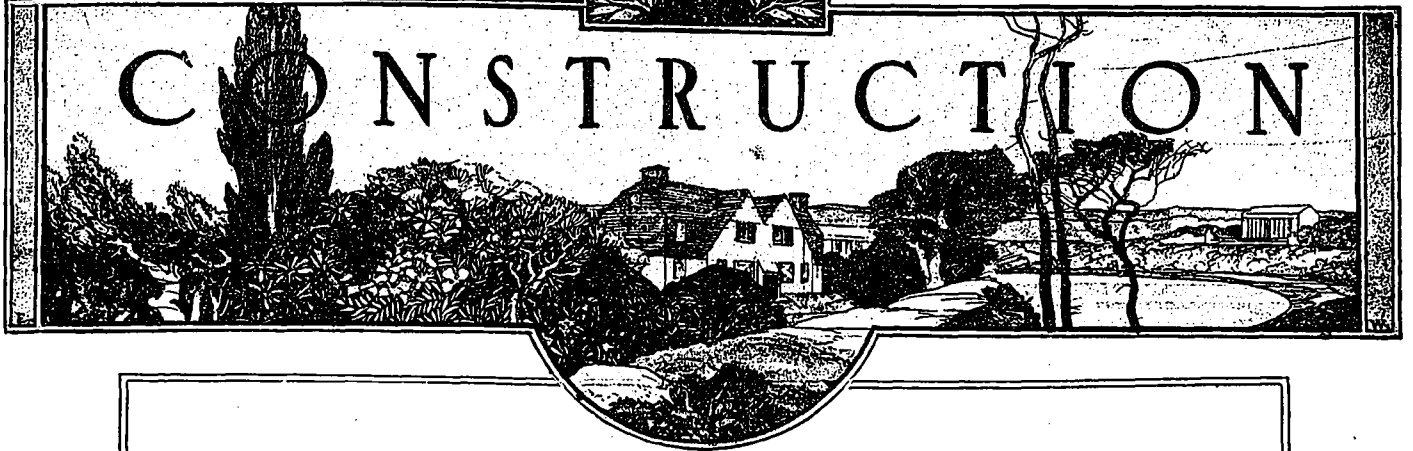


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# CONSTRUCTION



August, 1919

Volume XII, No. 8

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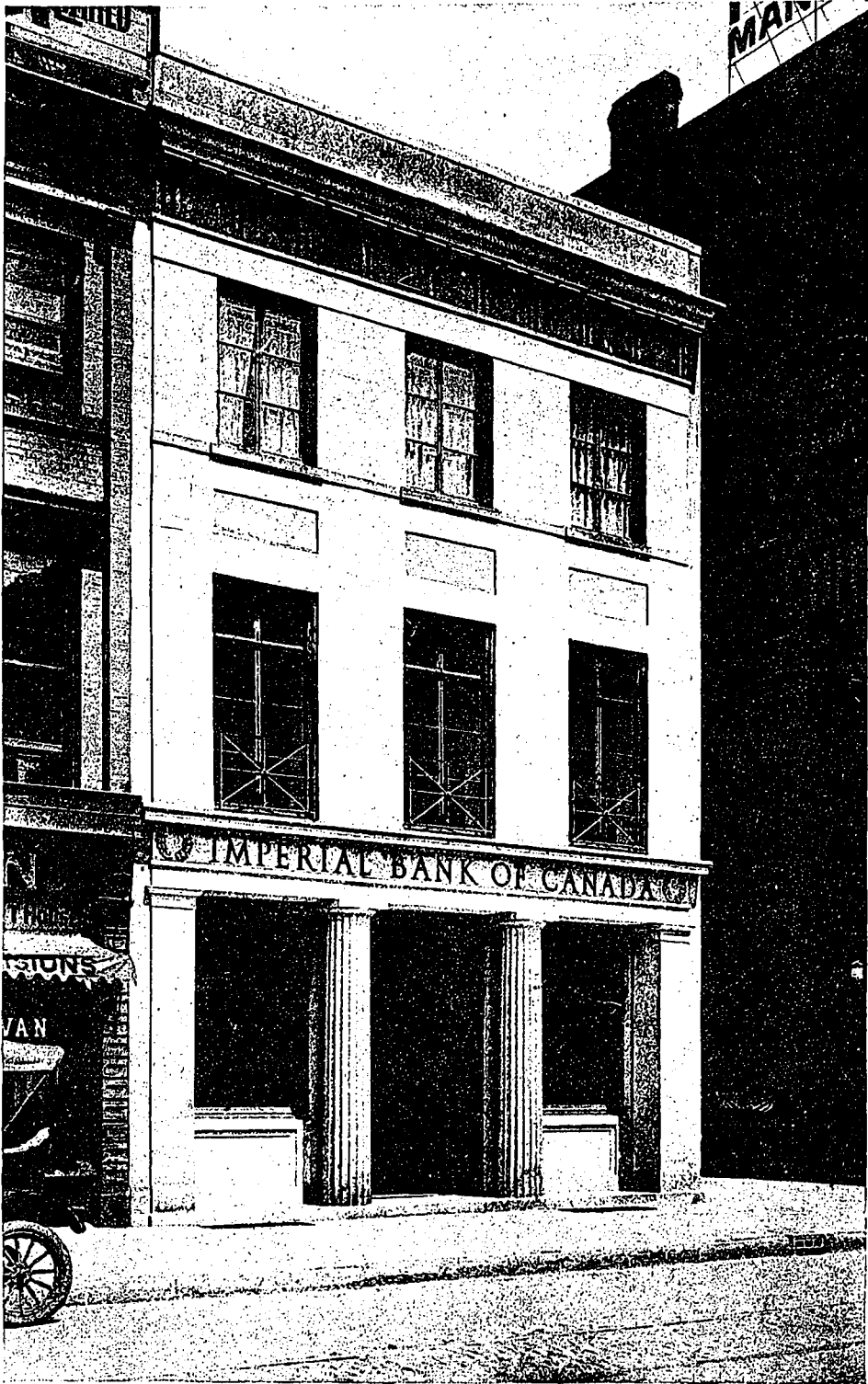
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MONTREAL

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NEW YORK



MARKET BRANCH OF IMPERIAL BANK OF CANADA, TORONTO

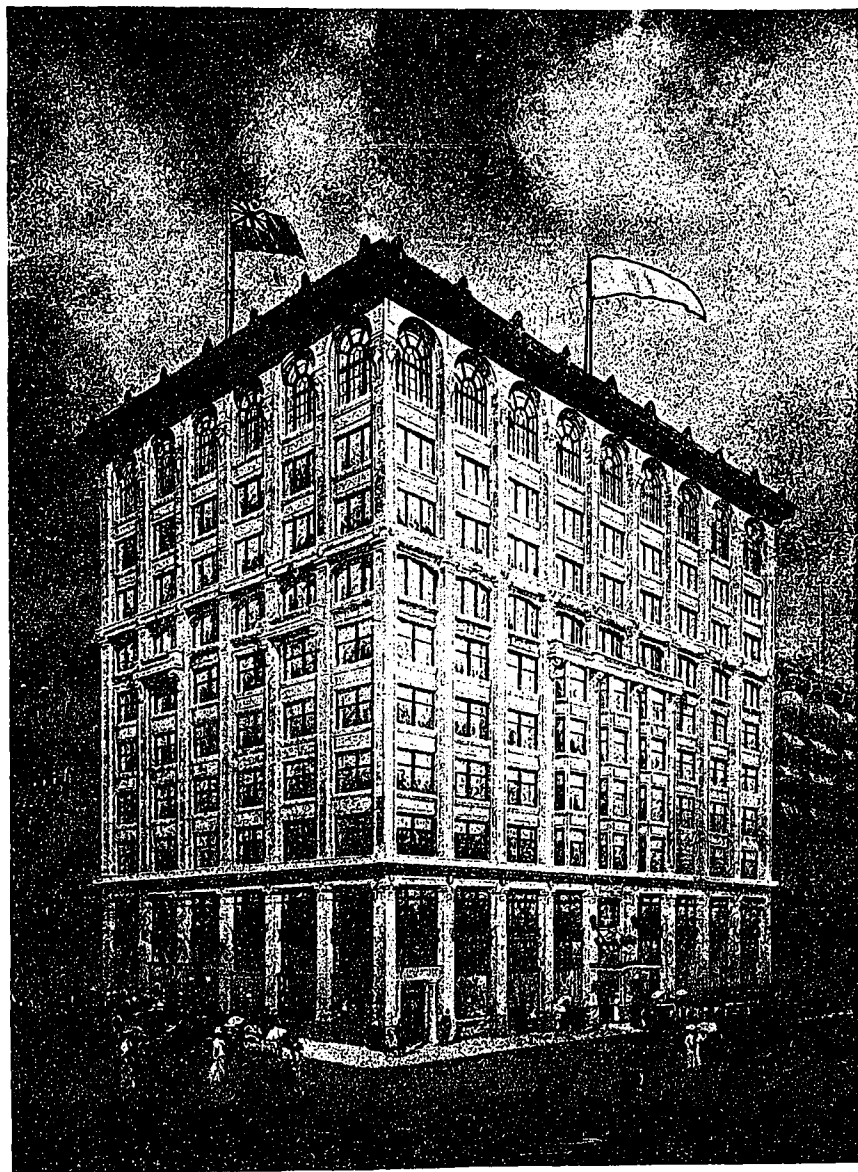
CHARLES S. COBB, ARCHITECT



## New Union Bank Building, Ottawa

COMPARATIVELY few large commercial buildings were erected in Canada during the war. Consequently the new Union Bank Building represents an important development which denotes the growth and progress of Ottawa. The structure has a frontage of 139 feet on Sparks Street and 100 feet on Metcalfe

basement. The main hall from Sparks Street, which connects with the Metcalfe Street entrance, is equipped with four elevators, capable of operating at a speed of over four hundred feet per minute. A cigar, candy and newsstand appropriate to the design is provided for the convenience of the occupants. The elevators



UNION BANK BUILDING, OTTAWA,

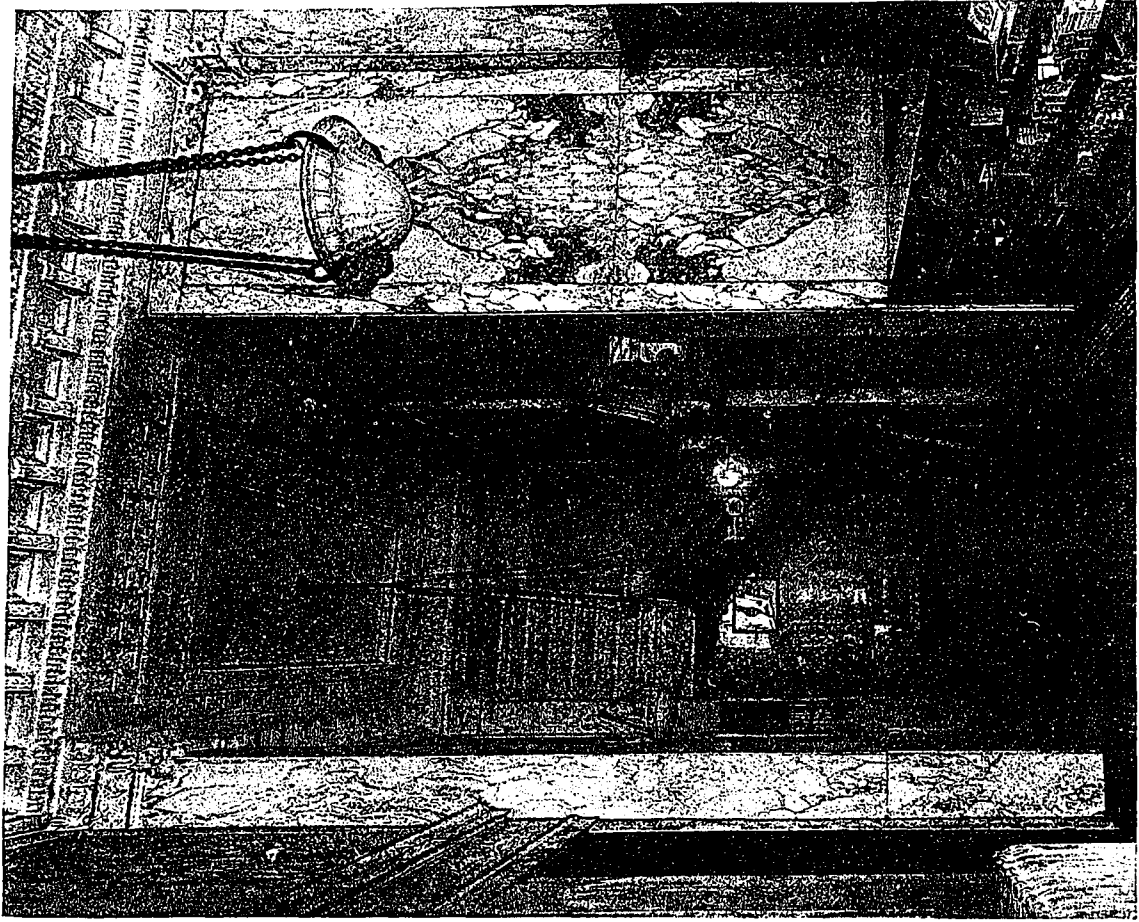
W. E. NOFFKE, ARCHITECT.

Street, and is ten stories and basement in height. The ground floor is divided into banking quarters on the corner, six stores and a hotel. Above this are offices, averaging about thirty-six to the floor. In the basement is a grill room in connection with the hotel, a barber shop, public lavatories, large billiard room, storage, boiler room, power equipment and electric switch room.

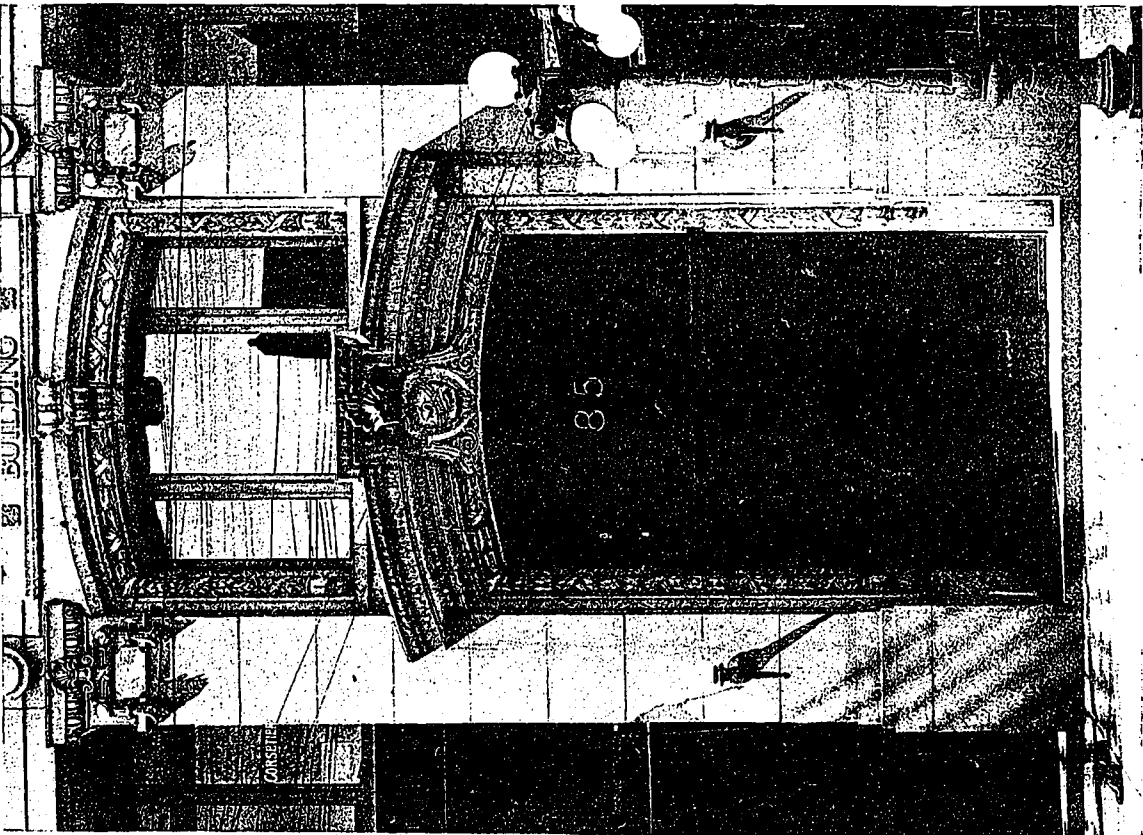
The main entrance on the ground floor opens into a large vestibule, having a staircase to the

are enclosed in bronze doors, and the walls of the corridor and entrance are faced to the height of the ceiling with Paonazzo marble.

Steel covered with concrete is employed for the framework of the structure, and all floors throughout are of concrete, reinforced with expanded metal and wire cloth. The exterior walls are of grey Stanstead granite for the two lower stories, with Ohio sandstone above. A feature of the main entrance is an elaborately carved lintel in one piece, weighing about eight



LOWER ELEVATOR HALL.



DETAIL OF ENTRANCE

NEW UNION BANK BUILDING, OTTAWA

W. E. NOFFKE, ARCHITECT

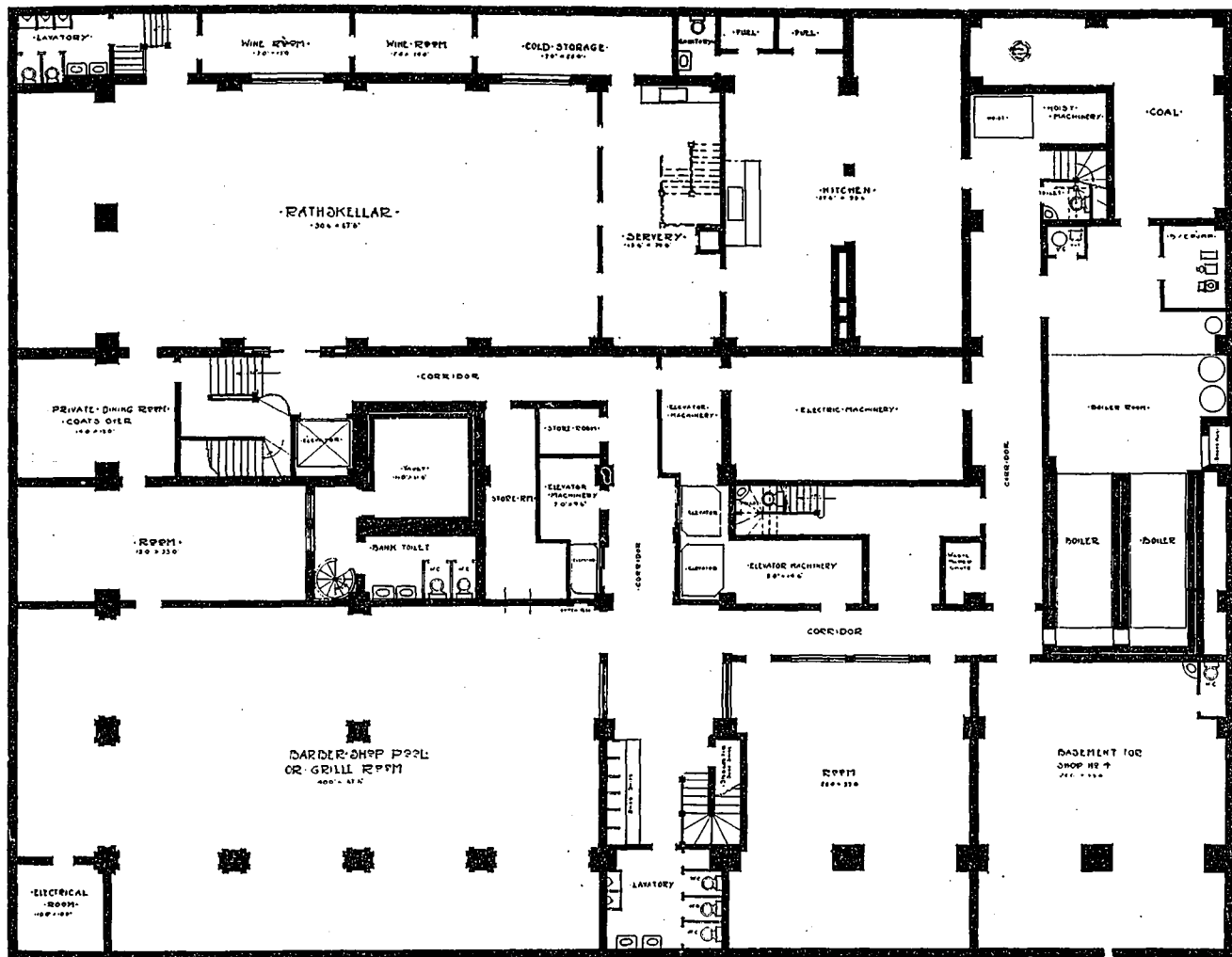
tons. The cornices are of copper, with a heavy embossed lion's head capping off each pier, and having electric lights between the panels for illumination at night. The show windows are exceptionally well fitted with curved glass and are panelled on the inside with inlaid mahogany. Each store is also provided with a gallery, which not only attractively adds to the scheme, but also increases the amount of space available for the use of the tenants.

On the upper floors every office suite is provided with a vault. Each floor has two separate lavatories for men and women, making four in

the roof, and from there supplied to the various floors, an automatic water booster being employed as an auxiliary.

All floors are equipped with vacuum outlets, with discharge and motor for same located in the basement.

The building is ventilated by two 72-inch fans placed on the roof and electrically driven. The ducts from these are dropped down, with registers at ceiling and floor levels. In the winter time only the floor registers are used, unless the others are required. The heating is done by a vapor system, having control valves on



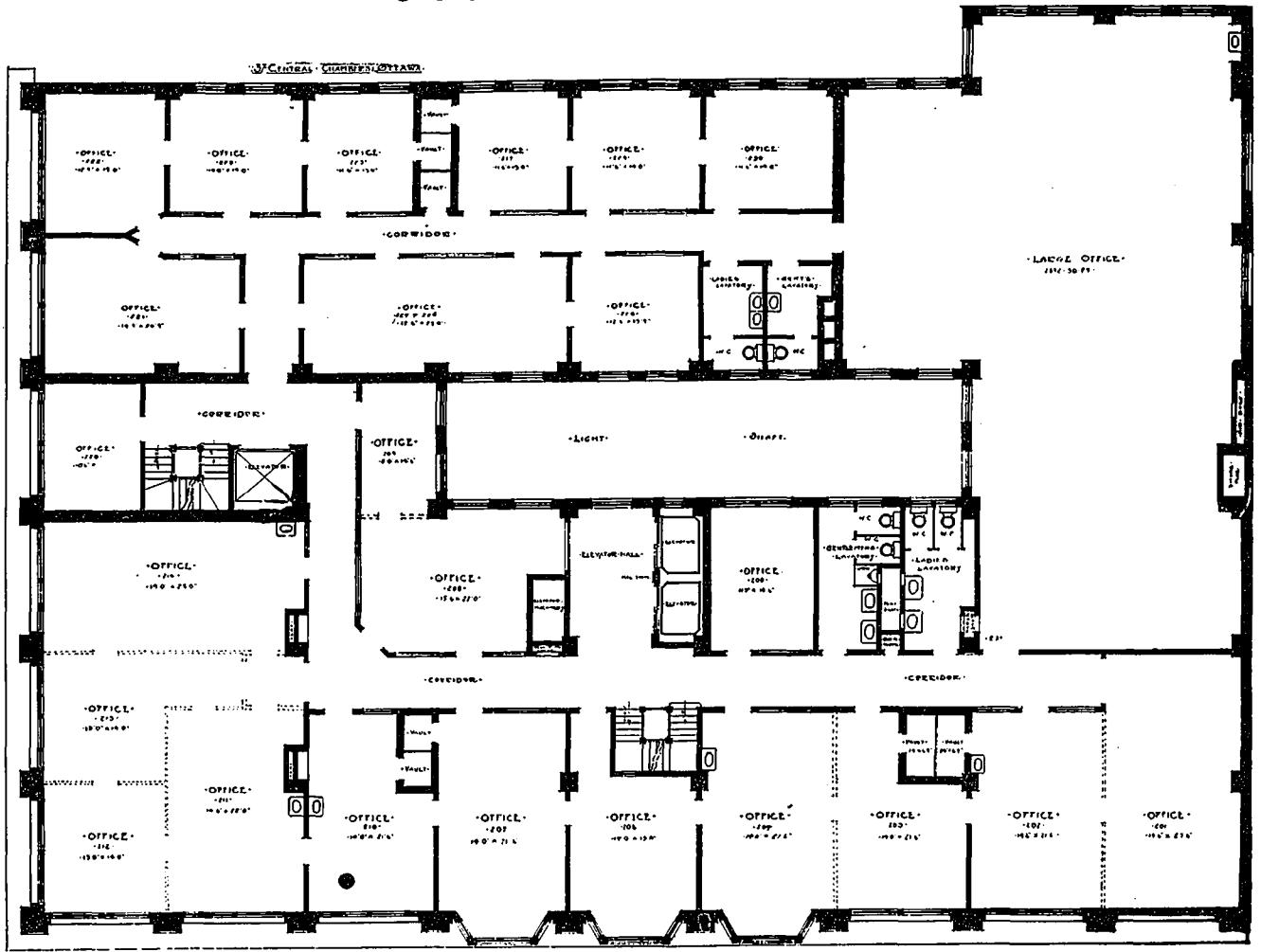
BASEMENT PLAN, UNION BANK BUILDING, OTTAWA. W. E. NOFFKE, ARCHITECT.

all, tiled to the height of seven feet. Tiling or terrazzo is also used for the floors of the corridors and in some of the shops. The plumbing fixtures are of the most approved type. The basins are of the non-splash kind, and are equipped with automatic taps to prevent against waste of water. All plumbing is so arranged that any section can be cut off without interfering with the other portions, and it can also be closed off immediately at the tap in case of washer repairs. The water supply comes into the building through a three-inch main from the street to an automatic pump, from where it is pumped to a ten-thousand-gallon tank on

each radiator and fed by two 18-foot tubular boilers having a diameter of 78 inches.

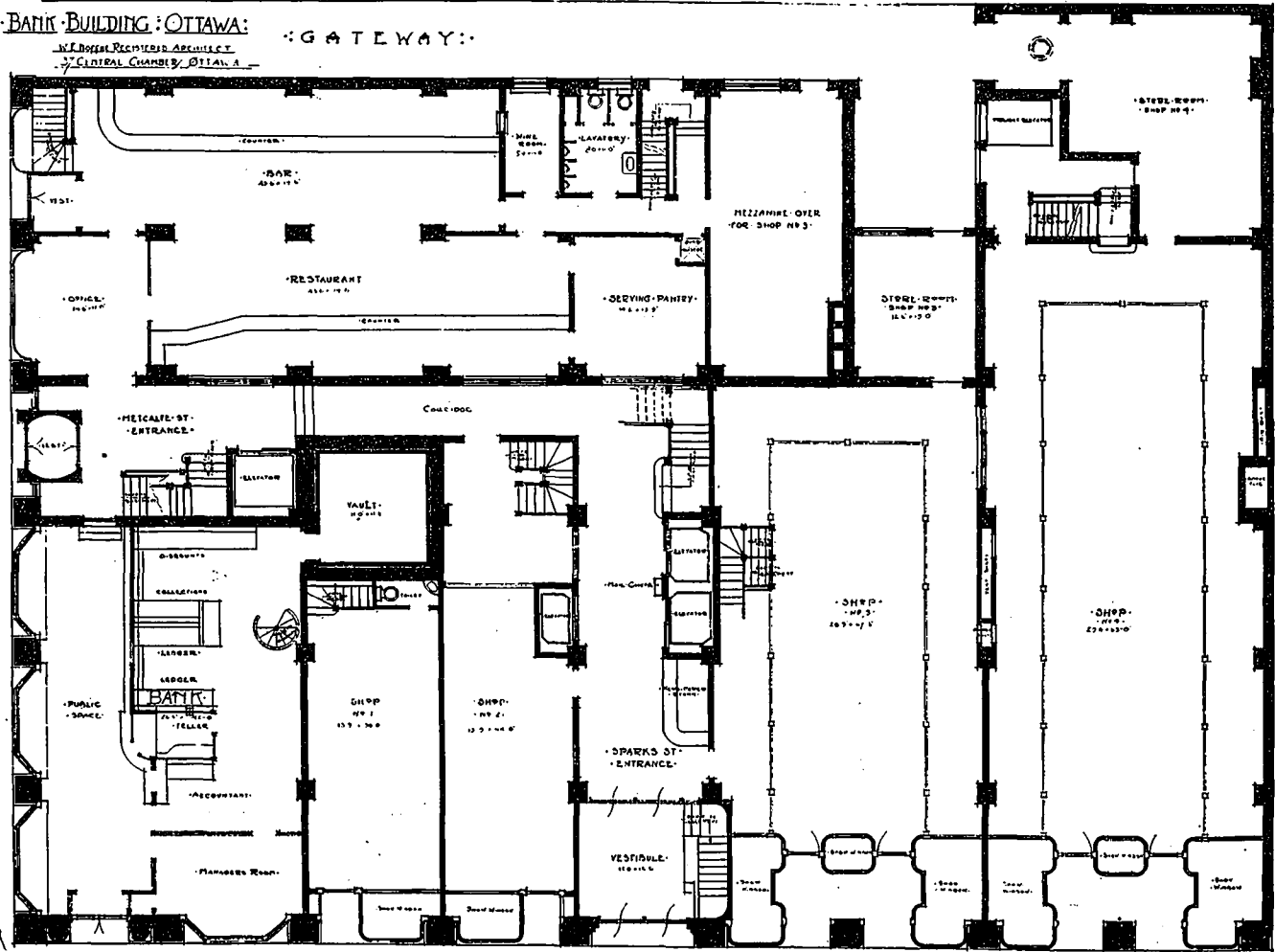
The cost of the structure complete was approximately \$600,000.

If a decoration is not practical, if it does not present a good reason for its being, then it falls far short of its mark and degenerates into something that certainly is not decoration. This is a condition of fact which many furnishing men are apt to forget—and which is made easy of forgetting by the weird, meaningless forms occasionally sponsored by various "art movements."—Exchange.



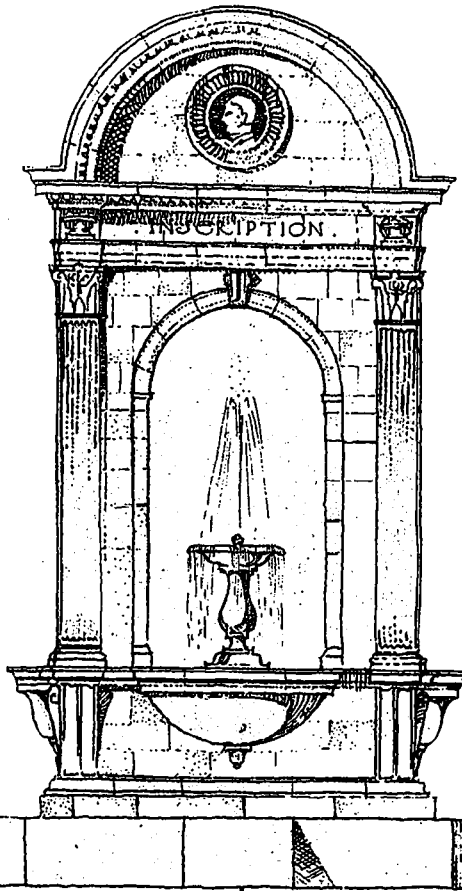
TYPICAL UPPER FLOOR PLAN.

UNION BANK BUILDING OTTAWA: GATEWAY:



GROUND FLOOR PLAN.

SUCCESSFUL  
COMPETITIVE  
DESIGN  
FOR  
PROPOSED  
MEMORIAL  
FOUNTAIN  
TO THE LATE  
DR. D. W. YOUNG,  
KEW GARDENS,  
TORONTO.



MAURICE D. KLIEN,  
ARCHITECT.

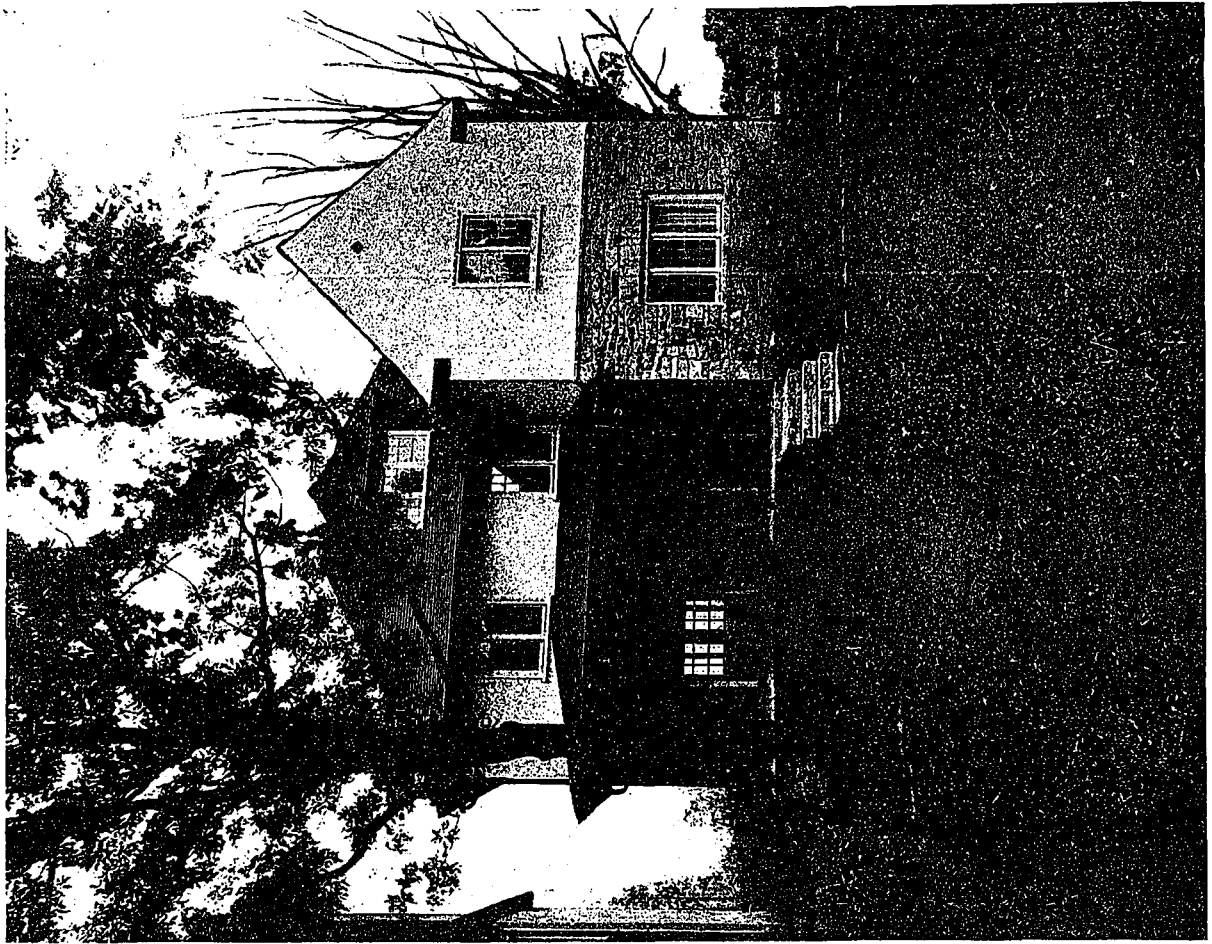
## Proposed Memorial, Kew Gardens, Toronto

Tribute to the memory of the late Dr. D. W. Young, whose life was characterized by many humanitarian and benevolent acts in the pursuit of his professional duties, will shortly assume the form of a memorial fountain to be erected in Kew Gardens, Toronto, from funds raised by his many admirers. The design, which was selected in a recent competition held for this purpose, represents the work of Maurice D. Klein, one of the younger members of the architectural profession, who is at present in his twenty-fourth year. Prior to taking up practice, Mr. Klein was for several years in the office of Mr. C. S. Cobb, during which time he was twice awarded first prize in the students' competition at the Canadian National Exhibition. He was also awarded the fourth-year prize of the Toronto Technical School in advanced architecture in 1917. In the Dr. Young memorial he has not only produced a design of pleasing artistic merit, but also displays ability of considerable promise.

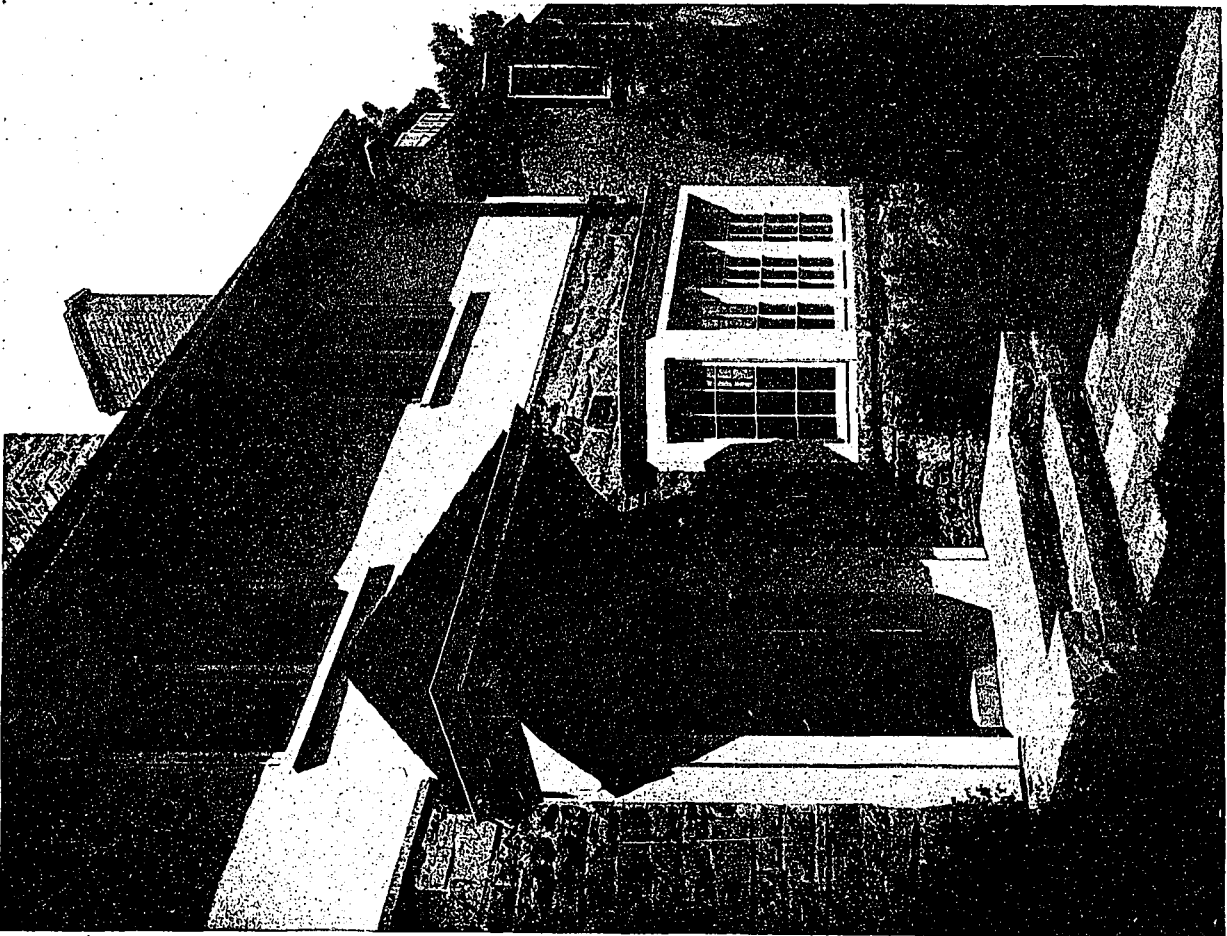
The monument, which is in the Italian Renaissance style, will rest on a platform about

17 feet square, with the terminals accentuated by plants. The monument itself will be about 5 feet 6 inches square, rising to a height of approximately 14 feet. The drinking basins are located three feet from the edge of the platform, and above same on all sides are open arches giving a vista through the park. The soffit of these arches will be carved, five pateras to each arch, on a blue colored background, the pateras being in gold. At the centre of the monument there will be a bronze spray, whose continual play will be emblematic of the outpouring kindness of Dr. Young's life. On each side of the archways there are pilasters running to the underside of the architrave. These are of the Corinthian order and fluted, being carried by consols. Above the cornice is a semi-circular roof covered with copper. The design also provides for bronze medallions of the late physician on the north and south elevations, and suitable inscriptions will be carved on all four sides of the frieze. The material to be used will be limestone.



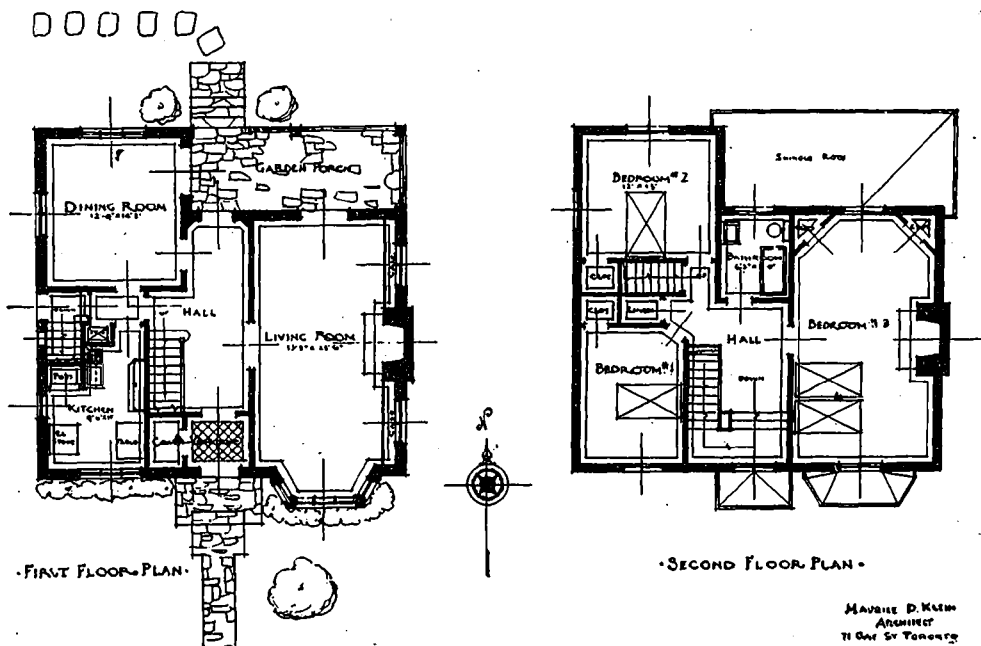


VIEW FROM THE REAR.



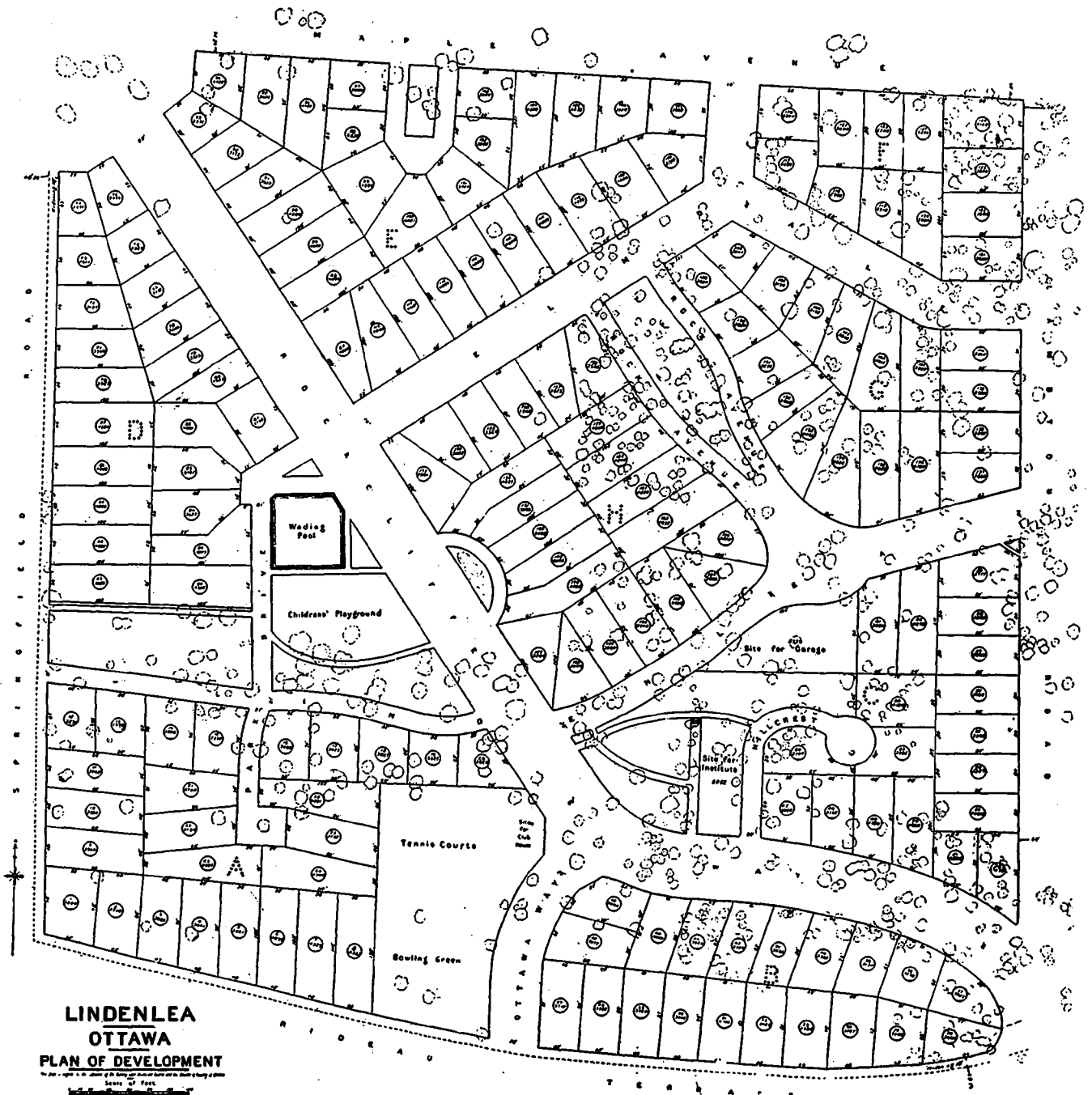
DETAIL OF ENTRANCE AND BAY.

RESIDENCE OF H. B. TABER, ESQ., "CEDERVALE," TORONTO, ONT.  
MAURICE D. KLEIN, ARCHITECT.



RESIDENCE OF H. B. TABER, ESQ., "CEDERVALE," TORONTO, ONT.  
MAURICE D. KLEIN, ARCHITECT.

MAURICE D. KLEIN  
ARCHITECT  
11 GAY ST. TORONTO



**LINDENLEA  
OTTAWA  
PLAN OF DEVELOPMENT**

Scale: 1/4" = 10' Feet  
This plan is for the use of the public and is not to be construed as a contract. It is subject to the provisions of the Planning Act and the regulations thereunder. It is also subject to the provisions of the Municipal Act and the regulations thereunder. It is also subject to the provisions of the Planning Act and the regulations thereunder. It is also subject to the provisions of the Municipal Act and the regulations thereunder.

OTTAWA HOUSING COMMISSION'S PROPOSED DEVELOPMENT SCHEME.

The above development to be known as "Lindenlea" which the Ottawa Housing Commission proposes to carry out, comprises an estate of about 22½ acres and provides for the erection of 168 houses. The ground plot which was prepared by Mr. Thomas Adams, Town Planning Adviser to the Commission of Conservation, departs from the usual rectangular method, being planned to follow the contour of the land so as to obtain the best economic and aesthetic results. The main thoroughfare will be a 66 foot roadway called Rockcliffe Way, which will extend diagonally through the property. This road will form a juncture with a small connecting road to Rideau Terrace, called Ottawa Way, from which point a splendid view of the Parliament Buildings can be obtained. Provision is made in the plan for tennis and bowling greens,

a children's playground and wading pool, an institute or public library and a community garage. All open spaces are intersected by Rockcliffe Way and will be connected to form a small park system, so that the main artery will be an attractive driveway, fringed with trees and open spaces. The open spaces in the plan also include an "Island" in the centre of Rock Ave. This consists of an out cropping of rock which will be preserved in order to avoid the cost of excavation and converted into a rock garden with the road running on each side. The scheme is more fully described in the accompanying article, and it shows the practical solution of a problem which might offer valuable suggestion to other municipalities engaged in providing housing facilities or contemplating a similar undertaking.

# Ottawa Housing Development

THE proposed "Lindenlea" garden suburb to be developed by the Ottawa Housing Commission should serve as a worthy object lesson to other municipalities which are engaged in solving the housing problem. It will not only provide an ideal residential district, but one which will offer special community advantages. The plan of development, which has been prepared by Mr. Thomas Adams, Town Planning Adviser to the Commission of Conservation, involves a group scheme of 168 houses, with a main thoroughfare 66 feet wide and secondary streets running through the property and connecting a small park system. The property itself, which comprises a very picturesque site near Rockland, has the following approximate dimensions on its four sides:— N., 980 ft.; S., 990 ft.; E., 975 ft.; W., 928 ft.

The reputed area is 22.235 acres, of which one-eighth of the total is to be reserved for open spaces. The subsoil comprises clay and gravel, but shallow rock underlies a considerable portion of the area. The site is one which can be easily drained, and is exceptionally healthy in character and situation. There is much fine timber, suitably located to enable it to be preserved for shade and beauty. The prospects of the surrounding country are especially fine. The undulation of the land affords scope for interesting and varied treatment of the lots as sites for buildings.

In preparing the ground plan, an endeavor has been made to avoid putting the Commission to any unnecessary expense for grading streets and cutting into rock, and to utilize the land which is unsuitable for building on as part of the street or park area of the scheme. By doing this the maximum of good land will be included in the lots and there will be no expensive lots to develop. Mr. Adams, in submitting his report on the scheme, points to the fact that while the lots are fairly small in size, regard should be given to the area which is reserved for open spaces; also that it would not have been possible to have reserved land to this extent for recreation purposes had the streets been made of rectangular form and of the regular width of 66 feet. The design, according to the report, has been prepared in such a way as to comply with the provincial by-laws, but it is so arranged that a good part of the width in the secondary or least important roads will really form parts of the open spaces and not be wasted in unnecessary street areas. A street called Lindenlea runs off from the east to west along the foot of the ridge which traverses the estate. A diagonal street from the north-east to the south-west might have been of some advantage, but

it was deemed undesirable to create two main traffic routes across the estate, introducing cross-traffic which might become a danger to the residents.

## OPEN SPACES.

The scheme is to be carried out within a limited expenditure necessary to give consideration to the question of financing and administration of the sites reserved for open spaces. In this connection it has been decided to merge the cost of these spaces in the price of the lots, which will entitle the residents on the estate to their full use. The spaces to be utilized for this purpose comprise the following areas:—

(1) Tennis courts and bowling greens, 34,580 square feet.

(2) Park adjacent to proposed library and institute, 19,400 square feet.

(3) Children's playgrounds, including boulevard area between Springfield Road and Rockcliffe Way (and wading pool), 43,700 square feet.

(4) Small crescent area off Maple Lane, 3,260 square feet.

(5) Triangular area on Rock Avenue, 9,880 square feet.

(6) Small crescent off Rockcliffe Way, 2,994 square feet.

(7) Open space at entrance to estate, 4,920 square feet.

Total, 118,734 square feet.

These open spaces have largely been arranged on the principle of using up land that is least suitable for building, some of which it would have cost as much to convert into building land as the land would be worth when converted. The sites of the tennis courts and bowling greens are good building land, but obviously a good level site is needed for recreation purposes.

In reference to the question of responsibility as to the maintenance of these public spaces, the report makes the suggestion that the ownership of the sites on all open spaces might be vested in the city and dedicated to the use of the residents; or that the Housing Commission might continue to act as trustees for the residents pending the creation of a permanent trust or the transference of the open spaces to the city. It is therefore recommended that the Mayor and Controllers be approached to find out what would be the best arrangement to make in the interests of the city, having due regard to the rights of the owners and the de-

sirability of exemption from taxes of the spaces in question.

As regards the tennis courts and bowling green, it is suggested that the money required to be invested in levelling and planting the courts and green should be spent by the Housing Commission as part of the cost of developing the estate, and also that a small clubhouse should be erected.

In reference to the public park space, it is proposed that this should be laid out with shrubs and walks and maintained as a small park area by the city or Improvement Commission, and for that purpose should be handed over to one of these bodies on the condition that they will maintain it.

As to the children's playground, it is proposed to either form a special association of the residents to control same or else to invite the Ottawa Playground Association to take over its management under some special arrangement.

#### SITES FOR PUBLIC BUILDINGS.

Two sites are suggested for public buildings, one for an institute or library, or a combination of both, on what is the highest elevation on the property. It is suggested that when the whole area is built upon, the residents will desire to have a place of meeting for social and educational purposes. While this building might not be erected for some time, it is undoubtedly something which will eventually be deemed of advantage, and hence a site for same has been provided in laying out the grounds.

Near the site of the institute provision is also made for a special site in a low position screened by trees for a public garage. This public garage will fulfill a similar function to that of the tennis greens in that it will help to make up for the comparatively small size of the lots. The report points out that while a tennis court or a garage are costly things to provide for each separate home, they may be comparatively cheap things if provided for a number of families in common. If properly situated, they will be found as convenient and useful as if privately owned, and if properly laid out and designed, can be made ornamental instead of destructive of amenity. In case any owner wishes to erect his own garage, he will be permitted to do so, subject to the submission of his plans to the Commission and the suitability of his lot for that purpose. It will be noted in reference to the public garage that roads radiate in every direction from the proposed site and that a court is left open in front of the proposed building. No site is reserved for a school.

#### SURROUNDINGS OF HOUSES.

In considering the layout of the ground for housing, due consideration has been given to

the matter of surroundings, not merely in the immediate locality of the site of any dwelling, but for some distance on all sides of it. The orientation, opportunities for obtaining light, air, privacy, shade and garden spaces, with public open spaces reasonably accessible, have all been taken into account. By paying proper regard to health and convenience in the layout of the area, and with the attention it is proposed to give as to simplicity and economy in the design of the buildings and the preservation of light and shade, an ideal district will result, without the need of any artificial methods to give it variety, interest or attractiveness.

Mr. Adams' report also deals exhaustively with the question of transportation, roadways and local improvements, and incorporates many suggestions of value to other municipalities engaged in or contemplating similar undertakings.

The estimated cost of the property on which "Lindenlea" will be situated is estimated at \$66,000, and to this it is suggested that \$15,000 be allowed the Commission for expenses covering development, bringing the total sum to about \$81,000.

The lowest-priced lot is \$340 and the highest (exclusive of local improvements) is \$595, the average price over the whole property being figured at 12.8 cents per square foot.

### Conducting Aluminum—A New Invention

According to a report of the United States Consul at Basel, Switzerland, a new invention called conducting aluminum, which is said to be creating a profound impression, has been made by Dr. Georges Giulini, the most famous expert in the aluminum trade. This new metal is produced by putting the ordinary aluminum through a special patented process by which it acquires the same mechanical qualities and capacities as bronze, copper and brass without changing its specific weight.

It is said that the price of the new metal can be kept within very low limits, so that, even at the prewar prices of other metals, it will be able, by reason of its smaller specific weight, to compete with copper and brass very favorably. The fact that the new metal is a conductor will make it especially in demand in the electrical trade.

### To Build Memorial Hall

A proposal to erect a large memorial hall at London, Ont., in honor of the soldiers who fell on active service during the war will be sent to the people for their endorsement in January next. The scheme, which is said to have the approval of Mayor Somerville, is to provide quarters for military organizations and, in addition, a large convention hall.

**New Branches, Imperial Bank, Toronto**

The branch of the Imperial Bank of Canada used as a frontispiece in this issue is an old building opposite the St. Lawrence Market which has been remodelled and brought thoroughly up to date. A dignified stone front in Doric character replaces the time-worn brickwork, and the interior has been extensively altered and modernized for the transacting of banking business. The arrangement of the place is shown in accompanying plan.

Another branch of the same institution, at the corner of Danforth and Bathgate Avenue, is illustrated above. The exterior



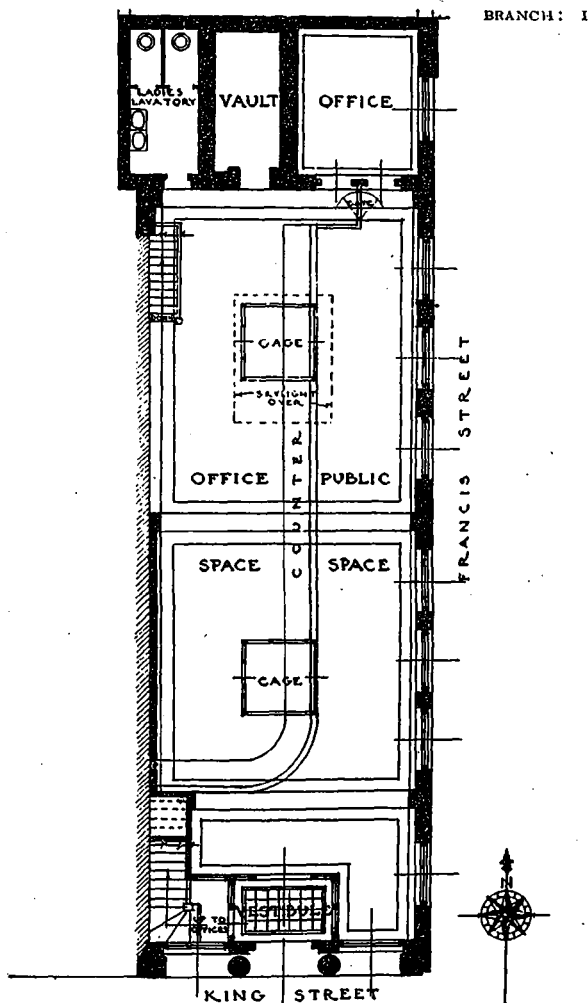
BRANCH: IMPERIAL BANK OF CANADA, DANFORTH AND BATHGATE AVE., TORONTO.  
CHARLES S. COBB, ARCHITECT.

character of the building is only temporary. Eventually two additional bays are to be built along Bathgate Avenue and a second storey added to the entire structure. While the design in its present form does not fully express the purpose of the building, it nevertheless affords a study of simple proportions. The brickwork itself is quite noteworthy. In view of the future extensions to be carried out, the building is set back from the lot line so as to allow for a stone exterior with which the completed structure will be enclosed. Mr. Charles S. Cobb was the architect for both buildings.

**Art of Coloring Glass**

It is probable that the coloring of glass, and particularly the garnet tint and not the ruby hue, as some authorities would have us believe, originated in Bohemia, says the New York "World." This color—garnet—is obtained by alloying or fusing an extremely minute quantity of gold with the other ingredients—silica, soda, lime, iron oxide and alumina. On its first heating the glass is colorless, but on reheating it develops its soft, rich appearance.

It is announced that a \$1,500,000 addition is to be built to the King Edward Hotel, Toronto. The new part will be ten stories, and on the property which extends on King Street to Leader Lane, just east of the present building.



FIRST FLOOR PLAN CHARLES S. COBB ARCHITECT 71 BAY ST. TORONTO

PLAN OF MARKET BRANCH: IMPERIAL BANK, TORONTO.  
(SEE FRONTISPICE PAGE 228.)

# A Reconstruction Programme for the Building Industry

*By Sullivan W. Jones.*

In view of certain evils which have crept into the building industry, together with the amount of recent discussion in reference to lump sum and cost-plus-fee contracts, the following address, read a short time back before the Institute of Electrical Contractors of New York, is timely and of interest. It discusses the fallacy of certain practices and defines the relationship which should exist between an architect, contractor and owner, contending that the salvation of the architect, contractor and building industry lies in a partnership of talents. Unless this can be brought about, the prediction is made that still more unfortunate results will follow with corresponding loss to both the public and the prestige of the industry. The subject is in every way comprehensively treated and is altogether worthy of the attention of the reader.—Editor.

WHILE we may chafe under the present temporary inactivity, I cannot help feeling that it is altogether fortunate we are obliged to pause and take stock of the future. As we look forward our minds go back over the road we have traveled. We are seeking the causes of our past difficulties, that a cure may be found. It is in thus taking the past—to use the words of President Lincoln—"as philosophy to learn wisdom from," that we shall effect real reconstruction. As the electrical contractor, in common with all others in the so-called sub-contractor class, plans the future on a philosophic appraisal of the past, it is quite natural that he should see the general contractor as the root of all evil in the building industry. Now I have no inclination to defend the general contractor and his usual attitude toward his work, and toward those upon whom he has had to depend for help, for, broadly speaking, he has more than earned all the abuse that has been heaped upon him. Yet I am convinced that his elimination would be merely the adoption of another expedient, an attempt to alleviate a single symptom by superficial treatment, when the nature and malignance of the malady demands a major operation.

The assertion that the architect was the source of the trouble would be more nearly correct, for he, perhaps, largely through default, has been responsible more than anyone else for the development of the general contractor into what he is to-day. But the architect is blameworthy to no greater degree than any other group in the industry. None of us have understood the direction of the stream of tendencies, or whither it was carrying us. I think we are beginning to understand now, and that is why I say it is fortunate we have been forced for the moment to take our minds off problems of production and give sober thought to the position of the industry which furnishes us a living, and to what is going to happen if changes are not made.

## THE PROBLEM OF PRICE COMPETITION.

The whole building industry was on a false basis before the war. The competitive stipulated sum contract system had a corrupting

influence on every one who became involved in it. The architect, with few exceptions, had failed to develop the professional service part of his function. He has stood still, while changes took place with kaleidoscopic rapidity. There were many indications that he was on the high road to enslavement by the contractor. The general contractor and sub-contractor found it well-nigh impossible to secure a reasonable profit honestly. The manufacturers of materials for construction had been forced by price competition, resulting from the inability of the architect, the engineer and the owner to recognize or measure quality and fitness of such materials, to make exaggerated and often wholly false claims for the merits of their products; and this condition had been stimulated by the cupidity of the contractor. Demand for worthless by-products and cheap substitutes had been created at tremendous and constantly increasing cost to the consumer through the employment and prostitution of the power of advertising and salesmanship by manufacturers with an insatiate appetite for profit. Competition by unscrupulous rivals, who, in sacrificing quality to cheapness, have under-cut prices, had forced the conscientious manufacturer to devote his entire energy to defending his product, and robbed him of all incentive to prove it. The same kind of competition among contractors had driven the standards of work steadily downward. This condition had its effect even on work that was not competitive, for here, too, the general contractor resorted to the same shameful tactics in selecting his sub-contractors that he was obliged to employ when he himself was selected competitively on price. Indeed, the most casual inquiry discloses that every phase of the industry displayed symptoms of the destructive influence of price competition. Utter moral, if not financial bankruptcy was the goal toward which the industry was working. This is not a cheering picture, but it is a true one. It gives us the dimensions of the problem to be solved.

## THE TWO FUNDAMENTAL QUESTIONS.

Now the correction of all these conditions is not as difficult as it may seem. There are in

reality only two fundamental questions involved; and even these two are closely related. The others are the natural developments of them. One is the contract system; the system of selecting contractors, either general contractors or sub-contractors, through competitive bidding on the price for a complete piece of work, under which the owner buys his building from the contractor or a group of contractors for a sum stipulated in advance of construction. The other question relates to the architect and his function. Both of these questions are under consideration by the American Institute of Architects. The one on contract system is before the Committee on Contracts and Specifications, and the one of the architect and his function is being studied by the Post-War Committee on Architectural Practice. But before I speak of the work of these committees, it will be well to show why these two questions are fundamental in character.

#### THE FALLACY OF THE LUMP-SUM CONTRACT SYSTEM.

The contract system which was in almost universal use before the war had evolved from two wholly false assumptions: one, that a modern building can be described by drawings and specifications with sufficient completeness to provide for an accurate computation of costs, and, hence for bids on its construction that are fairly competitive; and the other, that the contractors' business is that of selling finished work, and that he is essentially a merchant, who should, but by no means always does, possess a specialized knowledge of the suitable and economical use of the things he buys and sells.

The first of these false assumptions leads us directly to a consideration of the sufficiency of the architect's service; while the latter involves a study of the contractor's status under this form of contract. We have thus established at least one direct relationship between the two fundamental questions. While they have been stated separately, so interwoven are they that discussion of them singly is impossible.

#### ORIGIN OF THE LUMP-SUM CONTRACT.

The stipulated sum construction contract is a product of the mercenary spirit of modern industrialism. Until the early part of the nineteenth century, the beginning of the industrial era, the lump-sum contract for construction was unknown. The great buildings of the Middle Ages and of the Renaissance period were not designed by architects, as we know them, or built under contracts. They were constructed by societies or guilds on what we would now call the cost basis, and were paid for as the work proceeded out of the public funds or

voluntary contributions. The designers were master builders, members of the guild which had trained them, but with unusual ability in design. The earliest construction contracts were signed with a master builder, who, like his illustrious predecessors, was both architect and constructor. He submitted his design and the price for which he would execute it. If there was competition, it was between designs with their corresponding prices. The builder had complete control of the work, and the manner of its execution. The procedure was a perfectly safe one for the owner, because buildings were structurally simple, of few types, and the choice of materials was extremely limited. There was no question of standards of work; they were established by the pride which the artisans and the builder, took in their skill; for neither pride nor skill had yet been destroyed by the feudalism of money.

#### DIFFICULTIES DEVELOP.

But with industrialism came accumulations of wealth by many who had not previously possessed it, and this change had an almost immediate effect upon practice in construction. In response to the demand for distinctive architectural effect in the homes of the newly rich, the builder with special aptitude in design became an architect. These owners applied to the purchase of their homes the same methods that had made profits for them in business. They strove to drive shrewd bargains with the contractor, and the architect was shortly called upon not only to design the building, but to exact the utmost possible of the contractor for his client. The demand for distinctiveness in design and for luxuries leads to complexities in construction, the employment of new devices and methods, all of which increased the architects' difficulties both in preparing adequate drawings and specifications and in securing from the contractor what he considered the contract called for. In England, this condition produced the surveyor and the quantity system; while in France, the unit price contract became the rule for better class work, the unit prices being established by the national architectural society, and recognized in law as standard, with the architect as "verificateur," a function closely corresponding to that of the English surveyor. The French system would seem to us most complicated, and I mention it only as being the result of an effort at correction. But in this country (United States) we had done practically nothing, until the Government was obliged to adopt a different system on its war contracts. Moreover, our problem is vastly more complicated than it ever was in either England or France, because we have led the world in the application of science and invention to the en-



gineering of construction, and because American ingenuity has been freely utilized in meeting the demand for luxuries which have become successively conveniences and then necessities. Our buildings are now complex machines, the design of which requires the services of many engineering specialists, but we are still clinging to the contract practice of a century ago.

#### COMPETITION IN THE ASSUMPTION OF RISK.

Let us assume for the moment that we wish to hold to the lump-sum form of contract and competitive bidding. Obviously, then, we must find some way of giving to the contractor in advance the information essential as a basis for fair competition or price? Can it be done? Drawings and specifications may be improved through further standardization; questions of quantities may be largely removed by the adoption of the quantity system, and the costing of work may be placed upon a more accurate basis by the "open-price," which will also raise the price standard and assure a better margin of profit to the contractor. But are these partial remedies all that is necessary? There are always several ways of doing a thing, one less costly than another, and there will always be differences of opinion between the contractor and architect as to which is the best or whether the substitute proposed is permissible under the contract. There will always be disputes over questions of quality, because quality, both in workmanship and materials, is well nigh impossible to describe. There is another important speculative element in every lump-sum contract, and it will exist even if drawings and specifications could be perfected. When a contractor signs such a contract, he sells short for delivery over a stipulated period of time, the quantities of labor and material required. It is this element of risk which has now acquired such proportions that no sensible man is willing to assume it. In some localities, in times more normal than these, or than those to which we look forward, the risk of loss to the contractor from a rising labor market has been minimized by wage agreements with organized labor. In other places that stability has not been secured. And the material market never has been and never can be brought under control. Estimating, even under the most favorable conditions will always involve risk to the contractor, and as long as there are risks, competition will be based on risks instead of work to be done. The low bid, whether it be too low or not, will always be the product of the greatest error or the assumption of the greatest risk.

#### COMPETITION SHOULD BE PRESERVED.

We are forced to the conclusion, it seems to me, that competition on price is economically

unsound; which conclusion leads us to ask the question: Which is wrong; competition or the stipulated price? Competition is the foundation of healthy life. It is the necessary stimulant to development, to sustained human effort and efficiency. We should strive by every possible means to preserve competition in the building industry; competition between architects, between contractors, and between manufacturers. But let us also strive to make that competition of the invigorating and not the destructive kind.

Let us, therefore, examine the case for the lump-sum contract. I have said it had a corrupting influence on every one involved in it. Almost every ill and every evil in the building industry, I am satisfied, may be traced to the lump-sum contract. Under it the interests of the owner and contractor are diametrically opposed. The contractor's profit lies between the actual cost of the work and the amount of the contract. The greater the cost, the less the profit: and *vice versa*. The contractor's aim is, therefore, to deliver as little as possible, while the interest of the owner is in exacting the utmost of the contractor. The contract stands between them setting up antagonisms where there should be co-operation, creating conflict of purpose where unity of interest is essential to success. Under the lump-sum contract the contractor has been a merchant, buying and selling finished buildings. All of us have been misled by thinking of the product rather than the method of production, by fighting over the division of profit rather than considering means of assuring reasonable profits to all who participate in the enterprise, including the owners. That is why the contractor has become a broker trading in contracts which represent finished buildings and their component parts, instead of a constructor or engineer.

#### CONTRACTORS CANNOT BE MERCHANTS.

The arguments against the general contractor being a merchant are possibly more conclusive than any that can be directed against the merchandising function for the sub-contractor, especially the sub-contractor who manufactures and installs a product; but they apply, nevertheless, with the force of conviction to both. The general contractor manufactures none of the materials which he handles. He has no plant or factory, and has no legitimate use for either. He has no capital invested in anything of permanent value to him. The money which he uses in conducting his business is a temporary substitute for the owner's capital ultimately represented by the finished building. What is it the contractor has to sell? Service, his expert knowledge of the fabrication of buildings. In the last analysis

service is the thing he has always sold, but instead of selling it to his employer, he has sold it to himself. The system has placed a premium on disloyalty and astuteness in the contractor, rather than engineering skill and efficiency.

The same contradictions have confused and misled the sub-contractor. He has wasted his best energy fighting for trade discounts on the materials he purchases in order to resell them competitively at a possible profit. He, too, has struggled to make a livelihood through the purchase and sale of labor and materials when he should have centered his effort on perfecting his service, and finding a market for it. If service is the commodity in which the contractor deals, and we wish to preserve competition, obviously, then, competition must be in service and not in the price for finished work. The value of service is measured in terms of results. If economy is one of the results looked for, and secured, let it be an asset to the contractor, instead of stolen fruit to be concealed.

#### THE ARCHITECT AND THE LUMP-SUM CONTRACT.

But we have not yet put in all the evidence against the lump-sum contract. The architect has not escaped its insidiously evil influence. The average owner, the owner who is inexperienced in matters of construction, undertakes his venture on the assumption that the architect is omniscient, and that when a bid is received on the drawings and specifications, it is all inclusive. This is the fallacy of the complete and sufficient drawings and specifications. A mistake is made when an architect accepts employment without disclosing to his client the unavoidable limitations which are placed upon his service. As the work proceeds, omissions are discovered, differences arise as to what is meant by vague expressions and indications, and the architect is at once placed on the defensive with respect to the sufficiency of his drawings and specifications. He has the choice of confessing his plight to the client or covering it up by compromise with the contractor. Some pursue the former and honorable course, others, the latter. The position of the architect under such a contract is unwholesome. It is unfair to him. It is unfair to the owner who has sought the architect's advice on the basis of confidence. It is unfair to the contractor. It is a high tribute to the profession and the professional tradition, that so few architects have succumbed to the temptations which constantly urge them to abandon the difficult role of conscientious servant.

#### CONDITIONS AND THE AMERICAN INSTITUTE OF ARCHITECTS.

That the architect is keenly alive to his untenable position, and to the gravity of the con-

sequences to the whole building industry, if conditions remain unchanged, is evidenced through the appointment by the American Institute of Architects of a Post-War Committee on Architectural Practice, charged with the study of the architect, his function, relation to the public and public interest, and his education; and by the principles adopted as fundamental by the Committee on Contracts and Specifications in connection with its deliberations on the cost-plus-fee form of contract. These two committees beginning work on two distinct questions have found, for reasons I have already shown, that their labors are complementary; and I venture to predict that in the end their work will be co-ordinated, at least to this extent: That the Committee on Contracts and Specifications will perfect the cost-plus-fee form of contract and the other committee will recommend its universal adoption.

#### THE COST-PLUS-FEE CONTRACT.

The cost-plus-fee contract, as we have known it, has been a compromise document. The status of the contractor, by reason of his contract liabilities, and by reason of the unchanged attitude of the architect and owner, was not radically different under this form of contract, from what it had been under the lump-sum contract. While his interests theoretically coincided with those of the owner, the contractor failed to realize the nature of the relationship, and consequently his attitude of mind remained unaltered. The Committee feels that the change must be complete, and to accomplish that end, it is necessary to make such changes in the document as will give the contractor a new picture of his status and responsibilities. The Committee asserts that, "in the light of recent experiences of the government in the use of the cost-plus-fee system, the following general principles are felt to be fundamental."

(1) The contractor becomes in effect a professional adviser of the Owner, as his "Construction manager" and should be relieved of all contract liabilities inconsistent with such a relationship; (2) For this purpose the Owner should pay directly for all materials and should enter directly into contract with sub-contractors rather than having sub-contractors make their contracts with the Contractor. Payrolls must perforce be paid by the Contractor and reimbursement made by the Owner; (3) In view of this professional relationship, no "bond" guaranteeing performance is needed or proper, any more than for the architect.

It is difficult to comprehend at once the full significance of this statement. The principles enunciated find expression throughout the document. There has been a discussion on the expediency of changing the term "contractor" to "constructor," or "manager of construction," or "constructing engineer," but it was decided a wiser course to pursue, to use the old and familiar term and let the contractors' wishes gradually crystallize into the choice of some substitute term which would be more appro-

priate and more descriptive of the new function.

This is the wording of the clause, which, in the older form of contract, was captioned "Sub-contracts." It now bears the title "Separate Contracts."

All portions of the work that the contractors' organization has not been accustomed to perform, or that the owner may direct, shall be executed under separate contracts. In such cases, either the contractor shall ask for bids from the contractors approved by the architect and shall deliver such bids to him, or the architect shall procure such bids himself, and in either case the architect shall determine with the advice of the contractor and subject to the approval of the owner, the award and amount of the accepted bid. The owner shall contract direct with such approved bidders, etc., etc.

This clause, it will be observed, establishes the relationship between the so-called sub-contractor and the owner or architect, which the sub-contractor has sought to realize through the elimination of the general contractor.

#### THE ARCHITECT-CONTRACTOR RELATIONS.

The Post-War Committee on Architectural Practice has made several important announcements in connection with its study of the architect, his function and conditions of service, and it is interesting to note how the line of inquiry has led the Committee directly to considerations of contractual relationships. Under a sub-division of its work termed "Contracting," the Committee makes the following observation:

Great changes have taken place in recent years in the status of the contractor in relation to building enterprises, that have reflected a change in the status of the architect. For a number of years there has been a gradual increase and consequent instability in prices of material. Also there has been an increasing scarcity of labor, and a consequent instability in labor cost; also a more or less general industrial unrest, and the working out of problems of labor jurisdiction, terms of employment and restriction of output, all of which have made the old method of competitive bidding and lump sum contracts, uneconomic and unfair, either to the owner or the contractor. Contractors, in order to eliminate the risk of loss to themselves or the necessity of charging the owner a large contingent fee to protect themselves against loss, have advocated the "cost plus a percentage," or "fixed fee" profit. The Government, through practically all its agencies, has let contracts amounting to more than a billion of dollars on this basis and has thus placed its stamp of approval on the method. The general uncertainty as to prices of labor and material in the readjustment period after the war will undoubtedly still further establish this procedure in awarding construction work.

Under the new system the contractor sells his services on a professional basis at a certain percentage on the cost or for an agreed fixed fee, and his remuneration is understood to be for the use of his organization and its knowledge of the building business applied to the particular enterprise; in fact, the methods we employ and include in the term professional practice are being approached steadily by those we have been pleased to call contractors and who have had to do with the actual business of building only. The selection of a contractor now becomes a question of the individual's or concern's reputation for honesty, ability, and business judgment rather than a question of a competitive price at which they will undertake the work; his relation with the owner becomes a more personal one—based upon confidence rather than on an entirely impersonal contractual relation.

Contractors have been quick to realize the changing conditions affecting their selection; also the modern business tendency to deal with one organization equipped to handle all phases of a building problem and have built up highly specialized organizations, impressive in their size and with such financial connections as inspire confidence in their ability to render service. Construction companies and engineering corporations are employing able designers and doing all work from the making of drawings and specifications to the financing, building, and furnishing of

the structure. Under this new system, the average architectural organization dwindles in impressiveness. The service of an architect, where a contractor is selected on the basis of "Confidence" is not required in the same degree as in the older method, to which the performance of the contractor or to safeguard the expenditures of the owner. Nor is he so frequently called upon to adjudicate disputes that may arise between the owner and the contractor over interpretations of the contract obligations. The architect, the contractor, and the owner are collaborators to secure the maximum of building at the minimum of cost.

More and more frequently the owner, through his closer association of contractors with actual building, selects a contractor who has a so-called architect appended to his organization or leaves the selection of the architects to the judgment of the contractor.

Under another sub-division referred to as "The Architects Personal Association with Actual Construction," the Committee presents for consideration the following thought:

"Architects are inclined to devote themselves too exclusively to the study and preparation of drawings, specifications and contract documents and to entrust the supervision of the work too largely to a salaried employee. The owner's active interest is in the actual construction, not in the drawing. In watching the progress of the work he is thrown into closer contact with the contractor and the salaried employee, with the result that the value of the architect's service in connection with the actual construction seems unimportant to him.

(If this is true, the correction is manifestly in the hands of the architect, himself, by surrounding himself with an organization which permits him to render the full service his client has a right to expect.)"

The Committee also issued a questionnaire for the purpose of securing the views of practicing architects generally on several phases of practice which are recognized as important. The questions which I shall quote are interesting because they indicated the thoughts which are going through the minds of the members of the Committee.

2. Do we serve all of the public or only one class, the wealthy or the moderately wealthy?
3. Are we qualified by training and experience to render service over a wider field?
4. Over the whole field, for rich and poor, for every kind of industry and human activity, and if not, how could this best be brought about?
5. Do we pretend to a greater knowledge than we have?
14. What can we do to improve our relations with the structural engineer?
15. What will make evident our respective functions?
16. What will secure co-operation in the solution of building problems?
17. What is our logical relation with the mechanical and electrical engineers, the lighting experts?
18. What is our logical relation to the big engineering corporations that aim to furnish all kinds of designing and supervisory services?
19. How can we improve our relations with the contractors and their sub-contractors?
20. What is the reason for the success of the construction companies that aim to fulfil all these functions, designing, engineering and building?
21. How can we co-operate with, and help the workers and craftsmen (masons, carpenters, plumbers,) dependent on the building industry as we are?
22. How should we be interested in their organizations?
23. How should they participate in ours?
24. How shall we interest ourselves in the producers of building materials?
25. How shall we help to standardize details of building products in common use?
26. How shall we help to establish bases of quality?
27. Shall we try to reduce the number and variety of each product that we demand?

#### THE ADVANTAGES OF THE COST-PLUS-FEE CONTRACT.

It must be now plain that the architect's status and function cannot be considered, with-

out considering also the status and function of the contractor. It seems almost superfluous to point out the advantages to the whole building industry from making the cost-plus-fee contract, the rule instead of the exception. It is important, however, for us to think of this proposed change in terms of results, so that we may all have a clear conception of what it is we are striving for. But when we think in terms of results, we again find it impossible to think of the architect and the contractor separately. First, the contractor, or let us call him the constructor, will be selected on the basis of confidence and his service record. Since the contractor's profit will no longer depend upon his ability to cheapen the work, which has been the motive underlying the general practice of offering substitutions, we may expect fewer discussions, of this kind in the future. Considerations of price alone will less and less influence the selection of materials. The architect and the contractor will work together instead of in opposition. The knowledge and experience in construction which the architect lacks will be furnished by the "constructor." This, to my mind, is one of the most important results that will be secured, for it must be realized, and is realized by the thinking element in the architectural profession, that ability in design, which reaches its highest development only in men who are sensitive, imaginative and impulsive, is wholly incompatible with the scientific quality of mind that works in exact terms of fact and statistics; an essential pre-requisite to the proper performance of the "constructors" function. Under the cost-plus-fee form of contract, the architect, the contractor, and the owner enter into a tri-party agreement to accomplish a single end. It does not require much imagination to see in this change in the contractor's status the reincarnation of the master builder of the Renaissance, through a virtual, if not an actual partnership of the two talents that produced the world's most inspiring and enduring architectural monuments.

The salvation of the architect, the contractor and the industry lie in such a partnership of talents. If it cannot be brought about, I predict that contractors will try to become architects as well, and that architects will attempt to become builders—and, in the broad sense, few will succeed. Buildings will be either poorly constructed or poorly designed, and the loss to the public and in the prestige of the industry will be immeasurable.

In connection with the adoption of the cost-plus-fee contract system, I wish to point out the importance of a standard cost accounting system, and the greater value of the open price

plan, as a powerful factor in education and in establishing mutual confidence.

#### CHANGE NEEDED IN POLICY ON BUILDING LOANS.

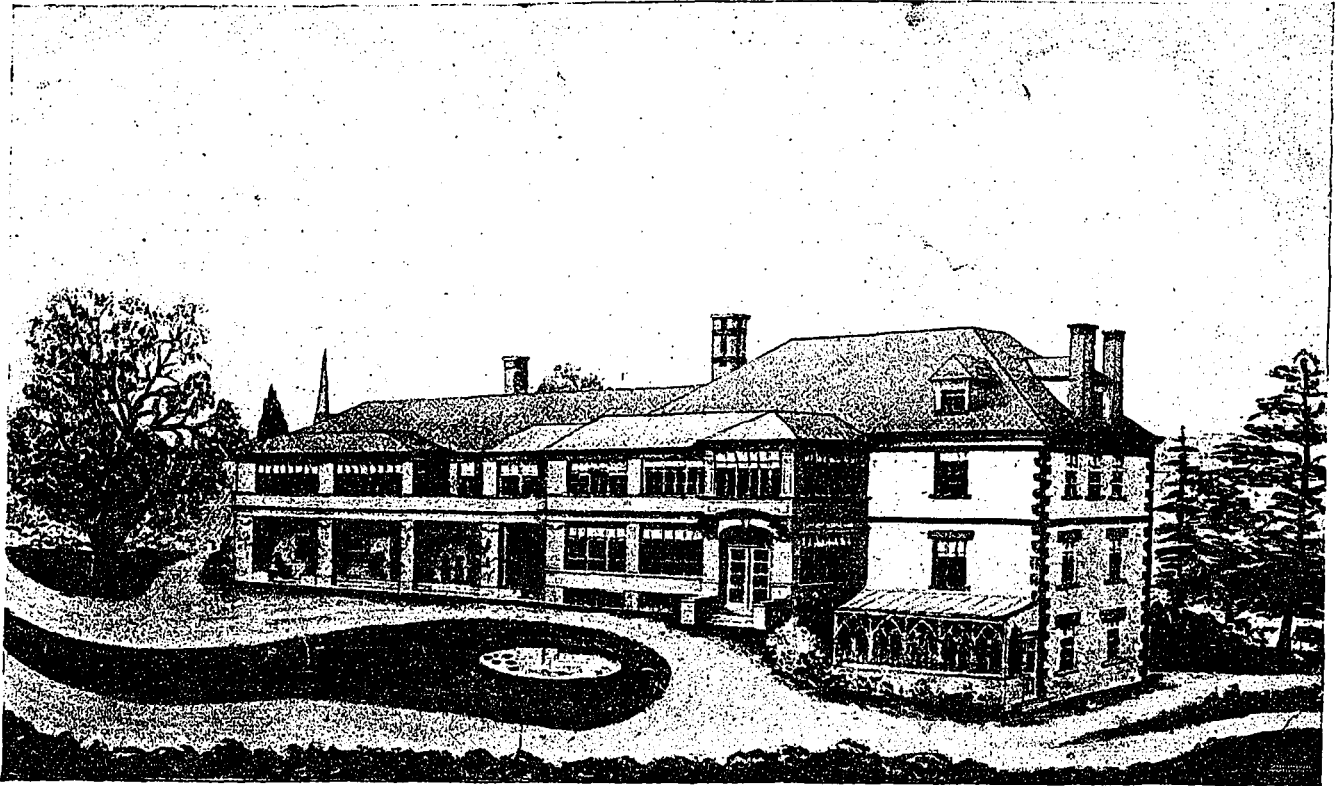
There is one, and only one, serious difficulty which lies in the way of securing these fundamental reforms. It will be necessary to effect a change in the policy of the lender of money for construction. Relatively little new construction is carried forward without building loans. Such loans are usually a certain percentage of the contract cost of the building. The question is, can the great lending companies be made to feel that they will be amply protected in loaning the same percentage on a carefully prepared estimate by a reputable "constructor" even though the amount of that estimate is not guaranteed by a contract and bond? I believe that ultimately such loans will be secured on the basis of confidence, even more readily and with less question as to values and risks than has been the case in the past. And I believe also that loans so made will be more secure than those made on the lump-sum contract ever have been. This must be so because the building will be a better investment in that both the cost of upkeep and depreciation will be less, and because costs will rest on the stable foundation of true values instead of the insecure basis of speculation.

#### Rhodes Scholarship for Architects of Ontario

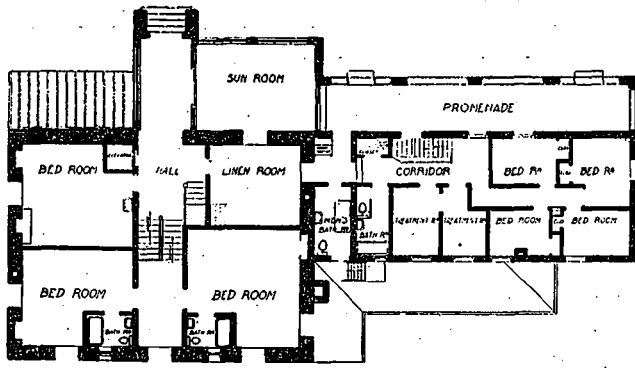
Notification has been received by Hon. Dr. Cody, Ontario Minister of Education, that the Rhodes Scholarship offered for the Exhibition of 1921 has been thrown open to the architectural students of this Province. This is accompanied by the Henry Jarvis studentship. The value of the scholarship is two hundred and fifty pounds, and the studentship two hundred pounds.

Intimation of intention to compete for these awards must be forwarded to the Secretary of the British School at Room 54, Victoria Street, London, S.W., before next January. Details of the plans and drawings will be forwarded to applicants.

Corrosion tests that have been completed indicate that the presence of calcium chloride, although the amount used is relatively small, in mortar slabs exposed to the weather causes appreciable corrosion of the metal within a year. This appears to indicate that calcium chloride should not be used in stucco, and warns against the unrestricted use of this salt in reinforced concrete exposed to weather or water.—*Engineering News-Record*.

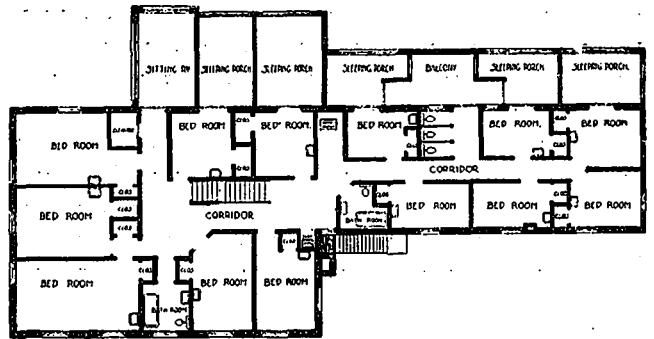


PERSPECTIVE VIEW FROM GARDEN SIDE



SECOND FLOOR PLAN

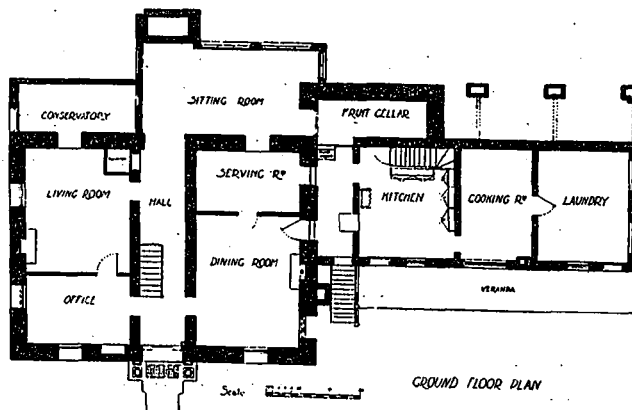
Scale - 1/4" = 1' - 0"



THIRD FLOOR PLAN

Scale - 1/4" = 1' - 0"

BRAESIDE  
LODGE  
SANITARIUM,  
PRESTON,  
ONT.



GROUND FLOOR PLAN

Scale - 1/4" = 1' - 0"

F. W. WARREN,  
ARCHITECT.

Fire Prevention Meeting, Sept. 4

Announcement is made by Secretary Lewis of the Ontario Fire Prevention League that the special meeting for which notices were recently sent out has been postponed to the date of the annual meeting, which will open at 10 a.m., September 4th, in the Reception Room at the

Parliament Buildings, Toronto. It was found that many of the members could not conveniently attend both a special and the annual meeting, coming so close together, hence it was decided to merge the two. A very successful meeting is anticipated, and all members are urged to be present.

## Braeside Lodge, Preston, Ontario

Braeside Lodge is the result of the enterprise of two nurses, themselves seeking rest in the Spring of 1918 at Preston, Ont., after a long period of strenuous duty, and who conceived the need of a sanitarium for the treatment of nervous and convalescent cases. The building itself was converted from a handsome old residence, and it was the desire of the owners to retain some of the details of the existing structure and make them a feature of the new scheme, with the result that the whole institution has a very homelike atmosphere about it. There is an old colonial stairway that has a charm all of its own, and the old doorways and woodwork which gave the old colonial homes their feeling of hospitality. The architect saw the value of these details and made the new work harmonize with the old.

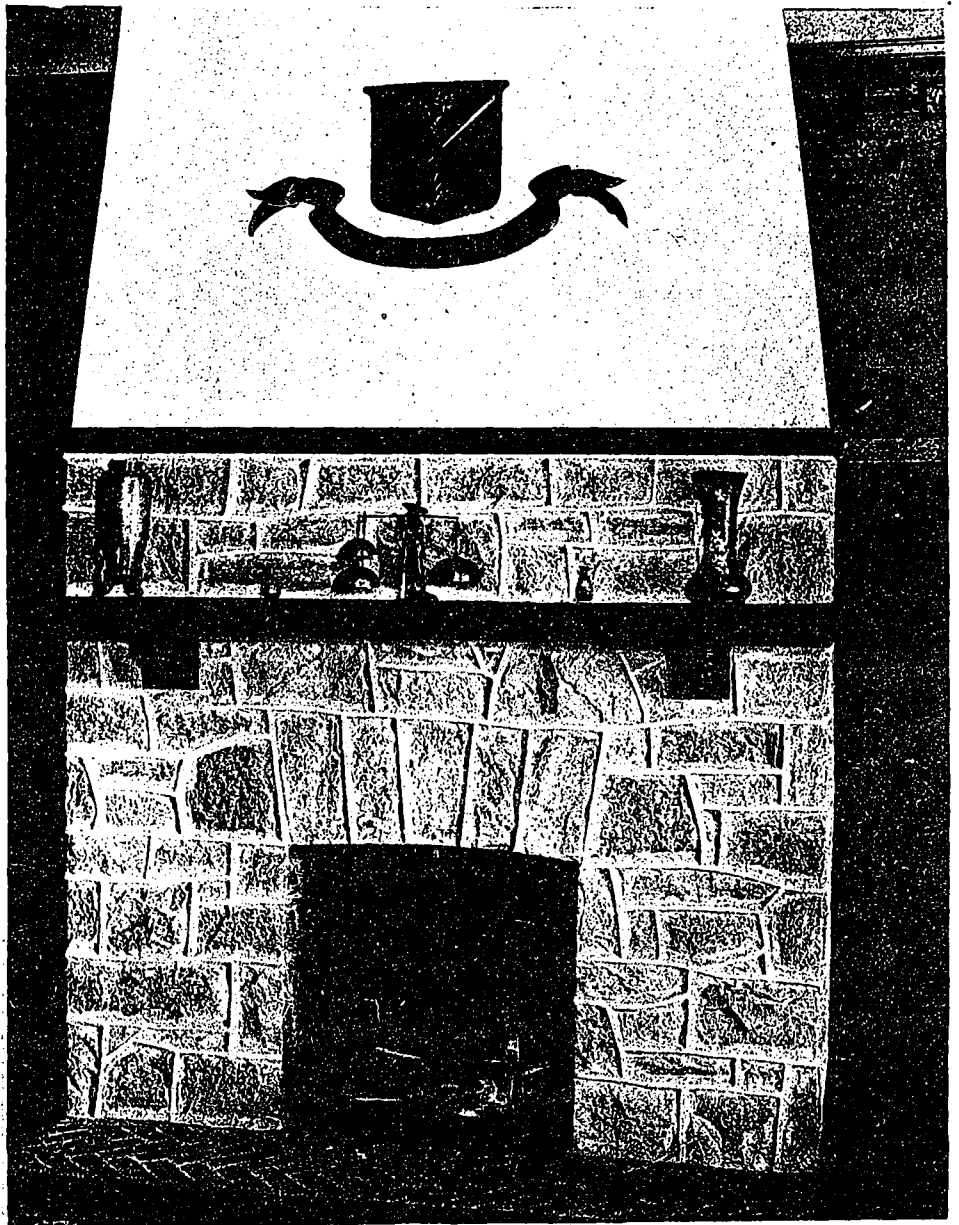
The main entrance leads into the hallway where the old staircase is located, with the office and private living room to the left. On the right of the hallway is the dining room, with the kitchen, serving room and butler's pantry adjoining. At the end of the hallway is the nurses' dining room, with a conservatory at one end, where flowers and vegetables are grown for the use of the building. Next to the kitchen is the cooking room and laundry.

The garden entrance is on the second floor, with a hallway running through to the elevator and stairway. Off the hallway is the solarium, with entrance on to a covered promenade. On this floor are bedrooms with private baths. Over the service wing are the treatment rooms, with bedrooms for the help farther on.

The third floor is almost entirely devoted to bedrooms, those facing the south-east having sleeping porches, while the fourth floor is utilized as one large room for recreation purposes.

Very attractive grounds surround the building, the district in which it is situated being

noted for its mineral springs and its good air, the altitude being a thousand feet. The garden is particularly noteworthy, being developed under the direction of capable landscape architects, and representing a carefully-thought-out



DINING ROOM FIREPLACE: BRAESIDE LODGE, PRESTON, ONT.

scheme. The public highways have been screened to give the place of a feeling of privacy, and there are winding paths through the garden for the use of the patients, as well as a section which is set off for lawn sports.

In laying out the building and grounds, consideration has been given to future extensions.

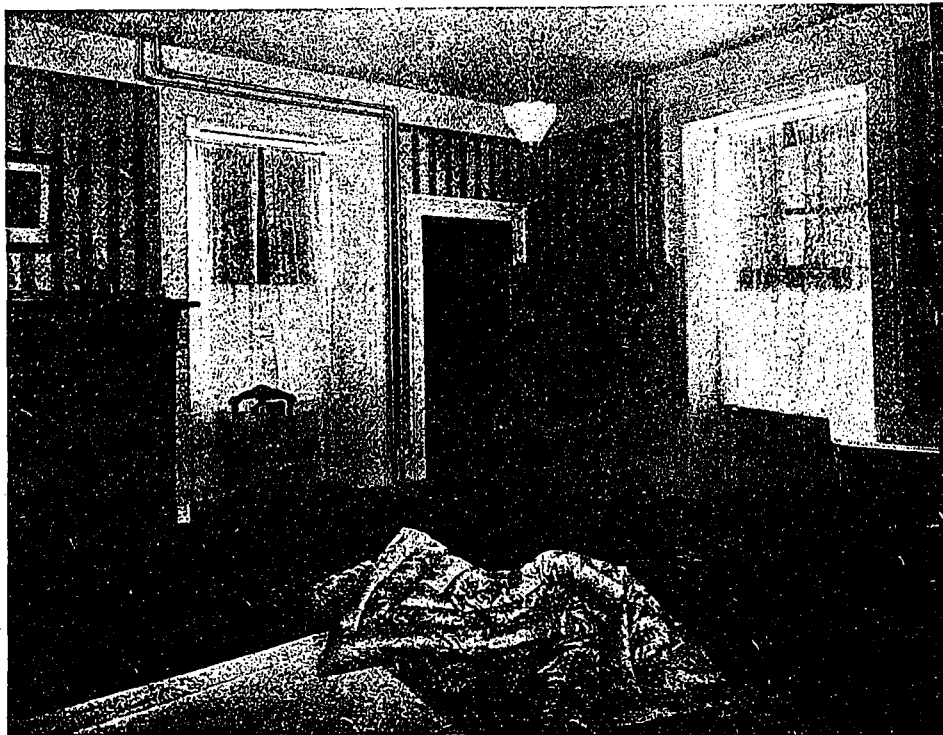
### Professional Remuneration

The doctrine that architects exist primarily for the practice of an art, and that the world at



DINING ROOM: BRAESIDE LODGE, PRESTON, ONT.

large can do without their aid, somehow or other, when an artistic end is not sought to be attained, may be unpopular with the profession, but the probability is great that this is the general impression of their place and service in the public mind. This will account for the commonly received notion that architects in most occasions of their employment have little to show for their remuneration. When real architecture is required and power of design evidenced the debt to the profession is fully admitted, and the value of its contribution to



GUEST ROOM: BRAESIDE LODGE, PRESTON, ONT.

the amenity of the world ungrudgingly recognized. It is, therefore, from the artistic side of their sphere of operations that assurance and advance will most naturally come to architects. Broadly viewed, the situation of the profession in the public view is secure within this its central and authoritative domain. Here uncertainty and doubt can only properly arise within the professional breast as to the competency of the art to fulfil the demands made upon it; a healthy fear of failure that is stimulative both of imagination and study. Here, again, the architect is able to make the value of his work sufficiently evident.

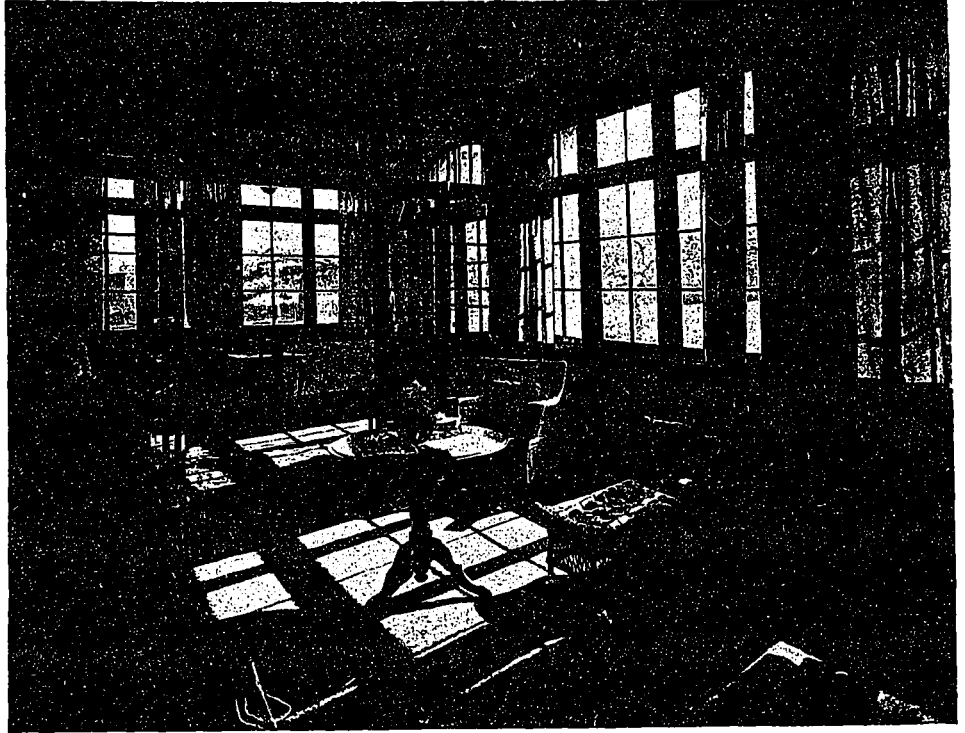
It is, however, in the more general and humbler sphere of contriver and director of common building operations, directly and indirectly, in suggesting various solutions of accommodation puzzles, wrestling with by-laws, neighbors and estimates, that the profession at large makes its livelihood. Thus services of real value are rendered to private individuals and public bodies, trying and arduous in nature, demanding skill, patience and experience, that from their character look difficult to appraise and liable to be under-estimated and soon forgotten.

Practising architects, whose opportunities of important artistic work are rare, not unnaturally value such services as deserving sufficient recognition and remuneration. It is unfortunate that in most of these latter exercises either the conceit of clients, the experience of a good builder, or the complacency of neighbors and circumstances may reduce their necessity and apparent value. It is just possible, though the economy may be more than doubtful, that the building operation after all did not demand the assistance of so highly trained and specially qualified an expert, and that after the original provision of a

plan his activities were almost superfluous. Such may be the opinion of the world, and a consciousness of its existence seems to underly the recurrence of spasms of self-justification in a profession which does not go with the world and permit advertisement.

The situation of the architect, therefore, is delicate, in his dual capacity of artist and man of building affairs, with but uncertain occasions for exhibiting his real worth and with abundant opportunities of ordinary unrecognized usefulness, and the remuneration for many services more often than not presumed to be a matter of concession unrepresented by material. The stupid world, in its practical way, impatient of elaborately just accounts, has by a long and deep-seated custom admitted that value of architecture is represented by a commission of five per cent. on the cost of the building, and the better judgment of the profession has continually expressed its dislike and contempt of an estimation which takes no real account of the time or skill, often differing greatly in value, which it bestows without detailed computation. But, whether willingly or not, the situation has been accepted, and taking the rough with the smooth, the back has become accustomed to the burden and has submitted to evils that it knows rather than invite unknown uncertainties.

There is considerable danger to-day in attempting to disturb a system which, with the very considerable advance of building cost, promises to increase the ordinary remuneration of the profession. The danger lies in the field where, as has been indicated, architects have the greater part of their employment, viz., in the sphere of ordinary building work, where their services may be dispensed



SUN ROOM: BRAESIDE LODGE, PRESTON, ONT.

with or displaced from non-professional sources. The public will be keenly alive to any effort on the part of their professional advisers and protectors which may innocently appear to take a double advantage of the present-day tendency of unions to make the employer pay increased prices, by not only charging the normal commission on an abnormal cost, but by increasing the rate per cent. of that commission. Further difficulty will certainly

*(Concluded on page 258.)*

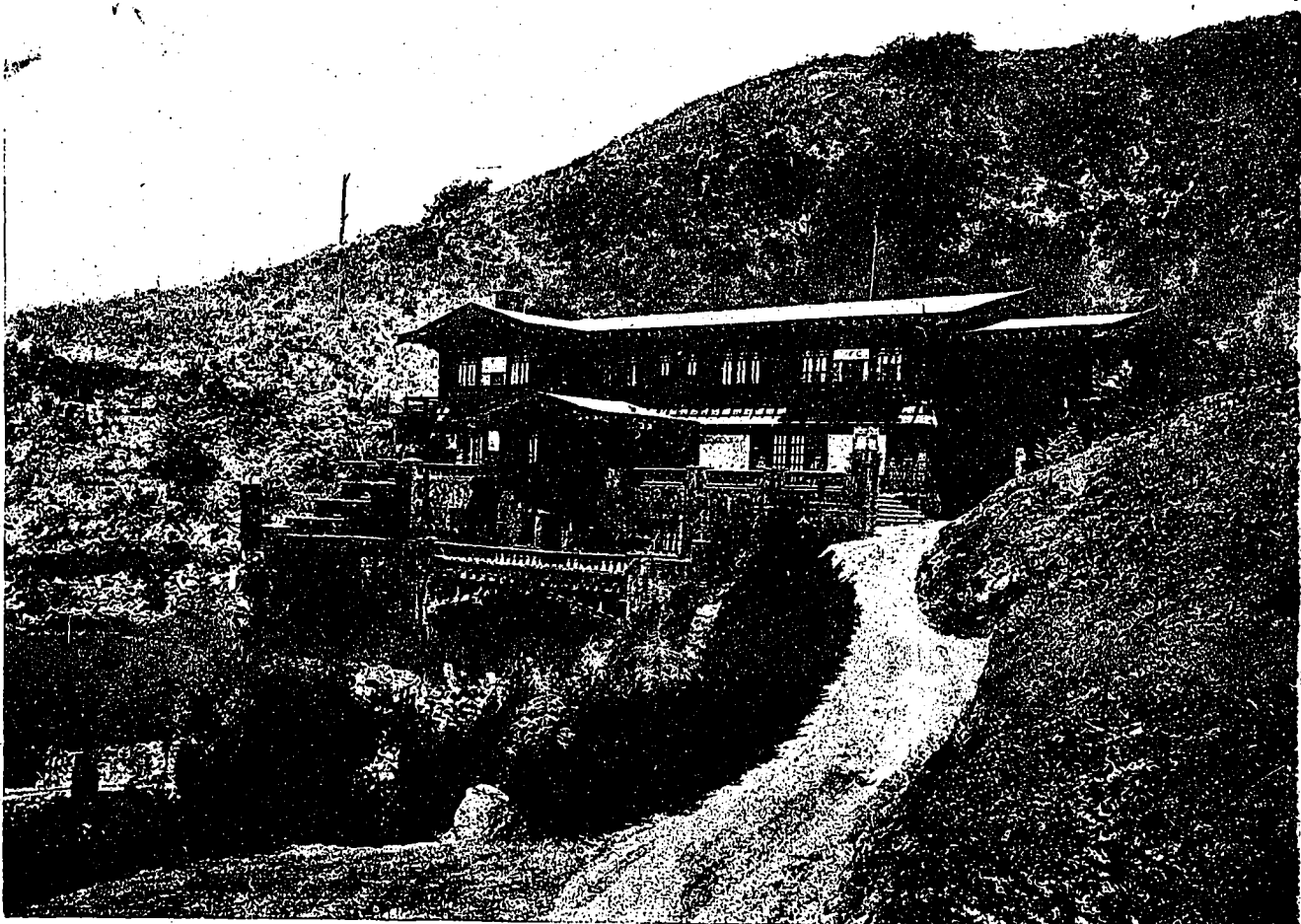


PATIENT'S SUITE: BRAESIDE LODGE, PRESTON, ONT.

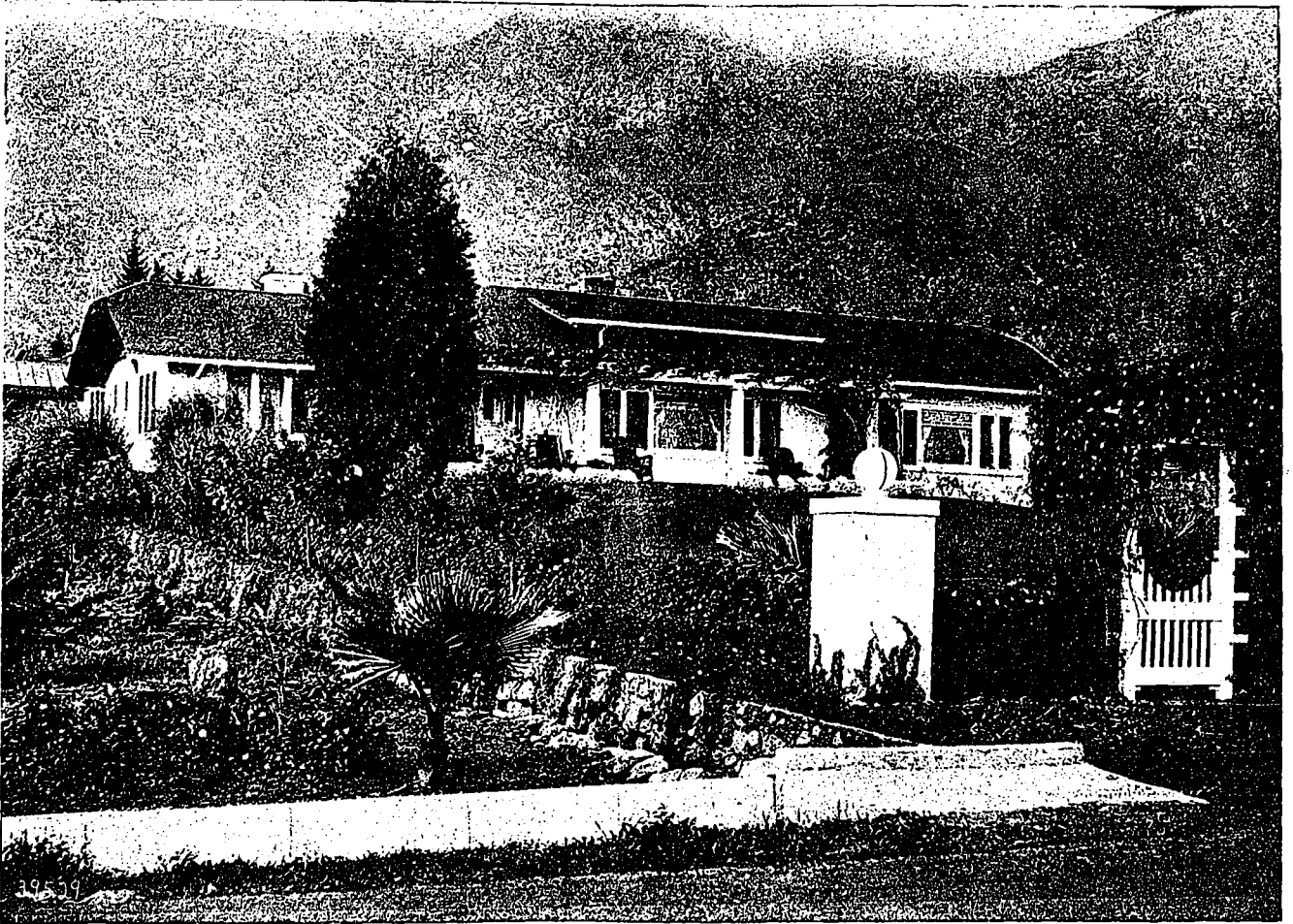




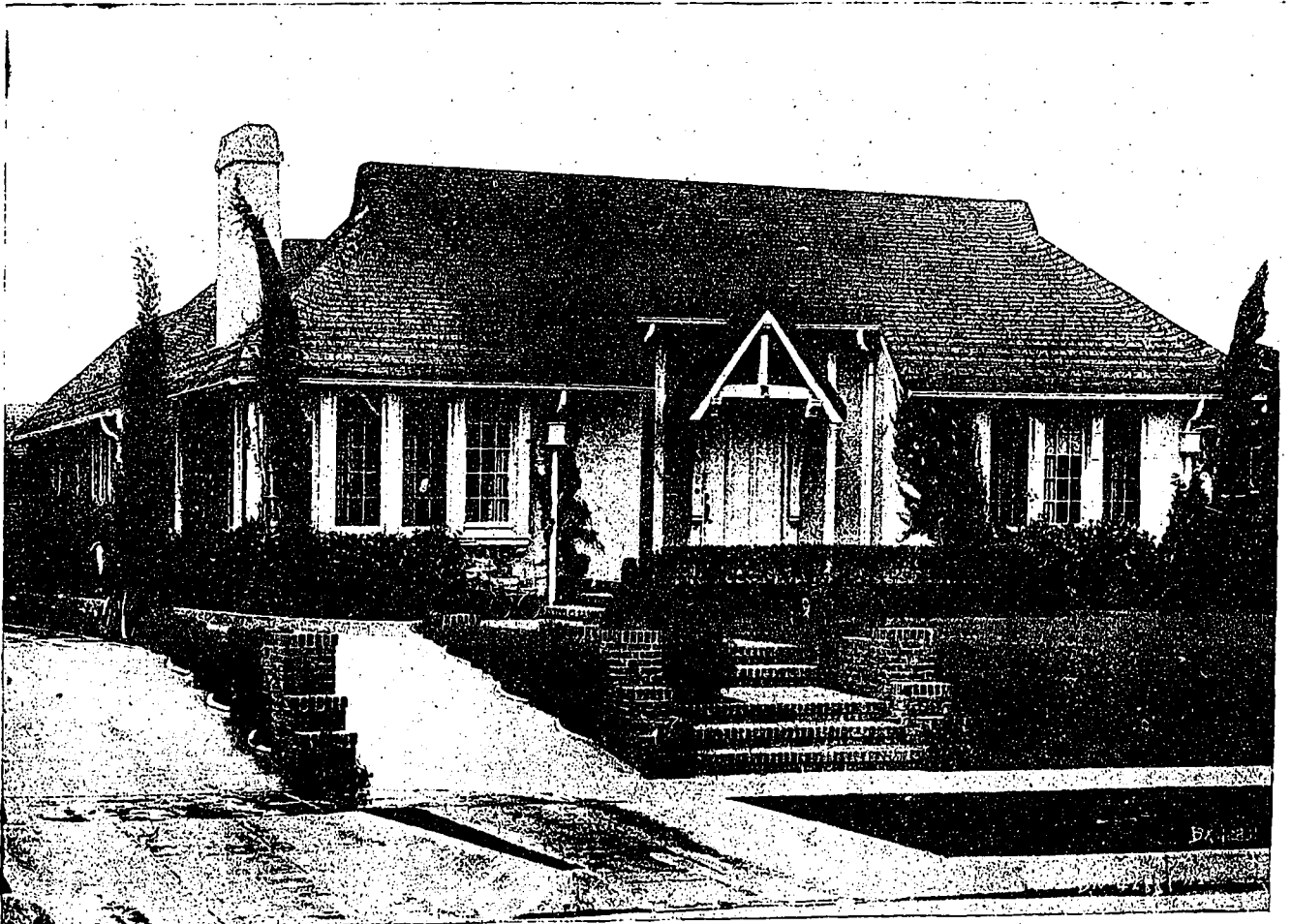
STABLE AND SERVANTS QUARTERS ON A CALIFORNIA ESTATE WITH CREAM COLORED PLASTER, GREEN ROOF AND WINDOW BARS PAINTED RED, GREEN AND YELLOW.



A MODERN CALIFORNIA BUNGALOW, NESTING IN THE HOLLYWOOD FOOTHILLS.



AN OLDER TYPE OF CALIFORNIA BUNGALOW, HAVING LITTLE DEPTH AND A DIRECT ALIGNMENT OF ROOMS OPENING ONTO A PERGOLA.



THE THATCHED SHINGLE ROOF, A SOMEWHAT RECENT INNOVATION, AS SEEN IN A SMALL CALIFORNIA HOME.

# The Need of Architectural Instruction In Colleges

**A** MOVEMENT initiated by the Illinois chapter of the American Institute of Architects which should interest the architects and educators of this country, forms the subject of an address delivered by Mr. George C. Nimmons, F.A.I.A., at the convention of the Association of American Colleges, which the "American Architect" reprints in a recent issue. The object is to have the colleges shape their curriculum to impart a greater knowledge of architecture and the arts to college students in general, and has no reference to existing architectural schools which provide courses of instruction for students who intend to follow the practice of the profession of architecture. According to Mr. Nimmons, after the student enters upon his career in life he begins to take part in constructive enterprises where building improvements are involved, and any knowledge he possesses of this kind will to a large extent determine the character of the architecture in the community in which he resides.

To the uninitiated, the address reads, institutions of learning are supposed to include in their courses of study instruction both in the arts and sciences, as the arts have always been associated at least in name with the objects for which most colleges and universities have been founded. It always seems to be assumed that the proper education of anyone would naturally include some knowledge or information of the fine arts. The assistance which an understanding of the arts would be in the acquiring of good taste and refinement, and the appreciation of and preference for the finer and better things of life, are objects which alone would seem to be sufficient recompense for the time spent in securing some knowledge and understanding of this subject.

Yet the curricula of colleges generally stop short with the art of literature. Few of them, aside from those having special art or architectural departments, provide any material instruction in the fine arts, or more especially any means of giving the students even a fair understanding of the history or principles underlying the practice of these arts. It is my understanding that about the only information as a rule imparted to the students concerning architecture is that which is more or less incidentally referred to in the various histories of the world used in the different colleges.

While there has been as yet no definite plan agreed upon by the architects defining the exact scope and character of the subject, it seems that a clear understanding of it cannot be had at this time without at least some discussion of

the nature of the architectural instruction proposed.

At the beginning it would have to be recognized that architecture is too large a subject to be treated at all completely in the limited time that might be found available in the already full courses of the colleges. There is no doubt that many subjects are being urged for consideration which cannot possibly be considered, and it is only on account of the extreme need of a better understanding of architecture, particularly among educated people, that the subject is urged so strongly for your consideration.

If the opportunity is given for the introduction of architectural instruction in colleges, the first consideration would be to select only such features and branches of the subject as would be of the greatest practical value.

It is not considered that the text books and lectures intended for strictly architectural schools would be at all adapted for the purpose in mind. These are designed for a much more extended and detailed treatment of the various branches of the subject than could possibly be included. Neither is it intended that any of the existing histories of architecture be utilized, as these do not include some of the most important topics to be presented and nearly all of them devote more space to some periods of the history of architecture than could be allowed.

The subject matter, therefore, that is intended for use in this case would have to be all newly compiled and specially prepared for the particular purpose in hand. It is probable that the best result would be secured by taking from a number of works the best treatment of the various subjects selected and adding new material as might be required.

There are a number of works of recent publication that contain some of the best discussions of present architectural problems which would undoubtedly be considered in order to bring the work abreast of the latest thought and opinions of the day. Whether this instruction should be given entirely in the form of lectures or by the use of a text book is a matter to be determined, but the text book form recommends itself, as in that case the same treatment of the subject could be at once universally applied, while if the lecture plan were adopted as the principal means of imparting the instruction agreed upon, it would be difficult at first to secure a sufficient number of lecturers fully equipped with the means to illustrate their lectures. The study of any text book, however,

should be supplemented as far as possible by such lectures as could be arranged for.

The establishment of a professorship in architecture is probably too much to be hoped for at the start, but in its absence the course could be conducted by the professor of history, with which subject it is so intimately connected.

The course of instruction in architecture, therefore, would consist, first, in the study of a text book specially prepared for that purpose; second, a series of illustrated lectures supplementing the text book; third, a brief course in drawing sufficient to teach the use of tee square and triangle in laying out plans and elevations to scale; fourth, a brief course of field work in which buildings under construction and buildings which are accredited to be the best types of architecture in the vicinity would be visited and observed under the guidance of some architect or some one capable of explaining the application of the important principles learned, to the actual building.

The text book no doubt would contain a treatment at least of the following subjects:—

Definition of architecture, its place among the fine arts, discussion of construction and its various types, the use of materials, a brief history of architecture, the present methods of the practice of architecture, the making of drawings, letting contracts and supervision of the work, the theory of design, the use of historic styles in connection with modern buildings, a national style, the relation of the art of the industries to architecture, a brief presentation of the principles underlying landscape gardening, painting and sculpture and their use in connection with architecture.

Whether or not the above headings happen to be the most comprehensive titles for the various branches of the instruction (and it is probable that they are not), still the important thing at this time is the value of the training and instruction to the student.

This course of instruction would be laid out and designed to exercise and train the mental faculties as well as supply useful and practical knowledge for after life. The study of it would be similar in effect in some ways to that of a study of the humanities.

No better agency than a knowledge of the history of architecture can be used to fix a good perspective in the mind, of the different peoples of past ages. We know a nation best by its works, and if we have a general knowledge of its buildings we have then the best index of its character. We can compare the works of one people with another and with our own. We can interpret in a fairly accurate manner their aims, ambitions and aspirations.

One instinctively seeks to found an estimate of a person upon what he does, rather than upon

what he says, when it is possible to secure the necessary information; a knowledge of architecture gives us this foundation upon which we can judge best of the character of the people of the past. Therefore it would be a great aid in the study and understanding of history.

This same ability to judge of the character of the people of the past would apply just as effectively to the present.

The reason that a building is such a good indication of the character of the man who built it or caused it to be built is the fact that its erection as a rule represents the hard-earned returns of his own labor or efforts; it is something for which he must usually give up all his savings and go in debt for a part of the cost besides. Then the building also furnishes him an occasion for giving material expression to the things which he likes and admires.

Architects can testify that the designing and erection of a building is as a rule one of the most serious and earnest undertakings in a man's life. It is sure to represent the best that is in him, according to his own standards, and the character and design of the buildings are very likely to represent more the ideas and standards of taste of the owner than they are those of the architect. It is the client's building; his desires, and his ideals must be incorporated and the architect is obliged to do the best he can to make the most of them. The building, therefore, as a rule truly represents the character of the owner.

A student who had received some training and instruction in architecture would have acquired thereby a new and wider scope for his judgment. The character of houses and buildings of cities must have meant little to him before; now with this instruction added to his store of knowledge he can discriminate between the good and the bad and the crude and the refined, in buildings, and therefore in the owners. He can at once make a better and more comprehensive estimate of certain qualities in an individual or of a whole community than he could have made without this knowledge. The student's character will have been improved and developed thereby to the extent of making him a better judge of the men of his day as well as of those of the past. If there is any one subject upon which the educators seem to agree as one of the important aims of education, it is upon the ability gained by education, of being able to judge men correctly. A study of architecture, therefore, would aid materially in this direction.

While this course of instruction would broaden the student's faculty of judgment with respect to his fellowmen, it would also at the same time develop and raise his own standards of taste. The instruction which would describe

to him the finest of the world's accomplishments in building and explain to him the principles upon which their design was founded would thereby develop certain important traits of his own character in a manner that no other agency in college can now possibly do.

The average American student in intercourse with almost any of the students of Europe is positively at a disadvantage, and sometimes embarrassed on account of his ignorance of the fine arts and architecture especially. If he is called upon for any opinion or to give expression to his conception of anything that has to do with architecture, his views are likely to be crude, and his judgment is not only discounted, but it is likely, on account of a lack of knowledge of the subject, to create a prejudice against him. In other words, the American student appears more or less like an unpolished, rough product of education, because he is deficient in a knowledge of the fine arts, although he may have, and usually does have, just as many other sterling qualities of character as his European brothers.

It is noteworthy in this connection to recall how the alumni of colleges universally regret their ignorance of architecture. With few exceptions they always appear eager to learn something from architects about it, and they are always anxious to know how they may recognize buildings and historic styles of architecture.

It is, nevertheless, a great regret that the American student does not have his rough spots polished off by an application in college of at least a little instruction in architecture so as to make him more a citizen of the world, equipped with a knowledge and understanding of those artistic things so important to the rest of the world, and so much neglected in the past in this country.

What a great benefit a little knowledge of architectural drawing would be if acquired in college in connection with this proposed course in architecture.

A student may have learned something of drawing in his earlier days in school, but as he advances with the higher studies of college he is likely to neglect it and to minimize the very important uses to which it may be put in after life.

The purpose of the instruction in drawing in this course would be to enable the student to lay out to scale the plans and elevations of a simple building and with the knowledge and skill so gained work out the arrangement and design of a few building problems, sufficient to fix in his mind some of the fundamental principles of architecture.

This training in the first place would tend to fix in mind for life a method of drawing by

which the idea of almost any material thing could be projected on paper for examination, criticism and judgment. It would afford anyone, no matter what his profession or calling, the best possible means for studying and perfecting important problems and undertakings that were difficult to visualize sufficiently for examination.

Then in an architectural way it would undoubtedly impress in the student's mind some useful rules of good construction a definite idea of how properly to plan and arrange things and some sound basis on which to found his ideas of good design and rational and beautiful ornament.

The last subjects suggested in the course of instruction are landscape gardening, painting and sculpture in their connection with architecture. . . . There are few things in life that would add so much to the wholesome enjoyment and refinement of the hard-working, industrious people of this country as would a knowledge and ability to beautify and cultivate properly the surroundings of their own homes and improve and landscape the streets and open spaces of their towns and villages. Such things stand for contentment, much-needed recreation, happiness and good citizenship, and are therefore some of the strongest influences for a higher and better life of the people.

It is beyond the scope of this paper to go into the fields of painting and sculpture and even attempt to recount the benefits that would result to the students from a real understanding and appreciation of these two great arts. But in this proposed course of instruction there might be introduced sufficient instruction to give the students some idea of the principle underlying these arts, the objects which the various schools of art endeavored to attain, and some guidance as to how best to enjoy and appreciate works of art.

After he has entered upon his career in life, his first serious direct contact with architecture will probably be the building of his own home. Its plan and arrangement will be responsible to an important degree for the easy running of his household. The effect of its design and surroundings will be those silent and yet potent influences in crystallizing his own ideals and standards of taste and refinement and in moulding those of his children.

As he progresses in life and begins to take part in constructive enterprises where building improvements are involved, his choice and decision on the arrangement and design of important buildings will naturally be sought. At this time his decisions and the results of his knowledge of buildings and architecture will increase in importance, because he will not only fix the character of his own buildings, but that of public buildings as well.

If this career lies in the field of business, then he may have to do with large and important commercial and industrial buildings. His judgment will have to be passed upon buildings whose plan and design may have much to do with the success of the business to be carried on. The army of employees engaged in the industries, together with their families, now constitute a third of the entire population of this country. Provision for housing them in wholesome and satisfying quarters is to-day one of the important problems of national concern. The workshops for the men, in order that business may meet competition and that wages sufficient for a decent living may be paid, must be models of efficiency and at the same time provide completely for the welfare of the employees. All these great questions are connected intimately with the plans and designs of buildings. Architects and engineers may draw these plans, but their character and their final approval in the last analysis comes down to those in control of the business, and their knowledge of building and architecture must guide them in their final decision.

Our industries need every help and encouragement they can get in these times of reconstruction. One of the greatest handicaps to some of the American industries in meeting foreign competition in the past has been the relatively poor appearance and design of some of our products as compared with those of Europe. American designers of industrial products often do not seem to understand the first principles of good design, neither do they understand as a rule the use of color and its combinations. Their products are often coarse, crude and ugly as compared with foreign ones. The trouble is that they have never had any knowledge of architecture. Architecture is the mother art from which the ideas for construction, ornamentation and design of industrial products are taken. Some of the awful things of industry would never have appeared in the market if the industrial designer had only understood that one single basic principle of architecture, viz., that good design and ornamentation can only grow out of a logical development of construction, fashioned so as to meet the functions for which the thing was created. If a single instance were to be mentioned to exemplify the above statements, there is probably no product of the manufacturing industries of this country that deserves this distinction so much as the American stove, and that variety so properly named the base burner. This product which is made up in its design of the most hideous gegaws and jimcracks, polished and silvered so as to vainly pronounce itself to the eye, is a creation which would seem to come from the lowest savage. As an example of design it might very properly be ascribed to the

heathen as an altar erected after their own fashion to glorify some strange and hideous god. The tragedy of the whole matter is that this is the fireside of thousands of American families, who have to sit around it through the long winter months. Their children growing up have this thing in their homes to pervert their standards of taste and degrade their ideas of design and ornament.

Such things absolutely never could have been created, or never would have been bought, if the people generally had received some instruction in architecture. As the tendencies of a large proportion of American people are toward the industries and as a great many of them so engaged look to the colleges to train and educate their children to carry on their business, the need for architectural instruction in college so far as the industries are concerned is very pronounced.

The January Bulletin of the Art Institute of Chicago has very fittingly summarized this aspect of the industrial situation in the following words:—

“A great industrial nation without an industrial art can after all be great in bulk only. When practically every industrial and commercial nation in the world excepting ours has long seen the light on this subject, it would be a perilous thing to venture forth with our wares upon the seven seas without a new reckoning.”

If the student elects to follow any of the professions as his life work, then this instruction in architecture will be equally important. If he is a lawyer and his practice is with corporations or estates, much of his work will have to do with buildings and architecture. If he is a physician, his practice will from the first be closely connected with hospitals. If he is a teacher or professor, the college buildings will become intimately associated with his work; and if he chooses the ministry as his calling, the architecture of churches will at once become a subject of the greatest importance.

As the student progresses in life and succeeds in taking his place in the control and direction of affairs, he sooner or later will be called upon to assist in determining and approving the plan and design of public buildings, and it will be his judgment and his standards of excellence and right planning that will determine the character of the architecture of his community.

If the student in his advancement is afforded the advantage of travel and study abroad, his deficiency in a knowledge of architecture will be felt all the more keenly. He who doesn't know one architectural style from another will probably fly to the rescue of Baedeker on the way over, in his haste to prepare for a first acquaintance with the world's great masterpieces of art.

It is a strange and unaccountable fact that these great works of art which the rest of the world prizes and appreciates so highly should arouse so comparatively little interest in this country, and when it is considered that these are the finest and greatest works of man in the building art, it is more surprising that the institutions of learning in this country do not teach at least enough architecture for the traveller to enjoy and appreciate them. It would seem that the proper education of a man was not complete without such instruction.

While this plea for architectural instruction may be founded somewhat on criticism of omissions in the present courses of college instruction, as well as on the benefits to be gained, still the writer is not unmindful of that purpose of college education which is the greatest of all, viz., the designing and the building of the highest form of Christian character. And it is most gratifying to know that, in spite of the effects of the war, the French and British Educational Commissioners who have just visited this country are entirely in accord with this high ideal, as indicated by their public utterances. Sir Henry Alexander Miers, a distinguished member of the British Commission, speaking at the University Club concerning the war and the aims of education, said: "The real objects of education are truth, honesty and justice."

Even if our colleges accomplish nothing beyond the cultural and moral training of the students, no one could properly have anything but praise for the good which they would do; yet it is recognized that it is essential for the sake of students and for the support from the people of the country that a college education must, without losing sight of its main object, include in its training and instruction as much as possible of that which would be of the greatest practical value in life after graduation from college. Certainly, this proposed architectural instruction has much that would be of great value in that way as well as a strong cultural and refining influence in an educational way.

As it is, we have never been able to advance far in the development of any architecture of our own, we have never been able to improve materially and in some ways not even equal the architecture of the past. We have the advantage which other nations of the past did not have in our photography and books with their illustrations. What we want now is to begin where they left off and progress. We want to get something more significant of ourselves into our buildings; we want to see the Greek fret, the acanthus and lion's head of Imperial Rome, or the fleur de lis of France, or such ornaments which have no national significance for us, give way to our golden rod and our wild flowers, our buffalo head, our Indian

lore and all those reminders of our own national existence, which is full of opportunities, and we want to see our wonderful new steel skeleton and our reinforced concrete constructions clothed with an architecture our own in spirit, representative of our institutions and worthy to stand as a fitting record and monument of our achievements for the people of the future.

## A "Cedarvale" Residence, Toronto

*Illustrations—See Page 5.*

The Cedervale district, Toronto, has recently witnessed the development of a number of interesting houses, of which two subjects were shown in a previous issue. In this number we are illustrating another example, the residence of H. B. Taber, Esq., on Hillbrow Avenue. This house is located on a level site 50 x 144 feet. Towards the rear of the lot there is a beautiful ravine, and for this reason the kitchen was placed at the front, which permits of a plan which gives the dining room and living room the advantage of a splendid outlook. Both of these rooms and the hall have French doors leading to the garden porch.

On the second floor there are three large bedrooms, one of which is 14 x 24 feet in size. The attic floor has two maid's rooms, a maid's bathroom and a storeroom.

The house is faced with four-inch stone, backed with eight-inch tile to the second floor level. The stone is laid at random, with wide joints, consisting of Queenston limestone, Indiana, Travestine, brownstone, marble, etc. Stucco on eight-inch tile is carried from the second floor to the underside of the roof. The roof and exposed rafters are stained dark and are in pleasing contrast to the stone and stucco, the garden porch having a stone floor and stucco ceiling.

The entire ground floor except the kitchen is treated in gumwood, walnut finish. The bedrooms are all in white enamel, the vestibule and bathroom having tile floors and the latter a Keen's cement dado. The heating is hot water.

Electrical appliances for domestic purposes are advocated by the Women's Housing Subcommittee of the Ministry of Reconstruction's Advisory Council of Great Britain, which has been considering the matter of improved living quarters for working-class families. It is stated that when the houses and water supply are heated and the lighting and cookery done by electricity, half of the domestic work now necessary will be eliminated. Other recommendations are in reference to furnaces, hot-water heaters, kitchen cabinets, clothes-drying racks, and water-proof wall surfaces, which are already common in the majority of even the less expensive types of Canadian houses.

# CONSTRUCTION

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## The Late Andrew Carnegie's Gifts

The name of Andrew Carnegie will endure both as one of the great captains of industry and as a large-hearted public benefactor. Through the generous gift of his millions many cities and towns in Canada and the United States owe the fact that they have respectable public libraries. In many cases these are better and more costly buildings than local boards themselves would provide, and have done much to raise the standard of community structures. Mr. Carnegie in this manner did much in the interest of architecture. It was always a condition in donating a sum for a library that the plans must first meet with his approval; also that the community which received his gift must agree to provide a stated annual sum for the upkeep of the building. This was Mr. Carnegie's way of making his gift permanent. It expressed his foresight and his desire to place his benefits to mankind on an enduring

basis. If a city or town failed to give this guarantee, it received no consideration.

Altogether it is estimated that Mr. Carnegie gave away over \$350,000,000. One of his great gifts was the Peace Palace at The Hague, which was established as a place where nations might arbitrate and settle their differences, and whose object was superseded by the present League of Nations. The great philanthropist visited Toronto shortly after the Reference and Circulating Library on College Street was completed. At that time he expressed his views as to the architecture of libraries, stating that they should not be gaudy in character, but should stand in place in quiet and simple dignity, as if to say, "My treasures are within." Not only did he give of his great wealth to provide for the erection of many such buildings, but he also had a well-formed idea as to how they should be built and maintained.

## Toronto Draughtsmen Organize

Construction has just received a circular drafted by the executive committee of the recently formed Draughtsmen's Association in Toronto, which was organized on May 16th, and has since been building up its membership. This circular defines the aims and objects of the organization, which, divested of superficialities, are substantially as follows: (1) To promote a higher regard for professional etiquette among its members; (2) to ensure that all work be carried out by men of proper qualification; (3) to establish a broader acquaintance and understanding among its members for their mutual benefit; (4) to enjoy the benefits of class instructions and lectures to be given by advanced members or by professional men; (i) to operate as a compact professional body in reference to their interests; (6) to encourage high ethical standards; (7) to promote such interest and participation in public and quasi-public affairs that will show the draughtsmen to be men of general and civic ability; (8) to create a more equitable relation between employers and employees.

"Last, but not least," the circular says, "that by inspiration and thoroughness in the training of junior draughtsmen this Association aspires to do what the societies of architects and engineers have failed to do, namely, to impart a more sound training in every branch of the arts and sciences pertaining to their work and ensure better recognition of the draughtsmen as a co-ordinate of the architect and engineer."

Construction believes that an association of this kind can do much to assist its members and that it can obtain the co-operation of architectural and engineering bodies. There is no



reason at least why their should be any conflict of interests. If in no other way, it will serve to promote a better spirit of fellowship and progress among a large class of men who are identified with similar interests. The association altogether includes all classes of draughtsmen—architectural, mechanical, electrical and engineering—and hold regular semi-monthly meetings. Time and space does not permit of us going into further details, but it is a subject which may again be dwelt upon in a subsequent issue.

## Professional Remuneration

(Continued from page 249.)

attend the many explanations that must attend varying scales of percentage designed to fluctuate with the increases often attendant on progressive operations, and the suspicion that the protector of the client is mainly concerned with protecting himself against his client will be hard to disperse.

An impartial wisdom will suggest that any uncertainty that exists in the public mind as to the place of the architect will be determined upon economic and not upon professional grounds. This should premonish architects not to disturb at present the generally accepted five per cent., in case the argument of its application to abnormal costs may be pressed to its logical conclusion.

## Korean Houses

When a Korean begins to build a house he first lays down a system of flues where the floor is to be. These flues begin at a fireplace, usually built in an outer shed or in a closed alleyway connected with the house. From the fireplace the flues branch out like the ribs of a fan and end in a trench at the back of the floor space. This trench, in turn, opens into a chimney, usually built at some distance from the house. When the flues are completed the builder carefully covers them over with flagstones; he then cements the whole floor and covers it with a short of thick oiled paper for which Korea is famous. The rest of the house is then built round the completed floor.

The heating system works in this way: When it is time to cook the rice for the morning meal the housewife lights a little straw or brushwood in the fireplace in the outer shed. While the rice is cooking, the heat from the fireplace passes through the flues, heating the stone flags of the floor and diffusing a pleasant warmth that lasts until it is time to prepare the next meal. Two heatings a day generally suffice to keep the floor warm. On the floor the

people sit by day and sleep by night. The heavy oiled paper that covers the floor prevents any smoke from entering the room.

## CONTRACTORS and SUB-CONTRACTORS

As Supplied by the Architects of Buildings  
Featured in This Issue.

### UNION BANK BUILDING, COR. SPARKS AND METCALFE STREETS, OTTAWA.

Plumbing and Heating, McKinley & Northwood, Ltd., and M. M. O'Connell, Ltd.  
Plastering, Chas. Hunt and T. Brethour & Co.  
Painting and Glazing, W. J. Carson and P. Stewart.  
Marble and Tile, Calkins Tile Co. and A. K. Mills & Son.  
Structural Steel, Canada Foundry Co. and Dominion Bridge Co.  
Carpenter Work, Smith Bros.  
Mason and Brick Work, Holbrook and Sutherland.  
Vacuum Cleaning System, Spencer Turbine Vacuum Cleaning Co.  
Bronze and Copper Work, McFarlane-Douglas Co., Ltd.  
Iron Stairs, Canada Foundry Co. and F. A. McKay.  
Electric Fixtures, Moran & Hastings, Ottawa Electric Co., and McDonald & Willson, of Montreal.  
Elevators, Otis Fensom Elevator Co.  
Mail Chute, Cutler Mail Chute Co.  
Vault Doors, J. & J. Taylor, and Canadian Fairbanks-Morse Co.  
Building Directory, Mantel-Stewart Co.  
Bank Fixtures, Canadian Office and School Furniture Co.

### ARCHITECTS' SPECIFICATION HANDBOOK.

One discerns the thoroughness with which the Trussed Concrete Steel Co. aims to be of service to architects in glancing through the "Architects Specification Handbook," which this concern has recently issued. Undoubtedly most architects have a copy of same by this time; if not, they should endeavor to secure one. It is issued in loose leaf form and consists of specification sheets dealing with waterproofing, damp-proofing, technical paints, coating and floor hardeners. In addition to indicating how "Truscon" products can be specified, there is much useful information as to the character of composition and application of these materials. A large list of "Truscon" users is also published. A copy can be obtained from the head office at Walkerville, Ont.

### A COAL OIL ENGINE.

What is claimed to be an efficiently and economically operated engine for various purposes, is now being placed on the Canadian market by the Dominion Supply Company, Confederation Life Building, Toronto. This is the Hoag Oil Engine, which, it is said, offers a number of advantages over the gasoline type of engines. One of its features is the fact that it has no electrical devices whatever, the burning of the oil being brought about by mechanical means alone, thus doing away with the usual time and trouble involved in fixing the electrical ignition. The engine, it is said, starts easily, even in the coldest weather on the fuel it uses, namely, coal oil or fuel oil, and has a stated operating capacity of 6 H.P. on 3½ gallons for ten hours. In that it has no carburetor, gasoline or electric spark, it is claimed that it is impossible for it to backfire and that hence it minimizes any danger of igniting any inflammable materials near the engine. Full information as to its construction and advantages may be had by addressing the above company.

### NEW MUELLER CATALOGUE.

Some idea of the extensive line manufactured by the Mueller Mfg. Company, Limited, of Sarnia, Ont., is obtained from Catalogue "A," which the company has just issued. Incidentally the magnitude and industrial importance of the plant which is necessarily required to produce such an excellent range of products, become quite obvious. The catalogue is a splendidly illustrated and printed book of 275 pages, featuring water, plumbing and gas brass goods. The company states that through the expansion of the Mueller line, coupled with the company's policy in standardizing and eliminating duplication, it has been found necessary to establish an entirely new set of plate numbers for the firm's products. With the exception of tapping and drilling machines every article in the catalogue has a plate number preceded by the letter "A." The company emphasizes that goods should be ordered by the plate number prefixed by the letter "A," not by the name of the article. The figuring of cost has been greatly simplified by the adoption of per piece price list almost exclusively. At the back of the catalogue is a telegraph code, which makes it possible to wire an order at slight expense. The new catalogue superceded all previous Canadian catalogues, booklets, etc., and the plate numbers and prices printed therein. Architects and plumbers will find the new edition of every-day value, and should lose no time in securing a copy from the Sarnia office.

### CENTRAL STATION AND INTERIOR HEATING EQUIPMENT.

The American District Steam Co., of North Tonawanda, N.Y., has just issued a special 30-page catalogue descriptive of their Central Station and interior heating equipment. Also an interesting folder entitled "The Radiator has the Floor," describing the Adaco Vapor Heating System. They will gladly send same to any one interested.