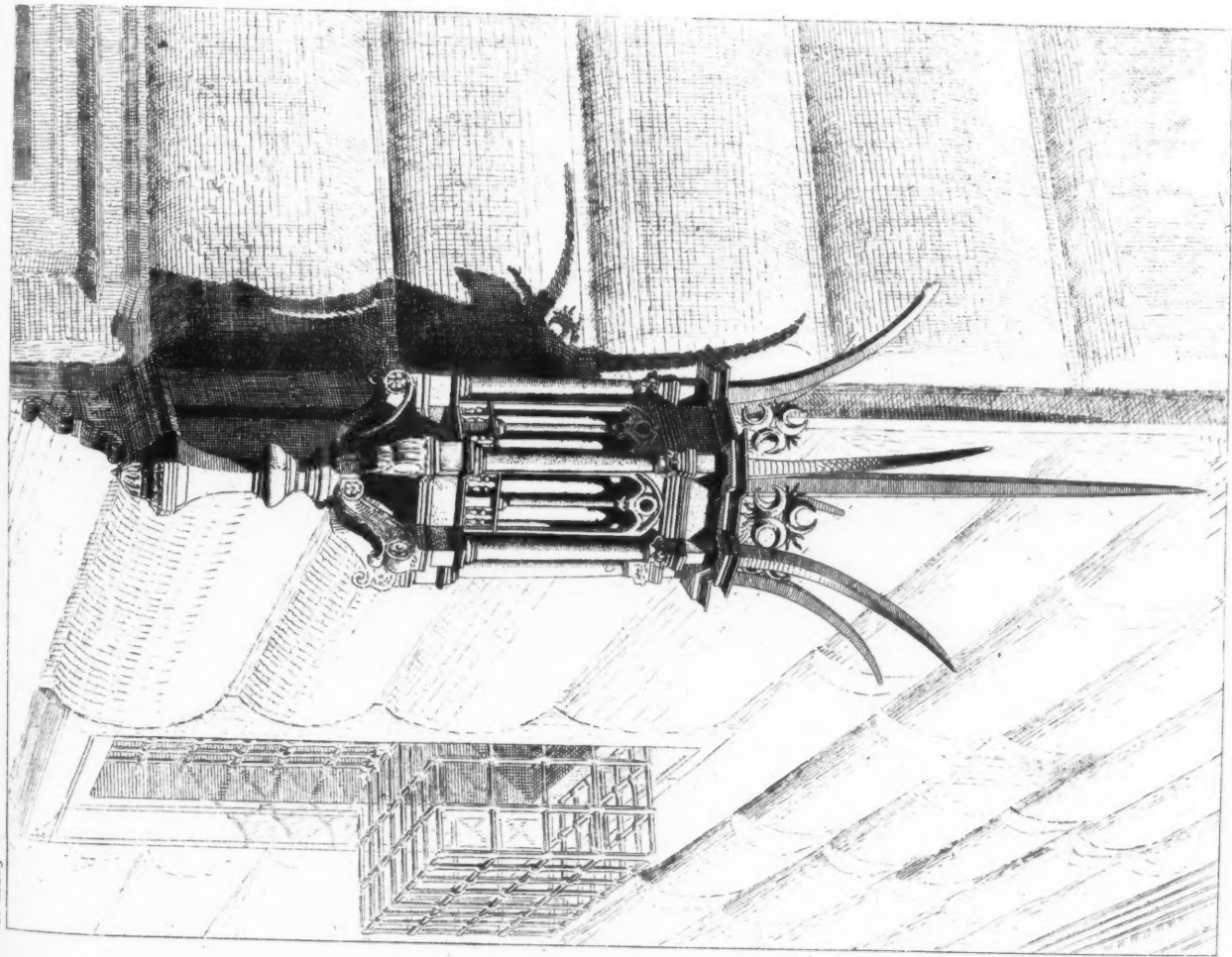
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THE HILLTOP FOUNTAIN CO.

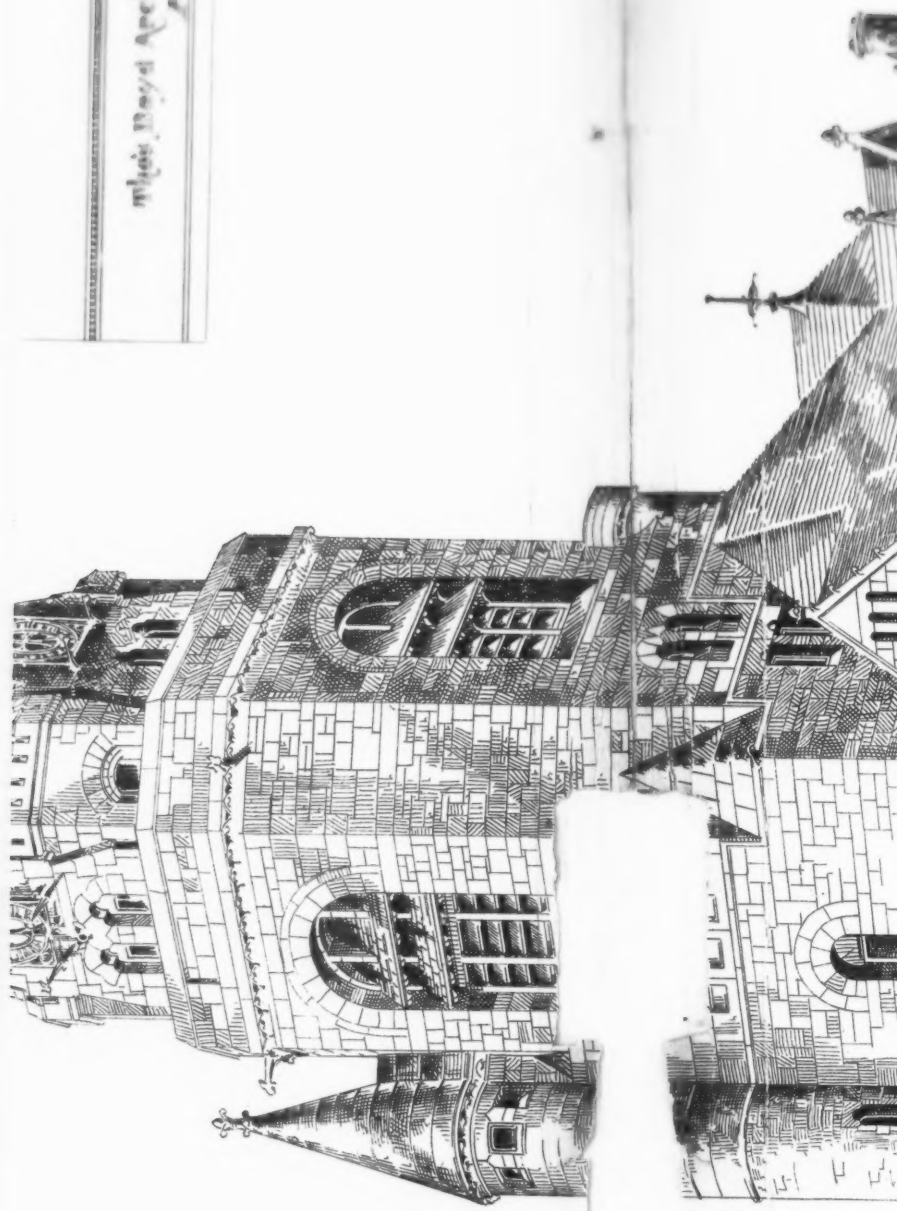
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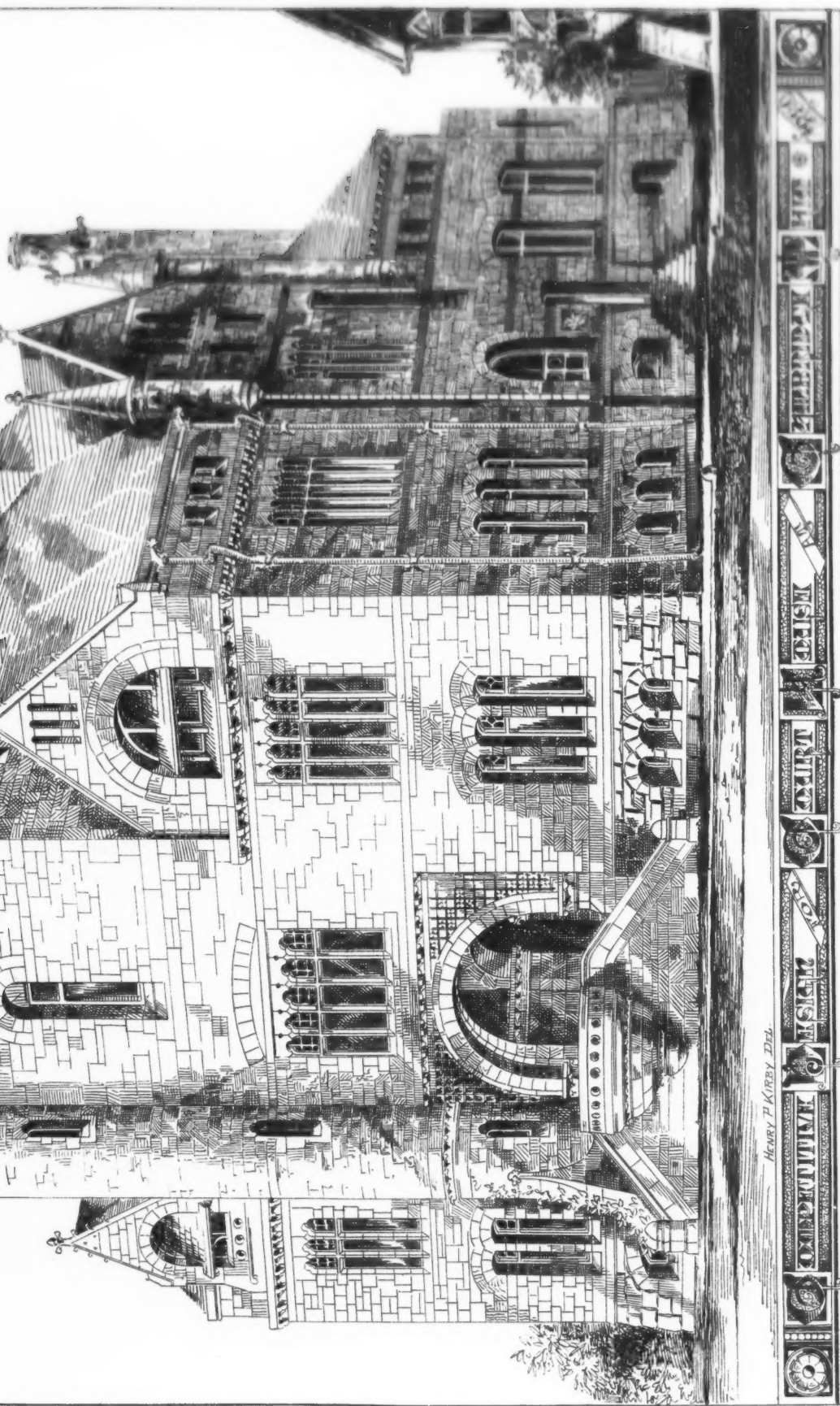


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THE HENRY P. KIRBY CO. 211 N. 1ST ST. PHILA.