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Some of the Results of Strikes.

Of late the fact has come to be recognized that great strikes of workmen, like that which took place a year or two ago in the engineering trades of Great Britain, are a serious blow to national commerce and prosperity. While British manufactories affected by this strike were closed down because of the unreasonable demands of employees, orders for goods which Great Britain was accustomed to supply were finding their way into the hands of manufacturers of the United States and other countries. Much of this trade has been permanently lost. A similar result followed the great strike of workmen in the Welsh slate quarries. The check on supply caused by this strike induced dealers to look abroad. As a result the value of shipments of slates from the United States to Great Britain has increased from \$1,400 in 1893 to \$900,000 in 1898. In such cases the workmen must share with the employers the loss resulting from a restricted market. Viewed from this standpoint, it would seem to be the duty of national governments to declare that strikes will in future be regarded as violations of law, and that differences arising between capital and labor must be decided by arbitration.

In this number are printed the papers The O. A. A. Papers. presented before the Ontario Association of Architects at the annual convention held recently in Toronto, together with the ensuing discussions. They will repay careful perusal. The papers contain information of much interest and value to architects and others connected with architectural work. This information is further amplified and supplemented by the discussions. It has been truly said that one of the most valuable features of a paper is its ability to provoke discussion. From this standpoint, as well as from many others, the success of the papers presented at this convention must be conceded. Mr. W. J. Hynes treated the subject of plastering as

became one who has been identified with the subject in a practical way for more than a quarter of a century. The nature and possibilities of plastering materials were clearly explained, and suggestions made regarding the methods to be adopted to secure satisfactory results. Such an interchange of thought between the architect who designs and supervises the construction of the building and the skilled contractor who executes the work cannot fail to improve the relationship between the two and elevate the standard of workmanship. It has occurred to us to suggest in connection with future conventions, that if printed copies of the papers to be presented could be placed in the hands of members in advance of the meeting, it would tend to promote well considered discussion.

The T Square Club of Philadelphia.

WE have received from this club a volume which serves the double purpose of an exhibition catalogue and an annual review of architectural affairs in Philadelphia. A prominent place is given to a series of letters from eminent architects in the United States, written to answer the question which forms the title at their head: "An Unaffected School of Modern Architecture—will it come?" The T Square Club's view of the present state of affairs is stated in a pathetic extract which is quoted from the address, in French, of their delegate to the International Congress of Architects, held in Brussels in August, 1897. He says (as we translate): "Among our reproductions of Continental architecture, we have already, in Florida, specimens of the Spanish Renaissance as beautiful as any whatever in Spain. In Philadelphia, we have a lofty office building of which the ground and first floors are in the style of Francis the First, as exquisite as any example of that period existing in France. In New York we have a Giralda tower of Seville, and in Boston a library of Sainte-Genevieve in perfection! But, a modern spirit, national, indigeneous, inspired by our own times, which will mark and represent our own times, in place of these servile copies of the monuments of the old world, is still to come, and we await it with impatience." It is remarkable that the letter writers most hopeful of an unaffected style are those two determined stylists, Mr. Louis H. Sullivan and Mr. Ernest Flagg. The latter, whose thoroughly French looking design for the Bronx Park Botanical building appears in the illustrated catalogue of the exhibition, assures us that it is only unacquaintance with the principles that lie beneath the surface that makes people look upon the movement, which derives its origin from France, as an attempt to gallicize American art and a passing fashion. He affirms that it is an evolutionary movement. That may be so, but it does not bear upon it the stamp of such evolution as Mr. Sullivan, who gets at the matter abstractly, finds necessary; that the architect "must absorb into his heart and brain his own country and his own people." The French have a living style. In that truly Renaissance country one enjoys the influence of unity of style which we suppose to have been the architectural charm of cities before the Renaissance. It is no wonder that the ordinary architectural student in Paris is overcome and carries home an impulse which, however fervent for the development of an architectural style in his native country, is much more likely to find the way for it by informing it with his own derived ideas than by the patient absorption into his

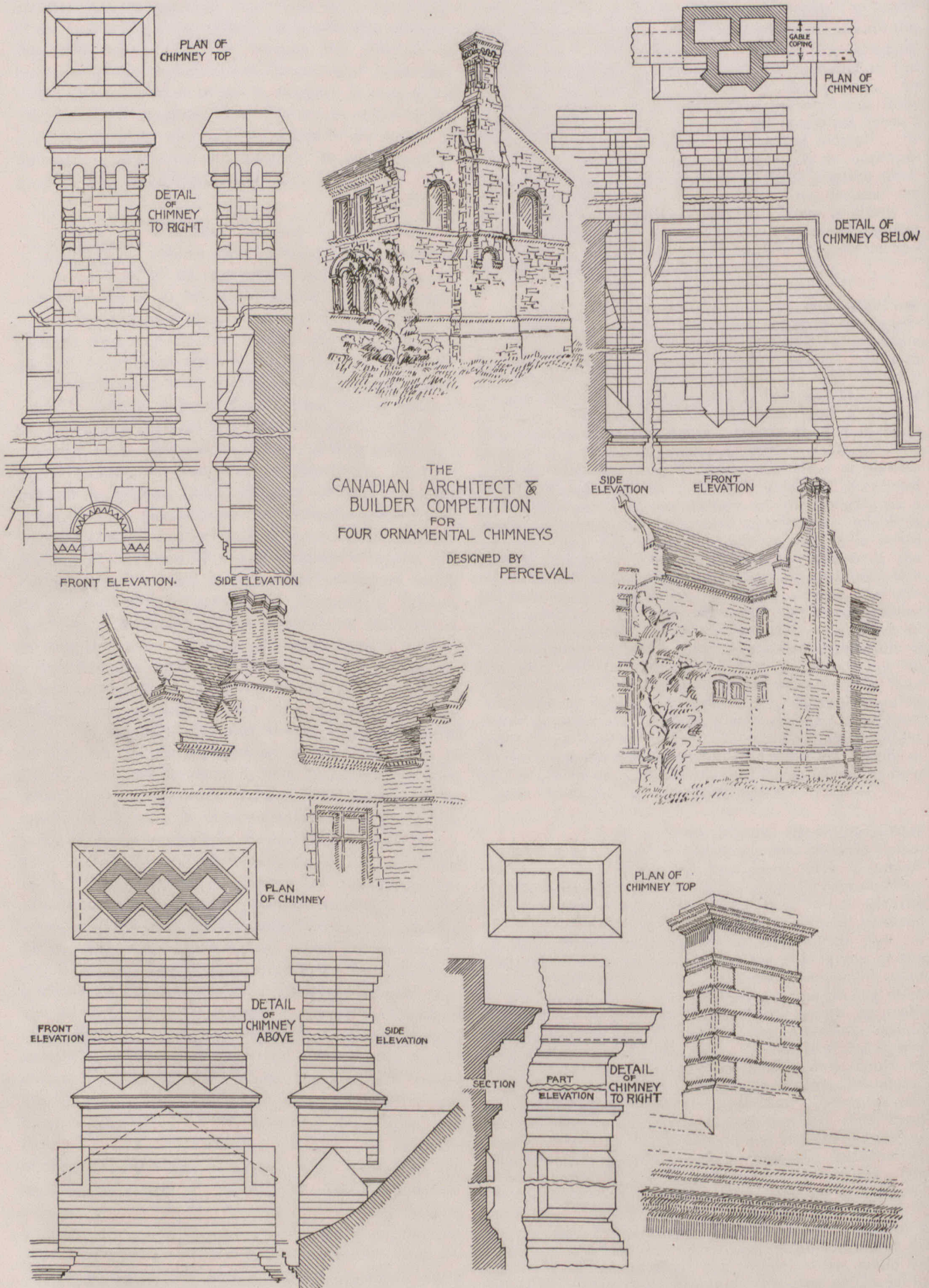
heart and brain of his own country and his own people. This process is a slow one. It is as when a husbandman, having sown his seed, "has long patience with it." The current business of architecture is only a process of cultivation; that very process of absorbing into the heart and brain the needs of their clients. It was possible for an autocratic French monarch to found an architectural style. The president's veto has not the same power. Architecture in the United States, which is of the people and for the people, will be found in the long run to have been formed by the people. As Professor Ware, with thoroughly national and indigeneous expressiveness says, in his excellent letter: "I don't think the T Square Club need worry." If the United States have not a living style in architecture, there is in this production of the T Square Club abundant evidence of a live spirit. The designs are admirable and beautifully rendered. There is plenty of native originality clothed in different styles, but perhaps the most interesting part of the book is the genuine and serious earnestness of the letter press.

Restrictive Legislation.

WE regret to observe that a bill has recently been introduced in the Legislature of British Columbia which aims to make illegal any contract for labor entered into with persons in other parts of Canada, as well as with persons in foreign countries before their arrival in that province. The fact that the bill was read a second time without a division would indicate that it is likely to be placed on the statute books of the province. We have no sympathy whatever with this class of legislation, believing it to be a factor calculated to retard rather than advance the welfare of the country as a whole, as well as the particular province to which it applies. The Dominion Parliament was in a sense obliged to pass an alien labor law by reason of the legislation of similar character previously adopted and enforced against Canadians by the government of the United States. We trust, however, that at no distant day the governments of the two countries may reach an understanding by which narrow minded legislation of this sort will be abolished. The proposed law in British Columbia is infinitely more objectionable than the national legislation referred to, inasmuch as it would discriminate between persons residing in different parts of our own Dominion. To our mind, there should be the freest possible intercourse between the people of all the provinces, such intercourse being one of the best means of building up an united nation.

The O. A. A.

IN a letter printed elsewhere in this number regarding the Ontario Association of Architects, Mr. Gambier-Bousfield strongly commends the proposal made by Mr. Baker, at the recent convention, that rooms for the use of the members of the Association should be fitted up and conveniently located in the central part of Toronto. From our point of view, this is one of the lesser requirements. The expenses connected with fitting up rooms in a suitable manner, and placing them in charge of an attendant so that they would be available at all times for the use of the members, would amount to a considerable sum. We believe the money which would be required for this purpose could be expended to much better advantage in other directions, as for example in prizes to students. The most important work to which the Association can apply itself would seem to be in the direction of cultivating closer relations between the students and the Association, and in awakening public interest in architecture. The first of these objects could perhaps best be attained by instituting competitions and offering prizes, or, if the necessary funds could be obtained, to institute a travelling studentship. The second object would be greatly assisted if some of the municipalities could be induced to follow the example of the city of Paris in offering yearly prizes for the building of the best design erected during the year.





HOUSE ON BEACON HILL, VICTORIA, B.C.
S. MACLURE, ARCHITECT.

CODE FOR COMPETITIONS.

THE hard times through which the architectural profession has just passed, when even the best established architectural firms have had little work—and even, at times, no work—to do, have been a time of severe trial for the morale of the profession. There have been points in which it has not stood the test. In particular, the small irregular competition has claimed its victims among men who ought to have stood by the profession in the determination not to countenance the competition system except when reasonably used. The great question for architects is how to persuade the public out of the idea that an architect's sketches cost him nothing, and that it is reasonable to ask an architect to do preliminary work for nothing, merely for the hope of getting work by it. This view may have been reasonable once, when the work of an architect was not what it now is; but it is unreasonable now, and would not stand for a moment if architects were quite clear about it themselves, or were quite clear that they were all agreed about its unreasonableness. As long as the camp is weak or divided it must accept any terms that are offered to it.

What, then, constitutes reasonableness in a competition, and what unreasonableness? It is generally accepted by the profession that under some circumstances a competition is a good thing; that it makes men who are in a position to get the work without competition exert themselves more when they are obliged to compete for it; that it brings forward unknown men who would never otherwise have had a chance; that it is excellent practice for young architects, who can, by entering many competitions for practice, learn ultimately how to succeed and become winners. We are unable to point to evidence in support of any of these propositions. Sir Charles Barry, who founded the type for legislative buildings in Europe, and H. H. Richardson, who founded the type for municipal buildings in America, did so in competition; but these were the great artists of their day; it required no competition to decide upon their selection for such work, and nobody who has read their lives can imagine that the fact of the design being made in competition would make any difference in the enthusiastic energy with which they attacked their work. On the other hand, Mr. Street's Law Courts, won in competition, were probably his worst work; and Mr. Colcutt, the winner of the other great London competition of this generation, the Imperial Institute, has not risen at all to the occasion, but has missed the suggestion of imperial character in an extraordinary manner. Of the unknown men to whom competition has been an opportunity, the greatest example was perhaps Mr. Gribble, the designer of the Brompton Oratory. How his subsequent practice fared or is faring we do not know; his name has not since appeared in any way to attract attention. But his design, which remains, attracts the feet of no pilgrims but the religious; it is as dull as a faithful rendering of the Italian Renaissance can make it. This was the fault of the style, no doubt, more than of the man. The Italian style, which has come to be the style of the Church of Rome, is dull; and, though graceful variants upon it are possible and have been done, they were not done in competition. A competition is not the place for originality which affects the question of taste. The expert arbitrator is but a man; he has a taste of his own, and to expect him to father anything that is strongly marked by the character of the designer, or which in any way savors of a new departure, is to ask him to exhibit qualities incompatible with the very qualities which are the ground of his appointment as arbitrator; that is to say, such marked personal qualities and attainments as are sure to be associated with a marked predilection of taste and tendency in style, even if he has not, as is most likely, arrived at the settled time of life when a man's ideas are no longer free and unrestrained, but are safely housed under a school of thought. It has been notorious in England that the frequent appointment of Mr. Alfred Waterhouse as arbitrator produced a crop of competition designs which threatened to make the prevailing

style of important buildings an imitation of the hard, liney Gothic, which is his peculiar style. Even if the arbitrator has not himself practiced in a style so marked as to indicate a bias of taste, he will not readily take up with another man's taste, and will consider, wisely, that he is best exercising his trust by keeping to safe lines in his recommendation of design. Here, then, is the answer to the argument that competitions are good practice for young architects. They are good practice to enable him to win competitions, but, if he wins, the probability is that the native quality in his style will receive that same chastening which in another branch of art communicates the impersonality of the journalist to his style and distinguishes it from literature.

It is, however, generally agreed by architects that a competition is a good thing under some circumstances. What are these circumstances? It is conceivable that a work that promises to be greater than the known capacity of local designers may justify the institution of a competition that will require them to prove their powers on paper and will also, if they should turn out to be insufficient, give an opportunity to a competent designer from outside to come in and show his sufficiency. It may also happen, when a great public building is in project, that, though there is no doubt about the capability of the profession at home, there is no machinery for making a choice. There is really no logic in favor of competition in this case as far as architecture is concerned, for each designer who enters the competition would, if given the work and opportunity to study it in consultation with the promoters, probably do better work than any would do in competition; but the case is a difficult one to manage in practice without a competition; and, where the work is of sufficient importance to be the prize of a lifetime, or at any rate a great prize, it is perhaps best, though not strictly reasonable, that architects should join with the public in adopting this method of settling the matter. But the public see no reason why the system should stop there, and the proof of the contrary position lies with the profession. They must support no competitions that put the profession in the position of struggling with one another for work, which is an ordinary problem; not large, not new; which is therefore presumably within the power of all; and to compete for which is therefore not to wrestle with the difficulties of a new problem but to struggle with each other for the possession of the work. This kind of struggle is not only undignified but is a most short-sighted policy. It ends in work for all with pay for one, and even he must do more for his pay than he would otherwise need to do. It means the indoctrination of the public with the idea that architects are always ready to do preliminary work for nothing and to try to oust each other.

The best way to settle the question of how far the competition system shall go is to have an absolute set of conditions of competition in which the principle shall be recognized that competitions are not a convenience for architects so much as for the promoters of the competitions, and that for this convenience they must be willing to pay in the shape of a direct fee to the competitors or premiums to the three or four ranked first, besides the cost of employing an expert arbitrator of high standing. This expense, which will be only a reasonable consideration for projects of such importance that they appropriately become the subjects of a competition, will choke off effectually all minor schemes of which the object is not so much to procure a better design as to sweat designers.

The Ontario Association of Architects has drawn up such conditions, and, in spite of want of recognition as yet by promoters of competitions and want of unanimity in rigid adherence to the conditions by members of the Association, there is no doubt that the formulation of the idea of a proper competition has been of great service, and conduced to stability of mind in the profession. The neglect of the conditions by members of the Association has been small and, compared with the adherence to them, not important; nor has the experience of those who accepted irregular conditions been such as to encourage them.



(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

IMPORTANT TO CONTRACTORS.

A Bill is now before the Quebec Legislature to amend the law relating to contractors, in such a way that the number of years for which a contractor is held responsible for his work shall be reduced, and also that each contractor and sub-contractor shall be held individually responsible, instead of the responsibility being placed entirely upon the general contractors as at present. A deputation, composed of Messrs. Sauvageau, president of the Liberal Contractors' Club, and Messrs. Lemoine, Lamarche, Leland, and Leveille, visited Quebec recently in support of the measure.

A COSTLY BLUNDER.

The civic hospital building in this city is an excellent example of short sighted economy. The building was erected about twelve years ago at a cost of about \$75,000. There was no proper foundation put under it, and from this cause the structure is now in a state of decay and declared to be uninhabitable. The Health Committee have recommended that plans be invited for a new building to cost about \$35,000. There appears to have been wilful mismanagement in connection with the institution, in view of the fact that some years ago the Legislature voted \$10,000 to cover the cost of putting in a proper foundation for the existing buildings, but the money is said to have been appropriated by the Council for other purposes.

PLUMBING REGULATIONS.

A deputation, headed by Mr. J. W. Hughes, the well-known plumber, waited on the Health Committee of the Council recently, to protest against the failure of the sanitary engineer to comply with the provision that the drainage system of all new houses must be inspected and certified before the building can be occupied. The deputation stated that only two hundred out of eight hundred new houses had thus been inspected. The sanitary engineer claimed that he had been unable to obtain lists of the new houses from the building inspector. A sub-committee of the Health Committee was appointed to enquire into and report on the matter, which has an important bearing on the public health.

A MUNICIPAL INVESTIGATION.

A disgraceful condition of affairs is being revealed as the result of enquiries by a committee of the Council appointed to investigate the claims of certain contractors for work done without the sanction of the proper authorities. The committee report that in connection with certain repairs at No. 16 Police Station, a local plumbing firm has presented an account amounting to \$511.55, which, at an outside valuation, should not have been more than \$297.55. Well known and responsible plumbers, who were called in as experts, stated that they would be prepared to contract for the work at \$250. Again, with reference to an account of another local firm amounting to \$1,540.11 for installing a hot water heating system, the committee report that the work could be duplicated for \$600. The committee state that in these cases no tenders were called for, and the work was ordered without sanction of the Police Committee, and in direct violation of the expressed wish of Council. A similar condition of affairs is shown to exist in connection with work done at No. 12 Police Station, where a charge of \$1,987.33 was made for work which the city's experts claim could be duplicated

for \$1,081.31, this latter figure including a handsome profit. In one of these accounts appears a charge for 117 pounds of solder. The experts declare that not more than 50 pounds could possibly have been required. Labor amounting to almost three months' continuous time for man and helper was charged, which is declared to be out of all proportion to the amount of work accomplished. A stairway consisting of ten treads leading from the main floor to the cellar in No. 15 Police Station is said to have been charged at \$2,500. Evidently there is need for a searching investigation into this whole matter, and perhaps also the scope of the enquiry might profitably be enlarged.

FIRE TEST.

A most successful test was made on St. James Street a few days ago of a fire retarding material called Salamanda by The American Fireroofing Company, Boston, under the direct superintendence of their general manager, Mr. Chas. S. Ellis and their agents, Webster Bros. & Parkes, of this city, a large number of the leading architects, fire underwriters and fire department officials being present. The first test was of a house built of $\frac{7}{8}$ spruce tongued and grooved and lined inside with No. 3 Salamander and measuring 48 x 40 x 40 in., into which a flue was inserted and a draught door. This was filled with kindling saturated with coal oil and the flames allowed to play directly on the Salamander, a condition not usually associated with ordinary construction. The furnace heat was kept up by fresh supplies of fuel, and 40 minutes elapsed before the fire penetrated to the wood and came through. During the whole of this time the outside of the building was so cool that the bare hand could be comfortably placed on it. The second test was to show the use of the Salamander as a fire retardent for ceilings. A section of ceiling covered with No. 1 Salamander, the lightest made by the Company, and with No. 2, the next grade, was placed over a furnace built with brick and filled with kindling wood saturated with coal oil. The No. 1 stood the test for 13 minutes, when by a regrettable accident it was perforated by the operator and the flames came through. The No. 2 stood for 32 minutes, thus proving conclusively that as a fire retardent it had accomplished its purpose. The third test was of a 3' section of flooring composed of a rough underfloor of $\frac{7}{8}$ spruce on which a layer of No. 2 Salamander was laid and on this a finished floor of $\frac{7}{8}$ spruce was nailed in the usual manner. For 60 minutes the fire roared and blazed, being fed with wood saturated with coal oil. During the whole of this time the top floor remained cool enough for the hand to be placed on it without any discomfort. At the expiration of 55 minutes Mr. Carver, of Boston, got on the flooring to show that the tensile strength of the boards was not destroyed and after being exposed to the fierce flames for 60 minutes it still held out, and on being removed the top floor was practically uninjured. This Salamander has been in use in Boston and the Eastern States for the last sixteen years, and in the city of Boston is of such known value that the Insurance companies allow a rebate of 5% off their rates where it is employed, and it is accepted by the Building Committee of the city in lieu of 1 inch of concrete, terra cotta or plaster.

NOTES.

Mr. John Clifford, one of the oldest and most highly respected contractors of this city, passed away a few days ago.

A by-law is now under consideration of the town council of Westmount, which provides that no building shall in future be erected covering more than 60 per cent of the ground area.

The Annual Exhibition of the Royal Canadian Academy is announced to open on the 7th of April, in the gallery of the Art Association. Exhibitors are required to send in their exhibits before the 28th of March.

The recent Conversazione of students of the Faculty of Applied Science of McGill University was held in the McDonald Engineering Building. Refreshments were served and dancing took place in the rooms of the Architectural Department.

A clause in the new City Charter proposes to place an impost of \$25 on vehicles used to bring building stone from outside municipalities into the city. The proposal is properly regarded as being too restrictive, and likely to injure rather than benefit the city's interests.

On behalf of the Estate of the late Duncan McIntyre, a peculiar request was recently made to the Finance Committee of the City Council, namely, that the proportion of the taxes for the unexpired term on the building destroyed by fire on Victoria Square be refunded. This is the first instance in which such a claim has been made, and the same has been referred to the city's solicitors.

HAMILTON

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

THE building operations for the year 1898 as reported in the January number of this paper are no doubt quite correct, and for the purpose of comparison with former years are useful, but they do not, nor are they intended to, show the correct expenditure on buildings during the year. For instance, some buildings completed last year had permits taken out in the year before, and as the report is made up from the list of permits issued, these do not appear. In the city of Hamilton the actual

amount spent last year probably would amount to half as much again as shown, and therefore 1898 stands as a prosperous year for Hamilton, and a long way ahead of previous years. The outlook for the present year is not exciting; there is nothing very much talked of, but the general idea seems to be that it will be a good year, though the buildings put up will not be of a very important character.

Out of the report of the convention of the Ontario Association of Architects, which the architects in Hamilton have read with more than usual interest this year because the Association has reached a critical condition, there is one good thing reported—good, as savoring of benefit to architects outside Toronto—that is the suggestion to have, at last, some down-town rooms as headquarters. If this is carried out, there will be a possibility of absent members being able to take an interest in the Association. There will be a place to which they can go when in Toronto, where they may chance to see some city members and gather news and information, and return the better for the visit. But it strikes us in Hamilton very forcibly that the Toronto Chapter and its management are a good deal more up-to-date than the Association proper and its board of directors, and that if the Chapter chose it might become an independent body, with very great advantage to the profession. It has been said that the Chapter is the Association. If it is, only let it act as such and have power to act, and shake off the clog which is hanging about its neck and get out of the groove that is the Associations' bane. It will set an example such as is needed, and other Chapters will be formed in other places, and in time a new association of the province will be matured, which from its very nature must be successful.

The Hamilton Builders' Exchange is meeting with extraordinary success and its membership is running up fast. Its rooms are central and open at all times. The architects of the city have been invited to become honorary members and their co-operation is requested to make the Exchange a success in every way. In many ways this honorary membership of the architects may be of assistance to the Exchange, and it will certainly be a convenience to architects as affording them an easy means of reaching contractors.

R. W. GAMBIER-BOUSFIELD.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

An amendment to the Quebec Architects' Act has just passed the legislature, permitting students who had commenced their course of studies in an architect's office previous to the passing of the charter of the P.Q.A.A., as amended by 61 Victoria, chap. 33, to register proof of such studentship with the secretary of the Association within three months from date, and as soon as the

period of studentship provided for by the original act, viz., four years, shall have been fulfilled, the said student shall be admitted on passing the examinations provided for admission to practice, the same as if they had duly passed the preliminary examinations before commencing studentship.

At a special meeting of the Council of the Association, held in the rooms of the Association Friday the 27th of January, it was proposed by Mr. E. Maxwell, seconded by Mr. J. S. Archibald, that: "The members of the Province of Quebec Association of Architects learned with heartfelt grief of the death of their esteemed fellow-member, Mr. A. S. Fowler, and that a copy of the present resolution be sent to the family."

ILLUSTRATIONS.

EXTERIOR AND INTERIOR VIEWS OF HOUSE ON BEACON HILL, VICTORIA, B.C.—S. MACLURE, ARCHITECT.

RESIDENCE OF MR. G. T. FULFORD, BROCKVILLE, ONT.—A. W. FULLER, ARCHITECT.

C. A. & B. COMPETITION FOR FOUR CHIMNEYS.—DESIGNS BY "CAZA" (MR. A. CHAPMAN, TORONTO), AWARDED FIRST POSITION; AND BY "PERCIVAL" (MR. ELMER H. RUSSELL, TORONTO), AWARDED SECOND POSITION.

MONTREAL MASTER PLUMBERS' ASSOCIATION.

The annual banquet of the above Association was held on the evening of the 13th inst., in the Balmoral Castle Hotel, the president, Mr. John Watson, presiding. The attendance of members and guests numbered about one hundred. Occupying places of honor at the table were ex-president Harris, representing the National Plumbers' Association; James Simpson, president of the Montreal Builders' Exchange; Joseph Venne, secretary of the Province of Quebec Association of Architects; J. M. Taylor, manager of the Dominion Radiator Company, Toronto; J. O. Thorne, manager of the Metallic Roofing Company, Toronto; Messrs. J. A. Lamarche, William Ramsay, J. W. Hughes, E. C. Mount, E. Watson, J. P. O'Leary, Kingsley, Blais, Egan, Powell, Davis, Beaupre, Gibeau, Poole, Giroux, W. Beaupre jr., Stewart, Lessard, Forest, Lamontagne, Warmole, Anill, Thibeault, Goodman, Dickson, Lawrence, Fournier, Gordon, Martin, Tremblay, Date, Saunders, McEntee, Hebert, Lesperance, Prudhomme, Lecours, Woodham, Pettigrew, Walsh and Murray. Letters of regret were read from the president of the National Association, Mr. Wm. Smith, Mayor Prefontaine, J. R. Wilson, representing Thomas Robertson & Company; Thomas J. Tout, representing the National Association of the United States; A. E. McMichael, of the James Robertson Company; Edward Gurney, of the Gurney Foundry Company, and R. J. Lockhart.

After the usual loyal toasts, the president proposed the health of the National Association, which was responded to by Mr. J. W. Harris and M. E. Lesperance. Following the toast to the city of Montreal came speeches from Mr. Lamarche and Mr. Hughes commenting upon the absence of any representative of the Sanitary Committee of the city council, and the failure of the Council to enforce the provisions of the plumbing by-law. The toast "Our Guests" brought suitable replies from Mr. H. McLaren, Mr. John M. Taylor, Joseph Venne, Mr. James Simpson and Mr. Anthes. Suitable reference, was made in connection with the toast to "Absent Friends", to the removal by death of Messrs Charles Jacotal, William Briggs and Fred Horton. Messrs. John M. Taylor, P. Carroll and Mr. Wynne responded in a happy manner to the toast to the "Ladies." Messrs Poole, Davis, Fournier and Giroux provided musical entertainment. The success of the Banquet is largely due to the following Committee of Management: J. W. Harris, chairman; E. C. Mount, secretary; P. C. Ogilvie, treasurer; Thos. Moll, J. Sadler, E. Lesperance and J. N. Lariviere.

Mr. Alex. G. Fowler, architect, of Montreal, who died on Thursday, Jan. 26th, aged 75, was one of the first members of the P.Q.A.A., having joined the Association in 1890, and continued a member since. He came to this country during the building of the Victoria bridge, on which he worked as a superintendent until the bridge was opened. Since then he has practised as architect. Among the many buildings which have been erected under his superintendence may be mentioned: The Bell Telephone Building, on St. Catharine street; warehouses for Messrs. Thomas Robertson & Co., on Craig street; for Messrs. Laing & Sons, on Parthenais street; rolling mill and tack factory for Messrs. Peck, Benny & Co.; Zion church, Stanley street church, besides numerous houses and stores scattered over the city.

THE ADVANCEMENT OF PUBLIC TASTE IN ARCHITECTURE.*

A few weeks ago Mr. Langton came to my office and asked for the title of the paper I was to read at the Conference this year. This was the first intimation I had received that a paper was expected from me. However, I believe it is the duty of every member of the society to do his share towards making our annual meeting a success, and although through want of leisure my attempt will not be of the value I would like it to be; I will not withhold it on that account, but give it for what it is worth.

A few days after the interview with Mr. Langton, I have just mentioned, I had the privilege of hearing the Rev. Mr. Shortt lecture to the Toronto Chapter, and he gave me the keynote for my remarks to-day in deploring the state of ignorance existing in the public mind regarding architecture, and suggesting that some method should be found and used—by architects—for its enlightenment. I therefore selected the subject you find on the agenda, "The Advancement of Public Taste in Architecture." I will not, however, promise to stick very closely to my text, as I shall have, perhaps, quite as much to say about the taste of architects themselves.

The architect from the popular point of view is a pictorial artist on a large scale, and of all the arts his is the one most capable of prolonged effort in design, music and poetry coming next. Again the painter will produce pictures to frame and hang on a wall to be seen only by a chosen or limited number; a sculptor will adorn a pedestal with his effort, and only those who seek it find it; music and poetry reach an increased number, but architecture, as a decorative art, is seen by all men at all times, and its silent influence, consciously or unconsciously, affects the minds of the cultured and uncultured.

To speak broadly, there are two faculties displayed in the architectural art—*invention and imagination*—one *constructional* and the other *aesthetic*. *Invention* has to do with the plan and scheme of a building and the relationship of its parts—the artist calling this faculty into play in much the same way as the dramatist creates characters; disposes of their destinies; thinks out the course of events in his story, and sets the scenes. This can all be done by the faculty of *invention*. Having made the plan and settled the scheme of the structure, its heights and sizes, *imagination* does the rest, and clothes it with beauty. The construction will, of course, give the motive of the design. Every structural problem will be met and solved before the building is begun, and the architectural design keep pace step by step with the construction, partly modifying it and making it obedient to artistic consideration.

It is of the decorative or imaginative side of the art that I wish to speak—the side which appeals most to the public.

We are all the time seeing and handling things which are beautiful and give us pleasure, or ugly and give us pain. There is nothing, however, to compel us to look at poor pictures or distorted statues; but we cannot escape the ugly buildings which disfigure our streets. Nor can we prevent the baneful influence of such bad buildings on the minds of our children, who, unfortunately, grow familiar with them, and whose tastes will, in all probability, become as corrupt as those of the public to-day.

Considering then that architecture as a decorative art is so transcendently important, is it not astonishing that the bad architecture should have been so long a matter of indifference, or at any rate so long tolerated by the educated public?

The first question I ask therefore, and will endeavor to answer is—"How is the Public Taste to be trained to a better judgment in matters of architecture—a better appreciation of art—and taught to know good architectural design from bad?"

The first essential is, that the public shall be induced to take an interest in architecture, and shall be educated to do so. How is this to be achieved? Not so much by talking as by doing. Not so much by lectures and papers and art criticism as by our actual work in stone and brick and wood. By the quality of the art set before it will the public taste be healthy or unhealthy. It depends, therefore, upon the architects themselves in the greatest measure whether there shall be any advancement in the popular appreciation of our art.

The next essential is closer and more friendly relations between the public and the profession. While I don't agree that the feeling of contempt that is sometimes spoken of exists, except amongst the least thinking class, it is undoubtedly true that there could be a more mutual feeling of respect between them.

It is said that culture only means the development of new

relations between ourselves and the world around us—a better understanding of how one thing affects another. This can be made clear perhaps by imagining the way in which every individual would conduct himself towards the rest in a society of the highest possible culture. Courtesy would of course be the rule. Each person would recognize the welfare of the whole as of the utmost importance, and do all in his power to establish it. Nothing would be done in a spirit of selfishness or to draw attention. All would be in sympathy and work in harmony. Under conditions such as these architecture could attain to something like popular appreciation.

My second question is—"Are we architects going to work in the right way to produce the best of which we are capable, or are we working under hopeless conditions, which must prevent not only any originality, but even tolerably good work?"

Any art is valuable only so long as the artist can be seen in it. The inanimate material which the artist handles, be it a lump of clay, a stretch of canvas, or a heap of stones or bricks, is quickened into life by the artist's communication of his own spirit into the thing. I mean, of course, without pre-meditation, resulting in unconscious expression. We all know of some buildings which have been erected under conditions where the thought of the architect can be read, and his hand traced not only in the general design but in the minutest feature. Such buildings are interesting because they have character, and they owe it to the impress of the architect's personality on his work; and it is only such that can charm and interest the uneducated as well as the educated, and that really deserve the name of architecture.

In the middle ages very much was left to the trained workmen which the architect—or master builder—employed, but they worked under his personal direction, and he was always on the spot to tell them what to do and how to do it; and often himself worked with mallet and chisel on the sculpture which adorned the building.

If this supervision over every part of the building was necessary then, when the architect had under him a skilled body of artizans, trained to the methods of a single school; how much more necessary must it be at the present day when he has no such traditions? They have to work one week in one style and the next in another, and then probably in no style at all. No wonder they are hopelessly at sea when left to themselves. The architect of to-day should, therefore, think no part of his work too small for his attention; everything should be thought out, studied, and the smallest detail designed as carefully as the more important.

It is hardly necessary to say that this has not been done with a large proportion of the buildings in our cities. It is a melancholy fact that much that has been produced is either positively bad or absolutely uninteresting. The buildings that are offensively bad are so from sheer ignorance or contempt for the recognized rules of art, and those that are dull and stupid often are so from the mere mechanical repetition of stock forms and stale ideas, which do duty for thought and save trouble of invention. With others truth has been sacrificed to whim, orders have been painfully caricatured, the details are inappropriate and often out of their proper position—a meaningless combination of forms, freaks and devices, dressed up to look fresh and clever. An uncultured and unappreciative public will call any extravagance fresh and clever until they are taught to know that there is a violation of some law. But the architect who does these things wins a cheap, but doubtful, reputation by pandering to a taste, which if he does not know is bad it is because his taste is no better than their own. He does not fear to blunder in his details, because he knows there is no one to detect them. His safety is in public ignorance.

How essentially different was it when the Greek architects were building. They were encouraged or admonished by the knowledge that they were watched by the trained and cultured eyes of all the Athenian people.

Every citizen was an intelligent critic. No Greek architect could deceive the public with a false proportion or vulgar profile; neither were they deceived by abundance of ornament covering a weak design. Nothing but purity and perfection obtained for the architect a reward. But when their high ideal of art was reached the appreciation and applause were promptly and ungrudgingly given and the reward—riches, honor and fame.

But alas for the architect to-day who is endowed with creative imagination and a keen sense of duty—whose profession is dear to him because of his love for his art. There is little in the condition of public sentiment from which he may draw inspiration and encouragement. He will see bad work pretty generally admired poor work too often approved.

* Paper presented at the eleventh convention of the Ontario Association of Architects.

I now come to the question, "Is not the public taste in Architecture retarded by a want of respect amongst architects for each other, and for which they are responsible more or less? I mean an absence of professional etiquette—the esprit-de-corps of other professions.

Sometime ago I read in a professional journal of an incident which occurred in the States and was singularly like one in which I was personally interested. A brother architect was in the witness box, having been called by the plaintiff to testify in certain points regarding professional charges. On cross-examination the opposing counsel asked—"Is it not very common for architects to offer to submit plans on a venture, hoping that they may be accepted?" The question was objected to by the plaintiff's counsel, but the objection was not sustained by the judge, who remarked that the architectural profession was not like that of doctors or lawyers who never solicited work, but that it was well-known that architects were always glad to compete. The incident shows how little the architect's point of view is appreciated even by the educated portion of the community. But was it not to some extent true? The temptation to get work at any price is a constant one, and while the profession is open to any one, irrespective of ability, it is not strange that good and bad should be lumped together by the public in a single category.

It is true that there is a fundamental difference between the architectural profession and the others mentioned. A lawyer to practice must be a member of the Bar, the physician must have received his degree from the Medical University. The architect, however, is let loose upon the public with or without training. It is not to be expected then that there shall be respect in the public for a profession which does not discriminate amongst its own members, and which is content to let its professional name be used by untrained individuals. Law and medicine have taken measures to protect the public from inefficiency. Architecture has not.

Another element in the want of appreciation of architecture as an art by the public is the established level charge for the services of all; the authoritative schedule of charges sanctioned by the mass of the profession.

The most carefully educated and gifted man gets no more for his services than an ignorant bungler. In other professions, such as music, painting, sculpture, medicine and law, artistic ability is so remunerated that there is always an incentive and opportunity for still further increase, and the public demand for a high artistic standard is established in these professions. It is evident that the value of the work of a true artist is greater than that of the man of small ability. Moreover, the system takes little account of the nature of the design and the amount of brain work required to produce it; the carefully studied and elaborate detail of a first-class residence is of no more value, judged by the existing standard, than the unadorned school house or barn.

A writer in one of the papers has summed up the question in these words—"By the present mode of payment the public first refuses to recognize the difference in the artistic capacity of individuals; second, it refuses to recognize the artistic difference in widely varying services rendered by the same individual; and, third, it refuses to pay the architect in a way that will enable him to give its work his best attention." But the strangest anomaly of all is, that the financial interests of the architect and his client are diametrically opposite. Take the case of a building of the normal value of say \$50,000, the commission for which would be \$2,500. An architect unskilled and giving little thought to his work would probably spend \$60,000 in carrying out the work, for which he would be paid a commission of \$3,000. Another architect by thought, labor and diligence, and making various studies and changes in his drawings is enabled to reduce the cost by \$5,000. His faithfulness and care are rewarded, not by extra payment for extra study and labor; he receives no payment at all for that, and the original commission is reduced by \$250.00, 5% on the amount saved for his client. The better he serves his client the more his commission is reduced.

To recapitulate and conclude, I would say, that before we architects accuse the public of being indifferent we shall do well to look at home and see whether the work we turn out has any real claim to be interesting, and before we claim that they do not know good work from bad, it is our business to ask ourselves whether we have given them a fair chance of seeing what good work is. We shall educate them to be critics by giving them good and faithful work as a standard by which to judge the quality of the whole, and we can depend that every piece of really meritorious work will be an object lesson for the education of the popular taste and public appreciation.

DISCUSSION.

The reading of Mr. Siddall's paper was received with evident manifestations of appreciation, and elicited the following discussion:

Mr. Wickson expressed his very cordial agreement with the sentiments contained in Mr. Siddall's paper. It must be remembered that they could not get any people or body of people to look after them, but in the homely language of an old saying, "every tub must stand on its own bottom," and the same might be said of the Association. However much it might be deplored that the public did not appreciate what is good and what is bad, he did not think anything was to be gained by rating or scolding them for it, but, rather, architects ought to make that which they themselves knew to be good, and endeavor to educate the public unconsciously into liking it. Apropos of Mr. Siddall's reference to conscientious work, he thought if architects would cultivate the habit of considering what their brother architects would think of their work rather than the view taken of it by the public, it would result in the production of more meritorious and truly artistic designs. He thought that architects would be respected more by those outside of their profession if they respected themselves and each other more. He deplored the conditions which resulted in two architects being found in a court of justice, one swearing to a state of facts diametrically opposed to that advanced by the other, and he thought there ought to be some arrangement possible that would obviate that scandal, and result in the evidence of experts agreeing at least to a reasonable degree. Referring to what had been remarked by Mr. Siddall, that under the present system of remuneration when a good man by his skill and care kept down the price of work being executed for a client it resulted in his receiving less for his services than the careless man obtained, he thought it was well to remember that the architect who earned a reputation for protecting the interests of his clients in that way would not fail to ultimately reap his reward in the shape of an enlarged clientele.

Mr. Baker thought that to discover the secret of really good architecture one had to revert to the earlier days of the art and see how matters stood then. He was led to understand from what he had read that in those times the architects were the most learned and cultivated men in the land, numbering among them many bishops and other high clerical dignitaries thoroughly in touch with their "public"; and, as Mr. Siddall had said, these men erected their buildings not from drawings which were sent out of their hands, but they practically lived on the buildings and watched their creation step by step, and in that way every little detail was fittingly carried out. Mr. Dick had yesterday put the whole thing in a nut-shell, when he said that the architects of to-day in Canada, in addition to supervising their work, had to be not only their own superintendents, but in many cases foremen of the different trades. So long as that condition existed it would be difficult to achieve the high standard of work which had been reached by English architects, who always appointed a clerk of works, who had only one building at a time to superintend. Then to-day the question of cost was one of the first considerations, something which did not enter so much into the calculations of the architects in the earlier times, when no contracts were let, and the work was paid for as it proceeded. In that connection, he thought the English method of having

the quantities taken from the plans and specifications by skilled "quantity surveyors," paid by the owner, and the contractor making his estimate on these quantities, instead of each contractor taking off his own quantities and making his estimate thereon, was a very good one, which must result in the advancement of good architecture, and he would like to see the system introduced in this country. It had been shown by Mr. Siddall that the man who worked hardest in the monetary interest of his client was the one who received the least remuneration; that was the first logical argument he had ever heard adduced against the percentage system. He understood it was now the case in England that a number of the leading architects were receiving stated sums in payment for their services in carrying out buildings, instead of working on a percentage commission. He agreed with Mr. Darling that every man had a right to set his own scale of charges for services rendered, and, as a rule, he thought the public were pretty well satisfied that architects were not over paid. He had great pleasure in moving a vote of thanks to Mr. Siddall for his excellent paper.

Mr. Burke said one could not take a walk through the newer parts of Toronto without being impressed by the large number of houses of a class designed simply to catch the public eye. He thought it might be said that three-quarters of the houses recently put up were simply houses copied from others of the same type. In his own practice he was continually meeting with people who admired this or that house because of some feature not at all in accord with true architecture, but which for some inexplicable reason seemed to gratify a certain fancy of the public. You would find perhaps windows of half a dozen different styles in one front, and features introduced without any logical sequence at all, simply to gratify and catch the taste of clients of that class. This all made it very difficult for an architect who desired to design in a simple, logical and dignified form to obtain work. With regard to the question of detail, that was a very serious problem for the architect of to-day. As Mr. Dick had remarked, so much attendance had to be given to superintendence, that without burning the midnight oil, there was little time in which to cultivate design. Referring to the question of fees, he doubted whether under the existing conditions, any system more satisfactory than the present system of fees could be devised. There was one phase of this question, however, which he thought presented difficulty. In one case a man might have an easy going client, who made no bargain about fees, but left the architect to charge whatever he thought was the value of his services. In another case the client might be a hard bargainer, one who would say, "Well, if you won't do it at this rate I can get someone who will." Now, was it right to charge one man 5% for the same class of work which under pressure like that you would accept 4% for from another man, simply because one was a hard bargainer and the other a man content to let it go in the usual way? Yet an architect who was conscientious was driven to accept uniformly a less remuneration than his services were really worth, or else, on the other hand, ran the risk of losing clients and work.

The President noted that nearly every speaker had touched upon the main principle in all good design, the correct solving of the problem presented, and that problem included every consideration that arose in each

case, the matter of good and bad taste, the requirements of the client, the money consideration, the nature of the site, and everything else connected with the proposed building. He thought too much stress could not be laid on the necessity of approaching work with that thought in mind.

The vote of thanks to Mr. Siddall, having been seconded by Mr. Wickson, was then carried.

Mr. Siddall, in acknowledging the thanks tendered him, said there were one or two points that had arisen during the discussion of which he would like to say a word or two. It had been remarked by Mr. Wickson that the careful conscientious architect would get his reward by the increased patronage that would accrue to him. It was doubtful if that was an unmixed blessing, for he thought one cause of trouble was that architects undertook too much work, more than they were faithfully able to carry out in the way he thought it should be carried out. If they could undertake less work, getting for it proper remuneration, it would go a long way towards obviating many of the existing drawbacks, such as the impossibility of designing details in all the work. He thought a great deal of the working out of the details should be done on the building, a plan that was followed by some of the best English architects and might with benefit be adopted here, because there one had the whole thing before him, and could form more correct ideas as to proportion.

Mr. Burke pointed out what he considered the impracticability of the course suggested by Mr. Siddall. An architect here, if he desired to keep abreast of the times, must have all his working plans and details matured before the foundation of the building was finished, and the details of his interior work in the hands of the carpenter before the roof was on.

ONTARIO ASSOCIATION OF ARCHITECTS.

THE examinations of the Association will begin on the 13th of March next. Students wishing to enter for the examinations should send in their names to the Registrar.

The various propositions made in convention for the improvement of the Association are being considered by the consulting committee appointed at the convention. The committee has had two meetings with the Toronto members of the Council, and there is no doubt that some of the propositions that are brought before it—if not all—will be found feasible. It will be necessary to submit the result of these deliberations to a full meeting of the Council, and finally to the next convention; then, as the way is already prepared for them by a notice of motion, they may become law at once.

The Toronto Chapter met on Monday evening, the 13th, to hear Mr. W. L. Symons give his paper on "New Problems in Architecture," which circumstances prevented him from giving at the convention. The paper dealt chiefly with the new method of practising made necessary by the diversity of the operations required by modern architecture, and was a strong and practical argument in favor of the employment by architects of specialists to work out the details of important construction, and even of heating, sanitation, etc., when these details are so extensive as to engross the attention of the architect to the exclusion of architecture proper. Mr. Symons argued that if a specialist can do any portion of the work better than the architect, it is the architect's duty to his clients to employ him; and he pointed out that not only is it a gain to the architect himself to have these so-called "practical" parts of the work well done, but in setting his mind free to attend to design it enables him to devote himself to that by which his practice stands or falls; for it is always to be observed that when an architect begins to neglect his design by giving his own attention chiefly to practical affairs, his practice begins to fall off.

The audience for this paper consisted of Messrs. Grant Helliwell, C. H. C. Wright, W. R. Gregg, W. A. Langton, F. S. Baker, G. R. Harper and J. Wilson Gray.

CORRESPONDENCE

THE ONTARIO ASSOCIATION OF ARCHITECTS.

Spectator Bldg., Hamilton, Ont., Feb. 6, 1899.

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

SIR,—I have read with interest the report of the meeting of the Ontario Association of Architects in January. The President referred to those "objectors who complain that the Council is not active enough and that the Association fails to give them a direct return for the fees paid, or who are continually crying to the Council to do something—they never say what—to make the Association more interesting to its members." I am not one of these, because I am not a member. But as an outsider, a former member, and one who would come under the President's description of "objectors" if I was a member now, I should like to say a few things. You may remember that the President asked me to attend the convention and read a paper making a suggestion as to how the Association could be made of use to architects outside Toronto. The Registrar, in forwarding the President's invitation, took occasion to "warn me it would be of little use my coming unless I had a scheme prepared, cut and dried." My reply was that I considered it the duty of the Council to prepare such a scheme, and that it was not possible for one man to do the duty of the Board. Please understand my position. If the Ontario Association could be made one particle of use to architects of Ontario, I would gladly apply to be re-admitted to membership, and I should be glad to do all I could to further the Association's objects in my part of the province. But I maintain the Council has followed a policy that, instead of attracting architects to the Association, has driven them away. I do not want to hurt anyone's feelings, but I am going to be a little personal, because this matter is not a private one, but one that concerns every architect in the province, and that there are many who think somewhat in the same way as I do is shown by the fact that, as the President said, the present register of the Association contains the names of only two-thirds of the architects of Ontario. What has the retiring President, Mr. Townsend, done during the whole year of his presidency? Has he succeeded in bringing the Association and the public an inch nearer together? Does he feel that his term of office has redounded one wit to the good of the Association or the public? Does Mr. Langton, as Registrar, think that he is doing anything to draw outside members into closer communion with the Toronto members, or even to help Toronto members themselves, when he feels as he expressed himself at the convention, that he prefers his fireside and his book to taking any interest in furthering the objects of the Toronto Chapter by attending the meetings? And with all due respect to a gentleman of Mr. Belcher's years and professional experience, what possible good can he do the Association as President? Here is a fine opportunity for Mr. Wickson, as Vice-President, with the President non-resident in Toronto. Active work ought to fall to him, and upon him should devolve the initiative of many a good thing. But will he prove himself equal to the occasion? Will he initiate anything, or will he follow in the footsteps of his many predecessors, and be a figure-head only?

Mr. Baker made a suggestion which is by no means new, but which ought to be carried out and should have been years ago, namely, that suitable headquarters for the Association should be provided. Why have there been no rooms where papers were on file, where members might drop in, where country members could come in contact with city members, where the public could find the Association and have proof that it existed? Why? Because the Councils have been behind the times, because there was no life in them, and active notions of any sort were always sneered at and discouraged. Mr. Baker makes the only practical suggestion of any real value, and then the committee appointed to carry out or consider the matter is formed without his name being on the list. No wonder, then, the Association is a failure; no wonder the Treasurer's report is discourag-

ing; no wonder that outside members take no interest, and young architects starting for themselves do not care for membership.

Mr. Townsend, as outgoing President, said in his address that the Council had formulated building laws "which if adopted and enforced," etc. But that is just it; they are not adopted, and municipalities do not take the trouble to adopt the Association's by-laws, because they do not know anything about the Association itself.

"Conventions and exhibitions and public lectures;" how did these educate the public? The public knew hardly anything about them, and the lectures when delivered by architects were so utterly dry that the few "public" who attended one might well be excused from attending a second. Then, when an outsider is brought in to give a lecture on architecture, his theories do not agree with facts, and the public get taught incorrect notions of architecture. As to "esprit de corps," its a fine idea, and in a few cases exists, but as we know from every-day facts how members of the O.A.A. back-bite each another, and exhibit such childish jealousy of each other, to say nothing of the manner in which they are continually wire-pulling and trying to cut each other out of a "job," the less said about "good fellowship" the better, because it is nothing but rank hypocrisy. Architects do not care a fig for the "advancement of the art they love or ought to love"; they are too human and have pockets to fill, and all they care about now-a-days is to fill their own pockets. I do not say that is a good thing—it is a pity—but it is a fact. I think the sooner the Association has an honorary Registrar the better, as suggested as a necessity by the Treasurer, because the Registrar's office is one of great power for good to the whole profession, and a man who fills the office for his "love" of the profession and his desire to advance its interest will do so more earnestly and effectually than one who is paid. Have a paid Secretary if the work requires it, but have an honorary Registrar.

Yours truly,

R. W. GAMBIER-BOUSFIELD.

Canada Life Bldg., Toronto, Feb. 10th, 1899.

EDITOR CANADIAN ARCHITECT AND BUILDER.

DEAR SIR,—I am obliged to you for sending me Mr. Bousfield's letter to look at. The best answer I can make to it is to repeat what, in my letter inviting him to attend the convention and read a paper upon the subject of how to make the Association of value to its members, I said before: "I may as well warn you that it will be only by working out a scheme practically that you can do much good. There are no new suggestions in your letter (letter to the CANADIAN ARCHITECT AND BUILDER for December). Everything mentioned has been already acted upon; and, unless you are prepared to show how any proposal you may make is to be worked so as to bring success, you may be confronted with the statement that it has been already tried. In other words, if you suggest what has been tried before, you may still make a valuable suggestion if you can show a systematic way of going to work that will give hope of making more of it than has been made before."

There is an instance of this now. The question of whether the Association should have rooms of its own or not is a live question, but it turns upon the question of evidence as to whether a room will be really of such use to members that they will find it worth while to pay for it. If Mr. Bousfield wishes to speak for outsiders and will get any names of outsiders who would resume membership of the Association, so as to share the advantage of such a room and the attendant cost, he will approach the question in an effective manner.

I perhaps ought to point out what Mr. Bousfield could not know, as the order in which the proceedings took place is reversed in the published report: That Mr. Baker was not appointed on the committee connected with his motion because he had just been elected a member of the Council, and in that capacity would meet the committee which was appointed to "confer with the Council."

Yours truly,

W. A. LANGTON.

PLASTERING, PLAIN AND ORNAMENTAL.

By W. J. HYNES.

GENTLEMEN:—I am before you to talk on plastering, plain and ornamental. A local experience is all that I can speak from. I was born in this city and have followed my calling for 27 years—long enough to qualify me as an authority on the subject. I am not very diffident as to my knowledge, but I have my doubts as to whether I can place it before you properly, and I am most anxious to interest you in a much neglected art.

I propose making a short review of materials before taking up their use and application. The first is Lath.—My experience calls for great care in the selection of this material. A soft white pine, that will stay where it is nailed, is my preference. It should be seasoned, but not necessarily dry, and have a straight grain. When a dry lath is coated with mortar it must necessarily swell, and when it dries again it must shrink. A lath which is not thoroughly dry will not have so much shrinkage and will have a more secure key. Wire lath nails $1\frac{1}{8}$ " long are what we generally use; there is no advantage in having them heavy, but they must have a good flatted head. Metal lath is now offered in many forms; I do not intend to indicate my preference; there are several good articles on the market. I will merely ask you to examine samples in the full sheet—note the stiffening; they should be rigid every way. Satisfy yourself as to the key and effect upon it of a settlement or shrinkage in the building, and always have it painted or galvanized. Wire lath is good—it is almost all key. It is more expensive to buy, apply and cover than metal lath, and for that reason is not so much used.

Lime mortar is in general use, and most of our specifications for the preparation are taken from English authorities. I will not attempt to give you the theory of lime—most of you had a full explanation of that in your student days. I think that the Architectural Chair of our University might devote some attention to the examination of the various limes offered in our market with the proper proportions and description of sand they will carry. Until such time as this is done, I would advise you to have your work done by contractors in whom you have confidence. Good work can be done with lime, but it is a very variable article; we are well served in Toronto, but some very bad limes are used in the country. Our mortars are mostly made from grey lime; they are cool in working and should be given ample time to thoroughly slack before mixing with sand. Haste upon the part of the mortar man or a tendency to stir up the mass before it has slacked, will most likely result in lime pitting on the finished wall. In some lime or in fact in all lime, if not properly burned, there is great danger from this. There seems to be an underburnt core which very often disfigures good work. As this generally occurs in winter work the cause is more often with the mortar man than with the lime itself, but be as careful as you may it will occur sometimes.

Lime putty is made from white lime, generally called fat or rich lime. It is run in large vats and should stand a month or more before using. This material has no strength in itself and requires to be mixed with sand or gauged with calcined plaster before use.

Hair is necessary for mortar for use on lath work, and a smaller quantity is of decided advantage to the straightening or browning coats. It should be clean, well saved, long, winter cattle hair, Hemp, sisal, palmetto fiber, and many substitutes are used instead of hair in other places, but are not offered on our market.

Calcined plaster, the most useful of our materials, is used for many purposes. By mixing one-fifth to bulk with lime putty we obtain the compound for what we call "hard finish." A greater quantity mixed with the same putty allows us to form run mouldings. Where the thickness of moulding is too great to use putty and plaster, the work is cored out with mortar gauged with plaster. Quick work can be done by gauging the first coat of mortar in plastering to admit of finishing at once.

Its greatest use is in moulding and casting decorated ornaments, staff and fibrous plaster work. The property it possesses of swelling when setting serves to give us most faithful and accurate copies from any original, hence its extensive use in fine art. In addition to this, calcined plaster forms the basis of nearly all the patent or prepared plasters. By the addition of retarding and hardening compounds its setting is delayed sufficiently to allow of mechanical manipulation, while its ultimate strength gives a much stronger wall at once than can be obtained by using lime. My own conviction is that in time most all our work will be done in

those materials or with machine made mortars whose proportions are fixed and accurate. Plaster is also the base for the white cements, such as Keene's, Parian, Martin's and others. Just here I would say that principally through your own fault, gentlemen, I do not consider myself an authority upon those cements, and shall not dwell further upon this than just to say they are perfect goods, make perfect work and deserve much more attention than you have given them.

Before speaking of lathing I have something to say about the necessary preparation therefor. The genius who first conceived the idea of making the plasterer responsible for the carpenter work by a clause in the specifications calling on him to examine all studding, strapping, &c., before lathing, and if not found correct to stop and report same to the architect, could not have grasped all the facts: 1st, the carpenter is a bad man for the plasterer to fall out with; 2nd, tale bearing is not congenial work; 3rd, lathing is done at the rate of 2 or 3 cents per yard by a boss lather who is hustling a gang to make his work pay. It is easier and cheaper for him to get over the carpenter's bad work than to lose time and report it. If the angles are not solidly nailed the lather is not likely to do it; if a line of joisting demands the cutting of 8 or 10 inches off the lath for a long distance, the chances are the lather will find a convenient board or scantling, place it where the joists or stud should have been, and make his nailing to this loose piece, trusting to the lath nails to hold it until plastered. This is bad—very bad—but who is to blame? I say the architect is. If joisting and studding are not sized and one bulges below or forward of the others, it is easier to add on a few laths and give the wall or ceiling a graceful but incurable curve than to wait on a carpenter to trim it. Kindly examine the carpenter work yourself; don't dodge or depute your responsibility.

Have your lath laid in bays with breaks every 15 inches. Have a $\frac{3}{8}$ " key on walls and slightly larger on ceilings. Don't allow carpenter work to force the use of vertical lath. Have heavy timbers counter lathed. Don't allow laths to break over door post; slamming that door will break the plaster. Use plenty of bridging on joisting and studding. Strap all ceilings. Have false arches and beams made very rigid with as little timber in their make as possible. See that all junctions of wood and brick work are nailed very solid, and have them covered with metal lath; 16 inch centres is the greatest distance that should be allowed for $1\frac{3}{8}$ " lath; it is too great for 1 inch lath; they should have 12 inch centres. Try and have your work so correctly planned that the lather can make money; he will give you a good job with pleasure. The only way I know to do this is to have that greatest of all boons on a building, a good carpenter—the only way to get one is to give him a good paying price. He wants to live, too.

Now before the mortar is applied, before even the lathing is started, any ordinary good job should be well prepared by grounds. This is generally done badly, and the results are always to be seen before completion. The entire details of the interior finish should be made before this work is done; it's the only way if you want it correct.

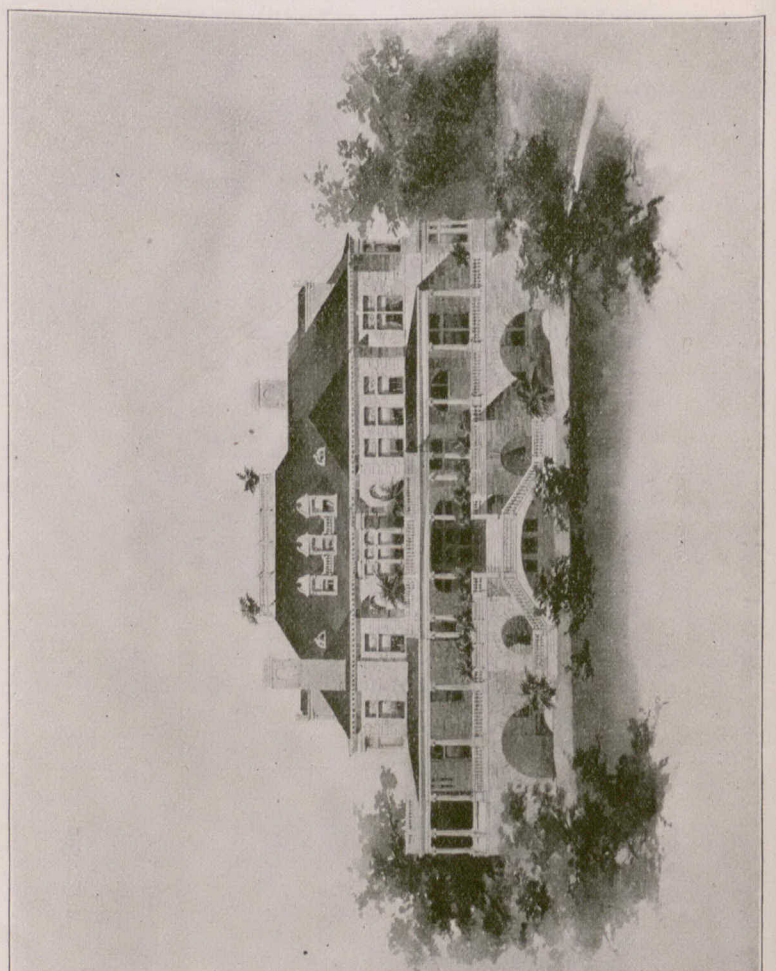
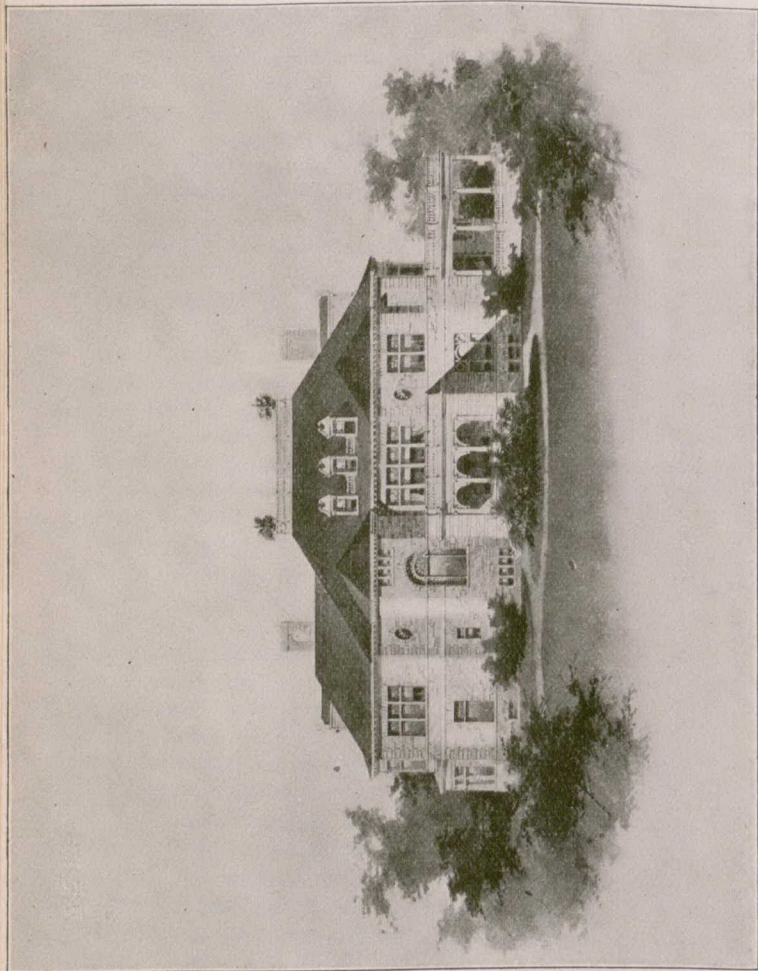
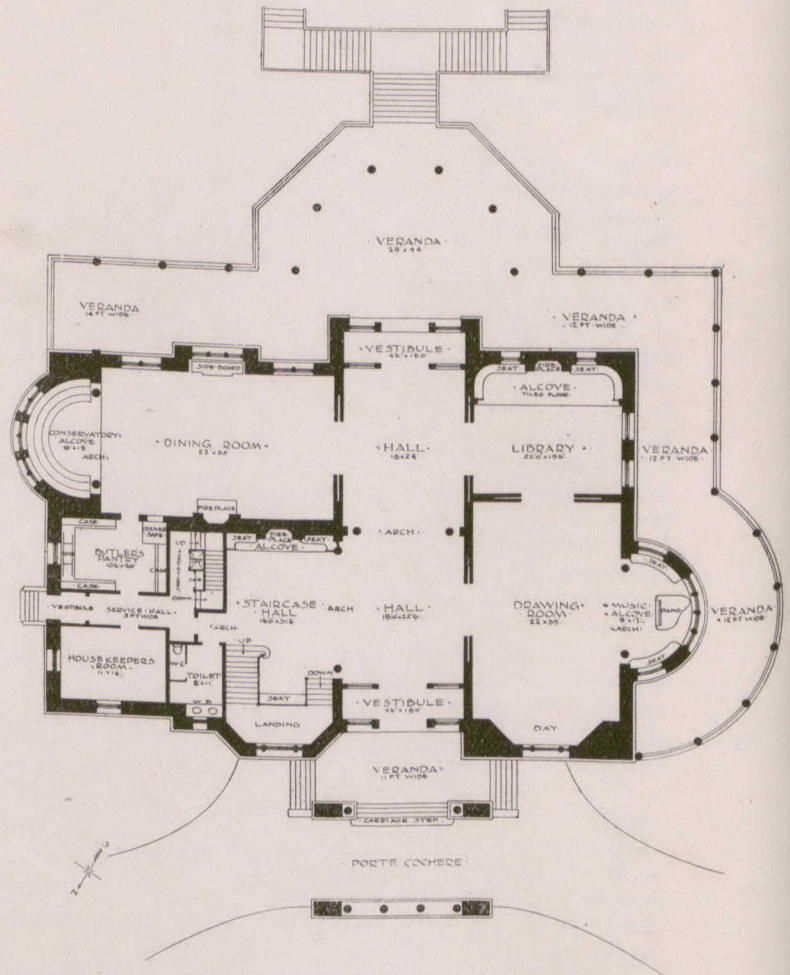
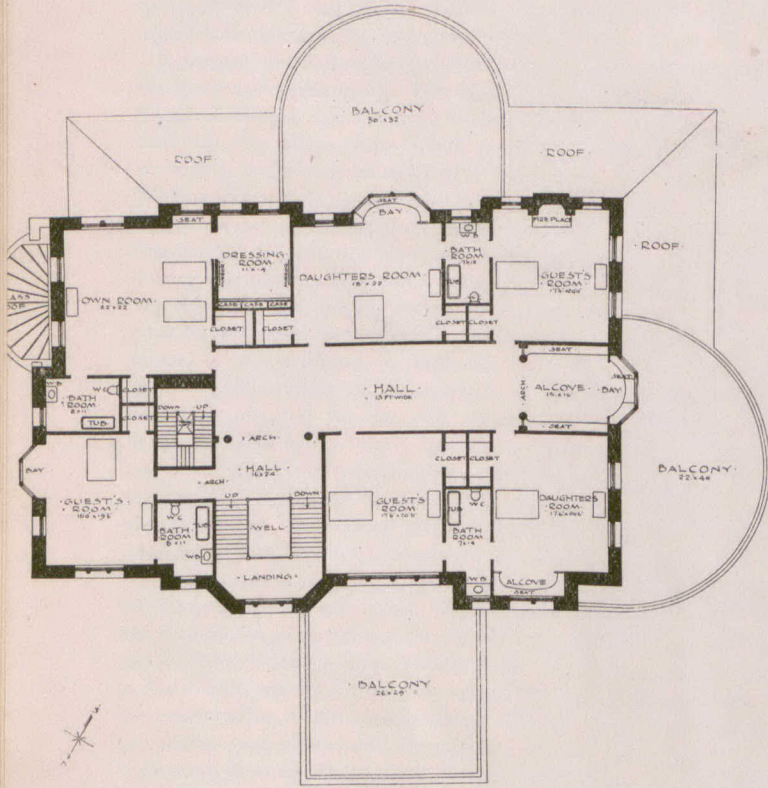
Perhaps I have been too lengthy on this particular question, but I wish to impress upon you that good plastering demands solid, firm and well prepared work to secure it. I am not here to tell you what bad plastering requires, but your chances of holding up bad work are good if work is prepared properly.

If, as I have suggested, the details have been prepared, the grounds fixed, a very definite idea will have been formed of the character of each portion of your building and you can definitely specify the proper finish. Two coat work is most general. It is sufficient for ordinary rooms to execute this work as so often specified—plumb, true and straight is not possible. One coat of mortar only can be finished with that wonderful tool we call a "darby;" it is a great implement for effecting a general levelling up, but don't try a straightedge on work left after it.

Hard white finish is made by gauging lime putty with calcined plaster and trowelling it to a finish before it sets. Perhaps some of you have discovered that hard white finish is misnamed—the hardest lime finish is never white—the strength of this coat is improved by the addition of sand.

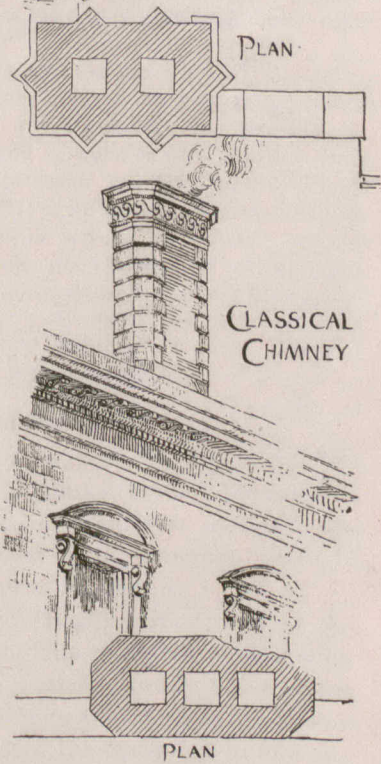
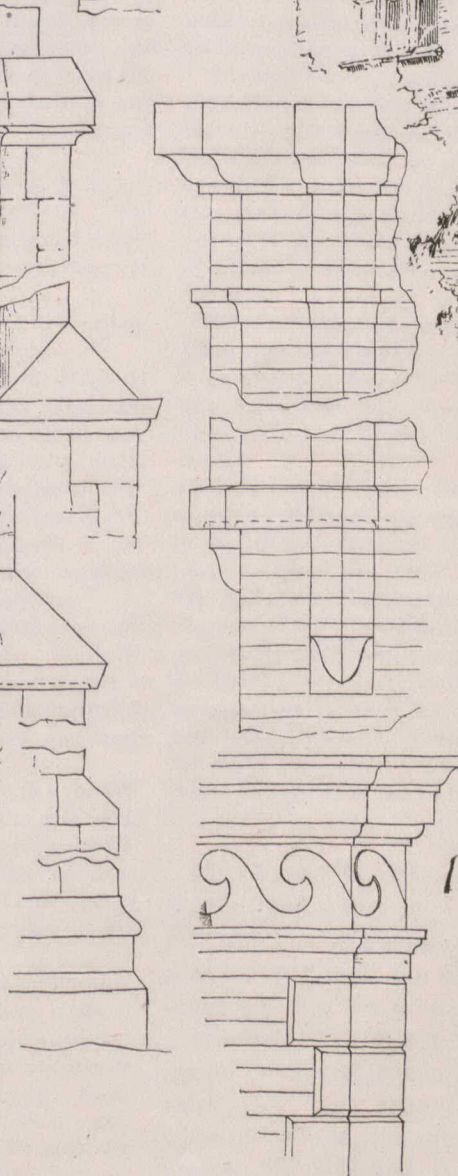
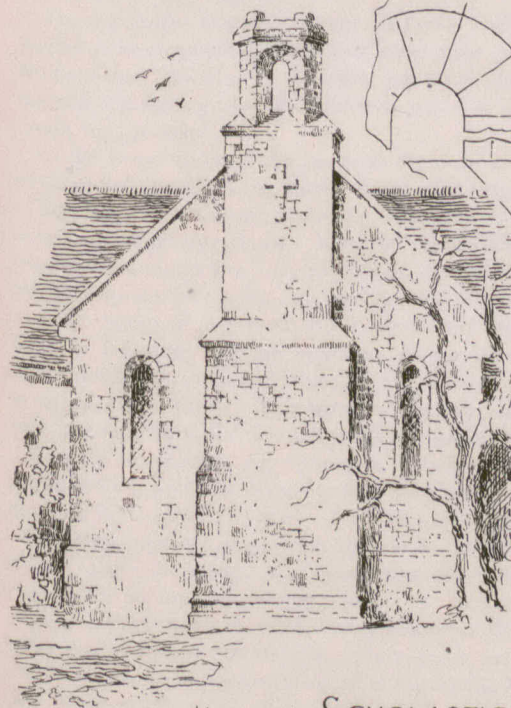
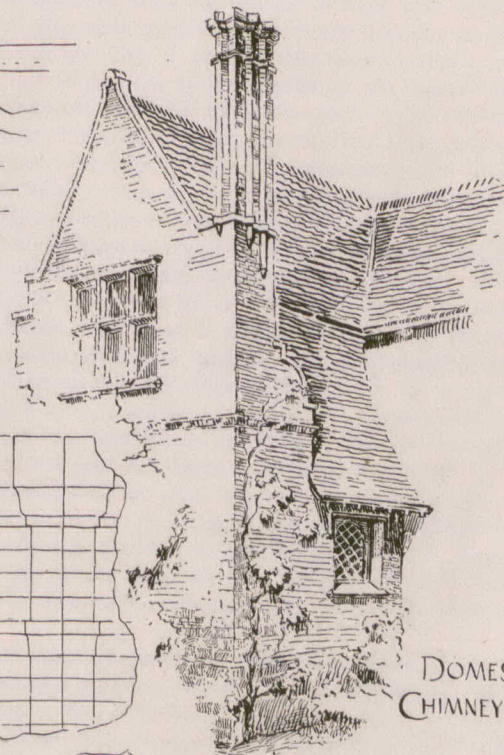
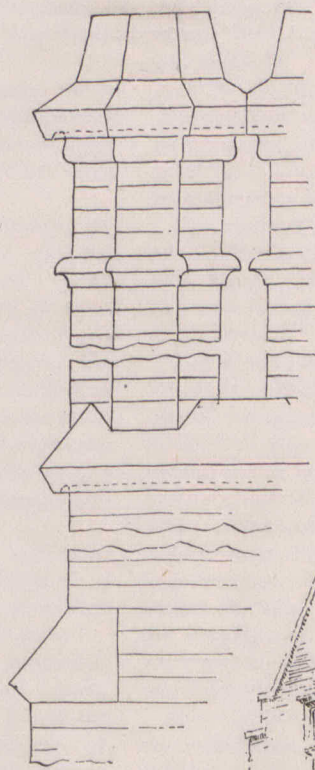
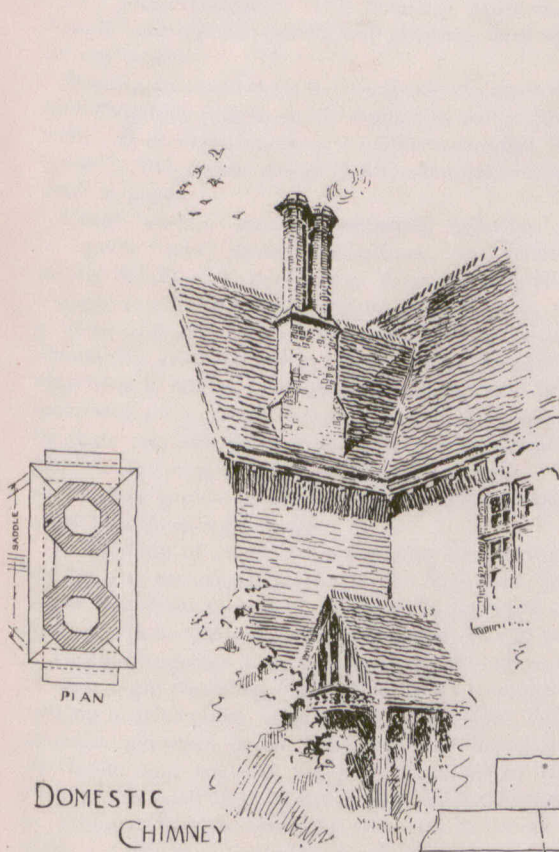
Now if your work is to be decorated, if expensive paintings and paper are to be applied to it, you should hesitate before placing them upon work that is neither straight nor strong. Three coat work admits of proper straightening. It will also on ceilings generally guard against the danger of seeing each joist and lath some time after work is finished, and further it gives you an opportunity to finish it as your work demands.

* Paper presented at the Eleventh Convention of the Ontario Association of Architects.



RESIDENCE OF MR. G. T. FULFORD, BROCKVILLE, ONT.
A. W. FULLER, ARCHITECT.

CANADIAN ARCHITECT AND BUILDER COMPETITION DESIGNS FOR FOUR CHIMNEYS BY "CAZA"



C. A. & B. COMPETITION DESIGNS FOR FOUR CHIMNEYS.—BY "CAZA" (MR. A. H. CHAPMAN, TORONTO).

TROWELLED STUCCO.—The best hard finish is made with lime putty and sand, thoroughly tempered and applied to the straightened coat of mortar. It is first laid true, then very thoroughly water floated, or scoured, and finally trowelled and retrowelled until a polish is secured. It is then dry brushed. This work is smooth and true enough for any painting, hard and firm enough for any paper.

Bastard stucco is done in very much the same manner, but the trowelling only progresses far enough to secure a partially smooth wall. As its name implies it is neither trowelled work nor rough stucco. This makes strong work, admirably adapted for either paint or paper.

Rough stucco, used on exteriors, hallways, churches, and in public and semi-public places, is generally executed in two coats—the first being heavily scoured, the second brought to a finish in one operation. Three coat work admits of a better stucco; the work being straightened in the second coat admits of a great variety in texture of the finished stucco. You may have it left very rough with all the indications of floating tool—with the graceful sweeping lines and curves, this work can be made very effective—or you can have it finished of a granular matt surface of great, uniformity and evenness. Vaults, domes, intersecting groins—especially where finished without mouldings—are best done in this work.

In speaking of stucco I use the term as generally applied by the trade to the rough-floated work I have been speaking of. I would like to see the use of this word in specifications somewhat limited. In its literary sense there would seem to be no limit.

Toronto has some fairly good samples of ornamental plastering; in what slight travelling I have done in the United States I found nothing near so good. Osgoode Hall, the first done, is still the greatest, executed under Cumberland & Storm, architects, by my father and uncle in the '50s. The Custom House, done in 1875 by the same firm, shows clearly what different results can be obtained from the same artist or machanic by different designers. However, as government work requires the man who gets it to have a "pull," we should not look for architectural excellence in that quarter.

The legislative chamber in our Ontario Parliament Buildings furnishes an example of modelling done right on the work. The Romanesque character of the work was admirably adapted to this method of handling, and Mr. Johnston, who did this work, deserves credit for the result.

In the Board room of the Imperial Bank there is a fine ceiling of strap ornament also modelled direct upon the work.

The Bank of Montreal, Dominion and Imperial Banks are good examples for plaster work. Most of these buildings have been plastered on metal lath; the mouldings also were on metal lath, and all enrichments being cast and bedded into their places afterwards. Some of our later work—especially the chapel of Our Lady of Loretto, Temple building, dining-room in Hon. G. A. Cox's residence, ceiling of Nasmith's Restaurant and others, are samples of staff work. This work is carefully modelled, moulded and cast in fibrous plaster, and fixed in position by nailing.

In spite of the many fine examples, I claim your profession has neglected our art, and progress has been very slow. I am now working in Toronto 27 years. I do not now, as formerly, carry a few stock cornices of each architect's design; I am not ordered to run same moulding, use same centres, brackets, and such stock work on each successive job.

Your opportunities to individualize you work lie in the ordinary every-day problems you handle. How much better to give each client something of his own instead of furnishing him with a duplicate of a previous work. Why not forestall the modern decorator and make him follow lines dictated by architectural study, than have him run riot with color in an attempt to decorate an impossible interior.

My earliest recollections of cornices are of a huge cove following closely to the angle of the room; below was a heavy mass of mouldings—their size, no doubt, the result of a static computation on the amount of dust it could carry. This was completed by a similar collection of heavy mouldings on the ceiling. Such a room was not complete without a centre flower, which must, of course, conform to the size and shape of the room. We had to fix with plaster huge ornaments five and six feet oval and circle as was thought necessary, and from 2" to 12" deep. These had beautiful strong undercut ornaments that held more dust that was impossible of extraction. Well, some of these are still up; some have caused manslaughter; many have helped the sale of china and furniture. Time taught us this was not safe, and the next result was an attempt, under the sacred name of good Queen Anne,

to get as many members as possible into a given space and avoid the pitfall of our predecessors, by making this as light as possible. With this came a revival of the run centre, and we were forced to form mouldings around gas-pipes that were fearfully and wonderfully designed. From my vantage point before you I can say many things that I would not like to say to you individually; the cap might fit. Those of you who caused these things to be done were, no doubt, like myself when working at this, under the impression that we were executing architectural work instead of perpetuating architectural monstrosities. What I want to impress upon you to-day is that you are the teachers, the leaders—even the Jerry builder looks to you for pointers.

You all know the method of run work. I will not describe it, but would request that you study the limitations of the material and have brackets provided for your mouldings and not take risk of the work falling by overweight; the best work should not average one inch thick.

The World's Fair at Chicago first placed before the profession the merits and demerits of Staff; the name was new—the daring use of the material new, but the use of fibre with plaster was familiar to European mechanics for years previous to this. As used in the White City, it was exposed to the elements; it was hastily nailed in position by any workman the contractor could secure; then hastily painted. Lines were any way; intersections not exact or true; the general effect was required, and it was successfully secured. Perhaps this very unevenness that I mention helped the effect; they certainly bore a remote resemblance to the varying and inexact lines of the early artist plasterer, whose work was all by hand in position, and carried with it that peculiar and indescribable effect that hand-work always does.

This staff is now before you as a commercial substitute for the run mouldings. The cost is nearly alike, unless when great quantity and richness favor the staff, or a small quantity and comparative plainness help the older method.

For staff work you will have to think out your design—studying the material—the best effects are plastic, the true nature of the material. You need not have a smooth, moulding; by combing and corrugating we vary the texture so that even a plain moulding may display its design with a side-light without breaks. Our methods are similar to the Terra Cotta. I would like you all to see what I mean by this. If you will visit the chapel of Loretto, Wellington square, you will see a rough plastic treatment.

From your detail the model is finished complete in the shop. Upon approval it is cast in plaster. While this mass is setting, a large amount of fibre or serim cloth is embedded into it; this enables us to make large and strong casts. A frieze which I made for the Conservatory of Music, here, was 12' x 2' 6" and cast in one piece.

Gentlemen, I fear my subject is too much for me. I would sooner do the work than talk about it. What I would like would be to give each and every one of you a sample from your own details. I believe that this method of work is here to stay. It is light and strong, comparatively cheap, and will stay where fixed. The cost of our substitute for the sheet metal ceilings is not much greater than that very undesirable article; of course it has the drawback of repetition, but under good design this may be made an advantage. I shall leave to your professional training and knowledge the matter of design; my object will be attained if I can make you regret the wasted opportunities of the past, and inspire an anxiety in you to do better in the future.

DISCUSSION.

Mr. Paull, in proposing a vote of thanks to Mr. Hynes, paid a very high compliment to that gentleman's skill and business integrity. He felt sure that so practical a paper could not but be of the greatest benefit to those who had the privilege of hearing it.

Mr. Siddall seconded Mr. Paull's motion, and in doing so remarked that in England much better plastering work was done than in Canada, and he believed the work in Canada was superior to that done in the United States. In England it was the exception to find any less than three-coat work, the specification of even small houses calling for three coats of plaster, floated and set, and he thought that was the only method of getting straight work. In the old country he had observed that they used a tool which he had not seen used

here very much—the long straight edge—and all work there was made perfectly true.

The following discussion then ensued :

Mr. Burke : I have been told that a great many of the buildings in the United States which have been plastered on metallic lath have been developing serious defects, in some cases it having been found that the metallic lath had almost disappeared. I suppose that was owing to their not being galvanized.

Mr. Siddall : I had a little experience of that in the Confederation Life building. We had occasion to take down a partition, even before the building was completed, and, although the lath had been painted, it was half eaten away.

Mr. Burke : Have you had any experience in that respect, Mr. Hynes ?

Mr. Hynes : I cannot say that I have, personally. I have never seen any metallic lath that were destroyed by oxidation or rust, but I know that where the lath is not completely covered with mortar it will rust. If the iron or steel is thoroughly embedded and covered with mortar, I do not think there is any danger whatever, but where the slightest particle of the metal is exposed it is likely to be affected, and that is why I say it should always be either galvanized or painted.

Mr. Siddall : I quite agree with Mr. Hynes that if the metallic lath were completely embedded with mortar no rusting would take place. I think it is the exposed part at the back that rusts.

Mr. Hynes : A thorough covering of lime mortar is a preventative of rust, but the reverse is the case with all patent plasters having calcined plaster or gypsum as their basis ; this material has a very great and immediate tendency to rust. I should think the cases cited by Mr. Burke were likely caused by their use. English white cements—as Keene's, Parian, Martin's—have a still greater tendency to cause rust, even destroying the tools used by the mechanics when working them. A knowledge of this fact is sufficient, as it is easy to guard against trouble from this source.

Mr. Wickson : Mr. Hynes did not refer in his paper, I think, to any of the patent plasters that have been on the market lately. There is the Rockwall plaster, Paristone, and others ; I wonder if he has had any experience of them, and if it has been satisfactory.

Mr. Hynes : My experience has been principally with Adamant. This was the first of the patent plasters. It originated in Syracuse in a patent for hardening plaster. The inventor became associated with business men, who changed his fluid chemical into a dry powder, and made a plaster furnished complete and ready for use by the addition of water. They did not make much out of selling the plaster, but obtained large sums for State rights—Illinois selling for \$35,000, Pennsylvania for \$17,000. Of course, in addition to the chemical compounds, to everyone whom they sold to they gave a formula of how to make the plaster. The result was that each of these parties found difficulties in preparing the mixture, and after a series of experiments each became an expert, and then called his mixture something else—"Rock Wall," or anything he had a mind to, but they are all composed of the same compound with the exception of the Acme, Agatite and the Royal cement. These I have never been able to get analyzed, and I would suggest that the authorities of the School of Practical Science make an analysis of them. They seem to be a kind of brownish earth, and it is claimed that they are

calined. They make very hard, durable work. Those on the market here to-day are principally Rock Wall, which is good. It is made by the Albert Mfg. Co., of Hillsborough, N. B., who also supply most all the calcined plaster used in our market. "Paristone" is made in Paris, Ont., by the Alabastine Company, from the local gypsum found down on the Grand river. The Grand river gypsum is good and plentiful, but is very little manufactured. I do not know of a bad patent plaster—it does not pay any one to make one that is bad.

Mr. Dick : I am sure Mr. Hynes has given us a very valuable paper. There is one point on which, perhaps, he can give us a little information, and that is about mixing the mortar applied to walls and so on, as to the time it should be allowed to stand before being applied to walls, with special reference to the limes we have in this country.

Mr. Hynes : Our limes are very slow, cool limes, and when they are first made up all limes are watery, and if you place them on the wall at once the lime has no binding, and the key falls off. It would never do to put fresh mortar on walls ; it is radically wrong, though one is sometimes forced by circumstances to do it. The idea of leaving it for a period of weeks or months is equally absurd. I think our mortar, after standing one week in ordinary weather, is sufficiently aged for all practical purposes. The greatest danger in connection with plaster is in trying to rush it through, and drying it too quickly. You see, you have only three-eighths of mortar on a lath wall, and if you dry it in a few hours there cannot possibly be any strength in it, the best lime cannot have any chance to strengthen properly. I am not an advocate of taking an unreasonable time, but I think that attention should be paid to the circumstances. The weather in summer that dries mortar in a few hours will always leave you a weak and pulverent mortar.

Mr. Wickson : Nearly all the text books say that lime when slacked ought to show a considerable amount of agitation, bubbling and hissing and so on. Now, I have noticed that a good many of the limes used here are quite unemotional when the water is put on. Will Mr. Hynes tell us if that is any indication that they are not good ?

Mr. Hynes : That is a question that covers a good deal of ground. Limes are divided into different kinds. There are the pure limes, composed of almost all lime, and when they are put in water they go off like a shot ; in fact, I have had limes placed in a lime box under a tree that burnt all the leaves off the tree. That was a pure, fat lime. Now, I think the greatest thickness you can get that lime to set is in white-wash, where it can get sufficient carbon from the air to form its original carbonate of lime. The grey limes have all more or less a certain amount of clay, some a very desirable clay, and those go towards forming the same compound we have in Portland cement ; in fact, if you take a good, well-burned brick, and mix that with good ordinary lime, you will have hydraulic or semi-hydraulic cement, and in that way we get all our best and strongest setting limes from these grey limes. I don't just know what the text books would call them. They are not pure lime, but an earthy lime, and my experience is that they are the hardest setting.

Mr. Baker : There is one point that Mr. Hynes has not touched upon, and that is the action of frost, and we would like to hear his opinion on that subject. I have seen two or three authorities, and they differ to some extent.

Mr. Hynes : I am aware that there are a number of things I have not touched upon, but the question put by Mr. Baker is a very pertinent one in Canada. I know there are architects who claim that the mortar being frozen, even in the bed or bulk, is destroyed. That is entirely wrong, according to my opinion. I would like to have it all frozen ; I think if we could have it all frozen we would have a more homogeneous

mass, thoroughly disintegrated in all its parts, and capable of a more complete mixture. Frost has no chemical action on lime; it is the water that freezes. But when on the wall freshly laid and largely composed of water, the frost comes along, swells and expands the mortar, the result is different. This expansion prevents the lime from cementing with the sand, and the work is destroyed—if partially dry, perhaps only the face is destroyed. In two-coat work this face may be dusted off, well damped and finished, but for three-coat work no chances should be taken of having the first coat frozen.

Mr. Wickson: You think there is nothing in the statement sometimes made that it is all right to freeze plaster dry?

Mr. Hynes: Did you ever see an icicle freeze dry? Water is one of the things you can freeze. If it is frozen how can it be lost? It must thaw before the water can leave it. I know that mortar gets hard and imperceptibly dries, but I cannot understand how it can freeze dry. Many have claimed that work that has frozen dry was the best and hardest. This, I think, was because a greater time was allowed for the necessary chemical action of the lime and sand to form carbonates and silicates before drying. I think there were either mistakes about it being frozen, or else it was frozen when very little water was in the wall—when it was partially dry, and not enough moisture in the work to allow the frost to expand its particles.

Mr. Dick: We had a very good instance of the drying power of frost the other day on the streets. We all know the condition Yonge street was in after the rain a few days ago, principally with horse dung—everything was literally soaked; but it froze hard during the night, and the next morning, when there was a high wind blowing, the particles of manure and dust were flying all over the street. Now, if it wasn't the frost that dried it I would like to know what it was. Every house-keeper will tell you when it is freezing hard that they keep their washing out on the line and let it get thoroughly frozen, and it will dry.

Mr. Pearson: What is the action of frost on the lime? Does it prevent the setting if it is frozen?

Mr. Hynes: I never found it so.

Mr. Pearson: Well, how is it that it rubs off and falls to pieces?

Mr. Hynes: Because the water is swollen out.

Mr. Pearson: Then that does not affect the lime?

Mr. Hynes: No, I do not think it affects the lime a particle.

Mr. Pearson: It is the water between that freezes and leaves it free, the lime forms the best cementing of the particles of sand together, and then the moisture between freezes and expands and leaves it free; that is the way it rubs off.

Mr. Hynes: Yes, that is the idea.

Mr. Gregg: I don't know whether Mr. Hynes heard the example given by Mr. Dick of the clothes freezing dry on the line, but I think he answered that by saying that if a wall can be left long enough to imperceptibly dry it would be all right, but it is the sudden changes that cause the trouble.

Mr. Hynes: That is it, exactly. If a wall has sufficient water to allow the frost to expand, it is destroyed, but if the water is not there in a sufficient quantity to allow the frost to swell, it is not going to hurt it. It must thaw before it can dry, that is sure, but it may do so imperceptibly.

Mr. Baker: The tensile strength of plaster is increased by the hair, I suppose. I was wondering if the expansion would not have a tendency to shorten the hair, and to separate it in places. I have much pleasure in seconding the vote of thanks to Mr. Hynes.

Mr. Harkness (School of Practical Science): It is a fact that ice will evaporate; that is a well known physical fact, and I imagine that plaster frozen on a wall in the early winter, if it were allowed to stand for some considerable time, would dry. The ice in it would gradually evaporate the same as any other ice will, but, of course, I am not able to say whether it would damage the plaster; I would not attempt to pose as an authority regarding that.

Mr. Hynes: I am inclined to think it would not. The more opportunity lime has to form back into its natural state the better. I have heard numbers of plasterers say there is no work so good as that you let freeze dry, but you must not let it freeze when you put it on first.

Mr. Siddall: I would like to ask Mr. Hynes if he has had much experience in mixing colored ingredients with plaster, and what is the mechanical effect on the plaster?

Mr. Hynes: I cannot speak from experience on that. The only experience I have had was in a little hall of the Bishop Strachan School, where we mixed yellow ochre with it. I was very much surprised when I saw it four or five months after to find that the color had almost entirely disappeared. I know it can be done, but you must reckon on the lime destroying a certain amount of the color. While I am on my feet, I would like to tell you that there is a work published in England by Mr. William Miller, a practical plasterer, which I think is the grandest work on plastering conceivable, and if there is any question you want answered you will find it there; in fact, you will find almost every conceivable inquiry answered. I think the use of coloring matter is quite feasible, but it must be handled with care, and a sufficient quantity made to avoid joinings.

Mr. Gregg: Is there not trouble in getting it on without being clouded and patchy afterwards if it is broken?

Mr. Hynes: Patching afterwards presents a difficulty that cannot be overcome, and there is undoubtedly danger of clouding. You see, lime is a most soluble compound, and when you water trowel or scour the work it brings the lime forward, and that is what gives it the cloudy effect. That can be avoided by having your work underneath sufficiently damp to admit of finish without using water.

Mr. Langton: I was going over the cathedral, and I liked particularly the color of the mouldings of the arches, and I was told that that was due to their being worked with a vertical tool, which kept the same from flowing out evenly. Do you not think it would improve the sand finished surface if the sand were not floated so easily? Is there any way in which we can get a flat surface?

Mr. Hynes: These arches were run with a mould, which cut off the material at right angles, or vertically, as you express it. A large amount of sand was used in the putty with which those mouldings were formed, and the result somewhat approached the effect of sandstone.

The President: Mr. Hynes spoke in his paper of the benefit that would arise by the substitution of staff for the metallic ceiling usually applied in situations where it is subject to great vibration. I would like to know what is the safest kind of plastering to apply where great vibration has to be provided against.

Mr. Hynes: Staff ceilings are most suitable for such plans. Staff is a compound of plaster in which a great amount of fibre or canvas is incorporated, and, being fixed in position by heavy galvanized nails, cannot possibly be dislodged or disturbed by vibration. You can have it perfectly plain or of such design as you may determine. It is well to recognize the fact that there has to be joints; if plain, have them well caulked with fibrous plaster for decorated work. You can generally so design your work as to cover them with mouldings, plain or enriched.

Mr. Gregg: Would you use plaster at all where there is great vibration?

Mr. Hynes: Yes, you may safely use staff; it can be nailed on every bearing so as to be perfectly solid. The only point in which there is any danger is that of having joints improperly stopped in plain work. If not well done joinings are liable to show, but it is perfectly sound and solid. Asbestos plaster, so far as yet offered, is simply the waste product of the asbestos mine, consisting of both fibre and ground rock. It is chiefly mixed with lime only. I have never used any except samples. It never gets very hard, but has a very nice quality in that it may be dinged without fracture. Lately it is offered in connection with Paristone. This ought to be a good compound, but I do not recommend unless from

experience. But you are fairly safe in using any good mortar on wire lath, no matter what the vibration.

Mr. Pearson: I wanted to ask Mr. Hynes what are the proper proportions of lime and sand for the brown finish.

Mr. Hynes: For the ordinary sand finish one-fifth sand, one-fifth plaster of Paris, and three-fifths putty. In saying that I am not speaking from exact information, but practice.

Mr. Pearson: Then for the hard white finish; how do you obtain that hard surface like china?

Mr. Hynes: It cannot be done without some cement. I have polished walls by putting equal quantities of putty and plaster, but you have to mix them with glue size or something of that kind, to allow time for working.

Mr. Pearson: For the hard white one-fifth plaster and one-fifth putty, and what sand?

Mr. Hynes: You do not want any sand for hard white.

Mr. Pearson: Then what is the proportion of lime and putty?

Mr. Hynes: About equal, if you pay for it; but you never get it; you cannot get that plaster work unless you pay for it. Hard white finish, as generally executed, is a misnomer.

Mr. Pearson: It is not a misnomer as we specify it, but you do not give it to us. Now the brown, just the first coat?

Mr. Hynes: I always mix about twenty bushels of lime to about six yards of sand.

Mr. Pearson: How many bushels is six yards?

Mr. Hynes: I do not know.

Mr. Pearson: How can you get the proportion?

Mr. Hynes: About one-sixth, I suppose, in the dry, but when the lime is slacked it is increased nearly double, so it becomes about one in three.

Mr. Pearson: Then is there any proportion for hair?

Mr. Hynes: We consider we should put about forty pounds to four hundred pounds of plastering. These are all hard questions to answer. I have never figured them out to my own satisfaction; I am only giving what I practice.

Mr. Pearson: Is there any way of running cornices and mouldings without using too much plaster of Paris?

Mr. Hynes: Yes, if you do not want to use too much plaster of Paris, be very careful to have the cornice well bracketed, the lath formed exactly to the lines of the moulding, and coat your lath carefully with the mortar.

Mr. Pearson: The trouble with fine hanging mouldings or anything like that is filling that out.

Mr. Hynes: Anything hanging must be formed by the plaster of Paris. Of course, if it hangs sufficiently you can carry a line of nails and string in it.

Mr. Pearson: There is another thing, Mr. Hynes. If you plaster a building in winter, and you put on the heat in the building, there is a great deal of moisture being evaporated, and I have noticed in certain places that it does not set for weeks and weeks, and practically rots. What is the cause of that?

Mr. Hynes: The mortar itself?

Mr. Pearson: Yes.

Mr. Hynes: If you leave it alone it will get harder eventually than that which dries more quickly.

Mr. Pearson: But then one cannot leave it for six months.

Mr. Hynes: I don't see any reason why it should stand for six months.

CODE TO GOVERN ARCHITECTURAL COMPETITIONS.

THE sub-joined code of rules to govern architectural competitions is the product of the labor of a joint committee representing the Architectural League of New York, the National Sculpture Society, the National Society of Mural Painters and the Philadelphia T Square Club. It received the approval of the Architectural League on January 19th last:—

I. DEFINITIONS.

1. A competition in design is the process by which, on the basis of merit, from two or more designs proposed, one or more are selected.
2. Competitions may be either "open" or "limited."

3. An "open" competition is one in which any person may be a competitor.

4. A "limited" competition is one in which each competitor is especially invited.

5. A competition of either class may be either—

(A) "Premiated"—in which remuneration is provided only for those to whom an award is made.

(B) "Paid"—in which remuneration is provided for each competitor.

6. The promotor is the party who undertakes responsibility for fulfillment of the competition according to its terms, and shall provide for proper and substantial remuneration to each competitor to whom an award is made.

7. The programme is the offer made by the promotor and includes the written or printed statement of the terms of a competition on the basis of which proposals are to be made.

8. A competitor is one who in acceptance of such offer submits a proposal in accord with the terms of the programme.

II. THE PROGRAMME.

9. The programme is an agreement, the terms of which must be carried out in good faith by all parties.

10. The terms of the programme are to be concisely stated and must be mandatory.

11. The programme shall—

(A) Be headed substantially as follows: "Under the general code governing competitions in design of the Architectural League of New York, of which a copy is subjoined,

(Name of Promoter.)

invites competitive proposals upon the following programme."

(B) Contain a definite statement as to proposed cost.

(C) Contain a definite provision as to anonymity,

(D) Name the jury, which must include experts upon the subject under consideration.

(E) Fix uniform requirements for drawings, models or other forms of proposals.

(F) Fix a definite time and place for receipt of drawings, models or other forms of proposals.

(G) Fix the nature or amount of the awards or prizes.

(H) Fix the period of time within which decisions will be rendered.

III. DRAWINGS OR MODELS.

12. The requirements for drawings, models or other means adopted for illustrating or describing the proposals must be clearly defined in the programme; including, namely: that they be uniform as to character of rendering, scale, number and size of separate sheets or pieces, and such other detail as may be necessary in the peculiar circumstances of each case.

13. The requirements for drawings, models, etc., must be of the simplest nature, adequate clearly to explain the design, thus reducing to a minimum the labor and material, necessary in their preparation.

IV. THE JURY.

14. All competitions are adjudicated by the vote of the jury including disinterested experts. If the subject of the competition be such that its execution requires special expert knowledge, then, if permitted by the programme, the jury may call in additional disinterested experts and also the promotor, to advise with them.

14. The order of procedure of the jury shall be as follows:

(A) Reading the programme.

(B) Passing upon the question of calling in expert advisers or the promotor.

(C) Passing upon the work submitted, with reference to conformance with the conditions of the programme. The jury must exclude from consideration proposals violating the conditions of the programme.

(D) Passing upon the manner of arriving at the verdict.

(E) Deciding upon the verdict.

(F) Writing and signing the verdict.

16. The jury may decide whether the prime object of the competition is to select a design, or whether it is a means of test, having for its object the selection of an artist.

17. The jury must make the awards to the competitors as stipulated in the programme.

18. The drawings, models, etc., are not to be placed on exhibition before the verdict of the jury is rendered, and except when otherwise provided in the programme shall remain the property of their proposers.

19. Voting must be by ballot, but procedure otherwise shall be as agreed upon by the jury.

20. The action of the jury shall be final.

V. BY-LAWS.

21. Any subscribing society may prescribe such by-laws additional to this general code of competition and not in conflict therewith as it may see fit; but such by-laws are to be included under a separate head, and indicated as being the by-laws of the particular society prescribing them, and the other subscribing societies shall be served with an official copy of such by-laws.

In submitting the code they added to the report the following statement:

1. It is the sense of this committee that the enforcement of this code and trials and penalties relating thereto involve questions of law on the one hand or of ethics on the other, neither of which are considering as properly within the scope of this general code.

2. It is the sense of this committee that the question of rate and basis of remuneration for services in connection with competitions further than general insistence upon remuneration to each to whom an award is made, is not properly within the scope of a code on competitions, but is rather an item of the broader general subject of remuneration, which should form the subject of independent consideration and adjustment.

TERRA COTTA.*

By M. J. HYNES.

Terra Cotta is a very large subject—anything from a doll from Tokay to a glass retort on the Ohio—and I fear a much-abused term. It includes everything made of baked clay, all indeed, with the exception of bricks, which are always, just bricks. Everything else in the category comes under the head of "Terra Cotta."

Terra Cotta is a mixture of clay and brains; the manufacturer supplies the clay, the architect the brains.

It not being my intention to give you a history of Terra Cotta, I shall however endeavor, with my limited ability, from a practical standpoint, to give you something that may possibly enlighten you on the practical utility of this material, for I feel that the knowledge gained by some fifteen years experience may be of some little service to you.

The question has probably occurred to you, and naturally, "Why is it that in Canada, we have not a first-class Terra Cotta Works?" Gentlemen, the answer is with yourselves. Except in a few individual cases, you do not ask for the material. Possibly you are prejudiced against it, and desire to remain so. It may be that you are not conversant with its utility, its virtues and its beauty, and have either been too busy or too indifferent to look into the matter with that degree of interest and study which the subject demands. While in the United States numerous buildings, some of them twenty stories high, have been constructed of this material, as yet you have failed to put it to anything like general use in this country.

Again you may say, "Why does not some responsible firm in this country cater to the Terra Cotta trade, with artistic work and good material?" The answer is as before, "You have not made the demand on them, and offered but little inducement or encouragement for the expenditure of the necessary money, with which good works are established, wherewith they could place themselves in a position to meet the requirements of the trade, did such requirements exist."

Why did the company with whom I have the honor to be connected for some time, expend large sums in the erecting and perfecting of works for the manufacture of Portland cement, a cement which is acknowledged to be equal to the best and second to none? For the simple reason, gentlemen, that you as professional men demand a first-class Portland cement which could not always be had in the imported article, and having the raw materials in quantities, that for excellence cannot be surpassed, this company met the demand, which demand, as I said before, you are in a large measure responsible for.

The same argument can be applied to Terra Cotta. If you will create the demand, there is no doubt that some responsible firm will rise to the occasion, and will meet the demand with material that will be as good, if not better, in artistic excellence and in quality, as any that can be procured in any foreign country; for in Canada we have plenty of the raw material; we have the capital, and we can soon secure the artists and workmen if we have not got them now. But you have ignored Terra Cotta; you have, with a few exceptions, left it in the background by erecting buildings in an old-fashioned manner and upon principles which, in the first instance, are cheap, and where the possibilities of combustion are apparently of minor consideration.

I may say that I am not advertising any existing Terra Cotta works. I am very much like Micawber, "Waiting for something to turn up," so that my efforts to impart any knowledge or information I have acquired is not in the interest of any particular firm or company, but purely in the interest of the material, which I feel when better understood and more cultivated, will come more generally into use, for its possibilities are practically unlimited.

Since the liquidation of my company in Toronto some years ago, I have been connected with the Rathbun Company of Deseronto, or possibly more properly speaking, of Canada, and I regret to say that during that time three of the brothers in that company have "passed beyond," and in the death of the late Mr. F. S. Rathbun, Terra Cotta has sustained an irreparable loss, by losing one who was alive to its possibilities, and who from a personal as well as a business standpoint was a strong advocate for its use.

It is to be regretted that some of the gentlemen of this Association have openly declared, that were they erecting a building of Terra Cotta, they would place their orders in a foreign country, forgetting, possibly, that they are dependent upon Canadians for clients, and that their utterance must of necessity cause

people in this country to believe that no such material as Terra Cotta is being made in this country, or if so, that it is of so poor a quality that it could not be used. I am anxious to impress upon these gentlemen the fact, that the more they do to foster Canadian enterprises and industries, the better materials they will secure, and the more clients they will have, thus benefitting themselves in the end. American architects employed over here in the erection of some of our large buildings have not so acted, for they have always used Canadian material when such could be obtained, and it is a pleasing fact that some of our Canadian Terra Cotta has found its way "over the line."

Without touching upon Egyptian, Assyrian, or even Italian and Spanish of later date, the actual revival of the use of Terra Cotta does not extend back much beyond fifty years. True, in England they made chimney pots and tiles as in European countries, but the English architect in the revival of classical architecture, sought for material that was at once light and durable, indestructible by fire and time, and which would not be an imitation like painted galvanized iron. This he found in Terra Cotta—a material of itself, with a beauty of its own, and not an imitation.

Modern buildings with a skeleton constructed of steel, offer a motive for the use of Terra Cotta, or, in other words, in Terra Cotta has been realized the possibilities of steel construction.

In touching upon the revival of Terra Cotta, reference must be made to England. The architecture of each country has developed its own individuality, and in England had the advantage of such men as Blashfield, Sir Henry Dolton, Sir George Skey, Jennings, Gibbs, Cowan and others; and even in the hands of these men, and under the leading architects of the day, the material as first produced, could not be called beautiful. The South Kensington Museum, and the Albert Memorial Hall, show what might be accomplished, but in no way satisfied the architects or the artistic public. The material in the Albert Memorial Hall was manufactured out of natural raw fire-clay, and having been submitted to open contact with direct heat in the kiln, resulted in twisted and distorted work.

Contrast this work at the Albert Memorial Hall with the gates at Lord Rosebery's mansion, made with clay carefully washed and free from impurities, mixed with broken glass, spar and grog (you must excuse the word "grog," and not take it in the ordinary acceptation; in this instance it is a term applied to fire-clay that has been burned and ground), properly dried and burned; this work could never be taken as an "imitation" of brown stone, granite or any material, but is simply Terra Cotta.

Another instance of success in the early days, is the work on the Dulwich College, carried out after the design of the late Charles Barry, and costing some \$140,000.

Terra Cotta received a great impetus when Sir Henry Dolton's Works were erected upon the Thames embankment in London, for the manufacture of this material and other fine art goods. The building and machinery alone represent an expenditure of £1,000,000, the interest upon which at 5% you, gentlemen, can easily estimate. I have just received a letter from a fellow-workman, at one time with me, but who has returned to England to his old shop. He informs me that now there are three Terra Cotta Works, where there was only one when he left a few years ago. The English architects must have created this demand, and I trust Canadian architects will follow their example.

Delf, china, faience, etc., etc., are made at the Dolton Works in Staffordshire, but the manufacture of Terra Cotta has no relationship to these industries at the various branches of the works mentioned.

The work in the United States has made rapid strides. Much has been accomplished, but Englishmen have been at the head, men such as James Taylor, Joseph Joiner, and others, all of whom received their practical education in England. In the United States to-day, the importation of Terra Cotta, delf, china, etc., is visibly decreasing. Why? Because a demand having been created—the architects giving the preference to home industries—investors grappled with the problem, with the result that to-day large works are dotted all over the country, doing a substantial, profitable business, and turning out material equal to the best that could be imported, as witness the work of the several Terra Cotta companies, and the magnificent work at the Rookwood Pottery at Cincinnati.

Terra Cotta in Canada has failed for two reasons—first and foremost, lack of support upon the part of the architects; second, because every person who connected himself with it, made brick, and making brick takes up about twenty-four hours a day, and leaves very little time for attention to Terra Cotta.

* Paper read before The Ontario Association of Architects, January 18th, 1899.

I fear that those in this country who try to make bricks and Terra Cotta, or Terra Cotta and bricks, will not meet with that success the venture merits, for to use the expression of the canny Scotchman, "Ye canna whistle and mawsticate oat meal." No doubt a vulgarism, but decidedly expressive.

In scarcely two countries will the difficulties met with be the same, though each has sufficient of its own. A man accustomed to follow a certain line of action in one country and with success, will often fail in another; the conditions seem to be peculiar to the country they exist in. Sometime ago a Staffordshire man, who met with success in England, conceived the idea that the possibilities of making money in Canada in the Terra Cotta line were exceptionally good, and a test of certain clays obtained in Canada seemed to warrant the investment, so he made it, and—failed. Then he tried imported workmen, and failed, then imported clay, and failed again. Imported coal he thought would fill the bill, but again failure attended him, so he concluded that to make a success of the undertaking he would have to import British atmosphere.

However, it has been practically demonstrated that Canadian clay is all right, and experiments conducted in Canada have proven that Canadian clay if properly handled and the conditions taken fully into account is as good as can be procured elsewhere, and that material of artistic excellence and good quality can be made here as well as in any other country. This is the result of a vast expenditure of time, money and patience, but the results justify the expenditure.

The dark ages that locked up trade and family secrets (and in Europe trade secrets became often family secrets, and a business would be carried on from generation to generation, from father to son) have now become a thing of the past. Science has reached out, analyzed and brought forth work not only equal to the old, but in many respects far superior,—again let me refer you to the Rookwood Pottery, which is a model of beauty and originality, and demands the praise of the civilized world.

There is, however, possibly an exception in the handcraft of the descendants of the Mexican Indian, where the secrets have been preserved for hundreds of years. These workmen can to-day hand you a water jug, designed with hieroglyphics that may be designated as barbarous, having a beautiful glaze upon the exterior, of a most peculiar nature, which will permit of evaporation and leave the water in the jug cool and refreshing. A fine point like this has not been achieved by the modern worker. Another exception can be made in the Japanese ware which leaves so much to admire, to study, to imitate and to learn.

You may think, gentlemen, that I am getting away from the subject—that it is not Terra Cotta—yet under the head of Majolica ware, which embraces all baked clay that has received a color and a glaze, and not porcelain or china, all of this is very much Terra Cotta.

Nature has in this country been particularly generous in its gifts of the various substances that go to make up the component parts of Terra Cotta. There is a wild rush for the gold of British Columbia and the Klondike, and those who don't rush, are speculating in stocks, but the time will come, and that ere long, when attention will be turned to the gold which we have at our very doors, and which can be obtained by the utilization of the raw products which at present are spurned and considered as worthless. A well-informed person who has practical knowledge of such matters, told me recently that within two hundred miles of Toronto large deposits of spar, and stone equal to the best Cornish can be had, while as to the clay the supply is unlimited.

At the revival, Terra Cotta was made of fire clay—the modern product is made of about four parts of clay to one of "grog" (fire clay), and like Colonel Seller's eye water, is often one ingredient short.

Clay good for Terra Cotta is not taken from the surface, which usually contains much foreign matter, and owing to these foreign matters melts at a very low temperature. A pure good clay should be mined like other precious metals, and I am convinced that a judicious mixing of different clays has produced the best results, for all that is desirable is seldom found in one bank; a clay should not shrink much in drying.

Ruskin has compared the perfection of form to the swan, and the perfection of color to the humming bird. Terra Cotta takes the form you impress upon the clay, and architects who visit the works to inspect the models made from their details, are prone to say, that the work never looks so well as in the natural soft, wet clay, and for this reason the manufacturers have been striving to make the finished material have as far as possible the appearance of the soft, wet clay, and the clay model the appearance the material will have in the finished state.

Upon the architect depends the finished material. If his conception be good, and the artist follows that conception to the satisfaction of the architect, then the finished material becomes a work of art; but if the conception be bad, and the architect will not permit the artist to improve upon it, (and the very fact that the artist is a clay worker should have some little weight), the finished material is anything but a work of art, and the manufacturer, seldom the architect, is scoffed at, and the unjust impression goes abroad that he cannot produce good work.

But the architect is often placed at much disadvantage, for the model he is asked to accept may be of a reddish clay upon a white plaster background, and the finished material to be of a cream buff color; really it would seem that for the time the architect should be color blind, and simply look for "perfection of form, but not of color."

In the matter of color much may be said. One man will require a shade of buff, the next a peculiar shade of mahogany, another a shade of grey with a "light sky blue feeling," and each is disappointed if he does not just the particular shade he

thinks he desires, but which if produced and erected in a building, might cause him to "take a trip abroad" until kindly time and the weather had softened the tones and shaded the surface of the structure.

What Mr. Waterhouse, the eminent architect has said on Terra Cotta, I am thoroughly in accord with—that is, that it should be made in small pieces—that large lintels, large columns of enormous proportions are successfully manufactured, but it is with a great deal of care, a great deal of time and a great deal of expense, while the virtue of the material is in relatively small pieces.

Waterhouse contends that the slightest settlement of a building will cause the large lintels, sills and transoms to crack; while if made and constructed in small pieces the mere settlement would be the opening of the mortar joints.

I have always found the tendency on the part of architects here to make their work in Terra Cotta conform as much as possible to stone construction. I have successfully made pieces containing 13 and 14 cubic feet, but I contend that such construction was an error.

The late Mr. Joseph Joiner, of Indianapolis, puts the maximum at 7 cubic feet, but I feel that there is beyond this a limit to which its use may be extended.

I will hand to your Registrar a specification such as I consider tenders should be based on; also a list of information which manufacturers require in order to tender in a practical way on Terra Cotta work.

I leave this matter with your Registrar. It may possibly be that some of you will find occasion to refer to it in future, as I have found that specifications for Terra Cotta work have not been as thorough as those used for carpenter and plumber's work.

You have now Terra Cotta in all colors at your disposal; all American Companies advertise Terra Cotta in all colors glazed and semi-glazed, while an English firm came out with an advertisement some years ago, "A new building after every shower."

Glazed Terra Cotta, so far, has not met with much success, but I feel that it could judiciously be introduced in particular places.

Sir Henry Dolton said that a new Terra Cotta job never looks well. It had to be seasoned with soot.

We have some few samples of different Terra Cotta in Toronto. There is some Italian, some English, some American and some Canadian. The Oak Hall building affords a good illustration of how architecture may be embellished with sculpture, but the Italian Terra Cotta was not sufficiently burnt for this climate. The winter has caused some of the figures to drop an arm or a limb, which are now glued on with cement.

The obelisk laid in the sand of Egypt for centuries, but it started to disintegrate as soon as erected in Central Park, New York. This shows the necessity of well burnt Terra Cotta for this climate. All the Canadian Terra Cotta is standing as fresh as the day it was put up.

We are constantly brought into opposition with stone. I might ask you to examine some of the buildings erected in that perishable material. The baulstrades that surround Osgoode Hall have entirely disappeared, while many of our finest buildings are showing the marks of disintegration. In a well burnt piece of Terra Cotta you have something that is indestructible, being proof against fire and time.

DISCUSSION.

Mr. Burke: There was a time in my experience when the mention of terra cotta made me feel like using strong language, and vowing that I would never have anything to do with it. My advice to architects is not to use it unless they can get the contract placed with a very large firm, and to take plenty of time. If they expect to get the terra cotta in about two or three weeks after they have placed the full sized drawings with the manufacturer they will be disappointed. I suppose the President in mentioning my name in connection with the discussion of this subject had reference to my experience with terra cotta in the erection of the Simpson building. In regard to size, I came to the same conclusion as Mr. Hynes: I do not think you can get a thoroughly straight piece of work more than two or three feet in length; to get it in greater lengths than that seems to be practical impossibility, and when building with terra cotta, below the first storey, it is a question whether it is safe to put it in even in that size. With regard to lap-joints, I suppose that Mr. Hynes means that he would make a rebate at the edge of each piece of terra cotta, a mullion and insert this slip which would have the rivet on itself, and cover that joint. At the Simpson building, where there were so many corners, I gave it up with regard to weathered joints in the terra cotta; I simply made the weatherings of cast iron, thin sheets of cast iron with the lips cast on the iron. These weatherings are carried on iron brackets bedded in the terra cotta, and lipped over the edge of the mouldings so that no wet whatever can get into the terra cotta beneath. That seems to me the simplest way in our climate, where almost any material of a clayey nature is in danger of disintegration by frost. I was very much interested when reading the account of



INTERIOR OF HOUSE ON BEACON HILL, VICTORIA, B.C.
S. MACLURE, ARCHITECT.

CAN. PHOTOGRAPH

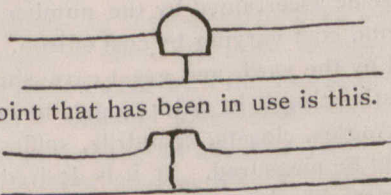
the Home Life Insurance fire, in finding how thoroughly the terra cotta withstood the action of the fire. As Mr. Hynes said, the chief injury was caused in that part of the building which was marble. About the only iron work seriously injured was a girder which by an oversight had been left unprotected in one of the upper stories, not covered at all in fact. I agree with Mr. Hyne's remarks in regard to Mr. Waterhouse, I think his conception of the treatment of terra cotta is the true conception, and if you have examined the details of the building you cannot fail to be impressed with that fact.

Mr. Pearson: Will Mr. Hynes show us a sketch of that water joint.

Mr. Hynes: The joint in common use is of this form.



There is great difficulty in retaining this joint intact. I contend it would be better if it was carried out in this way.



The other joint that has been in use is this.

The President: Don't you approve of Mr. Burke's method of carrying the terra cotta?

Mr. Hynes: No, I cannot think of terra cotta as such an inferior material as to render it necessary to cover it with sheet iron; if it is good, it does not want anything to preserve it.

Mr. Pearson: It is not the terra cotta that the trouble has been with, it is the joint.

Mr. Hynes: Well, I only give my own idea or suggestion of a joint to get over the difficulty. Everything has been used, copper flashing and everything else has been introduced, and this lap-joint has been constantly breaking off; a great many of these pieces are thrown away because of that little lap being broken off. The form I show is fairly practical, and does not show any mortar joint, and, besides, it is cheap.

Mr. Gemmell: That is the second drawing.

Mr. Hynes: Yes, the centre one.

Mr. Gemmell: What is to prevent a little moisture getting beneath the edge and breaking it off?

Mr. Hynes: I never saw any terra cotta break off that way; the difficulty has been where it was broken off before it got into its position.

Mr. Siddall: I had an experience here in Toronto which I never had before in carrying out terra cotta work. We had some terra cotta work in a building which was built in, and when built in it looked better than anything I had ever seen; it was perfect in alignment, finish and everything else. But after it had been in position for three or four months I found that the surface had begun to scale off, in some of the worst cases as much as a quarter of an inch in depth. I have never yet been able to find out the reason for that.

Mr. Hynes: A similar case came to my notice in Chicago. It was under the supervision of Thomas Taylor, a man very well enlightened in such matters, and who carried out the job very successfully, and it was placed satisfactorily to the architect and all the parties concerned. But after the first year he got a report that it was peeling off. He could not realize it at first, but he went and found that it was so. There is a clay that is used a good deal in the modelling shops, and the degree of heat that would affect that would turn the ordinary red clay into a vitrified mass before this potter's clay I speak of would be affected. Some of the modellers clay got into a thin slip and was thrown over the slack clay to keep it damp with water, and it went through the pulp mill and this clay did not become amalgamated, it did not become a heterogeneous mass, and wherever that was the case it just rolled up in layers, and after the first winter it showed up. It is possible that what you allude to may have arisen from the same cause.

Mr. Siddall: In the old country it is the custom

to supply the ordinary full size drawings, because when you have four or five drawings, the modeller does not take your profile at all, he has to enlarge it. In the building I speak of, every moulding and profile was drawn twice, once to shrinkage rule and once to the ordinary full sized scale. That is the only way you can get perfection. Of course the clay will shrink in burning, and in the old country that has been calculated to a nicety, and they will furnish rules to you to measure two feet plus what is necessary to allow for shrinkage.

Mr. Hynes: In pretty nearly every place where terra cotta is manufactured on a large scale, they employ a firstclass draughtsman, and these draughtsmen enlarge from the small up to the standard scale. The red clay I have used has gone as far as an inch and a quarter in shrinkage, while white clay only goes nine-sixteenths of an inch; that has been the total shrinkage to the foot.

Mr. Pearson: The figures Mr. Hynes has given as to breaking strains, afford no criterion to go by, because terra cotta is used as a hollow material, and it has to be backed up; and the backing up is what one has to depend on, and one cannot count on the outside face of the building in the thickness of the walls where you exceed in height three or four stories. In backing up terra cotta with brick there is always a space that has to be filled in or grouted, and it is a very difficult matter to get that done properly. Then, even if it is done, it is not safe to count on it bearing its full load. I do not think that terra cotta can be used in the same way that stone is used, for the reason that it is always a hollow material. Another thing that Mr. Hynes spoke of was having a wash on the surface of the terra cotta, and he is very strongly in favor of having the natural finish. That is all very well, but when you get a number of pieces and place them together they do not harmonize, there is a great difference in the shade; and when you get one piece very much more strongly colored than another, it is not always satisfactory. I do not see why there should be such a rooted antipathy to this wash. They do it in the States, and the buildings there appear to be satisfactory, and where that wash is used the surface finish is more satisfactory than we can get otherwise.

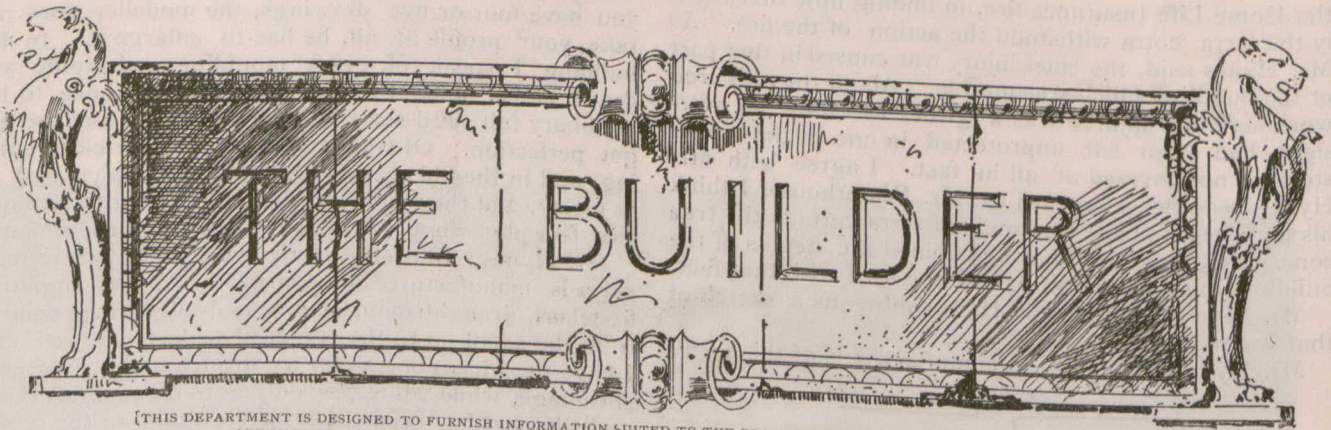
Mr. Hynes: In reply to Mr. Pearson, I might say there is no piece of terra cotta of such a shape that it cannot be stood up and filled thoroughly with cement and brick previous to being used; if it is set into the wall in the hollow form, then there is a great deal of difficulty in filling it. With reference to the straining power of terra cotta, which Mr. Pearson says is of no account, an architect who is no here to-day, said to me, "The difficulty with your terra cotta here is that it is too soft." I said, "Yes; where do you get soft terra cotta?" "Well," he says, "there is that job down on King Street." I said, "Where did you try it?" "Oh," he says, "just by looking at it." I said, "That is hardly a fair test. I will guarantee that you cannot produce a brick that will cut as hard a chisel face as that terra cotta."

Mr. Pearson: I do not think that Mr. Hynes is right in saying that terra cotta can be filled before it is set up in the building, because it has to be bonded into the wall. It may be right enough to do that with mullions.

Mr. Gregg: I have much pleasure in moving a vote of thanks to Mr. Hynes for his valuable paper, and I may say I would be very glad to see him here among us. Some of us remember him as one of our best modellers in plaster and terra cotta, and we have missed him for some time. We are sorry to hear of the death of his employer in Deseronto, but we hope that we may in the future see more of Mr. Hynes, and that he will have some place where we can see his work and consult with him.

Mr. Pearson having seconded the resolution, it was carried.

Mr. Hynes: I can assure you that it has afforded me much pleasure to be present with you, and if I can be of practical assistance to any of you it will afford me much pleasure. I hope at some future time to be able to give you some practical illustrations in the School of Practical Science as to the qualities of terra cotta.



[THIS DEPARTMENT IS DESIGNED TO FURNISH INFORMATION SUITED TO THE REQUIREMENTS OF THE BUILDING TRADES. READERS ARE INVITED TO ASSIST IN MAKING IT AS HELPFUL AS POSSIBLE BY CONTRIBUTING OF THEIR EXPERIENCE, AND BY ASKING FOR PARTICULAR INFORMATION WHICH THEY MAY AT ANY TIME REQUIRE.]

Items in Estimating.

THE tendency of the country builder is to overlook small items when estimating cost of a building, or to "bulk" a lot of small things together. Both these methods are wrong and likely to prove embarrassing and costly in the end. Every item should be figured on, then the style and finish should be considered, also the quality of material used. A few items are given herewith in a general way, merely to show the manner of dealing with them as they present themselves. Get the entire surface of the floors in square feet, add one-fourth for waste in fitting, etc., and if the stuff is more than one inch thick, make provision for extra thickness. Two men working together will lay more flooring in one day than one man alone will lay in two days. Two men working together will lay five or more squares a day. Five pounds of nails are required for each square of flooring. Ordinary 2" x 4" partitions should not cost more than two cents per foot running measure for labor. Doors and door frames should be estimated at so much an opening, including door, hanging, fitting and completing, exclusive of cost of material and fittings. As doors on each flat vary in size, finish, and style of fittings, each door should be estimated separately. Estimate cost of materials, locks, hinges, nails and screws according to specifications. Don't overlook closets, but make provision for shelves, wardrobe hooks, hook strips and such other fittings as specifications call for. Linen closets are often fitted up with drawers, shelves, small cupboards with doors, etc.; figure on each item, including hardware attachments. Base should be figured on as moulded, unless it is perfectly plain, then it may be put down as dimension grade lumber. Cost of laying base will vary with the style and number of members in the base. Where rooms are wainscotted (matched stuff), take surface measure and add one-fourth; count cap and shoe as mouldings. Bathroom finish should be estimated carefully according to specifications in the absence of details; top for bath tub and front, weather panelled or ceiling; water closet seat and front, wash stand front, drawers and door, water-tank and covering for pipes, and all cutting for pipes usually done by the builder. Mantels of wood or other materials should be carefully figured, ascertaining as nearly as possible the design and work necessary to place them. In estimating stairs, if the builder intends building them himself, he should figure the lumber in the wall and face strings and center bases, cost of housing and cutting same, lumber in treads and risers, and cost of preparing same; figure all newels separately, hand-rail by the foot, balusters by the piece, labor and nails for setting up if soffit is panelled or ceiled with matched stuff or prepared

for plastering. Fitting and hanging sashes: Cost of hanging may be ascertained by the number of pounds in the weights, cost varying by cost of iron. Plastering is measured by the yard, and great care should be exercised in estimating it in order to get the correct measurement. Angles, closets, spandrils, soffits, and everything, should be measured. If it is desired to estimate the lath separately, about 14 lath will cover one yard. One man will put on about 300 yards of lath in one day. Plastering, including lathing and furnishing all materials, is frequently done from 20 to 30 cents per yard, according to the number of coats and style of finish. These may be accepted as pretty low figures. Plaster courses are estimated by the foot running measure, the cost varying according to style and width. Angles and mitres count so much a piece, measurement always taken from the longest points. Painting is estimated by the yard, and requires as careful measurements as plastering. Special work, such as graining, staining, varnishing or polishing, is paid for by the piece or by special arrangement. These are but a few things, but they will give the estimator an idea of "how to proceed" in estimating.

Chimneys and Flues.

It is a well-known authenticated fact that nearly 75 per cent. of all the fires that occur in dwellings, and very many other buildings, have their origin in defective flues. This percentage could be greatly reduced if the builder would exercise a little more care in the construction of his chimneys and the proper distribution of the woodwork around them. Chimneys should be built from foundation to coping clear and independent of any woodwork. Where the stack passes through a floor or roof, the trimming timbers should work clear of the brick or stone work at least one inch, and the roof boards and flooring should clear the stack nearly as much. The slate or shingles will of necessity be close to the brickwork, but should be so put as not to interfere with the chimney's settling—for all chimneys will settle a little—for should the roof covering prevent the upper part of the chimney from settling along with the lower part, the stack will break at the line of junction with the roof, and the crack may be large enough to admit sparks and smoke, and the house may take fire from this cause. The same argument applies to the floor; the woodwork must be kept clear of the chimney. No flue should be less than 8 x 8 inches, or the length of one brick square in the clear, and this size should be maintained from bottom to top, regularly built—not contracted at some points and expanded at others. The walls adjacent to the flue should be laid close, and every joint of the

bricks slushed or entirely filled up with mortar. The inside of the flue should be well pargetted or plastered with a mortar that will adhere to the bricks; simple lime-and-sand mortar will not be effectual, although used in common, if not almost universally. When the flue becomes heated, which it will at times, common mortar will peel and chip off and leave the joints exposed for the admission of smoke and fire, and at points where the woodwork, such as flooring or timbers supporting the same, approaches too near the brickwork of the flue, will ignite, and the fire will extend between the floor and ceiling along the joists, and have control of the building before it is visible to outsiders or inmates of the house, and the building is either seriously damaged or entirely destroyed for the want of a little care and attention in the construction of the flue. Par-getting mortar should be made with a portion of cow's hair in it, in about the same proportion as used in mortar intended for the first coating of wall plastering. Horse manure, in about the same proportion as cow's hair, thoroughly mixed with the lime-and-sand mortar, makes a very effectual pargetting, and when well put on will remain as long as the flue lasts. As a further safeguard, at the intersection of floors and roof the thickness of the flue walls might be swelled out so as to give a thickness of walls at these points of not less than 8 inches. There is no constructional difficulty in this, and the chimney would be rendered doubly safe. A perfectly safe flue may be made by using ordinary glazed drain tiles of sufficient size for the flue, building them in as the chimney is being constructed. These may be obtained in suitable sizes, and T lengths can be had, which may be inserted in the flue, leaving the wing or third part to project through the wall for the reception of stove pipes, or for admission of air for ventilation purposes. A flue, constructed with tiles in the manner suggested, would be as near perfection as it is possible to build a flue.

Finding Some Angles.

SOMETIMES builders are puzzled to find proper angles and shapes to suit the work in hand. A few little problems and their solutions given herewith may prove of material service sometimes. Suppose we want to find an angle bracket for a cornice, proceed as follows: Let A, Fig. 1, be the common bracket; draw the parallel lines, ooo,

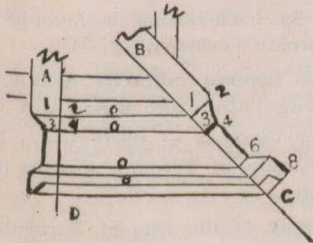


FIG. 1.

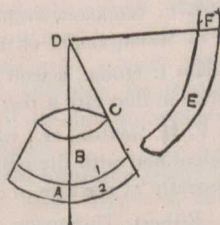


FIG. 2.

to meet the mitre line C; square up on each line at C, and set the distances 1, 2, 3, 4, etc., on the common bracket, from the line D, on the small lines from C; through these points, 2, 4, 6, etc., trace the form of the bracket, and the work is done. To find the form of a base or covering for a cone, let A (Fig. 2) be the width of the base of the cone. Draw the line B through the centre of the cone; extend the line of the side C till it meets the line B at D; on D for a centre, with 1 and 2 for radii, describe E, which will be the shape of the base required; F will be the point for the same. When this (E) is obtained, it may be bent around the base at A,

and its edges will be in a horizontal line. In other words, if the cone stands on a floor, and E be bent around its base, the lower edge of E will coincide with the plane of the floor. To find the shape of horizontal covering for circular domes, the principle is the same as that employed in the last problem, but, supposing the surface of the dome to be composed of many plane surfaces. Therefore, the narrower the pieces are, the more accurately will they fit the dome. Draw the line A through the centre of the dome (Fig. 3), divide the height from B to C into as many parts as there are to

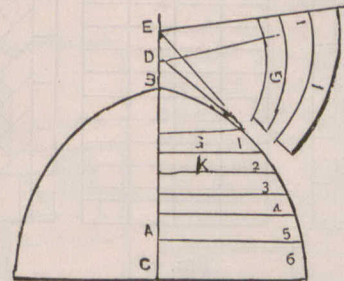


FIG. 3.

be courses of boards or tin. Through 1 and 2 draw a line meeting the centre line at D; that point will be the centre for sweeping the edges of the board G. Through 2 and 3 draw the lines meeting the centre line at E; that will be the centre for sweeping the edges of the board K, and so on for all the other courses. Care must be taken in drawing the lines from the face of the dome to the central line A, so that false centres are not obtained. To divide a line into any number of equal parts, let A B (Fig. 4), be the given line. Draw the line A C, at any convenient angle, to A C; set dividers any distance, as from 1 to 2, and run off on A C as

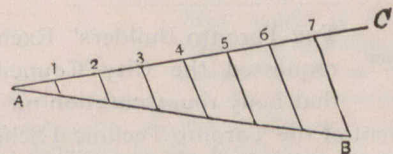


FIG. 4.

many points as you wish to divide the line A B into—say 7 parts; connect the point 7 with B, and draw the lines at 6, 5, 4, etc., parallel to the 7 B, and the line A B will be divided as desired. This is a very simple problem, and is absolutely correct. To find the cut for any angle where a moulding or other angle has to joint, proceed as follows: Let A and B (Fig. 5) be the given angles; set off from these points of the angles equal distances each way, and from these points sweep the arcs

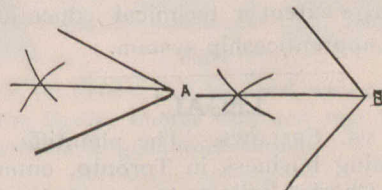


FIG. 5.

of circles, as shown in the figure. Then a line from the point of the angle through where the circles cross each other will be the cutting line required. This is one of the most useful problems in practical carpentry and joinery.

Diagonal Bond in Brickwork.

NOT very often, but sometimes, the bricklayer is called upon to "lay up" a diagonal or a herring-bone wall, and and it is fitting he should be able to perform the work without much trouble. The following illustrations and

descriptions will materially help him in laying out the work. Fig. 6 shows the method of describing a 4-inch wall in diagonal bond with English facing. Draw the facing bricks first, then take the diagonal length of four bricks A to B, strike an arc BC; from C, with half a brick radius, strike arc DE, join EA, and from E, the point of intersection with BC, draw horizontal line EF.

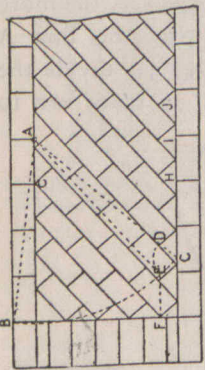


FIG. 6.

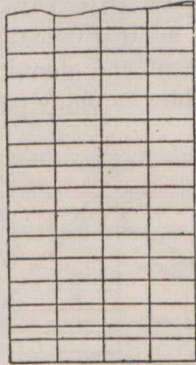


FIG. 7.

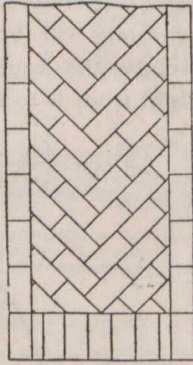


FIG. 8.

From F draw FG parallel with EA, to form one of the diagonal points; all the others may be obtained by drawing parallel lines at half-brick intervals. This method enables the diagonal bricks to be laid without any cutting, but it may be preferred to fill in solid the triangular end spaces H, I, J, etc.; then the diagonal points should be laid at an angle of 45° , and the bricks cut to fit. Every alternate course must be all headers, as shown in Fig. 7, and the diagonal courses may rake alternately from right to left. Fig. 8 shows herringbone bond, the interior bricks being laid at 45° and cut to fit the face bricks. This bond should also be laid in counter directions.

Toronto Builders' Exchange.

THE Toronto Builders' Exchange have requested the City Council to grant that body representation on the Board of Management of the Toronto Technical School and the Toronto Industrial Exhibition. The fact is mentioned in support of the petition that the Exchange represents one of the most important lines of industry in the city and the expenditure of a very large amount of capital. In view of the large number of young men who will every year pass from the technical schools into the ranks of mechanics in the building trades, it seems a fair proposition that the employers should have some voice in deciding what courses and methods of study are most likely to produce an efficient class of workmen. This appears all the more necessary since it is sought to substitute to a large extent a technical education for the old-fashioned apprenticeship system.

LEGAL.

ORR BROS. vs. FELLOWS.—The plaintiffs, a firm of contractors doing business in Toronto, entered into a contract with Charles Fellows to execute the brickwork of a pair of houses on Sussex ave. Plaintiffs reduced their tender for the work by \$100, in consideration of being permitted to use some brick and stone the property of defendant. They also agreed to accept as the last payment a note of the defendant for \$250 drawn for a period of three months, renewable, and bearing interest at 6 per cent. The revised form of contract was used, which contract was signed by Charles Fellows. At the completion of the contract plaintiffs learned that Ruth Fellows, wife of the defendant, was the owner of all the property, and she refused to endorse her husband's note for \$250. Defendant was his own architect and inspector, and issued no progress certificates. The specification contained a clause that no extras

would be allowed unless agreed on beforehand in writing and signed by the owner and the contractors, which was not done. The contractors sued Ruth Fellows for \$250 balance of contract, \$205 for extras and \$40 for refusing to permit them to make use of the old material. The High Court of Justice appointed Mr. Edward Morgan, Junior Judge of the County of York, as sole arbitrator to decide the dispute. The arbitrator found that Charles Fellows was merely the agent of the his wife, and therefore that his wife was responsible for the payment of note given by him. The plaintiffs were awarded \$250 in respect of the contract price, \$129.37 in respect of extra work, less a deduction of \$44.45, for work rendered unnecessary by changes in the plans and specifications, and certain work imperfectly done by plaintiffs, leaving a balance due the defendants of \$334.92, with interest thereon since Feb. 28th, 1898, together with costs of action. The plaintiffs' claim of \$40 for not being permitted to use the old material was not allowed, as this point in the agreement between the parties was not embodied in the contract.

EFFLORESCENCE ON BRICK.

TORONTO, Feb'y 4th, 1899.

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

SIR,—As far back as June, 1894, the architects and builders of British Columbia, in using pressed brick, were troubled with a white substance coming from the brick which greatly disfigured the surface of the work. They wrote to the Ontario Architects' Association asking if they could suggest a remedy that would completely destroy or prevent its appearance on the face of a building. The answer was, as near as can be remembered, as follows:—"There is no process known which is effectual in preventing the exudation of magnesia from brick work. The using of acids and oils is not satisfactory. The problem of how to avoid it, is one which has for a long time given brick manufacturers a good deal of anxiety, and if any of our readers are possessed of any useful information on the subject we will be pleased if they will contribute it."

I am inclined to think there is a possibility of the mystery being solved. Mr. F. J. French, a man well-known among the building fraternity, and a good number of the architects of Toronto, who has been in the brick manufacturing and building for a good many years, informs me that he has been studying and experimenting on the destruction of this white substance for years past, and is confident he has solved the problem. Chemicals, he says may destroy it, but that treatment is expensive; his process is simple and sure if strictly adhered to.

The remedy was placed with one of the largest firms of brick manufacturers in the province, in May of 1898, in order to give it a thorough test, which he is sure will prove satisfactory.

Yours truly,

A CONSTANT READER.

PERSONAL.

Mr. A. F. Wickson, architect, has been elected chairman of the Board of Management of the Toronto Technical School.

William J. Home, a well known Toronto contractor, died at his residence in that city a few days ago, at the age of 64 years.

Mr. F. H. Sexton, sr., who for upwards of thirty years has been identified with the building trade in Toronto, died in that city recently at the age of 67 years.

Mr. Robert Thompson, formerly of the firm of Turnbull & Thompson, builders and contractors at Paris, Ont., died in that town recently at the age of 79 years.

Mr. M. R. Burrows, architect, recently of Detroit, Mich., has opened an office in Sarnia, Ont., and will be pleased to receive manufacturers' and dealers' catalogues and price lists.

The news of the death of Mr. William G. Willis, manager of the Hobbs Glass Works at London, Ont., was received with widespread regret. Mr. Willis had been in the employ of the Hobbs Company for 23 years, and was universally respected.

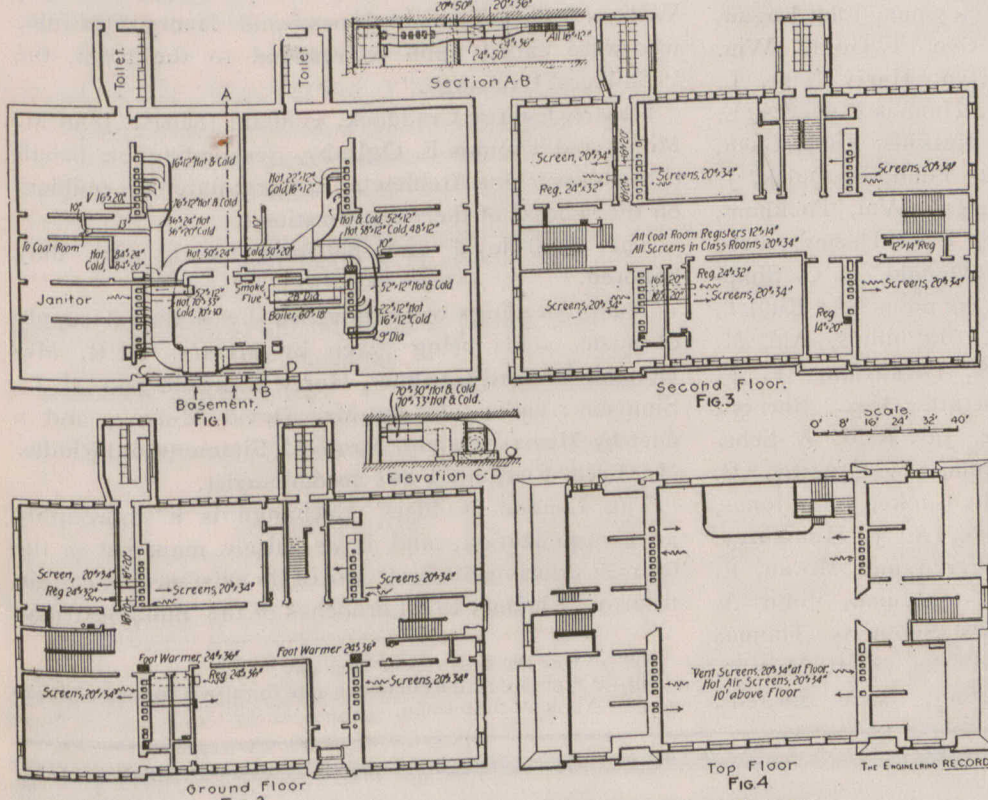
Mr. H. Mamizu, chief architect of the government of Japan, visited Toronto recently in connection with a tour of inspection of public library buildings. Mr. Mamizu is collecting data to be used in the erection of a national library at Tokio to cost \$300,000. He states that of late years the Occidental style, with its ingredients of brick and stone, is replacing wood architecture in Japan.

VENTILATION AND HEATING OF A NEW BRUNSWICK SCHOOL.

The new high-school building in St. John, New Brunswick, Canada, is heated by an unusually complete indirect blower system for a building of its size. Air is supplied by the double-duct method, the mixing of the cold and hot air taking place at the base of the various fresh-air flues.

The building was erected from the plans of Mr. G. Earnest Fairweather, of St. John, and the heating system was installed by Mr. Thomas Campbell from the designs of the B. F. Sturtevant Company, which furnished the heating apparatus. The following

are taken from them. There are four interior walls extending through the building, and in these are located the flues, both for heating and for ventilation. The branches from the ducts lead to the bases of these flues, as shown in Figure 1, and a mixing of the air in the two takes place at this point. The mixing dampers are of the Sturtevant hinged-cylinder type, and are controlled by hand from the room to which the flue leads. The air supply of each room may have, therefore, any temperature desired, irrespective of that of any of the other rooms, within the limits of the temperature of the outside air and that available from the heating apparatus. Fresh-air inlets to the class rooms are located 8 feet from the floor, and those in the assembly room 10 feet. They are 20 x 34 inches in size and are provided with wire screens. Air is carried through similar screened openings located at the floor and almost directly below the inlets, leading to flues rising alongside of the heating flues. The flues are brought together into four groups at the roof, where four ventilating covers serve to discharge the vitiated air into the atmosphere.



VENTILATION AND HEATING OF A NEW BRUNSWICK SCHOOL. The B. F. Sturtevant Company, Boston, Mass., Engineers.

description is reprinted from the Engineering Record of New York:—"The building is a three-storey and basement structure, measuring about 78 x 128 feet in plan. Figure 1 shows the basement, in which the machinery and apparatus of the plant are located; Figure 2, 3 and 4 are plans of the ground, second and top floors respectively. The entrances and stairways for the pupils are at either end of the building and are connected on both the ground and the second floors by a central corridor provided with coat and cloak rooms for teachers and for pupils. There is an entrance for teachers and visitors at the front of the building, and over this is situated the principal's office. Two parts of the building projecting from the rear, and accessible through hallways adjoining the cloak rooms, are used for toilet rooms. These are located in the basement and on the two floors above, as shown on the plans. The top floor is chiefly given up to a large assembly room occupying the center of the floor, with two small rooms on either side separated by continuations of the main stairways which rise in dormer windows, as shown in Figure 4.

A single boiler located in the basement furnishes steam for the heating coils and for the steam engine, which drives by belt a 7-foot blower capable of discharging about 40,000 cubic feet of air per minute at a speed of 180 revolutions per minute. Air is drawn into the basement of the building through adjacent windows, and is forced by the blower through heating coils of the sectional-base type, containing 5,000 linear feet of 1-inch steel pipe, equivalent to a heating surface of about 1,700 square feet. The coils are provided with a by-pass leading to a system of cold-air ducts located above, and separated from those conveying the hot air. An elevation of blower and heating coils is shown in Figure 5. A damper in the by-pass is only opened during school hours, as cold air is, of course, not needed when warming the building previous to its occupation by the pupils. The outlet chamber of the blower is also provided with a hinge damper, which is ordinarily allowed to project against the current of hot air so as to divert a sufficient quantity to temper the cold air passing through the heater by-pass. The two systems of ducts, the cold above the hot, are suspended around the center of the basement, decreasing in size as branches

are taken from them. There are four interior walls extending through the building, and in these are located the flues, both for heating and for ventilation. The branches from the ducts lead to the bases of these flues, as shown in Figure 1, and a mixing of the air in the two takes place at this point. The mixing dampers are of the Sturtevant hinged-cylinder type, and are controlled by hand from the room to which the flue leads. The air supply of each room may have, therefore, any temperature desired, irrespective of that of any of the other rooms, within the limits of the temperature of the outside air and that available from the heating apparatus. Fresh-air inlets to the class rooms are located 8 feet from the floor, and those in the assembly room 10 feet. They are 20 x 34 inches in size and are provided with wire screens. Air is carried through similar screened openings located at the floor and almost directly below the inlets, leading to flues rising alongside of the heating flues. The flues are brought together into four groups at the roof, where four ventilating covers serve to discharge the vitiated air into the atmosphere.

As shown in the drawings, floor registers are provided in a number of places and are supplied by circular flues. These are located in the cloak rooms, and two of large size in the ground-floor hall are for use as foot-warmers. Where the class rooms are separated from the flue wall by a cloak room or corridor the fresh air is carried in a short duct as shown. Under these conditions it is necessary to lead the corresponding ventilating duct from a floor register underneath the floor to the ventilating flue.

The toilet rooms are given no direct supply of air, but are provided with ventilating flues to carry away the foul air and to assist in maintaining a passage of air from the corridors into these rooms. This is brought about by a slightly greater pressure of the air as it is delivered by the blower into the main part of the building. At the third floor, pipes lead from the top of the flues to brick ducts above the third-storey ceiling, where they discharge to two of the ventilating centers."

This method of heating is now being introduced in this country

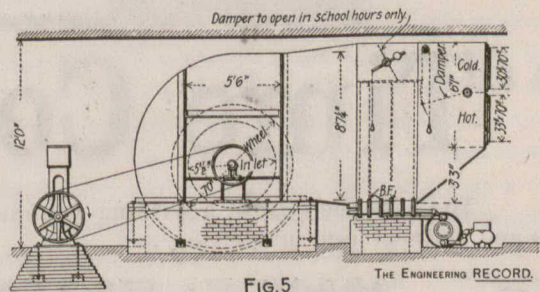


Fig. 5 THE ENGINEERING RECORD.

by Messrs. G. W. Reed & Co., Montreal, who are the Canadian agents of the Boston Blower Co., and who have earned an enviable reputation for good workmanship.

RESTORING THE ACROPOLIS.

On a stone of the temple of "Winged Victory" on the Acropolis at Athens an inscription has been found stating that the monument was built by Kalicrates, who was one of the architects of the Parthenon at the beginning of Pericles' government. This fixes its date at about 450 years before Christ. The Athens Archaeological Society is about to undertake the restoration and strengthening of the Parthenon. Marble from Pentelicos will be furnished free for this by the company working the quarries.

A bill has been introduced in the Ontario Legislature to incorporate the Toronto Hotel Company, with a capital of \$1,500,000 in shares of \$100 each, for the purpose of carrying to completion the project for the erection in Toronto of a first class hotel building.

LONDON BUILDERS' EXCHANGE.

THE first annual banquet of the above Exchange took place at the City Hotel, London, on the evening of the 2nd inst. The chair was occupied by the president, Mr. William Jeffrey. The following, among others, were in attendance; Major Beattie, M.P., Wm. Smith, John M. Moore, School Trustee J. M. Logan, Ald. Jolly, Wm. Joanes, George Craddock, School Trustee Jones, ex-Ald. Belton, ex-Ald. Stevely, George Kernohan, Wm. Edgecombe, W. D. Willis, W. T. Pace, A. T. Corp, E. Fitzgerald, Geo. Hayman, John Logan, Walter Toll, John Hayman, jr., Geo. T. Gould, Wm. Tytler, Hy. Stratfold, Ed. Martyn, Harry Sing, L. Boss, John Sullivan, John Bryan, Thomas Edwards, E. Garratt, Edward Skuse, Wm. Nutkins, Robt. Gash, R. J. Haslett, Thos. Ridge, John Fenn, I. Quick, J. Fleming, R. Skelley, A. M. Legg, Wm. Packham, Robert H. Berry, Henry Kerr, Fred Deeley, Fred Garratt, Albert Evans, H. R. McDonald, H. C. Simpson, Edward Gardiner, Frank Simmons, A. Riddell, Ald. H. M. Douglass, Ald. P. McPhillips, Ald. H. Dreaney, E. H. Russell, T. A. Parkinson, W. F. Wyatt, Wm. Hayman, J. Garratt, Alex. Burnett, Arthur Nobbs, John Whittaker, Jas. Reid, A. Schabacker, Geo. Mortimore, Thomas P. Oglesby, C. Colerick, A. Stewart, Arthur H. Cooke, John Jones, James S. Luney, W. J. Anthistle, A. J. Humphrey, Thos. R. Wright, Wm. B. Walker, James Moran, E. E. Nugent, ex-Ald. Gerry, H. Hayman, John A. Heaman, Thos. McKinley, Charles Simmons, Thomas Inge, George Taylor, Richard Griffiths, Scott Murray, George Everett, George Tambling, Isaac Sargent,

Wm. Chamberlain, George Howe, George Fox, Edward Jury.

Letters of regret were read from Col. Leys, M.P.P., Col. Culver, United States Consul; Mayor Wilson, Fred. Henry, H. C. McBride, Herbert Matthews and Col. Lewis.

The chairman referred to the friendly feeling and other benefits which had resulted to the trade since the organization of the Exchange a year ago. Testimony to this effect was also given by Alderman Garratt, William Smith, Thomas Jones, and Henry Stratfold, who were called upon to respond to the toast, the "Builders' Exchange."

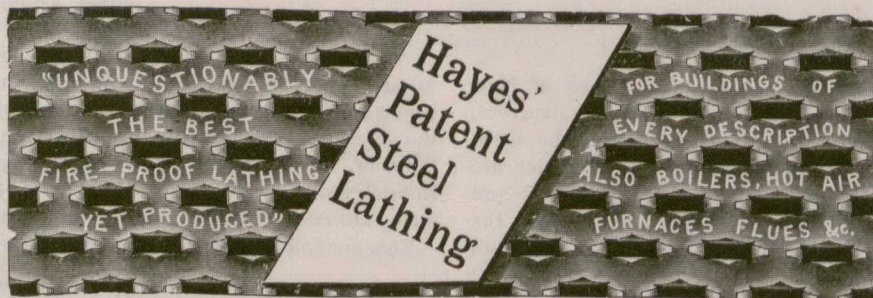
Messrs. George Craddock, William Joanes, John M. Moore and Thomas E. Oglesby, responding on behalf of the toast "Our Architects," congratulated the builders on the success of their organization.

The usual loyal and patriotic toasts were duly honored.

The proceedings were enlivened by a liberal supply of music, solos being given by Messrs. H. R. McDonald, Edward Gardiner, Harry Stratfold and H. C. Simpson; violin solos by Mr. David Murray, and a duet by Messrs. Galpin, Stratfold, Simmons and Riddle. Mr. Fred. Fitzgerald was accompanist.

The London Builders' Exchange is a thoroughly alive organization, and if as wisely managed in the future as during the first year of its existence, is certain to prove a benefit to all branches of the building trade.

Bill—"Has the boss raised your pay?"
Jill—"Well, no; he hasn't been able to raise it for three weeks now."—Yonkers Statesman.



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