

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. IX.

Copyright, 1881, JAMES R. OSGOOD & Co.

No. 270.

FEBRUARY 26, 1881.

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

CONTENTS.

SUMMARY:—

"Noisy Partisanship" as the New York <i>Evening Post</i> understands it.—Burning of the Palace Hotel, Buffalo, N. Y.—Fall of a Church Ceiling at Ottawa, Canada.—An Underground Railway Scheme for Boston.—The Demand for Rapid Transit in that City.—End of the Philadelphia Permanent Exhibition.—Captain Eads's Ship-Railway Scheme Tabled.—An Inspectorship of Heating Apparatus.—Street-Cleaning in New York.	97
THE RELATION BETWEEN PAINTER AND ARCHITECT.	99
PICTURES IN NEW YORK.	99
METHODS OF JUDGING OF THE WHOLESOMENESS OF DRINKING-WATER.—I.	101
THE ILLUSTRATIONS:—	
Stable at Cornwall, Pa.—Church at North Adams, Mass.—House at Chicago, Ill.—Cottage at N. E. Harbor, Me.	102
GAS-HEATING AND LONDON SMOKE.	103
SIR JOHN VANBRUGH.	104
COMMUNICATIONS:—	
The Strength and Stiffness of Floors.—Another Western Competition.—Trees and Leaching Cesspools.—A Correction.	105
NOTES AND CLIPPINGS.	106

THE New York *Evening Post* does us the honor to notice the editorial conduct of this journal in regard to the Feuardent-Cesnola controversy; and asserts that we "posed as a noisy partisan of Mr. Feuardent" during the early part of that dispute. The meaning of this expression is a little obscure, but we can gather enough of it to convince us that the *Evening Post* is under a wrong impression. To recapitulate briefly the circumstances of an affair which our readers have possibly forgotten: there appeared some months ago in one of the best art journals a circumstantial and temperate description, illustrated by careful drawings, of what was alleged to be questionable restorations of certain Cypriote antiquities in the Metropolitan Museum, signed with a name distinguished in the archaeological and artistic world. In response to this a certain daily paper of very high rank published an extraordinary editorial, which, without adducing any evidence or other argument upon the subject, denied Mr. Feuardent's statements on the absurd and insulting pretext that their author was a "mere dealer," and had made them "for the sake of advertising himself." It was difficult to read such an article without indignation, and a desire to do justice in some way to a gentleman and a foreigner seemed to make it a duty to notice in these columns such proofs as Mr. Feuardent could bring forward. For a long time these were the only allegations, on either side, which appeared to be supported by any evidence; but when General di Cesnola's explanation finally came, it was so thorough and satisfactory as to convince us that Mr. Feuardent was in error. The formal inquiry only confirmed this impression, and, to our mind, demonstrated the unusually conscientious character of General di Cesnola's administration. These impressions were presented to our readers as occasion offered, and in case of other similar controversies we shall pursue the same course,—to hear both parties, to consider the evidence each has to offer, and to inform our readers, according to our best judgment, which of them has reason on his side.

A THIRD calamity has occurred in Buffalo, N. Y., but fortunately without loss of life. Not long ago the floor of a grain warehouse gave way and fell to the basement, and more recently the great Palace Hotel, one of the most noted structures in Western New York, was destroyed by fire. The hotel was well and thoroughly built, of brick, five stories high, with a lofty tower in the middle of the front. This feature seems to have proved fatal to the building. Probably from spontaneous combustion, fire originated in the trunk-room, near the roof, and spread quickly up the elevator shaft and into the tower, where it was practically out of reach, and raged unopposed until the walls gave way, precipitating the mass backward into the main body of the house. The blazing timbers, crashing through the floors, at once opened a free passage for the flames and kindled everything combustible in their way, so that but a short time was needed to reduce the hotel to a heap of ruins. Fire hose was provided within the walls, but from long disuse had become stiffened, adherent, and useless, and a fine chemical engine which

stood ready proved unserviceable for the same reason, its hose cracking and bursting as soon as the engine was put in operation. The loss falls severely upon the owner, the occupants, and the public, which will have to contribute, through the insurance companies, more than a quarter of a million dollars as its share of the loss. We are glad to be able to say that neither carelessness nor ignorance seems to have been the cause of this disaster. It is true that the mutual insurance companies and fire-engineers understand the necessity for keeping hose pliable by frequent use, and avoid coiling it on fixed pins, from which it cannot be removed without laborious untwisting, but this knowledge is as yet shared by few others.

A REMARKABLE accident occurred at Ottawa, Canada, a few days ago. On opening the doors of the new Baptist Tabernacle one morning, it was found that three-quarters of the plastered ceiling had fallen during the previous night, demolishing furniture and other objects upon which it fell. Naturally enough the first congratulations that the catastrophe should have happened while no one was in the building were followed by an inquiry into its cause, which does not appear to have been successful in eliciting much information. Some "practical men" were examined, and gave opinions which recall those of their brethren who testified concerning the disaster at the Madison Square Garden. Some of them thought that the fall of the plastering was due to the "damp weather;" from which we must infer that Dominion plastering is only expected to stay up so long as the clouds are propitious. Others supposed that the settling of the building had "forced off the framework," that is, we suppose, the cross-furring, "from the rafters," an opinion still more extraordinary than the other. We are not at all disposed to believe that Canadian plasterers generally do work which is incapable of resisting a moist atmosphere or the settlement of a wall, and venture to suggest another explanation,—that the ceiling fell down because it was too weak to stay up. What was the nature of the weakness we cannot say. Perhaps the lime was bad, or the mortar was not trowelled sufficiently to make it clinch the laths; or perhaps the hair was omitted, or had been left too long in the lime, and thus corroded and destroyed,—such faults are found in the work of dishonest and ignorant masons,—or possibly the furring strips had been put on with small nails, or secured only to alternate rafters, as is sometimes the way of dishonest and ignorant carpenters; but we affirm with confidence that if the ceiling had possessed proper strength it would not have fallen, and that its lack of such strength was due to the ignorance or greed of some person or persons at present unknown, but whose identity could be established by a very simple investigation.

THE more respectable of the Boston improved transit schemes are now before the Massachusetts Legislature for the second or third time. Perhaps the best supported and most promising of them is one which proposes, instead of building above ground for the whole length of its route, to tunnel for about half a mile under Beacon Hill, in order to relieve the narrow and crowded business streets of that district. With this, and a judicious use of the side streets and alleys which abound in the city, the road could, if necessary, be kept out of the principal avenues entirely, although it is probable that business would follow it, deserting the other streets, as in New York Broadway would have been ultimately deserted for the Sixth Avenue if the underground scheme had not come to its rescue. A dozen years ago, when Boston was prosperous, and desired to become more so by making it pleasant and convenient for strangers to come and do business and hold property there, a tunnel line very similar to the one now suggested was seriously urged, extending from Haymarket Square, near which are collected the northern and eastern railway termini, to Dartmouth Street, where the principal southern and western roads intersect. Trains would then ply so as to connect closely both systems of railways, stopping at intermediate points, and even running through to suburban stations in both directions, much as those on the proposed elevated roads are intended to do. The project failed, to the regret of all who understood it. Since then, the traffic of the city and suburbs has much more than doubled, but so far from seeking to devise facilities for encouraging it by making it easy, rapid and comprehensive, the attitude of the Legislature has become singularly opposed to any

improvement whatever. Instead of aiding the transfer of passengers without change between the different railroads centering in the city, which could so easily be accomplished, and would be so great a convenience, the roads are forbidden by law to take any steps toward establishing such connection; instead of building up the beautiful suburbs of the city by promoting the extension of a network of branch railways, permeating the whole district, not only are the existing roads prohibited from constructing any branches within eight miles of the City Hall, but no new railroads whatever are allowed to enter the town; and the people who are, or wish to be, inhabitants of Boston are thus condemned either to ride in the slow, cold, and unpunctual horse-cars or go on foot; and a third ordinance removes the hope of possible improvement in this poor mode of transportation by forbidding any addition to the number of cars, although that of passengers increases at the rate of about twenty per cent per annum. No doubt this Chinese policy has contributed to the dullness of business for which Boston, as compared with New York, Chicago, or Baltimore, is becoming conspicuous, and it will soon be time to consider whether the prestige of intelligent enterprise which the city has so long enjoyed is not in serious danger of being lost forever.

NOTWITHSTANDING the assurances of the *Transcript* and other Boston papers that there is "no call" for better means of transportation between the different portions of that city and its suburbs, the dwellers in the neighboring towns continue to make loud complaints of the slow, infrequent and uncomfortable communication with the business portion of the town which they are obliged to endure. In Cambridge, the largest and worst served of the neighboring cities, a meeting has been held to devise means for securing some improvement. Three schemes were presented, one of which contemplated the construction of a steam railroad following very nearly the line of the present horse-car route, which is short and direct, but much too heavy in grade to be used without tunnelling; while the second proposed, as we suggested not long ago, that the new road should enter the "Back Bay" region of Boston, near Chester Park, reaching State Street by a line somewhat longer than the other, but much more convenient, as it would traverse nearly the whole of the principal sections of the city devoted to residences, retail and wholesale business, while such a road would have the support of a very populous and important part of Boston itself, now almost as badly off as Cambridge in regard to facilities of transportation. The third plan was to have the new route cross the river, and connect with the Boston and Albany Railroad not far from the Cottage Farm station. This would be the least direct line of any, and it seems certainly undesirable for such suburban roads to connect with any existing railways, which could not and would not give them anything like the facilities which New York and London possess, and which Boston will soon demand. The route from State Street *via* the Back Bay to Cambridge would, for instance, correspond very closely with that from the New York City Hall to Harlem. On the latter a train is now despatched every minute during the busy part of the day; and Boston would soon need, if not similar service, at least a frequency of communication which none of its great freight railroads could possibly allow.

THE stockholders of the Permanent Exhibition Company in Philadelphia, which has for four years vainly struggled to keep up an enterprise which had everything in its favor but public interest, finally voted last week to abandon the undertaking, close the exhibition, and sell the building. Although they enjoyed the use of the ground rent-free, and had purchased their building, together with much of its contents, at a fraction of the cost, the distance of the site from the business part of the city, reckoned by the time required to reach it, was so great that few were disposed to take the trouble to visit it. Perhaps the very magnitude of the edifice tended to chill and dishearten the number who went there and found themselves almost lost in its vast extent, while its fragile construction rendered the repairs a heavy charge. No one need regret very much the loss of the structure or the collections which it contained.

AFTER some weeks of waiting, Captain Eads's ship-railway scheme has been summarily laid on the table by the Congressional committee, and he will probably have to take his proposals to some other government. Meanwhile, the Panama Canal

Company have sent out a commission to the ground, consisting of a Superior Agency, a Chief of Real Estate, a Commissioner of Sanitary Service, and one of Work and Construction, who have been received at Aspinwall with much formality. These pioneers will "organize" the undertaking, and then, if the requisite money is forthcoming, will commence actual operations. The United States has already by a protocol agreed to guarantee the neutrality of the canal; and in spite of the predictions of its rivals, and the misgivings of its friends, the scheme seems to be assuming definite shape. Whatever may be the outcome to the stockholders, engineers and scientific men will profit by observing the processes employed for excavating the enormous mass of material which blocks the way.

A BILL now pending in the Pennsylvania Legislature provides for the appointment of an inspector of heating apparatus and flues in public buildings, who shall have control of the construction of such apparatus, and shall three times a year investigate the condition of all pipes and flues within his jurisdiction. The *Philadelphia Bulletin* very properly objects to the creation of such an office, as unnecessary, and, we might add, as taking away the burden of responsibility from those upon whom it ought to rest; namely, the contractors who undertake to construct such apparatus. There is no doubt that hot-air and steam pipes need occasional inspection, such as a janitor can give, to make sure that combustible rubbish is not allowed to accumulate about them, but the contractor, the builder, and the architect or superintendent are, one after the other, justly accountable for the manner in which they are first introduced, and any system which tends to divide or confuse this accountability is in many respects a public misfortune. The most thoughtful architects acknowledge that while rigid building-laws provide safeguards against the criminal recklessness of irresponsible mechanics, they tend to make the better class careless by tempting them to employ their ingenuity, not in devising strong and solid modes of construction, but in contriving the cheapest and lightest work that will pass muster at the office of the inspector, who assumes virtually the responsibility that should belong to them, so that the advance of the building art is, on the whole, retarded by such a system; and the same may be said of official inspection in other matters. To our mind, the spectacle of, let us say, the contractor for the heating apparatus in the church burned the other day, laid hold of by the strong arm of the law, his goods sold by the sheriff to satisfy the loss caused by his fault, and himself thrown into prison, would tend more to the security of such constructions in future, than any official inspection.

THE Sanitary Reform Society, which has already done so much for New York, is now devoting some of its spare energy to the promotion of an improvement in the system of street-cleaning in that city. Notwithstanding the enormous sums annually expended in New York upon what is called street-cleaning, no one who has ever visited the place can forget the pestilential condition in which every heavy rain leaves it. From the foul sloughs of West Street to the noisome pools of Centre Street; from the undisturbed garbage-heaps of the Sixth Ward to the reeking gutters of Harlem, the impression left upon the stranger is one of radical and hopeless filth. But New York has never yet been afflicted with any evil which some of its citizens did not in time find means to alleviate; and with such men as Messrs. Auchmuty, Meyer, Wingate, Gallatin, and James once enlisted in behalf of the people, we may be sure that something will be accomplished. It is gratifying to observe that Mayor Grace took an active interest in the proceedings of a meeting recently held to consider the subject. Entrusted, as the chief magistrate of New York is, with a very high degree of power and responsibility, a new incumbent just entering upon a four-years' term is in a position to confer great and lasting benefits on his fellow-citizens, and we hope and believe that Mr. Grace is disposed to avail himself of his opportunities. We remember once hearing the mayor of a pretty New England town, who was re-elected for the sixth time, say with touching sincerity of the place which he had done his best to elevate and adorn, that he "thought Worcester was a beautiful city." The citizens thought he was a beautiful mayor, and will long cherish the memory of his disinterested zeal; a zeal which, if displayed to an equal degree in the chief of a great city like New York, would bring incalculable blessings to the people, and immortality to their benefactor.

THE RELATION BETWEEN PAINTER AND ARCHITECT.

At a recent meeting of the Boston Society of Architects, Mr. Frederic Crowninshield delivered a discourse on the relations between painter and architect, and the influence of the modern school of painting on decorative art. Formerly the two professions were not unfrequently merged in one. Michael Angelo and Raphael were their own architects, and Baldassare Peruzzi his own painter. To-day, the division-of-labor system suggests duality. The architectural and pictorial fields are now too vast to be surveyed by one man. In the middle ages they were comparatively limited. Then men more or less followed in the footsteps of their fathers, and added their own modicum of originality. Nobody ever thought of bursting the bonds of tradition and creating an entirely new thing; hence the dearth of eccentricities. To-day, on the contrary, eclecticism holds sway. The facilities of travelling, the reproductive sciences, art reviews, etc., have bared the arcana of art. We have the whole world to choose from. To design in the Byzantine, Arabian, Renaissance, or Gothic style; to paint after the manner of the Flemish, Venetians, Tuscans, or Spanish, we have but to turn to the bookcase, the gallery, or the portfolio. We have too much to choose from to emancipate ourselves entirely from eclecticism. Considering, then, the gigantic proportions of this mass of artistic lore, it is well that the two professions should remain distinct. But it is also well that both architects and painters should have at least a superficial knowledge of the sister profession. No painter can ever hope to decorate who is not more or less familiar with the elements of construction, with decorative forms and monumental linear composition.

About half a century ago painting was at its lowest ebb. The academy had stifled nature. Artificial men and women moved or posed in artificial scenes. In poetry, Wordsworth first sounded the naturalistic note; Constable did the same for painting. He was followed in France by Rousseau, Decamps, Dupré, Couture, Corot, and a host of others. Hence the school of modern landscape. War was declared against the academy—the home of tradition—and the academy yielded, but did not, fortunately, surrender. Fortunately, because art is not nature; tradition not to be entirely ignored; ideal forms not to be sacrificed to the realistic. The academy needed this naturalistic infusion of blood into its decrepit veins to give it youth and vigor. To-day in France we have the co-existence of these two schools—the realistic and the academic—each re-acting beneficially on the other. The Villa Medici, fostering the *élite* of the academy, produces a race of painters and sculptors capable of co-operating with architects in great monumental works. For we have already seen that “conventionalism” and the so-called “style” are indispensable attributes of the decorative painter.

Unfortunately we have no Villa Medici in this country. With but a few exceptions, our painters are enslaved by realism. Men are more occupied by the “technic” than by the idea. They lose sight of the fact that art is the embodiment of feeling—not a feeling for cabbages, *bric-à-brac*, or the barn-yard, but a feeling for the beautiful and the soul-moving. To-day artists are bent on reproducing the irregularities of nature; the old masters strove to depict its regularities. Picturesqueness is another word for these irregularities. Regularities are sometimes known by the terms “classicism,” “academicism,” “style,” “high art,” etc. Regularities, moreover, are an essential part of the baggage of a decorator. The striving after the irregularities of nature has been further stimulated by the influence of Japanese art. Charming as this latter is, it has not been without its baneful results. It has enabled men, women and children to throw flowers and sprays of foliage irregularly across a plate, a screen, or a doily, and call it “decorative art.” Classicism, or academicism, if duly tempered with the irregularity or freedom of art (as it is in France) would prove its salvation, and there would be formed schools of learned painters fit to co-operate with the architects in the great fields of mural decoration. Architects in this country are superior to the painters: first, because they are drawn from a higher social stratum; secondly, because they are obliged to pass over a given curriculum of study (whereas any one can open a studio and dub himself artist); thirdly, because they are compelled to progress within certain bounds of constructive necessity, and to hold fast to wholesome traditions which are capable of consistent development. Thus it is that painting has not kept pace with architecture during the last ten years. Architecture may yet beget a race of painters through the medium of mural decoration. Heretofore there has been but little inducement for an artist to devote his energies to monumental figure painting. The first commissions given by architects to painters must naturally be attended by risks, seeing that there are no well-seasoned practitioners. But the risk must be incurred, if we are ever to adorn our churches, public buildings, or the more stately private houses with paintings worthy of their architecture. The attempt has already been made sporadically, and not without success. At present architects are dependent on the so-called decorators, who are but little better than pirates. Certain geometrical and vegetable designs are the common property of mankind; it is not so with figure compositions. To take a composition from a print or photograph, the product of another's fancy, and transfer it to a stained window or church wall may be lawful in one sense of the word, but it is certainly shameless. Such a mode of procedure is not only morally pernicious, but it stifles all hope of decorative development. Let artists once understand that there is a demand for such work, and the demand will create the sup-

ply. These remarks are only applicable to America. In foreign lands there is a class of painter-decorators.

The work of the architects themselves in questions of ornamentation has been influenced by the spirit of modern materialism, and too frequently bears the impress of mere picturesqueness. Particularly is this true of stained glass, where form and construction are sacrificed to tone; where the artist is occupied with the imitation of the blending tints of floating water-color, rather than with the more serious problems of composition. This tone work may be happily applied to the small apertures of a private house, but it is ill adapted to the more formal windows of cathedrals or public buildings, unless it can be combined with architectural design. The mural paintings in Trinity Church are a striking example of the sacrifice of form to color. Charming in tone, they are, too, perhaps unsurpassed. But the figures must be regarded as masses of color rather than as effigies of men and angels. The use of carved brickwork has often been abused. Its picturesque qualities are charming, but they not unfrequently ill accord with their more elaborate surroundings. When the relief is high and the cuttings deep, when they are placed at such a distance from the ground that the individual bricks are blended into one great mass, these panels are very effective. This introduces another question, viz., degree of finish. Many people confound breadth with coarseness. Because a work of art is sketchy, it is not broad. Breadth consists in simplicity of treatment and a due suppression of detail. The Grecian pediments and the Sistine vault are broadly treated, inasmuch as they were to be viewed from a distance, but not coarsely. The masses are simply treated, never rudely. This combination of breadth and finish seems to be ignored by many decorators, who treat mural decorations as they would a scene for the theatre. Vigor of touch is not the only indication of power. Raphael was exquisite without being feeble. The men of his day knew how to be rapid in execution without incompleteness. Though we may deplore the taste of the Italians of a late epoch—the “*macchinisti*,” etc.—as decorators, they were giants when compared with us moderns. Even the Italians of to-day dwarf us from a point of view of execution. Tradition, inheritance, and sound training have still kept alive the invention, the exuberance and the facility of their fathers. From various causes art is at a low ebb in Italy; but when her art is regenerated, she will have at her call a legion of capable workmen.

The greatest impediment to good decorative work in this country is, however, hurry. Churches must be complete for dedication day from cross to foundation, and houses for the house-warming, from attic to cellar. The great temples of Christianity were the work of years. Each generation added its quota of ornament, and was none the less content to worship within walls on which the succeeding generation was to leave its mark. Cologne Cathedral, begun in the mouldy past, has but just been completed, and certainly this generation is happier for it. In the furnishing of a house the owner attempts the impossible. Far better would it be for him, and far more amusing, to leave something to time, instead of cramming his untrained brain with an indigestible medley of tiles, tapestries, Morris papers, Eastlake furniture, dadoes, friezes, and whatnots. The architects might do much to mend these difficulties. Men are not altogether irrational, and if the case were fairly stated to them, they would doubtless yield.

Mr. Crowninshield then referred to the modest efforts made by the School of Drawing and Painting at the Museum of Fine Arts to instruct the pupils in elementary architecture, and closed his discourse with a few explanatory remarks concerning true fresco painting and the methods by which compositions in this vehicle were developed.

PICTURES IN NEW YORK.

THE ARTISTS' FUND SOCIETY. — MR. BRIDGMAN.

THE twenty-first annual sale of pictures contributed to the Artists' Fund Society has just been concluded. The prices paid were fair, over \$20,000, exclusive of the cost of frames, having been obtained for the 113 numbers. As has usually been the case the majority of the pictures were not of the highest merit. The artists who are members of the society belong in greater part to our elder generation and the works of most of them are apt to be more conscientious than delightful. This year, however, some new blood had been introduced into the society and the interest of its collection was greater in consequence. We may hope to see a steady annual improvement until the Fund exhibitions come to be ranked among the chief artistic attractions of the season. Pecuniarily the society is in a very flourishing condition. About \$4,000 are now paid upon the death of a member.

The collection was shown in the large south gallery of the Academy building, the Water-Color Exhibition being in progress at the same time in the other rooms. This south room has very often been shut off and the others used without it, but it has never been available itself for separate purposes. Now that a supplementary staircase has been built by which it may be immediately reached, it will doubtless be found very useful; for there are few good rooms in New York where small collections can be shown.

It is not necessary to touch upon the bulk of the pictures on the wall. It is not necessary to speak of those by Messrs. Addison Richards, Gay, Fitch, Loop, Casilear, Parton, Cropsey, Sonntag, Lambdin, Tait, Bristol, Hicks, Lang and Falconer.

Mr. Bricher's *Baby is King*, a beach scene, was rather stronger

than his usual work and came near to being a creditable example of the style affected—a style where modish toilettes form the main attraction and where the facts of sea and sky and shore are regarded as accessories. Mr. Maitland Armstrong evidently knows what it means to paint in a good manner and strives conscientiously to do so, but one cannot say that he strives with success. Still, the knowledge and the effort are not to be despised when we see so many canvases that give no sign of either. Mr. Darley showed a Village Blacksmith of the quality long known to us under his name, but his Evangeline was not so good. Mr. David Johnson exhibited a very carefully worked landscape which was a great improvement on those he did some years ago, though by no means equal to his contribution to the Philadelphia exhibition last autumn. The suggestion of certain French painters was again strong, but the treatment was harder, the tone less good and the composition unsuccessful. Mr. Eastman Johnson's old country folk were a little less well done than usual. I think many will agree with me that this artist's carefully finished interiors are less valuable than such pictures as the Cranberry Picking he showed last year. Yet as the public has most usually had them from his hand, they are what it most eagerly demands. Mr. Percival De Luce draws with care and has very good intentions. But when a man has no stronger instinct for color than he possesses it is a pity that he should not seek safety in modest aims rather than attempt such daring combinations as he gave us here in his Baby's Hour. The crude solid pink of the wall-paper and the bright dark blue of the mother's dress were both tints that had no place on a painter's palette. In combination they were most distressing. Mr. Wordsworth Thompson's Morning in Canobbio, Lake Maggiore, was a spirited picture with a diligence and a motley crowd of figures, seen in the misty light of early morning. It was painted with all Mr. Thompson's combined energy and definiteness and was, I think, as successful as anything he has shown for a long time. He also contributed a good View on the Tow-Path, Erie Canal. Mr. W. S. Macy seems to be falling away from the position he took a few years since. Two pictures stood under his name in this collection, one, a River Scene at Dartmouth, very green in the foreground and very heavy as to the sky. The canvas was very "painty" in effect, and one missed the atmosphere and light which Mr. Macy has so often given with success. The other canvas, Autumn at Nonquitt, Mass., was better, though not up yet to the artist's mark. He seems to be losing his lightness of hand, and his touch is heavy rather than broad. In place of a truer atmospheric effect we had here a sort of metallic clearness of tint and a relief that was so strong as to be unnatural.

Mr. Carleton Wiggins has always been an interesting painter, but he has improved very visibly since he went abroad about a year ago. We had two pictures of his here, one, an orchard with cattle, being particularly good. The soft, misty effect of very early spring was admirably given, the composition attractive, and the tone of the picture most agreeable if a little pallid. This picture sold for \$360. His work found a contrast in that of Mr. J. Ogden Wood, who also paints cattle, but in a style that is far too suggestive of Van Marcke to be very individual. Van Marcke's powerful scale and strong contrasts are essayed, but without entire success. Mr. Quartley contributed two of his coast scenes, the better of which was the Raritan Bay. The one called Marblehead would have been more successful, I think, had the sky been less "tormented." Mr. Dielman's Among the Shocks, showing a couple of negro boys, was not very good in color, yet it was better and stronger work than his "decorative" little pictures of ladies in queer dresses. These latter, taking subject and treatment together, strike one as being more fashionably "aesthetic" in their effect than genuine or artistic. Mr. Guy's Sweet Whisperings was a life-size half-length of a lady with a baby just out of its bath. The lady's face was the same that he painted last year as busy with her pottery decoration. The picture was inane in sentiment and weak in expression, the mother's face being perfectly blank. And the pink-soap complexion was even more distressing than is usually the case with Mr. Guy's figures. Yet the picture was "pretty" in the eyes of the average visitor, and, as might have been expected, it sold for \$510, the highest price obtained for any picture in the collection, except for Mr. Eastman Johnson's, which brought \$1,350.

The most interesting things in the room, I think, were signed by Mr. Homer Martin, Mr. Douglas Volk, Mr. Thayer, and Prof. John F. Weir. Mr. Martin's Woodland View was perhaps the only bit of absolute color in the whole collection, Prof. Weir's Study in Black and Gold being rather an "arrangement" than a spontaneous expression of an artist's way of seeing things. Mr. Martin's picture showed a stream running under trees which filled the whole canvas with their green and yellow shimmer. The color was of a kind, as is so often the case with Mr. Martin, that is not agreeable to every eye, yet as I have said, it was color, and of a genuine and not a manufactured sort. Mr. Volk had a small coast scene with figures, Watching for the Fishing Boats, Normandy, which was very well done. His larger study called Tired Out was exhibited in Boston in the autumn under the title "In the Park." It is not likely to be forgotten under any change of name. It showed the figure of a sleeping child clasped by the huge black hands of a nurse in whose lap she rests, but of whom no more is visible than the aforesaid hands. Naturally, it was hardly to be praised for composition, and in color it was very chalky, yet it was a very good picture in its way, strong in handling, and the face admirably alive. Mr. Thayer showed a capital study of dead birds and a Portrait of a Lady of the Nineteenth Century—rather an imposing title for what was simply a charming face deli-

cately painted. Here, too, it was possible to find a number of faults, but necessary to applaud in spite of them. The accessories of dress were not satisfactorily painted, I think, and the sharp diagonal line in the tapestry background took every particle of repose out of the picture. Mr. Thayer's painting is as far as possible from being imitative. It is scarcely calculated to produce from any possible point of view the true effect of the things portrayed. It is all most frankly paint: the hair is not hair, and the eyes are not liquid, and the flesh, although something very lovely, is not exactly flesh. In this particular portrait, too, there were faults which one does not always see in his work, for the neck was not modelled at all, nor could any one say that it was a strongly handled head like Mr. Volk's, yet in spite of all it was alive and individual and charming. Prof. Weir showed a canvas called By the Sea which was effective in coloring, though, I think, very unnatural. It was not a want of reality in tone, which may be readily excused for the benefits it sometimes brings, but in the very decided local colors. His half-length of a girl in black against a yellow background, to which I have already referred, attracted more attention than any picture on the walls. The figure was well posed and the color very good, though, I must repeat, it gave one the impression of having been sought for and attained by rule and effort rather than that of being the artist's natural mode of speech. There was something strange about the modelling of parts of the face, but it was lifelike and good, notwithstanding. The blacks of the costume were cleverly discriminated. One could not help admiring the picture for many qualities, but it was so evidently a portrait—so little of a study, or an idealized figure—that not every purchaser would have cared to own it. It was a picture that seemed almost desecrated when offered for sale to the highest bidder. One felt as though a bit of reality were being bargained for. About Mr. Thayer's picture, though also beyond doubt a portrait, one had not the same feeling. It was so much less actual, less startlingly real and individual than this girl of Prof. Weir's. Perhaps it was for these reasons that the picture, although it had been so universally called the most noteworthy thing in the collection, brought only \$155 when sold. When a man paints a portrait which strikes us as almost painfully out of place under the hammer, which, in spite of its good painting, seems as if it could have but little value for any but the sitter's friends—a portrait which I, for one, would no more care to hang upon my wall than I should care to have a stranger sitting by my fire—its value is, perhaps, of a prosaic, literal kind. It is certainly not the highest sort of portraiture, for that can make the portrait of any man a desirable possession for every other. But Prof. Weir ought certainly to paint satisfactory likenesses where the facts of resemblance and of strong, vivid characterization are those especially demanded.

Perhaps no American artist of the day has gained quite so high a European reputation as Mr. Bridgman. In spite of his youth he is no longer an aspirant for honors but has a recognized place among the best Parisian workers. His pictures have been medalled until they are now *hors concours* and the last Paris Exposition brought him the decoration of the Legion of Honor. In spite of the fact that he had occasionally sent pictures to this country, his name was for long better known here than his work. Three or four large canvases were shown during the past year but they did not seem quite to justify all that we had been told as to his ability. Reviewing them in these columns I said—and I think with justice—that they showed more of well-directed, accomplished industry than of exceptional endowment, more of erudition than of vigor, more of reflection than of inspiration, more of deliberate than of spontaneous sentiment. No painter, of course, could have acquired such skill as Mr. Bridgman's had nature not given him a genuine artistic substratum upon which to build. But the superstructure seemed so elaborate, so studied, so well regulated, that the personal accent of his talent, if I may so say, had been almost smothered. Mr. Bridgman did very good things and did them admirably. We might not have been able to cite any other man who had actually done the same things in the same way,—yet it did not seem at all impossible to the imagination that they might so have been done by some other. One did not receive his pictures as a special artistic message which no one but himself could ever have delivered. And Mr. Bridgman's preferences seemed so remote from the present day and from local things, that one was tempted to unwillingly omit his name from the list of those who will in the coming years, we hope, make of American art a thing not only fine and worthy, but separate and individual. Since Mr. Bridgman has opened his present exhibition, however, one acknowledges with delight that he has several quite distinct sides to his artistic character. The large, carefully-wrought pictures shown include those that I have already noticed as well as many others. And we are given in addition about three hundred sketches and studies of very various sorts. In these we find a force, a dash, a brilliance of technique, and a freshness of feeling that one had not expected. The variety of theme, moreover, is just as surprising as the variety in treatment. To-day as well as the past is painted, society as well as savagery, Europe as well as Asia and Africa. There is everything on these walls—studies of effects of sky and water, portraits of ladies and of babies, figures grotesque, picturesque or lovely from all sorts of places, animals of many kinds, architectural motives of every sort—everything down to the study of a railway station with a rushing train, one of the best and most artistic things in the room, by the way. Perhaps in noting it I should have said Mr. Bridgman had worked up and not down to it—for is not the best wish we can make for nineteenth-cen-

ture art the wish that it may learn how to treat the things that have never before demanded artistic treatment, the things which are characteristic of our civilization, vital to our lives and distinctive of our race?

It is impossible in a general notice such as this, to comment in detail upon Mr. Bridgman's work. It is so varied in style and so varied in both the kind and the degree of its merits and defects that the task would run into minuteness of criticism. Yet I cannot but give a word of especial praise to his animals: I have never seen such horses as Mr. Bridgman paints, from the most aristocratic to the most humble of the race. This exhibition has been the chief attraction of the season in New York. It is not only interesting as revealing a power and versatility one had not expected in the artist. It is also very valuable in itself, containing pictures that delight the public and studies that enchant an artist—that must, indeed, enchant any man who knows what it means to see as much in nature as Mr. Bridgman has seen and to interpret it in as many different ways—all of them so scholarly and some of them so powerful.

M. G. VAN RENSSLAER.

METHODS FOR JUDGING OF THE WHOLESOMENESS OF DRINKING-WATER.¹—I.

MANY years ago the usual way to ascertain the wholesomeness of drinking-water was to discover what mineral impurities were present. The water was therefore evaporated to dryness, and a more or less complete analysis was made of the solid mineral substance left, as is done with mineral-spring waters. Little attention was given to the organic matter, except when present in very large amounts, as in marsh-water, etc. Occasionally, even now, we read of some one making tests for mineral impurities in a suspected well-water but omitting any test for the organic matter. Such analyses were exceedingly troublesome; and, after all, it is very doubtful whether they were of much value—in many cases perhaps of no value whatever in ascertaining the wholesomeness of ordinary drinking-water. Of course, the detection of iron and of sulphate of lime and magnesia, in this way, was of some importance, for waters containing considerable amounts of these substances should be considered unwholesome for daily use, in health. But we really have no reason at all for supposing that such mineral substances as silica, alumina, potash and soda, as they occur in any but very rare cases, have any influence whatever on health. Moreover, waters which are free from much mineral salts may often be very unwholesome for other reasons not discoverable at all in this way. This sort of analysis has therefore been entirely discarded by chemists conversant with recent sanitary experience, except in selecting a new source of water-supply for a city, which involves other than sanitary interests as well.

In the preceding lecture it was shown that by far the most important element in sanitary investigations of water is the organic matter contained in it, either in the form of minute suspended particles or in actual solution. It was shown that the purest rain and spring waters contain a minute amount of organic matter, but that rivers, streams, and shallow wells, in populous districts contain much larger proportions of it. It has long been known that waters, the sources of which originate in populous districts, were often the apparent cause of disease.

These facts have been for many years recognized by chemists, and it has therefore been their endeavor to devise methods for finding the exact amount and also the nature of this organic material. Let us now briefly review the advances which have been made in this direction.

The earliest method used for this purpose was what is known as the "ignition" process. It consisted in evaporating a measured quantity of water to dryness at a temperature which varied with different chemists, and weighing the residue. This residue was then exposed in a platinum dish to a sufficient heat to burn away all the organic matter. On cooling, the weight was again taken, and the difference was called organic matter. It was very simple, and easily performed, and was extensively practised. It has been shown, however, to give very erroneous results in a large number of cases, especially with hard waters, and well-waters containing considerable nitrate. There are numerous chemical objections to it which render it entirely fallacious, but it will not be proper on the present occasion to enter into much chemical detail. We may say, however, that any carbonates of lime, etc., will, by the heat necessary to burn away the organic matter, partially lose their carbonic acid, ammoniacal salts will be volatilized, nitrates will be converted into carbonates by the carbon of the organic matter, these and other salts will lose water of crystallization, and if much chloride of sodium is present, in contact with carbon, hydrochloric acid will be volatilized, the fumes of which are often perceptible in thus treating the residue of a highly polluted water. Moreover, it is frequently difficult to get rid of the last traces of unconsumed carbon without raising the intensity of the heat so as to render the loss of mineral salts positively certain. In fact, we can never know what interchanges may take place among the materials of the residue when heated to faint redness. Various efforts were made to avoid this, or to replace the loss. Carbonate of soda was added during the first evaporation, but it has been shown that by this means a part of the organic matter was liable to be destroyed before the first weight was taken. Carbonate of ammonia

or carbonic acid water was added to the residue after being heated, so as to restore the lost carbonic acid, but while this confessedly replaces only a part of the loss, it has also been shown that the weight of the residue is frequently increased in a curious and irregular manner by this means, so as finally to become sometimes considerably greater than it was before being heated at all.

Prof. Wm. Ripley Nichols finds this method, with the employment of aqueous carbonic acid, of some utility for the relative comparison of the very soft waters of many New England streams. In these cases the loss appears to represent chiefly organic matter, and is recorded as "organic and volatile matter," which is the only accurate designation for it. But the results probably can never be, constantly, very exact, and no reliance should be placed upon them to the exclusion of other tests. In the case of the majority of well-waters Prof. Nichols considers this method valueless. It may frequently be useful, and as a qualitative test only, to heat the solid residue, and notice the odor, if any is given off. This will aid us in distinguishing animal from vegetable substances.

The unsatisfactory character of the "ignition" method led chemists to adopt what is known as the "permanganate" method. Of this there are numerous modifications, giving different results according to the practice of different chemists. They are all based on the same general principle, which is strikingly illustrated by the action of potassic permanganate on oxalic acid in solution. The magnificent color of the permanganate almost instantly disappears in a surprising manner. If we pour very rapidly, numerous bubbles of gas rise and burst at the surface, exactly as in a glass of soda-water. Now, what happens here is, chemically, just as truly combustion as the burning of coal in a fire, only the oxidation takes place in water instead of air. The permanganate is rich in oxygen, which it gives up very readily, and this combines with the oxalic acid to form carbonic acid and water, just as the oxygen of the air unites with the burning coal to form the same substances. The oxalic acid is destroyed and the resulting carbonic acid gas passes off in small bubbles. The permanganate also is destroyed, as is shown by the disappearance of color, and the hydrated oxide of manganese, which would otherwise settle in brown particles, is held in solution by sulphuric acid, a little of which was previously added, forming the colorless manganese sulphate.

Now oxalic acid is only one of the many organic substances upon which potassic permanganate acts in the same way, in a greater or less degree. As long as there is organic substance in the liquid to be acted upon, the color of the permanganate will be destroyed, although in some cases very slowly; but as soon as this organic substance is exhausted the pink color will remain permanent in the liquid. We obtain in this way a sort of measure of the amount of organic substance. In the actual analysis the chemist takes a measured quantity of the sample of water and pours into it from a measuring-tube, called a burette, a solution of permanganate of known strength. This is a very imperfect description of the method, but it is sufficient for our purpose.

This method, with whatever modification it is used, does not really show how much organic matter is actually present, but only how much oxygen has been required by the substances which are capable of being oxidized in this way. German chemists are in the habit of reckoning five times the numbers obtained in the analysis as representing the total amount of "*Organischer Substanz*." This is, however, an arbitrary factor, and while it may have been tolerably accurate for some waters used as test analyses, we have no proof at all that the calculation would be accurate in all other cases, and it is hence reduced to a mere guess.

There are many objections to this method which show it to be very unreliable. Different substances are acted upon in very different degrees by permanganate, and upon some that must frequently occur in polluted water there is no action at all. Hence the method cannot by any means be relied upon to give the absolute amount of organic substance. If nitrous acid, ammonia, hydrogen sulphide, or protoxide of iron are present in the water, they will affect the permanganate in the same way as organic matter, and would be counted as such in the analysis. We must, therefore, find the amount of these substances in other ways and make a correction for them. It is also stated to be uncertain whether the action on ammonia is uniform, and if it is not, no accurate correction for the ammonia can be made. Dr. Frankland, while condemning this method as entirely unreliable for ascertaining the quantity of organic matter, admits that it may be a useful qualitative test. "Thus," he says, "if a clear and colorless water decolorizes much of the permanganate solution, the water ought to be rejected for domestic use, as being of doubtful quality." It has the advantage of being readily performed, as a qualitative test, in a short time, with few materials and no special apparatus, and is therefore useful on occasions when there is no opportunity for a regular analysis.

In the hands of any one chemist, its use as a quantitative method will, without doubt, give some valuable information as to the relative quality of different waters, if the test is always performed in the same manner. The degree of rapidity with which the oxidation takes place will probably give some idea as to the putrescible nature of the organic matter. It is thus that Dr. Tidy's periodical analyses of the metropolitan water of London, by the permanganate method, have not been without value.

In England and America both the methods I have described have been to a great extent abandoned, and two other methods have taken

¹ Abstracts of lectures delivered before the Franklin Institute, by Reuben Haines, December, 1880, in which additional original matter has been introduced.

their place. These are Wanklyn's ammonia method, and Frankland's combustion method, which were devised and published at nearly the same time, in 1867 and 1868. The Frankland process consists in evaporating a measured quantity of water to dryness and burning the residue in a combustion-tube on the same principle as that by which an organic analysis is made. The resulting gases, instead of being immediately absorbed, are measured in a delicate and complicated apparatus for gas analysis, and then separated by absorption. The gases resulting from the organic matter are chiefly carbonic acid and nitrogen, and are calculated as organic carbon and organic nitrogen. The gases are drawn out of the combustion-tube by means of a Sprengel vacuum-pump, and upon the perfection of the vacuum produced, depends, in part, the reliability of the results.

The Wanklyn method, which is much more generally practised, makes use of the potassic permanganate. A measured quantity of the water to be analyzed is put into a glass retort, to which is attached a condenser. A little carbonate of soda is dropped in through the stoppered orifice in the retort, and the water is distilled rapidly until no more ammonia is given off, and condensed with the steam. The distilled water is collected in flat-bottomed test-tubes of perfectly colorless glass. This ammonia which is first distilled is called free ammonia. It is that which is present in the form of ammonia, either in the free state or in combination, in the water. A solution of potassic permanganate, with which a strong solution of caustic potash has been mixed, is now poured into the retort, and the distillation continued until no more ammonia is perceived in the distilled water. The ammonia now found in the distillate is called "albuminoid ammonia," and is that which results from the decomposition of nitrogenous organic matter by the action of the permanganate solution. Hence it represents that organic matter, and forms a relative, more or less definite, measure of it. It is upon this peculiar action of a boiling, strongly alkaline solution of potassic permanganate that the method of Wanklyn is founded. The delicacy of the method depends upon the sensitiveness of the Nessler test for ammonia, which is one of the most delicate colorimetric tests in the whole range of analytical chemistry, being capable of recognizing easily one part of ammonia in ten million parts of water, and distinguishing differences of one-third of this amount.

Let us now consider some of the defects of these two methods of analysis and appreciate what may be readily learned by their use.

In the first place, by neither of them can we, with certainty, estimate the exact amount of organic matter actually present in water. For this purpose there is no method known; nor can these methods enable us to identify and separate the different kinds of organic substances that may be present. In fact, we know almost nothing as to their nature, except that there is a general impression that much of this polluting material is probably of an albuminoid character.

Frankland's method endeavors to estimate the exact quantity of organic matter, but, as will be seen by a candid examination of the essential defects of the process, there is at least a formidable array of probabilities against the possibility of its doing this.

Wanklyn, on the other hand, does not undertake to estimate the absolute quantity, but simply attempts to find a factor by which to make a tolerably accurate comparison of the relative purity or impurity of water. By this method we analyze a naturally good water, known beforehand to be wholesome by long experience and absence of any contaminating source, and the results obtained from this are then taken as a *standard* by which to compare other waters. The opinion is expressed by some chemists that this standard, although practically constant for any one locality, will be apt to vary considerably for different localities, even remote from the seaside.

In comparing the two methods we may say that both are philosophical in some points, and both unphilosophical in other ways.

That of Frankland seems theoretically better, because a combustion is made of the organic matter on precisely the same principle that is employed in the ultimate analysis of an organic compound. By this means the carbonaceous matter not nitrogenous is also estimated, which does not enter into the results of Wanklyn's method.

But Wanklyn's method is more philosophical, because it deals with the water itself, and not with merely the solid residue left after evaporating the water. We want to know what is contained in the water, or at least the properties of the water; but we do not necessarily need to know what is in the residue, for it is at best only indirect evidence, and what is shown by it may be only partially true of the water from which the residue came.

The value of Frankland's process depends on the assumption that what is contained in the residue fairly represents what is contained in the water itself, deducting of course the nitrates, which must be got rid of in conducting this method. This is really an assumption which Frankland has never clearly proved to be a fact, and which Wanklyn and others, including German authorities, claim is a mistake. It has been shown by German chemists that an appreciable amount of organic matter is lost during the evaporation of the water, especially when originally volatile matter is present. Moreover, we have no knowledge as to whether volatile products may not be formed during the evaporation at the boiling temperature. Frankland endeavors to prevent the latter result by the addition of sulphurous acid, taking advantage of its antiseptic properties. This has, however, been shown to be quite objectionable, causing the inevitable loss of part of the organic matter through the formation of gradually concentrating sulphuric acid. It is claimed that the further addition of sodium sulphite will not sufficiently neutralize this acid; but

whether this is correct or not may not have been proved. Several other technical objections¹ have been advanced against the method, which it will be unnecessary to quote here. Finally, the chances of error, and the numerical corrections to be made are so numerous as to make this method quite complicated and difficult. It requires the chemist to be thoroughly skilled in the most delicate gas analysis, on account of the exceeding minuteness of the quantities to be measured, as compared with ordinary analysis. The apparatus is costly and fragile, and considerable time is required for each analysis. Skilful chemists might not consider some of these as really serious objections, but they will certainly prevent the general adoption of this method by city and state boards of health for sanitary purposes.

This method endeavors, also, to determine the character of the organic matter by the proportionate relation of the organic nitrogen to the organic carbon, this relation being found to be, by an average between wide limits, respectively, 1:11.9 for waters containing extract of peat, and 1:1.8 for sewage.

But Frankland has found that oxidation of peaty matter decreases the carbon, while oxidation of sewage decreases the organic nitrogen. "It is thus evident that the proportions of nitrogen to carbon in soluble vegetable and animal organic matters vary in opposite directions during oxidation—a fact which renders more difficult the decision as to whether the organic matter present in any given sample of water is of vegetable or animal origin.

Prof. Nichols quotes² from Sander: "Without a knowledge of the previous history of the water, the relative proportion (between carbon and nitrogen) is not available as a means of deciding as to the nature of the contamination; if, however, the previous history of a water is known, there is scarcely need of so particular an analysis in order to judge of its character."³

It has been shown that in the case of very pure waters the experimental error may often be greater than the total amount of organic material to be estimated, and that in the case of waters containing readily decomposable nitrogenous organic matter, together with a large excess of nitrates, the accuracy of the results may be more or less vitiated by the efforts to get rid of the latter. Mr. Wigner says that "supposing that the organic nitrogen yielded by the Frankland and Armstrong process were a positive quantity instead of a quantity needing a heavy correction for personal equation and for impurities in the chemicals used, yet the danger of error involved in the analysis, and the risk of contamination by atmospheric impurities, are in my opinion sufficient to prevent it from ever coming into general use; and unless generally used it is undesirable for reports which appeal to public sense and public understanding."⁴

Wanklyn's method is also unsatisfactory and unphilosophical as a scientific quantitative method, because it assumes that most of the organic material usually found in drinking-water is in its general character similar to animal and vegetable albumen. This is an assumption which no one has yet proved to be correct, and it is difficult to perceive how it can be proved until we know definitely what these specific materials are, which it is impossible to determine in the present state of our knowledge. Wanklyn found that pure albumen yielded by this method about two-thirds of its total nitrogen as ammonia, and that this proportion was quite constant. That this is also true of organic matter in water cannot at present be proved. He proposed at first to calculate the total organic matter as ten times the albuminoid ammonia, but this he has since, evidently, and it should be said rightly, rejected as both unscientific, and really not necessary for the practical judgment of the sanitary character of water by his method.

THE ILLUSTRATIONS.

STABLE FOR MR. R. H. COLEMAN, CORNWALL, PA.—MR. W. B. POWELL, ARCHITECT, LEBANON, PA.

THE exterior of the building is constructed of sandstone found on the estate, in color a rich brown. The walls are broken range pitched, and the finish, etc., tooth-chiselled. The lining and interior walls are built of Philadelphia pressed brick, laid with thin joints in white cement. All openings are arched with moulded brick. The carpenter-work throughout (save in harness-room) is executed in Georgia yellow pine, planed and moulded. All framings are tenoned and keyed. The cases in harness-room are made of butternut wood, the sliding doors having single light three-eighths-inch plate-glass panels. The floor of this room (also of hay-room) is laid with two thicknesses five-fourths-inch narrow yellow pine heart boards, tongued and grooved, blind nailed and joints filled. The balance of ground-floor, including the pavements under front and rear porches, is laid with asphalt brick on side. The stalls have oaken racks or floors laid upon the brick, which may be removed at pleasure; when the stalls are occupied, the same are covered with thick plaited straw mattresses or bedding. All exterior doors on ground-floor (also skylight over wash-room) have single light one-half-inch hammered glass. The windows in stable are glazed with one-eighth-inch white ribbed English glass; elsewhere, one-fourth-inch polished plate. Cresting and finials, terra-cotta from Perth Amboy, N. J. Hardware throughout polished bronze, made from special drawings. The stall-fixtures, cast and wrought iron. The plumbing is thorough and

¹ Vide Jour. Chem. Soc., Chem. News, etc.

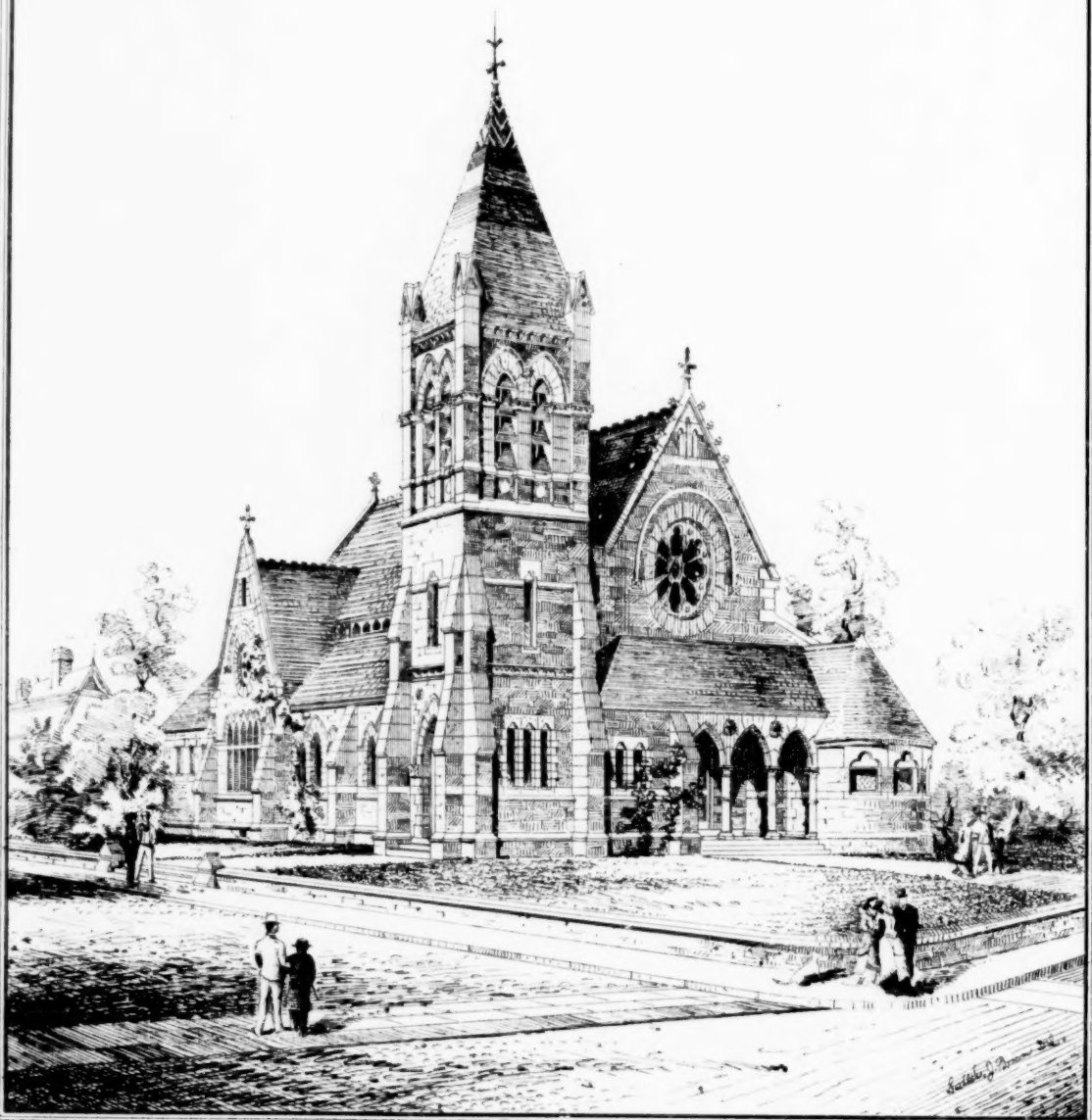
² Prof. Nichols's paper in Buck's Hygiene, vol. 1, page 303.

³ "Handbuch der öffentlichen Gesundheitspflege," page 230.

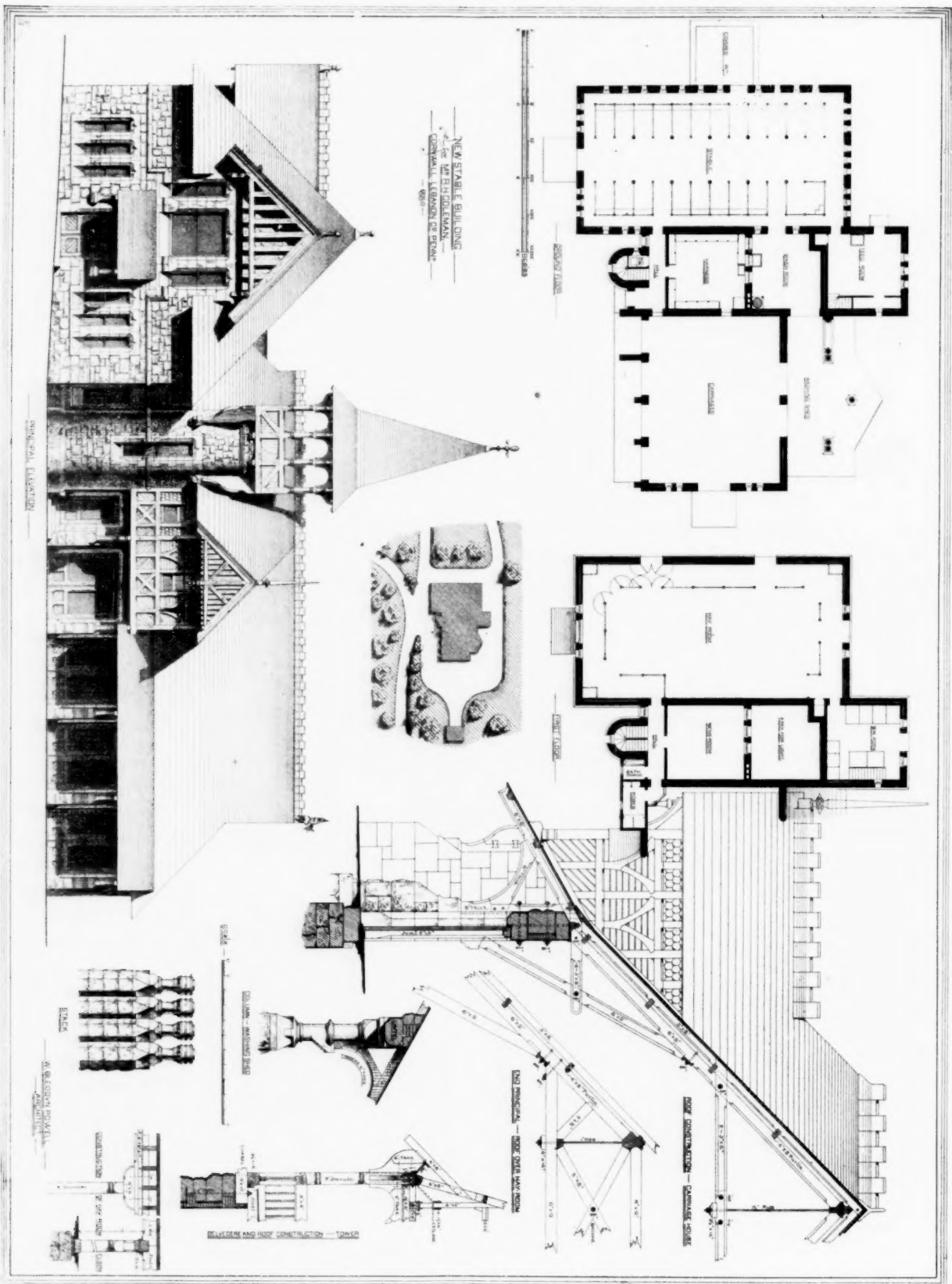
⁴ Sanitary Record, Oct. 19, 1877.

l
f
e
a
y
-
-
s
e
a
a
-
s
-
n
-
-
e
e
-
e
n
n
i-
c
g
a
r
s
d
i-
i-
e
s,
i-
s
a
e
l
s-
lt
e
s-
n
as
is
l.
es
it
ot
of

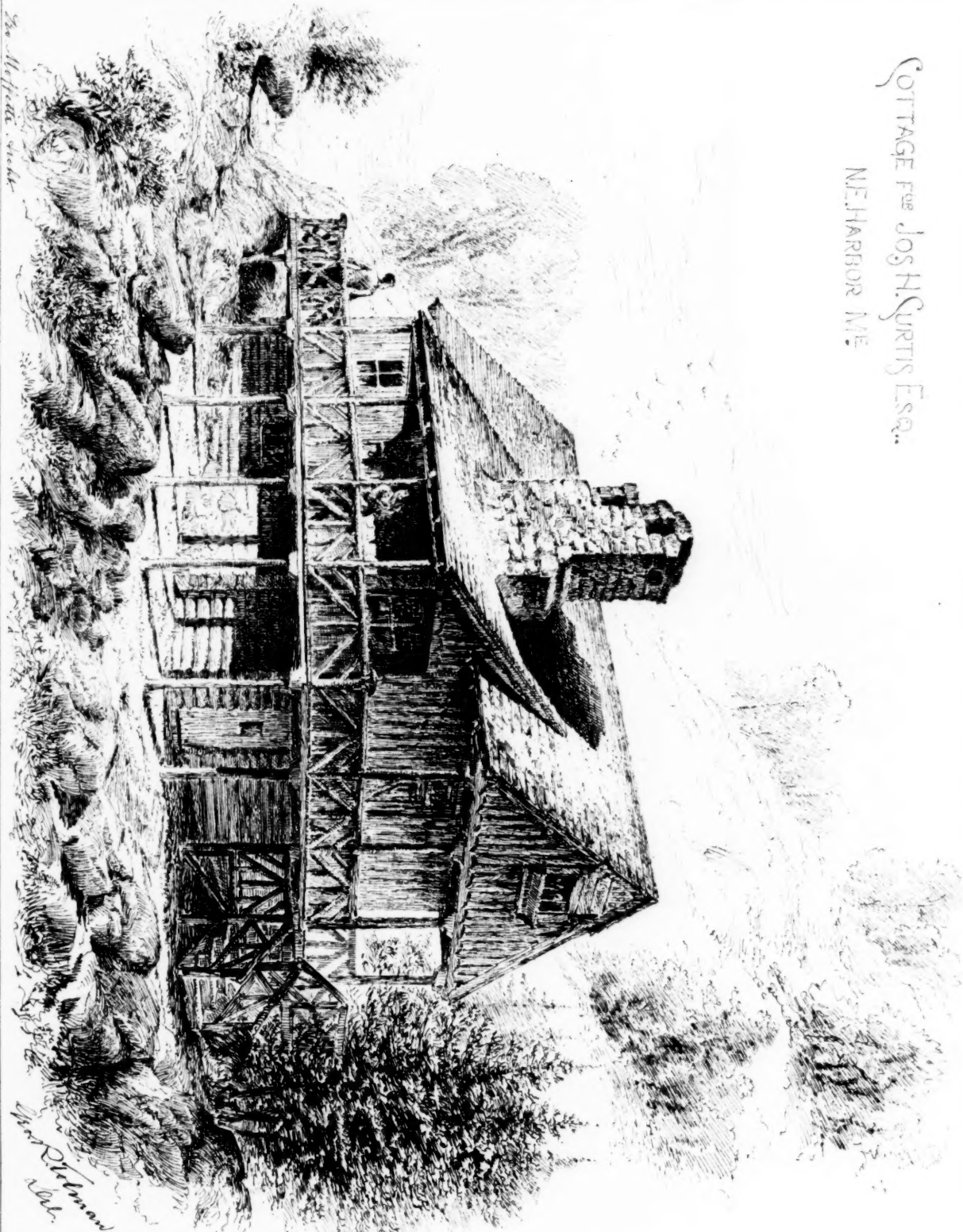
a.
n
re
or
ts
ne
n
d
l,
ss
h
s,
of
s,
or
n
w
y-
d
te
e.
d-
ne
d



• CHURCH at NORTH ADAMS, Mass. W. C. BROCKLESBY, Architect. •



COTTAGE FOR JOS. H. CURTIS ESQ.
NEW HARBOR ME.



The Moffatt, sketch

Wm. R. Johnson
1880

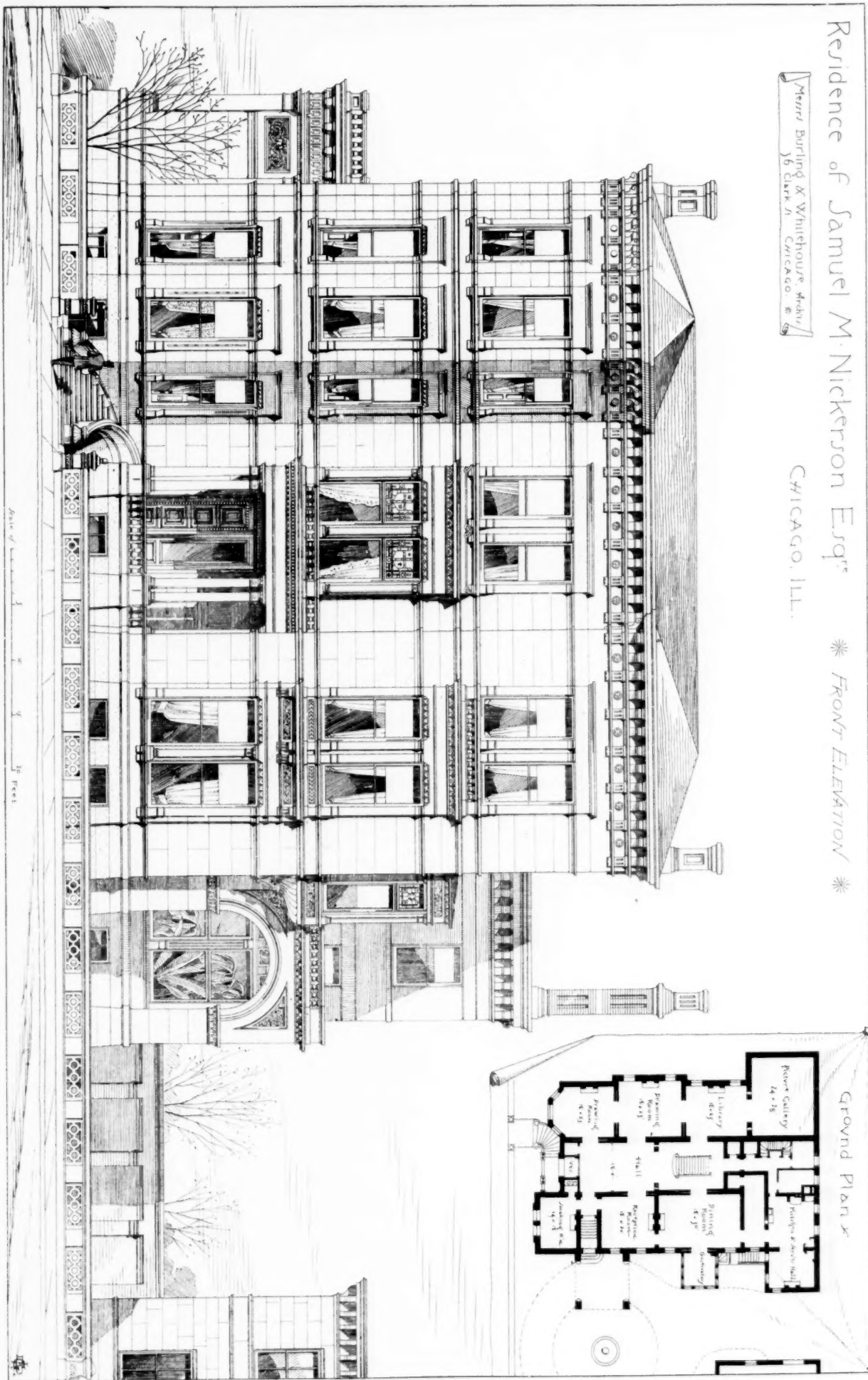
COPYRIGHTED 1985 JAMES R. OSGOOD & CO.

Residence of Samuel M. Nickerson Esq^r

* FRONT ELEVATION *

Merris Burling & Whitehouse, Architects
36 Clark St. CHICAGO. * 6

CHICAGO, ILL.



complete in every respect. Fire-plugs are located in stable and carriage-house, in the hall between the same, and others on the north and south sides external to the building. The bath, water-closet, soap-stone and china sinks in feed, wash and harness rooms, are large size, and furnished with nickel-plated fixtures. A Hitching's furnace with water connections, in wash-room, supplies hot water to the establishment. All the drainage is underground; the pipes are large and heavy, thoroughly trapped and ventilated, and draining into two cess-pools, 10 feet diameter by 30 feet deep, distant 130 feet from the carriage-house. The stalls have bell-trap inlets, each inlet-waste trapped into main drains. The water from roofs and drives surrounding the building is conducted by twelve-inch terra-cotta drains into a creek 150 feet distant. The building is lighted with gas. The pipe and fixtures in stable are nickel-plated; elsewhere of polished brass. The grain-bins are rat-proof and connected with feed-room on ground-floor by seven chutes having patent "grain cut-offs." A telephone connects with the mansion. Cost, complete, \$48,000.

SAINT MARK'S CHURCH, ADAMS, MASS. — MR. W. C. BROCKLESBY, ARCHITECT, HARTFORD, CONN.

This church will be built of local limestone, with finish of Ohio stone. A portion of the interior finish will be executed in pressed brick and terra-cotta. The contracts for the building were signed last month, and work will be commenced early in the spring. The designs of the architect were accepted in competition.

HOUSE FOR SAMUEL M. NICKERSON, ESQ., CHICAGO, ILL. — MESSRS. BURLING & WHITEHOUSE, ARCHITECTS, CHICAGO, ILL.

This building is one of the few fire-proof houses in the city. The brick partition-walls are carried one above another to the roof: the floors are of brick arches turned between iron beams upon which bedded in mortar are the flooring strips to which the flooring boards are nailed.

COTTAGE FOR J. H. CURTIS, ESQ., N. E. HARBOR, ME. — MR. GEORGE MOFFETTE, ARCHITECT, BOSTON, MASS.

GAS-HEATING AND LONDON SMOKE.

It is scarcely reasonable to expect — so soon do we happily forget our ills — that the average Londoner of to-day should be able to realize effectually the dolorous manner in which the average Londoner of five-and-twenty or thirty years ago used actually to hold his nose as he crossed the bridges or went to and from business on the penny boat. What the philosophers call a fixed idea had taken possession of people's minds to the effect that the dreadful dirtiness of the river was part of itself, and would last as long as the current would run — which would not be forever, though, after all (as would be jocularly remarked), seeing that the time must probably come at last when the old channel would be choked up by the more substantial cause of the smells, and the water would have to find for itself a new one. So completely had patience conquered its throne, however, that the nuisance had become a mere subject of hilarity, and the man was counted a pragmatist who would regard "Filthy Old Father Thames" as anything else than a rollicking old joke. But one of those accidents at length intervened which, all through the generations of man, have determined the eventual shaping of his ends, rough-hew them how he may. The House of Commons had to sit a little farther into the dog-days than usual. If it had been only the House of Lords, or the Courts of Law, nothing might have happened; but it was the House of Commons. The "filthy old Father" had the misfortune — so far as his conservatism was concerned — to have somewhat supersaturated himself with his stench that year. He was the same rollicking old blade as usual, only he smelt rather worse. The fine gentlemen in the Commons experienced a new sensation; inquired what was the cause of it; nosed it out to the river flowing so unconsciously by; and without more ado resolved to embark the river and redrain the town. The result we know and appreciate.

Another analogous case was that of the London engine-chimneys. Bad as the smoke is now, it was much more demonstratively and competitively obnoxious when every tall shaft in the metropolis was belching forth at pleasure its cloud of funereal fumes. Again an accident happened. My Lord Palmerston, taking the Home Office instead of the Foreign in his happy-go-lucky way, in order to make things pleasant for the moment with somebody else, had the idea presented to him, as to his predecessors time out of mind, that it would be a lively thing to compel engineers to consume their own smoke. His lordship liked the idea vastly; adopted it promptly; passed a little bill; and ever since that day the police magistrates have been fining everybody who, having smoke worth consuming, fails to consume it. Here again, when the thing is accomplished, the public enjoy the benefit; and a cockney who sees a factory-chimney smoking away in blessed unrestraint in a country town only wonders why the policeman stands by and allows it.

What accident is to have the supreme credit of abolishing the London fog it is impossible to say, but it is fair to suppose that what was a natural law for filthy old Father Thames and the engine-chimneys will be the same for the demon of the fog, and that nothing but hap-hazard will ever really reach him. But be this as it may, and changing our tone to one more serious, surely it is plain enough to everybody who knows enough of London, whether as resident or visitor, that the fog looks like a thing that must be gravely tackled some day. It is not to be taken for granted that such a shocking abuse of Nature

is an incident inevitable. If it seems very hard of cure, it is not to be supposed that the cure is never to be attempted. That there is the fixed idea of the dirty smoke, dirty smuts, and dirty fog being each one of them a thing to grin and bear is doubtless true enough. So also, by the way, there is the fixed idea of the London water being a thing to grin and bear. But (if we adhere to this last illustration) just as we see the authorities at last bestirring themselves in earnest now to procure clean water, so it must obviously be in course of time that they will put their shoulders to the wheel that is to abolish the smuts and the fog and give us clean air.

How it is exactly to be done is not the first question, as some easy-going souls will say it is. Even if we leave altogether out of the calculation how it is to be done, we are no less bound to urge upon the sluggish public mind that it *must* be done; and when it is at length decreed that done it shall be, we may be content to rest assured that there is quite enough of inventive skill in England to accomplish this, quite as well as the cleansing of the river, the consumption of the furnace fumes, and the supply of wholesome water. One thing, indeed, may be boldly said at once, and without any exaggeration being admitted: sooner or later either London must abolish its fog, or the fog will abolish its London. As the vast area of the town increases, as the population increases, as their density increases, as their dirt-producing work increases, as their sensitiveness to disease increases, the fog is increasing its effective power of attack, and the imprisoned victims are losing their efficient power of resistance. For the fog, it must be remembered, is not, as regards what may one day happen, a mere ordinary factor of death-rate, like bronchitis or typhoid-fever, but an abnormal pestilence, which is waiting for its opportunity to deal one good blow and have done with it. In a word it is by no means a difficult effort of the fancy to imagine a single day's work of fog more outrageous than usual decimating the population of the inner metropolis.

The cause of the fog has been explained many times, but we must explain it briefly once more. Wherever there is a large town lying along the banks of a great river, there is sure to be in moist winter weather now and then a sudden invasion from the open country of cold air, which, attacking the warmer air of the town saturated at the moment with moisture, occasions a large condensation of the atmospheric water-vapor, previously invisible. This makes the *white* fog. But the town air, thus laden with moisture, has also suspended in it a large amount of the gaseous and vaporous products of occupation — to use this somewhat euphemistic phrase to signify the miscellaneous and chaotic atmospheric dirt which is constantly escaping upwards from a great town by the kindly help of Nature, inducing it to ascend out of reach. In the thickening volume, therefore, of the white fog, all this dirt comes to be at once intercepted in its effort to escape; to use a plainer phrase, the "sweat" of the town clogs the air and makes the *yellow* fog. The smoke very soon makes this a *broken* fog, and by that time we are breathing, not the oxygen and nitrogen of heaven, but a hell-broth vapor of a hundred unctuous exhalations, innumerable varieties of dust and dirt, and a round half-dozen of actual pungent acids by name, with anything else that may lie handy to make matters worse and worse. How such a pestilent cloud ever gets dissipated again seems more of a marvel than its generation; but one thing we may certainly say is that it seems to disappear every year more slowly — as of course it necessarily must.

Now whatever we may be able or unable to do with the white fog of water, or with the yellow fog of town sweat, we may certainly see our way in one direction to deal with the smoke, which contributes to the cloud its peculiar aptitude for entangling and applying all else to the pestiferous purpose of poisoning mankind. The idea in question is the use of manufactured coal-gas for fuel, instead of the coal raw. It is of course not at all a novel suggestion, but it is one that appears to offer a clue to discovery; and as it will have to be urged upon the public over and over again a great many times yet before anything will come of it, we must not be led aside by the sneer that there is nothing new to be said about it.

So far as convenience goes, and cleanliness, it is scarcely necessary to ask for evidence in favor of the acceptance of gas-fires; but nevertheless there are two or three difficulties to overcome which are serious. First, there is the question of the cost of the gas as fuel. Here we have the satisfaction of being able to hope that, instead of merely reducing the additional cost of gas — which has hitherto been the chief purpose — inventors are now on the way to a material reduction below the present standard of cost of the raw coal itself. It seems strange to have to say so, but it seems to be the fact that an actual saving of our cash expenditure is the only consideration that will ever induce the present generation to try to grasp the notion of preferring a scientific material to an unscientific — such a thing as gas to such a thing as coal. But supposing this saving to be clearly made out, as we hope it soon may be, there comes up at once a second point of anxiety, how are all the millions of London fire-grates to be altered for the use of gas? The only answer to this is that time must be allowed; and we may of course add that the adaptations of old grates, and not the substitution of new ones, must be the mode of procedure. Then, thirdly, there is the financial question; the gas companies would obviously have to supply on credit, to those who are not only the impecunious but the improvident, the whole of their "fire and light," and, besides this, to face the very considerable risk of waste through both stupidity and wantonness, not to speak of the perhaps larger risk of bad debts among the great class of citizens who live from hand to

mouth and occupy their dwellings from week to week. It is not to be forgotten that these people are in fact the mass of the population, or, as the more expressive phrase goes, the masses. Lastly, we may content ourselves with alluding to the important circumstance that although gas may make no smoke, it still gives off products of combustion which have to be disposed of; akin to which is the other fact that if coke, for example, be used as a vehicle of incandescence, here again there would be deleterious gases to be dealt with.

The subject of the general abolition of coal-smoke in a great town is therefore one that is charged with not a few difficulties. But, although we have cited some of them, our doctrine is that they ought not to be dwelt upon as obstacles, but on the contrary, as a point of expediency, if not ignored, regarded hopefully. It may be a long time yet before we reach the ground of really practical endeavors to surmount them, but in the meantime we are bound in patriotism to believe that they cannot fail to be surmounted. — *The Architect*.

SIR JOHN VANBRUGH, 1666 — 1726.

[From the *Cabinet Maker*.]

AMONG the Queen Anne architects and designers this distinguished man deserves a prominent place. Although he had but little to do with the furnishing of the mansions he erected, still the vigor of his pencil very largely influenced the art productions of his day, and paved the way for that free classic treatment that eventually became known as "Queen Anne."

With a view to rightly understand the various phases of this much-talked-of period, we recommend a study of Vanbrugh's architectural volumes, feeling assured that the searcher after good form and effective light and shade will not go unrewarded.

To those who may question the utility of these biographies of Queen Anne architects, we may point out that there is a deplorable absence of illustrated literature having to do with early eighteenth-century house furnishing. It is thus only through the consideration of the ornamental portion of the architecture that a correct idea can be obtained of the style.

One result of the freedom and originality of his designs was that such men as Gibbs and Kent were led to vary their conceptions from the repetition of old detail which is to be seen in the works of Wren. It is frequently noticeable how the style of Inigo Jones is reproduced, even amongst the pupils of Wren, in preference to that of their master. Although it is unknown under whom Sir John acquired his knowledge of architecture, it is evident that the works of Inigo Jones formed a very prominent part of his studies; he was never, however, fettered by the lines of any such great predecessor.

Sir Christopher Wren is unquestionably entitled to be known to posterity as the "Giant Architect," but he is at least rivalled, if not eclipsed, by Inigo Jones in variety of detail. Between these two men the style of Vanbrugh takes rank, inferior perhaps to both, but none the less commanding and original. Many men, both furniture designers and architects, have produced their best works at the commencement of their career; thus it was with Sir John Vanbrugh, for Castle Howard is considered by many to be of superior design to Blenheim Palace, although it was built some twelve years previously.

Sir John Vanbrugh, the eminent eighteenth-century architect and dramatist, was born at Chester, in the year 1666, and his father was a merchant of that city. He was sent to France for his education, but his artistic studies were ere long interrupted by his joining the French army. This departure from his profession will indicate a many-sided character, and help to account for the curious development of genius that transpired later in his life. Notwithstanding such vagaries, at the age of twenty-nine he had acquired such reputation as an architect that he was appointed one of the commissioners for the completion of the important building now known as Greenwich Hospital. Strange to say, in this great man we find a curious combination of the dramatist and architect. The experiences of his early age, combined with his inventive genius, afforded him the material for several clever plays. His first effusion as a play-writer was "The Relapse," which, when brought out at Drury Lane, obtained such popularity that Vanbrugh ranked as one of the leading wits and dramatists of his day.

About the year 1697, appeared his famous comedy of "The Provoked Wife," which was produced at Lincoln's Inn Theatre, with even greater success than "The Relapse." Inspired to further performances by these successes, he joined Congreve in starting a theatre in the Haymarket, but so acoustically imperfect was the building that the brilliant wit and racy humor of "The Confederacy" failed to command an audience, and Congreve consequently abandoning the scheme, the theatre was closed.

The theatrical career of Vanbrugh is a story by itself, and these remarks must be confined to his pencil rather than to his pen. It was in 1702 that he erected the Palace of Castle Howard, in Yorkshire, for the Earl of Carlisle. The commanding grandeur of this building, and the satisfaction it gave to his noble patron, led to an extensive practice amongst the noble and wealthy in other parts of the country.

Vanbrugh had now gained such a reputation that he was commissioned to erect Blenheim House for the Duke of Marlborough. Money was not forthcoming in sufficient sums to meet the necessary expenses, and Parliament refused to grant funds when applied to; so that Sir John found the commission more honorable than lucrative. "Good Queen Anne" generously supplied most of the funds from

her private purse, and the architect was for a time fully employed on his greatest task; but the death of her Majesty unfortunately stopped these supplies ere the work was completed. When the Duke of Marlborough died, he left a definite sum to be expended to meet Vanbrugh's claims; but the Duchess refused to pay him his salary, dismissed him from his office, and the building was completed under different management. Notwithstanding this dismissal, the original designs of Sir John were adhered to. His relations with the Duchess were never again friendly, and it was not until some pressure was brought to bear upon her that he recovered nearly all the money that was due to him.

In 1714 he reached the pinnacle of his fame, and was made the Controller of the Royal Works. He died, at Whitehall, in 1726, much lamented by a large circle of admirers, and left his well-known comedy, "The Provoked Husband," unfinished.

His style of building and ornamentation was somewhat at variance with that previously practised. He seemed determined not to be controlled by any rules of architectural composition, but rather to allow his fertile brain unlimited play.

We find in his buildings combinations of novel forms and composite orders rendered in a varied and picturesque manner. These were but imperfectly understood by society at that time, and he was therefore subjected to much adverse criticism. Sir Joshua Reynolds, however, judged the censured buildings from a painter's point of view, and praised the effect of the light and shade, and the pictorial beauties, found in the works of Vanbrugh. It must be admitted that the grandeur and beauty of his compositions were often marred by inconsistencies of detail, and it is this want of care that spoils some of his otherwise clever productions.

Amongst curious epitaphs the one applied to Sir John Vanbrugh is interesting, as applied to the profession of an architect:—

"Lie heavy on him, Earth, for he
Laid many a heavy load on thee."

THE STRENGTH AND STIFFNESS OF FLOORS.

Boston, Feb. 10th, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The *American Architect* of Feb. 5 contained a communication from a prominent architect, of New York, questioning some of the statements and constants found in my articles on the Strength and Stiffness of Floors, published in your issue for Jan. 1. With your permission, I will give my authority for the statements and constants there advanced.

First, as to the requirements of the New York building law in regard to the space between the bearing walls of buildings. The first sentence in Art. 7, Section 1, of that law reads:—

"Every building hereafter erected more than thirty feet in width, except churches, theatres, school-houses, car-stables, and other public buildings, shall have one or more stone or brick partition-walls running from front to rear, or iron or wooden girders supported on iron or wooden columns; these walls shall be so located that the space between any two of the bearing walls shall not be over twenty-five feet."

Your correspondent quoted the part *not* in Italics (which are mine), but omitted to quote the rest. If your readers will take the trouble to compare the statement which I made in the article referred to with the above quotation, they can judge for themselves whether it was warranted or not.

The Boston building law reads essentially the same as the New York law on this point. Your correspondent, after admitting that the formulæ and constants given by me are perfectly safe, endeavors to show that they call for an unnecessary amount of material. Possibly they do, but we much prefer that they should call for a little extra material, rather than run the risk of having the lives of many people placed in jeopardy on account of weakness in the floor timbers on which they stand.

The weight of a packed assemblage of persons, it is said, will not exceed 70 pounds per square foot. Generally, it will not, although Mr. Trautwine, in a foot-note on page 297 of his *Civil Engineers' Pocket-Book*, states that the architect of Buckingham Palace wedged men together as close as they could possibly stand, lowering the last man down from above among the others, and thus obtained a result of 120 pounds to the square foot. But my principal reason for giving the 120 pounds as the maximum load per square foot for floors in public buildings is that Art. 20, Section 1, of the New York building law, reads:—

"In all buildings, every floor shall be of sufficient strength in all its parts to bear safely upon every superficial foot of its surface seventy-five pounds; and if used as a place of public assembly one hundred and twenty pounds; . . . and every floor shall be of sufficient strength to bear safely the weights aforesaid, in addition to the weight of the materials of which the floor is composed."

Also, that 120 pounds per square foot is the load which Prof. Rankine, in his *Civil Engineering*, gives as the maximum for floors in public buildings; that Mr. Haswell, in his *Engineers' and Machinists' Pocket-Book*, gives 175 pounds as the amount to provide for the weight of the flooring and the load upon it per square foot; and that Mr. Trautwine recommends 100 pounds per square foot as the limit for crowds. I do not think that a superimposed load of 120 pounds per square foot is too great to allow for floors in public buildings, when they are constructed as carelessly as many of them now are.

Your correspondent also thinks that the ratio of the working to the

breaking load of the floor timbers need not be less than 1 to 4, instead of 1 to 6, as I recommend.

Unfortunately we have no experiments that can be of much assistance in deciding upon the factor of safety to be employed in floors; so that it is largely a matter of judgment. For a steady dead load, such as a tank of water, 4 would undoubtedly be a sufficiently large factor of safety; but for beams subjected to such vibrations as are caused by the motion of crowds of people, especially if dancing or marching, I do not think that we should use a factor less than 6. It should also be remembered that we want our floors to be not only strong enough, but also stiff enough to prevent any uneasiness to timid people, from excessive vibrations.

Knowing, however, that there is quite a difference of opinion among our best engineers as to the factor of safety to be employed for floor beams, I did not give any value in the formulae, but merely inserted the factors. In recommending 6 for a factor of safety, I was influenced by the practice of some of our best engineers. For instance, Mr. Trautwine recommends as the factor of safety for wooden floor beams, 8; Mr. Haswell, 5 to 6; Mr. E. S. Philbrick of Boston, 6 to 10; and Prof. Rankine, 5 to 10.

The value given by me for the constants a and e , for white pine and spruce, agree very nearly with those of B, and $40 \div F$, given in Table XX, of Hatfield's Transverse Strains; but there is a wide difference in the value for yellow or Georgia pine, which I suppose may be accounted for as follows:—

The values of the constants B and F given in Table XX of the work mentioned are, if I mistake not, deduced from experiments made upon beams from one to two inches square, and having a span of 1.6 feet. The pieces were probably very perfect specimens of Georgia pine, and hence gave very high values for B and F, much higher, in fact, than would be obtained from beams of such sizes as are used in construction. The values of the constants a and e are derived from an extensive series of experiments made at the Stevens Institute of Technology, on a variety of yellow pine beams of various lengths and dimensions, and also from a series of experiments on the same wood made by myself. These experiments, taken as a whole, probably constitute the most thorough set of experiments ever made on American yellow pine. Now if your correspondent will look on page 162 of the *Journal of the Franklin Institute* for September, 1880, he will find that Prof. Thurston, in summing up the results of the whole series of experiments, states that an average value of the modulus of rupture for good timbers may be taken as 13,000 lbs. The constant a , or B, is $\frac{1}{3}$ of the modulus of rupture, and dividing 13,000 by 18, we have 722 lbs. as the proper value for these constants. The value which I gave for a (725 lbs.) is sensibly the same as this.

Then if we accept 725 lbs. as being a more reliable value for a than that given by Mr. Hatfield, and quoted by your correspondent, I do not see how a floor calculated as in the example worked by him could be considered as conforming to requirements of the New York building law, and hence should be rejected by the inspector of buildings in that city.

Art. 20, Section 1, of the New York law, requires that a factor of safety of 3 be used for beams and girders; and calculating Example II so as to conform to that law, allowing 20 lbs. as the weight of the floor per square foot, we have $C = \frac{2 \times 2 \times 100 \times 725}{3 \times 256 \times 140} = 2.7$ feet, instead of 3.69 as given by your correspondent. And even if we used 850 instead of 725, we should still have a value less than 3.69 feet.

The constant F given in Table XX of Mr. Hatfield's work corresponds to $\frac{1}{3}$ of what is known as the modulus of elasticity. Now if we multiply 5,900, the average value of F given by Mr. Hatfield for Georgia pine, by 432, we have 2,548,800 lbs. as the modulus of elasticity for that wood. Mr. Thurston obtained as an average value of the modulus of elasticity of four large timbers of yellow pine, 1,387,156 lbs. or a little more than one-half of the value obtained from Mr. Hatfield's data, and hence the value of F given by him for yellow or Georgia pine is almost twice as large as it should be for timbers of that wood. This explains the wide difference between the value of e given by me (which is deduced from Prof. Thurston's experiments) and that given by your correspondent at the end of his communication.

In the example at the end of my article, the value of B, given as $2\frac{1}{2}$, and $2\frac{1}{2}$ in the last line, should evidently be $4\frac{1}{2}$ as pointed out by your correspondent. It is obtained by dividing 3,420, the value of $B \times D^3$, by the cube of 9.

F. E. KIDDER.

ANOTHER WESTERN COMPETITION.

TO ARCHITECTS.

DESIGNS for a ten-room school-house will be received at the office of the Superintendent of Schools, in this city, up to Saturday, the 19th inst. The probable cost of the building will be furnished with the design. By order of the Board of Education. A. DEMAREE, Clerk.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I send the foregoing copy of advertisement for designs for a school-building to be erected by the Board of Education of Quincy, Ill. It may be amusing to Eastern brethren to see how these things are done in the West, and to learn that in a city of 30,000 inhabitants of average intelligence, a body of men can be found honest enough to state publicly that they are willing to take something for nothing, and verdant enough to inform those whose victims they will

soon be that they are ready and anxiously waiting to be taken in. This same board points with pride to some of the most thoroughly constructed, best contrived, and most economical school-buildings in the State, all of which have been erected during the past twelve years, under the direction of a thoroughly trustworthy and competent architect whose services it has been their pleasure to secure from time to time, and whom they had already seen regarding the proposed building. At the urgent request of two or three superlatively energetic practitioners of Chicago and Quincy for the privilege of submitting designs, it was decided to advertise in the above most primitive manner.

Of course their former architect has too much regard for professional ethics to engage in a scramble of this sort, notwithstanding there is no doubt he would, with the influence he controls, be successful. If all architects would take the same position and maintain it, such competitions would soon give way to those properly conducted and so managed as to stimulate the professional practice in a healthful manner. But just so long as this sort of energy is employed by so-called architects, just so long will a discriminating public do its part in visiting anathema and disgrace on the profession, and dissatisfaction and imposition on itself.

RECTUS.

TREES AND LEACHING CESSPOOLS.

NO. 32 EAST FOURTEENTH ST., N. Y. CITY, Feb. 2, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Sirs,—I send you herewith a drawing of a well to be used in connection with the Field or Waring flush-tank, or, if desirable, without such connection.

With the Field or Waring tank it would simply be a modification of the system of house-drainage devised by G. E. Waring, Jr., and explained in his "Sanitary Drainage of Houses and Towns," the numerous small horizontal wells, if I may so term them, employed in that system having an ample substitute in the larger cylinder set vertically.

This three-foot wide well I would place from 50 to 75 feet away from the house wall, where it might be allowed to stand to a certain extent open, and where the willows or other trees surrounding it, and which it would need for the accomplishment of its purpose, might have free space for growth. The Waring shallow drain tiles are reached by the short roots of herbaceous plants, whilst my deeper well requires the roots of deep-feeding, water-loving trees, which are not only to reach, surround, and form a bed against its outer surface, but they are to fill its lower portion with a compact mass of fibres,—in fact to form a mammoth sponge, upon which the waste of the house is to fall and be absorbed.

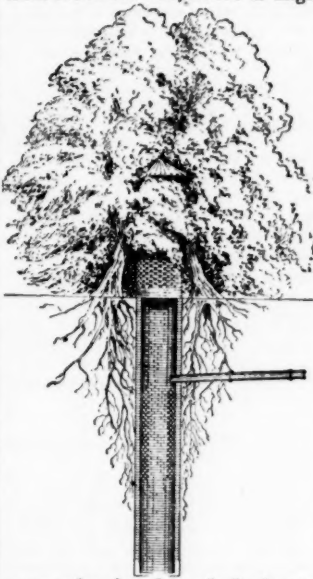
In order to prevent the access of external ground-water too directly to the bottom of the well, six or eight feet of the lower portion of its cylindrical wall, together with its floor, should be sealed with hydraulic cement. Above this tight section the bricks should be laid more or less loosely—the horizontal joints only cemented—with vertical intervals of solid brickwork. Again, from a point just below where the drain from the house pierces the well wall, the entire brick cylinder should be solid to the well's top, which should rise eight inches or a foot above the ground surface.

The drawing is intended to clearly show this arrangement, and also the well's continuation upward from the level last given, thus forming a round roofed house of indefinite height,—anywhere from three to eight feet,—the brickwork of which would be laid very open for the easy admission and transmission of air.

That the well should operate thoroughly from the first, it would be best to sink it alongside of a willow or poplar—the weeping-willow is suggested as preferable to all others—of considerable size, or, better still, of large dimensions. It would, of course, take some time for the lower interior of the well to fill with roots as I have above indicated; still the compact outward enclosure of the underground structure with the tree's roots and rootlets would progress so rapidly that when the well's fluid contents had reached the height of the lower brickwork there would be a sufficiency of absorbent surface to prevent the ground from becoming contaminated. When once the deep mat within the well, and the close one without, were formed there would be no further trouble in regard to the question of the ultimate disposal of house-waste. The self-cleansing cistern would, in fact, operate as long as the tree that overshadowed, surrounded, and occupied it, continued a living thing; and in case of its demise, an unlikelihood for one generation at least, there would be no difficulty in finding others to fill the vacancy made.

Very respectfully yours,

B. F. LEEDS.



A CORRECTION.

80 EAST WASHINGTON SQUARE, NEW YORK, Feb. 22, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I notice a typographical error in the last issue of your journal which I would like very much to see rectified. In your notice of the objects of sculpture recently bought by the Boston Museum of Art, you mention a bust by Miss Olive D. Warner. Now a man usually does not like to be taken for a woman, neither does he like to have his name construed into that of a woman's, and as I belong to that class of men, I wish that mistake could be rectified somehow, for instead of Miss Olive D. my name is Mr. Olin L. Warner. Very respectfully, O. L. WARNER, Sculptor.

NOTES AND CLIPPINGS.

THE HOTEL ENTRANCE-HALL COMPETITION.—An accident prevented the publication in our issue for February 5 of the names of the authors of two of the designs for a hotel entrance-hall. We have been informed since the publication of the designs that the author of the design marked "Lux" was Mr. Glenn Brown, of Washington, D. C. As soon as the author of the drawings designated by a circle inscribed in a square shall have discovered himself, we will take much pleasure in doing him similar justice, and will then be enabled to return to him his drawings.

KITCHEN BOILER EXPLOSIONS.—The Manchester Steam Users' Association have issued the following circular on kitchen and circulating boiler explosions:—

Kitchen boiler explosions are due to an accumulation of pressure in the boiler, in consequence of the outlets being stopped up while the fire is burning. These explosions occur during the frost, through the choking up of the pipes with ice. Sometimes stop taps are placed in the circulating pipes, and should these taps be shut, or should the circulating pipes become choked with sediment or stopped up from any other cause, the pressure would then be bottled up and an explosion might result at any time, whether summer or winter. To prevent this, every boiler should be fitted with a small reliable safety-valve, whether the boiler be of copper or of cast-iron, and whether it be fitted with a copper cylinder or not. A safety-valve of dead-weight construction is recommended as the most simple. In the event of the outlets becoming choked, it would relieve any undue pressure and prevent an accumulation, while, at the same time, it would emit a slight hissing noise, which would tell those in the kitchen that something was wrong. In the meantime, until a safety-valve can be fixed, open the hot-water tap in the bath-room, and any other hot-water taps connected with the boiler. If the water cannot be drawn freely from these taps, do not light the fire; and if the fire be already lighted, put it out at once. If the water flows freely, the fire may then be lighted, but this must be done with caution, and the taps just described frequently opened to see that the flow continues and that the water gradually heats. If the flow does not continue, or if the water does not heat, the supply of water to the boiler must be running short, or something must be wrong with the circulation, and the fire must be drawn. Also the cold-water cistern, as well as the ball tap, should be examined, and the cold-water taps in the bath-room and elsewhere opened to see that the water-supply is free; otherwise the boiler may run dry. When the fire is once lighted and the circulation proved to be free, the fire should be kept burning by night as well as by day as long as the frost lasts, otherwise the frost may get the mastery during the night, choke the pipes with ice, stop the circulation, bottle up the pressure, and thus lead to the bursting of the boiler. But the only true safeguard is a reliable safety-valve, and the sooner that is fixed to the boiler the better.

DUST AND FOG.—A remarkable paper, communicated by Mr. John Aitken to the Royal Society of Edinburgh, on Dec. 20, throws quite a new light on the origin of fogs, mists and clouds. Mr. Aitken has made a great number of experiments with moist air at various temperatures to determine the conditions which produce condensation of water vapor, and his conclusions, briefly stated, are, that whenever water vapor condenses in the atmosphere, it always does so on some solid nucleus, that dust particles in the air form the nuclei on which the vapor condenses; that if there were no dust, there would be no fogs, no clouds, no mists, and probably no rain; and that the super-saturated air would convert every object on the surface of the earth into a condenser, on which it would deposit as dew; lastly, that our breath, when it becomes visible on a frosty morning, and every puff of steam, as it escapes into the air from the engine, show the impure and dirty state of the atmosphere. These results have been verified at temperatures as low as 14 deg. Fahr., at which, however, there was little cloudiness produced, owing to the small amount of vapor in air so cold. The sources of this dust are many and various; for instance, finely ground stone from the surface of the earth, the ash of exploded meteorites and living germs. Mr. Aitken showed experimentally that by simply heating any surface such as a piece of glass, iron or wood, a fume of solid particles was given off, which, when carried along with pure air into a receiver, gave rise to a dense fog mixed with steam. So delicate is this test, that the hundredth of a grain of iron wire will, when heated, produce a distinct haziness in the receiver. By far the most active source of these fog-producing particles is, however, the smoke and sulphur given off by our coal fires; and as iron gas grates will not prevent the omission of these particles, Mr. Aitken thinks it is hopeless to expect that London and other large cities of the country can ever be free from fogs. However, inasmuch as more perfect combustion will prevent the discharge of soot-flakes, our fogs may be rendered whiter, purer, and therefore more wholesome, by the use of gas grates, such as those recommended by Dr. Siemens. Mr. Aitken also drew attention to the deodorizing and antiseptic powers of smoke and sulphur, which probably operated beneficially in killing the deadly germs, and disinfecting the foul smells, which cling about the stagnant air of fogs, and suggested caution lest, by suppressing smoke, we substitute a greater evil for a lesser one. — *Engineering News.*

WHAT BECAME OF CONSUL CAIUS.—In the neighborhood of Marseilles, not long ago, was discovered an ancient Roman burying-ground, containing, among other interesting graves, that of Consul Caius Septimus, wherein a quantity of antique weapons and coins were found, and, moreover, an amphora—the inscription upon which was all but illegible—containing a small quantity of a thick, reddish liquor. The amphora, emptied of its contents, was submitted to the inspection of an eminent archaeologist, who, after bestowing extraordinary pains upon the deciphering of the mutilated characters engraven upon its surface, declared it to be his opinion that they indicated the presence of genuine Falernian within the vessel, adding that Caius Septimus, a jovial Consul of considerable repute as a judge of good wine, had obviously ordered that a flask of the best vintage in his cellar should be buried with him. The scientific gentleman who had discovered the Consul's grave and taken possession of its contents, upon learning the true character of the liquid relic in question, at once started for Paris with his Falernian in a glass decanter, and, there arrived, invited a dozen of his friends, members of the Academy of Inscriptions, to a dinner at one of the leading restaurants. At dessert he produced the "Consul's wine," carefully poured it into tiny liqueur glasses, and handed it round to his guests, exhorting them to drink it, reverently and upstanding, to the immortal memory of Caius Septimus. The glasses had scarcely been emptied when a telegram was brought in by the head-waiter on a salver, and laid before the founder of the feast. He opened and glanced at it, and then letting it fall upon the floor, fled from the room with a cry of terrible agony. One of the startled academicians picked up the message and read it aloud. It ran as follows: "Marseilles, 7 P. M. Don't drink contents of amphora. Not Falernian at all. Have deciphered inscription on foot, which previously escaped my notice. Red liquid is the body of Consul Caius, liquefied by special embalming process." But the friendly warning came too late. The archaeologist and his academical colleagues had drunk up the Consul to the last drop. — *The London Telegraph.*

ANCIENT MINERS' TOOLS.—The miners in the Silver Belt Mine have made a remarkable discovery showing that the mine was worked ages ago. The ten-foot bonanza recently uncovered, continuing to widen at every stroke of the pick, left an overhanging wall on one side that appeared more like loam than the ordinary wall or vein matter of a quartz ledge, and so soft that it caved in such a way as to obstruct the work. They then went up above the cave and decided to run down on the ledge in a new place, so as to get under the cave, in order to have solid ground to work on, and in cleaning away a place to start in they found lying on the ore, on top of the ledge, in the soft loam three feet from the surface, five stone hammers such as are found in the ancient ruins and abandoned mines of the Aztecs all over the country, showing clearly that the Silver Belt has been worked in prehistoric times. This is the first and only indication that has been found that the "Belt" was ever disturbed before the present owners uncovered it. Dan Thorne this morning exhibited one of the hammers, which a miner had broken in order to see the quality of the stone of which it was made. The material is a dark, tough, slaty-looking rock, such as the ancients used in making all their hammers and axes. — *Arizona Miner.*

A LEGEND IN CONCRETE.—A ghastly "cast from the life" is that which they show in Algiers. It was taken many hundred years ago (so the legend ran) by inclosing a Moor in cement and using the block for the mole that runs out into the Mediterranean. The legend had it that the victim was a captured Moor who had been brought up a Christian, and on being recaptured by his countrymen, refused to abjure Christianity and believe in Mohammed. They say that the legend was so particular and so persistent, pointing out the very spot where he was buried, that on an occasion of repairing the mole the block was fished out, opened, and discovered to contain an exact mould of a man, his beard, moustache and turban being plainly visible.

BASS'S BREWERY.—It is said that the area of the first Bass's brewery was that of a moderately large garden. That of the sons occupies freehold business premises extending over forty-five acres, and more than one hundred acres of leased property. Then steam power was unknown in the place. Now there are 32 steam engines, 9 locomotives, 2 portable engines and 100 cart horses. The employees number nearly 3,000, while, in addition, hundreds are required to manage the firm's business all over the United Kingdom. Bass & Co. pay £285,000 in taxes yearly.

THE SITES OF ENGLISH CATHEDRALS.—In his Natural History of British Fishes Mr. Buckland notes that eighteen out of twenty-five English cathedrals stand upon salmon streams, actual or historical, while four more are in the fens, where coarser fish formerly abounded. He suggests that in the days before the Reformation a good fish supply for fast days was almost indispensable.

A DISCOVERY OF PYRAMIDS.—Two pyramids built by a king of the sixth dynasty have been discovered to the north of Memphis. They were buried beneath the sand. The vaults and chambers are covered with inscriptions.

THE DUKE OF BRUNSWICK MONUMENT, GENEVA.—The Brunswick monument, built at so great a cost, is showing ominous signs of giving way. It is built on land which not many years ago was reclaimed from the lake. Such land is notoriously treacherous, for often beneath it and only superficially covered, there are enormous holes hollowed out by the glacial action when the Rhone glacier swept over the present site of Geneva. A few summers since a large lake wall at Vevey disappeared in the night and left not a trace behind. In the case of the Brunswick monument every precaution was taken to assure its permanency by placing it on an exceedingly thick and seemingly solid foundation of concrete, but it appears only too probable, from present indications, that the ground underneath is subsiding, and that the structure is threatened with serious danger, if not with complete destruction.

BUILDING INTELLIGENCE.

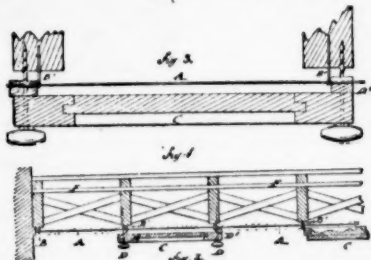
[Reported for The American Architect and Building News.]

[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.]

236,761. FIRE-PROOF CEILING.—Friedrich Baum, Breslau, Prussia, Germany. This invention consists of a ceiling, the panels of which are hung to transverse wires supported on nails driven into the beams at a suitable distance below the same. Each panel of the ceiling is laid on from above on a supporting-frame of suitable length, which is temporarily secured to the beams above, the frame being removed after the panel is dry. Each frame is provided with a longitudinal side-strip, which serves as a gauge to indicate the thickness of the layer of plaster, and to furnish an accurate meeting-edge for the adjoining panel. A represents a number of strong galvanized or tar-coated wires, stretched from one wall to the other at suitable distances from each other, and attached at each end by a loop to a notch cut into the end nails, B, which are driven into the beams as near as possible to the side walls. The wires are supported at intermediate points by nails, B', provided either with end hooks or with eyes. The wires have to be supported at a suitable distance from the bottom of the beams, according to the thickness of the ceiling and according to the distance at which the same is to be suspended from the bottom of the beams. The ceiling is constructed



In panels, which are laid on from above, through the space between the beams, upon horizontal supporting-frames, C, which are rigidly secured at the proper distance from the bottom of the beams by means of gimlets, D. Along one edge of the supporting frame, D, is arranged a gauge-strip, D', by which the thickness of the ceiling is regulated, and at the same time serve for protecting as smooth a meeting-edge as possible for the adjoining panel. In the panel next to the wall the thickness of the same is simply regulated by the gimlets. The edge of this panel forms the support for the frame in forming the next panel, as shown in Fig. 3. After completing the second panel the frame is moved to the space between the next beams for forming the third panel, and so on. When all the panels of the ceiling are completed the joints are filled at the defective places with plaster, which is carefully smoothed down. The frames, C, are soaked with oil and covered with varnish to prevent warping or shrinkage. To prevent the adhesion of the plaster to the frame the top surface of the same is coated before the panels are laid on with oil, tallow, or soap, or covered with paper. As soon as the panels are laid the lower rough floor, which is shown in Fig. 1 and indicated by the letter F, is put down, so as to protect the ceiling against injury from above.

237,677. WATER-METER.—James B. Curry, Louisville, Ky.

237,714. HEATING STOVE.—James W. Wright, Manakato, Minn.

237,717. FURNITURE-CASTER.—Jos. J. Adgate, New York, N. Y.

237,723. WASH-STAND.—Nathan O. Bond, Fairfax Court-House, Va.

237,729. BRICK MACHINE.—Israel Cullin, J. C. Conroy, and H. D. Kilgore, Pittsburgh, Penn.

237,731. CHUCK.—Jno. Doyle, Hoboken, N. J.

237,749. HANGING WALL-PAPER.—Alexander Johnson, New York, N. Y.

237,750. FIRE-PLACE GRATE.—James J. Johnston, Columbiana, Ohio.

237,762. REVERSING MECHANISM FOR ELEVATORS AND OTHER MACHINERY.—Volney W. Mason, Providence, R. I.

237,768. ICE-HOUSE.—Patrick O'Brien, New York, N. Y.

237,780. BIT-STOCK.—Nelson Spofford, Haverhill, Mass.

237,796. OVERFLOW APPARATUS FOR CESSPOOLS.—Geo. W. Alexander, Baltimore, Md.

237,799. SAW-SET.—Geo. W. Atkins, Milton, Del.

237,805. FABRIC FOR FIRE-PROOF SHIELDS.—John S. Brooks, Brooklyn, N. Y.

237,807. CURTAIN-SLAT.—Chauncey Buckley, Meriden, Conn.

237,815. ELEVATOR.—Daniel Casley, New York, N. Y.

237,829. WINDOW-SCREEN.—J. G. DeCoursey, Philadelphia, Penn.

237,831. VENTILATING HOUSES.—Wm. Dewart, Fennelon Falls, Ontario, Canada.

237,847. DEVICE FOR RAISING AND LOWERING AWNINGS.—David Fey, Peoria, Ill.

237,854. FAUCET, ETC.—Robert P. Garsed, Norristown, Penn.

237,864. ROLLING BLIND.—H. H. Hilgen, New York, N. Y.

237,869. CHARLES B. HOTCHKISS, Brooklyn, N. Y.

237,892. SASH-FASTENER.—Gottfried Le Normand, Spartanburg, S. C.

237,899. PROCESS OF AND APPARATUS FOR EXTINGUISHING FIRES.—James L. Pollard, New Orleans, La.

237,900. FIRE-EXTINGUISHER.—James M. Pollard, New Orleans, La.

237,901. PROCESS OF AND APPARATUS FOR EXTINGUISHING FIRES.—J. M. Pollard, New Orleans, La.

237,902. SOLUTION FOR EXTINGUISHING FIRES.—James M. Pollard, New Orleans, La.

237,912. SCROLL-SAW.—Friedrich Schaeffe, Baltimore, Md.

237,913. WINDOW-SASH TIGHTENER.—Louis Schneller, Williamsport, Penn.

237,923. DOOR-KNOB.—Benjamin D. Stevens, Cambridge, Mass.

9,574. (Re-issue.) PLANING MACHINE.—William H. Doane, Cincinnati, Ohio.

SUMMARY OF THE WEEK.

Albany.

STATE HOUSE.—It seems doubtful whether any appropriation will be made by this Legislature towards it, or if any, not a very large one, much diversity of opinion existing as to the propriety of spending any more of the people's money until by some kind of proper investigation all doubts as to the permanency of some portions of the structure, and the advisability of the changes and proposed plan are removed.

NEW CITY HALL.—The design of Mr. H. H. Richardson, selected by the commissioners, is now being estimated upon. The conditions of the competition were that no design costing in its execution more than \$195,000 should be accepted. Until the bids are opened this will remain undecided.

STORES.—Several dwellings on North Pearl St. are to be remodelled into stores, one for Dr. Nelson by A. W. Fuller, architect.

Also one for Wm. M. Whitney & Co. by W. Dickson, architect.

Also a large store for J. Sparborg; Messrs. Ogden & Wright, architects; and another on same street for B. Stark, Esq.

ST. JOSEPH'S PARK TERRACE, to consist of 19 dwellings, facing the park of that name; fronts laid up with random rubble ashlar, granite spaces, with marble, terra-cotta, and pressed brick finish; Walter Dickson, architect.

ETC.—Quite a number of improvements have been spoken of, but the season does not open as auspiciously as was anticipated.

Boston.

BUILDING PERMITS.—Wood.—Bradstreet Ave., near Mt. Hope St., for Daniel Lucy, wood-shed, 12' x 14'. CHURCH.—Work will soon be commenced on the People's Church, corner Columbus Ave. and Berkeley St.

Y. M. C. A. BUILDING.—It is said that the committee of the Young Men's Christian Association of Boston reports \$125,000 subscribed toward the new building, and ask that the appropriation be increased to \$175,000.

BOSTON ART CLUB BUILDING.—At the regular monthly meeting of the Art Club it was voted to increase the appropriation for new club-house from \$75,000 to \$85,000, provided that the consent of those who have subscribed to the former loan be obtained.

Brooklyn.

BUILDING PERMITS.—Ellery St., No. 116, three st'y frame store and tenement, 25' x 55'; owner, J. C. Hacker; architect, John Platte; builder, Henry Loefler.

Smith St., e. s. 50' s Butler St., four-st'y brick store and tenement, 25' x 60'; cost, \$15,000; owner, Chas. Seibel, Smith St., near Butler St.; architects, M. Freeman & Son; builders, Horgan & Hyde and M. Freeman & Son.

Hicks St., s. s. cor. State St., 7 four-st'y brick flats, 24' 8" x 50'; cost, \$10,000 each; owner and builder, James W. Deering, 460 Hicks St.; architects, Parfitt Bros.

Decatur St., n. w. cor. Reid Ave., 3 two-st'y brick dwellings, 16' 8" x 40'; cost, \$2,700 each; owner, A. Miller, 72 Stanhope St.; architect and builder, Thos. Miller.

Nineteenth St., s. s. 125' w Fourth Ave., four-st'y frame chair factory, 50' x 50'; cost, \$2,100; owner, H. A. Schneider, Nineteenth St., near Fourth Ave.; builder, D. Ryan.

ALTERATIONS.—First St., East River, South Fourth and South Fifth Sts., half of the block, raise building from six to nine stories; cost, \$50,000; owners and builders, Havemeyer & Elder; architect, J. M. Ducloux.

First St., Nos. 53 to 71, foot South Ninth St., eight-st'y brick extension, 24' 6" x 41' 8"; owners, Decastro & Donner Sugar Refining Co.; architect, J. V. V. Booraem; builder, Peter Farley.

Chicago.

BUILDING PERMITS.—Lane, one-st'y brick dwell., 24' x 34', Lincoln St., near Sedgwick St.; cost, \$2,800. Western Warehousing Co., two-st'y brick warehouse, 30' x 31', N. Water St.; cost, \$9,000.

P. J. Mahoney, two-st'y brick dwell., 24' x 58', Indiana St., near Robey St.; cost, \$25,000.

Mark Sparborg, three-st'y brick store and dwell., 22' 4" x 62', Lake and Leavitt Sts.; cost, \$5,000.

C. Seipp, 5 four-st'y brick stores, 140' x 178', 257 to 273 Franklin St.; cost, \$100,000.

Headen & McAuley, two-st'y brick shop, 49' x 100', Indiana St., cor. Franklin St.; co. t., \$7,500.

L. Dietz, two-st'y brick store and dwell., 21' x 80', Larrabee and Sophia Sts.; cost, \$5,000.

Julius Zittel, 5 three-st'y brick dwellings, 50' x 100', 58 to 66 Cass St.; cost, \$2,500.

W. Grace, two-st'y brick dwell., 22' x 62', 2725 Calumet Ave.; cost, \$1,500.

E. Haebl, two-st'y brick dwell., 15' x 56', Ogden Ave.; cost, \$3,500.

D. J. Powers, two-st'y brick dwell., 23' 6" x 49', 77 Lincoln Ave.; cost, \$2,500.

George R. Clark, two-st'y brick dwell., 37' x 55', Groveland Park Ave.; cost, \$7,000.

CHURCH.—The trustees of the Michigan Ave. Baptist church have decided to reorganize and build a new edifice. One lady of the congregation offers \$40,000 as a starter.

SCHOOL-HOUSES.—The Committee on Buildings and Grounds of the Board of Education has reported recommending the erection of a fifteen-room school-building on the site at the corner of Johnson and Wright Sts., which has been concurred in.

CAR WORKS.—The Western Indiana Railroad have purchased 400 acres of land at South Chicago. It is said the Grand Trunk Railway and the Wagner Palace Car Company will build extensive car works here.

Cleveland.

FOUNDRY, ETC.—Messrs. Wilcox, Treadway & Co. now find it necessary to build a new foundry. It is to be 65' x 180', and connect with the main building. The cupola will be 36". Besides this another building, 35' x 100', will be erected.

STORES.—S. Brainard's Sons are to build a large brick building on Sheriff St., to be used as the music publishing department of their business; J. T. Waterson, contractor; Walter Blythe, architect.

Mobile.

STORES.—Nos. 27 and 29 N. Water St., four-st'y brick store, 66' x 126'; front, Mobile pressed brick, ornamental work, galvanized iron; owners, D. R. Dunlap & Co.; builders, McGuire & Lyndall; cost, \$16,000.

Nos. 31 and 33 N. Water St., 2 three-st'y brick stores, 33' x 126', and 33' x 100'; also No. 23 St. Michael St., two-st'y brick store, 31' x 6'; all connected as one store; owner, Mrs. E. Emanuel; architect, Jas. H. Hutchisson; builders, C. Farley and W. S. Foster; front to be of Mobile pressed brick; cost, \$19,000.

HOUSES.—State and Jackson Sts., n. w. corner, two-st'y frame dwell., for architect and builder, O. Caldwell; cost, \$3,200.

Royal St., w. s. between Monroe and Ealam Sts., two-st'y frame dwell., for John Dunn; architect, R. Renz; builder, Jas. Robertson; cost, \$2,500.

Monroe and Jackson Sts., s. w. corner, one-st'y frame store and dwell., for Jas. Clark; architect and builder, L. Monnin; cost, \$1,500.

Government St., n. s. near Hallett St., two-st'y frame dwell., for G. Campbell; architect and builder, J. Nounce; cost, \$2,700.

New York.

BUILDING PERMITS.—Fifty-Ninth St., No. 38 w, one-st'y brick private school, 25' x 65' 8"; cost, \$20,000; owner and builder, Abraham Dowd-ey, 411 East Sixty-Fifth St., architects, H. J. Schwarzmann & Co. Ninety-Third St., n. s. 100' w Third Ave., 11 four-st'y brownstone tenements, 18' 2" x 71'; cost, \$11,000 each; owner, Robert J. Algie, 884 Tenth Ave.; architect, Henry J. Dudley.

East Broadway, No. 92, five-st'y brick store and tenement, 25' x 68'; cost, \$10,000; owner, Maurice O'Brien, 90 and 92 Bowery; architect, Frederick Jencks.

Seventy-First St., s. s. 100' w Second Ave., 10 five-st'y brownstone tenements, 20' x 65'; cost, \$13,000 each; owner, Dennis Lounie, 175 East Seventieth St.; architect, Eugene Parker.

Bleecker St., Nos. 330, 332 and 334, 3 four-st'y brick stores and tenements, 19' 4" x 48' 6"; cost, \$6,700 each; owner, Wm. H. Buxton, 96 Warren St.; architect, Charles W. Clinton; builder, I. Walford.

Fifty-Fourth St., No. 40 w, s. s. 435' w Fifth Ave., four-st'y brick dwell., 25' x 63'; cost, \$27,500; owner, John H. Deane, 1262 Broadway; architects, D. & J. Jardine.

One Hundred and Twenty-Fourth St., s. s. 40' w Lexington Ave., 3 three-st'y brownstone dwellings, 16' 8" x 45'; cost, \$8,000 each; owners and builders, Giblin & Lyons, 32 and 34 Frankfort St.; architect, J. C. Lyons.

First Ave., n. e. cor. One Hundred and Fifteenth St., four-st'y brick store and tenement, 25' x 57'; cost, \$12,500; owner and builder, William Ferschild, 2162 First Ave.; architect, Andrew Spence.

First Ave., e. s. 25' n One Hundred and Fifteenth St., 2 four-st'y brick stores and tenements, 25' 5" x 55'; cost, \$11,500 each; owner and builder, William Ferschild, 2162 First Ave.; architect, Andrew Spence.

One Hundred and Fifteenth St., n. s. 75' e First Ave., four-st'y brick tenement, 20' x 51'; cost, \$6,300; owner and builder, William Ferschild, 2162 First Ave.; architect, Andrew Spence.

Ninety-Fourth St., s. s. 110' w Third Ave., 6 four-st'y double flats, 37' 6" x 61'; cost, each \$16,000; owner and builder, Henry J. Burchell, Bank Building, Fifty-Seventh St. and Third Ave.; architect, F. S. Barus.

South Fifth Ave., Nos. 159 and 161, five-st'y brick store and 10' 5" x 95' 7"; cost, \$20,000; owner, Lorillard estate, 3 Mercer St.; architect, J. B. Snook.

Fifty-Seventh St., Nos. 344 and 346 w, 2 four-st'y brownstone dwellings, 21' 5" x 55'; cost, each \$20,000; owner, Edward C. Coggeshall, 108 East One Hundred and Fifth St.; architect, Charles W. Romeyn.

ALTERATIONS.—Third Ave., No. 998, one-st'y brick extension, 14' x 20', front and interior altered; cost, \$3,000; owner, Louis Schooler, 23 East Sixty-Fourth St.; architect, Julius Kastner.

Boulevard, cor. One Hundred and First St., removed from its present site, new foundation and new basement; cost, \$3,000; owner, George A. Hearn, 79 Fifth Ave.; architect, B. W. Berger.

Broadway, Nos. 728 and 730, raised to four stories, four-st'y brick extension, 32' x 94', present front wall rebuilt and building refitted entirely for theatre; cost, \$80,000; owner, Mrs. C. M. Stewart; architect, Kimball & Wisdell; builder, Geo. T. Dollinger.

Pine St., Nos. 50 and 52, repair damage by fire, roof beams only burnt, etc.; cost, \$9,300; owner, H. [Continued on next page.]

Publishers' Department.

The American Architect
and Building News.

PUBLISHED EVERY SATURDAY BY
JAMES R. OSGOOD & COMPANY
211 Tremont St., Boston, Mass.
NEW YORK OFFICE, 21 ASTOR PLACE.

An Illustrated Journal of Constructive and Decorative
Art, devoted to the Interests of Architects,
Builders, Decorators, etc.

15 cents per copy; \$7.50 per year; \$6.00 in advance;
12 Monthly Numbers, with Detail Sheet, \$1.75.

Payments should be made directly to the pub-
lishers, either by draft or post-office order.

JAMES R. OSGOOD & CO., Publishers,
211 TREMONT ST., BOSTON, MASS.

New Advertisements.

CONNECTICUT MUTUAL LIFE INSURANCE CO.
(Hartford, Conn.), Thirty-fifth Annual Statement.
Page iii.

ANGLO-AMERICAN ROOFING CO. (New York).
Metallic Shingles. Page vii.

ASAHEL WHEELER (Boston), Paint Preserver. viii.

MURRELL DOBBINS (Philadelphia, Pa.), Philadel-
phia Press Brick. Page iv.

BROOKS, SHOOBRIDGE & CO. (New York). Port-
land Cement. Page viii.

MEDICAL & SANITARY EXHIBITION. (London).
Page i.

E. HOENSHADE. (Chicago), Architects' Wire-Work.
Page v.

THE SOLDERLESS STANDING-SEAM CONDUCT-
OR CO., LIMITED. (Allegheny, Pa.) Rain Spouts,
etc. Page x.

TO SUBSCRIBERS.

The publishers respectfully refer subscribers
who have not yet paid their subscription for
1881, to the notification printed at the head of
their respective bills, and desire to remind
them that the time within which subscribers
who pay in advance can benefit by the discount
of \$1.50 on the subscription price (\$7.50) has
elapsed.

WANTED.

Back Numbers of the American Architect.

Any one who can supply us with clean and perfect
copies of the American Architect, Nos. 44 and 50, vol-
ume for 1876, and No. 121, volume for 1878, can receive

Twenty-five Cents for Each Copy.

JAMES R. OSGOOD & CO., 211 Tremont Street,
BOSTON, Mass.

WANTED.

COMMUNICATIONS from parties in towns of the
South and West, having a population of 10,000
and over, who keep themselves posted on build-
ing operations in their respective towns. Address
stating present occupation, "Opportunity," in care of
the Editors of the AMERICAN ARCHITECT, 211 Trem-
ont St., Boston, Mass.

BUILDING INTELLIGENCE.

S. Suarez, 63 Broadway; architect and builder, Hen-
ry Wallace.

Bowery, cor. Hester St., repair damage by fire,
etc.; cost, \$20,000; owner, S. Mack, 69 West Forty-
Sixth St.; architects, H. J. Schwarzman & Co.;
builders, Van Pelsden & Arnott.

Sixth Ave., Nos. 307, 309 and 311, interior altera-
tions; cost, \$10,000; owners, Simpson, Crawford &
Simpson; architect, T. Stent; builder, John Downey.

Fifty-Ninth St., No. 145 e, two-st'y brick exten-
sions, 22' x 43', front and interior alterations; cost,
\$4,000; owner, Bernard Havauagh; architect, Fr. S.
Barus.

Forty-Second St., cor. Park Ave., raised about 10',
mausard; six-st'y brick extensions, 13'1" and 26' x
75'; cost, \$15,000; owner, Julia A. Shaw, Grand
Union Hotel; architect, J. Rogers.

Broadway, No. 365, n.w. Franklin St., repair dam-
age by fire; cost, \$9,940; owners, American Express
Co., 65 Broadway; architect, P. B. Wight; builder,
Henry Wallace.

LAW SCHOOL. — Mr. C. C. Haight has been appointed
architect to construct for Columbia College a set of
buildings which will occupy the entire block bound-
ed by Forty-Ninth and Fiftieth Sts., Fourth and Fifth
Aves. The cost will be \$750,000. A new building
with a seating capacity of 600 will be built, running
from Fifth-Ninth to Fiftieth St., frontage 160'; its
upper story to be used as a library, and its lower as
an auditorium. The old orphan asylum will be
razed, a new edifice built upon its site, joining the
chapel and the Madison Ave. structure. The trust-
ees have decided to construct but one building at a
time.

PRODUCE EXCHANGE. — The members have increased
the appropriation for the building fund, and a deci-
sion as to the successful plan is expected to be
reached on the 4th of March.

BUILDING MATERIALS. — Lumber is higher; other mate-
rials are still almost nominal. The spring will de-
termine prices for the year, which are not expected
to rule higher than in 1880. Iron is steady and not
likely to fluctuate to any extent.

LABOR MARKET is uneasy, and contractors generally
are figuring on an advance.

C. H. FELLOWS, HOFFMAN & CO.,

MANUFACTURERS OF
FINE GAS FIXTURES,
206 and 208 Canal Street, New York.

INTERNATIONAL

MEDICAL and SANITARY EXHIBITION

To be held at LONDON, during the International
Medical Congress, 1881.

For particulars and forms of application for space
apply to the SECRETARY, PARKES MUSEUM OF
HYGIENE, UNIVERSITY COLLEGE, LONDON.
Application for space must be made before March
31st. From India, the Colonies, and America, ap-
plications received up to April 15th.

SCIENTIFIC BOOKS.

A Descriptive Catalogue of Practical Books for
Architects, Engineers, and Contractors, sent free on
application.

E. & F. N. SPON, 446 Broome Street, New York.

SOAPSTONE HEATERS

For Comfort, Safety and Health.

Highly recommended by leading sanitary author-
ities. A soft, pleasant heat, pure air, and perfect
security against fire attained by the use of these
Heaters, which are built entirely of soapstone.

For circulars and information, address

JOHN G. PORTER, 405 Pearl St., N. York.

THE CLARK

Colored Brick and Terra-Cotta Co.,
(Limited.)

OF GLENS FALLS, N. Y.

WE are now prepared to fill orders for the building
wares in White, Buff, and Red.

The undersigned have been successfully engaged in
Canada for the past five years, and can now fill orders
at considerably reduced prices.

They consist of

Building Pressed Bricks,

In Different Colors, Plain and Moulded.

Also ARCHITECTURAL BLOCKS, highly or-
namented, and in different colors.

We produce a beautiful material, durable and un-
changeable in color, as lasting as pottery, and suitable
for the interior or exterior of buildings, ornamental
or plain work.

Adopted by the chief architect of the Dominion of
Canada, and also by Walter Dickson, Esq., Govern-
ment Architect of the new Post-Office and Custom-
house at Albany.

Always in Stock or got up to architects' own
designs.

T. M. CLARK, Glens Falls, N. Y. (Box 176.)

AGENTS.

J. S. HOBBS & CO, 92 State St., Boston.

ROWE & DENMAN, 360 West St., New York.

BUILDING INTELLIGENCE.

Philadelphia.

BUILDING PERMITS. — Leithgow and Diamond Sts.
corner of, three-st'y store and dwell, 15' x 46'; C. H.
W. Keyser, contractor.

Sarah St., south of Wilsey St., one-st'y boiler-
house, 13' x 34'; Hyzer & Patterson, contractors.

Montrose St., No. 1712, two-st'y stable, 16' x 18';
Thos. Wallace, owner.

K St., w.s. south of Venango St., one-st'y smith
shop, 28' x 28'; Jacob Keck, owner.

Cor. Thirty-Fifth St. and Gray's Ferry Road, five-
st'y storehouse, 50' x 80'; Harrison Bros. & Co.,
owners.

Front St., north of York St., three-st'y store, 18' x
30'; for Samuel Henderson.

Spring Garden St., west of Sixteenth St., office
and foundry, 48' x 101'; P. H. Somerset, contractor.

Tioga St., No. 812, one-st'y ice-house, 18' x 20';
Valentine Liebig, owner.

ADDITIONS AND ALTERATIONS. — Chestnut St., No.
1230, one-st'y addition to store and interior altera-
tions, 18' x 38'; Jonas Zepp.

Thirtieth St., south of Chestnut St., two-st'y addi-
tion to shop, 68' x 80'; J. G. Brill & Co., owners.

Swanson St., No. 776, interior alterations and addi-
tion, 22' x 35'; Mitchell & Megonegal, contractors.

STORE. — Market St., near Thirteenth St., four-st'y
store, 18' x 90', of brick and Ohio stone; David Pep-
per, owner; A. H. Williams, contractor; Theophilus
F. Chandler, Jr., architect.

STABLE. — Brick stable, rear 3012 Walnut St.; B. K.
Jamison, owner; J. A. Palmer, contractor; Wilson
Bros. & Co., architects.

ALTERATIONS TO GIRARD HOUSE. — J. S. Steel, con-
tractor; Wilson Bros. & Co., architects.

MONUMENT. — Hazlehurst & Huckel are architects for
a monument to be erected in Laurel Hill Cemetery;
J. A. Bailey, sculptor; cost, \$6,000.

Toledo.

GRAIN ELEVATOR. — The Ohio Central is about to
build a grain elevator, equal to any in this place.

CHURCH. — German Presbyterian church, Allen St.;
brick and stone; cost, about \$12,000; E. O. Fallis,
architect.

PATENT MINERAL WOOL.

Entirely Fire-Proof and Undecaying.

THE BEST INSULATOR OF HEAT, COLD
AND SOUND.

For Lining Roofs, Walls, Ice Houses, Refrigerators'
Furnaces, Heater-Pipes, Boilers, etc.

ALEXANDER D. ELBERS,

P. O. Box 4461.

26½ Broadway, New York

SLATE MANTELS

Of the latest and most beautiful designs, and all other
Slate and Soapstone work on hand or made to order
No. 1210 Ridge Avenue. JOSEPH S. MILLER, succe-
ssor to Wilson & Miller, Philadelphia, Pa. Send for
Illustrated Price-List.



J. & K. LAMB, 59 CARMINE ST., N. Y.

CHURCH FURNISHERS.

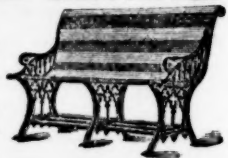
Practical Workers in Sterling Silver, Brass
and Bronze, Carved Wood, Decorations, etc.

Illustrated Catalogues.
Furnit' re loc.; Metl'w'k loc.; Decorat'n loc.

IMPROVED SEATING.



Send
for
Cata-
logue.



Schools, Opera Houses, Halls, Churches.

BAKER, PRATT & CO.,

No. 19 Bond St., N. Y. 618 Arch St., Phila.

Colorless Waterproofing for Buildings.

Attention is called to our Invisible or Colorless Pro-
cess for preserving the walls of Brick, Stone, or other
buildings, giving them a firm, hard surface, thus
effectually preventing the entrance of rain or damp;
the absorption of the impurities contained in the rain-
water of towns; the adhesion of soot, dirt, or moss,
etc., and the stains caused by the washing down of
stone trimmings. It causes no efflorescence; nor does
it in any way discolor, glaze, nor alter the appearance
of the part treated, more than would be occasioned
by sprinkling water upon it. On the contrary, it im-
proves the appearance, renders it permanently clean,
and is the only effectual method of waterproofing and
reserving brick, stone, stucco, and other porous ma-
terials, and preventing mortar joints from crumbling;
being a permanent process, it requires no renewal.

Specimens of brick or stone treated with the pro-
cess forwarded free of charge, upon application to
the St. Louis Waterproofing Co., No. 421 North
Twelfth St., St. Louis, Mo.

BUILDING INTELLIGENCE.

HOUSES. — Brick dwell., two stories, Madison St., for
P. Wachter; cost, about \$5,000; Gibbs & Stine, ar-
chitects.

THE FLOOD AND ITS EFFECTS. — Considerable tor-
pidity still prevails in building matters, owing in
some measure to the relentless ice grasp, and the in-
tense excitement which has prevailed during the
past week on account of the most tremendous and
disastrous flood by far ever known in this locality.
The water rose to from 3' to 8' in depth in cellars
never inundated before, and, before it had time
to recede to any extent, froze solid. The river is
full of ice at present, said to be from 15' to 20' in
depth, for miles. Weather soft to-day and a heavy
snow-fall. Much anxiety is felt as to the outcome.
Several buildings have been seriously damaged by
water, and hundreds more or less injured.

During the rise of the water, one week ago, a con-
flagration occurred on the somewhat unusual
cause of a large line-house being partially sub-
merged, and the slacking line setting the fire.

St. Louis.

BUILDING PERMITS. — Twenty permits have been
issued since our last report, of which 8 are for frame
structures of slight importance. Of the rest, those
worth \$2,500 or over are as follows:—

OWNERS' NAME.	USE.	Sq. ft.	Cost.
F. Wubrink,	Dwell.,	2 12	30,000
F. A. Pollock,	Dwell.,	2 7	3,500
C. C. Murphy,	Dwell.,	3 8	3,900
C. C. Murphy,	Dwell.,	3 8	3,900
C. S. Greely,	Store,	5 5	44,000
M. J. & E. Koons,	Planing Mill,	1 3	2,500
G. B. Emmons,	Dwell.,	3 12	9,000
D. B. Gould,	Store & dwell.,	2 32	16,000

General Notes.

ALAMEDA, CAL. — J. B. Wattles, of the San Francisco
Stock Board, is having a fine conservatory, 20' x 48',
built. It will cost between \$2,000 and \$3,000.