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AFTER two years of preparation the Edison Electric-Light Company has begun to deliver electricity for lighting purposes in its first New York district. Certain Wall-street offices were the first to be supplied, and the lighting proved completely successful. The common defect with incandescent lamps,—the flickering of the light—has been quite overcome, and the lamps now in operation in the district are all that could be desired. The flickering, where it exists, is due to slight changes in the intensity of the current, which may be caused by irregular action of the machinery for generating it, or any similar circumstance. Where dynamo-electric machines are driven by belts from a pulley, incandescent lamps supplied from them change at every passage of the rivets which join the ends of the belt over the driving pulley, and the monotonous regularity of the flickering so occasioned is very trying to a nervous person. To avoid this, each of the enormous dynamo-electric machines at the Edison station is driven by a special engine, whose piston-rod is connected directly to the shaft which carries the armatures of the dynamo machine, without the intervention of belts or gearing, and a steady motion is thus obtained. With other systems of incandescent lighting the secondary battery, which will probably be interposed between the generating machine and the lamps, will serve to regulate the transmission of the force, so that the electric-light of the future promises to be at least far pleasanter to the eyes than gas-light. According to the *New York Evening Post*, many of those persons in the first Edison district who have received their supply of electricity have already abandoned gas-light, and have notified the companies to remove their meters. This seems a little hasty, but we hope their confidence in the permanence of the electric supply will prove to be well founded.

WE wish we could say that the building committees of churches always showed that self-denying regard for other people's wishes which their members probably practise in private life. Just now a ridiculous and discreditable quarrel is in progress between Mr. Wakefield, of St. Johnsbury, Vermont, and the proprietors of a Presbyterian church, who, according to the newspaper accounts, bought a lot of land, with, as he says, the understanding that a passageway should be left between any building which might be erected on the lot, and his premises, which adjoin, but instead of this began to put in the foundation for a church within twenty inches of the boundary. Finding this out, Mr. Wakefield erected a fence on his land, thirty feet high, covered with barbed wire on the side next the new building. The church authorities attempted to board over the fence on their side, but were stopped by an injunction, commanding them to desist from touching or making any use of the fence. This unexpected difficulty necessitated the modification of the contract with the builders, who had not contemplated such proceedings in their estimate, and a new contract was made in accordance with the altered circumstances.

At present, the construction is going on as rapidly as work can be pursued in a space twenty inches wide, lined on one side with bristling spikes, and the other inhabitants of the town look on, delighted at the sport. It is said that Mr. Wakefield desired to have the church set at a little distance from the line, in order that snow might not slide from the roof into his grounds. This he has an unquestionable right to require in any case. The fall of snow from the roof of the building upon his land, or even the turning of surface-water over his premises during rains by any change in the grading, constitute a trespass which he is in no way bound to suffer, and he can compel the church at any cost to prevent them.

EVERY two or three months we take occasion to say something about the remarkable success with which the manufacturers of sectional houses, if there are any such in this country, manage to conceal their addresses from those who would like to become their customers. The most frequently repeated of all the many questions which we receive—one which we have become weary of answering—is the inquiry where the sectional or portable buildings so largely sold abroad, and once manufactured here, are to be procured. Our correspondents alone, for the last four or five years, supposing them to order one house each, would have kept a considerable establishment fully occupied, and we hope that any persons undertaking such business, for their own benefit as well as ours, will keep us informed of their whereabouts.

THE stockholders of the Keely Motor Company have had a meeting in Philadelphia, which seems to have ended in a delightful reconciliation between them and their distinguished principal. The latter was voted an immediate present of one thousand dollars in cash, and fifteen hundred shares of the Company's stock, which he "consented to receive," and permitted it to be "understood" that upon the payment of this tribute he would "go ahead" with his mysterious operations. Whether the old machine, from "oxidation" or other causes, has become useless, we do not learn, but it appears that castings are to be made for a new one, of five hundred horse-power. We trust that the cost to the stockholders of the second apparatus will be less than that of the first, but that the great inventor will in any case find means for keeping up their spirits we can no longer doubt. Indeed, it is already reported that in a moment when the general joy had perhaps thrown him a little off his guard, he confided to a bystander the information that "he should soon be able to take a railway train from Chicago to New York at a cost for fuel of less than fifty cents." It will of course be necessary to construct a locomotive to carry into effect this important discovery, and perhaps a new company, with fresh stockholders, might with advantage be formed to supply funds for the purpose. However this may be, it certainly seems as if, what with general salary, extra payments for "going ahead," and special subsidies for the removal of "oxidation" from two or three machines, Mr. Keely's future prospects were more comfortable than ever.

THE competition for the San Francisco Garfield Monument has been decided in favor of Mr. F. Happersberger, a young gentleman who has studied at the Academy of Arts in Munich. The design is described as consisting of a pedestal raised on a base of gently ascending steps. At the foot of the pedestal is seated a bronze figure of America, leaning on a sword and weeping. The sides of the pedestal bear eagles, watching and guarding the emblems of war and commerce, and the national flag and shield. Surmounting all this is the statue of Garfield, in bronze, ten feet high. With excellent taste, the inscription is made to consist only of the lamented President's own expression,—"*Strangulatus pro Republica*." We hope to know more of the design hereafter, and are quite ready to believe that the artist has given an ample equivalent for the reward which he is to receive.

SIR EDWARD WATKIN, the enthusiastic chief of the Channel Tunnel Company, has shown an indiscreet zeal in pursuing his great project, which may lead him into trouble before long. Every one remembers that after the panic which seized the British public at the idea of opening a door to invasion, a Com-

mittee of the Board of Trade was appointed by the government, to consider, in connection with a Military Committee, the expediency of forbidding entirely the construction of the tunnel. It was generally supposed that the company would suspend operations until these important committees had made their report, and the announcement of the cessation of work was actually made; but it appears that the great boring machine, which had just begun to prove its extraordinary powers, continued its functions without interruption, and before the deliberations of the Committees had come to a close the tunnel had made considerable progress to the southward. On discovering this the government caused an order of court to be issued to the effect that the excavation should be carried no further without the consent of the Board of Trade. Whether Sir Edward Watkin was gracious enough to pause a moment to see what the Board might have to say on the subject, we do not know, but presume that he did all that he supposed to be required of him. However that may be, the Board does not seem to have expressed any opinion, and Sir Edward, considering, no doubt, that silence gave consent, kept on again with his work, and had driven the excavation seventy-two yards nearer France before he was stopped by a peremptory order forbidding him to use the boring machine for any purpose without the written authority of the Board of Trade. Probably this will at last cause the abandonment of the enterprise; but with all regard for the popular terror we cannot help regretting that the tunnel had not advanced beyond the English jurisdiction before its projectors were overtaken by the mandate of the Court.

Two small leaks were discovered in the Hudson River Tunnel in one day last week, the first being serious enough to alarm the men at work, who made their escape in safety by the air-lock, leaving the superintendent to stop the leak as best he could with sand-bags. After some minutes of effort he succeeded in his attempt, and work was soon resumed. Thanks to the persistent courage of this brave man, although a considerable quantity of silt was forced in, no water entered the tunnel, and the company will be spared the cost of pumping out nearly a third of a mile of the completed excavation. As the depth of the tunnel beneath the surface increases, the pressure of water and silt will increase with it, and some difficulty may be met in resisting the strain, but we hope that no further serious accident will occur to interrupt the successful prosecution of the work.

ACCORDING to the *Scientific American*, there were in this country in 1881 forty-four failures of railway bridges and trestles; and it expresses a hope that inventors will turn their attention to diminishing the number of such casualties by improved methods of construction. With all due respect for the good intentions of the *Scientific American*, we are convinced that it is quite mistaken as to the means necessary for remedying the disgraceful inefficiency of our ordinary railway constructions. The science of bridge-building is already quite far enough advanced to furnish rules for the designing and execution of bridges and trestles which shall have a definite strength adequate to resist the definite maximum strain which will come upon them, and the so-called engineers who are unable to put these rules in practice would make the same, or worse failures in endeavoring to apply an improved theory. There is something astonishing in the complacency with which the newspapers record the fact that a new iron highway bridge, supposed to be adequate to the heaviest traffic, with a factor of safety of six or seven, has fallen in under the weight of a cow, as happened not long ago; or that an iron railway-bridge, calculated, as one would imagine, for moving loads of hundreds of tons, has collapsed all alone by itself, immediately after completion, and under no strain whatever. In any other country the designer of such a structure would be held responsible for the damage caused by its fall, but the principle of professional responsibility is so little understood here that unless some person is killed by the catastrophe, the railroad or town engineer to whose incompetence the failure is due generally continues to draw his salary unmolested, his principals consoling themselves with the hope of "better luck next time."

STATISTICS recently published by the Census Bureau show a considerable change in the relative manufacturing importance of the larger cities of the United States. We have become so

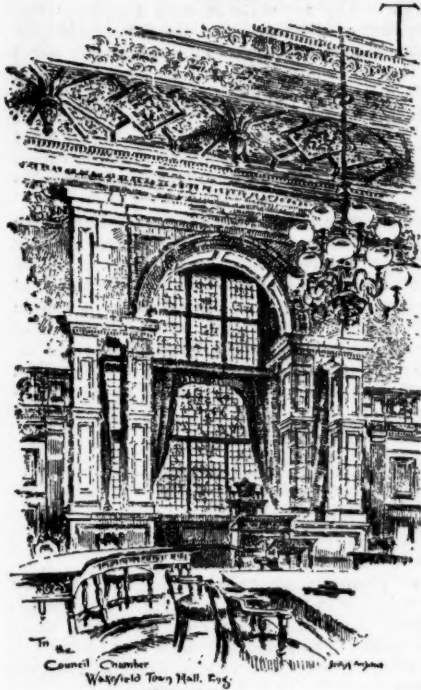
habituated to regarding Philadelphia as *par excellence* the manufacturing centre of the country that it is rather startling to find that the number of manufacturing establishments in New York and Brooklyn is very nearly double that in Philadelphia, and the annual value of the goods produced in them considerably more than twice as great. The annual product of New York alone is nearly one-half larger than that of Philadelphia, although, strangely enough, the capital invested in manufacturing is considerably less in the former city than in the latter. The ratio of the value of the annual product to the capital invested varies materially in a way which seems connected partly with the business habits of different localities, and partly with the nature of the manufactures carried on. In Chicago, for instance, with a capital of sixty-four millions, the value of the yearly out-put is two hundred and forty-one millions, or nearly as four to one; while Pittsburgh, with fifty millions invested, turns out only seventy-one millions annual product. In Boston, Brooklyn, Cleveland, Milwaukee, Newark, New York and San Francisco, the annual value of product is about three times the capital invested; in Baltimore, St. Louis, Buffalo, Cincinnati, Detroit, Washington and Philadelphia, it is about twice as great, while in Louisville, Pittsburgh and Providence it is less than that. Jersey City, probably on account of the delicate and costly character of the articles made there, produces every year a little less than sixty million dollars worth of goods with an invested capital of something over eleven millions.

AMONG the greatest advantages of the new Holland gas-burning locomotive is certainly its freedom from smoke. According to the account of the trial trip of the passenger engine *C. Holland* from Paterson to New York, as given in the *Chicago Tribune*, the windows of all the cars in the train, as soon as it arrived at the mouth of the Bergen Tunnel, which is about a mile long, were thrown wide open, and the products of combustion from the smoke-stack allowed to sweep through them. Instead of a whirlwind of suffocating gas and dust nothing was perceived except a cloud of vapor, without odor or admixture of dust, which condensed in fine spray, but left no stain or other unpleasant consequence. The trial trip was made, it seems, with the intention of testing only the power of the locomotive in maintaining a high pressure of steam, this being an essential point in locomotives of any kind. Economy of fuel, though important, is a subsequent consideration. For this reason the combustion was steadily maintained in full activity, and by this means the steam was kept at a uniform pressure of one hundred and forty pounds, the safety-valve blowing open on arrival at every station. With coal as fuel, the diminution of pressure is said to be usually about fifty pounds between the beginning and the end of the trip.

A most humane and thoughtful step has been taken by the government of the city of Leadville, Colorado, in ordering that all unidentified corpses brought to the city dead-house shall be embalmed, so that their features may be recognized even after the lapse of a considerable period. The peculiar situation and reputation of Leadville attracts to it multitudes of persons who have left their homes through despondency, wilfulness, or in consequence of some more or less innocent aberration, and it is said that not a day passes without the receipt at the police headquarters of letters of inquiry in regard to persons who have abandoned their families and friends, without leaving any clue to indicate the direction in which they have gone. In very many cases such wanderers arrive sooner or later at Leadville, often to die of disease or despair, and a large part, certainly, of these dying strangers leave behind them, in some distant place, wives, uncertain whether they are widows or not, heirs unable to touch their inheritance, and responsibilities of all kinds, which may affect the happiness and rights of many persons, but cannot be assumed by others without proof of the death of the one whose duty it is to bear them. For the relief of all such cases of hardship, as well as for furnishing a sad comfort to the friends of the unfortunate exiles, the plan of the Leadville authorities offers an invaluable resource. Few persons would be ingenious enough to hide themselves, unless death should intervene, for a very long time from the affectionate persistency of friends, or the trained skill of professional detectives, and the preservation of their mortal remains, even for a few weeks, in a condition to be recognized, may be in some respects only less important than their restoration to life.

NOTES ON HOUSE-DRAINAGE.—IV.<sup>1</sup>

## THE QUESTION OF TRAPS.



"bell-trap" which is so widely used is, under all circumstances, absolutely inadmissible in good work; that all traps which are materially larger than the pipes on which they are placed are seriously objectionable; and that the "bottle" trap of Boston is a survival of the unfittest portion of the ancient plumbing-work of that town.

In my judgment the acceptable traps of the present day are simple bends, in lead, iron or earthenware, of at least no greater diameter than that of the conduits of which they form a part (ventilated in case of need); some of the mechanical traps of which the orifices are closed by floating or weighted balls; and traps which depend for their permanent seal on the presence of mercury. All of these traps have merits for certain uses, and all may be reasonably relied upon to cut off communication between the soil-pipe and the house. From its simplicity and cheapness the simple bend trap holds, for uses to which it is suited or for which it is necessary, the first place. As ordinarily made its diameter is too great and the depth of its water-seal is too little; but this difficulty may easily be remedied. As ordinarily applied in house-drainage it is subject to the very serious danger of having its water withdrawn by suction (siphonage), when a strong flow through the soil-pipe or waste-pipe to which its own waste delivers creates a partial vacuum and causes the atmospheric pressure on the house side of the trap to force its contents forward toward the drain. A realization of the advantages of this trap and an observation of its frequent failure from the cause just described have led to the wide and general adoption, in the regulations of Boards of Health and in the recommendations of experts, of the principle of what is called "back ventilation." The best accepted illustrations of interior house-drainage include almost without exception a series of air-pipes leading from the top of each trap, either separately or in combination with each other, to the top of the house or to a point in the soil-pipe above the highest fixture connected with it. In some cities it is permitted to construct or to alter the plumbing-work of a house only in conformity with this plan. That such ventilation will efficiently correct the difficulty to which it is directed is quite certain, but that it has nevertheless some grave objections seems to me clear.

I object, in the first instance, to the serious increase it requires in the amount of lead pipe thus introduced into the drainage-work, lead pipes being subject to accidental defects, as for instance by the misdriving of nails and the gnawing of rats, which indicate the propriety of limiting its use as much as possible. The extra cost of the work that the arrangement entails is by no means unimportant. Furthermore, and this is serious, it is found in practice that the free current of air established immediately over the water of the traps leads to its rapid evaporation, causing, under not unusual circumstances, a greater danger of unsealing from this cause than previously existed from siphonage.

Having long had the conviction that the requirement for universal back ventilation in the regulations of certain Boards of Health was ill-advised, I obtained authority from the National Board of Health to undertake an exhaustive series of experiments with a view to discovering the conditions under which siphonage would and would not take place. The results of these experiments were so at variance with the accepted theory that they were subsequently repeated, by order of the National Board, by E. S. Philbrick, Esq.,

O the average mind "traps" are the key to safe sanitary plumbing. Traps are certainly of absolute importance. At the same time, I question whether the defective ventilation of soil-pipes and the defective connection of their joints are not really a more serious, as they are a more occult, source of ill-health than are any ordinary imperfections of traps. The ordinary imperfections of traps, however, are serious enough to engage our most careful attention. It is not worth while, in the brief statement here proposed, to enter into all of the details concerning the different kinds of traps and their merits and demerits. It will suffice to say that the

C. E., in Boston, his arrangements being somewhat different from mine, but both arrangements being those usual in house-drainage. These experiments were carried on at the expense of the National Board and the results in detail cannot properly be published here. It may, however, not be amiss for me to say that my experiments indicated that sufficient security could be guaranteed by a thorough ventilation of the soil-pipe, and that, while Mr. Philbrick caused the siphonage of traps—not always, but sometimes—with a thoroughly ventilated soil-pipe, he did so with a combination of discharges from different vessels that would very rarely, if ever, occur in practice. Mr. Hellyer's experiments, in London, showed that, with a  $3\frac{1}{2}$ " soil-pipe, with full ventilation at the top and at the foot, it took ten discharges of a water-closet to cause a small trap connected with a lower point of the soil-pipe to lose three-sevenths of its  $1\frac{1}{2}$ " seal.

With no desire to call into question the wisdom and propriety of the orders and regulations of established sanitary authorities, I cannot accept this requirement as being either necessary or judicious; and, although compelled to conform to it when working within the jurisdiction of such Boards of Health, I have very rarely in practice elsewhere met with a single instance in which it seemed to me necessary for the purpose of preventing the unsealing of traps to apply the system of back ventilation.

At least one practical expert who reviewed my experiments at the instance of the National Board reported that my results were fully in accordance with what he had himself concluded after much inspection of house-drainage work; but he regretted the conclusions at which I had arrived, for the reason that the prescribed back ventilation leads to a useful circulation of air through the whole system of lateral waste-pipes. Where it is important to establish such a circulation of air it may be wise to adopt the new method; but it should be done frankly for this object. Even then the work should, I think, be so modified as not to bring the current so near to the water of the trap as to facilitate its evaporation.

It was found in my experiments that while it was easy to protect lateral traps from the influence of currents passing down an open-mouthed soil-pipe, there was a frequent disturbance of minor traps when several vessels were attached to one small lateral waste. It becomes, in such cases, a question as to the propriety of preventing this disturbance by a back-ventilation or of adopting the alternative of using mechanical traps, which, however much they may be disturbed, cannot be permanently unsealed. My experiments showed that the desired end could always be secured by the use of mechanical traps.

The question is still by no means definitely settled. There can be no doubt that we shall in the future reach a better result than has thus far been attained. All that it is necessary for me now to say in the way of positive directions will perhaps be covered by an account of my own present practice. I use under water-closets, it being necessary with these to provide an unobstructed water-way of considerable size, a simple water-seal trap, this being sometimes, as with the plain hopper-closet, a deeply-bent lead trap with a good seal, and at other times, as with the Dececo or the California closet, a considerable depth of water in the bowl. It will very rarely happen that the water will be so much withdrawn from the trap under a hopper-closet in giving passage to air under suction that enough will not remain to reestablish the seal after the suction ceases; with an open soil-pipe I think it will never happen. It will never happen that the volume of water retained in the bowl of the other varieties of closet named will be so far withdrawn as to unseal the trap. For all other connections I use mechanical traps. Where there is a considerable amount of lint, tea-leaves, or stringy matter, I use Bower's trap (a trap closed by a hollow india-rubber ball floated against the mouth of the inlet pipe). It is necessary so to arrange the drainage of the house that the suction of this trap will not be sufficient to remove so much of its water that the ball will not be held against its seat. There does exist the objection that the ball at times loses by corrosion that smoothness of its surface which is necessary to a tight joint, while sometimes by cracking or puncture the ball fills with water and sinks, leaving no greater security than would have been afforded by an unventilated bent trap. For other wastes, as those of wash-bowls and bath-tubs, I use Cudell's trap or one similar to it, where the inlet-pipe rises into a chamber in which lies a ball sinking by its own weight in the water held to complete the seal. The forms of all of these traps are such as to expose a considerable amount of fouling surface, and from the accumulation of foul matter the balls are undesirably subject to corrosion; but it is to be remembered that the exhalation from the soiled surfaces is on the soil-pipe side of the trap, and has no communication with the house, and that even a somewhat corroded ball lying against an orifice that is reached by the retained water forms a reasonably tight joint by capillary attraction, even when by siphonage the contents of the trap have been very largely withdrawn. It is idle to prophesy as to future improvements, but it would seem that in some better use of mercury than has thus far been suggested, or in an improved form of Cudell's trap, we shall attain more satisfactory conditions.

The greatest difficulty encountered in recommending modifications of the usual forms of work to practical plumbers is met in advising a reduction of the sizes of traps. So far as I know, no plumber in New York or Boston would think of using a trap less than 2" in diameter under the kitchen sink of a large house. Many prefer a 3" trap even where the waste is smaller. Opposition generally

<sup>1</sup> By George E. Waring, Jr., Newport, R. I.

takes the form of the expression: "Why, such a trap will fill up in no time: I took out a 3" trap the other day and it was filled with grease as full as it could be." It seems at first blush incredible that matters which will be retained in the form of foul and obstructing deposits in a 2" trap or pipe will be completely removed if the diameter is reduced to 1" or to whatever will bring it within the easy flushing capacity of the stream to be supplied. Large bent traps have the great advantage over the Boston round or bottle trap that they do furnish a direct water-way without angles for the accumulation of deposit; but an inspection of either of these which has been for some time in use will elucidate the subject most clearly. In a rapid constant current obstructing matters, including congealing grease, are carried forward by the velocity of the stream. The velocity depends on the diameter of the channel through which a certain amount of water flows. If this amount of water passes through a three-inch channel with a velocity of one inch per second, it will flow through a one-inch channel with a velocity of nine inches per second. In the latter case it has sufficient power to carry with it everything that can go through the strainer of a sink, but at the lower velocity it will have no such power. Grease will, in congealing, attach itself to the sides of the channel; solids will settle in eddies of the current, and the trap or pipe will, little by little, become obstructed. Usually this obstruction goes on until the water-way is reduced to a size necessary to give the current enough velocity to carry its contents all with it. A dissection of an old three-inch kitchen-sink trap generally shows a mass of grease and filth through which a small, tortuous channel has been maintained by the force of the restricted current. If the diameter of the conduit itself is reduced at once to the diameter of such a self-constricted current, there will be no accumulation at any point. If accumulation occurs it means, not at all that the passage is too small, but that it is too large, and that the stream has itself been at work in reducing it to the proper size.

There is, so far as I know, no positive knowledge on which to base an exact rule for regulating the sizes of traps. Probably absolute cleanliness can be secured only by a greater reduction than has yet been attempted. It is my own practice, as at present advised, to use under laundry tubs, for the whole set, one 1½-inch trap; under a bath-tub a 1½-inch trap, and under wash-bowls a 1-inch trap. The water-way of any of these is greater than the water-way through the strainer by which the discharge reaches them, and the fall or head due to their position increases their capacity.

#### AN ARCHITECTURAL MASQUERADE.



London, 1890.

As a rule Americans have not been widely celebrated for respect for the accumulated wisdom of years, and there is still a pertness in our civilization that keeps an old man on his metal till he is hustled off the scene of action altogether. Now and then perhaps some jaded and thirsty poet of the town has warbled of the "old oaken bucket," or tired of the battle of life has sought rest in reminiscences of his "grandmother's arm-chair." But these were only episodes — the rush of the torrent of new civilization drowned the voice of the singer and his successor on the old farm, stuck labor-saving pumps into the wells, and banished the antique furniture to the garret.

That greater wealth and leisure, stimulated by the effect of foreign travel and example, should lead to some reaction in these matters is not unnatural. That the reaction should be extreme and its partisans enthusiastic, is in keeping with the national temperament. That the unreasoning gush over the "antique and horrible" should slop over in the magazines and newspapers is not surprising. The life of much of our periodical literature is in revolutions, revelations, resurrections, and alliterative records of commotion and crime.

So long as excited reformers confined their efforts to ransacking garrets there could be little harm done. It was rather amusing to be sure to see the drawing-room of modern indolence furnished with the spinning-wheels of an industrious ancestry, the wood-work shining in coats of fresh varnish. It mattered little, too, if the belle of the period, with her limp backbone, chose to loll on cushions and contemplate the uncomfortable chair in which her great-grandmother used to sit as bolt upright as if she had swallowed the ramrod of Bunker Hill.

The trifles raked out of garrets can be banished with the next pirouette of fashion to the dust heap or the junk shop; but the dry-rot of bad example has not been checked in its "furniture and bric-à-brac" stage, but creeps insidiously into the more sober and permanent work of the building architect.

In England the revival of an old style has given place to the revival of a later and debased one. In the hands of genius it is sometimes more than tolerable — like any style in such keeping. But in the hands of professional mediocrity or of unprofessional plagiarism it is guilty of more hideous nightmare effects than the worst disciples of "white-pine Greek" or later "Vernacular" ever dreamed of; even the carpenter's "mansard" seems quietly elegant by contrast. In such hands it becomes a vulgarly ornate and elaborated travesty of work whose greatest virtue was simplicity — the robes of harlequin on Benjamin Franklin, "What is age? What is venerableness," as old Eccles exclaims, if they are to be abased after this fashion?

While cherishing a keen appreciation of the charms of picturesque age; while admiring to the fullest extent the many virtues of early American builders and their English contemporaries, let us not be blind to their defects or try to confine our new wine in their old bottles. They aimed to satisfy certain simple needs in a simple straightforward manner, guided by the lamp of tradition, whose somewhat feeble glimmer in a new atmosphere, constrained them always to work deliberately and often rudely. It is not of the earliest settlers that we are treating: there is little of interest to the archaeologist in the pioneer's shelter.

"His home was a freezing cabin  
Too bare for the hungry rat;  
Its roof was thatched with ragged grass,  
And bald enough at that;  
The hole that served for casement  
Was glazed with an ancient hat;  
And the ice was gently thawing  
From the log whereon he sat."

But the "frame house" promptly succeeded the log one, and fifty years showed marked progress in the art of building. Still the architectural features, where there was any pretence to such, were borrowed from the "old home;" and certain simple text-books containing free renderings of the Roman Orders, etc., were in the hands of these architect-builders.

In many instances the oak frame, the panelling, the stairs, mantles, and the exterior decorative features were imported complete from Old England. This work was copied and interpreted by intelligent carpenters who took an honest pride in their calling, put thought into their work and labored long days; but never thought of raising a frame with less motive power than a barrel of Old Jamaica. The power must have been ample, for they often put the biggest timber in the roof.

Every architect of experience is more or less familiar with this early work and must have a certain respect for it and its constructors. From their merits and their defects some sound lessons may be drawn; but to assert, as has been done, that their architecture is in any general sense, a high standard of beauty, convenience, or scientific construction, as applied to the proper solution of the problems of our day, is simply the babble of ignorance. The success of their edifices as works of art can easily be determined by careful examination, which, however, must be kept free from the effect of personal association and the poetic glamor of age and tradition — influences liable to warp the judgment when an old building becomes the subject of critical analysis. On questions concerning their planning and construction the architect and builder are almost the only competent witnesses; and this simply because the remaining examples are mostly tenanted, and can seldom be intelligently examined unless in process of repair or demolition.

From one to two hundred years ago pine lumber was plenty and the trees were large, and it was chiefly used on account of the ease with which it could be worked: otherwise English emigrants would have always used the traditional oak. To save labor the sticks were left about square in section and unnecessarily heavy, which caused them to deflect with their own weight. The timber was sometimes rightly cut and seasoned, when it endured; and sometimes it was cut out of season and used hurriedly, when it suffered from dry-rot. Covering boards were irregular in thickness, of great width and with wavy edges, with wide irregular gaps between; and the shingles, being of a rude manufacture, and sheathing paper unknown, the drifting rain and snow filtered through the roofs into the garrets. Windows seldom opened at the top, and wide-mouthed fireplaces drew their supply of air from numerous cracks and crevices. Occasionally a cargo of good bricks was imported from England, but the domestic substitute was irregular in shape and size, small, and imperfectly burned. Wood was freely used in the construction of chimneys in the shape of lintels, bond-timbers, and springing-pieces for trimmer-arches. Many old houses owe their destruction to this cause alone. The mortar was often of poor materials and badly mixed. The plastering on split laths, which were often laid so close together as to prevent any proper key, was occasionally strong but as a rule weak and irregular in surface.

As for plan the dwellings of the common type aspired to nothing of the sort. They were simply an aggregation of rooms. A large proportion had two rooms on each floor, with a big chimney in or near the centre between them, and a steep narrow staircase against the chimney in front. The roof was sometimes low and hipped, but often pitched or gambrel in style. Small dormer windows were sometimes found in the gambrel roofs and now and then in the pitched. There is one old house on the island of Nantucket with a genuine mansard roof: doubtless the special importation of some ancient mariner.

If the family outgrew the earlier accommodations the attics were finished, Ls or lean-tos were added *ad libitum*, as barnacles collect on a bit of drift-wood. The aggregate was often picturesque. In the original façade there was generally some attempt at a balance of parts but rarely symmetry, and the effect was generally better on this account. Privacy seems to have been of as little account in a New England farm-house as in an Italian villa. Rooms served for passages, and stairways started from rooms and ended in them.

An old house near Boston, with the general arrangement just described of two rooms on each floor, served for years as a stage tavern—guests, landlord, and family, servants, kitchen, bar, beds: all in four small low-studded rooms.

Bathing facilities, except the horse-trough and "old oaken bucket," were little known and less cared for. The surface of the ground served as drain and cesspool. Privies were often roomy, both as to superstructure and vault, and generally located "convenient" to the well.

Closets were few and small, clothing being stored in chests. Stories were commonly about seven feet high in the clear, and rooms were imperfectly lighted by few and small windows with semi-transparent bulls-eye glass. The low stories served to make the narrow crooked stairs less dangerous.

As for cellars there were either none worthy of the name, and the sills were set almost on the ground, or they were ill-lighted and unventilated pits, often flooded in spring, always musty and sometimes with rank growth of fungi. These cellars had sometimes inner and lower depths, the terror of the childish mind, where milk and butter were stored. As for cellar stairs,—for the credit of our ancestors the less said of them the better. It would be morbidly interesting to have the statistics of doctors and undertakers concerning them.

Doors were thin, often not more than one inch in thickness, narrow and low, with rude strap-hinges that encouraged sagging. Outside doors were more liberal, but gained their swinging room at the expense of an already cramped front entry. Sometimes liberal porches occur, but oftener there was no protection from the weather but a scanty false pediment; but as front doors were rarely locked there was no necessity for any one to remain outside.

The limited number of town and country houses of the better sort are harder to classify. More erratic in style and individual in plan they seem to have been combined of fragments of the larger English work with bits of cottage or farm-house tacked on. The examples of a complete and harmonious plan are very rare. A good front hall and staircase were often supplemented by a dark, narrow and crooked back stair. The roominess and liberality of parlor and sitting-rooms were shabbily supplemented by odd holes and corners in upper stories and L. There were surprises in the shape of odd steps and unexpected changes of level charming in a sketch or a romance, but inconvenient and dangerous in every-day life.

The decorative features externally were almost invariably false and unconstructional: poor imitations of stone-work in thin wood. There was little attempt at real deception, however: that the pilasters and cornices were pine shells was evident to the most careless observer.

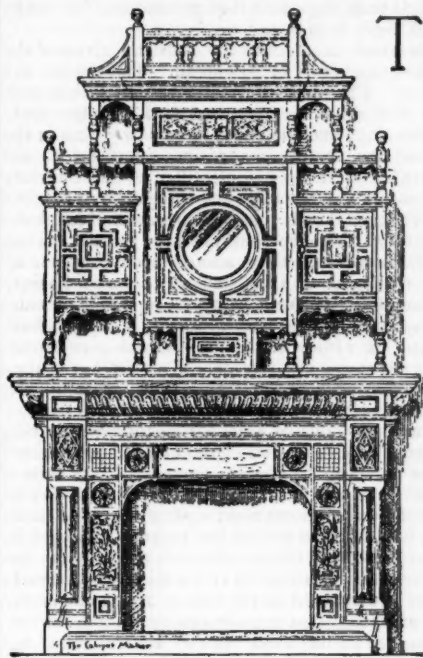
In characteristic treatment of parts these houses were generally defective. Outward forms seldom indicated the inward uses. This is partly accounted for by lack of caste in the family, the servant, or help, being the peer of master and mistress.

Examples might be almost indefinitely multiplied to illustrate many interesting points connected with this early building; but it would all simply tend to show that our ancestors were a frugal, simple, out-door living people. Like the laborers in the streets and fields to-day, they were so fortified by their manner of life that they were proof against ordinary exposure. Neither their houses, nor their garments, nor their religion, nor their schools, nor their eating and drinking will answer the needs of to-day. "Nor is it meet they should." In the early days of Nantucket a young mother trudged seven miles through the primeval forest, carrying a full-weight colonial baby, merely to make a friendly visit to a neighbor, and then trudged cheerfully back at night. As well pattern the dwellings of to-day after the wigwam of the Indian as after the dwellings of such a race, unless we are prepared to return to the Spartan simplicity of their daily life. Until we are ready to accept this alternative let us cease to masquerade in the garments of a dead civilization. A little of their old sturdy, honest spirit will not hurt us, but we cannot make any fitting use of their wardrobe.

J. A. F.

**DETERMINATION OF CARBONIC ACID IN AIR.**—The following method of determining the quantity of carbonic acid in atmospheric air has been proposed by M. Mascart, the method being based on the diminution of pressure which takes place when a certain quantity of air is deprived of its carbonic acid, the temperature and the volume remaining constant. The air to be analyzed is deprived of the water vapors which it contains, and is then introduced into the reservoir of a gas thermometer. A second reservoir, similar to the first, contains the same quantity of air, and is in communication with the first by means of a mercury manometer. These two reservoirs are placed in a water bath, so as to both be at the same temperature, and the difference in pressure of the two is taken. By means of a mercury pump the air to be analyzed is then pumped out and led slowly over potash, and then into an auxiliary tube, from which it is led again into the reservoir. When the height of the mercury in the second apparatus is the same as it was at the beginning of the operation the difference in pressure will give the amount of carbonic acid which was present.

## THE WHITE-PINE SUPPLY.



Design for a large room, Model by J. J. Talbot.

THE *American Architect* thinks it is to be deplored that the figures of the census bureau have not received the attention which they deserve, and thinks that they will not until the advancing cost of pine lumber brings the lesson home forcibly to the public mind. It claims to see as a result of the publication of these figures a doubling up in the price of pine lands within a few weeks, and it says that the question of the employment of some other material for the coarser uses of building is earnestly discussed among architects and contractors. The *New York Tribune*, that stands ready at all times to give any

sophomoric swash, has had its ninth-story philosopher moralizing on the government timber figures, and drawing the conclusion that very soon the people of America will look upon a pine board as a relic of the past.

It would be possible for these papers, and all others that swear by the figures issued by government, to know more about the pine supply than these figures teach them. It is easy enough for publications and individuals who know no better to imagine there is no more white pine in the North-west than estimated by government; but when these publications and individuals set up a cry of a short supply, and argue that in from eight to fourteen years the pine forests will be denuded, the influence is a pernicious one from the fact that the data upon which the argument is founded is incorrect. Such theorizing tends to create fictitious values and a scare when there is no necessity for either.

The *Lumberman* has not before criticized the government figures, and it had hoped it would have no occasion to criticize them. If government wanted to indulge in the making of forestry bulletins it had a right to do so. If it wanted to effect a knowledge of the amount of standing pine in Michigan, Wisconsin and Minnesota—a thing that many a man who knows more about the timber supply of those states than the entire census force would not attempt to do—it certainly had a right to do it. At any rate it certainly did it, and the hopes of this paper were that instead of working evil the figures would drop into that oblivion that swallows up so much statistical work.

The *Lumberman* considers, and knows, that on the whole the figures presented by the census bureau are misleading and erroneous, yet it counts itself too wise to make figures of its own, and show therefrom wherein government has erred. Time has given the lie to every prophet who years ago displayed his wisdom by telling how much pine there was, and there is no reason to think that the latter day prophets are any wiser. These wise ones began on Maine. They figured up to a foot how much pine there was and how long it would last, yet to-day without doubt there is as much pine in the state as the entire amount was estimated at ten years ago. They then tried a hand on Pennsylvania. They denuded the Keystone state over and over again. They made it appear years and years ago that the mill men at Williamsport, Lockhaven, Whitehaven and elsewhere would very soon be obliged to quit the manufacture of lumber and engage in other business. The mills at those points are running as lively as ever, and promise to keep up the same gait for years to come. Seven years ago estimates were made for Pennsylvania at less than 3,000,000,000 feet, and the figures went the round of the press as gospel truth. A great many million feet have been cut during those seven years, and men who know as much about the supply as men knew seven years ago, more than double the previous figures. The same class of chronic denuders then attacked the lower peninsula of Michigan. Twenty years ago they labored hard to have all the pine cut off in ten or twelve years, especially in the Saginaw district. As many as ten years ago one of the leading mill men of Saginaw called his nephew into the office and told him solemnly that the pine supply in that section was about exhausted, and as a matter of business it would be wise to invest their surplus money in pine in another state. The gentleman showed the same kind of wisdom displayed by others of his ilk, for within ten years the Saginaw valley mills have turned out nearly 7,000,000,000 feet of lumber, and the cut last year was the largest in the history of the mills.

Time, as has been stated, has given the lie to all the estimates that have been made, and it is to be regretted that government has taken a position that time will force it to abandon.

It may be well to first call attention to the estimates given of the pine supply of the upper peninsula of Michigan. The figures are put at 6,000,000,000 feet. The mills at Marinette and Menominee have not cut a billion feet since the operators at that point openly stated that they owned 12,000,000,000 feet of standing pine in the Menominee district, and the leading manufacturers there do not hesitate to say that with safety the government figures may be multiplied by two. In Wisconsin hap-hazard work was performed. One tract of land recently changed hands that had upon it 3,000,000,000 feet, yet those 3,000,000,000 feet never entered into the calculation of the government mathematician. From another tract that was estimated at less than 75,000,000 feet have already been sold nearly 400,000,000 feet, and another 100,000,000—a part of the same tract—may be purchased by any man who desires to invest in pine lands, and who has money enough to buy it. Work containing such glaring errors may receive the stamp of government, but nothing is more certain than that when government condescends to so stamp it it gives circulation to a base coin.

Minnesota is given at 6,000,000,000 feet. It would be satisfying if the government agents would rise and explain how they obtained the figures. When in northern Minnesota there are thousands of acres of pine lands that have never even been surveyed, it would be a satisfaction to know how the government agents know so much more than some other people about the timber it has. It would be well also for these "experts" to explain why on the Minnesota forestry bulletin all that territory lying north of Itaska county, stretching to the right of Fort Francis and to the left to the Lake of the Woods, is left white, indicating that it has no pine, when every timber-looker who has tramped through that country knows that it has pine. During the past ten years the mills upon the upper Mississippi have cut in round numbers 2,092,000,000 feet of lumber, the amount ranging from 170,000,000 in 1872 to 355,000,000 in 1881, and now government steps to the fore and sagely assures us that there are but 2,900,000,000 feet of timber remaining upon the Mississippi river and its tributaries. It must be an amusing piece of news to the operators on the upper Mississippi, who expect to be able to carry on the manufacture of lumber in its present proportions for the next twenty years, who are supposed to know about how much timber they own, and who are conscious at the same time that they do not own all there is upon that river and the streams emptying into it. A state land-examiner remarked on seeing the forestry bulletin that the census agents evidently knew as much about the standing pine of Minnesota as a boot-black, and no more—not complimentary testimony to come from a man who for years has been familiar with a considerable portion of the forests of his state. The figures given for the other districts of Minnesota are open to the severest criticism. In fact the putting forth of such figures as are contained in the Minnesota forestry bulletin is a piece of peerless arrogance. The *Lumberman* will stake its reputation that before the pine forests of Minnesota shall have been exhausted, a record of the output of lumber of that state will cause the government agent to seriously regret that he did not treble his figures.

There are valid reasons, perhaps, why the figures issued by the census department, and alleged to represent the amount of pine standing in the North-west, are by far too small. There are men who cannot consider a question equitably. They form a conclusion in advance and aim to make every argument support it. There are dealers in the Chicago lumber market who will be bulls, and others who will be bears, to the end of life, regardless of any facts or arguments which may exist or be presented. The *Lumberman* has none but feelings of friendship toward the gentleman who had in charge the making of the forestry bulletins of Michigan, Wisconsin and Minnesota; at the same time its judgment would not select him as a man who would do justice to the great work which he attempted to do. By instinct, association and policy he trains with the large body of men whose pockets demand that the price of pine lands be forced to the highest possible notch. For years he has been a pine-land agent and speculator, and the advance in pine has been his bread and butter. And it would be of interest to know what proportions of the figures, which in the aggregate make up the forestry bulletins, were made by men who have, or had, at the time of making them pine lands to sell. It would be of interest to know who made the larger half—the men who saw a chance to bull the lumber and pine-land market, or the other men, who made their estimates with the one object in sight, that the country should be informed of the real condition of the white-pine supply.

The figures presented in the forestry bulletins of the three states under consideration are working mischief every day: hence the design of the *Lumberman* to call the attention of all who are interested in the great lumber industry to the palpable fact that they misrepresent. It is an unpleasant task. It would be much more agreeable to settle down to the conclusion, were such a thing possible, that, when government puts "experts" at work in any field with the necessary means at their command to work with, their work approaches approximate accuracy. But in this particular case the sooner the people disabuse their minds of the idea that such accuracy was reached the wiser they will be regarding the amount of standing pine.—*The Northwestern Lumberman*.

## THE LUMBERING INDUSTRY.



### PROFESSOR SARGENT'S

Forestry Bulletin No. 17, issued by the census office, is in the form of a table representing the volume, by states and territories, of the lumber industry of the United States for the census year, as derived from the returns of the enumerators on the schedules of manufactures, and from the reports of special agents for manufactures in cities having at the time of the ninth census, 8,000 or more inhabitants. No distinction between the different kinds of wood sawed has been attempted in the enumeration. A comprehensive idea of the magnitude of the lumber industry is thus given.

It appears that in the United States the number of establishments for the manufacture of lumber is 25,708, employing a capital of \$181,186,122. The statement of the number of hands employed in these establishments exhibits the following average: Males, above 16 years, 141,564; females above 15 years, 425; children, and youths, 5,967. The value of logs used amounted to \$139,836,869; value of mill supplies, \$6,318,516; wages paid during the year, \$31,845,974. The following table exhibits the various products:

|                                                     |                |
|-----------------------------------------------------|----------------|
| Feet of lumber (board measure).....                 | 18,091,356,000 |
| Number of laths.....                                | 1,761,788,000  |
| Number of shingles.....                             | 5,555,046,000  |
| Number of staves.....                               | 1,248,226,000  |
| Number of sets of headings.....                     | 146,523,000    |
| Feet of spool and bobbin stock (board measure)..... | 34,076,000     |
| Value of all other products.....                    | \$2,682,668    |
| Total value of all products.....                    | \$233,367,729  |

Of the 47 states and territories Pennsylvania ranks first in the number of establishments with 2,827, followed closely by New York 2,822. Then comes Ohio with 2,352, Indiana with 2,022, and Michigan with 1,649. Of the southern states Virginia stands at the head with 907. The six New England stand as follows: Maine with 848, New Hampshire with 680, Vermont with 688, Massachusetts with 606, Rhode Island with 49, and Connecticut with 300.

The number of establishments, however, give no idea of the magnitude of the industry in the several states, as, according to the amount of capital employed, Michigan stands far ahead, with \$39,260,428, Pennsylvania coming next with \$21,418,588, followed by Wisconsin with \$19,824,059, and New York with \$13,230,934. Ohio which stands third in the number of establishments, employs a capital of \$7,944,412. California, with its large way of doing things, employs a capital of \$6,454,718 for 251 establishments, the cutting up of its monster trees being a work of considerable magnitude. The industry has not taken a deep root in Oregon as yet, considering that it has the most magnificent forests in America, for it has 228 establishments, with a capital of \$1,577,875. Of the New England states Maine employs a capital of \$6,339,396; New Hampshire, \$3,745,790; Vermont, \$3,274,250; Massachusetts, \$2,480,340; Rhode Island, \$144,250; Connecticut, \$657,300. The first four, it is thus shown, rank high, considering their size.

In the matter of the total value of all products Michigan again stands way ahead with the figure of \$52,449,928; followed by Pennsylvania, with \$22,457,359; Wisconsin, with \$17,952,347; New York, with \$14,365,910; Indiana, with \$14,260,830; Ohio, with \$13,864,460. Of the New England states, Maine makes the fine showing of \$7,933,868, ranking next to Ohio. The total value of New Hampshire's products is \$3,844,012; of Vermont's, \$3,258,816; Massachusetts', \$3,120,184; Rhode Island's, \$240,579; Connecticut's, \$1,076,455.

In the number of feet of lumber produced, Michigan stands first with 4,172,572,000, followed by Pennsylvania, with 1,733,844,000; Wisconsin, with 1,542,021,000, and New York, with 1,184,220,000. Maine produced 566,656,000; New Hampshire, 292,267,000; Vermont, 322,942,000, and Massachusetts, 205,244,000. The products of Massachusetts included 26,000,000 feet lumber, 11,982,000 laths, and 127,591,000 shingles, manufactured from logs cut in New Hampshire and Vermont.

## THE ILLUSTRATIONS.

COTTAGE NEAR SHORT HILLS, N. J. MR. W. A. BATES, ARCHITECT, NEW YORK, N. Y.

SKETCH FOR A HOUSE FOR H. BURNETT, ESQ., ST. LOUIS, MO. MESSRS. BURNHAM & ROOT, ARCHITECTS, CHICAGO, ILL.

HOUSE FOR H. POWELL, ESQ., MT. AUBURN, CINCINNATI, O. MR. SAMUEL HANNAFORD, ARCHITECT, CINCINNATI, O.

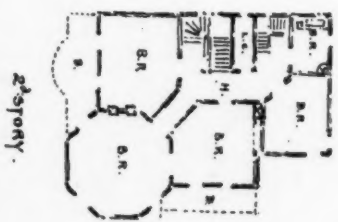
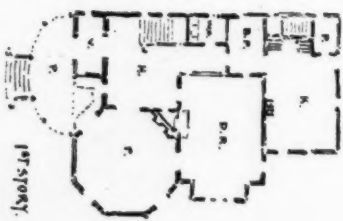
WAREHOUSE, PITTSBURGH, PA. MR. W. S. FRASER, ARCHITECT.

## AMERICAN ARCHITECT COMPETITION—NEW SERIES.

AS the vacation-season is about closing and the approaching cooler weather offers encouragement for undertaking extra work out of office-hours, we think it a proper time to announce the following short and simple programme:

A correspondent some time ago complained of the inappropriate





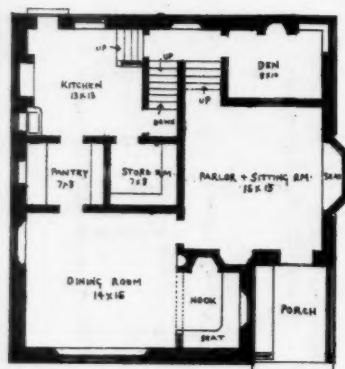
Sketch for residence for

H. BURNETT, Esq.  
ST. LOUIS, MO.

BURNHAM & ROOT  
ARCHITECTS, CHICAGO

The McGraw-Hill Co. Ill. Drawing No. 1000



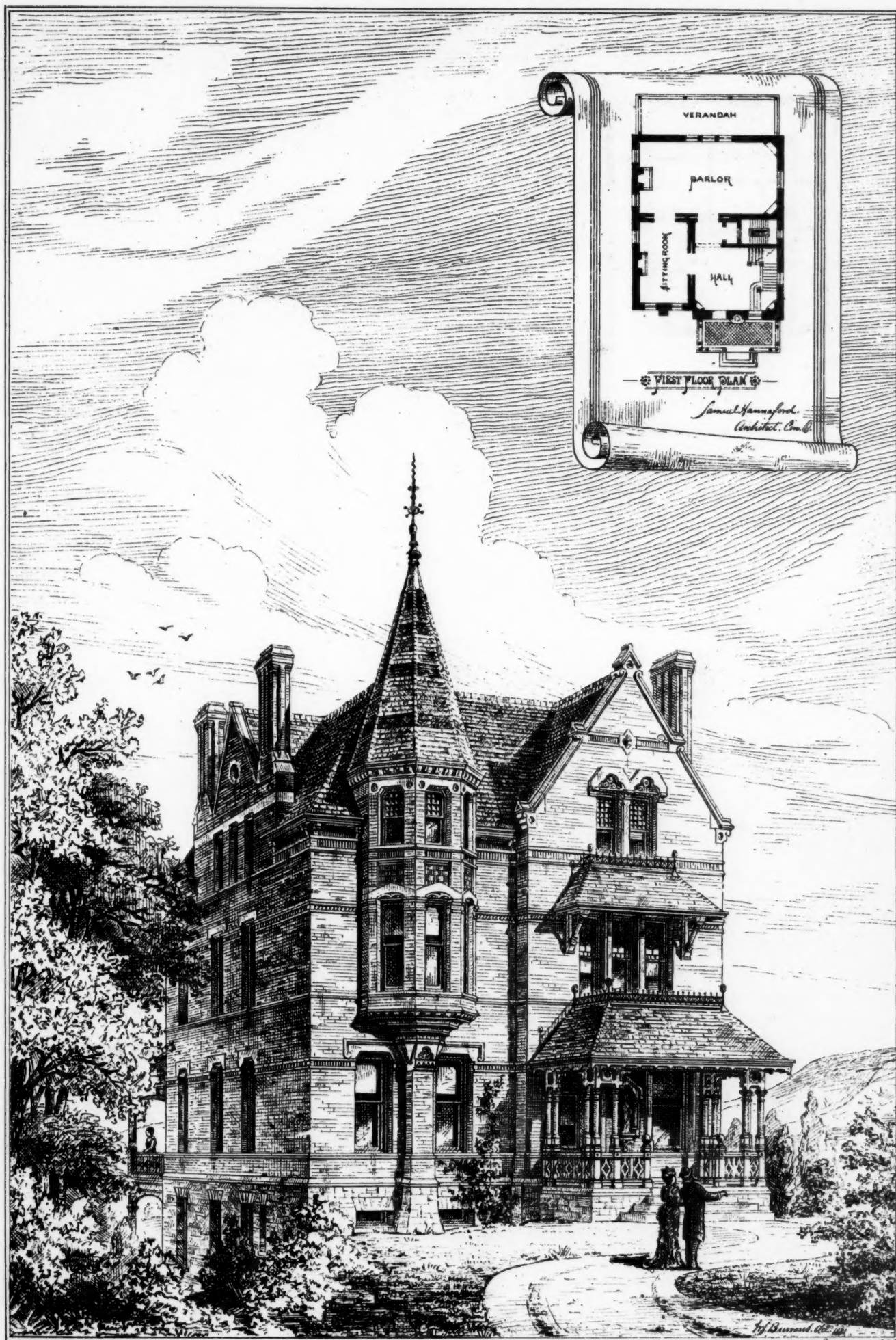


FIRST FLOOR PLAN



COTTAGE NEAR SHORT HILLS NEW JERSEY

W. A. BATES ARCHT. 149 B'WAY N. YORK



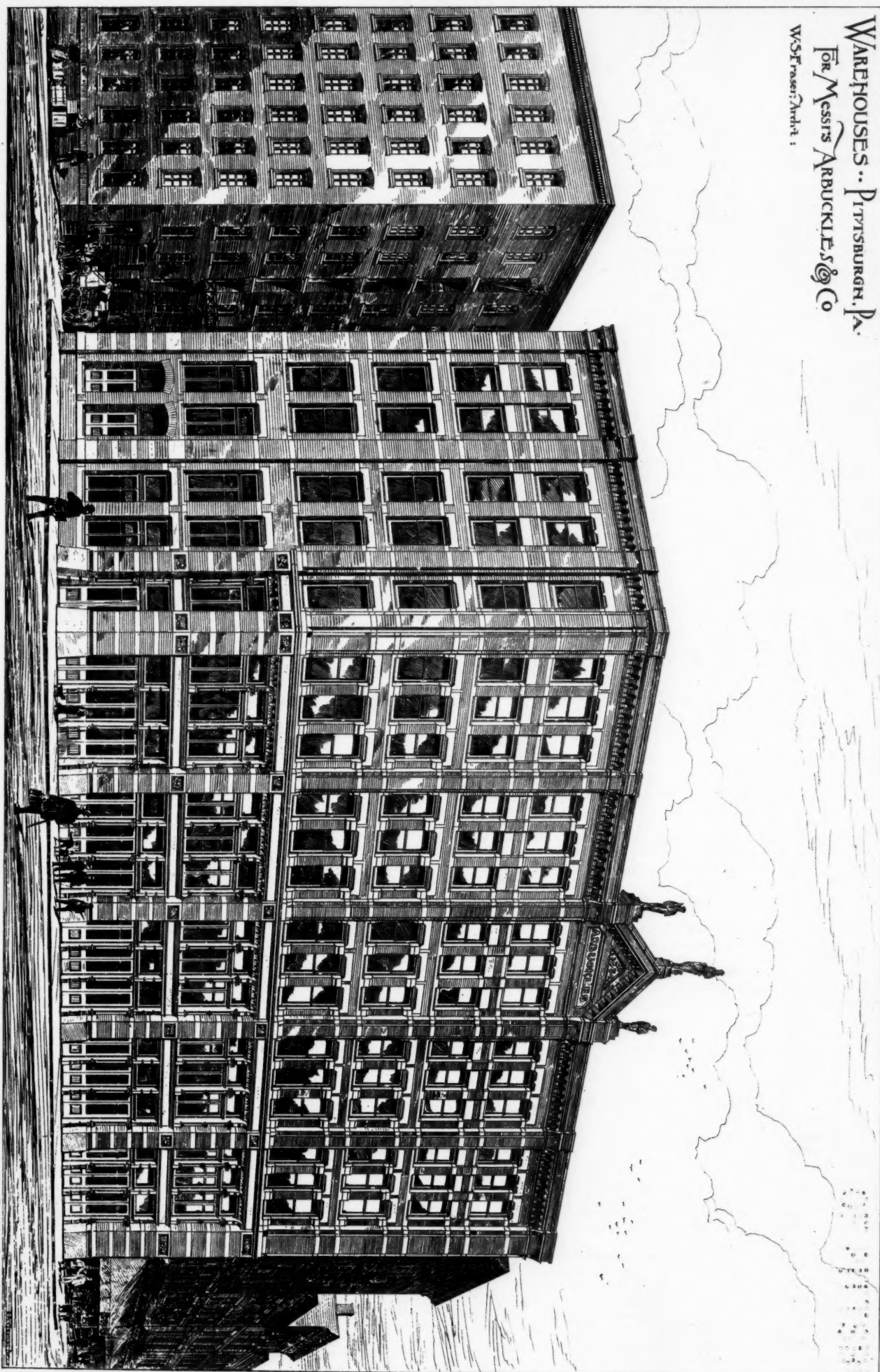
RESIDENCE FOR HENRY POWELL, ESQ.  
MT. AUBURN.

The Lithotype Printing Co. 111 Tremont St. Boston



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For Messrs ARBUCKLES & Co  
W. S. Fraser, Architect.



The Engraving, Printing & Lithography Co., 211 Broadway, N.Y.

Handwritten text, mostly illegible due to fading. The text appears to be organized into paragraphs or sections, with some lines being more prominent than others. The handwriting is cursive and somewhat slanted.

Vertical text on the left margin, possibly a list or index, containing several lines of small, illegible characters.



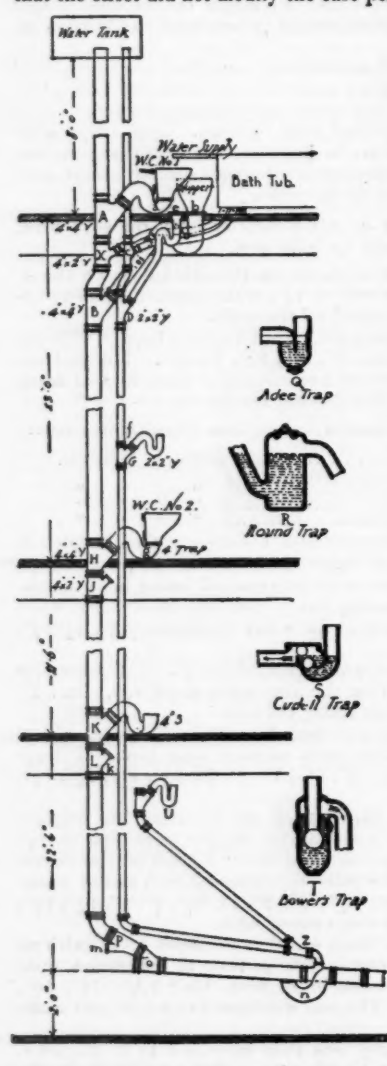
tion in which the water was poured into the hopper. The above records are all the results of pouring it in at the side of the hopper opposite the trap, so that the velocity of the water acquired in its fall from the pail through the hopper was not impaired by such an abrupt change of direction when striking the bottom of the trap as it would be if the pail were applied either directly over the trap, or half-way between this and the former position. Moreover there was no strainer at the base of the hopper to break the momentum, the hopper being of the form formerly much used for water-closets.

(8) In order to eliminate in some degree the effect of this momentum the same experiments were tried with another form of hopper, suitable for a water-closet, and having its trap above the floor, such as is marked "water-closet No. 1" on the plate. The distance through which the water had to fall from the edge of the hopper to the bottom of the trap was thus reduced by 10".

The trap had a seal of 2" and was first tried with no vent in it. It discharged directly into a patent Y-branch with expansion at top, devised for the purpose of preventing siphoning. Nine pailfuls were emptied with a lowering of the trap-water as follows, viz.: 1", 1", 1", 2", 2", 0", 2", 1", 2", losing the seal three times in the nine. Another trial under similar conditions showed a loss of the seal three times in five.

(9) A vent-pipe 1' long and 1 1/2" in diameter was then applied at the crown of the trap. Ten pailfuls were emptied in a direction to favor a loss of water by momentum, but no appreciable loss of water occurred.

In order to eliminate from the last two experiments the possible effect of the offset in the main pipe directly under the connection of this branch, the same experiment was tried on the floor below, at "water-closet No. 2" with essentially similar results, indicating that the offset did not modify the case perceptibly.



(10) The effect of excessive length of vent-pipes was experimented on with the result that under conditions which indicated perfect security with a pipe 1' long and 1 1/2" diameter on a 4" trap, a coil of pipe 50' long coupled to the vent rendered it inefficient once in eight trials, the trap having 2" seal, being siphoned in this case, and lost 1" of water three other times out of the eight.

In another case where a short vent of 1" in diameter seemed to be quite efficient, a coil of 1" pipe with a length of 28' 6" being coupled to it rendered the vent of apparently little use, for the trap lost its seal at every trial.

(11) In order to test the effect of a partial closing of the top of the soil-pipe, a piece of paste-board was laid over it having a hole of only 2" diameter. Such a stricture is often produced above the roofs of buildings in cold climates by the formation of ice through condensation of the vapor of water which rises with the air through the soil-pipes.

It was found that it

The plug connecting with the 2" waste was then drawn from the bath-tub on the floor above, and the water allowed to run a few seconds. The water in the trap was found to have fallen 4 1/2". The next trial destroyed the water-seal with a flow of ten seconds. A third trial produced the same result in four seconds.

Five pailfuls of water were then poured in succession into the hopper at *e* on the third floor with this result:—

The seal was twice entirely lost, and for three times the water was lowered 4 1/2", leaving only 1/2" seal.

(2) This deep trap was then removed and an S-trap of same calibre applied in its place, having only 1 1/2" seal, with glass strips in its side and a vent-hole 1" in diameter on its crown. Five pailfuls in succession were poured into the hopper above with no perceptible loss of water in this trap. Its water was agitated less than 1/2".

(3) The vent-hole was then half covered and the experiment repeated, with scarce a perceptible loss of water.

(4) The vent-hole being wide open the bath-plug was drawn for twenty seconds. The water in the trap oscillated about 1/2", but was not lowered perceptibly.

(5) This trap was removed and a Cudell trap substituted, such as is shown at *S* on the plate, with no air-vent in it. The bath plug above was raised for ten seconds, and the trap was found to have lost all its water. The plug was raised again twice for six seconds each time, and the trap twice again completely lost its water seal. Three pailfuls of water were emptied at the hopper in succession and the trap lost its water-seal each time.

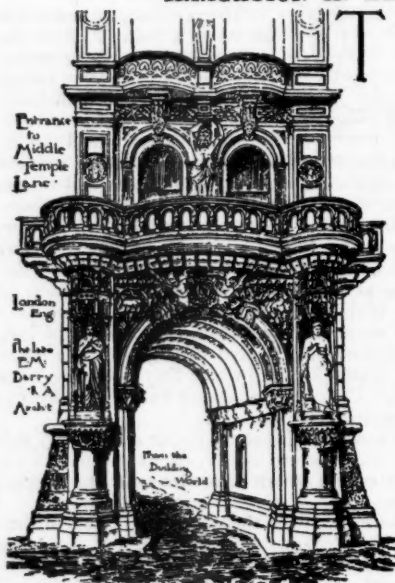
(6) This trap was removed and a Bower's trap substituted, with-out special air-vent, such as is shown at *T* on the plate. The plug was drawn from the bath above for fifteen seconds, and the trap was found to have lost 1 1/2" of water, leaving about 1/2" water-seal. A second and third trial of the same flow without refilling trap left less than 1/2" seal.

Air was now readily sucked up through the trap by the mouth, in spite of its ball, which was new and clean. On filling the trap again and pouring a pailful into the hopper above 1/2" seal was left. Two pailfuls more without first refilling trap left about 1/2" seal. The hopper was then filled by a pailful of water and discharged by lifting a plunger, and 1/2" seal was left.

(7) This trap was replaced by an Adece trap, such as is shown at *Q* on the plate, having 1 1/2" seal. The flow from the bath above destroyed the seal in ten seconds for three trials in succession. Three successive pailfuls of water emptied at the hopper above left from 1/2" to 1" seal after each.

Conclusion next week.

## IRRIGATION IN EGYPT.



THE American Consul-General at Cairo states that the tillable land of Egypt consists of the delta of the Nile and a narrow valley extending from Cairo, southward. This valley is generally from one to ten miles wide, though for about one hundred and fifty miles above Cairo it has a width of from ten to thirty miles. Both the delta and the valley, except so far as the former borders on the Mediterranean, are bounded on all sides by mountainous deserts, and for more than two thousand miles from its mouth the river has not the smallest tributary. It rolls on towards the sea, unlike other rivers, constantly decreasing in volume. As there are no rains of any practical importance, it sustains all vegetation, and all the inhabitants of Egypt and its herds drink of its waters. For two or three months in the year a considerable portion of the country may be irrigated by the natural rise of the river, but with the exception of certain sections the water is not permitted to flow freely over the land. It is taken from the river and conducted by canals along-side the fields where it is to be used, and spread over the different parcels of land, if it is sufficiently high, and if not it is raised by some of the various modes employed for that purpose. Small embankments prevent the water from running onto other lands that may not at the time be in a condition to receive it; in fact, the process of overflowing the lands, ploughing, sowing, and harvesting are often being carried on simultaneously in adjoining fields. When the land is sufficiently irrigated the water is shut off, or the pumping discontinued. The process of irrigation is required to be repeated several times before the maturity of the crop, the quantity of the water depending very much upon the kind of product. Rice requires a large amount of water, and wheat, rye and oats much less. There are in Egypt 8,406 miles

was much more difficult to retain water in the traps in all cases under this condition except where special vents were applied to the traps themselves. In such cases the stricture above described at the top of the soil-pipe seemed to produce no appreciable effect.

We will next consider the loss of water in traps by the flow past them from above through the main into which they may discharge.

### C—EXPERIMENTS WITH A TWO-INCH WASTE-PIPE OPEN AT TOP.

(1) A trap of 1 1/2" calibre of S-form having 4 1/2" depth of seal, and having strips of glass inserted in its sides where the lead was removed, was applied at the branch marked *G* on the plate.

of irrigating canals, of which 1,897 are navigable. There are also great dikes along the river and its various delta branches, to prevent their overflow, and innumerable small ditches and embankments everywhere throughout the country. In consequence of the muddiness of the waters of the Nile the canals require frequent cleansing, and the high waters injure the dikes and render it necessary to repair them each year. The greatest amount of labor is, however, that required in raising the water from the river and canals to the level of the lands. Dipping, drawing and pumping are processes going on nearly the whole year, and nearly half of the whole irrigation is done by these means. Its water is raised from one or two feet to twenty, and sometimes more, according to the location of the land and the height of the river. The following is a description of the manner in which water is raised by means of the "shadoof." The "shadoof" is simply a leather basket-shaped bucket attached to a pole, suspended in the same manner as an ordinary well-sweep. The sweep is very short, and the bucket of water is balanced by a mud weight. The instrument is of the rudest character, but by this means water is raised to the height of eight or nine feet with considerable rapidity. If the water is to be raised twenty feet one man close to the river raises it from four or five feet into a basin made of clay in the side of the bank, and from this point two men, each with a bucket, raise it about eight feet to a similar basin, and two other in the same manner to the required height, whence it is conducted by small earth sluices to the required place, often a considerable distance from the river. It requires the constant working of these five "shadoofs" for forty-eight hours to water one "feddan" (equivalent to one acre). This, by changing once in four or six hours, would require ten men, each of whom would apply twenty-four hours' labor to the watering of one acre. This process requires repeating at least three times for each crop. Thus the labor required for the irrigation of one acre would be seven hundred and twenty hours, or seventy-two days of ten hours each. The labor is of the most severe kind, and the fellah, with nothing except a cloth round his loins, is compelled to apply himself to his task with all the energy at his command. In the delta and some parts of Upper Egypt, the water being taken from the river at some distance above the point where it is used, is kept for a considerable portion of the year on very nearly the same level as the land. If, however, it has to be raised at all, it requires at least fifteen days to the acre. When the water is raised only a few feet, the more ordinary method is that of the "sakia," a rude machine propelled by oxen, cows, and horses, and sometimes camels and donkeys, and which raises the water by means of earthen jars attached to an endless rope-chain passing over a vertical wheel. There are a few steam-pumps, but fuel is too expensive and labor too cheap to permit of their general use. The number employed is about four hundred, and these are mostly in Lower Egypt. They are used principally on large estates, but in some cases by those who irrigate the lands of the small farmers, at a fixed price per acre. This is generally where cotton is produced, which requires watering once in eight or ten days throughout the season. The water has ordinarily to be raised but a few feet, and the quantity required each time, when the watering is so frequent, is much less. The usual price paid per acre is about 30s, and it is only the low price of farm labor that renders it practicable to cultivate lands requiring so much irrigation. — *Journal of the Society of Arts.*

## MONTHLY CHRONICLE.

- August 3. The Central R. R. freight-house at Albany, N. Y., 200' x 400', gives way and becomes a total wreck. No one injured.  
 August 7. A severe earthquake visits the Island of Chios.  
 August 10. Dam at Calais, Me., carried away, causing much damage to property below it.  
 August 11. Burning of St. Sauveur, a suburb of Quebec, Canada. A large land-slide caused by a water-spout near Lenior, N. C., carries away many houses.  
 August 12. Burning of Randolph County Court-House at Huntsville, Mo., causing the loss of a great part of the city and county records. Two men killed by touching electric-light wires while climbing the fence of the Tuileries gardens at Paris.  
 August 13. Burning of the lunatic asylum at Lancaster, Pa. No lives lost.  
 August 14. Unveiling of the statue of Arnold of Brescia, at Brescia.  
 August 15. A heavy wind-storm visits Bangor, Me., doing much damage to buildings.  
 Also heavy storms at Madison, Wis., Sterling, Kans., and Sherbrooke, Can.  
 August 20. A serious break in the New York end of the Hudson River Tunnel declares itself.  
 August 22. Fall of the roof of John Dawson's dye-house, 508 Tenth Ave., New York.  
 A water-spout bursts over Brünn, the capital of Moravia, doing incalculable damage.  
 August 23. A water-spout breaks over Dayton, O., and does serious damage to roads and railroads.  
 August 24. Explosion in, and burning of, the Erie Elevator at Buffalo, N. Y. Five lives lost.  
 August 28. A hail-storm near Pesth destroys vineyards and maize-fields and partly demolishes fifty houses. Many workmen killed.  
 August 30. Fall of iron bridge on the Canada Pacific R. R. over the North River, carrying a freight train with it. No lives lost.  
 August 31. Death, at Berlin, of Johann Halbig, a noted sculptor, at the age of 68.

Burning of the Brunswick Hotel and Pleasant House at Old Orchard Beach, Me. The guests escape uninjured.

## A CASE OF PLAN-STEALING.

August 29, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Gentlemen,—I have a case as follows: A committee from a School Board from an adjoining city came to my office, selected a design from my files for a school-house, directed me to arrange it to suit a lot that would be filled five feet, and requested me to appoint a time to meet with them. I did so: at that meeting no action was taken except to ask me to leave my designs with them. At a subsequent meeting three members out of six had employed a carpenter to make copies of my work, have advertised for bids and let the contract on the copied work.

I notice you publish law decisions of interest to architects very frequently and wish to ask: Are there any decisions bearing on the question—Is an architect entitled to pay for his work when plans are so appropriated?—if so, will you please send me a copy or reference to them so that I can obtain them? I have the complete files of the *American Architect*,—Has any such decision ever been published in them? This piracy has been practised on me so frequently, and this being an important building, the case an aggravated one on account of the vote standing three to three for several meetings, and finally carried by the three-to-two vote on the absence of one member, and much personality among the members, that I wish to test the case whether I am entitled to compensation for my work under the circumstances, and consequently ask the information above.

I shall be glad to give you full particulars of all the circumstances more fully stated than above and the decision of the question by the courts if you desire for the benefit of others when a decision is reached. Will you please give me such information as you can of any decision bearing on the question?

Respectfully yours,

[OUR correspondent's letter reads as if his observation of facts might perhaps have been somewhat hasty. Is he sure that his plans were copied by the direction of the committee to whom they were intrusted? May not the carpenter's plans be only similar to his, but not identical? The whole point of the case lies in this. If he can prove that the committee, or any members of it, procured the surreptitious copying of his plans, and thus appropriated to themselves, or those for whom they acted, the benefit of them without payment to the owner, he is at liberty to proceed against them exactly as in the case of any other thieves, by criminal as well as civil action if he likes. If, however, as is more probable, the plans made for them are so far different from his as not to be a palpable copy, he would run a serious risk of being unable to convince a jury that they were his property, and would do better to pocket his loss and keep clear of such company in the future. In regard to adjudicated cases of a similar kind we cannot at the moment give him any reference. In civilized communities committees-men of the sort which our correspondent supposes these to be are seldom found outside of jails, and have on that account little opportunity to enter into controversies with architects. This should not, however, prevent him from pursuing his own course as he thinks best. The only precaution which we would suggest to him is the important one of ascertaining whether he must proceed against those who have injured him as individuals, or against the town or community for which they acted as the authorized representatives. This question would have to be answered by a good lawyer, and to such only should he confide his cause. — EDS. AMERICAN ARCHITECT.]

## THE ANNUAL CONVENTION, A. I. A.

CINCINNATI, September 2, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—As resident member of the Committee of Arrangements of the Sixteenth Annual Convention of the American Institute of Architects, I would like to ask through the columns of your paper that all Fellows and Associates who intend favoring the convention with papers will as early as possible notify Mr. Bloor or myself of their intention so to do. This matter is important in order that the final programme may appear in due season and in proper shape.

Yours truly,

CHAS. CRAPSEY.

## STRAW LUMBER.

NEW YORK, September 1, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In a recent number of your publication you make mention of straw lumber. I am looking for a substitute for ordinary lumber for a particular purpose. In your article it is stated that the straw lumber is practically water-proof. Can you, and if so, will you inform me of the component parts of the cement used in the manufacture of the lumber? It is important for me to learn this, for if the cement will not stand the action of certain chemicals, the straw lumber would not serve my purpose.

Any information you can give me on the subject will be duly appreciated.

Respectfully yours,

B. A. MASON.

TROY, N. Y., August 15, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs—Will you please inform me of the address of the parties manufacturing straw lumber, noticed in No. 345, and greatly oblige

Yours respectfully,

EDWARD W. LOTH.

[If any of our readers know anything of the whereabouts of a straw-lumber factory they will do us a kindness by putting us in a position to answer these and similar inquiries. — EDS. AMERICAN ARCHITECT.]

## BUILDING NEWS.

PITTSBURGH, August 30, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Gentlemen,—Why is our city never noticed under the heading of "Building Intelligence?" C.

[SIMPLY because "C" does not take interest enough in the matter to send us the necessary information. We cannot invent building news.—EDS. AMERICAN ARCHITECT.]

## NOTES AND CLIPPINGS.

**THE NILOMETER.**—The Nilometer used for the purpose of measuring the height of the Nile is situated on the island of Roda, opposite Old Cairo. It consists of a square well or chamber, in the centre of which is a graduated pillar divided into 17 cubits, each about  $21\frac{1}{2}$  inches long. Owing to the elevation of the bed of the Nile the relative proportion of the rise of water has been altered, and it now passes about  $1\frac{1}{2}$  cubits above the highest part of the column. The state of the stream is proclaimed in the streets of Cairo during the inundation every day by several criers, to each of whom a particular district is allotted. From 24 feet to 26 feet may be taken as the ordinary maximum of the rise at Cairo. — *Iron Age*.

**EBONIZING.**—How to make woods, such as cherry, mahogany, etc., look like ebony, is often desirable, and a correspondent of the *Hub* gives the following directions: To imitate black ebony, first wet the wood with a solution of logwood and copperas, boiled together and laid on hot. For this purpose two ounces of logwood chips, with one and one-half ounces of copperas, to a quart of water, will be required. When the work has become dry wet the surface again with a mixture of vinegar and steel filings. This mixture may be made by dissolving two ounces of steel filings in one half pint of vinegar. When the work has become dry again sand-paper down until quite smooth. Then oil and fill in with powdered drop-black mixed in the filler. Work to be ebonized should be smooth and free from holes, etc. The work may receive a light coat of quick-drying varnish, and then be rubbed with finely pulverized pumice-stone and linseed oil until very smooth.

**NOVEL WAY OF CLEARING A RIVER.**—The work of dragging or harrowing St. Helen's Bar, at the mouth of the Columbia River, having been abandoned as practically useless, and the government appropriation not being available for some weeks, so that the government dredge could not be utilized, a new means of deepening the channel was devised and put in operation, concerning the result of which a very favorable report has been received. The theory was that if the sand of which the bar is formed could be kept in suspension by the motion of a steamship's propeller, the current of the river would carry it out to sea. The scheme was considerably ridiculed by most of the river and ocean captains and pilots, but as the sand of the bar is very clean and light, and the current of the river runs two miles per hour at ebb and three at flood tide, Mr. Prescott, Manager of the Oregon Railway and Navigation Company, felt sufficient interest in the experiment to offer the use of the company's steam collier *Walla Walla* in making it. Under supervision of Messrs. Gates and Holland, the mechanical engineers of the Oregon Railway and Navigation Company, the steamer was moored on the bar, bow up stream, the stern at the lower edge of the bar, and loaded so that the keel touched the bottom. In eighteen hours' actual work a channel 1,000 feet long and 100 feet wide was deepened from a maximum of 18 feet to from 22 to 24 feet. The steamer is now completing and straightening the channel on the whole length of the bar, and after finishing at St. Helen's she will be sent to Walker's Island for similar work. Mr. Prescott speaks enthusiastically of the success of the experiment, which he regards as having solved the problem of keeping the river clear of obstructions and at a nominal cost. — *New York Times*.

**A GREAT LIMESTONE SLIP.**—One of the greatest land-slips on record recently occurred at Crich, in Derbyshire, England, by which some hundreds of thousands of tons of limestone were displaced, without, however, doing any personal injury. The occurrence, it is said, is hailed with delight by the Clay Cross Coal and Iron Co., which for years has been engaged in blasting the stone for use of iron furnaces. The work of the quarrymen and the use of explosives have thus been suddenly rendered unnecessary, and all that is now to be done is to break up the stone and send it away. The hill itself, which has been removed, is one of the most remarkable features of geological formation. It consists of strata of limestone, which by volcanic eruption have been forced up into a dome through overlying strata of an earlier period, and which were originally deposited in a horizontal position. At one point a shaft was sunk in search of lead ore. It was noticed some time since that the quarrying had caused a considerable crack in the cliff extending to a distance of between 100 and 200 yards from the north to the south-west, and the rains in all probability caused the fissure to open so that in some places it was a yard or two wide. The day before the occurrence took place there were strong indications of what was about to happen, and it is owing only to this fortunate circumstance that the few residents were able to escape in time. There was a villa in proximity to the cliff, and while some men were engaged in the house a trembling motion was noticed which caused a speedy retreat. The house then began to slide towards the road, and the effect of the rush was to raise the road up and finally sweep it away. Mr. George Stephenson, the eminent engineer, was the first to attack the cliff many years ago for the limestone, and since then it has been continuously worked for the iron furnaces. Now, however, not only will the company have supplies without being quarried, but they will be able to supply others. The slip, which might have been a most disastrous occurrence, has thus produced the opposite effect, and more desirable work has been done in the course of a few moments than could have been effected in years of quarrying. — *Iron Age*.

**THE BAYREUTH THEATRE.**—I cannot close my Bayreuth correspondence without a parting reference to the theatre in which these performances are taking place. Of the successful *ensemble* I have already spoken, and it would not be worth while at this distance to compare the merits of the singers who alternate in their rôles. But to the theatre itself attention cannot be often enough called, for it is the only existing theatre in which a complete illusion is attained; and if at the present day an architect undertakes to build an opera-house on any old-fashioned system he can only be accused of either great wilfulness or gross ignorance. I earnestly hope that if a new opera-house is to be built in New York the Bayreuth model may be taken into consideration. The very entrance puts the spectator in an artistic mood. The whole theatre is one parquet, in the shape of an amphitheatre, each row rising above its predecessor, so that up to the royal boxes in the background one seat is about as good as another. There are no boxes at the sides, their places being taken by simple but handsome columns, between which are the twelve exits by means of which the whole house can be emptied in two minutes. Especially advantageous is the absence of a proscenium box connecting the stage with the auditorium. Its place is taken by an open space between the last columns and the stage, leading down into the mystic abyss in which the invisible orchestra is at work. The effect of this open space is that it makes the stage seem farther removed, while the figures on it are as large as before, and by familiar optical illusion everything, in consequence, seems larger and more distinct, the difference between our ordinary stages and that of the Wagner theatre being similar to that between a photograph and a stereoscopic view. This optical illusion is rendered the more complete by the invisibleness of the musicians and the conductor to the audience, although the conductor is visible, of course, to the vocalists. The sounds rising from the mystic abyss are not localized by the hearer. They seem to come from the stage itself,—to hover about the singers as its fragrance does about a rose, and the music thus gains that exquisite charm which alone belongs to invisible music, as all those know who have ever been waked up in the morning by a serenade. The sounds, too, are somewhat subdued, so that the singers are never "drowned," as so often happens in ordinary theatres. The only disadvantage of the present arrangement is that the brass, being actually placed under the stage, is a little too much subdued, wherefore the stirring fortissimo passages lose some of their accustomed splendor and glory; but this shortcoming can probably be remedied by a somewhat different acoustic arrangement, while retaining all the present advantages. — *Correspondence of the N. Y. Evening Post*.

**FIRE-PROOF CEMENT.**—A fire-proof cement is being introduced, made from a material found in the Eifel Mountains. It is alleged by eminent professional men to be the only material known to science which possesses besides its plastic qualities the virtue of being fire-proof. Moistened with water, this cement forms an elastic mass, which can be exposed when dry to great heat without shrinking or showing any cracks. Such a cement should be peculiarly adapted for repairing defective fireplaces, cracks in retorts, etc., as mortar for fire-proof buildings, and for the interior plastering of furnaces. The mode of its preparation is as follows: The cement is to be well mixed in a dry state, a small quantity of water is added and mixed well together. As a mortar it can be used in the ordinary way. In lining furnaces, however, care must be taken to press the cement well into the walls, so as to leave a smooth, even surface, as when dried by the air the cement easily crumbles and will not harden till ignited. Moreover it must not be treated roughly until it has been well burnt. Cracks in furnaces, retorts, etc., should be well cleansed and scraped, and if possible roughed before applying the cement. The parts to be mended should be damped beforehand. An analysis by Dr. Bischof, of Wiesbaden, gives the following results: The cement is a pale gray, gritty substance, consisting of a good deal of fine dust, with angular and round particles of quartz. When mixed with water it is very sticky, compact, and easily moulded. In 100 parts of the material dried at 120 degrees C. there were:

|                                        |       |
|----------------------------------------|-------|
| Clay earth.....                        | 10.18 |
| Silica, chemically combined.....       | 11.03 |
| Silica, mechanically mixed (sand)..... | 73.58 |
| Iron oxide.....                        | 0.41  |
| Lime.....                              | 0.23  |
| Magnesia.....                          | 0.17  |
| Potassium.....                         | 0.99  |
| Loss by heat.....                      | 3.46  |

100.05

As will be seen, the quantity of fusible matter such as iron, etc., is very small indeed, if any. Under the fire treatment the cement showed the following results: After being heated to silver-smelting heat, or about 1,000 degrees C., the cement turned to a gray color, speckled with a few black spots, the fracture being earthy and porous. — *Scientific American*.

**ENAMELLING WATER-PIPES.**—Two inventors in Bohemia have patented a direct process for enamelling cast-iron pipes, which can be applied to other hollow castings that are made with cores. It consists in simply covering the sand core with the enamel and then pouring in the iron as usual. The heat of the melted iron fuses the enamel, and it attaches itself firmly to the iron, and detaches itself so completely from the sand that the enamel is said to be all that can be desired for water-pipes and other industrial purposes. In casting sinks, basins, urinals, etc., the enamel can be applied to the sand on that side of the mould which is to form the inside of the basin. The composition of the new enamel is kept a secret, but is said to differ from the old form in the simplicity of its preparation and the extraordinary cheapness of the materials used. It is so cheap that it has found extensive use in many branches of industry. In color this new enamel is gray. It will be useful for gas-pipes as well as water-pipes, because it will make the pipes absolutely tight by this glassy lining. It will be no less useful for soil-pipes, which are always liable to corrosion from the gas they contain, and for conveying acid liquors, like mine-water, and in chemical works, for sinks and waste-pipes in chemical laboratories, it should displace lead, glass or terra-cotta. — *Wood and Iron*.

# 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.]

263,305. WEATHER-STRIP. — Wm. H. Blair, Janesville, Wis.  
263,317. ROOF-PAINT. — Robert E. Bruce, Lancaster, Pa.  
263,323. WATER-FOUNTAIN FOR STOCK. — Evin E. Davis, Tama City, Io.  
263,334. LATHE-REST. — Alexander Gordon, Cincinnati, and Jas. W. See, Hamilton, O.  
263,354. CONSTRUCTION AND DECORATION OF BUILDINGS. — Henry C. Rew, Chicago, Ill.  
263,371. WINDOW-SCREEN. — Horatio O. Whyman, Norfolk, Neb.  
263,380. ELECTRIC SAFETY APPARATUS FOR ELEVATORS. — Cyrus W. Baldwin, Chicago, Ill.  
263,381. ROOFING-TONGS. — Thomas Babb Beeson, Wilmington, Del.  
263,412. METHOD OF ILLUMINATING BASEMENTS. — Peter H. Jackson, San Francisco, Cal.  
263,426. SCAFFOLD-TIE. — John T. O'Brien, Philadelphia, Pa.  
263,443. HOT-AIR REGISTER BORDER. — Romanzo Trefethen and Jacob M. Willey, Dover, N. H.  
263,446. FLUSH-POT FOR KITCHEN SINKS, ETC. — George E. Waring, Jr., Newport, R. I.  
263,448. SEWER-INDUCT AND ITS COVER. — John P. Withey, Lynn, Mass.  
263,450. FLUSH-CISTERN. — William Wright, Plymouth, County of Devon, England.  
263,455. BIT-STOCK. — Charles H. Amidon, Buffalo, N. Y.  
263,461. SOIL AND WASTE PIPE. — James Barrett, Boston, Mass.  
263,471. WRENCH. — William A. Bradford, Goshen, Ind.  
263,494. SOIL OR DRAIN PIPE. — Patrick W. Doherty, Boston, Mass.  
263,536. SASH-FASTENER. — Edward Kuhns, Indianapolis, Ind.  
263,560. FIRE-ESCAPE LADDER. — Thomas Miller, Jersey City, N. J.  
263,570. ELEVATOR FOR BUILDING MATERIAL. — John Otter, Chicago, Ill.  
263,578. CARPENTER'S RULE. — Francis J. Power, Boston, Mass.  
263,579. LAYING ARTIFICIAL STONE OR CONCRETE PAVEMENTS. — Ernest L. Ransome, San Francisco, Cal.  
263,583. METALLIC ROOFING-SHINGLE. — Henry S. Reynolds, Brooklyn, N. Y.  
263,592. BATH-TUB. — William W. Rosenfield, New York, N. Y.  
263,602. CALIPERS AND DIVIDERS. — Bernard K. Shumway, Chicopee Falls, Mass.  
263,603. ELEVATOR. — William H. Skeritt, Jersey City, N. J.  
263,619. EAVES-TROUGH HANGER. — William F. Stoetzel, Omaha, Neb.  
263,668. PROCESS OF AND APPARATUS FOR PREPARING ROOFING-FELT AND SHEATHING-PAPER. — William H. Stelwagon, Philadelphia, Pa.  
10,191-192 (Reissue). ELEVATOR. — Geo. C. Tewksbury, Newark, N. J.

## SUMMARY OF THE WEEK.

### Baltimore.

ADDITIONS TO DWELLINGS. — Messrs. J. A. and W. T. Wilson, architects, have made drawings for additions to the third st'y and a fourth st'y for the dwell. No. 279 North Charles St.; cost, \$1,500; Mr. Wm. B. Wilson, owner.  
BUILDING PERMITS. — Since our last report twenty-eight permits have been granted, of which the following are the more important:  
S. Frankenstein & Son, two-st'y brick building, McHenry St., between Munroe and Payson Sts.  
Jos. Turner, 6 three-st'y brick buildings, Madison Ave., between Laurens and Oliver Sts.  
Mrs. C. Hiltz, 2 two-st'y brick buildings, Dallas St., between Thames and Lancaster Sts.  
J. C. Schaffer, three or four st'y brick warehouse, n w cor. Lexington St. and Diamond Alley.  
Fort Ave., Permanent Building Association, 5 three-st'y brick buildings, n w cor. Hanover St. and Fort Ave.  
L. H. Robinson, 12 two-st'y brick buildings, Prestman St., between Mount St. and Bruce Alley.  
Jno. H. Farber, four-st'y brick building, North St., between Pleasant and Bath Sts.  
W. T. Jordan & Co., two-st'y brick building, 32' x 48', Block St., w of the "Drawbridge."  
J. C. Penhagen, two-st'y brick packing-house, Aliceanna St., between Washington and Chester Sts.  
L. M. Carrick, 3 three-st'y brick buildings, Mount St., between Edmondson Ave. and Franklin St.  
Chas. Gantz, three-st'y brick building, Chase St., between Greenmount Ave. and McKim St.  
A. L. Black, 5 three-st'y brick buildings, Chase St., w of Constitution St.  
S. T. Richardson, 8 three-st'y brick buildings, Mount St., commencing at s e cor. of Prestman St.  
S. T. Richardson, 6 three-st'y brick buildings, Prestman St., between Mount St. and Vincent Alley.  
Henry Westphal, 12 two-st'y brick buildings, Barney St., commencing at s w cor. Byrd St.

S. O. McComas, 6 two-st'y brick buildings, Cole St., commencing at s e cor. Gilmer St.  
Fred Kroeber, three-st'y brick building, n w cor. Washington and Bank Sts.  
Seth A. Marchand, 4 two-st'y brick buildings, Chester St., between Fayette St. and Fairmount Ave.  
Seth A. Marchand, 4 two-st'y brick buildings, Castle St., between Fayette St. and Fairmount Ave.

### Boston.

BUILDING PERMITS. — Newbury St., No. 280, Ward 11, for Silas W. Merrill, three-st'y dwell., 23' 4" x 62'; S. W. Merrill, builder.  
Kneeland St., Nos. 169 and 173, cor. South St., Nos. 223 and 225, Ward 12, for Patrick Holly, four-st'y dwell., 17' 4" x 37' 6"; Asa Lowe & Co., builders.  
Silver St., Nos. 254 and 256, Ward 13, for Dudley Pray, one-st'y store and dwell., 21' 6" x 34'; S. H. L. Pierce, builder.  
Northampton St., cor. Baldwin St., Ward 18, for Sarah McDonald, two-st'y glass-manufactory, 47' x 51'; Leander Greely, builder.  
Parker St., near Boylston St., Ward 22, for Samuel G. Snelling, two-st'y mechanical, 20' x 40'; J. D. Payne, builder.  
Wood. — Elmore St., near Mayfair St., Ward 21, for L. L. and G. H. Whitney, two-st'y dwell., 28' x 42'; ell, 18' x 25'; L. L. and G. H. Whitney, builders.  
Elmore St., near Mayfair St., Ward 21, for L. L. & G. H. Whitney, two-st'y dwell., 28' x 42'; ell, 18' x 25'; L. L. & G. H. Whitney, builders.  
East Seventh St., near M St., Ward 14, for Edmund C. Coleman, one-st'y dwell., 19' x 30'; ell, 12' x 15'; Wm. T. Eaton, builder.  
M St., cor. East Seventh St., Ward 14, for Edmund C. Coleman, one-st'y dwell., 21' 3" x 33'; Wm. T. Eaton, builder.  
M St., near East Seventh St., Ward 14, for Edmund C. Coleman, one-st'y dwell., 21' 3" x 33'; Wm. T. Eaton, builder.  
Brighton Ave., near Allston St., Ward 25, for Chas. A. Sabine, one-st'y stable, 22' x 29'; Chas. A. Sabine, builder.  
Garfield Ave., off Carey St., Ward 23, for Chas. B. Botsford, one-st'y stable, 28' x 28'.  
Allston Sq., near Allston St., Ward 25, for M. T. Sprague, one-st'y stable, 28' x 28'; M. T. Sprague, builder.  
Hulbert St., near Regent St., Ward 21, for John Guirney, two-st'y dwell., 25' 2" x 38' 2".  
Quincy St., near Columbia St., Ward 24, for City of Boston, one-st'y primary school, 33' 2" x 65' 8"; John B. Wilson, builder.  
Pynchon St., opposite Cedar St., Ward 21, for J. P. Thorndike, one-st'y iron foundry, 60' x 140'; Clark & Lee, builders.

### Brooklyn.

BUILDING PERMITS. — Vanderbilt Ave., e s, 20' s Bergen St., 4 three-st'y brownstone flats; cost, each, \$5,500; owner, architect and builder, John V. Porter, 184 Park Pl.  
Myrtle Ave., s s, 20' e Throop Ave., 6 three-st'y brick flats; cost, each, \$6,000; owner, D. R. James, Myrtle Ave.; architect and carpenter, R. C. Addy; mason, not selected.  
Oakland St., e s, 130' n Calyer St., three-st'y frame tenement; cost, \$2,500; owner, Bart. Conley, 269 West Twenty-second St., New York; architect, F. Weber; builder, not selected.  
Beaver St., e s, opposite Park St., 4 two-st'y frame dwellings; cost, each, \$2,300; owner and builder, Geo. Loeffler, 82 Tompkins Ave.; architect, Th. Engelhardt.  
Marcy Ave., s e cor. Walabout St., 3 three-st'y frame tenements; cost, each, \$4,000; owners, Moller & Schumann, Marcy Ave., cor. Flushing Ave.; architect, P. Platte; builders, H. Grasman and John Rueger.  
Pierrepont St., s s, 175' e Henry St., four-st'y brownstone dwell.; cost, \$60,000; owner, A. D. Farmer, 63 and 65 Beekman St., New York; architect, Wm. Baker; masons, E. D. Connolly & Son; carpenter, not selected.  
Willoughby Ave., n s, 100' w Marcy Ave., 2 three-st'y brownstone dwellings; cost, \$8,000 each; owner and carpenter, Samuel Peden, Jr., 399 Marcy Ave.; mason, J. Softy.  
Flushing Ave., s s, 200' e Marcy Ave., one-st'y brick warehouse; cost, \$3,000; owners and builders, Chas. Phizer & Co., 11 Bartlett St.; architect, M. J. Morrill.  
Seventh Ave., n w cor. Eighteenth St., 4 three-st'y frame tenements; cost, each, \$2,400; owner and carpenter, Frederick Schroeder, 386 Seventeenth St.; architect, W. H. Wirth; mason, C. Lauenstein.  
Forest St., n s, 16' w Flushing Ave., 2 three-st'y frame tenements; cost, \$6,500; owner, Her. Gerdes, 1231 Flushing Ave.; architect, Geo. Hillenbrand; builders, J. Schloeb and J. Weidner.  
Greene Ave., No. 259, n s, 300' e Grand Ave., two-st'y brick shop; cost, \$5,000; owner, architect and builder, J. N. Smith, 371 Lafayette Ave.  
Norman Ave., No. 114, s s, 25' e Eckford St., three-st'y frame tenement; cost, \$4,500; owner, Boesche Rebers, on premises; architect, Th. Engelhardt; builder, Ch. Antonius.  
Clason Ave., No. 100, w s, 275' s Flushing Ave., three-st'y frame tenement; cost, \$4,500; owner, Margaret Downey, on premises; architect, Th. Engelhardt; builder, J. G. Hoepfer.  
St. Mark's Pl., No. 751, two-st'y brick coach-house; cost, \$6,000; owner, James Haslehurst, on premises; architects, Wm. Field & Son; builders, Jas. Ashfield & Son and T. A. Remsen.  
King St., No. 111, being 125' n w Richards St., three-st'y brick tenement; cost, \$4,200; owner, Chas. Smith, on premises; architect, G. Damen; builders, Peter Kelly & Sons.  
Thirteenth St., n s, 60' e Fourth Ave., 2 two-st'y brick dwellings; cost, each, \$3,000; owner and architect, T. Pitbladdo, 213 Seventeenth St.; builders, W. & T. Corrigan.  
Graham Ave., w s, 100' s Grand St., three-st'y frame tenement; cost, \$3,600; owner, Daniel Canty, 532 Grand St.; architect, G. Hillenbrand; builder, U. Maurer.  
Lafayette Ave., Nos. 1118-1122, s s, 110' e Broadway, 3 two-st'y frame dwellings; total cost, \$7,500;

owners, Isaac Debevoise and H. Stocks, 1437 Broadway; builder, H. Stocks.

Willoughby Ave., s s, about 190' e Throop Ave., three-st'y and basement brick dwell.; cost, \$14,000; owner, James Richmond; architect, Henry F. Kilburn; builders, John Clark and P. F. O'Brien.

Palmetto St., n s, 230' w Myrtle Ave., three-st'y frame store and tenement; cost, \$5,000; owner, Hen. Steinmann, cor. Fifth and North Ninth Sts.; architect, Geo. Hillenbrand; builders, G. Welsch and John Rueger.

Fulton St., s s, 285' e Rochester Ave., 3 three-st'y frame stores and dwell.; cost, \$2,500 each; owner, Alex. C. Hanner; architect, T. F. Thomas; builders, Lax & Co. and — Nichols.

ALTERATIONS. — Myrtle Ave., No. 341, raised 2'; also one-st'y brick extension; also store front strengthened; cost, \$2,700; owner, H. W. Rozell, 383 Myrtle Ave.; builders, W. Bulkeley and Long & Barnes.

Prospect Pl., late Warren St., n s, 58' 7" w Brooklyn Ave., two-st'y brick extension, interior alterations, etc.; cost, \$6,000; owner, Chas. S. Emery, St. Mark's Pl., n e cor. Brooklyn Ave.; architects, Wm. Field & Son; builders, Jas. Ashfield & Son and Powderly & Murphy.

Henry St., No. 327, e s, 100' s Atlantic Ave., three-st'y brick extension, front and interior altered; cost, \$2,500; owner, Mr. Ludrich, on premises; builders, M. Gibbons & Son.

De Kalb Ave., Nos. 617 and 619, add one-st'y flat; also three-st'y frame extension; cost, \$3,000; owner, P. M. Dale, 60 South Elliott Pl.; builder, W. J. Heligan.

### Chicago.

HOUSE. — W. Loomis is about to build a house on Dearborn Ave. It is to be of brownstone, with pressed brick finish; it will cost \$20,000; Cobb & Frost, architects.

CHURCH. — The English Lutheran Congregation is about to build a Gothic church, on the cor. of Elm St. and La Salle Ave., from plans by C. O. Hansen; it is to cost \$30,000.

STORE. — F. Wasco is building store and flat on cor. Division St. and Ashland Ave., from plans by J. J. Flanders; cost, \$5,000.

BUILDING PERMITS. — Wm. Kemper, two-st'y brick dwell., 24' x 40', Kemper St., near Orchard St.; cost, \$3,500.

J. Fojder, two-st'y and basement brick store and dwell., 24' x 108', 608 Throop St.; cost, \$9,600.

C. Swensen, two-st'y and basement brick store and dwell., 22' x 46', 290 Townsend St.; cost, \$4,000.

Thomas Seeger, three-st'y and basement brick store and dwell., 25' x 75', 244 Indiana St.; cost, \$7,000.

R. Kalock, two-st'y and basement brick dwell., 20' x 50', 21 McKeynolds St.; cost, \$4,100.

J. Hackle, two-st'y and basement brick store and dwell., 24' x 60', 711 Twenty-first St.; cost, \$4,000.

John H. Drury, three-st'y and basement brick store and dwell., 25' x 47', 269 West Madison St.; cost, \$7,000.

F. Walther, three-st'y brick dwell., 22' x 52', 358 North Halsted St.; cost, \$4,500.

Frank Charwach, two-st'y brick dwell., 21' x 46', 480 Twentieth St.; cost, \$2,700.

D. W. Walker, 5 three-st'y and basement brick dwellings, 67' x 56', 1800 to 1808 Indiana Ave.; cost, \$15,000.

D. W. Walker, four-st'y brick dwell., 56' x 60', 63 to 65 Eighteenth St.; cost, \$10,000.

R. D. Sheppard, five-st'y and basement brick store, 50' x 73', 199 and 201 Fifth Ave.; cost, \$30,000.

Potter Palmer, two-st'y brick store, 23' x 70', 12 Quincy St.; cost, \$2,500.

Potter Palmer, two-st'y brick store, 23' x 70', 19 Quincy St.; cost, \$2,500.

John Hamlen, two-st'y and basement brick dwell., 22' x 60', 657 Twenty-sixth St.; cost, \$4,500.

T. O'Shea, two-st'y brick dwell., 22' x 57', 74 Kosuth St.; cost, \$3,500.

Frank Rocco, three-st'y and basement brick dwell., 25' x 60', 95 Astor St.; cost, \$10,000.

Thomas Chocola, two-st'y and basement brick dwell. and store, 23' x 77', 538 Centre Ave.; cost, \$4,000.

A. Lane, two-st'y and basement brick dwell., 22' x 66', 133 North Market St.; cost, \$4,000.

John Meister, two-st'y brick dwell., 21' x 56', 313 Eighteenth St.; cost, \$3,000.

A. Connors, two-st'y and basement brick dwell., 22' x 50', 330 Centre Ave.; cost, \$4,000.

Jacob A. Rothschild, three-st'y and basement brick dwell., 36' x 70', 2633 Michigan Ave.; cost, \$18,000.

A. Seedenspinner, two-st'y brick dwell., 21' x 40', 580 Larrabee St.; cost, \$2,600.

Peter Schillo, two-st'y and basement brick dwell., 24' x 50', 100 Johnson St.; cost, \$6,000.

Freeman Campbell, 6 two-st'y brick dwellings, 36' x 120', De Kalb St., near Leavitt St.; cost, \$20,000.

M. Schraeder, two-st'y brick flat, 21' x 56', 408 Garfield Ave.; cost, \$4,000.

J. E. Fowler, two-st'y brick dwell., 21' x 50', 623 South Ashland Ave.; cost, \$2,600.

Wm. Emery, four-st'y and basement brick store, 50' x 95', 75 and 77 Ohio St.; cost, \$15,000.

Paul Muehlmann, three-st'y and basement brick store and flats, 24' x 60', 3502 State St.; cost, \$8,000.

F. Sefel, three-st'y and basement brick flats, 22' x 56', Franklin St., near Elm St.; cost, \$6,000.

North Chicago City Railway Co., two-st'y brick car-house, Larrabee St., near Centre St.; cost, \$10,000.

F. Kleinhaus, three-st'y and basement brick store and flats, 25' x 60', 853 Clark St.; cost, \$11,000.

Wm. Gerts, two-st'y and basement brick dwell., 21' x 48', 670 Twentieth St.; cost, \$4,000.

S. G. Williams, two-st'y and basement brick dwell., 24' x 40', 239 South Lincoln St.; cost, \$4,500.

C. G. Meyer, two-st'y brick store and dwell., 24' x 50', 94 Clybourn Ave.; cost, \$3,500.

### Cincinnati.

LABOR MARKET. — Small demand at present for free-stone workers; other branches are reasonably busy. BUILDING PROSPECTS. — The Gazette says that the prospects are, should the rain now keep off, that the fall building trade will be livelier than it has been for several seasons. The builders and con-

tractors are just returning from their holidays and are getting out their orders. Most of the jobs that were set back by the strikes of the workmen in the spring have been put on the order-book again, and many people who hesitated to make contracts owing to the disturbed and upward tendency in rates have made up their minds that it is no use expecting lower figures, and have given out their work. The increase in the cost of lumber, brick and other material is from 5 to 25 per cent over last year. Most of the workmen in the several branches also receive an advance of 25 cents per day. It is worthy of note that the smooth compressed New York brick is coming much in vogue for "facing" of buildings of the better class. The workmen who superintend the laying of this kind of brick have to be experts, and as the number is limited and they work by the piece, they make big wages—all the way from \$5 to \$7 a day.

**CORRECTION.**—The types made it appear that the contract for the limestone for the new union depot was let to H. Meiners & Son for \$4,300, which was all right except that the amount should have been \$43,000.

**BUILDING PERMITS.**—George Tait, two-sty frame dwell., Grove St., between Plum and Elm Sts.; cost, \$3,500.

Wm. Miller, two-sty brick dwell., Ohio Ave., near Parker St.; cost, \$6,000.

H. Shillerin, three-sty brick dwell., Vine St., near Mulberry St.; cost, \$2,000.

Wm. Baker, four-sty brick dwell., cor. of Kenny and Denman Sts.; cost, \$7,000.

R. T. Morris, three-sty brick printing-house, No. 65 Vine St.; cost, \$5,000.

John Brio, three-sty brick dwell., Hopkins St., near Dalton Ave.; cost, \$4,000.

Lape Bros., to rebuild portion of planing-mill recently destroyed by fire, cor. of Laurel St. and Central Ave.; cost, \$5,000.

Six permits for repairs; cost, \$2,500.

Total permits to date, 540.

Total cost to date, \$1,524,000.

#### New York.

**BUILDING PERMITS.**—Third Ave., w s, 150' n Harlem River, extending to a w cor. Third Ave. and One Hundred and Thirty-fourth St., five-sty brick machine-shop, one-sty brick foundry, and one-sty brick engine-house; cost, \$30,000; owner, J. L. Mott Iron Works, Mott Haven, N. Y.; architects, Babcock & McAvoy; builders, J. & W. C. Spears and T. Overington.

One Hundred and Twenty-second St., s s, 225' n Pleasant Ave., 2 four-sty brownstone apartment-house; cost, each, \$9,000; owner, Mrs. Margaret Schmitt, 432 East One Hundred and Twentieth St.; architect, George M. Walgrove; builder, Frank Schmitt.

Lexington Ave., s e cor. Seventy-ninth St., 5 three-sty brownstone dwell.; owner, Hiram Sigler, Jersey City; architect, K. W. Buckley.

Eighty-fifth St., s s, 100' w Third Ave., 2 five-sty brick tenements; cost, each, \$16,000; owner, Bernard Havanagh, 185 East Sixty-fourth St.; architect, J. Hoffmann.

First Ave., e s, about 100' n One Hundred and Twenty-fifth St., one-sty brick boiler-house and office; cost, \$3,000; owner, Geo. T. Gaden, 15 West One Hundred and Twenty-fifth St.; architect and builder, Geo. Damsen.

Ninth Ave., No. 763, four-sty brick dwell.; cost, \$13,000; owner, Elizabeth Phillips, 765 Ninth Ave.; architect, Wm. Jose; builders, M. Lapp and H. Weller.

East Eighty-fourth St., No. 321, four-sty brownstone flat; cost, \$16,000; owner, Thomas Bennett, 345 East Eighty-fifth St.; architect, R. W. Buckley.

Ninth Ave., e s, 25' n One Hundred and Twenty-fifth St., 5 four-sty brick tenements; cost, each, \$12,500; owner and architect, S. M. Styles, 143 West One Hundred and Thirtieth St.

Tinton Ave., w s, 100' s Cedar St., 3 two-sty frame dwell.; cost, each, \$3,000; owner, C. Decker, 841 Forrest Ave.; architect, W. W. Gardiner; builder, F. P. Decker.

Lexington Ave., n e cor. One Hundred and Eighth St., 14 four-sty brownstone tenements; cost, each, \$16,000; owner Jacob Jenny, 149 East One Hundred and Tenth St.; architect, Chas. Baxter.

One Hundred and Ninth St., n s, 245' w Third Ave., four-sty brownstone apartment-house; cost, \$14,000; owner, Margaret Schmitt, 432 East One Hundred and Twentieth St.; architect, J. F. Burrows.

Eighty-seventh St., n s, 80' w First Ave., four-sty brownstone tenement; cost, \$9,000; owner, Peter J. Uihlein, 1710 First Ave.; architect, Julius Kastner.

Eighty-first St., s s, 200' e Tenth Ave., 4 three-sty brick and terra-cotta dwell.; cost, each, \$11,000; owner, Mrs. Annie E. Brown, 1280 Broadway; architects, D. & J. Jardine; builders, Sinclair & Wills and J. Jennings.

South St., No. 380, running through to and being No. 324 Front St., three-sty brick factory; cost, \$30,000; owner, E. G. Mitchell, 8 West Nineteenth St.; builder, John C. Wessels.

Greene St., No. 113, five-sty brick warehouse; cost, \$32,000; owner Lippman Toplitz, 47 East Sixty-eighth St.; architect, Henry Fernbach.

**ALTERATIONS.**—One Hundred and Forty-eighth St., s s, 30' e Morris Ave., raised one sty; also three-sty frame extension; cost, \$4,000; owner, Robert Huson, 218 East Fifteenth St.; architect, J. W. Marshall; mason, R. Huson; carpenter, not selected.

Beaver St., Nos. 14 and 16, extending to Market-field St., add one sty, rebuild west side wall, elevators, etc.; cost, \$25,000; owner, W. H. Caswell, exr., 87 Front St.; builders, J. M. Dodd, Jr., and L. H. Williams.

East Sixty-eighth St., No. 60, at s w cor. Fourth Ave., three-sty brick extension; cost, \$10,000; owner, Emily Fowler, on premises; architects, D. & J. Jardine; builders, J. & G. Ruddell.

West Fourteenth St., No. 406, two-sty brick extensions; cost, \$2,500; owner and builder, Philip Herrmann, 406 and 407 West St.

Sullivan St., No. 23, rebuild all unsafe walls, front alterations, etc.; cost, \$4,000; owner, Mary G. Finkelmeier; builder, S. H. Mapes.

Front St., No. 93, first and second stories altered for offices, new windows and chimneys; cost, about \$5,000; owner, Geo. W. Lane, on premises; architect, R. M. Upjohn; builders, Burns & McCann and Perkins & Green.

West Fifty-fifth St., No. 71, two-sty and basement extension; cost, \$5,000; owner, Wm. M. Reynolds, 152 West Fifty-seventh St.; architect, R. Rosenstock.

#### Philadelphia.

**BUILDING PERMITS.**—Orleans St., s e cor. Emerald St., 10 two-sty dwells., 14' x 40'; J. Cunningham.

Salmon St., n e cor. Lehigh Ave., three-sty dwell., 20' x 48'; C. Fay, contractor.

Edom St., n s, e of Kennedy St., one-sty factory, 55' x 175'; A. B. Rorke, contractor.

Germanstown Ave., cor. Wayne Junction, three-sty carpet factory, 40' x 112'; A. B. Rorke, contractor.

Tackawana St., cor. Gillingham St., three-sty umbrella factory, 123' x 202'; Aaron P. Bilyeu, contractor.

Division St., n s, w of Jefferson St., 4 two-sty dwells., 16' x 30'; Peter Collins, owner.

Evergreen Ave., s s, bet. Twenty-fourth and Twenty-fifth Sts., three-sty dwell., 18' x 28'; George S. Roth, contractor.

Mascher St., s w cor. Putnam St., three-sty factory, 54' x 67'; David Mayhew, contractor.

Hope St., w s, n of Columbia Ave., No. 1718, three-sty dwell., 18' x 28'; Anthony Laird, owner.

Ridge Ave., e s, n of Kitchen St., three-sty dwell., 18' x 40'; Edward C. Parker, owner.

Rittenhouse St., n s, bet. Main and Green Sts., three-sty dwell., 18' x 30'; John Breidling, contractor.

S. Eighteenth St., No. 1432, two-sty dwell., 16' x 43'; J. H. Young & Bros., owners.

Eighteenth St., n e cor. Pennsylvania Ave., one-sty machine shop, 31' x 100'; Baldwin Locomotive Works, owner.

Leiper St., w s, n of Allen St., three-sty dwell., 28' x 43'; Wendell & Smith, contractors.

Cemetery Lane, cor. Frankford Road, three-sty store and dwell., 18' x 69'; Shogeg & Quigley, contractors.

Eighteenth St., cor. Fisher's Lane, two-sty factory and engine-house, 45' x 72'; John G. Schuler.

Alder St., w s, n of Norris St., 2 two-sty dwells., 14' x 28'; Michael Smith, owner.

#### St. Louis.

**BUILDING PERMITS.**—Eighty-five permits have been issued since our last report, of which twenty-two are for unimportant frame houses. Of the rest, those worth \$2,500 and over are as follows:—

Carondelet Union Hall Association, two-sty store; cost, \$5,000.

James Gunn, 3 two-sty dwells.; cost, \$9,000; T. J. Gunn, contractor.

Samuel R. Hamilton, two-sty tenement; cost, \$3,500; T. Moore, contractor.

T. McGrade, two-sty dwell.; cost, \$3,500; T. Brady, architect; Hugh Raymond, contractor.

Mrs. Agnes Elliott, two-sty dwell.; cost, \$7,500; S. H. Hoffmann, contractor.

Grand Avenue Presbyterian Church, church; cost, \$36,000; F. D. Lee, architect; Samuel Ross, contractor.

St. Louis Mutual House Building Company, No. 3, two-sty dwell.; cost, \$4,171; Beckmeier & Riethmann, contractors.

A. H. Handian, 3 three-sty dwells.; cost, \$15,000; James A. Conlan, contractor.

J. Buchka, two-sty store and dwell.; cost, \$4,500; Louis Strecker, contractor.

Mrs. F. P. Corby, two-sty dwell.; cost, \$3,000; Barnes & Morrison, contractors.

Bolman & O'Hara, two-sty warehouse; cost, \$4,000; T. Gugerty, contractor.

D. C. Schelkhardt, two-sty dwell.; cost, \$3,500; T. Gugerty, contractor.

J. P. Fairley, 2 two-sty dwells.; cost, each, \$6,000; T. Brady, architect; H. Redmond, contractor.

Kansas Bucket Manufacturing Company, four-sty factory; cost, \$7,000; J. B. Legg, architect; A. E. Coko, contractor.

#### General Notes.

**GREENFIELD, MASS.**—Alterations and additions are to be made to the house of Mr. G. C. Gardiner, from designs of Messrs. Wilson Bros. of N. Y., architects.

**HAYVERHILL, MASS.**—Mr. E. A. P. Newcomb, of Boston, is the architect of the new church and chapel now being built for the First Baptist Society. It will be of brick with terra-cotta finish, is in the Romanesque style, and will measure 85' x 175', with seating capacity in the church for 1,200 and in the chapel for 600; Messrs. Gidding Bros. of Exeter, N. H., are the contractors.

**SAN ANTONIO, TEX.**—A house, stable, farmer's cottage and other buildings are to be built on the estate of Mr. J. W. Brackenridge; from designs of Mr. Chas. I. Berg, of N. Y.

**WAYLAND, MASS.**—A frame house, 41' x 63', two stories is now being built for Mr. C. A. Cudding; Hartwell & Richardson, of Boston, architects.

#### Industrial.

**BROCKTON, MASS.**—A four-sty addition, 100', is to be added to C. H. Ward's shoe factory.

**CLAREMONT, N. H.**—The Monadnock Mill Company will soon build a cotton mill.

**CLEVELAND, O.**—The Globe Iron Works will build an addition, 101' x 120'.

The Northern Ohio Blanket Mills will build a new mill, 50' x 160'.

**DETROIT, MICH.**—The Detroit Emery Wheel Company are about to enlarge their mills to double their present capacity.

**EPFING, N. H.**—A new shoe-factory is to be built in place of the one belonging to B. W. Hoyt, which was burned there some time ago. A stock company has been organized, to be known as the B. W. Hoyt Manufacturing Co., who will commence the building at once.

#### Bids and Contracts.

**BOSTON, MASS.**—The contract for building a new dining-hall for the South Boston Lunatic Asylum has been awarded to F. J. McGonigle & Co. The bid was \$3,690.

#### PROPOSALS.

##### PLASTERING.

[At Philadelphia, Pa.]

OFFICE OF SUPERVISING ARCHITECT,  
TREASURY DEPARTMENT,  
WASHINGTON, D. C., September 1, 1882.

Sealed proposals will be received at this office until 12 M., on the 21st day of September, 1882, for all the plastering required in the Court-House and Post-Office at Philadelphia, Pa., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

JAMES G. HILL,  
Supervising Architect.

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##### JETTIES.

[At Volusia Bar, Fla., and Brunswick Bay, Ga.]

UNITED STATES ENGINEER OFFICE,  
ARMY BUILDING, NEW YORK, August 25, 1882.

Sealed proposals, in triplicate, addressed to the undersigned, will be received at this office until 12 o'clock, noon, on the 25th day of September, 1882, at which time and place they will be opened in the presence of bidders, for constructing jetties at Volusia Bar, Fla.; constructing jetty and dredging in Brunswick Harbor, Ga.; and for dredging in Wapoo Cut, S. C.

Proposals for each work must be separately rendered and properly endorsed on the envelope. Specifications, instructions to bidders, and blanks for proposals may be obtained at this office or from Capt. B. D. Greene, Corps of Engineers, Charleston, S. C.

Q. A. GILMORE, Lt.-Col. Engineers.

Bvt. Maj.-Gen., U. S. A.

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##### JETTIES AND TIMBER DIKES.

[Cheesequakes Creek, N. J.]

U. S. ENGINEER OFFICE, ROOM 59, ARMY  
BUILDING, COR. HOUSTON AND GREENE STS.,  
NEW YORK, August 18, 1882.

Sealed proposals, in duplicate, will be received at this office until 12 o'clock, M., of Friday, September 22, 1882, for improving Cheesequakes Creek, by the construction of rubble jetties and timber dikes and by dredging.

Amount available, \$35,000.

For forms of proposals and all information apply at this office.

G. L. GILLESPIE, Maj. of Engineers.

Bvt. Lt.-Col., U. S. A.

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##### BRICKS.

[At Cincinnati, O.]

The Cincinnati Gas-Light and Coke Company will receive tenders up to noon Saturday, October 14, 1882, for five million bricks, to be delivered at "East End Garden," situated between Eastern Avenue and Ohio River, and Main and Spencer Streets, First Ward, Cincinnati.

One million to be delivered between January 1 and March 1, 1883.

Two million to be delivered between March 1 and May 1, 1883.

Two Million to be delivered between May 1 and July 1, 1883.

Each bid to be accompanied by specimens of the bricks to be furnished, which specimens are to be made the standard to which deliveries must conform, in accordance with the provisions of the specifications on file at Gas office, corner Fourth and Plum Streets.

A good and sufficient bond in the sum of \$10,000 will be required, conditioned upon the faithful performance of the contracts.

Bids will be received for the whole lot, and also for separate deliveries.

The Company reserves the right to reject any and all bids.

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##### RIP-RAP GRANITE.

UNITED STATES ENGINEER OFFICE,

NEW LONDON, CT., August 28, 1882.

Sealed proposals in triplicate will be received at this office until 11 o'clock, A. M., on the 27th day of September, 1882, for rip-rap granite to be delivered in Breakwater at—

Stonington Harbor, Ct.

Clinton Harbor, Ct.

New Haven Harbor, Ct.

Port Jefferson Harbor, N. Y.

Greenport Harbor, N. Y.

Specifications and blank forms for proposals and for guaranty will be sent on application to this office.

J. W. BARLOW,

Major of Engineers, U. S. A.

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##### SCHOOL-HOUSE.

[At Brown, O.]

Sealed proposals will be received at the office of the Clerk of Board of Education, in Brown township, Franklin County, Ohio, until Saturday, September 16, 1882, at 12 o'clock, noon, for furnishing materials and doing the following work, to wit:

For building a new school-house, 24' x 30', 12-foot story, of brick, in sub-district No. 7 (seven), Brown township.

Plans and specifications can be seen at the office of said Clerk.

The different materials and the labor must be separately stated in the bid, with the price thereof.

Each bid must contain the name of every person interested in the same, and shall be accompanied by a sufficient guaranty of some disinterested person, that if the bid be accepted a contract will be entered into and the performance of it properly secured.

The Board reserves the right to reject any or all bids at discretion.

JOHN T. HURD,

Township Clerk.

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##### POLICE-STATION.

[At New York, N. Y.]

Sealed proposals will be received at Police Headquarters until September 13, 1882, for building a station-house, lodging-house, and prison on the ground and premises now occupied by a building known as Franklin Market. For full particulars see *City Record*, copies for sale at No. 2 City Hall.

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