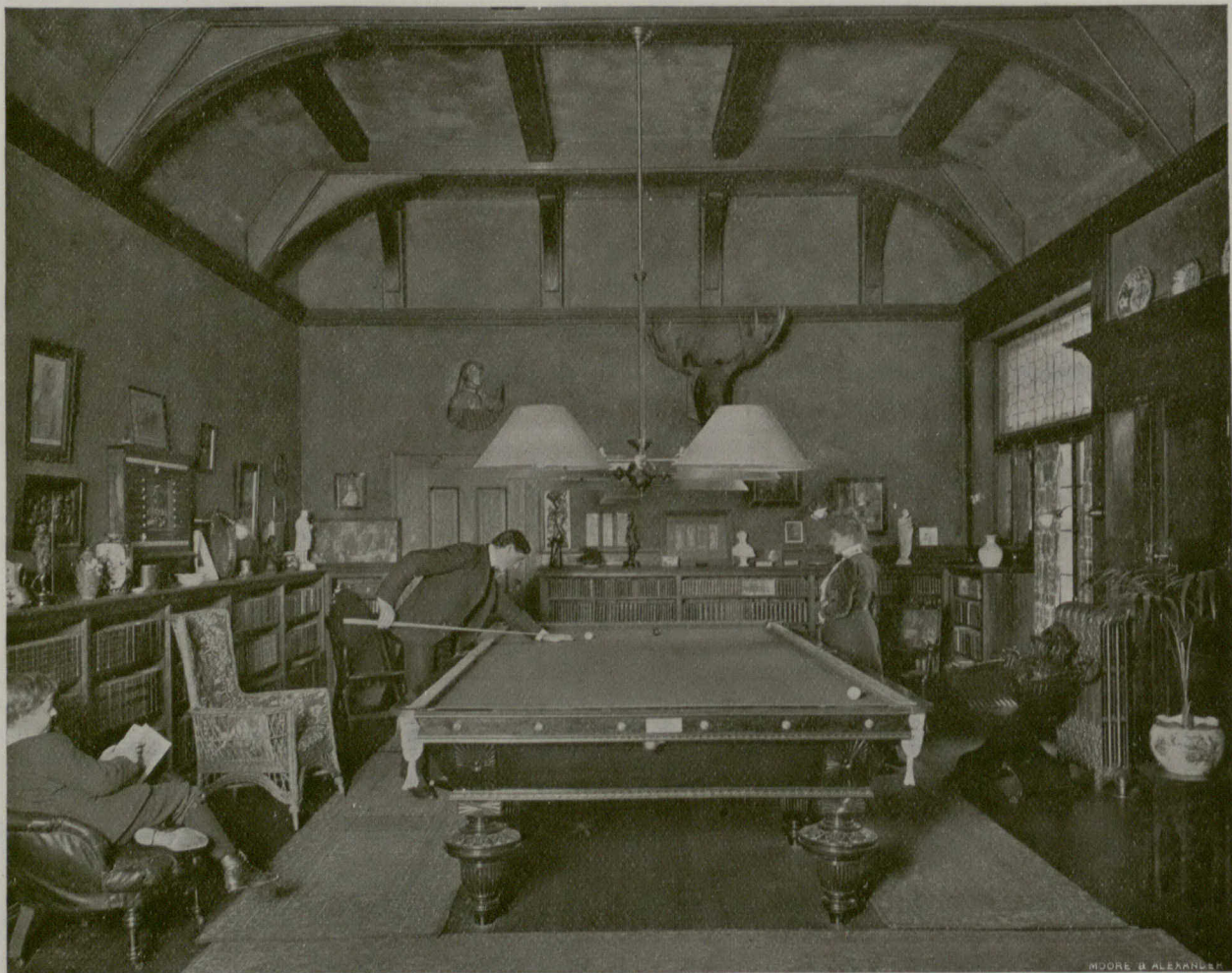


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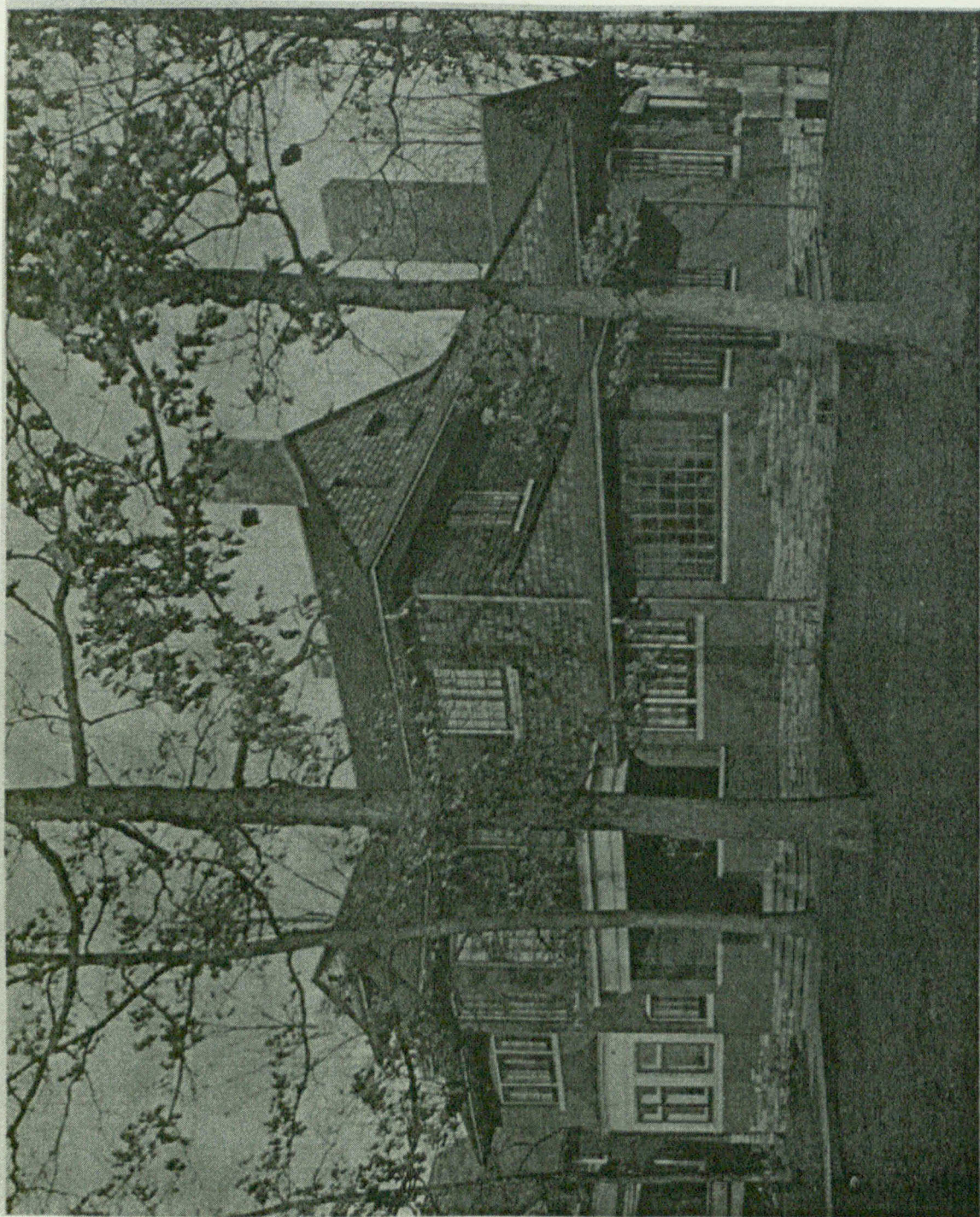
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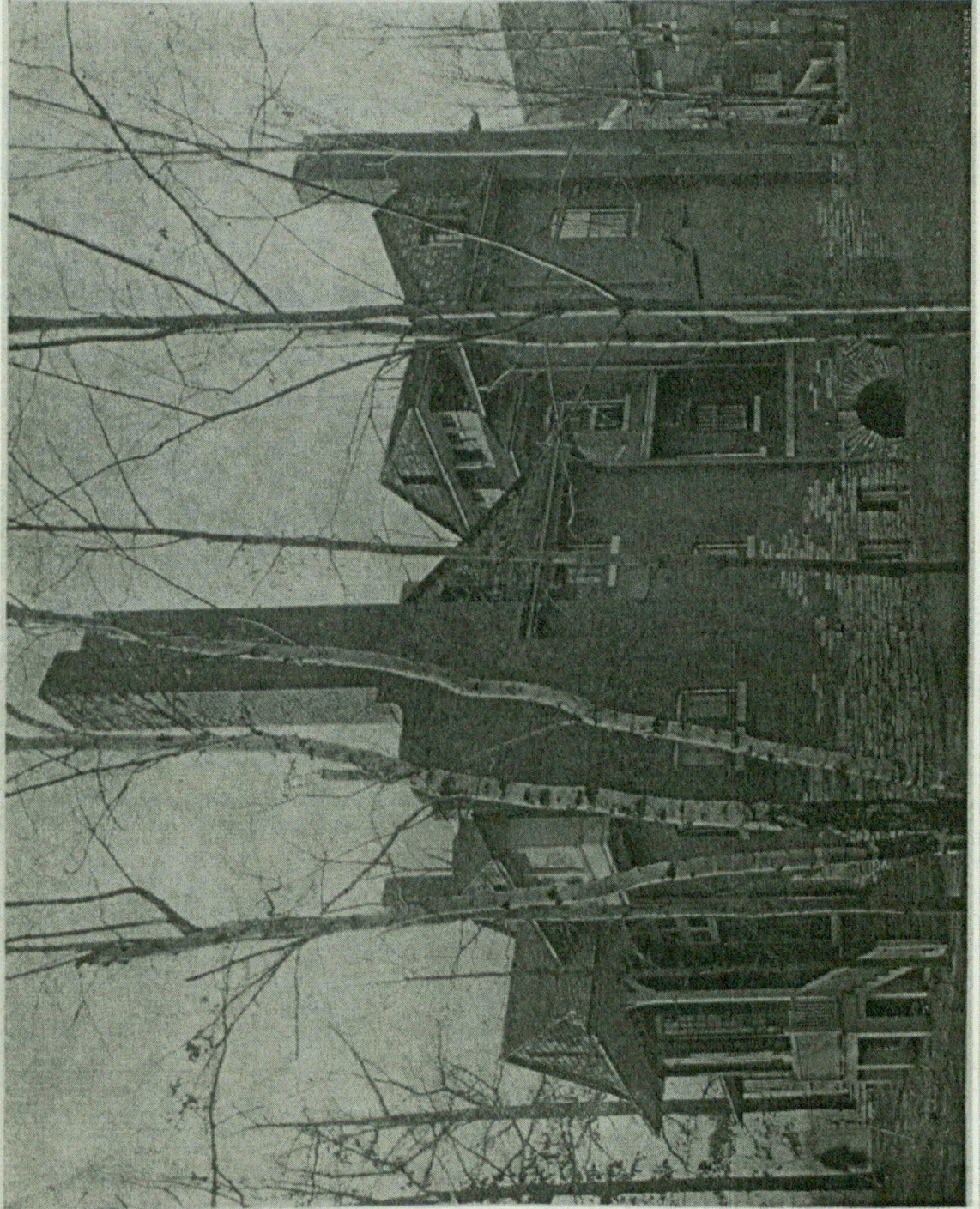


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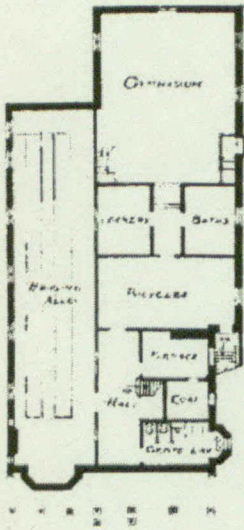
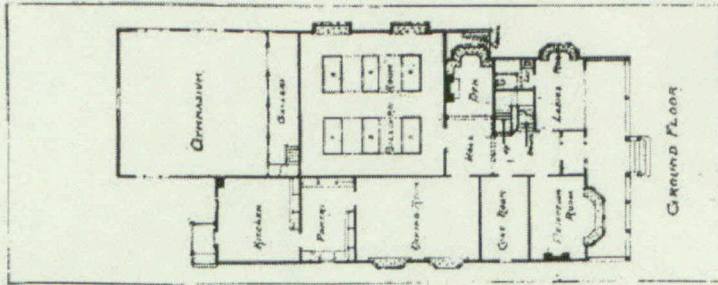


# CANADIAN ARCHITECTURE



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NS, ARCHITECTS.

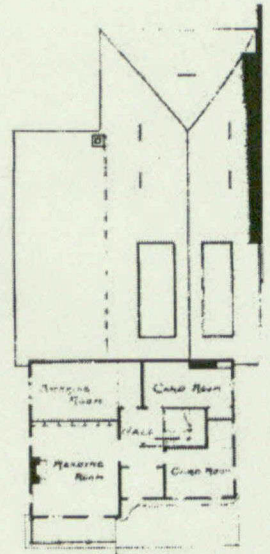




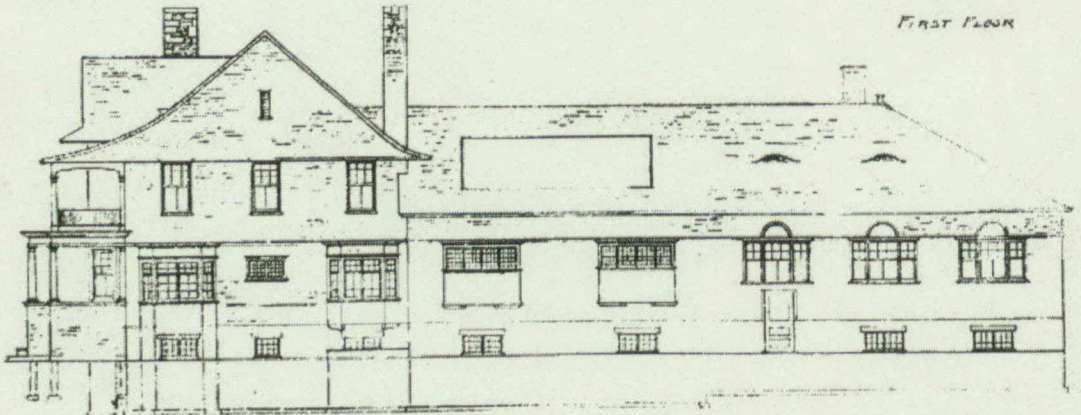
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SOUTH ELEVATION



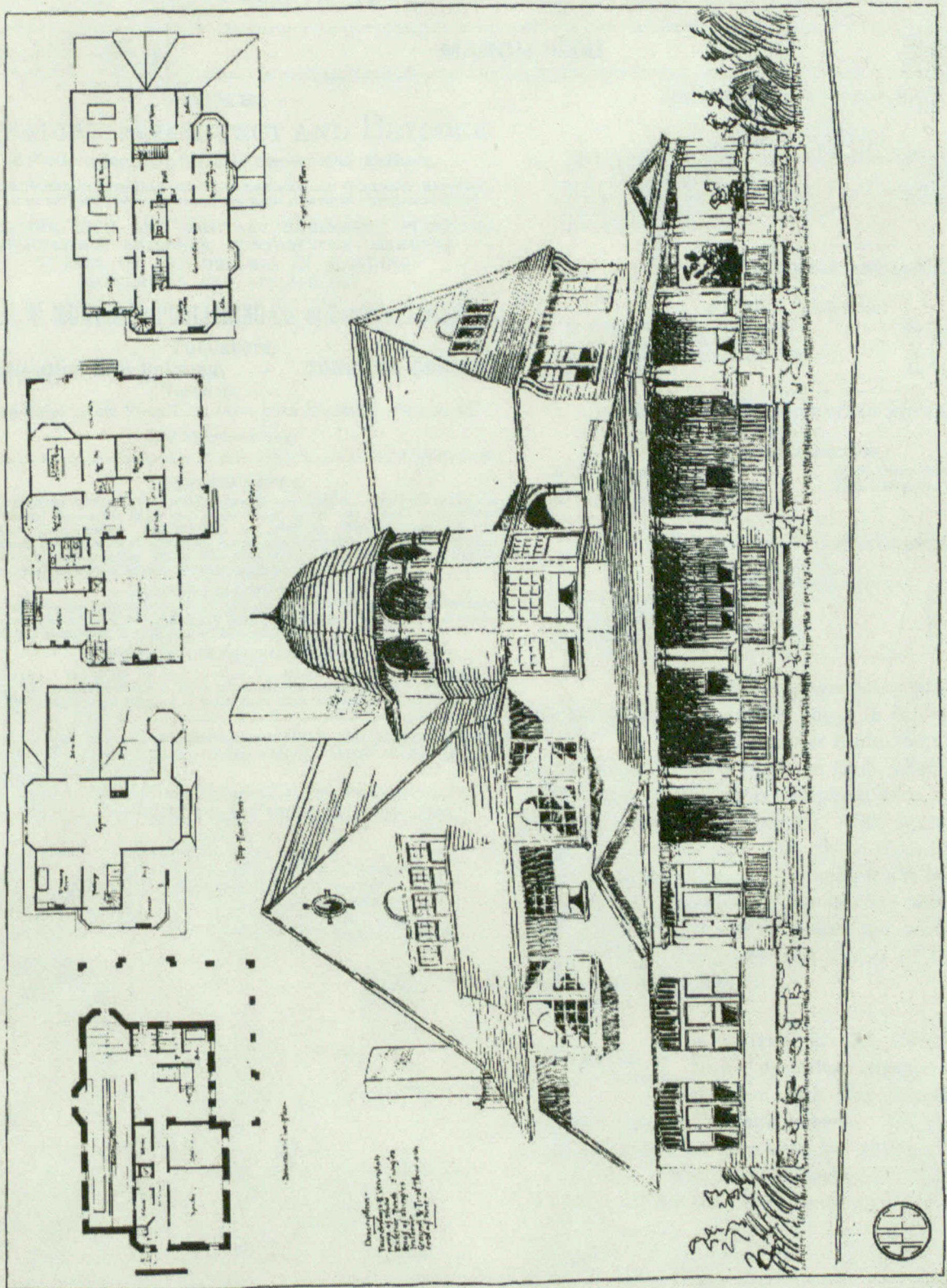
FIRST FLOOR



EAST ELEVATION

DESIGN BY "KENILWORTH" (CLARENCE THETFORD, TORONTO), AWARDED FIRST POSITION.

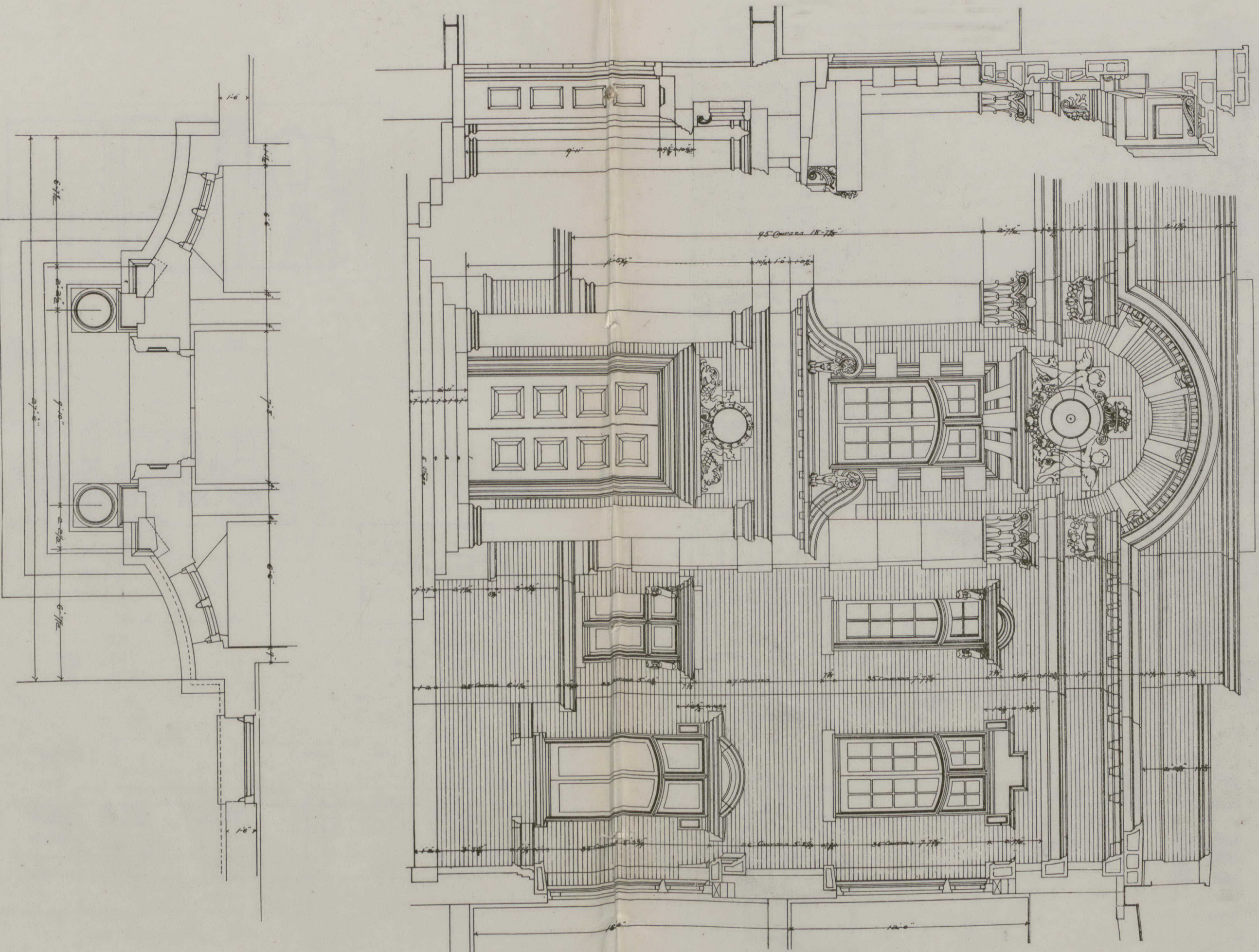




Description:  
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 building with a  
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 The building is  
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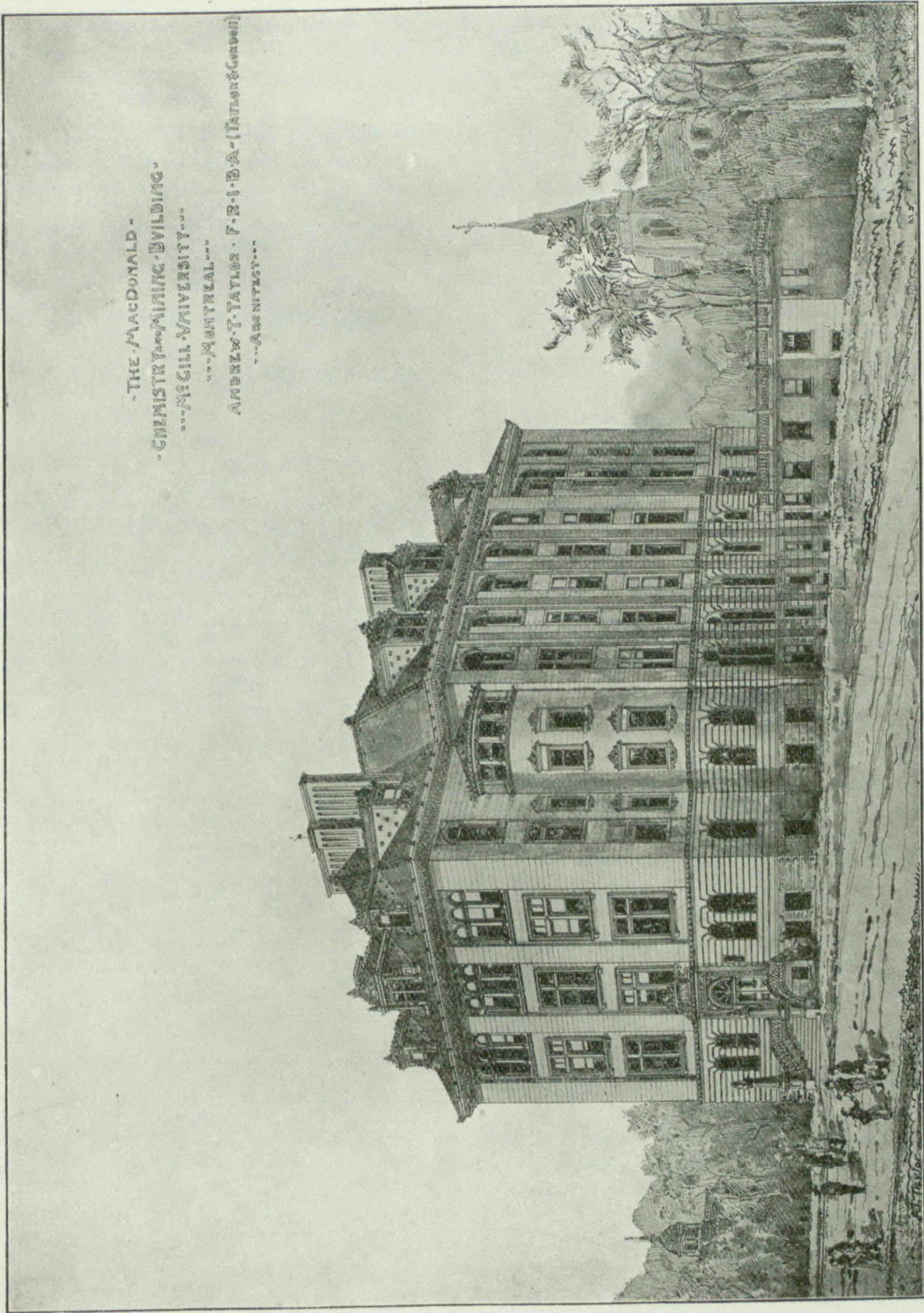
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DRAWING TO  $\frac{1}{2}$  INCH SCALE OF OFFICE BUILDING FOR MESSRS LEVER BROS., LIMITED, TORONTO.  
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# CANADIAN ARCHITECT AND BUILDER.

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We have consented to place one of the **The Eighteen Club.** illustration pages in future numbers of the CANADIAN ARCHITECT AND BUILDER at the disposal of the Eighteen Club, which, as many of our readers are aware, is composed of a number of the younger architects of Toronto. This page will bear the name of the club, and will show illustrations of the work of the members. The designs will be selected by a vote of the members at the weekly meetings of the club, and will no doubt be looked for with interest, as exemplifying the ideas and tastes of the oncoming generation of architects.

### A Substitute for Portland Cement.

A WRITER in the London Building News describes experiments made in Belgium with slag cement as a substitute for ordinary Portland cement. The results of these tests are stated to have been so satisfactory that slag cement was substituted for Portland in the construction of the works for the improvement of the water supply of Brussels. A saving of \$12,000 is said to have been effected by the change in material, the slag cement costing ten shillings less per ton, being also higher, of greater volume, and capable of being used immediately after manufacture. This writer gives the following description of the methods employed to test the material: "In the first place, the conditions of test were identical for all the specimens, whether they related to the tensile and compressive strength, the degree of crushing or trituration, the action of boiling water or the force of steam. It was impossible to adopt a uniform standard of density, because while that of ordinary cement averages about 3.12, it is only 2.75 for the



mortar prepared with slag. It is stipulated that the test-samples of pure cement should develop a strength of at least 330 lbs. per square inch after being exposed to the air for one day and then immersed in water for a week, and that when this latter period was increased to some twenty-five days, the strength should be augmented to 480 lbs. It was conclusively proved that this condition was both worthless and out of date, without taking into consideration that cement is seldom used in a pure state, but, on the contrary, mixed with a certain proportion of sand, which imparts to it the necessary strength. Ordinary cement-mortar generally consists of one part of cement and three of sand, both by weight, and this was the composition of the specimens submitted to trial. At the end of 28 days these specimens were capable of supporting a stress of compression equal to 1,060 lbs. per square inch."

**The Cost of Building.**

The Carpenters' Union of Toronto have recently demanded that eight hours shall in future constitute a working day. Last year this reduction of hours was granted to the masons and bricklayers, so that it cannot well be refused the carpenters. The cost of this concession must ultimately come out of the pockets of those who put up buildings, and further enhance the expense of building, which has already been considerably increased by the rapid advance in price of land and materials. What will be the effect upon building enterprise remains to be seen. It is argued, not without reason, that, as a result of the prevailing prosperity, the people have more money and can afford to spend it. Certain it is that during the dull times, when land, materials and labor might all have been purchased below par, very little building was done, while coincident with an all round increase in values, came renewed activity in building. While this principle may operate up to a certain point, it is nevertheless possible to so encumber enterprise as to check its progress.

**Ancient vs. Modern Systems of Heating.**

Canadians who have visited Great Britain have been impressed with the inefficiency of the heating methods employed there in when contrasted with the hot air, steam and hot water systems so generally used and which are such a source of comfort in Canada and the United States. In recent years the advantages of the heating apparatus manufactured in Canada have been brought before public notice in Great Britain and on the continent of Europe. As a result, many important public buildings have been fitted up with modern apparatus, a constantly increasing quantity of which is being exported. The need for improvement in heating methods is thus expressed by the Building News: "The hot water and steam or hot-air systems of scientific arrangements for warming have yet found no place in our architectural arrangements and all we have attempted is to incase the pipes, and provide cast-iron ornamental cases for the coils and radiators. But we cannot reckon without them in our public buildings, and before very long these systems will have to be expressed."

**Architectural Practice in Canada.**

UNDER this title, the "London Architect and Contract Reporter" of February 9th indulges in a lengthy criticism of the Ontario Association of Architects, particular reference being made to the proceedings of the recent

annual convention of that body. The "Architect" sets out with the statement: "Why there should be congresses or conventions in such places (colonial towns) is not always plain. As a rule, architects have to act during the greater part of their lives individually, and occasion for co-operation with other architects rarely occurs. Painters and sculptors do not hold congresses, although it would be as easy for them to find topics to talk about as it has been for several years for architects." In answer to this, it can be said that architects stand on entirely different ground from either painters or sculptors. The practice of architecture is, to a large extent, a commercial pursuit. The architect must know how to handle structural materials in such a way as to give his clients buildings perfectly adapted to their purpose, securely constructed, and with the least amount of material necessary to this end. He is called upon to invest wisely his client's money, and in addition has constantly to deal with manufacturers and dealers in all classes of materials, and with contractors in a dozen or more trades, who must receive from him their instructions as to the manner in which these materials should be employed. There is no such commercial side to the work of the painter or sculptor, hence there does not exist the necessity for associations to consider and compare experiences and methods.

The inference is deduced that the Ontario Association of Architects cannot exert any influence or achieve any useful purpose because of its limited financial resources, and it is called a shabby genteel imitation of the American and British Institutes. On this point the Association's critic says: "It was found necessary, owing to financial straits of the Association, that the office of registrar and librarian would have, for a time at least, to be honorary. Poverty may be creditable, but the people of Toronto are sure to conclude that a society that is unable to pay a single official has no right to exercise influence upon them." No sensible man will admit that a society is useless because it does not see fit to employ a paid officer. We have for example the Toronto Guild of Civic Art, which has no paid officer, but which nevertheless has exerted an influence in connection with the decoration of the new municipal buildings, the conduct of School Art Leagues, and other matters of equal importance.

The action of the Ontario Association of Architects in soliciting subscriptions from prominent citizens of Toronto to establish a fund to found a travelling studentship is ironically referred to as an example of courage, "which would hardly be paralleled by a member of any other society or calling in the city, and as illustrating the hardihood required by a man when he becomes a member of an architectural society." We fail to see the matter in this light. In Canada we have no great public museums and art galleries to be centers of education for our students, who are therefore compelled to go abroad to secure the education which would fit them for their future work. Neither have we a leisure class who can devote their time to the promotion of art education. Under these circumstances, the Ontario Association of Architects, being desirous of providing for the education of the on-coming generation of architects, considered that business men who might not be able to devote time and thought from their



business to assist a worthy object of this character, might nevertheless be willing to contribute of their means for such a purpose. And as a matter of fact, although the full amount required was not subscribed, a sufficient sum was promised to show that many of those to whom the request was preferred were fully in sympathy therewith and with the object sought to be attained.

Reference is made to the educational work on which the Association have decided to embark, and the conclusion is reached that "as the improvised professors were not selected, it is not likely the teaching will be started until an indefinite time elapses." The members of the Association, who have undertaken to give their time for the benefit of the students, do not regard themselves as professors, either improvised or otherwise.

The part taken in the convention by the Eighteen Club is not fairly stated. The Eighteen Club is not in any sense a rival of the Ontario Association of Architects, nor is it altogether antagonistic to the latter organization. While it has not been able to see eye to eye in some matters, it is nevertheless, to a large extent, in sympathy with the Association, and likely to join hands in carrying out the undertakings, especially with regard to education, decided upon at the recent convention. The Ontario Association of Architects is not apeing the older societies, as it has been accused of doing, but is seeking, as far as possible, under different circumstances and conditions, to profit by the experience of these societies.

The most striking feature of the article to which we have referred is the display of the purse-proud spirit and the lofty air of contempt assumed by the writer towards an institution which is striving under difficult circumstances to perform a useful work on behalf of architecture. It will be noticed that while the article bristles with criticism of a purely destructive character, it does not offer a word of sympathy or encouragement, or make a single suggestion for the improvement of the condition of affairs which it so severely condemns. From beginning to end it displays conspicuous lack of knowledge on the part of the author of the matters of which he writes so loftily. If the other articles appearing in this publication of sixty years' standing have no better foundation in fact, it will soon cease to carry any weight. We cannot help feeling surprised that a professional journal of the age and supposed standing of the London Architect should have condescended to the style of criticism contained in the article which we are discussing.

The sand blast, invented by C. B. Tilghman, of Philadelphia, and patented in October, 1870, has revolutionized the old methods of preparing stone and glass for the purposes of building and decoration. The engraving, cutting and boring of these materials, as well as of some metals, are accomplished by the percussive force of a rapid stream of sharp sand driven against the material by an apparatus operated by compressed air or a mechanical fan. A stencil is employed on the surface of the material to direct the action of the sand stream. By the use of a photographed coating of gelatine upon glass, reproductions of line engravings are finely executed at a small cost. The patterns on the cheaper kinds of colored glass are performed by the sand blast, a stencil being used upon the colored panes and the blast operating to remove the color from the exposed parts.

### THE BEAUTY OF FITNESS.

THERE is no surer sign of the innate provincialism of both ourselves and of our esteemed brothers of the United States than the inflated character of our architecture. There is too much architecture to the square foot, or it is of too high a class for the buildings. It may seem presumptuous to class with ourselves the travelled architects of New York; to call them provincial who have seen the world; but knowledge is not culture; indeed knowledge acquired in haste for the sake of possession is apt to choke the growth of culture; which is an emanation from within, a process of thought which has little foresight for the commercial value of knowledge, but appropriates what it wants for its present use and no more. This is a slow process and may, alas, take a generation or two in North America. In the old world, where a man cannot take a walk out of doors without running up against a standard example, he has a better chance, if he starts fair, of understanding the true nature of architecture. He at least knows what much-praised architecture is like and will not be misled as we often are who derive our knowledge only from descriptions. Was not Ruskin the greatest of describers, and has not Mr. Howells said, in his *Venetian Life*, "I remember how, just after reading Mr. Ruskin's description of St. Mark's church, I, who had seen it every day for three years, began to have dreadful doubts of its existence!" These descriptions are a work of art in themselves, treating the building merely as a basis or an effort to arouse the imagination to feel what the writer feels about it after patient study; and it is not to be wondered at if the inhabitant of the new world when he visits the old and finds himself at last before a great example, should feel inclined to exclaim with the poet on the seashore, "Is this the mighty ocean, is this all?" But he has made a great step towards true feeling for architecture when he got there. When we were young we imagined kings and queens to be much more accustomed to wearing their crowns than turns out to be the case, but they are on the whole more dignified without them, and dignity was all we wished to attribute to them. The person who figures to himself the highest state of society is apt to imagine brilliancy of wit and a graciousness of demeanour which would be rather uncomfortable to live with. He has lost nothing when he learns the greater grace of simplicity, although it's attainable by ordinary people. In the same way there is nothing lost but much gained to the provincial student of architecture when he finds out that architecture has its limitations; that it is not always posing but often at its ease, and is then too usually most attractive; that even when it has a representative function to bear and adopts the high manner it is most effective when most natural; and where it is chiefly utilitarian it comes off with greatest dignity by being simple and straightforward.

The truth of the matter is that the ultimate test of architecture is fitness. The magnificent civic building, the solemn cathedral, the plain and substantial warehouse, the stately mansion and the snug cottage are all architecture and all works of art, provided only they keep each within its own limits. One is not as full of graces as another, but it would be hard to say that each in its way is not beautiful. In its own place whatever is right is pleasing. The elephant, for instance, is to us a lumbering monster whose proportions border on ludicrous. But Henry Drummond, in his *Tropical*



Africa, says—"To see the elephant at home is a sight to remember. The stupendous awkwardness of the menagerie animal, as if so large a creature were quite a mistake, vanishes completely when you watch him in his native haunts. Here he is as nimble as a kitten, and you see how perfectly this moving mountain is adapted to its habitat—how such a ponderous monster, is as natural to these colossal grasses as a rabbit to an English park." Doubtless if we could always see in their own places the animals which we call ugly, we should choose another word to describe them or admit the beauty of ugliness in its right place. May we not also venture to assert the ugliness of beauty in the wrong place? A world all ugliness would be oppressive; but would not a world all elegance be wearisome? We must have alteration like the discords in good music. If everything were as sweet as the rose we should die of it "in aromatic pain."

If ugliness in its right place ceases to be ugly and beauty in its wrong place ceases to be beautiful this is only to say that the perception of beauty or ugliness is but the perception of fitness or unfitness, and this is the test of beauty in architecture. What does it mean? What is this fitness which is beautiful? There has been much said in abuse of what it is now-a-days the fashion to call Realism in architecture and it may be necessary to disclaim any connection with the Realism which consists in the painful exhibition of construction for the sake of exhibiting it or considering it necessary to proclaim on the outside all the uses of the interior. But that a building should appear to be what it is; that it should appear to be what it is in this country, not in another country; and in this century, not in another century; in the material of which it is built, not in other material however much more splendid; and, if the construction must be protected and must therefore be concealed, that the protecting material may appear to conceal construction, not to display it; these are the realities which are involved in an appearance of fitness. It would be absurd to speak as if there were no advance in the agreeableness of the architecture of recent years, as well as in its importance; or to overlook the remarkable development in constructional skill. But the habit of mind which makes a fitting design is not common. The designer is usually after something else than his real problem, which he either does not recognize at all as his problem, or frankly abandons as not practical politics. The result is only half a success. The tall buildings of New York are the great architectural creation of this century. The dark spire of Trinity church ensconced among a group of these white buildings is a study in the grand picturesque; the skyline of the peninsula of New York would be a theme for Turner; but closer inspection leaves one apathetic. There is not only not one throb of pleasure but a feeling very like contempt. The draughtsman who has been allowed to flounder over these surfaces has not had the pluck to see that in the truth was his effect: that the mass was everything, and that the same straightforward method which he has applied so successfully in the shingled cottage, where he was not afraid nor misled by ambition, would serve his purpose far better than the silly simulations of construction and the undue ornament with which he has made these majestic fronts frivolous and unmeaning.

The key to the satisfactory solution of this problem is to face it. It is the key to the solution of all architectural problems and to that fitting diversity between

buildings of different kinds which may be said to constitute the design of cities. The determination to make a good thing of the conditions of arrangement and construction before the designer, this is the sure road to character, which is the greater part of beauty in architecture as in everything else. The temptation to look outside of the problem for a motive; to adopt motives from distinguished monuments of the past, because they are admirable in their own place, and work them into the design in hand, where they are not in place, and will not be admirable, is the temptation of imperfect training. A riper culture and skill will see in the problem in hand something to touch the imagination, and in the limiting conditions a clue to the design. Limitations accepted at first perhaps with pain, but at any rate accepted, will when grappled with, turn out to be the life of the design. It is an old story that the triumphs of art are but its difficulties overcome. The etcher who has but a line to represent nature (which has none) is forced to think; he learns to abstract the essence of a scene—and men who love art love etchings. It is its limitation that makes the art. Even wool-work, within its limitations, is an art. It is barren labor to make one thing look like another when the key to beauty is to make it look like itself. This is the really inspiring work, and it suggests a field of study abroad as well as at home. We go abroad to see great buildings and come home to scatter their details over buildings great and small; quite forgetting that at home, in their own place, they stood apart, central jewels in a setting of much plain work. This plain work we should study quite as much as the great monuments. There is much traditional good taste and suitability to be seen in it. To wander for a day in one of these towns is to receive an architectural impression, consciously or unconsciously, which is perhaps as great as that which we receive from the monumental work we go to see, and is worth our study also for the reason that we lack it at home.

#### BY THE WAY.

An International Congress of Architects will be held in Paris from July 29th to August 4th. Among the questions which will be discussed during the Congress will be that of the "cheap dwelling house," which has been noted on the programme according to the request of the British architects.

x x x

The recent heavy fall of snow is said to have caused the collapse of a skating rink at Milton, a hardware store at Woodstock, and a livery stable at Paris. Fortunately no loss of life is recorded, which is due to good luck rather than good management. So long as rule of thumb methods continue to be so generally employed in construction work, we may expect to hear of failures of this kind with now and then a disaster involving loss of human lives.

x x x

Regarding the proposal to reduce the fee for a plumber's license from \$10 to \$1, it is to be hoped that the City Council of Toronto will decide to let well enough alone. The City Medical Health Officer and the Master Plumbers' Association have promptly protested against the proposed change on the ground that it would permit incompetent men to engage in the plumbing business and thus injuriously affect the sanitary condition of the city, which under the present regulations is in a tolerably satisfactory condition.



## THE ONTARIO SOCIETY OF ARTISTS' 28TH EXHIBITION.

In endeavoring to put down a few notes on this year's exhibition of the Ontario Society of Artists, one is brought face to face with the unsatisfactory nature of all criticism. One man's opinion can never be anything more than one man's opinion, but one man may perhaps be a sort of representative delegate from the general public to those most interested, viz., those who have labored over these works of art, and after many an hour of anxious thought have brought them to a stage of readiness to be exposed to the public eye. The chief value of the jottings which follow is that they are the sincere utterances of an ordinary observer.

No. 31, "A Red Roof in Surrey," by C. M. Manly. In this picture Mr. Manly has displayed his old faculty of selection, and has given us somewhat more breadth of treatment than he usually allows himself. In taking this characteristically English scene, the artist has displayed some courage, seeing that it involves a stretch of rather uneventful grass at the base of his picture—always a difficult thing to manage, but, as a whole, the picture is pleasing. In "Harvest of the Sea," No. 138, Mr. Manly has a subject in which he has introduced more figure drawing than is usual with him, and has done it well. In 141, "Ockment Water," he is again in his old and well known style, and one can pick it out for a Manly from the other side of the room. His water colour, "In an Old Cathedral City," No. 137, reminds us very much of a similar effect by the lamented Mr. O'Brien. It is a scene that has been very frequently portrayed. In 139, "In a Peach Country," Mr. Manly has as pretty a little sketch as one need hang.

Among the newer stars that have arisen on the horizon of the society, is Mr. J. D. Kelly, whose clean and well rendered effects in water color are highly successful. He has got a good deal of light and bold color into No. 132, "A Muskoka Trout Stream." No. 131, "The Wild Fowler," is a pretty little subdued bit of treatment.

Miss Wilhemina D. Hawley gives us examples of her clever patch-sketching—No. 124, "The Woman in White," and 120, "By the River,"—in both of which the good figure-drawing somewhat atones for the sloppiness of the finish. It is only on rare occasions that sketches can be exhibited in galleries, and perhaps this is one of them.

In 148, "The Day is Ending," Mr. H. Robins shows a fine feeling for nature and a good eye for color and a faculty of composition which is not above learning from established precedents. It is pleasing to remark that this picture is sold.

Again Mr. Reid attempts the task of showing us the decorative qualities of a hay-stack in "A Cloud Effect," No. 153, and gets over the difficulties of the case as well as could be expected.

One of Mr. Chavignaud's most characteristic effects is shown in a "A Dutch Landscape, (Evening)," No. 106. The row of gaunt trees is of course indispensable and familiar, but Mr. Chavignaud manages it rather better than usual. He has also three other manneristic Dutch drawings. Mr. Chavignaud is industrious and forcible. He is also not without poetic feeling but it is too much of the dark gray order.

As "A Design for Decoration" Mr. Gustav Hahn's drawing, No. 127, is bold, striking and inventive, but we would like to know what that decoration is for.

In No. 51, "The Widower and His Daughter," Miss Laura Muntz has been bold enough to give us a picture with a story. This is, we know, against the canons of the hypercritical, who tell us we should paint for "art's sake only," and let the story go hang. Nevertheless, pictures with stories, especially when they are so full of ability as Miss Muntz's, will continue to attract a large amount of notice. Miss Muntz's fine handling is also shown to advantage in No. 46, which she calls "Eventide." An old Frenchwoman and her daughter are returning from, or going to, vespers. The contrast of the faces, and the work of years on that of the elder woman are remarkably well shown. In No. 48, "In the Sunlight," Miss Muntz again gives us a delicious bit of color and dash, and equally spirited is "The Child with a Rose." Miss Muntz's "Portrait of My Father," is by a long way the best portrait in the exhibition.

Mrs. Reid's "Roses, Lady Dorothea," No. 57, is an example showing that lady's mastery of form and her inimitable technique. Its color has a splendor and transparency which mark it as one of the best of recent flower paintings. Equally charming and full of sunlight is her "A Verandah," No. 60, a picture of luxuriant growth and the juiciest of coloring. The glowing sunlight is

also well rendered in her "Poppy Garden," No. 59. Another triumph of this artist's is No. 58, "Looking East." In this picture Mrs. Reid shows a mastery of her materials which is very remarkable; "this sort goeth not out but by prayer and fasting." In this picture, too, she has had the courage of her convictions, and has not hesitated to paint clouds as she sees them, nor to give us a delightful spot of color in the gable of the little house.

J. W. Beatty has painted a little gem in No. 8, "Evening," and we note that it has attracted a purchaser early in the Exhibition. His handling of the sky and trees is full of craftsmanship.

Miss Tully's fine pastel portrait of Mrs. Russell, No. 80, is marked by great freedom of handling and that mastery of materials which long ago gave the artist a favoured place among those who deal with this medium. Miss Tully's pastels are indeed something that the artistic world of Toronto may be proud of. She has also considerable insight into the characteristics of the sitter; in this example the beholder has no doubt of the reality of the portraiture. It has actually human qualities, while the draperies and accessories are likewise exceedingly well rendered, though we cannot say that we altogether like the handling of the neck, the exceeding breadth of the method by which the lights are put in giving a woolly appearance. The same ability to catch the characteristics of the sitter is shown in the portrait which is hung above that of Mrs. Russell, No. 79, in which Miss Tully has chosen oil as a medium. Her "Evening Effect, (Decorative Panel)," No. 84, has a sympathetic feeling for nature and much poetry in it. In "The Poplars," No. 86, which the artist brackets "Afternoon Effect," she has introduced us to an experiment which no doubt will be interesting to artists, but can scarcely be appreciated by the general public.

Mr. F. H. Bridgen gives us six interesting water colors, in which we see that the progressiveness of this young artist has not come to its limit. "In the Harbor, St. John, N. B.," No. 93, though it represents a somewhat usual method of treating a subject of this kind, gets over the difficulties of the situation with considerable skill. In the water color entitled "St. John River," No. 94, we have one of those panoramic effects which, while they are useful in giving the beholder a fair idea of the surroundings, scarcely afford the artist any better opportunity than he finds in a more limited area. The best part of this picture is the foreground, which is very happily rendered and full of artistic feeling and life; the distant landscape is somewhat heavy. The same skill in handling the foreground is shown in No. 96, "In the Valley (August.)" Familiar as this scene is to all Torontonians, the picture gives a romance to the locality of the Don which is not found there by everybody.

In No. 44, "The River Road," a large oil painting, Mr. Manly somewhat escapes from himself and his usual habitudes. He gives us in this an English village scene, which is redolent of the characteristics of the old country. He treats it with a juicy brush and much freedom, though we do not quite like his handling of the dark green rushes at the right hand side of the foreground; still it is a lively and interesting effort, only wanting a little more time and putting together to make a very good picture of it.

In No. 128, "The Return of the Fishers," Mr. McGillivray Knowles has a subject that suits well his practised skill in figure drawing. The work is catchy, breezy, and does not require the frame to make it a satisfactory composition. His little picture of "St. Paul's," No. 130, makes the heart of an Old Countryman turn to the land of his fathers, but it is not everybody who can put the great dome into a sketch with such facility and effect as Mr. Knowles. "Newlyn, Cornwall," is an "easy one" for this artist, seeing that he is as familiar with the brown sails of fishing boats as he is with the store awnings on Yonge street.

Mr. F. S. Challener's eye for color and craftsmanlike observance of detail are both evident in the two little water colors which bear his name, namely, "Old Mosque, Near Jerusalem," No. 110, and "A Country Road," No. 111. This last is a genuine bit of Ontario, and would also make a pretty little adornment for a room.

Very good examples of Mr. J. W. Blatchly's well known style are to be found in the works Nos. 99-102. Mr. Blatchly has a good eye for color, and in No. 101, "A Canadian Homestead," he has glorified an ordinary bit of country scene, which he presents to us transfigured with the glorious sunlight of summer. We prefer, however, "Declining Day," No. 99, in which he has given us a composition that shows not only much ability, but capacity for seeing nature.

Miss Clara E. Galbraith exhibits considerable freedom and



strength in No. 120, "Old Hoover Homestead on Lake Erie." It is rather a contrast to the highly finished method of the last mentioned artist, but it shows that Miss Galbraith is not only a keen observer of nature, but that she has attained considerable mistress-ship of pencil and brush.

Mr. Carl Ahrens has some Ahrenesque landscapes which are full of mysticism and strange color. We like the best his "Landscape," No. 4; next his "Early Morning," No. 2, which has much poetic charm; we would as soon have "The Coming of Night," No. 1, as any other conundrum of the kind, while his "Nearing the End of Day," is really delightful and should find a ready purchaser.

Mr. Edward Morris does not paint for ordinary people or in ordinary ways, nor does he, to our thinking interpret nature any less mystically than Carl Ahrens. We take his disregard of the ordinary conventions to be a little too disregardful; but, given a proper amount of shutting one's eyes to nature and detail, his pictures may no doubt be enjoyed when one stands far enough away from them and looks at them with a selective eye. These things are true of Mr. Morris' "Landscape," No. 45. He and Mr. Ahrens are the mystics of the exhibition.

Mr. W. Cutts is one of the men who have made progress during the past eight or ten years. His "Far into the Summer," No. 10, is a workmanlike landscape. In "A Winter's Sunset," No. 13, he has shown that he can tread in the footsteps of the veteran Jacobi.

Miss Florence Carlyle has a clever portrait of a young girl in a white frock and black stockings, with roses scattered about her. It is a tour de force in its way, and shows some of the virile vigor that characterizes Miss Muntz. Miss Carlyle's "Hollyhock Time," No. 19, is painted in the interests of the paint and color manufacturers.

Mr. Reid's "Study in Low Tones," No. 54, is a really good piece of portrait work, as those will concede who have the honor of the acquaintance of the well known and gifted lady who is the subject, and who have any notion of what a portrait should be. His pastel of a man reading has, we understand, been chosen by ballot as a purchase of the Ontario Government, and, on the whole, it was the best of those available, despite a somewhat chalky pallor in the flesh tints.

One is at once struck by Mr. J. W. L. Forster's large portrait of Mrs. Coleman Stuckert. The attitude of the subject is easy and the whole effect of the picture is somewhat imposing. It is one of Mr. Forster's happiest efforts.

Mrs. M. E. Dignam, in her "Roses and Bluebells," shows a worthy example of her practised skill in flower-painting, the drawing and composition of the roses being especially good.

Miss Gertrude Spurr has a definite and characteristic style which may become a fetter unless she gives more scope to her imagination, since a picture should be something more than the portraiture of a place or scene. Nevertheless, the artist shows no falling off in her picture of Lynmouth Harbour, nor in the other examples which bear her name, conspicuous among which is "Scarboro, Herring Season."

The same can hardly be said of Miss Hagarty, whose contributions do not equal those of last year, and are not distinguished either by good color or good drawing.

Miss Ethel Heaven's best effort is a pastel in profile which displays considerable facility of handling, and good color. In her upright panel she is less successful.

Mr. E. Wyly Grier has a good likeness of Hon. S. H. Blake, Q.C., which shows the precocious youth of the subject to great advantage.

Mr. Bell-Smith has one oil landscape and three water colors, which display much facility but are not his best. In the water color "Evening (Holland)," No. 39, the artist has been too much of an anti-Boer to give Holland any flattery.

Mr. W. E. Atkinson is represented by two oils and one water color. The oil landscape, "Winter, Holland," No. 5, is a good example of this artist.

Miss H. E. Bastedo's white peonies gleam out nicely.

Mr. John Innes shows one example of his work, and it recalls the artist's recent trip to the Northwest in search of material. He calls the picture "Indians in a Blizzard," and very successfully represents the wintry landscape of bleak prairie. In the drawing of the horse Mr. Innes is a past master, while what he doesn't know about Indians is not worth mentioning. Accordingly we have in this picture not only good artistic work but an historical 'document' of the greatest value.

A little more characterization of the rocks in Mr. R. H.

Gagen's large water color, "When the Flowing Tide comes in," No. 112, would have made it an even more considerable picture than it is. It must not, however, be supposed from this that Mr. Gagen has not to a large degree grasped the facts of nature. To a very great extent he has, and there is no artist we can think of at the moment who has made more advance during the past four or five years. Both in this picture and in No. 114, "Sea Sand and Summer Sky," Mr. Gagen shows the genuine marks of a true nature-lover, while his "Lobster Catcher," No. 113, is a triumph as to water. He has almost entirely left behind him the heavy opaqueness that was once a besetting quality with him, and we must sincerely congratulate him on this year's contributions to the O.S.A.

There is not, to our think, much connection between the name and the subject in Mr. G. A. Reid's decorative panel "Music," No. 53. The nude youth who leans against the tree and is lazily blowing a few notes on his shepherd's pipe does not look as though he had much "music in his soul," neither does he look, as the poet says, "fit for stratagems and spoils." He is just an ornamental adolescent, displaying the beauty of line and curve that are to be found in the human body, and being dreamily lazy about it. We know enough, however, not to waste time in making too much of the literary meaning of decorative panels, and are quite willing to concede that the artist has, in this example, given us much that we may regard with satisfaction. The splendor of the lumpy clouds in the top left hand corner is a thing to be seen and enjoyed, and the masterly harmoniousness of the work is freely apparent.

Of Mr. Henry Martin's two examples, we prefer the upright water color, "Chateau Dieppe, France;" the larger picture, "St. Mark's, Venice," is a considerable effort, though the perspective, or perpendicular, or something, seems to be a little out.

Mr. W. St. Thomas Smith gives us a Turner-esque effect in No. 167, "Sunset in the Southesk, Scotland," and in so doing invites comparison with the memories of well known pictures. On the whole, the deceased painter has the best of it, though, of course, we do not think for a moment that Mr. Smith had any idea of Turner in his mind when he started on the work. In No. 167 we have a St. Thomas Smith picture pure and simple, and although the effect of the storm-driven sky is well given, we must confess that we have seen much better examples of this artist, who has a distinctive and worthy method, from which considerable progress may yet be expected.

Mr. Harry Spiers can paint a "don't care a cent" agricultural horse as well as the next man, and perhaps better. His picture of "Harrowing," No. 163, is full of what is called local coloring and should be bought by the government, or by collectors, as an aspect of farm life that is, we are told, destined to go out of fashion through the elimination of the horse from modern uses, in favor of electricity. This artist has also a noteworthy sketch entitled "Market Day at Hamilton," in which much deft craftsmanship is shown.

T. Mower Martin has three water colors, which, while of a not particularly ambitious character respectably represent his practised brush.

Mr. Challener has a bright oil painting of a bonnie Canadian girl sitting in the midst of a summer landscape. His decorative panel of three nude nymphs and a sheep shows capital composition and drawing and is, besides, a nice bit of color.

Miss Eleanor Douglass has an ambitious little oil which she entitles "By the River."

Miss Carrie Hillyard has a couple of clever and hopeful works.

Of Mr. Staples' six works we like best his flock of sheep in No. 75 which he entitles "The Drover." "Evening, Toronto Bay" is too topographical. "The Brook" is green and bushy and rather nice in feeling and so is "Largo," the old man playing the cello.

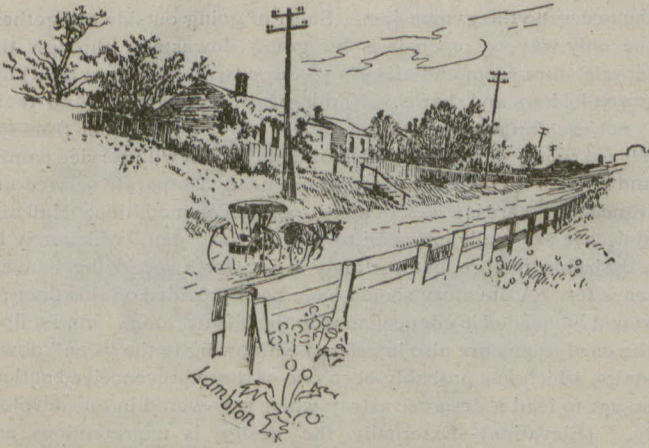
Mr. W. A. Sherwood is represented by a single feminine portrait.

Mr. Charles J. Way has four very interesting and capable water colors, in which there is much good handling and lots of good drawing. He is a Montreal artist whose pictures everyone will be pleased to see on the walls of the Toronto gallery.

The exhibition is brightened this year by the very clever statuettes of Mr. J. Lisney Banks, a sculptor of no mean ability. His presentation of the elephant in two of them is worthy of all praise—they are by a long way the unique things in the show—while his portrait "Alva" is full of clever work.

BERNARD MCEVOY.





Lambton Mills, Ont.—Sketched by A. H. Howard.

### CANADIAN ARCHITECT AND BUILDER'S STUDENTS' COMPETITION FOR A SUB-URBAN BICYCLE CLUB HOUSE.

SEVEN sets of designs were received in this competition. Owing to a misunderstanding they were not passed upon by a committee of the Province of Quebec Association of Architects, as was our intention. The president, Prof. S. H. Capper, has, however, furnished us with his personal notes on the drawings which are printed below. These notes are arranged alphabetically and do not indicate the order of merit of the designs. The awards are based upon the accompanying report of the committee of the Ontario Association of Architects:

#### REPORT OF O. A. A. EXPERTS.

We place "Kenilworth" in the first place, although his elevations have badly disregarded the instructions as to fitness for reproduction, being too timidly drawn; he wants to cultivate a more vigorous line. But we consider that on the whole his plans and elevation bespeak a larger grasp of the subject. There is more suitability to their purpose in the elevations. Roofs and wall spaces have more inviting breadth and restfulness than most of the other designs. The plans show better disposition of the various rooms with regard to their different functions. The ground floor hall has its lounging space, fireplace, etc., better arranged to achieve their purposes; would suggest that gallery of gymnasium should be connected with billiard room to give more continuity to whole. The external access to former somewhat isolates it.

"Spes" is placed second, although his drawing entitles him perhaps to first place, displaying considerable firmness of touch, marred however by much indecision in the matter of his deeper shadows which are very undecided in their direction, and not at all suggesting the construction. The indication also of shrubbery is very childish. The plans are considered secondary for reasons as follows: Ground floor hall, though large enough, has chimney in a most pretentious position, not the cosiest or most serviceable, being too much in the thoroughfare to various rooms. The reading room we consider would be better a storey higher. The apartments devoted to the ladies want connection, and their toilet conveniences badly disposed. His billiard room omits one table. It is questionable if the gymnasium would be well placed, with its noises, on the top floor, although "Spes" would be handicapped to account for his great roof if not allowed so to place it.

"Dinah" is placed third, although there is much to be commended in his design. We believe his idea of utilizing the basement and the first floor under and over verandah is the proper one for a frame structure such as

a bicycle club. The first floor and basement can thus be planned to suit their requirements, and if this results in somewhat limiting the rooms of ground floor still it must be remembered that the verandahs of ground floor are a vital necessity of a summer club, as valuable as rooms. To criticise we consider ground floor hall is too unstudied and not inviting or effective in giving impression of hospitality. Hall seat no one would sit on from choice, being unlighted. As to kitchen and dining room on first floor, although not customary, it might be good. There is fine corner room for dining room which would have good outlook. We consider basement billiard room would have poor light and the access to same somewhat tortuous. Bicycle room not large enough and entrance to it poor. Rendering of perspective quite effective except glass of windows which lacks suggestiveness of depth.

"Forget Me Not" placed fourth, is a very quiet good line drawing, not we think, however, suggesting boy's club, but rather ladies school or convent. The verandahs, we think, like some of the other designs, are much too tall to give proper impression of cool and shade. Shingled columns are open to criticism and certainly moulded capitals to same are incongruous. Plans are not well considered. Basement space badly laid out. Ground floor hall lacking in lounging space. Dining room and kitchen in poor relation to each other. Not good position for reading room, with entrance off dining room.

"Mayfly"—There is commendable sobriety about these elevations, somewhat in colonial style. We do not think the angles of roof well chosen, and lack vigor. The draughting is neat but timid. Would recommend study of good book on rendering in line to author of this design. While the columns of verandah may be satisfactory in appearance, their capacity is not sufficiently utilized, the verandah being narrow and so tall as to lack shade essential to such a feature. The whole building is somewhat high in appearance for purposes of suburban club. Bicycle entrance well arranged but not near enough to main entrance. Dining room is too small and the passage way to billiard room is not good and would be dark, and the billiard room is smaller than called for.

"Vadis"—placed sixth—The elevation strikes one as having height at the expense of breadth. The ceiling of the verandah is somewhat too high to be useful and the design generally is lacking in characteristics of suburban designs. The construction is somewhat of a style that is passe, but is in accord with much English work, and shows fair grouping for that style of a building. The basement is well laid out, but the bicycle accommodation is inadequate. There is neither refreshment room or kitchen provided as required, the omission of which spoils an otherwise compact plan.

"Marcus"—placed seventh—The elevations bespeak inexperience and the rendering is very speckled. A study of some good work would show the author where he is deficient; on the whole his work is promising, showing, as it does, bold projection of eaves and good grouping of windows. Like most of the others, the design is not sufficiently suggestive of cosiness, which ought to be a feature of a club house. The verandah is much too meagre—also the front entrance. The one good feature is the combining of gymnasium and bowling alley. The lavatory accommodation is inadequate. The plan throughout shows want of experience, giving practically no accommodation for lounging and refreshments.



Practice and experience will make a great difference if the author continue to show continued diligence.

It is a matter of surprise that no competitor adopted a style lower in character and with wide projecting eaves to the verandah so that occupants could sit near the parapet and still be in the shade.

Signed { A. F. WICKSON.  
JOHN GEMMELL.

The authors of the designs which have been awarded first, second and third positions respectively are as follows: "Kenilworth," (Mr. Clarence Thetford, 237 Dufferin street, Toronto, Ont.); "Spes," (Mr. Willford Gagnon, 25 Melbourne ave., Westmount, Montreal); "Dinah," (Mr. Frederick C. French, 84 Wellesley street, Toronto.)

NOTES BY PROF. CAPPER.

"DINAH".—(Plan)—Gymnasium on ground floor, with billiard room beneath it in the basement, dining rooms being on 1st floor. It is a serious defect in such a building as this to relegate the billiard room to so inconvenient and secondary a position; nor is this at all redeemed by a basement cafe alongside it (in unpleasant proximity to a lavatory, which is none too well lighted.) The billiard room itself is awkward in shape, being spoilt to fit in the bowling alley. On ground floor the ladies' room (with lavatory off it) and the reception and smoking rooms are well placed and the covered gallery is large—a good feature, both in plan and elevation. The gymnasium itself is well placed, with good locker accommodation off it. Baths are shown, but the w. c. accommodation is quite inadequate—a single w. c. for this floor, and that entered from two sides—a quite impossible arrangement. The main staircase has a lavatory most conspicuously at the exact head of the stairs, as public as possible; a little re-arrangement would have improved this and increased the size of upper hall. Kitchen is ingeniously arranged for service, but the little service room itself is inadequate; it is badly lighted and has three doors in its small space. On attic floor the caretaker's house is well separated, a good arrangement; but it has no bathroom accommodation. There are five bedrooms for the club, equally destitute of bathrooms. The service stair in this design is good, but it has no service entrance, which would half destroy its utility. The entrance to bicycle store in basement is rather awkwardly managed with its sharply curving steps. (Elevation)—The design is shown in a perspective, in which the deep verandah or gallery is not very successfully indicated. Externally, the club house is simple, and free from the terrible vice of pretentiousness. The entrance porch has too much the air of having been "stuck on"; otherwise the design is satisfactory, if slightly commonplace.

"FORGET-ME-NOT".—(Plan)—The general scheme of this plan is very good; it is simple, and this very simplicity would increase its convenience in practice. Gymnasium and billiard room are both on the principal floor, the former with locker and toilet accommodation conveniently placed; as shown, however, the latter is quite insufficient—no baths and only a single w. c. The bowling alley in the basement is well managed, there being more space for spectators and loungers than in most of the other plans; it is a defect, however, that the lavatory only enters off this. The bicycle store-room also is conveniently planned. The 1st floor on the other hand is less successful; as planned, the service from the kitchen has perforce to cross the upper hall, which would be highly inconvenient; the reading room also is only reached through the dining room. The absence of any communication (save by "dumb-waiter") between kitchen and 1st floor and store-room in basement, is bad; all the service would necessarily invade the principal stair—a great inconvenience in a club. No ladies' accommodation is provided, but none was asked for in the program. In the entrance hall much greater interest could have been imparted by combining the staircase with the hall; the two are shown unnecessarily separated, and would be very commonplace in execution. There are outside galleries on three sides, an excellent feature; it is a question, however, if more might not have been made of these by carrying them continuously round the three sides of the house, although the lighting of billiard room might have been somewhat affected. (Elevation)—The elevations are regular and symmetrical, though more might have been made of them in the pen-and-ink rendering. The round-headed windows to reception room and the round-arched entrance door do not harmonize well with the rest of the design, introducing a rather jarring note.

"KENILWORTH".—(Plan) The radical defect of this plan is

the access to the gymnasium. Short of going outside altogether, the only way to reach it is by going downstairs through the bicycle store-room and along a passage (with borrowed light) between lockers and baths. Nothing can rectify this. And there is not even an entrance to the gallery of the gymnasium from the billiard room. On the ground floor dining room with service pantry and kitchen are well arranged, there being a separate service entrance, but there is a lack of store-room accommodation. Hall and staircase are really cramped to provide the "den," which may be a desirable feature, but certainly is not worth sacrificing convenience for. A lavatory should have been provided on this floor; it would be needed in connection with the billiard room. On 1st floor the card rooms are also interfered with owing to the "den" downstairs, which has probably been one of those preconceived notions so apt to lead a designer astray when persevered in too devotedly. (Elevation)—Externally the design is unpretentious and good; rather timidly rendered.

"MARCUS".—(Plan)—The planning of the principal floor is decidedly weak. A lavatory that can only be reached from the billiard room by going through a card room is very badly planned. Upstairs a similar arrangement for the ladies' room is, of course, quite suitable and convenient. The kitchen on attic floor would hardly be workable at all in practice; it is destitute of proper facilities for storage, etc., and, situated in the midst of the members' bedrooms, would be a perpetual nuisance. (Elevation)—The elevation again is much better than the plan. It has no special character of a club about it, but is nevertheless fairly pleasing. The verandah or gallery would have been better (both for the plan and the elevation) had it been carried round the building on two sides; as designed it is too small. In this scheme bicycle accommodation is kept entirely separate from the house, an arrangement for which a good deal may be said.

"MAYFLY".—(Plan)—This design has a very good plan indeed in many respects. On ground floor the entrance hall and staircase are better arranged than in any other; cloak room and lavatory are well placed, the office is convenient, and the dining room is quite satisfactorily arranged with the pantry and kitchen en suite, the service entrance and staircase being adjacent; the latter would, however, be rather dark. Both gymnasium and billiard room are very well placed, although the latter is much smaller than the requirements of the programme. On the basement floor bathrooms and lockers, etc., are reached by a separate stair from the gymnasium, and accommodation for bicycles is convenient. On 1st floor the caretaker's house is kept quite separate with its own access stair. In the club portion, the only accommodation for ladies is reached through the reading room and music room, an arrangement very far from satisfactory. This is certainly the chief defect of the design. (Elevation)—The elevations are only fairly good, the east side being sadly dull.

"SPES."—(Plan)—In this design the gymnasium is on the top floor. In such an arrangement it was essential to provide good access to it, but precisely in this respect the planning is most faulty. To reach the gymnasium, members would have to go up the principal stairs to the 1st floor, then proceed along the passage straight towards the service stair, only to turn abruptly aside in search of the actual stairs leading up to the floor above, which are anything but suitably placed. As planned, the drawing room would surely be more suitable for the cafe than the room actually assigned to this, service to which would be very involved and awkward. Ladies' accommodation is provided, a separate billiard room being included for them, but there is no lavatory accommodation for them at all; and billiard room and reception room reserved for the ladies' use are very inconveniently separated. (Elevation)—The exterior is shown in a boldly drawn and pleasing perspective. The design is good, perhaps the most satisfactory of all sent in. The gallery is ample, so that the little extra verandah facing north (and commanded by the toilet room) might well have been omitted in plan.

"VADIS".—(Plan)—This design makes no provision for refreshments at all, and therefore fails to comply with the conditions of competition. The general scheme is naturally on a somewhat smaller scale, though accommodation is provided for ladies on the first floor. A caretaker's house is also provided; but the caretaker, to come inside the club house, has to go out of doors and ascend the verandah to the front door, a very circuitous route. The plan, however, contains one arrangement that is well worth noting. The bowling alley, a very noisy accompaniment to club life, is here relegated to a separate building, entered off the gymnasium. Covered accommodation for bicycles is much too limited for a club specially devoted to cycling. (Elevation)—The exterior is rather fussy in design, with a somewhat pretentious bay window; but it has a certain character of its own suitable to a club and therefore satisfactory.





Cottage at Weston, Ont.—Sketched by A. H. Howard.

### THE SCHOOL ART LEAGUE MOVEMENT.

The Art League movement in Toronto really started with the opening of the Rosedale school in 1896. Mr. Hughes spoke at the time of the art influence in decoration, and referred to the organization in other countries devoted to the improvement of school room decoration. The need of this work being so apparent, the ladies of the district organized a league for the purpose of carrying out this object in the Rosedale school. Money was raised for the scheme by concerts, lectures, etc.

After much active work the members of the league realized that expert advice would be necessary in order to judiciously spend the money which had been collected. With that in view a deputation of the Rosedale League waited on the Ontario Society of Artists, and requested it to co-operate with them in the matter. The result of this meeting was that in December, 1898, an Advisory Board was appointed, consisting of four architects, four artists and four lay members, an equal number of each elected by the Ontario Society of Artists and the Toronto Guild of Civic Art. In addition to these active members, four ex-officio members were appointed—the Mayor of Toronto, the Minister of Education, the Chairman of the Public School Board and the Inspector of Public Schools.

At the first meeting of the Board, held in the Education Department early in January, 1899, when Honourable G. W. Ross, then Minister of Education, was present, Mr. J. L. Hughes, Inspector, was elected Chairman and Mr. C. H. Acton Bond was elected Secretary. The Superintendent of Public School Buildings was added as an ex-officio member, and the Woman's Art Association of Canada was asked to appoint three active members. At this meeting the Honourable G. W. Ross offered to have printed and distributed to every school in the province, at the cost of the Government, a pamphlet setting forth the objects of the art leagues, their methods of working, and a suitable list of reproductions of the great pictures of the world, architectural photographs and good plaster casts. This pamphlet the Advisory Board has since prepared and it has been printed and distributed. Other work which the Advisory Board has already done is the preparation of a scheme for the redecoration of the kindergarten room at Rosedale school and supervising its execution. At present the Board is engaged in preparing schemes for decoration of the new rooms which will be added to various schools throughout the city this year, and also is preparing a report to present to the Minister of Education on the teaching of drawing in the public schools. This gives an idea of what the work of the Board is, and what the Board is prepared to do, and the advisory relationship it bears towards the art leagues in general.

When more leagues have been formed, it is proposed

that a central league shall be organized, governing, to some extent, all the branch leagues. This will in no way interfere with the work of the Advisory Board, which has nothing at all to do with the governing of the leagues.

It will be seen that by this organization economy of effort and quick results will be gained, as each school getting advice from a board of experts which is continually accumulating experience in this particular branch of work, must be greatly benefitted, and the work of the art leagues will be done more economically, more thoroughly, and the ultimate results more quickly gained.

The following is a list of the present Board: Ex-officio members: The Minister of Education, the Mayor of Toronto, the Chairman of the Public School Board, the Superintendent of School Buildings, the Inspector of Public Schools. Representatives appointed by the Art Organizations:—Toronto Guild of Civic Art—A. J. Sommerville, E. F. B. Johnston, E. Wyly Grier, F. S. Challener, Frank Darling, W. A. Langton. Ontario Society of Artists—R. Y. Ellis, Arthur Cox, Eden Smith, C. H. Acton Bond, Gustave Hahn, G. A. Reid. Woman's Art Association of Canada—Mrs. Dignam, Miss Laura Muntz, Mrs. Hemsted.

### NOTES ON METALS.

BY J. RAWSON GARDNER.

IN view of the general interest now being taken in Canadian mines and in the development of the mineral resources of this country, the following notes on some well known metals will no doubt be of value. It is well at times to compare what is being done in Canada with the work that is going on in other countries, and with this object in view certain statistical tables will be quoted—by this means the reader will be able to see at a glance where Canadians stand in comparison with other nations, and thereby gain a truer and more correct idea of the situation.

Let us take, then, for our subject the following five metals: Iron, copper, lead, zinc and tin.

#### I.—IRON.

This constitutes in its various forms of cast and wrought iron and steel one of the most important materials from an engineer's or architect's point of view. The ore is well distributed and is generally found as red or brown hematite, magnetite or carbonate, the red hematite variety being mostly mined. The production of iron ore in the United States under these headings for the years 1889, 1893 and 1897 were as follows:

Year.	Red Haematite.	Brown Haematite.	Magnetite.	Carbonate.
1889.....	9,056,288	2,523,087	2,506,415	432,251 tons
1893.....	8,272,637	1,849,272	1,330,886	134,834 "
1897.....	14,413,318	1,961,954	1,059,479	83,295 "

The chief producing states in 1897 were:

Michigan.....	6,087,463 long tons.
Minnesota.....	5,601,429 "
Alabama.....	2,098,621 "
All others.....	3,730,533 "

17,518,046

This iron ore was converted into pig iron and steel chiefly in Pennsylvania, Ohio and Alabama. In the last 20 years the world's production of pig iron has increased from slightly over 14 million tons to nearly 33 million tons, while the steel production has increased even more rapidly, only 3 million tons being produced in 1878,



while in 1897 21 million tons were turned out. The figures are as follows :

In 1897.	Pig Iron.	Steel.
United States.....	9,652,680	7,156,957
Great Britain.....	8,789,455	4,585,961
Germany and Luxemburg...	6,879,541	5,119,300
All Others.....	7,615,814	4,157,643
	32,937,490	21,019,861

A writer in a recent number of *The Spectator* stated that he considered Germany was in more dread of the United States as a commercial competitor than Great Britain. This statement is borne out somewhat by the above figures as the iron market has oftentimes been called the barometer of trade. These notes on the iron industry will no doubt be of special interest at the present time when Canadians are looking forward to the day when the large iron and steel works at Sydney, Cape Breton, will be turning out over 300,000 tons of pig iron annually. The whole of Canada only produced 53,000 tons of pig iron and 18,000 tons of steel in 1897, so that one can judge from these figures the importance to Canada of this enterprise. Canadians will no doubt be proud that their own country will then be able to supply her mills with pig iron instead of being obliged as at present, to look to others for the supply of this most important material.

#### II.—COPPER.

This metal is very widely distributed, rich deposits having been found in various parts of the world. It is generally obtained from its ore by what is known as the dry or pyro metallurgical method, that is, if containing more than 4% of copper. When the ore contains under this amount it is usually obtained by the hydro metallurgical or wet method. The dry process is the one usually employed, and consists of roasting, calcining and refining, as many as 6 and oftentimes 11 different processes being gone through to convert the ore into good copper.

Copper is found in a few cases in the metallic state (when it is termed "native copper") but more often in some combination of oxides, sulphides or carbonates. The yellow sulphide commonly known as "pyrites" being probably the most common. The world's production of this metal for 1889, 1893 and 1897 was as follows :

Europe.....	81,613	88,922	88,828
North America...	110,674	158,553	239,679
South America...	31,983	27,220	25,300
Asia.....	16,125	18,000	23,000
Australia.....	11,582	6,667	17,322
Africa.....	7,860	6,090	7,440
	259,837	305,452	401,569

This table clearly shows that North America has nearly 60% of the world's production to her credit while the table following shows that the United States alone has over 50% of the world's product of copper :

United States.....	220,571 tons.
Canada.....	5,938 "
Newfoundland.....	1,800 "
Mexico.....	11,370 "

Total North America.. 239,679

The chief districts in the United States where copper ore is found are Montana, Lake Superior district and Arizona. The chief foreign producer is Spain, the world famed Rio Tinto mine alone producing in 1897 nearly 34,000 tons of copper.

#### III.—LEAD.

There is but one ore of lead that is of any commercial importance, the sulphide (Pb. S.) which is more com-

monly known as galena. It is usually associated in greater or less quantities with silver, and when the silver is in paying quantities the ore is generally termed argentiferous galena. The silver is not hard to separate and when over 3 oz. to the ton is generally separated. The theory of smelting lead is as follows : The sulphide is converted into either the oxide or sulphate and then fused with a quantity of unchanged ore which yields metallic lead and sulphurous acid.

Galena is well distributed, the chief producing countries being the United States, Germany, Mexico and Great Britain, in the order mentioned. The United States produced in 1897, 192,000 tons, while Spain, the next largest producer, turned out 170,000 tons. Canada had 17,700 tons to her credit, being eighth in the list of lead producing countries. Iron plates coated with an amalgam of lead are called terne plates.

#### IV.—ZINC.

Zinc is usually obtained from either the sulphide when it is called blende, or from the carbonate when it is termed calamine. Metallic zinc when made into cakes or ingots is known in commerce as spelter. The ore is first crushed or ground and washed, then calcined in a reverberatory furnace, afterwards going through a series of retorts for reduction purposes. Zinc having the exceptional property of being readily volatile at the temperature of its reduction, it is necessary therefore that this operation should be carried on in some form of retort and the zinc obtained as a distillate.

Zinc is capable of being rolled at a temperature of 100° to 150° C. into very thin sheets. At a temperature of 200° C. the metal becomes brittle and capable of being pounded in a mortar. At 415° C. it fuses, and at 1040° C. it boils. The chief producing countries are : Belgium, Silesia, Germany and the United States, the Vielle Montague Company, of Belgium, being the largest single producer, turning out in 1897 over 68,000 tons of crude zinc. Great care should be taken in using zinc to see that it is perfectly pure as in the event of its containing iron it will not resist the action of the atmosphere. The expansion is greater than in other metals, which is the chief drawback to a larger use of this material.

Expansion of Zinc=.	.0030
" Lead=.	.0028
" Tin=.	.0024
" Copper=.	.0017
" Iron=.	.0011

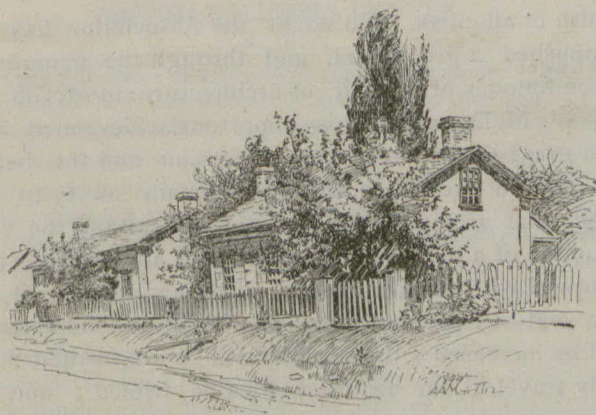
It is chiefly for this reason that zinc has been used as a coating for iron plates, which have been called erroneously, galvanized iron.

#### V.—TIN.

This metal, in contradistinction to the other four above mentioned, is very sparsely distributed, the chief countries producing tin being Great Britain (almost entirely in Cornwall), Straits Settlements and Australia. The ore is found in veins or layers within the older crystalline rocks and slates. It often also presents itself in loose crystals in the sandy beds of rivers, having been washed away from its matrix, and is then called stream tin. It is used extensively in the process of tinning iron plates which has of late become quite an extensive branch of the iron trade. There were, in the year 1897, 69 tin plate establishments in the United States alone. No deposits of tin of commercial importance have, however, so far been discovered in either the United States or Canada, and the tin used in the manufacture of these plates is all imported.

Temple Building, Montreal, March, 1900.





Meadowvale, Ont.—Sketched by A. A. Martin.

### APPLIED ART.

By G. A. Reid, R.C.A., President Ontario Society of Artists.

The Exhibition of Applied Art now being organized by the Ontario Society of Artists, is undertaken in the hope of aiding the movement which has shown signs of growth in Toronto. It is intended to show also that the artists who are usually thought of as painters of pictures which may sometime find a temporary and possibly an inappropriate place on the walls of a private residence or museum, are not satisfied to occupy such a narrow groove in the world of art, but instead are chafing under the limitations of the position they are supposed to occupy, and are fully aware of the debased condition of art about them. They know that the architect, sculptor, and painter should work hand in hand to produce true architecture, which is only worthy of the name when it is so treated. They understand that without the artist artisan all art fails, and it is with dismay that they see him reduced to little more than a machine.

The Society of Artists therefore are desirous of placing themselves on record as being in sympathy with the wide movement which has for its object the reunion of the arts now so disassociated. Though there are those who cannot see how reform can come to the arts except by a return to pure handicraft, and only handwork seems to them worth being called artistic, there are others and probably they are the most philosophical and enlightened, who think that the art of every age should work in its own way as directed by conditions; thus the machine should be utilized, but not recklessly as has been the case during the last hundred years.

It is to be hoped that the riot of invention which has possessed us will soon have spent itself and that we will soon be able to judge of the respective values of the work of the machine and the hand and so reap the true advantage of the labor saving device. To make such an estimate requires perhaps a very different education and environment than now exists, but we must form our ideals and approximate our actions to them whatever the impossibility may be of reaching them.

Before the advent of steam power, there were many plans whereby the workman by this and that mechanical means aided his hand and supplemented mere brute strength to multiply his power to produce. We have only to think a moment to call to mind many such labor saving devices, and to recognize in them the first steps to the multitude of forms which we see in the machines of to-day.

Hand and foot power, horse power, wind and water power, have been largely supplanted by that steadier and more powerful motor, steam, and that is now being driven out by more subtle forces yet. To what extent rapid increase of power may go no one is now pre-

pared to make assertion, though there is much speculation.

The steam age has existed about one hundred years and the revolution in the processes of production during that period, it is safe to say, has never in the world's history been paralleled; the statement might be made in fact, and find no intelligent contradiction, that no period of ten times the duration has seen as great a change.

To realize what such a revolution means taking place in what may be termed a life-time, we only need to picture the workman of the last century busy making with the aid of his hand and foot power machines and tools, a complete article, the design of which and its embellishment progressed as it grew, and to glance at the typical workman of to-day keeping time to the beats of a machine as a minute piece of a complete article gets advanced a step in its progress to being a completed part.

The first picture is that of an artist artisan of whom there are only a few isolated examples now in existence, and the second is that of a mechanical drudge whose work debases him and saps his life by its monotony and lack of interest for him.

The power to repeat with ease and great rapidity elaborate forms which give a show of wealth when the mechanical device first appeared, could not be otherwise than alluring to the people heedless to what it would lead, and the law of supply and demand was inexorable so that a rapid degradation and decline of the arts was the consequence.

Naturally, those who recognize the value of the plastic arts to a people have been plunged into despair as they have realized the constantly increasing domination of machine-made work over that made by hand and the consequent loss of individuality in design and workmanship in every field of art activity, and all over the civilized world many crusaders are now working, trying to stem the tide or to turn its power to account.

Arts and crafts exhibitions are one of the evidences of this widespread movement, and the intention of these exhibitions is to make all the people realize the value of work of beautiful design and craftsmanship, and to thus create a demand which would move the manufacturer to supply. This may seem hopeless to some on account of associating great cost with the beautiful building, piece of furniture, utensil, or other objects of art, but this is far from the right idea. A return to simplicity and sincerity of intention is the central purpose, and the idea that to insure the production of a beautiful thing the worker must experience a joy and delight in producing it, is coming to be recognized. The best systems of education now are stimulating the power to initiate and the time is at hand where wise manufacturers will use the initiative power of the workman as the basis of profit, instead of taking so much cognizance of mere whimsical demand.

### A DECORATIVE HINT.

An excellent decorative effect has been obtained in the carriage driveway of the Bach Bay Station, in Boston, by using a high wainscot of copper, carrying out the lines of the oak vertical boarding with V-shaped joints that is employed for lining the upper part of the walls. No molding is used to break the joint between the copper and the wood, the whole effect being obtained by the difference in color. The same treatment obtains both on the walls and on the heavy circular columns that carry the roof.



## COMPETITIONS IN MONTREAL.

By "POLNUD."

THESE are invariably of a character that architects of any professional standing can hardly enter with safety, and always with a surety of loss, for it is the best lobbyist who secures the prize in the end, and though he may have a good design and the ability to construct a creditable building, it is his influence as a churchman, or the enmity of a certain member on the committee to the other competitors, and not his ability as an architect, that wins. Under this condition of things the best architects do not compete, and those who have a professional name to make and a fortune to acquire, enter them only so far as they feel some hope of success, and leave them when other work brings more lucrative employment. On the other hand in England, France and Germany, the conditions are vastly different. They have a past to commemorate and an accumulated wealth to invest, and the architect works for glory, being assured when he competes for a structure of importance that his chances are all based upon his ability to design; and once asked to enter such a competition, he feels confident of fair play, and his design being placed first, no party or petty spite is allowed to wrest from him what he has fairly won by his genius. We should not despair of seeing a like condition of things in this country. A few such successful competitions as this would have a vast influence; a new generation will come with advanced ideas upon art, and while a new style will be a matter of formation for generations and its perfection only to be found in the decadence of a nation, still each bright mind in the profession will seek to better that which exists.

Two conditions always necessary are :

The successful designer should as a matter of course be employed to carry out his design at regular prices; competition as regards rates of compensation would necessarily be demoralizing to the competitors, and possibly to the judgment of the committee.

While it is in accordance with the extremely mercantile spirit of the age to endeavor to obtain the maximum of value for the minimum of payment, yet such a principle applied to artistic work has a most depressing effect on talent, fails to call out high ideas and drives eminent practitioners entirely away.

The best way to secure a keen and good competition is to name and pay (enough for expenses) a certain number of leading architects, and allow all others to come into the competition without pay but a fair and just chance of winning the prize should their plan take first place. There is nothing invidious in the choice; all architects not named would know that a want of influence on the Board was the cause of their being left out.

This is where the members of the Province of Quebec Association of architects could be benefitted, as all members in good standing should be invited to compete on all public buildings, viz., government, municipal schools, libraries, hospitals, and public charitable buildings. I can plainly see unless some compensation as well as glory is derived from the Association it will dwindle away and members will resign and practice as do the aliens and outsiders without its benefits and protection.

This, after all the devotion and labor of the first originators of the Association would indeed be a serious calamity, as no branch of the professions should be more protected in an educational sense than Architecture, as it is the most important of all professions, affecting as it does the health, comfort, safety, and the beauty and

wealth of all cities. No doubt the Association has accomplished a great deal, and through the generosity of the founder of a chair of architecture in McGill by Sir W. McDonald. This important achievement will be a great incentive to the profession and the better education of architects will be a certain surety to the public that architects will at least understand the construction of a building if they are not all geniuses and endowed with artistic ability. The architecture of our city will be improved; the comfort of our inhabitants will be increased; the revenue will be augmented; the daily travel to our beautiful cities be tripled; and the prosperity of our people assured. This is all very encouraging, and our young men are led to believe that all is accomplished for their future prosperity when they have become members of the Association. The public, however, looks for one great essential in our architects, competency, and nothing but the real article will suffice. An architect in these days must prove that he possesses distinct knowledge of building, that he is a better constructor, better sanitarian, better artist, than a builder merely — that his scientific knowledge of mechanics, of the properties of matter, the laws of heat, light and sound, of chemistry and hygiene, are so far complete that he can advise on buildings for all purposes; specify works of drainage and ventilation; he must know sufficient law to protect his client from all possible risks, and all this in addition to his art training and artistic capabilities. It is such a competence that can only be proved in actual works designed, and executed by him, that the public demand for the five per cent. — not a mere theoretical knowledge that may do very well for a graduate of McGill or a member of the architects association. The titles bestowed by these two ought to imply a distinctively competent man as I have sketched, and should only be bestowed on those who have actually carried out designs of their own; but alas! the titles are won by men of very indifferent attainments, and whose rank as artists may be impeached in many cases. The examinations have unquestionably raised the meaning and standing of members in many instances, but they are of a much too general and perfunctory kind to guarantee the architect's ability. When a diploma or letters bestowed on an architect can actually mean that he is above his fellows, then will the public begin to realize the value of these distinctions, and not before. No system of questions and answers will ever test the actual ability of an architect in his two fold functions of an efficient builder and skillful designer. The public also have a suspicion of anything like cliqueism, and those who form themselves into societies and combinations have generally a reputation (ill founded in most cases) of trying to serve their own ends, and the charge of trade unionism is often brought against professional bodies. It is for the professions to show the unreasonableness of the charge by proving that their interests are the public's interests. The building public ask for competent men able to design and carry out well constructed and sanitary buildings. They want to have proof of that competence by some guarantee that a building will be more efficient when an architect is employed than when he is not, and the Association should strive to prove to this doubting public that the degree conferred on any member by the Association and sanctioned by the legislature (as it is) should be guarantee of the highest standard of professional attainments.



## BRITISH COLUMBIA LETTER.

No. III.

THE want of places of amusement and resort in the towns of British Columbia is very noticeable, and is found not only in the new but in the old towns as well; Vancouver possesses an opera house with excellent appointments, but beyond this and a couple of small music halls, of scarcely questionable character, there is nothing; there are no assembly rooms, neither is there a choral hall, or for that matter any hall whatsoever of a public character; the so-called city hall is merely an indifferent bad market place, converted by somewhat primitive means into a series of rooms that remind one rather of loose boxes for the accommodation of the civic officers and staffs, the building having proved a failure in its original business; exclusive of the opera house, there is no place in which a great meeting of the citizens can be held, and curiously enough, the need of such a place does not appear to be recognized.

The public free library, though recently greatly improved, does not compare favorably with similar institutions in other places of equal importance; there is no art gallery, museum of any sort, art or technical schools.

In Victoria we find a small natural history museum housed in the provincial government buildings and under the control of the agricultural department, so Victoria can scarcely claim an undivided interest in this, her only jewel of the description, for in other points the capital is certainly no better provided than is her younger and less wealthy sister on the mainland.

The British Columbian public, while claiming to be an advanced and go ahead community, betrays a strangely complete indifference to matters of this sort. The explanation offered is the well worn one always trotted out when one ventures to criticise anything on this continent, "we are so young, you know." But this tiresome cant falls to the ground if comparisons be instituted between these and other very young and far more remote places; it is obviously unfair to compare little towns such as Victoria, Vancouver, New Westminster and Nanaimo with places of the same size in England, Germany or France for instance, or with the Australian towns of similar importance, but either Tasmania or New Zealand may fairly be said to have enjoyed no advantages of age or proximity to great and wealthy communities over these British Columbian places; in New Zealand we find every town whose inhabitants number more than a very few thousands is fairly well provided with museums, art gallery, art schools, public library and town hall, each of these being more or less well equipped with collections of the different descriptions, for the possession of which the people are usually in the main more indebted to the patriotic generosity of private individuals who laid the foundations of these invaluable institutions in the earliest days of that distant colony than to the wisdom of their elected rulers; nothing has yet been done on these lines for any town in this province, old or new. The people of both Auckland and Christchurch possess priceless collections of native weapons, implements, carving and so forth, good, useful collections of pictures, which include many works by famous men of the past as well as of the present; these and other treasures, such as blackletter bibles (there are no fewer than six Caxtons in Auckland), blackletter books, illuminated missals and manuscripts, examples of wood engraving, cutting and printing, prints, etchings, painting on ivory and china, sculptures, coins, bronzes, and so on—in Auckland these are housed in a building, the cost of which, amounting to nearly \$150,000 without the site, was the posthumous gift of one man; the late Sir George Grey, the famous pro-consul, donated his magnificent private library and works of art, together valued at \$400,000, to the same city during his life time, and a Dr. McKelvie established a fund which provides something like \$6,000 annually for the purchase of British paintings; the Auckland Art Society's annual exhibition is one of the social events of each season; the public library, too, is splendidly equipped and maintained. Contrast this with the state of affairs in Victoria, which is of the same age as Auckland, or with Vancouver, which will probably soon have as large a population. In New Zealand we see a keen appreciation of the educational value of museums, galleries, art schools and public libraries; here we find their absence or inadequacy scarcely known or noticed! Possibly the only work of art (save the mark!) which the people of Vancouver may claim to be their very own is the galvanized iron travesty of a blind-folded Justice soldered to the summit of the tin dome of that arch architectural caricature, the Courts of Justice.

The Arts, Historical and Scientific Association of Vancouver

appears to have enjoyed a successful season during 1899. The membership numbers 51, nine meetings were held during the year exclusive of 5 public meetings, the attendance at which, however, was not very large. On February 9th Rev. L. Norman Tucker read a paper on "Historical Quebec"; on March 9th one on "Canadian Poetry" was given by Ven. Archdeacon Pentra; a musical program was rendered on the 11th April; a conversazione was held on October 10th; Rev. Prof. Whittington delivered a lecture, illustrated by diagrams and maps, on "700 Years of Work and Wages in England."

Numerous additions to the collection of the Association have to be recorded, notably some specimens of Roman pavement presented by Miss Kilby, and a number of photographs of Egypt, Constantinople and Athens, of Greek architecture, and of Italian works of art, all presented by Madame A. Aalberg.

During the year the museum has been reduced to order, everything having been labelled by a sub-committee. The financial statement shows a balance to the good of \$77, and the city made a grant of \$100. The secretary, W. H. J. de Forest, expresses in his annual report a hope that a more suitable house for the Association may soon be found in connection with the free public library.

The Association appears to devote little attention to the arts, probably because it is found that things historical and scientific embrace a sufficiently wide domain. Owing to the lack of a public art gallery, we are precluded from receiving the benefit of even the briefest intercourse with any painters, architects or other artists who may visit our city for a few days. Those painters who sojourn with us for a season and wish to exhibit their works have to do so in a manner which is wholly unsatisfactory. Quite recently a Royal Canadian Academician was indebted to the courtesy of a druggist for permission to exhibit his sketches of the coast among the tooth brushes and sponges displayed in the store window. Another well known R. C. Academician showed his paintings in a store devoted to photography and picture frames, certainly a more appropriate place than the other, but it is not creditable to a city of 35,000 inhabitants that it should not possess a salon, studio, or even a suitable room to place at the disposal of visitors more or less distinguished in the world of art. Our city fathers appear to be too deeply immersed in acrimonious personal disputes or in the cares of ward politics to give much thought to such trifling matters as "painting and poetry," but surely if a fair proportion of the citizens are really of a higher intellectual level than the squabbling ones who usually run the city hall in these parts, the deficiencies noted would be quickly remedied?

Sir L. Alma-Tadema, R.A., has emblazoned on the walls of his studio this device: "As the sun colors flowers, so art colors life." How little color then must there be in the vast majority of lives! John Ruskin says "All great art is praise." We have a city full of churches, is it invidious to ask "where is the art?" Echo would indeed answer, Where?

Sedding, in a paper read before the Portsmouth Church Congress in 1886, thus replies to his own question, "What is Art?": "I answer, Art is the embodiment and communication of man's thoughts about man, nature and God. It is man's way of decorating his existence and of ministering to the glory of his Maker. Art is both the need of man's nature and its highest product; art is, I say, a necessity of man's nature, it is his speech; and ordinary speech, the utterance of his ordinary thoughts and emotions, is a necessity, so too is the utterance of his inspired thoughts and emotions, through the medium of art, a necessity. Look through the world's history and from beginning to end man is revealed as an artist, a promoter of art. . . . Art is man's speech in inspired moments, the voice of the imaginative qualities in individual or in race, a voice so tell-tale, so expressive in its manifestations, that the expert need not be told the origin of a piece of art brought to his notice, need not be told the land of its birth. Even if it be of remote antiquity it carries its mark, a type of form, a pattern that recalls dead symbols, a trick of handiwork by which its source is traced home, . . . and in the art of a race we have not only its imaginative voice but the key to the dominant traits, the temperament, the conditions of the people."

Were the civilization of this country now to be abruptly terminated, in what estimation would the antiquarians of succeeding ages hold the "dominant traits, the temperament, the conditions of this people," as evidenced by their archaeological remains? In spite of systems of electric trolley cars, of electric lighting, and of telephone communication (with their attendant forests of hideous poles), our "handsome," "solid," even "magnificent" blocks, as the ubiquitous reporter very modestly describes them,



our "splendid" galvanized iron statuary, our tons of "beautiful" metal cornices, our sham Gothic churches, with their wealth of stained glass, in which is revealed about as much power of design and thoughtful color as is found in a 10-cent kaleidoscope, all of these notwithstanding, it is greatly to be feared our learned critics would not place us very high on the scale of past civilizations. What indeed could the future Mr. Dryasdust find to say in favor of a people apparently so devoid of excellence in the practise of the Arts? Imagine how he would record his discovery of the entire absence of an art gallery, public hall, technical schools, of a library of reference, in the most modern and important town to be found in a distance of nearly 3,000 miles—his comments on a people content to worship in buildings which would not have reflected credit on the Vikings of Europe, who ran their race ten centuries before them, would probably be worth reading! Posterity would indeed find it hard to believe that Eastern and Western civilization were contemporary and linked by the superb engineering feats marking the trail of the iron road connecting the two extremes.

We are pleased to learn that steps are being taken towards the formation of an Arts and Crafts Society, based, we understand, upon similar lines to the now famous Arts and Crafts Society of London, founded by the late Mr. Wm. Morris, which has performed yeoman's service in the cause of restoring English Art to a national art, as opposed to a merely one man or individual art; the new society hopes to bring together all workers in metals, wood carvers, architectural sculptors, carvers, modellers, designers and workers in glass, furniture and fabrics, painters of china, wood engravers, professional and amateur photographers, and, in short, all sorts and conditions of men and women who regard their daily vocations as something higher than mere wage-earning drudgery. It is intended to enroll both working and honorary members, with a nominal subscription for the former and a higher one for the latter; the chief efforts of the society will at first be directed towards holding an annual exhibition to remain open to the public for some days, and an attempt will be made to encourage the sale of local productions by means of an art union. The honorary membership will carry with it admission to the Society's exhibition, the opening conversation and the private view, and will also entitle the holder to certain chances in the Art Union. It is to be hoped that the enthusiastic promoters of this excellent scheme will meet with a full measure of success.

Had the craftsmen to whom our details have to be entrusted for execution enjoyed the opportunities for study and comparison which a properly constituted Arts and Crafts Society affords, we should be spared many of the errors in elementary good taste and in the proper fitness of things one so frequently meets with; even when the architect provides carefully studied details, which is far less frequently the case than should be, they are often misrepresented in execution by thoughtless artificer who puts but little life or pride into his work; the every day, machine-made artizan works primarily for wages. Wages, of course, must be earned, but if the worker could have instilled into him some appreciation of the art value of the molding, contour, or what not on which he is working, as well as of the texture of the material, his interest would be quickened and he would of necessity put more of his own soul and character into his execution; of most workmen it is the highest ambition to emulate the precision and neatness of a machine, and in this he is encouraged by a public which places a false view on mere exactness; upon being shewn a drawing the first comment of both the average workman and the every day layman is made upon the mechanical dexterity or draughtsmanship betrayed in its preparation; rarely indeed does either look beyond this point and seek for its real value, the knowledge and power shewn in its design and composition; it is not possible that character and feeling can be retained under such circumstances—one might as well expect to hear a soulful rendering of Beethoven's "Moonlight Sonata" ground out by a grinning Italian organ grinder and his appreciative monkey. The fault, too, lies heavy at the door of the every day architect, who takes about as much interest in the higher teaching of his vocation as does the man who tends the planing machine; with the former, commission is the first aim, with the latter, wages; in no true sense is one better than the other. Not long ago the architectural world in England was much exercised over the question of "Architecture a Profession or an Art?" Here it might be transposed, "Architecture a Business or a Trade?"

Advertising will sell everything that ought to be sold.—Bates.

## ILLUSTRATIONS.

- DINING HALL AND UPPER CORRIDOR IN ROYAL HOTEL, HAMILTON, ONT.—MR. W. P. WITTON, ARCHITECT.
- EXTERIOR AND INTERIOR VIEWS, RESIDENCE OF MR. W. S. ANDREWS, ROSEDALE, TORONTO.—MESSRS. DARLING & PEARSON, ARCHITECTS.
- THE MACDONALD CHEMISTRY AND MINING BUILDING, MCGILL UNIVERSITY, MONTREAL.—ANDREW T. TAYLOR (TAYLOR & GORDON), ARCHITECT.
- DRAWING TO HALF-INCH SCALE OF OFFICE BUILDING FOR MESSRS. LEVER BROS., LIMITED, TORONTO (SELECTED BY THE ARCHITECTS' EIGHTEEN CLUB, TORONTO)—SPROATT & ROLPH, ARCHITECTS.
- CANADIAN ARCHITECT & BUILDER'S STUDENTS' COMPETITION FOR A SUBURBAN BICYCLE CLUB HOUSE.—DESIGN BY "KENILWORTH" (CLARENCE THEDFORD, 237 DUFFERIN STREET, TORONTO) AWARDED FIRST POSITION.—DESIGN BY "SPES" (WILLFORD A. GAGNON, 25 MELBOURNE AVENUE, WESTMOUNT, MONTREAL, QUE.) AWARDED SECOND POSITION.—THIRD POSITION IN THIS COMPETITION HAS BEEN AWARDED TO THE AUTHOR OF THE DESIGN SIGNED "DINAH," FREDERICK C. FRENCH, 84 WELLESLEY STREET, TORONTO.)

## FIGURING UP.

The following is given by the Illustrated Carpenter and Builder as a simple and rapid way of finding the number of joists, studs, furring, &c., for any given length of floor or walls, where the centres are placed 16 in. apart: Multiply the length of the building in feet by three, and divide the product by four. For instance, a building is 124 ft. long, then  $124 \times 3 = 372 \div 4 = 93$ , the number of joists or studs required. This rule holds good no matter what the thickness of joists may be, as long as they are spaced 16 in. from centre to centre. Allow one extra for a starter, except where a sill or other timber forms a starter. The same rule applies also to furring or stripping, or any other work, when 16 in. form the distances from centres. In estimating the number of rafters or other timbers that are set 2ft. 6in. to centres, results may readily be obtained by multiplying the length of building by two and dividing the amount by five. The result will show the number of pairs of rafters required, less one pair, which must be added. Again, if we want to place joists of timbers of any kind, 18in. from centres, all we have to do is to multiply the length in feet by two, and divide the product by three, pieces required less one, which must always be added. In the first instance the foot is divided into three parts of 4in. each, and in the two latter examples the foot is divided into two parts of 6in. each. The principle is quite plain, and, when properly understood, may be applied to many cases in estimating.

The Dominion Radiator Company has contributed \$500 to the Canadian Patriotic Fund.

The introduction into New York of a mechanical bricklayer, which has been invented in England, has brought the leaders of the builders trades' unions face to face with a serious problem. The latter say they cannot stop the progress of machinery, but they will keep reducing the hours of labor as the introduction of machinery proceeds. The new machine will save two-thirds of the time occupied in laying bricks by hand.



## THE NEED OF AN ART MUSEUM IN TORONTO.

THE Ontario Society of Artists have had printed a brochure "On the Need for an Art Museum in Toronto and some Suggestions on how it might be founded." The introductory reads as follows :

The need of an Art Museum in Toronto has long been felt by those interested in the progress of Art in the city and province.

While in other branches of education Toronto takes a leading position, and suitable buildings have been erected for their accommodation, as regards Art it is far behind cities of its size and importance in the United States, Australia, New Zealand and Cape Colony.

Visitors are surprised at the absence, in a centre of education, of an appropriate home for the fine arts.

All art workers feel more and more the need of such an institution as a place of reference and comparison ; and students of art also feel the lack of opportunities for study.

It is therefore considered that a great effort should now be made on a broad basis to found such an institution. The material for this pamphlet has been prepared and published in the hope of aiding the organization of an Art Museum Association in Toronto and of encouraging donations by citizens and corporations.

The nature and functions of an Art Museum are described and suggestions offered for the founding of an institution adapted to the requirements of Toronto, as follow :

An Art Museum should be regarded, first, as an educational institution, its power to delight and amuse being secondary to its instructive function. It should possess the historical aspect incidentally, and treat the history of art concisely with the best examples of the work of all periods, never exhibiting mere relics ; therefore, the difference between an Art Museum and an Historical Museum must be kept distinct, though a close relation may exist.

Access should be so free for all that every man, woman and child of the community might be familiar with its contents. This, however, should be made compatible with the necessity of setting apart times for study by specialists and students. Free and pay days for the admission of the public would serve such a purpose.

A school of art and design should be in close connection with such an institution ; the collection of works of fine and applied art serving as a storehouse for reference, and stimulating art activity of every sort. An enumeration of the leading sections will serve to show the vast importance of such a museum. There should be, as a matter of course, antiquities of all sorts, valuable as art productions ; examples of sculpture, painting, architecture and textiles, and of work in metals, wood, and pottery.

These and other heads, when sub-divided, would cover a vast field of work which it is necessary for the student to see and examine to fully appreciate and emulate ; and it is by the examination and contemplation of such works of art that the young are induced to undertake the development of their latent abilities.

An ideal Art Museum, and an Art Museum such as would appear a possibility in Toronto, are probably very different things ; to accomplish the latter, as much as possible of the quality of the former should be aimed at.

The situation of such an institution should be carefully selected ; it would be a blind policy to take a poor site because it was cheap or was available as a donation.

Perhaps the most difficult thing to guard against, when a great public institution is being founded by the generosity of citizens, is the gift bound by conditions which may rob it of its most valuable quality. That gifts should have conditions is reasonable, but it would be better to go at a slow pace in founding a home for the arts in Toronto, asking for donations with objects well defined and application of the funds guaranteed. Therefore, to found an Art Museum in Toronto the Society of Artists believes that an association should be formed at the outset which would have the power and responsibility to outline a plan and carry it out, to receive bequests and grants and apply them to the purpose for which they were intended.

This Art Museum should be undertaken on the principle of gradual growth ; that is, development of the building and what it is to contain. The whole plan should be so prepared that a small portion could be built at first and added to from time to time ; the buildings to be fireproof, affording security to valuable works of art received as loans or bequests.

Accommodation should be provided in the building for the School of Art and Design, as an integral part of the museum, and suitable galleries should be kept for current exhibitions.

A fund for maintenance could be provided by a citizen's honorary membership fee, carrying with it privileges of library, lectures and exhibitions, thus making a continual connection with those interested in art for the carrying on of the government of the institution. The Art Societies and School would be independent bodies, occupying a portion of the building as tenants.

The foregoing suggestions are offered in the hope of bringing together those who are interested in the founding of an Art Museum worthy of Toronto ; on the formation of an association of citizens, the shape it should take can then be determined.

For the purpose of bringing forth additional suggestions and to show what has been and what is now being done, in cities of the same size as Toronto and also in some of the greater cities, a list is appended of art associations, museums, institutes, etc., their bequests and outlines of government. Full particulars of all these associations have been ascertained and are available for reference when needed.

## TESTS OF FIREPROOFING MATERIALS.

The British Fire Prevention Committee have reported the results of recent tests of girder coverings by the "Gypsin" Brick Co., Limited, of London and Paris. The report states that "exact details as regards the composition of the girder-coverings used were not given, the materials of which these coverings might be composed alone being named by the maker. As we have here a case where the exact composition and proportions of the substances used in the composition of the coverings must affect their fire-resistance, it is to be regretted that the details were not given. It makes it so much more difficult for the architect to know whether the protective coverings put on the market are identical with those which have been under investigation."

The object of the test was to record the effect of a fire of one hour's duration, commencing at 500° Fahr., and increasing to 1,800° Fahr., followed by the application of water for two minutes.

NOTE.—Two types of protective compositions were to be tested around 7 in. steel joists, the one joist being covered by a composition applied as plaster about one inch thick, the other joist bedded in a composition about 3 in. thick.

NOTE.—The time allowed for the construction and drying of the covering was to be a fortnight.

The following observations were made after the test in respect to the beam of larger section :—

There was a longitudinal crack on the soffit of the protecting material for about half the length.

There were fine hair cracks on all surfaces of the protecting material.

The lower arrises of the protecting material were damaged.

The protecting material was very sodden from the applied water, and was very soft and easily impressed.

The composition remained attached all round, and the girder was not affected by the test.

The following observations were made after the test in respect to the beam of smaller section :—

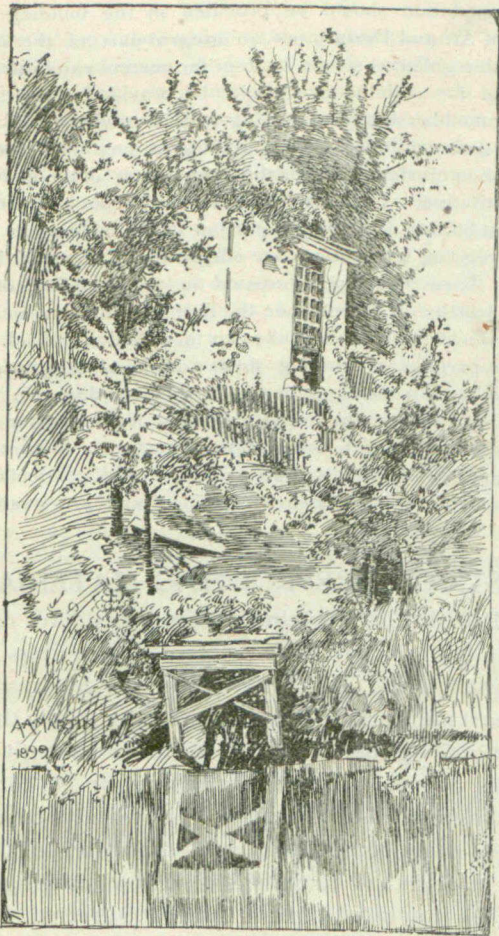
A layer of the protecting material to the soffit of beam of about  $\frac{5}{8}$  in. thickness had become detached and had dropped off.

The sides of the protecting material showed vertical cracks, and the surface of the material showed fine hair cracks on all faces.

There was a longitudinal crack in the protecting material on the top surface.

The protecting material was sodden with the applied water, and was soft and easily impressed.





St. Davids, Ont.—Sketched by A. A. Martin.

## ARCHITECTURE IN MANITOBA.

[BY A CONTRIBUTOR.]

IN reviewing the progress of the building art in Manitoba, the tender age of the province appeals to our consideration. It was only the other day, June 23rd, 1870, that the Dominion government bought these lands from the Hudson Bay Co. for 300,000 pounds sterling and entered the province into federation. The population then being 11,965, of which 5,694 were French half-breeds, 4,076 English half-breeds, 1,614 whites, and 581 Indians, it now is over 250,000.

Architecture being to some extent a sensual gratification, was not studied by the early settler, who was satisfied with the humblest kind and cheapest form of building, be it constructed of logs or lumber, as long as it served the purpose of habitation, though not calculated to withstand the severity of the long and trying winters. To this day some of these old buildings are still extant, but are being rapidly replaced by more modern structures, for, architecture, which may be said to be one of the first steps in the great march of civilization, appealing to the eye and affording the best scope for the parade of pomp and splendour, received more patronage and resulted in a better class of buildings, more noted, perhaps, for their simplicity, symmetry and solidity than their architectural beauty or purity of design, and in many instances, the incongruity of the composition suggested at least an imperfect acquaintance with the first principles of architectural design. This is not altogether the fault of the designer, but attributable to the economy, or rather, parsimony of his client, whose crude taste has not been properly trained to better judgment in the matters architectural. This prevalent desire to obtain cheap buildings has resulted in contractors entering into competition with the architects, and owners of property have given them considerable encouragement. This procedure saves the architect's

fees, but it is open to question and future history whether such buildings are cheaper. This state of things is due to there being no western association of architects, which would have the tendency to make an organized association of architects more honored and their services more remunerative.

The province throughout is waking up to the fact that more attention must be paid to the art of building, and in the cities and towns the building by-laws are being revised, being brought up to date, and, more important, being enforced. Winnipeg has followed the safe example of older cities and has appointed a building inspector from whom permits must be obtained.

The severity of the winter demands greater attention paid to the warm construction of buildings than perhaps any other country, and has exercised the constructional ability of local architects to no small degree, but with very favorable results.

During the last year or two several fine buildings have been erected in Winnipeg, notably the Manitoba Trust Company, the Bank of Commerce, and the Dominion Bank, and though the credit of the designs falls to eastern architects, they are an acknowledged and gratifying addition to the architecture of the city.

The present year indicates further progress, in such important buildings as the C. P. Ry. hotel, a new Y. M. C. A. building, Merchants Bank, and others in the city, while the whole province predicts an unusually active season in building operations.

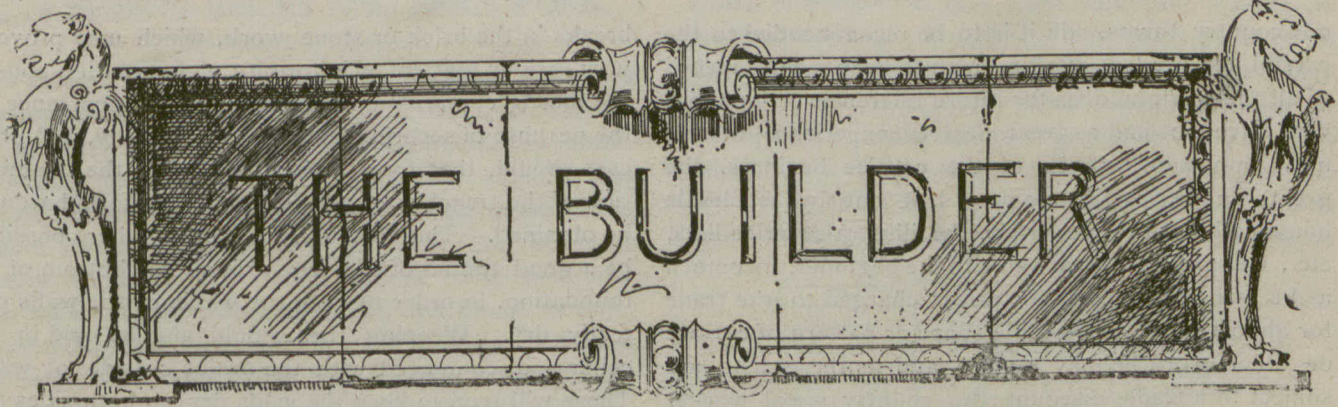
## NEEDED IMPROVEMENTS AT TORONTO INDUSTRIAL EXHIBITION.

At the annual meeting of the Industrial Exhibition Association of Toronto held recently, Mr. J. O. Thorn, manager of the Metallic Roofing Company of Canada, urged upon the board of directors the necessity of erecting new buildings which would afford proper accommodation to manufacturers and exhibitors in other departments. Mr. Thorn stated that, owing to imperfect accommodation and unsatisfactory treatment, 90 per cent. of the implement manufacturers had decided not to exhibit, and for the same reason the manufacturers of stoves and heating apparatus had also unanimously decided to refrain from exhibiting until a suitable building is provided. The fact that the Ontario Society of Artists have, for years past, endeavored to have proper provision made for art exhibits, was also mentioned.

Architects and others interested in architecture will coincide with the following expression of opinion regarding the necessity for a more artistic treatment of buildings which may be erected in the future on the exhibition grounds: "There is certainly a strong feeling that in the erection of any further buildings a little more regard for the architectural effect would benefit both the exhibition and the exhibitors. In the various continental exhibitions of late years, the attention given to the designing of the buildings, no matter how inexpensive, has been very great; the results, temporary and permanent alike, have been very marked. A number of the present buildings to my mind resemble packing cases more than anything else."

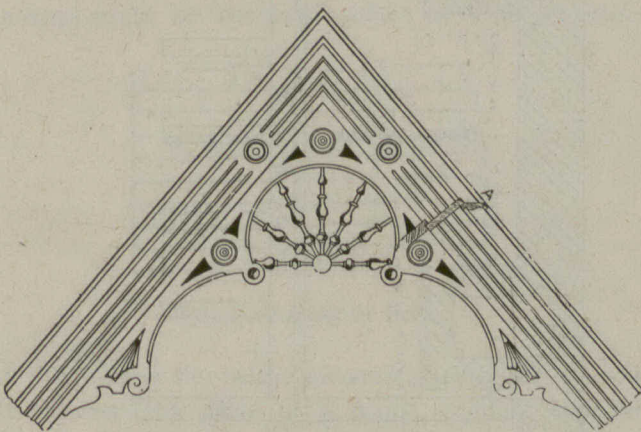
Mr. Geo. Polly, who goes to Vancouver as the representative of the James Robertson Co., Limited, of Toronto, was handsomely entertained by the firm and presented with a well filled purse on the eve of his departure for the west.





[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.]

There are many very beautiful patterns of barge-boards and gable ornaments on old buildings both in England and Germany, many of which are elaborately carved and cut into fantastic yet appropriate forms and fill their purpose to perfection. In this country we rather follow the Swiss and French methods of finishing our gables than the more solid and durable English and German, "more's the pity." The illustration shown herewith gives an open gable with a built-up barge-board. It is neat, quite effective, and not costly to make. The turned spindles add materially to the design and are neither difficult to make nor costly. The rosettes are also turned and are planted on. The method of construction, with the crown moulding, is shown at A. Gables of this kind are well adapted for frame buildings



GABLE ORNAMENT.

where paint and color are important factors, but, for brick or stone buildings heavier and more substantial ones should be employed.

#### Estimating Sheet Metal Work.

In making estimates for sheet metal work, it is necessary that persons estimating should have a proper knowledge of the method of reading and measuring plans, and this can only be acquired by cornice men after long, careful and close study and observation. The following hints will, in some measure, supply what some may lack in these important qualifications: When the amount of sheet metal is determined that will be required to do a certain job of cornice work, the next question that presents itself is, how much time and labor will it take to do the work? There are almost as many ways employed to arrive at the result sought for as there are ways of doing the work itself. Some guess at the time, comparing the work under consideration to that of a similar character and design done before. Knowing, of course, the amount of time that it has taken to do the preceding work, a nearly correct esti-

mate can be made as to the time it may be required to do the work now in hand. The method as described is used in a good many shops with sometimes widely differing results as to the actual time required, sometimes being too low an estimate and quite often too high to be in any way near correct. The way that is most prevalent for sheet metal workers to bid on work is by lump figures, that is, the plans and specifications of certain works are submitted by the architect to the metal worker, and he gives a figure for whatever amount he is willing to do the job complete for, in a lump sum. It also sometimes occurs that a bid is asked for a cornice or other work by the running foot, or by the square foot for the work complete on the building. If the result has been obtained in a manner as shown by the "snap" rule, it is only necessary to divide the work on which the price is based into feet, and discover the price of this per foot, then multiply the number of feet of work to be done by the amount per foot cost of the work finished, which will give some idea of a correct estimate. This method, though well enough in the absence of a better one, is not to be commended, as it is a sort of hap-hazard way of arriving at a result which ought to be correct, but rarely is, as many a sheet metal worker has found to his cost.

#### Correct Way of Es- timating.

A reliable way to estimate is to figure up on the entire items of a cornice or other work separately, such as, 1st, work in the shop on the cornice; 2nd, transportation from shop to building when the work is to be put up; 3rd, cost of scaffolding; 4th, the cost of putting the work on the building; 5th, cost of materials, including tinned nails, solder and sheet metal. In some large establishments the following plan is used to determine the cost of almost any member of a complete cornice: We will take say a bracket, or any member of a cornice for that matter. The first step is to make a drawing of the desired shape full size, and cut out a pattern; note the time very carefully, also note the general character of the design, size and shape, next the work done on the forming, bending, joining and soldering together of the various parts of the work. When the member is completed, the weight, including cuttings and waste, size, general description of the work, and the precise time it has taken to complete the work, future calculations for all similar work can safely be based on the results obtained. The same method is used to obtain the price of all the different parts of cornices or other works coming under the sheet metal workers' department, thus securing for all time a safe and reliable guide for future estimates and calculations. While the foregoing would hardly be applicable to small shops in



our country towns, still it is to be recommended to the careful and prudent working man to keep a close record of all the work he does for future reference. For those who have not had a great deal of experience in this most important branch of the cornice business, the great number of catalogues sent out by wholesale houses who sell to the trade, the illustrated price lists, etc., will prove of great value to the beginner, inasmuch as he will find therein the prices charged to the trade for almost every conceivable shape or pattern of cornice or other work he may require, and as these lists are subject to a trade discount, the country metal worker will generally find it to his interest to purchase the work ready to put up from the wholesale dealer.

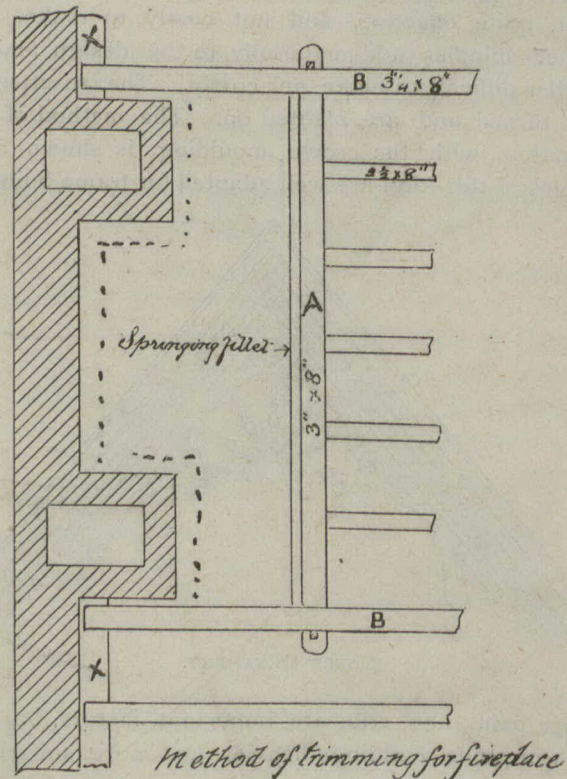
Notes on  
Foundations.

A few accepted conditions required for good foundations are herewith presented: If for a frame building, footings two feet wide will answer in almost any solid ground. If, however, the ground be soft or boggy and wet, a good plank bottom four or five feet wide may be necessary. The planks should be in several layers and crossed. Good stone footings may be placed on the top tier of planks; much will depend upon local conditions of the soil. For a brick or stone building, wide footings must be employed, and these should always be below the frost line. A cellar floor should never be below the top surface of the footing stones, and, if the foundation is built on sand, the cellar, or other excavations, must not be carried below the footings or serious results may follow. The depth of a foundation will depend on several conditions: the nature of the soil, the purposes for which the building is intended, the weight of the walls, etc., etc., and can only be properly determined by local knowledge. Rock, if not seamy generally provides a good foundation. The surface should be levelled off, and all loose and decomposed stones removed, when all hollows and cracks should be filled up solid with a fine grained concrete. Sand or gravel, when not water-soaked, make good foundations, and are quite healthy to live over, but clays, loams, marl, and alluvial soils are naturally damp and unwholesome. Gravel makes a good solid foundation; it may be levelled easily and will stand any amount of pressure. Sand forms a good bed for footings if dry, and if not allowed to escape laterally will bear great weight. Made ground of any kind is not to be trusted. When this occurs, the trenches should be dug down to the original ground, or else piles driven through the made ground until they reach the original bed. If there are layers of hard and soft ground, the foundation should be laid on the hard layer, and the footings should be wider than usual in order to get a greater bearing area. Soft places or pockets in the trenches should be tramped down, or piles should be driven in them, or they should be filled with concrete and relieving arches thrown over them to prevent uneven settlement of the walls. If the ground under a building be of a soft nature, it will of necessity yield or compress beneath the weight placed upon it. If any part of a building be loftier and more weighty than the other portions of it, as in the case of a tower or steeple, the soil beneath the extra weight will be more compressed than the other parts of the site, and will, therefore, require a broader foundation than the other walls, or that portion of the building will settle lower, and thus tear away from the lighter wall, leaving ugly cracks and

breaks in the brick or stone work, which may prove a very serious matter. Uniformity of foundation and resistance to compression is of the utmost importance for the purpose of securing the requisite stability, and great care should, therefore, be bestowed upon the examination of the trenches so as to see that a uniform hardness be obtained. There should, in all cases where possible, be a good system of drainage around the bottom of the foundation, in order to keep the whole of the walls perfectly dry. Weeping tiles should also be laid in the cellar and connected with the drains outside of walls. These will tend to keep the walls dry on both sides and make the cellar more healthy. Ordinary field tiles make very good weeping tiles.

Trimming for a Fire-  
Place and Hearth.

The ordinary method of putting in trimmers around a stair, well-holes and around fire-places by cutting in pieces of joists and spiking them to the bearing joists is all wrong. The bearing joists should always be an inch or so thicker than the common joists and should be morticed to receive a tenon or tenons on the ends of the trimmer, as shown in the diagram. In this case,



the bearers B B run across the building, having their ends resting on the projecting stone foundation wall, and the trimmer A is tenoned through them, and keyed snug to the bearers as shown. The common joists may either butt against the trimmer and be spiked, or, better still, tenoned into the trimmer. The springing fillet is intended to carry one side of a flat arch, which should be carried over to the protection on the stone wall. This arch is intended to carry the hearth, which is to be either finished in cement, or laid with tiles, ornamental or otherwise as may be decided on.

The works of the Georgian Bay Portland Cement Company at Owen Sound, Ont., are being extended by the erection of a storehouse 260 x 40 feet in size.

"I heard ye were on 'shtrike,'" said Mike to his friend Pat. "I was that," answered Pat. "A strike for what, Pat?" "For shorter hours, Mike!" "An' did you get them?" "Sure we did, Mike. It's not working at all I am now!"



## CONCERNING BRICKS AND BRICKWORK.

BY FRED T. HODGSON.

IN view of the fact that wood for building purposes has advanced in price to such a point that it is becoming a luxury, its uses in domestic architecture is certain to become less prevalent than formerly, when it was almost the only building material available in our more remote districts. Nowadays, however, the farmer or villager who intends building, thinks twice before he determines the material of which his house is to be constructed. At this writing, the difference in cost between a solid brick house and a good frame house, is so little, that all thoughtful men decide on the former, all things being equal, and are in the end better satisfied.

Bricks, both machine and hand made can be obtained in almost every settled portion of the Dominion, equal in quality to any bricks made, though first-class productions are more expensive than they ought to be, and even the inferior grades are priced too high. This, however, may be owing to two causes, first, the lack of the most improved methods and machines in manufacturing, and second, because of the limited demand for bricks. At Haverstram on the Hudson, and at other places where extensive brickmaking is pursued, the finished product can be bought some 20 to 40 per cent. less than in many places in Canada. I have seen hundreds of thousands sold for \$4 per M. f.o.b., and in some cases, in large deals, for something less than that. Another thing that militates against a freer use of bricks, is the exorbitant railway and boat charges. If the rates could be cut down some 25 or 30 per cent.,

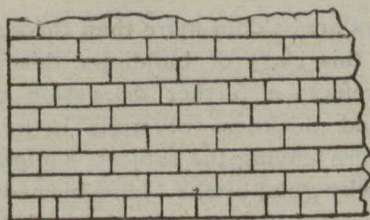


FIG. 1.—AMERICAN BOND.

and the price of the bricks lowered a trifle, the narrow gap between the price of a frame building and the price of a brick building would almost disappear, and the demand for burned clay would likely be doubled in a year or two.

Bricklayers themselves could help very much to increase the use of bricks if they would but make good careful work of what they do execute, and avoid the practice of making their walls a sort of tartan exhibit, or a representation of a huge checker board stood up on edge, by introducing cream, grey, buff, and red bricks, regardless of method or good taste. No bricklayer, unless he is a man of much experience and good taste, should attempt on his own responsibility, to decorate his building with various colored bricks. Only a master can do that well, and he uses strong contrasts sparingly.

Various shades of the same color when properly disposed, may be made to add to the appearance of a brick wall if the fenestration is skilfully devised; but good workmanship, with even mortar joints, and a judicious selection of face bricks and proper attention to the bonding, go farther to give a building a solid and cosey appearance, than any combination of ordinary colored bricks possibly can.

Bond, in brickwork, is a very important matter in several directions, though in this country, there is usually but one kind of bond in vogue, namely, that called "American Bond," which simply consists in showing four or more corners of stretchers and one of headers on the face as shown in Fig. 1. This makes a fairly strong wall but does not look nearly as well as English bond, an elevation of which is shown at Fig. 2,



FIG. 2.—ENGLISH BOND.

or as well as Flemish bond exhibited at Fig. 3. The English bond is the strongest of bonds, being alternate courses of headers and stretchers, while Flemish bond consists of headers and stretchers in the same course. This makes a very handsome bond, particularly if the bricks are of a fine deep red color and the joints are

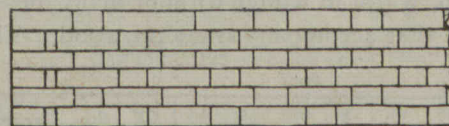


FIG. 3.—FLEMISH BOND.

laid up with fine gray mortar with cut joints. There are several other kinds of bond, such as garden wall bond, face bond, etc., etc. Sometimes, if the walls are three or more bricks thick, a sort of diagonal bond is employed in order to tie the wall together. I show a couple of examples at Fig. 4. In these cases, the face

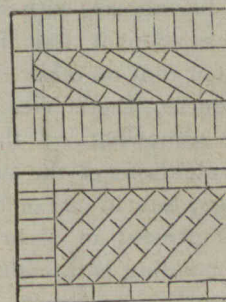


FIG. 4.—DIAGONAL BOND.

of the wall on both sides, may be laid in any of the bonds shown, and the core of the wall laid diagonally, reversed in alternate courses. Walls of this kind, when intended to do much work, should be well put together with good mortar filled in between every joint.

There is another bond sometimes made use of by bricklayers and which is very useful in some cases; this is called "blind bond," and is generally used in tying the front course in pressed brick work, where it is not desirable that any headers should be seen in the face work; and when the binders are good hard-burned brick, and the backing up is properly executed, it appears to answer well enough for ornamental brickwork and fronts of structures; but to construct the exterior face of a wall with costly hard pressed front bricks, laid in close putty joints, and then to back it up with soft bricks and the joints sometimes one-half inch thick or more, and a binder not in for a dozen courses, is the worst sort of workmanship, and should not be tolerated.

To form this bond, the face brick is trimmed off at both ends as shown at Fig. 5, so that it will admit a



binder to set in diagonally from the face of the wall, and every layer of these binders should be tied with a header course the whole length of the wall. The binders should be put in every fifth course in order to get the best results, and it is evident that the backing up of this work should be done in the most substantial manner with hard bricks laid in a close joint, for the reason that the face work is laid in a fine putty mortar, and the joints consequently close and tight, and if the backing is not the same, the pressure upon the wall will make it settle and draw the wall inward.

The bricklayer, in starting this kind of facework, should take care and have the work so laid out on his wall that no bats or closers will appear in any part of it; and in a first class job, the doors and windows will be so arranged that such will be the case. Little matters of this kind, while they do not take up much of our time, add much to the building, both in appearance and in quality.

For domestic buildings, brick seems to be the most appropriate of all materials, cool in summer without being damp, warm in winter without many of the disadvantages that accompany stone or wood. The color

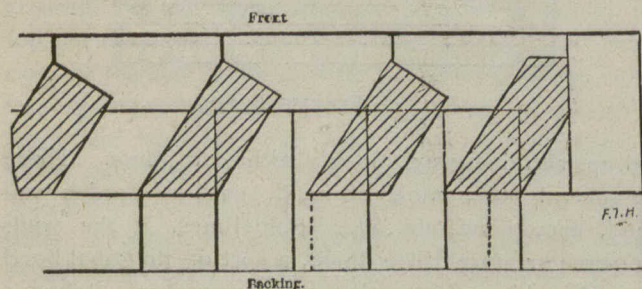


FIG. 5.—BLIND BOND.

and texture of brick harmonizes with any surroundings, and there is a cosiness about it that imparts a feeling of comfort and content that no other building material can convey. Of course, there are degrees of these qualities, dependent somewhat on the color of bricks employed and the pretensions of the structure, together with the surroundings, but in the main the homelike qualities are always present in a brick building, no matter for what the building is intended.

The necessary requirements for a good, substantial brick house are: First, a solid and ample foundation of stone or other suitable material; second, good hard-burned bricks of some regular color; third, properly proportioned and made mortar; fourth, good and careful workmanship on the part of the bricklayer. If these requirements are honestly complied with, the most satisfactory results will ensue, and the building will be a "joy for ever." Cottages, one storey or one and a half storey, may have walls one brick in thickness (nine inches); and as this is a light wall, a foundation, on most soils, sixteen inches thick, with footing twenty inches wide, will be ample to sustain it. The wall should be rendered inside—that is, given one coat of good plastering, and over this a series of strapping should be nailed with centres sixteen inches apart. The strapping should be plumb and fair on the face. Over the strapping is a coat of lath and plaster done in the usual manner, care being taken that the plaster is well worked in about the windows and doors in order to shut out the cold. In a wall of this sort we get, first, a solid brick wall nine inches thick, next a coat of plaster, then an air space of one inch, produced by the strapping, then we have the inside lathing and plaster: all of which, when well executed, should make a com-

fortable house. To make the house still warmer, I have seen the walls, after being rendered and permitted to dry out, lined with heavy building paper before the strapping was nailed in place, a method which insures warmth in winter and preserves a cool temperature in summer.

Sometimes two-storey buildings of brick are put up with nine inch walls. This system is not to be commended, as a nine inch wall twenty or twenty-two feet high, as the case may be, is not a very strong one, and must be well supported from the inside to give it stability enough to resist a wind pressure of 30 or 40 pounds to the square foot, or support a roof having a large area. It is always better to make the walls in the lower storey of a two-storey house thirteen inches, or one and a half brick, thick. The second floor joists can then rest on the offset formed by the upper storey wall falling back four inches, the top wall, of course, being only nine inches thick. In the case of a three-storey building, the lower storey should be two bricks in thickness, the second storey one and a half, and the top storey one brick thick. In fact, it is a good rule to follow, to add a half a brick in thickness to the lower storey for every extra storey in height. An increase in the height of wall, with the necessary increase of thickness, requires a corresponding increase of resisting power in the foundation, and an extension of the area of the footings. No brick building, two storeys or more in height, should have foundation walls less than eighteen inches in thickness, with footings two feet wide. Buildings three storeys high should have foundation walls two feet thick, with footings at least three feet broad.

As dwellings are seldom more than three storeys high—and it is to this class of buildings this paper more particularly refers—a further discussion of footings, foundations and thickness of walls is not necessary here, but, before leaving the subject, I might say there is no reason why good bricks—hard burned—might not enter largely into the construction of foundations. They will resist all the pressure necessary, look well, will not absorb more moisture than many kinds of stone do, and are always available. Bricks, also, might be used more freely in the construction of fences, posts for entrance gates, paving cellars, and a hundred other purposes. A greater demand for bricks would give us a better article at a reduced price, conditions worth striving for.

The chief of the Winnipeg fire department in his annual report to the council, adverts to the careless and dangerous construction and arrangement of buildings, which he insists has much to do with large conflagrations. He suggests that a provision be made in the building by-laws regarding elevators, staircases, etc. He thinks these dangers could be guarded against, and that too much dependence is placed on the fire department for protection. The smallest water mains, he claims, should not be less than six inches, and hydrants should be properly drained to prevent freezing.

In the new extension to the Boston State House, the rear staircase, which is an elaborate piece of wrought ironwork, has been coated with aluminum leaf, with the ornamental portions touched with umber, and in some cases the sunk panels on the square newels and the panels of the open soffit of the stairs have been shaded in umber, the whole thing being then varnished, giving a soft effect. Similar results, though not quite so durable, can be obtained by using aluminum bronze instead of the aluminum leaf. If gamboge is used for glazing instead of umber, a golden tone is given, somewhat approximating in effect to that obtained by using gold leaf. Dull tones, resembling the appearance of oxidized silver, are got by skillfully glazing with asphaltum over aluminum leaf.







### ESTIMATING FOR STONE WORK.

Estimating, as known by those who are conversant with the subject, is not a matter in which the haphazard or rule-of-thumb methods should be tolerated by contractors; and yet, it can be safely stated that fully one-half of all the estimates made for stone are based on guesswork. In the absence of a correct system of collecting values, many contractors bid on work when the amount of their bid is excessively high or ridiculously low; or if the bid should be near what it ought to be, it is more through accident than the result of a nicely wrought system which should enable them safely to determine the cost of production, if not exactly, so near to it that at all times, so far as their listed values are concerned, they can be as certain of their "net cost" being as nearly correct as under existing conditions it is possible to make it. And until a contractor is certain of this, he cannot, in these days of close competition, be sure of how he stands with regard to a contract until all of the work is completed, all of the outstanding bills paid, and all moneys paid in connection with the work, which may be due him, collected; and then he is apt to find that he has lost money on his contract, which is a fact that has been demonstrated only too often.

The writer has in mind the methods of some contractors that are not governed by the rules deduced from the science of bookkeeping; but, rather, is the ever-ready system which they carry under their hats! They require no system which entails the use of averages to enable them to figure closely on any work that may come before them, the result being that no man, however competent to do the work of estimating under the proper conditions, can ever hope to be able to fix the value of work during the absence of the contractor himself, whereas, under a proper system one qualified in every other respect to do the work as it should be done, would have no difficulty in estimating to the satisfaction of all concerned. In other words, the business would run itself, so far as relates to estimating, responsibility could be fixed to an absolute certainty, and the mental comfort resulting from a well organized system such as herein indicated, would more than repay the small amount of labor required to institute it. It is this class of contractors to whom this paper is addressed.

Following the completion of a contract in which a loss has been sustained, it is but natural that a contractor should ask himself: Who is to blame for this state of affairs, and how can it be avoided?

It is evident that a proper presentation of the subject demands that this question should be answered in its relation to the one who superintends the work, the one who figures the work and the contractor for whom the work is figured, inasmuch as all three either directly, or indirectly, affect the estimate; and it is also evident to those who have given the matter serious thought, that the contractor himself is often to blame for poor work that is done in his office.

In order that a contractor may justly exact a prime quality of work from the one who he employs to do his estimating, he should endeavor to place at the command of the estimator every facility necessary to insure full and correct data, as well as to give him ample opportunity to study work in all stages of its production, and to keep thoroughly in touch with those whose duty it is to see that the work comes out to the best advantage, unless, perchance, the man who does the estimating should be the man that gets the work out, in which case

he would be in a position to watch the cost of production to a nicety. It is not possible for the contractor to secure the best service from the man in charge of the estimating in any other manner; and he would do well to bear in mind that, with a man who is honest, and capable in other directions for assuming the responsibility of fixing the figure at which a contract shall be taken, he will best subserve his own interest by reposing full confidence in him as to all that relates to his work; affording him full opportunity to post himself as necessity may require; consulting with him fully at all stages in the preparation of an estimate; and, in a sense, making him, for the time being one of the firm, in which the interest is mutual. In this way the estimator is encouraged to take the fullest interest in his work; will feel that his best efforts are thoroughly appreciated; and, if there is no manhood lacking in his composition, can be relied upon by his employer to exert himself for the best interests of the firm. Failure to observe the principle involved in this statement has often resulted in heavy pecuniary losses to the contractor, in lost reputation to the estimator, who, perhaps, was thoroughly qualified to do his work safely had he not been compelled to work under adverse conditions.

Given the opportunity as outlined above, the contractor may reasonably expect that the estimator may be able to produce an estimate which shall represent the net cost of production and should understand that this estimate is governed solely by the cost of getting the work out in his own shop, whether it be higher or lower than that which may be expected from the shops of his competitors, as it is obvious that any difference in the cost of production in his shop, as compared with that of his competitors, is chargeable to the methods of operation in vogue in the shop, the degree of difficulty in working the material, as well as to the means of handling work which may be at the disposal of those charged with the conduct of operations—this under the assumption that his competitors, as well as himself, work along the lines indicated herein, according to a correct system. Inasmuch as the contractor fails to observe these principles, he is justly blameable for losses which may accrue from a failure to do so, always implying that all other requirements for the production of a correct estimate are not wanting in his shop.

An estimator who is thoroughly qualified to undertake the task of fixing the value, or net cost, of the stonework for a building, for instance, should, first of all, be a practical man; and the more practical he is as a stonemason the more extensive his knowledge of the stone to be figured, and the working of it, the more valuable he is as an estimator. Indeed, without this experience and knowledge, all other qualifications necessary, too, in the estimator, become practically inoperative. In fact, outside of the simple, plain figuring, without practical knowledge which comes from the use of the tools and observation in the shop, and at the building, no person can honestly lay claims to being capable of producing an estimate which can be considered safe in any particular. Then the estimator must, as a prime requisite, be prepared to figure correctly from such units of value as may be gathered from the shop records, but he must also be ready and able, by reason of previous experience in a practical sense, to determine the values of such intricate or new work to which the shop records have no reference; for, it is evident that only a man who is qualified through practical experience and trained obser-



vation is able to ascertain the value of such work safely. The contractor cannot reasonably look for close and safe estimates from an estimator who is not qualified as stated, even though his ability to read or make drawings remains unquestioned. Even then, as noted before, the estimator must be in touch with the shop and the ever-changing records to be capable of producing the best results.

Another qualification of the estimator is his ability to read drawings. And he is still better qualified if he is skilled in making of all kinds of drawings which are to be found within his sphere of duty; because he is thus able to see with the draughtsman's eye and discover, accordingly, much that is necessary to the proper discharge of his duties, and which, otherwise, would escape his notice. Of course, it must be admitted that there are estimators who are not draughtsmen by profession, and who are thoroughly reliable as to estimating, but long practice or exceptional opportunity has developed in them the draughtsman's eye—the ability to see as the draughtsman does; and consequently, that being the reason for the estimator's possession of this qualification, it cannot argue against the necessity for it. Then, too, the more thorough the estimator is as a draughtsman, the more thorough he is as an estimator. His ability in this direction is only secondary to the necessity for being practical as hereinbefore shown, both being necessary, his ability is proportionate to his strength of knowledge of each—draughtsmanship and practical stonecutting, which includes, of course, all that relates to the practical working of the stone, from quarry to building, if we would aim at perfection in this matter.

Next to the estimator's ability as draughtsman comes the mathematical qualification, which, in general, is simply arithmetical, although there are moments when he can advantageously use his knowledge of practical, descriptive and rational geometry, as well as plane trigonometry. This is so obvious a necessity that it is simply mentioned here as a qualification, and dismissed from further consideration; but the last and very important requirement of the estimator, outside of "taking off quantity," which is understood to come within the bounds of draughtsmanship, is the preparation of the "quantities" for estimate. This presupposes that the estimator is well versed in the science of construction as applied to buildings, etc.; that he understands from the drawings and specifications where to expect, and look for, all stone work in connection with the contract, whether it is a "girder block" hidden away in the brick backing, or stone work plainly shown on the elevations, plans, etc.; that he understands how the stone work butts against the different materials, whether they be iron, brick, wood, etc.; and in general, that he understands from the requirements of the drawings and speci-

fications exactly how the stone work should be cut and set in the wall; for then, and then only, will he be prepared to say fully how much stock shall be used in the execution of the contract, and how much labor must be involved. This being settled, we will consider the preparation of the quantities for estimating purposes. It is not intended here to elaborate a system, but simply to point out a few facts which are essential to good estimating, and which, taken in conjunction with what have been stated before, serve to show the duties of the estimator, and what should be required of him if he is not to be chargeable with inefficient service.

In arranging the quantities for estimating, it should be determined upon, at the outset, that all similar stones shall be grouped; that is, all of the same size, profile and finish should be written in a column together, with the three dimensions and cubes, so that the calculations may be simplified as much as possible, on the principle that simplicity in this respect means speed and safety. Next in the order is the arrangement of those pieces which cannot be classified as similar. Having listed in this way all the stone in the building, the cubes should be brought out, and added, in order to determine the amount of stock, and the cost of freight and handling. Before doing so, however, the estimator would do well to scan closely the specifications, and read them all through carefully, and ascertain whether some particular stones are hidden away, which are not shown on the drawings, as contractors often find to their chagrin, when shipments of stock take place, that there is some more work that they never figured on. The next step for the estimator is to determine the labor, and to find the net cost, all as has been indicated herein. These are his plain duties, and it is manifest that if he should be found wanting, as herein shown, the contractor has just cause for charging him with incompetency, and he is one cause of failure as pointed out before.

The next to be considered is the superintendent of the shop, and, perhaps, the quarries. It can be truthfully said that in him should be found all the qualifications of the estimator. His duties as superintendent require of him, if not at one time, at another, all the qualifications already described, and he should, in a well regulated establishment, be charged with the preparation of the estimates; as it is obvious, unless a check be contemplated on the figuring, that he is in a position, with reference to all that which enters into the cost, to render the best service available.

After a careful consideration of what has been said here, it will become apparent to the contractors for whom this paper is intended that it is of paramount necessity for the success of their business that they should, first, systematize it so far as it relates to the work; and, secondly, having secured the services of those well qualified to direct the work, and pass upon the value of it, there should be no difficulty in avoiding the financial pitfalls into which so many contractors have plunged unwittingly, and which can be easily guarded against, when seen. Then the contractor will know that when he fails to get a job that his figure was safely high, and that, if his figure is much lower than his competitor's, that he is safely low—in all cases he will know exactly how he stands with regard to a bid before he signs a contract.—F. T. Mallon, in Stone.

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## LEGAL.

A case of a rather novel kind was recently tried before Mr. Justice Kenny in Dublin, particulars of which are given in the Builders' Reporter. The plaintiffs, Messrs. Byrne & Warman, were sub-contractors on tramway works, and they sought to recover £412 11s 4d from Mr. Ward, the contractor, for work done, materials provided, etc. The case in reality turned on the interpretation to be given to the words "per square yard" of excavations. The plaintiffs maintained that the words "square yard" meant a superficial square yard, the excavation being 1 foot deep, so that if the excavation were 3 feet deep, 1 square yard would count as 3 instead of 1, as contended by the defendant. On behalf of the defendant it was argued that the plaintiffs had received £410 on account, which was £63 11s 5d in excess of the amount due to them. It was also stated that "square yard," when applied to excavators' work, signified "cubic yard." The judge said there was no evidence to show that it was customary to consider a "square yard" of excavation as a superficial square yard, with a depth of one foot. If the plaintiffs' hypothesis were accepted, the defendant would have to pay them nearly three times as much as he was receiving himself. His lordship therefore decided the main point in favour of the defendant.

JAMES MORRISON, CONTRACTOR, vs. THE BELL TELEPHONE CO. —Judgment by Mr. Justice Curran of Montreal in an action by plaintiff for \$2,969.93, balance due under a contract for lathing and plastering a building belonging to the defendants, situate on Notre Dame street in the city of Montreal. Plaintiff also claimed damages for having been retarded in his work through the fault of defendants. He further claimed for extras done in connection with the building, which he alleges were totally independent of his contract work. The defendants pleaded that the work of plaintiff was done under contract; that if any extras were performed, to entitle the plaintiff to payment, he should have obtained written orders, in accordance with the article of the Civil Code, and the terms of his agreement. Defendants further claimed that the delays, apart from that in starting work, which was due to vis major, were entirely owing to plaintiff's negligence and fault, and that such a delay caused great loss to defendant. Plaintiff never was authorized to do any extra work but for two

items, one of \$10 and the other \$60. The work, which was an extra, was not done for defendants, but for the Hamilton Bridge Company, and plaintiff should look to them. The company asked \$8,372 for insurance, for heating, and under the penalty clause of \$30 per day for every day that the work was not completed after six weeks, the term agreed upon. The case was referred to Messrs. Hutchison, Wright and Doran, as experts, notwithstanding the company's opposition. The experts made a voluminous report. They came to the conclusion that the delays were not owing to the fault of the plaintiff, but arose from the acts of the defendants. The court agreed with the finding of the experts on this point, but modified the finding on other points. It gave judgment for the plaintiff for \$1,885.49, and the costs of suit, on the question of the costs of expertise, plaintiff shall pay one-third of the expenses, and defendants the other two-thirds.

About a year ago the Lyceum Theatre of Eccles, near Manchester, was in course of construction by Messrs. Moore & Sons. The decorative work was a separate contract, and was in the hands of A. R. Dean, Limited, of Birmingham. One of the painters who was engaged on the ceiling fell from the scaffolding to the pit, owing to the failure of one of the planks, and was killed. The widow claimed compensation from her husband's employers, who denied liability on the ground that painting did not come within the scope of the Workmen's Compensation Act, and also because the scaffolding had been erected by Messrs. Moore & Sons, who became responsible. The case was brought into the County Court, and the judge appointed an arbitrator to hear it. The applicant claimed that A. R. Dean were "undertakers" in the sense of section 7, and on the other side the contention was that the work undertaken was not construction within the meaning of the Act. The arbitrator decided that the painters were undertakers, and he awarded the widow £300 damages with costs. The County Court judge, however, set aside the award on the ground that the painting of the ceiling of the theatre was not an employment within the Act. The case was carried to the Court of Appeal. Lord Justice Smith said there was no doubt deceased was employed on a building within the Act, and that whoever undertook the construction of a substantial part of such a building was an undertaker. The applicant was therefore

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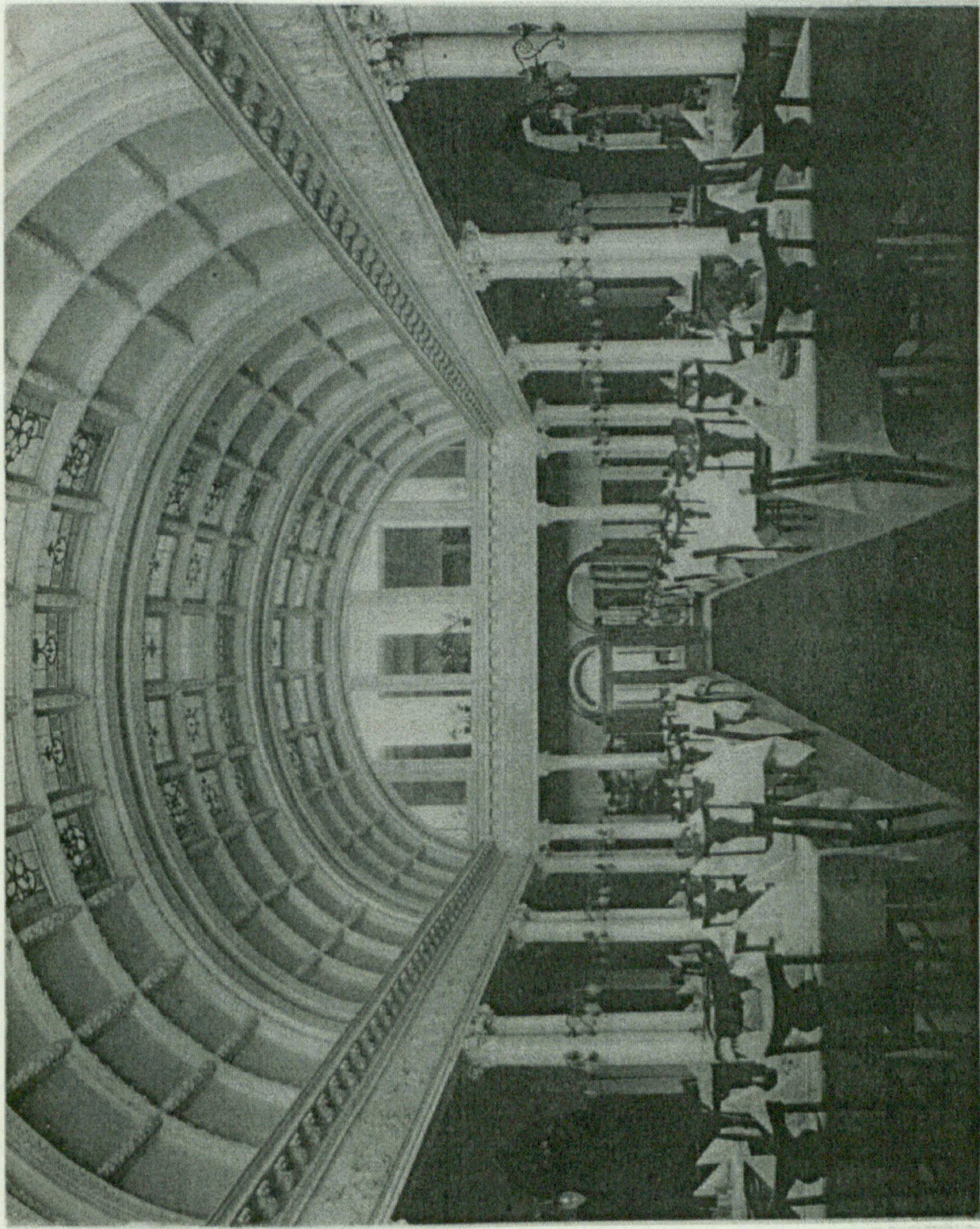
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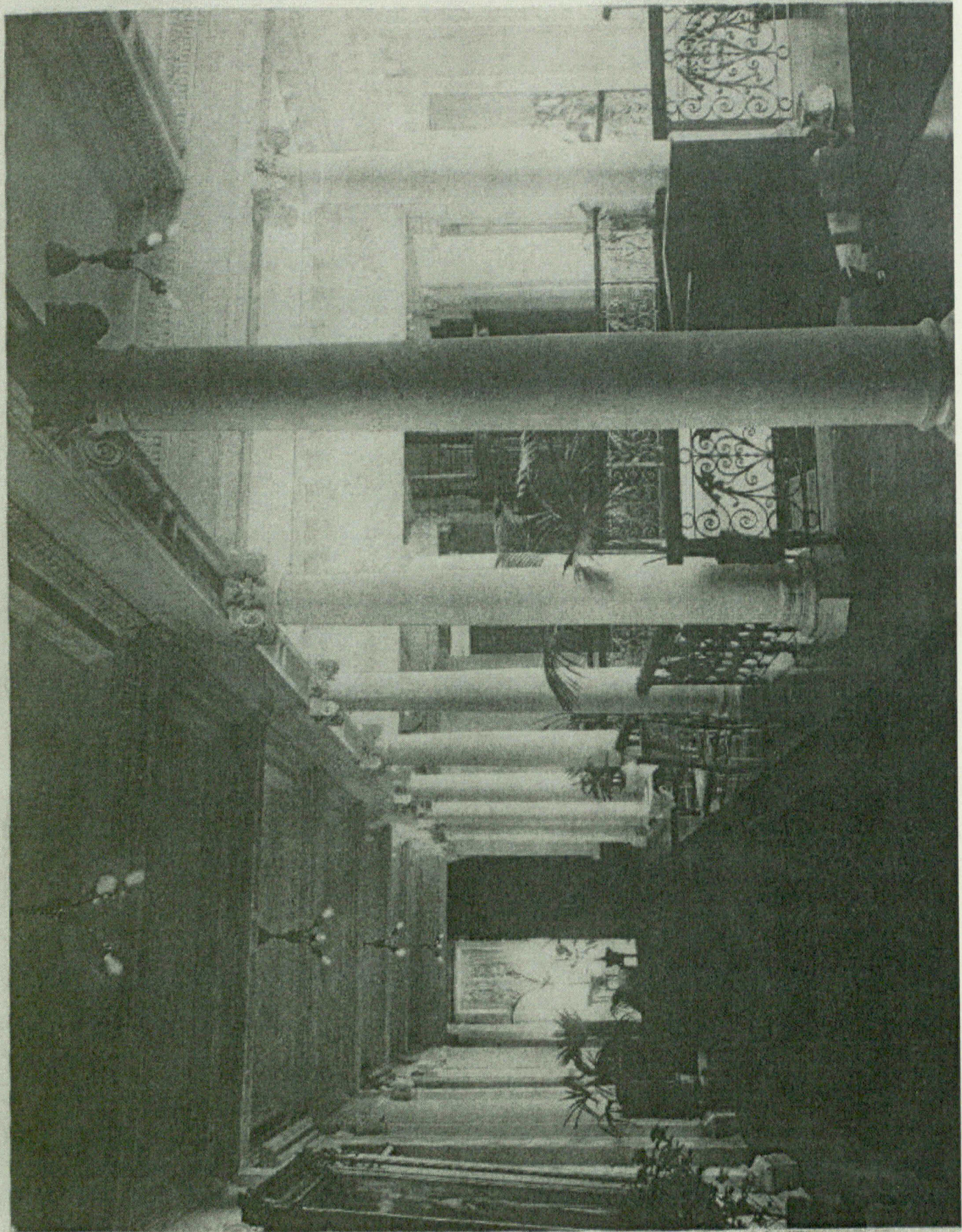
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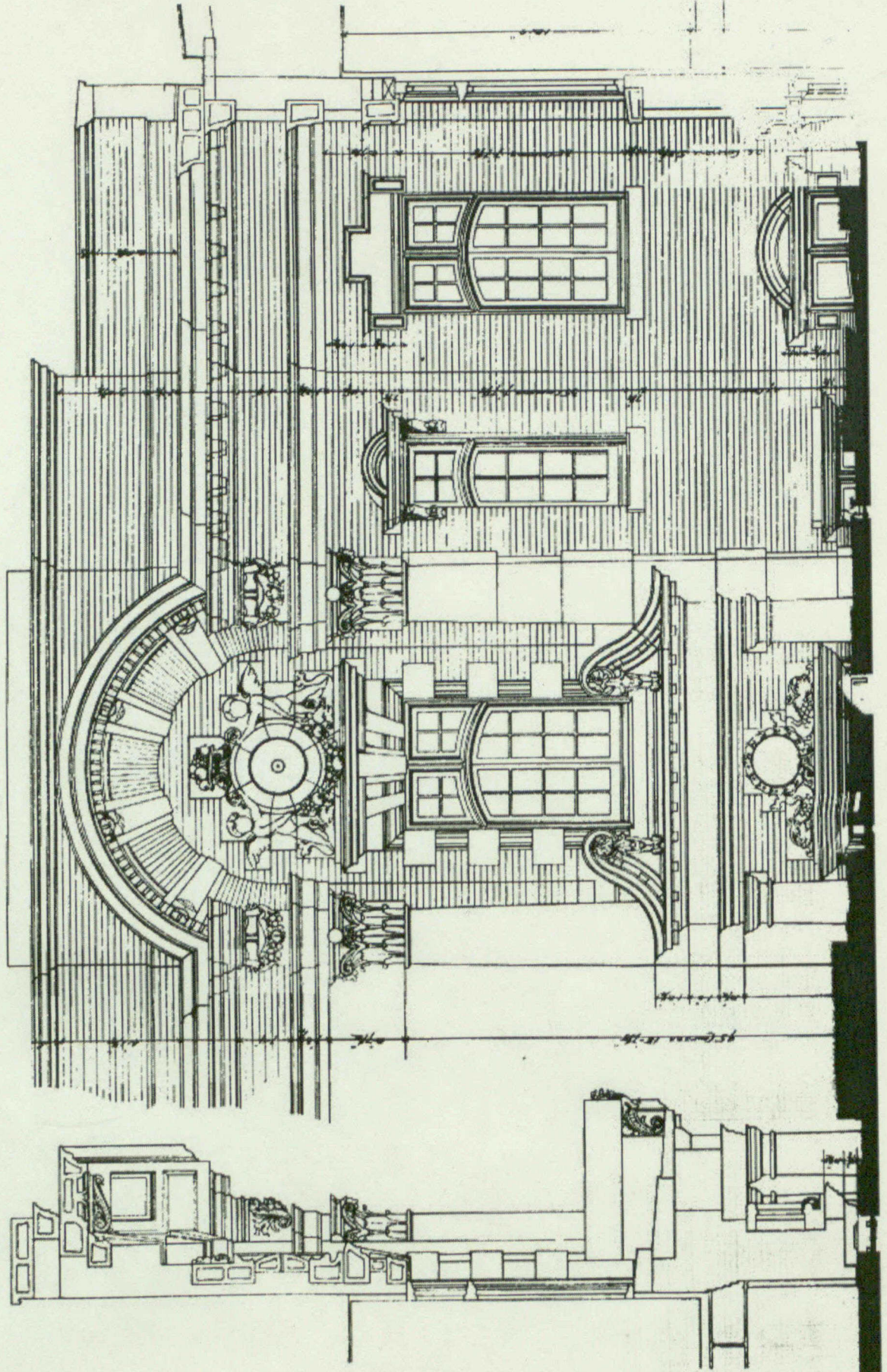




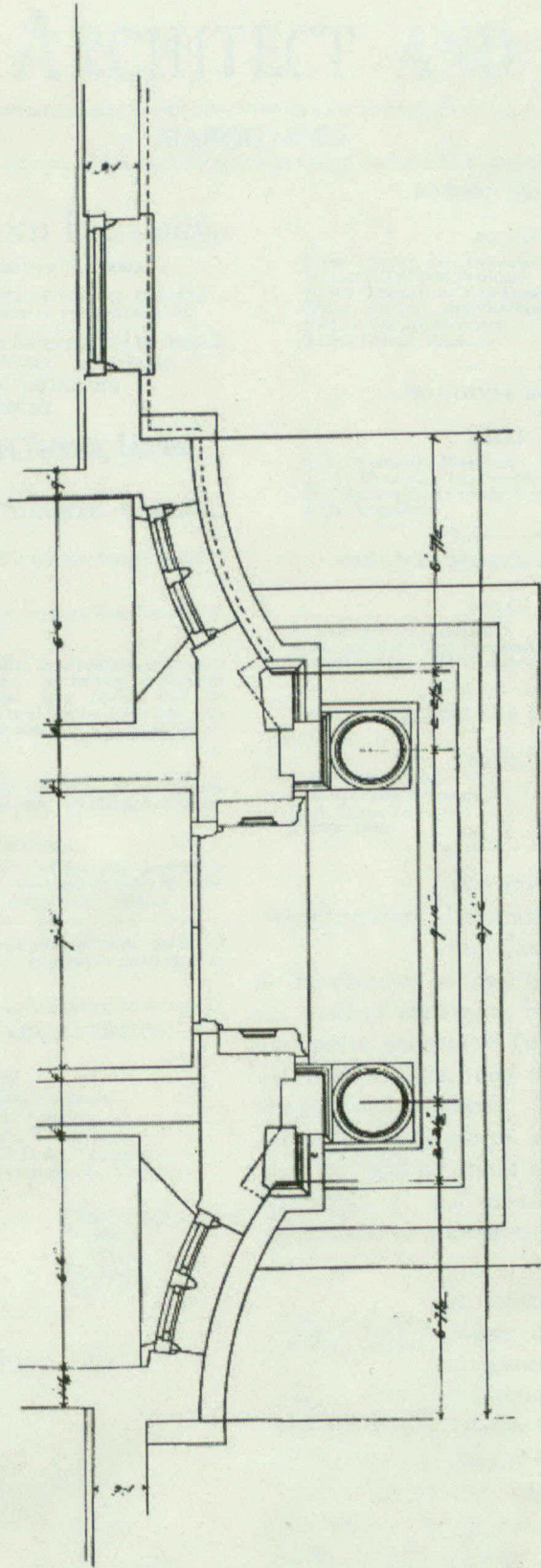
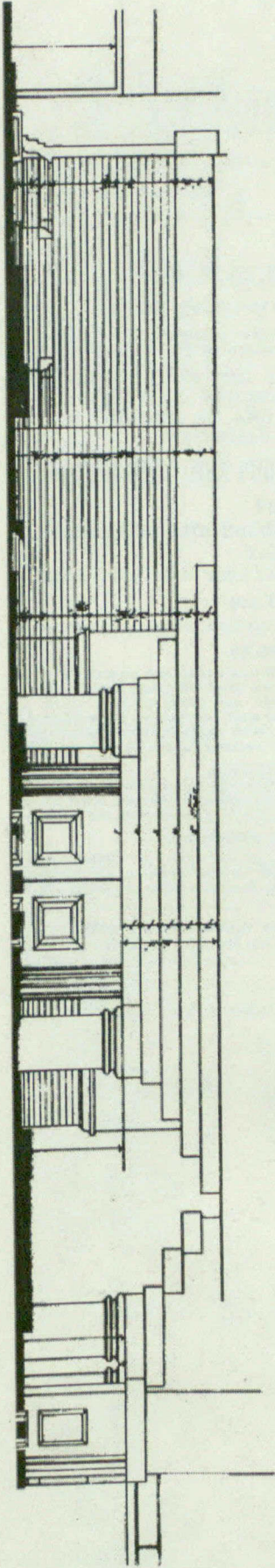


RESIDENCE OF MR. W. S. ANDREWS, ROSEDALE, TORONTO.  
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declared to be entitled to the sum which the arbitrator had awarded. Lord Justice Collins, in agreeing, said it seemed to him to be immaterial what kind of work a workman was engaged on at the time he met with an accident. Lord Justice Romer also agreed, and, according to him, when several persons were engaged in carrying out separate parts of a building each and all of them became "undertakers," but that undertaker alone was liable to pay compensation who was employing the workman when the accident occurred. The decision will not be satisfactory to sub-contractors, and it will increase the liability of many who hitherto were held to be exempted from the operations of the Act, but it will have the advantage of simplifying interpretations, and will help to prevent needless litigation.

The case of Benoit et al. vs. Smith, recently decided by Mr. Justice Doherty at Montreal, was an action for the cancellation of a lease of a lower tenement on the ground that, owing to the imperfect construction of the floors of the building, the plaintiffs were so disturbed by noises overhead as to be deprived of the peaceable possession to which they were entitled. The court held that the plaintiffs had failed to prove the existence of any fault of construction or hidden defect in the premises leased, which rendered the same uninhabitable. The houses in question appeared to have been constructed in a manner similar to that in which a very large number of tenement houses are built in the city of Montreal, and the precautions taken in the construction of the flooring to prevent or diminish the communication of sound from one tenement to another, while possibly not the best, appeared to have been such as commend themselves to and are adopted by a very large number of architects in this city, and, under the circumstances, the absence of a more perfect means of preventing such communication of sound, could not be considered as constituting a defect of construction in the premises in question. In view of the foregoing facts, the noises complained of, heard in the early morning in one or two rooms of the tenement occupied by the plaintiffs, and which awoke all the occupants thereof about six o'clock in the morning and which are caused by the occupants of the upper tenement moving about in the kitchen in an ordinary and usual manner, must be considered to be inconveniences incidental to the occupation of a lower tenement, and afford no ground for rescission of the lease prayed for by the plaintiffs. The defendant's plea was, therefore, maintained and the action dismissed.

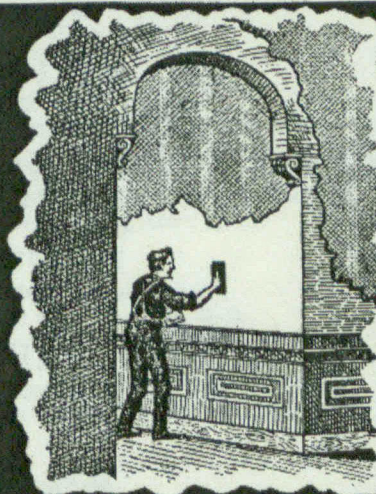
**TORRANCE V. CRATCHLEY.**—Judgment by Chief Justice Armour in the Divisional Court at Toronto on appeal by defendants from judgment of Neil McLean, esquire, official referee in a summary proceeding to enforce a mechanic's lien in that it does not direct that the sum of \$354 paid into court by F. G. Clarke, the land-owner, is sufficient to discharge the lands in question from the liens. The referee held that the payment of \$94 to Steele and other lien holders for wages was not a valid payment of part of the 20 per cent. to be retained under R. S. O. ch. 153, sec. 11, because made before the expiration of thirty days after the completion or the abandonment of the contract. Held, that the only object of the provision requiring the owner to retain 20 per cent. for 30 days appears to be that indicated by sub-sec. 3 of sec. 11, viz., to give persons entitled to liens an opportunity of enforcing them against the fund directed to be retained. As to the effect of the premature payment in this case, it is clear that the position of all lien-holders is precisely the same as if the owner had retained the 20 per cent. for the full period of 30 days, and then distributed it according to legal priorities

or paid it into court. No one is here injured, but in making such a payment the owner takes the responsibility of so showing as he has done in this case. Section 12 does not affect moneys which the owner is directed to retain and so does not apply. Appeal allowed with costs here and below.

"Practical Staircase Joinery," with 180 illustrations in cloth, Cassel & Company, publishers, 7 and 9 West 18th street, New York, contains, in a form convenient for every-day use, concise information on the general principles and practice of the art of which it treats. In this handbook the examples of staircase joinery described and illustrated are arranged progressively, beginning with the simplest and leading gradually to the most elaborate kinds of work.

Owing to a dissolution of partnership in the firm of Leitch & Turnbull, elevator builders, of Hamilton, Messrs. Turnbull and Russell, who were connected with of the old concern, have been negotiating with the Assessment Commissioner with a view of locating their factory in Toronto. Mr. Fleming is now in a position to announce that Messrs. Turnbull & Russell have purchased the large four storey brick building, No. 126 John street and the adjoining premises, formerly owned by the John Burns Carriage Co. The members of the new firm have had varied and successful experience of 20 years in elevator work and have thoroughly grasped the necessity of energy and enterprise, and in order to advance with the times they are not only installing the latest modern machinery in their works but are introducing new ideas and designs both in electricity and hydraulic elevators. The firm will employ a staff of 25 hands.

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The mesh is very open.

That's what makes its key so good.

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