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AN illustration of the way in which the operations and interests of insurance companies influence building operations in certain cases is found in a recent occurrence in New York. A large church in Harlem was burned some three months ago, the walls only being left standing. The property was valued at eighty-five thousand dollars, and insured in various companies for forty thousand dollars, which, it was estimated, would not cover the loss by several thousand dollars. It happened, however, that the parish was known to have been dissatisfied with its church building, and moreover a price had been offered for the land on which it stood so large that another equally eligible lot could be bought with the proceeds, a more satisfactory church built, and yet leave a surplus of money. The insurance companies, as one of the authorities alleges, knowing this, attempted a sharp trick. Instead of paying over the amount of the policies, they professed to be about to avail themselves of the option which all policies give, to rebuild the burnt structure instead of paying the insurance, in the hope that the parish, rather than see their inconvenient church rebuilt on a site which they would prefer to see vacant, would abate a portion of their claim. The church authorities, finding that it would cost the companies some sixty-five thousand dollars to rebuild, felt very naturally that their position was a strong one, and declined to take any less insurance than the sum they had contracted and paid for. Accordingly the companies have set about the construction, with all their interests, as they suppose, in favor of doing the work as cheaply as possible, while the church authorities look on, keeping a sharp watch to see that the construction of their new edifice is not so outrageously bad as to come under the penalties of the law.

THIS interesting spectacle is further diversified by the connection with it of the Department of Buildings. It appears that immediately after the fire the parish authorities, in order to present an authenticated statement of their loss to the underwriters, applied to the Department for permission to rebuild the church, using the walls which still stood. After inspection, this permission was refused, and it was ordered that a large part of the walls should be taken down. A special survey, made by a mason, an architect, and the Superintendent of Buildings, unanimously confirmed this judgment, and the walls were ordered to be torn down. After the insurance companies had undertaken to rebuild the structure, permission for which was granted on condition that the condemned walls should be taken down, another inspection was ordered, by a new set of deputies, who concluded that it would be safe to use the old walls as they stood. The point which seems to make the most impression on outsiders is that the architect who was a member of the first survey, which condemned the walls, was subsequently commissioned as architect of the church by the insurance companies, and it certainly is a little singular to see the same walls which he had himself condemned in concurrence with the Department afterwards pronounced safe by the same

Department on the application of those who had become his employers. Although it is to be regretted that anything should occur so likely to occasion unfavorable comment, we should not be too hasty in attributing bad faith to any one. After all, the "coefficient of safety" is a very arbitrary matter, and the best of architects or inspectors might condemn a wall which had only four times the strength requisite to resist the strain upon it, if he supposed that it would be no injury to any one to have it taken down; while he might conscientiously think that to be an ample margin for safety if he subsequently found that important interests required that it should be allowed to stand.

MANY of our readers have doubtless received copies of the instructions to architects intending to compete for the new public buildings at Toronto, and will be interested in a circular sent out by a number of the profession in the Province of Ontario, who are naturally the first to act in the matter, addressed to their fellow architects, and requesting signatures to a paper addressed to the Commissioner of Public Works. We reproduce both these documents in another column. On the whole, the terms of competition had appeared to us much fairer than usual. A very large amount of work was required of competitors, far too large to make it worth while for architects in very extensive practice to enter the lists, and much of it unnecessary, as, for instance, the stipulation that the material should be distinguished on the eighth-scale plans and sections, which would require an immense amount of minute picking out of cut-stone, rubble, brickwork and furring of no use to any one, since no contractor would pay any attention to such microscopic indications; and such details in the specifications as the sizes of steam-pipes, which every heating contractor would have a different rule for. The "itemized estimates of quantities and cost" would also involve much useless labor. Every architect knows that the most elaborate schedules of quantities do not prevent contractors' tenders from varying a hundred per cent or more, and that their approximate estimates made by cubing the contents, with a knowledge of some nearly similar constructions to guide them, are, if carefully made, usually pretty near the actual cost, while quantities ignorantly drawn or intentionally falsified might be fatally misleading. The competition of rates between architects we were sorry to see proposed, but competitors of any capacity would so quickly see the folly of advertising themselves as second-rate by offering to do the work for less than the usual commission that the matter did not seem serious. However, we should be glad to see a recognition on the part of the Government that cheap experts are the dearest of all public servants. As to the extension of time, we might suggest as a compromise that sketch plans only, in pencil perhaps, at a sixteenth-scale, might be called for at once, and a selected number, say twenty, out of these should be notified to prepare more detailed plans, for which a longer time would be given. This would save the collective profession from a vast amount of needless labor and expenditure, and would, we think, secure a better class of competitors.

MANY of our readers have been interested in Mr. Edward Atkinson's suggestion, made shortly after the destruction of the Cathedral Building, in the centre of the richest part of Boston, by which this and the neighboring districts could be efficiently protected against the fires which prove so unmanageable in high buildings filled with inflammable goods, by means of stand-pipes and ladders, enabling the firemen to work efficiently and promptly. The details of the system were well thought out, and the description of it received much attention in many places. The cost of complete apparatus, ready for service, was estimated at sixteen hundred dollars per acre, and Mr. Atkinson reckoned the area covered by high buildings needing such protection in Boston to be not over fifty acres. The cost of fitting up the whole exposed district would then be eighty thousand dollars, and a hundred million dollars' worth of property would be at least partially protected. However, eighty thousand dollars seemed to the insurers a large sum; still larger did it appear to the owners of the property, who all had policies in their safes covering, as they supposed, any probability of loss, and so nothing was done except to speak approvingly in conversation of the project, and hope it might some time be realized. Fortune, after waiting four months for something besides talk on the subject, administered lately another severe lesson in the fire in the Beebe Building, within a few

rods of the ruins of the fire of December last. With the usual delay for bringing ladders, putting them up outside, and hauling hand-hose with great labor to a spot which with stand-pipes could have been reached in thirty seconds after the first fireman entered the building, the blaze was subdued, but thousands of dollars' worth of property had perished. The insurance companies are now putting their hands in their pockets for their contributions to make up this loss to the owners, pondering meanwhile how they can raise rates so as to make the same owners pay it all back to them in the next year or two. To neither of them does it seem to occur that the interest on the value of the property destroyed would, if properly applied, in four years make such enormous losses impossible for the future.

We have received, by the courtesy of the Secretary of the National Board of Fire Underwriters, the printed reports presented to the late meeting of that body by various committees. Among others is the report of the Committee on the Form of Policy, which contains a new form, recently adopted by the New York Board, presenting it not as a model, but with the remark that a demand for a shorter form of policy having undoubtedly arisen, the New York form offered some suggestions on that point. Those who have strained their eyes over the microscopic print of ordinary policies to find out definitely to what their premiums entitled them will remember several points which the new policy treats in a different manner, and, as a rule, much more favorably to the policy holder. The troublesome stipulation that the working of mechanics in dwelling houses for more than five days in a year, or in other buildings for any length of time, without the written consent of the insurers, should vitiate the policy, is changed so as to allow the operations of mechanics without notice for fifteen days in a year, in any building. Plate-glass and frescoed decorations, and printed books, which were formerly not insured with a building, are now covered by the same policy. A new clause is inserted, to the effect that no constructive loss beyond the actual damage by fire to the property shall be covered by the policy. This refers to the requirements of most building laws, that structures erected before such statutes were in force, must, in case of total or nearly total destruction by fire, be rebuilt, not as they were before, but in accordance with the existing laws. This is an important matter; in New York especially, where the difference in cost between the actual and the lawful construction of many buildings would amount to thousands of dollars; and owners of such buildings should know that their new policies cover only the value of the actual illegal construction, leaving them to pay the additional cost of compliance with the law out of their own pockets.

We should like to see an attempt made to draft a satisfactory policy of insurance to cover buildings in process of construction. It is easy enough for the owner to insure his interest, but he has no interest in the building until he has made a payment to the contractor, and then only to the amount of such payments. In order that all the loss by a fire may be covered, the builder must also insure his interest, which varies as the work goes on, by a separate policy, and the architect or owner has sometimes to look sharply to see that he does this, for it is not impossible that a builder, supposing that the owner's policy covered all the interests, or too ignorant or careless to protect his own, may be thrown into bankruptcy by a fire, to the injury both of himself and of the other party to the contract, who has to make a new agreement to rebuild the structure, generally on less favorable terms. We have known policies covering the whole loss to be made payable to the architect, in order that he might apportion the loss between the parties, but this throws on him a new and serious responsibility; and contracts sometimes require that both interests shall be separately insured, the architect making sure that this is done by keeping the policies, which is better, but still rather a cumbrous proceeding. A simple and intelligible policy for such cases would meet with great favor from architects and builders.

ONE stipulation which is frequently made in insurance policies, although perhaps not much insisted on by the companies, seems to us manifestly unfair. This is the clause providing that the policy shall be vitiated unless the building on which it is taken is provided with "good and substantial stone or brick chimneys, the absence of which has been the cause of the fire." Whether the existence of the "defective flues" to which a very great proportion of fires are due, might not be taken as

evidence that the chimney to which they belong is not "good and substantial," might some time be a serious question, if the underwriters, alarmed at the increasing proportion of losses, should begin to look more sharply after excuses for avoiding their obligations. In point of fact, not one policy holder in a hundred knows anything about the condition of the chimneys in the buildings he has had insured. Even if he is the occupant, he cannot tell what may be the condition of things behind the furrings of the chimney-breast, while if his interest is simply that of a mortgagee, all the chimneys may, for aught he knows, be built on top of the roof. A proper inspection by experienced agents of the companies could determine all these points, to the great ultimate advantage both of underwriters and owners, and it seems only fair that the acceptance of a premium by a company should be taken as indisputable evidence that the risk was actually such as the policy represented it to be.

THE Council of the Royal Institute of British Architects, in their annual report, present the scheme for the examination which it is proposed to make compulsory on all candidates for membership after May, 1882. We print the scheme at length in another place. It has already excited much discussion among the English architects, but its reception has been very favorable. It is unquestionable that a strong public feeling exists in favor of doing something to sift out trained professional men from the untrained, and mark them so that they can be recognized, and this demand grows more and more urgent with each such manifestation of the disastrous effects of incompetency as the fall of the Madison Square Garden, the burning alive of a theatre audience, or the failure of a railroad bridge, but it is not easy to find a method of accomplishing this desirable end. Much as professional men suffer from ignorant pretenders, who not only compete for their business by questionable means, but bring disgrace upon the whole body by their malpractices, they are deterred by a creditable sentiment from promoting anything which might injure the least worthy of those who call themselves their fellows; while the public is disinclined to interfere in the private affairs of a profession, however much it may suffer from the misdeeds of a portion of it. In this state of affairs, the formation of a body of practitioners into which none can enter except those who prove themselves, by examination, adequately trained in the art which they profess has come to be accepted as the best resource. Such an examination does no injustice to those who cannot or will not pass it; no slur is cast upon them, and the public is left free to employ them if it wishes; but those who have earned by hard labor the right to stand among others of eminent acquirement are given an opportunity to claim that right, and to be recognized as having attained it. In setting the time for the first examination two years hence, the English architects afford ample opportunity for all now in the profession to qualify themselves for its honors, and give public notice to intending applicants of the standard which they must attain, so that no one who wishes to reach the standing in his business which membership in the Institute will confer need fail, unless by his own incapacity or slothfulness. We hope before long to see a similar condition for admission established in our own national and local architectural societies. Not only would the public and the profession profit by the institution of public tests of competency, but the societies would gain an immense increase of prestige and influence, as soon as it became known that they had that to dispense which it cost an effort to obtain.

THE Berlin architects some time ago did a judicious thing, which might well be imitated elsewhere. A large brewery had been built near the centre of the town, and, the proprietors falling into financial difficulty, the building was sold off at a great sacrifice. The Association of Berlin Architects, which includes also the engineering profession in the capital, by making an effort succeeded in purchasing the structure, and fitted up the large space thus obtained to suit their own purposes. The house so transformed has become a general resort of the members. Social entertainments are given in the great apartments, and public lectures are delivered there, while students and amateurs pursue artistic or technical courses in their special quarter, and there is still space left for all the conveniences and attractions of a club, separate from the rest. Among us, architects come in contact with artists on one side as much as with engineers on the other, and an association which included all three professions would have a good chance of being harmonious and useful.

OLYMPIA.¹—I.

THE folio volume embodying the results of the third season of the excavations at Olympia, or, as the Germans delight in terming it, their third campaign, — 1877 to 1878, — has recently been published. Its illustrations, like those of the preceding annual reports, consist of heliotype-photographs which show the landscape of the excavations and the objects of greatest value found: principally fragments of sculpture. These are supplemented by a topographical map, by restorations of the gable-groups, and by architectural plates, — the latter being in this volume especially numerous and interesting. The elegantly printed text consists of the short official introduction of Dr. Curtius, descriptions of the objects represented, with notes upon the plans of the buildings. It contains also an essay by Dr. Treu upon the restoration of the western gable-group, or rather the attempt to place the fragments of the figures in relative position. The price of this third publication, in a portfolio .38 m. by .49 m., is ninety marks; that of its predecessors was thirty-six and fifty marks respectively, the difference being explained by the increased number of plates.

In the meantime the fourth season of the excavations is over, and the fifth, probably the last, draws to its close with the approaching warm weather. The fourth volume, officially promised (by Adler in No. 63 of the *Deutsche Bauzeitung*, 1879) for last January has not appeared. It is now rumored that it may be delayed so long as finally to be united with the fifth year's report, — instead of having been published at the same time as the volume now before us, as it might. It is true that it will be decades before the enormous amount of material which has already come to light can be fully appreciated and absorbed, as it were, by the various branches of science which are thereby enriched. Some idea of the quantity of antiquities unearthed, up to the end of the fourth season, may be obtained from the numbers of the objects they catalogue. The fragments of sculpture amount to 1,328, of bronzes 7,464, of terra-cotta 2,094; there are mentioned 696 inscriptions, 2,935 coins, and 105 various articles, — glass, horn, lead and the like. Three peripteral temples and numerous other important buildings have been laid bare for investigation, and the great question of the topography of the Altis, the sacred enclosure, is decided in its main bearings. Food for reflection has thus certainly been already given; but on the other hand it is disappointing that results, which have been made known one by one in scattered numbers of the *Archäologische Zeitung*, where each individual discovery of importance is immediately mentioned, should await collection and publication with illustrations for nearly two years after the time when all the facts and photographic views were in the hands of the editors.

The two former volumes, which showed the state of the work up to the summer of 1877, were referred to in a notice in No. 120 of the *American Architect*. At that time the great temple of Zeus, superficially touched upon by one of Blouet's trial-pits, fifty years ago, had been almost uncovered, the Heraion and the Exedra of Herodes Atticus had been found, the paved place before the great temple had yielded much of the eastern and some part of the western gable-groups, and two of the grandest works of ancient sculpture known had been discovered: the Nike of Paionios and the Hermes of Praxiteles, the latter in May, 1877, too late for publication in the second volume. The work of the third season began about the first of October, 1877, and closed when the heat of the next June rendered continuance impracticable. The number of workmen was increased until in the late spring three hundred were simultaneously employed. A detail of the excavation was the great increase in the use of horse-carts which carried the earth from the trenches to throw it into the former bed of the Alpheios, where all traces of antiquity have been washed away by its waters. The wheel-barrows, which during the first year had removed the debris from the site of the great temple, through the two short southern trenches, could not suffice when the digging was removed one hundred metres farther north to the foot of Mount Cronion, directly away from the spot where the displaced earth was deposited. This season, attention was especially directed to thoroughly clearing the southern side of the great temple and continuing with the removal of the land slidden from the hill upon the northern edge of the Altis, where the Heraion, the Exedra and several treasure-houses were known to exist. Work was commenced at the great temple, the earth being dug away for a distance of fifty metres to the west and half as far to the south. Here a number of fragments of figures of the western gable were found: the nymph of the southern corner, the torso of the central figure, and other pieces which allow a reconstruction of the great composition, now quite easily understood from the double plate 26-27 which shows the remains in relative position. The group has a direct architectural importance as well as archaeological and sculptural interest. A large part of this third report is devoted to its consideration. The subject typified was the combat of the Lapithæ with the Centaurs at the wedding of Peirithoos. This agrees with the statement of Pausanias,² who further attributes the work to Alcamenes, the most celebrated scholar and emulator of Phidias. The authorship of the works of sculpture recognized as belonging to the western gable has been attributed without further question to Alcamenes on the strength of this testimony. Yet no one can claim to see in the gable-groups of the Olympian temple the slightest dependency upon the art of Phidias. They rather seem to belong to a stage of development preceding his

age, even as the architecture of the temple is evidently of an earlier period than that of the chief buildings of the Athenian acropolis. There are facts which strengthen this view, but this is not the place to discuss a question which has not hitherto been opened. The reconstruction of the composition was effected from nearly a thousand fragments, represented in Berlin by plaster-casts. The fact of the almost formless blocks appertaining at all to the temple was often recognized alone by their position when discovered. They were fitted together after long study in a large room in the museum of Campo Santo; the inclination of the temple gable being there represented by a triangular wooden frame, into which the arrangement was fitted. Though the result was not so positive as to put it beyond the influence of future discoveries, it at least presents the principal lines and masses of the composition. The chief motive, the seven figures in the middle of the gable, is surely known. The bodies of the two Centaurs with the women whom they have seized, being seen in full side-view, give broad masses of light to the central part of the composition, where the height of the triangle is greatest. Rising above them is the chief figure, well outlined against the shade cast by the bodies of the Centaurs upon the wall-veil of the tympanum. The powerful action of the groups at either side tends upwards with the line of the gable corona to the quiet and supreme deity. The position of the seven figures was determined by a combination of facts recognized during the attempts to reconstruct the composition in Berlin. The principal group of each wing, separated by two figures from those in the centre, consists of a Centaur, overthrown by the sword-thrust of a Lapith, yet still grasping the woman he had seized at the outstart. That upon the southern side is the better preserved of the two; a separate plate, 28, upon a larger scale than that of the entire gable, is devoted to its three figures which act a separate episode in the great struggle represented. The two figures between this side group and that of the centre are a Centaur and his prize — seen in face and coming forwards, as it were, from the tympanum surface. In this case those to the north are the most perfect: the arm of the youthful Thessalian encircles the neck of the Centaur who bites forcibly and brutally into the wrist. The figures which remain in each corner of the triangle are less certain in situation and action than those nearer the centre. Forming as they do with the adjoining figure of the Lapith who attacks the Centaur a triple repetition of a position with the trunk inclined far forwards, they seem less favorable to the general composition. But the somewhat monotonous line of the torsos may have been much altered by the action of the extremities, found in fragments insufficient to show their direction. The bodies fill the shade well out with broad masses in the corners of the composition, where a void would be especially felt, and they prepare for the first great break above the backs of the Centaurs, accenting the line which leads to the dominant centre. The figures in the extreme corners of the gable are characteristically marked for their position by an almost excessive triangularity. Those next to them seem to have reclined upon a couch, perhaps introduced as furniture of the room in which the wedding was being celebrated. It is evident from several considerations that some support was placed beneath the bodies. If not thus elevated they would hardly have reached the height of the corner figures. The under side of the marble was carefully worked in reference to being seen from below, which was only possible when artificially raised above the broadly projecting surface of the entablature corona. The figures were anchored to the wall behind, — not the case with those next them, and not necessary if they had lain like these, directly upon the cornice. Finally the fragments of a cushion or of some object covered with drapery were discovered among the remains of the western gable, close to one of the figures in question and probably part of the support beneath it. The pieces are represented upon Plate 16, and upon several side views of the double plate 26-27. The introduction of such a motive into the gable is particularly interesting. The arguments to prove that the figures thus elevated did not belong at all to the gable-group, based upon somewhat dissimilar workmanship and the different material, — they alone are Pentelic marble while the rest are Parian, — appear to be successfully refuted by Dr. Treu in his preface to the publication. He points to their position in the arrangement of the whole, to the fact that they complete the number of figures to the twenty-one of the eastern gable, to their style, which agrees perfectly with those beside them, and to the condition of the back of the stone, where are seen the dowel-holes that were necessary in clamping them to an upright surface. Opinions vary as to the significance of the majestic figure in the centre of the composition. Dr. Treu upholds the testimony of Pausanias as showing it to have been Peirithoos. The direct part taken in the struggle, the right arm, according to the view of Dr. Treu, holding the Centaur back, would seem incompatible with the character of a deity. On the other hand the conception that the figure represents Apollo, favorable to the Lapithæ who were directly descended from him, agrees far better with the mighty presence and the position of the body and with the archaic character of the head, recognizable at the first glance as a representation of that god. If any action at all is taken in the combat it is very slight, and must be looked upon more as a divine than as a physical interference. The outstretched arm is quiet, and seems more to protect the bride, Deidameia, than to struggle with the rampant Centaur Eurytion. The torso is upright, the drapery rests undisturbed upon the left arm; the entire position is composed and supreme. The far greater size of the Apollo renders the superhuman character still more evident. Its dimensions are only comparable to those of the reclining figures

¹ Die Ausgrabungen zu Olympia. III. Uebersicht der Arbeiten und Funde vom Winter und Frühjahr, 1877-1878. XXXVIII Tafeln, herausgegeben von E. Curtius, F. Adler und G. Treu. Berlin: Verlag von Ernst Wasmuth, 1879.

² Paus. V. 10. 8.

in the extreme corners of the gable, apparently nymphs of the locality where the wedding took place (of the Olympian valley, Dr. Treu says), corresponding to the stolid representatives of the Alpheios and Cladeos, which look upon the preparation for the chariot-race of Pelops and Oinomaos in the front gable. If the central figure and those upon either extremity of the composition be considered as superhuman, and the writer would argue in favor of this interpretation, the gable would be filled, like that of the eastern front, with three divinities in similar position and with eighteen mortal figures: in this case six Lapithæ, six Centaurs, and six women. The statues K and M of the plate 26-27 would be the bride Deidameia and the maiden mentioned by Pausanias, as they are recognized by Dr. Treu; the Lapith H, who struggles with the Centaur Eurytion I, would, however, be Peirithoos — certainly a more worthy pendant to the Theseus O of the corresponding group than would be Caineus, which the publication announces as the figure H. As to the decided testimony of Pausanias, who reports so trustworthily what was told him concerning the antiquities, it would not be strange if at his time, some six centuries after the creation of the work, he had been wrongly informed by his guide. The mistake of placing Peirithoos in the chief place of this representation of the combat would be natural, and every one knows how often the signification of a figure in a monumental composition is misinterpreted by professional *ciceroni*. The analogy of the gable-groups of the Parthenon, the temple of Ægina, and above all of the eastern front of this Olympian temple itself, would certainly make it probable that the figure of the deity presided over the combat. The beauty of the general design in its strictly symmetrical and yet agreeably varied action, in its masterly treatment of lines and masses, is peculiarly architectural. The gables of Olympia, because so much better preserved than those of the Parthenon, and of an arrangement more surely known than those of Ægina, are perhaps the most instructive to our profession of all compositions of sculpture existing. Though there may be room for doubt whether these figures belong to the age, to the school itself, of Phidias, and were worked by the hands of Paionios and Alcamenes, it still is hardly possible to speak with too great enthusiasm of the grandeur and dignity of the groups — fitted by a sacred calm for the eastern front of the great temple, where the festal processions passed the bronze tracery of the pronaos, as well as by life and energy for the rear, the freer field for pictorial ornament above the open epinaos. The incomparable application of sculpture to architecture, everywhere characteristic of the Greeks, is particularly instructive in the ruins which have been uncovered at Olympia. The problem is treated with equal power whether the gable-groups, the metopes and the reliefs of the buildings, or the more direct figural decorations of the numerous paved places of the Altis, be considered. Even when the statues have disappeared, the positions of the pedestals often suffice to display the admirable wisdom of their arrangement.

During the first work of the season, near the southwestern corner of the temple of Zeus remarkable archaic works of bronze were found, — the head of a statue with pointed beard (Plate 22), and curious reliefs, Heracles shooting a Centaur with a bow, and a winged female figure, apparently Artemis, grasping two lions by the hind legs (Plate 23). A peculiarity of the Centaur here is that the front legs and body are human, as Pausanias describes those upon the coffer of Cypselos, where there was also a representation of the archer Heracles in similar action.¹ From the vicinity of the temple several trenches were driven to gain an oversight of the remaining parts of the Altis. One of these struck, about fifty metres north of the stylobate, upon foundations which are supposed to be of the chief altar for burnt sacrifices, as they were in the midst of a layer of ashes from a metre to a metre and a half thick, among which were quantities of terra-cotta and bronze *figurini*. From the Heraion the works proceeded westwards, meeting with the remains of a circular peripteral building, recognized as the Philippeion, and, farther on towards the Cladeos, an immense square with peristyle and surrounding chambers. The latter, the most extensive of the buildings yet discovered, was first held to be the Prytæneion, but is published as the smaller Gymnasium and Palaestra. To the east of the Heraion, passing the Exedra of Herodes Atticus, excavated in the previous season, the workmen uncovered the numerous treasure-houses which stood at the foot of the hill. This occupied the forces of the excavators until spring. Afterwards the lower terraces with the bases of the sixteen figures of Zeus, the so-called Zanes, erected from the Olympic fines demanded from those who knowingly infringed upon laws governing the games, were examined. At their west was the third peripteral Doric temple of the Altis, the Metroön; at the east the subterranean entrance to the Stadion was discovered, a passage barrel-vaulted with wedge-cut stones, through which the contestants came into the space crowded with spectators. The northern half of the Altis, from the Gymnasium next the river to the Stadion at the foot of Mount Cronion, is thus quite thoroughly known.

No small part of the remains of antiquity was gained by overthrowing the walls which had been constructed in the Olympian plain after all understanding of the principles of antique architecture had been lost, and the carved blocks of earlier buildings, inscribed tablets, and even works of sculpture, were looked upon simply as raw material. It is only to be regretted that more fragments were not thus preserved. Too many marbles must have found their way into the lime-kiln which supplied the mortar so

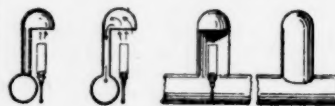
freely used for these clumsy walls. The Christian buildings of Olympia are of two classes, — the stone structures of the earlier Byzantines, many of which were built immediately adjoining the great temple, before this was overthrown by the earthquake, and the miserable peasant hovels of another period and another race, called in the reports of the excavators Slavonic walls, for the sake of a comprehensive term. The rectangular fortress of the Byzantines, connected with the temple, was an enormous structure; the walls, often three metres thick, were composed of fragments of every kind, which had been overthrown at the time of its erection. It may be judged from its dimensions — the northern wall being three hundred metres in length — how much there was preserved. The Slavonic walls, though they stand upon antique foundations, embodied few blocks carved by the Greeks. At the time of their erection all the buildings of the Altis were totally ruined, and many buried under heaps of rubbish. The bits of marble which were again used at this period are so fragmentary and boulder-like as to be of little value.

It may be seen from a glance at the topographical plan that as many works of sculpture as those which repaid the labor of the first years could not be expected to be found in the third season. The greater part of the gable-groups of the temple of Zeus lay in the position to which they had fallen when overthrown. The fragments which had been dragged about were all that further excavation could add to these principal compositions. Yet such supplementary fragments are of the most decisive importance. Every stone found which belongs to the gables is readily brought into position, now that the great problem of their general arrangement has been solved.

J. T. C.

VENTILATION OF GAS-BURNERS.² — II.

THE Faraday Gas-Ventilator (Figs. 158-161) is said to be open to the objection that the draught is liable to be irregular and the chimney to become blackened with smoke. Though with careful construction and management both of these objections might be obviated, yet where the chance of this is great, other forms should be adopted. For the footlights of theatres a ventilator constructed as in Figs. 172



Figs. 172-176.

to 176 might be practicable. In this the footlight-screen and ventilator are combined. Fig. 172 gives a side view of the device, and Fig. 173 a vertical section, showing in both cases a section of the large horizontal ventilating-flue connecting the several branch ventilators together and passing along at the foot of the lights, partially screening them from the audience.

Fig. 174 gives a view as seen from the stage, and Fig. 175 as seen from the auditorium. In both cases a side view of the main flue is given. A horizontal section is shown in Fig. 176. The main flue should, of course, be large enough to carry off the products of combustion from the entire circuit of lights. Each branch-ventilator should be quite small, — only enough, and no more than enough, to serve for its own burner. A gas-jet burning in the perpendicular portion of the main flue would create sufficient initiatory draught therein, and should be lighted with or before the footlights.

The fatigue experienced at and after a late evening party is largely due to the impurity of the air of the ball-room. A dozen unventilated gas-burners exhaust the atmosphere as much as would forty or fifty guests. The result is general discomfort and often evident permanent injury to the health. Were the host aware of the extent to which the enjoyment of his entertainment — not to say the health of his guests — is impaired by these causes which a fractional part of the cost of the feast could have removed, he would have provided pure air for the lungs of his friends, even if to do so it had been necessary for him to buy simpler food for their stomachs and reduce his band of fiddlers. The body is covered with little vent-tubes, many hundreds in every square inch, called perspiration-tubes, for the escape of vapor and fatty matter from the skin. This vapor arises constantly from all parts of the body, carrying with it the decayed organic matter thrown off in large quantities every day from the pores, and mingles with the breath, itself loaded with the impurities which it is its very office to remove from the blood. What if, instead of compelling our guests to feed their lungs upon these exhalations from the skin and nostrils of their friends, both healthy and diseased, while they were allowed fresh viands for eating, we should reverse the treatment and compel them to eat in rotation one and the same dish, each devouring the morsels that another had masticated and returned again for the enjoyment of the rest! The idea is to us disgusting. But we need to be disgusted to induce us to improve our condition, and the idea would hardly appear more revolting to us than that of consuming the fetid breath of our neighbors, had not habit rendered us peculiarly callous to the latter. Yet how delicate the structure of our lungs, and how careful should be our treatment of them! The extent of the respiratory surface in the lungs of an average adult is calculated by Lieberkühn³ at fourteen hundred square feet, and

¹ Paus. V., 19, 7 and 9.

² This paper, by the writer of the Open Fire-Place articles, will be incorporated with them in their separate form.

³ Simon's Chemistry of Man. Philadelphia, 1846.

the number of air-cells of which it is composed is estimated by some at six hundred millions. Through this wonderfully complex structure the air of our crowded ball-rooms is pumped twenty times a minute, loaded with its dust and impurities, although it is here that the blood should be aerated for purification! "There are," says Leeds, "on an average, about seventy-two pulsations of the heart every minute, and two ounces of blood are passed through the lungs at each pulsation, or from sixty-five to seventy gallons every hour, and from forty to sixty barrels per day. . . . We thus see the very large amounts of blood and air that circulate through the lungs, and can easily imagine of how much greater importance the proper supply of air is to the maintenance of good health than the supply of food, because, while we eat less than two pounds daily, we breathe fifteen times that amount, or about thirty pounds." Fifty barrels of blood are forced through the hundreds of millions of air-cells of the lungs for the purpose of obtaining the purification of fresh air. Yet we give it foul. An atmosphere forty miles in height has been provided by Nature, to ensure us an ample supply for this blood purification, and at the same time we have been provided with a breathing apparatus evidently designed to prevent inhalation of the same breath twice. Yet we shut our friends up for entertainment in boxes so arranged that it is impossible for them to obtain a single breath of air that has not been breathed over and over again, perhaps a hundred times and by a hundred different persons. The impurities of the blood have then to be carried back again from the lungs to all parts of the system, and diseases of all forms follow. When the delicate air-cells become choked, consumption begins. Unfortunately we do not always observe in crowded rooms the gradual deterioration of the atmosphere because the senses become benumbed and accustomed to it; but enter suddenly from the outer air, and the foulness appears at once.

In the room described as allowing two cubic meters of air to pass by way of invisible cracks, there were five windows having north, south, and west exposure, and two doors, to say nothing of a fireplace and three other openings for gas-ventilation, etc. When the experiments were made, all the furnace registers throughout the house were shut excepting the one in this room, so that the maximum of hot-air pressure might be obtained at this point. The amount of air forced through the chamber was, nevertheless, only 1.5 cubic meters per minute. Were the number of openings reduced one-half, leaving a number more usually found in rooms of the size of this, the ventilation under the same pressure would have been 0.75 cubic meter, — hardly sufficient for one person. Had there been but two openings, say one window and one door, a condition not infrequent, we should have had only about 0.4 meter of fresh air per minute, and the air of the room would very soon become foul, even without the consumption of gas and under the pressure of the hot-air column. Were the pressure removed the air of the room would have been nearly stagnant.

In heating and ventilating a room, provision should be made for the maximum number of persons it is likely at any time to contain and for each burner contained in it, supposing all to be in use. A parlor, for instance, in which an entertainment for fifty guests is provided, and ten unventilated gas-burners are used, should have foul-air exhaust openings and fresh-air supply sufficient to change the air at the rate of one hundred cubic meters a minute, or, if the gas-burners are ventilated, at the rate of fifty cubic meters per minute, assuming that the room is connected with others equally filled with guests and burners. Supposing we allow the air to travel through the openings at the rate of one hundred meters a minute, these openings, both exhaust and supply, should each be at least a meter square in the aggregate, and the arrangements for changing the air should be such that the air is *actually* and not merely *apparently* changed at the rate established, and this without extraordinary expense or inconvenience. There are few rooms to be found with even an approximation to such ventilation. It is nevertheless possible, and the manner in which it has been accomplished by the writer will next be described.

THE SERAPEUM OF MEMPHIS.

A LECTURE was lately delivered by Professor A. Mariette, M. A., before the members of the Crystal Palace Company's School of Arts, Science, and Literature, on "the remarkable discovery of the Serapeum of Memphis," by the brother of the lecturer, now His Excellency Mariette Pasha. After some introductory observations, the lecturer proceeded to say that M. Mariette eagerly volunteered to follow the track of Lord Prudhoe, afterwards fourth Duke of Northumberland, and of Tattan, to collect for France what Coptic and Syriac manuscripts had escaped the investigation of the two great English travellers, and after inquiry the French Government did not hesitate to accept his services. In August, 1850, the young *savant* left France for Egypt. In Alexandria he was surprised to find lying in the gardens of European residents, a great number of sphinxes in limestone, covered with ancient Greek inscriptions. He was informed that they had all come from Sakkarah, the site of the ancient Memphis, and had been found in the desert, and he concluded that they could not but be connected with one of the marvellous avenues that led to the Egyptian sanctuaries. On reaching Cairo, Auguste Mariette placed himself in communication with Linant Bey, who volunteered to guide him in his expedition. Having visited the Pyramids and explored the vast necropolis in the midst of which

they stand, he proceeded to Sakkarah, and while awaiting the arrival of his friend he made a topographical survey of its necropolis. He purposed remaining a few days: he actually remained four years. He remembered a passage in Strabo, in which the old geographer, who was born sixty years B. C., spoke of the Serapeum of Memphis being placed at the entrance of the Libyan desert, and being constantly threatened with invasion from the sand. Soon afterwards his foot struck against what proved to be a libation-table, sculptured in honor of Osiris-Apis, which is now to be seen in the Louvre, and he concluded that the tomb of Apis, which must contain so many scientific treasures, could not be far off, and he determined to seek for the Serapeum at all risks. The search for manuscripts was given up, and his credit and future career were at stake. The Egyptian Apis, as old as the worship of the divine bull, had two homes, in one of which he lived under the name of Apis; the other, where he reposed after his death, under the name of Osorapis or Serapis. He was prepared to find the latter plundered of its treasure, as it was, by the early Christians, but the plunderers had perhaps spared the archaeological and historical treasury, which was far more valuable than any amount of silver and gold. He commenced his labors in the desert with a score of fellahs, — some with pickaxes, some with baskets to carry off the sand. A second sphinx soon rewarded their labor, and others followed to the number of twenty-one. They formed a few of those which constituted an avenue of sphinxes in the middle of a vast necropolis. The avenue wound its crooked way between vast funeral monuments. The labor entailed might be gathered from the fact that while the sphinxes first discovered lay at a depth of twelve feet below the surface, the others were found at a depth of between sixty and seventy feet. At last the one hundred and thirty-fifth sphinx was brought to light at a spot where the avenue turned to the right at an angle of 85°. The work was pushed on vigorously in spite of enormous difficulties, which the lecturer detailed at some length. One day eleven of the laborers were buried under an avalanche of sand, and were with difficulty extricated. The head men of the neighboring villages ordered that all supplies of food should be withheld, and the fellahs were forbidden to work for him; but in spite of these and various other difficulties, including orders from the highest authorities in Cairo to desist, which he disregarded, he still persevered. After the one hundred and forty-first sphinx had been secured, a spacious dromos paved with fine flag-stones was discovered. It was in shape a semicircle, decorated with eleven Greek statues of poets, philosophers, and lawgivers, and it stopped the explorer's way. He determined on a new departure, and soon came on a chapel bearing the royal cartouche of Neclanbo I., of the thirtieth dynasty, the last but two of the indigenous Pharaohs. The image of Apis stood there, a welcome indication to the young explorer that he was on the right track. But the chapel stopped his way, and he had to take a new direction. He did so to the west, and two other chapels were discovered, one in the Egyptian and the other in the Greek style. The latter was empty: in the former stood a statue of Apis in stone with the solar disk before his horns. The statue, before which Alexander the Great, Cleopatra, and Caesar must have passed, and which must have witnessed the last solemn rites of the funerals of Apis, is now an object of admiration at the Louvre. Along both sides of a paved causeway ran a wall six feet high, built of huge blocks, upon which, as upon a pedestal, stood colossal statues of fantastic animals. A peacock, six feet high, carrying a little Genius, a gigantic cock, a lioness, a panther with a serpent's tail, a Cerberus, — all led by children, — a phoenix with a woman's head, lions with strange faces; all samples of the mystic symbolism of Egypt, as conceived by the Greek mind. The work was carried on in most trying circumstances. All sorts of impediments were thrown in the way of the indefatigable archaeologist, but they were got over. High officials arrived from Cairo with prohibitions which he contrived to disregard. When his labors were found to be crowned with success, the Egyptian authorities claimed their fruit; but the monuments he had discovered he contrived to have conveyed to Alexandria and shipped to France. European international jealousies and Turkish cupidity conspired together against the young antiquarian, but with unflinching enthusiasm he continued his course, and after a lengthened period the French Government interfered on his behalf, and sent him a large and welcome remittance. The details of the further excavations were narrated by the lecturer, who added that during the night of November 12, 1851, the last loads of sand were removed, and a long gallery was opened to view. The explorer attempted to enter, but his light was extinguished by foul air. At last he was enabled to enter, and stood in the tomb of Apis. He beheld walls covered with tablets with thousands of texts and with divine images, a treasure of historical documents which have no parallel in the world. It was not until February, 1852, that a less intolerant régime enabled the excavators to work at all efficiently. To the 513 monuments which had been already forwarded, over 2,000 others were safely sent to Alexandria. The sarcophagi discovered were of polished granite, each cut out of a single stone, and were ten feet in height and thirteen feet in length, and weighed upwards of sixty tons. It was difficult to realize by what mechanical contrivance such enormous masses of stone were transported to their resting places from the far-distant quarries. When the entrance to the great tomb was effected, the finger-marks of the Egyptian who had closed up the last stone of the wall were still visible in the cement, and on the sand of the floor was still to be seen the impression of the naked feet of the workmen who 3,230 years before had deposited the deified Apis in his tomb. This

and other tombs yielded many valuable and beautiful specimens of jewelry which now enrich the collection of the Louvre. — *The London Times*.

THE ILLUSTRATIONS.

THE ASTOR LIBRARY, NEW YORK, N. Y. MR. THOMAS STENT, ARCHITECT, NEW YORK, N. Y.

This view shows the recent alterations in the building.

HOUSE FOR W. H. STRONG, ESQ., DETROIT, MICH. MR. J. M. DONALDSON, ARCHITECT, DETROIT, MICH.

A VILLAGE CHURCH. MR. GEORGE T. TILDEN, ARCHITECT, BOSTON, MASS.

This little church was designed for a small corner-lot in a country village of New Hampshire.

REREDOS FOR GRACE CHURCH, NEW YORK, N. Y. MR. JAMES RENWICK, ARCHITECT, NEW YORK, N. Y.

ALTERATIONS TO A HOUSE AT ARLINGTON, MASS. MESSRS. HOWE & DODD, ARCHITECTS, BOSTON, MASS.

THE DRAINAGE OF TOWNS.¹—I.

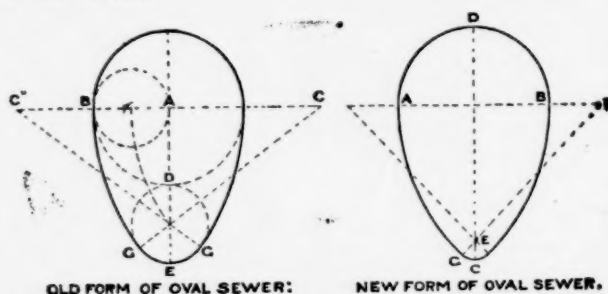
THERE are three kinds of material to be removed by drainage:—First, Subsoil-water, or that part of the rain-fall which soaks into the ground, and which may, if not drained off, remain too near the surface for health.

Second, Surplus rain-water which runs on the surface.

Third, Sewage, or the fluid and water-borne refuse of houses, stables, and manufacturing establishments.

Previous to the beginning of this century, and even later, the large cities of Europe provided drains chiefly for the surplus rain, or surface water, which was discharged into the nearest water-course. It was illegal, says Baldwin Latham, to drain fecal matter into the London sewers prior to 1815, and only in 1847 was such drainage made compulsory. [Boston has not made it compulsory to this day.]

The sewers of the last century were nothing but rain-water culverts. Their faulty construction to act as conduits for sewage, or even for street wash, is plain enough when viewed in the light of modern experience. They were generally formed with flat bottoms, often having side-walls of rough stone, and with very little attention to uniform grades. The result was a large accumulation of solid matter, sometimes to such an extent as not only to block the opening, but to create very offensive exhalations by the decomposition of this detritus. Soon after the admission of water-closet and other house drains into the sewers, this evil became so aggravated that the matter was taken in hand by engineers, and proper attention has since been given to these details. The annexed figures show the modern forms of brick-sewers.



The drainage of subsoil-water, to avoid saturation near the surface, is effected to a considerable extent in modern brick sewers, owing to their being constructed with somewhat porous walls. The importance of keeping the ground-water several feet below the bottoms of cellars is not fully appreciated, so that very little attention has been given to this subject in practice. Except by the adventitious drainage through the pores of brickwork, just alluded to, scarce anything has been done for this end in cities. All cities and towns that are built upon clay-beds or other impervious soils should consider this subject more fully. If the subsoil is gravel or sand, and sufficiently raised above the valley bottoms, it may take care of itself, but many cities are not so underdrained by Nature. If the sewers act as subsoil-drains, through their porous walls, they will also be liable to allow the fluid portion of the sewage to leak out into the soil whenever the ground-water is reduced below their level by a drought. Two evils result from this, viz.: the pollution of the soil by such leakage, and the choking of the sewers themselves from the lack of fluids to wash along the more solid parts of their contents. The following method for taking off a part of the subsoil-water has been adopted in Oxford and some other English towns, viz., to provide a pipe of twelve inches diameter, or less, to be laid directly below the sewer. This is a necessary adjunct in construction of sewers through very wet ground, serving to gather the ground-water to the sumps from which it can be pumped out. Such pipes are often much encumbered with sand during the construction of the works,

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

but if this can be avoided the same pipes can permanently serve a useful purpose as subsoil-drains, if the sewer is made tight enough not to leak into them. The true method in such cases would doubtless be to provide a separate system of subsoil-drains. But very few if any cities have yet done so. The ordinary way is to build the brick sewers so as to let the water in, not so much from intention as because it is very difficult to make them tight in wet ground, though they can and should be made so. If the ground were *always wet*, there would be no danger of outward leakage, but we can rarely be sure of this. Moreover, if the sewage is to be pumped or otherwise treated at the outfall, we do not wish to be encumbered there with a needless bulk of water.

SEPARATION OF SEWAGE AND RAIN-FALL.

The construction of separate ducts for the sewage and for the surface or rain water is a question about which a great variety of opinion prevails. I know of no town or city where such a separate system has yet been provided in this country, though we are told that the city of Memphis is now about to do so. The usual method is to allow the surplus rain-water to enter the sewers at convenient points, with the view of assisting the flow of the sewage by its scouring effects. Of course, if this plan be followed, the capacity of the sewers must be proportioned to the duty imposed upon them. In most temperate climates the volume of such surface-water to be dealt with is many times that of the house-drainage, generally from ten to twenty times as great, so that the volume of *sewage* has had but little to do in governing the capacity of the sewers. It was necessarily controlled by the rain-fall.

But even when dealing separately with the rain-fall, it is conceded by all to be best to allow a small portion of it to enter the sewage-pipes; viz., at least such portion as may fall upon the front roofs of buildings. If any portion is so taken, due regard must always be had to it in adjusting the size of the conduits to the duty. The house-drainage alone can never exceed in volume that of the water-supply, for the solid matters added to the water are less bulky than the portion of water lost by evaporation. The flow of house-drainage is, however, not uniform, but concentrated mostly during the working hours of the day, and reaches its maximum during the forenoon. Hence allowance must be made for this maximum, which is sometimes fully double or nearly three-fold the average rate of flow.

The arguments in favor of separating the bulk of the rain-water from the sewers are of the greatest weight in a scattered population, such as often occurs in suburban towns, and the objections increase in force as the population becomes more dense. A few English towns have recently been provided with sewers on this principle, among which is Oxford, where it has been in use some two years, and is said to be quite satisfactory so far. The chief reasons in favor of the separate system are as follows:—

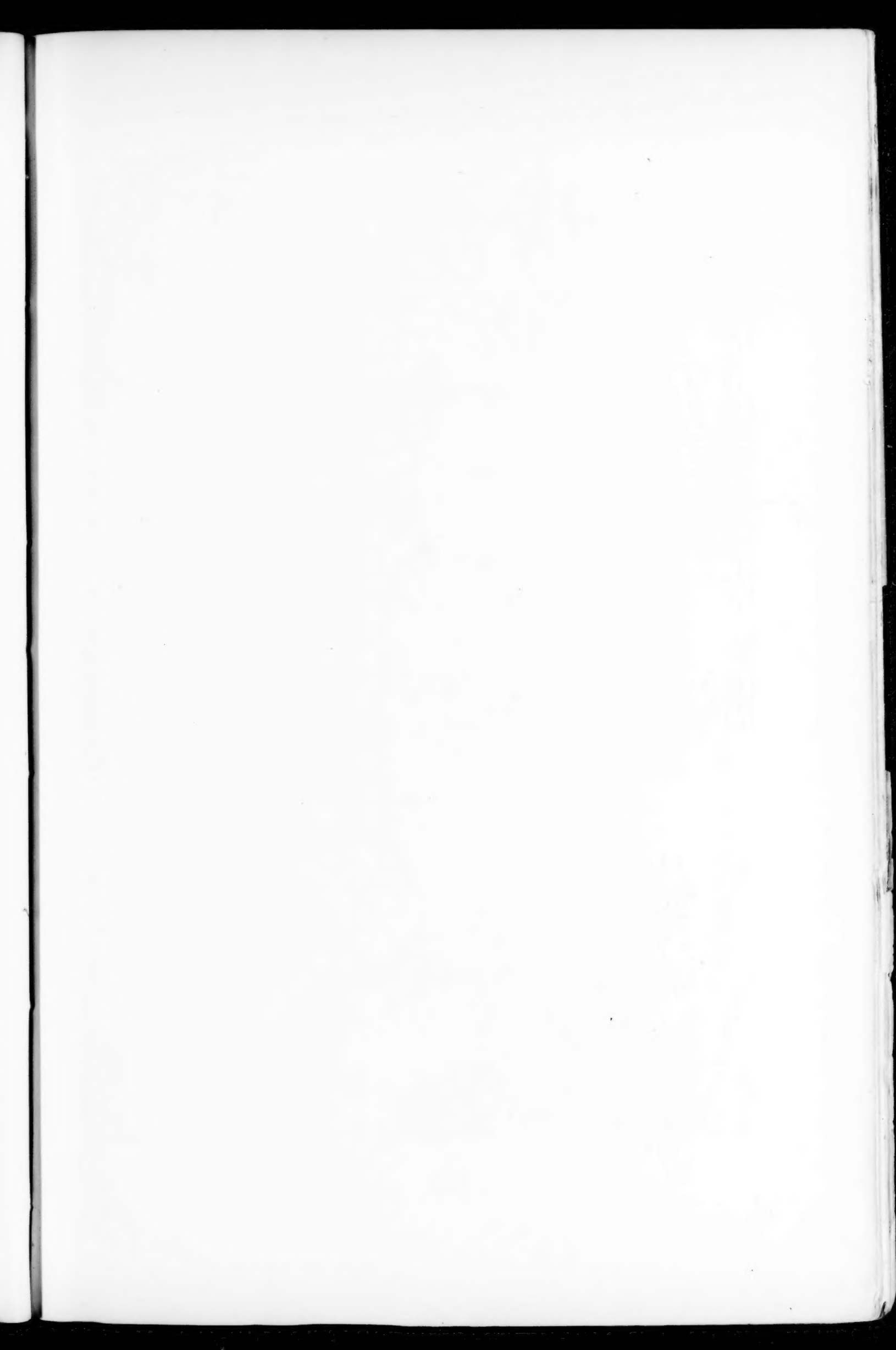
1. Economy. The separation avoids the construction of long lines of large mains, because the rain-fall is conducted by short conduits to the nearest water-course, it being rarely found necessary to collect the whole discharge at any one point for a whole district. But it is not proper to discharge *sewage* in this way; so that, if both are mixed, we have either to transgress this rule, by discharging the mixture where it ought not to go, or build long mains of large size for its collection at some one place where the sewage can with propriety be dropped.

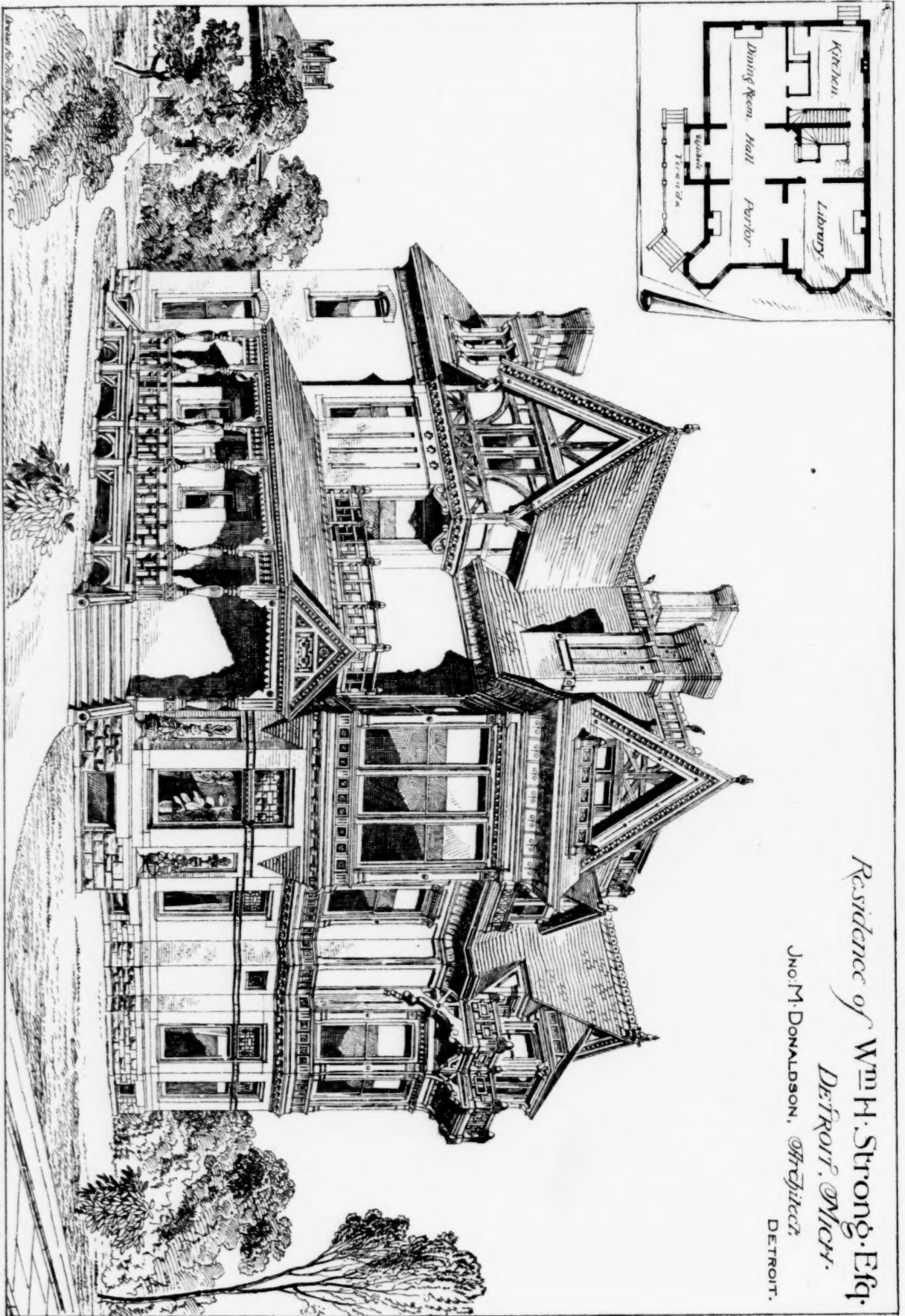
This combination of rain-water with sewage becomes a very serious encumbrance whenever the sewage requires either an artificial treatment of any kind at the outfall, or even pumping alone; for the works adapted to handling the sewage alone would be increased in capacity very largely if required also to handle surface-water. Moreover, the volume of the latter is so exceedingly variable that a large part of the plant provided for the maximum must necessarily lie idle for a greater portion of the time. If the sewage is used for irrigation of land, as is now becoming a common method in Europe, the trouble is not then avoided, for the same rain-storm which gorges the sewers to their full capacity has also the effect of saturating the soil to be irrigated, thereby rendering it less capable of absorption, and likely to become sodden and noxious.

2. The sanitary considerations arising from the better "self-cleansing" qualities of small pipes, carrying a more uniform flow. The variable volume of the rain-water requires large conduits to be provided for occasional storms, while for most of the time they are charged with an insignificant flow, not enough to render them "self-cleansing" by scour. The dry-weather flow, in fact, occupies but such a small part of the large sewer, that it does not move with sufficient velocity to avoid deposits. If such deposits occur, the end is defeated for which the sewer was intended; viz., the complete and rapid removal of all the sewage to its ultimate destination. This is one of the axioms of the profession,—a point upon which all modern sanitarians are agreed; for it is admitted by all that great harm must result from the delay and consequent putrefaction of the matter deposited by sewage, while, on the other hand, if the sewage is kept moving, very little change need take place in its condition while it remains within the conduits, and the noxious character as well as the quantity of the gases of decomposition would be kept at a minimum.

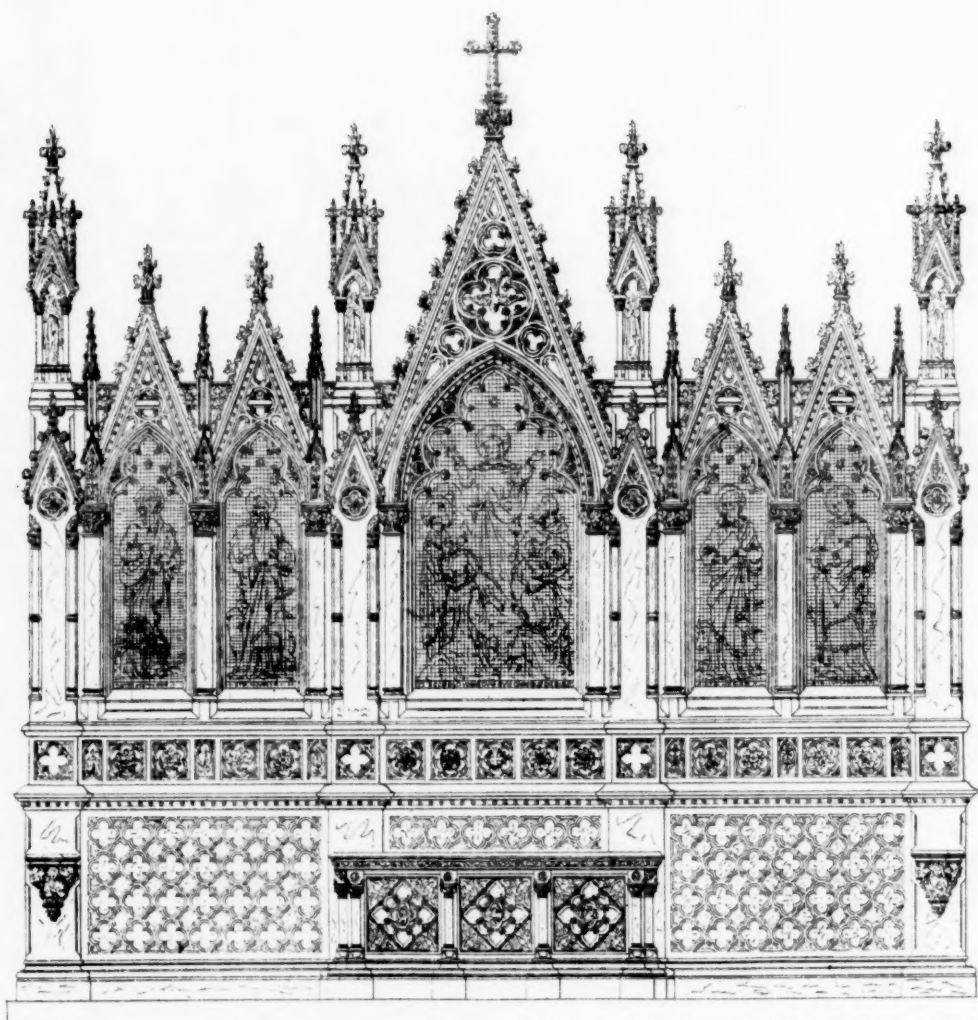
I copy the following from the *London Engineering*, of January 16, 1880: "The subject of separating the rain-fall from the sewage of houses, in passing through the sewers, has received much attention. Generally speaking, engineering authorities are agreed as

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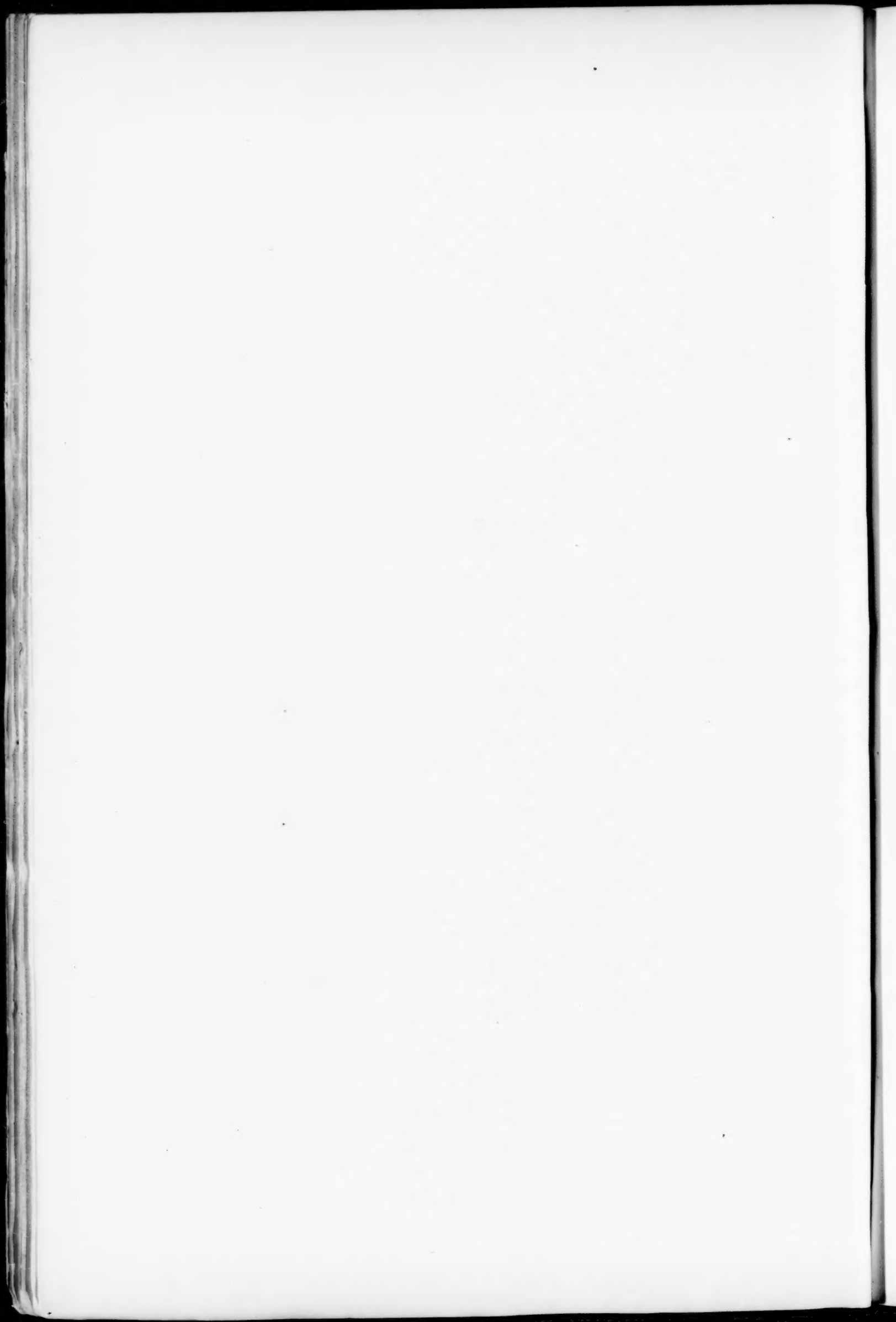
NEW REVEDOS OF GRACE CHURCH
NEW-YORK

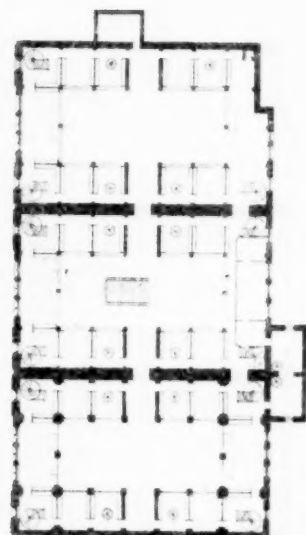
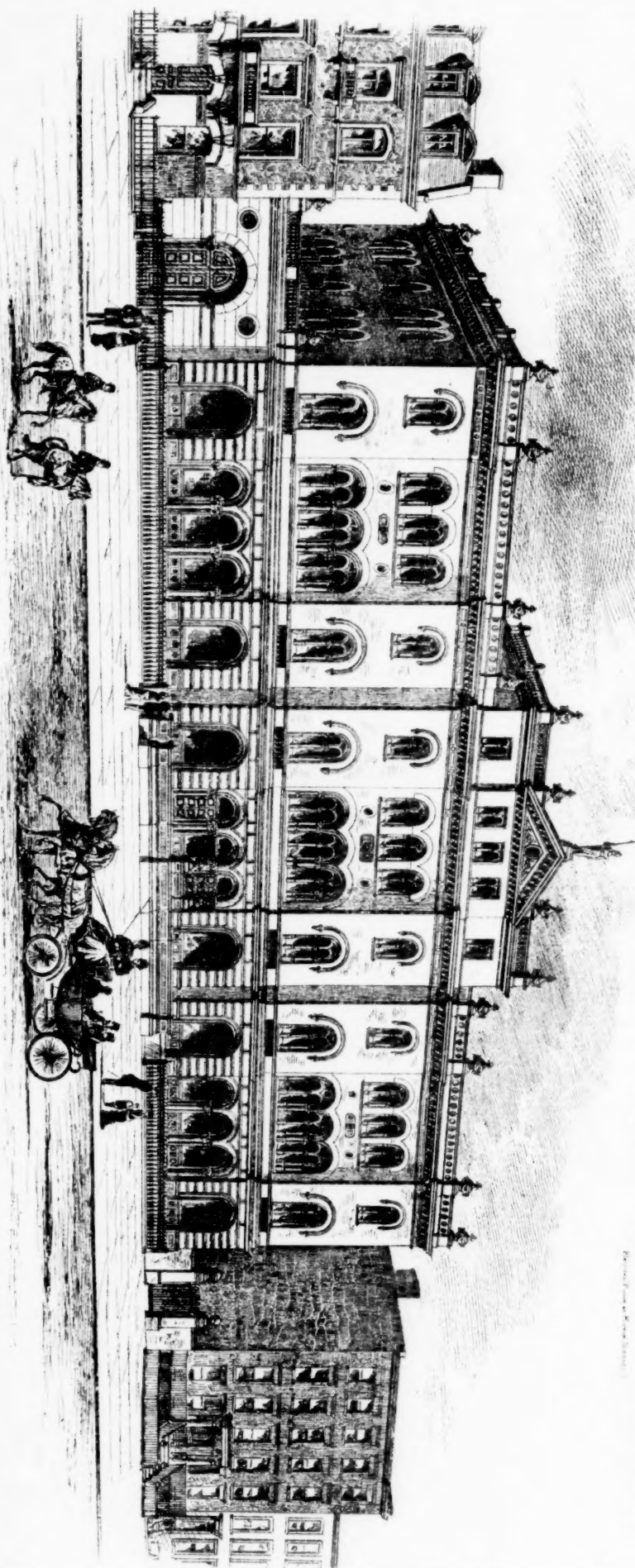


STANDARD OF 10'

JAMES HENRY MONTGOMERY

NEW-YORK, 1880. PUBLISHED BY J. H. MONTGOMERY

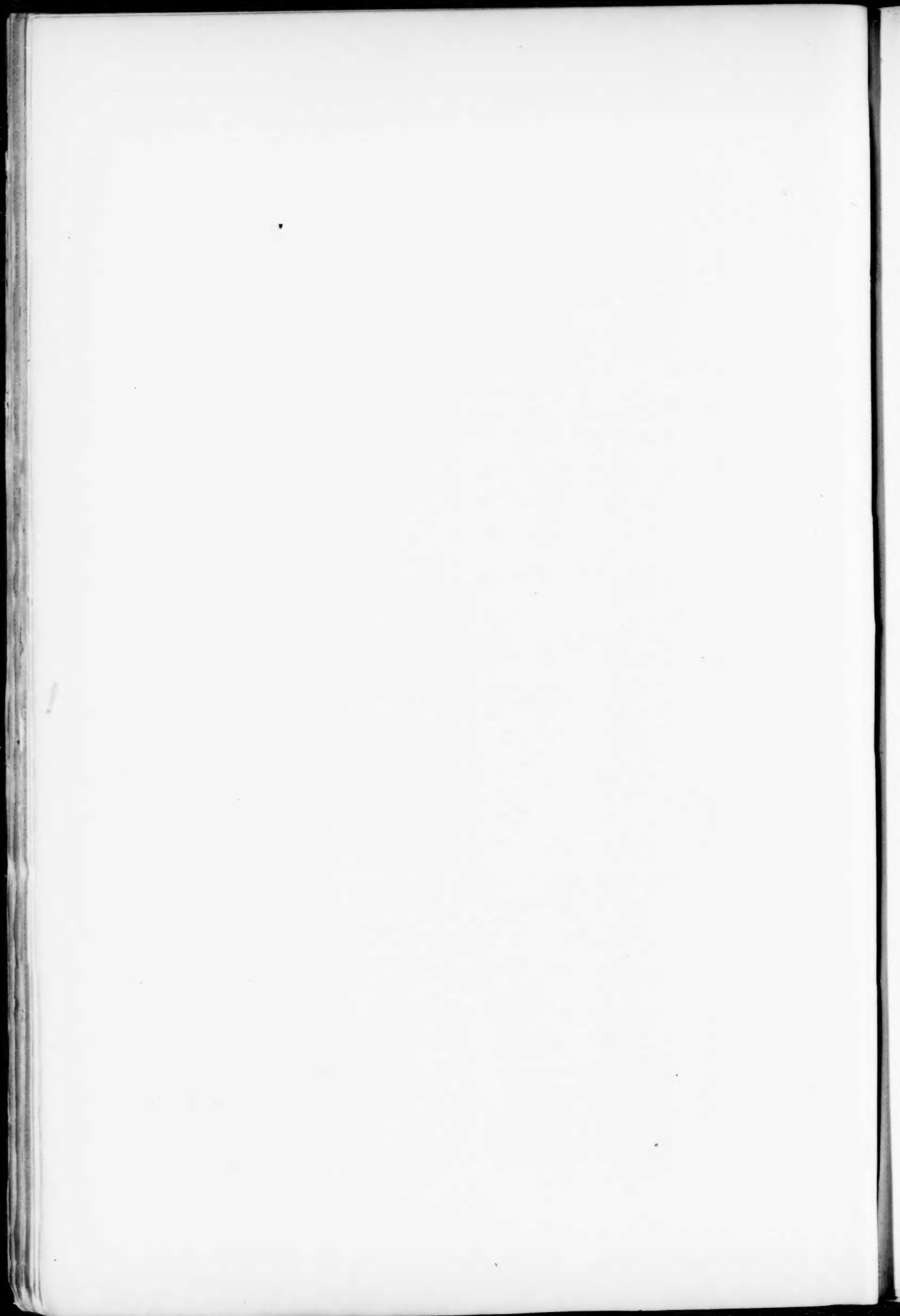




ASTOR LIBRARY NEW YORK

W. B. STICKNEY ARCHT. N. Y.

THE ASTOR LIBRARY, 21 WALL ST. N. Y.



to the desirability of such a separation. In London the amount of road refuse which enters the sewers is enormous, continually blocking them, and consequently sending the sewage and sewer-gases into the houses."

It may be argued by the advocates of a combined system that the rain-fall scours out such deposits; but it must be remembered that we have in this climate such long droughts that several consecutive weeks often pass during which no considerable rain-fall occurs; and this is likely to be during the hottest part of the year. The result would be the collection of deposits at such times, just when the heat renders the changes by decomposition most rapid, and its effect upon the health of a community the most powerful.

The flow of sewage is, as above explained, comparatively uniform, being subject to only daily variations, and always within certain definite limits. It can therefore be definitely and cheaply provided for by such sizes of pipes as are needed, and which will for these reasons be so far filled every day as to insure there being scour enough to keep them free.

For such small towns as can readily take care of their rain-water on the surface, the above reasons are certainly strong ones in favor of separating the sewage flow. In such towns the street traffic is so moderate that the street water is not very foul, and can therefore be discharged with impunity into the natural water-courses. Such towns, too, are precisely the ones that will find the saving of capital by the separate system an important item in their finances, and on whom the burden of constructing large and long main sewers would be found oppressive if not prohibitory. But grave objections are found in various places, viz., in most large towns, to the plan of separate ducts for sewage and surface-water. First, the liability of polluting the brook-channels and even larger water-courses by the discharge of street wash into them. Very few towns remove the horse-manure from their streets so thoroughly as to prevent the more soluble parts from being washed away by every rain, with whatever other organic matter or loose material happens to be lying about in the shape of dust. If the surplus rain-water from the streets be delivered to the nearest natural stream, unless this be a large one, there will be a constant accumulation of silt in its channel, containing such a quantity of organic matter that it could hardly fail to become offensive in warm weather. The variable character of the flow, dependent on the rains, would favor the continual deposit of banks of foul silt in such channels, which cannot be self-cleansing. The result would be very unsatisfactory in all small brooks and streams of insufficient volume to largely dilute and carry off such impurities.

There is a second reason which operates with a good deal of force against any attempt to separate sewage and surface-water in our older cities; viz., the complications arising from an increase in the number of underground pipes in our streets. Most cities now have already gas-mains and water-mains under the pavements. If we add to these not only one set of sewers, but two, one for house-drains and one for street gullies, we have to consider how all these systems are to cross one another at every street corner, and how the small house pipes from either side the way are to cross the mains with which they do not connect, and still preserve the continuous slope for both mains and branches, which is indispensable for drains, and quite important for gas and water-supply pipes. Of course each system of mains could be laid at a different depth below the pavement, to provide for this crossing; but the grades of sewers often depend upon other things besides the level of the pavement. A long sewer must have often but a very slight descent, and cannot vary in inclination as the surface of the street may. So its depth cannot be a constant one. So long as we have only one set of sewers, acting also as drains, we can put them deeper than the gas and water-mains, which are usually laid at successive levels above the sewers, and nearly of uniform depth below the pavement; but, if we must have two systems of drains, their slopes or grades may often clash with one another and create much inconvenience. Of course such intersections and superpositions can be made feasible and practicable, but not without cost and continual trouble,—a matter that should be duly taken into account in considering such a change. If the day should come, as it may, when we have sub-ways under our pavements, in which all these main pipes can be laid and repaired without taking up the pavement so often as is now done, then the putting in of an additional pipe would not be of so much importance as it is under the present condition of things.

Moreover, we must remember in connection with this discussion that the old-fashioned wide or flat-bottomed sewers, which favored the accumulation of sediment when but a small flow occurred in a large sewer, are no longer built in these days. The modern forms are like the long section of an egg with the small end down, so that the invert, even though covered with only six inches of flowing sewage, is narrow and smooth, and unlikely to collect any considerable quantity of deposit, even when the sewers are ten or twenty times as large as required for the dry-weather sewage alone.

It is evident that the circumstances of the locality which happens to be under consideration must be carefully considered in relation to this question. Thus the separate system of pipes for sewage and rain-water may not only be well adapted to many towns or districts with a somewhat scattered population, but also even in large-towns, perhaps, where the rain-water can be discharged into rivers of considerable size, that would not become polluted thereby. Still, if the town had within itself the elements of an indefinite increase, as many American towns have, the village of to-day may be a crowded

city in the next generation, losing all the rural characteristics of both streets and brooks. In this case any provision which might have been suitable for a suburban population would cease to be so when the conditions had changed.

THE PROPOSED ENTRANCE EXAMINATIONS TO THE R. I. B. A.

THE annual report of the Council of the Royal Institute of British Architects contains the scheme of the examination which it is proposed to make compulsory on all candidates for membership after May, 1882. It was prepared by a special committee, consisting of Messrs. Whichcord, Lewis, Jones, C. Barry, T. H. Wyatt, H. L. Florence, J. D. Mathews, Cates, E. P. Anson, T. R. Smith, Waterhouse, and W. "White." The scheme is as follows:—

1. That the examination under by-law XIV. shall be in professional subjects only.

2. That, as it is important not to deter candidates from presenting themselves for examination, the test shall not at first be severe; and further that the names of those who pass shall be returned alphabetically.

3. That the following shall be the general outline of the examination, viz.:—

(i.) *Probationary work*, consisting of authenticated proofs of the candidate's ability in drawing and perspective, to be submitted by him prior to the examination. (See for exemptions Nos. 10 and 11.)

(ii.) *A written and an oral examination* which shall test the candidate's knowledge of the following subjects, viz.:—

a. History of Architecture.

b. Mouldings, features, and ornaments of one recognized architectural style, selected by the candidate.

c. Filling in of an outline block-plan of a building with the details of arrangement for a selected purpose.

d. Specifications and methods of estimating the cost of erecting any building.

e. Shoring, underpinning, and dealing with ruinous and dangerous structures.

f. Materials and construction, and calculations for ascertaining the strength of materials.

g. Contracts, dilapidations, and general practice.

4. That, as it is important to offer facilities for joining the Royal Institute of British Architects, there shall be not less than two examinations in the year, one to take place about four weeks before the commencement of the session.

5. That examinations under by-law XIV. may be held in the principal towns of the United Kingdom, and, if practicable, under the supervision of those architectural societies whose regulations shall have been recognized by the Royal Institute of British Architects. The arrangements for these examinations shall be subject to such conditions as the Council of the Institute may from time to time prescribe.

6. That a fee of three guineas shall be paid by each candidate prior to examination; the said fee to be placed to his account as his entrance fee should he be elected an Associate within twelve calendar months from the date of his passing.

7. That a Board of Examiners, of not less than five Fellows of the Royal Institute of British Architects, shall from time to time be appointed by the Council; that the said Board shall draw up the questions for each Examination, consider the answers, and examine the candidates orally; that three Members of the Board shall form a quorum.

8. That for each Examination two Moderators, either Fellows or Associates of the Royal Institute of British Architects, shall be appointed by the Council of the Institute, to be in attendance during the time in which the written portion of the Examination is proceeding.

9. That for the present the services of the Examiners and Moderators shall be honorary.

10. That the Board of Examiners shall have discretionary power to take into account any previous successful examinations, or prize competitions, in the Institute or elsewhere, of candidates for Associateship.

11. That all practitioners of architecture who have been in the active exercise of their profession prior to January 1, 1875, shall be exempted from submitting any probationary work. (See No. 3, section i.)

The Council regret the absence from the ranks of the Institute of several well known and esteemed architects, who, on account of being directors and shareholders of trading companies, are unable to subscribe to the declaration—"I will not have any interest or participation in any trade contract, or materials supplied at any works, the execution of which I may be engaged to superintend." In one instance a candidate for membership was peculiarly interested in the manufacture of decorative work of a particular kind, and of a higher character than could be otherwise procured. The Council were therefore asked to consider whether the terms of the declaration might not be relaxed where they press somewhat heavily, but after careful discussion, they felt that such a relaxation would involve so much risk they were unprepared to recommend it.

The report concludes by stating that the subject of professional competitions, about which so much has been written and said during

a generation, and which is still one of the questions of the day, is receiving careful attention from a special committee, appointed by the Institute. Many other equally important matters have been discussed by the Council in the twenty-five meetings held by them during the official year. They share in the hope recently expressed by Mr. Thomas H. Wyatt, the President of the Architects' Benevolent Society, that its happy connection with the Institute may result in lasting advantage to the charity; and the Council, who are also indebted to him for valuable assistance as the Honorary Secretary of the Institute, rejoice in the success which has attended his efforts to increase the benevolent fund, the objects of which deserve liberal support from all the professional members. The present, by Professor Donaldson, of a gold badge and chain of office, to be worn on certain occasions by the President for the time being, and when acting as the representative of the Institute, has added to the long list of obligations due to him. That his experience and judgment may be preserved to the members, during the important period which is to witness the introduction of compulsory examination for membership, and for many subsequent years, cannot be too earnestly desired. In fine, during the summer of 1881, a general conference of architects of the United Kingdom will take place, which the Council hope will afford the means of securing further professional support; and this will be followed in 1884 by another conference, which may celebrate the fiftieth anniversary of the foundation of the Institute.

THE COMPETITION FOR THE NEW PARLIAMENT BUILDINGS AT TORONTO.

TORONTO, May 11, 1880.

THE architects of Toronto and neighborhood, on receiving copies of the instructions relating to the competition for new Parliament Buildings, immediately held a meeting at the office of Messrs. Langley, Langley & Burke to consider the conditions. After about two hours of careful discussion, a committee was appointed to draft a memorial to the Hon. Commissioner of Public Works, containing the views expressed by the architects present. This committee met and drafted a memorial, a copy of which is enclosed.

It was resolved at this meeting that, in order to give the petition as great weight as possible with the Commissioner of Public Works, the signatures of as many architects in the city and throughout the country be secured to this memorial as can be obtained.

Owing to the difficulty of obtaining the names of all the architects practising in the Dominion, we are compelled to rely to some extent on the kindness of those whose names we have been able to procure to give us all the assistance in their power in obtaining signatures to the enclosed document, as the larger the list and the more extended the residence of the signers, the greater weight we hope it will have with the Commissioner of Public Works.

We trust that all architects will look upon this as a professional and not a personal matter. The fact that, owing to some cause or other, he may not intend to compete, should not prevent any man signing the petition. Let each consider that as an architect he is in duty bound to assist to raise the profession in every way that is in his power.

We do not ask any architect to sign this memorial who does not agree with the clauses contained in it, but we do ask all to sign it who agree with the general principles therein laid down, although not agreeing with minor points.

It is of the greatest importance that this matter should be attended to at once. We desire to have all copies returned to us as soon as possible.

In returning the signed copies address them to Frank Darling, 56 King Street East.

Hoping that this matter will receive your approval and prompt attention, we are

Sincerely yours,
 Signed, HENRY LANGLEY,
 Of Langley, Langley & Burke,
 Chairman of Committee.
 JOSEPH CONNOLLY,
 FRANK DARLING,
 Of Darling & Curry,
 JOHN GEMMELL,
 Of Smith & Gemmell,
 GEORGE H. LALOR,
 DAVID ROBERTS,
 WALTER R. STRICKLAND,
 Stewart & Strickland,
 Members
 of
 Committee.

TO THE HON. C. F. FRASER, COMMISSIONER OF PUBLIC WORKS.

WE, the undersigned architects, having received copies of instructions as to the proposed competitive designs for the new Parliament Buildings to be erected in the City of Toronto, while acknowledging their general excellence, respectfully beg leave to draw your attention to a few points, which our profession feel very strongly require amendment, both in the interests of a building of so great importance, as well as in justice to ourselves, and which we think cannot but commend themselves to your judgment.

1st. — We feel that the length of time allowed is altogether inadequate for the preparation of the designs and the proper elaboration of the very large number of drawings required for such a work. The time now remaining is only ten weeks, at a period of the year when architects are most busily engaged with their general practice. It cannot but be evident to you that a building of such magnitude will demand a very large amount of care, study and thought, quite sufficient to occupy the designer exclusively for at least three months, not taking into account the vast amount of mechanical work subsequently required to perfect the drawings.

As a matter of fact the lack of a sufficient number of competent draughtsmen in the country, renders it utterly impossible for architects to furnish proper designs within the time named even in the crudest form.

In view of the foregoing, we feel that the time ought to be extended to the 1st day of January, 1881, or at the very least to the 1st of December next.

We would respectfully urge upon you the strong probability that if such extension is not granted, the best talent of not only this country but also of the United States and probably of England will be debarred from competing, a circumstance which would be much to be deplored considering the very great importance of the work.

2d. — We would deprecate anything tending to institute a competition of rates between the architects preparing designs for the proposed buildings by asking them to state the amount of remuneration which they are prepared to accept for their services. The matter, as we understand it, is to be a trial of skill in designing, and not a competition in regard to professional charges. We assert that any man who is capable of preparing a design suitable for erection, which may be approved of by the Government through the experts, whom it proposes to employ, is well worthy the being paid the commission generally allowed by law and custom, and which is in accordance with the rates adopted by all architectural institutes and societies throughout the world.

We believe that you will find that the result of fixing upon the usual rate of five per cent commission will be to induce men of the highest attainment in the profession to compete. We would also urge with all earnestness that it be distinctly stated that the architect whose design is allotted the first place will be employed to carry out and supervise the erection of the building at the rates above mentioned. As a rule it will be found that any man capable of designing a building such as the one in question, will also have the necessary ability and experience to carry it out.

In case, however, it should happen that the architect whose design is selected for erection should be deemed lacking in practical knowledge sufficient to make it safe to entrust the carrying out of the work wholly to himself, it might then be mutually agreed upon that some other man, who in the opinion of the Government would supply the necessary qualities, should be associated with him.

It must be evident to you that the mind which first conceived the design in its general arrangement and outline is pre-eminently the best qualified to design and carry out the finer and more elaborate details which are essentially necessary to that life and expression so characteristic of good architecture.

3d. — In regard to the employment of experts, we would respectfully suggest that they should be non-competing architects of the highest standing, chosen from different points outside of the Dominion, as local men must necessarily be more or less acquainted with the style of their confreres, so that if such were appointed judges, the object of the Government in asking for designs under motto in order to keep the source of authorship a secret, would stand a chance of being defeated.

4th. — While agreeing fully to the limitations with respect to the geometrical drawings, we fail to see that there can be any objection to allowing the different competitors to finish their perspective drawings in any manner that they may deem best, provided only, that no color be used, merely etching or washing in with sepia or Indian ink.

5th. — With regard to the Government retaining the drawings to which the second and third premiums are awarded, and the clause making it compulsory upon any competitor to part with his design for the sum of \$400, we would respectfully ask that these conditions be altered. The second and third premiums should be offered as a reward and recognition of merit and not as purchase money, and the drawings should still remain the property of the authors, particularly as they can be of no use to the Government. If, however, the Government should deem it advisable to retain any of the designs sent in on account of any special merits which they may possess, they should in all fairness pay to the author such amount as he may be willing to accept. But that under no consideration should it be made compulsory for any competitor to sell his design.

RESTORATION IN ITALY.

MR. HENRY WALLIS says that the attention of the Italian Minister of Public Instruction may fairly be called to the present state of the Baptistery at Ravenna. It is known to those interested in art and archaeology that it has been proposed to raise the building as it stands by some yards, the present pavement being about two and a half metres above the ancient. The realization of this project would be a gain from no point of view. The exterior of the Baptistery is simply rough brickwork, without architectural pretension, and the interior wall below the pavement is in the same state, the ancient decoration, probably marble panelling, being destroyed. Last week, while in the building, Mr. Wallis saw a person who had strolled in with him simply lay his hand on the mosaics, and a large piece fell down. The custodian said this arose from the humidity that saturated the building last winter, on account of allowing open spaces to remain in the walls. Until lately small houses were built against the outside of the Baptistery; these have been taken down and the walls unnecessarily tampered with; even some of the ancient marble panelling has been removed. It would have been unquestionably right to have insisted that the houses should no longer have been inhabited, but they were undoubtedly a stay and protection to the main building. It is intended to "restore" the Baptistery, but the only valuable part of the building is the interior mosaic decoration, and this, to students of art and history, is of paramount interest. Not only are the prophets and apostles among the noblest creations of Christian art, but they as distinctly indicate the phase of Christian belief in the fifth century, as the thirteenth century or sixteenth century frescoes the form it assumed in those epochs. In any way to endanger such a monument is a matter which concerns the whole of intelligent Christendom. This engineer's whim is against the wishes of educated Italians. Mr. Wallis also refers to the proposed restoration of the chapel painted by Melozzo da Forlì in the Church of S. Giralamo at Forlì. The roof of the chapel is covered with fissures and cracks that have now been for

three years pasted over with strips of paper, consequently almost completely hiding Melozzo's frescoes. This is especially to be deplored, as his works, which are very distinctive and impressive, are scarcely to be found now save in his native place. The single panel of Melozzo in the Pinacoteca at Forli has, along with some others by Palmezzano, been restored and repainted, and consequently spoilt. — *The Architect*.

ACTION OF THE SUN'S HEAT-RAYS ON HOUSE-WALLS.

THE solar radiation is not without influence on the comfort of the occupants of a house, and it may be very different, according to the orientation and exposure of houses. In a recent number of the *Zeitschrift für Biologie*, Herr Adolf Vogt, having discussed this question theoretically, describes some experiments which he made with reference to it. He cut out of a block of sandstone three plates, 51 cm. (20 in. square), and only 14 mm. ($\frac{1}{2}$ in.) thick, and attached to the back of each plate a water-vessel of thin sheet-zinc of the same extent as the surface of the stone plate, and with a width of about 2 cm. ($\frac{3}{4}$ in.) In the water a thermometer was inserted, and the whole vessel, exclusive of the front stone plate, was inclosed in a wooden case, and packed with hair, so that the communication of heat to the water would probably be only from the stone plate.

Three plates so arranged were now set up in an open space unaffected by any shade: one plate looking directly eastwards, one southwards, one westwards. In the shade of the hollow space between the three plates the air-temperature was measured, and at a short distance from these the solar radiation was measured with an actinometer. Hourly observations the whole day through were possible last year, at Berne, only on two days, July 25 and 29. These observations, which alone were undisturbed by cloud or mist, led to very remarkable results, which are shown in tables.

"If we sum up the calories," says Herr Vogt, "which passed through each of the four walls in the course of one day, the same unexpected result appears from both series of observations, — viz., that the south wall took insulated-heat least, although it was twice as long exposed to the sun's rays as the east and west walls, and although at the time of the most favorable angular position of the radiation to its surface — viz., mid-day, — the power of insolation had reached its maximum for the day. The heat which penetrated through the east wall during about fourteen hours was to the same heat of the west wall, and to that of the south wall, on 25th of July, E.: W.: S. = 100: 75: 69; and on 29th July, E.: W.: S. = 100: 88: 86."

The following are amongst the values given in the table: On the 25th July the highest temperature of the air was 26.6°, at 4 P. M.; the maximum temperature of the blackened actinometer, 46.4°, appeared about one o'clock. Of the three water-vessels, that in the east reached its highest temperature, 33.4°, at 11 o'clock A. M.; the southern, 36.2°, at 3 P. M.; and the western, 40.3°, at 6 P. M. On the 29th July the highest air-temperature, 28°, appeared about 3 P. M. The dark actinometer reached its maximum, 45.7°, at 1 P. M.; the eastern water-vessel reached its maximum temperature of 34.8° at 11 A. M.; the southern was 37.4° at 3 P. M.; and the western reached a temperature of 44°, which was observed both at 6 and at 7 P. M.

OCHRE PAINTS.

THE ochre-beds of the United States are assuming importance in the growth of mechanic arts and industries, as there are constantly increasing demands for good paints of cheap cost. The States where excellent ochre-beds occur are here now mentioned in something like the order of their containing native deposits of ochre, and the relative natural excellences of their qualities and their beauties of colors: Missouri, Arkansas, Georgia, Tennessee, Alabama, Kansas, North Carolina, Virginia, and New York.

The ochres of America are comparable to the best ochres that were ever imported from France and England, but our manufacturers should observe the utmost care in the manufacture of the paints from them. The richest colored and most costly ochres are those which make the orange mineral. Superior beds of this are found in some of the States above named. In our country we have all the varieties of colors and shades of colors, — such as cream-color, yellow, buff, light orange, dark orange, light brown, dark brown, vermilion-red, Indian-red, Venetian-red, and other diversities beside. Ochre paint-manufactories are operated in New York, Missouri, and other States with considerable success. There is far less trouble in the production of these than in most or all other descriptions of paint. The processes of grinding, washing, sifting, and decanting them into settling tubs or vats, where the wet process is used, are the chief labor of preparing ochres.

They admirably fulfil the conditions of being the best "cottage-paints" for either indoors or outdoors. They also are largely used for painting furniture, agricultural implements, bridges, depots, warehouses, barns, and farm structures generally. The great economy in employing ochre paints is in their first cost being one-fourth to one-tenth less than most other paints, and it is asserted by persons of experience that they last longer and continue to look better than many styles of paints which are much in vogue. One of the important qualities which they possess is that of penetrating the surfaces they

are applied to, and in the coating of wood substances they not only penetrate the fibres, but they likewise case-harden the substance. This effect is supposed to be due to the fine condition of the silicon which constitutes a part of every species of ochre.

W. G. ATKINSON.

STEAM METERS.

OFFICE OF TROY STEAM HEATING CO.,
TROY, N. Y., May 17, 1880.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, — My attention has been called to an inquiry in your paper for a steam meter. I would state for your information and your correspondent's that we have a meter, which is a steam trap also. It has been in successful operation here some little time past. I would be pleased to answer any further inquiries.

Very truly yours,

S. E. BABCOCK, Engineer.

NOTES AND CLIPPINGS.

CONTINUATION OF THE EXCAVATIONS AT OLYMPIA. — All lovers of art and archaeology will rejoice to learn that though there is no hope of any more grants from the German Reichstag for these excavations, the liberality of the Emperor of Germany has from a private source supplied an additional 4,000 $\frac{1}{2}$., which will, it is thought, be sufficient to complete the exploration of the site. As the work draws to a close the question has to be settled where this great collection of Olympian antiquities with which the Germans have so generously endowed Greece is to be finally housed. According to the precedent of the Mycenaean treasure it might be expected that the Olympian antiquities would be transferred to Athens, where they would form a museum by themselves. But it is said that a rich Greek is prepared to furnish the money to build a museum at Olympia itself, and that there is a strong party in Greece in favor of this scheme, in reference to which there is much to be said for and against. If the antiquities are to remain at Olympia, archaeologists will have the advantage of seeing them in immediate proximity to the sites where they were found, and the architectural remains can be studied with the illustration of the sculptures. On the other hand, Olympia is a spot very difficult of access at present to the ordinary tourist, and the climate is deadly in summer, and neither agreeable nor salubrious in any part of the year.

A LARGE PUMPING ENGINE. — The big pumping engine at the Union Shaft, built at the Union Iron Works, San Francisco, by Prescott, Scott & Co., is the largest engine of the kind on the Comstock. Some idea of its size and power may be gained from the weight and dimensions of the cylinders and fly-wheel. It is a direct-acting compound engine, and the two cylinders are upright, and placed so as to incline toward each other at the top. The initial cylinder is 65 inches in diameter, with 6-foot 9-inch stroke, and the other cylinder is 100 inches in diameter with 8-foot 3-inch stroke. The big cylinder weighs 43 tons, and the small one 30 tons. The fly-wheel is 37½ feet in diameter, and weighs 110 tons. It revolves on a shaft that is 27 inches in diameter. The hub of this wheel weighs 15 tons. All else is on the same scale. When this big pumping machinery starts up, all the water likely to be found in the three mines working through the Union shaft — Sierra Nevada, Union Consolidated, and Mexican — will be readily handled. The water now flooding the 2,500 foot level of the Sierra Nevada Mine will be taken out at once. — *The Economist*.

ITALIAN DISCOVERIES AT ESTE. — Some of the finest prehistoric remains in Italy have lately been dug up by Professor Prosdocimi in an ancient cemetery lately discovered near the town of Este. The Romans had, long years ago, rifled some of the tombs, but many of the places of interment were found to be undisturbed, and they contained some valuable stores of pottery and bronzes. The ornamentation, as well as the modelling of the pottery, is considered to be very fine. Great interest has been excited by the figures on the bronzes.

THE PEABODY AND THE WATERLOW BUILDINGS. — The average cost of 954 buildings erected by the Peabody Fund in London was \$1,565, while those erected by the Sir Sidney Waterlow Industrial Dwelling Company cost \$685, or less than one-half. Hence the former pay but two per cent, and the latter five per cent, while the former are occupied by a much better class of tenants than they were designed for.

THAT HYBRID, AN ARCHITECT. — A draughtsman is not, in the opinion of an English critic, born again when he is called an "architect," and the deluding prefix of "profession" is a mere vulgarity, intended by this class of business agents to assert some vain superiority to trade. A barrister or surgeon, he says, takes no commission, but his fee, for his professional advice. Artistic workmen would receive their wages, or stipulated pay, according to the value of their art, as business men gain profit or experience loss in trade. But architects pretend to be a sort of trinity in unity, professional, artistic, and commercial, all in one; and such pretence is very business-like.

THE ITALIANS AS WORKMEN. — The workmen who bored the St. Gothard Tunnel were mostly Italians. Many lost their limbs or lives through accidents, but altogether they stood the heat more easily and were less frightened in handling dynamite than the Swiss and Germans. For such enterprises they are classed by those who have seen them work, next to the Chinese.

A BUILDING LAW FOR BALTIMORE. — The mayor has confirmed the appointment of the following named gentlemen to prepare a building law for the city. Mr. John H. B. Latrobe, lawyer; Messrs. John Muddock, Wm. T. Wilson, and Geo. A. Frederick, architects; Messrs. S. H. Adams and Blake, builders.

JAPANESE FANS.—A Japanese journal furnishes some interesting information respecting the fabrication of fans. Here, as in many other branches of industry, the principle of the division of labor is rigorously observed. The bamboo sticks are prepared by workmen in their own homes, while the incised ornaments of the lower portion of the fan are confided to more skilful hands, who dress the handles according to the sketches given by the designer. In the same way, the artist gives to the engraver the motives which, in his idea, will prevail the next season, and will ensure a ready sale. He it is also who chooses the colors for the pieces already cut out, as also the colors for each isolated detail, and, finally, the different decorations for the back of the fan. The paper made use of to insert, when pasted, the leaves of the fan is all Japanese; it is peculiarly suited for this purpose—so much so that an attempt to employ foreign paper had to be abandoned. The papers from America were tried, but rejected; but experts will tell one that the native paper used in this branch of industry is much inferior to that used in the past. Formerly, when the country had no relations with the outer world, the most expensive fan made cost scarcely a pound. Since then, however, there have been numerous commissions for much larger sums. The current price of ordinary fans is, for a hundred, from 50 yen or dollars to 15 yen. The number of fans furnished for the Philadelphia Exhibition of 1876, on commission, was no fewer than 800,000, the price of which was estimated at \$50,000 (£10,000). Formerly the fan trade rarely exceeded ten thousand articles yearly throughout the whole country, but during the last twelve months, though the date from which this period commences is not stated by our informant, there have been exported nearly three millions of articles from Hiogo and Yokohama. Highly appreciated as are the products of Hiogo, those of Tokio are by far the most esteemed, not alone for their beauty, but for their superior cheapness.

THE BILLIMORA TOWER OF SILENCE.—The consecration of the new Tower of Silence, built from the subscriptions collected among the Parsees of Bombay and other neighboring towns and villages, took place on March 26, in the presence of a very large number of the members of that community. None but Zoroastrians were allowed to witness the ceremony. Before the business of the day was proceeded with, the people were allowed to inspect the tower. It is an enclosure made of a thick circular wall about seventeen feet high, with a small iron door fixed in the front where the dead bodies are admitted. The floor is lined with Sewree stone slabs of different dimensions, over which the bodies are exposed. There are in all sixty-five such slabs fixed close to each other in a circular form, radiating, as it were, from the centre. In the middle there is a large well or hole, in which the bones and other remains of the bodies collect themselves, and find their way through large apertures into the depths of the ground. It is one hundred and thirty-six feet in diameter, and is therefore considerably smaller than the tower built about two years ago at Nowsaree. There are two other towers at Billimora, one of which was built about three hundred years ago, and the other one hundred years ago. The latter has been used up to a recent date, but in consequence of the walls having been broken in several places, it cannot, according to the Parsee religion, be utilized any longer. It was intimated that some three or four small Towers of Silence were to be built in different villages in Guzerat. The tablet fixed inside the tower bears the following inscription: "This Dokmoo (tower) is built from the general subscriptions collected from the Parsees of Billimora and other out stations for the use of those only who profess the Zoroastrian religion. March 26, 1880." The tower will be used for the first time on the death of a very young child, according to the immemorial custom. — *Exchange.*

ROMAN RELICS IN THE BED OF THE TIBER.—The excavations in the garden of the Villa Farnesina for widening the bed of the Tiber have again yielded several interesting archaeological results. A statue of a Roman matron, 1 metre 70 centimetres high, and perfect except for the loss of the left hand, was found a day or two ago, and close by, another statue, of Tiberius, which was, however, in many fragments. Near these a sepulchrum containing several urns was discovered, four of which were of the finest workmanship, decorated with reliefs of fruits and flowers; in other two, besides the ashes and calcined bones found in all, there were two gold rings, with onyx stones, somewhat damaged by fire but still perfect enough to show an intaglio—one of a lion sleeping, the other of three children chasing a bear. It is conjectured that the urns had been previously discovered in the building of the Aurelian wall, which passes by a few steps off, and that the finer urns had been robbed of anything of value, while the plain ones escaped notice. On one of the latter is the inscription: "Minati A. Pollæ." The various articles were almost immediately removed to the museum in the Lungara, where the other objects discovered in the Farnesina gardens have been placed, and carefully kept hidden from the public under the plea that the museum is not yet completed. It should be observed that the Duca di Ripalda, representing the proprietor of the Farnesina, claims compensation for the objects of value discovered on this ground, which was expropriated for the public good, and the price of which has never yet been settled. — *Pall Mall Gazette.*

FIREPROOF MATERIALS.—In the report published by the *Journal of the Society of Arts*, on the Applied Science Exhibition, Paris, of last year, mention was made of the muslin curtains shown by M. A. J. Martin, Paris, to which a flame was constantly applied without consuming them. The composition he employs for rendering unflammable paper, wood, and textile fabrics is the following:—

	Parts.
Pure sulphate of ammonia	80
Carbonate of ammonia	25
Boracic acid	30
Pure borax	17
Starch	20
Distilled or pure water	1,000

The materials are dipped in this solution while hot, so as to be thoroughly impregnated, when they are dried sufficiently to be ironed in the same way as ordinary starched fabrics.

MORE NOTES FROM THE SAN DONATO SALE.—As most of the American purchases were made through my instrumentality, I am able to give a general idea of the class of objects which go to America. As I have already spoken of the pictures acquired by Americans, I will now refer more particularly to some of the more choice pieces of bric-à-brac and special objects of art which also go to the same destination. One of the last sold, but not least in importance, destined to adorn a private house in New York, is the reduced repetition in bronze, made many years since by Barbedienne of Paris, of the Ghiberti doors of the Baptistery of Florence—those famous Gates of Paradise, as Michael Angelo pertinently called them. They cost the Prince in England \$20,000, and it took three years to make them. He used them as the entrance to his Gobelins tapestried concert-room, formerly the chapel of his palace. The present owners intend having them gilded, as their originals were, the traces of the gold, after more than four centuries' wear, being still plainly discernible on them. America will also possess some of the finest specimens of the celebrated old Vienna porcelain, the making of which has been discontinued by the Austrian Government on account of its expense. The remarkable dinner service, made up of 107 pieces, decorated with copies of the most celebrated of the old masters of the Belvedere Gallery, beautifully executed, and which cost the Prince \$35,000—for one dish alone he paid \$3,300—was sold by the piece at a very great sacrifice, not a third of the original price. The famous Rubens plate goes to a small country town in Pennsylvania, and not a few pieces of this renowned collection, with choice old bits of Sevres and Saxon of the best periods of the last century, go to decorate New World homes which hitherto have seen nothing of this select character. Few probably are aware of the prices paid by European collectors for rare specimens of these last-named porcelains, simply on account of some delicate quality of the decoration or paste. There were three small flower-vases of the blue turquoise tint, fan-shaped, painted by Dodin in 1758, which sold for \$19,000, and immediately after were resold at an advance of \$3,000. The Sevres snuff-box, No. 476 of the catalogue, painted after a design by Boucher, was eagerly acquired at the price of \$6,000 by Baron Rothschild. These values, it is true, are exceptionally fictitious, and are the result of the competition of a few avid collectors, who are willing to pay any price to secure some very rare or choice specimens of certain old workmanship in some fashionable line of the minor arts. When Americans fairly enter the European field of bric-à-brac competition, we may see even more extravagant prices paid, simply for the pride of ownership, irrespective of absolute artistic values. It is with no small satisfaction I am able to chronicle the fact that at least one good, genuine specimen of Luca della Robbia's work, "La Vierge au Cousin," surrounded by a wreath of fruits and leaves, in color, in his usual fashion, goes to New York. There are few of the "old masters" whose names have been more misused than his in the fathering of work which he would not have allowed even to enter his "bottega," much less leave it. I was on the point of forgetting, perhaps, the most interesting of all the relics, from its associations with Louis XVI, which hereafter finds its new home in our country. This is the charming iron music-stand, of hammered and repoussé work, which was designed by the King, while he was Dauphin, as a present to Marie Antoinette, and is so lovely a specimen of fine taste and workmanship as to clearly prove that the unfortunate monarch missed his "mission" when he fatally played at kingcraft instead of becoming a *bona fide* artisan, and saving his head. In reading the "San Donato Catalogue," which is a masterpiece of literature of its kind, every one must be impressed with the graceful facility and eloquent suggestiveness with which the French language lends itself to the succinct description of works of art. Our own tongue is lamentably deficient in terms which express the material processes of beauty, especially in fine workmanship and dainty cunning of design. English terms are hard, mechanical, material, unpoetical—do not lend themselves to the sentiment of the objects—and a catalogue of fine art, to give any adequate idea of bric-à-brac of high standard, must borrow from the French language expressions which are either untranslatable into our more rigid, matter-of-fact speech, or else altogether lose their fine æsthetic bloom in the uncongenial change. — *James Jackson Jarves.*

A NOVEL RAILWAY.—A railway with some novel features has been recently opened between the stations of Ribeauville (on the Strasburg-Basel line) and the town of that name, about two and one-half miles distant. The line is on the road (with which the rails are level) and has a narrow gauge of three feet three inches. There are inclines of one hundred and thirty feet and curves of one hundred and seventy-three feet radius. The train requires only one engineer and one guard. The locomotives weigh nine tons, and among the rolling stock are ten platform cars, which are arranged for conveying cars from the main line without the goods being transferred. These platforms carry two rails corresponding to the normal larger gauge, and they rest on two bogie trucks, having four wheels each. Thus the larger cars can be conveyed over the sharpest curves of the narrow line. These platform cars weigh three tons, and the largest cars, with full charge, weigh fifteen tons, giving a total weight of eighteen tons, which, divided among the four axles, gives a maximum load of only four tons fifty per axle. Passengers, as well as goods, are conveyed upon the line. The total cost of the line has not exceeded \$50,000. — *The Railway Reporter.*

AN ENGLISHMAN ON AMERICAN ART.—Americans are no longer content to buy old rubbish from Europe, palmed off as the work of great masters, but seek to encourage their own rising school of artists, many of whom will doubtless take rank some day as masters, even in Europe. It is to be regretted that we know so little of American painting in this country. The book illustrations that come to us in magazines are so good as to make us wish to be better acquainted with the artists. They seem, however, usually to prefer the French *Salon* to our exhibitions for an introduction to Europe. — *The Academy.*

THE BLUESTONE OF TEXAS.—It is said that the soft bluestone rock which underlies a wide part of the prairie region of Texas is fully six hundred feet thick at Sherman.

BUILDING INTELLIGENCE.

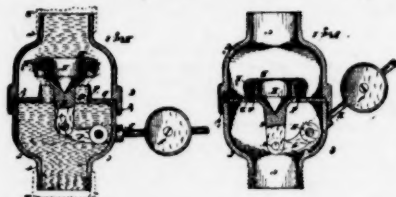
(Reported for The American Architect and Building News.)

[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.]

226,476. VALVE AND SEAL-JOINT FOR WASH-STANDS, ETC. — Joseph Benner, Philadelphia, Penn. The invention consists of a mercurial seal-joint which opens and closes automatically under hydrostatic pressure.



A is the outlet-pipe from a wash-basin, and B the discharge-pipe. C is a coupling, composed of two hemispherical sections, C' C'', united by male and female threads at c³. D is a diaphragm which rests on a shoulder, c⁴, in the section C', formed with a central opening, d, and depending annular flange, d'. E is a valve having a stem, e, which passes up through opening d, and is pivoted to an arm, f, on a rock-shaft, F, which has its bearings in bosses c⁵ c⁶ formed on the walls of the section C'. This shaft is provided at one end with another arm, F', which is furnished with an adjustable weight, f', designed to hold the valve E up to its seat on the diaphragm D. The valve E has a solid centre, E', of conoidal form, and skirt E'', which forms a trough for the reception of mercury, and also adapted to receive the depending flange, d', of the diaphragm D, so as to submerge it and thereby form a seal-joint. The operation is as follows: normally the valve is drawn up to its seat against the diaphragm D, the edge of the trough E'' meeting the latter, and the flange d' entering the mercury. When, however, water flows from the basin in adequate quantity, it will depress the valve sufficiently to permit it to pass down through the waste-pipe B, as shown in Fig. 2. As soon as this is accomplished the weight, f', will raise the valve to its normal position, and the seal will be again closed. It will be noted that a double seal is provided; viz., that of the water, which remains above the valve when the latter is closed, and that of the mercury in the trough, below, into which the flange dips. As the water above decreases by evaporation or other cause, the flange will dip more deeply in the mercury. Should there happen to be no mercury in the trough, the water above will form a seal; and should there be neither water nor mercury present, the contact of the upper edge of the trough with the diaphragm against which it seats, such edge being made true, will form a tight joint. In lieu of the counterbalancing-weight, a spring may be used.

227,355. WINDOW AND DOOR PROTECTOR. — Frederick Gould, Canton, Mass.

227,379. ELEVATOR. — John Q. Myers, Waterloo, Io.
227,380. TOOL-HANDLE. — Albert Nawadny, New Orleans, La.

227,397. WINDOW BLIND AND SHUTTER. — H. T. Watson, Philadelphia, Pa.

227,401. FIRE-ESCAPE. — Charles C. J. Wood, Chicago, Ill.

227,403. WATER-CLOSET SIGNAL. — Delos R. Baker, Cincinnati, O.

227,404. WEATHER-STRIP. — Geo. W. Bell, St. Louis, Mo.

227,411. SEWER-GAS TRAP. — Joseph A. Burgess, Worcester, Mass.

227,412. DRAIN, GAS, AND WATER PIPE. — Mortimer M. Camp, New Haven, Conn.

227,414. DOOR-CHECK. — Charles T. Close, Brooklyn, N. Y.

227,421. HATCHWAY-DOOR MECHANISM. — William I. Ely, Detroit, Mich.

227,438. SAND-PAPER HOLDER. — Chauncey M. Lothrop, Norwood, Mass.

227,446. WINDOW-SCREEN. — Jacob Reigart, Steelton, Pa.

227,452. BENCH-PLANE. — William Steers, Sherbrooke, Can.

227,469. STAIRWAY ELEVATOR. — John I. Tay, Oakland, Cal.

227,466. CURTAIN-CORNICE. — Hans H. Winger, Chicago, Ill.

227,500. IRON-PLANER TOOL. — Harlow Dewey, Westfield, Mass.

227,532. BLIND-SLAT OPERATOR. — Noah M. Hutton, Quincy, Ill.

227,533. SHUTTER-WORKER. — Noah M. Hutton, Quincy, Ill.

227,545. FIREPLACE FENDER. — James H. Kizer, Covington, Ky.

227,562. SASH-LOCK. — George H. Metzger, Buffalo, N. Y.

227,571. LUMBER TALLY. — John L. Paxon, New Hope, Pa.

227,575. KITCHEN SINK. — Frederick Rauscher, West New Brighton, N. Y.

227,576. WATER METER AND MOTOR. — Charles A. Reed, Bridgeport, Conn.

227,578. DIVIDERS. — Charles F. A. Reimann, Pine Bluff, Ark.

227,582. VISE. — Wilson Riley, Keighley, England.

227,586. VENTILATOR. — Walter S. Sayers, Guelph, Ont.

227,587. LATCH-LEVER. — George H. Sargent, New York, N. Y.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — Louis Henneyhauser, 2 three-story brick buildings, on Charles St., near Hill St. Wm. Collet, 3 three-story brick buildings, on Fulton Ave., between Franklin St. and Edmondson Ave. Levy Conden, 11 three-story brick dwellings, on Fulton Ave., near Winchester St. Miss Elizabeth Harwood, three-story brick building, 132 Lexington St., between Park and Howard. Charles Rockefeller, 10 three-story brick dwellings, on Townsend St., near Mount St. Chas. Rockefeller, 7 three-story brick dwellings, on Mount St., near Townsend. Elizabeth Whalen, three-story brick building, 53 Raborg St., near Pine. Francis Denmead, five-story brick warehouse, on W. Falls Ave., near Black St., 47' x 47'.

INSPECTION OF SCHOOL-HOUSES. — A resolution was offered in the City Council, May 14th, instructing the Inspector of Buildings to confer with the School Commissioners in regard to the ingress and egress in school buildings in case of fire, and report to the City Council what alterations are necessary to remedy existing defects, and the probable cost of such repairs. The resolution was adopted.

IRON TRADE. — The iron merchants report business in their line, both here and elsewhere, at an almost complete standstill. They attribute it to an over-importation of iron from Europe, 400,000 tons having been brought over since January 1st to this country, prices in some cases having fallen off from \$18 to \$20 from the top figures touched during the big boom. A steamer, arrived last week with 2,300 tons of iron ore, is at Quarantine grounds, discharging into canal-boats which will carry the cargo to Philadelphia. The consignees were unable to place it on the market at a fair price, owing to the large quantities on hand.

STOCK EXCHANGE BUILDING COMPETITION. — The competition for the new building for the Stock Exchange was decided on Wednesday May 12, in favor of the designs submitted by J. A. & W. T. Wilson, architects. The new building is to have a frontage of 48 feet on German St., near South. It will contain brokers' offices on ground floor, and the main hall with gallery on second floor. The materials are to be pressed brick, red terra-cotta, and Cheat River blue-stone.

THE NEW BUILDING LAW. — The mayor has appointed six gentlemen to act as an unpaid commission to frame a general building law for the city of Baltimore. Three of the gentlemen are prominent architects, two are builders, and one an attorney.

WAREHOUSE. — Mrs. B. Weisenfeld is building a large four-story brick and stone warehouse, 23' x 75', on the northwest corner of Howard and Lombard Sts.; cost, \$10,000.

Boston.

BUILDING PERMITS. — Brick, 526 Commercial St., for R. and A. Burnett, 1 dwell., 29' x 31', four stories; J. Kelly, builder.

MEDICAL SCHOOL BUILDING. — The corporation of the Harvard Medical School has decided to locate the new building on the westerly half of the square bounded by Boylston, Exeter and Dartmouth Sts.

Brooklyn.

BUILDING PERMITS. — Hewes St., 7 two-story brown stone dwellings, 19' 2" x 42'; owner, John F. Ryan, 142 Rodney St.

Kent Ave., 1 two-story brick mill, 57' x 50'; owners, Goodwin, Cross & Co., 45 Clason Ave.; architect, W. H. Gaylor.

Carlton Ave., cor. St. Mark's Ave., 2 three-story brown stone, one store and dwell., 22' x 50' and one dwell., 20' x 45'; cost, \$12,500; owners and builders, Lambert & Mason, 226 Clermont Ave.; architect, J. H. Mason.

Eighth St., 4 two-story and basement brown stone dwellings, two 17' x 40' and two 13' x 45'; cost, each \$3,500; owner, William Taylor, 83 Third Place.

Third St., 12 three-story brown stone dwellings, 18' 3" x 50'; owners, J. P. Kinney & Co.; architects, Parfitt Bros.

Washington Ave., 3 three-story brown stone dwellings, 18' x 45'; owner, W. C. Bowers; architects, Parfitt Bros.

Court St., 2 four-story brick stores, one 42' and one 21' front by 75'; owner, E. S. Litchfield, State St.; architect, Carl F. Eisenach.

Garden St., cor. State St., 9 three-story brown stone dwellings, 19' 3" x 43' 3"; owner, J. W. Dearing, 434 Henry St.; architects, Parfitt Bros.

Nelson St., 2 three-story brick tenements, 20' x 40'; owner, Michael Kelly, Hamilton Ave., cor. Nelson St.; builder, Thos. Keogh.

Greene Ave., No. 273, 1 two-story brick factory, 25' x 87', and 1 two-story brick stable, 25' x 25'; cost, about \$7,200; owners, Dennison Manufacturing Co.; architect, William B. Tuthill; builders, Cornelius King and W. H. Tunison.

Hooper St., 2 three-story brown stone dwellings, 20' x 42'; cost, about \$4,800 each; owner, etc., James Sheridan, 216 Lee Ave.

Union Ave., cor. Scholes St., 1 two-story brick church, 50' x 100'; cost, \$20,000; owners, Trustees St. Peter's German Church; architect, L. B. Valk; builders, Henry Grassman and Edward Gustavson.

Chicago.

BUILDING PERMITS. — T. L. Kempster, four-story factory, Illinois St.; cost, \$25,000; and a five-story factory, Indiana St.; cost, \$65,000.

Board of Education, three-story school-house, cor. Lincoln and Thirty-Fifth Sts.; cost, \$30,000.

Hicks Bro., 2 three-story stores and dwells., 916 and 918 West Lake St.; cost, \$8,000.

Alexander Watson, two-story dwell., Hinman St., near Wood; cost, \$3,000.

C. Warnecke, two-story dwell., 202 Townsend St.; cost, \$5,000.

John Vierke, two-story dwell., 585 and 587 Paulina St.; cost, \$3,500.

Chicago, Alton & St. Louis Railroad Company, freight house, cor. Charles and Van Buren Sts.; cost, \$9,200.

S. C. Judd, two-story dwell., on Delaware Pl., near State St.; cost, \$12,000.

R. Sheppard, 3 two-story dwells., 174 and 176 South Green St., cost \$10,500; 2 two-story dwells., 187 and 189 South Green, cost \$7,000; and 2 at 524 and 526 Lake, cost \$7,000.

C. & W. I. R. R. Co., freight house, cor. Twelfth St. and Third Ave.; cost, \$30,000.

Belton Hailey, cottage, 3,517 Portland ave.; cost, \$2,000.

Cleveland, Ohio.

DWELLINGS. — Eleven frame houses on Perry St., for O. H. Payne; cost, \$3,000 each.

A frame house on Dunham Ave., for H. C. Hawkins; cost, \$7,000.

A frame house on Franklin Ave., for J. H. Shultz; cost, \$3,500.

Alterations of brick house on Prospect St., for J. A. Vincent; cost, \$3,500.

Alteration house on Euclid Ave., for F. H. Penfield; cost, \$3,000.

Frame house on Scoville Ave., for Wm. H. Brown; cost, \$3,500; Coburn & Barnum, architects.

New York.

ALTERATIONS. — Grand St., No. 133, cor. Crosby St., to be changed into an office building, interior alterations; cost, \$5,500; owner, Citizens' Gas Light Co., N. E. cor. Sixteenth St. and Union Sq.; builder, John H. Williamson.

Second Ave., No. 65, to be changed into an apartment house, to be raised to four stories, a four-story brick extension on rear, 24' x 100', and interior alterations; cost, \$5,000; owners, Johnston Bros.; architect, Wm. Jose.

Stanton St., cor. Eldridge St., to be raised to four stories, and a four-story brick extension on rear, 18' 10" x 24', also interior alterations; cost, \$8,000; owner, John Martin Schuh; architect, Chas. Sturtzko.

West Twenty-Third St., No. 42 one-story and basement extension on front, 21' 8" x 9'; cost, \$2,000; owner, W. Jennings Demorest; architect, W. Jones; builders, Jones & Co.

Grand St., Nos. 392, 394 and 396, full stories to be made of attics, and damage by fire repaired; cost, \$4,000; owner, Mrs. Brady; architect, P. O'Reilly; builders, Gibb & O'Reilly.

East Thirty-eighth St., No. 110 three-story brick extension, 8' 6" x 8' 6" on rear, and interior alterations; cost, \$5,000; owner, George N. Sears; architect, Henry F. Cooke.

West Thirty-Ninth St., No. 58 two-story brick extension; 13' x 20' on rear; cost, \$4,000; owner, Robert W. Nesbit; masons, N. & H. Andrus; carpenters, Jas. C. Hoe & Co.

Bowery, Nos. 165 and 167 (theatre), the front portion of present peak roof to be changed to flat, a new gallery built, and internal changes; cost, \$2,500; owner, Harry Miner; architect, Henry Dudley.

Broadway, Grace Church, three-story brick extension; cost, \$28,000; owners, rector, church wardens, and vestry; architect, James Kenwick; builders, Owens & Canfield and Smith & Crane.

North Washington Sq., No. 20, to be changed into an apartment house, and building raised to four stories, a four-story brick extension, 12' x 80', also internal alterations; cost, \$25,000; owner, Estate of Geo. P. Rogers; architect, H. J. Hardenburgh.

Wooster St., No. 74, three-story brick extension on rear, 25' x 20', also internal alterations; cost, \$2,000; owners, Archer & Panooset; builder, Patrick Childs.

Nos. 167 and 169 Chambers St., are to be altered from dwellings into stores, at a cost of \$16,000; Rd. Deever, mason; Havilah M. Smith, carpenter.

The house of Dr. Otis, on Thirty-fourth St., is to be raised one story and an extension added; Messrs. Gambrell & Picken, architects; Mr. Rd. Deever, contractor.

Below Wall St., on Broadway, a number of stores are undergoing alterations, the most important being Nos. 72 and 74, which are to be made into one.

BUILDING PERMITS. — East Nineteenth St., No. 11 1 four-story brick (iron front) store, 20' x 77'; cost, \$15,000; owner, Robert Goelet, 261 Broadway; architect, Geo. Mulligan; builder, Marcus Edlitz.

Fifty-fifth St., 2 four-story brick (granite front) dwells., one 33' x 33' and one 17' x 95' 5"; cost, \$40,000 and \$20,000 respectively; owner, Charles T. Barney, 101 East Thirty-Eighth St.; architects, McKim, Mead & White; mason, L. N. Crow.

Mott Ave., cor. One Hundred and Fiftieth St., 5 three-story brick dwells., each 19' x 36'; cost, \$5,500 each; owner, Charles E. Van Tassel, Walton Ave. and One Hundred and Fiftieth St.; builder, J. G. Van Tassel.

One Hundred and Fifty-First St., 1 two-story brick dwell., 20' 6" x 42'; cost, \$3,500 each; owner, John Buse, on premises; architect, John Brandt.

Twelfth Ave., 1 one-story brick engine and boiler house, 75' x 20' and 34'; cost, \$7,500; owner, N. Y. C. & H. R. R. Co.; architect, F. S. Curtis.

King St., cor. Greenwich St., 1 five-story brick factory, 50' x 100'; cost, \$16,000; owners, Gordon & Dilworth, 575 Greenwich St.; architect, Charles Reekil.

Fifty-fifth St., 5 three-story brick (brown stone front) dwells., 18' x 60'; cost, \$8,000 each; owner, Brian McKinney, 1347 Third Ave.; architect, B. Muldoon.

Fifth Ave., 1 four-story brick (brown stone front) dwell., 25' x 97' 4"; cost, \$45,000; owner, E. Frank Coe, 47 Bedford Ave., Brooklyn; architects, Thom & Wilson; builder, William B. Pettit.

Bowery, No. 169, 1 five-story brick office building and store, 23' 54" x 52'; owner, Harry Miner; architect, Henry Dudley.

Greene St. Nos. 129 and 131. 1 five-st'y brick store, 50' 6" x 96'; cost, \$44,000; owner, Dr. John C. Barron, 17 Washington Pl.; architect, D. Lienau; mason, Freeman Bloodgood; builders, Havilah M. Smith & Son.

Fifty-fifth St. 1 four-st'y brick (brown stone front) dwell., 25' x 60'; cost, \$39,000; owner and builder, John C. Donnelly, cor. Fiftieth St. and Lexington Ave.; architect, James E. Ware.

Fifty-sixth St., No. 142 East. 1 two-st'y brick stable, 25' x 70'; cost, \$3,500; owner, Jesse Baldwin, No. 119 East Fifty-Seventh St.; architect, W. B. Baldwin; builders, Peter Tracy, and Hall, Hatt & Parker.

One Hundred and Thirtieth St. 7 three-st'y brick dwells., 17' 9" x 50'; cost, \$6,500 each; owner, E. S. Higgins, 84 White St.; architect, John F. Miller; superintendent, Thos. Wilson.

Fifty-fourth St. 1 two-st'y brick stable, 25' x 80'; cost, \$8,000; owner, Joseph Doelger, 228 East Fifty-Fourth St.; architect, Julius Kastner.

Fifty-third St. 3 brown-stone-front five-st'y apartment houses; each 25' x 67'; cost of each, \$14,000. Eugene Parker, architect.

Third Ave., cor. Eighty-sixth St. a brick four-st'y factory and store, 51' x 57'; cost, \$14,000. Spies & Brother, owners; E. Sniffen, architect.

Third Ave., cor. Eighty-seventh St. brick store, three-st'y and dwell., 26' x 60'; cost, \$12,000; Charles F. Southmayd, owner; John C. Donnelly, architect and builder.

Sedgwick Ave., a two-st'y frame hotel, 75' x 25'; cost, \$2,500; Cornelius Stone, owner; A. B. Ogden, architect.

Eighty-sixth St. 2 brick four-st'y tenements, each 25' 6" x 78'; cost, each \$9,000; Johnston & Brothers, owners; A. B. Ogden, architect.

Sixty-fifth St., 110' east First Ave. (rear). brick two-st'y stable, 100' 5" x 23'; estimated cost, \$3,500; A. Dowdey, owner; F. S. Barnes, architect.

APARTMENT HOUSE.—At an expense of \$25,000, No. 20 North Washington Square is to be made into a first-class apartment house, containing suites of rooms to rent for \$3,000 per annum; Mr. H. J. Hardenbergh is the architect.

FACTORY.—On Grand St., near Mott St., a lot, 50' x 70' is being torn down, and foundations are to be laid by Mr. Ed. Deves. On the ground a six-story factory is to be built for the "Scriven" estate, from designs of Messrs. Potter & Robertson.

FLATS.—Messrs. Herbert, Pirsson & Co. are drawing plans for flats on Eightieth St., corner Lexington Ave., 30' x 90', four stories high.

HOTEL.—On Eighteenth St., corner of Fourth Ave., a hotel, 53' x 144' is to be built for Mr. Wehrle.

OFFICE BUILDING.—Messrs. Joel B. and John A. Post are to build, at 18 Exchange Place, an office-building, 85' on Exchange Pl., 53' 4" on Hanover St., 88' 2" on Beaver St., 163' 4" on the rear line, and 110' in height. The building is to be of light buff brick, with terra cotta finish. The cost will be between \$200,000 and \$300,000. Mr. Geo. B. Post is the architect.

SCHOOL HOUSE.—Mr. L. J. O'Connor is preparing plans for a school-house for the Cathedral Parish to be built on Fiftieth St., between Lexington and Fourth Aves. The building will be of brick, 80' x 100', four stories high with basement; it will cost between \$50,000 and \$60,000.

STORE.—Messrs. H. J. Schwarzmann & Co. have drawn plans for the five-story store, 80' x 100', which is to be built for W. Myers on the corner of Hester St. and Bowery, at a cost of \$30,000. The building will be of brick with stone finish.

THEATRE.—Abbey's Park Theatre is to be enlarged and improved from designs of Mr. S. J. F. Thayer, of Boston.

Philadelphia.

BANK BUILDING.—303 Chestnut St., add. to banking house for C. Glendinning; cost, \$7,500; contractor, Oliver Bradin; G. W. Hewitt, architect.

FACTORIES.—**Hancock**, cor. Edward St., four-st'y factory, 42' x 66'; Rob't Bishop & Sons, owners.

621 and 623 Aramingo St., add. to factory, 30' x 34'; owners and builders, Albert Shoenhut & Co.

Baltimore Ave. and Sixtieth St., 1 three-st'y factory building, 75' x 140'; owner and builder, George Callaghan.

HOUSES.—**Filbert St.**, 3 two-st'y dwells.; M. De Haven, owner.

South St., 3 two-st'y dwells., 15' x 30'; owner, M. De Haven.

527 and 529 Christian St., 2 three-st'y dwells., 17' x 50'; owner, H. R. Maxwell.

Twelfth St., near Iaska, 1 two-st'y dwell., 16' x 44'; owner and builder, Andrew Miller.

Leamy St., south of Lehigh Ave., 1 three-st'y dwell.; owners, Catholic Church; architect, E. P. Durang; 60' x 40'.

1742 Market St., add. to back building, 26' x 80'; contractor, H. Doan.

Ludlow St., east of Fortieth St., 2 three-st'y dwells., 12' x 33'; builder, Wm. Gill.

Thirty-fifth St., 2 three-st'y dwell., 16' x 32'; builder, Robert Manley.

Allegheny Ave., 7 three-st'y buildings, 16' x 32'; builder, Robert Manley.

Hancock St., 1 two-st'y dwell., 18' x 30'; builder, Sam'l Henderson.

Diamond St., 16 three-st'y dwells., 16' x 55'; owner and builder, A. R. Schoch.

Hancock St., two-st'y dwell., 21' x 60'; owner and builder, A. Woll.

Forty-third and Walnut Sts., 6 three-st'y houses; owner, Henry L. Gaw, Jr.; cost, \$48,000; architect, G. G. Hewitt.

LABORATORY.—**Cor. Rush and Amber Sts.,** 1 laboratory, 25' x 32'.

STABLES.—1005 Lehigh Ave., 1 two-st'y stable, 20' x 45'; owners and builders, Green & Matthews.

Sixth St., near Dauphin St., 1 one-st'y stable, 19' x 145'; builder, E. Conrad.

Morris, cor. Marshall St., 1 stable, 40' x 30'; owner and builder, A. Rittenhouse.

STORES.—**Twentieth, cor. Calliohill St.,** 4 three-st'y stores, 17' x 64'; builder, A. A. Catnach.

4025 Lancaster Ave., 1 store and dwell., two stories, 17' x 49'; builder, D. McManigle.

Filbert, cor. Filbert Alley, 1 three-st'y store, 21' x 207'; owners, Strawbridge & Clothier; contractor, Balderston & Hutton.

312 South Second St., three-st'y store and dwell., 16' x 60'; builder, Wm. Scott.

San Francisco, Cal.

BUILDING PERMITS.—1 two-st'y and basement frame building, Mission St., between Sixth and Seventh; owner, S. P. Collins; cost, \$5,650.

One two-st'y frame, Bush St., between Gough and Octavia; owner, Joseph Getz; cost, \$9,500.

Brick building on Summer St., near California Market; owner, R. J. Tchay; cost, \$4,200.

St. Louis.

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

Owners Name.	Use.	Stories.	Rooms.	Cost.
H. Scholz,	Dwell.	2	6	3,500
Union Warehouse Co.,	Wareh'g.	2	2	3,000
Mrs. William McKee,	Dwell.	3	10	12,800
R. Miller,	Dwell.	2	7	3,500
J. Wiley,	Dwell.	2	8	3,500
Henry Shaw,	Store.	2	2	3,000
L. Gundacker,	Dwell.	3	3	15,000
Andrew McKinly,	Store.	2	2	7,000
Mrs. M. D. Hitchcock,	Store.	4	4	3,000
M. Kinkwood,	Store.	2	5	6,000
J. Hammond,	Dwell.	2	10	10,000

General Notes.

ALBANY, N. Y.—Mr. W. M. Woollett is the architect of the new church to be built for the Calvary Baptist Society, on High St.

ANSONIA, CONN.—Messrs. Brown & Stilson, architects, of New Haven, are building a house for W. O. Wallace, Esq.; cost, \$6,000.

AUGUSTA, ME.—A new building for the female patients is to be built on the Insane Asylum grounds, at Augusta; not to exceed \$18,000 in cost.

BILLERICA, MASS.—At a recent town meeting in Billerica the offer of Mrs. Joshua Bennett to give \$5,000 for a building for a town library, on condition that the town give the same amount, was declined with thanks.

BISMARCK, D. T.—P. J. Pauly & Bro. are the architects of the new court house and jail now building, at a cost of \$20,000.

CAMBRIDGE, MASS.—The Hasty Pudding Club is discussing the possibility of building a club-house. Messrs. Cabot & Chandler, of Boston, have submitted sketches.

CLEVELAND, O.—Blackburn & Charlot, architects, have made the plans of a building for the Cleveland Baking Company. It is to be of brick, four stories high, and will be 143' x 43'. They are also engaged in sketching a plan for a fire-proof building for the Cleveland Provision Company, which is to be two stories high.

DELAWARE, O.—House for W. Little; cost, \$8,000; Coburn & Barnum, architects, Cleveland, O.

DETROIT, MICH.—Excavating for the foundation for the new building of Francis Palms, on Jefferson Ave., is nearly completed.

The supply of brick made last season having been used up during the winter, building this spring has been somewhat delayed. The new brick is now beginning to come into market. Although the demand for brick for local use and for shipment is at present greater than the supply, prices remain low.

HARVEY'S LAKE, PA.—Mr. A. Hunlock is building a frame cottage, costing about \$4,000, from plans by J. H. W. Hawkins, architect, of Wilkesbarre, Pa.

HAVERSHILL, MASS.—A house for Mrs. Houston West will be soon completed, at a cost of \$7,000. Currier & Killan are builders. Mr. Newcomb, of Boston, is the architect.

HOLYOKE, MASS.—The Sisters of Charity are to build a frame hospital and orphanage.

LOUISVILLE, KY.—The Newcomb-Buchanan Distilling Company is to build a one and a half-story brick warehouse on the southwest corner of Gregory and Hamilton Aves.; cost, \$55,000.

Edward Hardy is to alter a two and a half-story brick dwelling on College St., between Brook and Floyd; cost, \$5,500.

W. O. Dodd is to build a three-story brick and stone dwelling, cor. of Fourth and Kentucky; cost, \$15,900.

A. J. Ballard is to build a three-story brick mill on Linden street, between East and Floyd; cost, \$5,000.

William G. Meier & Co. are to build a one-story brick tobacco warehouse on Fifteenth and Magazine streets; cost, \$8,000.

LYNN, MASS.—The question of building a city hospital is now being agitated.

MERIDEN, CONN.—Messrs. Brown & Stilson, of New Haven, are the architects of Hon. J. C. Lewis's house; cost, \$12,000.

They are also to alter the houses of M. Hubbard, Esq., and N. L. Bradley, Esq., at a cost of \$5,000 and \$3,000 respectively.

MONUMENT, COL.—The Presbyterian Society is making preparations to build a church shortly.

NASHUA, I.A.—It is proposed to raise \$25,000 to build a Court-House, if this town is to become the County seat for Chittenden County.

NEW DORP, N. Y.—A new parsonage is to be built for the old Moravian church.

OBERLIN, O.—Dwelling for A. A. Wright; cost, \$3,000. Coburn & Barnum, architects, Cleveland, O.

PITTSBURG, PA.—P. McCanna is building a brick block, 30' x 85', three stories; Fred J. Amsden, architect.

PLEASANTON, N. J.—Episcopal chapel; cost, \$3,000; contractor, James Wilson; architect, G. W. Hewitt.

PORTLAND, CONN.—Father Desmond's house is being altered, at a cost of \$5,000, by Messrs. Brown and Stilson, architects, of New Haven.

PRINCETON, N. J.—Work on the Marquand Chapel for Princeton College will soon begin.

SANDWICH, MASS.—A cottage for J. L. Wesson is now building, from drawings of Mr. Newcomb, architect, of Boston. Joseph Hall is the builder; cost, \$4,000; open timber-work.

A house for E. I. Swan will soon be built; contract not yet let.

A spire, with other improvements, is being added to the Unitarian church; all under the direction of Mr. Newcomb.

SCRANTON, PA.—The Lackawanna County Commissioners are to build a county jail.

STANFORD, KY.—Over \$3,000 have been secured for a new Christian church.

TROY, O.—Foundations are laid for a double brick dwelling for Mr. L. F. Dillaway, from plans by Messrs. Peters & Burns, architects. Building prospects fair.

WATERBURY, CONN.—James Crompton is soon to build a cottage.

WESTFIELD, MASS.—The corner-stone of the new Episcopal chapel, on King St., was laid Saturday. Only the foundation of the tower is to be laid at present.

WORCESTER, MASS.—Mr. H. W. Eddy is building for E. W. Lincoln, Esq., a pair of brick houses, 50' 56'.

Industrial.

AMHERST, MASS.—It is expected that both the Hills Company and H. D. Fearing & Co. will rebuild their hat factories, and work will be commenced soon.

BEAVER FALLS, PA.—The File Works, recently burned, are being rebuilt.

CAMPBELL, MASS.—George E. Keith has broken ground for a new factory, 30' x 130', four stories high.

EAST HAMPTON, CONN.—The Merrick & Conant Manufacturing Company are building a silk factory here.

FALL RIVER, MASS.—Ground has been broken for an extensive addition to Eddy's woolen mill, 122' x 50', four stories high. The contract for mason work has been awarded to Mr. John J. Highlands, and for furnishing the granite, to Wm. Beattie.

HOLYOKE, MASS.—Buchanan, Bolt & Co. are going to carry out their plans for extending their Fourdrier wire-cloth works at once.

INDIANAPOLIS, IND.—Ground was broken last week for a new elevator.

LYNN, MASS.—Miner & Brother are to build a new brick shoe manufactory in rear of their present factory. The structure will be 80' x 80', and five or six stories high.

NEVIN, ILL.—A new flour mill is being built by Lyeon & Co.

NORTH ADAMS, MASS.—The Johnson Manufacturing Company has begun a 100 feet brick addition to its mill.

NORTH ATTLEBORO', MASS.—It is expected that H. F. Barrows will soon commence to build a large jewelry manufactory.

NORTHAMPTON, MASS.—Leroy Lewis has put in the foundation for Belding Brothers' new silk mill, and is now putting in one for a silk mill at Florence, Conn.

PHILADELPHIA, PA.—Homer Brothers, carpet manufacturers, are putting up a large factory, covering the block from Lehigh Ave. to Somerset St., between Lithgow and Lawrence.

PHOENIXVILLE, CONN.—A new mill is to be built for the manufacture of twine, and will be run by E. M. Smith. It will cost \$5,000.

TROY, N. Y.—D. E. Paris & Co., stove makers, are putting up an addition, 75' x 61'.

WATERBURY, CONN.—A portion of Holmes, Booth & Hayden's factory, which was burnt last February, is being reconstructed under direction of Albert M. West, architect; with additions will cost about \$10,000.

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