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TO OUR SUBSCRIBERS.

DURING the coming year we shall pay especial attention in all our editions to the architectural features of the World's Fair at Chicago. The gelatine plates of the INTERNATIONAL EDITION in particular will be largely selected from World's-Fair subjects, and subscribers to that edition, will receive also *twelve extra helio-chromes* mainly from the same sources, to be issued at intervals during the year.

All new subscribers for the year 1893, who remit to us direct, in full, before January 1, will receive the remaining numbers of this year from the date of their order.

TO ARCHITECTS.

THE publishers of the *American Architect* will be pleased to print notices of removal or of the opening of new offices, free of charge, upon receipt of the necessary information from architects. These notices will be found hereafter immediately under the "Wants."

A CURIOUS dispute between contractors and architects has been in the Massachusetts courts. A few weeks ago, two men were killed by the falling of a cornice stone from a building in process of erection in Boston. According to the story of the counsel for the contractors, the plans of the building showed a cornice of defective and dangerous character, the erection of which would be a violation of the building-laws of the city; and the contractors claimed, also, that they had been notified by the Employers' Liability Assurance Company that, if they erected the cornice, the company would not be responsible for any accidents that might occur. They alleged, further, that the architects had notified them to complete the cornice, and had warned them that, if they did not do so, other mechanics would be employed, and the cost would be deducted from the contract price. As the contract provided that this might be done, in case of refusal of the contractor to carry out his agreement, and provided, also, that payment should only be made on the certificate of the architects, the contractors asked the court for an injunction against the architects and the owner, restraining them from compelling the erection of the cornice by the complainants, and from hiring any one else to do it in their place. Rather unfortunately for the profession, the controversy was settled out of court, the owner, to avoid the delay incident to a suit, deciding to make a cornice of galvanized iron, and the contractors, as they were bound under their agreement to do, allowing the value of the stone cornice omitted.

AS the experienced architect will surmise, the affair was really a simple difference of opinion between the architects and the contractors as to the meaning of the contract. It seems that one of the drawings appeared to show cornice-stones not balancing on the wall. The architects say that this drawing was a mere profile, with a dash of color, intended, as the contractors knew, to show only the outline of the face, and that the section was shown correctly on another drawing, which the contractors had lost; but, without discussing questions of fact, it is fair to suppose that the architects, like nearly all other architects, thought that they had given sufficient notice to the contractors of what would be really required, and had protected themselves and their clients against clerical errors in the drawings by providing in the contract that the building should be erected in a good, substantial and workmanlike manner, and to their satisfaction, even if the further saving clause was not added, which is now commonly used by architects, that the work should conform in all respects to the building-laws and the directions of the inspector of buildings. It will be observed that we make no assertions as to what was really the case, but assume the condition of things to exist which generally exists in such controversies, where building operations are carried on under the direction of architects. Under such circumstances, the contractors who undertake to maintain that what they agreed to do was to carry out a draughtsman's obvious blunder, and that they paid no attention to the promises to complete the building in a good, substantial and workmanlike manner, and to the satisfaction of the architect, in the contract to which they signed their names, are not likely to get much comfort from the courts. We believe that it is well settled in this country that, where the drawings are inconsistent with the written or printed contract or specification, the written or printed document controls the drawings; which, of course, is reasonable, as there are many times more chances of an inadvertent error in a drawing than in a written description. In the present case, the contractors' claim seems to be that, a piece of work having been described in two different ways, that shown by the drawings being, as they say, illegal and dangerous, and that stipulated in the specifications or contract being substantial and good, they contracted with a view only to the dangerous and unlawful method of doing the work, and they ask the court to restrain the architects and the owner from insisting upon the other view being adopted. One of the legal maxims in regard to contracts is that each party is bound to the interpretation which he supposed the other party gave to it at the time of signing; and it would be interesting to ask the contractors whether they believed, when the owner signed, that he did so with the expectation of having his building finished with a cornice which would fall off into the street by its own weight.

THE St. Louis Chapter of the American Institute of Architects entertained as guests, the other evening, four members of the St. Louis Board of Fire Underwriters, and, after the usual dinner, the evening was devoted to the discussion of a standard slow-burning construction, for mercantile buildings, which should satisfy the requirements of the underwriters, without so much hampering owners as to deter them from adopting this system, which is very much favored by the insurance men of St. Louis. The conference seems to have been very satisfactory to both parties, and the St. Louis underwriters are probably convinced by this time that the architects of their own city, at least, know something of the art of building, and that it is more profitable to confer with them about the proper way of making a given system acceptable to owners, than to study a system solely from their own point of view, and then berate architects for not compelling owners to adopt it, at the sacrifice of many other considerations, of the utmost importance to the successful conduct of business, or to the rental value of a building. We are promised details of the points discussed, which will be of much interest.

COLONEL ALBERT A. POPE deserves the thanks of the present generation, and will undoubtedly receive those of posterity, for his untiring efforts in favor of the improvement of American roads. We need not repeat what has been often said here and elsewhere, that the crying need of our country is decent ordinary roads, over which the farmer can haul his produce to market, and the city merchant can distribute his goods to his circle of rural or suburban customers with economy, speed and convenience. As with all inveterate

evils, it is hard for us, accustomed to the old system, to realize the difference which a better one would make in our condition. The number of horses and mules owned in the United States is about sixteen million, and the cost of keeping them is probably not less than two hundred million dollars a year. It is found, by hundreds of experiments, that one horse, working all day, and day after day, can do as much work on a good macadamized road as eight horses can on a road covered with gravel from four to six inches deep, as is usually the case with suburban roads after the annual repairing. Now, bad as are these repaired suburban roads, every person of experience will acknowledge that the labor of pulling a vehicle over them is as nothing in comparison with that involved in wallowing through a Virginia, or Ohio, or Indiana, or Kansas highway after a rain, or when the frost is coming out of the ground. Indeed, it is not necessary to make any invidious distinction in favor of any of the States, for the mud of Connecticut or New York, or the sand of Southern Massachusetts or New Jersey, have little to fear, as regards capacity for retarding locomotion, by comparison with the loam of the Mississippi Valley.

WE will not go so far as to say that two million horses and mules, with good roads, would do as much work for us as sixteen million do now, but it seems, at least, reasonable to assume that one-half the labor of traction would be saved if the universal "dirt roads" of our country districts could be replaced by macadamized streets; and the saving of half the labor of traction would leave one hundred million dollars a year in the pockets of the farmers, expressmen, teamsters and others who depend on draught animals to help them earn a living. To this enormous saving should really be added a vast further sum, representing the economy which decent roads would allow horse owners to make in wear and tear of harness, and in the deterioration of animals by overstraining in particularly bad pieces of ground. We imagine that a busy farmer would find that the cost of buying new harnesses and mending old ones, with expenses chargeable to repairs of carts and other vehicles, added to deterioration in value of horses by the ailments due to overstraining, would amount to quite as much as the twenty-four cents a week for each horse which we have assumed as the cost of maintenance. With roads anything like what they should be, the repairs on wagons and harnesses would be but a small fraction of what they now are; but, assuming that they would be half as much, we should still have another saving of a hundred million dollars to be added to the economy in horseflesh alone. It is to be borne in mind that just as much work will be done with the smaller number of horses, and the fewer repairs on harnesses and vehicles, as now, so that the two hundred million dollars of animal saving would be cash in the teamster's and farmer's pocket, in addition to the time he would save for himself by the greater expedition with which he would get through his work. We do not think that the most confirmed devotee of the present order of things will say that two hundred million dollars a year is not a sum worth trying to save, and that it can be saved by the application of well-known principles of road-building is a proposition as clearly demonstrated as the multiplication table. Colonel Pope's plan for making a beginning in the matter is to petition Congress to establish at Washington a Department of Roads, similar to the Department of Agriculture, with the object of promoting public knowledge of the art of constructing and maintaining roads, with, incidentally, provision for teaching students the science of road engineering; and for such an exhibit of road material and machinery at Chicago, next year, as may call the attention of the public to the subject. A petition to Congress to that effect has already been drawn up, and is in circulation for signatures all over the United States, and it is hoped that at least a million signatures may be obtained to it. All persons interested in the subject, a description which should include every citizen of the United States, are earnestly solicited to add their names to the petition, extra copies of which will be sent with pleasure to any address on application to Albert A. Pope, P. O. Box B, Boston, Mass., and should be returned to the same address, with as many signatures as possible, before January 1, 1893.

IT has been officially decided to hold a universal exposition of arts and manufactures in Paris in the year 1900, to be opened in May, and close, probably, in October. It is rather curious that the Paris exhibitions have been held regularly every eleven years since 1867, the exhibition years having been 1867, 1878 and 1889; and that of 1900 will be the fourth of the series. Apparently, this regular succession is the result of pure accident. The exhibition of 1878 was a patriotic effort. In 1876, when the preparations for it were begun, France had had less than five years to recover from the effects of a ruinous war, followed by the loss of two important provinces and the extortion of an enormous indemnity; and the splendid display which was spread, two years later, on the Champ de Mars and the Trocadéro Hill taught the world a lesson, not only of the industry and taste, but of the courage and persistence of the French people which has not yet been forgotten. The exhibition of 1889, like ours of 1876, was held in commemoration of the one-hundredth anniversary of the most important date in modern French history; and that of 1900, while it happens to be separated by the same interval from that of 1889 that the latter was from the previous one, very fitly precedes the opening of a new century, in the history of which France seems likely to play as important and honorable a part as she has in that of the nineteen previous ones.

WHILE we are talking of history, it may be interesting to remember that the year 1900 will be also the year of the Christian Jubilee, which has been celebrated in Rome since the year 1300. The Christian Jubilee now occurs every twenty-five years, and, as the last celebration was in 1875, there is every reason to suppose that the next one will be in 1900. Whether our readers wish to seize the opportunity to secure a plenary indulgence for their sins or not, the ceremonial at Rome will be impressive; and if Professor Langley's prediction, that by that time there will be regular lines of air-ships across the Atlantic, should be fulfilled, many of us will be tempted to lay aside our cares for a few months and avail ourselves of the only chance likely to be afforded in this generation to see the wonders of the temporal and the ecclesiastical world displayed in a single season.

A CORRESPONDENT of *La Semaine des Constructeurs* gives an interesting account of a visit to Liège, which, although not far from the ordinary route of tourists, does not seem to be much visited by architects. It is hardly necessary to say that Liège has been for centuries renowned for its metal work, particularly in the manufacture of iron; and *La Semaine's* correspondent says that to this day objects in metal form the principal commodity of the bric-à-brac shops. Of course, many of these are mere second-hand tools, but there are also plenty of curious and interesting specimens of blacksmith's work. Of architecture in the stricter sense, there is a great deal. Most of it, to our ideas, is not extremely beautiful, but, as it represents all periods, from the tenth century to the present day, it is interesting, and picturesque as well. The most remarkable edifice in the town is, however, so inaccessible that it ought to have a special charm to the adventurous traveller. This is the Mont de Piété, or public pawnbrokers' shop, which occupies what was once an immense and magnificent private house, built in 1560, by one Decort, who was reputed at the time to be the richest private citizen in Europe. Beginning as a tanner and cloth-finisher, he added other varieties of business to his original employments, and at last became commissary-general to the Spanish armies in the Low Countries. It was notorious that Philip Second's armies got very little good from the enormous sums which he transmitted for their maintenance; and Decort, who is described by one of his contemporaries as having "hooked fingers and sticky hands," grew rapidly rich. Philip, however, instead of inquiring into the source of his wealth, recognized it by ennobling him, and the parvenu, thus confirmed in its possession, used it with what seems to have been real generosity and intelligence. He carried out, at his own expense, great public works, for the sole benefit of his fellow-citizens, and, for his own satisfaction, built the huge house which still stands. The structure is of brick, with belts of stone, between which are panels, sculptured with the fables of Æsop. Decort must have been very fond of these fables, for they ornament the walls from the ground to the roof. The roof itself is very lofty, even for a Belgian house of the sixteenth century, and contains four rows of dormers. The interior is said to be marvellously interesting, but no person not employed in the pawnbrokers' establishment is allowed to see it.

OFFICE-HELP FOR ARCHITECTS.[1]—II.

SECTION III.—BRICKS:

§ 43. Composition: — All bricks are made primarily from a mixture of about one part of sand to five parts of clay, mixed sometimes with coal, sawdust or other foreign matter either to assist the burning, or to give color when this is not obtained by the mixing of special clays.

§ 44. Manufacture: — As usually practiced, after the clay is mixed with the sand and other matters, it is placed in an annular trench in which a large wheel revolves, or in a "pug" mill, and thoroughly broken up and mixed together with water, into a homogeneous mass.

The breaking-up is sometimes partially accomplished by exposure to the atmosphere and frost. During the mixing, sand and coal and sawdust are added in the proportions determined by experience, and the plastic mass is then passed to moulding machines. In these, two processes are employed: in one the mixture is pressed into a form containing spaces for five or more bricks, and in the other, the mixture is forced by considerable pressure through a small orifice onto a moving platform which carries the mixture under a frame which contains a number of fine wires, and which is brought down by hand, cutting the bricks to the proper length. If the product is intended for common brick, the blocks so formed are partially dried by exposure to the air on an approximately flat surface for three or four days, then stacked in kilns and fired, being gradually brought to an intense white heat, kept there for from ten days to two weeks, and then allowed to cool gradually.

Usually the bricks nearest the fire-openings are partially fused, are called "bench brick" and, when not too much distorted, form the hardest building brick; the bricks in the body of the kiln are called "hard brick," and are the usual product, while the brick on the outside, which have not been so well burned are called "pale," "salmon" or "filling-in" brick, are quite soft, and are unsuitable for any building purpose, as they are likely to disintegrate. Occasionally the bricks, while lying on the drying-floor, are caught in a shower, when this affects only their narrow edges they may be used, as they give a pitted effect which is admired by some. Such bricks are called "wash" brick and are worth ten per cent less than the others. Those bricks that are pressed out under considerable pressure are much the toughest and strongest, and by reason of the decrease in waste due to breakage in handling are worth about fifteen per cent more than the common variety. Lorillard's common pressed brick is the kind usually obtained in the New York market.

All bricks should be straight and true, should give a metallic ring when struck with a trowel, and when broken should show a straight clean fracture.

The color of common brick is determined largely by the character of the clay used. Red is due to oxide of iron in the clay. When the oxide is in excess, a blue or black is the result. An excess of iron by melting and running through the brick results in vitrification, giving increased strength. White is due to the presence of lime and absence of iron, and requires a lower temperature to burn than ordinary brick. The presence of iron and lime produces a light drab color. Magnesia produces a brown.

When a decided color is desired, it is usually obtained by the application of a mineral pigment to the surface desired to be colored, which is incorporated into the body of the brick by the intense heat which vitrifies the pigment.

Should the product desired be pressed brick or "face" brick, the clay is carefully selected both for chemical composition and color, and after the mixture is formed into bricks, it is re-pressed, a pressure of about five tons per square inch being used. This makes the brick much denser and, after burning, truer to shape. The burning requires great care, as does the entire process and this is the reason of the increased cost.

The clays of New Jersey are so diverse in their characteristics that almost any shade or color can be produced.

Enamelled bricks are re-pressed brick, made with great care and a mineral pigment put on the free face which is fused when the bricks are burned.

They should be formed with flat top and bottom surfaces, so as to avoid bringing undue strain on the faces, when built in; if this is not done, they are apt to spawl and chip off.

[1] Continued from No. 876, page 23.

§ 45. Weight: — As given in the table.[2]

§ 46. Strength: — As given in the table.[2]

§ 47. Characteristics: — Good hard bricks when properly laid may be said to be indestructible. Frost has no effect on them. Fire does not injure them, and unless sprayed with large volumes of water while intensely heated, or injured by the tearing out of beam anchors, the walls of a building that has been gutted by a fire may be used again after such fire with safety, so long as they remain plumb. They may be made of almost any desired shape or size, the cost being determined by the clay used, and the requirements of handling.

§ 48. Setting or Laying: — Depends largely on the character of the work. Generally all joints should be filled full of mortar and made as small as is consistent with having at least $\frac{1}{8}''$ of mortar between surfaces, as a minimum.

Common Brickwork: — If for the foundation of ordinary frame dwellings, and the upper walls of brick buildings not more than three stories high, common brickwork may be laid in a mortar of Rosendale cement, lime and sand. If for work of a better class, and for foundations of brick dwellings, the mortar should be of Rosendale cement and sand. If for work requiring considerable strength, the mortar should be of Portland cement and sand. It should be laid up so that nine courses measure not more than $23\frac{1}{2}''$. The outside courses should be laid by spreading the mortar with a trowel along the

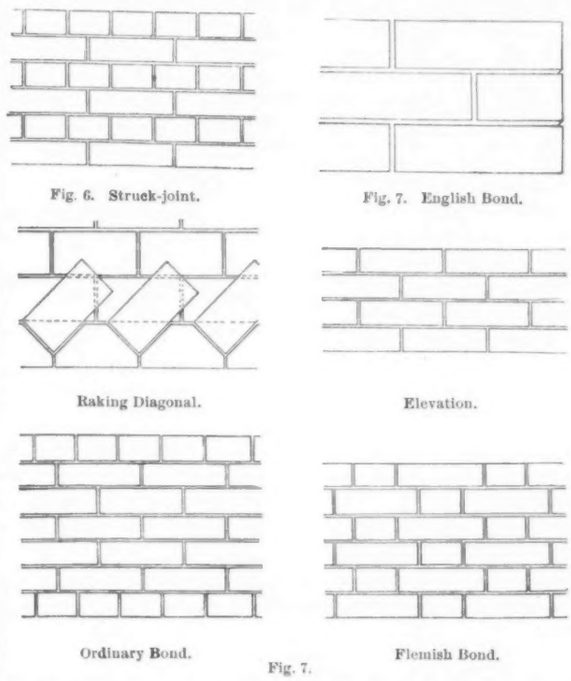


Fig. 6. Struck-joint. Fig. 7. English Bond. Fig. 7.

line, then making a depression in it with the point of the trowel, then a dab of mortar is put on the inside corner of the last brick set, and also on the corresponding outside corner of the brick to be set and the brick put in place with a sliding downward motion, which forces the mortar into close contact with the bottom and end. The trowel is then passed over the outside joint, cutting off the surplus mortar which is placed on the end of the brick, the surplus mortar on top of the transverse joint is cut off and placed on the new brick, then the bricks are tapped into line and the joints struck.

Striking should be done as shown in Figure 6, so as to leave a slight lip projecting on the under side of the brick, which forms a wash and facilitates the running off of moisture.

When the two outside courses have been carried along to an opening or angle, the masons should go back and fill the space between about one-fourth full of mortar and then put in the heart bricks, pressing them in with a downward diagonal motion so as to press the mortar up into the joints so as to fill them full. The surplus is cut off with the trowel and thrown ahead. If this work is done conscientiously, the wall will be so strong after the mortar has set, that it will be very difficult to break down, and it will be practically impossible to remove the mortar from the bricks.

[2] This and many other tables will be omitted in this first publication.

The usual method of filling-in is to slush mortar over the tops of the bricks which are laid dry in the wall, cutting it in between with a trowel; but this usually is a mere subterfuge and the resulting work is little better than a pile of dry bricks.

Another method is grouting, that is, pouring thin mortar over the brickwork, with the hope that it shall find its way through all of the spaces, but the result is that which usually follows good intentions.

The writer has *heard* of good grouting, but it has never been his good fortune to see it.

Face Brick: — Are usually laid either in lime mortar colored as may be desired, or in Portland cement. The joints should never exceed ½″ as a maximum and should be carefully filled and the joint raked out at once. The proper height of nine or ten courses can only be determined by actually laying up a piece of wall, and when common brick and several kinds of face brick are intended to be used, and especially if terra-cotta is used as a trimming, samples of all of the brickwork should be laid up at some point on the works, where they will not be disturbed, and can be readily referred to. These samples should be at least 2′ 6″ long and 2′ 0″ high, and should be laid in the most careful possible manner. They should be used in laying-out the terra-cotta or stone trimmings, and should be conformed absolutely to in executing the work. As face brick can rarely be bonded oftener than once in seven or eight courses, it must be carefully laid up to sustain its own weight.

§ 49. Cutting: *Common Brick:* — Common bricks break readily when struck smartly with a trowel. The apparent edge should always be struck first however, as then the resulting fracture will usually show a clean smooth break at this point. When it is necessary to cut a common brick, the end of which must show, it should be struck lightly all around at first and then smartly. When broken the end should be smoothed by rubbing it on an unbroken brick.

Face Brick: — Should always be cut with a cold chisel having a straight edge about 2″ long. The chisel should be struck lightly at first until a decided dent is made, and then smartly.

In cutting moulded brick where it is desired to waste as few as possible, use a saw, it will cut the brick and, of course, ruin the saw temporarily.

§ 50. Bonding: *Common Brick:* — Should be bonded by building in headers continuously every fifth course on both sides of the wall, carrying the course through as alternate headers and stretchers, then the next course should be alternate stretchers and headers, after which the ordinary filling may proceed for the next three courses.

Face Bricks: — Are bonded in a variety of ways as shown on Figure 8.

The best way is to use Morse anchors for every brick, each fifth course.

Special Cases: — As the bonding of footing-courses will be subsequently given, great care should be used in these cases to insure the bonding being exactly that that has been predetermined.

In building piers, the bonding should be carefully studied and so laid out as to secure the greatest possible breaking of joints.

§ 51. Pointing: — May be divided into four kinds. Rule-joint, V-pointing, tucking, applied to first-class masonry and

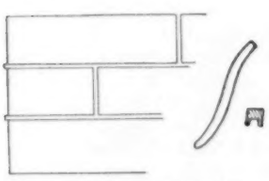


Fig. 8. Rule Joint, Tool and Section.

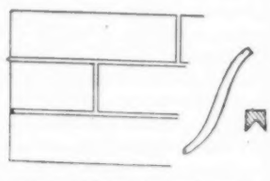


Fig. 9. V-Joint, Tool and Section.

face brickwork, and common pointing applied to all other work.

Rule Joint: — The joints should be raked out to a depth of ½″ and then filled with lime putty (a mixture of lime paste and white lead), colored as may be desired with a mineral pigment.

The finish is obtained by pressing the mortar into the joint until it is filled flush with a tool like that shown in Figure 8. The last part of the operation being done with a straight-edge as a guide for the tool.

V-Pointing: — Is done in similar manner to rule-jointing except that the finish is given with a tool with a V-shaped groove passed along the straight-edge. This causes the jointing material to show as a sharp ridge. Figure 9.

Tucking: — Is done in manner similar to V-pointing, the only difference being in the shape of the tool. Figure 10.

Common Pointing: — Is usually done with a trowel and is illustrated in Figure 6.

Remarks: — Any of the above pointing may be done with neat Portland cement mixed very stiff, and in such case gives

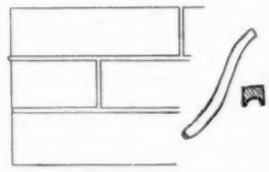


Fig. 10. Tuck Joint, Tool and Section.

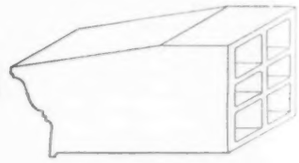


Fig. 11. Terra-cotta.

a joint that will last longer than in any other material. Care should be had to see that the voids are filled absolutely with the pointing material and that the surface is compressed as much as possible with the pointing-tool.

§ 52. Cleaning Down: — Is done with acid and bristle brushes, as heretofore described.

§ 53. Damp-proofing: — All common brick walls are pervious to moisture and while furring-blocks or furring are necessary on the inside, the outside should also be rendered damp-proof. This may be accomplished in three ways:

(*a*) By painting with white lead and oil. This should be deferred until at least three months have elapsed after the setting and repointing of the brickwork. Three coats are required on common brickwork, to be renewed every four or five years.

(*b*) By rendering the surface with Portland-cement grout, using a mixture of the consistency of whitewash and applying it with a whitewash brush. Two coats should be applied, but not sooner than three months after the setting and pointing of the work: this method gives the wall a light gray color. It should be renewed every five to six years.

(*c*) By using some one of the patented paraffine preservatives, all of which are more or less efficient, but none are particularly to be recommended.

All of these methods destroy the effect of the grain of the brick, painting being the worst.

The Portland rendering has a lustre similar to that of brickwork, and is said to be generally more satisfactory and less expensive than paint.

The above applies to walls above grade.

For foundations, special treatment is required which will be described under Chapter VII, Foundations.

SECTION IV. — TERRA-COTTA.

§ 54. Composition: — A mixture of a special clay, ground terra-cotta, brick, etc., (called batch) with sand. The clay should be especially selected and ground, and the sand should be also selected, so as to give the desired color and surface.

§ 55. Manufacture: — The clay is exposed to frost and moisture until disintegrated; it is then ground, screened, mixed with the proper proportion of sand and batch, ground with water to the proper degree of plasticity and then pressed in moulds. Terra-cotta is usually made in large blocks, and in order to keep it from injuriously warping, and from taking a needless amount of material, is formed with an outer shell connected and braced by means of cross struts. The voids should not exceed 6″ square and the cross struts should be at least 1″ thick; they should have numerous holes in them to form a clinch for the filling-in mortar and brickwork (Figure 11). The plastic material is placed in the mould by hand, being well kneaded into the material already placed. On the thoroughness with which this is done depends the strength of the terra-cotta. After the terra-cotta is moulded, it is taken from the moulds and dried in the air for a few days and then put in kilns and burned. The fires should be gradually increased to a white heat, and then kept there for several days. After coming from the kilns, the terra-cotta should be so hard as to resist scratching with the point of a knife. Color and glaze are sometimes given by slip glazing; in this the "slip," which is a fusible mixture, is either sprayed on with a steam-jet before burning, or is painted on afterward and then subjected to heat.

Neither method is to be recommended but of the two the first is the better.

§ 56. Modelling: — Models are made first in plaster to a shrinkage scale of about 13″ = 1′. These models should be carefully made by experienced modellers and should not be made too smooth. When hard they are used to prepare moulds of plaster-of-Paris into which the terra-cotta is pressed. After the terra-cotta comes from the mould, it should be retouched by the modeller to bring out any lines which may have become blurred in the moulding.

§ 57. Laying-out: — The jointing of the terra-cotta should be shown on the drawings. It should be generally made so as to be a part of the construction and for that reason, except for sill-courses and cornices, should be made in as small pieces as practicable. Pieces of terra-cotta should not exceed 3′ 0″ x 4′ 0″ x 1′ 6″ in size, as larger pieces are very apt to warp so as to render it impossible to build them in. Before making the final lay-out, some of the brickwork should be actually built up so as to insure having the bond with the brickwork exactly right. Care should be exercised with the joints to make them of sufficient size to allow for the shrinkage of the greater number of joints in the brickwork. Generally a joint should equal one-fourth the height of the joints in the adjoining face brickwork. To secure a lay-out that will give the desired artistic effect, and at the same time be reasonably economical, requires some little experience and can only be so taught.

§ 58. Cutting: — Should be done by men furnished by the terra-cotta manufacturer, since this process requires a deal of experience. It is done with a cold-chisel and hammer, first going around on the line intended to be cut with light blows and then working around with heavier blows.

Terra-cotta can also be sawed when the blocks are not too heavy.

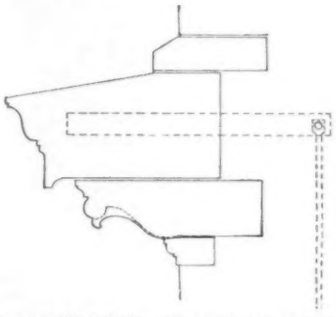


Fig. 12. Method of securing Projecting Members.

§ 59. Setting: — Terra-cotta should always be set in Rosendale or Portland cement and sand mortar carefully spread over the bed and ends so as to insure all voids being filled. As soon as set, all exposed joints should be raked out to a depth of at least $\frac{5}{8}$″. The terra-cotta should be built up in advance of the backing, one course at a time, and then the backing brought up, filling all voids in the terra-cotta with cement into which bricks are forced. Whenever the projection is so great as to require it to be made in two pieces similar to that shown in Figure 12, the projection must be supported by means of small I-beams (as shown by dotted lines) built into the masonry.

When there is a projection of cornice so great as to nearly over-balance the weight of the masonry on the built-in end, making an allowance of forty pounds per square foot for snow and wind-pressure on the free end, the fixed end should have holes in it to permit of bolts being built into the masonry below, to hold down the terra-cotta by means of nuts and washers on their upper ends. All parts of the terra-cotta that are not solidly built in should be anchored with ⌐¬ or ⌐⌐ anchors, both longitudinally and transversely, the anchors being made of galvanized-iron.

§ 60. Pointing: — Should be done with Portland cement, colored with a mineral color to correspond with the color of the terra-cotta and forced into the joint with a rule-joint tool. Horizontal joints in all sills and washes of belt-courses and cornices should be caulked with elastic caulking, *i. e.*, they are first raked out about 2″ deep, then filled with oakum for 1″ in depth and finished with an elastic cement, the base of which is an asphaltic mastic.

§ 61. Characteristics: — Hardness has already been mentioned. The character of surface can be made anything desired: smooth, rough, glazed, sand-finish, etc. No spawled, chipped, glazed or warped pieces should be accepted. Samples obtained by breaking up a piece, broken in handling, should show an ultimate compressive strength of 6,000 pounds for 1″ cubes, the cubes being prepared for testing by grinding. At least three such pieces from each shipment should be so tested until positive knowledge is gained as to the product. Should the strength run very uniform, the testing may be discontinued for the work until near the end, but samples should be constantly taken and labelled for use if necessary.

§ 62. Working-Drawings: — Working-drawings should be furnished by the terra-cotta contractor to the foreman-setter showing every piece of terra-cotta with some distinctive mark, and each piece of terra-cotta should be correspondingly marked. Drawings should also be furnished by the terra-cotta contractor to the iron contractor showing all necessary clamps, anchors, etc.

§ 63. Delivery: — A schedule of delivery should be agreed upon by the several parties in interest, and this should be rigidly followed.

§ 64. Protecting: — A clause in the carpenter's specification should provide for boxing all moulded and ornamental work so as to protect it against damage during construction. Rough white pine should be used for this: hemlock stains the terra-cotta.

SECTION V. — FIRE-CLAY:

§ 65. Composition: — Fire-clay is a clay in which aluminium and salicic acid form two-thirds of the mass with about ten per cent each of combined water and quartz, and very small quantities of water, potash, titanic acid and oxide of iron.

When mixed with water and sand, moulded and burnt at a white heat the product is called "fire-brick"; when in addition

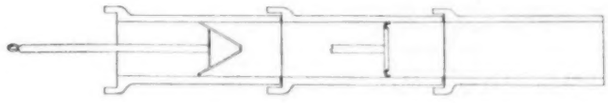


Fig. 13. Two Methods of cleaning Joints of Vitrified Pipe.

Fig. 14*a*. Old Style.

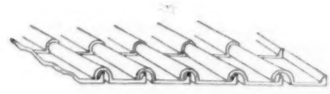


Fig. 14*b*. Roofing Tile.

about forty per cent in bulk of sawdust or some other equally combustible material is added before burning, the product is called "porous terra-cotta" or "terra-cotta lumber."

§ 66. Uses: *Fire-Brick:* — Are moulded hollow in a large variety of ways to form flat or segmental arches for floors, fire-proofing for columns and girders, furring for walls exposed to dampness, blocks for partitions, shafts, etc. In slabs for flat ceilings, floor arches, mansard roofs and light flat roofs. Bricks are also made for building purposes of various colors, for furnaces, setting boilers, and other uses, where a highly refractory material is needed to resist the action of acids or heat.

Tiles for paving and roofing, linings for flues, and an almost endless variety of shapes are made for the purposes above noted, and the like.

Terra-cotta Lumber: — Is made in almost as many shapes as the fire-brick. It is used wherever lightness is a requisite; it possesses the property of being readily sawed and of holding nails well.

General: — All of the above are excellent non-conductors, and resist the action of fire better than any other building-material known. They are not affected by alternations of frost, moisture and warmth, and possess a high compressive strength.

§ 67. Setting: — When used for the lining of surfaces exposed regularly to the action of flame, the setting should be in a mastic made by mixing fire-clay, sand and water to the consistency of putty. For all other purposes the setting is similar to that of ordinary brickwork. The joints should be made close and the bonding carefully cared for.

§ 68. Other Points: — Are similar in all respects to those heretofore given for common brick, face brick and terra-cotta.

§ 69. Pipes: — Drain-pipes for purposes of sewerage and drainage are made of similar materials in many sizes and shapes, but usually round.

They should be straight and true to section to within one-sixteenth diameter, but never exceeding $\frac{1}{2}''$, and should be formed with a socket at one end and a spigot at the other, so proportioned that when the spigot is in the socket, there shall be an annular space of $\frac{1}{4}''$ between the two; they should be glazed with a salt put on before burning and then fused in. Very large pipes are made cylindrical and a ring of clay in two halves is furnished to cover the joint and hold the cement until set. In setting pipes the bed of the trench should be made smooth and with a uniform pitch. In rocky soils or rock, it is well to spread sand 6″ deep over the bottom of the trench: then the tiles are laid making a depression to receive the hub or socket, so that the entire length of pipe bears on the bottom; mortar is then placed around the bottom half of the socket and the top half of the spigot and the pipe inserted. A pointing-tool should be used to press the mortar into the joint until it is full. A wad of oakum or a scraper like Figure 13, made of a conical piece of wood with leather or rubber edges is kept in the pipe that has been set and as soon as a new one is set, should be drawn forward so as to remove all pieces of projecting mortar, and leave the bore smooth and uninterrupted. Rosendale cement and sand should be used except for first-class sewer-work and then Portland cement should be used.

As fast as three or four lengths of pipe are laid they should be covered over 3″ deep with soil or sand lightly packed around them and then left until inspected, when the filling-in may proceed with any desired degree of rapidity.

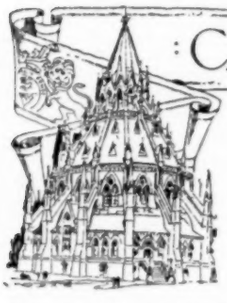
§ 70. Roofing Tiles: — Made of clay in a variety of shapes and colors, salt-glazed and burnt at a very high temperature. Figure 14*a* shows the usual shape, Figure 14*b* shows a very much better shape recently brought out. In setting Figure 14*b*, a bituminous mastic or some other plastic cement should be used in making the joint, and galvanized nails used to hold them in place. In the shape Figure 16*b*, projections are made in the bottom of each tile to catch the tile below and hold it into place.

§ 71. Floor Tile: — (Known as the "Guastavino" arch.) Hard burned tiles are made for floor arches. They are 1″ x 6″ x 12″ made of fire-clay and are laid up in Portland cement. For the support of all masonry stairs, for carrying very heavy uniformly distributed loads, for domes and similar uses they make an excellent arch, but are not advised for ordinary floor arches. For other floor arches see Chapter IX.

§ 72. Drain Tiles: — Are usually made in ∩ shape of ordinary clay not glazed, so as to enable moisture to soak through them. They should be set on 1″ hemlock boards laid with a uniform fall in the bottom of the trench, and with the joints covered with a strip of canvas or oil-cloth about 2″ wide.

[To be continued.]

: CANADA :



TORONTO AND HAMILTON.— ENGINEERS AND ARCHITECTS. — THE WORKING OF THE EXAMINATION SCHEME. — THE WORK OF THE ASSOCIATIONS. DEATH OF PAUL PEEL. — LABOR ORGANIZATIONS AND DAY-LABOR ON THE TORONTO COURT-HOUSE.

THE building season proper, now nearly closing in, has been a very quiet one for the city of Toronto; very few private residences have been erected, and none of any particular note. Banks and insurance companies have been laying out a good deal of their capital, but it would seem that this is rather a sign of depression of trade than otherwise, for the general complaint is that the banks hold all the money, that there is none in circulation. The capital of banks and insurance companies goes on piling up, and then, when they have more than they know what to do with, they put it into bricks and mortar, which will be long in returning even a fair rate of interest.

While, however, Toronto has been almost standing still for the past year, at any rate, the city of Hamilton, forty miles from Toronto, has been exhibiting signs of improved prosperity. Hamilton was once the rival city, having a considerable carrying trade, with a large fleet of schooners on the Lake. The railways killed Hamilton, apparently, and the headquarters of the trade became Toronto. It is called the "ambitious" city, and, even now, thinks it can hold its own against Toronto, and at present it seems very flourishing. Montreal, too, which had its period of depression, is also immensely improved within the last few years and bids fair to be one of the finest cities on the continent of North America. Both Toronto and Montreal, however, have been expending immense sums of money upon educational buildings, and the Toronto University and the McGill at Montreal are rapidly becoming as complete and fully equipped as any in America. McGill University has been especially fortunate in donations of large sums of money from various millionnaires, and has not been slow to profit by them, and though while at present in the departments of technical education, it is the engineers rather than the architects who are being benefited, it is to be hoped, and not without reason, that before long architects may be able to be fully trained there, and, in time, reap equal benefits. A young country cannot get on without engineers, but it does not see much necessity for architects during the period of its youth; but now that Canada is adult a change has taken place, and there is now a demand for architects of education in preference to men who have practically no claim to the name. But it is hard to get members of the profession to work together for the general good. The Council of the Associations of Ontario and the Province of Quebec complain greatly of the apathy of their members, and declare that they are, in general, more anxious for their own individual advantage than for the good of their profession. Meetings are not well attended, it being the same few who turn up regularly and work industriously month after month, the others showing no interest in the proceedings. The report of the Council of the Province of Quebec Association, delivered at the annual meeting, held on the last days of September in Montreal, contains, in reference to every kind of meeting or class held during the preceding twelve months, the note that at such meetings the attendance was not as large as might have been expected.

At the two examinations held during the year, at the one at Montreal, for admission to study the profession, only six presented themselves, of whom four passed; while at the one held in Quebec (city) one candidate only came up for examination in the final, and none in the intermediary. There is, however, no reason on this account to suppose that the Associations are going to fail. They are carrying out good and important works through the diligence and energy of the few steady workers, hampered as they are by the indifference, and, in some cases, open opposition, of architects who are too narrow-minded and even selfish. The best thing these young associations can possibly do is to devote themselves to the education of the rising generation of architects, and leave the questions concerning the regulation of professional practice in abeyance until the soil has been prepared in which such matters may be able to take root.

The two associations, by working together as far as possible towards the same ends, will be the means of building up a future for the profession of no small importance, but there, no doubt, exists in many members a feeling of disappointment that greater things have not already been attained. The auspicious manner in which the Ontario Association came into existence augured to the minds of many speedy changes — the abrupt termination of abuses and the sudden rise of the status of architects on a pedestal of acknowledged dignity — which have not been realized, and will not for many years. It is uphill, patience-trying work, but the efforts of the workers cannot fail ultimately to be crowned with success. The new Council of the Province of Quebec Association is constituted as follows: Victor Roy (Montreal), President; J. Nelson (Montreal), First Vice-President; H. Stavely (Quebec), Second Vice-President; J. Z. Resther (Montreal), Treasurer; A. C. Hutchison (Montreal), Secretary, and six Members of Council, of whom five are in Montreal and one in Quebec.

In the death, at Paris (France), of Mr. Paul Peel, Canada deplores the loss of an artist, a native genius of no small ability. Mr. Peel was the son of a marble-cutter of London, Ontario, and early displayed so much talent that he was sent to study in Paris. He was awarded a gold medal at the Paris *Salon* in 1890 for special excellence. He was only thirty years old, and leaves a widow and two children.

It is greatly to be regretted that labor organizations are unable to look at the matters they take in hand in a wider and more patriotic manner than they do. The primary object of the members in forming such associations is no doubt their own pockets. They band together for the purpose of protecting the interest of the workingman from the supposed outrageous attempts of the capitalists to defraud them, while they attempt to disguise their object by professing openly to be only anxious to facilitate business and while some of their efforts, as shown by the resolutions carried at their meetings, are fairly laudable the membership of their associations is, for the majority, made up of men who have no idea beyond what they so proudly speak of as their "rights." We have an example of this kind of unfortunate thing in Toronto at the present time. It will be remembered that in a former letter I mentioned the trouble at the Toronto Court-house (which by the way is gradually turning the architect's hair gray) between the contractor and the architect came to a head and in the dead of night the architect scaled the palisading and called on the police to protect him in the exercise of his rights. He then formally seized the works and the contractor was excluded. The contractor then brought an injunction to prevent

further proceedings with the works but when the matter came up for argument the architect was sustained and allowed to remain in possession. In order to straighten up matters and get the works into shape for re-tendering, the architect employed a number of men by day labor. This has been going on for some weeks and it is proposed soon to set about new contracts for the completion of the works. The whole cost of the building is to be over a million dollars and, so far, only the ground floor has been reached. The labor societies are now agitating and making every effort to get the whole of the work remaining to be done carried out by day labor instead of under contract. Such a proceeding would of course involve a terrific amount of trouble to the architect; but it is a question as to whether he will be considered in the matter. The municipal elections are approaching and it is understood that these associations intend only to support such candidates as will be favorable to their schemes. The result to the city would be an outlay of a very much larger sum of money than if the works were carried out under contract, and there is a little doubt that the completion of the building, which is not expected now to be much within another six years, would be postponed indefinitely. The sole object in thus agitating, is that the men employed would get perhaps better wages and would be certainly longer employed, but the cost to the tax-payers would be enormous, while it is highly probable that the work would be very badly executed. Such considerations, however, never enter the heads of these entirely self-interested men, and it is doubtful whether the aldermen whose intelligence ranks very little higher than theirs will be able to entertain these considerations.

THE COURT-HOUSE AND JAIL CONTRACT. — THE BOND ACCOMPANYING IT. — THE PROPOSED REMODELLING OF A THOROUGHFARE. — A WORLD'S FAIR REGULATION.

WITH regard to the new Court-house, the City Government has succeeded in tangling itself in such a snarl that it will take any number of lawyers an indefinite time to straighten the matter out, and the probabilities are that even then the result of their labors may be far from an equitable settlement of the case. The designer (who is playing the dual role of architect and contractor), Mr. M. A. Orlopp of Dallas, Texas, certainly deserves some little censure for having been so indiscreet as to enter into such a contract with such clients. As mentioned in our last letter, the competition was held under one administration and the execution of the work left to its successors. It is, therefore, not surprising in the least that there should be an opportunity afforded for misunderstandings, though we confess that we did not anticipate the present complication of affairs.

To review a little, it will be necessary to state that the City of New Orleans held a competition for plans and bids combined, and that a bond of $100,000 was required to accompany each set of plans submitted. The limit of cost was fixed at $350,000 to include all fees, etc., and a certain amount of accommodation was required. Of the designs submitted, Mr. Orlopp's, was thought to be the most acceptable from a financial point of view as, we are told, it was the only one coming within the specified limitations. His plans were examined by the City Engineer who drew up a list of nine points of modification after which they together with the bond tendered by him were accepted, and a contract signed with him to carry out the work for the sum named. Some of these modifications were matters of considerable consequence in reference to cost.

However, this part of the transaction seems clear and everything was satisfactory. About this time the new Administration was inaugurated, and a new City Engineer assumed control. It was not long before he discovered that quite an amount of revision of the specifications for the Court-house was necessary to make the building acceptable. The contractor acceded to a number of modifications, but when he saw that he would be soon likely to "come out of the small end of the horn," he very naturally became alarmed, and refused to accept any further alteration of the plans or specifications without additional compensation. This was at once a "*casus belli*," and the press, not knowing exactly which side to take in the matter, at once adopted the popular course and even came very near accusing Mr. Orlopp of swindling the tax-payers by taking their money and giving them next to nothing for it. As for Mr. Orlopp, he was put to all sorts of tests. To try his courage, he was summoned to appear before the "City Fathers" but formally refused to accept the new schedule of alterations without additional pay. Seeing that it was impossible to effect any favorable results in this way, the Mayor then turned his attention to the other details and attacked the bond, which he submitted to the City Attorney for investigation. This official soon found that the bond was valueless in the present case, as it was given only as a guaranty that the contract would be entered into by Mr. Orlopp at the specified sum if his plan should be accepted. This information was communicated to the contractor, who at first was at a loss to see how it could be worthless when the last administration had approved and accepted it and signed his contract without asking for any other. However, not wishing to appear antagonistic to the officials he was serving, he wrote to the Mayor offering to provide a bond that could not be questioned. This admission was just what was wanted, the opportunity was at once taken, and Mr. Orlopp was informed that when he shall have amended the specifications to suit the fancy of the present Council that then "the proposition of furnishing a bond will be considered."

If it can be proved that the working-plans are materially different from the set of plans accepted by the last Council, we can understand that the city may have a case against the contractor, but we cannot see that he can be held in any way responsible for the actions of that body or that he should be willing to incur extra expense, which according to Engineer Brown's report, will, in all probability, reach $100,000, while he receives nothing to reimburse him for the extra outlay.

The root of the whole trouble seems to lie with the careless manner in which the competition was conducted, and the too hasty examination and approval of the plans when submitted to the late City Engineer. We can hardly understand how Mr. Orlopp deserves all that has been said against him, except perhaps that he should be on his guard next time, and look before he leaps into such enticing opportunities.

We cannot help but hope that, should the case be submitted to a jury, they will be able to see it without its sentimental draperies, and understand it as a clearly business transaction, in which, should a private citizen be substituted for the City Government, and a residence or store, for the Court-house there would be little likelihood of mistaking the equitable course to pursue.

There has recently come to the surface a problem, which we have long looked for, in the management of street-car tracks on our principal thoroughfare, Canal Street. As its name implies, this street was originally a moat for the fortification there, with a roadway on either side, and formed the southern boundary of the "Vieux Carré," and it is to-day the dividing-line between the American and the Creole quarters of the City. Its exceptional width (170 feet) is due, not to the forethought of the engineers who laid out the town, but purely to the pre-existing conditions. The canal was eventually closed, and then filled up, and as the different lines of street-cars were projected, they came to this street for their terminal points on account of its central location. The neutral ground between the roadways was thus in early times appropriated for this purpose, and as the lines increased in numbers, and the business of the older ones grew larger, they at last are compelled to ask for more room to accommodate a maximum of 400 cars. Beside the terminal points and turn-tables, there now exists a belt or trunk line which makes the tour of the street from the river to Claibourne Street, a distance of about two miles. Now the recent granting of franchises to the roads to use electricity makes a new arrangement necessary, and Engineer Brown proposes to do away with the terminals altogether, and thus clear the street of all car-stands, starter's-boxes, turn-tables, etc., which would be a very considerable improvement. He proposes, further, to use three belt-lines, thus making six tracks on which all cars will make the circuit of Canal Street before returning over their respective routes. Besides, he suggests the removal of the Clay Monument to some other point where it will not interfere with traffic; and the repaving of the entire street making one roadway from curb to curb, at the same time perfecting the drainage which at present is very defective. The suggestions seem admirable except in a few particulars. We hope that it will never be necessary to remove Clay Statue as it has been the scene of several very interesting episodes in the history of the City and the State. If the monument interferes with the traffic, why would it not be possible to create a circle like that encircling the monument to General Lee, at the head of St. Charles Avenue? The surrounding buildings have certainly no architectural pretensions, and three out of the four corners are occupied by old and badly arranged buildings, which need rebuilding to make them habitable, much more remunerative. Then again two belt-lines seem all that are needed at present, if the terminals are done away with — one of these could be reserved for the use of electric-cars exclusively. This will leave a large area which might be converted into a continuous garden, so that New Orleans might boast in the future of a street like Drexel Boulevard, or Commonwealth Avenue. Flowers are usually so plentiful that no one seems to think it worth while to use them for such purposes. The repaving is a necessity, but the obliteration of the neutral ground seems hardly required, if proper police regulations were enforced with regard to cab-stands, etc. — a point which appears to have been overlooked.

A few days ago, we noticed under the caption of "World's Fair Notes," the following:

"The Exposition authorities are desirous to impress all would-be exhibitors that no article of embroidery, artificial flowers, or fancy articles made of pumpkin seed, cotton or any domestic decoration so often seen in the rustic home, will be accepted."

The word "embroidery" covers a good deal that is, of course, not acceptable, but it also covers an amount of very valuable material for exhibition which might be otherwise lost sight of altogether. We can readily understand the other points specified as being entirely out of the question, as nothing has been more tiresome in past exhibitions than the totally unrestrained filling-up of exhibits with worthless material of this sort which is neither interesting nor instructive.

When the above was written we must confess that in drawing the conclusions and speculations there presented, we had failed to take into consideration three very important facts with regard to the contractor's position in the matter of the Court-house difficulty. First, the entire want of encouragement or support from any quarter and the apparent animosity of the community as expressed by the daily papers. Second, the pressure brought to bear by the city authorities, tending towards coercion, whether right or wrong. Third, the most uncertain equity of a jury decision when rendered by the tax-payers in defence of their menaced rights. These perhaps coupled with others that an outsider cannot understand were the conditions which finally led Mr. Orlopp to accept the stipulations forced upon him. The result, viewed from any standpoint is to be deplored, for it necessarily renders the probability of the production of a good piece of work more uncertain than ever, and we can only wish that our City Engineer may for a time be endowed with the eyes of Argus, for we cannot expect that the difficulty should end here as the wound is only bandaged for a time and is by no means healed.

LONDON

THE LONDON COUNTY COUNCIL ELIMINATES THE BUILDING-CONTRACTOR. — SUCCESS OF THE ARCHITECTURAL ASSOCIATION EDUCATIONAL SCHEME. — PROPOSED PALACE OF PHYSICAL RECREATION. — INHUMATION IN ST. PAUL'S. — THE WELLINGTON MONUMENT.

YOU are, I expect, accustomed by this time to examples of the enterprising spirit which governs the London County Council in its administration of the municipal affairs of London, but I shall be somewhat surprised if the latest proposition of this body does not awaken within you feelings of mild wonder at the rapidity with which we are being taken into the Elysian fields of municipal socialism. On Tuesday, October 18th, the Council determined to abolish, or as it was termed, eliminate the building-contractor from its works. This intrepid resolve is the logical outcome of the policy that has for some time been followed by the Council, and it would perhaps serve to better explain the position, if I were to explain briefly the circumstances that led up to this decision.

In the times of the late Metropolitan Board of Works, the relations of the Board with the contractor were generally of an amiable nature. It was occasionally urged that the severity of the conditions of contract insisted on by the Board operated somewhat unfavorably upon the tendering for public works, but, nevertheless, tenders of a reasonable character were received in considerable numbers, when a public building was advertised. Perhaps the general tone of the prices was rather higher than would have been the case in private works, but certain difficulties of this kind are generally to be anticipated in work executed for a corporate body. With the advent of the London County Council, matters speedily underwent a change. The influence of the various trades unions on the Council was of a marked character and after considerable discussion, it was announced that every contractor tendering for Council works would have to sign a declaration that he was paying to his workmen those rates of wages and employing them for those hours of labor that were generally recognized as being fair in their respective trades. The result of the step was soon apparent. Fewer tenders were received and the amount of these generally exceeded the estimate of the architect or engineer. The Council, however, appeared unable to recognize that this was the direct result of their action and it began to be hinted obscurely that there was a combination of contractors with the object of defeating the Council's wishes with regard to the labor question. This state of affairs went on for some time, until confidence seemed about to be renewed, and the rumors of combination appeared to be dying away, when a further action on the part of the Council apparently put an end to the prospect of amity. It was urged in the Council that the expression "recognized as fair in the trade" was ambiguous and vague and liable to misinterpretation, and therefore, to put the matter beyond a doubt, it was decided that every contractor executing work for the Council should specifically declare that he was in the custom of paying to his staff the rates of wages and asking those hours of labor demanded by the various London trade unions. The view adopted by the contractors was that this requirement practically placed them at the mercy of their employés, and as few contractors were prepared to undertake this risk, few tenders were received and these exceeded very considerably the estimates of the estimating officers. Thus matters seemed to be approaching a dead-lock, and as the various works were of an urgent character, some steps had to be taken. The solution of the problem was considered to be in the elimination of the building-contractor altogether and in the direct employment by the Council of the necessary labor and materials to carry out their work, and after a long and interesting discussion, a proposition to this effect was carried with regard to some artisans' dwellings to be erected in connection with the Blackwall Tunnel. It was agreed to accept none of the tenders received for this work, but to carry it out directly without the intervention of a contractor. This action has attracted a considerable amount of public comment, and the press generally is distinctly averse to the proposal, which is felt to be reckless and liable to many abuses. Mr. John Burns, M. P., the labor member, was the chief advocate of the proposal and I believe he has in his mind the establishment of a great Works Committee which is, in fact, to consist of a sort of municipal workshop on the lines of those established in Paris in 1848. It appears to me that this action was taken without a sufficient consideration of the stupendous difficulties involved. It is urged that the proposal will save the cost of supervision and the contractor's profit. This is an excellent theoretical argument, but I fear it will not stand the scrutiny of a severe practical investigation. It is well-known to architects that builders do not obtain very great margins of profit in these days of close tendering and keen competition, and it is only by exercising the most watchful economy that a builder is able to obtain his profit. He realizes that every penny saved in the execution of a contract goes into his pocket — a greater incentive could hardly exist — as architects know to their cost. If a workman is inefficient, he is instantly discharged. A close watch is kept over the fluctuation in the prices of materials, and everything is bought in the cheapest market. These incentives can hardly exist to anything like the same extent in the case of a salaried official, however earnest his desires to produce a cheap job may be. He will be aware that a certain responsibility will attach to him to see that the quality of the work is of a high class, and the consideration will be certain to tell against severe economy. Another difficulty he will feel will be the fact that the workmen will not be his servants but those of the Council, and when we consider that a large number of the Councillors have these very workmen as their constituents, it becomes obvious that questions of great difficulty and delicacy may occur. It is quite within the bounds of possibility that circumstances might so shape themselves that a strike might occur, and if such an event were to happen with Mr. John Burns and Mr. Ben. Tillett in the capacity of employers, complications might again take place. The question bristles with difficulties, and I cannot help feeling that the Council have made a serious administrative mistake, which if not very carefully watched may be productive of grave results.

The result of the first year's working of the Educational Scheme of the Architectural Association has now been published. It appears on the whole to be satisfactory. It was hardly to have been expected that the launching of so comprehensive a scheme of education would be achieved without a certain financial loss and to meet this anticipated deficit, an appeal was made to the profession for a guaranty fund. About £1,000 was received, and of this sum £300 were expended on alterations to premises and in the purchase of furniture and fittings, and £200 to meet the deficit on the first year's working, thus leaving a balance of nearly £500 to be carried forward to meet any deficit that may occur next session. It appeared from an able address delivered by the president that the work of the first and second year's students resulted in a profit, and if this be the case, it may fairly be expected that in two more years the whole scheme will be self-supporting. The Association ought certainly to be congratulated upon this satisfactory result of its spirited policy, and I might quote a few words from an interesting speech delivered by Professor Kerr at the opening meeting.

The Association, said the Professor, was the most successful society that he knew of — absolutely the most successful. Let them consider for a moment. Nearly fifty years ago the Association was founded by a very few very young men for the purpose of engaging in fortnightly discussions after the manner of their seniors in the Institute, with the object in view of improving themselves educationally, in recognition of the fact that ordinary office training was not equal to that end. Let them consider what had been done by the Association since that time; let them look at its position at the present time. Not only did they have disputed elections, which were of importance to the profession at large; not only did they have warm discussions upon points of controversy — and such discussions were the life-blood of a society; not only had they held classes with a directly educational purpose for so many years, not only did they maintain the Architectural Association "*Sketchbook*," which was one of the most meritorious productions of the profession; not only did they carry on their journal, *A. A. Notes*, which seemed to be equally well conducted, whether by one party or another; not only did they do all these things, but they had now established what was practically an Architectural University, and they were able to dismiss with a mere wave of the hand, as a thing never to be mentioned again, the supposition that the Association was a mere cramming institution.

The president this year is Mr. H. O. Cresswell, one of the younger school, who is well known in England for his careful and artistic work. Mr. Cresswell delivered his Presidential Address on October

21 to a large assemblage of present and past students. His tone was plain and practical and he adopted a conciliatory attitude which should go far to remove the division which threatened in the Association towards the close of last session.

Some years ago, under the direction of Sir Edward Lee, a very large hall of iron and glass, after the style of the Crystal Palace, was erected on the borders of Battersea Park. It was fitted with a fine organ, and was intended for the purposes of popular recreation. The financial burden consequent upon its erection became too serious, and the enterprise had to be abandoned. An attempt was then made by the official liquidators to start a great "variety show," but that also languished, and for years the building has been unoccupied. It is situated in the midst of a very poor district, and recently there has been an attempt to acquire it for popular purposes. Mr. John Burns, M. P., has been very enthusiastic in the matter, and when he learned that the building, which cost originally £150,000, was to be obtained for £20,000, he made strenuous exertions to obtain promises to this extent. He has now succeeded in obtaining this sum, on condition that the London County Council undertake its maintenance. He proposes that it should be termed "The Palace of Physical Recreation," and his idea is that it should be entirely free to any one who chooses to enter, and that facilities should be given for lads engaged in factories and workshops to exercise themselves and improve their physical stamina. There is little doubt now that the scheme will be carried through, and it is capable of very great development in the improvement of both the physical and mental condition of our hard-worked poor.

Mr. Aston Webb is about to resign the important post of Secretary to the Royal Institute of British Architects. His tenure of this difficult position has been marked by a very successful administration, and every one, though congratulating him upon his great amount of professional work, regrets his retirement. He will, however, have a worthy successor in Mr. William Emerson.

An application was made to the Dean of St. Paul's for permission to inter the body of the late Mr. Thomas Woolner, R. A., within the walls of our metropolitan cathedral. The Dean, however, felt it necessary to refuse to give his consent, on the ground that the cathedral rested on a bed of concrete, and that he was satisfied that every perforation made in this bed tended to endanger the stability of this great church. This decision, though regretted by some on sentimental grounds, is generally regarded as a cautious and wise one. There is no doubt that the foundations of St. Paul's will not admit of too much tampering, and, even apart from this, there are many considerations to be urged against burial inside a building in a city. With the gradual extension of cremation, the question may, perhaps, pass away, but in the interval no injury would be likely to be caused by a discussion upon the desirability of actual interments in cathedrals, and whether the desired object would not be equally well attained by a simple monument or memorial stone.

Whilst on the subject of St. Paul's, it gives me great pleasure to be able to record that an appeal by Sir Frederic Leighton for a balance of £300, still required for the removal of the monument to the Duke of Wellington into the body of the Cathedral, has been generously responded to by a private donor, and the work is now in progress. The monument is to be moved to a space on the north side of the nave, beneath the eastern arch of the arcade, and although it is but a tardy recognition of Alfred Stevens's great genius, yet it is none the less welcome on that account.

Mr. E. A. Sollye has sent to one of the professional papers some very curious epitaphs on architects which he has unearthed. One is on Mr. Nightingale, architect, and runs:

> "As the birds were the first of the architect kind,
> And are still better builders than men,
> What wonders may spring from an architect's mind
> When St. Paul's was produced by a Wren."

Another to a Mr. Trollop:

> "Here lies Robert Trollop,
> Who made yon stones roll up;
> When death took his soul up,
> His body filled this hole up."

And he asks whether it was not Pope who wrote this epitaph on Sir John Vanburgh:

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

I regret to have to record the death of a well-known architect, in the person of Mr. James Fowler, of Louth. He was diocesan surveyor for Lincoln, and built and restored many churches in that country, among them the fine parish church of Heckington, well known on your side of the Atlantic. He was a constant attendant at the excursions of the Architectural Association, and his genial presence will be greatly missed on those occasions. He had been five times mayor of his native city. Among the other losses are Mr. Thomas Woolner, to whom I have referred above, and Dr. Bickersteth, the Dean of Lichfield, to whose exertions should be mainly attributed the restoration of the fine west front of Lichfield Cathedral.

An important series of essays on the work of an architect, edited by Mr. Norman Shaw, R. A., and Mr. T. G. Jackson, A. R. A., has appeared, and attracted a great amount of attention. I have not yet had an opportunity of seeing the work.

A SUMMER AMONG THE DOVECOTES.

IN the fertile garden county of Hereford, a quaint-shaped turret, capped by a weather-vane of bygone days, is often to be seen, peeping out above the topmost boughs of the home apple-orchard, or almost hidden among the farm buildings. It is not a hop-klin, for that would wear a horn-shaped cowl pointing away from the windward quarter. But perchance the gleam of white or bronzy wings will point out its use, and you know that the openings in the lantern top communicate with a tower-shaped dovecote below.

Ask for the key at the house, and enter through the low doorway, notice the great thickness of the walls, and then, if pigeons are kept, you will recognize the force of the comparison "a flutter among the dovecotes"; for all will be commotion and flapping of wings, until the last pigeon has escaped through the lantern, leaving a few helpless squeakers on the ground or alighting ledges above. A few moments and the eyes get used to the gloom of the place; for the only light comes from the lantern opening above, which in the most complete houses is closed with a hinged trap, worked from below by means of a cord. And now it will be seen that the whole of the walls, from floor to roof, are lined with some hundreds of nesting holes, each just large enough for a pigeon to enter. Put the hand in one of these, and the reason of the great wall-thickness is apparent, for the cavity goes back some fourteen inches, and enlarges right or left into an L shape.

If the pigeon-house happens to be circular or octagon in shape, a stout post occupies the centre; and from it project two horizontal arms, which in their turn carry a ladder near enough to the wall for

Bridge and Dovecote at Eardisland.

any one mounting it to reach the nest-holes. The centre post revolves on pivots and allows the ladder to sweep round the building; and thus every pigeon-hole is made easily accessible.

A mild interest had gradually grown in my mind towards these old-time buildings; perhaps dating from boyish recollections of the half-tame blue-rock pigeons, which nodded and pecked among the horses' feet in my native city. Up in the garrets of the old house (every visitor to Hereford knows the richly-carved timber-work of this ancient home of the butchers' guild) these pigeons had their home; and at dusk they crept in under shadow of the angels, which form the finials to the decorated barge-boards. Old John Roberts, the saddler, who lived below, owned them, and many a couple of young birds he enjoyed for dinner.

And as time went on, I found that among our local pigeon-houses, were examples of almost every period, from Norman times until the

beginning of the present century; that the custom of keeping these birds in quantity was not so common as in former times; that no pigeon-house had been built for many years; and, worst of all, that hardly a year passed but one was demolished in some part of the county.

It was with the idea of forming a record of these curious buildings,

that I resolved to collect particulars of all in my own county; and very quickly found that the only possible way to get reliable information, was to visit every corner of the district, and to see for one's self whether a pigeon-house did, or did not exist at places where they were reported to be. Hardly a man was to be found who could tell of more than two or three, and these were buildings usually which every one had a full view of from the public road. The dovecote built in the centre of the fold-yard; or hidden away at the end of the farm garden, seemed to be an unknown building, and even the worthy farmer would learn for the first time the date of its building, and the initials of its first owner; yet there, plain to all eyes, these records stood; cut in stencil letters in the vane, or carved in stone up under the eaves.

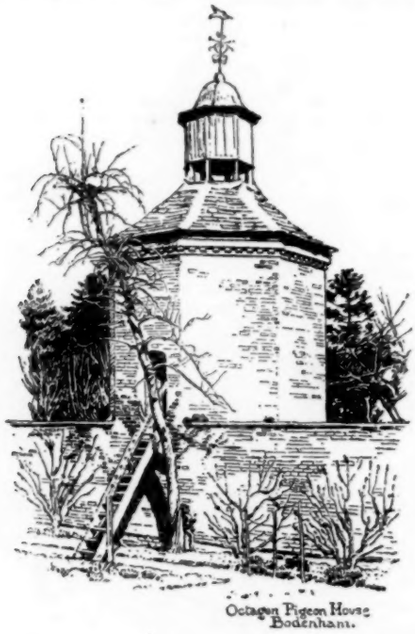
Many a pleasant tramp, camera on back, through orchard and fallow, along by-roads, over wooded hills, and past thatched cottages, this search entailed; or perhaps my companion in interest would join, and we drove together along the undulating roads, he, note-book in hand, to take particulars of the interior details, the style of lantern and vane, of the two or three examples we came upon in our day's search; I to look for the most pictorial point of view.

The hedges were still bare, though carrying promise of awakening life, when this search began; and there were yet pigeon-houses unvisited,

> "When yellow leaves, or none, or few, do hang
> Upon those boughs which shake against the cold."

Every one in eastern Herefordshire knows how, looking towards the west, a couple of conical wooded knolls break the line of horizon, and connect together groups of hills. These hillocks, which lie about a mile apart, are called Robin Hood's Butts, the tradition being that the famous outlaw was wont to shoot arrows from one to the other. It is in the wooded dip which links one of these butts with the adjacent Wormsley Hill, that the old farmhouse of Buttas stands, massive and imposing yet, with its square-headed and stone-mullioned windows.

And here, in 1632, George Karver, the yeoman owner of the estate, built for himself in the pride of his heart a combined pigeon-house and falconry, evidently intended to outvie all previous ones.



And there it stands now, one of the most beautiful examples of carved and decorated timber work in the district; its black diagonal timbers outlining the white plaster panels, each with a carved boss in the centre; the barge-boards and corbels elaborately carved in oak, and the little projecting window where the falcons were wont to bask in the sun, supported by a lion-headed truss.

It was no local carpenter who carved here; one would rather think that the artificer who gave full play to his imagination and skill in the beautiful gate-house at Stokesay Castle was called to the work; so similar in style are the two buildings.

Many pigeon-houses were divided into two stories, the lower one being used for general purposes, and in some instances arched over

for use as an ice-house, but here at Buttas, the doves were assigned the top loft only, among the gables, the falcons having their mews in the centre chamber, and the ground floor with two large doors was used for general stores, probably not as at present for carts, wheels having hardly come into general use at that time.

How closely linked are these buildings to the domestic life of that age. Honest George Karver added his wife's initial to his own, all carved in raised letters on a shield, with a device of a heart beneath.

So too, when Ffoulkes Walwyn built a pigeon-house at Hellens, the old family seat on the other side of the county, his wife's name joined his own.

The inscription here almost covers one of the sides of the building, first the date, 1641, then the letters W for Ffoulkes and Margaret Walwyn, all in white letters some F M two feet deep, worked in a kind of stucco, the making of which is as dead as the building of pigeon-houses, for the wear of two-and-a-half centuries has not peeled it off the old red brick walls.

A Walwyn of later days added the present weather-vane, bearing the initials E. W. 1753. This is the earliest example of an octagonal pigeon-house in the county, and probably marks the first departure from the square or circular buildings; most of the octagonal ones dating later than 1700.

But the building which seems to belong to the county, and to blend best with the apple-orchard and time-stained farmhouse, is the half-timbered square dovecote. How many quaint varieties of this type I found in my rambles: here a single-span roof with pigeons' entrance in the gables; there a pyramid-shaped roof, with open lantern at the

apex; or most picturesque of all, the four gabled roof, with a miniature reproduction of the same, covering the open woodwork lantern.

At Putson — a pleasant suburb of the city where an early Bishop of Hereford had a seat — was a good example of the carpentry building of those days when oak was plentiful. Every cross-timber framed to its neighbor and fastened with oak pins; and so durable

is the wood, that the axe marks on the surface of the beam remain, and one notices the Roman numerals with which the carpenter marked the mortices and tenons as they were fitted together on the ground.

When brickwork and roof decay and fall away, this timber framing still hangs together. But it was not with brick that the panels

Moat Farm, Hereford.

were filled up in the first place; a composite walling called wattle and daub was used, a kind of basket-work plastered over with hair mortar. And in these timber-built dovecotes, the nesting-boxes were of wood also; and the partition dividing each from its neighbor ran in a diagonal direction, so that the bird might not be cramped for tail room when sitting on her two eggs.

Alas! this Putson pigeon-house has, within a month of the time I write, been demolished, and now there is but one left within the liberties of our city, and that so picturesque in its dilapidated old age, such a favorite subject with artists, grouping as it does with the great porch of the farmhouse close by, that I fear it too must shortly vanish.

Only a year ago, the same fate befel the round stone dovecote at Wigmore Abbey; a date 172– was cut in the vane, but the building was evidently older. One would like to think that it had furnished pasties for the pleasure-loving abbots and monks, who dwelt there under the protection of the great Mortimers of Wigmore (it was a Hugh de Mortimer who founded the Abbey in Stephen's reign); only there is unmistakable evidence that the pigeon-house was built when the mosaic buildings were razed to earth at the Reformation, for it was built of dressed stones of unequal sizes and when pulled down some carved corbels were found in the walling.

Bit by bit, these records of the past vanish; here at Wigmore, a few ecclesiastical windows, fitting-in with the present farm-house, a

picturesque gateway with half-timbered walling, and the noble abbots' barn, with curved oak timbers springing from floor to roof, still remain.[1]

[1] This fine tithe barn has lately been destroyed by fire.

Gone, too, is the still more interesting dovecote, which, five years ago, was noted as the only remaining part of the ancient palace of the Bishops of Hereford at Bosbury; and not a drawing or detailed description of it seems to remain.

All the information I could get on the spot when I visited this old-time village was from an aged woman, who knew it was built of stone and had some sort of glass lantern on the top. Certain it is that when good Bishop Swinfield wrote his "*Roll of Household Expenses*" for the year 1289, he consumed pigeons from the "Columbarium of the Manor of Bosbury," and probably this very building survived until about 1883, for Webb describes it as being similar to

that at Garway (1326). Its fate was tersely described by the gray-headed postman who was taking his midday rest at the old inn close by: "Falling to pieces, like me, getting old and past work, and so they pulled it down." A vivid picture of the domestic customs of the times can be read between the lines of the roll above mentioned: how, when Martinmas came round, and the winter season, with its lack of fresh meat (for hay and roots and winter fodder were unknown in those days) drew near, there began a great slaughtering and salting-down with "salt from Worcester" of the carcasses of fifty-two beeves, twenty-two pigs and numbers of sheep; how from the parks of Eastnor, Colwall and Dingwood carcasses of deer were brought in; how Harpin, the falconer, was much from home, and supplied abundance of partridges, cowered down by the fluttering of his hawk above, while he draws his net over them as they lie close on the ground.

Then came the tanning of the hides and the making of the fat into candles for the dark evenings. And now the reason of the great importance of the dovecote to our forefathers will be seen; no wonder they take pride and care in its erection, and make it roomy and convenient, when they know that in it, and in the well-stocked stews or fish-pond, and in the results of hawking, can be found the

only escape from a uniform diet of cured and salted meat during the winter.

There is a delightful old book, "*The Sportsman's Dictionary*" (1725), which enters with great fulness into fowling, hawking and all rural matters; and the pigeon-house, "a piece of economy of which a great deal may be said," is fully dwelt upon. The precautions against the inroads of rats are interesting: "To hinder rats

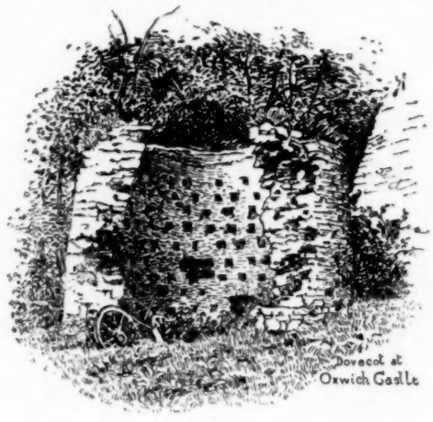
from getting upon the outside into a pigeon-house, they fasten tin plates to a certain height, and in such places where they foresee the rats might pass, at the outward angle of a square pigeon-house; these plates ought to be a foot high, and raised above half a foot on the sides, so that when the rats come to them and cannot catch hold of them they fall upon the iron spikes, which are usually fixed at the bottom, or the place where you foresee they may fall." The spiked railings I did not meet with, but, sure enough, one square dovecote at an out-of-the-way farm-house was fitted up with these smooth iron angle-plates some fourteen feet above the ground, and a projecting string-course is often built half-way up the building to baffle the climbing power of rats. Again: "To manage this affair

Culver Hole, Gower.

well, the door should always be placed in sight of the dwelling-house, whether the pigeon-house is built within or without the court-yard, because the master of the house may keep in awe those that go in or come out of the pigeon-house." Then there are minute directions about the door and windows, "which must always, as much as may, be placed to the south, as pigeons love directly to feel the sun, especially in winter"; and nearly a page is occupied with instructions about the nest-holes.

But of the dovecotes put up with so much loving care which still remain, hardly a third are now stocked; at one place the rats got in and destroyed the young birds; at another owls took possession and frightened them away, for pigeons are very timid, and their house should not be visited after midday, or they might not settle down in it before night. The jolly old rector at one place kept his dovecote stocked, until his farmer church-warden shot at them so often that they forsook their home.

The exclusive right of certain persons (lords of the manor and rectors) to possess dovecotes was an interesting remnant of feudal times lingering on until quite recently, and so these buildings are



seldom seen, except at manor-houses (otherwise courts) and rectories. Worlidge, in his book on agriculture (1687) refers to this in speaking of dovecote pigeons: "They bring unto such as are privileged to keep them a considerable yearly advantage."

Pigeon-fanciers, even in early days, do not seem to have taken to the large dovecote, but found, as now, a smaller loft to be more convenient. And so it is that breeding pigeons for table and for fancy have always been distinct matters, although I have known a farmer who was in the habit of supplying pigeon-shooting matches to keep a particular breed of large white pigeons in his large dovecote, and to shoot all intruders of different feather.

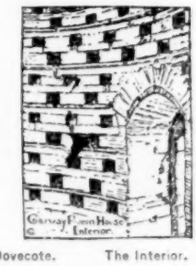
It was the Norman conqueror, who, when building in every corner of England, fortified castles and dwellings for his own use, also introduced the tower-like and substantial columbarium, which has served as a pattern for many successive styles of pigeon-houses down to the present time. And not only the building, but the customs connected with it, originated in Normandy, for there almost every lord had at his castle one of these hated towers, from which the pigeons issued in clouds to prey upon the crops of the oppressed peasants, who were denied the right of rearing birds themselves.

The revolving ladder does not seem to have been used in the early Norman examples existing in England, but was introduced later on; it is, of course, never applied to square, pigeon-holed houses.

Down in the rocky peninsula of Gower, where, though in the heart of Wales, the English tongue is, and has been for centuries, the language of the inhabitants, I spent some time towards the summer's close, and there found three examples of dovecotes attached to old castles. At Penrice old castle, which overhangs the home of the late Mr. Talbot, the "Father of the House of Commons," the dovecote is in perfect order, tall and tapering like a chimney to an opening at the top of about two feet. At Oystermouth Castle, only a small part of the wall is left, but sufficient to show that, like all early examples, it was without a wood roof, the top being domed over with stonework, leaving a small aperture at the apex. The one at Oxwich is similar: the roof is gone and one-half of the walls levelled, so that the interior structure is easily seen from without. This castle and dovecote was built by Sir Rice Mansell in 1541.

A still more interesting and unexpected find fell to my lot on this beautiful coast, where every inlet and every hamlet has its legend or

The Doorway.



Garway Dovecote. The Interior.

tradition. It is well known to naturalists that the domestic pigeon is descended from the wild-rock pigeon, which still breeds among the caves and rocks of the Gower coast; and a specimen of the Herefordshire farm-house blue-rock pigeon, which I picked out from a number offered for sale, is not only similar to the wild species, but absolutely identical in every detail of marking and color. Even the

half white feather on the outside of the tail is there. At a spot where the cliffs are boldest and highest, close to the pretty fishing village of Port Eynon, I found that in castle-building times, some persons deeply interested in pigeons (tradition says it was a Mansell of Hen-y-Llys, the same family as the builder of Oxwich pigeon-house) had, as an experiment, converted a narrow cleft or cavern in the cliff into a gigantic pigeon-house, evidently intended to attract and, perhaps, partly domesticate the wild-rock pigeons. Very curious is this culver hole, as it is called, and strange that its true use had so long escaped notice. The guide-books and a writer in an old volume of the "*Archæologia*," who gives illustrations of its structure, do not even guess at its original purpose. And yet its name points it out, for culver is an old name for a dove, and in some parts of England dovecotes are still called culver-houses.

The wall which closes the cave entrance is very massive, ten feet thick at the base, where a small aperture, washed at high tide, gives entrance; it is pierced by five windows, and is sixty feet high. The interior of the wall, even to the sides of the windows, are lined with pigeon-holes of the true L shape, as I discovered by means of a most difficult climb. A rough staircase gives access to the upper part of the hall.

It is in Herefordshire, on the border-line along which the defensive castles of Grosmont, Skenfrith, Pembridge and Monmouth were built, that the most perfect example of an Anglo-Norman columbarium is to be found. There, at Garway, in the lonely valley of the Monnow, the Knights Templar founded a preceptory about the thirteenth century. It was not long before the order was disbanded, and their possessions were in this case handed over to the Knights Hospitallers, and then, "in the year 1326, this dovecote was built by brother Richard," as the inscription, worded in Latin and Old English characters, on the tympanum over the doorway tells.

Very carefully brother Richard carried out his work with the aid of Gilbert, the mason, who left his name inscribed on one of the neatly squared and dressed stones of which the interior is built. The domed top is still perfect, with a funnel-like opening in the

Garway.

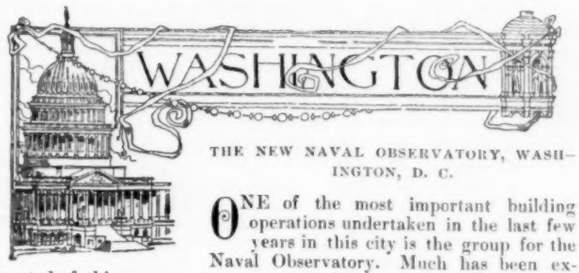
apex. There are 666 nesting-holes in this building, and the walls are three feet nine inches thick. Such a number of nesting-holes are not at all uncommon in buildings of later date; in fact, the largest I came across had 850.

Through all the succeeding centuries the building of pigeon-houses has continued, in many styles, in varied materials, always points of picturesque interest in a rural scene, and sources of pride to their owners. Then, in the early part of our own century, they went out of usage, and since about 1810 no complete detached dovecote has been built in this part of England.

But these notes on the results of a summer's work must draw to a close, and, as for the remainder of the seventy odd pigeon-houses hunted out in Herefordshire, shall not their record be found in the *Royal Archæological Journal*?

Nor must other points of interest be dwelt upon, such as the solitary example of a six-sided pigeon-house at Foxley; the picturesque, dormer-windowed roof at Richard's Castle; another like it I found just over the Worcestershire border — the remote farm-house, with its garden dovecote, at Netherwood, where Queen Elizabeth's Earl of Essex first drew breath; the nesting-holes built in the massive stone front of one small farm-house; the long pigeon-boxes under the projecting moulded beam of another antique-timbered front.

And mingled with these visions of tiled roofs, bull's-eye glazed lanterns, weather-vanes of all fantastic shapes, the gleam and whirl of pigeons' wings as they rise in a body at your approach, there come memories of long tramps on dusty highways, of pleasant ways skirting hop-yards, and through the long, cool, mowing grass; of complaisant curiosity of roadside laborers at my inquiries; of old-time walled gardens with a row of bee-hives in one sunny corner; of pleasant recognition of faces familiar enough on market-days, but not seen before at their own farm-home; of hearty welcome at unknown homesteads, and pointing out of short cuts across the fields, when the glow of the setting sun is dying away on the hedge-rows, and the doves have gone to rest in their red-tiled home. — *Alfred Watkins, in the English Illustrated Magazine.*



THE NEW NAVAL OBSERVATORY, WASHINGTON, D. C.

ONE of the most important building operations undertaken in the last few years in this city is the group for the Naval Observatory. Much has been expected of this movement, on account of its unexcelled location, the amount of money to be expended, the character of work to be done therein, and the reputation of the architect, R. M. Hunt, of New York, to whom the work was intrusted. The instruments are now being moved into the new buildings and it is interesting to know how far our expectations have been fulfilled.

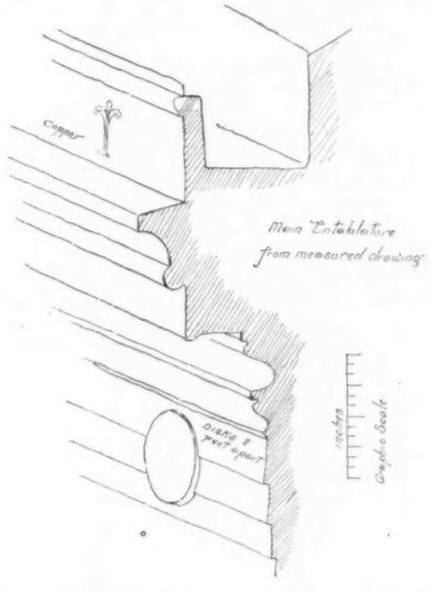
About eleven years ago, during President Arthur's administration, and under Admiral Rodgers as the head of the observatory a limited competition was instituted for plans; this was before the purchase of the new site for the buildings. The result was that to Mr. C. A. Didden was awarded the final preparation of plans and a complete set of drawings was prepared under the direct supervision of

Waiting-room. Transit House. One of the Transit Buildings.

Admiral Rodgers. But before the present site was acquired Admiral Rodgers died, a new administration came into power and under Secretary Whitney, after the ground was purchased, Mr. Hunt was appointed the architect.

The work which was awarded to James McLaughlin has progressed slowly. He failed to carry out his contract, and the buildings ings were taken possession of by the government and are now about completed. They are disappointing both as a whole and in detail The structures are separate, scattered indiscriminately here and there, no effort having been made to group them as a harmonious whole. They are neither far enough apart to be viewed singly, nor placed so as to be effective in a group.

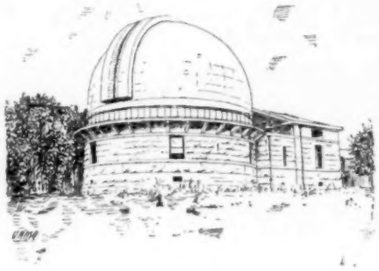
This arrangement, so unfortunate from an artistic standpoint, is due in part at least to astronomical requirements — the buildings being placed so that the large telescope will command a sweep of the horizon and the transits an uninterrupted line parallel with



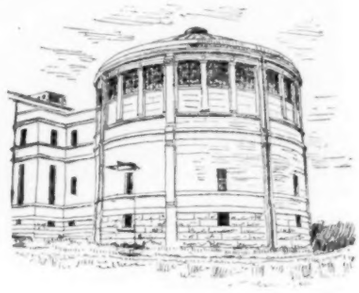
either longitude or latitude. It is a pity that the paramount utilitarian requirements could not have been made to coincide more fully with a pleasing effect. And I cannot see why this might not have been attained by a careful consideration of the subject jointly by the architect and the astronomers.

In addition to the apparent lack of intelligent grouping, there has been little or no effort made to design the separate buildings in harmony with each other. First and most imposing is the office-building — showing a tendency toward the Greek classical, flanked on the east by a circular extension having a conical roof and on the west by the nine-inch telescope tower, with a decided Egyptian leaning. The elevator and stairway shaft obtrudes itself very disagreeably between the two. Adjoining and not more than ten feet from this telescope tower, I should call it, is located one of the transit houses, most incongruous in connection with the marble building which it adjoins; this has the simplest form of a gable roof, the gable end facing the driveway; the sides and roofs are covered with corrugated sheet-iron. It was only after inquiry that I could realize the fact that this and three other similar houses of varying size scattered around with apparent indiscrimination over the grounds were anything but temporary structures put up to accommodate the instruments until more permanent and, particularly, more pleasing ones could be erected. They suggest the most primitive of machine-shops or car-sheds. The iron sides and roof are necessary to keep the building at the same temperature with the exterior air while observations are being made, but why iron buildings so incongruous with surrounding nature and the adjoining buildings were erected no one of whom I have made inquiries seems to have any idea. The most effective detached building is the one for the twenty-six inch telescope; it is built of rock-face marble: the projecting balcony throws strong shadows, and the whole forms a very appropriate base for the large hemispherical dome forty-eight feet in diameter; the small one-story building on the north contains rooms for the observing astronomers. Just north of this building are several small one-story affairs (waiting and retiring rooms), one of rock-face marble, two of wood, two of corrugated iron — none in keeping with the others.

Transit Building, Nine-inch Telescope Tower, Office-Building.



The Twenty-six-inch Telescope Building.



The Library.

The office-building has a low basement and two stories above the ground; it is a long building with centre and end projections. In plan it is simple, a long corridor with office rooms on each side, ending in the east with the library, on the west with a reception-room surrounding the foundation for the nine-inch telescope. The office-building and library are of dressed stone while the telescope end is of rock-face stone.

The main building is decidedly Greek in character and its details should, I think, be judged from a classical standpoint. The wings and central projections are disagreeably proportioned, the height being too great for the width. The windows add materially to this stretched effect, the heights vary from three to four or five times their width. The doorway is low and insignificant, the entablature has no frieze, the cornice and architrave looking as if the builder in a hurry had overlooked this important and effective member of the classical entablature. The only example of such an omission of which I am aware is the Tomb of Amyutal Zu Telmissus,[1] a primitive Asiatic tomb, and the porch of the Caryatides in Athens. The first is crude and rough, the second is the only porch of its kind and exceptional. Both have dentils between the cornice and the architrave, which probably partly do away with the disagreeable impression which is undoubtedly produced by the cornice. Neither, I think, is an example that is to be commended as a model. This treatment is unfortunately emphasized by the copper gutter shown in cut. The foundation for the nine-inch telescope is carried up directly from the ground and is in no way connected with the building which surrounds it; in this way any vibrations from the building are not transmitted to the telescope. The library has a concave or domical ceiling and it is just the proper distance from the floor to permit a sound produced by contact with the floor (which is of tile) to be reflected from the ceiling to the floor and back again until as many as forty distinct echoes are produced from one sound. Nothing has yet been done to stop this echo so annoying to any one who attempts to read or study in this library. The power-house is connected with the cellar of this building by an open brick arch; a constant draught from this source causes a disagreeably musty odor to permeate the building.

The house for the twenty-six-inch telescope has been built of rock-face marble with a stone-floored balcony. This is artistically effective, with its large dome, but from a utilitarian standpoint it is to a certain extent deficient, the heat absorbed by the mass of stonework is given off and passes up in front of the telescope in the form of vibrations, which interfere materially with the use of this large lens. It is necessary in a case of this kind to wait until the temperatures of the air and the stonework have become approximately equal. The machinery for revolving the dome and for opening the sliding shutters was designed and put in by Warner and Swasey of Cleveland, Ohio. The operation of this portion of the building is proving very satisfactory. The same firm will mount the large twenty-six-inch telescope. The floor surrounding this instrument will be made so it can be raised or lowered by hydraulic pressure at the will of the operating astronomer.

The transit buildings or corrugated-iron sheds are so built that the air may pass between the inner and outer shells, thus in the shortest possible time the whole structure which surrounds the instruments becomes of the same temperature and the vibrations of the ascending air is prevented.

The foundations for the large instruments are made in one large mass of concrete cross-shaped in plan, some of them as much as fifteen by thirty feet and twelve to fifteen feet deep, made so as to pass through the surface strata to a hard gravel stratum. The foundations are in no way connected with the foundations of the buildings, or the surrounding earth, the only contact being made where the concrete rests upon the earth at the bottom. The space between this mass of concrete and the surrounding earth is filled with sand. In this way the instruments are best protected from tremors and vibrations produced by local causes on the surface of the ground.

Although the architectural effects are disappointing and there are the slight practical defects mentioned, the Naval Observatory will have quite a good outfit for astronomical work.

[1] J. Buhlman, Architecture, Plate 19. "*Texier L'Asie*," III Vol.

SOCIETIES

ENGINEERS' CLUB OF PHILADELPHIA.

AT the regular meeting, October 15, 1892, Mr. John C. Trautwine, Jr., presented notes on the Distribution of Pressure in Masonry Joints, illustrated with sketches on the blackboard, showing that the true significance of the "middle third" of the joint, and of the "tension" which is said to occur when that limit is exceeded, lies in the fact that masonry joints are practically incapable of resisting tension, so that when in such a joint the resultant of all the pressures falls outside the middle third, the portion of the joint which, if capable of tension, would be called upon to exert it, is simply idle, and the entire pressure is concentrated upon the remainder of the joint, the width of which is three times the distance from the resultant to the nearest edge. Owing to this, the maximum unit pressure in such joints increases very rapidly after the middle third is exceeded; whereas, in a surface capable of resisting tension (such as a cross section of an iron bar) the maximum unit pressure increases uniformly, however far from the centre of the section the resultant may fall.

THE ARCHITECTURAL LEAGUE OF NEW YORK. — AVERY PRIZE, COMPETITION FOR CATALOGUE WORK.

Dated November 1, 1892.

THE Catalogue Committee desire to obtain a cover design for this year's catalogue, which can be used hereafter by making slight changes in lettering. The size of the drawing to be 8 x 14 inches; of suitable character to be printed, reduced one-half, on hand-made rough paper. All the designs to be made in black and white lines on Bristol board. The committee wish to secure a design that will commemorate the opening of the Fine Arts Building. Intending competitors are cautioned, however, that the design must be of a very simple character. Designs can be arranged so that part can be printed in color.

For the best design received on or before December 3, the Committee on Competitions and Awards will pay the sum of $50. The

design should be sent under a *nom-de-plume*, in the usual manner. Designs to be delivered flat, carriage paid, at 47 Liberty St., New York, addressed to E. K. Rossiter.

The lettering to be as follows: "Catalogue of the Eighth Annual Exhibition of the Architectural League of New York, January, 1893. American Fine Arts Building, 215 West 57th Street."

Committee on Competitions and Awards, { E. H. KENDALL, E. K. ROSSITER, GEO. L. HEINS, *Chairman.*

THE T-SQUARE CLUB OF PHILADELPHIA.

THE T-Square Club held its second competition, in the 1892–93 series, on Wednesday evening, November 2, at the club's room, No. 29 North Thirteenth St. The programme for the evening was a "Windmill for a Gentleman's Estate." After the designs had been fully criticised, the awards were made as follows: first mention to Percy Ash, second to A. P. Valentine, third to Frank A. Hays. The programme for the next competition was then announced: "A memorial chapel on a rocky coast." PERCY ASH, *Secretary.*

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

MAIN ENTRANCE, ALLEGHENY COUNTY COURT-HOUSE, PITTSBURGH, PA. H. H. RICHARDSON, ARCHITECT.

[Gelatine Print issued with the International and Imperial Editions only.]

SKETCHES BY THE *American Architect* TRAVELLING-SCHOLAR FOR 1891, MR. ALBERT KAHN, DETROIT, MICH.: TWO SHEETS.

[Issued with the International and Imperial Editions only.]

SKETCHES BY THE *American Architect* TRAVELLING-SCHOLAR FOR 1892, MR. W. MARBURY MACCAFFERTY, BROOKLYN, N. Y.: ONE SHEET.

[Issued with the International and Imperial Editions only.]

HOTEL, NORTH AUGUSTA, GA. MESSRS. ROMEYN & STEVER, ARCHITECTS, NEW YORK, N. Y.

HOUSE FOR J. L. THOMPSON, ESQ., TORONTO, CANADA. MESSRS. DICK & WICKSON, ARCHITECTS, TORONTO, CANADA.

A COLLECTION OF OHIO AND KENTUCKY CHURCHES. MESSRS. CRAPSEY & BROWN, ARCHITECTS, CINCINNATI, OHIO.

BUILDING ON LINCOLN STREET, BOSTON, MASS. MESSRS. WINSLOW & WETHERELL, ARCHITECTS, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

ENTRANCE TO RESIDENCE OF HERR GEBHARD, LEIPSIC, SAXONY. HERR A. ROSSBACH, ARCHITECT.

[Gelatine Print.]

HOUSE AT COLOGNE, PRUSSIA.

[Gelatine Print.]

CARVED-WOOD PANELS FROM VERSAILLES.

[Photogravure.]

NEAR GODESBERG.

TRINITY GROUND, MILE END ROAD, LONDON, ENG.

THIS picturesque little haven of rest for weary mariners is said to have been designed by Sir Christopher Wren. It was erected by the Corporation of the Trinity House, in 1695, for decayed masters and commanders of ships, mates and pilots, and their wives or widows. The end houses have models of old ships on the roofs, there is a chapel, and, on the green is a statue of Captain Robert Sandes, a benefactor to the establishment, who died in 1721.

TRAFALGAR CHAMBERS, ST. MARTIN'S LANE, CHARING CROSS. MR. W. YOULTEN, M. S. A., ARCHITECT.

THE above block of chambers is one of the recent building improvements effected which has so materially tended to architecturally embellish this old and historical London thoroughfare, and which has received more than ordinary attention in consequence of the conspicuously bold treatment of its elevation.

The ground floor is faced with red gauged brickwork, with Portland stone dressings and granite plinths, the treatment of this floor giving to the whole fabric a commendable appearance of stability. At the first-floor level the frontage line proper of this floor is set back some two feet from the ground floor and general building line of frontage, and is faced with malms. The bays which project therefrom to a vertical line over the ground-floor face are of bright red bricks with Mansfield stone dressings, and the dark red of the projecting bays from the lightly-colored background materially enhances the effect of the breaks in the line of frontage. The series of red gauged arches at the ceiling level of the second floor is very satisfactory, while the strongly outlined dormers give a quaint sky-line, and pleasingly break the monotony of the level line of parapets adjacent.

The site extends from the street nearly 200 feet, and on the ground floor and basement in the rear are the trading premises of the building owners whose business has necessitated several very large lantern-lights. The front portion is being let off as offices, each letting having the use of a well-arranged lavatory and water-closet on every floor.

NOTES AND CLIPPINGS.

ELECTRIC-LIGHTS AND INSURANCE. — In discussing the question of defective construction work, one of the New York dailies asks: "Why are not the electric-light companies responsible for fires due to defective wiring?" It also says: "If railroads can be legally forced to pay for fires owing their origin to sparks from locomotives not properly provided with spark-arresters, why should not reckless electric-light corporations be made to bear the burdens caused by their own error or fault? It is clearly possible to introduce the wires in a safe manner, and, failing so to do, the electric-light companies invite trouble, which should accrue to themselves instead of to innocent property-owners or insurance companies. A firm legal application of these principles in a few cases would cause an awakening among the electric people as to the advisability, from a financial point-of-view, of installing better equipments than they have provided in the past." There is evidently some misconception on the part of this writer as to the responsibility of the electric companies and the insurance companies. While there has been much to complain of in the quality and manner of installing electrical equipments in many cases, and admitting the tendency of contractors to spend as little as possible on a job, it must be borne in mind that all the apparatus and wiring in any building is subject to the examination of the Board of Fire Underwriters, and such plants are not put in operation until inspected and passed upon by this Board. It has long been apparent that electricity has worked to benefit the insurance companies in two directions. It is one of the safest risks which an insurance company can handle if the installation is up to the standard, and this question lies in the hands of the underwriters. The record of fires caused by other forms of illumination, covering the same time, shows the number due to electricity to be trifling in comparison. On the other hand, the insurance companies make electricity an excuse for considerably higher rates on buildings where it is installed. Electricity works both ways in favor of the insurance companies, and, but for the object of keeping its dangers before the public, they would have no grounds for complaint. — *Electricity, September* 21.

HARDENING COPPER. — Ferdinand Allard, the Quebec blacksmith, whose discovery of a process of hardening copper is attracting great attention, formerly lived in this city. He was employed in 1840 by the late James W. Lytle, and worked in the shop now run by James W. Lytle, son of the former proprietor. Allard was in the city this spring to see Mr. Lytle. He had specimens of copper hardened by his process, among them a plate about a fourth of an inch thick, in which a bullet was imbedded, and also a three-leaf wagon-spring made of copper. He stated that at tests made by an army officer at Quebec, a plate of his copper about six inches square and a quarter of an inch thick was tried with a plate of iron one inch thick, backed by nine inches of wood, and that a bullet fired from a gun powerful enough to send it completely through the ten inches of iron and wood was successfully stopped by the copper plate, and remained imbedded in it, without breaking the plate in any way. The discovery of the long-lost art of hardening copper has attracted much interest in scientific circles. Mr. Allard has been approached by the governments of England, France and the United States, and by numerous individuals, Edison among others, but has decided for the present to keep the process a secret, at least until fully developed. Mr. Allard is now about seventy-five years old, but very well preserved. He has one son, who shares the secret of the discovery with him. On his visit here this spring, he spent an evening in company with Mr. Lytle looking over the city, but could find little to remind him of Ogdensburg forty years ago, the time of his last previous visit. He promised to send Mr. Lytle a copper cold-chisel. He is a Frenchman, pretty well Americanized, but acts and talks with the nervousness characteristic of his race. — *Ogdensburg Journal.*

PROOF OF THE VALUE OF STATISTICS. — Professor Heilprin, the eminent naturalist who was in charge of the expedition sent up on the "*Kite*" to bring Lieutenant Peary's party back from McCormack's Bay, is down in the Philadelphia directory as a "music-teacher." The *Record* of that city says: "The mystery of this masquerade as a music-teacher seems to lie in the fact that the Professor is an expert pianist. When the name-gatherer called at his North Sixteenth Street residence, the boarder who kindly furnished the information must have made his or her own deductions from the masterly way in which he rattled the keys, and been in blissful ignorance of the fact that the ivories which most engrossed the Professor's mind were some old fossil teeth of monsters who wandered along the silurian shore or played in the jurassic sand."

Ammi B. Young, Architect of the Boston Custom-house. — The writer was a student in his office for the entire years of 1849–50, and of course knew him and his work well. I give some of the more salient points of interest. He was born at Lebanon, N. H., or at least resided there till his years of manhood. He was a brother of Ira Young, a long-celebrated professor at Dartmouth College. The professor was father of the now well-known professor of astronomy. Mr. Ammi B. Young was a carpenter in his early days; but, interested in architecture, procured a few books, and some little instruction of the late Alexander Parris, an architect of some little celebrity in his day here in Boston. Mr. Young was architect for many small buildings in New Hampshire, and in 1835 he began work as architect of the State-house at Montpelier, Vt., which was occupied for the first time in 1837, burned in 1857, and rebuilt by the writer as architect in the two following years. Mr. Young's design for a new custom-house in Boston was adopted about the year 1838, and was finished about 1848. While a student in his office the writer prepared a statement concerning the building which was published in the Boston *Almanac* of some year not far from 1850. Mr. Young was architect for many of the houses at the South End, just then building up. There were certain peculiarities about the finish of his buildings which so unmistakably marked them I think I could to-day point out an hundred of them. I will in passing name but one, and that stands on the northeast corner of Washington Street and Franklin Square, a brick block with freestone finish and cupolas to each house. He was architect of many stores and warehouses; a solid block on State Street making the corner of Merchants' Row, and another behind this on Chatham Street are fair examples. Of his school-houses I name but one, and that is in Charlestown, at the left and rear of the monument. Of churches, I quote the Bromfield Street Church; a fire some years ago destroyed the interior, but all of the present front save the cornice is as he made it. This work was the first and best attempt at a revival of Norman architecture ever made in the city. It was finished in 1849. He was architect for the large United States bonded warehouse on Commercial Street and of other structures on some of the wharves. He was architect of the court-house at Lowell as it now is, another unique example of Norman work. He was also architect of the court-house at East Cambridge (exterior and interior) both substantially as they now are. He removed to Washington about 1852 as architect of the Treasury Building, and his work also comprehended marine hospitals, post-offices and buildings of like nature. During the succeeding years he built many of the buildings named. The post office, destroyed by the great fire at Portland, also the present one at Providence, as well as that at Gloucester, Mass., Rutland, Vt., and many other places, were from his designs. During his residence here, his house was one erected by himself at the south corner of Bowdoin Street and Ashburton Place. He was born and married at Lebanon, N. H., early in the present century, and died at Washington, D. C., about ten years ago, at the age of not far from eighty. — *T. W. S. in Boston Transcript.*

The World's Fair. — Summing up a long editorial on the dedicatory ceremonies at the World's Columbian Fair, and Mr. Depew's remarks in that connection, the *Times* of London says: "We have no wish to depreciate the value and importance of the many services which the United States has rendered to the Old World and to ourselves. Not least among them is the spectacle they have given of a material prosperity greater than had been known before, and of an energy and resolve which have done much to make the powers of nature subservient to the benefit of man, and which have never perhaps displayed themselves on so stupendous a scale as they now do in the yet unfinished preparations for the World's Fair. Well may the American people look with pride on so unexampled a sight as this and listen with gratified self-esteem to the orator who helps them to understand its full value and their own. There is a time, proverbially, for all things, and yesterday, if ever, was a time at which words of high-flown panegyric were so entirely appropriate to the occasion that they must not be censoriously judged. We feel, therefore, that Mr. Chauncey Depew in his Columbian oration has succeeded admirably in striking the right note, and that he has shown singular acumen in what he has said and in what he has omitted to say. We have already described at length the chief features of the great Chicago Exhibition. If we have failed in any way to grasp its full significance, we must beg humbly to be excused, for to do this, Mr. Depew says, demands a celestial intelligence, so vast and overpowering are the varied topics which it calls up. Some points, however, there are which will suggest themselves to ordinary minds. The Chicago World's Fair buildings are most fairly to be judged by comparison with previous structures intended for a like end, and, so judged, they are without an equal or a rival. Quite literally they are first and the rest nowhere, or so far behind as not to come into the running. On no former occasion of the kind has there been anything like them or near them In the extent of ground which they cover, in their structural dimensions, in the number of spectators which they will contain, in the profusion and elegance of their decorations, and in their general adaptability to the purpose for which they have been designed they stand out as supreme. It is idle to say that there are other countries which could do the same if they tried. The fact remains that the United States has done what has never yet been done elsewhere, and has given proof to the world of what wonders can be brought about by industrial enterprise and skill, animated by a patriotic spirit and by a resolve to take the lead in everything. It is a splendid spectacle. We fully recognize the qualities and efforts which have produced it, and we offer our hearty congratulations on the success with which they have been crowned."

The Government Timber Tests. — Some interesting tests of timber are being made at Washington University, St. Louis and elsewhere, under the direction of the Agricultural Department, by Prof. J. B. Johnson, Prof. C. B. Fernow, Chief of the Forestry Division of the Department, Dr. Charles Mohr of Mobile and Prof. C. H. Roth of the University of Michigan. The object of the tests is to determine the relative strength of various kinds of wood. The tests consist of four parts, as follows: the collection of the timber by Doctor Mohr, the physical tests by Professor Johnson, the biological tests by Professor Roth, and the coördination and study of all the results by Professor Fernow and his corps of assistants at Washington, D. C. The part of the work undertaken by Professor Johnson is described in a St. Louis paper. He has a laboratory fitted up with machines for compression tests, cross-bending, crushing endwise, crushing across the grain, tension, etc. The machines used are operated by hydraulic power. When the point of failure is reached, the exact number of pounds required to break the wood is indicated on scales. Logs are used in the tests, and they are shipped to the city without charge for freight, so interested are the railroad companies in the experiments. As soon as the logs are subjected to the cross-bending and crushing-endwise tests they are sawed into sticks, and the other tests, which do not require such large pieces, are then made from the remainder. Professor Johnson has learned that long-leaf yellow pine is the strongest of wood, and that hickory is as strong in tension as cast-iron, and that next to these comes oak. The tests go back to first principles to find out what makes one kind of wood stronger, or more elastic, or harder, or tougher, and so on, than another. The Government hopes to be able to learn why the part of a tree nearest the roots is the best or worst piece of timber in it; what kinds of timber are best suited for certain purposes, so that a builder can specify just what material he wishes to use in his house; and on what kind of soil the best results for certain kinds of trees can be obtained; what, in fact, is it that makes good timber? If definite conclusions can be reached, the facts will be invaluable from both commercial and scientific standpoints. — *New York Evening Post.*

The Cross on the Pantheon. — The cross of the Paris Panthéon has still some chance of remaining in its position. In the first place it has been found that the estimate of 20,000 francs for the removal was based on a price list that is seven years old, and in that period labor and materials have become more costly. At least 1,000*l.* must be expended if the cross is to be carried off as a prize. Another notion has been entertained. It is to remove the two arms, and make of them and the upright portion combined a sort of stand for the tricolor. The authorities of the Department of Civil Buildings were compelled to consider the scheme and invoke the aid of the experience of M. Deschault, who has charge of the building. That gentleman estimates the expense of the operation at 400*l.*, including the cost of the scaffolding. That sum would appear a trifle if there were no additional charges. But the flag that will brave the breeze at such a height is costly and needs to be often renewed. It is not proposed to form a permanent approach to the summit of the dome, and every time a new flag was necessary the fixing would entail an expense of about 9,000 francs. Economy, therefore, dictates resignation before the cross. — *The Architect.*

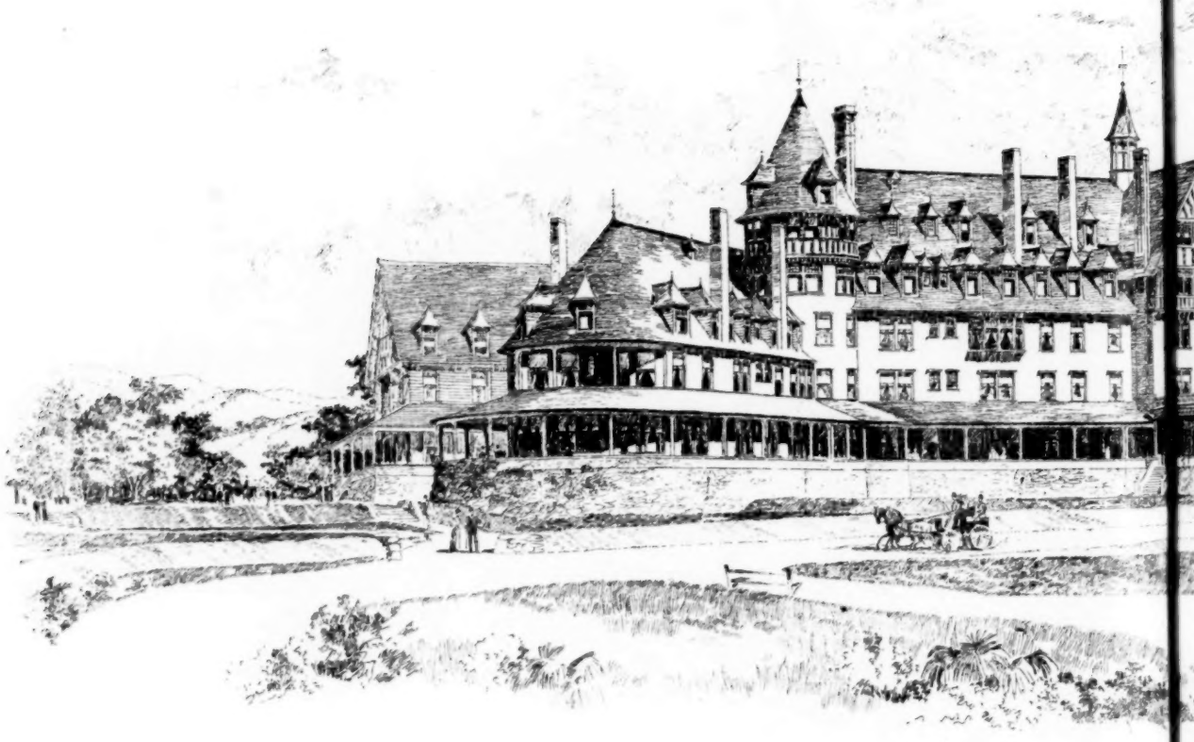
TRADE SURVEYS

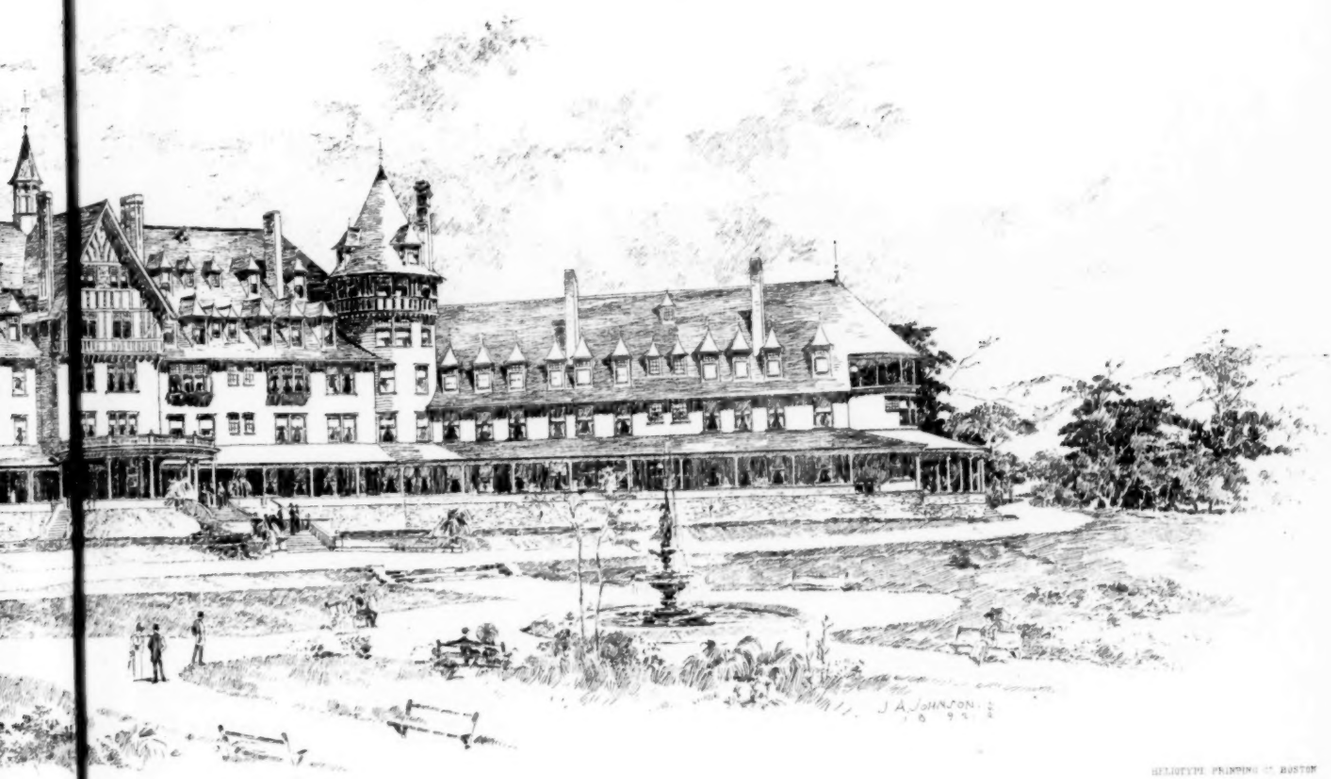
Quietude is the characteristic of all commercial centres. Activity is observable in all industrial centres throughout the country. The banking interests report a heavy demand for money at good rates of interest. Railroad reports show an increased traffic, at uncut rates. The jobbing interests report an active demand for mid-winter stocks. Travellers who have been consulted report a low condition of stocks in retailers' hands. In the iron trade, there is a moderate demand in most branches, but abundant promise of increased demand later on. In railroad-building circles there is nothing new, but it is not yet time to make predictions as to the probable amount of railroad building next year. The result of the election has been a surprise to the manufacturing interests, but it is gratifying to note that there is very little scare. There are several facts which stand in the way of any radical departure from previous legislative methods. In the first place, the necessity for collection of between three and four hundred million dollars each year to run the government forbids any sudden upsetting of existing economic methods. In the next place, the desire of the incoming party to continue in power will probably prevent the adoption of any uncertain measures The election has accomplished good already in assuring the rank and file of voters that such remedial measures will be enacted as circumstances will allow. The industrial situation is strong; the financial situation is safe. The outflow of gold will not be renewed very soon. The export and import trade continues large. The distribution of merchandise throughout the interior is equal to the anticipations of the most sanguine. Building operations continue above the average of the season. Building material of all kinds is cheap, and this fact stimulates enterprise to some extent. The development of natural gas continues in the newer fields; numerous strikes are being reported where the existence of gas was a short time ago unsuspected. The glass factories throughout the country are working on nearly full time. The nail factories have very little stock on hand. The pipe manufacturers are crowded with orders to meet the demands for new lines for oil and gas. There is a steady increase in the number of new enterprises requiring small investments of capital. The tendency of prices is still downward, rather than upward. A great deal of producing-capacity is still idle, and will probably remain so until market requirements justify a heavier output. Confidence prevails in manufacturing and commercial circles generally. The consumptive capacity of the people is greater than at any previous time. Stocks everywhere are under pretty good control. No causes are at work, so far as acute observation can perceive, to bring about any fluctuations in values or other serious disturbances. In foreign countries, a good deal of industrial discontent exists, and failures are more frequent than heretofore. A great deal of labor is disemployed in Great Britain, and its reëmployment is uncertain. There is a large amount of idle capital awaiting employment, and financiers there do not feel safe in making any prediction as to when normal conditions will be reëstablished. On the Continent there is prosperity, generally speaking, but in certain localities depression prevails, owing to sharp competition and enforced idleness.

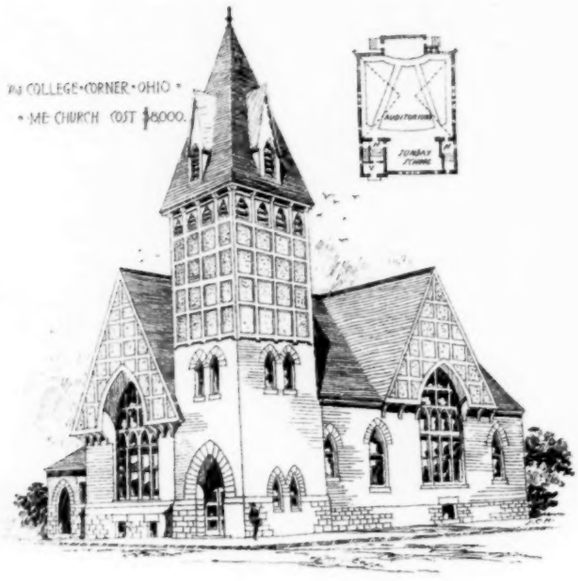
S. J. Parkhill & Co., Printers, Boston, U. S. A.

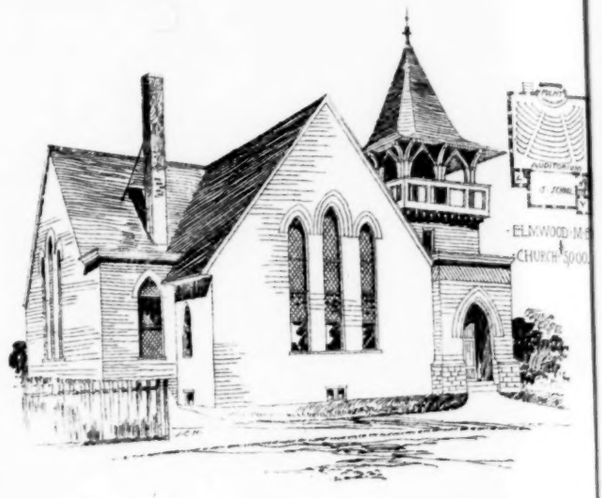
HOTEL AT NORTH AUGUSTA. S.C.

ROMEYN AND STEVER. ARCHITECTS. NEW YORK.




J.A. JOHNSTON





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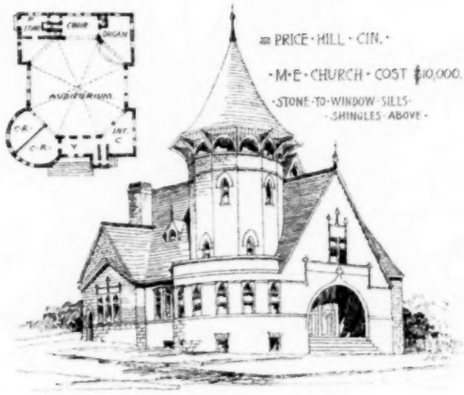

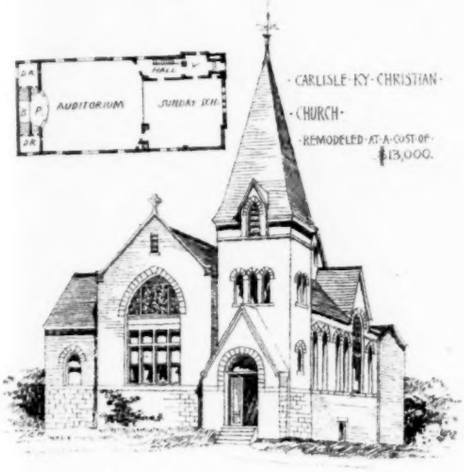

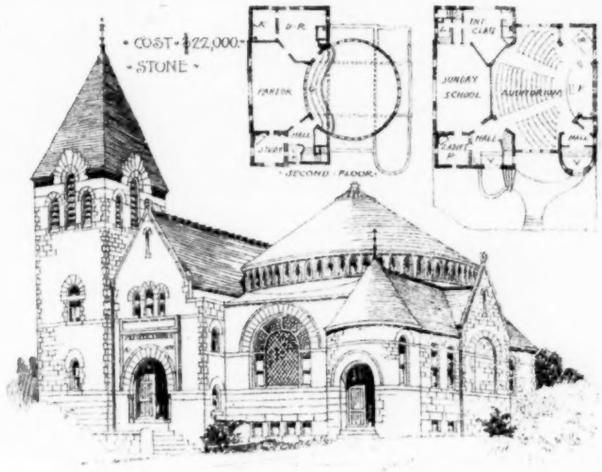

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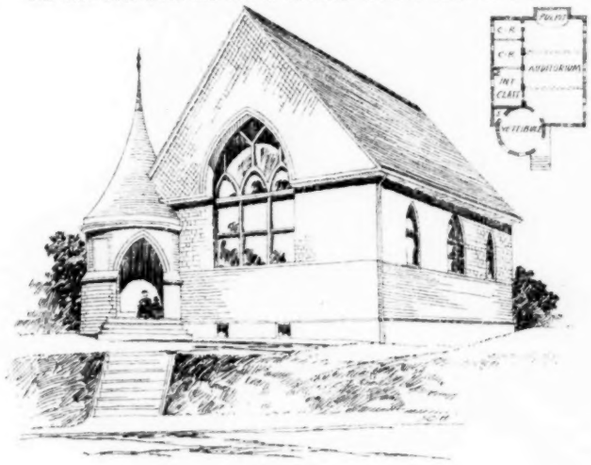

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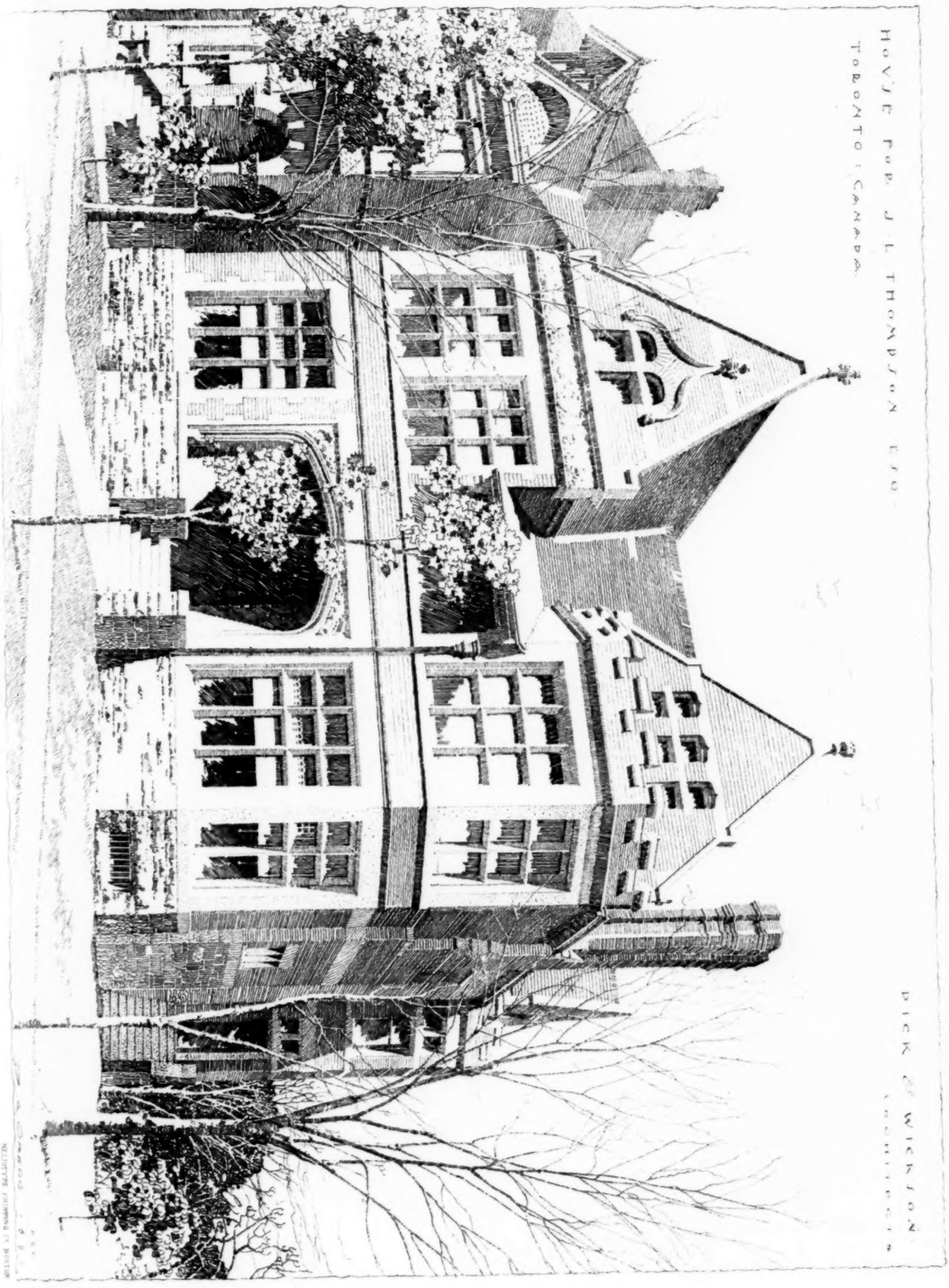

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