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"*Qui terre a, guerre a,*" is the suggestive proverb with which the commission charged by the Société Centrale des Architectes with the preparation of a revised manual of the laws relating to building introduce their work. Some seventeen years ago the same society published a smaller digest of similar character, which had a large sale, and has long been out of print. A new edition was demanded, and its publication resolved upon; but material has accumulated so rapidly within the last two decades, that nothing short of a complete re-writing of the book could be thought of, and the manual of one small volume was necessarily expanded into four. Considering the conciseness with which the French common law, thanks to the *Code Civile*, is capable of being presented, the contrast between these bulky books and the thin duodecimos which purport to contain the English law on the subject is somewhat striking; but it can hardly be said that any of the matter is superfluous, and a perfect appreciation of the needs of architects is shown in that which is selected. The law of party-walls, ancient lights, servitudes and easements, the customs of various districts in regard to projections, and so on, which architects generally have to learn by painful experience or costly inquiry in each particular place, are here set down with admirable completeness. As usual in French works of the kind, the mode of presentation of the various subjects consists in the citation of those articles of the *Code* which relate to each, accompanied by explanations which take the form of a series of notes subjoined to each article, summarizing the judicial decisions which have been made on all the points under that article, followed by references to the actual cases. These notes are illustrated by woodcuts, the first we remember to have met with in a legal treatise, but of great service in elucidating the text.

NOTHING, perhaps, puzzles architects more than the subject of boundary lines, unless it be that of the privileges of adjoining proprietors. They are often called upon for an opinion on some conventional landmark, whose interpretation depends on traditions and usages of which the knowledge even of engineers generally is somewhat vague, and that of most architects slighter still. They have reason, therefore, to envy their French brethren, who can turn to their *Manuel* and find such precise information as this: "All ditches between two estates are presumed to be divided in the centre by the party-line, unless there is evidence to the contrary, but when all the excavated earth is thrown on one side of the ditch, this is taken to be evidence that the whole of the ditch belongs to the proprietor on whose side the earth is thrown." Or, in regard to a question which often arises in practice: "The proprietor of a wall standing wholly on his own land, immediately adjoining his neighbor's property, may legally make windows therein, but only under the restriction that they shall be at least six feet above the floor of the room which they illumine, and shall have sashes fixed with nails or screws, and a permanent grating of iron with meshes not more than four inches in diameter." If the wall in which it is desired to make openings is at a distance less than six feet from the boundary line, windows may be made without gratings, but must still be six feet from the floor. Beyond the six foot distance ordinary windows may be constructed. By consent of all parties, no doubt these rules are often transgressed, but that is a matter independent of legal right.

THE Superintendent of the late Building Department of New York has been twice indicted by the Grand Jury for malfeasance in office. The first indictment was quashed for technical error, and another has been drawn. In addition, warrants have been issued by one or two police justices for his arrest on specific charges of bribery. The arraignment to answer to the bill of the Grand Jury will take place soon. It appears that the specifications accuse him of "allowing buildings to be erected in such a manner as to endanger the lives of citizens," besides other misdemeanors. We trust he will receive punishments for all the sins he has committed, but we cannot avoid expressing surprise that if Mr. Dudley is to be arraigned for approving certain criminally defective plans, those who made the plans and controlled their execution should not be placed in the dock with him.

THE *Fireman's Journal* corrects our statement, based on the accounts in the New York daily papers, that Mr. Thomas McAvoy had been appointed Superintendent of Buildings on the part of the Fire Commissioners, saying that after legal process had been served on them, restraining them from taking possession of the office of the Department of Buildings, the Commissioners were advised that to appoint any one in place of Mr. Dudley before the points of law were settled, might be construed as a contempt of court, and they therefore forbore to make any nomination. The *Journal* adds, that Mr. McAvoy is the Mayor's candidate for the position, but evidently does not hold the highest opinion of his qualifications for the office. About that we reserve our judgment, only taking leave to remark that we do not imagine that the Commissioners are in any way held to confirm the Mayor's choice if they do not think it a good one. The salary offered, some sixty-five hundred dollars we believe, ought to be sufficient to attract candidates of thorough training and ability, and no others should be considered for a moment.

CHICAGO is beginning to contemplate, none too soon, the introduction of a new and thorough system of sewerage, incited by the material increase in the death rate, and the obvious impurity of the atmosphere of many portions of the city. This foulness of the suburban district renders the problem a serious one, and will add much to the necessary cost of the work, on account of the great length and perfection of workmanship of the sewers required to drain so large an area of low-lying ground with any thoroughness; and thoroughness it is essential to have, for the end will be only half attained if the central and more closely packed wards of the town are put in good condition, but the surrounding regions left filthy. It seems to be proposed to empty the sewage into the lake, — to enrich the drinking water which is pumped back from the same place, we presume. It could not be long before the steady draught from the lake at the crib of a solid stream of fifty or sixty million gallons per day, and its return at the sewer mouths would establish a circulation between them, even though they were much more than two miles apart. One would think Chicago well situated for an irrigation experiment on a large scale, surrounded as it is by boundless tracts of comparatively flat arable land. Such an experiment might be made in a tentative way, by selecting a certain limited district toward the outer edge of the city, and applying its sewage on the ground of the country beyond. If this succeeded, a similar disposition might be made in regard to the adjoining district, and so on. In this way the cost of a trial of the system would be comparatively small, and no remodelling of the drains of a district would be necessary in case an intercepting sewer should be afterwards substituted for the original mode of discharge.

A DECISION has recently been rendered in the Supreme Court of Pennsylvania, regarding a point of some importance in fixing the responsibility for accidents from defective construction. What the circumstances were we do not learn from the report of the decision, which is very brief, but it is possible that some considerations may have been involved which do not appear upon the surface. The court held, in substance, that where a corporation employed a bridge-builder to erect for it a bridge, and there was no evidence to show that the builder was not a person of ordinary skill and care in his trade, the law presumed that he possessed ordinary skill and care, and the burden of proof was upon the plaintiff to show that the company did not exercise ordinary care in his selection. Moreover, if through defective construction of the bridge, any one should be injured, if the defendant company could prove that it had employed a regular bridge-builder, his negligence would not render the company liable, unless it had been previously made aware of the existence of the defect, and had neglected to repair the same. We hope, and are inclined to believe, that this is questionable law. Those who trust themselves upon a bridge, or on board a steamboat, or in a building, do so confiding in the liability of the owners, of whose character and pecuniary responsibility they know something, to indemnify them for injury occurring by reason of the bad construction or bad management of the craft or structure, and believing that the consciousness of this liability has, and will continue to induce the owners to watch carefully over both construction and management. About the builder, or builders, they cannot possibly know anything, and if they did, it would be useless to look to them for damages, while their remaining resource, to inspect the structure for themselves and call the attention of the owners to defects before embarking, would be still more absurdly out of the question. The whole subject of liability for so-called accidents needs clearing up. Why would it not be worth the while of the accident insurance companies to do something toward a settlement of principles?

BEFORE the connection between the continents of North and South America is finally severed, it seems probable that the great African desert will have become the unresisting subject of engineering experiments, — of what kind it is difficult to say as yet. The proposition made long ago to overflow the Sahara by a canal from the Mediterranean, whose level is for the most part higher than that of the desert, seems to have fallen into discredit, partly, we suppose, on account of the doubts which have been thrown upon the accuracy of the surveys and estimates upon which the arguments in favor of the scheme were based, and public attention is now directed toward the project for a railroad from Algiers to Timbuctoo, or perhaps, as has been more recently suggested, from Tripoli through the fertile oasis of Fezzan to Lake Tchad. To the objections raised by certain explorers, that a railway across the Sahara would be buried from time to time in sand, and that the savage inhabitants of Africa would interfere with the construction and operation of the line, even if it were desirable as a commercial enterprise, its French promoters reply, that the inconvenience from sand can be but slight compared with that from snow on many of the American railroads, and if it should prove serious, the same mode of protection by sheds can be employed against simooms, which is found so useful against winter storms in the Rocky Mountains. As to the natives, they will soon learn that passenger trains are not sent to provide them with "meat," and annoyance from them will cease. All this seems reasonable enough, and there is no question that Africa is on the brink of a vast and rapid development. Already the route which Stanley pursued so painfully is practically open to travel; many others are being established, and if we are not mistaken, railway supplies have recently been shipped to Zanzibar for use upon the continent. We confess to some personal disappointment at seeing the prospect of a Saharan sea fade away. To say nothing of the amelioration which it was expected to work in the summer climate of Southern Europe, the thought of having to traverse the desert by land instead of water, even in a railway car, has little that is attractive.

NEW YORK'S obelisk is fairly on its way across the Atlantic, and it is time to make preparations for its reception. The Park Commissioners have granted a site for the shaft in the Central Park, on a knoll not far from the old Reservoir, but difficulties present themselves in the transportation of so heavy an object through the city. The Street Department fear that its weight may crush the sewers under the roadway, and at the least some dislocation of the pavement must be expected, so that it is desirable to make the route to the site as short as possible, and with this view it is now proposed to float the obelisk up the East River to Eighty-sixth Street, which is a wide avenue with a good dock at its foot, and, landing it there, haul it by means of ways laid in the gutters, with a staging spanning the street, to the Park entrance, and thence to the spot chosen for its reception, where it will be deposited until the foundation is ready. It is unfortunate that the foundation cannot be constructed beforehand. A granite monolith will be none the better for lying prone upon the earth in our climate, perhaps for a whole winter, in case early frosts should interfere with the mason's labors.

THE Royal Gold Medal annually conferred by the Queen, in accordance with the recommendation of the Council of the Royal Institute of British Architects, upon some person distinguished for his services to architecture, or merit in the practice of that art, has been bestowed this year upon Mr. John Loughborough Pearson, an architect noted among those of the Gothic school, by his profound knowledge of the style, and the purity and repose of his designs. Mr. Beresford Hope, one of the best and ablest amateurs in England, and once President of the Institute, presented the congratulations of the members to Mr. Pearson in a happy and feeling speech, and the award seems to have given very general satisfaction. The Royal Institute appears to be rapidly advancing in usefulness and influence. Not only has the agitation for reform in competitions been carried this year nearly to a successful issue, with its encouragement, if not exactly under its auspices, but the institution of an obligatory examination for the privilege of membership is now settled, and all this without any sacrifice of the dignity and reserve with which it is thought desirable to conduct its affairs. These qualities give it an undoubted advantage in many cases, as, for instance, in the conference which its President has just been requested to hold with the new Greek minister to the Court of St. James, with reference to improving and strengthening the relations between the Institute and the Government and archæological societies of Greece.

THE *American Art Review* for June contains a noteworthy etching by Mr. S. A. Schoff, of a picture which has enjoyed a great and lasting reputation, — Mr. Elihu Vedder's "Sea Serpent." It must be nearly or quite fifteen years since this singular picture made its first strong impression on the public mind, an impression which seems to have been repeated at each successive exhibition of it to this day. Whether the novel sensation which the painting excites is one which it needs great genius to produce, or which deserves to be the object of fine art, we need not discuss; such as it is, the impression of the original is rendered in the etching with a fidelity which seems to us extraordinary. Mr. Schoff is so well known as a line engraver, and in a very different field, that so successful an essay in a new one will be sure to attract much attention.

THE technical journals contain frequent reference to a new material which is coming very rapidly into use for many purposes. This substance, as at present manufactured, is a compound of three sulphides, those of iron, zinc and lead, with pure sulphur, and the mass obtained by the union of these elements has the properties of being very easily fusible, and of expanding on cooling, besides possessing a certain amount of elasticity, and resisting the action of the atmosphere and of most chemical reagents. These qualities adapt it to a great variety of uses, among others to the jointing of metallic pipes for the conveyance of water or gas. The expansion of the alloy as it solidifies does away with the laborious caulking of the joints which is necessary to make the ordinary lead-packing tight, and its semi-metallic character gives it great superiority over the putty and cement which sometimes take the place of lead. In other uses, for which metal is usually employed, it is found to answer a good purpose, as for stereotyping, the manufacture of objects of art, builders' ornamental metal-work, and other articles in which a substance expanding sufficiently on cooling to give a sharp casting is required, it is found to answer a good purpose, its ready fusibility being in its favor, as well as its cheapness, the cost of the new material being much less than that of lead. A variety of tints may be given to it, — steel-blue, bronze-green, golden or silvery, although the normal color is a dark gray. Among the English gas-light companies its use for jointing mains has become very general, a hundred or more having already adopted it. The specific gravity of the new substance is about three and a half as compared with water, and its melting point one hundred and sixty degrees Centigrade, while that of lead is three hundred and thirty-four degrees. It is easy to foresee a great and constantly extending field of usefulness for it, if it turns out to have all the good qualities claimed for it.

NOTES ON ELEVATORS.[1] — II.

THE only other species of apparatus known to us which dispenses entirely with all ropes or chains except the shipper is the direct-acting form of hydraulic elevator, which is still used in Europe to a considerable extent, especially on the Continent, and is in some situations found satisfactory in this country. This form consists of an iron cylinder, of the same length as the hoist, sunk vertically in the ground immediately under the centre of the shaft, in which moves a piston. To the top of this piston is attached the platform. A pipe outside supplies water under pressure below the piston, and when this, and with it the car, has been pushed up to the required distance, the supply is cut off and the waste-valve opened by a three-way cock operated by the shipper-rope, allowing the water beneath the piston to flow out gradually, and the platform to descend. There is hardly any possibility of danger with this form of apparatus, unless, as has sometimes happened, the piston is made so slender as to buckle and break under the weight of the platform and its load, or unless the piston should stick in the cylinder in its descent, and the water should escape below.

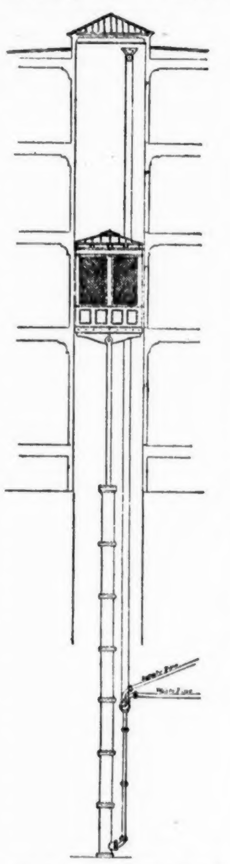


Fig. 2. Direct Acting French Hydraulic Elevator.

There are not very many localities where a cylinder long enough for a lofty hoist can be buried without considerable expense, and an outlet must be provided for the water from below the piston, for which it is often by no means easy to find a practicable place of discharge. It is not necessary that the outfall should be below the lowest point of the cylinder; the weight of the descending piston can be depended upon to raise the water beneath it to a certain height, which can be easily calculated. One objection which is found to the employment of direct acting pistons in long vertical cylinders, is the variation of the power at different points in the lift. It is unnecessary to say that the common and most obvious way of obtaining power to move the piston is by the hydrostatic pressure of the water supplied, and that this pressure depends upon the height of the source of the supply above the point at which the action is exerted. Consequently, the hydrostatic force of water acting at the bottom of the cylinder will be greater than the force which it exerts at the top, or end of the stroke, by the amount of pressure, or head, corresponding to a column of water of the height of the cylinder. Supposing the cylinder to be fifty feet high, a very moderate estimate, the hydrostatic force at its foot due to this height alone will be about twenty-two pounds to the square inch, or a ton and a half per square foot, so that if the cylinder is one square foot in sectional area, the piston starting from the bottom with a surplus lifting force of one and one-half tons will not retain power enough to reach the top; and if hydrostatic pressure is supplied from outside sufficient to raise the load to the top of the shaft, the strain at the bottom of the cylinder is increased to a wasteful and useless extent. This difficulty which is severely felt in apparatus of this kind, might be to a great extent avoided by using the elasticity of compressed air as a source of power, instead of hydrostatic pressure, in the way which is explained below in regard to water elevators of a different type.

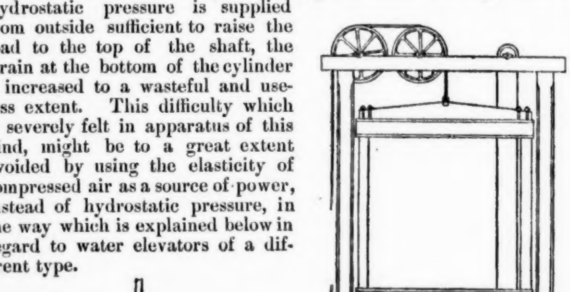


Fig. 3. The Stebins Hydraulic Elevator, with Flexible Piston.

The variation in power incident to the employment of vertical cylinders suggested the placing of these in a horizontal position, in order to preserve a uniform degree of power. It then became necessary to use ropes, chains, or flexible bands, in order to change the horizontal movement of the piston to a vertical hoist, and the elevator of this kind may be taken as a simple type of the suspended apparatus. As shown in the figure, which represents the Stebins machine, a three-way cock operated by the shipper-rope admits water to either end of the long horizontal cylinder, or allows it to flow to waste at will. To the piston is attached a wire rope, or "flexible piston," which passes through a stuffing box in the end of the cylinder. The other end of the wire rope is carried around a pulley or drum attached to the floor, then up to the top of the shaft, over another pulley, and thence descends to the beam of the car or platform. To this it is attached by means of a device which, as it is a type of the safety apparatus most commonly used, will serve to introduce the consideration of these appliances, after which the study of the more complicated hoisting engines can be pursued more intelligently and consecutively.

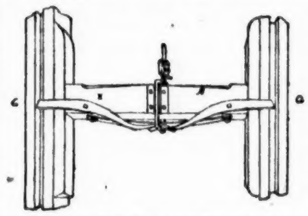


Fig. 4. The Stebins Safety-Catch.

In Figure 4, A is the cross-beam which carries the platform of the elevator. G. G. are the guide posts. Beneath the beam is a strong steel spring, like the lower half of a carriage-spring, and the suspension rope, instead of being attached directly to the beam, is secured to an iron frame which loosely encircles both it and the spring. In this iron frame lie also the inner ends of two iron levers or pawls, pivoted at X, and with their outer ends brought to a sharp angle. So long as the platform and its load hang suspended from the rope, their weight pressing on the spring flattens it, and the inner ends of the safety levers are raised enough to draw their sharp outer points a fraction of an inch away from the wood of the guide posts.

On the breaking of the cord, however, the spring is released, and assumes its bent form, depressing the pawls and throwing out their points, so that they bury themselves in the wood of the guide posts, and so stop the fall of the platform, provided it has not previously acquired so much headway that the iron points, instead of taking a firm hold of the timber, plough their way through it to the bottom without materially impeding the fall of the car, as sometimes happens with heavy loads.

A more common form for this kind of safety-catch is shown in Fig. 5. The main difference between this and the last described variety consists in the notched strip of cast-iron which is secured by screws to the guide posts on each side the whole height of the shaft, in whose teeth the ends of the safety levers catch when thrown out by the action of the spring. The mode in which the releasing of the spring moves the levers varies considerably, every manufacturer having his special device. A good and simple form is that shown in the illustration, where the depression of the inner ends of the bent levers, as the spring relaxed by the breaking of the rope flies back to its original convexity, throws out the outer ends with an energetic movement, while the shape of the levers enables them to present a firm resistance to the shock which the sudden arrest of its fall causes to every part of the platform.

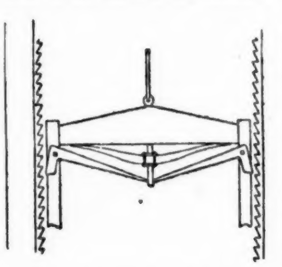
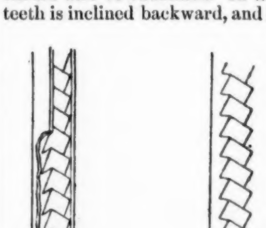


Fig. 5. Common Spring Safety-Catch.

In the sharp competition between the various manufacturers of hoists, there is much temptation to diminish the cost of the apparatus by reducing the weight of metal and the amount of labor required to the lowest limit consistent with reasonable strength, and in examining elevators of an unfamiliar make care should be taken to see that the pivots on which the bent levers turn are large enough, and sufficiently well secured, to be certain of resisting the violent strain which in case of the breaking of the rope is thrown wholly upon them. The ratchet, a toothed strip of metal on the guide posts, should also be examined. In the best forms the upper surface of the teeth is inclined backward, and a raised rim encloses them on each side, both these precautions forming valuable safe-guards against the shaking out of the levers from their hold, in the violent agitation caused by the parting of the rope and release of the spring. It is impossible to be too careful in the inspection of these appliances, whose action is very uncertain under the various unfavorable circumstances of actual use. Out of eleven elevators whose fall was reported during the month preceding that in which we write, it is said that only two were unprovided with what purported to be safety-catches. Besides the breaking of the levers or pivots, or the shaking out of their points from the notches of the rack, it often happens that the


Right form of Ratchet. Fig. 6. Bad form of Ratchet.

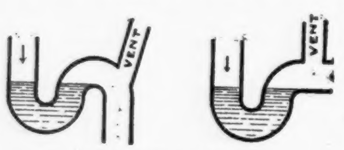
[1] These papers will appear monthly. (See No. 232, June 5, 1880.)

springs, if originally strong enough, being constantly compressed by a weight which is never removed unless by the breaking of the rope, — since the platform hangs suspended even when at its lowest point, — lose their elasticity to some extent, and not acting with sufficient quickness when released to throw the levers instantly into their notches, the falling load gains so much momentum that if it is subsequently caught by the levers either these or the racks are torn from their attachments and the whole falls to the bottom of the shaft. It is, for this reason, of the utmost importance to see that the racks are firmly secured to the posts; the short wood-screws often used, at the rate of two to every four or five feet, form a fastening of doubtful strength.

APPARATUS USED FOR HOUSE DRAINAGE.[1]

I will now endeavor to explain some of the leading characteristics of the several styles of apparatus in most common use in this market, grouping them as far as possible in classes, according to the principles governing their action. I propose first to discuss various kinds of traps. These devices all depend upon the same principle, viz.: that a small depression or chamber is made in the drain or pipe, in which the sewage is retained, as a seal, to prevent the passage of air and gases.

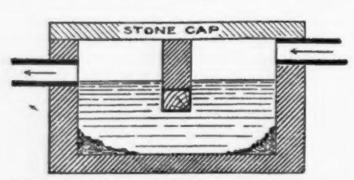
Since it is desired to retain as little of the sewage as possible within the drains, for reasons before given, the smaller we make the depression or water-chamber of the traps the better, provided they are efficient and can be relied upon to retain their water at all times. The simplest form of trap is the ordinary S-bend, formed now-a-days by casting the lead in a mould, so it may be seamless. (See Fig. 12). This form is not likely to become a place of deposit for the grease or other solid matter in the sewage, and if it could be relied on to retain its water it would always be the best form, because of its cleanliness. It is, however, extremely likely to lose its water-seal by siphon action, whenever the waste-pipe runs full below it, or whenever any slight vacuum is produced in a connecting pipe into which it may discharge. The remedy for this is to admit the atmospheric pressure just below the water-seal by a vent-pipe, and if this is as large as the trap and waste-pipe, and not too long, it will be efficient. Such pipes cannot of course be opened directly into the house, but must communicate with the air by means of extensions leading up through the roof, or into the soil-pipe above all branches that bring drainage into it, supposing this pipe to extend itself through the roof with an open end in all cases.



Vanted S-Traps. Fig. 12.

The cost of such a vent-pipe and the lack of a proper place to lead it, where it may have a continuous slope to avoid the accumulation of water from condensation, especially in old houses, is often a serious objection and has given rise to various other styles of traps. The opposite extreme is the cesspool trap, which we often find in the basements of houses built thirty years ago, and sometimes in buildings designed and erected within ten years by architects who ought to have known better.

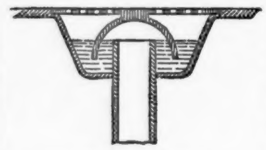
The cesspool trap (See Fig. 13) is a small tank, sometimes of only one or two cubic feet capacity, into which the drainage enters at one end and goes out at the other at a slightly lower level. The sewage is of course retained in it up to the level of the outlet. In order to stop the flow of gas upward, a partition is made, extending across the tank, but not entirely closing across the bottom, often starting on a bar of iron or wood some inches below the water-line, and extending to the top or cover. This is an effectual bar to the passage of gas, but the corners of the tank favor an accumulation of foul matter from the sewage which putrefies and gives off to the house drain more bad gas than would be found in miles of a well-constructed sewer. The remedy therefore may be worse than the disease, and such cesspools are never to be tolerated, except on the wastes of the kitchen and butler's sinks, for the interception of grease, as before described, and then they should be made with rounded corners, and frequently cleaned out.



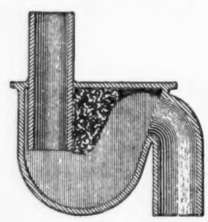
Old Style of Cess Pool Trap.
Fig. 13.

The various forms of traps between these two extremes are too numerous to admit of illustration except by classing them.

A very common form is that of the bell-trap (See Fig. 14); it is generally found under sinks, as a part of the outlet strainer, and is generally a mere subterfuge, and worse than nothing, so far as it tends to give a false sense of security where none exists. An inverted cup or bell is attached to the under side of the strainer, made to dip into an annular depression around the upper end of the waste-pipe. Since the flow of water around the edge of the cup can never be much accelerated by pressure from above, the chamber being close up to the bottom of the sink where the flow is obstructed by the strainer, and since the water-way is so shaped as to favor the accumulation of crumbs and sand, it frequently gets choked, while the seal is so slight, rarely over $\frac{1}{4}$ or $\frac{1}{2}$ an inch, that a very slight vacuum below will cause the water to be forced out of it and render it inoperative.


— Bell Trap —
Fig. 14.

Another faulty form of trap is the D-trap (See Fig. 15), generally made of lead, and largely used by some of our best plumbers, at least till within a short time. Its faults are forcibly illustrated by this specimen before you which was recently taken from a house in this city, which is cut open on the side, showing the accumulation of filth which has been deposited, so as to leave a narrow channel for the water through the centre, while more than three fourths of the cavity is occupied by solid matter, even after it has shrunk somewhat by its drying since it was opened some weeks ago. In fact, the water-way is here reduced to an S-shaped channel through the putrid slime, the original shape of the cavity being entirely masked by its lining.


D-Traps. Fig. 15.

A form now in general use, particularly among Boston plumbers, is the round or "bottle" trap, made thus, and often serving as a trap for several wastes from different bowls or tubs in different apartments (See Fig. 16).

Its merits are that it requires a very strong blast of air through it to drive the water out and destroy the seal, so that this seldom happens. Moreover, the cleaning screw at the top enables one to readily get access to the interior for removing the sand or filth. This trap is often placed directly under floors, with the screw just visible through

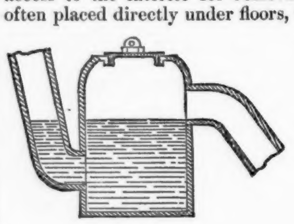
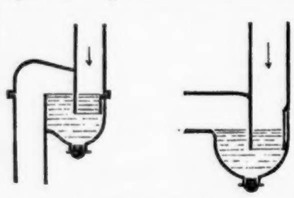

— Round Trap —
Fig. 16.


Fig. 17.

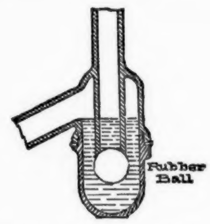
a hole in the floor for inspection and cleaning. Its faults are that it is a cesspool, though perhaps a small one, and soon becomes a place of deposit of a vile and putrid filth, which it is not desirable to harbor anywhere in our houses, — even in our drains. House-keepers rarely, if ever, open these traps for cleansing. They are in out-of-the-way places, and are rarely thought of. The form with rounded bottom is more likely to keep clean than the flat bottom, which accumulates filth, as shown in Figure 17.

It will be readily seen that the security against the loss of the water-seal by siphon action is greatest in those traps which, like the D-trap and bottle-trap, have a marked expansion of the water-chamber, which admits of air being blown freely through them without displacing and losing much of their fluid contents. It is also easy to see that any such expansion of the water-chamber is likely to encourage a deposit of filth in a short time, and this deposit is not only an evil in itself, but serves to fill up all such parts of the chamber as are free from the force of the current, and finally to reduce it to a mere crooked channel, like this in the D-trap, very similar to the simple S-trap in its form. The ingenuity of the inventors of the various styles of traps, some of which are shown in Fig. 18, has therefore been spent in trying to make a practical compromise between the tendency to lose the seal by siphonage and the tendency to accumulate deposits. This effect has also given rise to various forms of mechanical devices for closing the opening by a solid valve, which it was hoped might effectually stop the passage of gas in the direction opposite to the flow of water. A variety of such valves have been produced, and are now for sale in the market, most of which are hinged flaps like ordinary pump-valves, except that they are made with turned and fitted metallic seats. If the fluids passing through them were always clean and free from solid matter, these might work satisfactorily. But of course this cannot be the case. The result is that the valve seat often becomes the place of deposit of hairs and particles of lint, grease, etc., which adhere to it and prevent the


Adee Traps. Fig 18.

[1] A lecture by Mr. Edward S. Philbrick, C. E., delivered before the students of the Massachusetts Institute of Technology, Boston.

valve from shutting tightly. All the valves that are hung on hinges are subject to this defect. The better form of valve for such a purpose is the ball-valve, which rarely applies the same face to the seat for any length of time, and by its continual shifting and rolling tends to keep the seat partially wiped. The hinged valves, for the above reason, have never come into general use, and are generally limited in their application to the narrow circle of the practice of their inventors. The best form of ball-valve is the inverted or floating ball. This principle is incorporated in Bower's trap, (See Fig. 19).



- BOWER'S PATENT TRAP -

Fig. 19.

The more ordinary form of ball-valve used in pumps has an upturned seat with ball resting on it. By inverting the valve seat and turning it downward it is rendered less likely to become the place of deposit of hairs and lint, but of course the valve becomes inoperative the moment the trap loses its water, on which it depends to float the valve against its seat. The ball is made of hollow vulcanized caoutchouc, which is quite pliable, and readily adapts itself to form a comparatively tight joint against the seat so long as water enough remains to float it. Moreover, its compressible quality is an advantage in case of frost, which might otherwise burst the receptacle. If these traps were always made of the best quality of material and the parts well fitted, they would be more reliable than at present, the lead being sometimes too hard and the screw joint has too little width for a reliable washer. The manufacture is limited to those controlling the patent, so that the market can only be supplied through them: the responsibility of workmanship and good materials is therefore concentrated and subject to control. It is to be hoped that these faults alluded to may be corrected by the makers, as the device, if well executed, would be a very useful one, and might be recommended without qualification for general use if supplied with an air-vent to prevent loss of water by siphonage.

The loss of water in an ordinary trap by siphon action is a phenomenon too familiar to require illustration, but the loss of the water in any trap by a rush of water through *another pipe*, with which it may connect, is apparently seldom thought of by many of the plumbers who have fitted up our modern dwellings. I have accordingly set up this apparatus to show how this is done. (See Fig. 20). A hopper at the top of this vertical soil-pipe is provided with a plug, by which it can be discharged at will. The descending column of water passes by the Y-branch with a small trap on it at B, with such force as to drag along with it from this branch the air that it contained, and the small trap loses its water in an instant, unless it is provided with an air-vent at *c*. This vent has a cork in it. I will remove the cork and discharge the hopper again. You see by means of the glass test-tube, outside of the trap, that the water-seal is not disturbed this time. But if the vent-tube, instead of opening here at *c*, had been only one inch diameter or less, and some thirty feet long, with crooks in it, the air might have been so detained in it by friction that it would not have supplied the vacuum quickly enough to avoid disturbing the water-seal in this small trap.

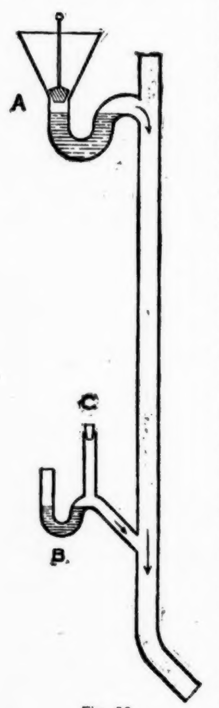


Fig. 20.

I will now remove this S-trap and apply by means of putty, a bottle-trap, with a glass tube outside to show the amount of water it contains at any moment. It has no air-vent. On discharging the hopper above you see the air rushes in not only through the inlets, bubbling into the trap, but through the test-tube also, and a large part of the trap-water is blown out, though not quite enough to destroy the seal, which was a deep one.

Thus we see it is not enough to provide against the siphoning of the trap into or through which we may be discharging water at any time, but we must also see that all the other traps which connect with the same soil-pipe or system are well supplied with air, to guard against the disturbing of their water by the passing rush. In all new constructions the better way is to provide a separate air-pipe, at least two inches in diameter, into which branches may be led from all the small traps on each floor. This air-pipe can, if convenient, extend up through the roof independently; but as it may in our climate be often filled with hoar frost in a cold night when exposed to the outside temperature, a safer way may be to branch it into the upper end of the soil-pipe which is four inches in diameter, as shown in Figure 21, above all branches by which drainage may enter, to create disturbance.

A good deal has lately been said about the inefficiency of traps to stop the circulation of gases in our drains, especially by the patentees or their agents, who wish to introduce mechanical valves for the same purpose. These people allege that every trap is capable of passing bad gas, by the solution or absorption of such gas in the trap-water to be given off on the other side into the air having access to our rooms. The experiments of Dr. Fergus, tend to show that this transfer is actually made, to a limited extent, when the gas accumulates on one side of the trap in a very *concentrated form;* but more recent experiments, conducted with a good deal of care, by Dr. Carmichael of Glasgow, show conclusively that in practice this transfer is not likely

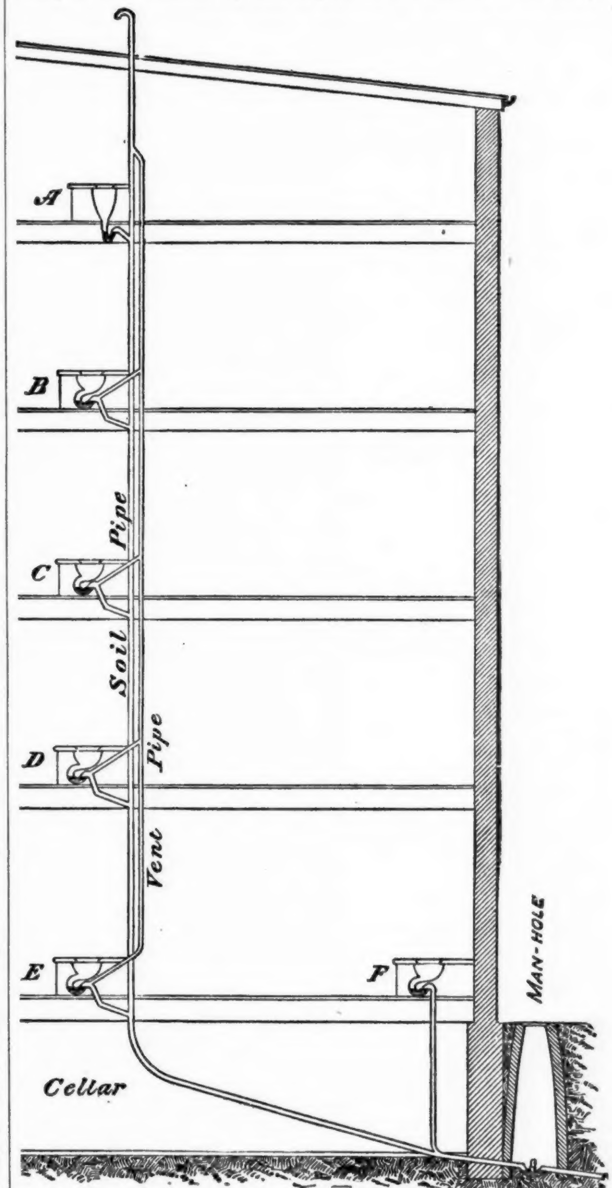


Fig. 21.

to occur, unless the concentration of bad gas becomes much more marked than is ever likely to be found in sewers with even a moderate supply of ventilating or breathing holes. Moreover, the transfer of germs or organic spores, however minute, was not found to take place in such a manner, *i.e.*, by absorption and subsequent exhalation from the trap-water. The old-fashioned trap, then, with a simple water-seal, may be accepted as a perfectly safe device to check the circulation of gases in drain-pipes, so long as the normal atmospheric pressure is freely admitted in the manner and at the points above described, to preserve the water-seal from disturbance through pressure or vacuum. Dr. Carmichael states that the amount of gas actually transferred through the water of an ordinary trap to be so minute as to be "perfectly harmless."

Another frequent cause of the loss of the water-seal in traps is by *evaporation*, which in our dry climate is likely to occur in many traps that are not in daily or very frequent use. Bowls or sinks in spare chambers or other apartments which may be unoccupied for several consecutive weeks or even months, should either be supplied with a dash of water occasionally, or if disused for longer periods, disconnected from the drain system entirely. A neglect of this precaution in an unoccupied apartment may lead to a serious contamination of the air, which may not only circulate into other rooms that are occupied, but which sometimes is absorbed by the bedding, upholstery, carpets and wall-paper, so that it becomes next to impossible to rid the room of the noxious odor by ventilation, even after its source is cut off.

Traps are often relied upon in overflows of tanks and in cellar drains. These drains are generally used at such rare intervals that their traps may lose their seal by evaporation, and as the memory can hardly be relied upon to replenish their water when exhausted, it is better to avoid depending on it.

Overflows, as I have said before, should *never* be discharged into drain-pipes, but over open sinks or bath-tubs, or out of doors. Cellar ground-drains are often discharged into the sewer or house-drain by necessity. In all such cases a separate trap should never be depended upon, because of its liability to dry up. The better way is to lead such drains into the main trap, *i.e.*, the trap on the main house-drain just outside the walls, connecting below its water line or discharging in the open air just above its vent-hole, as found most convenient.

If connected with the drain system without such precaution, we should thereby ventilate our drains or sewers into the air spaces of our foundation walls, which is not advisable.

THE ART OF WOOD-WORKING.

THE wood-worker's art has not yet found its historian. To say sooth, the task is laborious and demands a man with broad shoulders, patient and persistent, *tenacem propositi vivum.* To narrate the history of wood-working, that is to say, image-cutting, carpentry, ebony-working, cabinet-work in all their varieties, from the astounding creations of the first Egyptian dynasties to the wood-working of the *petits maitres* of the eighteenth century; studying by the way the sandal-wood closures of the pagoda at Perou, and the gates at Somnath, the Diana of Ephesus which was of ebony, and the Juno Regina which was of cypress, the *opus intestinum* of the Romans and the chair of St. Peter, the roof of Westminster Hall and the marquetry of Fra Giovanni of Verona, the doors of the Alhambra, the choir stalls at Amiens and those at Gaillon, the Graces of Germain Pillon, and the St. Francis of Alonzo Canno, the ebony-work of Boulle and of Riesener, the decorations of Lepautre, of Oppenordt, and of Toro; to show in a word, how wood is used in building, for furniture, for statuary, among all peoples and in all ages, surely this is a programme of broad scope, and our short-breathed contemporaries, grand-masters of monographs as they are, have some reason to be afraid of it, but if the work is considerable, cannot one divide it, attack the divisions in detail without pecking at the infinite.

The art of the wood-worker, although it accommodates itself to every latitude, flourishes by preference among homely people. The love of home betokens a special and very perfect material, furniture varied in kind, commodious and handy, chairs whose backs and seats envelop one, *causeuses* soft and inviting, sheathed walls, well-fitted wood-work and tight doors. On the other hand, the inhabitant of warm climates longs for an interior cool and fresh, decorated with marble, stucco or tiles, large isolated divans, rugs on the floor, and fresh currents of air; he receives few visitors, he lives out of doors.

From this first principle flows the second, to wit: that peoples treat the art of wood-working differently according to their geographical situation. The man of the North is rather a house-carpenter, his work always smacks of house framing. The Englishman, excellent cabinet-maker, sacrifices everything to comfort. The German, skilful carver, loves squat and heavy forms. The Spaniard as well as the Italian shares the influence of the South; for them interior comfort is an accessory, home the exception. The first, under the influence of a common rule sometimes mingles two contrary elements, northern and southern, Flanders and Spain; but the ill-assorted union could neither be fruitful nor lasting, and each soon resumes its own liberty. The Italian knows nothing of these compromises, he is a frank meridional; he has seen Gothicism pass by, without making any advances to it and has always maltreated it. An out-of-door man, able decorator and full of dash, he loves expeditious methods, searches for effect, and disdains all beside.

In France wood-working is a matter of predilection. We practice to perfection the art of "receiving," we love home more than the Englishman himself, although the word belongs to him; therefore our school has applied itself to perfecting the surroundings of private life. Favored by an exceptional geographical situation, receiving from Flanders the north wind already tempered, from Italy the rays of the East already warmed, prompt to assimilate, borrowing with reserve from this one his skill with tools and the resources of his practice, from the other the finish of his combinations and the solidity of his workmanship; from the one, his acute intelligence, from the other, conscience, our old masters have discreetly combined every thing with the traditional taste and the genius of their race. From a common material, colorless, ungrateful, exposed to every agent of destruction, they have derived an art, elegant, refined, and above all individual, and have endowed France with a school without rival.

In the Middle Ages Parisian work is already famous. Foreign catalogues do not fail to mention furniture, *ex operagio Parisiensi*, and the work-shops of Lyons, Toulouse, Burgundy, Auvergne, and Normandy can be compared with those of the Isle of France. During the Renaissance our workmen were sought from all sides. Maitre Jacques, *francme falegname*, made the foot of a magnificent ebony table for Paul III. Frenchmen worked on the stalls of Perouse and the doors of the Vatican. Under Louis XIV, buhl-work makes the circuit of the world, our work-shops receive orders from every foreign court and the great *Ecole des Gobelins*, royal manufactory of crown furniture, gives the tone to Europe. In the eighteenth century, Denmark, Spain, Parma, Genoa, Sweden, Poland, Saxony, summon our artists: Peter the Great imports into Russia a whole colony under the direction of Le Blond, and French influence continues to the end of the century.

The art of wood-working in France forms, then, a considerable chapter of the general history; it deserves a volume to itself, and the enterprise ought to tempt some painstaking writer. The histories of gold and silver, that is to say of jewelry, the history of faïence, iron, tapestry, enamels, porcelain, have all been written. Why is it that the history of wood is still to write?

We well recall that formerly, in those days when we still had illusions, the thought occurred to us to write the history of a bit of wood: grown on a Druid oak in one of the primeval forests of Gaul, we were going to have it cut by one of our ancestors to take its place in the palisades to defend the country against Cæsar. The roughly squared timber next passed to a Gallo-Roman city, thence into a Merovingian palace, at length into the roof of a Romanesque cathedral. Soon, half-consumed by a conflagration, it was cut up into smaller beams, and was used to decorate the hall of a rich burgher's house. In the thirteenth century, broken by the weather, it became a panel, was covered with paintings, and, all glowing, took its place in a church as part of a beautiful cupboard in the sacristy. Two centuries later, the ruined panel refurbished and carved by a skilful sculptor was imbedded in a coffer, whence after long adventures, passing from the coffer to a stall, from the stall to a chest, it at length endured to the reign of Louis XIII, then despoiled of its ornaments, smoothed down and planed, it served as support for a brilliant inlaying of ebony; later it entered the atelier of Boulle, then that of Riesener, and at length Jacob's, in turn clad with tortoise-shell and copper, with colored woods and mahogany. At length, the unfortunate fragment, worn and worm-eaten, fell into the hands of a manufacturer of old furniture, delighted with the opportunity of incorporating it in the body of a modern arm-chair, which he could thus pass off as an old one.

Our ligneous hero was to relate the fine things that he had seen in his travels, the corporation, the cloisters, the work-shop, the processes. Admitted into the house, he was to show us its surroundings, the life of its interior, and that of its masters. And the day when sold to an amateur, he once more found himself among his old comrades, the glorious invalid was to sing once more the glowing recollections of his youth, and the triumphs of the past.

This little archæological romance was still-born. It had a certain literary perfume, but it was not serious. In archæology the world has become very solemn, the young pontiffs will that its august mysteries shall be celebrated with majesty, and allow no frivolous talk in the temple. If Monteil or Nodier should revisit the world again, they would be politely invited to write for young girls, or contribute their articles to the annuals. We were forewarned, and the "history of a bit of wood" was prudently left unwritten. God forbid that we should regret it. Science each day makes giant steps, and the programmes of the evening are outstripped the next day. The retrospective exhibitions have brought to light treasures, whose existence our forefathers never suspected. An army of collectors has rushed to the discovery. Thus the materials have reached the work-yard in a crowd, and every one has set himself to work. Quite properly, M. Viollet-le-Duc has led the van and has laid the first stone, but without going beyond the Middle-Ages: he has stopped at the foundations. M. Jacquemart attempted to take up the sequence under another form, and build a new story: Death surprised him too soon. M. Charles Blaue looks at the matter from another point of view; delicate analysist, he decomposes the art of wood-working, and searches for the laws of the æsthetics of decoration. M. Alfred Darcel, note-book in hand, visits the cabinets of amateurs and the new exhibitions, taking notes, observing, comparing, sowing about him his doctrines, so luminous and correct. Each one brings his stone to the structure, this one a *compte rendu*, that one a monograph, another a conference; we sketch, we engrave, we photograph, each one adds his page; who, then, will write the book? — *L'Art.*

THE ILLUSTRATIONS.

A PARALLEL OF LOW-COST COUNTRY HOUSES. MESSRS. WARE & VAN BRUNT, PEABODY & STEARNS, J. P. PUTNAM, J. A. FOX, E. A. P. NEWCOMB, OBER & RAND, W. W. LEWIS, AND CUMMINGS & SEARS, ARCHITECTS, BOSTON, MASS.

THE object in view in preparing this collection of low-cost houses has been to furnish architects with a reference-sheet, to which they can turn, either for their own enlightenment or to convince some unbelieving client that such and such a building either can or cannot be built for a moderate amount of money. The architect hardly needs to be warned that as the conditions under which these houses were built were never the same, the stated cost only affords an approximate clew to the cost of a similar house built under other conditions. Moreover, the conditions under which the houses are to be occupied vary widely. Some are simple seaside cottages, occupied during four months only, others are inhabited during the whole year. Again the prices of building materials and the rate of wages have varied greatly during the building of these cottages. Still, in spite of these disadvantages the architect, by noting the cubic contents of any of these houses, the time when it was built, the purpose for which it is to be used, and its architectural style, will be able to reach a pretty definite idea of the cost of a similar house, at any time or place.

HOUSE FOR C. L. PRUYN, ESQ., ALBANY, N. Y. MESSRS. POTTER & ROBERTSON, ARCHITECTS, NEW YORK, N. Y.

HOUSE AT KENNEBUNKPORT, ME. MR. H. P. CLARK, ARCHITECT, BOSTON, MASS.

EFFICIENCY OF WATER-TRAPS.

WE reprint below a portion of a paper by Dr. Carmichael, published in the *Sanitary Journal* for March, 1880.

"We now come to the much more important question, Do the organic particles, including germs, putrefactive or specific, come through a sound water-trap? A simple but very crude method of examining the question consists in the microscopical comparison of water through which soil-pipe air has been aspirated, with water through which the air over the trap has been drawn. The former contained numerous organic particles of a very heterogeneous kind; in the latter no particles could be detected. This method is, however, not conclusive, as particles might readily elude observation.

"About five years ago, when experimenting on the germ theory of putrefaction, I performed the following experiment: Into two glass test tubes (Fig. 1), about four inches long, and having drawn-out necks, I introduced turnip infusion. The liquid in the tube was then boiled to sterilize it; and while steam was freely issuing from the drawn-out necks, a closed capillary tube, containing a putrid infusion, was passed into each tube. The body of each tube was then immediately dipped into cold water, and at the same time the neck sealed by melting it in the blowpipe flame. The putrid infusion in the capillary tubes was thus subjected to the boiling temperature for only a few seconds. The necks of the tubes were now connected by putting over each, while hot, a piece of india-rubber tubing, which adhered. A small portion of the neck of each tube was now broken off within the two tubes. In this way the whole apparatus was sterilized, except that one capillary tube in each larger tube contained putrid liquid, and the two tubes had an open connection through the india-rubber tubing. The apparatus stood for several weeks unchanged. I now violently shook one tube, so as to break the contained capillary at a constricted portion, and so inoculate the infusion. This putrefied, developed a large fungus, and became muddy from the development of bacteria. I watched for some time, and daily expected to find that the germs would pass over and inoculate the liquid in the other tube; but they have not passed over even in five years. This experiment, which did not turn out as I had anticipated, directed my attention to the subject of the relation of water to the behavior of putrefactive particles. Some points in this investigation I now place before you.

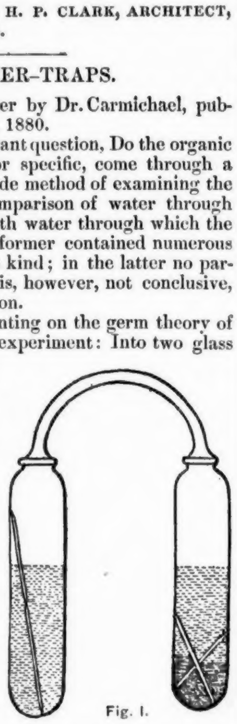


Fig. 1.

"Into a glass flask, with long neck bent so as to form a trap, and also into this trap, I placed urine. Both were sterilized by prolonged boiling. The liquid in the trap, being exposed to the air, putrefied, the urine in the flask continued clear. To deal, however, more directly with soil-pipe air, the following experiments were performed. On a shelf across a window, so as to have a good light, a glass flask, having a neck bent so as to form a trap, was placed. Into the flask was put urine; in the trap, water. The neck of the flask was connected to a lead pipe joining the soil-pipe under the trap of the kitchen sink. There was an aperture in the neck of the flask, where this joined the body, for ventilation, and to permit a current of air. The urine in the flask and the water of the trap were sterilized by prolonged boiling. The aperture mentioned was closed with cotton wool while steam issued. The water in the trap, being in direct connection with the soil-pipe air, in sixteen days developed fungi. The urine in the flask has continued unchanged. The experiment was started in July of last year, so that even in seven months germs have not been able to make their way from the soil-pipe, through the little trap of water in the bent neck, into the urine. But, lest it might be objected that there was not a sufficient current of air to draw germs over the curve of the neck, I repeated the experiment with another flask similarly arranged, except that it had two apertures for ventilation in the neck, and that it contained hay infusion in place of urine. A glass tube, plugged with cotton wool, projected through one aperture into the neck of the flask over the infusion. The infusion and the water were sterilized, and the apertures closed with cotton wool, as before. To the cotton-plugged tube projecting through the aperture was now attached the aspirator, which caused a current of air to rush through the cotton wool over the surface of the water of the trap, along to the neck toward the infusion, and out through the small tube. It will be seen from this arrangement, that any particles which might be dispersed from the surface of the water-trap must have been carried in the air current over to the infusion, and must have caused it to putrefy. It is still perfectly clear, although it has stood for five months. No particles, therefore, have come through that trap even in five months.

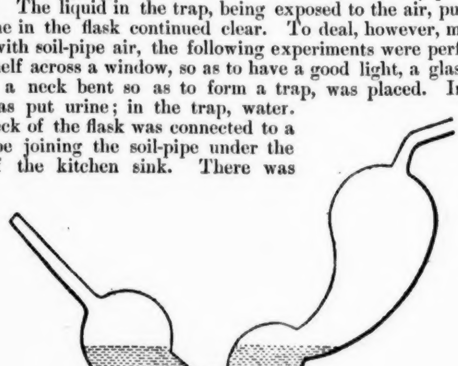


Fig. 2.

"Another flask, similar to the first mentioned of these two, containing urine in the body, and having the neck empty, was connected with the soil-pipe. This was sterilized as the others were. In a few days it began to putrefy, and in a few weeks it was very foul and putrid. That in the soil-pipe air which caused putrefaction in this case, was cut off by the water-traps in the other cases. These experiments seemed to me fairly conclusive; but, lest it should be objected that germs might rise from the liquid of the trap and fail to be carried over, or that an ordinary water-closet trap might behave differently from the glass one mentioned, I adopted the following methods of experiment, which I think you will consider crucial. Nitrogen bulbs (as in cut) were charged with Pasteur's solution (one of the best cultivating liquids). The liquid was boiled so as to sterilize it, and while steam was issuing, both ends were sealed in the flame. The bulbs were now wrapped in lint and placed in boiling water for half an hour, so as to insure perfect sterilization of the bulbs. The lead trap in the kitchen, already referred to, was now sterilized by placing under it, and raising so as to immerse the trap, a pot of oil heated to from 350° to 400° F. This caused the water in the trap to boil, and steam to flow out abundantly through both tubes. To one of these pipes an india-rubber tube was attached, and, while steam was issuing freely from the other end of this india-rubber tube, one limb of the still closed nitrogen bulb was inserted into and firmly tied in it. The other still closed end of this nitrogen bulb was now inserted into the end of another india-rubber tube, plugged near its extremity with cotton wool which had been soaked in a solution of carbolic acid, and also firmly tied in. Both ends of the nitrogen bulb were now broken off (where they had been previously scratched with a file) within the india-rubber tubes. The aspirator was immediately set to work. The liquid in the bulb was now again boiled. Steam was still coming freely from the open tube entering the cavity over the trap. When this began to slacken, a piece of cotton wool, which had been soaked in an etherial solution of carbolic acid, was tied over the end of this tube, and the whole apparatus allowed to cool. In this way the connection was made, while the whole apparatus was sterilized. The air, entering the cavity over the trap, was filtered by passing through the cotton wool of tube, passed through this cavity, passed out through the other tube, bearing with it, of course, any particles or gases which might come through the trap, bubbled continuously through the liquid in the bulb, and was discharged through the aspir-

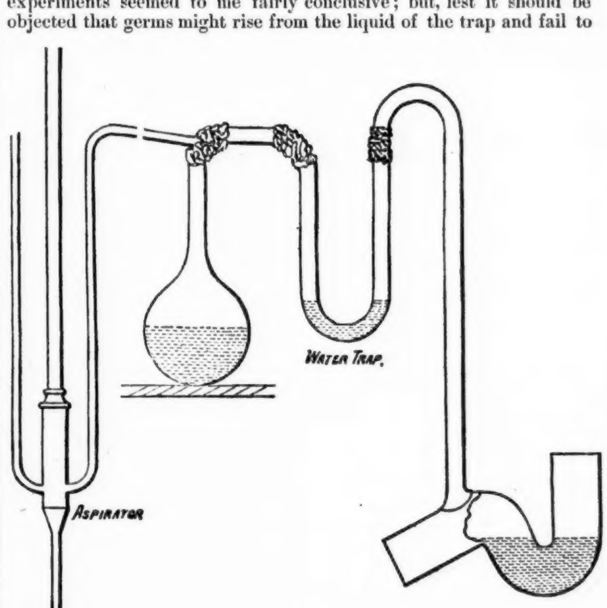


Fig. 3.

ator. The aspiration was continued for from twenty-four to thirty-six hours. At the expiration of this period the bulbs were, before removal, hermetically sealed by melting at each end, in the blowpipe flame. The bulbs were now removed, and placed in a warm room in a public work, at a temperature of from 75° to 100° F., and were left there for some months. This experiment was frequently repeated, with Pasteur's solution, hay infusion, and urine. Similar experiments were performed with flasks, arranged with two tubes passing through carbolized cotton wool in the neck, one tube entering the fluid, the other stopping short of it. Air passing over the surface of the water in the trap was, of course, caused similarly to bubble through them. In repeating these experiments, it was not found necessary always to sterilize the trap for each experiment. When the bulb or tube was detached as described, the india-rubber tube connected with the trap remained closed at its free extremity by the hermetically-sealed portion of glass tube which had been removed from the bulb remaining in it. This was connected with a fresh bulb, still closed, under a carbolic acid solution, so as to maintain aseptic conditions. In this way experiments sometimes went on for several weeks without the renewal or the fresh sterilization of the water in the trap, which of course must in that time have absorbed a large amount of the impurities of the soil-pipe. The liquids in all those tubes and flasks, though kept for from two to five months at cultivation temperature, have remained perfectly clear, and even when examined with a $\frac{1}{12}$ in. Hartnack's immersion lens, multiplying 900 diameters, exhibited no trace of life. The conditions of these experiments seem to me crucial, and to warrant the conclusion that germs do not pass through a sound water-trap. If no germs pass through, then it is certain that no particles pass through, because the particles in a soil-pipe are putrid, and because the passage of organic particles through water necessarily impregnates them with germs. Clearly, therefore, such particles as epithelium from the bowels in typhoid fever, containing the typhoid contagium, are cut off and effectually excluded from the house by a sound water-trap. *Water-traps are, therefore, for the purpose for which they are employed, that is, for the exclusion from houses of injurious substances contained in the soil-pipe, perfectly trustworthy.* They exclude the soil-pipe atmosphere to such an extent that what escapes through the water is so little in amount, and so purified by filtration, as to be perfectly harmless; and they exclude entirely all germs and particles, including, without doubt, the specific germs or contagia of disease, which, we have already seen, are, so far as known, distinctly particulate."

ENTRANCE-HALLS.

Of the two extremes, it is better to have a large hall in a small house, than a small hall in a large house. There is something depressing, when we enter a house of generous size, to find the hall meagre and cramped, and this is usually one of the peculiarities of the houses of a past generation.

The houses of our forefathers were nearly all built after the same model. With them it was a sore perplexity how to locate the chimney. Bricks were difficult to be had, and stone took up more room than they could well spare. Under such circumstances, to build two or more chimneys was a serious matter, and so they took a middle course, literally, and built one large chimney in the middle of the house. Many of these chimneys cover an area of one hundred and forty-four square feet. There was an opening in each room for a fire-place. This left but little space for the stairs, between the front door and the side of the chimney, and when the stairs were in place there was but little left that might be called a hall. Coming generations improved on this, and when they had attained to a style of construction that admitted of a hall running through, with a chimney on either side, it was thought to be a great success, particularly if the house was large enough to admit of a hall of generous width.

The hall should be a prominent feature in every house. Far more depends upon it than one who has not thought about it would be prepared to admit. First impressions go a great way, and are not easily effaced. It has been said that the salt-cellar, as it stands on the table, is a fair index of what the dinner may be expected to be. If the salt is snowy white, fine and dry, and carefully placed in the salt-cellar, we may feel sure that the viands, when they reach us, will realize our expectations; while, on the other hand, any apparent neglect in this direction may justly arouse our suspicions. A hall is an equally good index to the house. If it is narrow, cramped, contracted and indifferently lighted and ventilated, we are likely to find scrimping in other departments, and may readily come to the conclusion that while the house may not be in every way inconvenient, we shall find it lacking in many features essential to our comfort.

A large hall not only commands respect, but also calls forth our admiration. The impression it is likely to make at first sight may be illustrated by an incident that not long since came under my own observation. A broker was showing to a house-hunter a number of country-seats that were offered for sale, but with indifferent success. In almost every instance something objectionable was found. At last, on entering a house, they passed from a vestibule of ample size into a hall of generous proportions — of the dimensions of a large room,— with a broad staircase that ascended, with low risers and broad landings on three sides, to the hall above. There they paused for a moment, the price was named, the details of the purchase were settled, and the bargain was closed without the inspection of a single room in the house; in a word, the purchaser was satisfied that the house in its other features would realize his expectations, and he was not mistaken.

I do not advise or advocate the buying of houses in this way; on the whole, I think that taking so much on trust would be rather risky, and I have only mentioned this incident to show how marked an impression may be made by a large and well-proportioned hall. Many persons would think it a great waste of room to throw out so large a space for this purpose; but in this they are mistaken. A hall must be one of two things, simply a passage, an entry, or large enough to be enjoyable — an additional room, as it were, properly lighted and warmed, where one, if so inclined, may sit and talk, and read his morning papers. The name is from the Saxon *hal*, and means, when properly used, "the first large apartment on entering a house." Champlin.

THE EFFECT OF SULPHATES ON LIME MORTAR.[1]

In the year 1870, the author commenced to experiment on the subject of the effect of sulphates on lime mortar, and finding himself at the beginning of 1879 unable to further pursue his investigations, he decided to submit a paper on the subject to the Institution of Civil Engineers with a view of enabling others to give the matter their consideration. It afforded him pleasure to find that that body appeared to appreciate his labors, inasmuch as it accepted the paper and set it up in type. However, as twelve months had elapsed and there was no appearance of the paper being read this session, the author determined to withdraw it, and by the kind courtesy of the Council of this Association he is enabled to bring it before the present meeting.

It was observed by Major, now Major-General H. Y. D. Scott, C.B., Assoc. Inst. C.E., about twenty-five years ago, that the chemical combination of a small quantity of sulphurous acid gas with limes had the effect of causing them to set, after the manner of cements, without increase in bulk or any considerable elevation of temperature. The union of the gas with the lime was first effected by allowing sulphur fumes to pass into the kilns during the process of calcination; but more regular results have since been obtained by mixing either a soluble sulphate or sulphuric acid with the lime after it has been burnt. In ordinary mortar the lime, before being mixed with the sand, is brought to a state of fine division by slaking with water, that is chemically; whereas in General Scott's method mechanical appliances are resorted to in order to reduce the lime to powder, and water containing finely-ground plaster of Paris or other soluble or partially soluble sulphate is then added. When these have been reduced to a creamy paste, the sand is put in along with any further quantity of water necessary to render the mortar when mixed convenient and fit for use. Mortar thus prepared may be used even for plastering purposes shortly after being mixed, as the lime when treated in this manner shows no tendency to slake. The quantity of sulphate required to be added varies with the description of lime, and is much governed by the proportion of clay which it contains. Those limes in which only traces of alumina are found, such as the pure chalk limes, require about seven per cent, whilst blue lias and other hydraulic limes require but three or four per cent, and with very clayey limes the amount of sulphate may be reduced to two per cent of the bulk of the lime. The principle of General Scott's invention, now generally known as the selenitic process, is so to combine the lime with water that it shall not burst with the heat, and, in fact, to arrest the slaking of the lime so that the setting may take place without increase in its volume. By this means the strength of the mortar is increased, and it is rendered quick-setting, which is a very desirable property under many circumstances. In ordinary building operations, however, the mortar must not be too quick, or it may set before it can be got into the work. A strong but comparatively slow-setting mortar is often therefore to be preferred. The experimental results contained in this paper lead the author to believe that such can be procured by first thoroughly slaking the lime with water, then adding the sulphate to it in that state, and afterwards the sand, ashes, and pozzuolanas, or other ingredients, and mixing the whole in the usual manner. If this method be pursued, and four or five parts of sand be added to one part of slaked lime, a slow-setting mortar will be produced, possessing, after having set for some time, much greater strength than selenitic or Portland cement mortars containing a similarly large proportion of sand. The characteristics of this mortar are therefore entirely different from those of the latter compositions. It would appear that General Scott entirely directed his attention to the neutralization of the slaking properties of quick-lime, and not to the employment of a sulphate with slaked lime, as here proposed, in mixing ordinary mortar.

The adding of plaster of Paris to lime has frequently been said not to be a new process, inasmuch as it has been used by builders for an indefinite period both with and without lime for plastering purposes, in order to produce a fine quick-setting mortar. The proportion of plaster employed for this purpose, however, has always been much larger than that adopted by General Scott and proposed to be used by the author. The builder has hitherto mixed a large proportion of plaster with lime on account of its quick-setting properties as a material, and employed the resulting composition for rendering the interior of rooms and similar descriptions of work not exposed to wet or damp; and in such positions, were it not for the question of cost, many would prefer to use neat plaster of Paris. This mortar pre-

[1] From a paper by Mr. Graham Smith, C.E., read at the annual meeting of the Association of Municipal and Sanitary Engineers and Surveyors, held at Leeds, on May 27th, 28th, and 29th.

pared with plaster of Paris if subjected to wet or damp would crack and disintegrate, whereas that which the author advocates is suitable for all situations in which it is customary to employ an ordinary mortar. The plaster of Paris, that is, sulphate of lime, is added in small quantities because it is the most convenient and economical medium for supplying the requisite chemical constituents. The builder would deem plaster which has been once set as worthless; however, it may be inferred that if this substance were re-ground it would answer in the processes which are now being considered, nearly as well as fresh plaster of Paris.

In 1870 the author, then having charge of the testing of the various cements and mortars employed in the works in progress at the Liverpool Docks, availed himself of the facilities thus placed at his disposal, to test the effect of mixing sulphates with slaked lime. The results being somewhat extraordinary it has been thought advisable to bring them in detail before the Institution. The lime used in the experiments, unless otherwise pointed out, was Halkin lime, from Flintshire, in North Wales. The limestone from which this lime is derived contains about the same amount of silica and alumina as that from Barrow, and produces an hydraulic lime, which, however, is not equal to Warwickshire blue lias lime in setting or hydraulic properties. The proportions given in the accompanying tables are in all cases by volume; and where the quantity of any ingredient is represented by a fraction, such is of one part and not of the whole quantity of mortar. The quantity of plaster of Paris in all experiments with Halkin lime was a percentage of the quantity of slaked lime. The various descriptions of mortar tested were mixed in mills on the site of works in progress, and by men daily employed upon such duties; and every endeavor was made to insure that the experiments should be carried out under as nearly as possible similar conditions in each instance.

The first series of experiments was with briquettes having a sectional area of two and one-fourth square inches, such as usually made for testing Portland cement. These were drawn asunder by means of a Michele lever cement-testing machine. [The results and all particulars were given in tables.] . . . . It remained to be seen how the addition of plaster of Paris would affect mortar intended to be set under water. Experiments tended to prove that the ultimate strength of the ordinary Halkin mortar was not impaired by immersion in water, but that the strength of the mortar containing a small percentage of plaster was materially reduced. It would appear from these experiments that by adding plaster of Paris to slaked lime the strength of the mortar will be increased and the cost reduced, consequent on the larger proportion of sand which may be employed; and it may be inferred that experience will demonstrate the advisability of employing plaster of Paris in mortar to be used in ordinary building operations, but that it will not be found advisable to add it to slaked-lime mortars intended for hydraulic purposes.

The author does not wish it to be understood that he considers any description of lime-mortar can equal in strength or setting properties neat Portland cement, or Portland cement mortar, in which a small proportion of sand is used. However, when a large admixture of sand is made, slaked-lime mortar prepared with plaster appears to be decidedly stronger than Portland cement mortar containing a similarly large proportion of sand. Even ordinary Halkin-lime mortar, when mixed in the proportions of two and one-third to one, at the age of six months, is about equal in strength to Portland cement mortar mixed in the proportions of four to one.

It may, on the whole, be taken for granted that mortar composed of four or five parts of sand to one part of slaked lime can be made possessing greater strength than Portland cement mortar mixed in similar proportions. The economy to be effected is evident when it is considered that the normal price of Portland cement is not less than 2s. per bushel, whilst a bushel of slaked lime does not cost one-third of that amount.

The broken portions of the briquettes with which the first series of experiments was made have been exposed to the weather since 1871; those mixed in the proportions of five parts of sand to one part of slaked lime give evidence of being sound material, and of having stood equally well as those mixed without plaster in the proportions of 1 to 2⅓.

In making mortar, the proportions of sand, ashes, and other ingredients which ought to be adopted, depend entirely upon the nature of the lime; for instance, no engineer would put as much sand with blue lias as with gray-stone lime. In the process now proposed, similar laws will hold good, but, as a general rule, double the quantity of sand may be used when plaster is added, that would be considered proper with any particular lime under ordinary circumstances.

In conclusion, it may be stated that nearly 800 experiments with bricks and briquettes carried out in various manners, tend to endorse the general results accompanying this communication and the opinions advanced, which are briefly: that the ultimate strength of all lime mortars will be much increased by the addition of a small percentage of plaster of Paris, and that, when mixed in the manner described, they will apparently at first possess similar properties to ordinary mortar made with the same kind of lime in the manner as at present practised.

THE LION OF CHÆRONIA.

AT the closing meeting of the Royal Institute of British Architects, Professor Donaldson read the following communication from M. Lysandros Kaftangioglou, honorary and corresponding member, Athens: —

I hasten to give you very interesting news in reference to the ancient history of Greece and to Art also. You know well the Lion of Chæronia, consisting of different hollow blocks of stone, held together by iron cramps. The greater part of the descriptions of travelers were hitherto erroneous and inexact. Some said that the lion had been blown to pieces by powder. It appears, on the contrary, that it had fallen to pieces (having been constructed after the burial of the bodies) through the bad construction of the foundations and the badness of the material of which the pedestal is composed, it being a friable stone. You know that the Archæological Society had decided to set up the lion on its old pedestal, of which there existed only the underground part. But before undertaking the work, they ordered excavations to be made around the pedestal (which they then believed to be complete in itself), and which had been set up as an honorary monument to the brave heroes who had died for the liberty of Greece. But this operation brought to light the fact that the pedestal of the lion formed an essential part of a parallelogrammatic inclosure, 23.50 metres long, by 14.92 metres wide. The Society then ordered the excavation of the whole inclosure of the Peribolus, which was scrupulously carried out by the inspector, clearing away the soil to the lowest course of the pedestal, and even a little lower all around the foundation. This, however, brought nothing to light except six small buttresses projecting interiorly from three sides of the enclosure. The Society having expended 7,000 francs (£280) in this operation, were discouraged by the absence of any discovery to counterbalance the expense, but they decided, before undertaking the setting-up of the lion itself, to examine and verify the existing parts, and to study how it had been put together originally. M. Phytales, one of the best sculptors of Athens, was charged to make further researches, particularly of the artificial soil of the foundation of the pedestal and in the middle of the inclosure, and on digging 18 inches below the previous opening, bones were discovered and skulls. Other holes were then made at six different points, and skeletons were found placed parallel one to the other and covered with a blackish earth, arising probably from the decomposition of the bodies, and the skeletons solidly adhering to the soil. In one of the holes an iron lance was found, and a strigil used by bathers to clear off the perspiration from the skin. In others were pieces of ivory and bronze buckles. This unexpected discovery proves that the inclosure was nothing else than the polyandrion, or cemetery, in which had been interred the remains of the brave heroes killed at the battle of Chæronia. We hope to find many interesting objects among the skeletons, and possibly an inscription, indicating the precise epoch of the erection; for as yet no inscription has come to light. But we are assured that the famous lion of Chæronia was part of the funereal monument of the dead heroes. I have to tell you that M. Condostarlos, president of our Archæological Society, has just been appointed our ambassador at London. He is highly respected here, and a great partisan of the liberal policy of your great Canning.

WOOD PRESERVATION.

TO ENGINEERS, ARCHITECTS, PRESERVERS OF WOOD, CHEMISTS, AND OTHERS: —

The undersigned, a Committee of the American Society of Civil Engineers, appointed to report upon the Preservation of Timber, earnestly solicit information concerning past experience in the impregnation and preservation of that material.

Particulars of failures in this country, and if possible, the reasons therefor, are especially desired. Also, information on the following points in each of the processes which may have been used: —

1st. Kind of timber operated on — green or dry — age, dimensions, etc.

2d. Preserving ingredients injected.

3d. Quantity injected per cubic foot or tie.

4th. Mode of application, process, time employed, degree of heat, pressure, vacuum, etc.

5th. Subsequent use and exposure of timber, (bridges, buildings, or track).

6th. Result of preparation and comparison with life of unprepared timber.

This special and any general information on the subject is respectfully solicited.

Replies can be mailed to the Chairman of the Committee,

B. M. HARROD, Chairman,
122 Common St., New Orleans, La.
G. BOUSCAREN, 82 West Third St., Cincinnati, O.,
E. R. ANDREWS, 10 Warren St., New York City, N. Y.,
E. W. BOWDITCH, 60 Devonshire St., Boston, Mass.,
Col. GEO. H. MENDELL, U. S. Engineer, San Francisco, Cal.,
J. W. PUTNAM, P. O. Box 2734, New Orleans, La.,
Committee.

NOTES AND CLIPPINGS.

THE WIND EMPTIES A LAKE. — At Omaha, a curious freak was performed recently by the wind. Florence and Willow lakes, north of the city, were blown nearly dry, the wind scooping out the water. The grounds in the vicinity of the lakes were covered with dead fish, which were blown out of the water.

The Mosaics of the Lateran Church.—It is feared that the ancient mosaics in the apsides of the Lateran Church will be injured or destroyed by the enlargement of the choir. Four years ago the priests of the church persuaded the Pope that the choir was not large enough, and that the arched wall, which contained a head of the Saviour in mosaic dating from the fifth century, and a crowning of the Madonna by Jacopo da Turrito, of the thirteenth century, must be set back sixty-six feet. This, under the careful superintendence of the architect Busiri and of the Vatican mosaicists, could have been done. But, for some reason, after two years the former was displaced, and his plans were not regarded. He had ascertained that the wall was solid as stone and that the bits of the mosaic were firmly fixed in their places, but the subsequent destruction of the Portico Leonino and of the supports of the apsides in the Clementina nave have isolated and weakened it so much that it is now believed to be impossible to remove it entire. The only way to preserve the mosaics now is to remove the bits of the pictures and replace them in the new apsides which will be built. This work will cost a very large sum, and will not be completed for five years.—*New York Evening Post.*

A Viking's Ship.—The New York *Times* says that an exceedingly interesting archæological discovery has recently been made in a tomb from the eighth or ninth century in Sandeherred, in Norway, namely, a completely outfitted and well-preserved Viking skiff. The king who, a thousand years ago, was put to rest here, had the good idea to take along with him into the grave, not only his slaves, his horses, and his arms, but also his ship; and there it now stands, 75 feet long, with a mast 22 feet high, with the shields of the crew hanging along the railing, with its canvas and rigging in order, with all its various implements in place, just as it was hauled up from the sea, when, for the last time, it brought back its master. The Viking skiff has been as great a puzzle to the archæologist as was formerly the Roman trireme. It was known that the Vikings crossed the Atlantic on the same vessels on which they ran up the Seine as far as Paris; that they often dragged overland, for a distance of several miles, the same vessels on which they afterwards carried away great numbers of slaves, great weights of metals, and bulky cargoes of apparel, provisions, timber, etc. But how such a vessel was constructed and how it was manœuvered nobody understood. There are descriptions of these vessels in the Icelandic Sagas and in the pages of the Latin historians from the period between the seventh and the twelfth century. There is also a pictorial representation from the eleventh century on the celebrated tapestry of Bayeux, in Normandy—an embroidery with woolen thread on stiff canvas, showing the embarkation of William the Conqueror for England. But the picture gives only the general outline, and the descriptions, which are incidental with the historians, mention only some specialties or singularities. Thus, an intelligible and complete idea of this skiff has for a long time been a great *desideratum*, but by the above discovery the gap in our knowledge has at once been filled in the easiest and most perfect manner.

The Influence of Barometric Pressure on Illuminating Gas.—M. Brémond recently addressed to the Société Technique du Gaz a very interesting paper on the influence of the rarefaction of air, barometric pressure, and temperature on the illuminating power of gas. Every one knows that since the investigations of Regnault and Dumas, there has been established at Paris the equivalence of light arising from the combustion per hour of an exact weight of forty grammes of oil and that of fifty-four grammes of gas of the average quality; let us see if these conditions of equivalence are constant, and let us suppose that a quantity of gas made at Paris and compressed so as to maintain the same volume is transported to Madrid, for example, where the average barometric pressure is 707 mm. Will it there have the same illuminating power? No, because the illuminating power of the same gas varies according to the pressure at which the combustion takes place. This matter has not yet been made the object of special investigation, but it is worthy of being examined, and M. Brémond recalls in this connection some curious experiments of Dr. Frankland. Six candles were lighted at Chamounix for one hour, and the weight that they lost during this time was determined. The same candles were carried to the summit of Mont Blanc, where they also burned one hour within a tent which completely sheltered them from the wind. The flames were small and pale, yet nevertheless the quantity burned was found to be the same as in the first case. So although the illuminating power of the flame was lessened to an astonishing degree by the rarefaction of the air, the energy of combustion had remained the same. Dr. Frankland reversed his experiment by condensing the air about the pale and smokeless flame of an alcohol lamp, and obtained a flame of equal brilliancy with that of illuminating gas; he was even able to make it smoke, by still further condensing the air. The same weight of Paris gas then, burning at Madrid, although of the same volume (not more than the 42 grammes of oil) will not give there the same light as at Paris. The 42 grammes of oil in consequence of the rarefaction of the air will not give the same light as at Paris; but the difference will make itself more felt on the weight of the gas, 105 litres of which, suitably compressed, weigh 54 grammes. The influence of the rarefaction of the air will affect the weight of gas to a degree greater by 12 grammes, say 28 per cent, than the weight of the oil; and the same gas compared with the same oil in the same photometer will give poorer results, that is to say, will have a lower illuminating power than that found at Paris; but if we do not take the precaution to protect the gas from the dilatation resulting from the diminished barometric pressure, the 105 litres of gas expand in obedience to Mariotte's law, and if we measure 105 litres after the expansion they will weigh at Madrid, at 15 degrees, only 50 grammes, instead of 54 grammes as at Paris. We see immediately that they cannot furnish the same light as the 42 grammes of oil whose weight has remained the same. It is necessary then, in order to equalize the typical light of the lamp, to increase the weight of the illuminating gas: consequently it is necessary either to admit a greater volume, or manufacture a denser gas, that is, one richer in carbon. As the volume is limited to 105 litres, this last step is the only one that can be taken. M. Brémond cites facts which admit of no doubt.—*Revue Industrielle.*

The Prince Imperial's Monument.—The London correspondent of the *Edinburgh Scotsman* says: "I am assured that Dean Stanley is willing to withdraw his permission for the erection of a memorial of the late Prince Imperial of France, in Westminster Abbey, if anything like a general expression of opinion in favor of that course is elicited in the House of Commons."

Large Elm Trees.—The Hartford *Times* says that in Deerfield, Mass., the Williams elm measures in circumference, at one foot from the ground, 26 feet; at four feet, 19 feet; at seven feet, 20¼ feet. Another elm measures, at the same elevations, 27, 18¼ and 19 feet. Another measures 22½, 15¼ and 13¾. This last named tree has a spread of 100 feet. The Williams elm measured in its spread at least 150 feet. At Westchesterfield, Conn., there is an elm which measures, at three feet and three inches from the ground, 22 feet 5 inches. The girth of this tree where the roots enter the ground is 55 feet 6 inches. Thus, the circumference of the south branch is 16 feet 8 inches; of the east branch, 11 feet 6; of the north, 11 feet; northwest, 10 feet 3; of the west, 8 feet 7. From north to south the diameter of the spread is 150 feet; from east to west, 152 feet, and the circumference of the spread is 429 feet.

Two Dynamite Explosions.—The Geneva correspondent of the London *Times* writes of some remarkable phenomena connected with explosions of dynamite. Speaking more particularly of a recent catastrophe at Faido, he says that a considerable number of cartridges, variously stated at from 40,000 to 60,000, belonging to Signor Marsaglia, the contractor for the St. Gothard line between Airolo and Biasca, were placed a short time ago in the cellar of the communal building or town-hall, which was used as an iron warehouse, contrary to regulations, but, as is stated, with the permission of the President of the Commune. Immediately over the cellar was the high-school of the village, the floor of the room forming the roof of the cellar. On the morning of the catastrophe three of Marsaglia's employés were fetching cartridges (which are generally stored in casks) when some of them exploded. The three men were blown to atoms, the building partly collapsed, and the schoolmaster and his pupils fell pell-mell into the cellar. Not one of them, 16 in all, escaped without injuries more or less grave; two were killed on the spot, one had both arms and both legs broken, and the teacher has since died. The excitement in the village, as may be supposed, was intense; the parents of the wounded children beset Marsaglia's office threatening to kill him, and had not the police come to the rescue they would very likely have been as good as their word. Meanwhile, he has promised to make good all damages, and the Government are making a strict inquiry on the spot with a view to the punishment of the persons whose carelessness has caused the disaster. It will doubtless be found that the quantity of dynamite said to have been stored in the cellar was greatly exaggerated, or that only a small portion of it exploded. There being 32 cartridges to a kilogramme, 40,000 would represent a weight of 1,250 kilogrammes (2,750 lbs.) quite sufficient to have reduced the communal building to powder and shaken every house in the village to pieces. But the most extraordinary dynamite story I ever heard was told me the other day by Col. Auguste Pictet. Three years ago there existed a clandestine dynamite factory at Satigny, in this canton, close to the French frontier. The business was carried on in some large, old-fashioned, strongly-built farm buildings, and the dynamite was smuggled into France. There being an excise duty in that country of 2*f.* 50*c.* per kilogramme on all the dynamite produced, the trade, as long as it lasted, was an extremely profitable one, and as the people in the neighborhood were all allowed to participate in the benefit derived from it the secret was well kept. Even the officers of the Commune said nothing. One day, however, a frightful explosion occurred; hardly one stone of the farm buildings was left standing on another; three men, 100 cows, many sheep, and several horses were killed, and the proprietor of the establishment disappeared. At this juncture the police requested the help of Colonel Pictet, who is both an engineer and an acknowledged authority on all matters relating to dynamite. He recommended great caution in approaching the scene of the disaster, as it was by no means certain that all the dynamite had exploded. Some of it might be buried beneath the *débris*. At his suggestion the Government undertook the work of searching the ruins, intrusting to him the dangerous duty of superintendence. In effect, five large cases of dynamite were found intact and carefully removed. Then arose a question as to how they were to be disposed of, and, on the advice of Colonel Pictet, they were carried into the open fields and blown up, advantage being taken of the opportunity to try several interesting experiments. For instance, one case was surrounded by a huge fire, and, though it did not explode, was quite consumed. Among the absconding proprietor's papers was found a document from which it appeared that some time previously he had sent ten casks, each containing 1,000 kilogrammes of dynamite, to the Geneva railway station as artificial manure. The risk of storing such an enormous quantity of so dangerous a material in the midst of a large population was frightful, and Colonel Pictet went immediately to see whether it was still there. It had been sent to Morges, in Canton Vaud. Morges was at once apprised by telegraph of the nature of the consignment. It had been forwarded to Pontarlier, after remaining six weeks in the station at Morges, and a telegram was sent to Pontarlier. Pontarlier replied that the ten casks had gone on to Verrieres. Verrieres was forthwith communicated with. The dynamite was then in the hands of the Custom House officers, who even before the arrival of the despatch from Geneva had begun to suspect the presence of something other than artificial manure. It was of course immediately confiscated, and, the circumstances being so entirely unprecedented, instructions were asked from headquarters. The Government sent experts down from Paris to look into the matter and decide how the dynamite should be dealt with. Instead of adopting the course followed by Colonel Pictet and destroying it, they ordered it to be taken to Lormont, a small fort in the Jura, and placed in the magazine there. A short time afterward the fort of Lormont was blown into the air, and not one of the twelve men who constituted its garrison has ever been seen since.

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.]

228,977. FURNITURE CASTER. — Caleb Brinton, Chicago, Ill.

228,982. WOOD-FILLING COMPOUND. — De Witt C. Cooley, Aurora, and Charles H. Parker, Chicago, Ill.

228,990. AWNING-FASTENER. — Daniel Erickson, Chicago, Ill.

228,994. GRATE AND FENDER FOR FIRE-PLACES. — J. Nelson Harris, Louisville, Ky.

229,005. SASH-HOLDER. — Oliver S. Osborn, New Haven, Conn.

229,008. HAND-SCREW. — Charles F. Pettingill, Salisbury, Mass.

229,010. WINDOW-SCREEN FRAME. — James E. Ratcliffe, Dawson, Ill.

229,022. SASH-LOCK. — Charles S. Whipple, New London, Conn.

229,032. ADJUSTABLE WINDOW SCREEN. — Thomas W. Dowling, Detroit, Mich.

229,082. HEATING-STOVE. — Thos. P. Berryhill and Wm. D. Vaughan, Carrollton, Mo.

229,085. SPRING-BED-BOTTOM. — James Boyers, Brimfield, Ind.

229,094. TRAP OR VALVE FOR SAFETY PIPES. — Thomas Clements, Jersey City, N. J.

229,112. WATER-CLOSET. — Martin R. Fory, New York, N. Y.

229,142. ELEVATOR. — John H. Kazar, Boston, Mass.

229,143. TILE AND BRICK MACHINE. — Philip H. Kells, Adrian, Mich.

229,154. SUPPORT FOR SINKS. — Robert Love, Philadelphia, Penn.

229,179. TRANSOM-LIFTER. — Justus H. R. Prall, Elmira, N. Y.

229,183. BLIND-SLAT-OPERATOR. — Jos. H. Reury, Honesdale, Penn.

229,184. CURTAIN-FIXTURE. — Wm. H. Richmond, Mount Pleasant, Mich.

229,185. STAY-ROLLER FOR SLIDING DOORS. — Henry E. Richards, Oswego, Ill.

229,193. HEATING-STOVE. — John H. Shimmons, Lawrence, Kansas.

229,197. BIT-BRACE. — Henry L. Stevens, Miller's Falls, Mass.

229,198. SCREW-CLAMP FOR WOOD-BENDING MACHINES. — C. F. Theodor Steinway, New York, N. Y.

229,199. WOOD-WORKING MACHINE. — Albert W. Stossmeister, Newport, Ky.

229,203. ELEVATOR. — James M. Thayer, Randolph, Mass.

229,221. ADJUSTABLE METALLIC AWNING. — Wm. S. Woodruff, New York, N. Y.

229,226. WINDOW-BLIND. — Abial Rolfe, Fisherville, N. H.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — The following building permits have been issued since the last report:

Society of Friends, two-st'y brick school and chapel, on Light St., between Hamburg and Cross Sts.

German Savings Bank, three-st'y brick building, on German St., between Pine and Green Sts.

Charles Markell, three-st'y brick building, cor. Sterrett and Woodward Sts.

Wm. H. Pitcher, 4 three-st'y brick buildings on Sterrett St., between Woodward and St. Peter Sts.

Messrs. Knoop & Bro., 2 three-st'y brick buildings, cor. Baltimore and Gilmor Sts.

St. Mary's Seminary, four-st'y brick and stone building, on Paca St., between Druid Hill Ave., and Franklin St.

HOUSES. — The old Chatsworth mansion on Franklin St., between Pine and Pearl, is now being torn down to make room for a block of dwelling houses, to be built by Mr. J. M. Cone, a well known builder, who is now completing a block of dwellings on the adjoining site, and when completed will make a block of thirteen dwellings, 18' front and 65' deep, (the lot being 160' deep,) three stories high, of brick, with marble trimmings.

OFFICES. — Workmen began demolishing on Monday June 21st, the old building at No. 32 Courtland St., built and used for the first high school in Baltimore, to make room for a new building for the exclusive use of the Baltimore Title Company.

UNIVERSITY BUILDINGS. — The property immediately opposite the Johns Hopkins University on Ross St., has been bought by the Trustees of the institution with the intention of erecting a large lecture hall, with other apartments, for the accommodation of this rapidly growing institution. The work will be commenced shortly.

WAREHOUSE. — Mr. Chas. L. Carson, architect, is preparing drawings for a new warehouse for Mrs. Donovan, to be erected on Sharp St., between Lombard and German Sts., fronting on Sharp and Liberty Sts. The building is to be 24' front and 155' deep, five stories high, composed of brick, iron and stone, with terra-cotta ornaments. Messrs. Wm. T. Markland and Bro. are the contractors.

Brooklyn.

BUILDING PERMITS. — *Greene Ave.*, 3 three-st'y brown stone dwells., 16' 8" x 45'; cost, each $4,500; owner, M. Robertson, 529 Greene Ave.; builder, J. J. Reynolds.

Bergen St., 1 three-st'y brick tenement, 22' x 50'; cost, about $4,000; owner and builder, P. Donlon, 720 Sackett St.; architect, F. T. Thomas.

Wilson St., Nos. 198, 202, *and* 202½, 4 three-st'y brick dwells., 18' 9" x 45'; cost, each $3,500; owner, Edward Burcham, 24 Lee Ave.; architect, J. H. Devoe; mason, James Slocum.

Willoughby Ave., 1 three-st'y brown stone dwell., 21' x 45'; and 1 two-st'y brown stone dwell., 19' x 45'; owners Joseph Henderson; builders, Walling & Fenwick.

President St., 3 three-st'y brown stone dwells., 16' x 45'; owner and builder, W. C. Donnellon, 2 Jefferson Park; architect, R. Dixon.

Willoughby Ave., 2 two-st'y brown stone dwells., 17' 4" x 42'; cost, each, $3,500; owner, Richard C. Addy, 167 Hart St.

Prospect St., 1 two-st'y brick dwell., 18' x 38'; cost, $2,200; owner, Thomas Pitbladdo, 213 Seventeenth St.; builders, W. Corregan and Ed. Parsons.

Third Ave., cor. Forty-Second St., 1 two-st'y frame dwell., 25' x 43'; cost, $2,300; owner, Luke Gleeson, 516 East Fourteenth St., New York; builder, John H. O'Rourke.

Marcy Ave., cor. Penn St., 2 three-st'y brick stores and dwells., 20' and 21' x 56'; owner, John P. Heins, 87 South Fifth St.; architect, H. Hollwedel; builder, P. Concannon.

Hopkins St., 1 three-st'y frame tenement, 23' 6" x 50'; cost, $3,000; owner, Jacob Kaumer, 97 Throop Ave.; builders, A. Voltz and Jno. Rueger.

Pulaski St., 12 three and two-st'y brick stores and tenements, 16' 8" and 20' x 40 and 45'; owner and builder, Thomas Donohue, 103 Stuyvesant Ave.

Herkimer St., 3 two-st'y brown stone dwells., 17' 6" x 45'; cost, each, $6,000; owner, Harry Leach, 1103 Fulton St.; builders, C. King and M. C. Rust.

Atlantic Ave., 1 three-st'y brick stores and tenement, 25' x 58'; owner, William Moses, 541 Washington Ave.; architect, Amzi Hill.

Chicago.

BUILDING PERMITS. — C. J. Hull, two-st'y brick dwell., 24' x 48', 14 Artesian Ave.; cost, $2,500.

Byron L. Smith, three-st'y brick stores and dwells., 40' x 80', Wabash Ave. and Harrison St.; cost, $8,000.

John Hopstad, two-st'y brick dwell., 25' x 36', Armour St., cor. Erie; cost, $1,500. lls.,

Charles Keifer, three-st'y brick stores and dwe 23' x 72', 540 and 542 Division St.

A. Leckenberger, two-st'y brick dwell., 25' x 40', Chestnut St., cor. La Salle; cost, $5,500.

George P. Harris, two-st'y brick dwell., 22' x 32', 29 Depuyster St.; cost, $2,500

G. Schwarz, two-st'y brick dwell., 20' x 58'; Illinois St., cor. La Salle; cost, $4,000.

John Boland, two-st'y brick store and dwell., 25' x 72', 649 Twenty-First St.; cost, $6,000.

Dr. — Judson, three-st'y brick stores and dwells., 40' x 80', Wabash Ave., cor. Harrison St.; cost, $8,000.

Miss F. A. Speer, one-st'y brick dwell., 26' x 45', Indiana Ave., near Thirty-Seventh St.; cost, $3,000.

Henry Baker & Co., three-st'y brick addition, 40' x 60', cor. Lincoln St. and Blue Island Ave.; cost, $2,000.

C. P. Rosem, three-st'y brick store and dwell,, 25' x 65', Oak St., corner of Townsend; cost, $6,000.

Henry Leopold, three-st'y brick dwell., stone front, 58' x 44', Indiana Ave., near Twenty-Fifth St.; cost, $20,000.

Johnson & Anneson, four-st'y brick factory, 50' x 56', Noble St., near Ohio; cost, $4,000.

Mary Buckley, two-st'y brick livery stable, 40' x 100', Thirtieth St., near Indiana Ave.; cost, $7,500.

Crilly & Blair, three-st'y brick stores and dwells., 461' x 80', Madison St., cor. of Halsted; cost, $150,000.

Caspar Hahn, one-st'y brick store and dwell., 13' x 80', 37 Clybourn Ave.; cost, $4,000.

C. Busby, two-st'y brick dwells., 126' x 68', Harrison St., cor. Sangamon; cost, $32,000.

Gerts, Lombard & Co., three-st'y brick factory, 40' x 100', Indiana St., cor. Hoyne Ave.; cost, $8,000.

Home of the Friendless, three-st'y brick addition, 38' x 96', Wabash Ave., cor. Twentieth St.; cost, $30,000.

B. Wolf, three-st'y store and dwell., Twelfth St., near Blue Island Ave.; cost, $10,000.

Hannah Howard, three-st'y dwell., 221 Indiana St.; cost, $6,000.

R. Loewenthal, two-st'y dwell., Eighteenth, near Paulina St.; cost, $2,500.

J. Breston, two-st'y dwell., 443 Belden Ave.; cost, $2,600.

C. L. Epps, four-st'y malt-house, Dickson, near Bloomingdale St.; cost, $40,000.

B. Wygant, two-st'y dwell., 365 and 367 Park Ave.; cost, $6,000.

Lorenz 2 Franz, two-st'y dwells.. on Douglas Place, near Beers St.; cost, $3,600.

Jones & Laughlin, three-st'y iron warehouse, Lake, West Water, and Canal Sts.; cost, $45,000.

F. Kappe, two-st'y store and dwell., cor. Hickory and Bonfield Sts.; cost, $3,000.

E. Linsenbaith, two-st'y dwells., Lake, near Ada, cost, $2,500; and a dye-house, cost, $3,000.

William Creote, two-st'y dwell., St. John Place; cost, $4,000.

Mrs. Job Carpenter, two-st'y dwell., St. John Place; cost, $4,000.

J. Dusek, two-st'y dwell., Eighteenth, near Throop St.; cost, $3,000.

Ernst Hess, malt-kiln and elevator, 381 to 385 Carroll St.; cost, $35,000.

C. J. Hull, two-st'y dwell., 14 Artesian Ave.; cost, $2,500.

Byron L. Smith, 2 three-st'y stores and dwells., Wabash Ave., near Harrison St.; cost, $8,000.

Cincinnati.

BUILDING PERMITS. — S. Richards, two-st'y frame, Ashland St., near McMillan, Walnut Hills; cost, $5,000

Burtner & Coppin, three-st'y brick, Fifth St., between Stone & Hoadley; cost, $4,400.

Rice & McMiller, three-st'y brick, McMillan St., west of Gilbert Ave., Walnut Hills; cost, $3,600

Thomas Emery's Sons, five-st'y brick, cor. Race and Longworth Sts.; cost, $20,000.

Otto Singer, three-st'y stone front, No. 85 West Eighth St.; cost, $3,000

New York.

BUILDING PERMITS. — *Fifty-Eighth St.*, 6 four-st'y brick, brown-stone front, dwells., each 16'8" x 55'; cost, each, $15,000; owner and builder, John Coar, 100 West Thirty-Third St.; architects, Silliman & Farnsworth.

Fifty-Seventh St., 1 four-st'y brick, brown-stone front, tenement-house, 25' x 40'; cost, $9,000; owner, George D. Wallace, Jersey City; architect, J. E. Styles.

Sixty-Sixth St., 2 two-st'y brick stables, each 25' x 90'; cost, each, $7,500; owners, Perkins & Vilis, Windsor Hotel; architects, Thom & Wilson; mason, B. Spaulding.

East Fourteenth St., No. 710, 1 one-st'y brick engine house, 19' x 36'; gravel roof; cost, $900; owners, Eagle Pencil Co., on the premises; architect, G. W. Wundsom; builders, List & Lennon.

Seventy-Fifth St., 2 three-st'y brick, brown-stone front, dwells., each 16'8" x 60'; cost, each, $10,000; owner, Anthony McQuade, 345 East Seventy-Seventh St.; architect, John C. Burne.

One Hundred and Twenty-Fourth St., 6 three-st'y brick, brown stone front, dwells., each 16'8" x 50'; cost, each $5,500; owner, E. S. Higgins, 84 White St.; architect, John F. Miller; superintendent, Thomas Wilson.

Seventh Ave., cor. Twenty-Ninth St., brick factory, 125' x 100'; cost, $30,000; owner, Celia L. Weston; carpenter, John Smith; masons, Campbell & Co.

Eighty-Eighth St., 1 three-st'y brick apartment house, 28' x 62'; cost, $13,000; owner, Emma J. Johnson, Astoria, L. I.; architect, John C. Burne.

Hanover St., 1 seven-st'y brick office-building, 53'4" x 98'3" x 103'4"; cost, $250,000; owners, Joel B. and John H. Post; architect, George B. Post; builder, D. H. King.

Fulton Ave., 1 two-st'y frame dwell., 23' x 38'; cost, $5,000; owner, Adam Fahs, cor. Fulton Ave. and One Hundred and Sixty-Seventh St.; architect, Julius Kastner.

West Twenty-Seventh St., No. 348, 1 four-st'y brick tenement, 22' x 50'; cost, $9,000; owner, John L. Hamilton, 350 West Twenty-Seventh St.

East Fifty-Eighth St., Nos. 56, 58, and 60, 4 four-st'y brick, brown-stone front, dwells., each 19' x 90'; cost, each, $25,000; owner, Thomas Kilpatrick, 152 East Sixtieth St.; architect, Charles W. Romeyn.

One Hundred and Nineteenth St., two-st'y brick factory, 71' x 40'; cost, $6,300; owner, C. W. Hochstaetter, cor. Ave A and One Hundred and Twentieth St; architect and builder, William Fernschild.

East Thirty-Fifth St., No. 211, 1 four-st'y brick, brown-stone front, apartment-house, 21' x 65; cost, $12,000; owner, Felix Conner, 211 East Thirty-Fifth St.; architect, F. S. Barus.

Second Ave., cor. Sixty-Ninth St., three four-st'y brick, brown-stone front, apartment-houses; cost, each $12,000; owner, John D. Crimmins, 1037 Third Ave.; architect, F. S. Barus.

Fifty-Seventh St., six stories on front and nine stories on rear, brick apartment-house and studios, 50 feet wide on front and 42 feet wide on rear, 90 feet deep; cost, $75,000; owners, Hubert Home Club No. 2, 1251 Broadway; architects, Hubert, Pirsson & Co.

One Hundred and Twenty-Seventh St., 2 three-st'y brick, brown-stone front, dwells., each 18'9" x 60'; cost, each $16,000; owner and builder, James E. Ray, 322 East One Hundred and Twentieth St.; architect, J. H. Valentine, 2293 Third Ave.

One Hundred and Fourth St., 4 three-st'y brick apartment-houses, each 18'9" x 55'; cost, each, $9,000; owner, A. M. Jenny, 241 East One Hundred and Fourth St.; architect, J. H. Valentine; builder, J. Jenney.

Front St., Nos. 283 *and* 285, two-st'y brick workshop, 43'6" x 24'10" x 62'; cost, $5,500; owner and builder, W. R. Wood, 283 and 285 Front St.

Park Ave., cor. Forty-First St., three-st'y brick building, 98'9" x 60'; owner, Manhattan Eye and Ear Hospital; architect, Charles C. Haight; mason, John J. Tucker; builders, Chas. E. Hadden & Bro.

Fifth Ave., cor. Forty-Eighth St., five-st'y brick dwell., 50'5" x 91; cost, $175,000; owner, Robert Goelet, 261 Broadway; architect, Edward H. Kendall; builder, James Bogert.

Fifth Ave., cor. Forty-Ninth St., five-st'y brick dwell., 50' x 100'; cost, $175,000; owner, Ogden Goelet, 261 Broadway; architect, Edward H. Kendall.

One Hundred and Twenty-Fifth St., 2 three-st'y brick, brown-stone front, dwells., 12'6" x 55'; cost, $7,000 each; owner, E. Pelham, 574 Lexington Ave.; architect, G. B. Pelham; builders, Van Dolsen & Arnott.

Lexington Ave., cor. One Hundred and Eighteenth St., three-st'y brick, brown-stone front, dwell., 17'7" x 45'; cost, $10,000; owner and builder, Chas. E. Van Tassel, Walters Ave., and One Hundred and Fiftieth St.; architect, J. H. Valentine.

Lexington Ave., 5 three-st'y brick, brown-stone front, dwells., 16'8" x 45'; cost, $9,500 each; owner and builder, Chas. E. Van Tassel; architect, J. H. Valentine.

One Hundred and Nineteenth St., 4 two-st'y brick dwells., 18'9" x 45'; cost, $6,000 each; owner and builder, Isaac E. Wright, 153 East One Hundred and Twenty-Eighth St.; architect, J. H. Valentine.

One Hundred and Twenty-Third St., 5 three-st'y brick (brown stone front) dwells., 15' x 50'; cost, $7,500 each; owner and builder, P. H. Lalor, 121 East One Hundred and Sixteenth St.; architect, J. H. Valentine.

South St., cor. Montgomery St., one-st'y frame freight depot, 181'3½" x 97'3½"; cost, $6,000; owner, N. Y., N. H. & H. R. R. Co.

One Hundred and Fourth St., 7 four-st'y brick tenements, 25' x 54'; cost, $7,000 each; owner, Wilhelmine Juch; builder, Wm. A. Juch.

One Hundred and Thirteenth St., 1 four-st'y brick (brown stone front) apartment-house, 19'7½" x 65'; cost, $10,000; owner, Mrs. Margaret E. Niebuhr, 119

East One Hundred and Twenty-First St.; architect, W. Scott West; builders, H. P. & W. F. Niebuhr.

Eighty-Fourth St., 5 four-st'y brick (brown stone front) apartment-houses, 20'2" x 66'; cost, $14,500 each; owner and builder, James A. Frame, 107 East Seventieth St.; architect, John C. Burne.

West Forty-Sixth St., No. 151 1 three-st'y and basement brick (brown stone front) dwell., 23' x 55'; cost, $14,000; owner, Mrs. L. D. Haubner, 440 West Forty-sixth St.; architects, Thom & Wilson.

West Forty-Sixth St., No. 153 1 three-st'y and basement brick (brown stone front) dwell., 27' x 88; cost, $11,000; owner, Mrs. L. D. Haubner, 440 West Forty-Sixth St.; architects, Thom & Wilson.

Alterations. — *First Ave.*, gas works, internal alterations; cost, $15,000; owners, Knickerbocker Gas-Light Co; architect, Thomas F. Rowland; mason, Wm. C. Whyte; carpenter, S. F. Bartlett.

East Thirty-Fourth St., No. 119, two-st'y and basement brick extension, 22' x 20', to be built; cost, $3,500; owner, P. Thebaud; carpenters, Meeker & Hedden; masons, James B. Smith, Prodgers & Co.

Broad St., Nos. 10 *and* 12, *and New St., Nos.* 4 *to* 10 (N. Y. Stock Exchange) five-st'y brick extension to be built, 24' 4½" on Broad St., 67' 10" on New St., and 153' deep, present front on Broad St. to be taken out and rebuilt, and a Mansard roof to be constructed; cost, $230,000; owners, N. Y. Stock Exchange Building Co.; architect, James Renwick; mason, Samuel Lowden; carpenter, Edward Gridley.

State St., No. 19, height of building reduced 8 ft., and flat roof put on, four-st'y brick extension, 11' x 15', built on rear, also internal alterations; cost, $5,000; owner, John McIntyre; builder, Wm. B. Mitchell.

Madison Ave., cor. Thirty-Ninth St., wall of rear extension to be rebuilt, and new roof put on; cost, $9,000; owner, Wm. E. Dodge, Jr.; architect, J. C. Cady; masons, Sinclair & Willis; carpenters, Smith & Crane.

West Fifty-Sixth St., No. 52, three-st'y brick extension, 9' x 21', to be built on rear; cost, $2,400; owner, J. Shindler; mason, Alexander Brown, Jr.; carpenter, J. J. Brown.

West St., cor. Horatio St., one-st'y brick extension, 50' x 80', to be built; cost, $2,300; owner, Monitor Tin Plate Co.; carpenter, Wm. Davis; mason, Richard Chapter.

University Pl., No. 78, one-st'y brick extension, 25' 10" x 49', store front to be put in first story; cost, $5,000; owner, John Ortgrer; mason, J. P. Niblo; carpenter, C. Kuspert.

Eighth Ave., No. 304, rear wall to be rebuilt, store front put in, also interior alterations; cost, $2,000; owner, T. W. Decker; architect, J. V. Mettler; builders, J. V. Mettler and H. Saulpaugh

East Forty-Second St., No. 119 *to* 125, paper factory and market, to be raised to four stories; cost, $17,500; owner, James W. Pinchot; architects, D. & J. Jardine; builders, Amos Woodruff's Sons and Maguire & Sloane.

West Thirty-Seventh Si., No. 12, an extension to the residence of Mr. Lapsley, is to be made at an expense of about $2,500. Messrs. Gambrill & Ficken, architects, Mr. Rd. Deeves, contractor.

East Thirty.Fifth St., an extension is to be added to the residence of Col. Fitzgerald.

Chambers St., No. 31, is to be altered from a warehouse to a first-class office building, to be occupied by the Depratment of Works. The building is 30' x 150', and the cost of the alterations will be $20,000. Douglas Smyth is the architect.

House. — For Mr. Geo. W. Quintard, a fine residence is to be built from design of Mr. Arthur Gilman. The building will be 36' x 80' with brown stone front, and cost $80,000.

Hotel. — Work will be commenced at once on the additional story for the Metropolitan Hotel. Mr. Richard Deeves is the contractor.

The Weather. — The extreme heat is causing almost a suspension of business.

Philadelphia.

Building Permits. — *North Fifteenth St., No.* 915 three-st'y addition 13' x 12'; contractor, P. J. Burke,

South St., No. 1927, three-st'y addition, 12' x 42'.

Buttonwood St., East of Broad St., two-st'y addition to factory, 34' x 65'; owners and builders, Nutz & Worthington.

Race St., cor. Twenty-Third St., 1 foundry, 20' x 48'; contractor, W. L. Atkinson.

Germantown Ave., No. 2643, 1 two-st'y store and dwell., 18' x 61'; John Mander, contractor.

Branch St., No. 312, factory, 18' x 62'; Thos. McCarty, contractor.

Harmony St., west of Fourth, 2 two-st'y dwells., 15' x 30'; David Chambers, contractor.

Cornwall St., east of Jasper, 1 two-st'y dwell., 16' x 48'; E. Simleo, owner and builder.

Norris, cor. Clearborn St., 1 three-st'y dwell., 17' x 44'; Samuel Sabins, owner and builder.

Salmon St., No. 1832, three-st'y dwell., 16' x 33'; contractor, Rob't Buchanan.

Swanson, cor. Bainbridge St., one-st'y Filter house, 73' x 104'; owners and builders, Harmon, Haveymeyer & Co.

Chestnut St., No. 1010, four-st'y store, 24' x 54'; contractor, H. Phillipi.

North Fourth St., No. 851, three-st'y brewery, 17' x 144'; contractor, James B. Doyle.

Thirteenth and Race St., three-st'y dwell., 18' x 60'; contractor, R. J. Whitiside & Son.

Bringhurst St., near Wakefield St., 2 two-st'y dwells., 16' x 44'; John Reefe, owner and builder.

Fifteenth, cor. Washington St., one-st'y building, (shed) 36' x 100'; contractor, Samuel Johnston.

Pine St., No. 2111, addition, third and fourth st'y, 21' x 31'; owner and builder, Chas. McCrea.

Forty-Eighth St., near Seneca, 2 two-st'y dwells., 16' x 44'; contractor, Lewis, A. Smith.

Lancaster Ave., near Fifty-Fourth St., dwell., 40' x 50', three st'ys; contractor, William Orr.

Davis St., near Cresson St., 8 two-st'y dwells., 15' x 39'; owner and builder, A. A. Harmer.

Jefferson St., opposite Linden St., 2 two-st'y dwells., 16' x 28'; owner and builder, A. A. Harmer.

Manayunk Gas Works, two-st'y dye and boiler house, 30' x 55'; owners, J. & J. Dobson.

Twenty-Fourth St., cor. Sansom St., two-st'y house, 24' x 50'; owner and builder, C. A. Barker.

Fourth St., near Arch, 1 six-st'y store building, 40' x 90'; contractors, J. A. Ritter & Co.

Frankford Road, No. 2262, two-st'y stable, 17' x 33'; tractor, Peter Coglan.

Ridge and Fairmount Ave., three-st'y store and dwell., 38' x 30'; contractor, John T. Stuckert.

St. Louis.

Building Permits. — Thirty-nine permits have been issued since our last report, 4 of which are for frame structures of slight importance. Of the remainder, those worth $2,500 or over are as follows: —

Owners Name.	Use.	Stories.	Rooms.	Cost.
G. Biermann,	Dwell.	2	10	$3,200
Thos. Gallagher,	Dwell.	3	8	5,000
" "	Dwell.	3	10	4,800
" "	Dwell.	3	10	4,800
I. Bryne,	Dwell.	2	12	3,000
M. P. R. Road Co.,	Shop.	1	1	6,000
C. H. Frank,	Dwell.	2	36	7,000
" "	Dwell.	2	24	4,800
J. H. Rosengarter,	Dwell.	2	6	2,600

General Notes.

Ansonia, Conn. — Mr. Alton Farrell is building a frame house, costing $12,000, from plans by Brown & Stilson, of New Haven, Ct.

Brookline, Mass. — Four houses are being built for Mr. G. W. Russell, on Cypress St. Mr. O. F. Smith is the architect.

Cambridge, Mass. — A new school-house will probably be built in Ward 3.

Franklin, O. — The M. E. Church Building Committee have received the plans for their new parsonage, and will build on River St.

Gorham, N. H. — Plans of Odd Fellows' Hall have just been completed by Alden Frink, architect, of Boston. The building is to be of wood, and will cost $10,000.

Harlem, N. Y. — On June 22 the corner-stone, of the Second Baptist Church, at the corner of One Hundred and Eleventh-Street and Lexington Avenue, was laid. The church, which is to cost about $50,000, is to be of Philadelphia pressed brick, with stone finish, and will seat over 800 persons. The style of architecture is Romanesque. The auditorium is 60' x 70', and the tower at the southwest corner will be 120 feet high. In the rear will be a Sunday-School room with a seating capacity of 400. L. B. Valk is the architect.

Hartford, Conn. — The residence for Mr. Cornelius J. Vanderbilt, from plans by Mr. John C. Mead, is rapidly approaching completion; cost, $50,000 to $60,000. The terrace wall on front and east side will cost $15,000.

Long Island City, N. Y. — A house is to be built for W. D. Daly; cost, $10,000.

Louisville, Ky. — C. C. Alfriend is to build a two-and-one-half-story brick dwelling on Broadway St., between Floyd and Preston; cost, $3,386.

So. Braintree, Mass. — Mr. Alden Frink, of Boston, is the architect of a large private stable, to be built for Mr. Hollinsworth; cost, $10,000.

Somerville, Mass. — A block of three houses is being built for Mr. C. W. Wellington. Mr. Alden Frink, of Boston, is the architect.

Stoughton, Mass. — Mr. S. J. F. Thayer, architect, of Boston, has completed plans for the new Town-Hall. It is a two-story brick building, with brick and stone finish, and will cost $32,000. Messrs. J. W. Coburn & Co., of Boston, are the contractors.

Taunton, Mass. — Mr. J. A. Peck is about to build a two-story house on Winthrop St.

Publishers' Department.

The American Architect and Building News.

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JAMES R. OSGOOD & COMPANY, *Publishers*,

Boston, Mass.

New Advertisements.

REED'S ELASTIC SECTIONAL NON-CONDUCTING COVERING FOR STEAM BOILERS, ETC.

The construction and mode of applying this covering is very clearly shown in the engraving on advertising page ix.

The material is a species of paper made from all-wool rags, and the covering is laid up by winding this upon a mandrel. It can be painted on the exterior, and presents a very neat appearance.

It is made in sections 3 feet long, from 1 to 60 inches diameter. All sizes up to and including 6 inches in diameter are cut along the side to allow it to spring open far enough to pass over the pipes, and, therefore, it only needs to be fastened along the one seam or slit. All sizes above 6 inches are cut in two or more pieces, as may be necessary, for convenience of application.

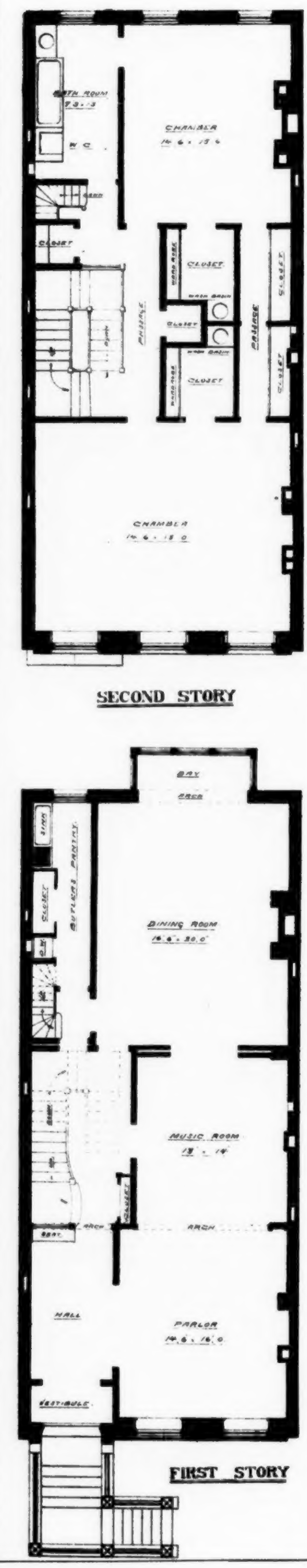
The fastening is done by copper staples pressed into the material itself.

As a protection for pipes exposed to frost, this covering finds another very useful application.

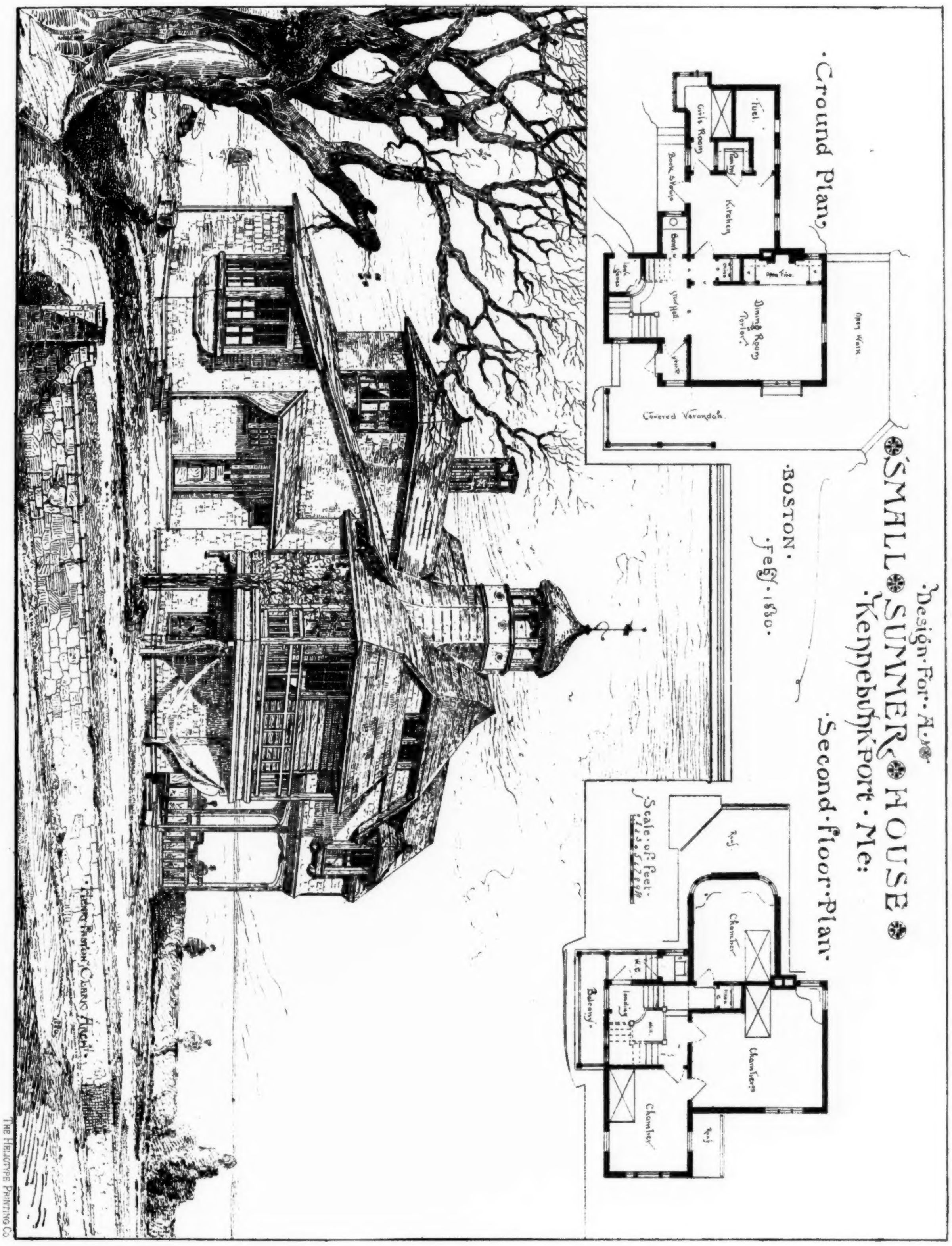
SILICATE PAINTS.

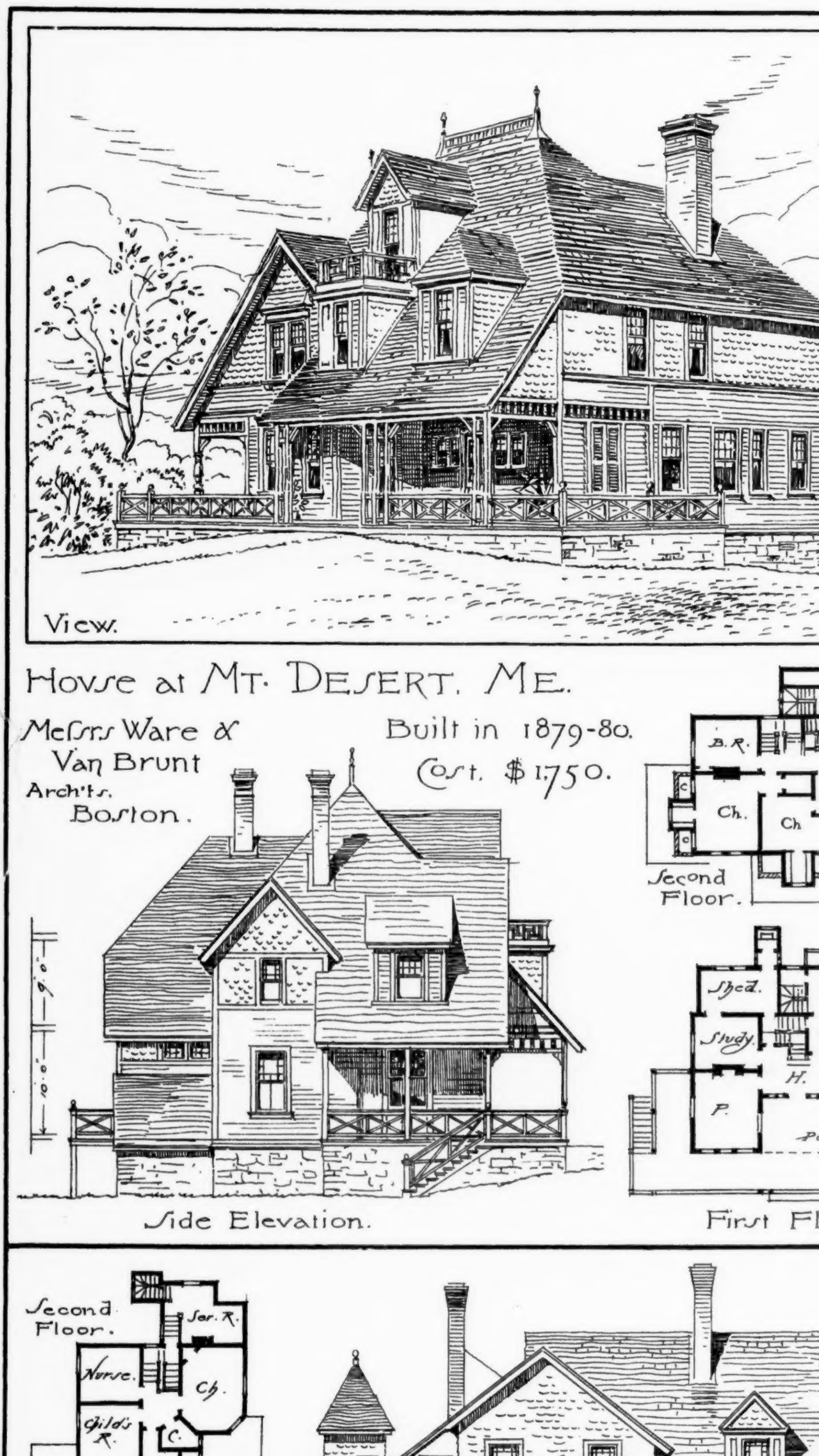
The merits and superiority of these paints, etc. (see advertisement on page vi.), are abundantly vouched for by the highest testimonials from public and State institutions, hotels, newspaper offices, railroad companies, opera houses, asylums, hospitals, etc. Among the many who use and endorse them are the U. S. Patent Office, U. S. Lighthouse Board, U. S. Engineers, Willard Insane Asylum, Norristown Insane Asylum, Columbus Asylum, Syracuse Asylum, Department of Public Works, N. Y., Florence Apartment House, N. Y. (the largest building of its kind in the world), Illinois State Penitentiary, Evening Post Building, Opera House, Cincinnati; Georgia R. R. Co., Western R. R. of Alabama, New Haven S. S. Co., Rochester Free Stone Co., Greenwood Cemetery, St. James Hotel, Kansas City; Harlan & Hollingsworth Co., Standard Oil Co. Tanks, Norway Iron Works Co., Southern States Coal and Iron Co., etc. The offices of the sole agent in the United States, Mr. Howard Fleming, 23 Liberty Street, New York, have been painted with the compositions, and they are open to inspection.

Residence For C.L. Pruyn Esq. Albany. N.Y.
Messrs Potter & Robertson
ARCHITECTS. N.Y.



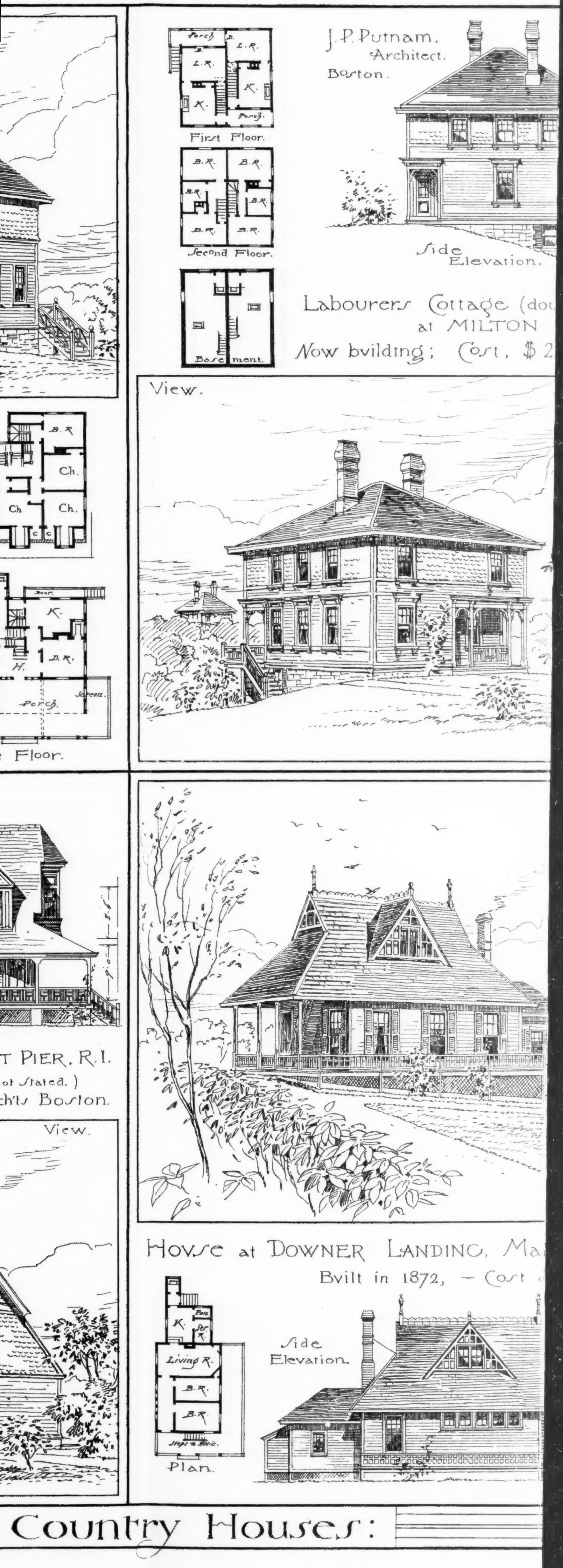
The Heliotype Printing Co.

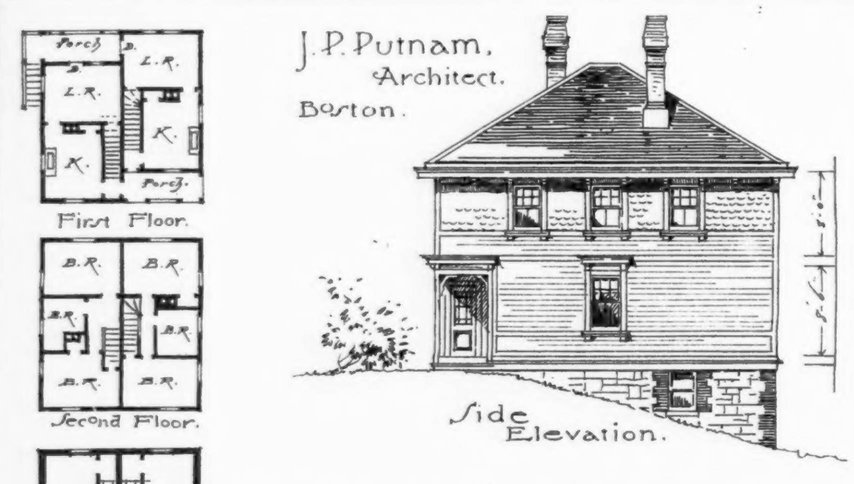

·Design·For·A·
·SMALL·SUMMER·HOUSE·
·Kennebunkport·Me:
·BOSTON·
·Feby·1880·
·Ground Plan·
·Second·Floor·Plan·
Scale·of·Feet·
Covered Verandah
Dining Room Parlor
Kitchen
Fuel
Girls Room
Open Walk
Chamber
Chambers
Balcony
Roof
THE HELIOTYPE PRINTING CO.



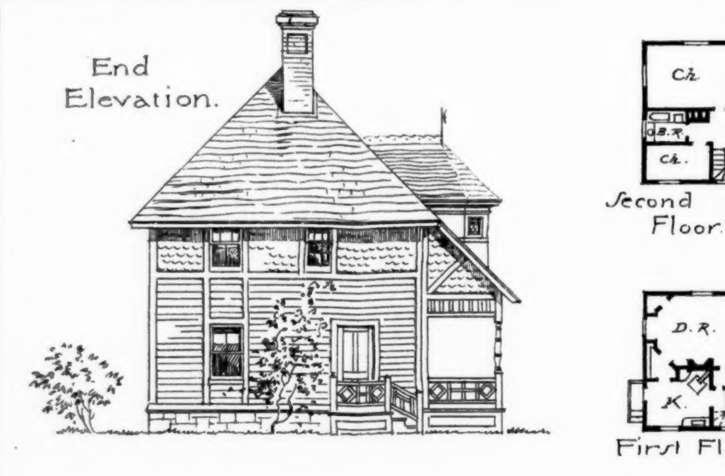
A Parallel of low-cost C

D.A GREGG DEL.

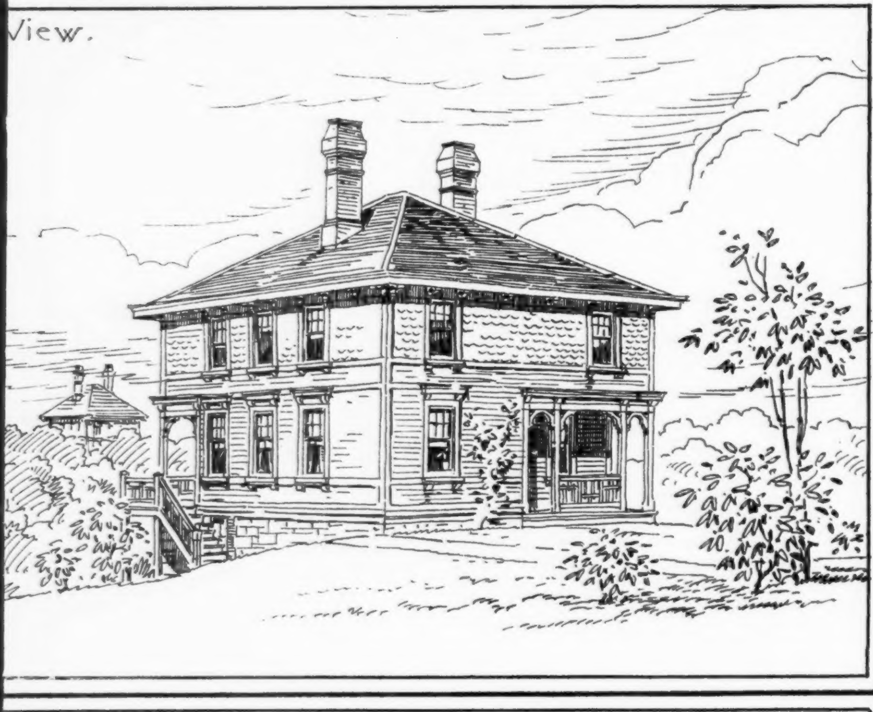

J. P. Putnam,
Architect.
Boston.
Porch
L.R.
K.
First Floor.
B.R.
Second Floor.
Base ment.
Side Elevation.
Labourers Cottage (dou
at MILTON
Now building; Cost, $ 2
View.
B.R
Ch.
Ch
K.
D.R.
H.
Porch.
Screen.
Floor.
PIER, R.I.
ot stated.)
ch'ts Boston.
View.
House at DOWNER LANDING, Ma
Built in 1872, – Cost
Side Elevation.
K.
Living R.
B.R.
Plan.
Country Houses:

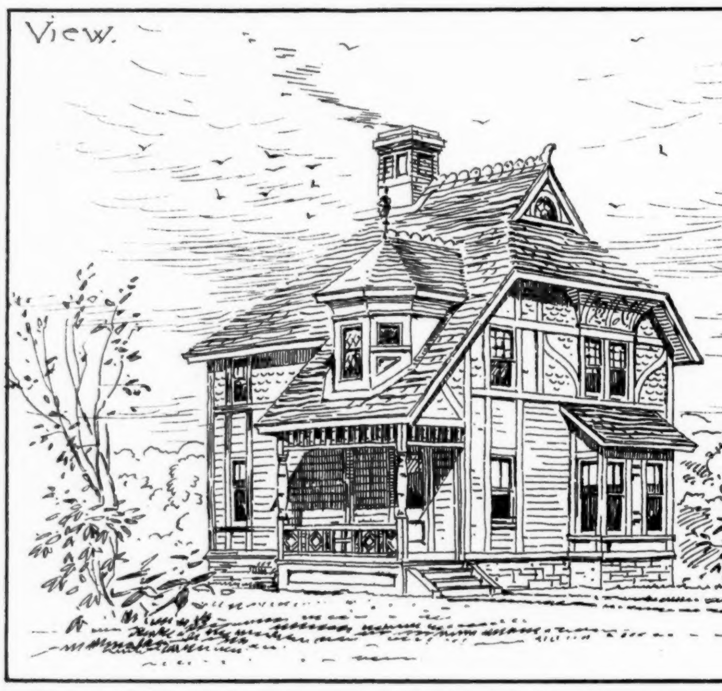


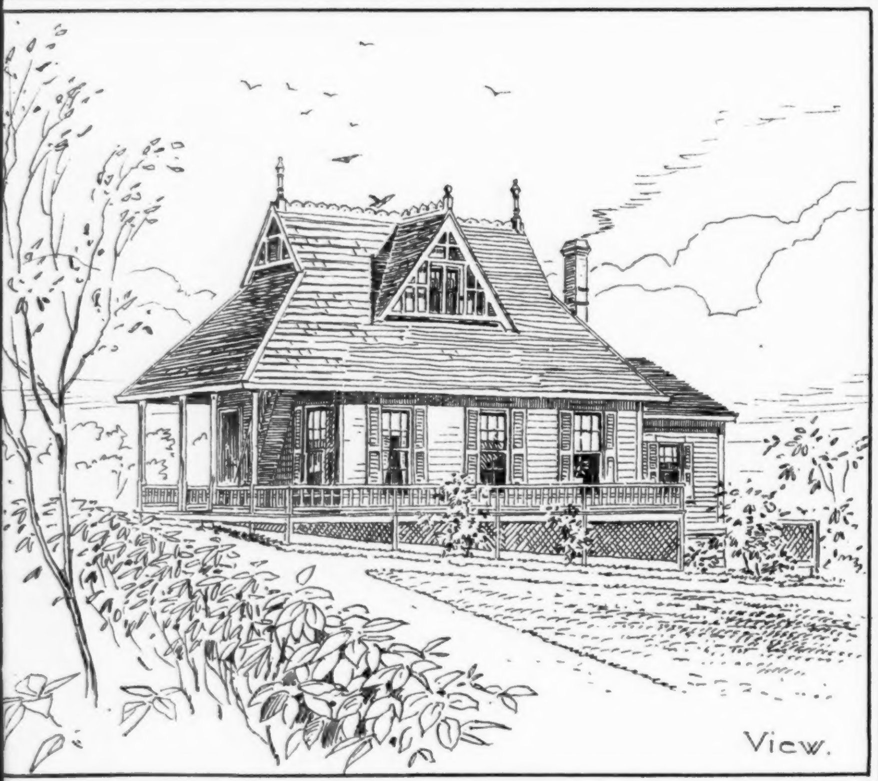
Labourers Cottage (double.) at MILTON Mass: Now building; Cost, $ 2,000.

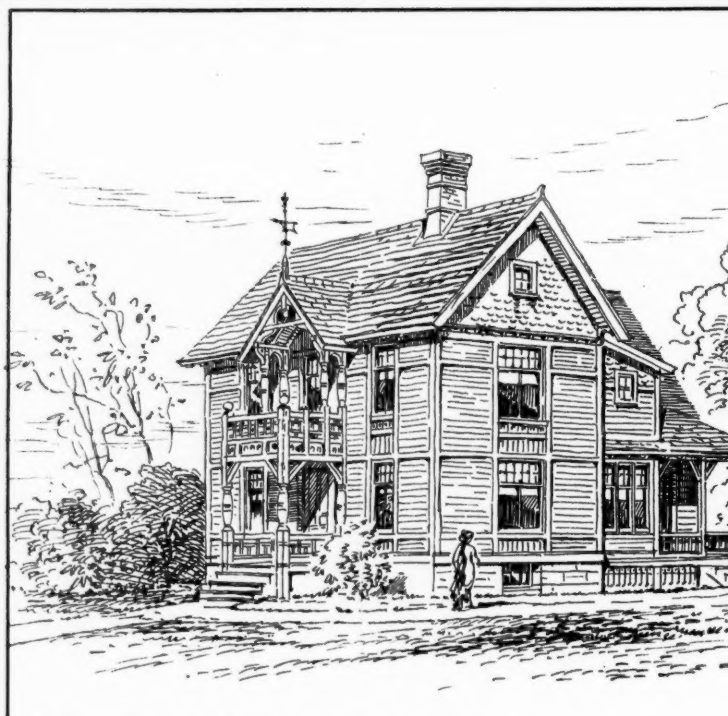


House at DORCHESTER Mass
Built in 1879, Cost. $ 2,300
E. A. P. Newcomb, Ar



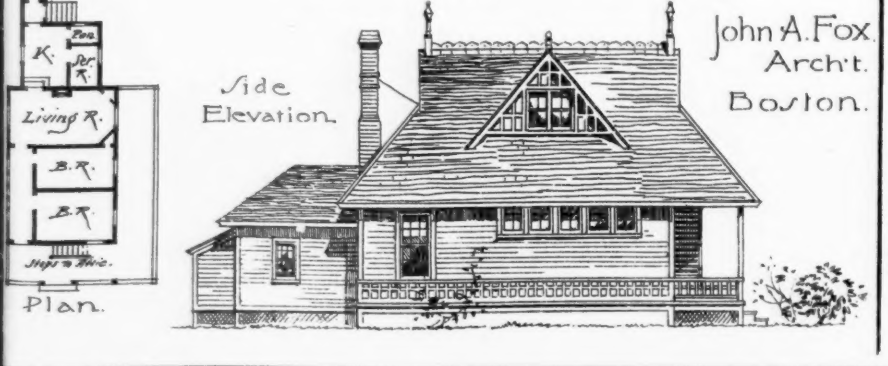




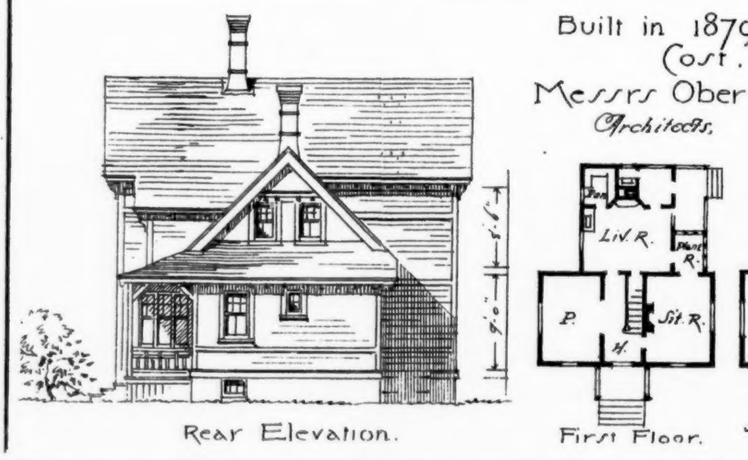


House at WINCHESTER, Mass.

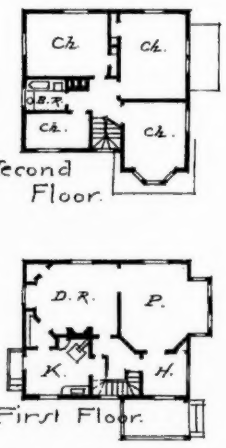
House at DOWNER LANDING, Mass. Built in 1872, — Cost $ 1500.



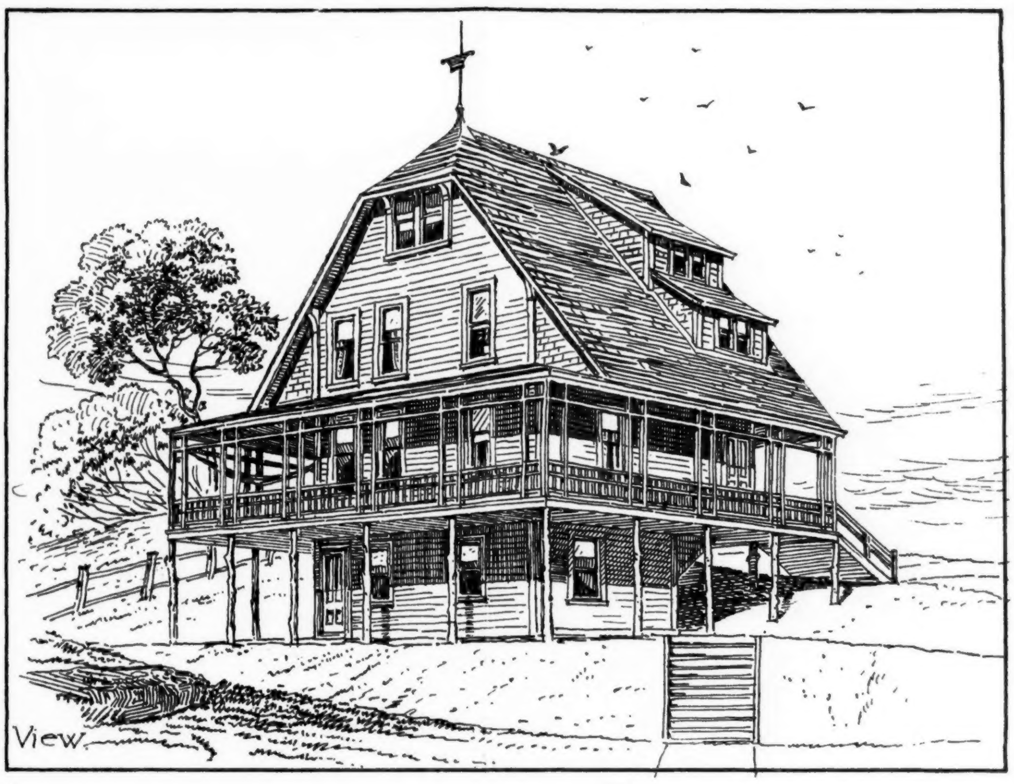
Built in 1879
Cost.
Messrs Ober
Architects,



y Houses: Note: The ELEVA

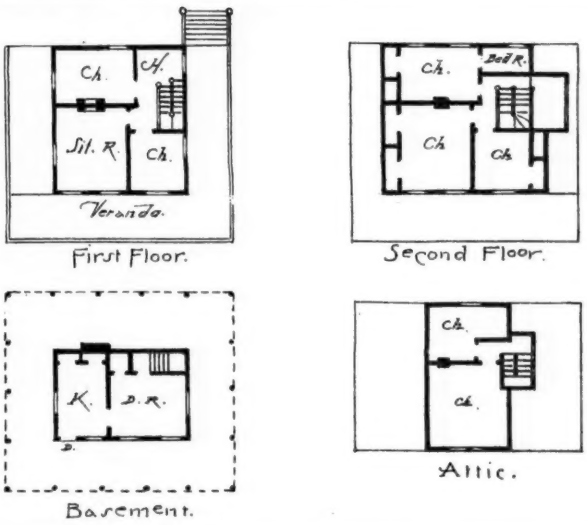


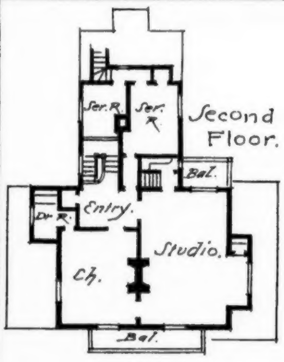
Mass.
$2,300.
mb. Archt. Boston.

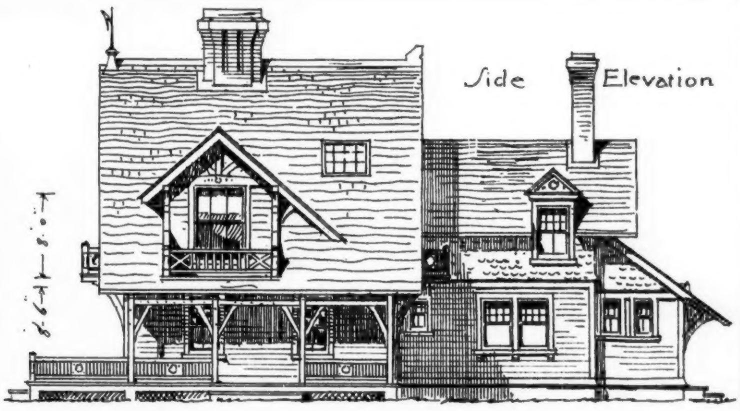


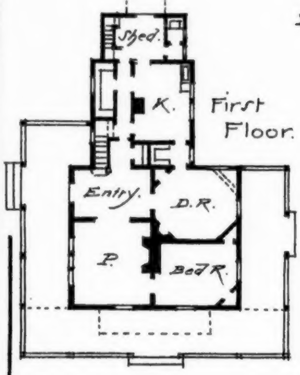
House at
HULL, Mass.
— Built in 1879
Cost, $2300.

W. Whitney Lewis.
Arch't.
Boston.

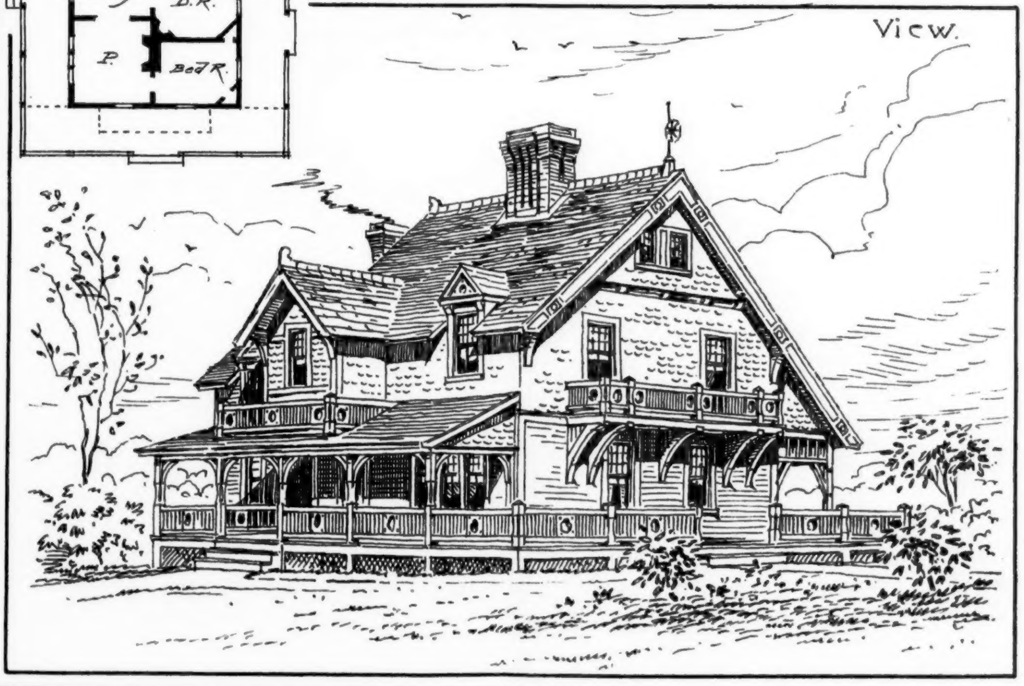




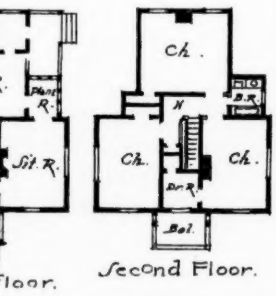




House at MAGNOLIA Mass.
Now building; Cost, $2,250.
Messrs Cummings & Sears. Arch'ts. Boston.

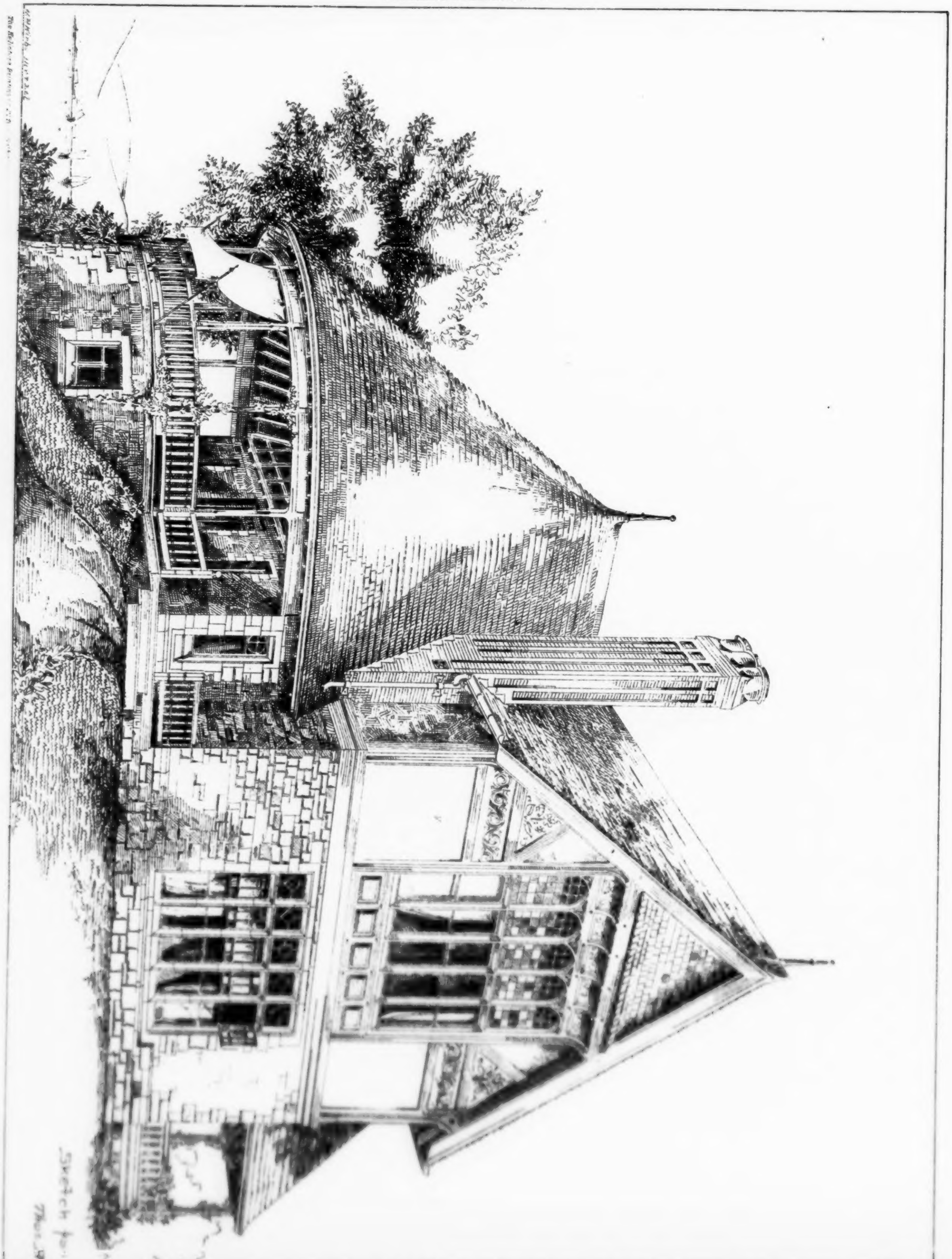


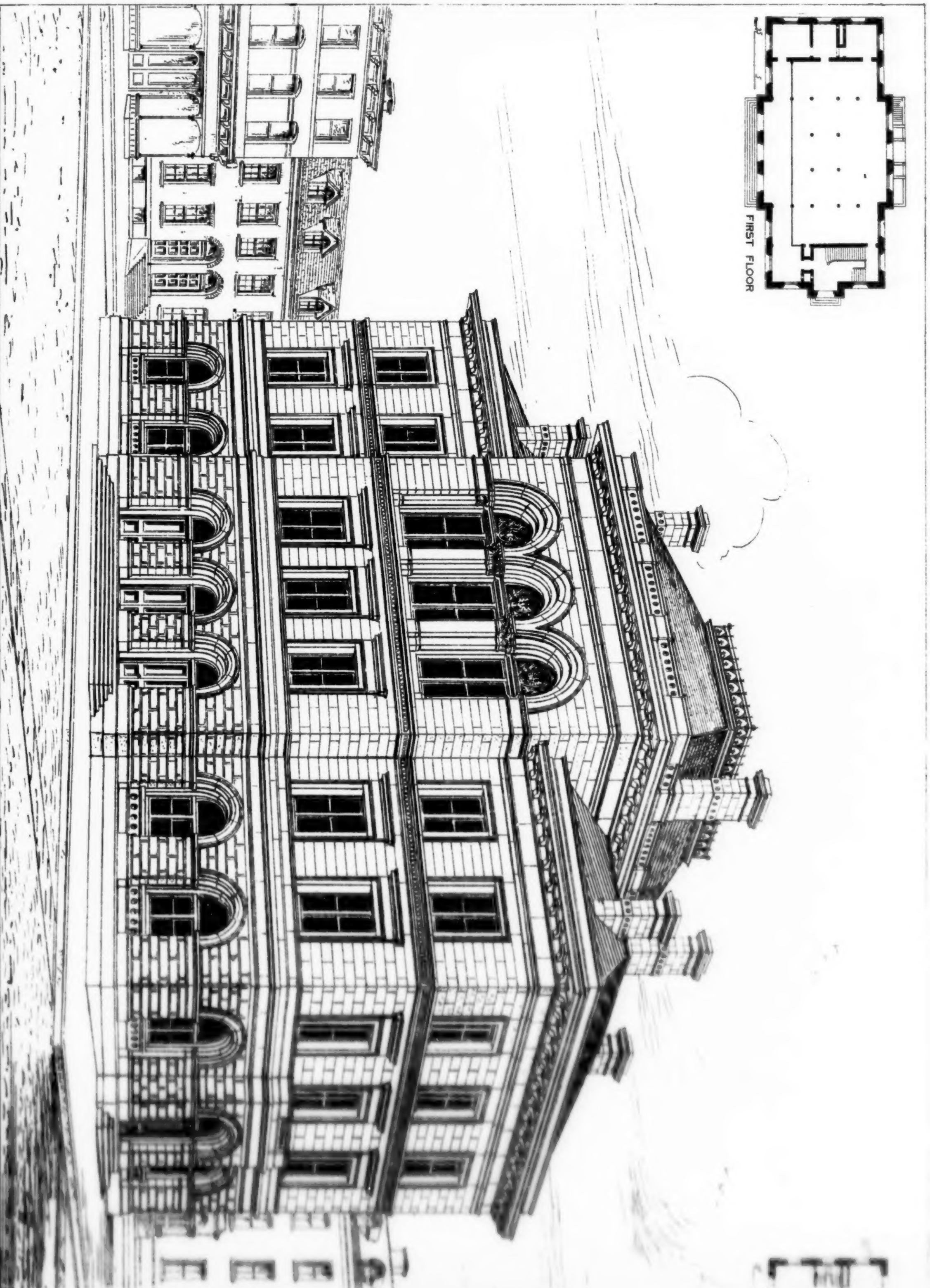
in 1879
Cost. $2,300.
Ober & Rand
hitects, Boston.



ELEVATIONS are drawn to a scale of 16 feet, and the PLANS to a scale of 32 feet to an inch.

No. 237. AMERICAN ARCHITECT AND BUILDING NEWS JULY 10, 1880.





U.S. COURT HOUSE & POST OFFICE HARRISBURG PA.