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MARCH, 1914

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CONSTRUCTION

A · JOURNAL · FOR · THE · ARCHITECTURAL ENGINEERING · AND · CONTRACTING INTERESTS · OF · CANADA

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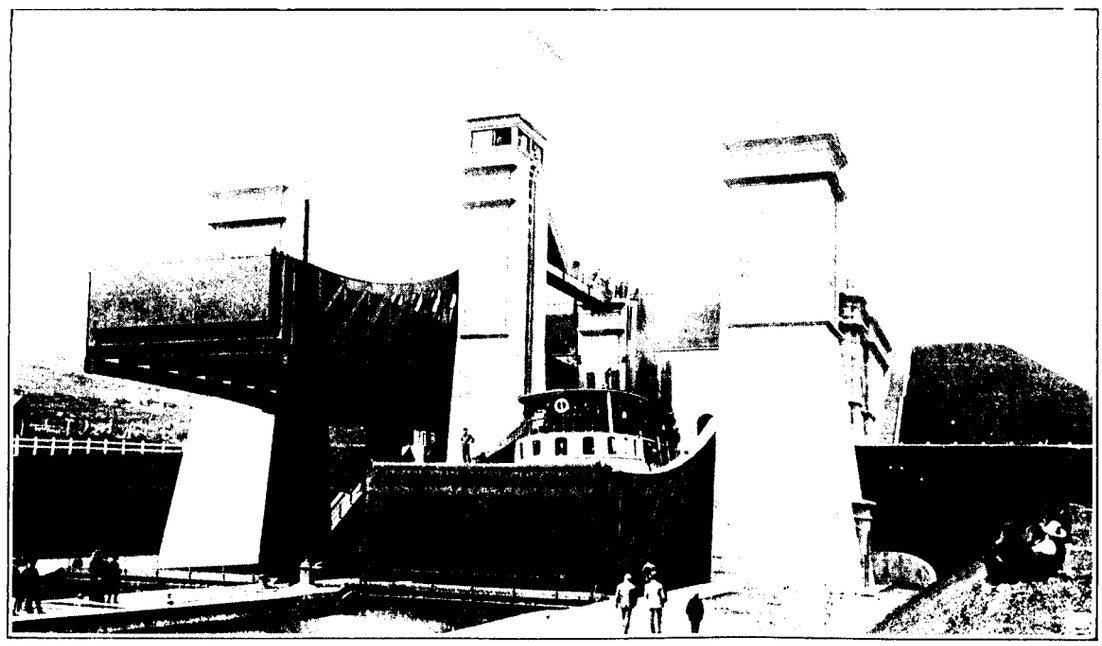

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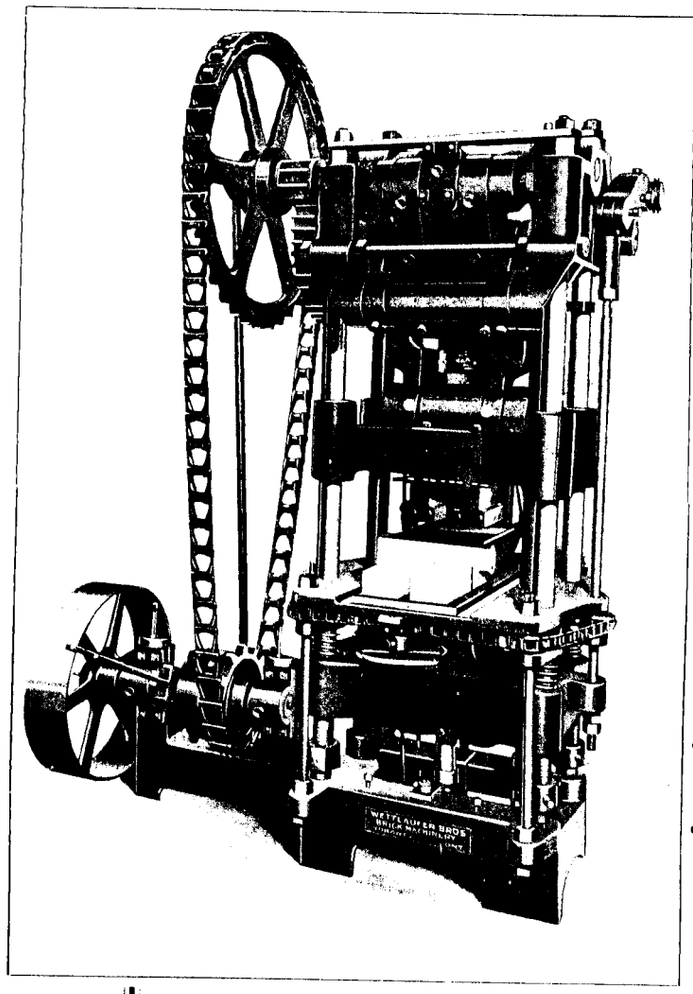

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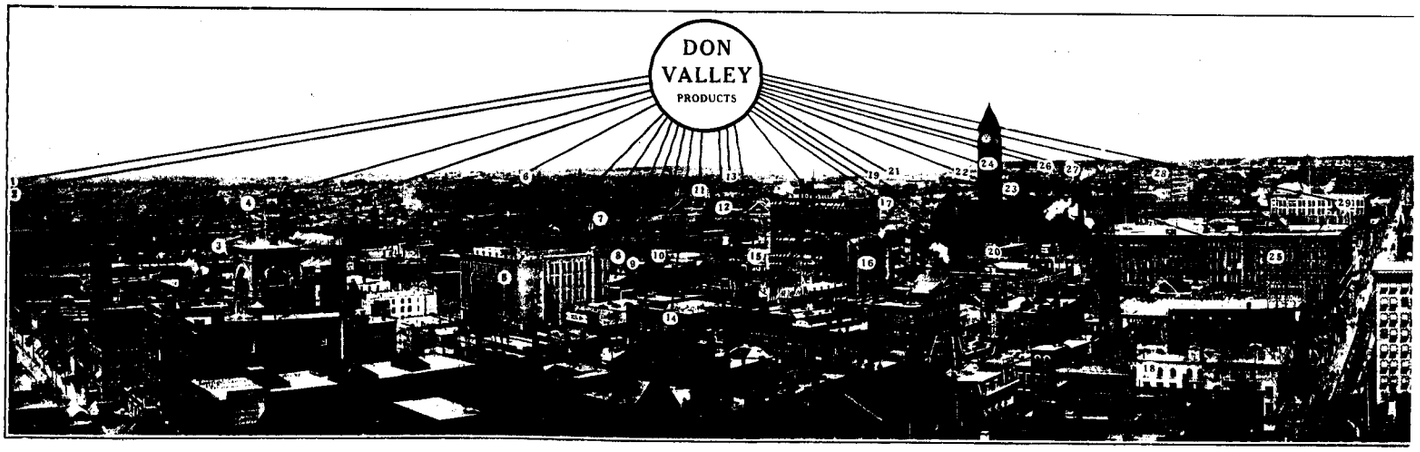
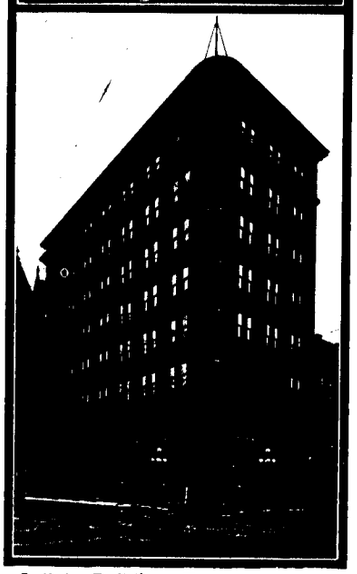


A City of Don Valley Brick



Ogilvie Building, Toronto (above).
Confederation Life Bldg., Toronto.

Key to Panorama

A.—Don Valley Porous Terra Cotta Fireproofing
B.—Don Valley Brick C.—Don Valley Enamel Brick

1-B—Darling Building.
2-B—W. J. Gage Building.
3-B—Adelaide Street Fire Hall.
4-B—Phoebe Street Public School.
5-AB—Bell Telephone Building.
6-B—Canada Foundry Company.
7-AB—Osgoode Hall (New Addition).
8-B—Ford Motor Co.'s Building.
9-B—Schacht Motor Co's Building.
10-B—Russell Motor Car Co.'s Building.
11-B—St. Patrick's Church.
12-AB—Armouries.
13-B—Dental College
14-B—Stair Building.
15-AB—Gayety Theatre.
16-B—Continental Life Building.
17-B—Manning Chambers.
18-B—Holt-Renfrew Building.
19-B—Physics Building, Toronto University.
20-B—Gerhard Heintzman Building.
21-B—Convocation Hall, Toronto University.
22-B—Engineering Building, Toronto University.
23-AB—General Hospital.
24-B—City Hall.
25-A—Robert Simpson Co. Building.
26-C—Sir Henry Pellatt's Stables.
27-A—Parliament Building.
28-AB—T. Eaton Co.'s Factory.
29-AB—T. Eaton Co.'s Store.

TORONTO has been called a "City of Brick." Not only the stores, factories and other commercial buildings, but also over 90 per cent. of the residences are built of brick.

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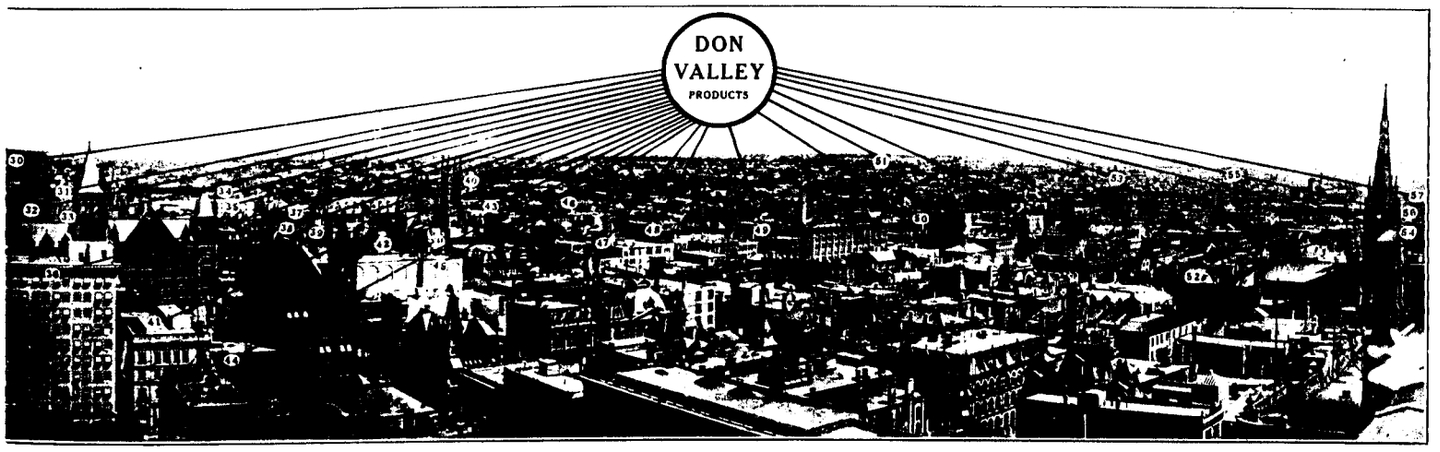

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The Brick must be up to an assured standard of quality.

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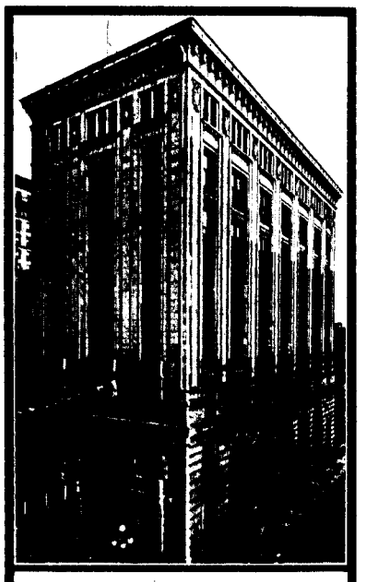
You will get the results your plans call for when you specify Don Valley.

Key to Panorama

A.—Don Valley Porous Terra Cotta Fireproofing
B.—Don Valley Brick C.—Don Valley Enamel Brick

30-AB—Traders Bank Apartments.
31-A—Massey Hall.
32-AB—Heintzman & Co.'s Building.
33-AB—Heintzman & Co.'s Building.
34-BC—Holy Blossom Synagogue.
35-B—Macmillan Publishing Co.'s Building.
36-A—Lumsden Building.
37-B—St. Michael's School.
38-AB—St. Michael's Hospital.
39-C—Vokes Hardware Co.'s Building.
40-B—Palm House, Allan Gardens.
41-AB—Birkbeck Building.
42-C—Orr Brothers Building.
43-B—Arena.
44-AB—Toronto Electric Light Co.'s Building.
45-AB—Shea's Theatre.
46-B—King Edward Apartments.
47-AB—McLaughlin Carriage Co. Garage.
48-B—Bennett & Wright Co.'s Building.
49-B—Robertson Bros. Building.
50-B—Fred Victor Mission.
51-B—New Government House.
52-AB—St. James' Parish House.
53-B—Sheet Metal Products Co.'s Building.
54-B—Christie, Brown Co.'s Building.
55-AB—Reinhardt Brewing Co.'s Building.
56-B—Gendron Mfg. Co.'s Building.
57-B—House of Providence.



Standard Bank Bldg., Toronto (above).
A. & C. Stoppers Co.'s Bldg., Toronto.

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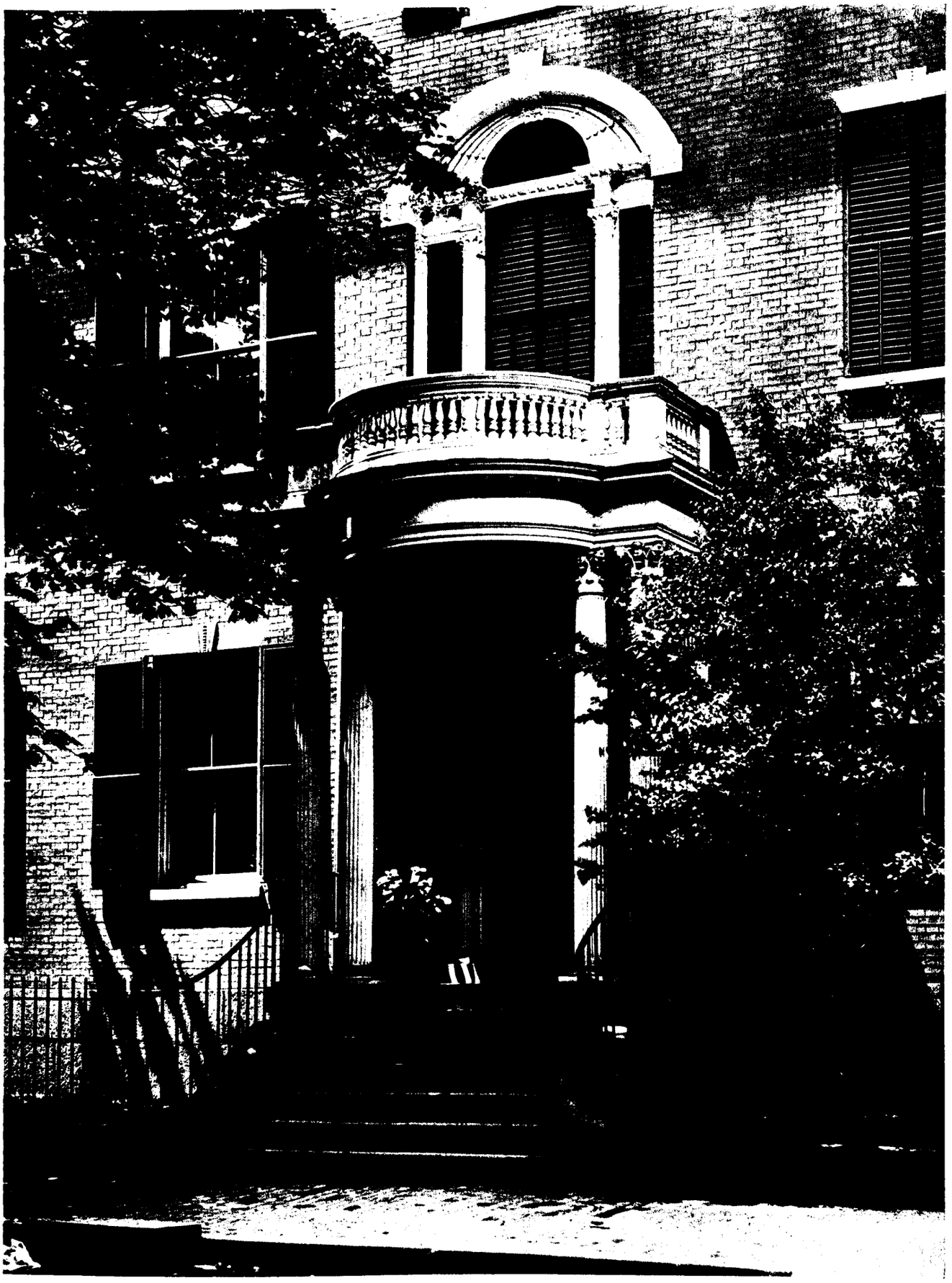

ANDREW SAFFORD HOUSE, SALEM, MASS., 1818.

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Our patent All-Steel Doors are made of 16 gauge steel, with interlocking joints, electrical welded, making a very strong and absolutely fire-proof door.

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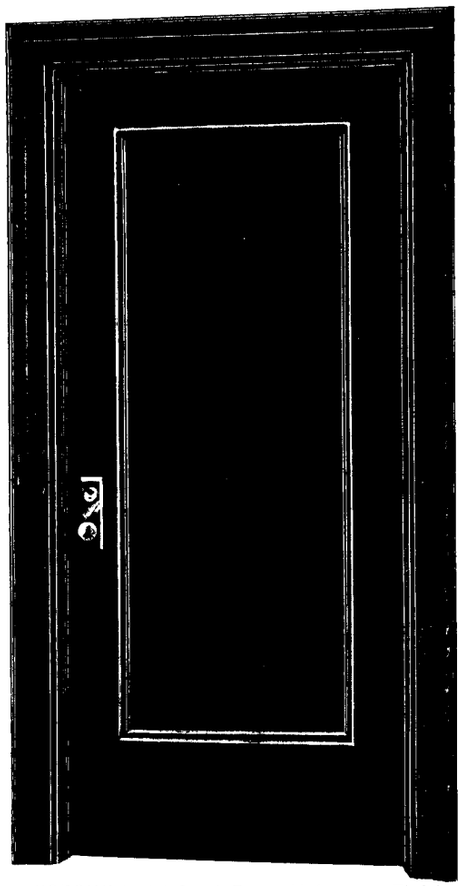

"CROWN" All-Steel Door, Mahogany Finish.

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Our Copper Bronze and Kalamein Doors and Windows are of the highest class of workmanship. We invite Architects to write and give us a chance to show what we can do in this line.

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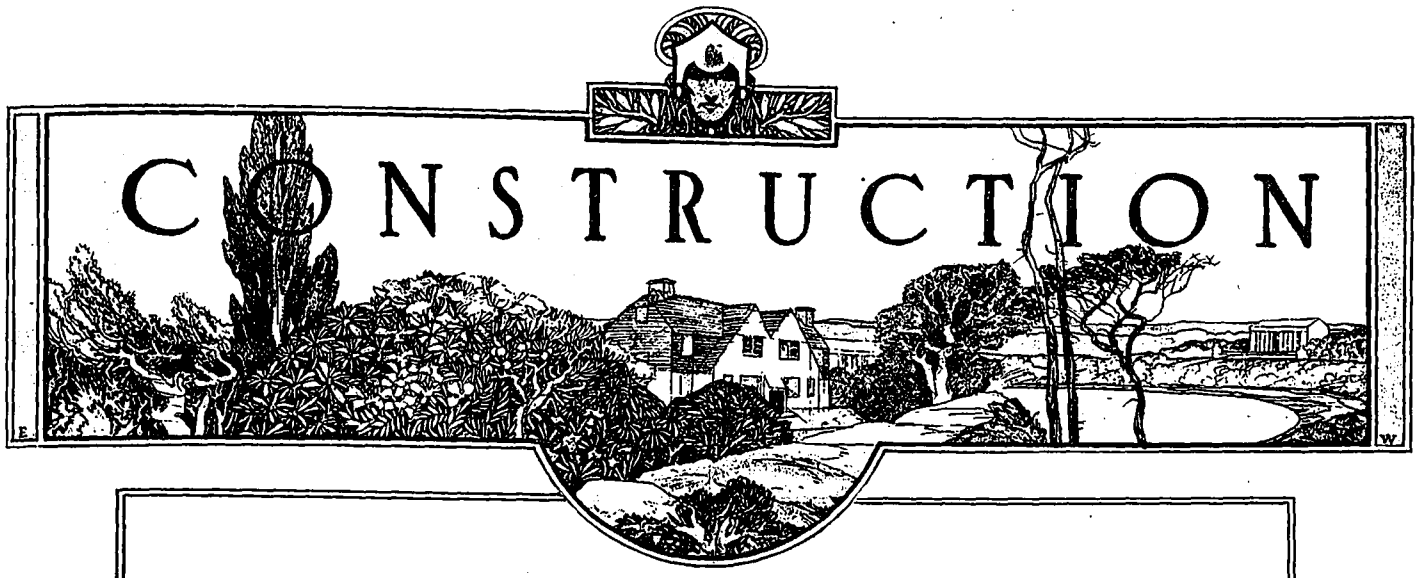

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Full Page Illustrations

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GRAPHIC ARTS BLDG., TORONTO, CANADA

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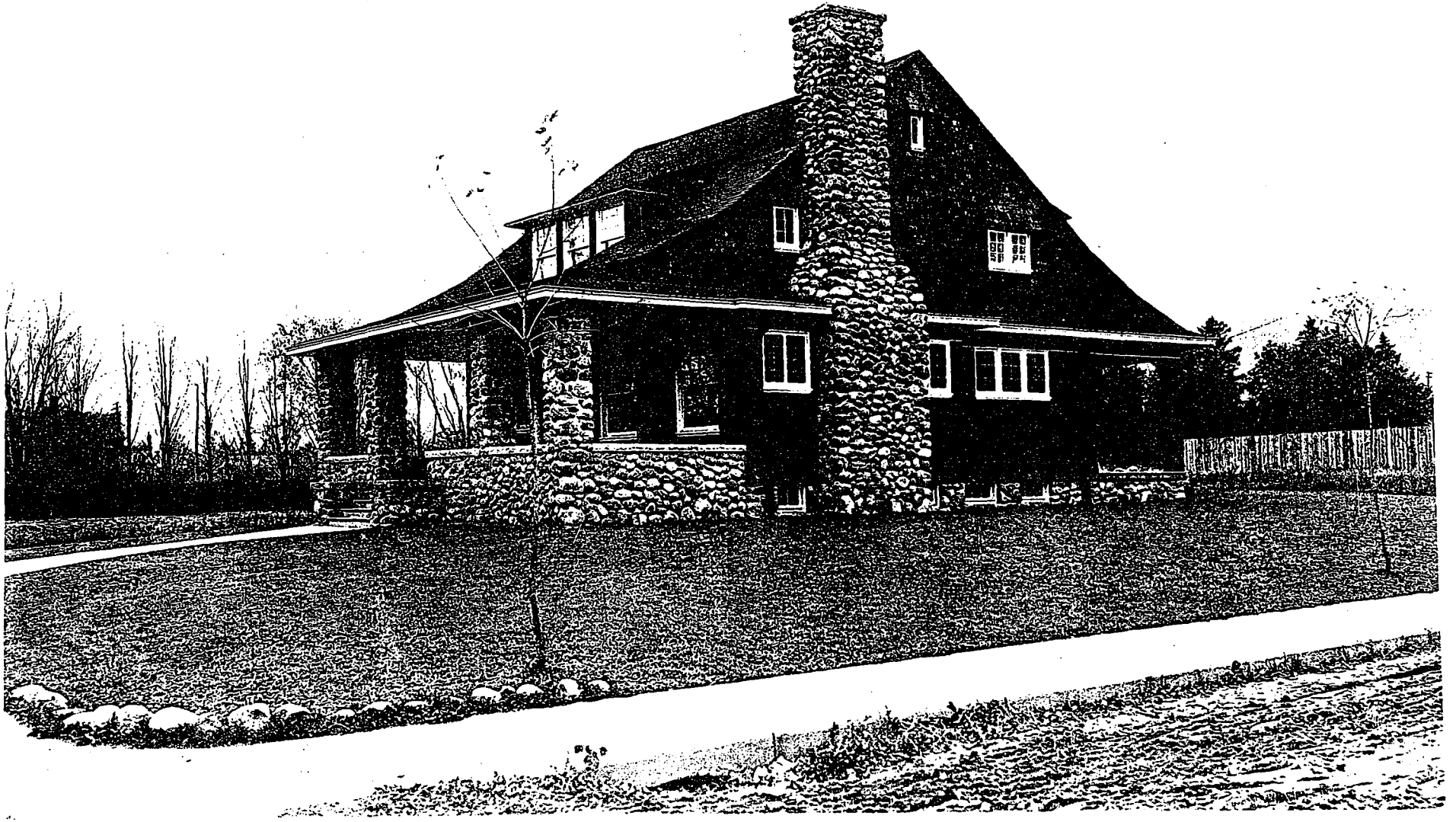


HOUSE AT HAMILTON, ONT.

HERBERT H. NEW, ARCHITECT.

The small house should be carefully planned to conform with the general surroundings and possess an artistic and homelike atmosphere throughout.

THAT THE small house of low cost receives too little attention is quite evident from the manner in which the vast majority are erected. For every home that shows the imprints of an artistic nature there will be a hundred most commonplace and unattractive. The question naturally arises, is this a condition which is productive of a wholesome influence? Surely not when we come to consider that practically all the time is spent there by woman-kind; that the men of to-morrow are greatly influenced by the moral and artistic impressions of their present homes. What we need to eradicate from our midst is the real estate speculator who erects so many houses for a certain fixed sum; thinking nothing of the general appearance of the street or the homelike feeling of each dwelling. His only aim is to boast of so much money made through his selfish nature at the expense of the city and the respective owners. It is an absurd fallacy to think that a cheap house cannot be artistic—in fact the less it costs the more care and study it should receive from the hands of an experienced designer. He alone knows how to work out a plan which conforms to the site and expresses the will of the owner. If the characteristics of the land are carefully considered the exterior and interior will be a natural outcome and form an integral part of the ensemble. As for the character, it is immaterial whether it be of brick, stucco, half-timber, or some other material as long as it is artistically simple and expressive of good design. In this number are examples of houses taken from Montreal, Toronto, and other cities, which approximate in cost $5,000 and which all possess an individuality of their own. They look like a real home with a sense of domesticity; and they will grow artistic as nature weaves her charm about them. The children will grow up to love the atmosphere of the place and will in turn strive to have their own home expressive of the same artistic and harmonious effect.

Housing conference held in Cincinnati—Work being done by the municipality of Cleveland—Deserving of universal support in every large city.

THE THIRD National Conference on housing in America held in Cincinnati December last, reveals clearly the universal interest that is being taken in the matter of providing homes for the working-man. Every Canadian city of importance was represented and it is especially pleasing to note that the solution of this problem is being well worked out in our own provinces. In another part of this issue is printed an able paper given before the convention by G. Frank Beer on "How to Get Cheap Houses," which should prove helpful in placing comfortable homes at the convenience of the poor and thereby eliminating the curse of the slums.

To provide the conscientious wage-earner with a house, cleanly and sanitary, will do more to elevate the social conditions of the people than the ecclesiastical work, which is unquestionably one of the mighty powers for good in any community. The home with its surroundings is the molding force in the child's life, and if so, then let it be wholesome. With a proper environment the children will grow into healthy forceful citizens wiping out the miserable localities which prove only a menace to the health and morals of the people as a whole. The city of Cleveland is planning America's first municipal model suburbs of five hundred houses on a plot containing ninety-three acres. One of the prominent ideas is to provide enough land to allow for every legitimate impulse of its tenant families; a fixed percentage of the land to be devoted to front and back yard gardens, while a certain amount will be reserved for athletic grounds. The buildings are to be grouped into units, with the thought of keeping all improvements at as low a cost as is consistent with durability and economy.

Aside from the furnishing of homes at a legitimate cost, one of the advantages to this scheme is the orderly and proper expansion of the city. Nearly every municipality has been

spoiled by the haphazard work of real estate dealers, whose one sole ambition seems to be to buy, stake out and sell quickly, irrespective of any considerations for the buyer or the future of the locality selected. This universal impetus towards a betterment of housing conditions is a worthy one and should feel behind it the necessary support of both money and brains.

The struggle in England over the registration of architects—The great lesson taught to Canadian architects on the need of Parliamentary authority.

The registration of architects in England has become a matter of serious import and may eventually disrupt the profession. Men standing high in the realm of art are widely at variance on this subject, as are the different architectural bodies. The Society of Architects in London have drafted a bill called the Architects Act, 1914, which may be summed up in clause 25: "From and after the first day of January, 1915, a person shall not be entitled to take or use the name or title of architect (either alone or in combination with any other word or words, save only that of naval architect) or any name, title, or description implying that he is registered under this Act, unless he be so registered. Any person who, after the above date, not being registered under this Act, takes or uses any such name, titles or description, as aforesaid, shall be liable, on summary conviction, to a fine not exceeding twenty pounds and on repetition of the offence fifty pounds." It also provides that no person shall be entitled to recover any charge in the court of law for any professional services rendered by architect not registered under the Act itself; that no certificate issued by an unregistered architect shall have legal validity. This bill is of interest to the Canadian architects not only because it is a problem confronting us at home, but also since it contains clauses relating to their work in the British Isles. Clause 34 states that an architect residing in any British possession and properly qualified shall upon payment of a fee not exceeding five pounds be entitled to register without examination.

The Royal Institute of Architects on the other hand, having transacted all business by charter, and having grown under it to a high plane of influence and power, feel that it would be useless to attempt such legislation. After years of deliberation they have finally passed the following amendment presented by Sir Aston Webb: "That the council be hereby authorized to prepare, and to submit for the approval of the general body, a petition for presentation to the King, praying his Majesty to grant a new charter, containing such further privileges and powers as are required to promote effectively the advancement of architecture by enabling the Royal Institute of British Architects to register and to distinguish persons qualified to practise."

Mr. Webb, in his address to the R.I.B.A., pointed out the many difficulties which have confronted that organization in their efforts to obtain legislation. He feels that the engineers and surveyors would oppose a registration bill and that Parliament would never pass one containing penalizing clauses. That surveyors, builders, etc., seek and accept commissions to do architecture is not sufficient reason for going to Parliament and relates how it even refused to entertain the proposal of recognizing the Institute's membership. He believes the efforts of the R.I.B.A. should be directed in placing the personnel of its members on such a plane that the public would appreciate, when employing one of its members, the high standard which insures in itself a conscientious treatment.

In referring to the present proposals, Mr. Webb said: "They would give a distinctive and exclusive title to members of this Institute. I understand that the Privy Council would be prepared to consider schedules of charges which would, if approved, be held in courts of law as reasonable and proper charges. The third advantage we should have would be that our examinations would be approved by the Privy Council, and we are given to understand we should have no difficulty about this, because they look upon us as reasonable men.

Surely it is incumbent on every architect in Canada to consider seriously the subject of registration; the years of struggle over this problem in England and the wide difference of opinion resulting therefrom. In speaking of the Institute's action, Mr. Webb says: "But fancy an Act of Parliament binding architects! There are not three architects in the House of Commons." Is this not true in Canada? It behooves us to anticipate our future deliberations and secure a better representation. The architectural profession is of such a size and so necessary for the artistic and practical development of our country that it is deserving of ample authority in the Parliament of the people in order to institute and carry through ony measure conducive to the welfare of its members and its prestige. It makes little difference whether we feel the need of Government authority or not in respect to the qualifications of the architect, the fact remains that we should become a potent factor in the development of Canadian art. This is very evident in reviewing the growth of architecture under legal authority in the past. And we cannot afford to sacrifice the present opportunities and the future prospects by allowing our rights to be handled wholly by men with little or no training in the world of art.

The Small House

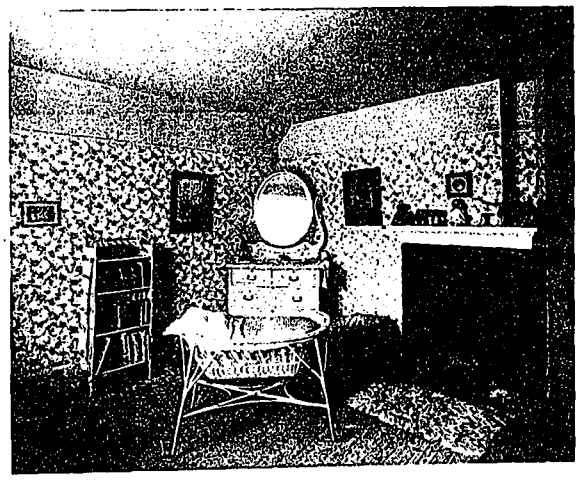
NO STRUCTURE expresses the æsthetic tastes of the people so much as the home, and especially the small and inexpensive type. The city which contains a large percentage of artistic houses may be designated as a centre of culture and refinement. For while they represent the work of an architect imbued with a love for the beautiful, still they depict to a certain degree the ideals and desires of the owner. Canadian work is greatly influenced by the English, who excel in home building. Yet there is a gradual development in the direction of our own necessities which will evolve sooner or later a local style embracing the practical and the æsthetic into one harmonious ensemble.

The small house, to be essentially economical, must conform to the law of simplicity. Each part must be considered in relation to the whole so that no detail, however ornate, is lost in the general effect. It is also necessary to plan the limited area so as to secure the maximum usefulness within. Comfort and utility have to be kept constantly in mind.

The resources of Canada are so great and so varied as to allow the widest range of materials from which to build. Stone, brick, plaster, tile and wood which have formed the nucleus for building in every age, are all at the command of the architect and builder. While wood remains the cheapest structural material, still its perishable nature has practically eliminated its use upon the exterior. It is essential, however, in the half-timber house in order to satisfy the client who admires the contrasts of dark and light effects. Brick, on the other hand, which lends itself to different textures and colors, is practically as inexpensive as timber, and made in every Province from local clays. When the building is constructed out of native materials it invariably follows that it harmonizes best with the surroundings in an artistic as well as a practical manner.

The desire for plaster in the treatment of exterior surfaces arises from the broad simple surfaces unbroken by joints. This material is quite susceptible to textural effects at a minimum expense, thereby bringing it within the range of all home builders. Up to the present time, ignorance of handling has caused the client and builder to avoid its usage. When applied to wooden structures covered with wire lath unless properly applied it is quite liable to crack. To avoid this the plaster applied to the outer face should be back-plastered directly upon the inner surface, thereby protecting the lathing on both sides and obtaining a durable exterior finish. By boarding the studding the building is warmer in winter and cooler in summer on account of the air space between the boards and the exterior plaster.

Many charming homes have been built with the combination of half-timber and plaster. The great danger in this is the crack-



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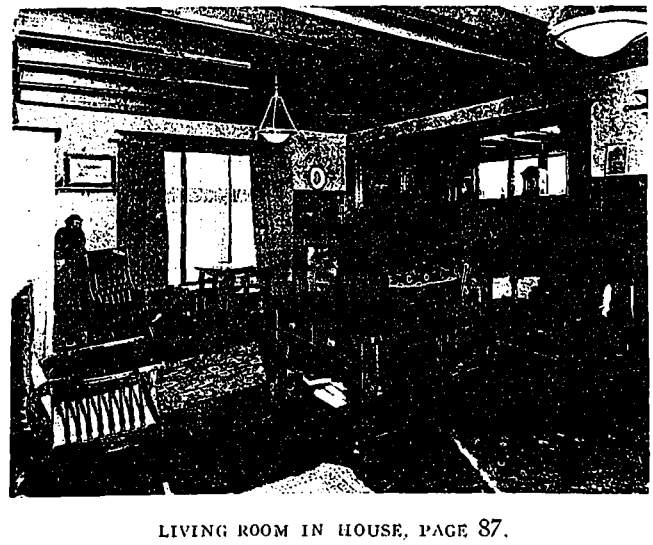
LIVING ROOM IN HOUSE, PAGE 83.



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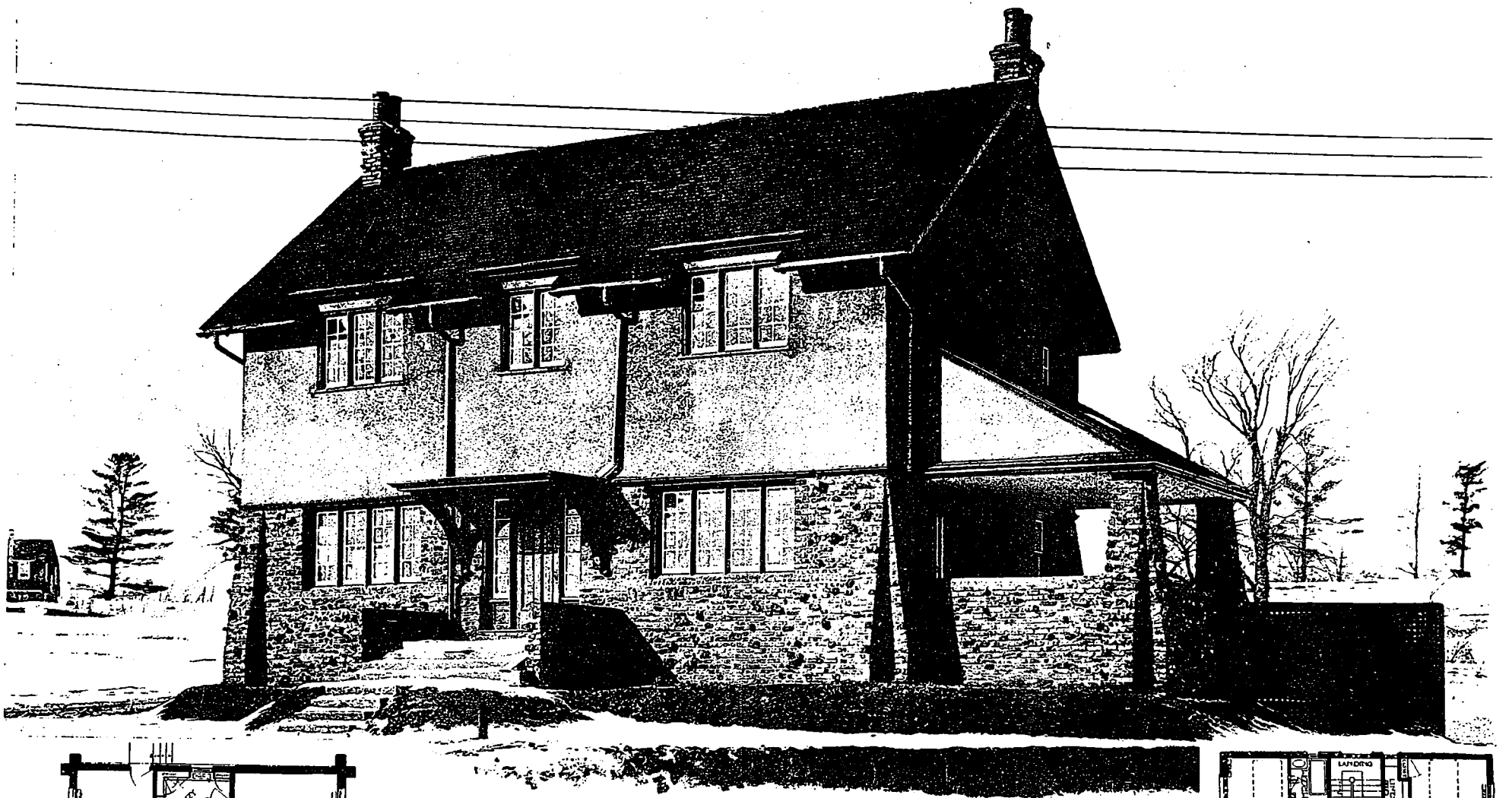
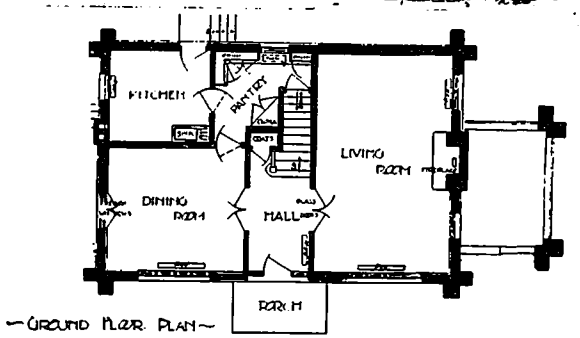
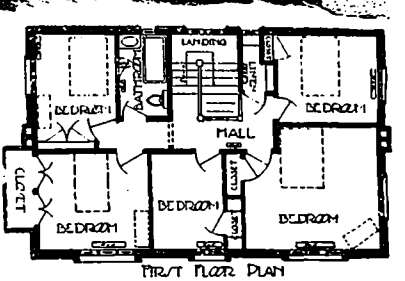




GROUND FLOOR PLAN



FIRST FLOOR PLAN

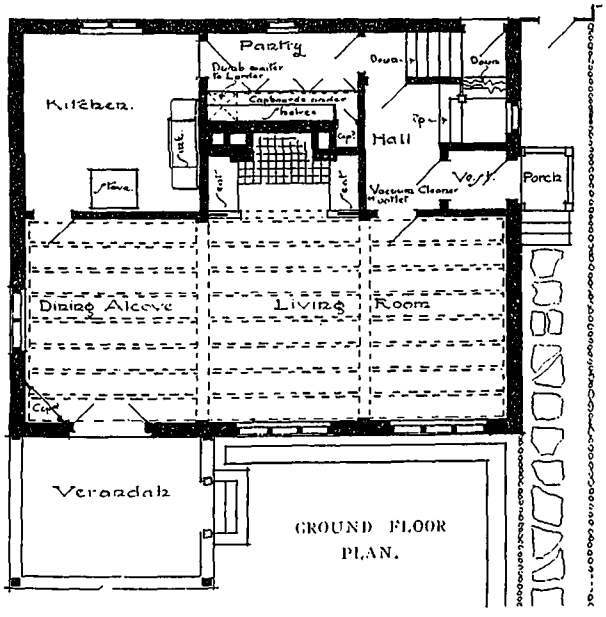
HOUSE AT TORONTO.

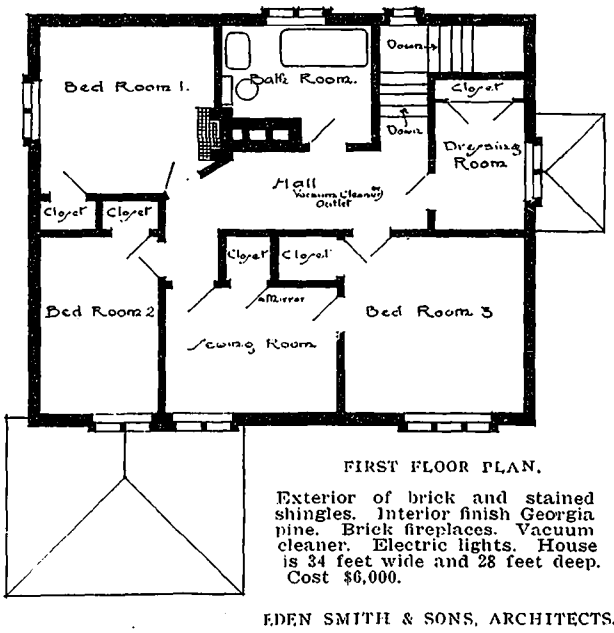
CHADWICK & BECKETT, ARCHITECTS.

ing of the plaster sometimes due to the woodwork, which is more susceptible to shrinkage. In order to prevent the timber from pulling away, it is advisable to construct the wooden parts separately and in placing them allow a clear space between the timber and the plaster. Such a scheme will prevent the rain from reaching the back of the plaster, thus eliminating all chances of cracking. In this method as in the straight plaster work it would be well to have the walls of brick similar to English examples. By the use of second-hand bricks the cost would be very little in excess of wooden frames and would present a surface of additional binding quality.

The exterior features which either make or spoil the design are the roof, porch, and windows. The roof is extremely important, as its definite silhouette creates the first impression.

The following pages show a number of small houses built recently in Toronto. They are the result of a demand for better social and domestic surroundings. Each one portrays an individuality which augurs well for the character of the small home in the future. With the profession rests the verdict. If a consistent effort is made to plan an attractive house, well suited to the needs of the people who live therein and adapted to the practical nature of the site, then the desire for better residences will become universal.

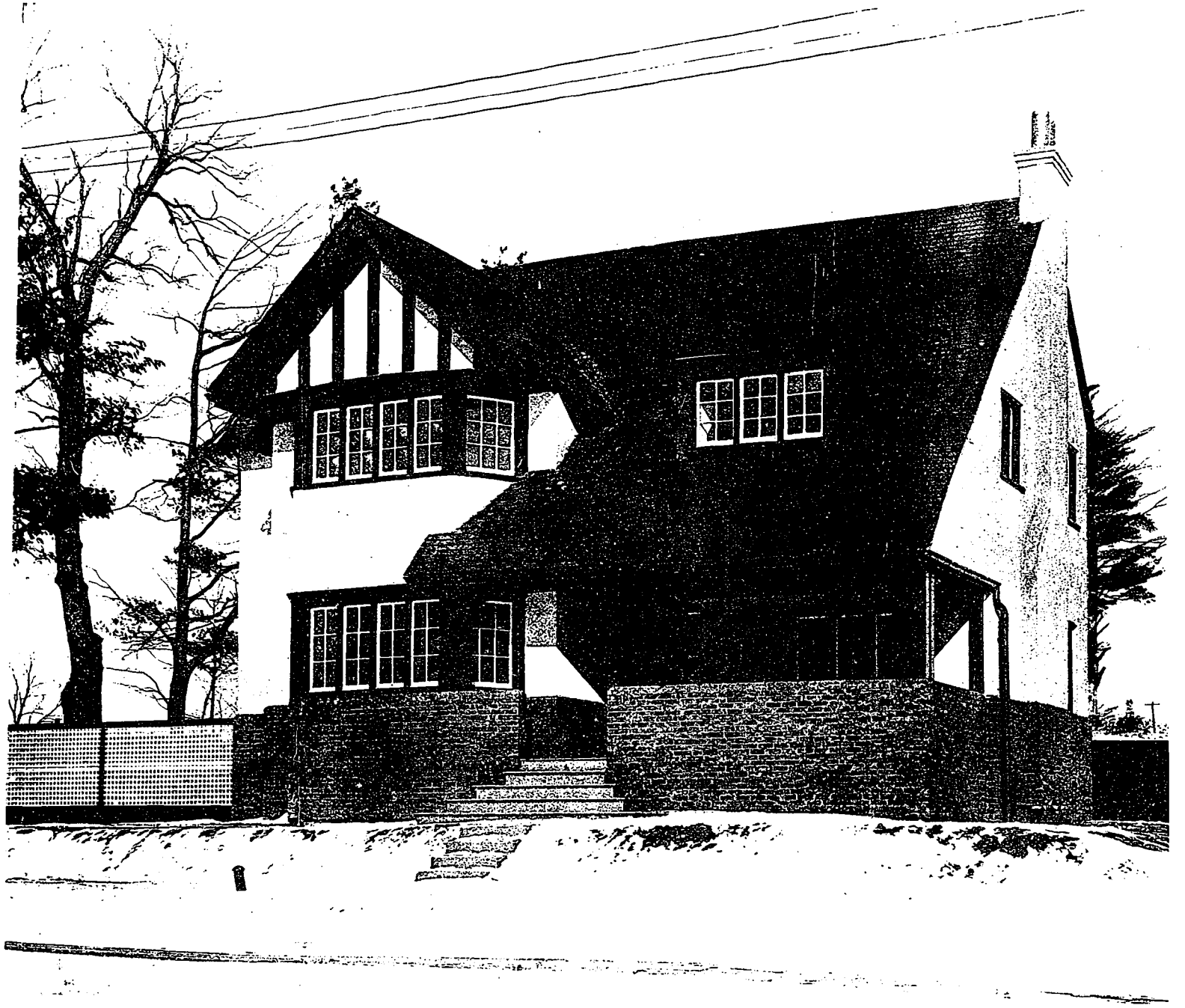


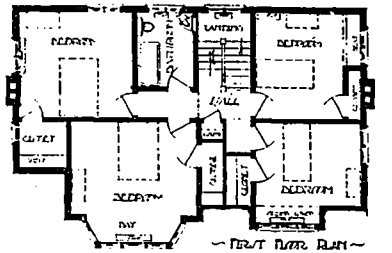


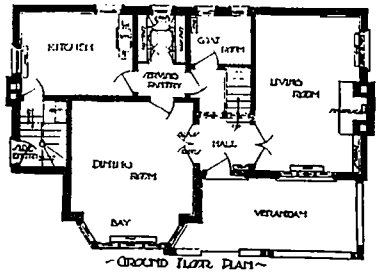
Exterior of brick and stained shingles. Interior finish Georgia pine. Brick fireplaces. Vacuum cleaner. Electric lights. House is 34 feet wide and 28 feet deep. Cost $6,000.

HOUSE AT TORONTO.

EDEN SMITH & SONS, ARCHITECTS.

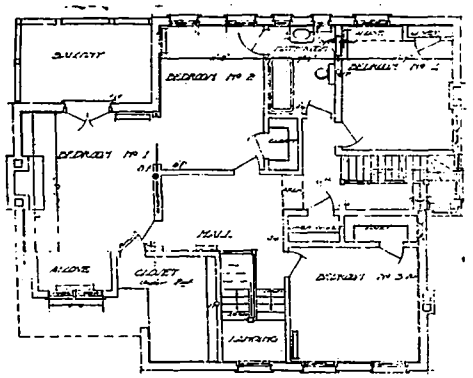






HOUSE AT TORONTO.

CHADWICK & BECKETT,
ARCHITECTS.

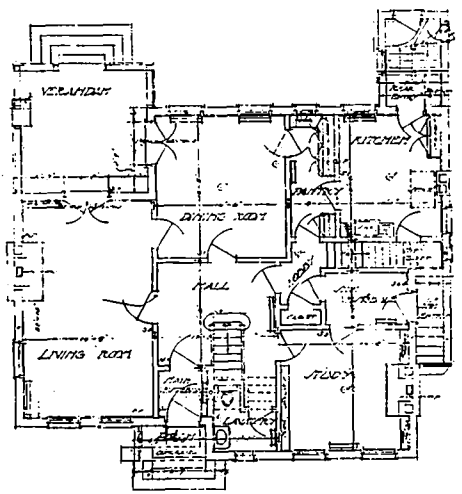


FIRST FLOOR PLAN.

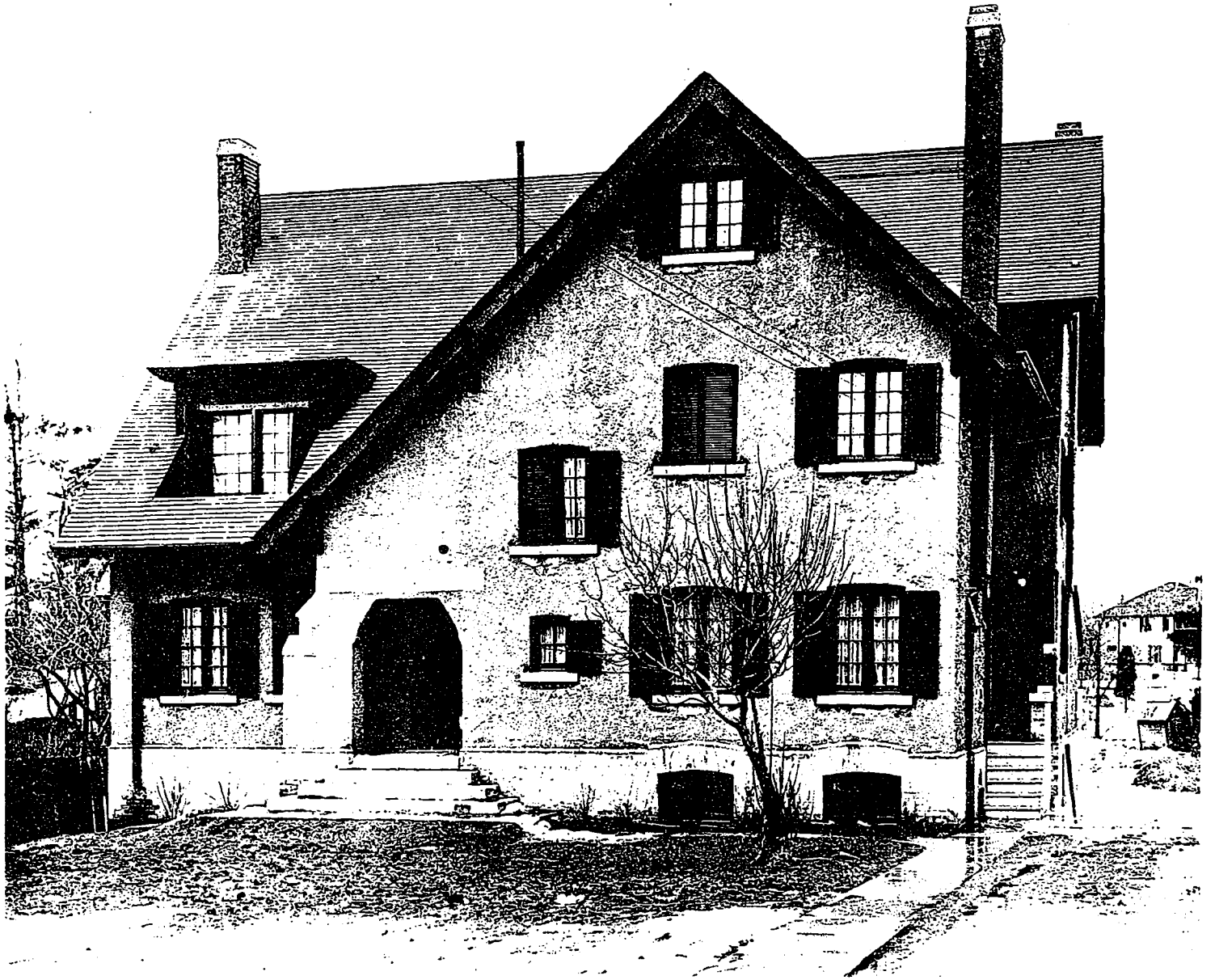
HOUSE AT TORONTO.

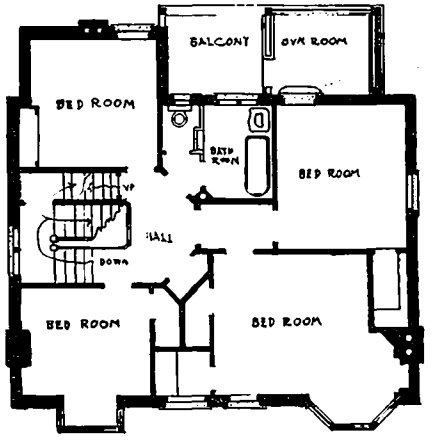
CHADWICK & BECKETT, ARCHITECTS.

Exterior of stucco on brick. Shingle roof. Ground floor finished in cypress with beech floors. Brick fireplaces. Hot water heating. Cost approximately 18 cents per cubic foot. House is 43 feet wide and 37 feet deep.



GROUND FLOOR PLAN.



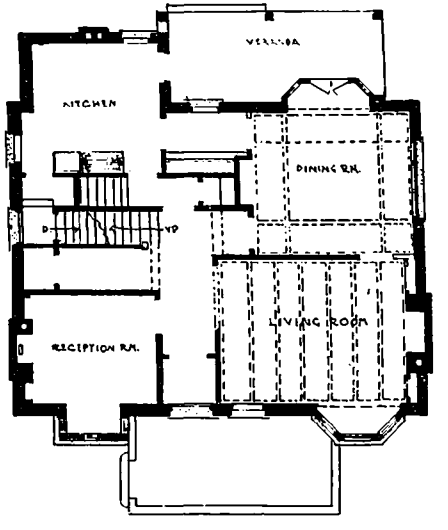


SECOND FLOOR PLAN.

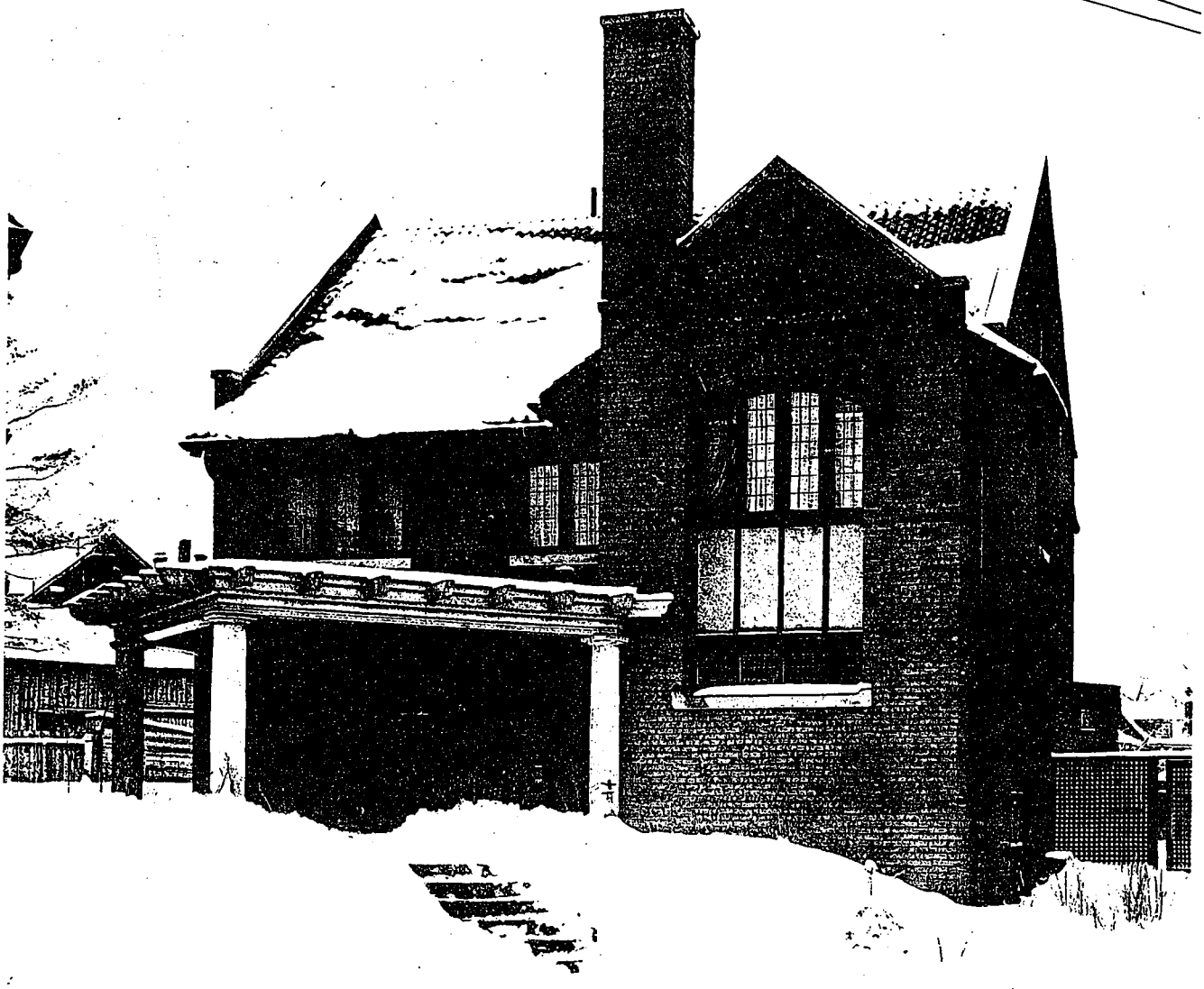
HOUSE AT TORONTO.

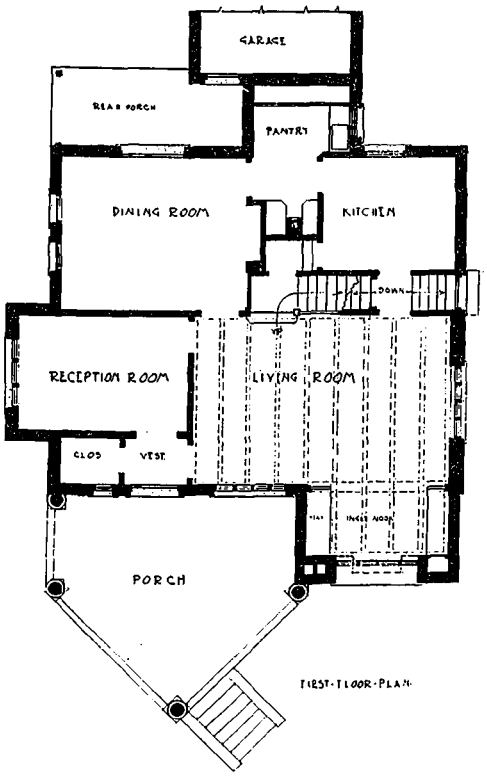
HENRY SIMPSON, ARCHITECT.

Brick exterior. Slate roof. Hardwood trimmings. Brick fireplaces. House is 38 feet wide and 35 feet deep. Cost $8,000.



FIRST FLOOR PLAN.

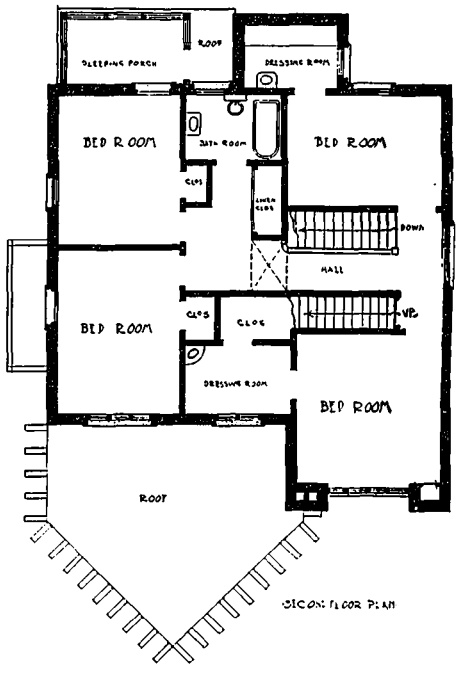


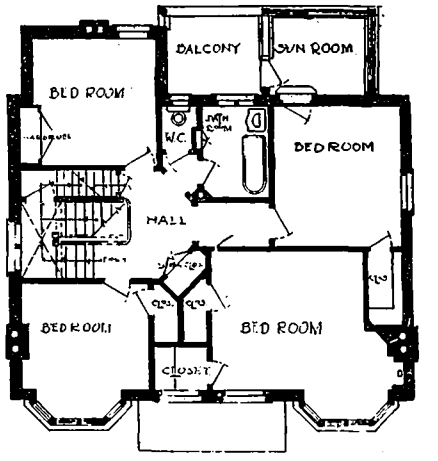


HOUSE AT TORONTO.

HENRY SIMPSON, ARCHITECT.

Brick construction. Spanish tile roof. Tile fireplace. Interior finish of oak and mahogany. Electric wiring. Hot water heating. House is 35 feet wide. Cost $8,000.



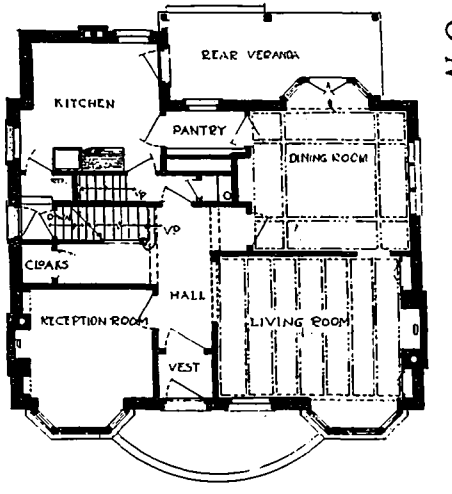


SECOND FLOOR PLAN.

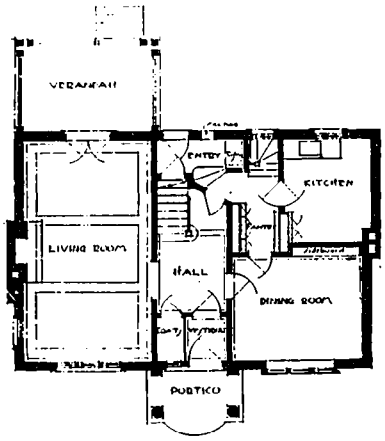
HOUSE AT TORONTO.

HENRY SIMPSON, ARCHITECT.

Brick exterior. Slate roof. Hardwood finish throughout. Brick fireplace. House is 38 feet wide and 35 feet deep. Cost $8,000.



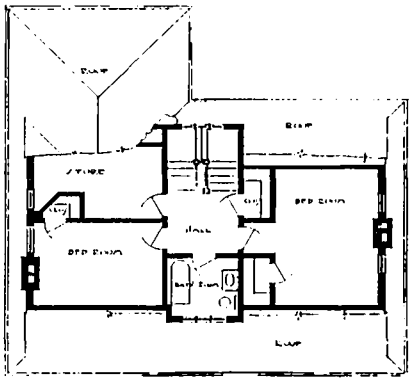
FIRST FLOOR PLAN.

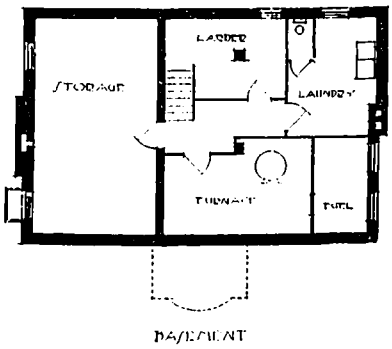


GROUND or FIRST FLOOR

HOUSE AT TORONTO.

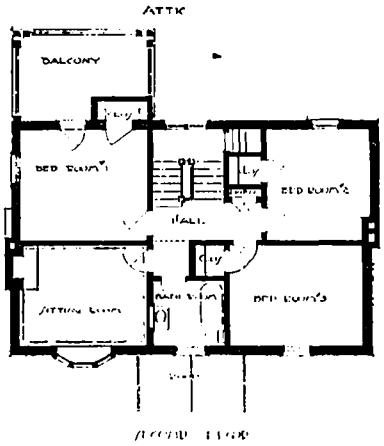
GORDON M. WEST, ARCHITECT.



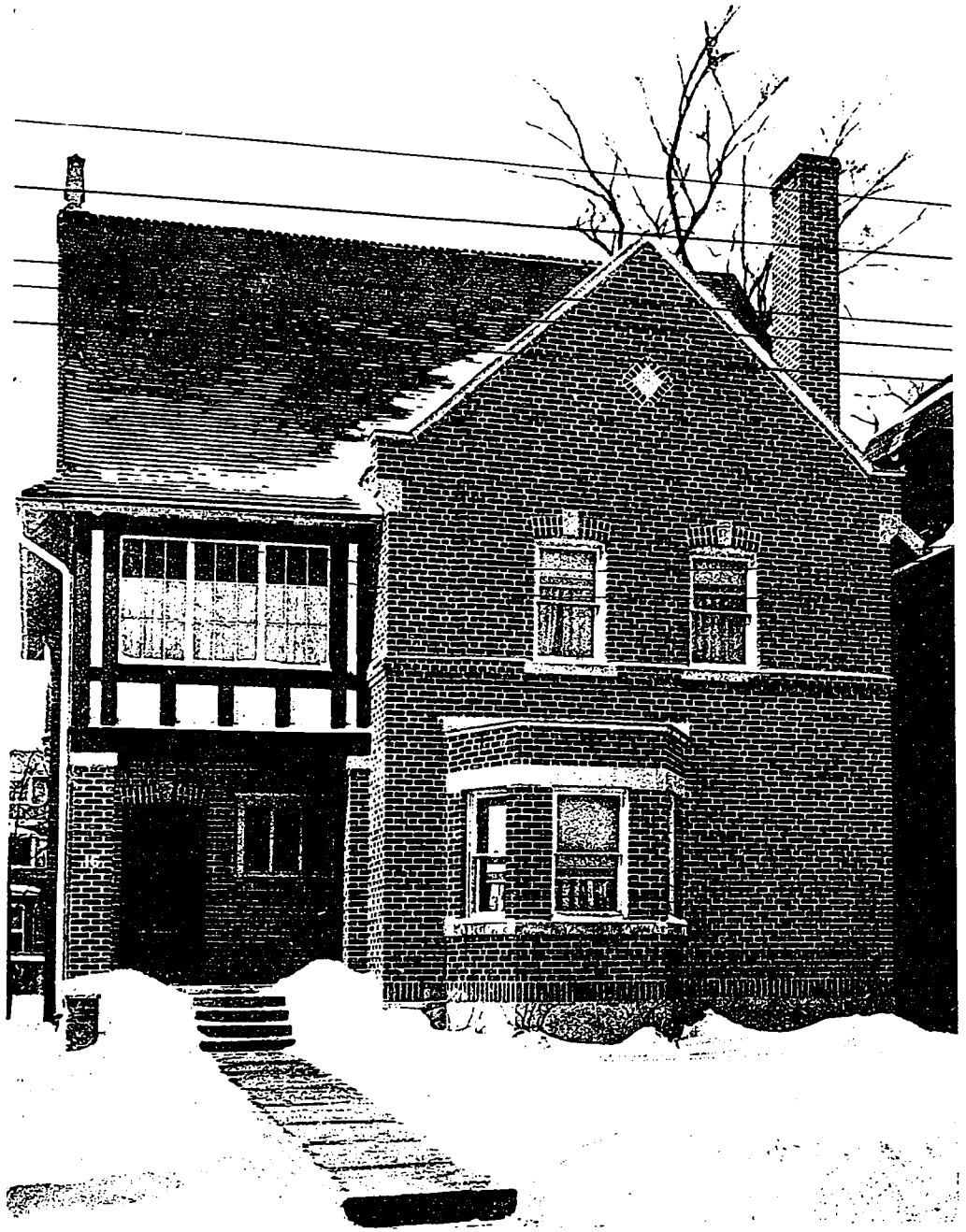


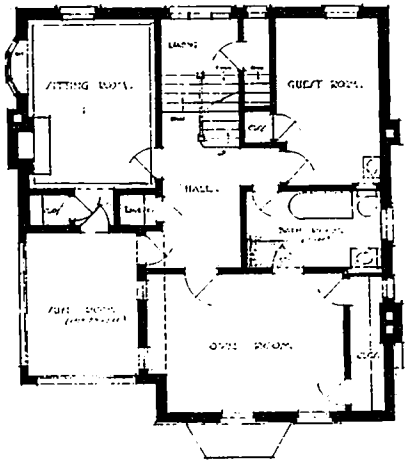
BASEMENT

Exterior of hard red brick, laid in white mortar. Stained shingle roof. Upon the interior the ground floor is finished in birch stained brown; elsewhere sycamore. Five-foot paneled dado in vestibule and hall. Tapestry brick fireplaces. Seven-eighth-inch oak flooring throughout. House is 38 feet wide and 26 feet deep. Cost $6,500.

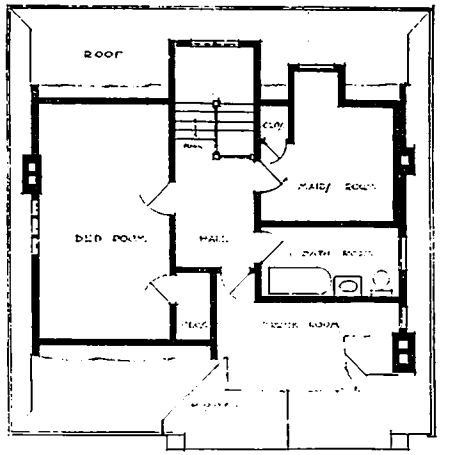


SECOND FLOOR





SECOND FLOOR

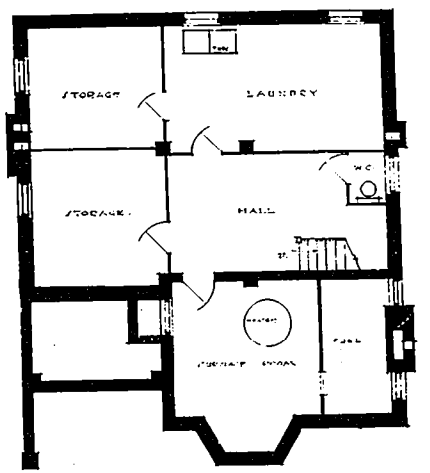


ATTIC

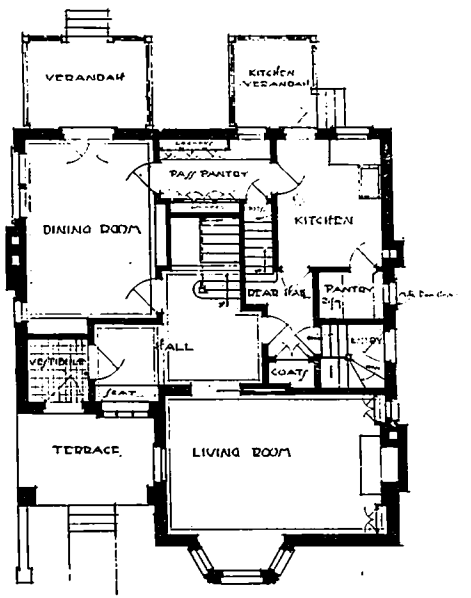
Exterior of selected thick brick with wide white mortar joint. Shingle roof and half-timber work stained. Interior finish of ground floor quarter-cut oak, of second floor pine, stained brown. Oak flooring throughout. Bathroom has tile floor and dado. House is 33 feet wide and 36 feet deep. Cost 19.5 cents per cubic foot.

HOUSE AT TORONTO.

GORDON M. WEST, ARCHITECT.



BASEMENT



GROUND or FIRST FLOOR

Houses Costing From $2,500 to $5,000*

PHILIP J. TURNER, F.R.I.B.A.

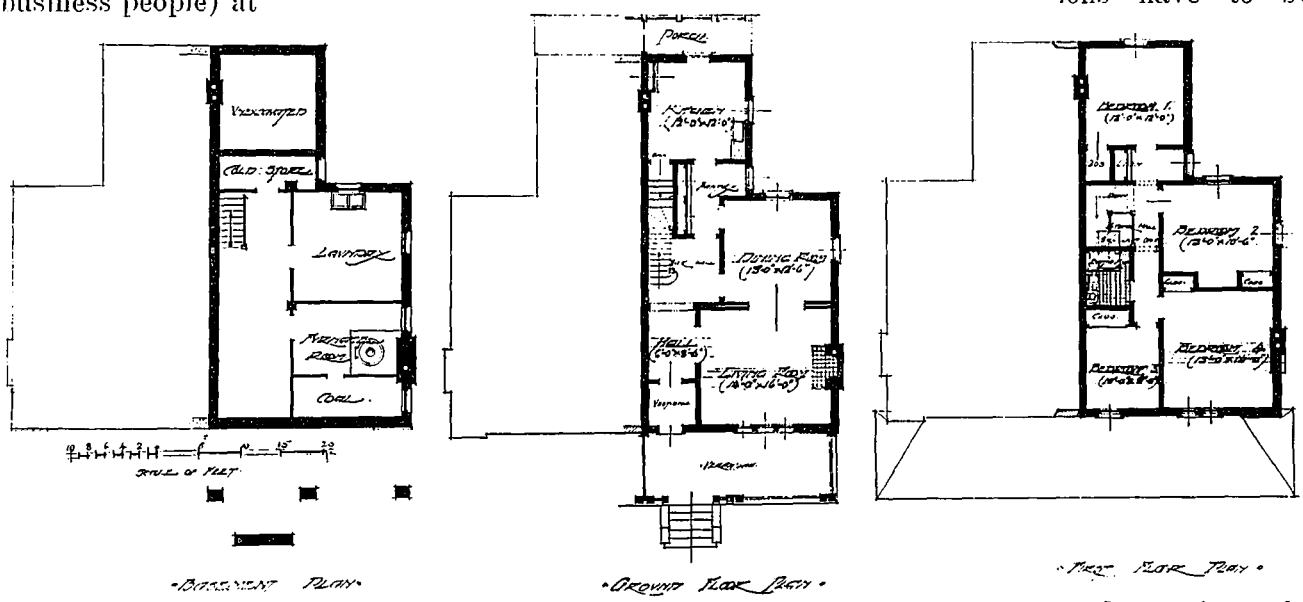
THE HOUSE of moderate cost at the present time is indeed a live topic, especially in a city like Montreal, where so many of the inhabitants are forced to live in apartments and flats, for the simple reason that houses cannot be obtained at a cost that is within the income of the ordinary salaried man.

In the residential districts of Montreal it would be difficult to find any house, however small, that could be rented at a less cost than $50 a month. The smaller modern house with the minimum accommodation sells in Montreal and the adjoining municipalities of Westmount and Outremont (which latter places are favorite residential districts for a great majority of Montreal business people) at a price ranging from $8,500 to $10,000.

Consequently, if houses however small could be built and sold profitably at a total cost of from $5,500 to $7,000, it would be difficult for anyone to supply the demand fast enough for such a type of house in the district of Montreal. It is well recognized that building in the metropolis of Canada is more expensive than in Toronto and in other cities across the border to the south of us. Houses can be rented in Toronto to-day in good residential districts at $30 and $35 a month, that would easily command a rental of $40 to $45 if the same type of house and accommodation could be obtained in Montreal.

The reason, amongst others, that tends to make the cost of building more expensive in the Montreal district, is due to the fact that more precautions are taken and extra provisions have to be made against the longer and severer winter of Quebec.

The average person when comparing Montreal figures with others of a warmer climate, does not always realize that the following provisions



NO. I.—SEMI-DETACHED HOUSES AT ST. LAMBERT.

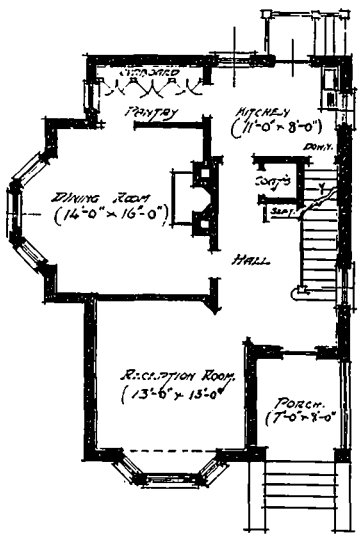
*All houses illustrating this article were designed by Philip J. Turner, excepting Nos. 5 and 6, which represent the work of Peden & McLaren, architects.

are considered essentials in house building in Montreal and the neighborhood: (a) Double windows or window sashes throughout; (b) double flooring to all floors; (c) a basement throughout the area of the building; (d) double roofing, i.e., a hollow space provided between the two thicknesses of boarding; (e) increased heating, and that on the hot water system, and (f) increased depth to the foundation walls, it being necessary to carry the walls down to a depth of at least four feet six inches to five feet below the ground to escape danger from frost. These precautions are as a rule omitted as unnecessary or are modified in the States and Southern Ontario on account of their winter being less severe.

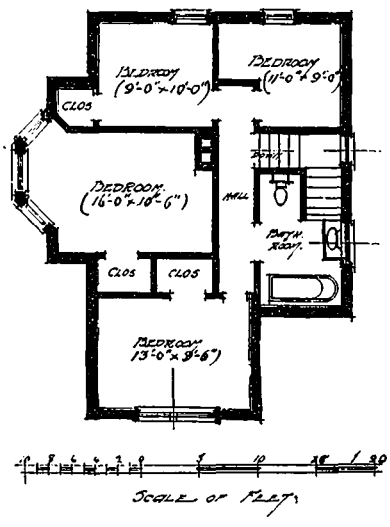
To return to the limits of the cost set down as the basis of this first article, it will be understood, from what has already been said, that very few examples can be found of houses in Montreal or in the district, that have not cost more than $5,000 to erect and complete.

In Westmount, where only solid brick and stone walls are allowed, there would be difficulty in finding any single example, so that illustrations of residences from this district will provide examples for more expensive houses to be dealt with in the second and third papers of this series.

In these articles it is intended to deal only with detached and semi-detached residences, and in this first paper the subjects are selected from Montreal and the neighboring municipalities of Montreal West and St. Lambert. Here solid plank construction with brick veneer for outside walls is permitted and in this way the cost can be kept down a little lower in price than where solid masonry walls only are allowed.



"GROUND FLOOR PLAN"

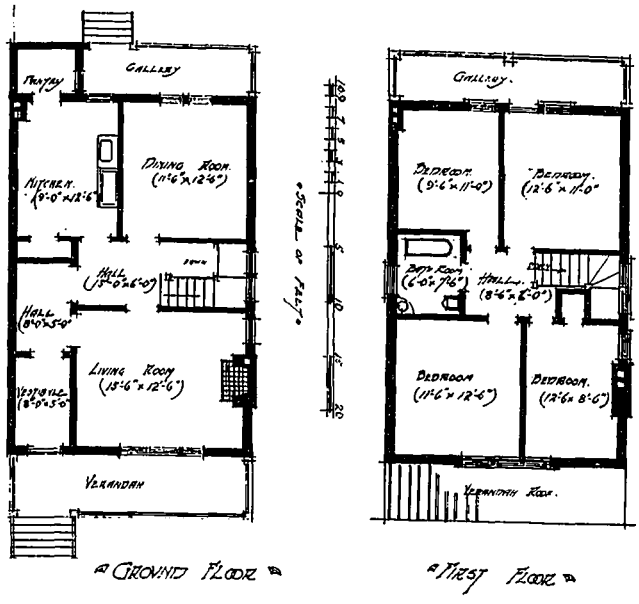


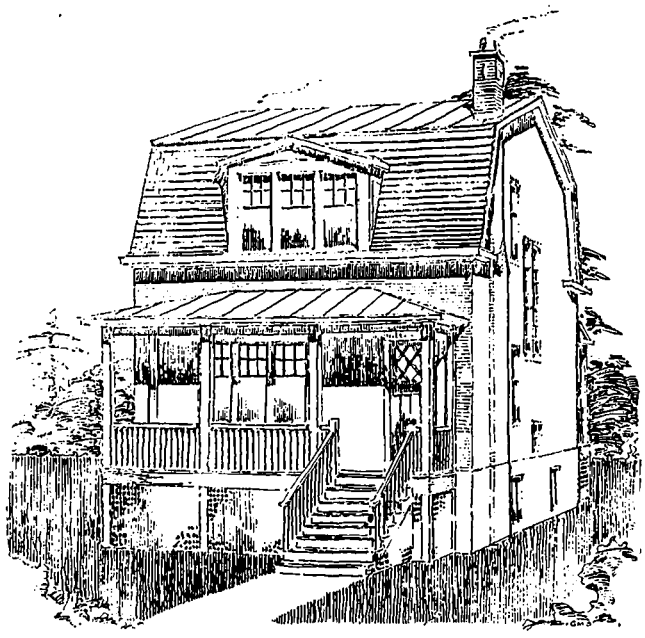
"FIRST FLOOR PLAN"

NOS. II. AND IIA.—TWO HOUSES FROM SAME PLANS.

Brick veneer houses are warm and durable when properly built and in most localities cost somewhere between the price of frame buildings and solid brick.

Let us study the householder's dilemma as it exists to-day and the difficulties with which the man of small means is confronted. Possibly there never were more architects and more builders than there are now, or more popular magazines being published broadcast which contain illustrations and plans of good houses. It is more than doubtful, however, whether with it all the man who wishes to have a house of his own, instead of a second-hand one, is much further on. He has acquired, no doubt, various odds and ends of information about houses, but



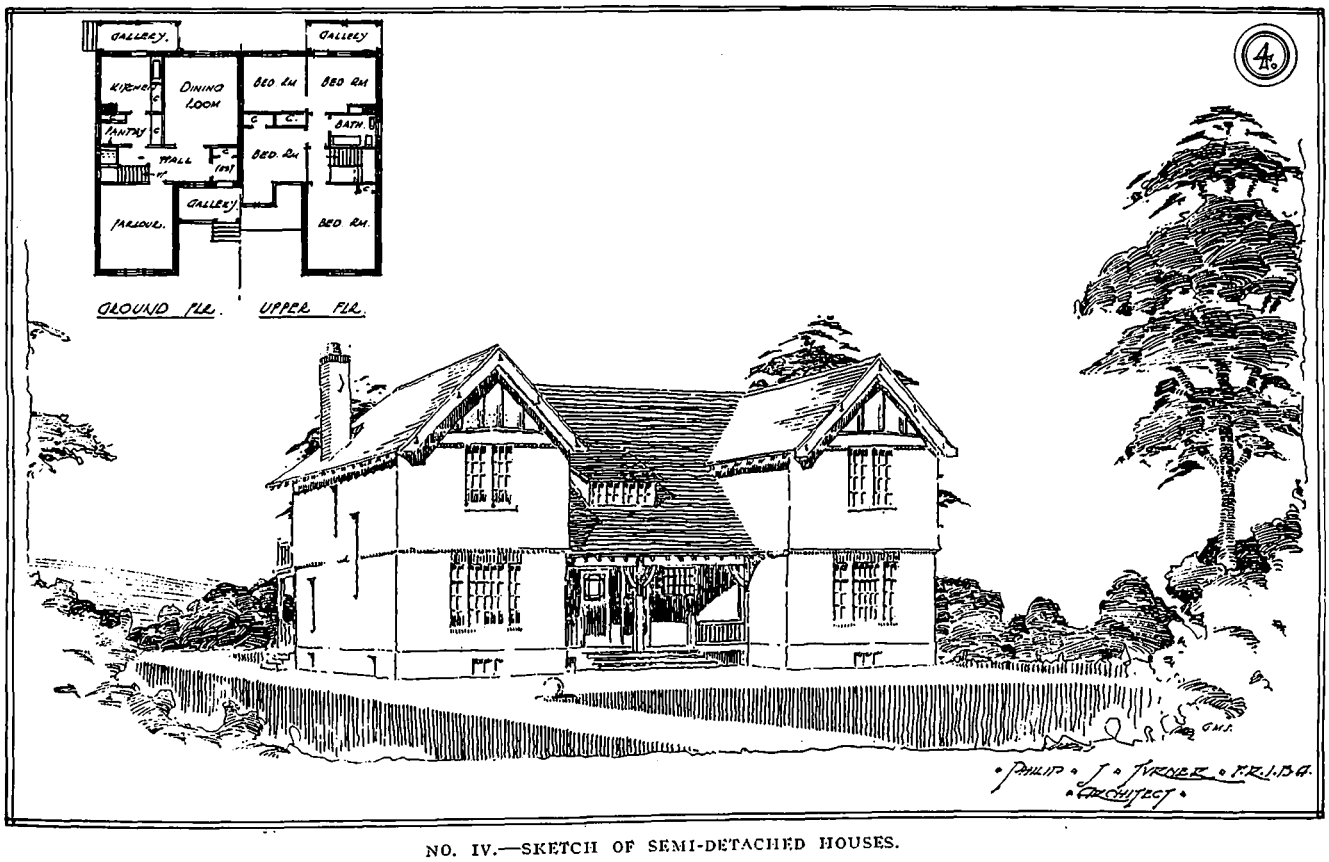


NO. III.—HOUSE ON MAPLEWOOD AVENUE, MONTREAL.

the same difficulty of securing the right kind of architect, the right kind of builder, the right kind of site, and in some cases, the right amount of capital remains.

The average person seems to think that anyone can design a cheap house, but to design one economically and artistically at the same time is one of the difficult problems an architect has to solve: especially is this so when the client of small means generally expects the accommodation that is found in a $10,000 house to be also included in his house that is to cost only half that amount. It is this latter requirement that makes the problem of designing the cheap house on artistic lines more difficult than planning a more expensive one.

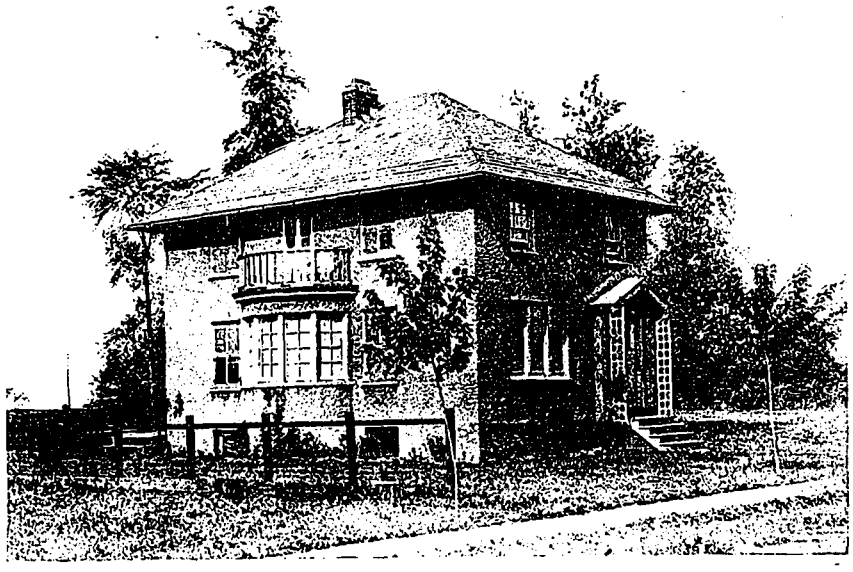
The man who is prepared to spend $4,500 or $5,000 on his home realizes at once the difficulty of the right man to select as his architect. He wants a man who is at once skilful, economical and artistic. The architect endowed with these qualifications, is probably not particularly anxious for commissions of this sort, and if he undertakes it, he expects to be paid,—reasonably enough from his point of view,—on a higher scale than is usual.

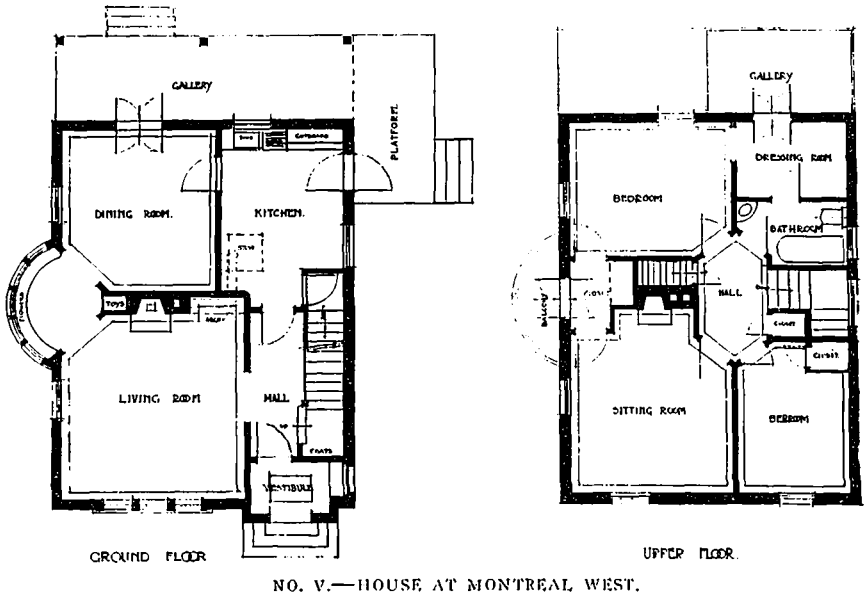


NO. IV.—SKETCH OF SEMI-DETACHED HOUSES.

Our client as a rule cannot appreciate that a five per cent. commission on a $5,000 house is anything but remunerative to his architect, and if the latter is going to give the care and thought that the smallest house design requires in the matter of detail, a far higher scale should be demanded if the best results are to be obtained.

How many of the small houses and cottages that one sees in the suburbs of our cities are spoilt for the want of thought and personal touch of the designer in every detail of its construction. Where the architect cannot arrange





NO. V.—HOUSE AT MONTREAL WEST.

a remuneration for his services commensurate with the time and work involved in the carrying out of the work, he will naturally be inclined—rather than to refuse the commission altogether—to delegate the work to one of his draughtsmen with instructions maybe not to give too much time to details.

Needless to say, this is not the stand taken by the true artist; but as a general rule it may truthfully be said that the successful cottage of $5,000, carried out with the time and attention given to it by the architect that it requires, is not going to be a "paying" proposition to him on the five per cent. basis. There are very few architects (as will be realized) who can afford to carry out such commissions for the love of their work alone. It has often been said that architecture would be a delightful profession if those practising it did not have to make a living by it, and this same statement applies particularly to the designing and detailing of the smaller house.

The designs of many of the smaller houses surrounding the outskirts of all our cities are very often hideous and at the best anything but beautiful. The public do not realize that but a very small percentage of $5,000 houses in our towns are designed by architects. The ordinary man in the street seems to think that what a well-qualified architect must demand as his fees (namely, six to eight per cent.) on a small house, seems quite prohibitive, consequently his services are often dispensed with, with the result that the designs of small houses erected in our suburbs are, as a rule, disappointing and uninspiring. To anyone endowed with taste, a palpable absence of the artist in *every detail* of the building is also perceived—a failing not found in our best garden cities, where the whole of the cottages, public buildings, and the laying out of the grounds have been studied to the best artistic, and at the same time, economic advantage.

A difficulty also that faces our would-be small house owner is that having obtained the plan of the house he likes, he finds it often no easy task to engage a satisfactory contractor. The contractor in a large way of business is quite above small work of this sort, or if he takes it, he is going to charge extra, and gives it at that, as a rule, no personal attention. The small builder is high-priced because he is short of capital, buys badly, and cannot get good work from an inferior staff.

But one must not multiply the difficulties of any individual of small means building his own home. Such a client will obtain the best value for his money and acquire probably the best solution of this problem when he builds his home on the lines laid down by our best model city companies in their co-partnership schemes; examples of these are to be seen in England at Hampstead, Letchworth, Bournville, etc., and in

NO. VI.—HOUSE AT MONTREAL WEST.

several cities in the United States. These companies undertake to build and sell a number of houses, designed both artistically and substantially at the figures we are now considering. Where such a company is not "putting up" and selling the houses for pecuniary reasons alone, but for the general welfare of the community, it naturally follows that good results will follow.

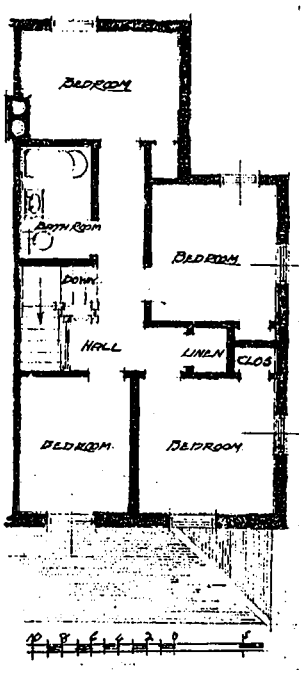
An architect, given a free hand as to design, will lay out the property on the most artistic lines, and where a number of houses are built at the same time, good contractors can be encouraged to interest themselves in the scheme, and are also able for the same reason to keep the cost per house at a lower rate than if only one house were built at a time.

If a very small house is required in the country with cheapness of price as the main desideratum, the local builder, working from his own plans, can give more as to quantity than if he were working from an architect's plans. He is afraid of the latter, also of the long and explicit specifications, and is likely for some reason or other to charge high in the first place when estimating from a city architect's plans. It is another matter altogether if what the client wants is quality, and that is what we are considering now.

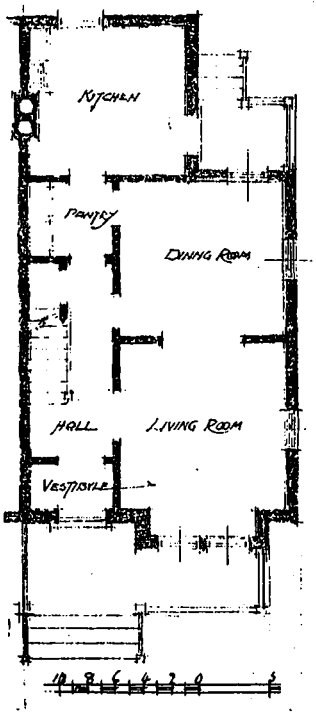
How often has one seen a small house which is designed artistically and planned economically entirely spoilt through its inappropriate surroundings and site. It is one of the most important matters in building a house that the site be first of all well considered, and that its suitability or otherwise be regarded before the same is purchased or the house designed. In this commercial age and owing to the high cost of land, we find sites altogether too small for the setting of a house with proper light and air space around it.

Lots of twenty-five feet frontage are altogether too small for detached or semi-detached houses, and subdivisions set out on these lines should be forbidden by law. It would seem that such divisions are merely a bait to catch the interest of the man of small means, for when once he gives attention to the kind of house he wants to build, he will find that he cannot fit his house on to the lot and it will be necessary for him to purchase two lots, making fifty feet frontage, or not build at all.

Thirty-five feet frontage is certainly a minimum lot for detached houses, and even with this width or with anything less than fifty feet wide one cannot "set" a number of houses to good advantage. Houses packed in parallel rows like sardines in a box are not going to give the passerby the idea of comfort and restfulness



FIRST FLOOR.



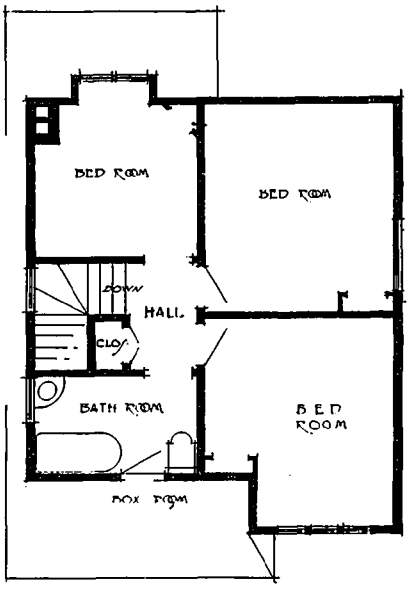
GROUND FLOOR.

NO. VII.—SEMI-DETACHED HOUSES AT ST. LAMBERT.

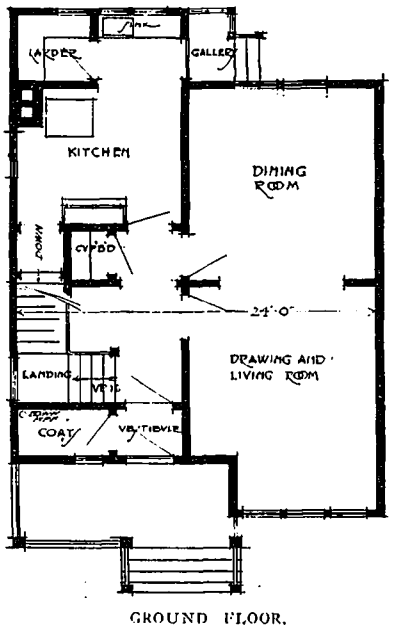
that is to be desired in a home, and a cramped site not only spoils the appearance of the house, but also tells the tale that the man who built the house was also cramped in his finances.

The limit of accommodation to be provided in a small house for present day requirements would seem to be on the ground floor: living room, dining room, hall, kitchen and pantry; on the first floor: three or four bedrooms, bathroom and linen cupboard; in the basement: larder or cool room, furnace room, coal storage, laundry and store for winter sashes and summer blinds.

Though the cost per foot cube is given in several of the examples illustrated, the pricing of a small house on the basis of its cubical contents is no safe guide, as local conditions affect the cost in nearly every case. One must not forget, moreover, how materials and wages have advanced in late years, and that the tendency of all forms of wood construction is to gradually increase as our forests continue to dwindle.



FIRST FLOOR.

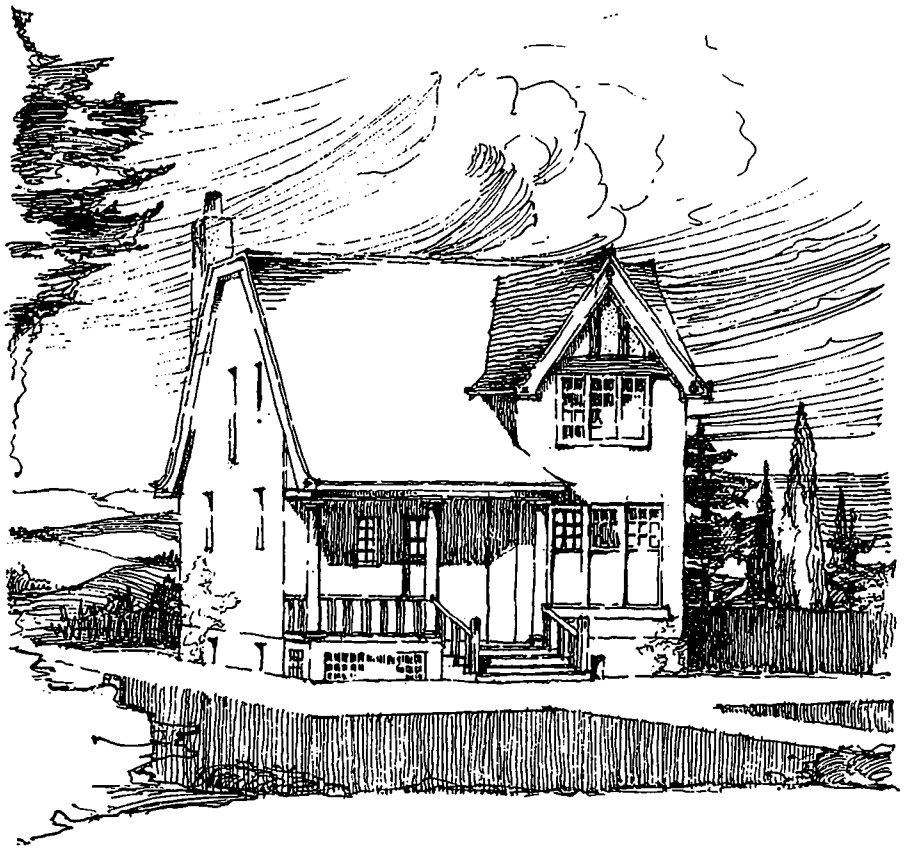


GROUND FLOOR.

Wood framed houses and shingle roofs are generally prohibited by our by-laws, except in the country districts, and rightly so, as more fires occur from flying shingles than from any other cause. For small frame houses ship-lap or boards tongued with rebated battens to shed rain are the most economical exterior covering. Shingles have nearly doubled in cost the last twenty years, but cost no more than the thin painted lapped siding or clap-boards. In the long run, the cost of painting the latter causes them to work out no cheaper than roughcast or cement on metal lath.

The ordinary plain brick house costs on an average about twenty per cent. more than frame and roughcast, and the combination of brick below and roughcast above will cost as much as the all brick building, though the former can be often made the more picturesque.

After everyone has said everything that there is to be said on the building of small houses, the fact still remains that houses are to be built to live in and not to be looked at, and whilst always endeavoring to obtain beauty in the design, the first and final object to be obtained is that the house, however small, should be well built and well planned.



NO. VIII.—HOUSE AT ST. LAMBERT.

Every house owner, architect and contractor, moreover, should work together so that they may produce all the desirable qualities referred to in the house described in "The Private Papers of Henry Ryecroft": "My house is perfect. Just large enough to allow that grace and order in domestic circumstance; just that

superfluity to lack which is to be less than at one's ease. The fabric is sound; the stairs do not creak under my step. I am waylaid by no unkindly draught; and I can open or close a window without muscle-ache."

A brief description is given of each house illustrated in this article.

No. 1.—Three pairs of semi-detached residences, St. Lambert, Montreal. These houses were erected on the Brooklyn Park estate in 1910 at a cost of just under $4,000 each. The walls are of three-inch solid plank with pressed brick veneer. Each house has a frontage of 23 feet 6 inches, and hot water heating. The pantry being situated between the kitchen and the hall and dining room prevents unsavory odors penetrating into the rest of the house. Asbestos slates are used on the gallery roofs. This plan is very compact, no waste space being taken up by passages. The cost of these houses amounts to 15 cents per foot cube.

No. 2.—This cottage was built in 1911 at Brooklyn Park, St. Lambert, at a cost of $4,150, concrete basement and hot water heating included. The walls are of wood framing, boarded, and covered with shingles treated with a brown creosote stain.

No. 2a.—This house is an alternative elevation from plan No. 2. Shingles on the upper level, and brick below. The cottage, which was erected without architect's details, would have been much improved if the junction of the shingles and bricks had occurred at the horizontal line of the first floor window sills, and if the bottom courses of the shingles had been brought out with a good projection. The jagged corners of the bay window, so common in speculative work, should never be permitted in good work.

No. 3.—A compact square plan of 22 feet frontage, one side wall being a party wall. The bathroom, although provided with a window, is also planned with a top light in the event of another house being built close up to it. Complete cost with heating, $4,189, or 20 cents per foot cube.

No. 4.—A pair of picturesque semi-detached houses costing $3,500 each. Brick on ground floor, cement roughcast on metal lath to upper floor, shingled roofs.

No. 5.—Erected at Montreal West in the winter of 1909-10, this house is a marvel of cheapness, costing in all $3,498.15. The figures of the different trades are interesting: Mason and brick, $459.45; carpenter, $1,639.57; roofer (slate), $182.00; plaster, roughcast, $399.00; painter, $282.59; plumber and hot water heating, $438.76; hardware, $48.85; electrician, $46.91, making a total of $3,498.13. The walls are of plank and brick veneer. The flower window is a pleasing feature and relieves the plainness of a square house. The appearance would have been further improved if the chimney had been raised.

No. 6.—This house was erected in Montreal West at a cost of $3,681.50, exclusive of the hot water heating, which was installed by the proprietor.

No. 7.—These cottages, erected in 1910 at Brooklyn Park, St. Lambert, are of wood framing and clap-boarding, with shingled roof and hot water heating. They cost $2,100 each. The building is supported on concrete piers with cellar under back portion only. Cost per foot cube, 12 cents.

No. 8.—This house, designed for St. Lambert, Montreal, with walls of roughcast on metal lath and shingle roof, a basement and hot water heating. Builder's contract sum, $2,950 complete, which is equivalent to 16 cents a foot cube.

COTTAGES NEAR RUGBY, ENGLAND, BY E. L. LUTYENS, ARCHITECT.

Heating The Small House

THE ECONOMICAL and effective way of warming the house is by means of a central heating plant. The initial cost of installation may be quite expensive, but eventually it will prove a saving proposition. Three systems—warm air, hot water and steam—are used with various changes in each one. For small houses the low pressure hot-water has proven quite satisfactory. The hot water is generated in the boiler, conveyed to the highest point of the system by the main pipe, from which branch feeders connecting the various radiators. A return pipe takes the cold water back to the boiler. Several feet above the system is located the expansion tank, which acts as a safety valve.

The warm-air furnace is most generally used, the fresh air entering from the outside above ground through a cold air box. In this system it is advisable to place the furnace in as central a position as possible in order to have the pipes of uniform length, although it may be conveniently placed toward the north in order to shorten the warm air pipes leading to the north and west rooms, and using the long pipes for the other sides, which are naturally warmer.

Steam heating has many characteristics of the hot-water system although distinctly different. The main flow pipe is carried to the highest point of the basement, with distributing pipes running at slight inclines and finally connecting with the boiler below the water line. Risers containing flow and return connect the radiators with the distributing pipes.

The chimney is an important part of the heating plant and should either be round or square, as the smoke and gases rise in a spiral manner. It should be ample in size and no flue should be less than eight inches square or eight inches in depth. Built at least two feet above the high point of the roof, it prevents any cutting off of the draft from wind blowing over the roof. The flue should be kept clear of all obstruction, the smoke-pipe kept to the inner side of the opening, the foundation of sufficient strength to prevent settling and cracking, and the furnace within six feet of the chimney.

Table of Chimney Flues. By A. G. King.

Cubic feet—contents of building.	Sq. ft. direct steam radiation.	Sq. ft. direct hot-water radiation.	Round tile or iron. Inside diam., sq. in.	Square or rectangular tile or brick.
10,000- 20,000	250- 450	300- 800	8	8x 8
20,000- 45,000	450- 700	800-1,200	10	8x12
45,000- 75,000	700-1,200	1,200,-2,200	12	12x12
75,000-140,000	1,200-2,400	2,200-3,600	14	12x16
140,000-200,000	2,400-3,500	3,600-5,200	16	16x16
200,000-300,000	3,500-5,000	5,200-8,000	18	16x20

In estimating the requirements for the various rooms to be heated, C. S. Prizer furnishes the following method: "To the actual cubic feet of space in each room add 75 cubic feet for each square foot of glass surface and eight cubic feet for each square foot of exposed wall surface. For a northern or western exposure add ten per cent. to glass surface and ten per cent. to exposed wall surface. For a southern or eastern exposure deduct ten per cent. from both the glass and exposed wall surfaces." Outside doors are measured as glass. The above rule provides for a temperature of 70 degrees within and zero weather without. The furnace naturally must be rated in equivalent cubic feet.

After the size and character of the furnace has been established care must be taken as to the size and method of installing the warm air pipes and risers as well as the location of the registers. In addition to the warm air registers in a small house there should be two floor outlet registers in order to properly warm the space as hot air will not enter an airtight room. Through these floor registers the air passes down the circulating pipes to the furnace for reheating, after which it is taken to the rooms again by means of the warm air pipes and registers. The cold air is brought into the cellar through a screened window opening into the air box, which is provided with removable baffles of stretched cheesecloth. The incoming air strikes at right angles the baffles, which extract all dust and other foreign matter.

In case a ventilating flue is desirable it should be placed next to the chimney flue in order that the warmth may give the air an upward tendency. In case outlets are made into the flues care should be taken to select a valve which will prevent back currents of smoke from being driven into the rooms.

Recent experiments show that fine hard brick absorb practically five per cent. of their weight of water, while soft brick take up forty per cent. Since one heat-unit is required to raise one pound of water one degree of temperature and the same amnuot of heat will raise five pounds of dry masonry one degree, it is readily seen how necessary it is to note the quality of the brick. If the building is of concrete special attention must be made as to whether it has been waterproofed or not; also if plastered directly on the concrete or if studded and lathed inside the concrete wall. If studded fifteen per cent. increase will be sufficient if finished by the other method, sixty per cent. will not be too much allowance for wet windy weather. Water is the greatest absorber of heat, so a building constructed of such materials needs more warmth.

The Garden City Movement

THE GARDEN CITY idea is a world-wide movement which is rapidly re-organizing social tendencies in every country. It is bringing about a wholesome condition with the prime object of accommodating the tenants in as economical a manner as possible. It also aims to furnish a better understanding between the classes, removing some of the big barriers that tend to keep humanity on a low moral basis. The suburban idea grants like advantages to business men and women as it does to artists and professionals. Here the single room may be a "Spanish castle" with the essential privileges of freedom, light and air as well as the large expensive home.

All great improvements have to go through an extended period of agitation and apparently insurmountable obstacles in the gradual progress of civilization. But after years the Renaissance comes and we are privileged to enjoy the blessings which our stunted natures prevented for so long a time. That a change in our social and industrial conditions had to come has been a recognized fact, but the method of accomplishing this much needed reform is and has been a serious problem. It is safe to say, however, that wonderful strides have been made in the right direction and that nothing will tend to clarify the atmosphere of unrest as much as the garden city movement.

WORKMEN'S COTTAGES AT EARLSWICK, ENG.

As has been stated, plans throughout the world have been made to re-organize great cities with a view of abolishing the slums and affording healthier conditions of life for the people, especially the poorer classes. The heads of great commercial organizations realize that it is to their interest to provide their employees with healthful and comfortable surroundings. A movement to encourage the people to remain in the agricultural districts is growing in every country. All of which lead to one goal—the creation of an environment which will give the coming generation a healthful, moral and economical living.

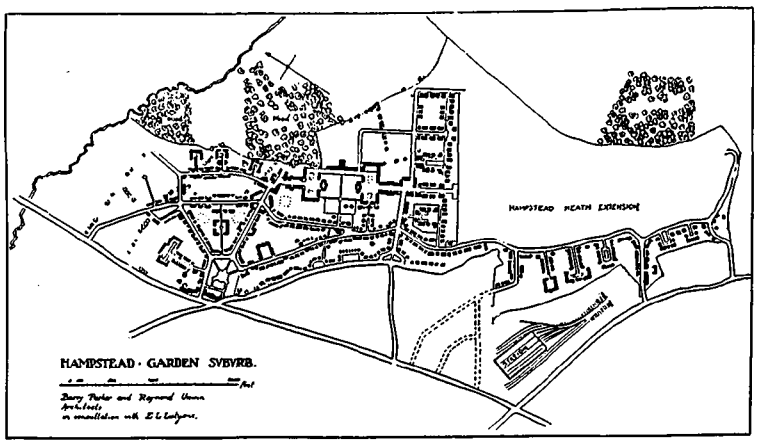
It might be interesting to note the effect of pure air and light upon human beings as shown in a recent study of English conditions. At Letchworth, where was born the garden city movement, it was found that the height, weight, general health, and mental capacities of the boys and girls showed a far higher average than that of the children in crowded parts of London, Birmingham and Liverpool. Since these comprehend the essentials of life, the conclusion to be deducted is quite apparent. It should bring about a more consistent effort on the part of every one interested in the sane and healthful progress of mankind.

Undoubtedly the moral tone of a community is regulated to a certain degree, at least, to the cleanly and healthful atmosphere surrounding it. With playgrounds affording all kinds of amusement, with homes beautified with lawns, trees and flowers—what could be more conducive of clean thinking and actions? The freedom and saneness of a garden city lends itself to the fundamental principles of right living. Selfishness, jealousy, and bitterness is replaced by mutual understanding and helpfulness towards each other. The filth and wretchedness of the slums will soon be a shameful condition of the past. Forty years ago Berlin banished her slum districts, the centre of Glasgow has been re-modelled, Paris has and is doing more for her poor than any other city in the world, Vienna is re-planning her crowded sections; in fact all living cities are wide-awake to the moral uplifting of neglected parts.

As for the economical side, this phase alone warrants a continuation of the work already started. We are not only confronted with the problem of housing properly the people of to-day, but must anticipate the needs of the vast horde of immigrants scattered throughout our provinces each successive year. The speculative concerns cannot create fit homes for the workingman at a reasonable price. His ambition to rob them is too well founded. We must look to men of broader vision who feel something more in life than the mere accumulation of wealth. That such men exist is exemplified in the work which is already being accomplished in the various cities.

A description of various schemes, together with illustrations, is given in condensed form in

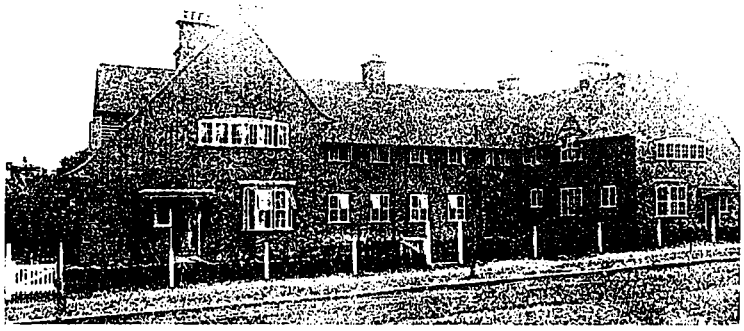
order to show what is being done. Other ideas will be reviewed later—all of which contain suggestions which may prove helpful in the working out of future problems.



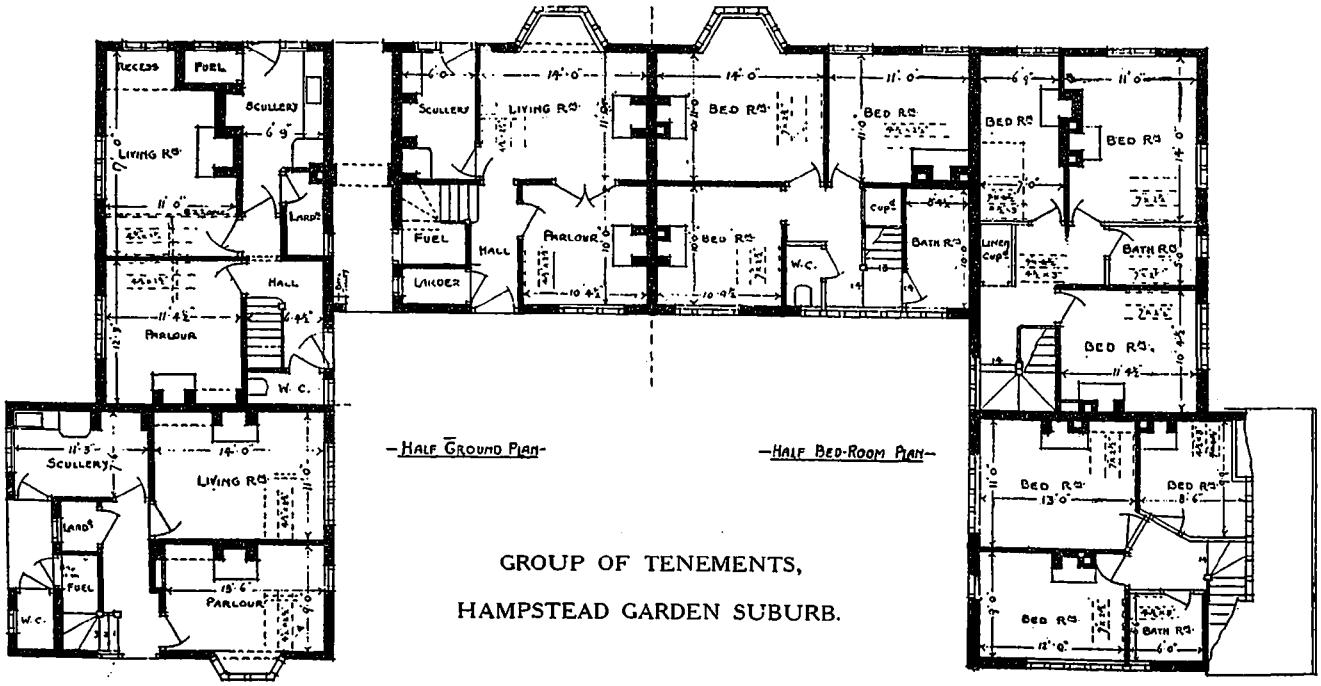
The Hampstead Garden Suburb.

One of the most striking examples of the garden suburb is at Hampstead, England. After a remarkable growth of five hundred homes in two years, it continued to satisfactorily meet the needs of the people and new area had to be added to the original tract. The location is especially favorable, being the highest site near London and of an undulating nature, while the famous Heath precludes all chance of despoliation from the hands of the speculative builder. Hampstead Heath, associated with such well known characters as Dickens, Keats, Shelley, Constable and others, will always be preserved as an open space. The large houses surrounded by gardens from one to three acres, face the Heath, while the smaller homes are located farther back. The northern section is given over to the workmen's cottages, singly and in groups, with ample space for gardens, orchards, playgrounds, etc.

The scheme was started by a body of private and public spirited citizens some ten years ago who purchased 240 acres at a cost of $560,000. After forming the Hampstead Garden Suburb Trust competent architects were selected who laid out the present arrangement. As new buildings were erected considerable care was taken to conform the new project with the general surroundings, which resulted in a free and natural arrangement, as the trees and hedges already developed were not to be changed at all. If the plan did not conform to the position of a tree then the work of the experts had to be changed, which resulted in streets and driveways following the hedges. As a consequence this new colony has an appearance of age and dignity. According to English laws, the buildings are of stone, brick or cement. The roofs are usually of dull red tile, which harmonizes with the warm brown effect of the cement walls.

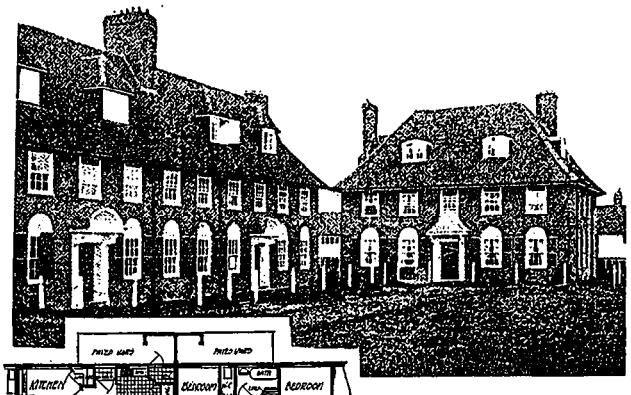


A notable feature



GROUP OF TENEMENTS,

HAMPSTEAD GARDEN SUBURB.

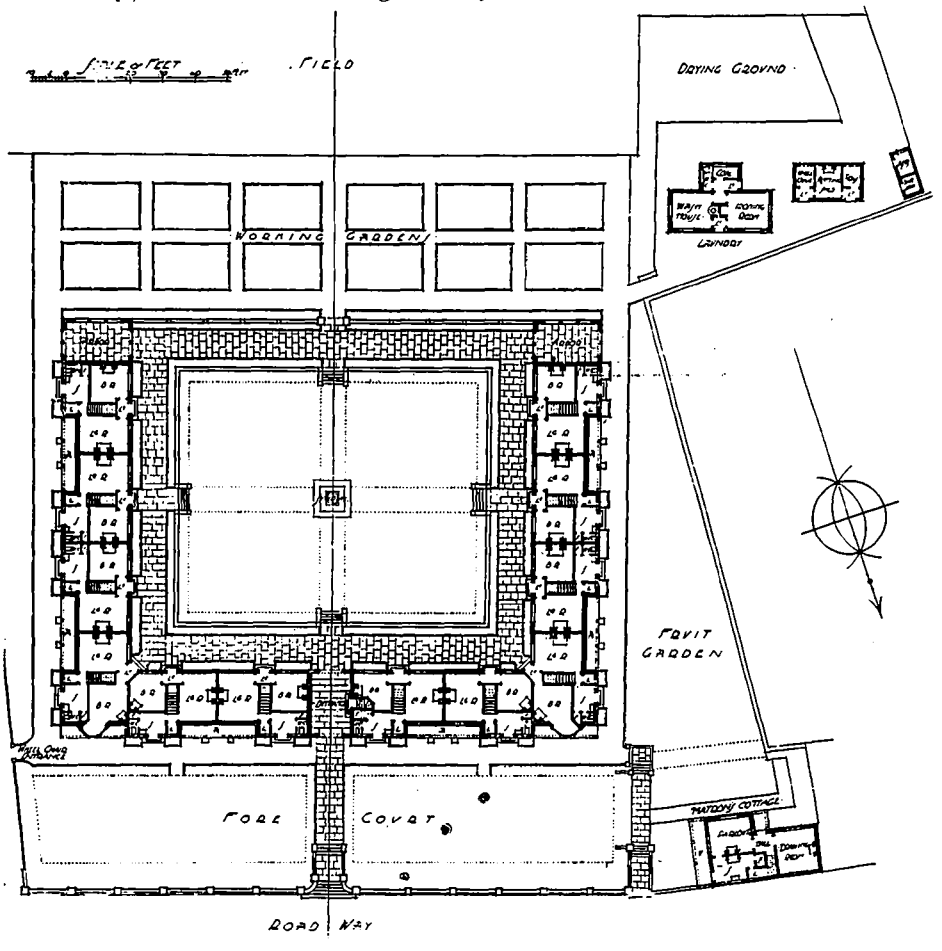


TYPICAL VIEWS,
HAMPSTEAD GARDEN SUBURB.

of this scheme is the pleasant mingling of all classes. The members of the Trust felt that society is impoverished by class distinction and each in turn suffer through ignorance of conditions aside from their own. From the first the principle was established that all buildings be made attractive, each with its own distinctive character. All homes had their own gardens, and when a group of houses was planned under one roof a larger space was allotted. In order that plenty of pure air and open views be maintained, an Act of Parliament limited the number of houses on an acre to twelve.

While one may pay any rent desirable, it is interesting to note the many groups of workmen's cottages which average approximately

one dollar and fifty cents a week. As per conditions, all of these are well built and thoroughly sanitary. One large quadrangle accommodates sixty self-supporting women, who have the conveniences of individual homes and also the privileges of a boarding house if desirable. Another provides for young men similar to a college dormitory, while a third is given up to single



CHURCHILL COTTAGE HOMES.

room tenements. The majority of dwellers are working men in the heart of London, and when we stop to contrast this life to that of a city tenement, it is possible to appreciate what a great boon to mankind such an undertaking offers.

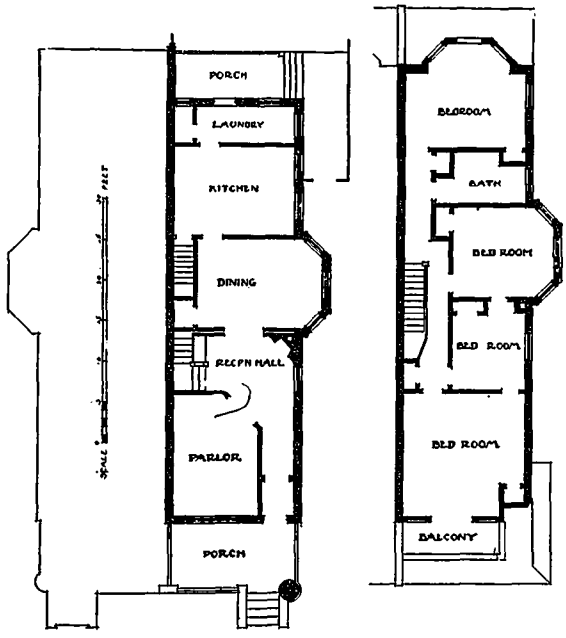
Port Sunlight Cottages.

Another type of industrial village is located near Chester, England. During the years of growth utility has been the main consideration, while the artistic and beautiful were thought of only in the sense of usefulness. Two types of houses have been used; the "cottage," which rents for $1.00 per week, and the "parlor house," at $1.30. In the "cottage" the ground floor contains a living room 15 by 18 feet, behind which is a scullery 9 by 3 feet, and a bath room 6 feet long; while the first floor has three bedrooms, each one equipped with a fireplace. The "parlor house" is planned to accommodate on the first floor a parlor 13 by 13 feet, kitchen of similar dimensions, a bath, scullery and pantry; the second floor possessing four bedrooms. Here, as elsewhere in England, wooden structures are prohibited by law; red brick, rough cast and half timber being used extensively.

In planning the homes, special attention is given to the general surroundings. In order to maintain a uniform beauty and neatness the front garden of each home is kept in order by the village authorities,

at an expense of approximately six cents a week. Plenty of space is granted to the tenants for the raising of fruit and vegetables or the keeping of poultry; also to the children for football, cricket, tennis and bowling.

The village represents an outlay of $1,750,000, on which the promoters receive no return, as the rents are based on the actual cost of maintenance, taxes and repairs. The "cottage type" costs approximately $1,650, while the "parlor house" is around $2,750. The value of the land is $1,200 per acre, each accommodating ten houses and ample garden space.



FIRST AND SECOND FLOOR PLANS.

The Girard Estate.

The Philadelphia Board of City Trusts, upon the death of Stephen Girard, had entrusted to its care large tracts of land located within the city limits. Part of the estate was practically useless and necessitated considerable filling-in to fit it for commercial purposes. The Board decided to erect eight hundred dwellings upon a section three miles from the centre of the city, constructing same with the

TYPICAL VIEWS OF GIRARD ESTATE HOUSES.

idea of permanency and also with a view of minimizing maintenance cost.

In order to eliminate the monotonous effect produced by rows of houses, distinguishable only by the street number, eight different types of dwellings have been designed. The various kinds follow each other in a natural sequence, two houses with same exterior being placed side by side. Not only does the style vary, but the materials change to suit the character of the design—tapestry and Roman brick, roughcast and rubble stone predominating.

One of the features in connection with the scheme, worthy of special mention, is the power plant located within a short distance of the tract and supplying the houses with heat, electricity and hot water. All of which is furnished free of extra charge; in fact the only expenditure the tenant has to meet in addition to the rent is the gas for the ranges. The amount of rental is based upon the cost of construction and on the contribution which the power plant is forced to make for the continual comfort of the occupants. The houses range in cost from $2,200 to $3,200, including all fixtures, painting and tree-planting. Such home-planning cannot help but bring the living expenses within the limits of the poor, produce a sanitary and wholesome condition, and enhance the æsthetic appearance of the residential districts.

The Churchill Cottage Homes.

A few years ago an interesting venture was made by a philanthropic citizen of England who built in Somerset a house accommodating twelve families. The building was erected around three sides of a quadrangle one hundred and twenty feet square. The open side is enclosed by a low brick terrace wall with a fine wrought-iron gateway giving access to the working gardens provided for each family. Surrounding the quadrangle are low walls with steps leading to the sunken garden.

On the north side is a forecourt 200 by 50 feet, five feet above the road level, and laid out with walks, grass plots, flowers and shrubs. The walls are of sand faced brick, roofs of red tile,

ILLUSTRATIONS ON THIS PAGE ARE TYPICAL OF THE WORK DONE IN PORT SUNLIGHT.

woodwork of oak. Each house has upon the ground floor a living room, bedroom, scullery and larder; on the first floor a bedroom, and large store room.

A consistent effort was made to preserve the quiet charm and character of the English homes and no part of the undertaking was slighted—the minutest detail receiving the most careful consideration. To the north-east is a matron's cottage with two sitting-rooms, kitchen, three bedrooms and bath; while to the south-west is a fully equipped laundry.

The building cost $55,000, furnishings approximately $10,000, gardens, etc., $4,500. Each occupant being a deserving person, is given a weekly sum for maintenance.

———————

THE CHIEF OBJECT of the promoters of the garden city idea has been to bring about a spontaneous movement of the people back to the land by creating conditions that will give them the advantages of city and country life combined, and to keep the whole thing on an economic basis that will afford comfort and prosperity to people of very moderate means. This is done by purchasing a tract of undeveloped agricultural land and building upon it a town or village that is planned as a whole and built without the disadvantage of having to overcome bad existing conditions. This means a great saving from the beginning and, as ground rents are all based upon the original value of the land and the greater part of the revenue derived from the rental of buildings is applied to the improvement of the town, the shareholding tenants naturally receive pretty good returns from their investment. The Co-partnership Tenants' Societies are co-operative associations which build and own cottage property developed on garden village lines and held in common by the society. They are the latest outcome of the co-operative idea which in its youth, in the days of Robert Owen, dreamed of the ideal community, but the communities that attempted to put it into effect failed because they were the result of despair with general conditions rather than of any hope of altering them. They were to be a refuge from the world and were to be self-supporting. The modern Tenants' Society recognizes itself to be only a part of the larger community and is based upon the truth that the recognition of obligations toward one's neighbors develops the spirit of citizenship toward the larger whole. There are already in England ten of these societies, affiliated with a central society which organizes all the business dealings. This central society has, for example, a central trading department which enables the affiliated societies to pool their orders and buy their building materials more advantageously in bulk than would be possible if they worked independently, to avail themselves of the services of the best architects and builders, and to do everything on a large scale. All the tenants are shareholders and the rules of

HOUSES IN PORT SUNLIGHT, ENG.

the society provide for an equitable sharing in the advantages of all profits and also for security against loss in the event of death or removal. Without them the garden city movement would hardly have developed as rapidly as it has, but with them there is practically no limit to its far-reaching influence.

Mr. Ebenezer Howard, in a little book entitled "To-morrow," about ten years ago evolved the commonsense scheme—not a new proposition, but one formed from the strongest features of three old ones—of developing along sound economic lines the building of garden cities and suburbs which should combine the advantages of town and country; adding to this a practical working plan by which these might be built largely by the tenants themselves.

COTTAGES IN EARLSWICK VILLAGE, ENG.

We who are interested in civic improvement on the American continent would do well to add to our plans for magnificent parkways, costly boulevards and great city extensions some consideration of the significance of this garden village movement and what it would mean if it were introduced and put on an effective basis in this country.—*The Craftsman.*

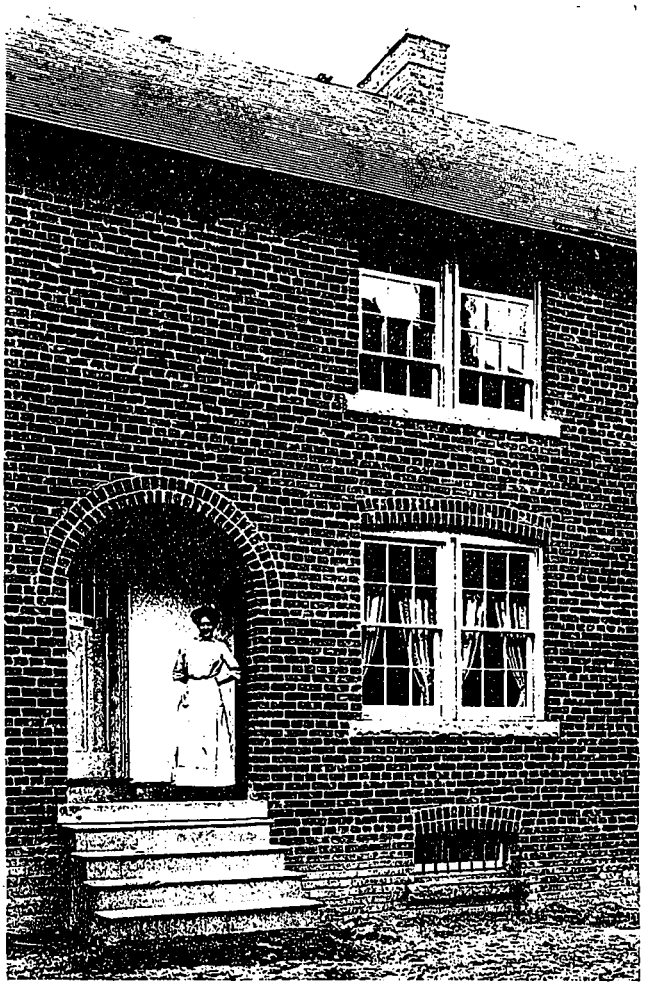
How to Get Cheap Houses*

G. FRANK BEER

SOME OF THE ELEMENTS entering into the construction of cheap houses are: (1) Cheap money, and an ample supply of it; (2) Cheap land; (3) Cheap building material; and (4) Cheap labor.

I put these in the order of their importance. As I do not believe in cheap labor, I probably should not have included this at all. Labor today is not overpaid except in cases where it is inefficient, so that all we should do to economize in this regard is to see to it that we get proper workmanship.

The question of building material will be dealt with by others in the discussion to follow. We can hardly hope to see a reduction in the price of lumber, indeed a continued increase in cost is not improbable. We must therefore look to our brick and concrete manufacturers for any relief in the cost of building material. In England, concrete construction is securing much attention. Messrs. Rowntree, at York, for instance, have built houses containing a large living room, a scullery and three bedrooms, at a cost of £90 each. In America, too, at Nanticoke and elsewhere, houses are being constructed at a very low cost and the rapidly developing use of concrete deserves special attention.



DETAIL OF COTTAGE FLAT, TORONTO.

*Paper read at the National Conference on Housing in America. The illustrations represent the work being done by the Toronto Housing Company in Toronto.

Land.—The cost of land is such an important and increasing item of cost that no effort is too great to make more of it available for housing purposes. Rapid and cheap transportation is unquestionably the goal to be aimed at as the most hopeful means to this end. Much land at present used for farming purposes could be secured at a cost not exceeding $400 an acre. After making large provision for open spaces the cost of each building lot need not exceed $50. At present the cost of land in Toronto approximates $750 for each dwelling. This entails a very heavy charge upon the tenant. It is fair to assume that rentals would be lessened by from three to five dollars a month were cheap land made reasonably accessible.

Having once secured cheap land, the problem then becomes how to retain it at a reasonable price. Without going into a lengthy discussion, I desire to state my conviction that our system of taxation should be reformed and land should bear a considerably heavier tax rate than that placed upon improvements. Further, it is inconceivable that educated communities will forever allow values created almost exclusively by communal activity to be appropriated by land owners who may have done nothing whatever to create such values. I am not advocating the single tax, but surely some amendments to our present tax system are greatly needed, and I know of no other course by which, having once obtained cheap land, we may reasonably hope to retain it at a usable valuation for housing purposes.

It is also my conviction that brick or concrete dwellings of moderate size, of desirable type, and with satisfactory sanitary conveniences, costing not more than $1,250, should be entirely exempt from taxation until such time at least as we are provided with ample accommodation of this character to house our wage-earners. Some encouragement must be given if we are to secure an adequate supply. No one means will be found sufficient, but by all combined it may be reasonably hoped that we shall do something substantial toward meeting the existing great need.

Finance.—We now come to the question of cheap money and an ample supply of it. Believ-

VIEW OF SPRUCE COURT, TORONTO.

ing the proper housing of our people to be a communal and not an individual responsibility, representatives of the Toronto Housing Company approached the Government of Ontario with a request for assistance. We claimed that private initiative had failed always and everywhere to provide an adequate supply of cheap houses for working people, and this being the case it was the duty of the Government, as representing all of the people, to assist in supplying such a vital need. The Minister with whom we had to deal is a man of large vision and great constructive ability—I refer to the Hon. W. J. Hanna. After careful consideration of the whole subject and with our co-operation, a Bill was framed through which the public spirited citizen of any municipality in Ontario may command the financial assistance required to supply necessary housing accommodation.

The Bill referred to provides:

1. That a company, the main purpose of which is the building of dwelling houses to be rented at moderate rents, may petition the town or city council to guarantee its securities, thus enabling it to raise the money to carry out such purposes.

2. If satisfied that such additional housing is urgently needed, and that the object of the company is not to make profit, but to be of bona-fide help in supplying such need, the council may, with the assent of the ratepayers, pass a by-law authorizing the giving of such guarantee.

3. The assent of the ratepayers is not necessary if the by-law is approved by the Provincial Board of Health.

4. The council must approve the location of the land, the general plans of the houses, and the form and terms of the securities to be guaranteed.

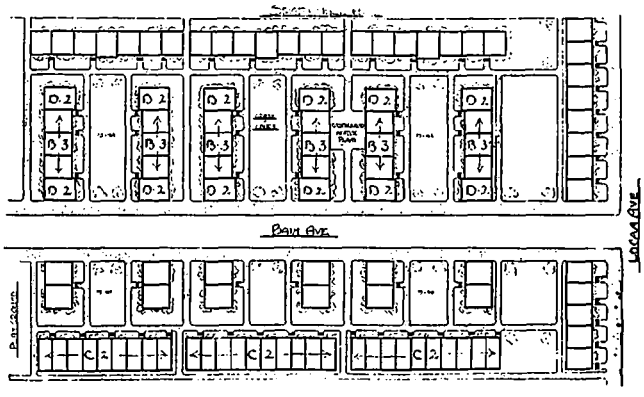
5. The total amount of securities guaranteed shall not exceed 85 per cent. of the total value of the lands and housing accommodation.

6. The council has the right to appoint one member of the board of directors of the housing company.

7. The books of the housing company shall at all times be open to inspection by the council.

8. No dividend upon the capital stock of the housing company shall be declared or paid in excess of 6 per cent. per annum. Such dividends shall be cumulative.

9. Any net profits received by the company in any year, and not required to pay the 6 per cent. dividend referred to, may be expended in acquiring the capital stock of the company.



PLAN OF COTTAGE FLATS, BAIN AVE., TORONTO.

10. After four years of operation the company shall, if requested by the city council guaranteeing its bonds, take steps by which the city itself shall acquire the stock of the company, paying therefor no greater premium than 10 per cent.

This Bill received the support of the leader of the Opposition, Mr. Rowell, and was afterward enacted by the unanimous vote of the Ontario Legislature.

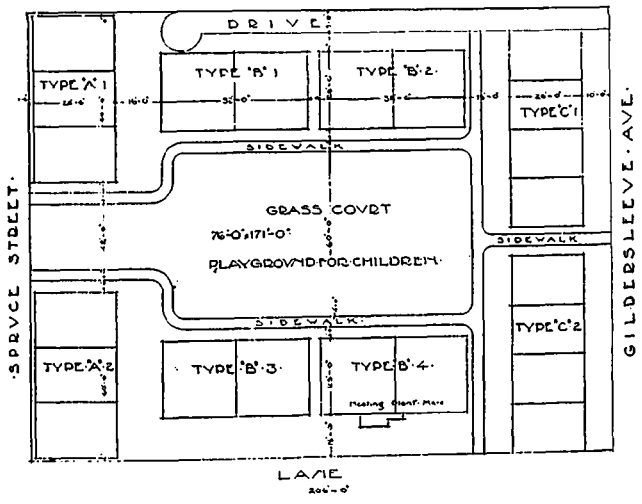
The principles underlying this Act which in our judgment seem wise are:

1. Where private initiative fails to provide an adequate supply of a pressing necessity the Government should and will lend its assistance to supply the need.

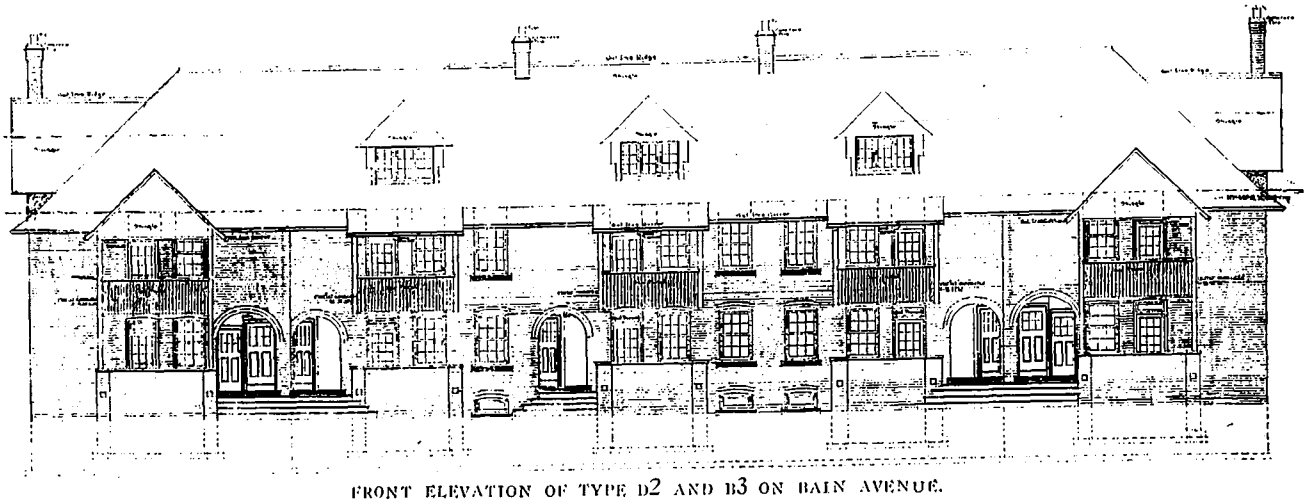
2. The principle of encouraging the voluntary co-operation of citizens with the Government in the solution of social problems.

3. The desirability of leaving the administration of such enterprise in the hands of those interested.

4. In undertakings, which by their nature,



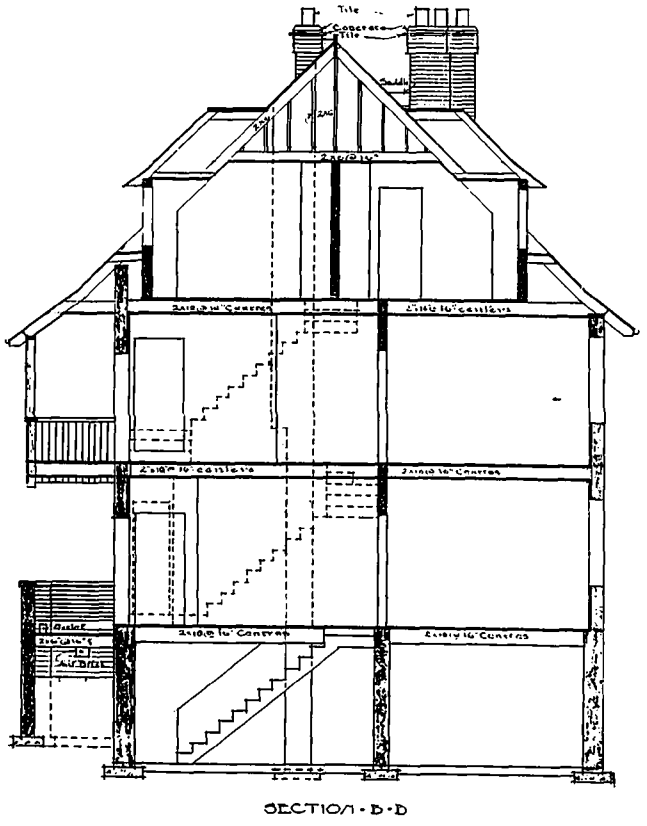
PLAN OF COTTAGE FLATS, SPRUCE COURT, TORONTO.



FRONT ELEVATION OF TYPE D2 AND B3 ON BAIN AVENUE.

create a value which is the direct result of Government co-operation, such value (after providing for the repayment with interest of the private capital employed) shall belong to and be employed for the benefit of those co-operating. In the case of our housing company the co-operators outside of those supplying the capital are the city, through its guarantee of the bonds, and the occupants of our houses.

In framing this Act it was borne in mind that many persons though willing to assist pecuniarily in furthering the object of our housing company, were not able to do so; others though able, were indifferent or not willing. It was therefore necessary to devise a plan whereby all so disposed might be appealed to for assistance without too much pecuniary sacrifice being called for, and whereby also the municipality might take its proper share of the responsibility involved.



SECTION · D · D

TYPE D2 AND B3 ON BAIN AVENUE.

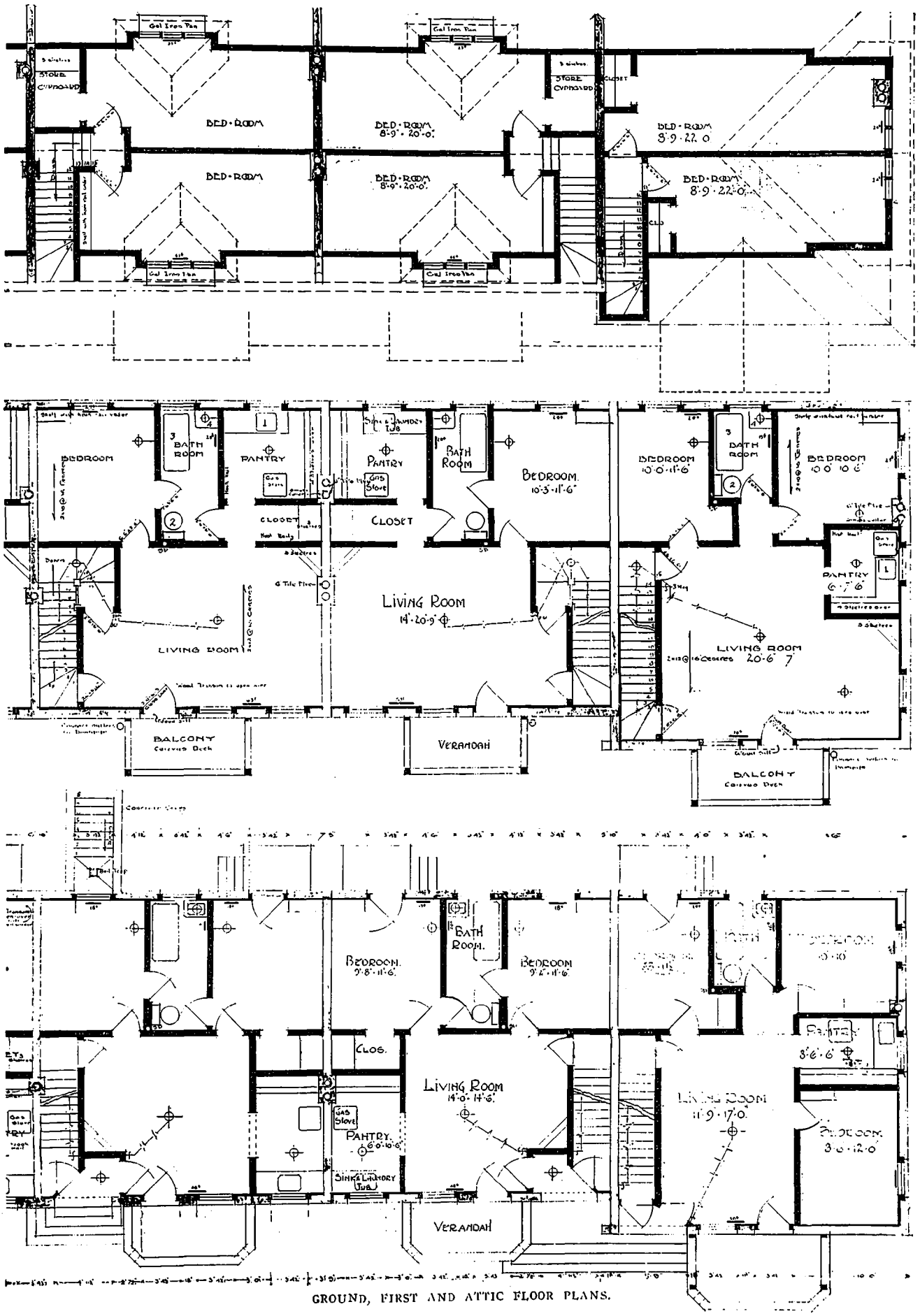
Under the power granted by this Act our company applied to the Toronto City Council for a guarantee of 40 year bonds to the value of $850,000. The matter was fully explained to the aldermen and the council guaranteed the full amount by a vote of 21 to 2. This $850,000 guaranteed by council together with the $150,000 provided by our shareholders forms the first $1,000,000 unit of our building operations. We have already sold $650,000 of these bonds which bear interest at 5 per cent.

A few days later we secured the approval of the Provincial Board of Health so that a vote of the ratepayers was not required and we were enabled to proceed with our plans without delay.

You will see by the above that we are conducting building operations upon a large scale. The reason is that we desire the overhead charges of management, offices, etc., to bear as lightly as possible in the form of rent upon our tenants. It will probably be found that the expenditure of further large sums will prove of equal advantage to the housing company and its tenants.

In a young country such as Canada, industrial development and trade expansion call for our entire financial resources. Without the co-operation of the municipalities which are suffering from overcrowding and similar evils, no really effective building development is possible. We do not destroy private initiative or public spirit, but supply these with machinery to make their good will effective.

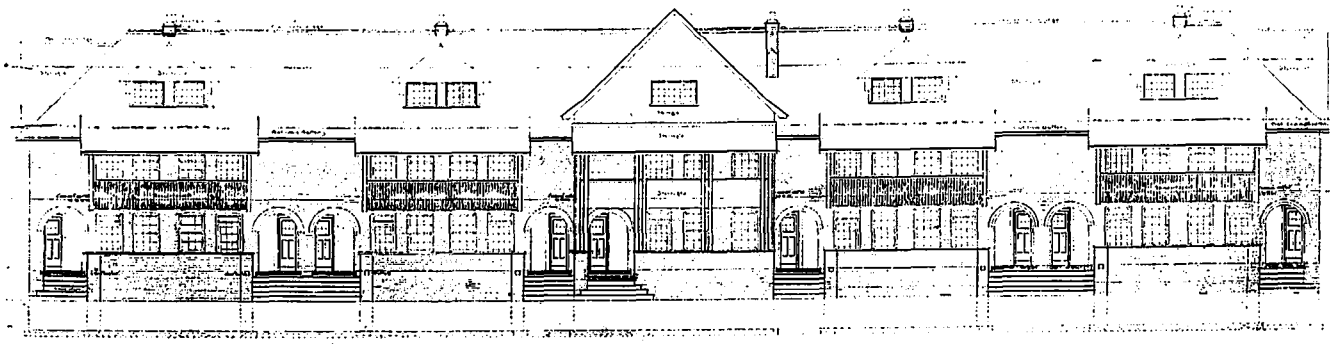
The estimation in which the Act is held is well shown by the reference made to it by Mr. A. R. Clarke in his retiring address as Chairman of the Toronto Branch of the Canadian Manufacturers' Association. Mr. Clarke in part said:—"As a result of this Act, the Hanna Act as it is now called, a number of municipalities are now seeking to develop housing schemes in keeping with its provisions. In making provision for



GROUND, FIRST AND ATTIC FLOOR PLANS.

COTTAGE FLATS, TYPE D-2 AND B-3, ON BAIN AVENUE, TORONTO.

EDEN SMITH & SONS, ARCHITECTS.



FRONT ELEVATION OF TYPE c2 ON BAIN AVENUE.

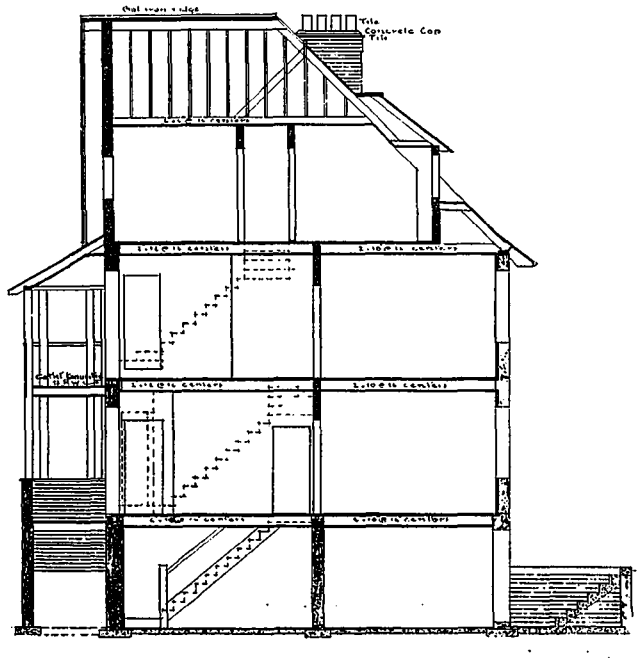
the health and comfort of that class of labor which industry so much requires, it will give a tremendous impetus to manufacturing in Ontario.

"This Act removes the financial barrier that has hitherto existed by providing the means for securing cheap money. Henceforth there should be no excuse in any city or town in this Province for the existence of unsanitary housing, and manufacturers, not only in Toronto, but throughout Ontario, should accept this as a challenge to themselves to see that the health and comfort of their employees is properly provided for."

As before stated the principles underlying the Act are: (1) Private initiative; (2) Government encouragement and guidance; (3) Public co-operation. I believe you will agree with me that this is legislation of a high order. It has already developed public spirit and inspired public service.

Other elements that enter into the final cost of buildings are:—

Durability.—In all construction it should be borne in mind that we are building for 40 or 50 years' occupancy. The ordinary jerry-built house deteriorates so rapidly that within 10 or 15 years it has lost its "respectability," and provides no longer a type of housing with which we would wish to be associated.



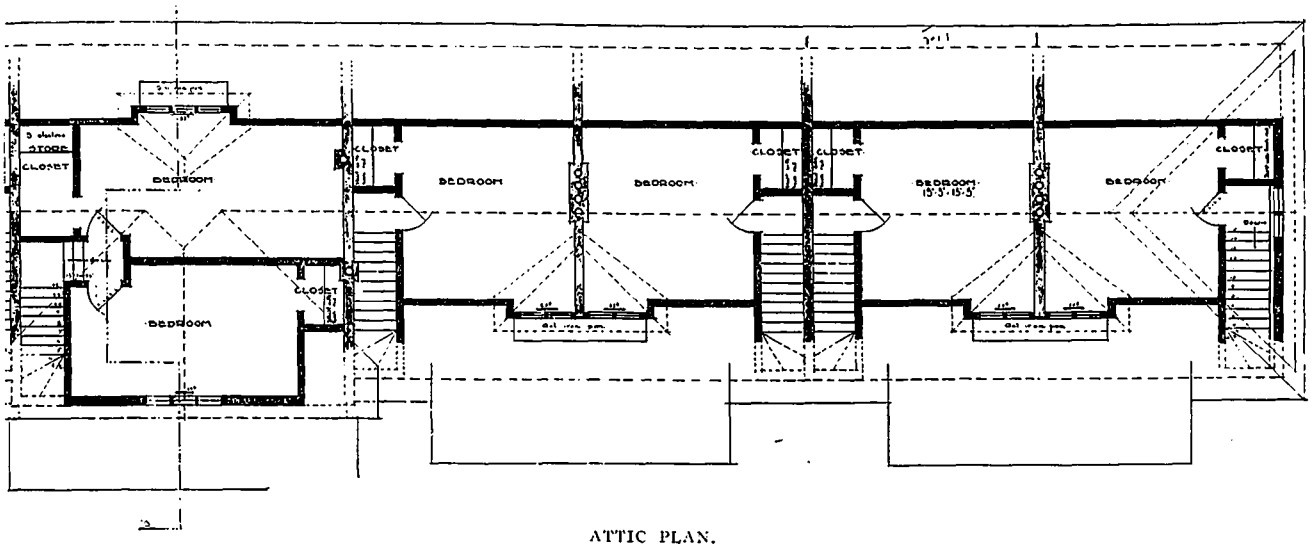
SECTION OF TYPE c2 ON BAIN AVENUE.

Attractiveness.—To build so that our houses will never lack tenants is to exercise true economy. During the coming years we hope to see a marked improvement in housing conditions. Let us build so that our houses will still be attractive after 20 years' occupancy and in keeping with the progress we hope to see realized within that period.

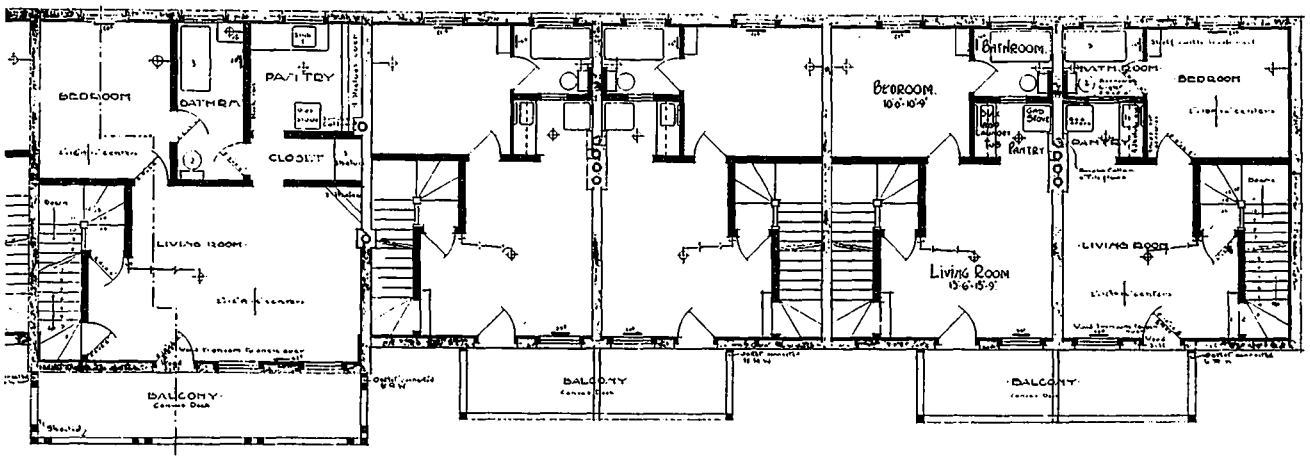
Town Planning.—We may reasonably hope for large economies from the general adoption of good town planning. The aesthetic values of such planning have been over emphasized while the economic gains, present and future, are not yet half appreciated. We earnestly wish for town planners the success their efforts merit. No new districts should be developed without their advice being had.

Industrial Suburbs.—To bring the factories of our large industrial enterprises into a proper relation with the homes of their employees is another method of reducing cost. Suburban industrial developments are to be most highly commended. Not only do they mean a saving in cost of land for all concerned but they mean more attractive houses for the workers, a saving of 50c. a week in car-fare, and, most valuable of all, an hour or possibly even two hours each day added to the time which may be spent at home. Gardening and other healthful recreations are made possible. All of this has money, social and moral value.

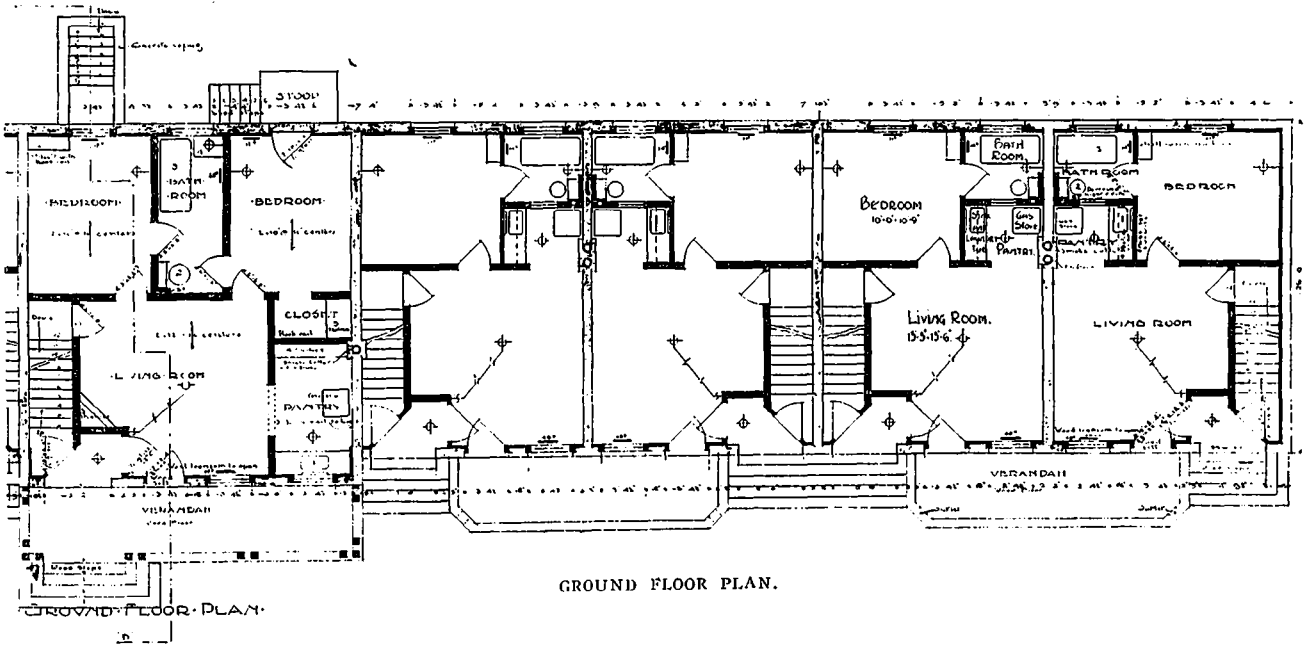
Housing By-Laws.—The restrictions of housing by-laws are adding materially to building costs to-day. A note of warning is not altogether unnecessary. If we, by regulation, increase unnecessarily the cost of new and desirable houses, by just so much do we increase the rental value of existing less desirable houses. A six-roomed house at $25.00 a month is a six-roomed house in Toronto whether the bedrooms contain in floor space 100 sq. feet or over as required by our existing laws or 80 feet as formerly allowed. I am not arguing for the latter—100 sq. feet is possibly a desirable mini-



ATTIC PLAN.



FIRST FLOOR PLAN.



GROUND FLOOR PLAN.

COTTAGE FLATS, TYPE C-2, ON BAIN AVENUE, TORONTO.

EDEN SMITH & SONS, ARCHITECTS.

mum for a sleeping chamber, but after all it depends primarily upon its fresh air and bright sunlight for living value and not upon floor space or cubic contents. All who have slept in small rooms well ventilated and large rooms poorly ventilated can speak with knowledge of their relative rest values.

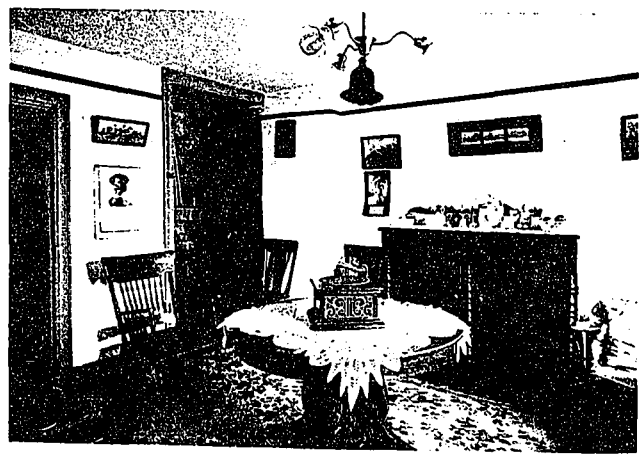
ROOM IN COTTAGE FLATS, TORONTO.

So, too, with the proportion of vacant land to ground floor space. A house to most dwellers in the city is primarily a shelter and its livableness depends upon air and sunshine and sanitary conditions rather than upon the size of the yard. If the yard is ill-kept and surrounded by apartment houses it may contribute little of value to the dwelling. In our Toronto developments we have provided small yards only—simply a place to dry clothes, etc. The ends of the yards have been "moved" to the fronts of the houses and by a combination of these fragmentary yards we provide grass courts in front of the houses where the children find a real playground for their mutual enjoyment. As the living rooms of the houses, each with their little verandah, face this court, the mothers are able to keep an eye on the children without being called away from their housework. In developments of this type the Toronto Housing Company have four grass courts, three 80 x 160, and one 60 x 140.

In Toronto many of the lots are narrow and deep, the space between the rears of houses being over 160 feet. With a different planning many more desirable houses might be built, thus reducing the cost of land. In one case we bought over 300 feet frontage on each side of a city block. The lots are 125 feet deep and the rears adjoin without a lane between. We are building almost solidly upon the street frontage and reserving two inner grass courts each 90 x 100. One of these will be used in common by our tenants as a bowling green, the other as a safe playground for the small children, where they may play unmolested by motor cars. This will not reduce the cost of the houses, but it will be the means of giving more for the money, a result equally to be desired.

Superintendence.—Whether the cost of building will be lessened by employing a superintendent of works and competent foreman and laborers is a question upon which information is desired. That the houses would be better built is possible; I am not sure that the cost would be lessened. Up to the present our own development has been by contracting. As we are still in the initial stages of our building, we may be able to give comparative results at a later conference. Meanwhile, we are anxious to receive information derived from actual experience under both plans of operation.

Re Housing.—The activity of a municipality in acquiring run-down or unsanitary properties and building for those actually dispossessed is well illustrated by the work done at Liverpool. The chairman of the Liverpool Corporation Housing Committee says: "Liverpool realized that it was a question of poverty and that the best solution was to build for the identical people turned out at the spot where they were turned out and at rents which they could pay." Up to the end of 1912 the city has spent £1,135,000. The cost of this policy to the ratepayers is £22,700 per annum, £9,000 of this amount represents the sinking fund by which the property is paid for and which property will become a most valuable corporation estate in years to come. The death rate in the districts affected has fallen from 50 per thousand to 27 per thousand. Liverpool spends £80,000 a year on hospitals and £129,000 a year on cleaning, the sum of £22,000 a year does not appear to be too much to spend in saving human life. As showing the further value to the community as a whole it should also be added that offences of persons residing in the neighborhoods so improved, which in 1904 amounted to 202, fell in 1912 to 4. In the light of this great achievement we may well hold that "Man has no need to bemoan his neglect of impossible and remote



ROOM IN COTTAGE FLATS, TORONTO.

tasks, but only his failure to perform the near and possible."

The subject of how to get cheap houses is one that will confront us for many years. It is a permanent problem. If it will be thought desirable to make this a feature of future meetings, I would respectfully suggest that the question be sub-divided into sections, each to be dealt with in brief papers. In this way a valuable body of concise information based upon actual experience will be made available in a permanent form for all our members.

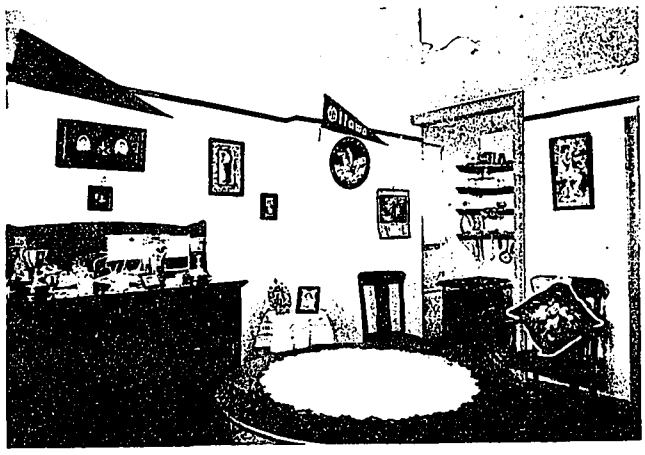
Some of the sections into which the subject would naturally fall are:

1. *Ground Plans.*—Maximum desirable use of land. Economical planning of sub-division. Relative saving in blocks of different housing units. Garden allotments, grass courts and squares. Garden suburbs.

2. *Indoor Plans.*—Large living room and small kitchen, vs. large kitchen and small parlor. Cost and desirability of basement. Size and location of bath, closet and laundry tub.

3. *Materials.*—Durability and up-keep of stucco. Concrete vs. bricks for basements. Tiles for partitions, walls, etc.

4. *Construction Details.*—Economic size in lumber. Standardization of doors and windows. Effect of joists left exposed without ceiling. Roofs: flat vs. gable; shingles vs. slate, tiles or asphalt board.



ROOM IN COTTAGE FLATS, TORONTO.

5. *Finishing Details.*—Paint vs. stain. Hard plaster vs. sand and lime plaster. Wall paper vs. kalsomine or other similar finish. Desirable forms of trim, door and window frames and stairways. Mantels.

6. *Fittings.*—Minimum larder, dresser and clothes closet equipment. Locks on all doors, vs. locks on outside doors with bolts and latches for other doors.

7. *Heating.*—Central heating plants, hot air, hot water, steam, kitchen ranges, fire-places.

8. *Ventilation, Refrigeration.*

9. *Management.* — Building by contract vs. purchasing material and engaging superintendent of works. Basis of rentals. Provision for up-keep whether by tenant or owner. Method of rent collection.

ROOM IN COTTAGE FLATS, TORONTO.

10. *Method of Finance.*—Co-partnership. Government co-operation. Municipal guarantee. Private shareholders. Plans for purchase by instalment. Plans and photographs of new buildings, showing ground arrangement, with actual costs where possible of masonry, carpentry, plumbing, heating, etc. Management of houses after occupancy.

Some of these details may appear to be unimportant, but unnecessary expense is doubtless incurred owing to lack of information upon them. No doubt too, some would be encouraged to build small houses if practical and ample information were easily obtainable.

In conclusion may I be permitted to add a few words upon the general subject of housing.

A clear view of our aim must precede any permanently valuable plan of operation. It is the reform of existing conditions we seek, a solution, not a palliation, of the housing problem. To build houses for those who need them is good, to make it possible for people to build and own their own houses is better. Let us not lose sight of the real object of our effort, whether we are engaged in securing legislative reforms, assisting in the enforcement of sanitary laws or occupied in the construction of cheap houses.

The more we are compelled to seek cheapness in order to supply houses at a rental the tenants can afford, the more we should seek the cause lying hidden behind the existing need. The demand for cheapness below a certain level must mean that something is wrong with our social or industrial machinery. If we build down to a level which is not in itself desirable and productive of lasting advantage, we will not be using our energy wisely. To build below a level upon which our people should live may mean the establishing or perpetuating of a

wrong social condition and doing little to supply a remedy. It is the remedy we seek. This at least is sure, that for every dollar spent in housing of a type not permanently desirable, two dollars should be spent by the city, State or Federal Government or by all combined, in seeking, finding and remedying the causes that render such lower level of living necessary.

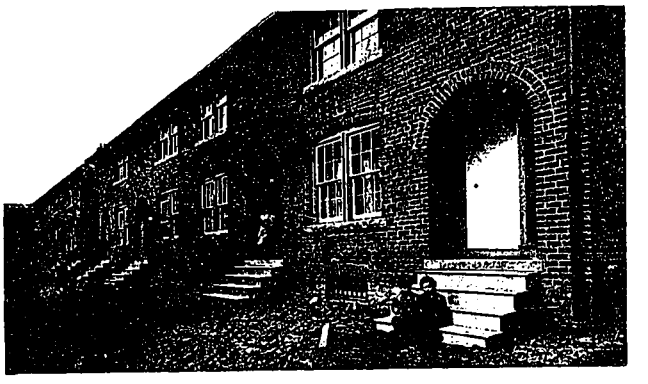
Housing is a communal responsibility. Water, sewage and other public services are not more necessary to our citizens than are decent houses to live in. If individual initiative fails to supply these, it is the duty of the city or State to step in and supply the need. Our civic well-being, to say nothing of our national existence, is directly involved. I do not believe in building down to a level of which we should be ashamed as a people. Let us build on a plane which we hope may become the minimum at a near future. Let us leave to the charitable, to philanthropists and to social reformers the task of accelerating that future. If we do this we shall at least know that we have done nothing to postpone a greater degree of social justice and nothing to blind the State from a clearer view of its responsibility toward a large number of its citizens.

THE third National Conference on Housing in America was held in Cincinnati, December 3-5, 1913, under the auspices of the National Housing Association. The program presented many topics of interest to city dwellers, as the problem of cheap homes was taken up in all its various phases. The delegates were given a practical demonstration of the tenement house problem in respect to the ameliorating of conditions in such districts by visiting the densely populated portions of Cincinnati. During the inspection the work already accomplished in

REAR ELEVATION, SMALL COTTAGE FLATS.

that city was pointed out in striking contrast to the former state of affairs.

During the conference George E. Hooker, civic secretary of the Chicago City Club, in an address on "Garden Cities," pointed out the advance which has been made in giving breathing spaces and parks to city dwellers. Light, air, land and a reasonable amount of the amenities of home life is being denied to thousands in cities, on account of crowded conditions, and this, he said, the garden city would prevent. This garden city movement, which began in



FRONT ELEVATION, SMALL COTTAGE FLATS.

England, and is rapidly spreading, has now become divided into garden cities proper, and also garden villages and suburbs. The advantages of numerous small parks and playgrounds in every community as a health and financial investment were told of in detail.

Mr. Hooker, in speaking of garden cities, said: "It surely cannot be necessary to enforce upon any person who goes about modern cities with eyes, ears and nostrils open, the progressive deterioration and destructive influence of many features of urban life. The harsh noises from the wheels, hoofs, brakes, and signals of the geometrically increasing amount of communication in great cities, as it has been allowed to develop, are ever beating more and more loudly upon the ears of the active members of the population. There is not a street in the central part of Chicago, or any other great city of the western world, where one can walk without one's nostrils being filled with the dust and gas of automobile traffic. The eye of the passer-by along the common city street is assailed with a panorama of architectural anarchy, disordered sky-lines, littered lots for sale, and general ugliness, which demoralizes people, save as it provokes them to revolt, and which is so prevalent and persistent that it largely tires out and defeats revolt.

"These conditions are steadily overcoming and defeating the sense of the sacredness of human life, even as against violent and dramatic forms of death. In Chicago, 1,195 deaths from accidents occurred in 1911, an increase of 26 per cent. in five years, or twice the increase in population. This increase is probably largely because well-to-do people, in seeking to get away from these conditions by their automobiles, ride down the common people, who cannot of themselves get away from them. We cannot blame

those who can do so from trying to get away from them, but just to flee is not to deal with the situation.

"Europeans have taken steps to learn the facts in the case far more than we have. It is known that 70,000 people in Dublin are living in tenements of a single room, that of the nearly one million of British mothers, annually, 95,000 lose their babies within a year of birth; that, as a rule, only 1,000 out of 7,000 youths offering themselves for the British Navy are, on examination, found fit; that only 38 per cent. of the young men in Berlin are fit for military service. Germany, indeed, in her military policy, is adopting systematic gymnastic training in the schools in an effort to counteract the physical deterioration caused by city life."

Another division of the conference listened to an address by Arthur C. Comey, of Boston, on "Co-operative Housing." He said the problem of housing is three-fold, architectural, social and financial. He continued that the only proper way to do away with the old system of landlords, so-called, was to apply a limited dividend system, speculative profits being eliminated and the money returns fixed, commensurate with the risk involved and at a fair percentage to the builder. Wholesale co-operation is likewise a fundamental principle, according to Mr. Comey, in erecting proper housing at a minimum and reasonable cost to the resident. Another principle involved is the participation and interest in the work by the resident of the building. This paper was discussed by W. S. B. Armstrong, of the Toronto Housing Company; C. S. Bird, of Massachusetts, and P. R. McNeille, architect, New York City.

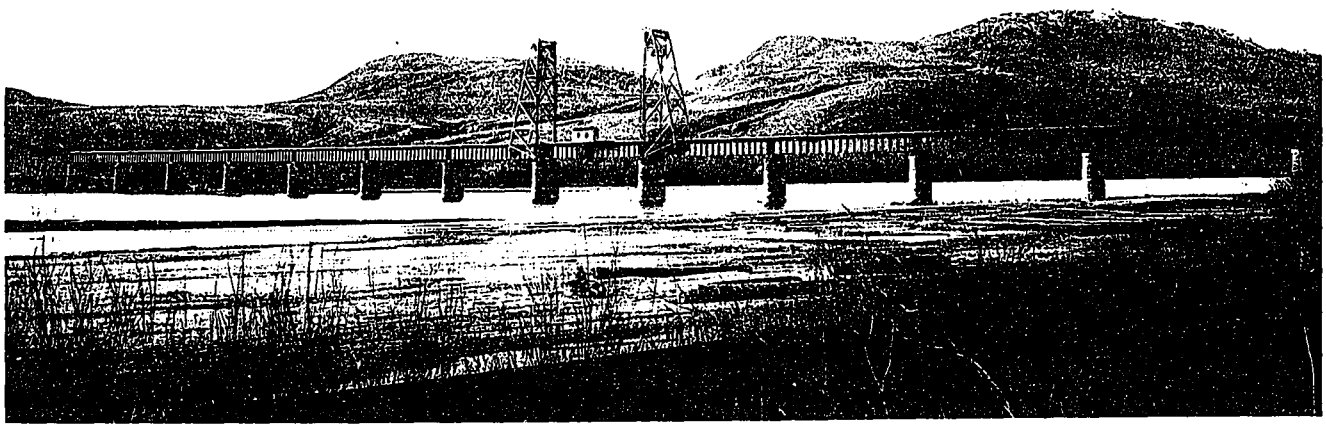
The relation of what is known as the "housing problem" to the taxation of improvements was made clear in an address on "How to Improve Housing Conditions," by John J. Murphy, Tenement House Commissioner of the City of New York. Mr. Murphy told of the splendid work done by the commission of which he was a member to improve sanitary conditions, and reminded his hearers that under the law the fashionable apartment house was just as much a tenement house as the crowded houses where the poor find shelter. He stated, in fact, that the careful father of a family nowadays would not think of allowing his children to dwell in some of the domiciles which were deemed desirable apartment houses a few years ago, but which were wholly unsanitary. But dealing with what we ordinarily understand as the tenement house, he said:

Tenement house construction can only be carried on as a commercial enterprise, and it must be made to pay. And, broadly speaking, it does not pay to provide homes for the very poor. In order to be near their work, they live on dear land, and where land is dear no devices of construction and no economy of space can put rents very low. The old story of the dog who learned to wag his tail up and down instead of sideways because his owners lived in a flat humorously symbolizes a sad situation. The narrowness of the lives of the poor, has a double significance in New York. Philanthropy has only touched the hem of the problem. However generous, it is powerless to materially alleviate an evil whose roots draw their sustenance from economic forces. These forces which might be made the engines of economic uplift, when improperly applied, steadily press downward on the submerged tenth, and tend to make the fraction larger. If we would solve the problem before us, we must study them to see if they cannot be made to work regeneration.

Treating of solutions, Mr. Murphy said there were three. Dealing first with municipal housing as adopted in some European cities, he declared that nowhere had operations been conducted on a large enough scale to do more than skim the surface of the depths. Taking up cheap transportation—which at first sight seemed a hopeful *solution,* he declared that the advance in site valuations consequent thereon, defeated the expectations of those who advocated it. The only real solution, in his opinion, was the abolition of taxation on improvements, and he came to Canada for his examples. These were his words:

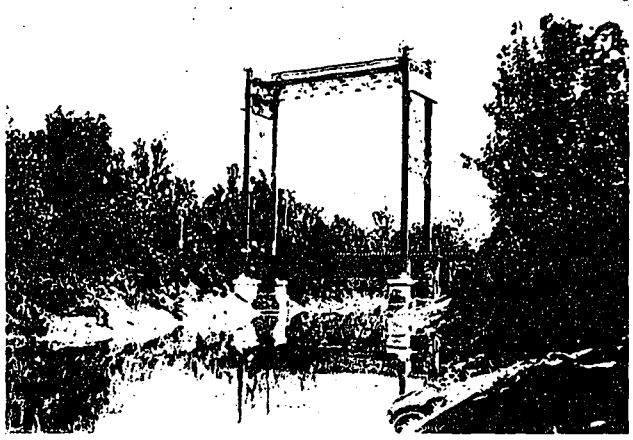
Improved methods of taxation may yet solve the problem which has defied so many solutions. The unprofitableness of tenements now often proceeds from the short-sighted policy which taxes heavily improvements while leaving mere speculation to escape with a minimum burden. The tax bills of tenement houses and small private houses are often enough to discourage would-be owners. We fine men for their industry, and reward others for their sloth. Where we need so many homes, we should do everything to encourage their production, whereas we penalize them heavily. I hope to live to see the day when no man who puts his money into the production of goods or houses will be taxed because he does so.

A number of Canadian cities, especially Vancouver, are now trying the experiment—so far with conspicuous success—of exempting improvements entirely. While this may seem fantastic, I can see no other way by which the "Housing of the Poor" can be lifted from the dismal swamp in which it is now submerged. No one can appreciate more keenly than I, that the way of this plan is beset by many difficulties. In New York we have capitalized congestion and built the city's credit on this insecure foundation, but I have faith that the way out of the mire will be found.



Lift Bridge at Kamloops, B. C.

THE Canadian Northern Railway has recently completed a girder type lift bridge across the North Thompson River at Kamloops, B.C., 1,209 feet long with additional approaches of 1,123 feet. It is the first bridge in the Dominion having a vertical lift span, 93 feet long, and can be raised 57 feet above high water level. The lift span, consisting of a 93-foot deck plate girder, weighing about 236,000 pounds, is balanced by counter weights attached to cables which pass over sheaves at the top of the towers. There are four (4) one and one-quarter inch cables at each corner of the span, while on the span side equalizers are used to distribute properly the load to each rope. The span is guided along the sides of the front tower columns during its movement, the guides being detailed so as to allow proper movement at the expansion end under temperature and live load changes. The counter weights are likewise guided along the sides of the towers. Centering castings are used at the ends of the span to bring it in proper alignment when seated, which castings take the thrusts from the trains. Special rail castings are used at the ends of the lift span to give continuity to the rails at these points when the bridge is down, and at the same time locks are provided for each end of the bridge. The span is raised and lowered by means of cables fastened at the top and bottom of the towers. These cables, which pass over drums at each corner of the span, are actuated by a system of gears and shafts connecting to a gasoline engine at the centre. All machinery is below the deck except the operating levers and indicator, which are located in the operator's house, supported at the level of the deck from the side of one girder. A limit switch is used in the igniter circuit to cut off the engine after the span has passed a certain point in both its up and down movements. Contacts are likewise placed on the clutch lever so as to control the igniter circuit in conjunction with the limit switch, while a hand brake is installed for manual control of the engine. The greater part of the machinery is enclosed between the girders just below the deck at the centre of the span, and is accessible from the operator's house by means of a stair and

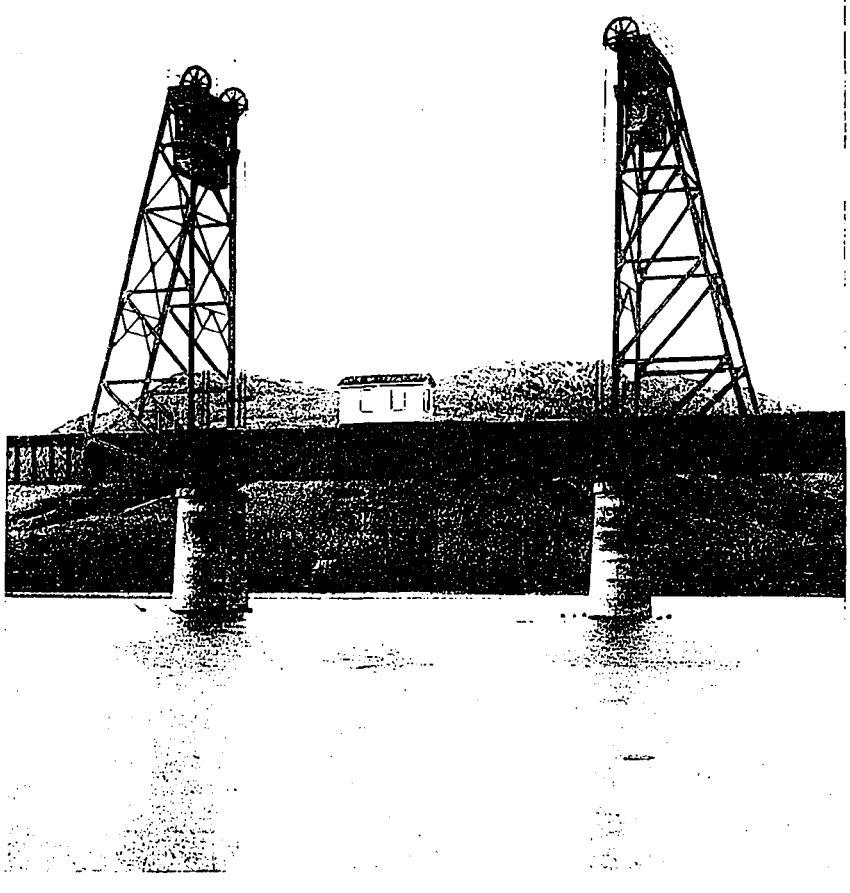


SPAN IN PLACE.

SPAN RAISED.

BRIDGE AT BIG CHOCTAW BAYOU, LOUISIANA.

door through one of the girders. The work is designed to lift the span 53 feet in 100 seconds, providing a clearance of 55 feet above high water. The Kamloops bridge is as yet the first of its type in Canada, while the St. John and Quebec Railway are contemplating the erection of a similar one across the Oromocto River near Fredericton South, N.B. There are only two other bridges of this nature as yet in operation, one over Pond Oreille at Sand Point, Idaho, and the other over the Big Choctaw Bayou in Louisiana, views of the latter being shown herewith, one with span raised and the other in place. This structure has a 50-foot lift span of the through plate girder type, which is fully balanced by concrete counter weights and operated by hand. The span is raised to the full height of 47 feet above high water, or lowered, in ten minutes. The piers are of concrete on pile foundations, similar to the one at Kamloops. It is claimed for the vertical lift bridge that it is a simple span in which all stresses are determinate, like those of a fixed span, economically adapted to a skew crossing, to construction on a grade and to a future change of elevation of grade. Furthermore, it is as rigid as a fixed span and may be paved in a like manner. Since the floor is always horizontal, spans of any lengths may be built, and the longer the span the greater the comparative economy of the vertical lift bridge. The wind has little effect upon either towers or span, for they expose small areas to it. The span is fully counterweighted, so that the operating machinery has only to overcome the friction and inertia, necessitating but one operator, no matter how large the open channel. The Kamloops bridge, erected under the able supervision of H. L. Johnston, Divisional Engineer for the Canadian Northern Railway, crosses from the Indian reserve on the east bank to the British Columbia Fruitlands property on the west, having fourteen concrete piers. The approximate cost of the bridge was $250,000 and was designed by Waddell & Harrington, Consulting Engineers.



DETAIL OF VERTICLE LIFT AT KAMLOOPS.

During the construction of the St. Lawrence Bridge by the C.P.R. four 408-foot spans were erected by launching each span endwise with its rear end supported upon an ingenious truck or buggy, while the forward end was supported on a large scow. This scow consisted of two independent scows with two 100-foot deck plate girder spans placed so as to equalize the load. Anchors composed of concrete blocks each weighing seventy-six tons, were placed 1,500 feet upstream in addition to an "I" beam embedded in the rock. In launching, the span was started by a number of jacks, after which an engine, located where a direct pull could be made from its drum, controlled the whole movement. The four 408-foot spans were alike in weight and general characteristics, but two methods differing somewhat in detail were used in placing them. The two downstream spans were launched on the same set of carrying scows, but with a pilot scow upstream to take up the slack in the cables. The experience gained through launching the two downstream 408-foot spans led to the abandonment of the pilot scow for the placing of the upstream spans. Under this arrangement the new spans were allowed, while travelling, to rub along a specially prepared vertical skidway bolted to the lower chords of the downstream spans already in place. During the work all trains passed over the adjoining spans, which made the average elapsed time for each girder over two hours, while the net moving time was thirty minutes.

CONSTRUCTION

A · JOURNAL · FOR · THE · ARCHITECTURAL ENGINEERING · AND · CONTRACTING INTERESTS · OF · CANADA

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CONTRIBUTIONS—The Editor will be glad to consider contributions dealing with matters of general interest to the readers of this Journal. When payment is desired, this fact should be stated. We are always glad to receive the loan of photographs and plans of interesting Canadian work. The originals will be carefully preserved and duly returned.

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Vol. VII Toronto, March, 1914 No. 3

CURRENT TOPICS

MESSRS. LANGLEY & HOWLAND, architects, have moved to their new offices in the North American Life Building, 112-118 King Street West, Toronto.

* * *

J. H. HAFFA has opened an office for the practice of architecture in the Peterkin Building, Bay Street, Toronto. Catalogues, samples and manufacturers' prices solicited.

* * *

THE ARCHITECTURAL firm of Burke, Horwood & White announce the removal of their offices from 28 Toronto Street to the Ryrie Office Building, corner of Yonge and Shuter Streets.

* * *

THOMAS H. MAWSON has been selected on the personal recommendation of the King and Queen of Greece to prepare a comprehensive plan for remodelling and beautifying Athens. Mr. Mawson in a recent interview speaks of his new work in the following manner:

"One of the most immediate necessities of the city is to provide a site for the new Union Railway Station, which will form a worthy portal to modern Athens. This great scheme is necessitated largely by the fact that within fifteen months there will be direct communication with Paris.

"The next work, which will be carried out in harmony with the views of the British, German, and American Schools of Archæology, will be the clearing away of the accretions of the hovel shanties which have grown up around the Acropolis and the ancient ruins of Athens. Some of these hovels date back almost to the time of the Turkish occupation.

"Great extensions will have to be planned in the ancient city and a great royal processional road will also be constructed between Athens and Piraeus. Sites must be found for new Government buildings, such as the Law Courts. A great water scheme is on foot for Athens, by which water will be brought to the city. In four years the provision of the new water supply will afford the opportunity for placing many fountains and the formation of ornamental waterways and lagoons—all of which will add to the city's beauty.

"One point on which their Majesties are more anxious than any other is the creation of a great public park and gardens and a boulevard system. Any one who knows Athens will realize that this is a prime necessity. Already the King and Queen have done a considerable amount of planting. Some of the hills surrounding the city are completely covered with new growths of native pines and cypresses. The work will be extended in all directions. Experimental gardens will be laid out, in which will be tested all the native trees and shrubs."

The completed scheme will include several areas devoted to housing the working classes. Mr. Mawson won the competition for the design of the gardens surrounding the Carnegie Peace Palace at The Hague. He has also been engaged to replan Vancouver, Calgary, Regina, and Banff.

* * *

THE FOLLOWING method for mixing the top layer of concrete floors has been successfully handled in various parts of America: Iron dust to the extent of 15 lbs. to 30 lbs. is mixed with 100 lbs. of the cement dry, and one part of this mixture to two parts of sand makes the slush for the top coat, which varies from one-half inch to one inch in thickness. It makes a hard and durable floor, thoroughly waterproof, and not slippery. The hardening material is also used to make new concrete adhere to old concrete in repair work.

AT THE FIFTH annual meeting of the Commission of Conservation, held in Ottawa recently, Col. J. M. Burland presented the report of the Advisory Committee on Town Planning, which for some months past has been pursuing investigations with a view to formulating some comprehensive scheme applicable to all the Provinces of Canada. A draft bill was submitted embodying the main features which, in the opinion of the committee, every Provincial Town Planning Act ought to possess. In broad outlines, the draft bill may be said to contain two principal proposals: (1) the creation in each Province of a Department of Municipal Affairs, with a branch specially devoted to town planning; (2) the creation of local town planning boards in each municipality to co-operate with the central authority. It is intended that the Provincial authorities' approval shall be necessary to the legality of all debentures issued to finance town planning schemes, and that they shall possess power to expropriate private property required in the department of a town plan. A part, at least, of any scheme shall be charged back on the property benefited.

* * *

EX-ALDERMAN James H. Garden, president of the Alberta Town Planning and Housing Commission, is making preliminary arrangements for holding a Provincial convention of the Town Planning Commission in Calgary this year. The mayors of all the cities and towns in the Province are being communicated with and requested to lend their co-operation and send delegates to the proposed convention. It is pointed out that the reason for holding the convention here is that Calgary is the logical centre, and has fostered the town planning idea from the start. The housing question is one of the principal subjects which it is proposed to deal with at the convention, if it can be arranged, as those behind the movement realize that cheaper housing must be provided if Calgary is to become a manufacturing centre.

* * *

FEELING that the unrest in Ireland is due to her isolation and that her real salvation lies in a renewed commercial activity, H. E. Tyrrell, C.E., proposes a scheme for uniting the island to England by means of a railway across the Irish Channel. In speaking of the venture, he says: "The most promising of all methods for crossing this deep and navigable channel is by means of a floating tube, either on the surface or submerged. It would consist of a metal shell lined with concrete to give it strength and weight. As the metal would become corroded with rust and finally eaten through, the concrete would still remain, greatly hardened with age. For a tube floating on the surface I would leave openings of 1,000 feet, four to five miles apart, for the passage of ships, the position of the openings being indicated by signals. Beneath these openings the tube would be depressed, leaving 40 to 45 feet of water above it for the passage of the largest ships afloat, which at present does not exceed 36 feet. This would provide for increased draught, as has been done on the Panama Canal. The depressed portions would be connected by easy grades with the surface sections, which must be strong enough to resist all surface disturbances, and to bridge the waves from one crest to another. A tube submerged throughout its entire length, is, however, preferable to one on the surface, for the channel is then all clear for navigation. The tube sections would be built on shore in convenient lengths of 200 to 400 feet, with closed ends, and then towed out into position and sunk. The temporary end dams would be 4 to 5 feet back from the ends, leaving space for the divers when bolting the sections togther. The cost of such a double track tube would be $25,000,000 to $30,000,000."

* * *

"IT IS UNUSUAL for a house, however small, to be erected in France without the services of an architect, who not only draws the plans, but actually superintends the work. Usually it is he who orders the building material and assures himself that its quality is up to specifications and requirements. The contractor and his workmen perform their duties in conformity with the architect's orders, and the latter, who is usually a man of capital, advances the funds required in order that the contractor need not wait for payment until the building is completed. Moreover, the French law imposes on the architect a serious responsibility, since he, as well as the contractor, is responsible for all defects of construction during a period of ten years."

* * *

THE PROVINCIAL Architects Association of Saskatchewan now desire powers similar to those granted by the Legislature to the legal and medical professions, and application to this end will be made at next session. The Association particularly desires to be able to deal with such cases as that which recently came before the courts, in which a man was charged with collecting fees for architectural work although not registered as a member of the profession.

* * *

THE NATIONAL Association of Builders Exchanges at their annual convention held in Winnipeg during the latter part of February, selected Saskatoon as their next meeting place.

Matters discussed at the convention were of a more or less internal character. Resolutions were adopted favoring stricter enforcement of the Mechanics' Lien Act and Workmen's Compensation Act, the establishment of technical schools by the Provincial Departments of Education in the West and urging the Dominion Government to take into its own hands the control of employment agencies. The resolution is as follows:

"We regret to say that none of the Western Provincial Houses of Parliament have manifested any sincerity in carrying out the several amendments to the Mechanics' Lien and Workmen's Compensation Acts, as asked for by the individual Exchanges, as well as the Provincial bodies during the last year.

"While we do not hold out much or any hope that these questions will be taken hold of and dealt with in an impartial and fair spirit, we would nevertheless urge upon the Provincial Exchanges to keep importuning their respective Governments to amend these Acts as have been asked for many years without avail.

"Whereas, the need for technical education is urgent for the better equipment of young men and women of our Provinces, and whereas, these schools have been established as part of the educational system in many countries of the world, be it therefore resolved that we urge upon our Provincial Governments the establishment of technical schools throughout the country at the earliest possible date.

"Whereas, the employment agencies throughout the country are conducted by private individuals, almost wholly without any authoritative control, and whereas in many cases unscrupulous contractors of labor have taken advantage of the ignorance and helplessness of unsuspecting seekers of employment, thereby entailing much financial loss and deception of this class of people, and whereas, we believe that this condition of affairs should not exist, but should be under Federal control, be it resolved . . . that we petition the Dominion Government to take over complete control of the labor bureau question by placing them under the guidance of a Federal officer, or officers, to be operated free of charge to seekers of employment throughout the Dominion, so as to eliminate loss of time and money, and make for more efficient handling of the labor question."

Officers for the year were chosen as follows: Honorary President, W. J. Davidson, Winnipeg; President, C. R. Frost, Edmonton; First Vice-President, J. P. O'Leary, Saskatoon; Second Vice-President, Jos. Bourgeault, Winnipeg; Honorary Secretary-Treasurer, A. M. Frith, Edmonton. Mr. Frith will select a Secretary-Treasurer to assist him with the work of the association.

BURNS LYMAN SMITH, owner of the L. C. Smith Building in Seattle, Washington, Gaggin & Smith, architects, the tallest building in the world outside of New York City, said recently while discussing the planning of this great structure: "Byers' genuine wrought iron pipe was specified throughout. Every influence within reason was brought to bear upon the architects and myself to change to steel, but the more I looked into the merits of wrought iron versus steel, the more convinced I became that Byers' pipe was by far the best." The guarantee of quality offered by the A. M. Byers Company is based on the absolute control of all the steps in the manufacture of its pipe, from the time the ore is taken from the ground to the final delivery of the finished pipe to the purchaser.

* * *

DARTNELL, LIMITED, beg to announce that Mr. W. H. Evans, C.E., has joined their sales staff. Mr. Evans comes direct from Toch Bros., New York City, where he has had a number of years' experience in selling technical paints and waterproofing materials. Besides having a thorough knowledge of technical paints, Mr. Evans is a practical waterproofing engineer and the Dartnell people look for a great increase in their R.I.W. and Toxement business.

* * *

THE TALLMAN Brass & Metal Company of Hamilton are forced through advance orders to build a 50 by 220 foot addition to their factory for the manufacture of electric fixtures.

* * *

THE SUN BRICK Company furnished two million brick for the construction by the Toronto Housing Company of working men's homes illustrated in this issue.

* * *

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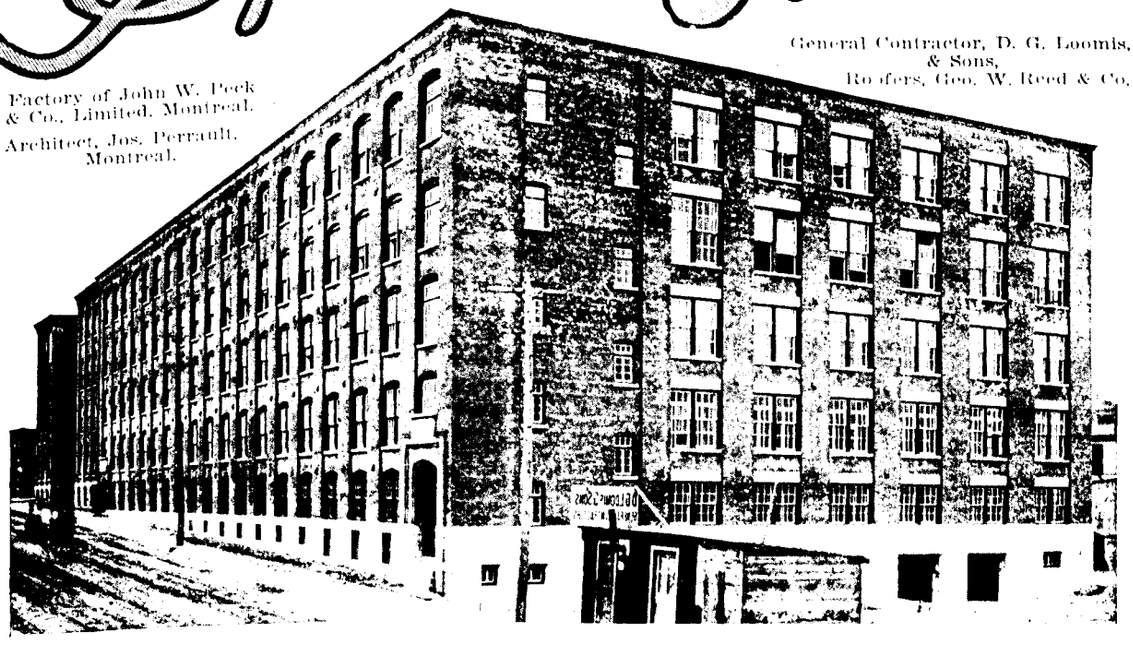

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Wettlaufer Bros.

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Leslie, A. C.
Pedlar People, The.

Sheet Metal Workers.
Feather & Roadhouse.
Galt Art Metal Co.
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Pedlar People, The.
Sheldons Limited.

Shingle Stains.
International Varnish Co.
Robertson Co., James B.

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Dennis Wire and Iron Works.

Sidewalk Lifts.
Otis-Fensom Elevator Co.

Slate.
Robertson Co., James B.

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Dennis Wire and Iron Works.

Staff and Stucco Work.
Canadian Johns-Manville Co.
Hynes, W. J.

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Sheldons Limited.
Taylor-Forbes Co., Ltd.

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Sheldons Limited.
Taylor-Forbes Co., Ltd.

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Noble, Clarence W.
Pedlar People, The.
Trussed Concrete Steel Co.

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Pedlar People, The.

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Dominion Bridge Co.
Reid & Brown.
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Toronto Iron Works.

Structural Steel.
Dennis Wire and Iron Works.
Dominion Bridge Co.
Reid & Brown.
Sheldons Limited.
Structural Steel Co., Ltd.

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Dartnell ,E. F.
Don Valley Brick Works.

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Dunham, C. A. Co.

Varnishes.
Ault & Wiborg Co.
Berry Bros., Ltd.
Brandram-Henderson Co.
Imperial Varnish & Color Co.
International Varnish Co.

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Brantford Oven Co.
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Galt Art Metal Co.
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Pedlar People, The.

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Brandram-Henderson Co.
Dartnell, E. F.
Imperial Paint and Color Co.
International Varnish Co.

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Taylor-Forbes Co.

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Bird, F. W. & Son.
Canadian Johns-Manville Co.
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Robertson Co., James B.
Standard Ideal Co., Ltd.

Wheelbarrows.
Wettlaufer Bros.

White Lead, Putty and Oils.
Brandram-Henderson C.o
International Varnish Co.

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Dennis Wire and Iron Works.

Wire Rope and Fittings.
Otis-Fensom Elevator Co.
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