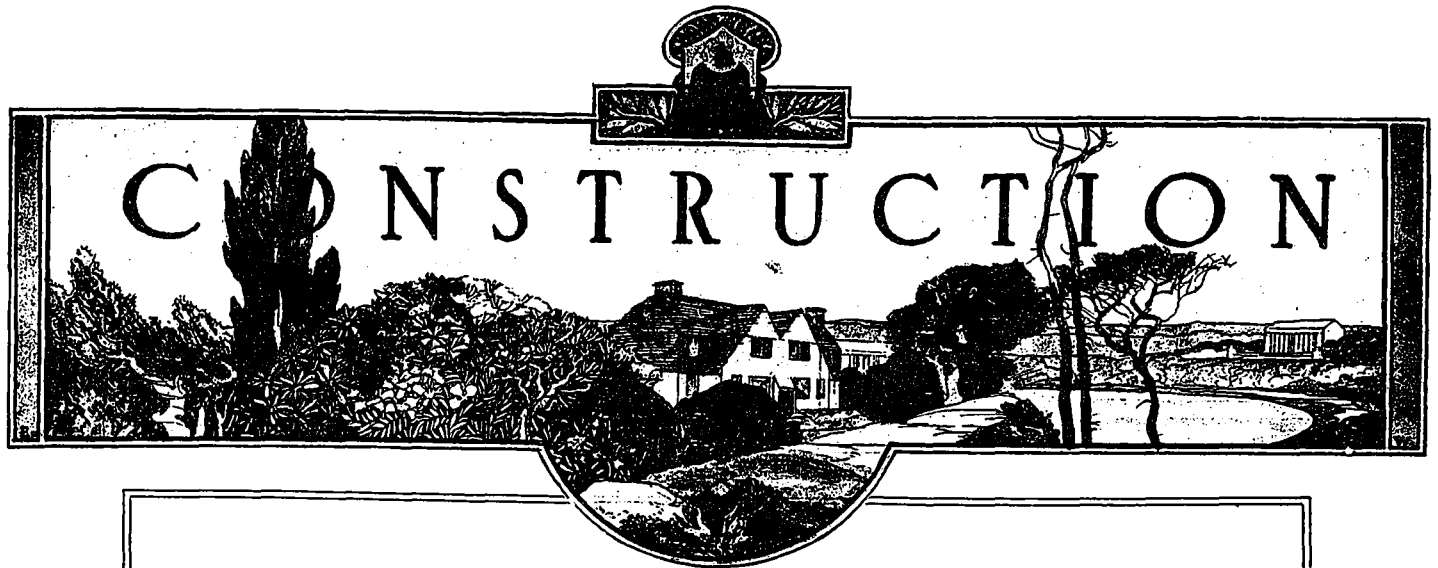


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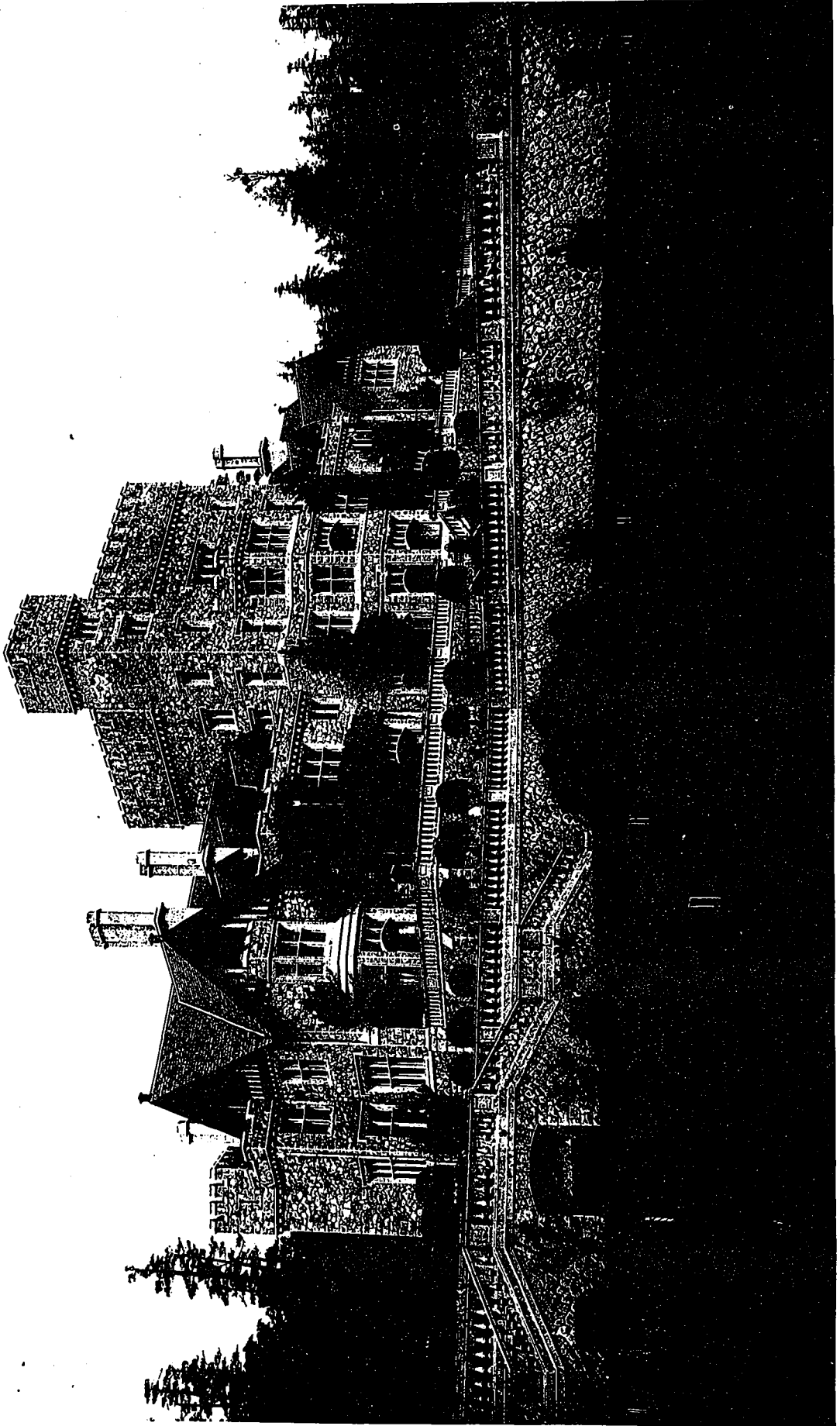
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MONTREAL

NEW YORK



HATLEY PARK, RESIDENCE OF JAMES DUNSMUIR, VICTORIA, B.C., CANADA.

SAMUEL MACLURE, ARCHITECT.

New Type of School Construction

Ryerson School, London, Ont., Illustrates an Important Development in Canadian School Architecture

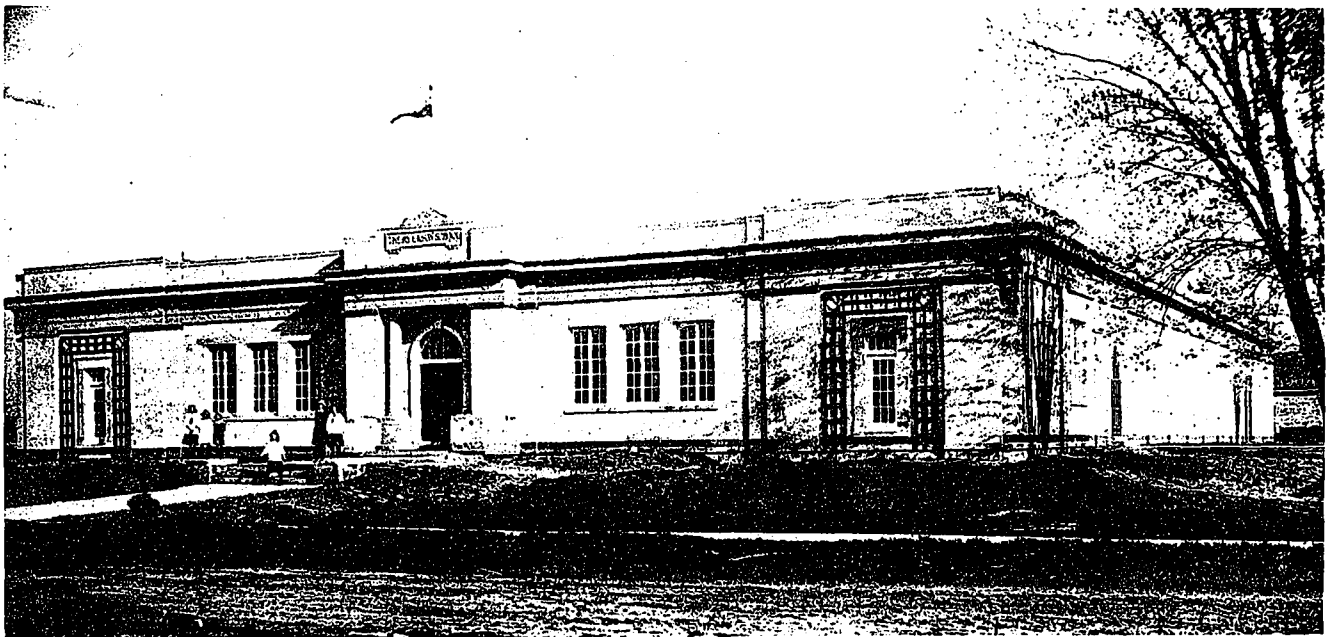
Watt and Blackwell, Architects; W. G. Murray, Associate.

THE Ryerson School is a distinct departure in school design for Canada, it being the first one-storey school building in Canada embodying the principles of modern construction as used in the larger cities of the United States. Of course there are many one-storey schools, but this one is entirely different and superior to the older ones on account of its up-to-date lighting and ventilation; one of the chief claims advanced in favor of this type is its lighting, nearly all the light is obtained from saw-tooth skylights, each one facing the north, ensuring an unvarying illumination, also avoiding glare and the light coming from above, as it gives all parts of the room even distribution of light without shadows. A strong feature in favor of such a

social centres in the near future, having all playgrounds under civic management, with trained supervisors. The auditorium is a rectangular room, connected on three sides by an arcade, giving the sense of an inner court in a classic mansion; here the children may listen to poetry, learn the art of interpretation, watch moving pictures of great events, etc., in the day time, and the grown people of the neighborhood come in at night for their club meetings, listen to lectures, and meet for social intercourse.

There are eight classrooms, all having concealed wardrobes, thoroughly ventilated, and equipped with umbrella holders and rubber racks, besides the usual equipment.

The manual training room has a large store-



RYERSON SCHOOL, LONDON, ONT.

WATT & BLACKWELL, ARCHITECTS; W. G. MURRAY, ASSOCIATED.

school is the emergency exit from each and every classroom at the ground level, and this feature is also a factor in the cost of building such schools, as it avoids the necessity for fire-proofing to a great extent. Each exit from classrooms has a panic bolt, which ensures sure exit in case of an emergency. The heating and ventilation is the most modern, as is also the plumbing throughout.

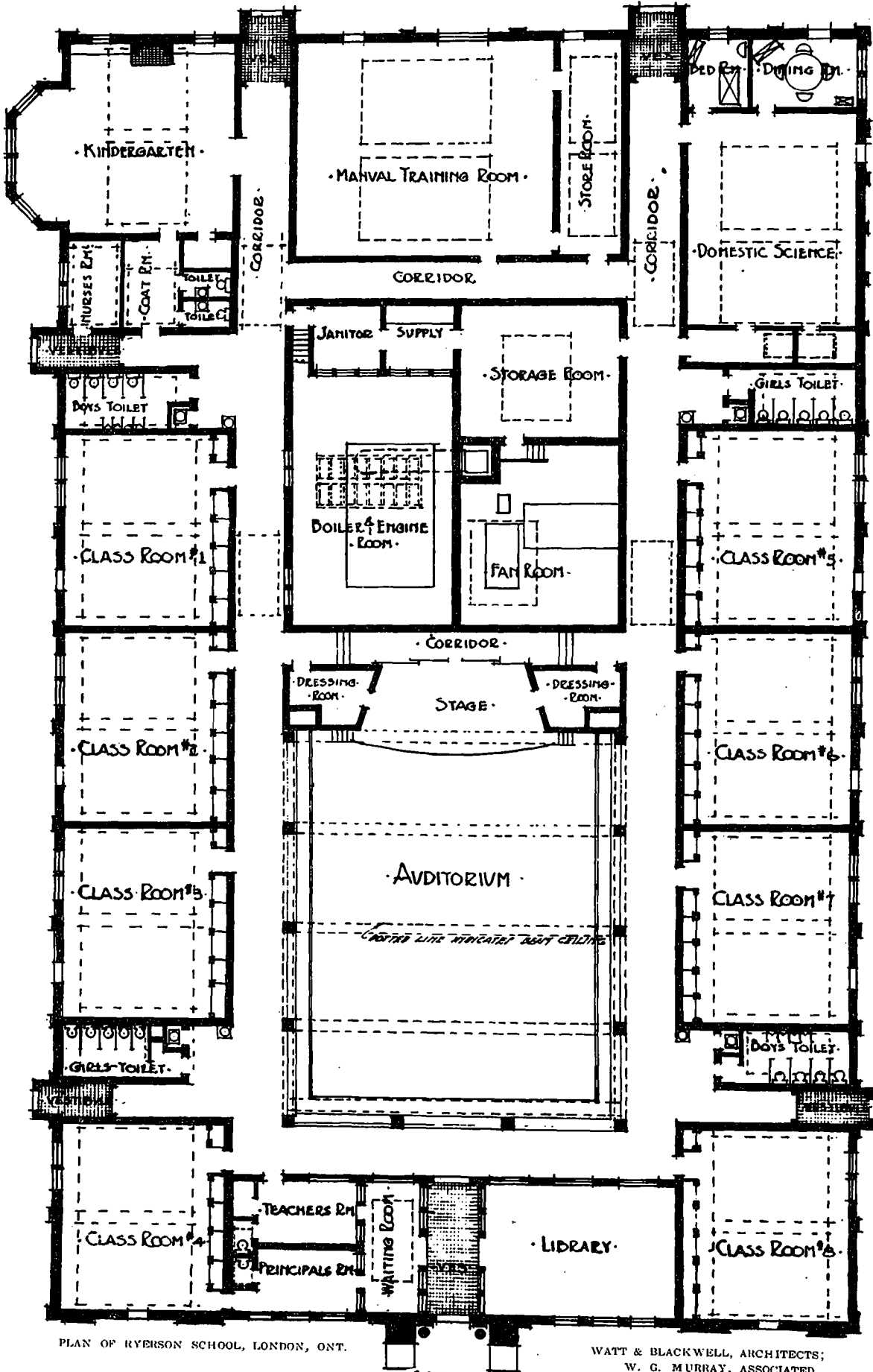
The plan is unique, the classrooms being grouped around a large auditorium, which can be utilized for school purposes in the day time, or for holding meetings and social functions by the community at night, thus making this school a true social centre; and it is the writer's belief that all Canadian schools will be planned as

room with several cupboards in it, and everything necessary for a modern carpenter shop; also an observation gallery, so that the pupils may watch their instructor in comfort.

The kindergarten is bright and cheery, has a separate entrance for the children, and is modern in every respect, even to the extent of having juvenile toilet fixtures for the "kiddies." Off the corridor to this room is a completely equipped nurses' room.

The domestic science room is complete with all equipment, and off same is a model dining-room, also a model bedroom, where children may be taught household duties.

The boiler room, fan room, etc., are placed in the central portion of the building, back of the



(Off the main entrance is situated the library, principal's and teachers' offices; in the principal's office, which is in direct connection with the principal's classroom, is situated the switchboard for the intercommunicating telephone system.

The exterior of the Ryerson School, which is of classic design and presents a particularly effective facade, was originally designed with a tapestry brick face, but owing to the extreme economy exercised by the trustees, was afterwards changed to stucco, which gives a very pleasing effect, and will improve with time, when the terracing is finished and the vines grow up on this trellis work.

The cost of this school was fifty-three thousand dollars, cost per cubic foot nine and one-half cents, a saving of at least six cents per cubic foot over the

PLAN OF RYERSON SCHOOL, LONDON, ONT.

WATT & BLACKWELL, ARCHITECTS;
W. G. MURRAY, ASSOCIATED.

auditorium, and everything here is up-to-date and is built complete for the inspection of the public the same as the rest of the building.

ordinary type of school construction. The building was also completed with a deduction of thirty-five dollars from the contract. Watt &

Blackwell were the architects who prepared the plans and specifications; W. G. Murray, associated, who supervised the work.

CANADA'S FORESTS AND THE WAR

The economic importance of the forest resources of this continent will be greatly enhanced as a result of the war. Enormous quantities of timber are necessarily used for military purposes, in addition to what is unavoidably destroyed in the fighting zone.

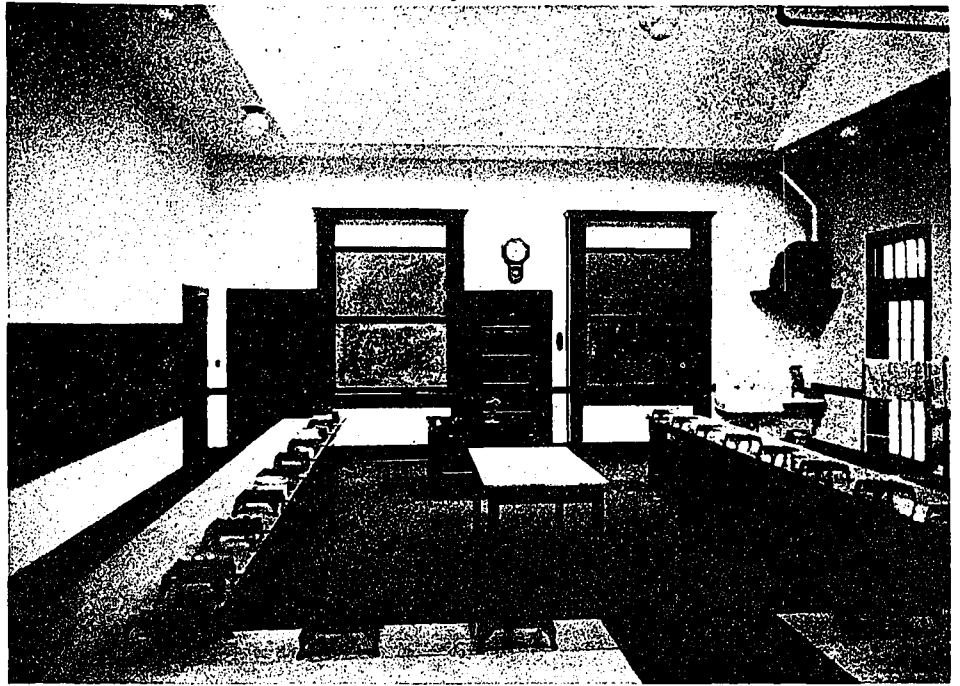
The shortage of tonnage has made it impracticable for the needed supplies of timber to be furnished on any large scale from Canada or the United States, and, as a result, heavy cutting has become necessary in the belligerent countries. While England is not generally regarded as a forest country, and has made relatively little progress in public forestry, there is still in England and Scotland a considerable amount of timber, mostly on royal and private estates. The imperative necessity for utilizing this timber has resulted in the despatch of a battalion of Canadian woodsmen to cut it for war purposes. Very large quantities have also been cut in France and in Russia. In Belgium, the Germans have cut a large pro-

portion of the timber and have used it in military operations, or shipped it to Germany.

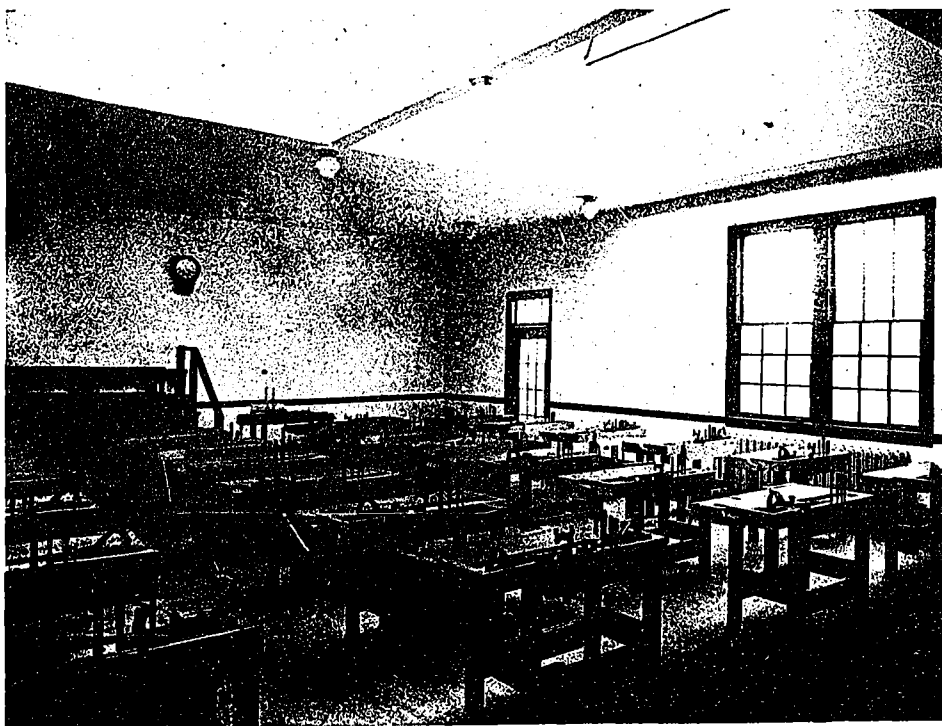
The result of all this over-cutting will mean a heavy shortage of timber for reconstruction purposes after the war, when it should be possible to make large shipments from this continent. This will mean a largely increased drain upon Canadian forests, and serves to emphasize the necessity for still more complete conservation of this tremendously valuable asset, if Canada is to take full advantage of her opportunities for world-service in this direction.

The greatest enemy of the forest is, and always has been, fire. It has been estimated that the average annual forest fire loss in this country is sufficient to pay the interest on the recent Dominion loan of one hundred million dollars. To reduce this loss, it is necessary not only to grant larger appropriations for fire-rangin' services, but also to reorganize such services in a number of cases, with a view of securing a dollar's worth of protection for every dollar spent. It has been stated on competent authority that at present more money is wasted on forest fire protection, for lack of proper organization and supervision, than is expended advantageously.

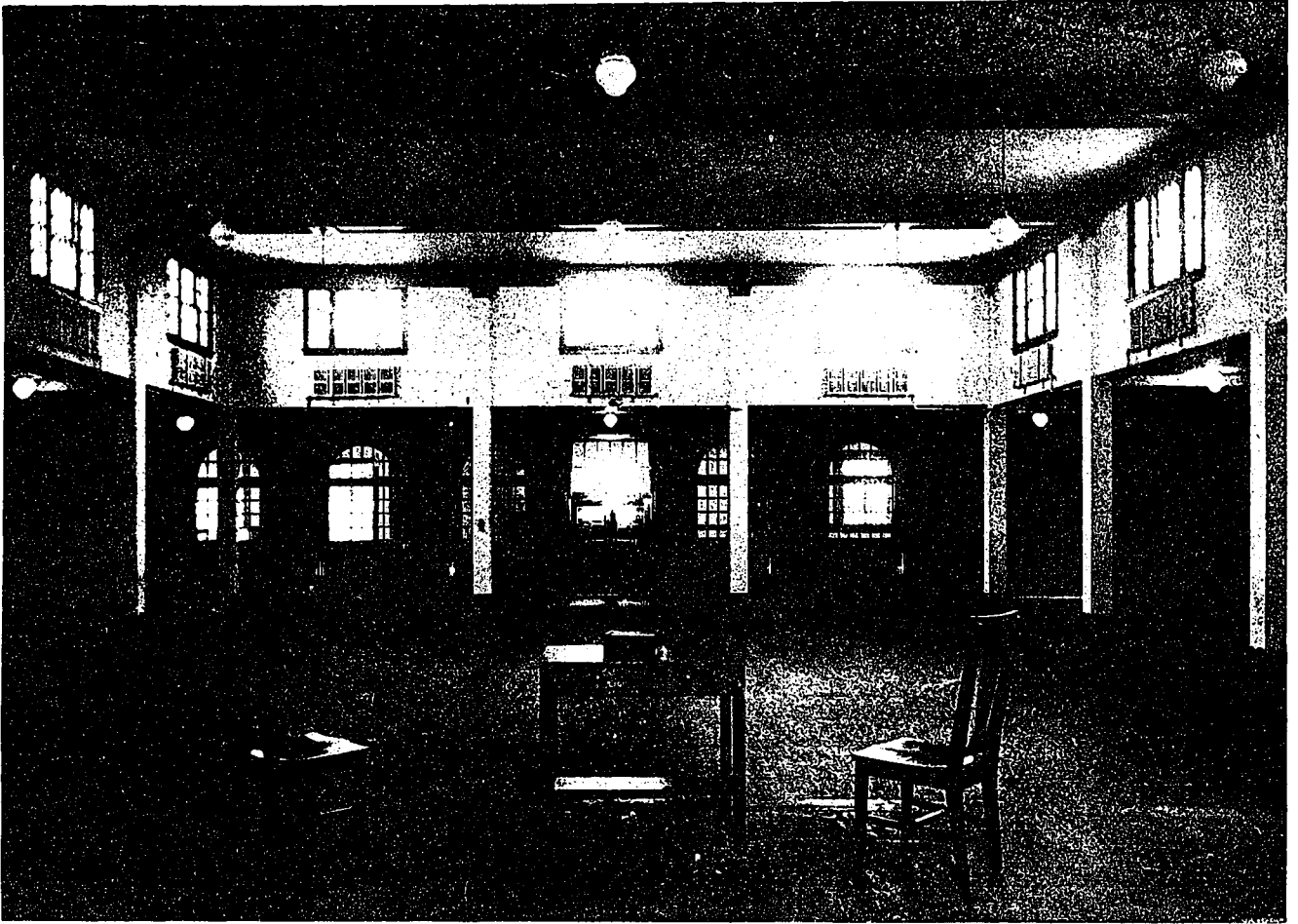
The importance of the



DOMESTIC SCIENCE ROOM, RYERSON SCHOOL, LONDON, ONT.

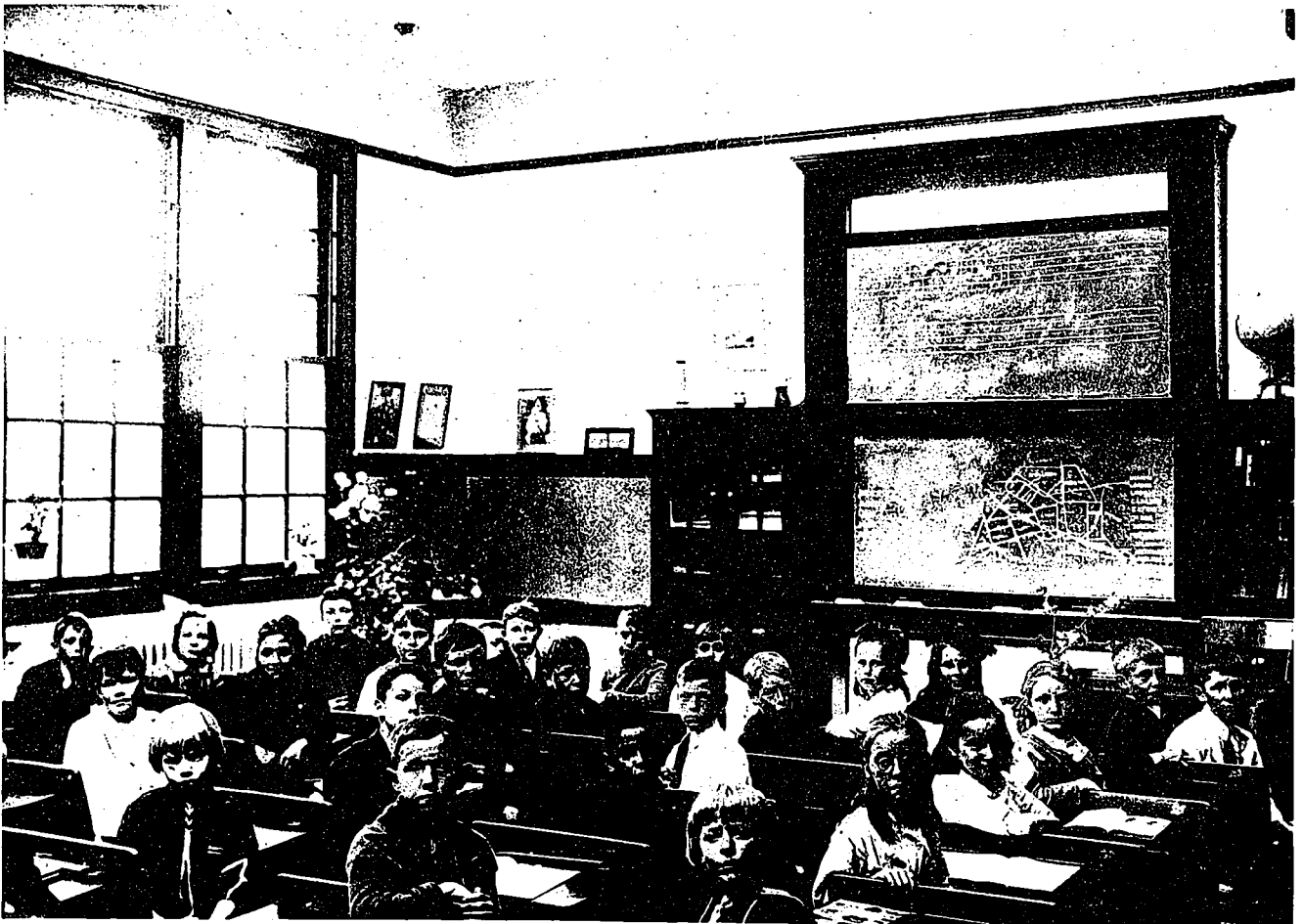


MANUAL TRAINING ROOM, RYERSON SCHOOL, LONDON, ONT.



AUDITORIUM FROM STAGE, RYERSON SCHOOL, LONDON, ONT.

WATT & BLACKWELL, ARCHITECTS; W. G. MURRAY, ASSOCIATED.



TYPICAL CLASSROOM, RYERSON SCHOOL, LONDON, ONT.

WATT & BLACKWELL, ARCHITECTS; W. G. MURRAY, ASSOCIATED.

forest in the internal economy of Canada is shown by the fact that the average total value of forest products of Canada is in the neighborhood of one hundred and eighty million dollars, or an average wealth production of about twenty-five dollars per head of population. Nearly eight million dollars in direct revenue is received annually by the Federal and Provincial Governments from the sale or lease of cutting rights to publicly-owned timber lands and from royalty and stumpage payments made upon timber so cut. Some five thousand wood-using industries in Canada are directly dependent upon the supply of timber cut from non-agricultural lands.

The importance of preventing the continued destruction of this great resource can scarcely be over-emphasized.

AGRICULTURE IN THE SCHOOLS

In the public schools of most of the Provinces of Canada, nature study and agriculture are included in the prescribed course of work, but the opportunity of correlating school subjects with practical life on the farm is not always fully



LIBRARY, RYERSON SCHOOL, LONDON, ONT.

utilized. In rural and village schools, particularly, the interest of children in their school work should be aroused and held by its intimate contact with agriculture. A few suggestions are offered herewith for impressing upon the pupils the utility value of the subjects taught.

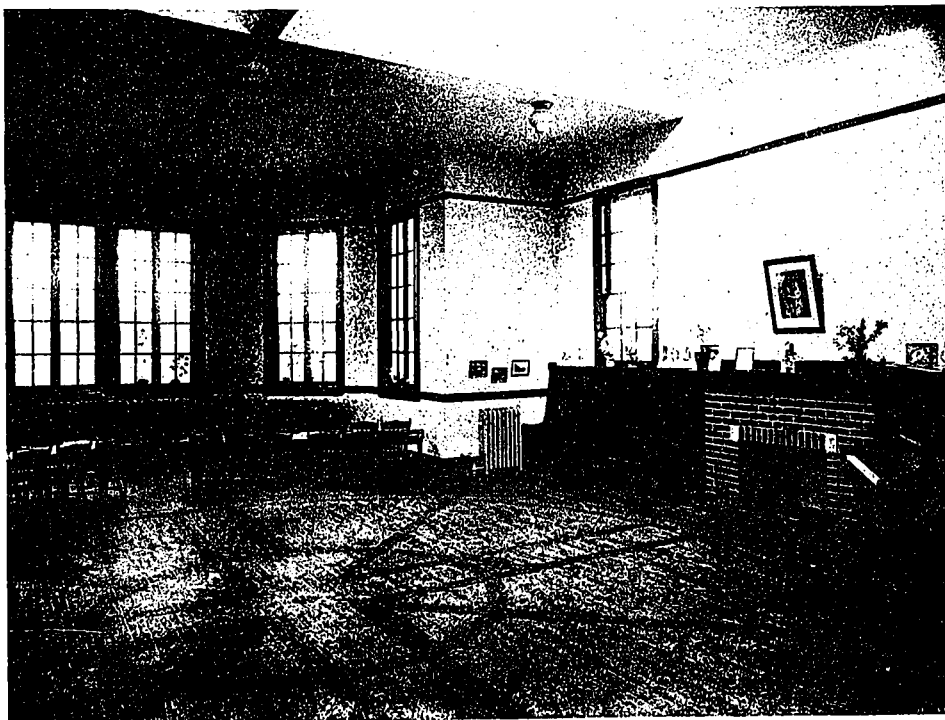
In connection with the teaching of arithmetic the following topics might be used as a basis for problems and general instruction:

Neat methods of compiling farm records, *e.g.*, milk and egg production, receipts and expenses, time sheets, etc. These records will form the basis for numerous problems.

Cost of production, rent, labor, wear and tear of machinery; marketing of farm products, computation of profits, mensuration of fields, wood-piles, lumber, ice-houses, etc.; invoices, cheques, receipts and commercial forms; taxation; mortgages.

The teaching of reading and the study of literature offer exceptional opportunities for arousing the interest of the pupil.

The best literature is replete with selections calculated to inspire a love of outdoor life and an interest in the plants and animals with which the country child comes in daily contact.—*Conservation.*



KINDERGARTEN, RYERSON SCHOOL, LONDON, ONT.

Normal School, Victoria, B.C.

A Reinforced Concrete Structure Embodying Many Interesting Features

W. C. P. Gillam, Architect, Vancouver, B.C.

THE location of the Provincial Normal School at the intersection of Lansdowne avenue and Richmond road, Victoria, B.C., is an admirable one for such a building.

The site has its greatest depth along Richmond road, and as the ground slopes gently from Lansdowne avenue to the rear of the property, the building has been placed at the highest point of the site, thus giving a clear view of the building from both roads, as well as from a large portion of the surrounding country.

The general dimensions of the building are: Length, three hundred and nine feet four inches; average width, sixty-two feet eight inches, increasing at the centre of the building to seventy-five feet eight inches; height from ground to base of finial at top of tower, ninety-eight feet.

The excavation for the building and foundations was made in solid rock, evidently the native bedrock, since the marks of the glacier were clearly defined upon the surface of the rock when the top earth had been stripped. An interesting find made during the excavation was a huge boulder of limestone, of which there is none in the immediate vicinity, and which was evidently

deposited at this point during the glacial period. The foundations of the building are, therefore, laid upon this solid rock sub-stratum, and are composed of reinforced concrete, which at the walls extends up to ground level, being waterproofed to that point to keep out dampness.

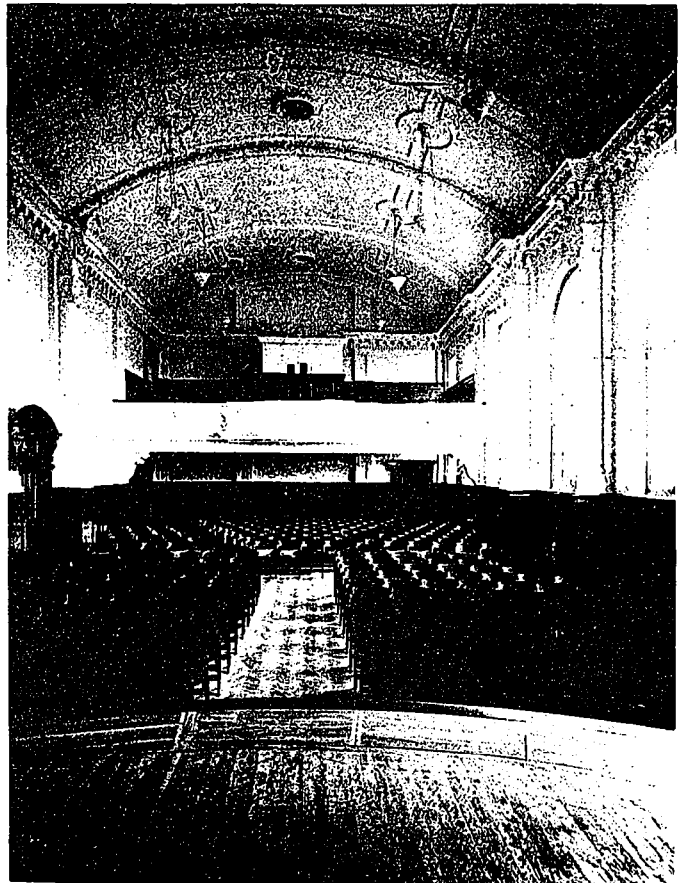
The skeleton structure of the building is built of reinforced concrete, of a mixture of one part of cement, two of sand, and four of broken stone, the stone being taken from the excavation and crushed on the site. The reinforcing is of square steel rods twisted cold. The roof is carried on steel trusses, with steel purlins sheeted with plank, and then felted and slated. The ceiling below the roof is carried on the roof trusses by steel ceiling rafters and a reinforced concrete slab.

The walls are built of interlocking tile, faced with pressed brick laid up in English bond with horizontal joints raked back, and vertical joints flush. The stone is from Denman Island. The stone at entrances and upon the centre of the south facade is elaborately carved.

All interior partitions are of hollow clay tile, thus rendering the entire building fireproof.



VIEW IN AUDITORIUM. LOOKING TOWARDS PROSCENIUM, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.



VIEW IN AUDITORIUM. LOOKING TOWARD GALLERY, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.



PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

W. C. F. GILLAM, ARCHITECT.

The heating is by steam on the direct-indirect system in conjunction with an exhaust ventilating system. Fresh air is admitted through suitable gratings in the walls at each radiator, and after being heated by passing over the radiator is exhausted with the foul air by means of a ventilating fan placed in the attic of the building and discharged up through the tower.

The temperature of the different rooms is automatically controlled by thermostats, which insure an even temperature throughout the building.

The plumbing throughout is of the most modern type, and is so installed that drains, supply pipes, etc., are accessible for inspection.

Gas for the building, for emergency lighting, and for the domestic science department and the laboratories, is supplied by a gas plant placed in a separate building to the north of the main structure.

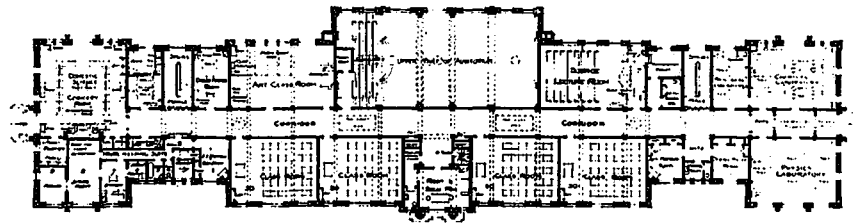
Underneath the corridor in the lower ground floor or basement, a tunnel is built running from end to end of the building, and in which are placed heating, plumbing, water, gas and other pipes, drains, etc.

The electrical equipment of the building for lighting, power, etc., is installed entirely in iron armored conduit, and is most complete for all purposes, such as the

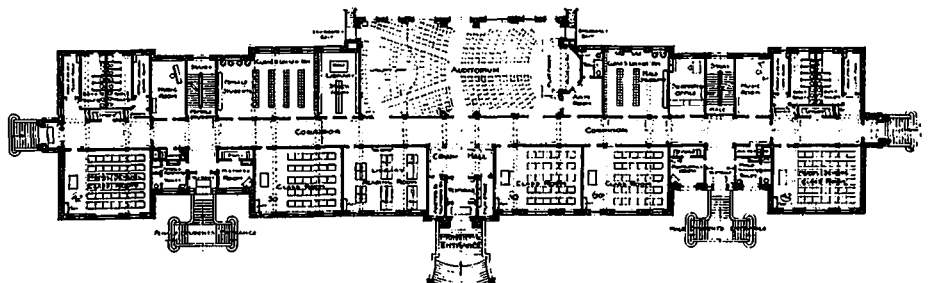
vacuum cleaning apparatus, clock system, telephone system, etc.

The artificial lighting in all of the classrooms, lecture rooms, laboratories, auditorium, etc., is on the semi-indirect system, by which the light is well diffused throughout each room without glare.

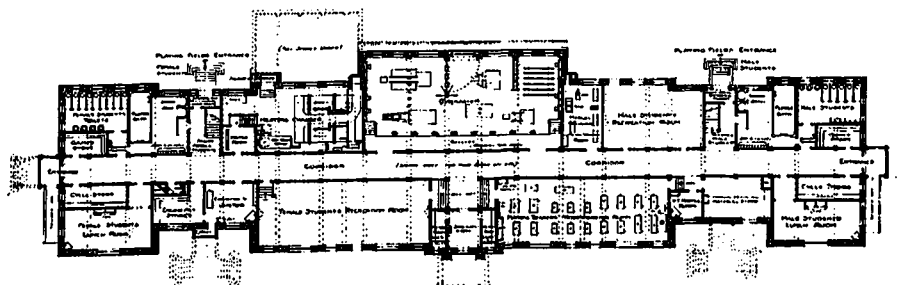
The building is planned throughout to secure



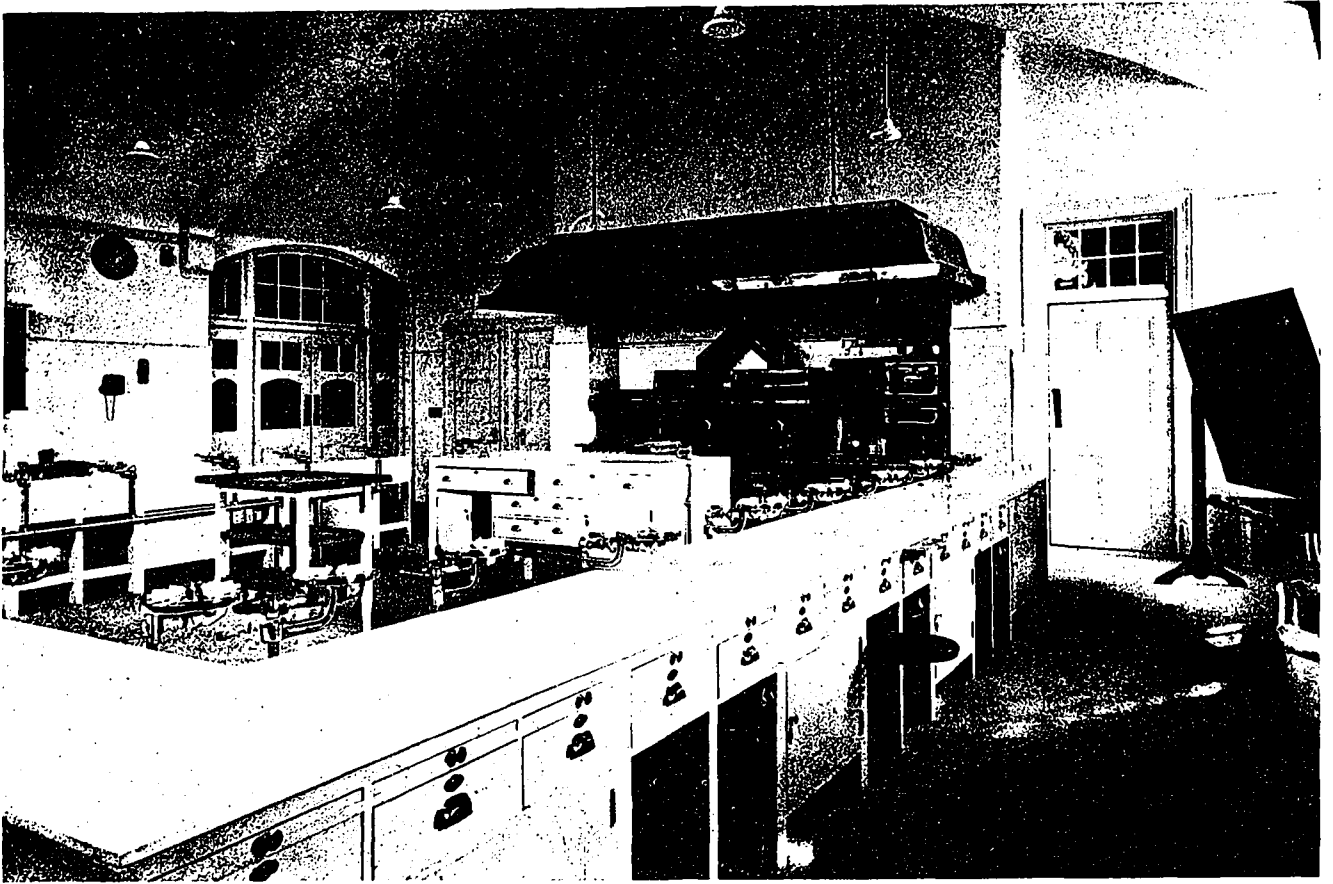
THE FIRST FLOOR PLAN.



THE GROUND FLOOR PLAN.



THE LOWER GROUND FLOOR PLAN.

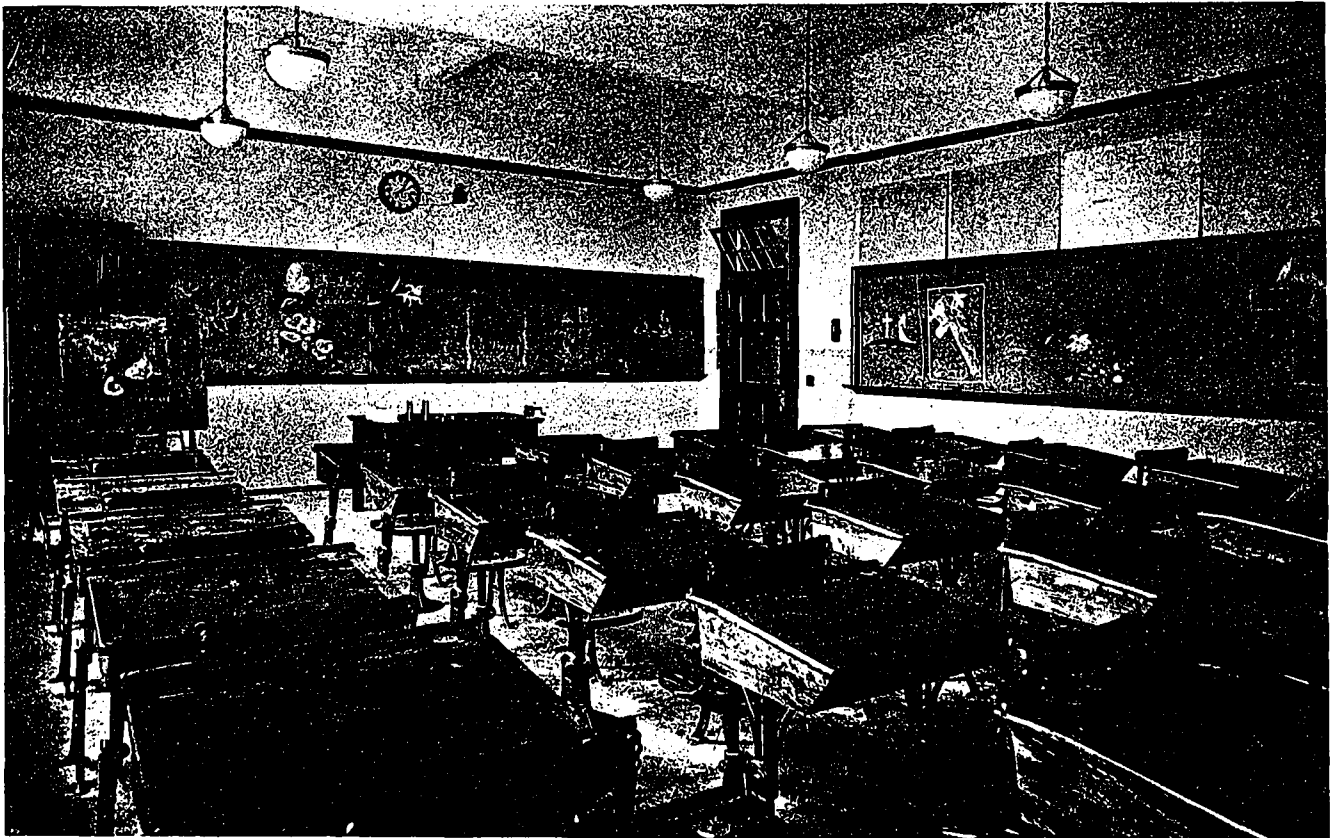


DOMESTIC SCIENCE (COOKERY) ROOM, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

W. C. F. GILLAM, ARCHITECT.

the greatest degree of co-operation between the several departments of the school and convenience in administration.

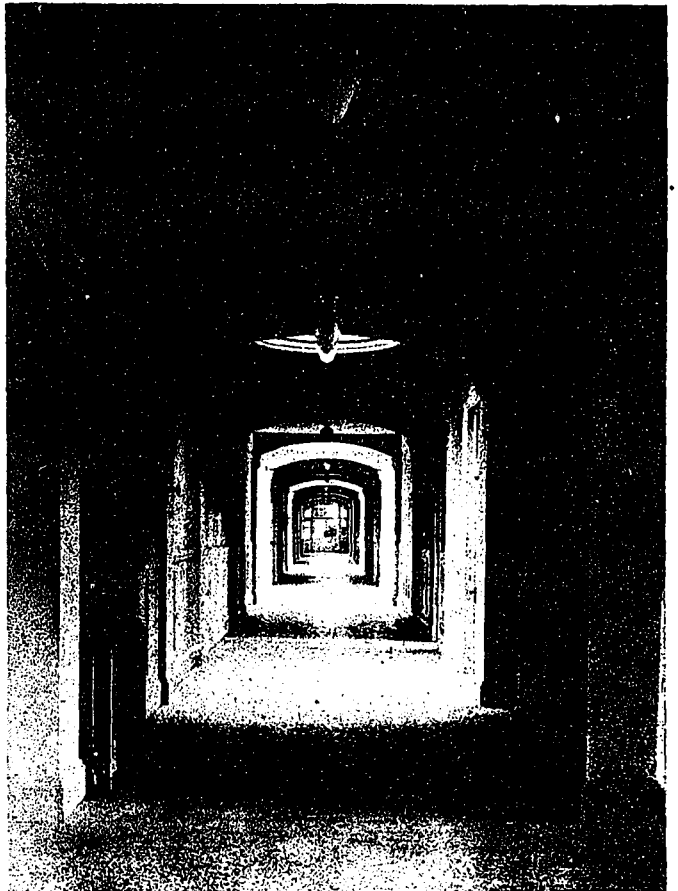
In the lower ground floor or basement are placed the manual training department, gymnasium, recreation and lunch rooms, general



TYPICAL CLASSROOM, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

W. C. F. GILLAM, ARCHITECT.

toilet rooms, boiler room, etc. The manual training department comprises a woodworking room, metalworking room, instructor's room and storage room. The woodworking room is sixty-four feet six inches by twenty-four feet by fifteen feet high, and is fitted up with the latest appliances for instruction and work. The metalworking room is fourteen feet six inches by twenty-four feet by twelve feet high, and is equipped with double forge, fan, etc., and anvil. The instructor's room is located so that complete supervision is obtained at all times. The gymnasium is seventy-three feet by thirty-five feet by seventeen feet high, and is equipped with the most modern apparatus. The students' toilet rooms are at opposite ends of the building, men's at the east end and women's at the west. Adjoining each toilet room is a bath and dressing room, equipped with shower baths, and each with a plunge bath seven feet six inches by twenty feet, and with a maximum depth of six feet. The toilet rooms, and bath and dressing rooms, as well as the plunge baths, are lined with ivory white glazed tiles, and have tiled floors. The female students' recreation room is sixty-four feet six inches by twenty-four feet by fifteen feet high, and the male students' recreation room is thirty-seven feet six inches by twenty-four feet by twelve feet high. Adjacent to these rooms are storage rooms for games and cycles, etc. The lunch rooms are fitted with gas



FIRST FLOOR CORRIDOR, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

burners, for the purpose of boiling water for tea, or making toast, etc., and with the necessary tables and chairs. In addition to the rooms above noted, there are also in the basement a janitor's workshop and a general storage room. The boiler room is fifty-two feet by twenty-four feet by seventeen feet high, adjoining which is a fuel room (built under the roadway at north side of building) thirty-eight feet six inches by twenty-five feet.

The ground floor has main entrance hall and crush hall at the centre of the middle block, flanked by a special filing room on one side, and on the other by the hall porter's room and telephone switchboard. There are three classrooms on this floor, each thirty-two feet by twenty-four feet by twelve feet high, also a library stack room fourteen feet six inches by twenty-four feet by twelve feet high, and a reading room thirty-two feet by twenty-four feet by twelve feet high. The students' locker rooms are also on this floor, that for the women being thirty-seven feet six inches by twenty-four feet, and for the men twenty-four feet six inches by twenty-four feet by twelve feet high, and are fitted with metal lockers. The auditorium, placed directly opposite the main entrance, is seventy-three feet by thirty-five feet by twenty-five feet to top of cornice, and thirty-one feet nine inches to crown of ceiling arch. The ceiling is arched, and with decorated plaster ribs panelled be-



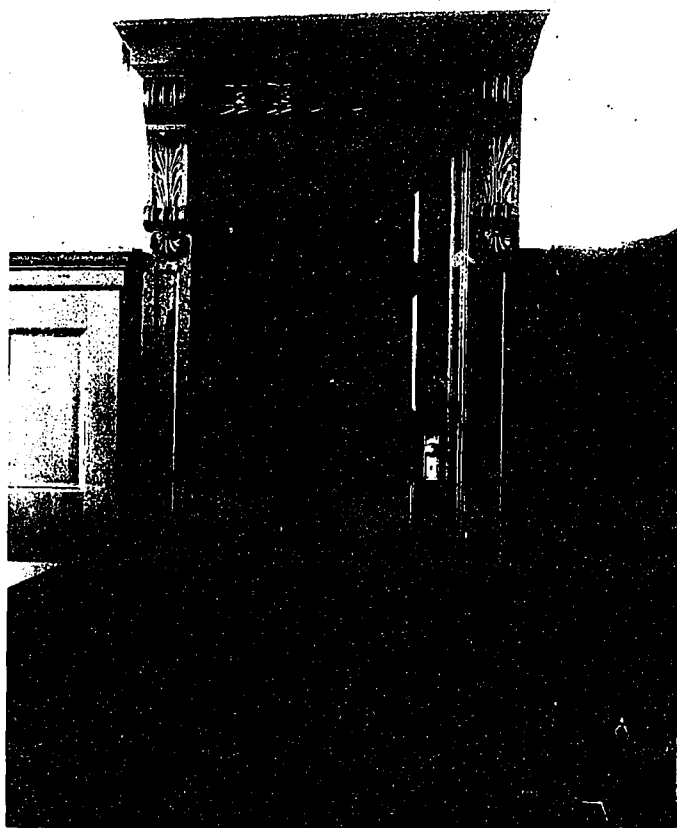
ONE OF MAIN STAIRCASES, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

tween. A gallery is placed at one end of the auditorium, access to which is gained from the first floor corridor. A fireproof room for a moving picture apparatus is built into the gallery. The auditorium is wainscoted in British Columbia Douglas fir to a height of six feet six inches. The stage is fitted with a roller curtain for use as a moving picture screen. The seating capacity of the auditorium, including the gallery, is about four hundred and fifty.

In the portions of the building connecting the main building and the wings are located the principal's and head mistress' rooms, and rooms for teachers; also an office for the secretary, and a music room at each end.

The ground floor of each wing is used for the model schools. Each wing contains one classroom, thirty-two feet by twenty-four feet by twelve feet high; also cloak and toilet rooms for the children of the model school. The entrances for the model school are placed at each end of the main corridor, so that the children need not trespass into the main portion of the normal school. Entrances for the normal students are placed on both north and south sides in the connections between main building and wings.

The first floor contains in the main building three classrooms proper, each thirty-two feet by twenty-four feet by twelve feet high; also the art room, and the science lecture room. The art room and the science lecture room are each



DOOR IN AUDITORIUM, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

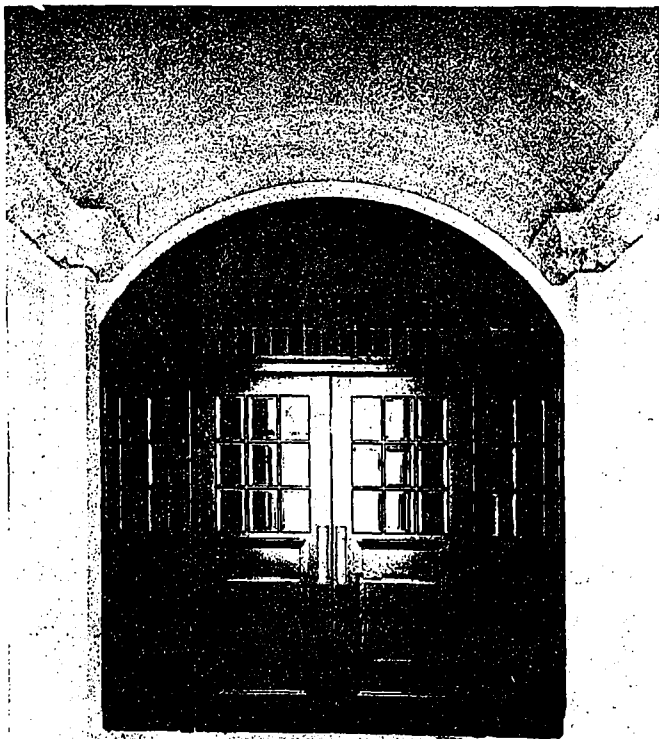
thirty-nine feet six inches by twenty-four feet, with arched ceiling fifteen feet from the spring of the arch to seventeen feet six inches to the crown.

The connections between main building and wings contain the preparation room for the science lecture room, optical dark room, biological laboratory, science master's room, assistant mistress' room, on the east side; and the sewing room, laundry of domestic science department, and domestic science mistress' room on the west side. The east wing contains the chemical laboratory, physics laboratory, balance and store rooms; while the west wing is given over to the domestic science department, and contains the cookery room, pantries, etc., attached, and the housekeeping suite, which contains living room, dining room, kitchen, bath and two bedrooms, and is used to teach the rudiments of good housekeeping.

In the centre of the building, over the entrance hall, is placed a rest or sick room, with medical storeroom attached.

The tower contains the ventilating outlet for the entire building, and the clock apparatus.

The floors of the corridor in basement, manual training rooms, storerooms, etc., are finished in cement, with cement compound as a surfacer. Corridors and stairways of the ground and first floors are finished in marble terrazo, as well as the entrances. The general floors of the remain-



MAIN ENTRANCE VESTIBULE, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.



PRINCIPAL ENTRANCE TO AUDITORIUM, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

ing instructional rooms and the auditorium are of wood-block, made of British Columbia Douglas fir. The blocks are cut nine inches by three inches by one and one-half inches thick, and are layed in a herringbone pattern, except for the border around each room, which is layed straight with broken joints. The blocks are rabbeted or grooved on the lower edges, both at sides and ends, and are set in a mastic preparation, which binds them to the concrete slab and to each other. The floor in the gymnasium is of tongued and grooved British Columbia Douglas fir, layed in the usual manner on sleepers on the concrete. The deadening quality of the wood-block floors is remarkable. So often in a concrete building the resonance of the floors is transmitted and multiplied through the structure, but with these wood-block floors there is no resonance, hence no multiplication of sound. In fact the floors are quite dead. All wood floors are finished with filler and wax polish. The floor of the cookery room in the domestic science department is of terrazo.

The fixtures throughout the building were specially designed by the architect, great care having been taken to embody the most recent ideas for the convenience of both teacher and student, as well as appliances which make for practicability in both instruction and demonstration.

The working tables of the physics laboratory are equipped with electric connections for direct

current from storage battery, as well as for direct current from power company's lines, and alternating current also from power company's lines. These connections are centred in a special switchboard in the physics laboratory, so designed that confusion or crossed currents cannot occur. In the work tables of the chemical laboratory are placed special Doulton sinks and waste connections which are acid proof, and the tables are arranged to give the student great capacity and convenience in working. In the cookery room of the domestic science department, the working tables are arranged in a hollow square, with the demonstrator's table closing the fourth side of the square. The tops of the tables are of opalite glass, about one inch in thickness, and each student's place has a swinging seat, and is fitted up with mixing board, drawers, cupboards, etc. Each table is equipped with a special gas burner designed especially for this building.

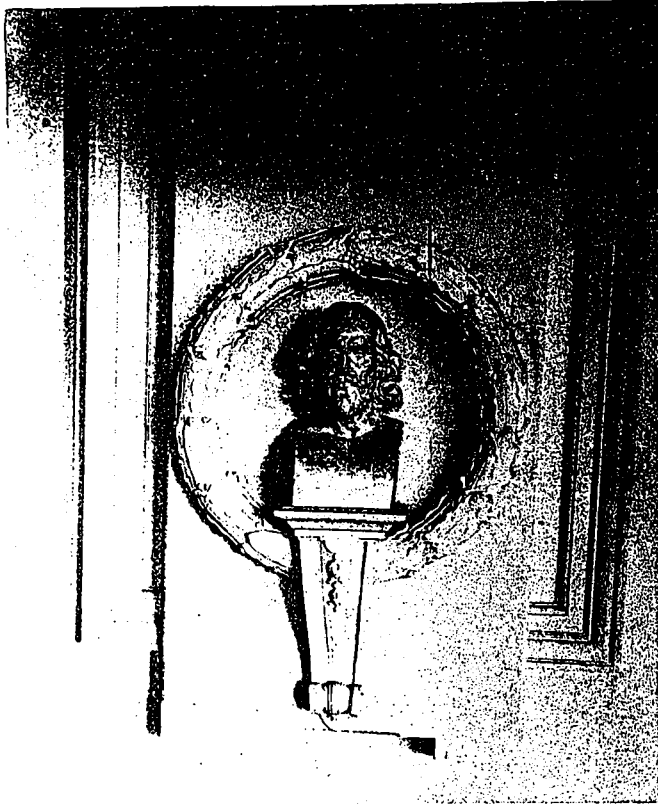
For general demonstration purposes the cookery room is equipped with a large coal range, a gas range (burning air gas), an electric range, together with the necessary boilers, broilers, etc. Porcelain sinks are placed at several points around the room, with plate drying racks above.

The demonstration table in the science lecture room is fitted up with all appliances for both chemical and physical lectures, as well as work in biology, photography, etc.

The sewing room of the domestic science de-



EASTERN ENTRANCE DOORWAY TO AUDITORIUM, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.



MEDALLION IN AUDITORIUM (ONE OF FOUR POETS), PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

partment is equipped with demonstration table, cutting tables, special hanging and needle-work cupboards, spool-drawers, etc.

The laundry is equipped with a steam dryer and gas stove for heating flat-irons, as well as outlets for attachment of electric irons. The tubs are of porcelain, fitted with wringer boards.

The biological laboratory is fitted with an aquarium, and cases, sink and tables for demonstration and development of cultures, etc.

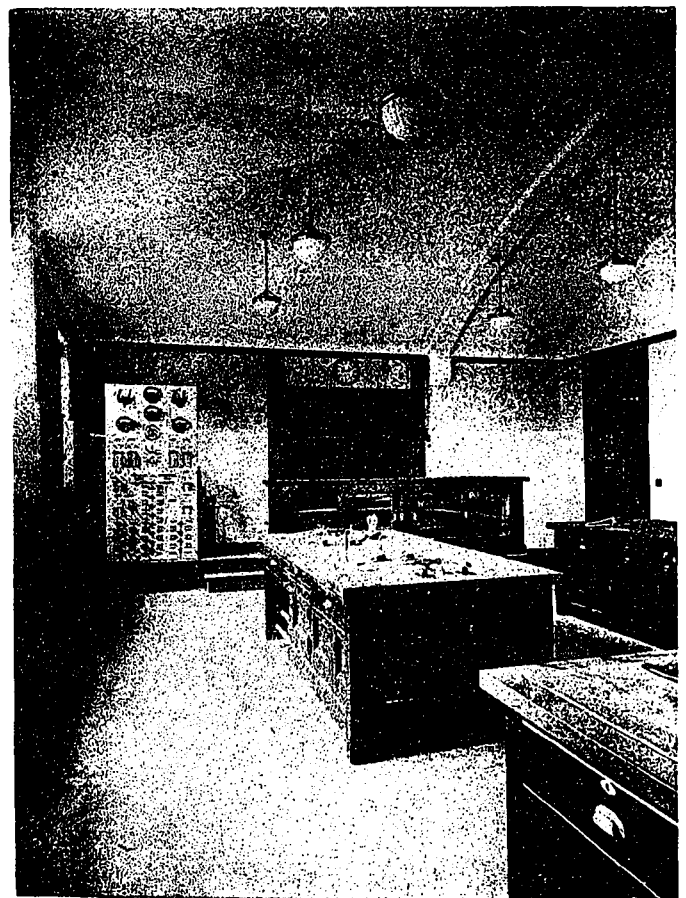
The entire building is equipped with a standard electric time system of clocks, controlled by a master and programme clock in the principal's room, which also controls the tower clock. The clock system is interconnected with the fire alarm system, so that in case of fire an alarm may be rung upon each of the programme bells in the different rooms, as well as upon the fire gongs in corridors. A system of interior telephones is also carried throughout the building. Public telephone connections are made from the principal's office, secretary's room, and porter's room at main entrance. Fire hydrants with underwriters' hose are placed throughout the building in such manner that all points can be reached. A vacuum cleaning system operated by electric motor is piped throughout the building.

At the end entrances to the basement the approach from the ground level to the basement level is made by an incline, concrete surfaced, so that bicycles may be conveniently taken in and out.

The gas house, in which is placed the gas making apparatus, is placed about sixty feet north of the building, about opposite centre; the piping being run underground and distributed through the pipe tunnel under corridor of basement. The gas house is built entirely of concrete, with slate roof, fireproof window frames with wired glass, kalomined doors, etc., being made as nearly preproof as possible. Gas is supplied for the cookery room, laundry, house-keeping suite, and other parts of the domestic science department, all laboratories, manual training rooms, lecture rooms, teachers' rooms, luncheon rooms, and for demonstration purposes on stage of auditorium. The gas supplied is an air gas made from gasoline by an air-gas apparatus. Gas is piped also for emergency illumination in corridors.

The heating system is on the direct-indirect system of radiation, fresh air being taken in through ducts passing through the exterior walls below each radiator. Two boilers comprise two units, each seventy-two inches by sixteen feet, and are of the return tubular type. One is sufficient to carry the load, and the other boiler is installed for relief. The heating system is equipped with the vacuum system and the system of temperature control. The domestic hot water supply is piped throughout the building to all basins and tubs.

The plumbing is of the most complete char-



PHYSICS LABORATORY, PROVINCIAL NORMAL SCHOOL, VICTORIA, B.C.

acter throughout. All wastes, vents, etc., above ground are of galvanized iron, and underground of cast iron. All supply piping is of galvanized iron. No lead is used anywhere in the building. Vent pipes are collected at convenient points in the roof space, and taken out on the inside slopes of roof so as not to be visible from the exterior of building. All piping is concealed throughout. A supply tank is placed in the lower storey of the tower, the bottom of tank being a trifle below ridge of main roof. This tank is supplied from the public waterworks, and has in conjunction an electric pump for boosting the pressure when the pressure in the street mains is down. The tower tank is built of steel.

The ventilating system is on the exhaust principal, and is operated by a fan placed in the roof space just north of the base of the tower, and exhausts through ducts up into the tower. The capacity of the heating and ventilating plants is such that the air throughout the building may be changed six times per hour. Fresh air is admitted through gratings placed in the walls immediately behind the radiators.

The cost of the work was in round numbers four hundred thousand dollars.

The architect was W. C. F. Gillam, M.S.A., Licentiate R.I.B.A., of the firm of Bryan & Gillam, Vancouver; and the general contractors were Luney Bros., Limited, of Victoria.

The New Bishop Strachan School

Toronto's Latest and Most Modern Residential School For Girls

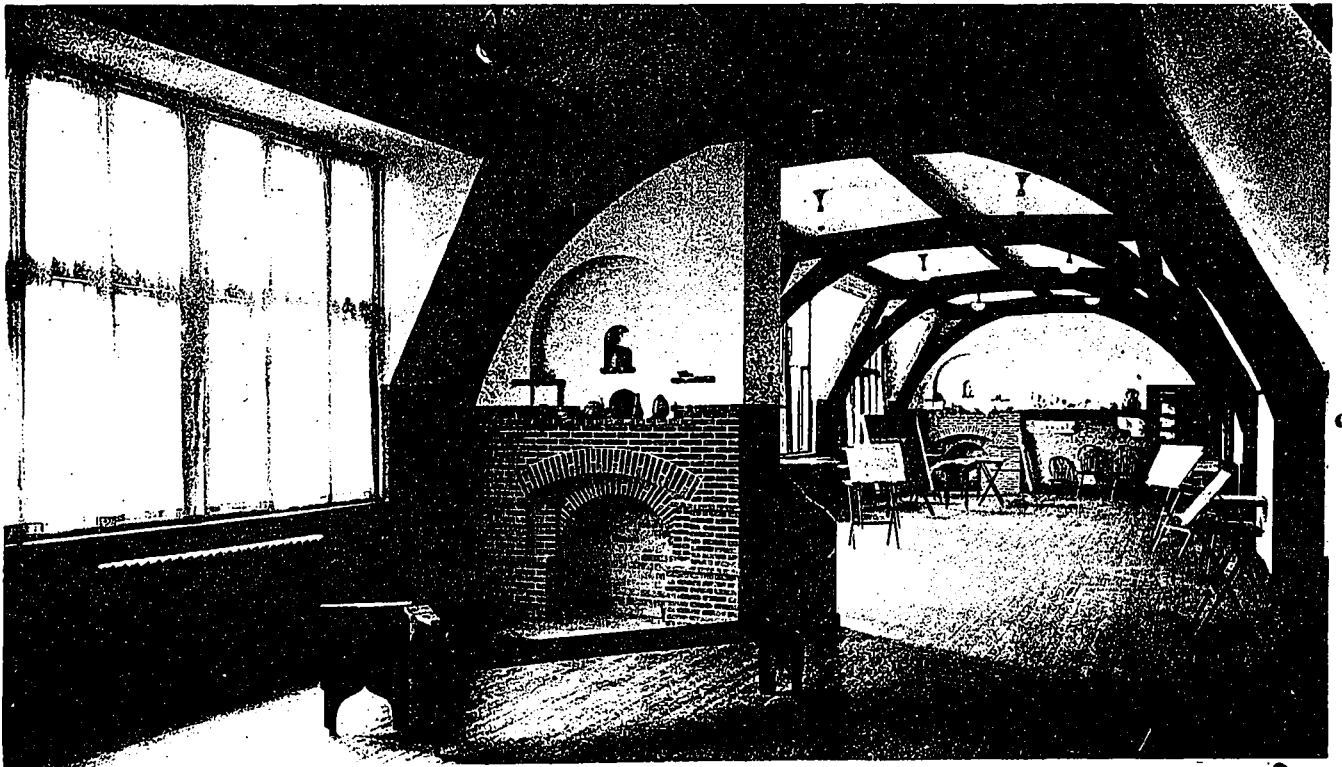
THE continued encroachment of the business section of Toronto on districts which a few short years ago were considered uptown has added one more to the increasing number of institutions forced to seek larger and more spacious homes to provide accommodation for the growing needs of Toronto as an educational centre. The Bishop Strachan School, illustrated herewith, is an example of meeting this problem, and the long and honorable career of this institution continues in this most modern structure, which is a creditable addition to Toronto's many fine college buildings.

Designed in the collegiate Gothic style, the building is an expression in stone, surrounded

by beautiful homes on College Heights, overlooking Greater Toronto.

A city block, bounded by Lonsdale road on the south and front facade, Russell Hill road on the west, Warren road on the east, and Frybrook avenue on the north, provide a worthy setting for the impressive building within. Built of grey Credit Valley sandstone, with copings, facings, cornices and window casements of cut stone, the school and residence are as two sides of a quadrangle, connected on the east side by the assembly hall, and on the west by music rooms and domestic quarters.

The building has a southern frontage on Lonsdale road of two hundred and eighty-five



ART ROOM, BISHOP STRACHAN SCHOOL, TORONTO, ONT.



THE BISHOP STRACHAN SCHOOL, TORONTO, ONT.

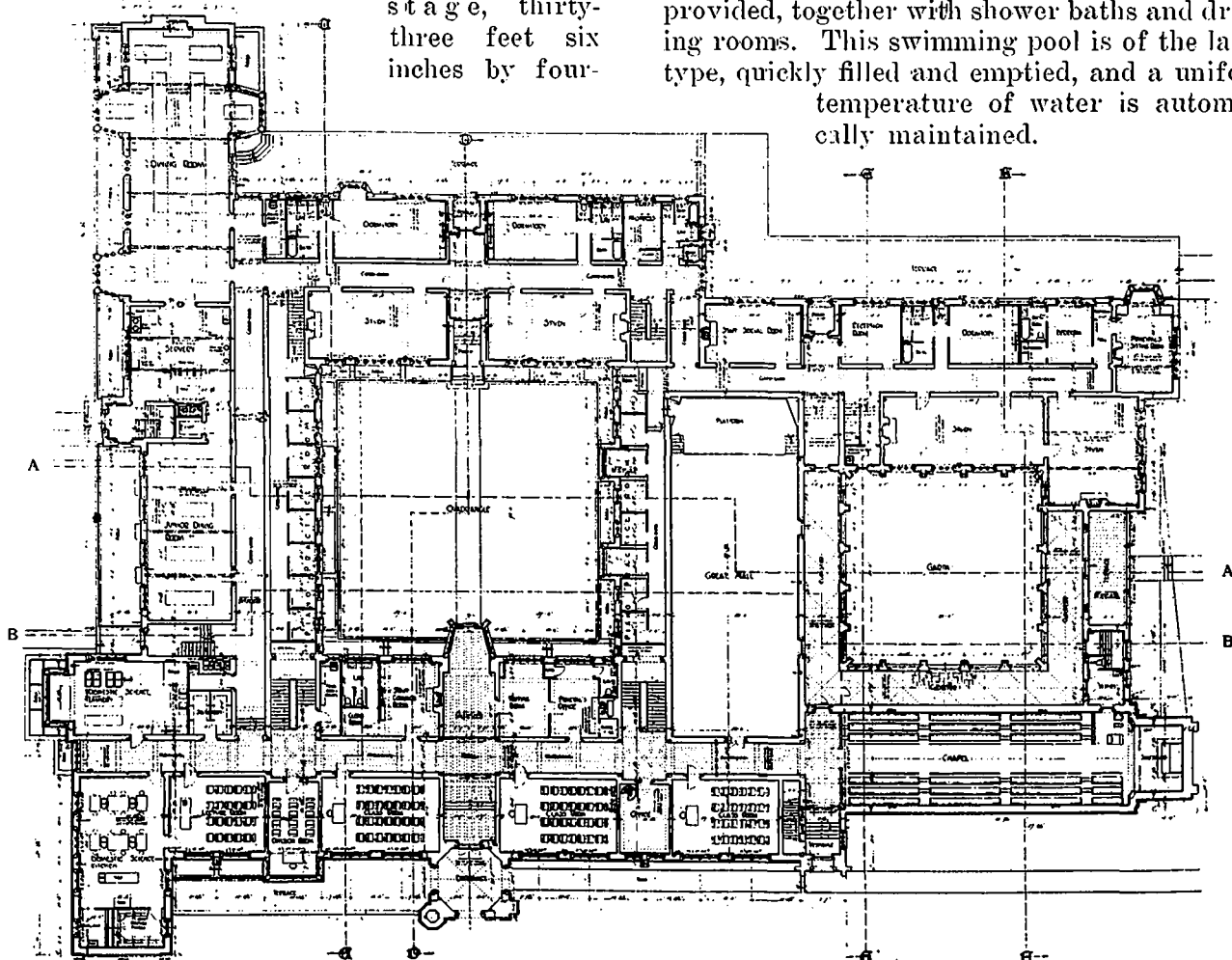
SPROATT & ROLPH, ARCHITECTS.

feet, and an east and west frontage of two hundred and forty feet, and while the southern or front portion contains three storeys in height, the remaining portions has four floors.

The assembly hall is a spacious room, thirty-two feet six inches by eighty-seven feet six inches, and some thirty feet in height, and provides seating accommodation for four hundred persons. A large stage, thirty-three feet six inches by four-

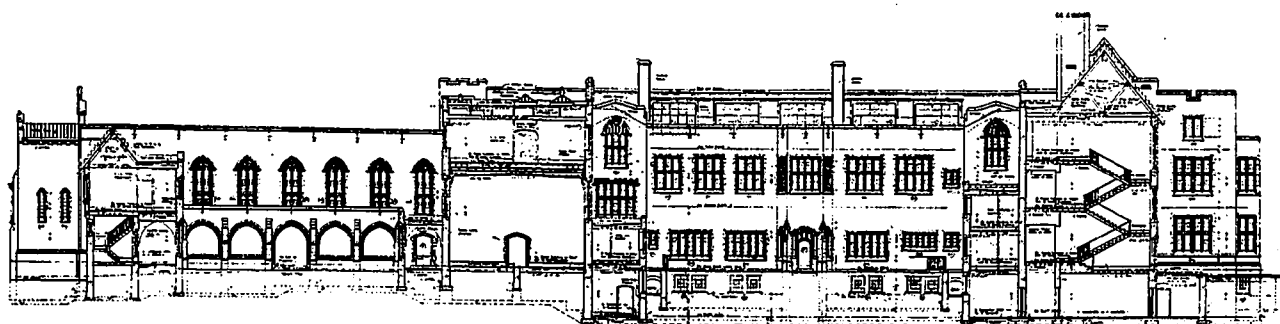
teen feet six inches is at one end of the room. In the basement separate cloak rooms are provided for the different grades of pupils, with necessary lavatory accommodation adjoining. The domestic service equipment, which is an extensive department of the modern institution, has ample space provided for the many departments, which include kitchen, bakery, dairy, fruit, vegetable and meat rooms, while a laundry plant complete in every detail is installed. Servants' dining rooms are located here, and in the northwest section a gymnasium occupies space of some seventy by twenty-five feet.

In the north wing a large swimming pool is provided, together with shower baths and dressing rooms. This swimming pool is of the latest type, quickly filled and emptied, and a uniform temperature of water is automatically maintained.



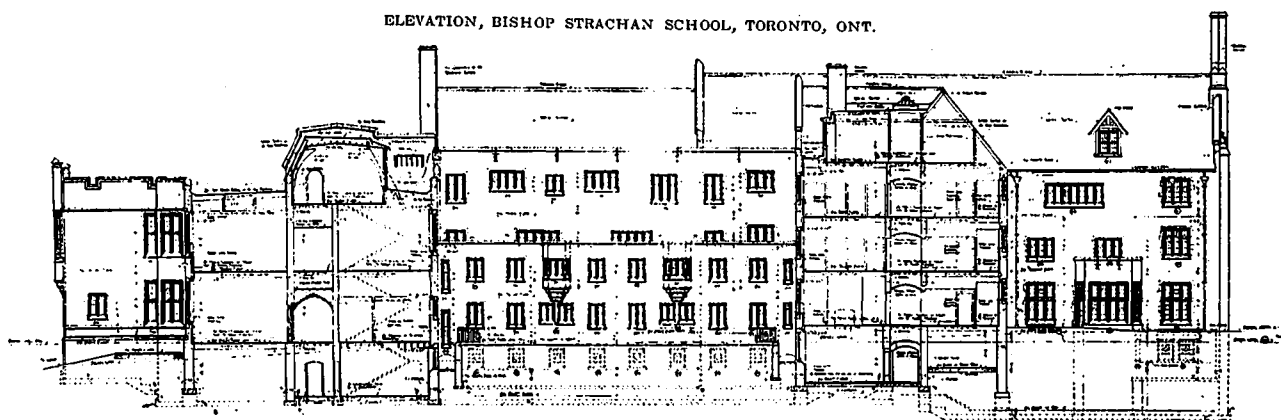
GROUND FLOOR PLAN, BISHOP STRACHAN SCHOOL, TORONTO, ONT.

SPROATT & ROLPH, ARCHITECTS.



SECTION · B · B

ELEVATION, BISHOP STRACHAN SCHOOL, TORONTO, ONT.



SECTION · A · A

On the first floor close to the main entrance is the principal's office, with waiting and general office on either side of the main hall.

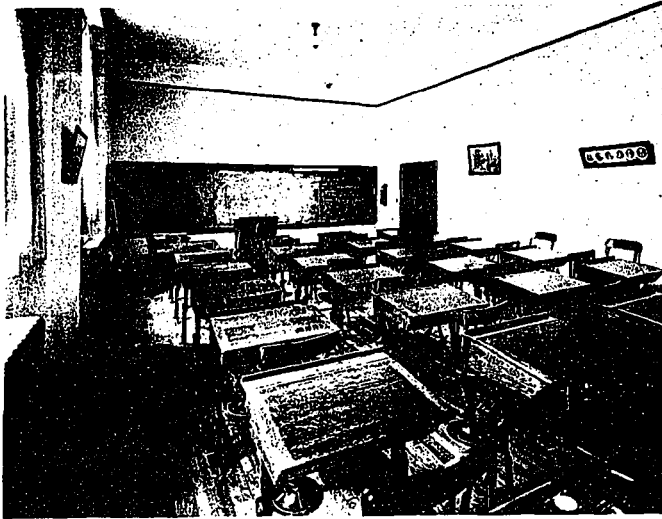
Reference to the plans will indicate the arrangements of the class rooms. The west wing contains laboratories, the junior dining room, servery and main dining room, with dumb waiters to kitchen immediately below. The north wing comprises two dormitories and the same number of study rooms, and in the east, as mentioned before, the assembly room is located. Individual noise-proof practice rooms are placed

on the first and second floors. The second floor is largely allotted to dormitories, with class rooms over the school proper. A large library is situated directly over the main entrance, while science laboratories are in the southwest corner. The third floor is fitted up as art studios facing the northern light, with skylights in roof. The fourth floor over residence contains the students' sleeping quarters.

A forced hot water system provides heat throughout, circulating through the mains and radiators under pressure with a very slight loss



GREAT HALL, BISHOP STRACHAN SCHOOL, TORONTO, ONT.



TYPICAL CLASS ROOM, BISHOP STRACHAN SCHOOL, TORONTO, ONT.

of heat units. The hot water system gives a lower temperature of heat emitted, and thereby does not absorb the natural humidity of the room, as would be the case were steam the medium. The heating plant is in a separate building, flow and return mains running underground through a tunnel. An artificial ice-making plant is a part of the power plant equipment, providing cold storage facilities.

Of fireproof construction throughout, the interior does not chill the sensibilities, the wall finish of grey plaster giving a feeling of warmth. The floors are of beech on the ground and upper storeys, while concrete with a finish of granolithic is used in the basement. The interior finish is in oak, dark stained, with fittings in harmony. The roof of the building is of felt and gravel, with green slate shingles on the eave slopes.

Abundance of sunlight is assured by the many windows of leaded glass in metal sash, while the artificial lighting is diffused by a system well planned. Ventilation, an important consideration in buildings of concourse, is assured by fresh air passing through water, then heated and forced to all parts of the building.

The building and equipment is a tribute to the skill of the Canadian architects, Canadian contractors and Canadian manufacturers, whose combined efforts have reared from the resources of Canada the new home of the Bishop Strachan School.

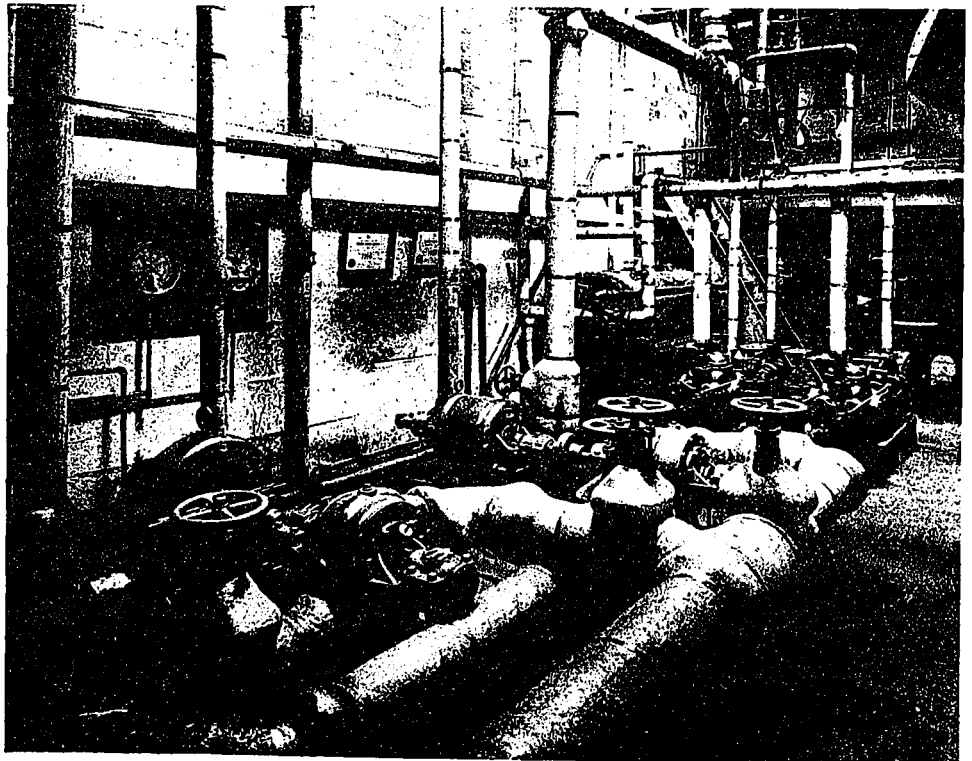
SETTLERS' PERMITS FOR FIRES

During the last session of the Legislature of Quebec several amendments were made to the Fire Act, which are calculated to add materially to its strength and efficiency.

One of these provisions requires that settlers engaged in clearing operations must, between April 1 and November 15 of each year, secure a burning permit from an authorized forest officer before setting out clearing fires. Wherever this provision is properly enforced, it will undoubtedly effect a very material reduction in the forest fire loss. One of the most serious features of the fire situation throughout Canada is the tendency of settlers to burn debris during dry periods, when fire is likely to spread and cause serious damage. A similar provision is urgently needed in Northern Ontario, where there is practically no control of settlers' clearing operations.

Another amendment to the Quebec Act provides that the debris from settlers' clearing operations must, before burning, be piled in heaps or rows at a distance of at least fifty feet from the forest. On this basis, it is much more practicable to control the fire than where the old method of broadcast burning is employed.

Holdings of timber licenses on Crown lands are required to clear away the debris on a depth of one hundred feet from railway rights of way. This is an excellent provision, but should be made applicable to privately owned lands as well. In many cases, the efforts of railway companies in the direction of fire protection are



POWER PLANT, BISHOP STRACHAN SCHOOL, TORONTO, ONT.

largely neutralized through the presence of large quantities of the most inflammable debris on lands immediately adjacent to railway rights of way.

Another excellent provision of the new Quebec Act is that any fire ranger or other forest officer may summon any male citizen between 18 and 55 years of age to assist in extinguishing any forest fire, the rate of pay being specified, and penalty being provided for failure to obey the summons.

The fire laws of the Province of Quebec are among the most progressive in Canada, but larger appropriations are needed to make them fully effective. In particular, provision should be made for a larger staff of inspectors. The present staff is not sufficient to exercise proper supervision over the fire rangers on licensed lands, nor is there adequate provision for the protection of Crown lands not under license.

NEW BRUNSWICK FORESTS

Three field parties are now at work in New Brunswick, in connection with the forest survey and classification of Crown lands. The project is under the supervision of P. Z. Caverhill, Provincial Forester, subject to the general direction of the Minister of Lands and Forests. The size and importance of the undertaking is indicated by the fact that the Crown lands in this province comprise 10,000 square miles and return a direct revenue to the provincial treasury averaging more than \$500,000 annually from timber alone, in addition to large revenues from the sale of hunting and fishing privileges.



DINING HALL, BISHOP STRACHAN SCHOOL, TORONTO, ONT.

The best agricultural lands are naturally along the valleys, where settlement has, for the most part, been concentrated. In some cases, however, settlement has extended to the uplands. Some of these lands are well suited for agriculture, but, in other cases, the settlers have apparently been attracted primarily by the timber or by the desire merely to locate a home and have settled on lands wholly unfit for permanent agricultural use.

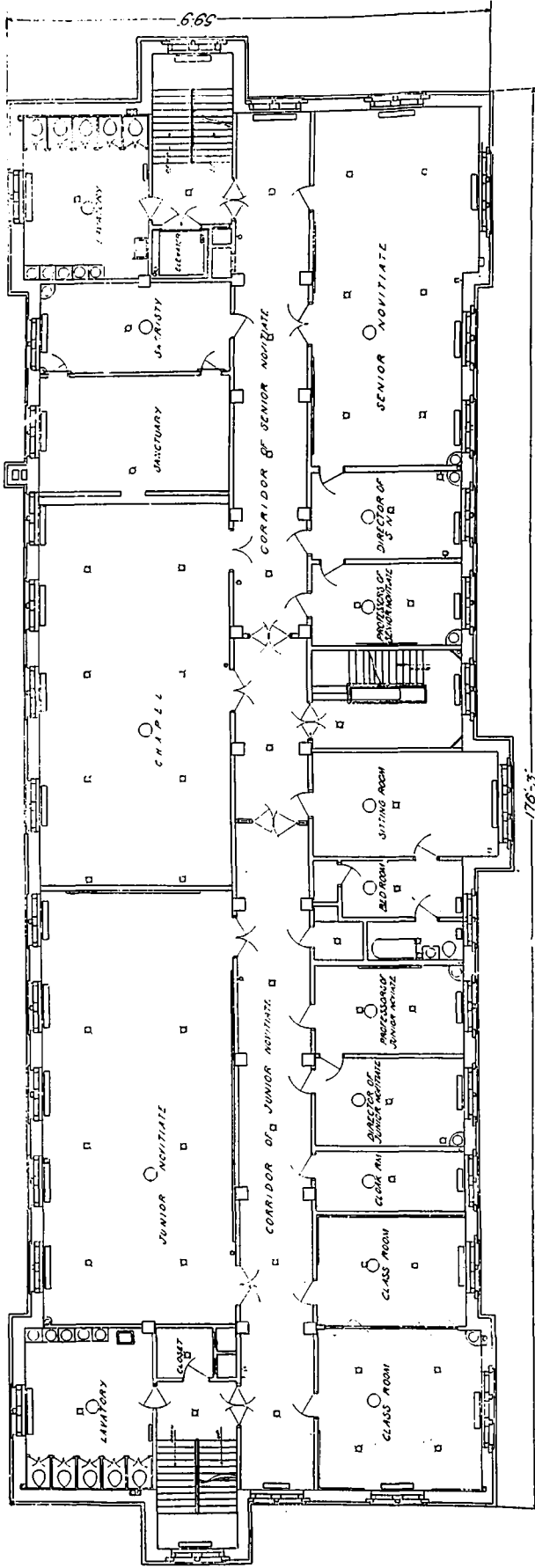
There is considerable pressure upon the Provincial Government for the opening up of new lands, to provide for immigration and for the surplus native population. An important feature of the Act of 1913 was the provision for a classification of soils with the object of directing settlement to lands really suitable for farming purposes.

This wise provision is now being carried out, and the result will no doubt be to reduce to a minimum settlement upon non-agricultural lands. The evil effects of such settlement may be seen in every province of Canada, and are due to the previous absence of a definite policy for the directing of settlement to lands really fit for that purpose.

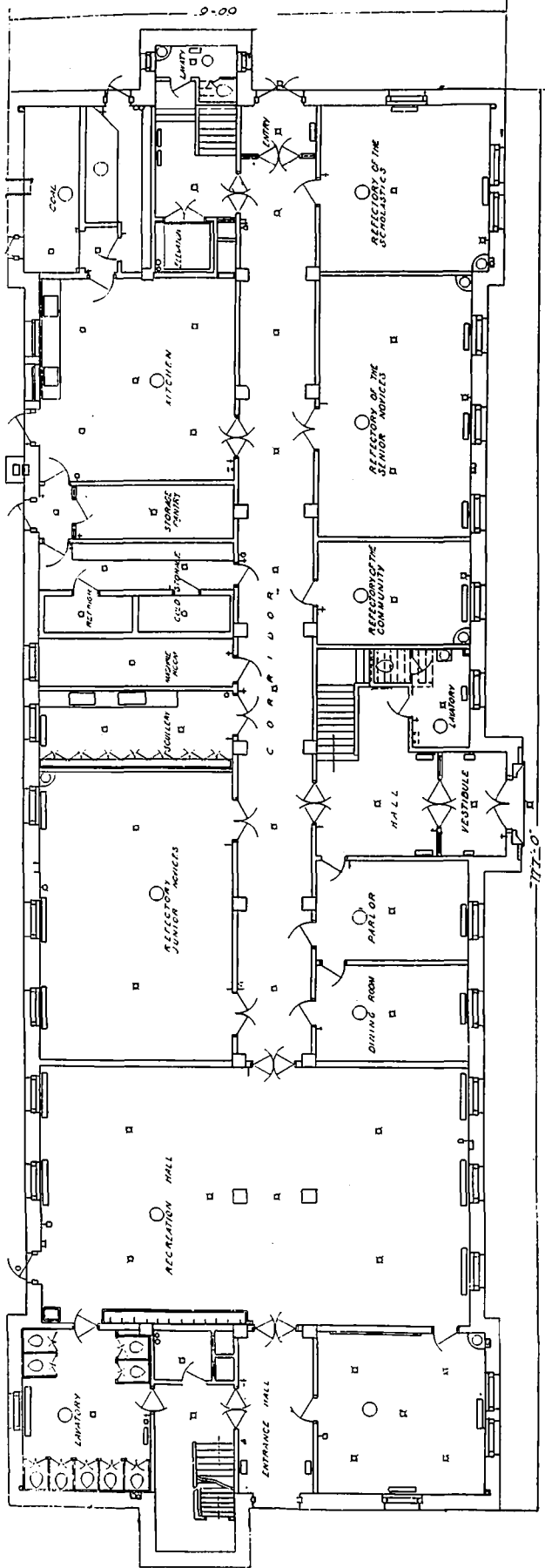
The Province of New Brunswick has undertaken to avoid the recurrence of such tragedies as were discovered by the Commission of Conservation to have been enacted in certain portions of the Trent watershed, Ontario, where settlers were allowed to locate on poor, sandy soils,



PRINCIPAL'S ROOM, BISHOP STRACHAN SCHOOL, TORONTO, ONT.



FIRST FLOOR PLAN, DE LA SALLE TRAINING COLLEGE, OAK RIDGES, ONT.



GROUND FLOOR PLAN, DE LA SALLE TRAINING COLLEGE, OAK RIDGES, ONT.

HYNES, FELDMAN & WATSON, ARCHITECTS.

HYNES, FELDMAN & WATSON, ARCHITECTS.

then chiefly valuable only for their timber. With the removal of the timber and the exodus of the lumbering industry, these settlers have been left stranded, with no opportunity to make a comfortable living, and faced with the necessity of constantly lowering their standards.

There are 73 buildings, large and small, used for exhibit purposes at the Canadian National.

This is the thirty-eighth year of the Canadian National Exhibition. It came into existence in 1879, and has been run continuously ever since.

De La Salle Training School

Built For The Brothers of The Christian Schools at Oak Ridges

THE De La Salle Training College, recently completed at Oak Ridges, Ontario, is located on property of one hundred and fifteen acres fronting on Yonge street, at the highest point between Lake Ontario and Lake Simcoe, commanding a view of all the surrounding country, and well chosen for the welfare of the students.

The building provides for a residence for the students and teachers, as well as the scholastic departments. The training is in conformity with the Department of Education of Ontario, equipping the students to take teacher's certificates, and also to enter the School of Pedagogy and Toronto University. At present there are about sixty students in attendance, with a staff of twenty teachers.

The building presents the appearance of a red brick structure with stone trimmings, but in reality it is a reinforced concrete skeleton building, with the exterior walls built of interlocking tile and faced only with brick, giving a practically fireproof building of four storeys in height, with a separate power building located at some distance to the north of the main structure.

A feature of the construction of this building is that the basement has been dispensed with; a large tunnel being the only space beneath the ground floor, which is used exclusively for the pipe systems of heating, water and electricity, where they are readily accessible for repairs or alterations. Another feature is that the floors throughout have linoleum laid directly on the concrete, which provides a noiseless and sanitary surface and eliminates all wood.

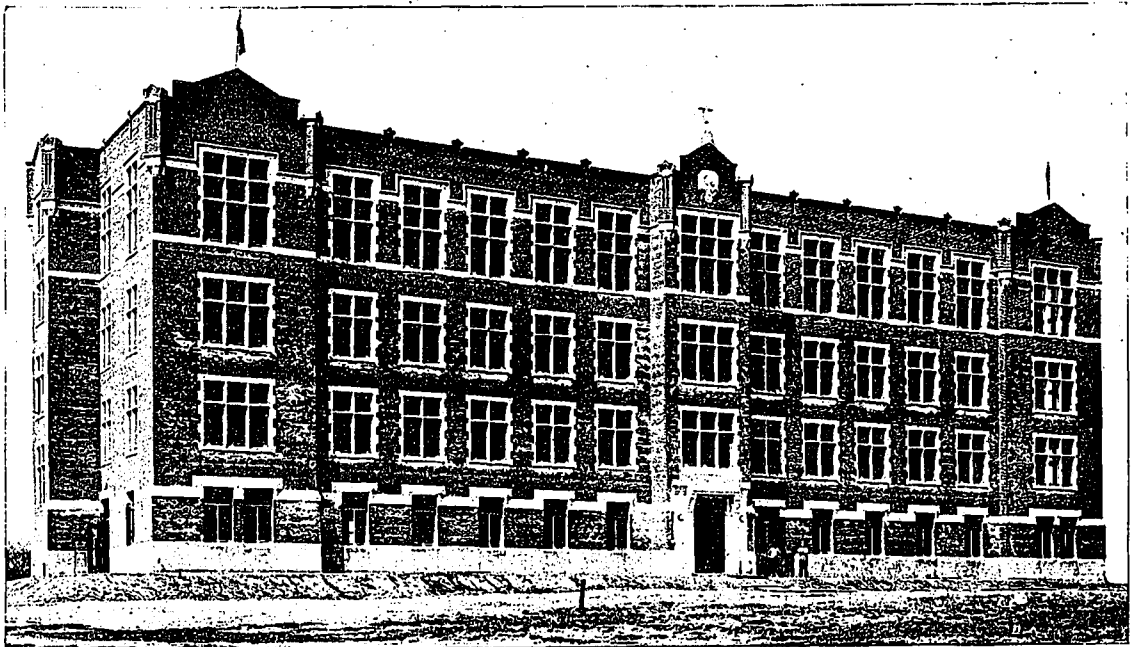
The ground floor accommodates the entries, staircases, refectories, kitchen department and gymnasium.

The second floor accommodates the chapel, classrooms, laboratory and lavatories.

The third floor accommodates additional classrooms, with bedroom accommodation for the teaching staff, while the top floor contains large dormitories for the students with very ample lavatory accommodation.

A building has been erected a short distance north of the main building to take care of the heating and power of the institution. It is a two-storey building of brick and concrete. The upper floor contains the manual training department, a well equipped laundry and a room for storage.

The power plant proper consists of two sixty-inch by sixteen-foot tubular boilers, which are

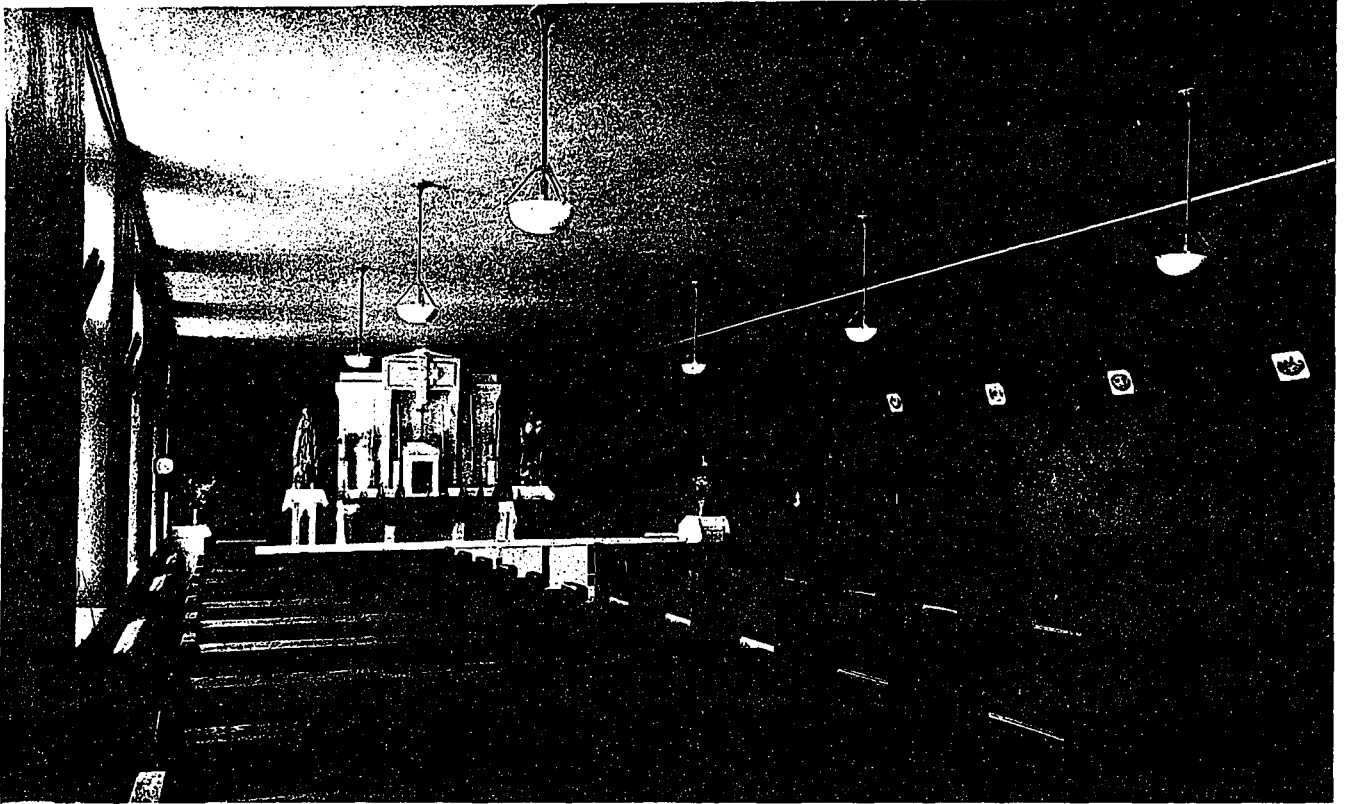


DE LA SALLE TRAINING COLLEGE, OAK RIDGES, ONT.

HYNES, FELDMAN & WATSON, ARCHITECTS.

fitted with automatic fuel feed and inclined grates.

The water service system installed is of more than passing interest. A pond on the property provides the water required. This pond is of the same nature as Bond Lake and Wilcox Lake, which are in the near vicinity. A crib has been sunk in the pond, running from which is a ten-inch pipe, enabling the water to be delivered by gravity to a concrete well four feet by four feet by twenty feet deep, which serves as a reservoir. An electrically driven pump placed fifty feet up the bank forces the water a distance of six hundred feet to the building, then through the tunnel to the power house and direct to a filter, which, with motor and pump, is shown in illus-



CHAPEL, DE LA SALLE TRAINING COLLEGE, OAK RIDGES, ONT.

HYNES, FELDMAN & WATSON, ARCHITECTS.

tration. This filter is arranged to discharge to either of two concrete reservoirs, each twenty-two feet by eighteen feet, and holding a depth of water eight feet. These reservoirs are located underneath the filter, or machine room, of the power house and underneath the coal bunkers. Another pump similar to the one in the field (the one shown in illustration) pumps the water from these reservoirs into two five thousand gallon

riveted metal pressure tanks, which are buried outside the power house. This electrically driven pump is controlled by an automatic switch, regulated by the pressure in the tanks. When the water is pumped into these tanks an air pressure is obtained. When this pressure falls below thirty pounds to the square inch the switch automatically starts the motor. Auxiliary to this for pressure purposes is an air com-



TYPICAL CLASS ROOM, DE LA SALLE TRAINING COLLEGE, OAK RIDGES, ONT.

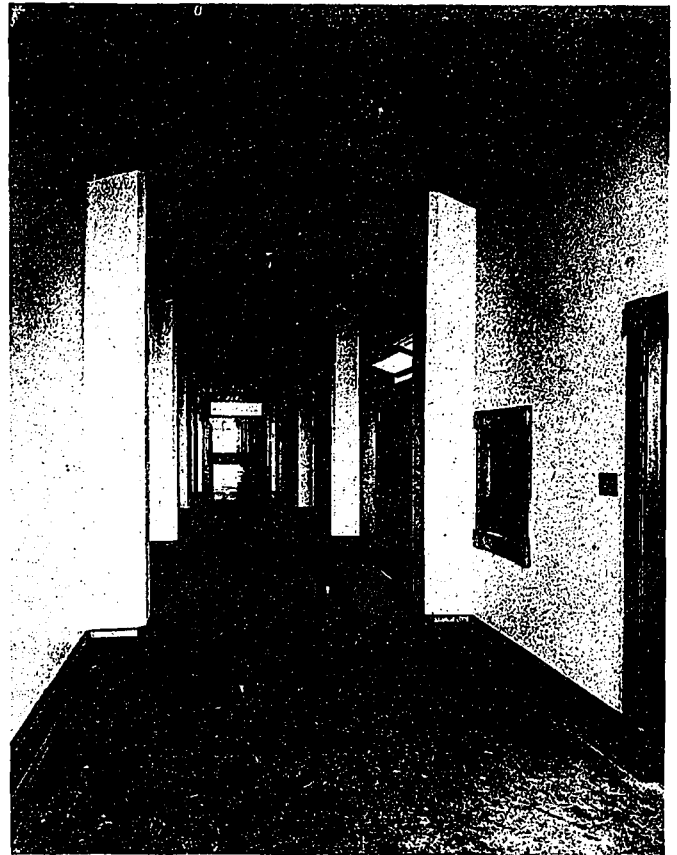
HYNES, FELDMAN & WATSON, ARCHITECTS.

pressor to maintain an air pressure in the tanks, which operates between thirty and sixty-five pounds, at which latter point the power is automatically shut off. This system is found to maintain a good water pressure throughout the building. The air compressor serves another purpose, that of raising the returned condensation water from the steam trap to the boilers. The reservoirs are fitted with perforated brass pipes to permit of chlorination or other treatment of the water should it be necessary.

Power for operating the motors and for lighting is obtained from the line of the radial railway which passes the property. It is received in transformers on the roof of the power house, which deliver at two hundred and twenty volts for lighting and five hundred and fifty volts for power. Motors are installed to operate the pump, which supplies the filter, the pump in the machine room, the air compressor, manual training room, the laundry and the ice plant, which are located near the kitchen.

Sewerage disposal is taken care of by means of septic tanks, installed in accordance with the regulations of the Department of Health of Ontario.

The problems arising in connection with the building and equipping of this school and power plant have been well taken care of by the architects, Hynes, Feldman & Watson, who designed

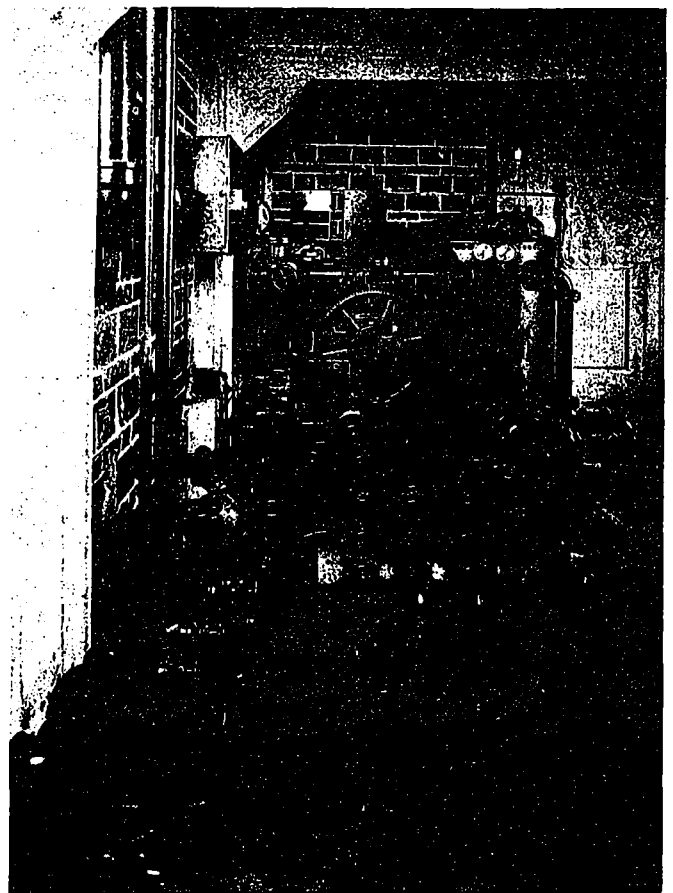


MAIN CORRIDOR, DE LA SALLE TRAINING COLLEGE, OAK RIDGES, ONT.

the buildings and superintended their erection and the installation of their equipment.



REINFORCED CONCRETE COLUMNS IN DORMITORY, DE LA SALLE TRAINING COLLEGE, OAK RIDGES, ONT.



FILTER AND PUMPING EQUIPMENT IN POWER HOUSE, DE LA SALLE, TRAINING COLLEGE, OAK RIDGES, ONT.

CONSTRUCTION

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INTERESTS OF CANADA



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

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FRASER S. KEITH - - - EDITOR AND MANAGER

Vol. IX Toronto, August, 1916 No. 8

Architectural Affairs

Pertinent to the present existence and to the future development of the architectural profession are a number of important matters concerning which a free discussion, both by the individual and by the association, with a view to future action, is advisable. On the opposite page of this issue we are pleased to publish a timely discussion of the situation by Mr. John M. Lyle, of Toronto. Lack of space prevented its being set in larger type, which its importance warranted. An open discussion in these pages will, we believe, do much to further the interests of the architectural profession, and we trust that architects throughout Canada will not hesitate to use these columns to give expression to their views on architectural questions.

Development in School Construction

Amongst the splendid educational institutions illustrated in the current issue of CONSTRUCTION the Ryerson School, at London, Ontario, is worthy of particular notice. It illustrates a type new to Canadian architecture, and contains several features which will commend themselves to municipalities where the price of land is not a controlling factor. The block plan shows the well-designed arrangement of the various rooms and departments, complete in one storey. A novel feature is the saw-toothed roof, providing additional lighting, and making possible the effected arrangement, the inner rooms having ample light. It is hoped that the architects will be enabled to keep in close enough touch with this school so that they may later provide figures regarding the cost of maintenance, particularly the heating plant, for comparison with the usual type of school construction.

Getting a Square Deal

Obviously the architects, engineers and builders, and incidentally the manufacturers, of Canada are being subjected to what amounts to a gross injustice. The laws of this country impose upon our Canadian architects, engineers and builders unrestricted competition with the more strongly, financially entrenched firms in the United States, while they are absolutely barred from doing business in that country. How this reacts against the general welfare of the Dominion was shown in figures quoted in our last issue, which proved that the American architect favors American contractors and American made goods. The situation is manifestly too one-sided.

In this connection Mr. R. K. Shepard, chairman of the Toronto Chapter O.A.A., wrote a letter to the Montreal office of the U. S. Department of Labor, asking for information as to the laws of the United States which applied to Canadian architects desiring to practice in the United States. Herewith is the reply received:

Mr. R. K. Shepard,

36 Toronto Street, Toronto, Ont.

Sir,—Replying to your communication of the 4th inst., I beg to quote the following from our laws as applied to contract laborers:

"Persons hereinafter called contract laborers who have been induced or solicited to migrate to this country by offers or promises of employment, or in consequence of agreements, oral, written or printed, expressed or implied, to perform labor in this country of any kind, skilled or unskilled."

The word "persons" covers aliens or any one not a citizen of the United States.

There is nothing in our laws which prevents a business concern, not a resident of the United States, submitting bids or specifications, but in order to enable a foreign concern to send into the United States workmen who are not American citizens, it becomes necessary to show that skilled labor of like kind, unemployed, cannot be found in the United States.

Aliens who are architects, builders or engineers fall within the provisions of our law quoted above.

Respectfully,

JOHN H. CLARK, Commissioner.

Besides this a number of the States of the Union have class legislation in favor of architects and engineers. Leaving the question of

provincial laws aside, it seems clear that the Alien Labor Law of Canada might easily be extended to cover the same ground as that of the

United States. It is only right that such should be the case. It is likewise apparent that it would be good business.

Status of The Canadian Architect

A Discussion of The Problems Confronting The Architectural Profession, With Suggestions as to How Conditions May Be Improved

By John M. Lyle.

The time seems opportune for a frank discussion among the members of our profession as to conditions under which we are working in Canada, in order that after the war is over, when times become normal again, some radical changes may be made and some concerted action taken to right the many growing abuses.

If we contrast the standing of the Canadian architect with his American, English or Continental confreres, both as regards his remuneration and as regards his position in the community, we would find that he is decidedly the worst off.

For the purposes of discussion let us divide the subject into the following headings:

- First—The relations between the client and the architect.
- Second—The relations between the contractor and the architect.
- Third—The relations between the engineer and the architect.
- Fourth—The schedule of charges for professional services.
- Fifth—The enactment of legislation.
- Sixth—The employment of foreign architects.

The Relations Between the Client and the Architect.

The Canadian client pays less for his professional services than almost any other client. He demands more from his architect, and the law protects him and holds the architect responsible to a greater degree than in many countries, with the exception, possibly, of England. We have lately had in Canada several cases where the architect has been held directly liable for faulty work executed by contractors.

If the present tendency now abroad in the land of having practically all the municipal, governmental and large corporation work executed under the care of governmental or corporation architects continues, we shall find the client of to-day as rare almost as the dodo bird. For, in addition to the above growing tendency, we have building and engineering firms undertaking architectural service, and speculative builders galore. The natural query is: What are the remedies to offset these conditions?

I would suggest the following:

First—That it should be obligatory for the client to employ and pay for a quantity surveyor.

Second—That on all jobs of twenty thousand dollars and cost a clerk of the works should be obligatory, whose salary should be paid by the client.

Third—United efforts should be made to persuade the governments, etc., to give out more work to the profession.

The Relations Between the Contractor and the Architect.

The relations between the contractor and the architect, especially under the separate contract basis, is most unsatisfactory. The vast majority of the contractors do not maintain a business organization such as pertains under the general contracting system. The work of co-ordinating the different trades, and of carrying the work to a successful completion, largely devolves on the architect, thereby placing an extra burden and expense on his shoulders. This, of course, is not true of the whole of Canada, as in Montreal the practice of general contracting is almost universal.

It would be a distinct gain to the architect, and to his client, to have the practice of general contracting made universal in Canada, at least for all buildings of a cost of over ten thousand dollars.

The Relations Between the Engineer and the Architect.

At present there does not seem to be any satisfactory or definite ruling as to the relations between the engineer and architect for special service work, particularly as regards the commission to be charged the client by the architect and engineer for their joint services.

For any work of importance, involving engineering services, an architect must either employ a structural or service engineer in his own office, or he must employ outside consulting engineers to collaborate with him in connection with the special services and structural work. It is manifestly unfair that the architect should receive no commission on the engineer's work, as there is bound to be a great deal of time put in by the architect in consultation with the engineer and in the revising, both of the engineer's and architect's drawings to conform one with the other. In the case of expert service, it is the American custom that a certain percentage should be paid, over and above the regular commission, to take care of expert engineering service. It is sometimes a difficult matter to get the client to see the value of these services. It is, therefore, important from the architect's viewpoint that his work, in collaborating with the engineer, should be protected. There should be a conference between the engineers and architects to arrive at a satisfactory solution of this difficulty.

The Schedule of Charges for Professional Services.

Every architect knows that residential work, which is really the bulk of the work carried on by architects in Ontario, is not remunerative, provided always that the architect gives full modern professional services for his fee. We have always had to contend with the theory advanced by the architects in smaller towns that it is difficult for them to get their clients to pay more

than the old five per cent. Would it not be very much better to establish a proper standard, and have our confreres work up to that standard, rather than work down to a low standard.

We are all aware that a contractor, in figuring on a job, would estimate on the average job to have a profit varying anywhere between ten and thirty per cent., and it is no uncommon thing to have work carried out under the percentage basis of ten and fifteen per cent., this percentage to be a percentage over and above all overhead charges of every description. Why, then, should the architect be grudging a greater commission than five per cent., which is to include all overhead and working expenses of every description, and not a murmur be made by the client as to the contractor's charges.

The minimum charge of the New York Chapter of the American Institute of Architects for general work is six per cent., and for residential work, within the city of New York, eight per cent. on the first fifty thousand of cost, and six per cent. on the balance of cost. For private dwellings outside the city of New York, including stables and other appendages, ten per cent. on the first fifty thousand of cost, and eight per cent. on the balance of cost. For all monumental, decorative, special interior and cabinet work or alteration work the charge is ten per cent. It is a well known fact that the majority of the leading firms charge considerably in excess of these commissions. There is also an established practice in New York that all work, no matter of what character, under twenty thousand dollars, is charged for on the minimum basis of ten per cent. I would suggest that the professional charge for all residential work be ten per cent., and that the minimum for other work should be six per cent., instead of, as at present, seven and five per cent. respectively.

If the architects of Canada are to build up strong office organizations to meet foreign competition it is absolutely necessary that a change be made in the schedule of professional charges.

It is a notorious fact, emphasized by this war, that the vast majority of the Canadian architects, even those with the most important work under their supervision, are not in a strong financial position to meet the strain of hard times. When you consider the vast sums of money that are entrusted to the architect's care, and the responsibilities which he assumes in the conduct of large jobs, it will be readily seen that his remuneration for the services rendered are out of all proportion.

The Enactment of Legislation.

The writer has always felt that the proper way to raise the standard of our profession is through the medium of education, rather than legislation. After some years of Canadian experience I am inclined to think that, while the first argument is entirely sound, there are at present certain conditions in Canada which make it necessary to have more drastic legislation enacted as regards the practice of architecture in Canada. Steps should be taken by the members of our profession to enact legislation governing the employment of quantity surveyors, a clerk of the works, and the registration of architects.

The Employment of Foreign Architects.

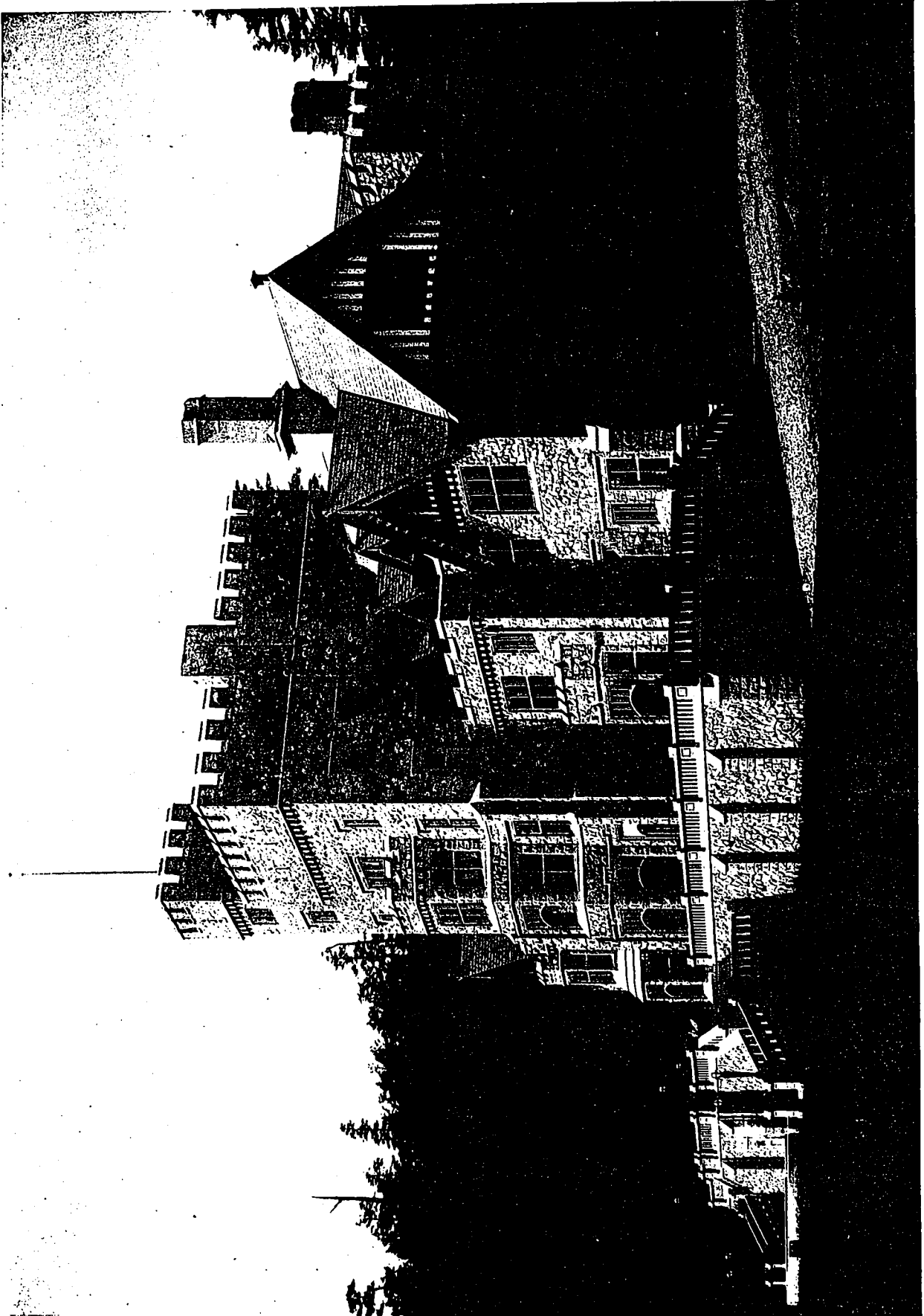
Every genuine artist feels that art should be international, but, at the same time, every patriotic Canadian should exert all possible effort to develop a national Canadian architecture. This can not be done if the custom of employing foreign architects increases in the same ratio as it has during the past ten years.

There would certainly be no quarrel if an occasional American architect came over to Canada to erect a building, but when we look around to-day, when jobs are pretty scarce, and see American architects building hotels and factories in Hamilton—American architects building theatres, office buildings, factories, warehouses and hotels in Toronto, and American contractors putting them up, we are bound to feel that the time has come for a more outspoken stand on the part of our profession as regards this American invasion. If the general public realized that the American architect, being naturally familiar with American materials, specified American goods to the detriment of Canadian goods, to the value of hundreds of millions of dollars during the past twenty-five years, a great outcry might arise.

Canadian architects can not be expected to build up strong office organizations if the cream of the work goes to outsiders, and we have to meet, in addition, the competition of municipal and governmental architects and contracting engineers.

What chance would there be in England of developing a national English architecture if a great many of the important buildings were designed by German or Swedish architects, or, again, what chance would French architecture have if a large number of their buildings were designed by Dutch or Spanish architects?

In conclusion, I am firmly of the opinion that there should be more and continual inspection on buildings of a moderate cost, and that the cost of this inspection should not be borne by the architect, but by the client. That the architect should receive more for his services, thereby enabling him to build up better office organizations to carry over his staff during bad times, and to enable him to give better service to his client, and, therefore, better buildings for the community in general. He should endeavor to persuade the different governments, municipalities and corporations to give out their work among the profession. He should aim, where possible, to encourage the use of Canadian materials and the employment of Canadian contractors.



THE GARDEN FRONT, HATLEY PARK, RESIDENCE OF JAMES DUNSMUIR, VICTORIA, B.C., CANADA.

SAMUEL MACLURE, ARCHITECT.

The Heating and Ventilation of Schoolhouses

The subject of heating and ventilating the schoolhouse has undoubtedly been given as much attention and thought as any other one particular type of building, and it is quite possible that owing to the constant recurrence of this problem in all portions of the country, it might be said that it has been met by a greater variety of solutions than can be found in any other form of building. Yet, with all of the thought, time, and money which has been put into this problem, it is a peculiar fact that it is not yet possible to assert that the perfect ventilating system has been devised.

In the first place—what is a perfect ventilating system? We cannot by any possibility maintain air inside of a building at the standard of purity possessed by the air before entering, owing to the fact that impurities are constantly added to the air within an occupied room. The only exception to this is when the outside air is so bad that mechanical or physical methods of cleaning may remove a quantity of undesirable exterior elements which might be accounted more deadly than those which the air would pick up within the room before being expelled through the vent openings.

interesting to note that this test was carried on for five hours a day for three weeks without perceptible effect on the school children, who were carefully observed by experts making psychological and physiological tests; these tests were compared with a corresponding class in another room which was ventilated according to the best standard methods and practices of to-day, with no apparent difference between the two.

In spite of this experiment, however, there are few who are yet ready to admit that fresh air is not required or that the condition of the air in a room can artificially be made as desirable for human being without a fresh air supply as with it. Until experiments demonstrating this fact have been made in multiple, with results of an invariably successful nature, the engineer and architect are not justified in departing from the old standards of the required amount of fresh air per pupil per minute.

It is a question if the average architect in designing a schoolhouse takes into proper consideration on his preliminary sketches the requirements of the ventilation system. While the modern trend is towards the elimination of this trouble, there are still many architects who cause themselves much needless work and later revising of plans by not making proper allowances in the preliminary drawings for the necessary ducts and flues.

In schoolhouse ventilation work there are three systems of piping which are in common use. These may be termed the trunk line, or single duct system, the double duct system, and the individual duct system.

The trunk line system is the one which is most familiar, a large percentage of the air blast duct work being laid out by this method. The double duct system, which consists of a warm air duct supplying two-thirds of hot air and the cold air duct supplying one-third of cold air to the base of the flues, the air becoming mixed in the flues and entering the room at a desired tempered degree, is also fairly well known.

The individual duct system, however, has advantages over the other two. This system gives every room its own duct and flue continuously from the fan to the room outlet and regulates the temperature of the air to suit the requirements of each individual room. It has been found by experience that rooms situated on the north and south sides, or on the windward and leeward sides, of a building

will not require air at the same temperature, the difference being several degrees. The main objection to the common trunk line system ordinarily used is that this variation of requirement cannot be satisfied.

Another advantage possessed by the individual ducts is the matter of head room in the basement. The argument is often advanced, however, that the double ducts, with the air mixing in the vertical flue, give the same temperature control as the individual duct in which the air mixes back at the heater, and at the same time they permit the use of the trunk line system. This is true, but between the heater and the base of the flue not only must two ducts be carried, but they must have a cross-sectional area of approximately 50 per cent. more than actually required. This is clearly understood when it is noted

that on a very cold day the cold air duct may be almost entirely shut off at the base of each flue, thus requiring all the ventilation for the building to come through the hot air duct, while on a warmer day the warm air duct may be 50 per cent. closed and the cold air duct utilized to its full capacity. Therefore where these ducts are extended along the basement ceiling, as is usually the case (or any place where head room is an object), the individual duct will make an appreciable saving in the height.

The first form of heating which was applied to schoolhouses was that of the fire-place and the stove. Later, however, as advancement in the art of heating became more pronounced and ventilation was required, furnaces were substituted and are still in use at the present time in some of the older schools, although generally with more or less dissatisfaction.

In order to show the progress of modern heating and ventilation, let us first take Figs. 1, 2, 3 and 4, which show the third, second, first and basement floor plans respectively of one of the older schools of moderate size in which furnaces had been in

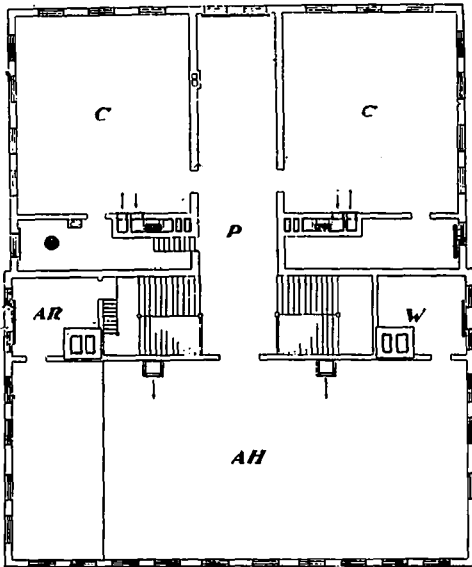


Fig. 1

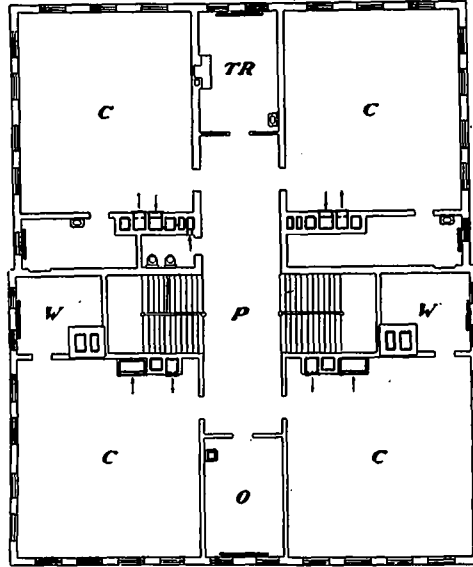


Fig. 2

It is not within the province of this article to enter into the theory of ventilation so much in regard to the scientific or medical side as it is to point out to the conservative architect the methods which are giving the greatest satisfaction to-day according to the standards based upon well recognized and generally accepted theories. Yet, in passing over this point of the discussion, it is hard to omit the mention of an actual test in a regular schoolroom operating under normal conditions. It was demonstrated that it is possible to re-use the air of the fully occupied room for continuous periods of three hours with the usual recess interval and without the use of any of the outside air whatsoever, except that which leaked in through crevices, and occasionally opened doors, it being impossible, of course, to keep the class rooms absolutely air tight. It is also

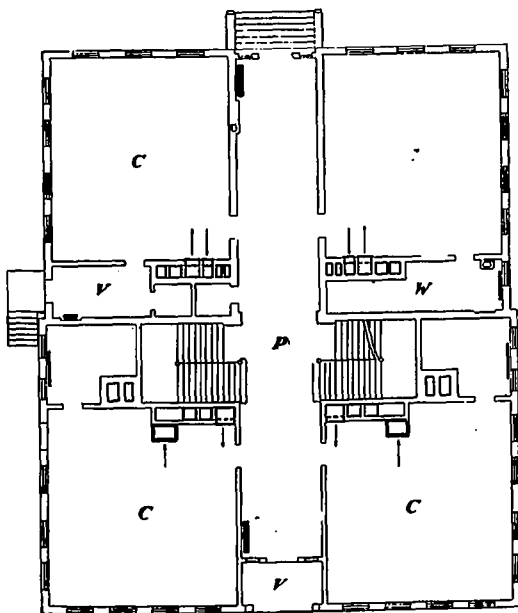


Fig. 3

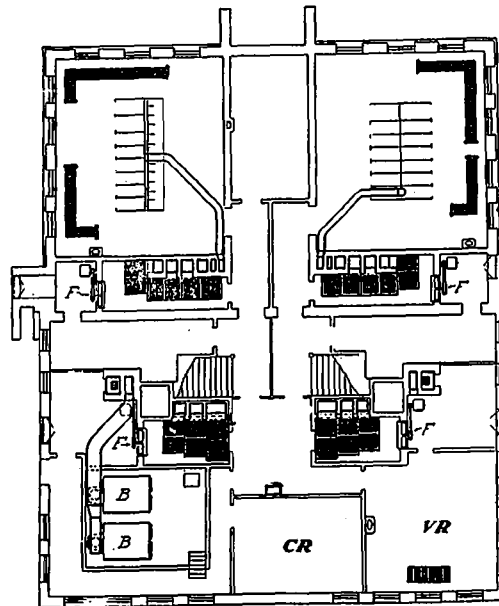


Fig. 4

use. These furnaces required maintaining four separate fires, and at their best were subject to back drafts on days of high winds and to other gravity hot air heating troubles as well. This school was recently remodeled as shown, so as to eliminate these troubles and to give a ventilation system furnished by gravity at times when outside conditions made such operation feasible, and at the same time to avoid the troubles usually experienced with the plain gravity system.

To accomplish this a fan F was installed which would force the air into the heating chambers, across the heaters and up the flues, thus assisting gravity enough to counteract adverse outside conditions.

It is not intended to hold up this school to the architect as an ideal installation, but rather to employ it as a means of showing what can be done to improve the existing unsatisfactory furnace systems. Owing to this being a remodeled system, some of the flues were installed by necessity in places where, architecturally speaking, they have no business being located; but this could, of course, readily be overcome in a new building properly designed to accommodate the ventilating system.

The exhaust flues are heated with vertical aspirating pipes, assisted by radiators located in the flues at the third floor, as shown in Fig. 1.

Some time after this school was remodeled another school building was erected a short distance away and connected to the old building by means of a pipe tunnel. The plans for the new building are shown in Figs. 5 to 8, inclusive, which are the attic floor, second floor, first floor and basement plans respectively. In this later school, as shown in Fig. 8, an air filter screen S was installed, together with a fan F, which forces the air over the heating coils H. The system is arranged so that either the gymnasium, the auditorium, or the class rooms may be used at different times, all supplied from the same fan F, the flues being opened and closed as desired through a system of switch dampers.

In the attic plan, Fig. 5, it will be seen that the exhaust flues are connected together and carried through the roof, circulation being assisted by the heaters H, which make aspirating flues out of these vents.

This arrangement is a step in advance of the arrangement in the older buildings, having a more positive air supply movement, a certain amount of temperature control, filtered fresh air, and a concentration of apparatus.

Of course a fan system on the vents is also most desirable, as this produces an almost constant pull on the rooms, rendering it possible to regulate the quantity of fresh air much more closely than when aspirating flues are in use. It is quite remarkable the amount of difference made in the amount of incoming air by the assistance given through the exhaust outlets.

Still further progress is indicated in Fig. 10, where the individual duct system is used and individual temperature regulation thus secured for the various rooms. For the purpose of this discussion the upper floors of this building may be assumed to be treated in a manner similar to the floor plans already shown. The small additional plan of the boilers shows the smoke connection and method of running the flue into the chimney.

The basement plan, shown in Fig. 10, is an especially good typical duct, illustration showing as it does the use of the individual ducts for the class rooms located with varying exposures, combined with a large trunk line duct supplying the auditorium above. A system of switch dampers is installed, throwing either the class room (i.e., the small individual ducts) or the auditorium (i.e., the large trunk duct) into service as desired.

The chief weakness in this installation consists of the lack of facilities for cleaning and purifying the air, it being absolutely im-

possible to install either an air washer or a filter screen in the space allotted to the ventilating plant. This is, perhaps, not quite as serious a consideration in this particular case as it might be under other conditions, owing to the fact that this school is in a suburban location where the air is of unusually clear character.

The ideal layout of a ventilating system to which it is desired to call the reader's attention is shown in plan and elevation in Fig. 9, this being one of two sets of apparatus of identical nature now being installed in a new high school in process of construction. In this particular school the apparatus shown is purely a class room proposition, taking care of all rooms on the left side of the building. The other apparatus is situated across the corridor and furnishes air for all the class rooms on the other side of the building. The auditorium and gymnasium are supplied by a third apparatus situated in the rear, thus making it possible to operate all sections of the entire school at one and the same time, instead of in parts alone, as was necessary in the other layouts.

In Fig. 9 the air enters through the window screen and

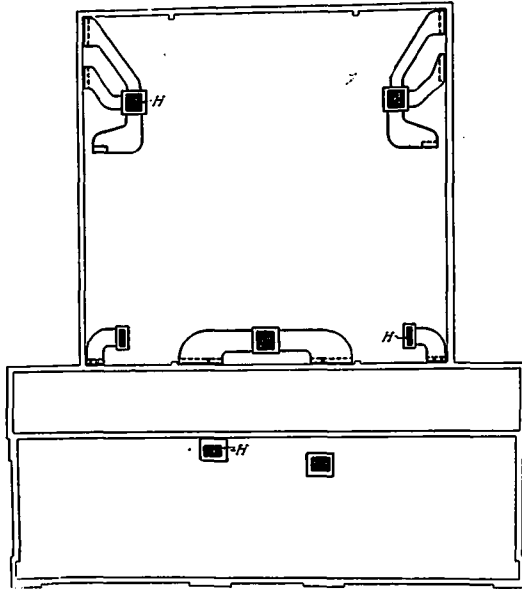


Fig. 5

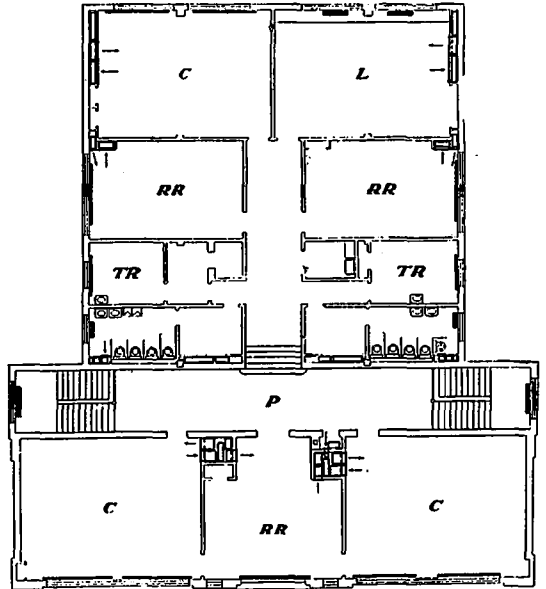


Fig. 6

passes in front of the tempering heater T, from which it is drawn through the air washer AW and heater H by the fan F. This fan is set in an enclosure which is made as air tight as possible, owing to the fact that the fan takes its suction directly from the room, thus making a plenum chamber out of it. The discharge from the fan is blown partially through the re-heater R, and partially through a by-pass beneath the re-heater, as indicated in elevation in Fig. 9. Here it is forced into the pipes P, which pick up the air and carry it to the various room outlets, the horizontal runs in this particular case being carried in a tunnel beneath the floor of the basement corridor. This is an ideal arrangement, which, however, requires all heat flues to be carried down to the basement floor instead of stopping off at the basement ceiling, as is customary.

The respective ducts obtain individual temperatures by the

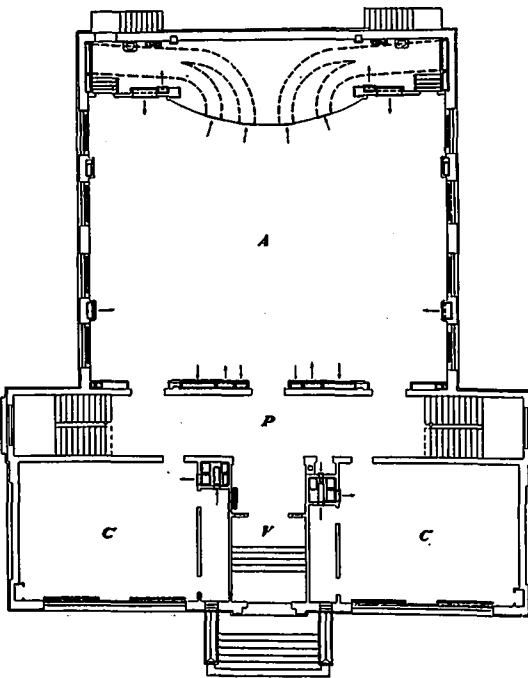


Fig. 7

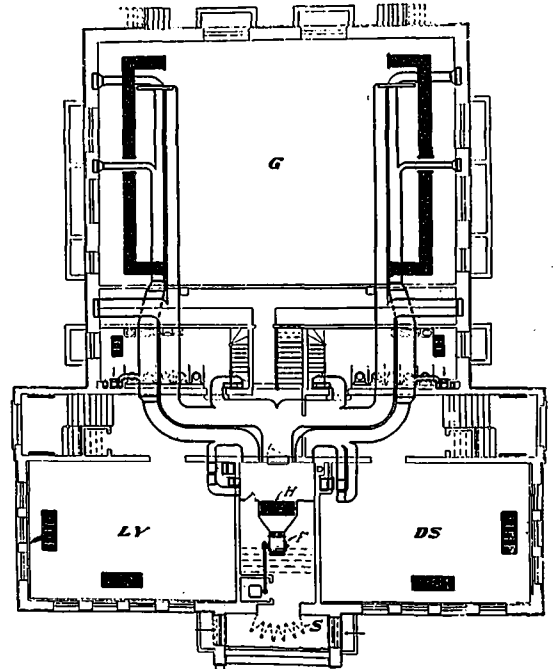


Fig. 8

amount of hot and tempered air admitted by the dampers D. These dampers are governed by a thermostat located in the room which the duct supplies, and thereby determining the temperature of the air entering the room.

The architect will undoubtedly at once question the cost factor on these more or less ideal systems of heating and ventilation. The most approved system—including air washers, heaters and fans of sufficient capacity to supply every pupil in every class room with 30 cubic feet of air per minute, and to give every seat in the auditorium 20 cubic feet per minute, besides supplying anywhere from four to ten changes of air per hour, as may be required in the various other rooms throughout the building—will cost from 2.1 cents to 2.8 cents per cubic foot, according to the amount of horizontal run and other variable factors, the average for a large number of schools approximating 2.4 cents per cubic foot.

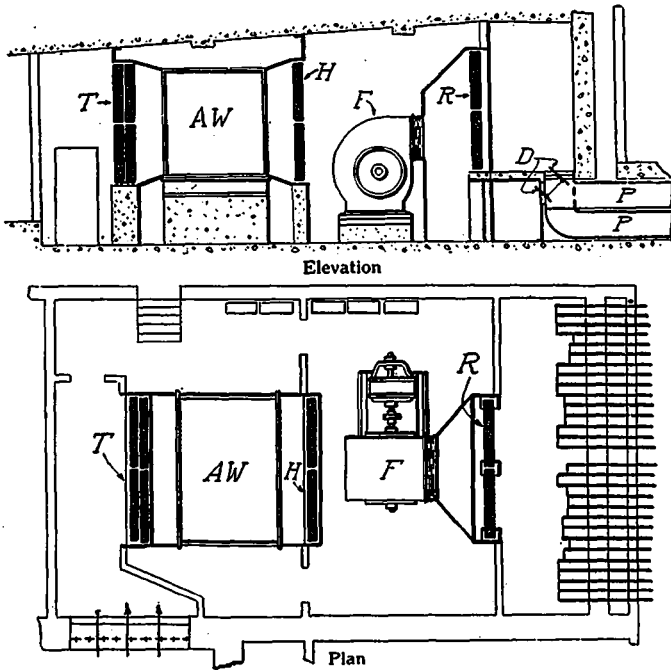


Fig. 9

It is often considered advantageous to install an auxiliary system of direct radiation, but many architects are opposed to the use of direct radiation in a building where air is supplied for ventilation, arguing that it is much cheaper to increase the temperature of the entering air by adding a few more sections on the heater than it is to carry steam pipes throughout the building and to install anywhere from two to six or eight radiators per room.

As far as first cost is concerned this is entirely correct, but the operating cost is excessive, owing to the large power bills which are incurred during the periods when the school is not in use, during which periods, however, heat is necessary to afford protection against the danger of freezing.

With direct radiation installed in the rooms no electric power need be expended from Friday afternoon until the following Monday morning, the temperature in the building in the meantime being maintained by the direct radiators without ventilation. When the hot blast system is used alone, either cold outside air must be heated and driven within the building in order to maintain the required temperature, or a by-pass must be arranged from the vent fan into the supply fan so as to revolve the air without the use of an outside connection during this period. This by-pass is sometimes not only difficult to obtain, but where the vent fans are located on the roof, or in the attic space, is absolutely impossible.

It is, moreover, very undesirable to use the hot blast system for heating such rooms as toilets, vestibules, kitchens, lunch rooms, and, in fact, any rooms from which there is a possibility of odors being spread throughout the building.

Since it is necessary, therefore, to install some direct radiation and to run steam supply and return mains for the heating of these particular rooms, it does not require an excessive amount of additional piping to locate the risers so that they may feed radiators in every room. It is certain that the interest on the additional expenditure involved by this installation would not be as great as the expense incurred in using power to run the hot blast system when it is being operated for the purpose of maintaining a satisfactory temperature during the period intervening between sessions.

In the plans accompanying this article the rooms have been indicated by letters as follows: A, Auditorium; AH, Assembly Hall; AR, Anteroom; BP, Boys' Playroom; BL, Boys' Locker; BR, Boiler Room; C, Class Room; CR, Coal Room; G, Gymnasium; GL, Girls' Locker; GP, Girls' Playroom; L, Lavatory; LY, Library; P, Passage RR, Recitation Room; TR, Teachers' Room; V, Vestibule; VR, Voting Room; W, Wardrobe. The apparatus has been indicated as follows: AW, Air Washer; B, Boiler; D, Damper; F, Fan; H, Heater; R, Re-heater; S, Screen; T, Tempering Heater.—"The Brickbuilder."

CATALOGUES.

The Mouat Heating System.—The vapor system manufactured by Mouat-Squires Co., Cleveland, Ohio, is described in a catalogue issued by them. The advantages of this system claimed are that radiators can be adjusted to suit weather conditions, or shut off entirely if desired, and temperatures controlled for each room separately; possibility of pipes freezing and flooding the building is avoided, as no water remains in the pipes of this system; ease of operation of the radiator valves, which are gradu-

ated and conveniently located at the top of the radiator; minimum expense of upkeep, since there is never more than a few ounces of pressure on the system; therefore pipes, fittings, etc., are not subjected to strain; simplicity of construction, resulting in little likelihood of the system getting out of order. It is stated that the system is applicable to boilers already installed. A number of important buildings in which the system is said to have been in use for a period of years are shown by means of half-tone cuts.

"Corkboard Insulation." The Armstrong Cork and Insulation Co., Pittsburg, Pa., has issued a new edition of their catalogue. It shows at the beginning an illustration of the cork oak from the outer bark of which Nonpareil corkboard is made. It contains much information concerning insulating materials and their application to cold storage warehousing, ice plants, breweries, fur storage vaults, dairies, and under conditions in which heat insulating materials for temperatures under 210 degrees Fahrenheit is required.

"The Commercial Value of Washed Air" is a forty odd page booklet issued by the American Blower Company, describing the Sirocco Air Conditioning System manufactured by them, with which it is claimed that the working conditions existing in most buildings are improved, with the result that the efficiency of those affected is increased. This system will keep the humidity of the air at any desired point. This booklet is of undoubted interest to architects, and is designed to fit the American Blower Co.'s catalogue binder.

BOOK REVIEWS.

"INDICATION IN ARCHITECTURAL DESIGN": By D. Varon, architect, formerly Professor of Architectural Design at Syracuse University, and at the University of Illinois. New York: The William T. Comstock Company.

This book is a treatise on a natural method of studying architectural design with the help of indication as a means of analysis. Its object is to inspire the student, helping him to discover the unlying principles of architectural composition with a view to bringing out the best that the individual can produce. This book will prove useful to architectural students particularly. The plates illustrating the author's sketches comprise the large portion of the book. They are used as examples of the author's methods, and are an inspiration to the student architect.

"HAND LETTERING FOR ENGINEERS, ARCHITECTS, SURVEYORS AND STUDENTS OF MECHANICAL DRAWING": By Wilfrid J. Lineham, head of Engineering Department, University, London. New York: E. P. Dutton & Co.

The object of this book is to minister to the needs of students by means of direct practice in the kinds of lettering most required by engineers, architects and surveyors. As a text book of letting it is very complete, and if followed by the student, gives him a course in lettering which is valuable, and which, if continued, should make him an expert in hand-lettering, such as is required by engineers, architects and surveyors.

"KIDDER'S ARCHITECTS' AND BUILDERS' POCKET BOOK": By the late Frank E. Kidder. Present edition revised and rewritten by Thomas Nolan, editor-in-chief, Professor of Architectural Construction, University of Pennsylvania, and a staff of specialists. Sixteenth edition. John Wiley & Sons, New York.

This is a new and rewritten edition of the "Architects and Builders' Pocket Book." The work devoted to its revision requiring over three years on the part of the editor-in-chief and his associate editors. The original plan of the subject matter has been retained, but on account of the comprehensive nature of the contents the many recent changes and rapid developments in different fields of architectural construction, and the consequent effect of such changes on the subjects treated the entire work has been rewritten. Part one deals with a practical application of arithmetic, geometry, trigonometry. Part two deals with materials of construction and the strength and stability of structures, and part three with miscellaneous information for architects and builders. Part two contains a new chapter on reinforced concrete mill and factory construction. The interesting general information of part three on such subjects as heating and ventilation, hydraulics, plumbing and draining, acoustics, etc., has all been thoroughly revised.

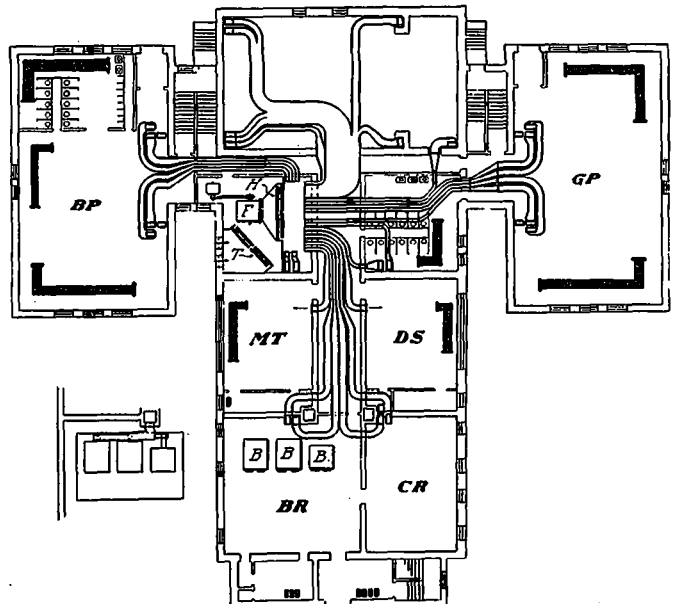


Fig. 10, Showing Arrangement in Basement of an Individual Duct System

Construction News

The following information is obtained from our correspondents, from architects, engineers and by our staff. These items are published in our Building Report Service, and are herein compiled for the use of subscribers to the monthly issue of "Construction." Should any of our readers desire this information daily we shall be pleased to submit prices upon request.

BUSINESS BUILDINGS.

DAVIDSON, SASK.—Contract let by the Bank of British North America for the building of a bank of brick construction at Davidson, Sask., to cost \$15,000.

NIAGARA FALLS, ONT.—Are preparing plans for office building to cost \$10,000.

OTTAWA, ONT.—Contract let for the electrical material for re-wiring the Parliament Buildings.

ST. MARY'S, ONT.—Plans are being prepared to erect a restaurant, to cost \$4,000.

STRATFORD, ONT.—The Public Utilities Commission contemplate erecting a modern office building, to cost \$15,000.

TORONTO, ONT.—G. V. Gray Construction Co. have received a contract to erect an additional building to the Harris Abattoir, on St. Clair avenue, to cost \$3,000.

WINDSOR, ONT.—Plans have been prepared for a new bank building of brick and stone construction, to cost \$30,000. The Universal Realty Co. contemplate an office building to be erected on Ouellette street, to cost \$300,000.

WINNIPEG, MAN.—Tenders are open for the completion of the new Parliament Buildings.

CIVIL ENGINEERING.

BIRD'S HILL, MAN.—Tenders are open for reinforced culverts. Tenders close August 15.

BALDUR, MAN.—Contracts let for the building of bridges over the Pembina River.

CHANDLER, QUE.—Bridges have been called for the extension of wharf 200 feet.

CHATHAM, ONT.—Bridges addition.

LINDSAY, ONT.—Tenders open for bridges over Nonquon River.

LONDON, ONT.—Contract let for sewers.

LONDON, ONT.—Tenders have been called for bridges on King street highway bridge and Adelaide street highway bridge. Tenders are being called for cement floors, Transportation building, Queen's Park, London.

MOOSE JAW, SASK.—Tenders are being called for several bridges, reinforced concrete. Tenders close August 7.

NIAGARA FALLS, ONT.—Contract awarded to Somerville & Dillworth for paving 20,000 feet walk. Contemplated that a dam should be built below falls to develop power.

OTTAWA, ONT.—Contract let for a 25-foot bridge at Huntley.

OAKBANK, MAN.—Tenders are being called for a 70-foot pile bridge. Tenders open for bridge north of section 24-12-5 east.

SARNIA, ONT.—Tenders are being called for bridge.

ST. LEONARD DE PORT MAURICE, QUE.—Tenders are being called for waterworks.

SUDBURY, ONT.—Tenders are being called for 1,500 lineal feet cement sidewalks.

TORONTO, ONT.—Contract let for concrete wall.

WINNIPEG, MAN.—Contract let for bridge 50 feet long. Tenders wanted for paving traffic bridge over Saskatchewan River.

WELLAND, ONT.—Contract let for concrete bridge over Twelve-mile Creek.

WOODSTOCK, ONT.—Tenders are being called for 5,000 feet tile drain.

WINDSOR, ONT.—Contract let for paving; cost \$40,000.

WALKERVILLE, ONT.—Contract let for concrete pavement of several streets.

CLUBS, HOSPITALS, THEATRES AND HOTELS.

CALGARY, ALTA.—Alex. Pantages contemplate theatre.

HAMILTON, ONT.—Contract awarded for nurses' home, to cost \$75,000.

INGERSOLL, ONT.—Plans are being prepared for hospital addition, Thames street.

MONTREAL, QUE.—Plans have been drawn for hospital building to cost \$20,000. Keith & Orpheum Circuits contemplate theatre. F. W. Stair, Toronto, contemplate theatre. Plans prepared and tenders will soon be open for picture theatre, to cost \$120,000.

MONCTON, N.B.—Contract awarded for opera house, to cost \$50,000.

NINETTE, MAN.—Tenders are open for addition to the infirmary.

QUEBEC, ONT.—Plans are drawn for hospital addition.

RENFREW, ONT.—Plans drawn for curling rink, to cost \$7,000.

SASKATOON, SASK.—Contract let for hospital building.

TORONTO, ONT.—Preparing plans for theatre to cost \$100,000. Preparing plans for Hydro to cost \$200,000. Plans drawn for theatre alterations to cost \$1,500. Tenders are being called for Hospital for Sick Children.

TIMMINS, ONT.—Tenders are being called for hospital, to cost \$30,000.

TRAIL, B.C.—Contemplate two theatres to cost \$100,000.

VANCOUVER, B.C.—Plans drawn for hotel alterations to cost \$10,000. Plans drawn for theatre, to cost \$250,000.

WINNIPEG, MAN.—Plans drawn for theatre alterations, to cost \$15,000.

PLANTS, FACTORIES AND WAREHOUSES.

ASSINIBOIA, SASK.—Tenders are being called for power house and heating plant.

BRACEBRIDGE, ONT.—Tenders are being called for plumbing, radiators, septic tanks, Central Public Schools.

BRANDON, MAN.—Contract let for plumbing and heating Telephone Exchange Building.

BERLIN, ONT.—Plans have been drawn for hardware store, to cost \$5,000.

BRANTFORD, ONT.—Contract let for machine shop and garage of brick construction. Tenders are being called for garage and sales room, to cost \$40,000, on Darling and Queen streets.

CLINTON, ONT.—Contract awarded for drying kiln of brick and frame construction, to cost \$5,000.

DUNNVILLE, ONT.—American Natural Gas and Gasoline Co., Ltd., contemplate a gasoline plant, to cost \$40,000.

EDMONTON, ALTA.—The C.N.R. contemplate a machine shop and storehouse, to cost \$60,000. They have also awarded contract to Nesbitt & Co. for the erection of stores and machine shop, to cost \$65,000.

FORT WILLIAM, ONT.—Tenders are being called for plumbing at civic buildings. Contract awarded for grain elevators, to cost \$700,000.

GALT, ONT.—Roelofson Machine and Tool Co. contemplate a factory. Tenders are being called for factory addition.

GRAND RAPIDS, SASK.—Plans have been drawn for pulp and paper mills, to cost \$2,000,000. Owner, Manitoba Power, Pulp and Paper Co.

HAMILTON, ONT.—Work to go on coopeage, to cost \$12,000, Wellington street north. Preparing plans for factory, King William and Victoria street, to cost \$40,000. Preparing plans for machine factory, Sherman avenue north, to cost \$125,000. Plans drawn for factory, Sturton street, of brick construction, to cost \$10,000. Contract let for plumbing and electric wiring the City Hospital. Contract let for plumbing work at the City Hall. International Nickel Co. contemplate factory, to cost \$100,000. Contract has been awarded to William Yates for the erection of walls of factory addition, to cost \$20,000.

LINDSAY, ONT.—Contract has been awarded to Westinghouse, Church & Kerr, New York, for munitions plant, to cost \$200,000.

LONDON, ONT.—Silk glove factory; owner, H. S. Hall, New Jersey; contract awarded to Hyatt Bros. for the erection of a warehouse, to cost \$18,000. The Canada Cereal Co. have had plans drawn for factory addition, to cost \$7,500. Contract has been let for heating and ventilating the county building.

MONTREAL, QUE.—The Montreal Light, Heat and Power Co. have had plans drawn for factory of brick construction, to cost \$20,000. Price Bros. are having plans prepared for pulp making plant, cost over \$100,000. J. J. Joubert, Ltd., have had plans drawn for factory, to cost \$8,000. Montreal Blanket Co. have had plans drawn for a factory, to cost \$5,000. Horace Chagon has had plans drawn for factory, to cost \$10,000. Canada Sugar Refining Co. have had plans drawn for factory, to cost \$4,000. Canada Tube and Iron Co. have had plans drawn for factory, to cost \$1,000. Henry Morgan & Co. have had plans drawn for warehouse, to cost \$40,000. S. Rutherford has had plans drawn for warehouse, to cost \$20,000. Natural Acme Mfg. Co. have had plans drawn for factory, to cost \$12,000. Peck Rolling Mills have had plans drawn for factory, to cost \$6,000.

NORMANDALE, ONT.—Dr. Burt has had plans drawn for fish hatcheries, to cost \$35,000.

NIAGARA FALLS—Contemplated power plant, to cost \$100,000,000.

POPLAR ISLAND—Westminster Marine Railway Co. have had plans drawn for shipbuilding yards, to cost \$70,000.

PETERBORO, ONT.—Tenders are being called for heating, ventilating, electric wiring and plumbing at the South Central School.

PORT ARTHUR—Contract let for roundhouse and machine shop, to cost \$30,000.

PERTH, ONT.—Henry K. Wampole & Co. have had plans drawn for factory addition, to cost \$25,000.

RED DEER, ALTA.—Campbell, Wilson & Horne contemplate warehouse, to cost \$40,000.

RENFREW, ONT.—Contract awarded by the South Renfrew Agricultural Society for the erection of a machinery hall, to cost \$5,000.

SYDNEY, N.S.—Plans to be prepared for nickel refining plant by the International Nickel Co., U.S.A.

STRATFORD, ONT.—Contract awarded for factory addition by the Stratford Brass Works, to cost \$5,000. Contract awarded for boiler and engine room by the Ballantyne Knitting Co., to cost \$10,000.

SHERBROOKE, QUE.—Contract has been awarded by the Canadian Connecticut Cotton Mills for cotton mills, to cost \$120,000.

SASKATOON, SASK.—Contract let for heating plant Collegiate Institute.

SARNIA, ONT.—H. J. Neal Baking Co. are preparing plans for factory, to cost \$20,000.

ST. THOMAS, ONT.—Monarch Knitting Mills, Dunnville, are preparing plans for knitting mills, to cost \$50,000. American Brakeshoe Foundry Co. have awarded contract for foundry.

TILLSONBURG, ONT.—Michigan Central Railway have had plans drawn for freight shed, to cost \$6,000.

TIMMINS, ONT.—Tenders are being called for plumbing and heating (T. and N. O. Railway).

TORONTO, ONT.—Dominion Government, Ottawa, Ont., are calling tenders for examining warehouse, Front street, to cost \$500,000. The Canada Cycle and Motor Co., Ltd., have awarded contract for factory, to cost \$100,000; tenders are still open for electric and power wiring, heating and high pressure piping. T. Eaton Co. have awarded contract for factory, to cost \$750,000; they have also awarded contracts for fancy embroidery factories; work started on alterations and additions to store, to cost \$3,500. Contracts awarded by the T. Eaton Co. for garage and factories, to cost \$250,000. G. V. Gray Construction Co. have received a contract for the erection of a bridge by the Harris Abattoir Co. on St. Clair avenue, near New street, to cost \$1,500. Tenders are being called for plumbing by Edwin Hatfield. Contracts have been awarded by the T. Eaton Co. for factories, to cost \$75,000. Brick work finished of Training College, on Davisville avenue, to cost \$90,000. Gray Mfg. and Machinery Co. have had plans drawn for garage, to cost \$300. Tenders are being called by Canada Cycle and Motor Co. for factories, to cost \$100,000. Goodyear Tire and Rubber Co. contemplate factory, to cost \$250,000. Work commenced on factory on Dufferin road, to cost \$10,000. H. Goldman has had plans drawn for addition to factory, to cost \$1,200. Russell Motor Car Co. are calling for tenders for factory, to cost \$100,000. Work commenced on warehouse addition (owners, Campbell Flour Mills Co.), to cost \$17,000. J. H. Cairncross has had plans drawn for carpenter shop, to cost \$1,200. Southam Press, Ltd., have had plans drawn for stock room addition, to cost \$4,000. Central Press Agency have had plans drawn for factory, beams of brick construction. The T. Eaton Co. have had plans drawn for double deck overhead bridge, Alice street, steel construction, to cost \$1,200. Gold Medal Furniture Co. have had plans drawn for addition to pump house, to cost \$500. S. Rabinovitch has had plans drawn for warehouse, to cost \$2,000. Tenders are being called by the Canada Cycle and Motor Co. for factory buildings, to cost \$100,000. Work to commence at once on machine shop addition; owners, Clark & Darch. Contracts have been awarded by the T. Eaton Co. for warehouse (now excavating), Terauley street. Automobile Supply Co. have had plans drawn for sprinkler tank, to cost \$1,000. Tenders are being called for planing mill for roofing. F. J. James & Co. have had plans drawn for sheet iron smokeless ovens. Gutta Percha Rubber Co. have awarded contracts for factories. Tenders are being called for plumbing, wiring, plastering (owner, Mr. McDonald), 55 Wolfrey avenue. Toronto Plaster Co. have had plans prepared for factory and storehouse, to cost \$3,000. The T. Eaton Co. have had plans and work commenced on factory. H. Greisman has had plans drawn for warehouse on Richmond street. Cluff Ammunition Co. have had plans prepared for two temporary frame galvanized factory additions, to cost \$3,000. Conduits Co., Ltd., preparing plans for factory, to cost \$3,000. Tenders are being called for ice plant, Front street. Contract let for examining warehouse, Front street. Tenders are being called for plumbing and wiring 55 Wolfrey avenue and 194 Ossington avenue. H. Carhartt & Co. have awarded contracts for factory addition, Queen street east. Work commenced on coal elevator, Dufferin street (owners, Conger Lehigh Coal Co.). Sir J. C. Eaton has had plans drawn for one-storey concrete and brick building, to cost \$5,000. Work commenced on warehouse, Cawthra avenue (owners, Campbell Flour Mills). Toronto Harbor Commission have had plans drawn for blacksmith and machine shop, to cost \$2,700. Work commenced on factory on Dufferin street (owners, Canada Cycle and Motor Co.). Tenders are being called for factory, Paton road (owners, Canadian Bag Co.). Tenders are being called for brick work, carpentering, roofing, wiring and drains for factory. Work commenced shipping house, Davenport works. Tenders are being called for plumbing by Alex. Park. Tenders are being called for factory, to cost \$50,000, by Northrop & Lyman Co.; they have also awarded contract for factory, to cost \$50,000. Tenders are being called by the T. Eaton Co. for factory on Bloor and Dufferin streets. Work started on boiler room, to cost \$2,500 (owners, City of Toronto). Work commenced on blacksmith and machine shop (owners, Toronto Harbor Commissioners). John Reid & Co. have had plans drawn for blacksmith shop to be erected, to cost \$2,000. Southam Press are calling for tenders for factory, to cost \$4,000. Tenders are being called for by the Harry Webb Co. for factory, to cost \$40,000. Canadian Allis Chalmers, Ltd., have had plans drawn for factory addition. Willys-Overland Co., Ltd., have had plans drawn for factory addition, to cost \$1,000. The T. Eaton Co. are excavating for factory, to cost \$60,000, Bloor and Dufferin streets. Contract has been awarded by the Goodyear Tire and Rubber Co. for factory, to cost \$750,000.

VANCOUVER, B.C.—The New England Fish Co. are preparing plans for factory, to cost \$300,000. Work commenced on factory building (owners, Canadian Products, Ltd.), to cost \$15,000. Alberta Lumber Co. have had plans drawn for lumber mill, to cost \$100,000.

WAY'S MILL, QUE.—Barnston Woolen Mills have had plans drawn for factory, to cost \$20,000.

WINDSOR, ONT.—United States Steel Corporation contemplate steel plant, to cost \$25,000,000.

WINNIPEG, MAN.—Contract let by D. Balcovski for the erection of abattoir, to cost \$150,000. Union Stock Yards have had plans drawn for packing and abattoir plant.

PUBLIC BUILDINGS AND STATIONS.

BOISDALE, N.S.—The Dominion Government are calling for tenders for station building.

CHATEAUGUAY, QUE.—Contract let for iron bridge, Norton Creek.

CHARLOTTETOWN, P.E.I.—Contract let for city hall addition.

COPPER CLIFF, ONT.—Contract let for sewage pumping station.

CONCORD, ONT.—McLeod & Co. have commenced work on institution, to cost \$60,000.

CALGARY, ALTA.—The G.T.R. have had plans drawn for station, to cost \$15,000. Tenders are being called by the Department of Public Works, Alberta, for drill hall, to cost \$20,000.

DAUPHIN, MAN.—The Town Council contemplate steel bridge over river valley, to cost \$10,000. Contract awarded to commence work on law court.

GALT, ONT.—Tenders are being called for a pavilion in Jackson Park. Work to commence on telephone exchange, Ainslie street (owners, Bell Telephone Co.). Contracts awarded for band stand and pavilion by the city of Galt.

HALIFAX, N.S.—Tenders are being called by the Dominion Government for the erection of Ocean Terminal Station. Hunt Milling Co. are having plans prepared for grain elevator, to cost \$30,000.

MONTREAL, QUE.—Montreal Tramways Co. have had plans drawn for platform, to cost \$2,000.

NELSON, B.C.—Contract awarded for telephone exchange, Stanley street.

QUEBEC, QUE.—La Banque Nationale have awarded contract for bank. International Paper Co. propose pulp mill. St. Anne's College are preparing plans for library, to cost \$6,000.

RIDGETOWN, ONT.—The Town Council have had plans drawn for pumping station, to cost \$3,000.

RENFREW, ONT.—Contract let for office fittings for post office.

SASKATOON, SASK.—Continental Oil Co. have had plans drawn for oil filling station, also auto filling station.

SYDNEY, N.S.—St. Francis Xavier have had plans for library and gymnasium, to cost \$40,000.

TILBURG, ONT.—The town of Tilburg are having plans prepared for public library, to cost \$9,000.

TORONTO, ONT.—Contract awarded and work commenced on Beulah Hall, 23-35 Charles street east. Contract let by the Hydro-Electric for station addition. Work commenced on lavatories, Parks Department, City Hall, to cost \$3,000.

VANCOUVER, B.C.—Contract awarded by the G.N.R. for railway terminal, to cost \$1,000,000. Board of Governors have had plans drawn for university building, to cost \$35,000. McGill University College have had plans drawn for chemistry laboratory and association hall, to cost \$35,000. Canadian Northern Railway have awarded contracts for railway terminal, to cost \$100,000.

WINNIPEG, MAN.—Committee contemplate Odd Fellows' hall, to cost \$40,000. City of Winnipeg have awarded contract for sanitorium addition, to cost \$50,000.

WALLACEBURG, ONT.—Rev. R. J. Hanley proposed a new Y.M.C.A. building to cost \$17,500.

WELLAND, ONT.—Tenders are being called by the Louis Bang for howling alley of brick construction, to cost \$7,000.

RESIDENCES, STORES AND FLATS.

ANDERTON TOWNSHIP—Wm. Cathlene is preparing plans for residence, to cost \$3,500.

AUBURN, ONT.—C. E. Asquith is preparing plans for residences, to cost \$4,000.

ERIN, ONT.—Contract awarded by J. Glasgow for residence, to cost \$3,000.

BRIGDEN, ONT.—Contract awarded by John Poland for residence, to cost \$4,000.

BROCKVILLE, ONT.—Contract awarded by Miss N. Dargavel for residence, to cost \$5,000.

BRANTFORD, ONT.—Mrs. H. Hamilton has had plans drawn for residence, to cost \$5,000. Chas. Coulson is erecting residence (walls going up), to cost \$1,400. Contract awarded by Mrs. Hamilton for residence, to cost \$4,500. Chatham Packing Co. have had plans for residence and warehouse. J. Stewart has awarded contract for residence, to cost \$6,000. The Norton Co., Ltd., are excavating for twenty-four houses, to cost \$50,000.

EDMONTON, ALTA.—Contract let for store and machine shop. Contract let for Leamington apartments, to cost \$60,000.

FENELON FALLS, ONT.—Tenders are being called for three stores and apartments, to cost \$16,000.

GESTO, ONT.—F. Mitchel has had plans drawn for residence, to cost \$3,000.

GALT, ONT.—Geo. Watson is preparing plans for store (haberdashery), to cost \$5,000. Aug. Vondraw has had plans drawn for store, to cost \$3,500. F. Daub contemplates apartment house, on Moore street, to cost \$15,000.

HALIFAX, N.S.—Eastern Investment Co. are preparing plans for residence, to cost \$5,000.

HAMILTON, ONT.—MacKay Bros. have had plans drawn for residence on Main street east, to cost \$3,000 each. Thomas McCleod has had plans drawn for residence, to cost \$3,000. R. B. Hill has had plans drawn for residence, to cost \$7,000. Mr. Moffat has had plans drawn for residences. Wm. Atkinson has had plans drawn for residence, to cost \$8,000. A. McIntyre has had plans drawn for store, to cost \$2,500. J. R. Marshall has had plans drawn for residence, to cost \$5,250. Contract awarded by H. Y. Hart for residence, to cost \$5,000. G. Fitzgerald has had plans for residence. Contracts awarded by Mr. Wilson for the erection of residence, to cost \$4,000. Contract awarded by W. Chiswell for residence, to cost \$5,000. Contracts awarded by Mr. McKim for residence, to cost \$5,000. Contracts awarded by M. E. McNevin for bungalow, to cost \$2,500. Excavating started on Dr. Truman's residence, to cost \$5,000. The Wilson Building Co. have had plans drawn for residence, to cost \$3,000. Plans drawn for residence of Mrs. Burchell, to cost \$3,500. S. Sanzone has had plans drawn for residence, to cost \$3,500. Tenders are being called for eight suite apartment, to cost \$20,000. Contract awarded for two houses, \$1,200 each. Contract awarded for residence, to cost \$2,200, by Mr. W. C. McLarity; he has also awarded contract for residences, to cost \$2,200 each.

KINGSTON, ONT.—Tenders are being called for residence, to cost \$5,000.

LONDON, ONT.—Contract awarded for residence, to cost \$3,000, by H. C. Colirick. W. Coomall is having plans pre-

pared for residence, to cost \$3,000. Contract awarded by Ald. Burdick for residence, to cost \$3,000. Contract awarded for apartment house, to cost \$10,000, by R. H. McKnight. H. N. Abel has had plans drawn for residence, to cost \$3,500. M. Nornstein has had plans drawn for residence, to cost \$10,000. J. Hubbert has plans drawn for residence, to cost \$3,500. Copp Syndicate excavating residences, to cost \$12,000. Contracts awarded for residences by Charles Hunter, to cost \$3,000; by J. Routledge, to cost \$3,200; by Geo. Pood, to cost \$3,500. F. Henderson is preparing plans for residence, to cost \$7,000. John Armstrong is preparing plans for residence, to cost \$3,000.

MILVERTON, ONT.—Martin Berger is having plans drawn for residence, to cost \$3,500.

METCALFE, TOWNSHIP—Mr. J. Denning has had plans drawn for farm buildings, to cost \$3,000.

MELFORT, SASK.—Jas. Davidson has had plans drawn for residence, to cost \$5,000.

MONTREAL, QUE.—H. Dibarrat has had plans drawn for residences, to cost \$7,000. E. Sauvangean has had plans drawn for residences, to cost \$6,000. A. R. Forest has had plans drawn for residences, to cost \$4,000. Provincial Bank has had plans drawn for store, to cost \$4,000. J. E. Lavelle has had plans drawn for one store and three residences, to cost \$7,000. M. Gaffin has had plans drawn for residences and theatre, to cost \$10,000. H. Berlett has had plans drawn for residences, to cost \$5,000. S. A. Pitt has had plans drawn for residence, to cost \$3,600. A. Allain has had plans drawn for residences, to cost \$10,000. Jack Estate has had plans drawn for one store and two residences, to cost \$10,000. Ed. Blake has had plans drawn for five residences, to cost \$10,000. J. A. Gougeon has had plans drawn for two stores and two residences, to cost \$15,000. E. G. Place has had plans drawn for residence, to cost \$5,000. Mrs. John Mitchell has had plans drawn for residence, to cost \$3,000. C. K. Dufresne has had plans drawn for one store and two residences, to cost \$6,000. W. K. Gillespie has had plans drawn for residence, to cost \$8,000. S. Gilmore has had plans drawn for residence, to cost \$8,000. Peter Singerman has had plans drawn for store, to cost \$3,500. Dupuis Freres, Ltd., have had plans drawn for store, to cost \$2,500. Semine St. Sulpicem have had plans drawn for store, to cost \$3,577.

WEST NISSONOI—J. Murphy is preparing plans for residence, to cost \$4,000.

NORMANDE BEACH, ONT.—Mrs. J. Spink has had the plans drawn of her summer residence, to cost \$3,000.

NIAGARA FALLS, ONT.—Dr. Harry Grant is preparing plans for residence and garage, to cost \$50,000. Dawson Bros. are preparing plans for residence.

OSHAWA, ONT.—Tenders are being called for residence by M. Finnegan, to cost \$8,000. Tenders are being called by W. J. Burns for residence, to cost \$8,000.

PORT ROWAN, ONT.—Geo. Lonks is preparing plans for residence, to cost \$3,500.

PARKHILL, ONT.—Tenders are being called by Quartley Building for residence, to cost \$3,000.

PORT STANLEY, ONT.—J. C. Duffield has had plans drawn for residence, to cost \$15,000.

PRESTON, ONT.—R. Osgood has drawn plans for store front, to cost \$3,000.

QUEBEC, QUE.—Plans drawn for four residences, costing \$8,000, \$6,000, \$7,000 and \$10,000.

ROMNEY TWP.—S. Baker awarded contract for residence, to cost \$4,000.

RUTHVEN, ONT.—Cameron Wigle, preparing plans for residences, to cost \$6,000.

RENFREW, ONT.—Contract awarded by Thos. A. Low, for seven residences to cost \$8,000. Plans drawn for five residences, to cost \$15,000. J. K. Rochester has had plans drawn for two apartments and garage, to cost \$6,000. Donald Campbell has awarded contracts for the erection of four residences, walls going up. Joseph Legree is excavating for residence, Hall and Plaunt streets, to cost \$6,000. Work commenced on eight residences, Plaunt street, to cost \$5,000. Patrick Enright contemplates residence, Bar street, Hillcrest, to cost \$2,500.

ST. THOMAS, ONT.—Work commenced on residences, to cost \$2,000.

SYDNEY, N.S.—Tenders are being called by the Provost Marshal Noble for a residence, to cost \$8,000. Contract awarded by W. J. Power for residence, to cost \$6,000.

SARNIA, ONT.—R. McKnight has had plans drawn for apartment house, to cost \$5,000.

STRATHROY, ONT.—R. W. Nicholson has had plans drawn for residence, to cost \$3,000.

STRATFORD, ONT.—Geo. Kalbfleisch has given instructions for work to commence at once on residence, to cost \$3,000.

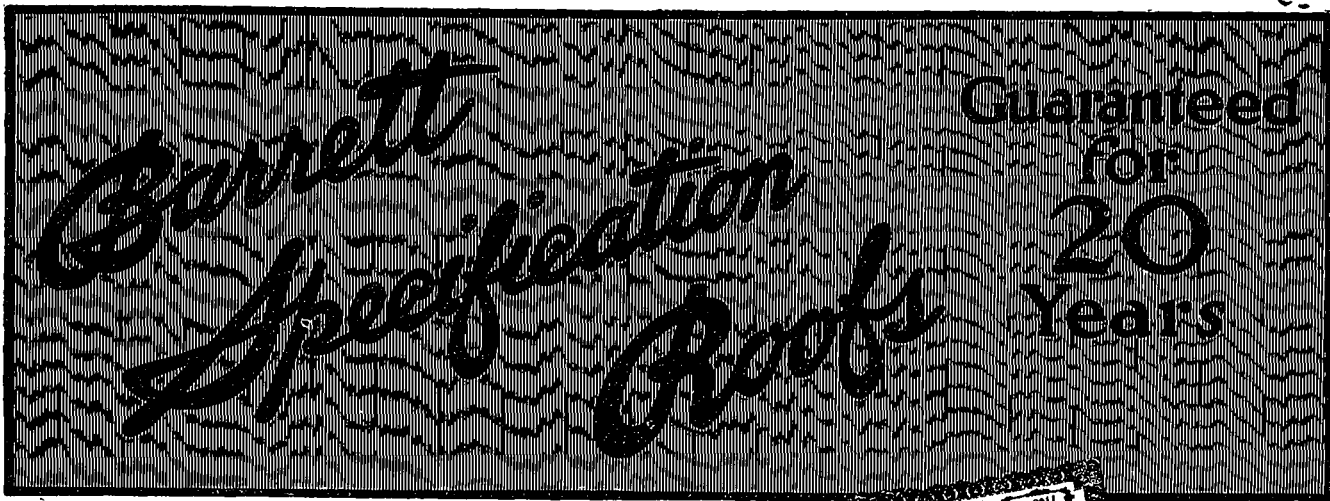
ST. CATHARINES, ONT.—Tenders are being called by the Victoria Lawn Cemetery for the erection of residence, to cost \$2,500. Tenders are being called by the City of St. Catharines for the erection of residence, to cost \$5,000.

ST. JOHN, N.B.—Work commenced on residence, cost \$3,000. Work commenced on residence of Dr. G. Hannah, to cost \$5,000.

THEDFORD, ONT.—J. Bullen is preparing plans for residence, to cost \$4,000.

TORONTO, ONT.—M. H. Crock has had plans drawn for duplex residence, to cost \$1,500. H. Moore has had plans drawn for residence, to cost \$1,500. Dr. John C. Hall has had plans drawn for residence, to cost \$3,000. Contract awarded by J. Hill for one pair semi-detached residences, to cost \$4,000. Hydro-Electric have had plans drawn for Hydro addition, to cost \$90,000. Dr. J. W. Russell has had plans drawn for residence, to cost \$2,000. Work commenced on four pairs semi-detached residences, to cost \$16,000. Wm. Isbister has had plans drawn for residence, to cost \$4,000. Lewis Buttershill has had plans drawn for residence, to cost \$2,500. Tenders are being called by A. Jeffery for the erection of two pairs residences, to cost \$5,000. Joseph Hill has had plans drawn for two pairs semi-detached residences, to cost \$4,000. Wm. T. Sinclair contemplates one pair residences, to cost \$6,000. The Trust and Guarantee Co. have contemplated ten residences to be erected, to cost \$15,000. Wilkins & Co. have had plans drawn for the erection of store front, to cost \$1,000. Contracts have been awarded by

Charles C. Blackwell for residence, to cost \$40,000. Contract let for residence, to cost \$4,000. Tenders are being called by Robert Whiteway for the erection of one pair of residences, to cost \$5,000. E. C. Havelbut contemplates residence to be erected on Briar Hill avenue, to cost \$3,500. J. Woodworth contemplates residence in North Toronto, to cost \$5,000. Tenders are being called by L. W. Doncaster, Nightingale & Smith, and G. Riley for various trades. Tenders are being called by Greenspan for the erection of apartment house, to cost \$15,000. F. E. Gibson has had plans drawn for residence, to cost \$3,500. W. R. Smith has had plans drawn for one pair residences. Work to start at once on one pair of residences (owner, J. F. Schooley). G. H. Harper has had plans drawn for residences, to cost \$4,000. Work will not proceed with store and residence belonging to Linder Bros. A. P. McEarcheron has had plans drawn for residence, to cost \$3,500. Work to start on store front, to cost \$3,000. Work commenced on residence and garage, to cost \$6,000. R. Robtburkell has had plans drawn for residence, to cost \$3,000. Muir Lumb has had plans drawn for one private semi-detached residence, to cost \$8,000. H. Gordon M. McKenzie and W. W. Dundas have had plans drawn for one store front to be erected. John McMaster has had plans drawn for residence addition (front), to cost \$1,000. J. J. Downey has had plans drawn for one pair semi-detached residences, to cost \$6,000. C. Black has had plans drawn for residences, to cost \$5,000. Wells Bros. have received a contract from the Robert Simpson Co. to commence work (home), to cost \$200,000, work to start at once on residence. W. G. McWaters has had plans drawn for residence, to cost \$3,000. John McCullam has had plans drawn for residence, to cost \$3,000. F. A. Parker is having plans drawn for residence, to cost \$5,000. Contract has been awarded by Mrs. M. McLennan for residence, to cost \$4,000. Geo. Jackson has had plans drawn for residence, to cost \$1,000. Chas. S. Blackwell has had plans drawn for residence, to cost \$35,000. Hubbs & Hubbs is having plans prepared for residence, to cost \$5,000. Mr. Crawford and Mr. MacClintock have had plans drawn for residence, to cost \$2,500. A. Harvie has had plans drawn for residence, to cost \$1,000. John Kaake has had plans drawn for residence and garage, to cost \$3,200. F. Smith has awarded contracts for residence, to cost \$5,000. Hubbs & Hubbs are having plans prepared for residence, to cost \$5,000. J. R. Gillard is preparing plans for residence, to cost \$5,000. Ontario Wind Engine and Pump Co. have had plans drawn for storehouse, to cost \$3,500. J. T. Moore has had plans drawn for residence, to cost \$4,000. M. Edmonds has had plans drawn for residence, to cost \$3,500. W. E. Shariton has had plans drawn for residence, to cost \$1,500. Tenders are being called by the Toronto Brick Co. for new store front (from fire). H. A. Johnston awarded contract for work to commence on residence and garage, to cost \$7,000. Work commenced on store and apartments, to cost \$12,000. C. Hough has had plans drawn for residence, work to commence July 10th, to cost \$3,500. Mrs. E. Greenspan has had plans drawn for stores and apartments, to cost \$10,000. H. McLean has had plans drawn for residence, to cost \$4,500. R. C. A. Cassels is having plans prepared for residence addition, to cost \$5,000. Kerr & Martin have had plans prepared and work to commence at once on residence, to cost \$4,000. John Firstbrook has let contract for residence, work to start at once, to cost \$6,000. B. J. Case has had plans drawn for residence, to cost \$3,500. Work commenced on cottage. S. F. Lankin has had plans drawn for residence, to cost \$2,500. Tenders are being called by J. Slade for one private residence; work to commence at once on residence addition, to cost \$2,000. Tenders are being called by Mr. Johnston for one detached residence. G. N. Ferrier has had plans drawn for stores and apartments, work to commence at once. McKindley & Bingham have had plans drawn for apartment house, to cost \$25,000. Thos. Heron has had plans drawn for one private semi-detached residence, to cost \$3,800. R. Boys has had plans drawn for residence, to cost \$3,000. Tenders are being called by L. White & Sons for the erection of store, on Queen street. Residence, work to commence, to cost \$3,000. Work to commence on residence, to cost \$3,000. E. Scotton has had plans drawn for residence, to cost \$2,500. J. Lucas is having plans prepared for one private residence. W. R. Smith has had plans drawn for one private semi-detached residence, to cost \$2,000. Harry Lucas has started excavating four private semi-detached residences, to cost \$14,000. H. J. Hall has had plans drawn for sun room, to cost \$1,200. L. H. Lankin has had plans drawn for one private semi-detached residence of roughcast, to cost \$2,450. J. M. Cairns has had plans drawn for residence, to cost \$1,000. John McMaster has had plans drawn for residence, to cost \$1,500. Mr. Spinks has had plans drawn for residence addition, to cost \$600. A. C. Palmer has had plans drawn for one detached residence, to cost \$1,000. Robert Burkell has had plans drawn for residence, to cost \$3,000. James Murray has had plans drawn for store alterations, to cost \$1,500. A. E. Warrington has had plans drawn for two detached residences, to cost \$4,000. Work to commence at Arlington avenue on one detached residence, to cost \$2,000. John Welsh has had plans drawn for one detached residence, to cost \$2,500. E. C. Hurlbut has had plans drawn for residence, to cost \$3,500. The foundation of the home of Robert Simpson has been completed, to cost \$100,000. R. H. Whiteway has had plans drawn for one detached residence, to cost \$2,500. J. Woodworth has had plans drawn for residence, to cost \$5,000. Contract has been awarded by H. A. Ryan for the erection of residence and garage, to cost \$4,000. Work to commence on duplex residence at 53 Sorauren avenue, to cost \$4,500. Contract awarded by W. H. Gibson for the erection of duplex residence, to cost \$4,000. A. A. Graham has had plans drawn for one private residence, to cost \$3,500. A. O. Scott has had plans drawn for residence, to cost \$4,000. Contract awarded by A. W. Clendenen for the erection of one private residence, to cost \$5,000. Work to commence on three private residences, to cost \$13,000. J. L. Corley has had plans drawn for two residences, to cost \$7,000. J. Haken is excavating residence, to cost \$2,500. Miss A. Parker has had plans drawn for residence, to cost \$1,000. Revised report on the residence of John Firstbrook, to cost \$30,000. A. H. Brittain has had plans drawn for residence, to cost \$3,000. H. H. Hill has had plans drawn for residence, to cost \$1,000. J. K. Heaman is excavating residence, to cost \$4,000. G. N. Heaman is preparing plans for two semi-detached residences, to cost \$2,000 each. Charles Thorpe has had plans drawn for verandah and sun room, to cost \$600. S. B. Coon & Son have had plans drawn for duplex residence alterations, to cost \$600. S. G. Whaley has had plans drawn for residence, to cost \$3,500. Tenders are being called by J.



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This Twenty Year Guaranty Bond is a new and important addition to our service.

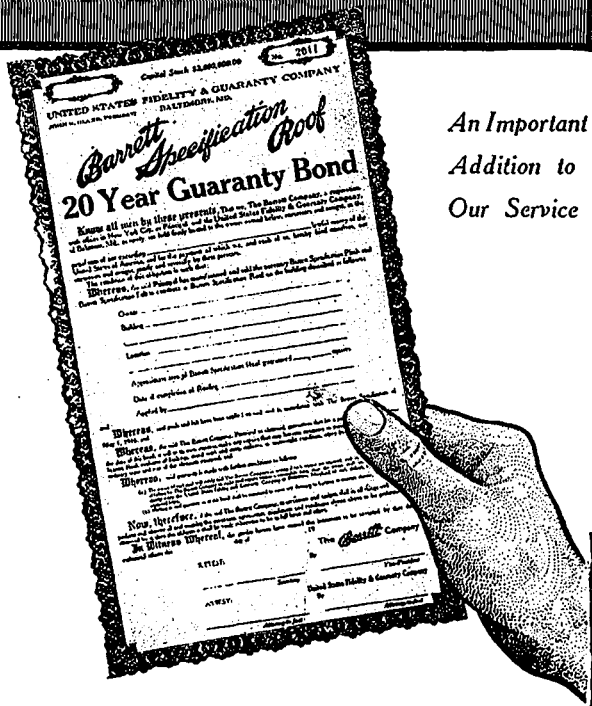
It will hereafter be given on all Barrett Specification Roofs of fifty squares or more in all towns in Canada and the United States of 25,000 population and over, and in smaller places where our inspection service is available.

All you have to do to secure the Guaranty Bond is to give the roofing contractor a copy of The Barrett Specification dated May 1, 1916, and tell him to figure on that basis. The specification of that date includes the 20 year Surety Bond provision.

Our only requirements are, that the roofing contractor shall be approved by us and the specification of the date mentioned shall be strictly followed. We know from the experience of over fifty years that such a roof will last 20 years *and more* without repairs of any kind.

The Surety Bond will be issued by the United States Fidelity & Guaranty Company and will be furnished by us *without charge*.

Our inspector will pass upon the quality and quantity of materials and workmanship and see that the roof is laid so as to give maximum



An Important Addition to Our Service

service. From the buyer's standpoint this arrangement is ideal. Under the plan he is assured of having an inspector on his roof whose only interest is to make it *as good as possible*.

The principal architects, engineers and roofing contractors throughout the Dominion are familiar with the plan and are cooperating with us.

If you wish any further information regarding the guaranty, write our nearest office and the matter will have prompt attention.

A copy of The Barrett Specification, with roofing diagrams, sent free on request.

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HALIFAX, N.S.

SYDNEY, N.S.

Hakens for the erection of residence, to cost \$2,500. Work to commence on residence addition, to cost \$2,000. Work to commence on residence addition, to cost \$3,000. Tenders are being called by F. W. Hill for the erection of duplex residence, to cost \$5,000. Tenders will be called shortly for the altering of five stores, to cost \$5,000. Tenders are being called by S. M. Hamby for the erection of two stores and apartments, to cost \$15,000. Tenders are being called by Dr. G. W. Clendenen for the erection of stores and apartments, to cost \$10,500. Contract awarded by H. R. Glass for residence alterations, to cost \$1,500. C. Mann has had plans drawn for residence, to cost \$2,000. A. Perlmutter has had plans drawn for altering store front, to cost \$500. Tenders are being called by the Rev. R. M. Hamilton for garage, to cost \$750. Plans have been drawn for five garages. E. A. Speer has had plans drawn for garage, to cost \$125. W. Ashall has had plans drawn for garage, to cost \$300. J. E. Diamond has had plans drawn for garage, to cost \$300. Chas. S. Blackwell has had plans drawn for garage, to cost \$3,000. Plans have been drawn for five private garages. Plans have been drawn for two private garages. Contracts awarded by the T. Eaton Co. for the erection of garage. Plans have been drawn for six private garages to be erected. A. P. Burritt has had plans drawn for private garage. The Toronto Electric Light Co. have had plans prepared for garage to be erected, to cost \$2,500. Tenders are being called by Suroff Hardware for garage. Plans drawn for private garage, to cost \$400. Plans have been drawn for two private garages to be erected, to cost \$650. G. T. Clarkson has had plans drawn for garage, to cost \$1,000. Contract has been awarded by A. G. Strathy for garage, to cost \$2,000.

VANCOUVER, B.C.—Mrs. Field has had plans drawn for residence, to cost \$2,500.

WINNIPEG, MAN.—The I.O.O.F., Manitoba, has had plans drawn for home, to cost \$4,000.

WALKERTON, ONT.—Mrs. Erdman has had plans drawn for store front, to cost \$3,000.

WELLAND, ONT.—Work commenced on residence, to cost \$4,000. Tenders are being called by O. H. Garner for residences.

ZURICK, ONT.—W. Ruby is preparing plans for residence, to cost \$4,000.

SCHOOLS, COLLEGES AND CHURCHES.

AILSA CRAIG, ONT.—Contract awarded to Sterling for school alterations, to cost \$4,000.

BRAMPTON, ONT.—Contract awarded for school, to cost \$25,000.

BRANDON, MAN.—Contemplated school addition of brick construction.

BLACKWOOD, SASK.—Tenders are being called by the High School Board for the Collegiate Institute alterations.

CARLTON PLACE, ONT.—Tenders are being called by the School Board for the erection of a school.

CAMROSE, B.C.—Tenders are being called for by J. L. Willson for school.

CREEMORE, ONT.—Tenders are being called by the School Board for the erection of a six-roomed school.

EGANVILLE, ONT.—Tenders are being called for a church by Rev. M. Voss.

ELMVALE, ONT.—The Public School Board are preparing plans for school, to cost \$14,000.

FORD, ONT.—Contract awarded by the School Board for a school, to cost \$40,000.

FREETOWN, P.E.I.—Tenders are being called by the School Board for school, to cost \$3,000.

GALT, ONT.—Work commenced on school alterations. Contract awarded by the School Board for school addition. Contract awarded for school alterations. Contract let for public school, to cost \$45,000. Contract awarded by the School Board for school, to cost \$45,000.

GRIFFIN, SASK.—Tenders are being called by the School Board for steamheating and ventilating the Griffin Public School.

HAMILTON, ONT.—The Board of Education are preparing plans for school, to cost \$40,000. Christ Church Cathedral have given instructions for work to commence on church addition, on James street north, to cost \$15,000. Tenders are being called for by the Union Church for church, to cost \$9,000. The Board of Education contemplate school, to cost \$40,000.

HAGERSVILLE, ONT.—Contract let for church alterations.

HALIFAX, N.S.—The School Board contemplate school, to cost \$50,000.

KINBURN, ONT.—The School Board contemplate school, to cost \$14,000.

KINGSTON, ONT.—Power & Son have awarded contract for riding school, to cost \$30,000.

LOREBURN, SASK.—The Oxford School Board are calling for tenders for school addition, to cost \$10,000. Union Church contemplate church, to cost \$20,000.

LONDONVILLE, ALTA.—Contract let for school.

LONDON, ONT.—The Board of Education have awarded contract for Technical School, to cost \$153,235.

MALDEN, ONT.—Contract let by the School Board for school, to cost \$3,500.

MINNEDOSA, MAN.—Contract let for school.

MONTREAL, QUE.—Fabriques have had plans drawn for church alterations, to cost \$4,000. The Russian Jewish Synagogue have had plans drawn for church alterations, to cost \$8,000. The trustees of Infant Jesus have had plans drawn for church alterations, to cost \$8,000. Jacques Cartier Normal School have had plans drawn for church, to cost \$65,000. The Church of Notre Dame have had plans drawn for church, cost \$50,000. St. Mary's Polish R.C. Church have had plans drawn for church, to cost \$18,000. The Church Board have had plans drawn for church, to cost \$4,000.

NELSON, B.C.—Contract let by the Board of School Trustees for the school addition.

PORTAGE LA PRAIRIE, MAN.—The Board of Education have awarded contracts for school, to cost \$50,000.

FORT CREDIT, ONT.—Contract let by the School Board for school, to cost \$40,000.

PEMBROKE, ONT.—Tenders are being called for the Pembroke Electric Light Co. for sub-station, to cost \$10,000. Contract let for school, to cost \$40,000. Contract let for school, to cost \$50,000. Tenders are being called for by the Board of Education for High School addition, to cost \$10,000.

RENFREW, ONT.—Contract let for convent (walls going up), to cost \$6,000.

SMITH'S FALLS, ONT.—Board of Education have awarded contract for school, to cost \$35,500.

STEPH CREEK, ALBERTA.—Contract let for school.

SARNIA, ONT.—The Board of Education have had plans drawn for school.

SELKIRK, ONT.—Contract let for school.

SARNIA, ONT.—Shultz Bros. have commenced work on school.

TORONTO, ONT.—Contract let for school alterations. Contracts awarded for dormitory by the city of Toronto; tenders are also open for smaller trades. Contracts have been awarded for church, to cost \$4,000. J. E. Close has had plans drawn for mission addition, to cost \$700. Tenders are being called for by the Beulah Hall for mission, to cost \$20,000. The Monastery of our Lady of Charity have had plans drawn for monastery addition, to cost \$2,200. Tenders are being called for by the Calvary Church for foundation only.

TWEEED, ONT.—The High School Board are preparing plans for high school, to cost \$25,000.

TILBURY, ONT.—Tenders are being called for by the School Board for school addition, to cost \$10,000.

VERNER, ONT.—Tenders are being called for by the parish priest of O'Racette for church heating system.

VANCOUVER, B.C.—Tenders are being called for plastering interior of school.

WINNIPEG, MAN.—Contract awarded for church, to cost \$7,000. Tenders are being called for by the School Board for the school alterations.

WILCOX, SASK.—Tenders are being called for by Mr. H. P. Jones for school.

WIARTON, ONT.—Tenders are being called for by the secretary of the School Board for High School addition.

WELLAND, ONT.—Tenders are being called for by T. L. Nichols for school, one room.

WHEATLEY, ONT.—The Public School Board have contemplated school, to cost \$15,000.

MISCELLANEOUS.

CRINNAN, ONT.—J. Zoller has had plans drawn for barn (stock), to cost \$3,000.

HAMILTON, ONT.—R. B. Hice has awarded contract for bakery addition, to cost \$7,000.

LENNOXVILLE, QUE.—Contract let by the Dominion Government for the erection of a dairy cattle barn.

LONDON, ONT.—Empire Manufacturing Co. are excavating storage shed, to cost \$2,500.

MELBOURNE, ONT.—Erin Carruthers has had plans drawn for barn, to cost \$2,000.

MONTREAL, QUE.—The Consumers' Gasoline Co. have had plans drawn for stable, to cost \$2,500. Guarantee Pure Milk Co. have had plans drawn for stable, to cost \$30,000. A. A. Shamrock has had plans drawn for grand stand, to cost \$6,000.

STRATFORD, ONT.—Contract awarded by the municipality for water tower, to cost \$23,000.

SOUTHWOLD TOWNSHIP—Wm. Gunning is preparing plans for stock barn, to cost \$3,500.

TORONTO, ONT.—Tenders are being called by the chairman, T. L. Church, for five-ton traveling beam. Conger Coal Co. have had plans drawn for coal shed, to cost \$1,000. Sir J. C. Eaton has had plans drawn for swimming pool conservatory, to cost \$10,000. Hydro-Electric have had plans drawn for transformer, to cost \$1,000. Contract awarded by Bowles' Lunch, Ltd., for bakery, to cost \$25,000. Work commenced on bakery addition to the Ideal Bread Co., to cost \$4,000. Contract awarded by the Ideal Bread Co. for bakery, to cost \$3,000. The Canadian Express Co. have had plans drawn for stables, to cost \$1,000.

VICTORIA, B.C.—B.C. Mausoleum and Crematory Co. contemplate mausoleum.

VANCOUVER, B.C.—Contract awarded for lighthouse to Snider & Brethour.

GENERAL ANNUAL ASSEMBLY.

The General Annual Assembly of the Royal Architectural Institute of Canada will be held at Quebec, Que., on 8th and 9th September, 1916. A very interesting programme is being prepared which will include matters of interest to every Architect in the Dominion.

Every Canadian Architect is cordially invited and is welcome at all sessions, whether a member of the Royal Institute or not.

CATALOGUES.

Fireproofing.—The Dahlstrom Metallic Door Co. has issued a booklet entitled "Finishing Touch in Fireproofing Your Building." It reviews the subject of wooden doors, and metal-covered wooden doors vs. hollow steel doors. It further deals with mouldings and finish in metal designed to eliminate combustible trim.

CONTRACTORS and SUB-CONTRACTORS

As Supplied by The Architects of Buildings
Featured in This Issue

Building, The Provincial Normal School, Victoria, B.C.
Brick, Nanaimo Pressed Brick Co., Nanaimo, B.C.
Boilers, Colburn Plumbing and Heating Co., Victoria, B.C.
Blackboards slate (English black slate), W. N. O'Neill Co., Vancouver, B.C.
Casements and window construction, Henry Hope & Sons, Ltd.
Chimneys, concrete work, Luney Bros., Ltd., Victoria, B.C.
Doors and window trim, Lemon & Gonnason, Victoria, B.C.
Electric fixtures, Hawkins & Hayward, Victoria, B.C.
Electric time system, Trumbull Electric Mfg. Co.
Hoists (ash hoist), Gillis & Geoghegan.
Expanded metal, "Self-centering Mfg. General Fireproofing Co., Youngstown, Ohio; Canadian agent, Clarence W. Noble, Toronto.
Fire alarm system, Hawkins & Hayward, Victoria, B.C.
Fire doors, Kinneer Mfg. Co.
Fire escapes, Westminster Iron Works, New Westminster, B.C.
Flooring, Luney Bros., Ltd., Victoria, B.C.
Fittings (steel lockers), Dennis Wire and Iron Works; (wood), Lemon & Gonnason, Victoria, B.C.
Glass, W. N. O'Neill Co., Vancouver.
Hardware (Yale & Towne), Prior & Co., Vancouver.
Heat regulating system, Powers Regulator Co.
Interphone system, Hawkins & Hayward, Victoria, B.C.
Laundry dryer, Canton Clothes Dryer Co., Canton, Ohio.
Marble, toilet division and shower baths, Alaskan Token (W. N. O'Neill Co., Vancouver).
Ornamental iron, Westminster Iron Works, New Westminster, B.C.
Paints, B. A. Paint Co.
Plumbing, Mott Co. of Canada.
Plaster work, Luney Bros., Ltd., Victoria, B.C.
Reinforcements, Twisted Steel.
Radiators, Colburn Plumbing and Heating Co., Victoria.
Roofing, Welsh Slate.
Stone, Denman Island Stone Co.
Structural iron and steel, Canadian Northwest Steel Co., Vancouver, B.C.
Tile work and fireplaces, W. N. O'Neill Co., Vancouver.
Vacuum cleaners, Barker & Cruise, Vancouver, B.C.
Contractors (general), Luney Bros., Ltd., Victoria, B.C.

Building, Ryerson School, London, Ont.

Brick, Interprovincial Brick Co.
Boilers, E. Leonard & Sons, London.
Casements and window construction, also doors and window trim, Dymont-Baker Lumber Co., London, Ont.
Concrete work, John Hayman & Sons, Ltd., general contractors.
Electric fixtures, Benson & Wilcox.
Electric wiring and apparatus, Electric Construction Co.
Expanded metal, Trussed Concrete Steel Co.
Fire alarm system, Benson & Wilcox.
Fire doors, Dennis Wire and Iron Co.
Flooring, Seaman-Kent, Meaford.
Glass, Hobbs Mfg. Co., London; Crown Mfg. Co.
Hardware, Springer Mfg. Co., Belleville; Hobbs Hardware Co., London.
Heat regulating system, Powers Regulator Co., Toronto.
Interior fittings, cabinet, woodwork and decoration, Dymont-Baker Lumber Co., London, Ont.
Interphone system, Northern Electric, Montreal.
Ornamental iron, Dennis Wire and Iron Works, London.
Paints, International Varnish Co.
Plumbing, Standard Ideal, Standard Sanitary, Eggett & Co., plumbing contractors.
Plaster work, McWaine & Glade, London.
Power machinery, Canadian Sirocco, Walkerville.
Radiators, Warden King, Montreal.
Stone, A. E. Nobbs Co., London.
Structural iron and steel, Canadian Bridge Co., Walkerville.
Tile, Italian Mosaic and Marble Co.
Varnish, International Varnish Co.
Ventilating system, Canadian Sirocco, Walkerville.
Contractors, John Hayman & Sons, London.

Building, Bishop Strachan School, Toronto, Ont.

Boilers, Jenckes Machine Co., St. Catharines.
Carpets, rugs and furniture, Murray-Kay, Ltd., Toronto.
Casements, Henry Hope & Sons, Limited, Toronto.
Electric fixtures, R. A. L. Gray & Co., Toronto.
Electric wiring and fire alarm system, Bennett & Wright, Toronto.
Electric clocks, Self-Winding Clock Co., New York.
Fuel Economizers, Burk Smokeless Furnace Co., Chicago.
Flooring and fittings, Weller & Co., Toronto.
Hardware, Aikenhead Hardware, Ltd., Toronto.
Laundry machinery, American Laundry Machinery Co., Ltd., Toronto.
Paints, Faircloth Co., Limited, Toronto.
Plumbing and heating, W. J. McGuire, Ltd., Toronto.
Plaster work, R. C. Dancy, Toronto.
Refrigeration equipment, John Hillock & Co., Limited, Toronto.
Refrigeration machinery, Linde Canadian Refrigeration Co., Limited, Toronto.
Radiators, Steel and Radiation Co., Limited, Toronto.
Roofing, G. Duthie & Sons, Limited, Toronto.
Stone, Page & Co., Toronto.
Vaults, J. J. Taylor, Ltd., Toronto.
Ventilating system, Sheltons Limited, Toronto.

Building, De La Salle Training College, Oak Ridges, Ont

Brick—(plain), John Price.
Boilers, The John Inglis Co., Ltd.
Carpets and rugs, Robert Simpson Co., Ltd.

Casements and window construction, Trussed Concrete Steel Co., Ltd.
Chimneys, The Custodis Co., Ltd.
Concrete work, Thomson Bros.
Electric fixtures, Robert Simpson Co., Ltd.
Electric wiring and apparatus, A. Rice & Co.
Fire doors, The Byrnes Co.
Interior fittings, Berlin Interior Hardwood Finish Co.
Hardware, Canada Hardware Co.
Cabinet, woodwork, Geo. L. Robinson.
Interphone system, Northern Electric Co., Ltd.
Laundry machinery, Toronto Laundry Machinery Co.
Marble, Mississquoi Marble Co., Ltd.
Paints, Chisholm & Hume.
Plumbing (bath fittings, sanitary fixtures, faucets), W. J. McGuire.
Plaster work (ceiling), Grant & Co.
Refrigeration equipment, John Hillock & Co., Ltd.
Refrigeration machinery, Canada Ice Machine Co., Ltd.
Power machinery (motors), General Fire Extinguisher Co., Ltd. (pumps), National Equipment Co., Ltd.
Reinforcements, Bains & Peckover, Ltd.
Radiators (manufacturers), American Radiator Co., Ltd.
Roofing, A. Mathews, Ltd.
Stone (artificial), Peerless Art Stone; (natural), John Vokes.
Tile, Mississquoi Marble Co.
Water tank, National Equipment Co., Ltd.
Contractors (general), Thomson Bros.
Desks, seats, Canada Office and School Furniture Co., Preston.
Blackboards, Geo. M. Hendry Co., Ltd.
Ice plant, Canada Ice Machine Co.
Bronze work, Patterson & Heward.
Linoleum, Robert Simpson Co., Ltd.

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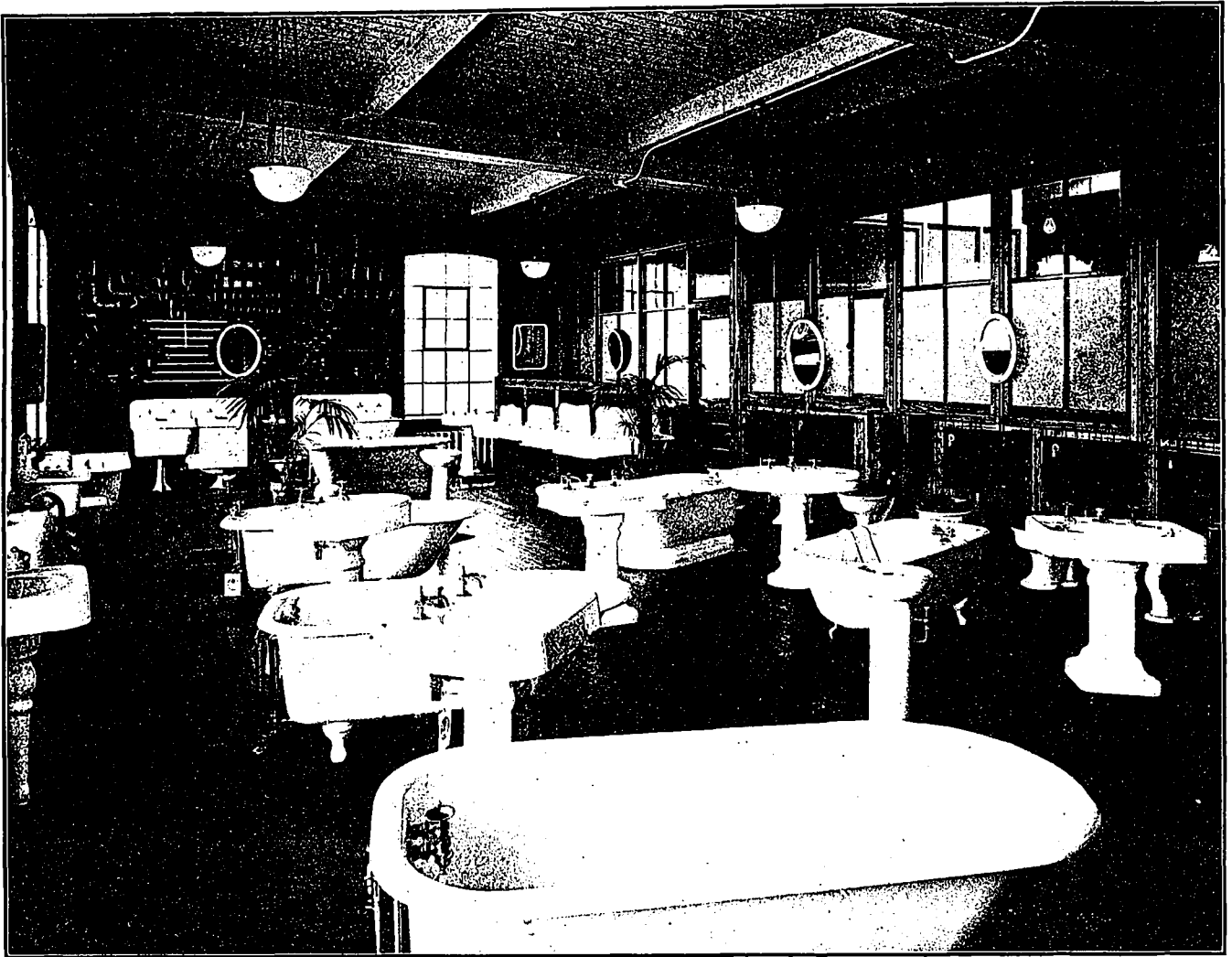
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