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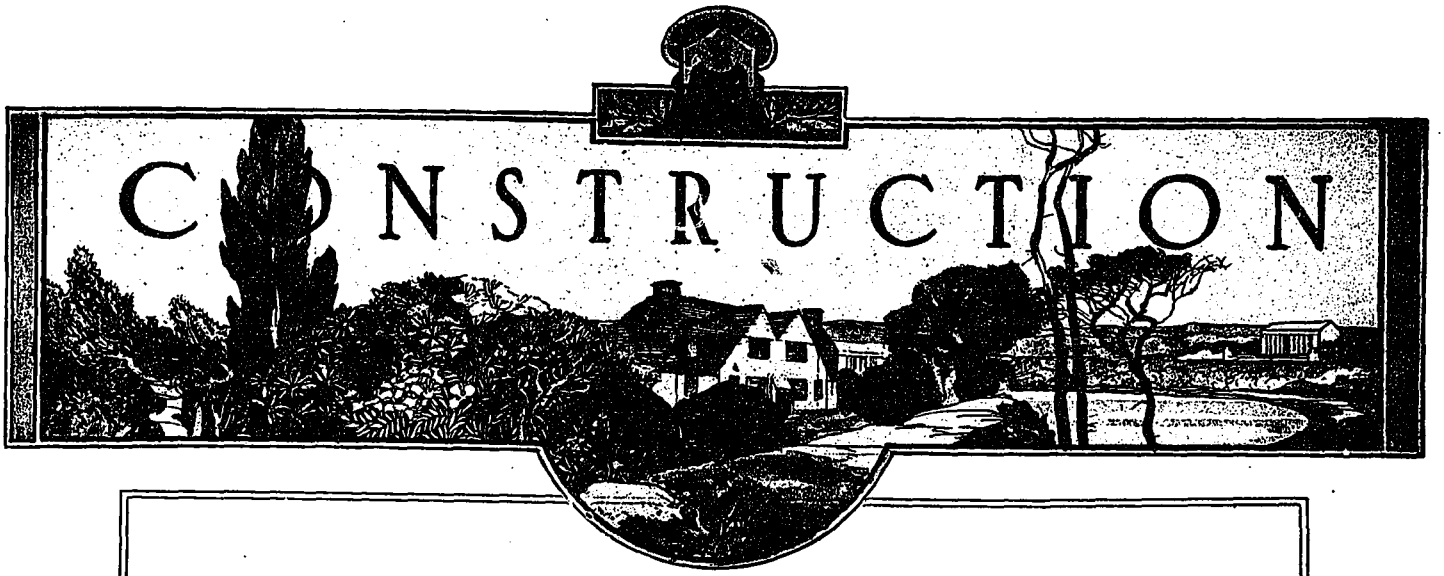

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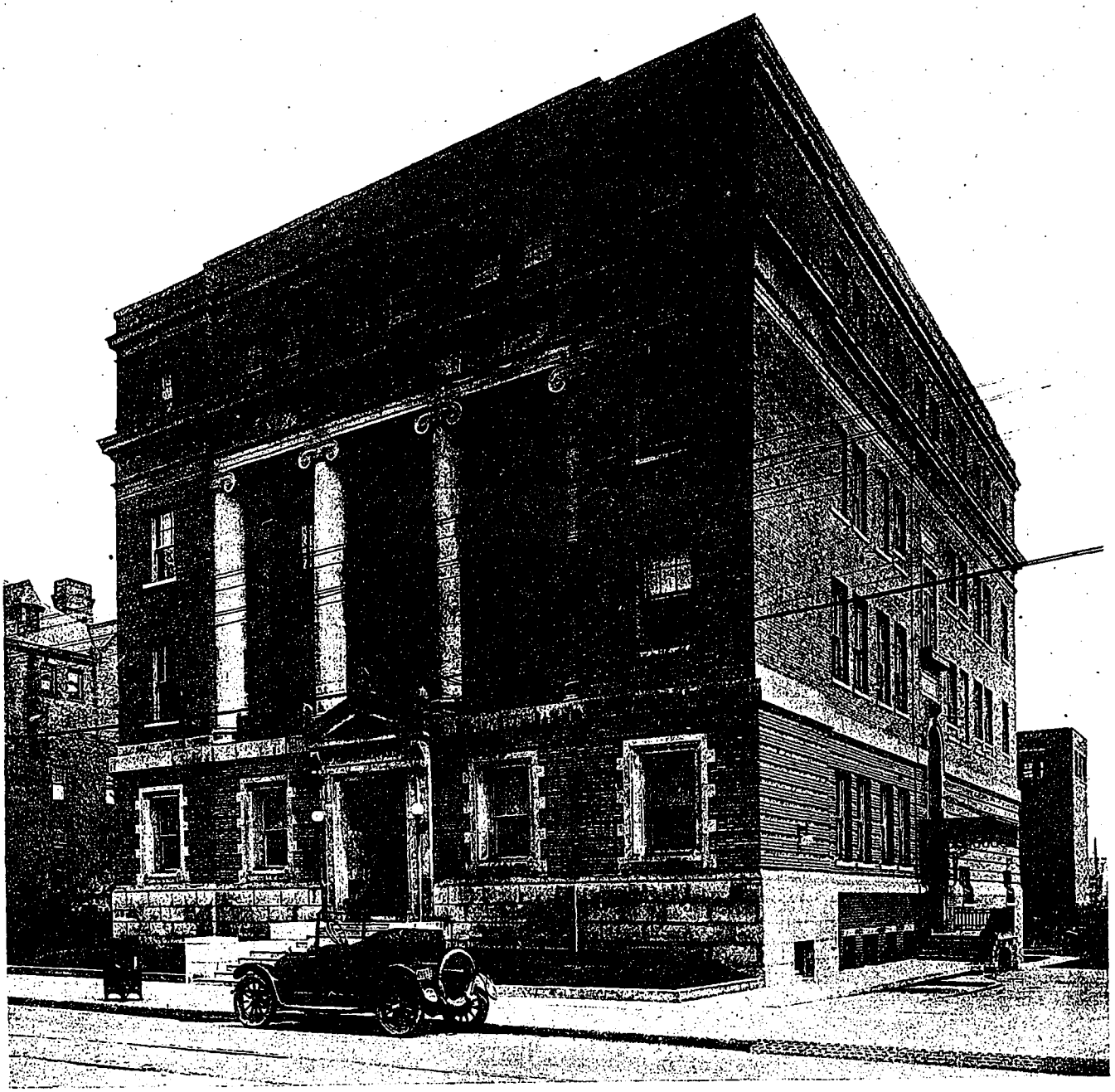


BOARD OF EDUCATION ADMINISTRATION BUILDING, TORONTO.

Board of Education Administration Building

Where Toronto School Officials and School Building Department Have Their Headquarters

A FINE, new administration building of the Board of Education contains the board room, members' room, committee rooms and the administrative offices of the board such as the secretary-treasurer's, school inspectors', superintendent of supplies' and superintendent of buildings.

Temporary offices were at one time at the corner of Wellington and Church streets, later at the corner of Richmond and York streets, in the York Street School, and later in the City Hall, during which time the board found it necessary to use the City Council chamber for a board room.

The building is sixty-seven feet across the front, ninety-one feet in depth, and is four stories above the basement.

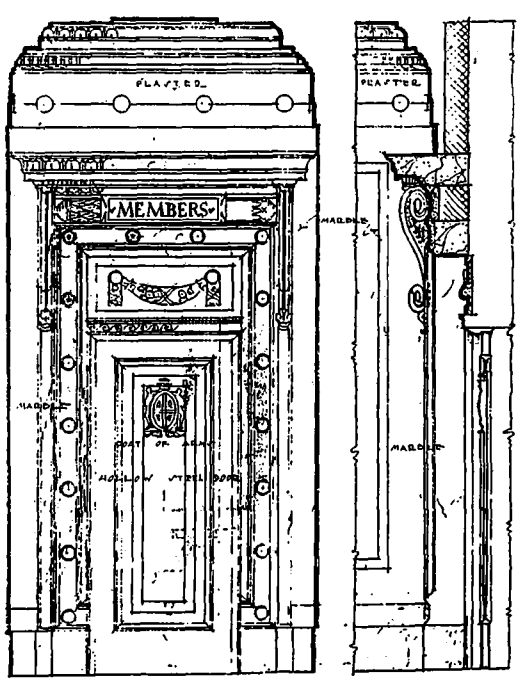
The basement floor contains the caretakers' quarters, lunch rooms for the staff, store rooms and heating apparatus. The ground floor opens out into College street, also at the side to a driveway, and contains offices for the supply department, offices for the medical inspection department, a special members' room, the board room, the telephone central, and, in the main hall, the general inquiry wicket. The second floor contains two committee rooms, and offices for the secretary-treasurer. The third floor contains a private office for the chief inspector, library, a private office for special supervisors, a filing room for the buildings' department, and a tendering room for contractors to view plans and specifications. The fourth floor contains a private office for the superintendent of buildings, and general offices for his staff, including a specially designed draughting room for preparing plans and specifications, etc. The ceiling of this room is extra high; lighting is from three sides, and from the top by a large skylight, with a cheerful southerly exposure. The facilities of the room are excellent, being equipped with the most modern draughting tables and filing cabinets.

The type of general construction is steel skeleton and what is termed as first-class fireproof construction. The floors, roof, columns, coverings and partitions are terra cotta, the exterior being enclosed with brick curtain walls supported by the steel frame. As the building was erected over the old "Sleepy Hollow Creek," it was necessary to carry the columns down a considerable depth, and use independent reinforced concrete spread footings.

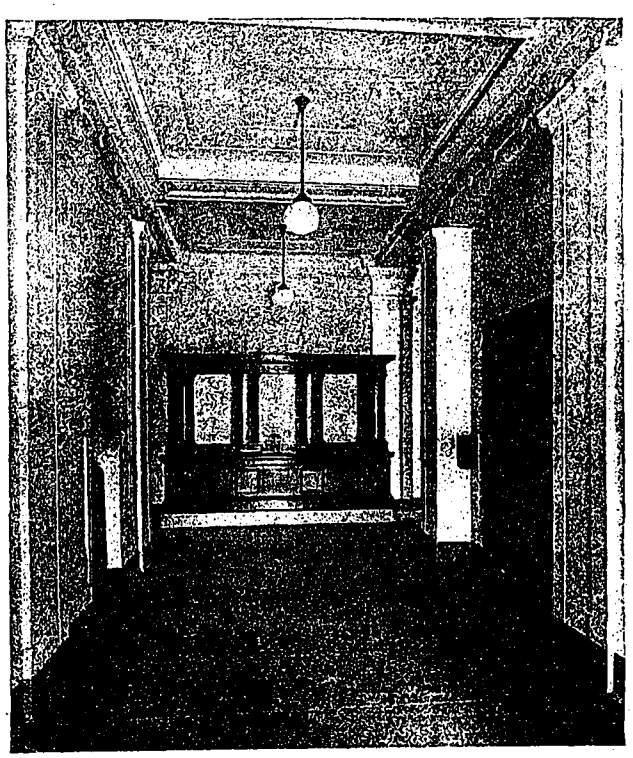
The heating throughout is by direct steam; and in addition to this the members' private room, the board room, and the two committee rooms, have a special warm air blast system to supply fresh air.

An electric elevator accommodates all floors, including the basement and roof, and a hand hoist is fitted up in the basement for removing ashes. The lighting is electric, through semi-indirect fixtures. Vault, toilet room, etc., accommodation for the different departments is provided for on their respective floors.

The design is of pure Greek Ionic architecture, as nearly as could be adapted to a modern office building; the choice of grey brick and



DETAIL OF DOOR TO MEMBERS' ROOM.



MAIN ENTRANCE HALL AND ELEVATOR.

grey stone adds much to its beauty. This adds one more interesting building to College street.

The feature of the main facade is an Ionic portico surmounting a heavy rusticated base, which is the ground floor story; this story is

DRAUGHTING ROOM IN ADMINISTRATION BUILDING.

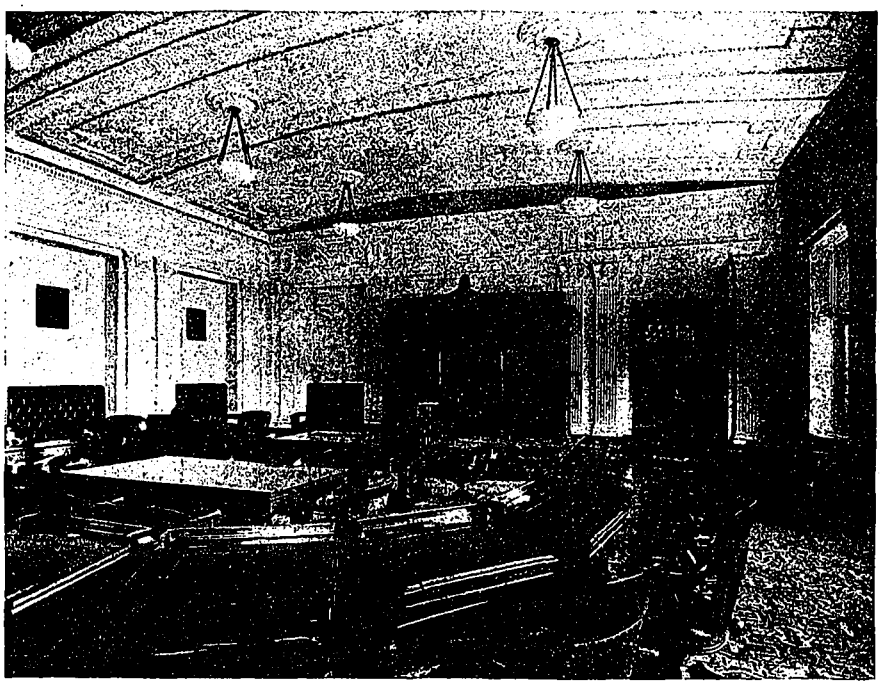
flanked by two end pavilions, the whole supporting an attic story. The spandrils between the stone columns are made up of ornamental iron windows. The main entrance is a splendid modern adaption of the famous Greek Erechetheion Temple doorway. The general treatment of the interior is very plain except the main entrance hall, the members' room and the board room. The members' room is approached through an ornamental doorway off the main hall near the information bureau, and provides a comfortable meeting place for the members. The walls are fitted with lockers and telephone booth in the panelling which incases all walls. The ceiling is very attractive with false beams. On the south side is a stone and brick fireplace between two windows.

The board room has three entrances one from the members' room one from the main hall, and one from the stair landing into a small gallery. The balcony is constructed without columns, to avoid any obstruction below. The chairman's dais is of Greek design, in harmony with the building. The walls and ceilings are decorated in Renaissance design, with ornamental plaster, The whole of the woodwork, and the chairs, desks, tables, etc., are all of genuine black walnut, richly upholstered in black leather.

The main hall has a simple plaster wall treatment, relieved by antae-pilasters supporting an entablature and plaster panelled ceiling. In the centre of the building, on the main floor hallway, is a plain but beautiful mahogany enquiry bureau, where one can be put in touch, or can communicate with, any department in the building.

ORNATE AND ARTISTIC

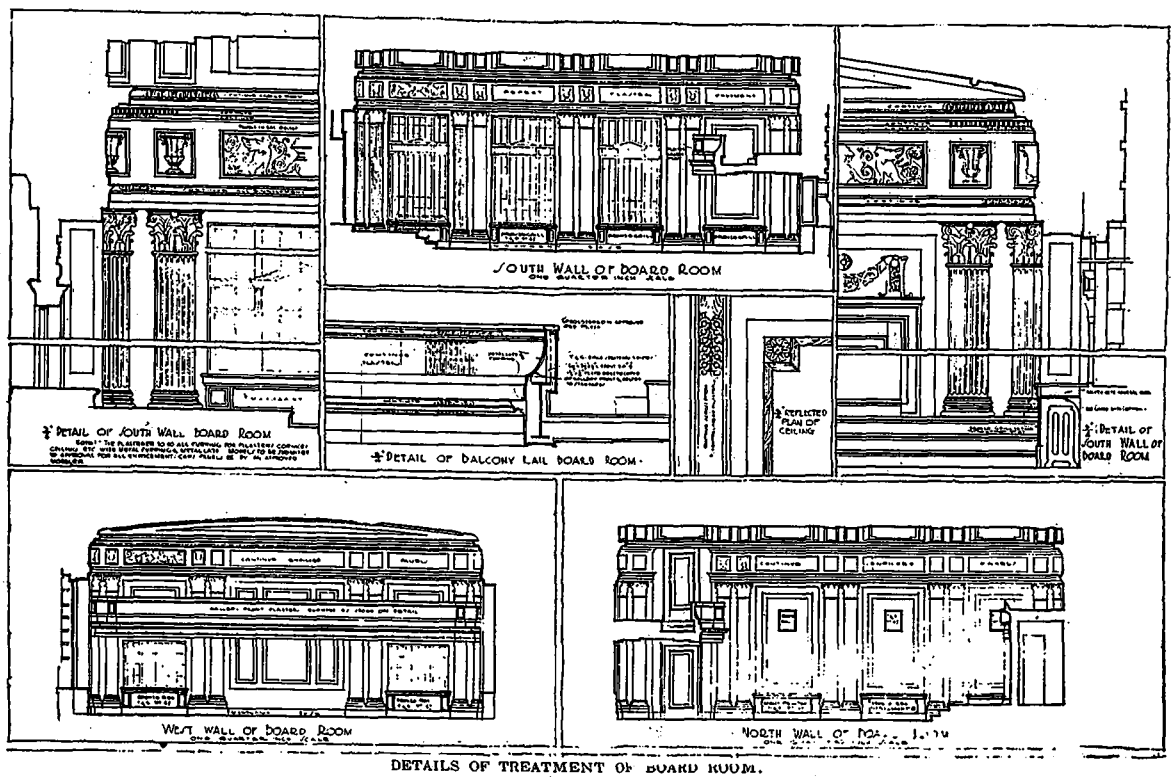
A curious misconception is abroad concerning art in school architecture. Many school board members are apparently of the opinion that a building which is not well supplied with decorative detail is inartistic. The same opinion seems to prevail among certain architects. The "School Board Journal" tells of a man who complained bitterly of the lack of appreciation for good architecture on the part of a building committee which had just rejected his rather elaborate design in favor of a simpler and plainer plan. He had provided for expensive cut stone cornices and belt courses on the facade, elaborate marble wainscoting and stucco trim in the corridors



TORONTO BOARD OF EDUCATION MEETING ROOM.

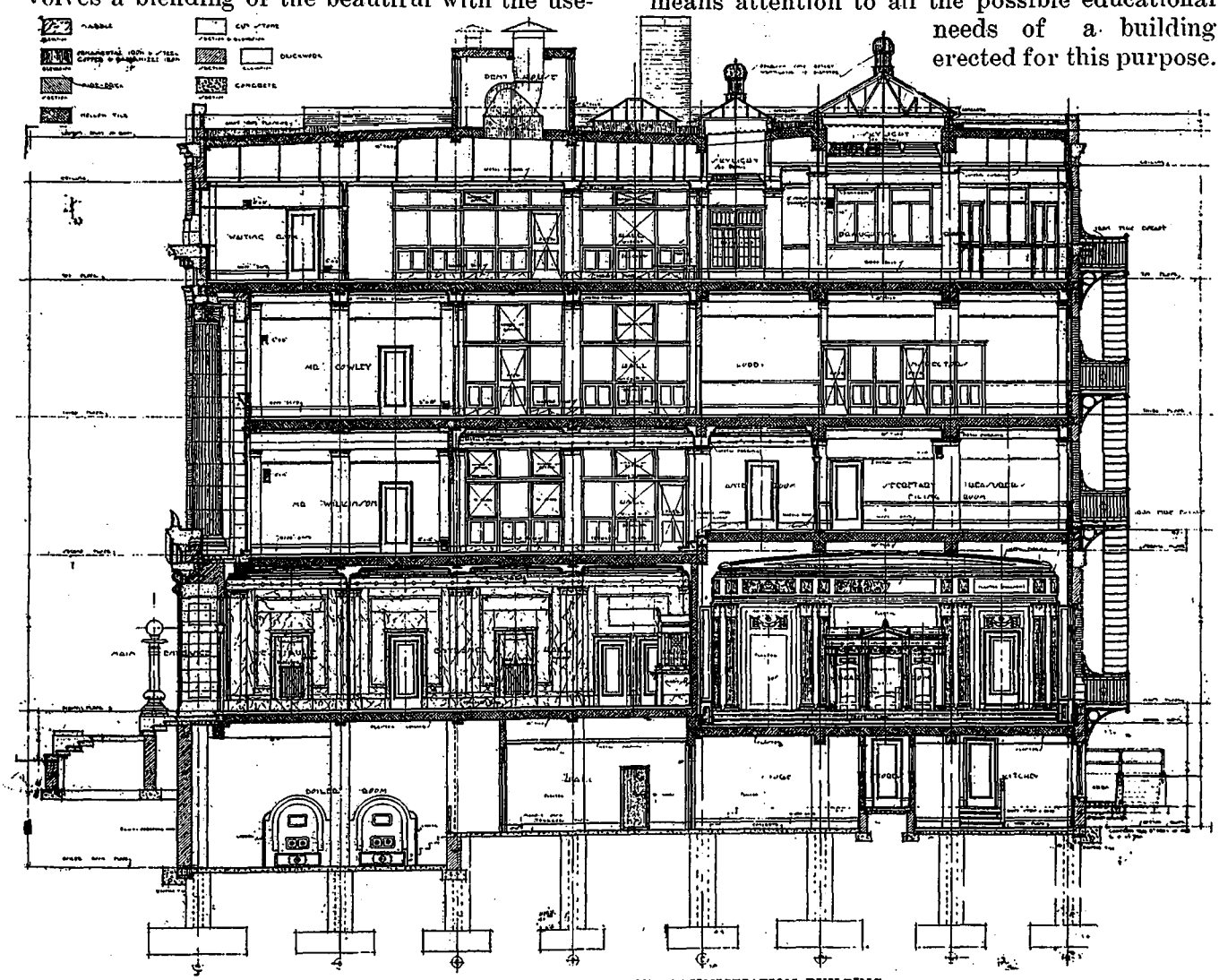
and assembly room and other embellishments. While his general plan was good, such important details as relation of stairways to corridors and classrooms, arrangement of toilet rooms, etc., had not been fully studied. His competi-

tor, whose plans were rather plain, had, on the other hand, studied very carefully every feature of his building and had completed a general design which depended upon good proportions and well-chosen materials for its effect.

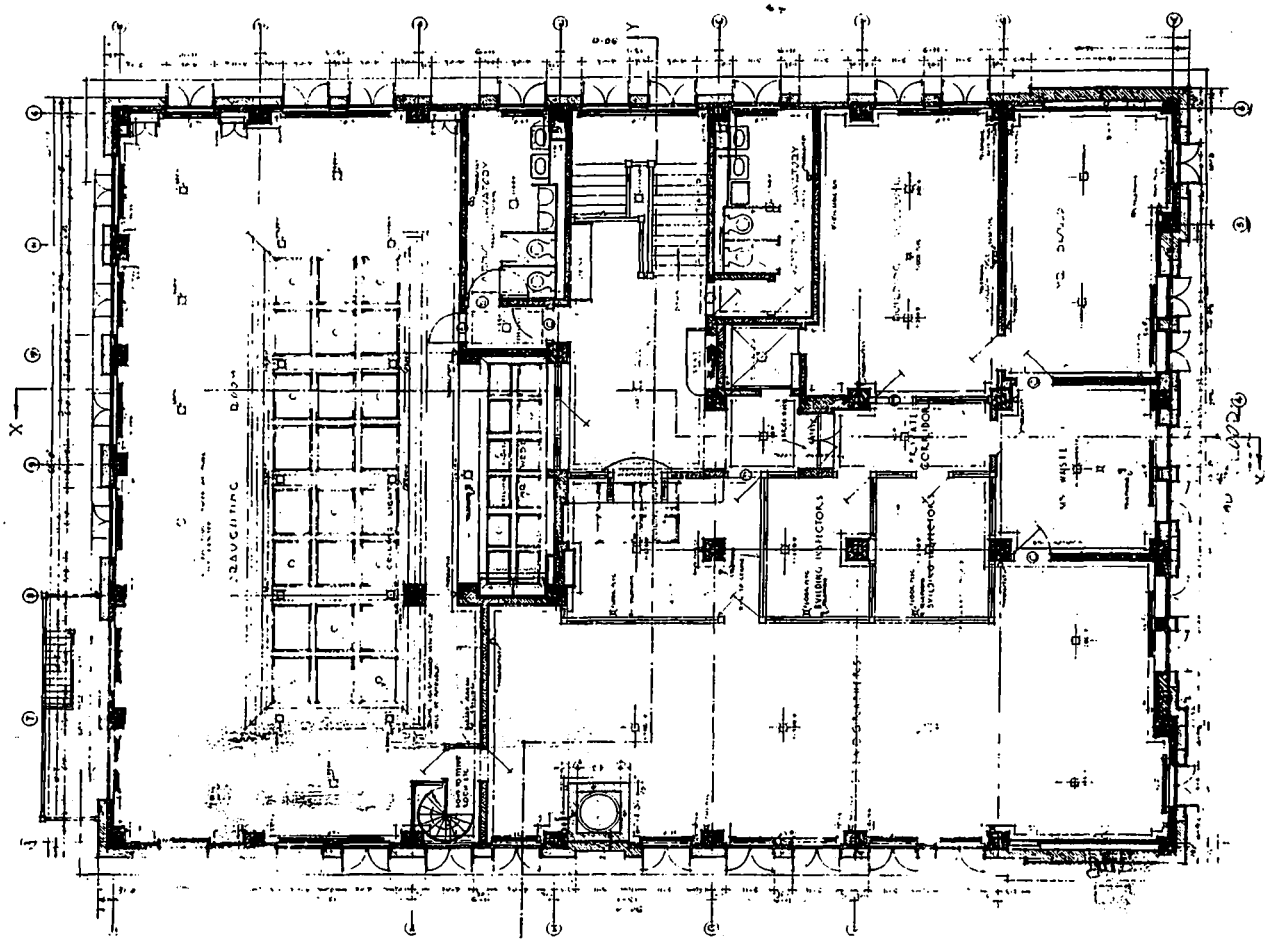


DETAILS OF TREATMENT OF BOARD ROOM.

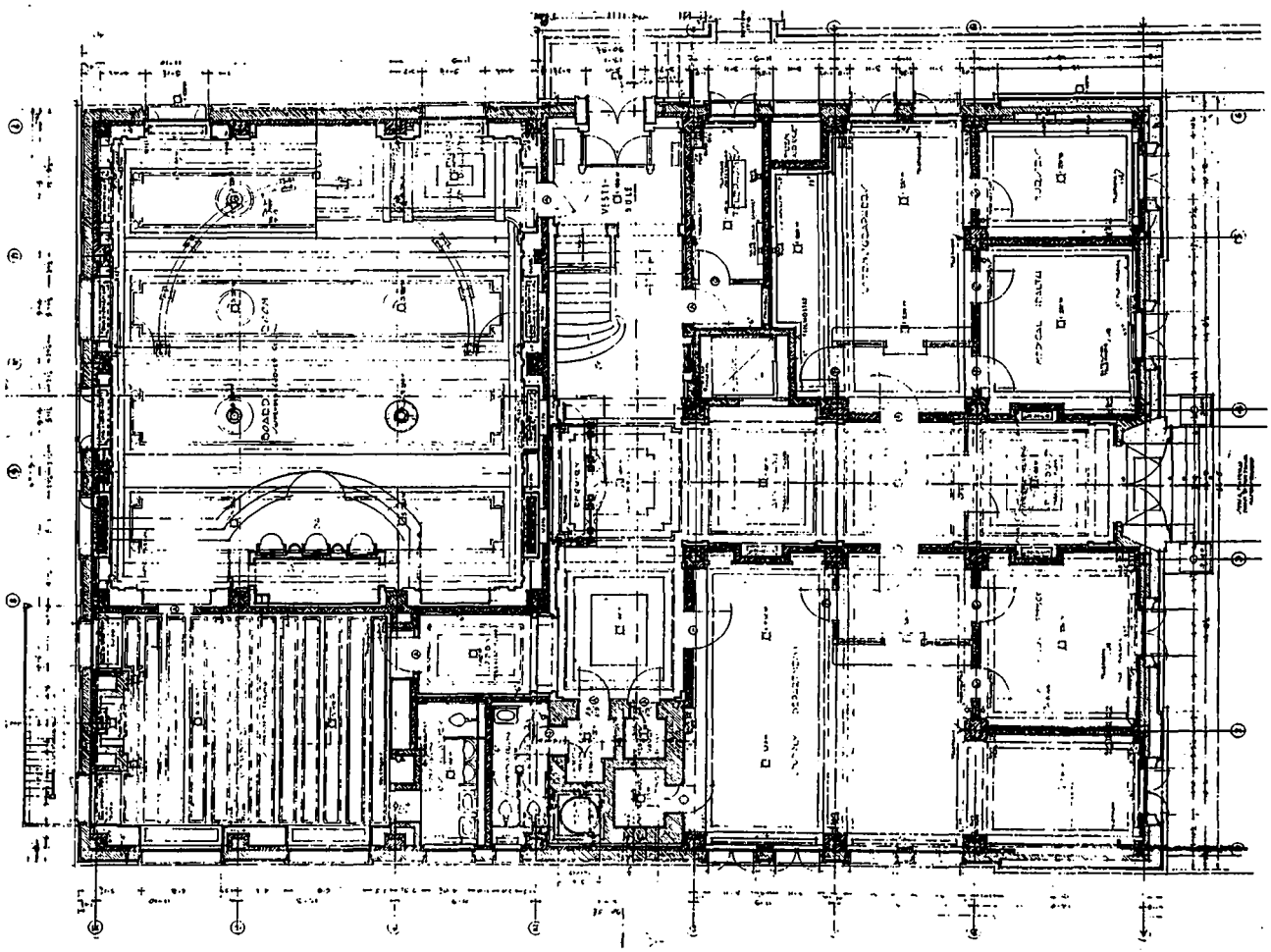
The highest art in architecture, whether it applies to school buildings, office buildings or homes, involves a blending of the beautiful with the useful, in which no essential of the whole is disregarded. Good architecture in schoolhouses means attention to all the possible educational needs of a building erected for this purpose.



SECTIONAL VIEW FROM WEST SIDE OF ADMINISTRATION BUILDING.



FOURTH FLOOR PLAN OF ADMINISTRATION BUILDING.



GROUND FLOOR PLAN OF ADMINISTRATION BUILDING.

New Commercial High School at Toronto

Accommodates Eight Hundred Pupils and Gives a Combined High School and Commercial Education

THE High School of Commerce and Finance, recently erected by the advisory commercial committee of the Toronto Board of Education, is of the solid block type, a large assembly room being placed in the centre of the building, with spacious corridors at the sides. The class rooms are arranged along the outside walls, which allows for excellent non-obstructed lighting for class work. The assembly room, which has a seating capacity of one thousand, is one of the present high school essentials. It is used for special lectures, concerts, and opening and closing exercises, etc.

The assembly room and corridors are first-class fireproof construction, finished with terrazzo floors.

The rotunda on the main floor, with its panelled oak columns and iron staircases, gives an impression in keeping with the size and importance of the building.

The building is heated throughout with direct steam radiation, and, in addition to this, the class rooms and assembly room are ventilated with warm air fan blasts.

The lighting of class rooms is by large group windows, on one side only, to the left of pupils, in accordance with well-established practice in school building.

The principals' office is directly connected with the class rooms by telephones, also class bells. Fire alarm bells are provided throughout the corridors.

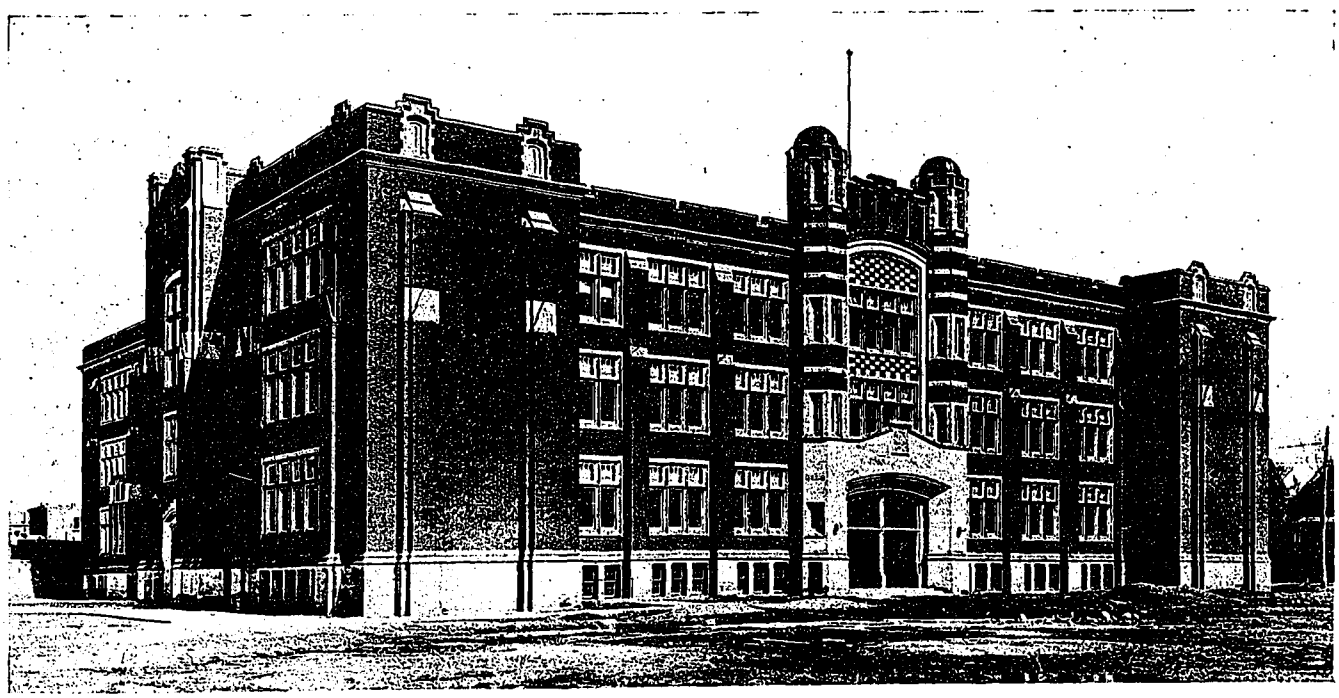
The following accommodation is provided: twenty-one class rooms, one business practice room, one business practice office, two typewriting rooms, two study of material laboratories, two lecture rooms, one commercial art room, one commercial museum, two emergency rooms, one library and reading room, and an auditorium capable of seating one thousand persons.

The basement, which is well above ground, contains assembling rooms, recreation rooms, bicycle rooms and toilet rooms—on the west side for the boys, and on the east side for the girls; there is also a students' supply room and a large cafeteria, located centrally between the boys' and girls' quarters, and thus readily accessible to both.

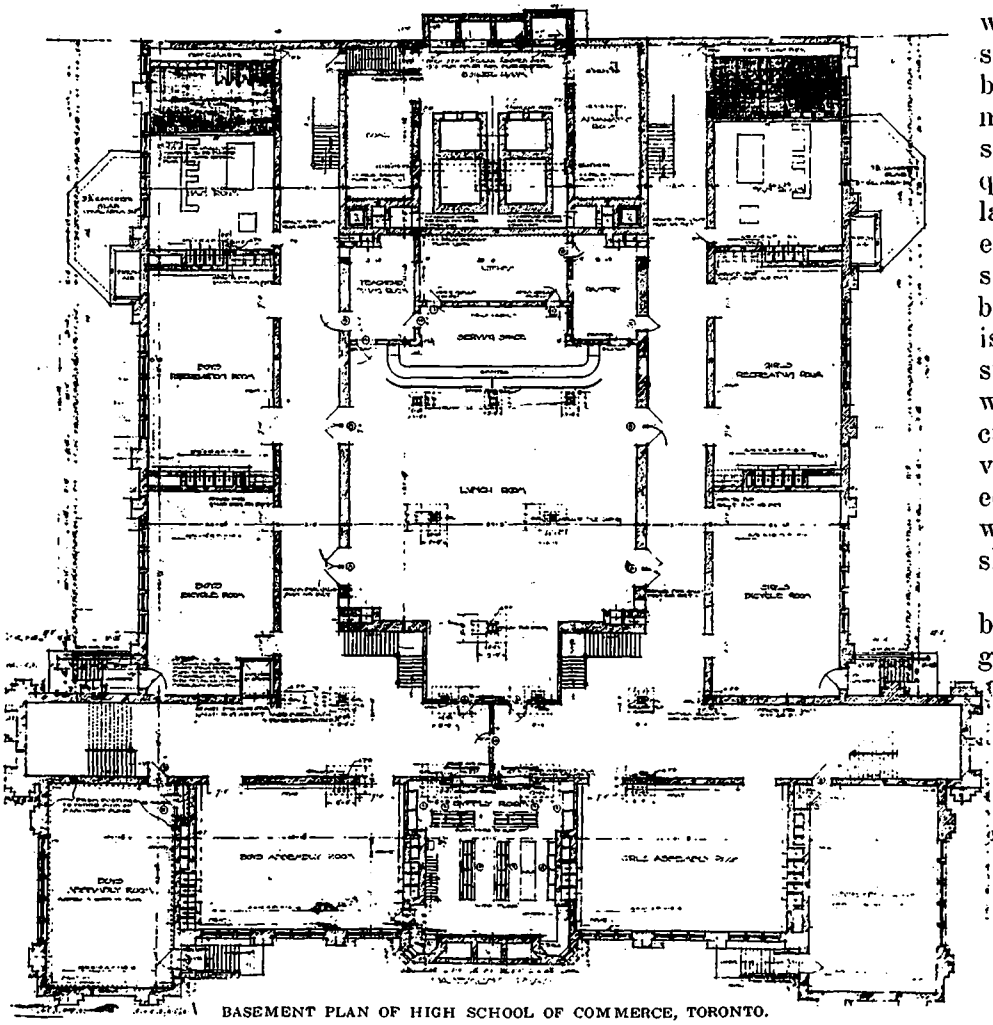
The ground floor contains the main floor of the assembly room, seven class rooms, a typewriting room, the library and teachers' room, the first floor contains the balcony of the assembly room, six class rooms, a senior laboratory, a preparation room, a small lecture room, a commercial museum, a business office, a typewriting room, and toilet rooms. The second floor contains eight class rooms, a junior laboratory, a preparation room, a small lecture room, an art room and toilet rooms.

The design is an adaptation of Gothic. The building is faced with selected red stock brick, having special recessed joints, and trimmed with white stone. The building cost $300,000.

The school accommodates eight hundred



FRONT ELEVATION OF CENTRAL HIGH SCHOOL OF COMMERCE, TORONTO.



BASEMENT PLAN OF HIGH SCHOOL OF COMMERCE, TORONTO.

pupils, and the equipment, though not expensive, consists of the most modern appliances for demonstrating business methods and systems of accounting, and for presenting the various aspects of business life. The equipment includes special desks and filing cabinets for the business practice rooms; typewriters and typewriting desks; duplicating machines; adding machines and dictaphones.

The purpose of the school is to give a general high school education, together with such a training in business theory and practice that students, besides being generally well informed, will be able to adapt themselves to the needs of any business with which they may become identified. Besides inculcating such requisites as punctuality, regularity, faithfulness, courtesy and industry, and besides giving a knowledge of business routine, the purpose is to give such a training, such an outlook on life, as will develop prompt and accurate judgments—the cultivation of the intellectual equally with the mechanical, which is essential to leadership in the business world.

Particularly in the general business course are students given a knowledge of the facts of nature and of the economics of the world around them. With this broader outlook they are inspired with an ambition which will enable them to advance more rapidly to superior positions in the business world, and to more intelligently cope with the problems which will meet them in a business career. Thus, while the cultural side is not neglected, the aim is to make all the subjects serve the special vocational purpose for which this class of school exists, namely, a preparation for business.

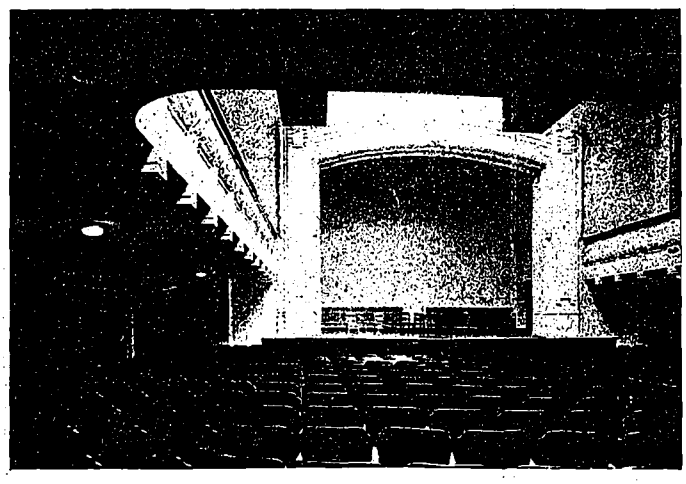
It is not intended that these courses shall turn out thoroughly trained business men and women, but rather students so trained that they may readily adapt themselves to and master the details of any business with which they may become connected:

1—Accountancy Course.—This extends over three years, and is intended to fit students to become bookkeepers, accountants, etc.

2—Stenography Course.—This also extends over three years, and is intended to meet the needs of students looking forward to positions as stenographers, secretaries, etc.

3—Secretarial Course.—This is a broader course and extends over four years. It prepares students not only for stenography and general office work, but more particularly for the work of the private secretary.

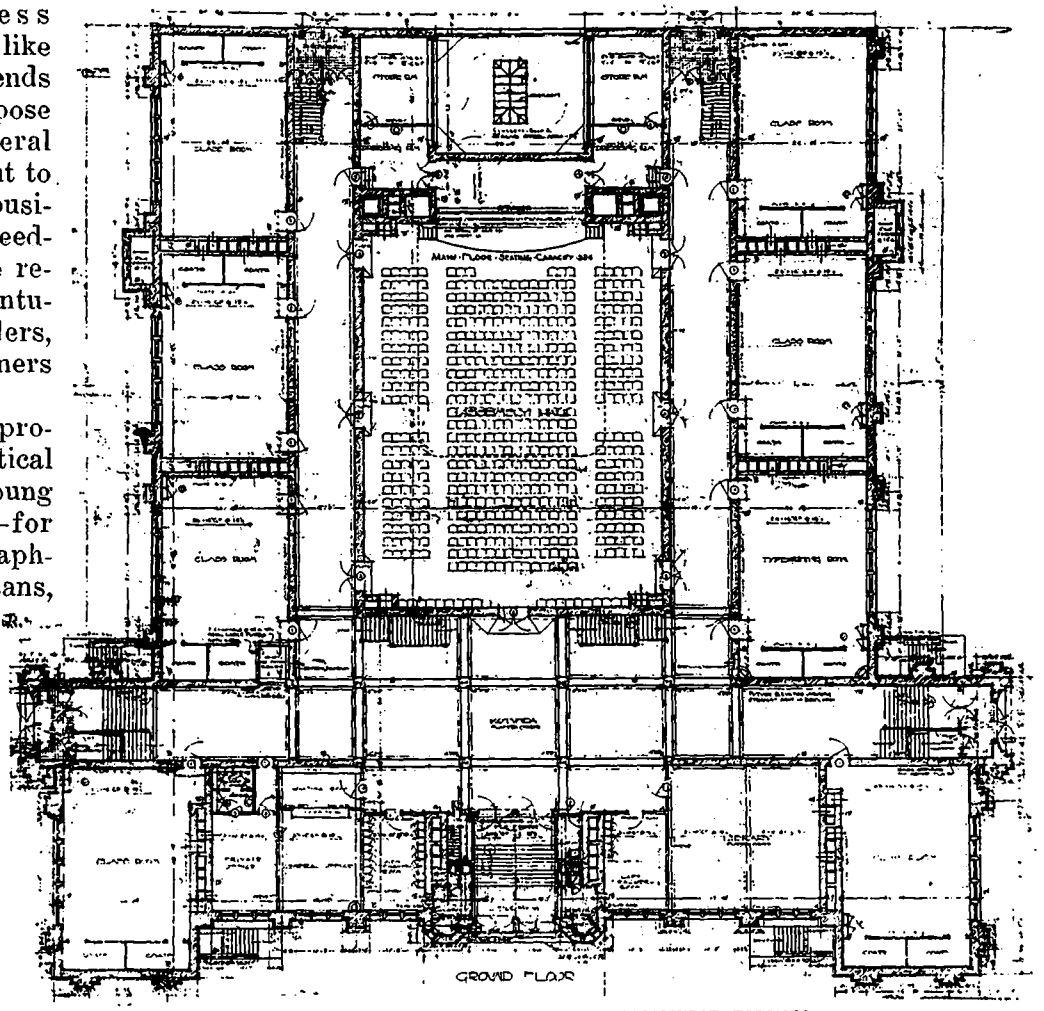
4—Salesmanship Course.—This is also a broader course and extends over four years. Its purpose is to prepare students not only for general office work, but for positions that will eventually lead to salesmanship both in the warehouse and on the road.



AUDITORIUM IN HIGH SCHOOL OF COMMERCE, TORONTO.

5--General Business Course.—This course, like the two preceding, extends over four years. Its purpose is not only to give a general high school education, but to assist those entering business with a view of succeeding to some of the more responsible positions, eventually becoming travellers, buyers, managers, partners or proprietors.

The evening classes provide theoretical and practical instruction for both young men and young women—for clerks, salesmen, stenographers, bookkeepers, artisans, and others who desire to improve themselves in any of the following subjects: Bookkeeping, business practice, business law, civics, penmanship, stenography, typewriting, spelling, business English, business arithmetic, rapid calculation, mensuration, algebra, study of material, salesmanship, French, German, etc.



GROUND FLOOR PLAN OF HIGH SCHOOL OF COMMERCE, TORONTO.

HEATING AND VENTILATING IN SCHOOLS

By A. S. Capwell, Kitchener, Ontario

Wherever a large number of people are congregated, as in schools, proper provision must be made for heating and ventilating.

Heating alone is comparatively a simple matter, but not so with proper ventilation.

In former years it was customary to leave ventilation to the individual desires and judgment of the teachers or pupils. The result was anything but satisfactory or effective.

Architects and engineers now realize that mechanical ventilation under proper supervision is the only real solution.

The distribution of air in a school must not only be uniform, but there must not be drafts. Furthermore, the quantity of fresh air must be in excess of that required by each pupil, and this must be accomplished without affecting temperature.

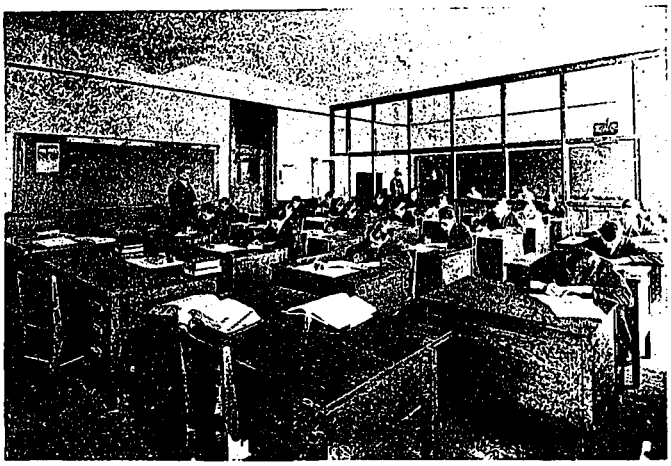
A third factor enters into ventilation problems, one that was formerly seldom considered, and for which no adequate machinery was available. That factor is humidity.

A room at sixty-five or seventy degrees and containing only dry air might be almost unbearable. A certain amount of moisture is absolutely essential to insure comfort. To predetermine the required heat, moisture and air required for each room, it is necessary to have proper dependable equipment that will produce these conditions.

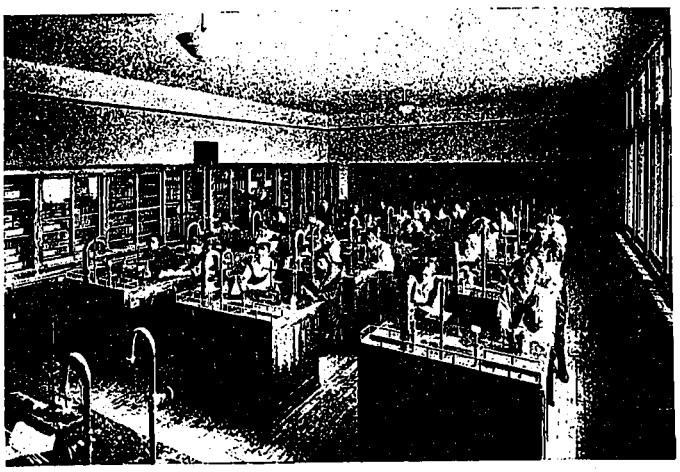
Air conditioning apparatus is now manufactured embodying features which makes it especially desirable for schools, hospitals, theatres, and for an endless number of manufacturing processes. With this apparatus it is not only possible to properly heat and ventilate a school building, but to control the humidity and free the air from all dust and impurities.

So effective is this installation that it is being

MAIN CORRIDORS IN HIGH SCHOOL OF COMMERCE, TORONTO.



BUSINESS PRACTICE ROOM IN HIGH SCHOOL OF COMMERCE, TORONTO.



STUDY OF MATERIAL LABORATORY IN HIGH SCHOOL OF COMMERCE.

installed in an increasing number of schools in all parts of the United States and Canada.

The principle on which this apparatus works is very interesting. Fresh air is drawn, by means of a fan, through an opening in the wall or window. It passes through a screen of water distributed by means of a large number of spray nozzles. It is here not only intimately mixed with the water but dust particles are thoroughly wet down. It next passes through a series of vertical zig-zag-shaped baffle plates. In their winding passage the water and air are thrown against the sides, when the moisture and dirt collect and are washed down into a settling tank below. The air leaves the baffle plates or "eliminators" with all free moisture removed.

Next the saturated air passes over heating coils. These are supplied with steam, and heat the air to whatever temperature is desired. By regulating the temperature of the water through which the air passes in the spray, accurate humidity control may be obtained. The heated air is now distributed to the different rooms and insures constant temperature, purity and humidity.

This apparatus is economical, both in first cost and in the operation, and the results obtained are so much superior to older methods that few schools of any size are being built today without apparatus of this kind.

MURAL PAINTING IN THE PUBLIC SCHOOLS

To serve a patriotic purpose and to encourage a beautiful phase of the painter's art, the education committee of the London County Council has approved an offer to provide decorative paintings for the council schools. The scheme of subjects will be to illustrate life and industry in the British Dominions.

This method of decoration has been followed in the public schools of a great many cities in this country, particularly in New York. The results have proved so entirely satisfactory, as means of inculcating patriotism and arousing interest in the better forms of art, that as fast as possible each new school will receive some mural painting as part of its decorative treatment.

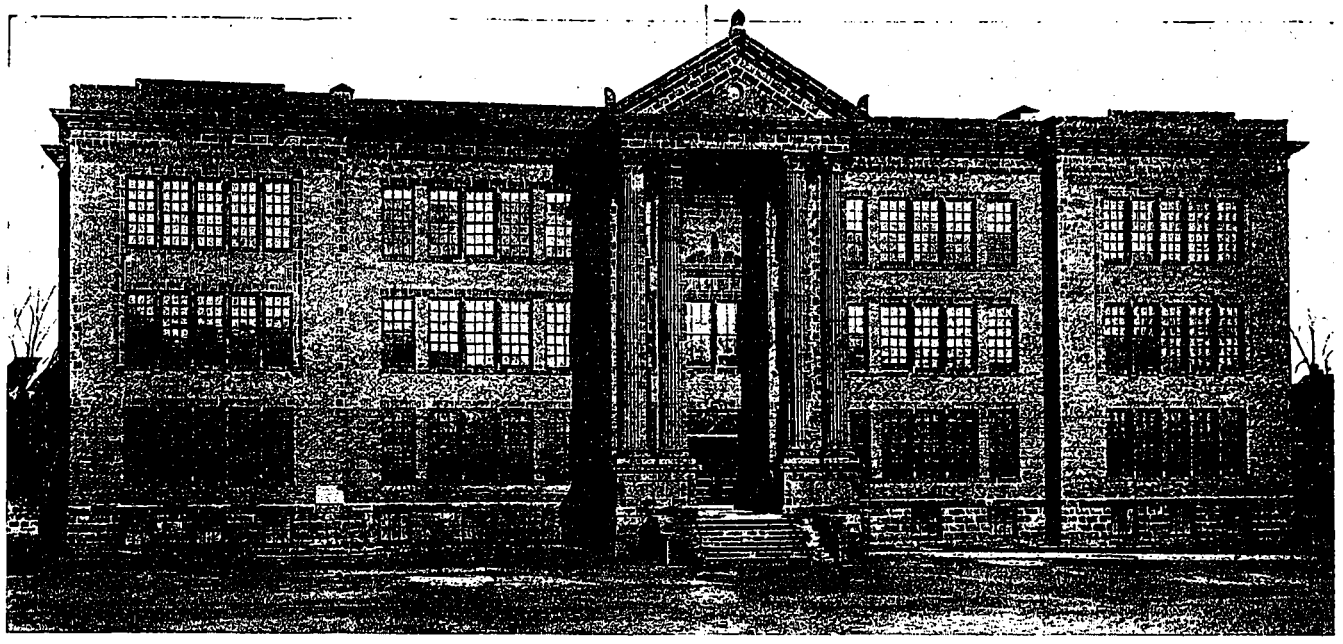
The competitions held by the various Boards of Education have called forth efforts from some of our best artists, and the results now in place in many of the later high schools are material evidence of the possibilities of mural painting, both educational and artistic.

ONLY PROFITS COUNT

Whenever you are tempted to put in a low price, remember it is the net profit that counts, and not the volume of business you do.

LIBRARY AND READING ROOM IN HIGH SCHOOL OF COMMERCE, TORONTO.

TYPEWRITING ROOM IN HIGH SCHOOL OF COMMERCE, TORONTO.



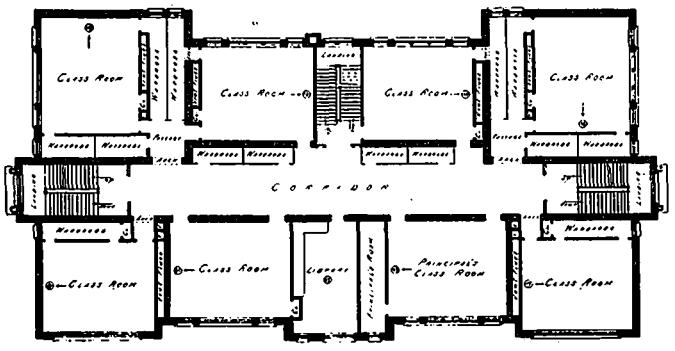
ABERDEEN SCHOOL, MONCTON, N.B. F. NEIL BRODIE, ARCHITECT, ST. JOHN, N.B.

A MARITIME PROVINCE SCHOOL

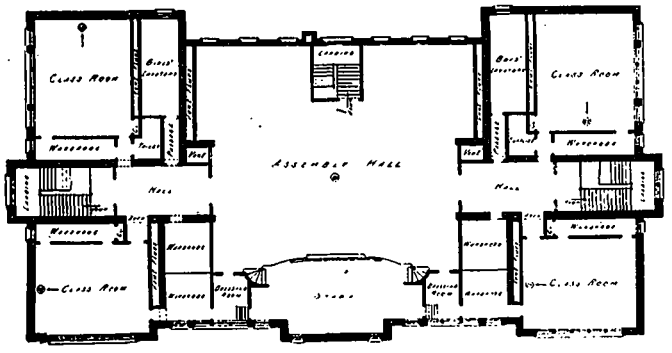
The largest school building in the Maritime Provinces is the new "Aberdeen," recently erected at Moncton, N.B. It contains twenty class rooms, an assembly hall seating nine hundred persons, waiting room, library, armory, shooting gallery, playrooms and girls' and boys' sanitaries.

The building is of concrete and stock brick, with terra cotta cornice and portico columns. The columns, which are four feet six inches in diameter and forty feet in height, are an exceptionally fine and effective piece of work.

The interior trim is of Douglas fir, and all floors are of selected birch.



FIRST FLOOR PLAN, ABERDEEN SCHOOL, MONCTON, N.B.



SECOND FLOOR PLAN, ABERDEEN SCHOOL, MONCTON, N.B.

The class rooms, twenty-six by thirty-two feet, with twelve-foot ceiling, have burlap wainscoting and are furnished with slate blackboards, teachers' cabinets, etc.

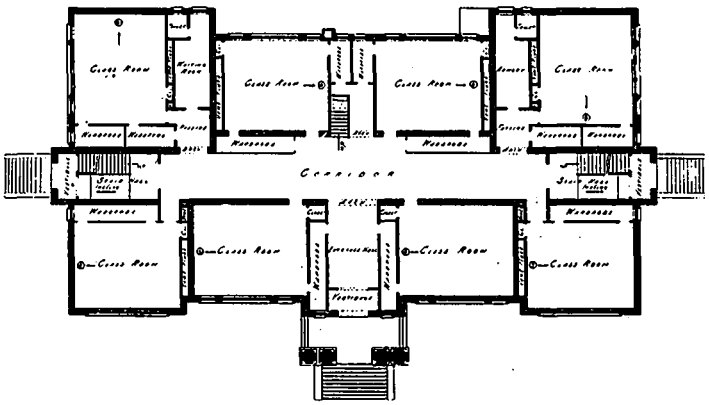
The general toilet rooms are in the basement, while additional toilets are provided on the third floor. All toilet rooms have individual porcelain water closets.

There is a bubble drinking fountain on each floor, and, also, a three-inch standpipe with two and one-half-inch hose reel for fire protection.

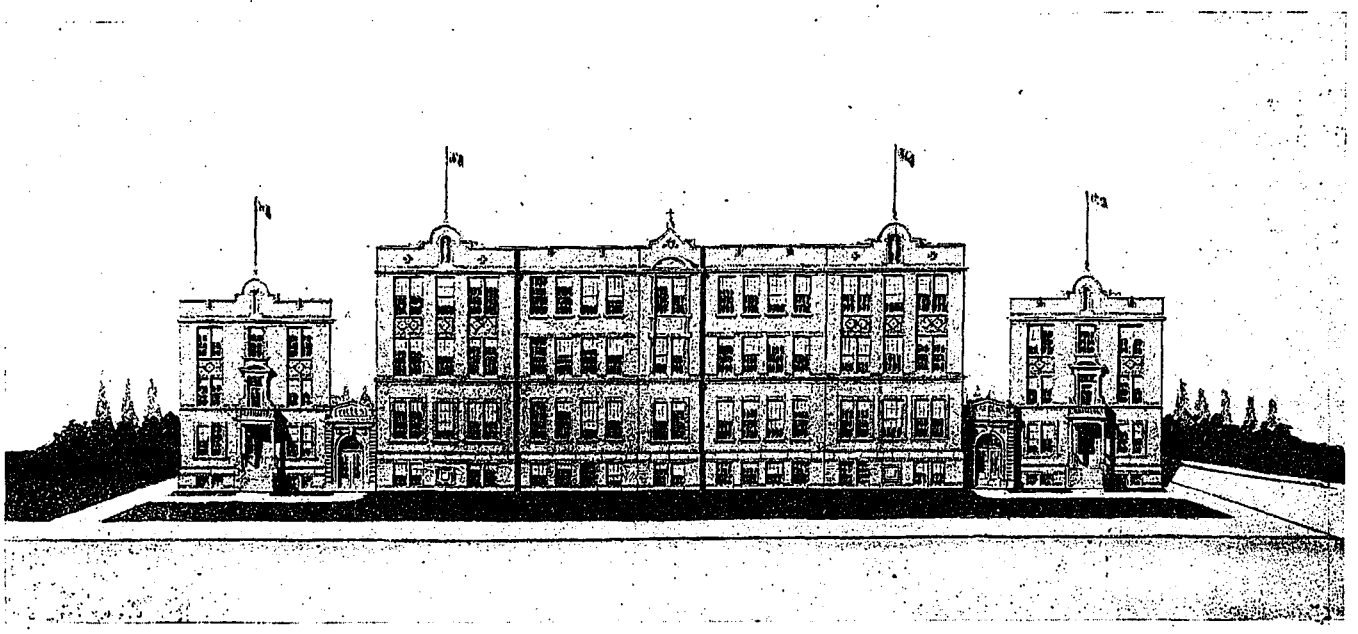
The building is lighted by electricity, and has a fire alarm system, with two "break glass" stations on each floor.

The heating and ventilating system has successfully passed a severe practical test, since, in the month from January 15 to February 15, with the thermometer below zero for nineteen days, the building was comfortably heated at an average cost of $6.70 per day. The system is direct radiation and warm air forced by an electrically-driven fan. There are two smokeless fire-box boilers, and the fuel is natural gas. The cost of the building was about $104,000.

Man has in him by nature but one good thing, the capability of improvement.—Stuart Mill.



GROUND FLOOR PLAN, ABERDEEN SCHOOL, MONCTON, N.B.



ROMAN CATHOLIC SCHOOL AND RESIDENCE, COTE DES NEIGES, MONTREAL. G. A. MONETTE, ARCHITECT.

Fine Roman Catholic School and Residence

New School for Boys and Girls Being Erected at Cote des Neiges, Montreal

A NEW school for boys and girls, and teachers' residences, is being erected for the Cote des Neiges Roman Catholic School Commissioners, designed by G. A. Monette, architect, Montreal, on a site measuring two hundred and thirty-four feet by sixty-five feet.

This school is divided in two separate sections, one for boys and one for girls, with separate residences at each end of the school for the fifteen teachers of each sex.

The school in the centre is one hundred and sixty-two feet long by sixty-five feet wide. The residences have a frontage of thirty-six feet by sixty-nine feet in depth.

The school has a basement containing the recreation rooms, toilet rooms, heating apparatus, steam boilers, dynamo-fan, etc., for the mechanical ventilation. The basement contains also the residence for the caretaker of the building.

The three floors above the basement contain the class rooms, twenty-two in number, with wardrobes to each class room, and two toilet rooms to each floor.

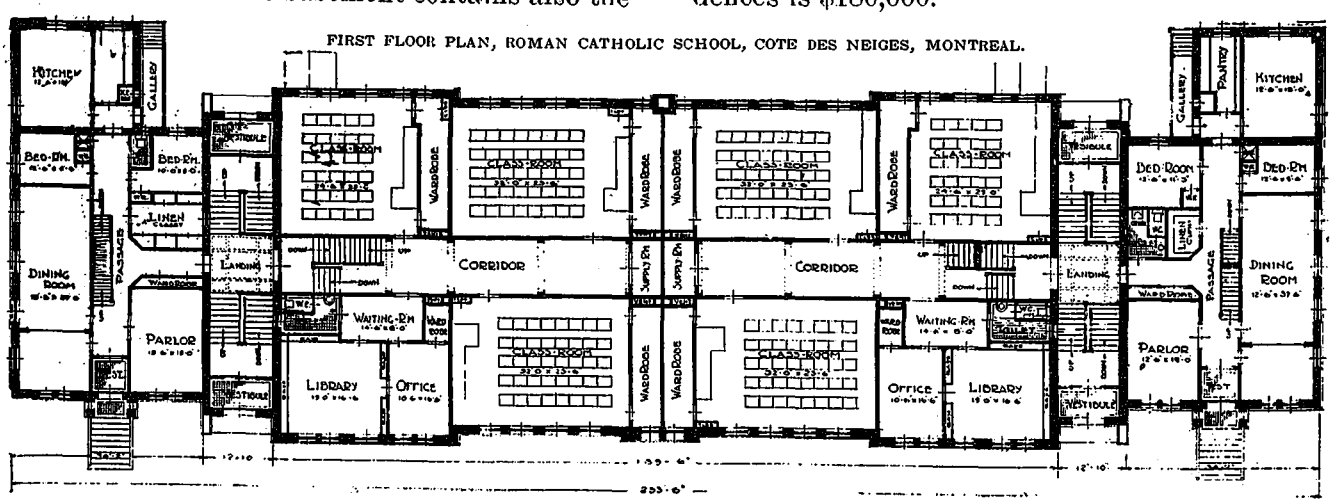
The first floor has the library connected with the office of the principal. At the rear three fire escapes are placed. This construction is, of course, all fireproof.

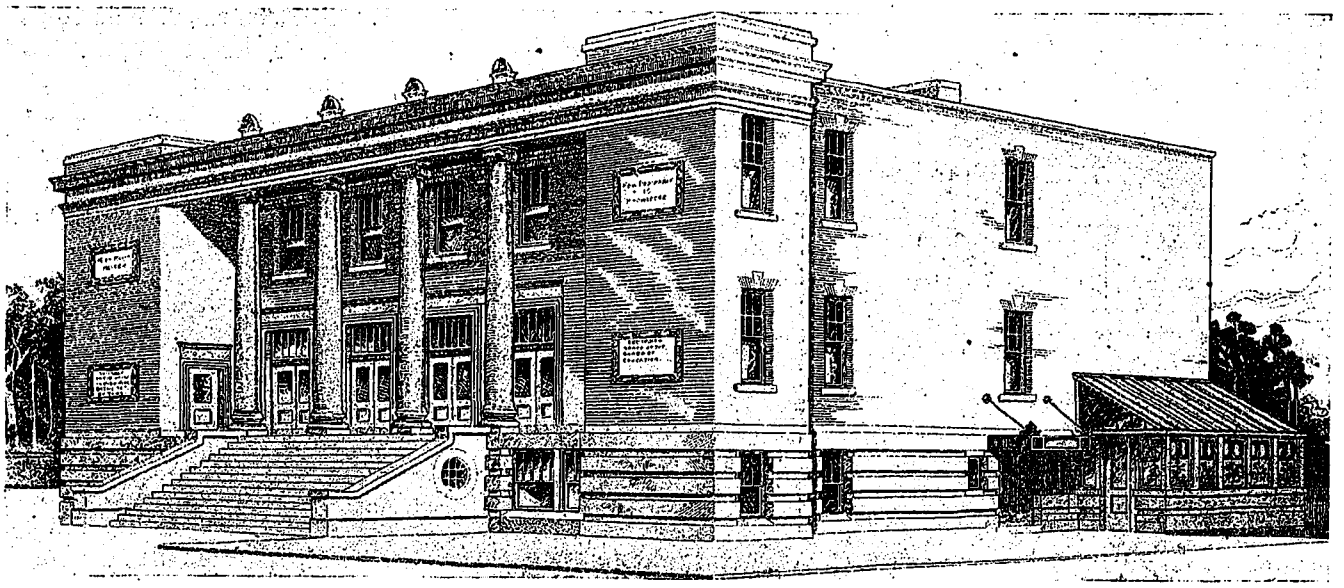
The elevations are faced with plastic rustic bricks, with grey canyon stone trimmings.

The floors are constructed of concrete beams. The partitions are of porous terra cotta, and the inside stairs are of iron and slate tread. Hardwood finish is used all through, with maple floorings.

The entire cost of this school and the residences is $180,000.

FIRST FLOOR PLAN, ROMAN CATHOLIC SCHOOL, COTE DES NEIGES, MONTREAL.





BEAMSVILLE HIGH SCHOOL. W. W. LACHANCE, ARCHITECT.

A Well Equipped High School at Beamsville

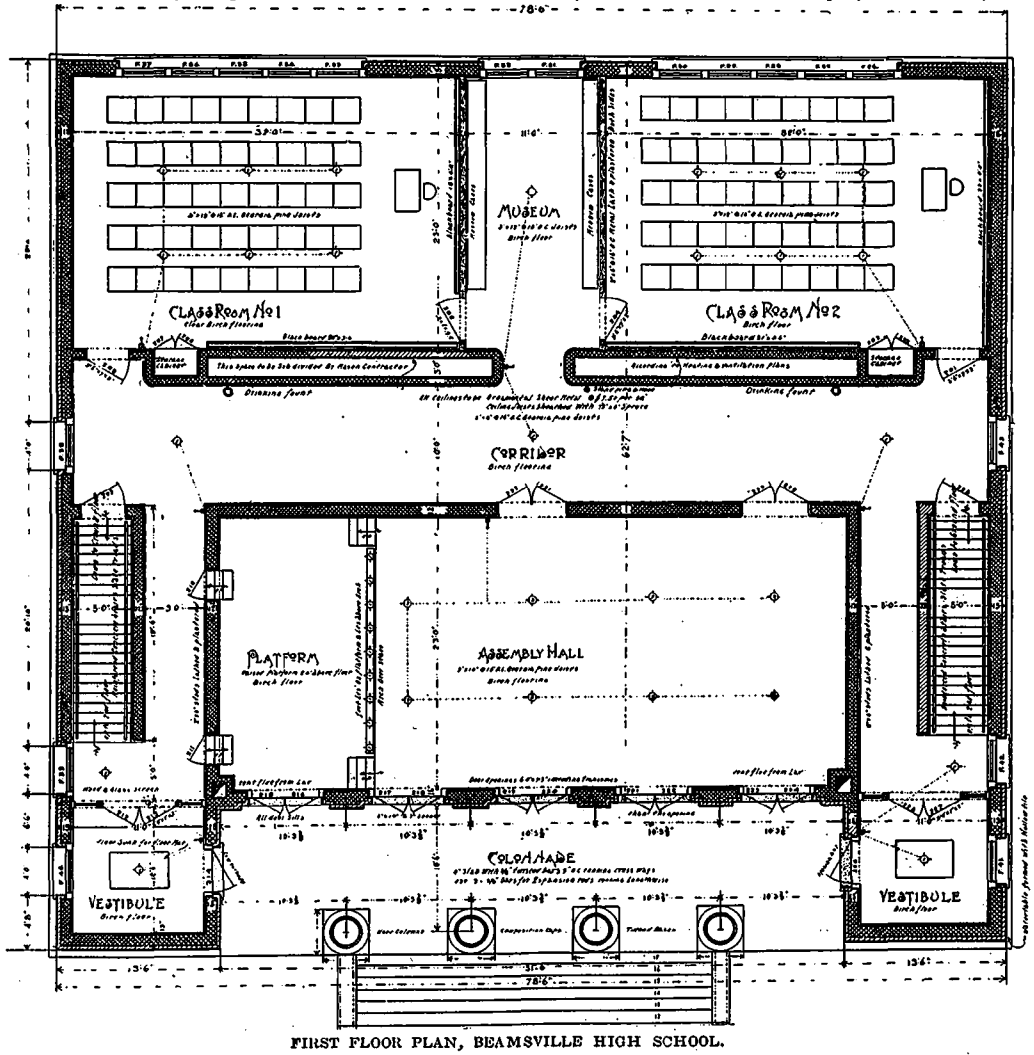
Basement Above Grade Line—Assembly Room on First Floor—Laboratories on Second Floor

By W. W. LaChance, Grimsby Beach, Ontario.

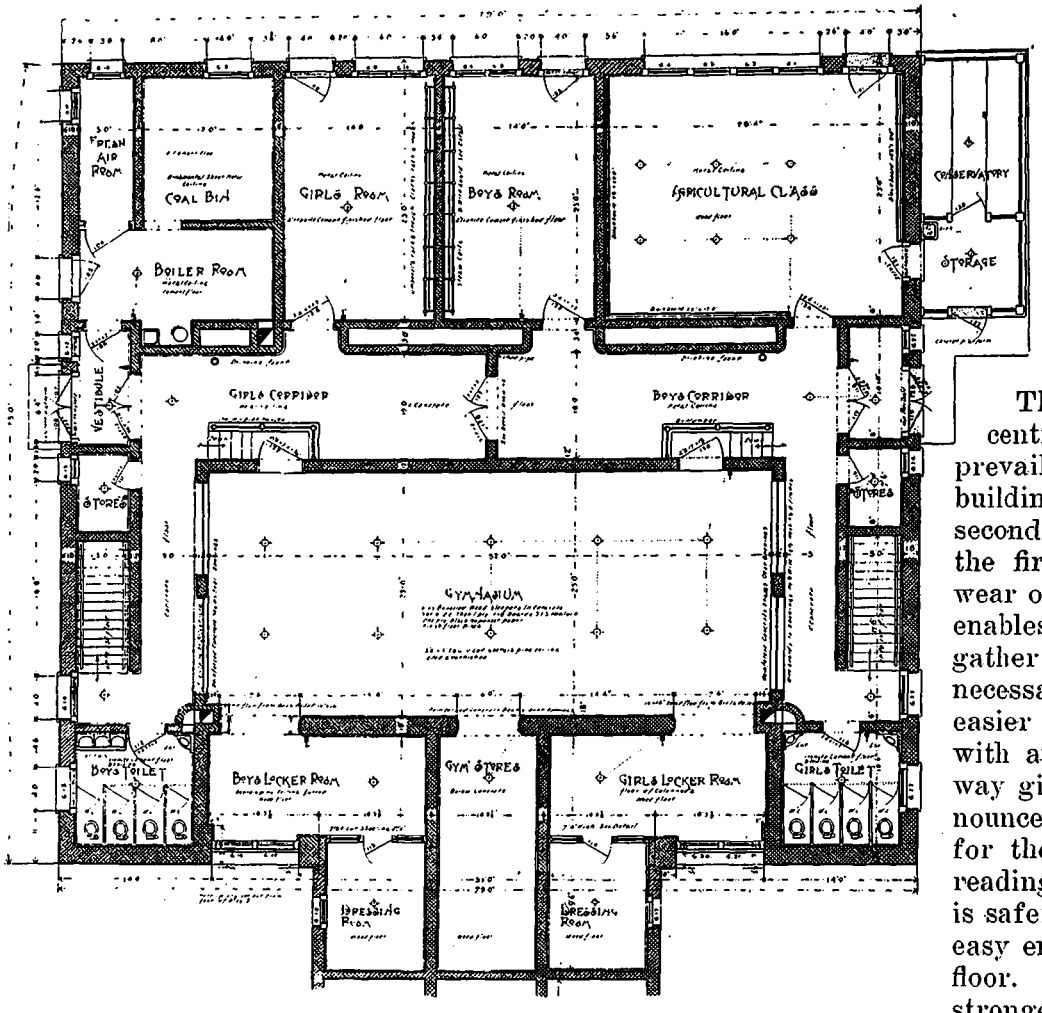
WHEN one begins to make plans for a high school building, certain definite and peculiar demands stare him in the face. He sees at once that every high school building ought, in addition to ordinary class rooms, to contain laboratories for the sciences, rooms for manual training, drawing, art, library, office, and especially an assembly hall. If he is more ambitious, he will try to include a room for cooking and serving lunches, bathrooms and gymnasium.

It is a fact that these latter demands are growing ones, and that in the near future they will take their place as rightful and helpful agencies in every well-equipped high school. At present, however, not every community can supply these, and it becomes necessary to offer some plans which will include only the bare necessities.

Recent construction of school buildings at various points give increased evidence that the school authorities, acting for and with the people, have foreseen and prepared for the enlarged utilization of public school facilities which will, in the future, be demanded by citizens and tax payers every-



FIRST FLOOR PLAN, BEAMSVILLE HIGH SCHOOL.



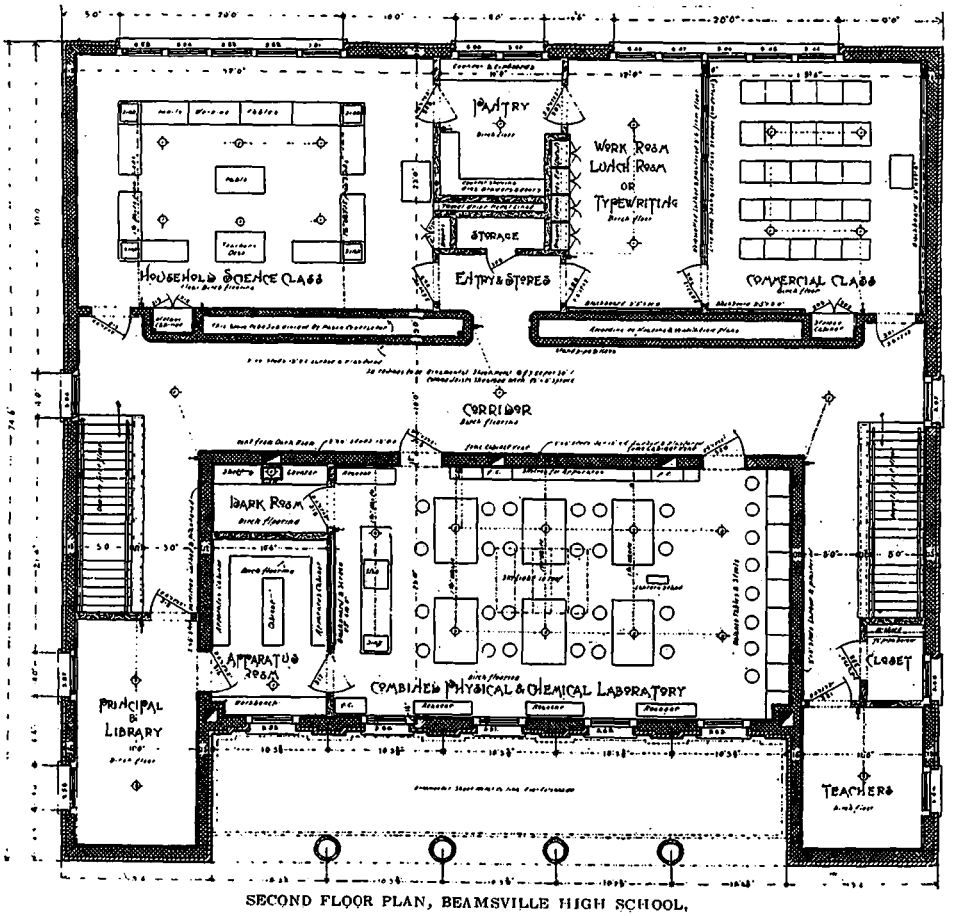
BASEMENT PLAN, BEAMSVILLE HIGH SCHOOL.

foot ceiling. The corridors act as space for spectators. Off the gymnasium are dressing and locker rooms for both sexes. Ample storage room is provided under the colonnade floor. All walls are of hollow tile plastered with cement plaster waterproofed.

The assembly hall is in the centre of the school. The prevailing practice in older buildings was to put it on the second floor, but, if located on the first floor it saves much wear on the building, in that it enables large audiences to gather without climbing unnecessary stairs. It makes it easier to start the day's work with an assembly, and in this way gives opportunity for announcements by the principal, for the inspiration of song, readings, or short lectures. It is safer in case of fire, permits easy entrance from the second floor. It insures a safer and stronger building for large audiences. The stage is of ample proportions. The lighting is abundant,

where. The new high school for Beamsville, Ont., will illustrate this tendency.

The usual basement has its floor four or five feet below the grade line, in this case it is eight inches above the grade line, thus giving abundance of light and easy access to the various rooms without the necessity of climbing stairs. On this floor level are located the boys' and girls' cloak rooms; these are provided with umbrella racks and gutters, and hat and coat hooks projecting six and twelve inches from face of wall, under which are placed steam coils protected with wire mesh guards; these coils not only heat the room, but dry the umbrellas and damp clothes of the pupils. The agricultural class is located on the ground level and has access to garden plot and conservatory. The gymnasium floor level is four feet below the grade level, thus giving a sixteen-



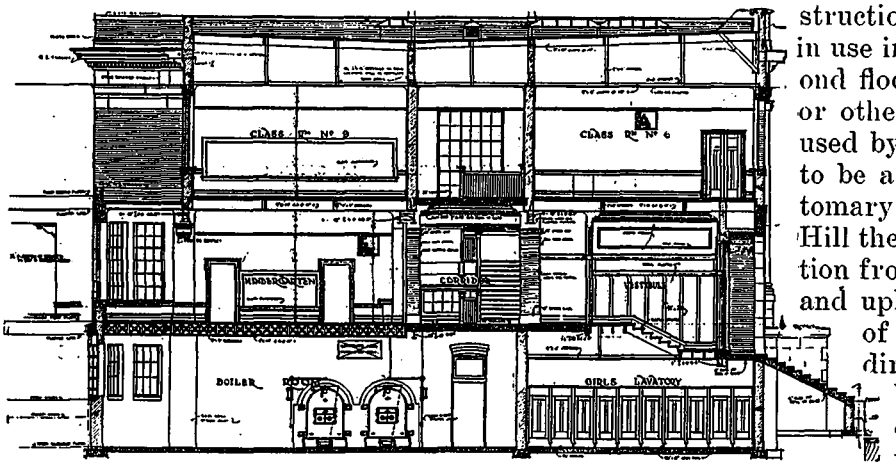
SECOND FLOOR PLAN, BEAMSVILLE HIGH SCHOOL.

and in summer time the large double doors opening on the colonnade may be thrown open. In village and country high schools there is as much or more need, comparatively speaking, for assembly halls, as in cities with more pretentious buildings.

The chemical and physical laboratories are combined in one room on the second floor.

All things considered, I am persuaded that physical and chemical laboratories are better placed on the second or top floor than on the first. Sky lighting can be obtained, better ventilation, and less danger of fumes reaching class rooms, less noise, are the main advantages. In a high school where one teacher is expected to teach both these sciences, one supply room of ample dimensions and of proper construction can be made to suffice, and by using a combined physical and chemical desk for the students, much room can be saved. The dark room is ventilated and equipped with plumbing. The walls below grade are of concrete and are waterproofed, the floors are under-drained, are of concrete, and made impervious to dampness. Walls above grade line rest on a damp course of waterproofed cement, and are composed of hollow tile, faced with red pressed brick laid in lime mortar.

The building contains two hundred and thirty-eight thousand seven hundred cubic feet, and cost $30,000, or 12½c. per cubic foot. The contracts were closed about the first of June last year. This is, in the writer's opinion, one of the most economical plans ever designed for a rural school.



SECTIONAL VIEW, BEAMSVILLE HIGH SCHOOL.

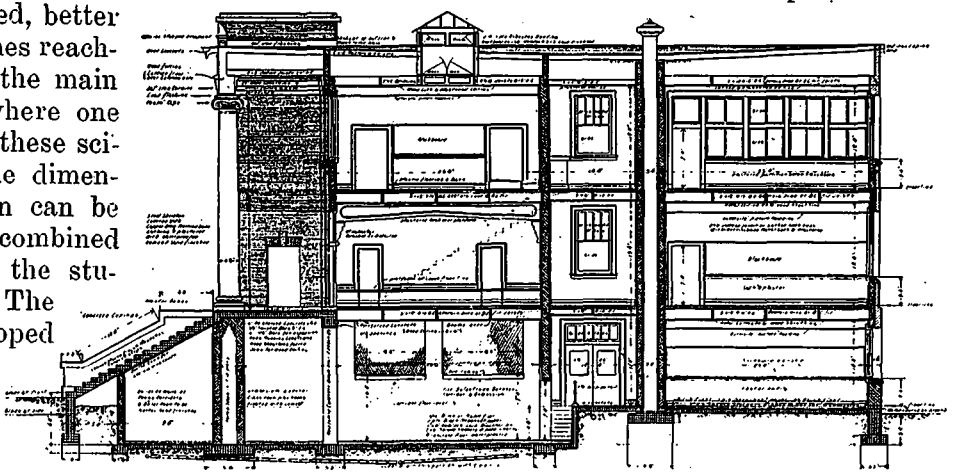
MANY HOSPITALS BEING BUILT

Present indications are that Canada's hospital accommodation will be more than doubled during the next year or two, the need largely resulting from the effects of the war in Europe.

The Canadian Military Hospital Commission is erecting a large number of hospital buildings to standard plans worked out to meet the needs for caring for mental, tubercular and surgical cases, these hospitals being located in every province of Canada.

The Provincial Governments and the Municipal Councils also recognize the increased need for hospital accommodation, and the desirability of selecting the best materials and most modern equipment.

The several hospitals illustrated in the June issue of CONSTRUCTION are excellent examples of the progress that is being made in hospital construction in Canada, and in the August issue the special type being erected by the Military Hospital Commission will be described.


SECTIONAL VIEW, BEAMSVILLE HIGH SCHOOL.

HISTORY OF WINDOW DESIGN

In a recent address Dr. Vernon E. Hill reviewed the history of window design and construction, and showed that windows were in use in ancient Egypt, at least on the second floors of buildings, but without glass or other protection. That they were also used by the Greeks and Romans is known to be a fact. Instead of glass it was customary to use pieces of colored glass. Dr. Hill then took up modern window construction from the standpoints of first cost, care and upkeep, loss of wall space, admission of flies and other insects, admission of dirt, weakening of walls and injury to building, entrance for burglars, increase of heat waste, interference with mechanical ventilation, increased liability to fire and fire panic and nuisance from noise. Under the last heading he showed that in office buildings, in the congested districts of large cities, the noise from electric cars, passing trucks, etc., entirely prevents the use of windows for ventilation on the first, second or even third floors. This is also a serious objection in the cases of hospitals and schools. Dr. Hill spoke at length of the window requirements of factories and workshops, this part of the paper being accompanied by illustrations of typical designs.

New Eight Room Public School at Galt

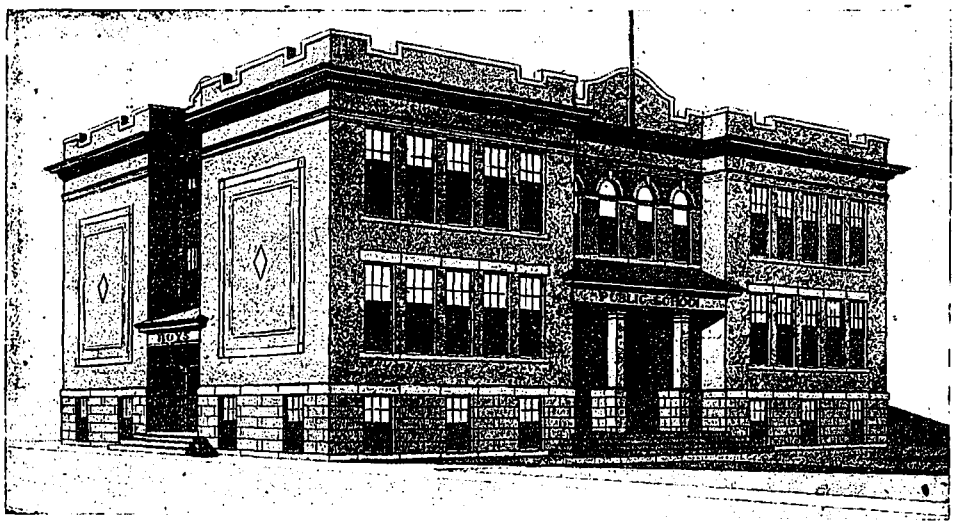
A Modern Structure of Plain Design, Having Good Proportions and Pleasing Appearance

THE foundation is of stone, all above grade being rock faced Indiana limestone, in regular courses, each stone being a header. All sills, lintels, coping or other stone trimmings are of tool finished Indiana limestone.

All stone walls of basement are lined on the inside with finished brickwork, the walls of lavatories, playrooms, corridors, etc., in the basement are of finished brickwork, being built up of best quality red pressed bricks. All ceilings in basement are plastered on metal lathing.

The lavatories, playrooms, etc., in the basement are ten feet eight inches high in the clear, six feet six inches of which is above grade. The boiler room, fuel room and fan rooms are fourteen feet high, with brick walls and plastered ceilings, the basement has cement floors throughout.

The exterior of the building is faced with fumed flashed pressed bricks, of best quality, laid up in Flemish bond with dark raked joints. All inside bricks are of good quality, pressed.



GALT PUBLIC SCHOOL. J. EVANS, ARCHITECT, GALT, ONT.

The interior of all corridor walls on first and second floors and vestibules are lined with finished brickwork the lower five feet being of fumed flashed bricks same as outside walls; this is capped with a brick dado course, and the upper portion of wall to ceiling is lined with light colored buff pressed bricks laid up in white mortar. The ceilings of corridors and vestibules are plastered.

The roofing is flashed to the coping, all brickwork from roof to coping being covered by flashing.

The roofing is laid over two-inch matched Norway pine sheathing supported on six-inch by fourteen-inch roofing timbers set five feet apart on centres. The roof is graded to two internal points and all rain water is carried down in the interior of the building. A large cistern is constructed in the basement, so that the heating boiler will always be supplied with soft water.

The main cornice and cornice to entrance porches are of galvanized iron, and all painted and sanded to the same color and texture as the stone trimmings. The main cornice is supported on iron brackets.

The roofs of entrance porches are covered with green slate, the roof water from porches is also carried to the inside of the building.

All exterior doors open to the outside and are protected by porches. Vestibules are provided at each entrance, having doors leading to basement and main corridors.

The stairs from basement to first floor are of reinforced concrete, with slate treads, and stairs from first to second floors are of steel construction, having panelled newels and strings, with slate treads and oak hand rails.

All floors of corridors and over boiler room, etc., are of fireproof construction, being of hollow tile and concrete supported on steel beams and finished with best quality hard maple flooring secured to wood sleepers embedded in the concrete. All other floors are double, the finished floor being of best hard maple laid over a spruce sub-floor, with a heavy interlining of asbestos.

All rooms are divided by thirteen-inch brick walls, and all interior trimming is of hard wood in natural finish.

Each class room has its own separate cloak room, separated from the class room by a brick wall, with door opening into the class room and also into the corridor; all doors open in the line of exit.

The blackboards are of slate, and extend across the entire front and right hand side of the class rooms, and are graded in height to suit the different grades.

The class rooms are of standard size, twenty-four by thirty-two feet, with thirteen foot ceilings. The windows extend to the ceilings, and are finished with splayed jambs, giving the maximum of light, and distributed so that there are no dark corners. All light is brought in

from the left hand side of the class rooms.

All class rooms, cloak rooms, teachers' rooms, etc., have plastered walls and ceilings, with a cement dado three feet six inches extending around each room.

There are four class rooms on each floor, the first floor also provides principal's office, with private lavatory, etc., with separate closets for kindergarten and primary.

On the second floor there are lady teachers' and nurses' rooms with private lavatories in connection, each room being well lighted from the outside, and each lavatory ventilated.

The building is heated by steam, direct radiation, on the low pressure gravity return system, and the temperature regulation is under automatic control.

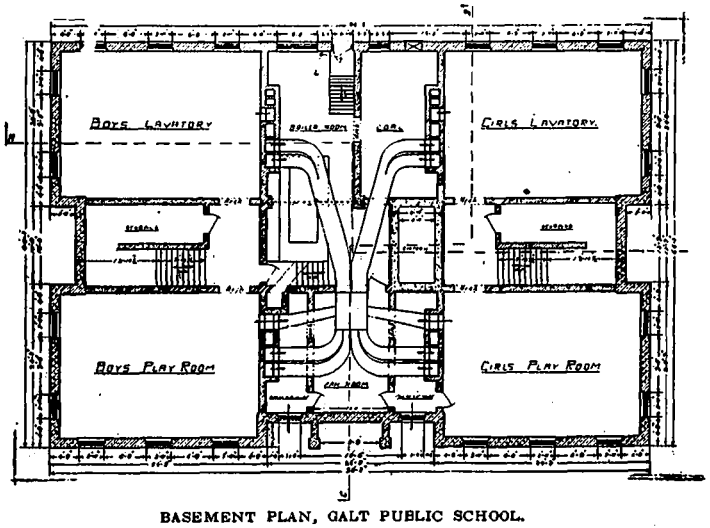
The ventilation of class rooms, cloak rooms and play rooms in the basement is on the single plenum system, the air being supplied from a motor driven fan in the basement, taking air directly from the outside and distributing it to the different rooms. The air used for ventilating is warmed by being drawn over steam heated coils, and is under automatic control, a uniform temperature being maintained at all times, same as in the heating system. Each cloak room, lavatory, etc., above the basement is ventilated separately.

The lavatories in the basement are ventilated on the exhaust system, the foul air being drawn off by an electrically operated fan in each lavatory, and discharging above the roof of the building.

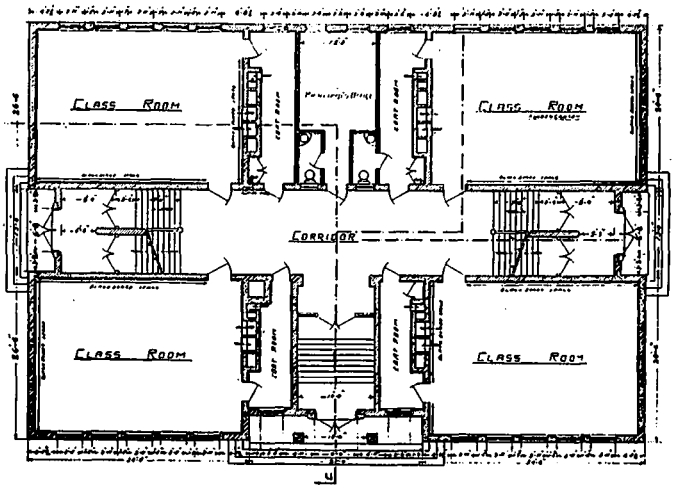
The plumbing and drainage system is very complete, all closets and urinals being individual sections divided by slate partitions, and each individual section ventilated.

Fire protection is provided by a large stand pipe extending from the basement, with flush cabinets containing valves, and hose racks on each floor and in basement.

The building is electrically lighted, and has a complete system of call bells, fire alarm system, etc.



BASEMENT PLAN, GALT PUBLIC SCHOOL.



FIRST FLOOR PLAN, GALT PUBLIC SCHOOL.

THE AMERICAN VANDAL

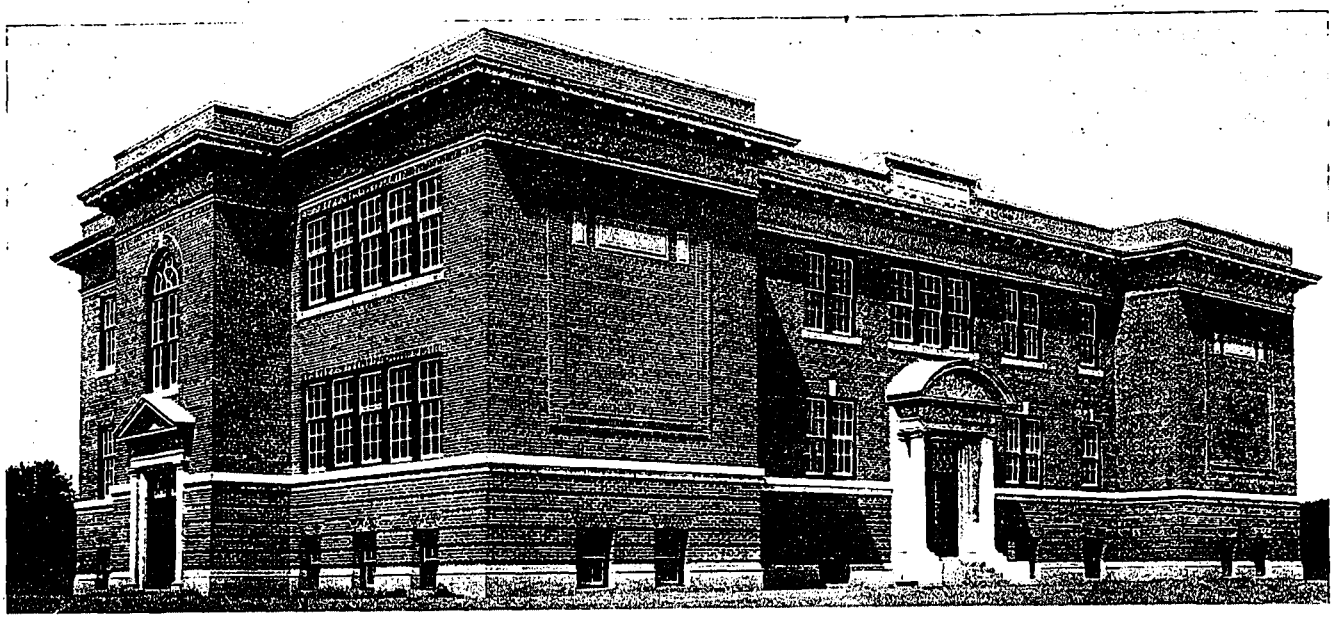
The other day we walked by a particularly attractive suburban residence. The house was good and the broad lawn showed both taste and care. Like a pretty little girl in a becoming Sunday school dress, with her hair curled, the premises made you think pleasantly that somebody's affection was centred upon it. It was so attractive that we turned into the cross street in order to walk along that side of the grounds. A garage stood at the corner of the grounds abutting on an alley; and fairly in the mouth of the alley, unavoidably catching the eye of whoever passed down the cross street, lay a heap of junk and offal, evidently thrown out from the garage and the house. The alley itself looked as though it might lead to a pigsty.

That is strictly typical. The alley, of course, did not belong to the householder, and he did not care a rap how it looked; so, with one hand he offered the passer-by a rose, while with the other he hit him in the eye with an old tin can.

Perhaps such negligence is due to the pioneer spirit, to which Nature was just something to be subdued, as quickly and untidily as possible, to human uses. But we have the habit of blaming everything disagreeable on the pioneer spirit, and the justification for it seems pretty well played out.

We do litter up the landscape abominably. It is a national habit that ought to be broken. Cities and towns should not only have ordinances forbidding unnecessary litter, but enforce them. Anywhere you will find a city spending a hundred thousand dollars or a million to make a beautiful park, and then tolerating all sorts of needless ugliness.

Any woman will tell you there is no use in wearing a fine dress along with a hat that has been fished out of a garbage can; for the dress simply emphasizes the hat. The more we spend on parks and front yards the less tolerable junk heaps and refuse-piled alleys become. What cities and towns are insisting upon reasonable sightliness?



NEW UNION SCHOOL AT BRIGHTON, ONTARIO. ELLIS & ELLIS, ARCHITECTS, TORONTO.

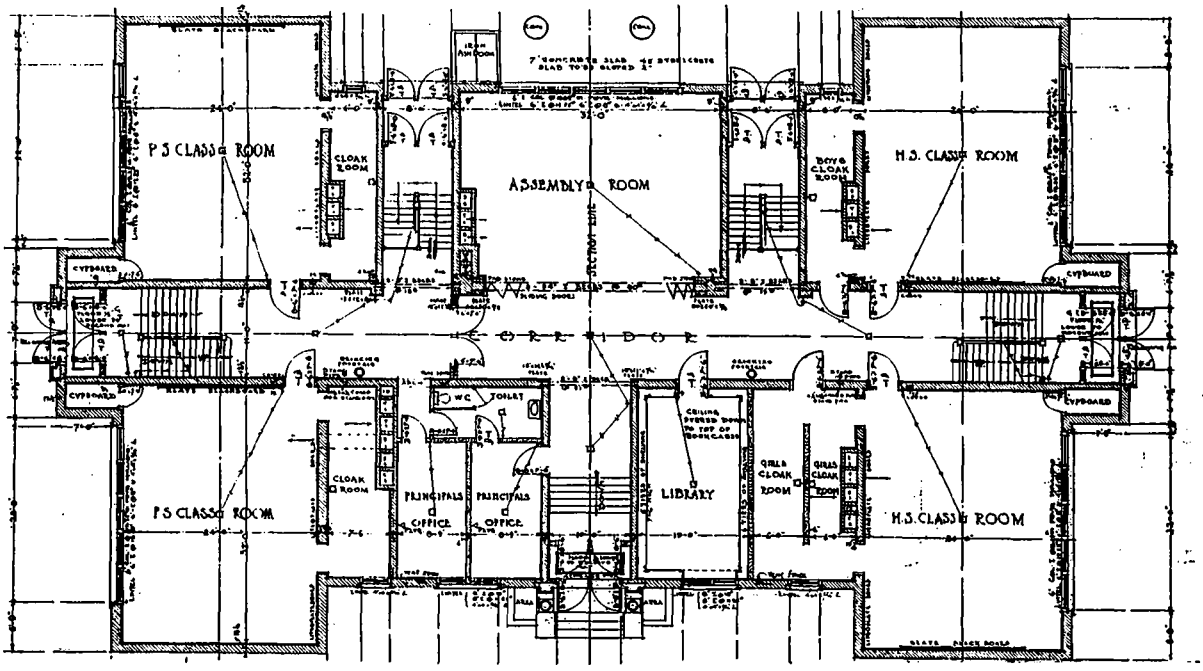
Union High and Public School Building

Unusual School at Brighton, Combining Class Rooms for Two Grades of Education.

WHEN the Board of Education at Brighton began to talk new school they found they could not finance the erection of two buildings, one for high school work and one for public school work, that would do credit to their town or site, which had been presented to the municipality for the purpose. Consequently, the architects were obliged to design an unusual school building to accommodate two grades of education.

The building erected is slow-burning construction. The basement walls are built of concrete, and the exterior walls above basement are hollow tile, faced with a rough textured red brick laid up in white mortar. The interior walls are hollow tile. Each class room is entirely surrounded with masonry, and is what is popularly called standard size. The cloak room systems are those adopted for public and high school work.

On the ground floor there are two class rooms devoted to public school, and two to high school. There are two principals' offices with a common toilet for their use only, a library with built-in



GROUND FLOOR PLAN, UNION SCHOOL BUILDING, BRIGHTON, ONT.

book cases for the high school; and a small auditorium which may be extended by sliding partitions to take in the large corridor, thus increasing the accommodation.

On the first floor there are four class rooms

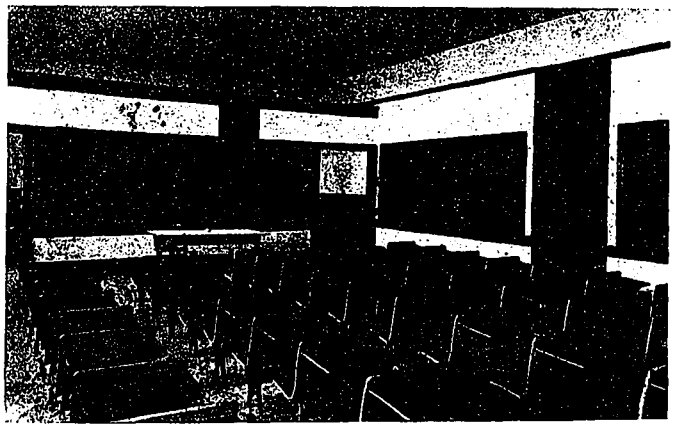
CHEMISTRY CLASS ROOM, BRIGHTON HIGH SCHOOL.

used for public school work, and two for high school, one of which is a science laboratory fully equipped, and an apparatus room in connection. Provision is made in science laboratory to carry off the fumes that escape from pupils' experiments, etc. On this floor also there is a roomy teachers' rest room, with a private toilet off same.

Every class room throughout has a large closet for teacher and class supplies.

In the basement there are four play rooms, one for each sex in both high and public school departments. Situated conveniently to each of these rooms are the various toilet rooms, two for each school. Each toilet room has the requisite number of plumbing fixtures. There are two storage rooms and a janitor's room.

From the play grounds at the grade there is an entrance to each play room in basement. Also on this floor is situated the boiler room and coal vault opposite same. These rooms are made as fireproof as it is possible to make them.



CLASS ROOM IN BRIGHTON PUBLIC SCHOOL.

The school is heated by steam with sufficient radiation to heat each class room to seventy degrees at ten degrees below zero and the ventilation is forced by means of a fan and motor. The fresh air is pulled through the indirect vento coils, thereby heated to the temperature of the class rooms.

SCHOOL BOARD INVESTIGATIONS

In both Toronto and London investigations are being held into the manner and cost of the operation of the school building departments.

In London the architect for one of the schools under construction is charged with accepting a commission of five per cent. on a certain contract. In Toronto the charges are more general, but it has been shown that employees in the building department have been undertaking outside contracts while drawing salary from the Board of Education.

That public education costs Toronto's citizens three million dollars a year, which is about $6 per head, or $30 per family, is the estimate of the Bureau of Municipal Research. Current expenditure, including debt charges and repairs, was $717,905 for the public schools in 1905, and $2,439,094 in 1914. The increase in expenditure on collegiate institutes was from $91,013 in 1905 to $370,518 in 1914. During the same period the increase in cost of technical education was from $42,847 to $199,481. The total on all types of schools, including commercial, increased from $851,767 to $3,058,042.

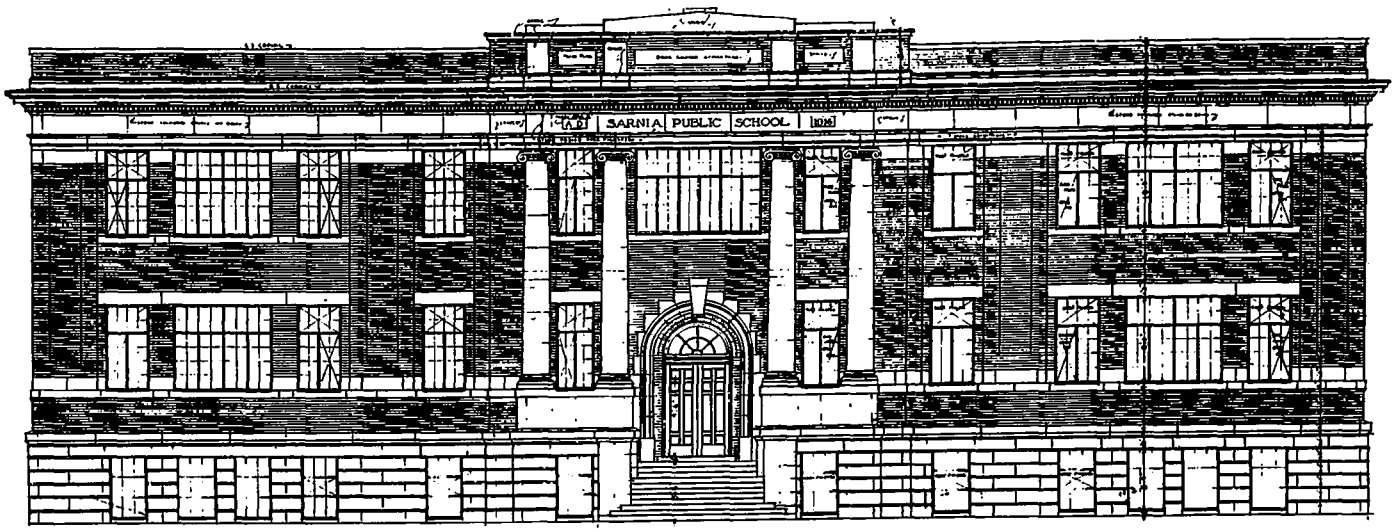
The building account shows the most striking increase in proportion to population. In 1905 it was $138,680, and the population 238,642. Population increases were steady to 470,144 in 1914, but the building account outstripped them, reaching $2,573,178 in 1914. The cost per pupil, based on average attendance, increased from $29.37 in 1905 to $51.84 in 1914, the included debt charge per pupil increasing in the same period from $3.52 to $8.89.

During 1915 and 1916 building activity has decreased, but the new Administration Building and the High School of Commerce, illustrated in this issue of CONSTRUCTION, have been completed, while the large new Park School, nearing completion, has been the subject of much discussion because of its cost.

The adoption of the policy of limiting school buildings to two stories will require larger school grounds, and increase building costs. So, if population continues to increase, expenditures for new schools are not likely to show a decrease.

The time is opportune, however, for the introduction of economies in administration, as well as a careful scrutiny of building costs. Public money can be put to more patriotic use than paying two salaries to political favorites.

To provide Galt with more workingmen's homes, which are badly needed, the Board of Trade has appointed a committee to go ahead with the organization of the Galt Housing Association, under the Ontario Housing Act.



NEW PUBLIC SCHOOL BUILDING, SARNIA, ONTARIO. S. B. COON & SON, ARCHITECTS, TORONTO.

Sarnia's New Public School Building

Auditorium Formed by Opening Corridor Into Kindergarten Room on First Floor.

By S. B. Coon & Son, Architects, Toronto, Ontario.

BOUNDED on the three sides by streets and beautiful shade trees, this new school building is situated near the heart of the town on a level lot.

Structurally, the building is of stone, brick and tile. The basement or ground floor is constructed of Queenston limestone; the first and second stories of red pressed brick, trimmed with Indiana limestone, metal cornice and stone coping.

The main entrance faces the south, while the entrances for the pupils are at each end.

The ground floor is finished, lighted and ventilated in a similar manner to the upper floors. It contains domestic science rooms, industrial training rooms, boys' and girls' play rooms or lunch rooms, which have hardwood floors; boiler room and store rooms have dustproof concrete floors, and the lavatories have terrazzo floors.

The toilet fixtures throughout are of the most sanitary design procurable, in vitreous china.

The first floor contains four class rooms, principal's and teachers' rooms, and a primary room with a large solarium bay, and immense sliding doors to the rotunda, which forms, with the primary room, an auditorium with a seating capacity of four hundred.

The second floor contains six class rooms and a library. Special study has been given to the plan in order to distinctly separate each cloak room from the adjoining class room by a solid partition from floor to ceiling, and lighting, heating and ventilating cloak rooms separately.

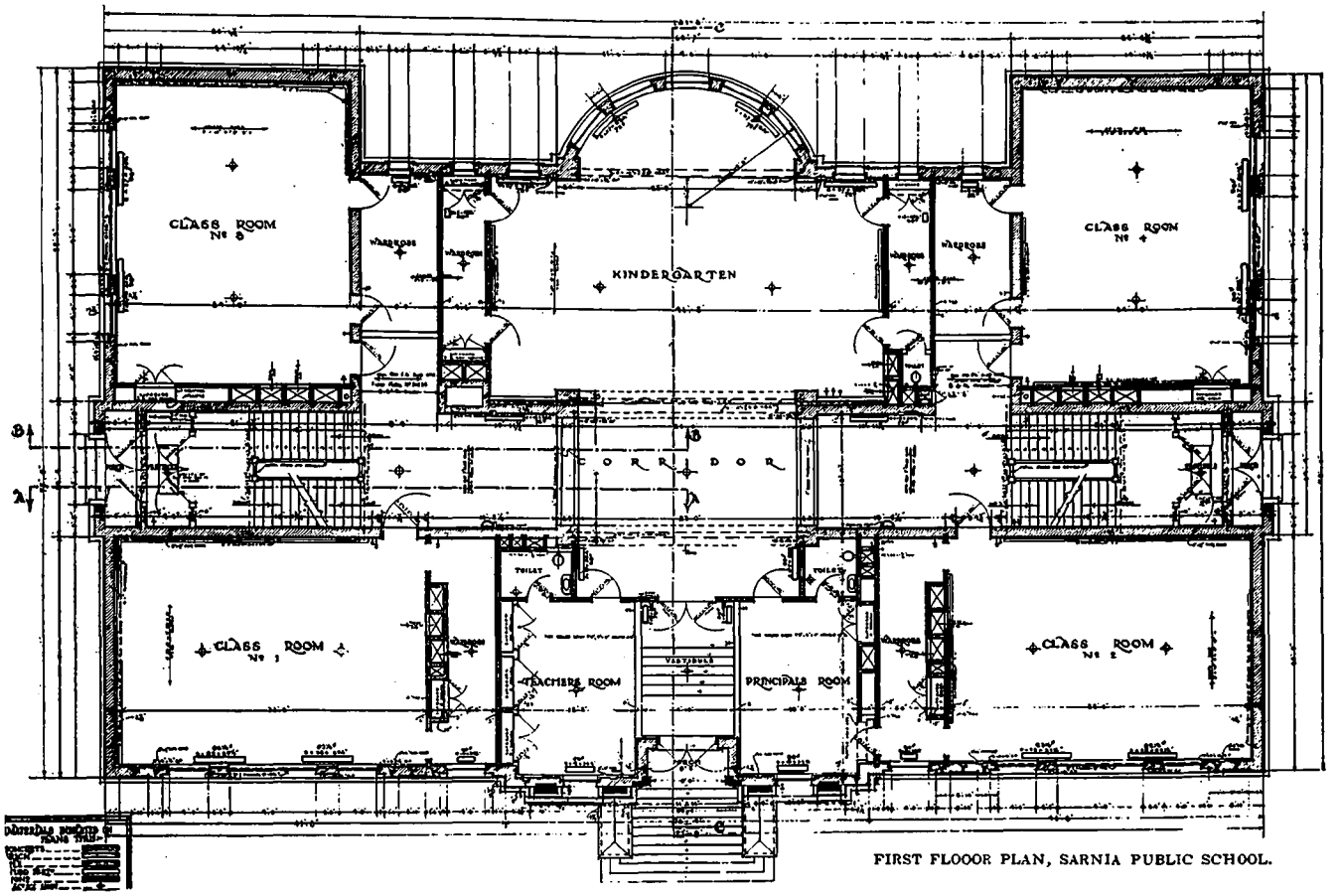
The floors of all corridors are finished in terrazzo on reinforced concrete, and the stairs are steel with noiseless mastic treads, thus making the exit from all three floors entirely fireproof. The corridors are as well lighted as the class rooms, by large steel casements, which are used in all windows.

The heating is effected by means of direct steam radiators, hospital pattern, with smooth-finished round tops, wide hubs, and high legs. Ventilation is by means of the plenum system, by an electrically driven fan.

AUTOMOBILE SERVICE STATIONS

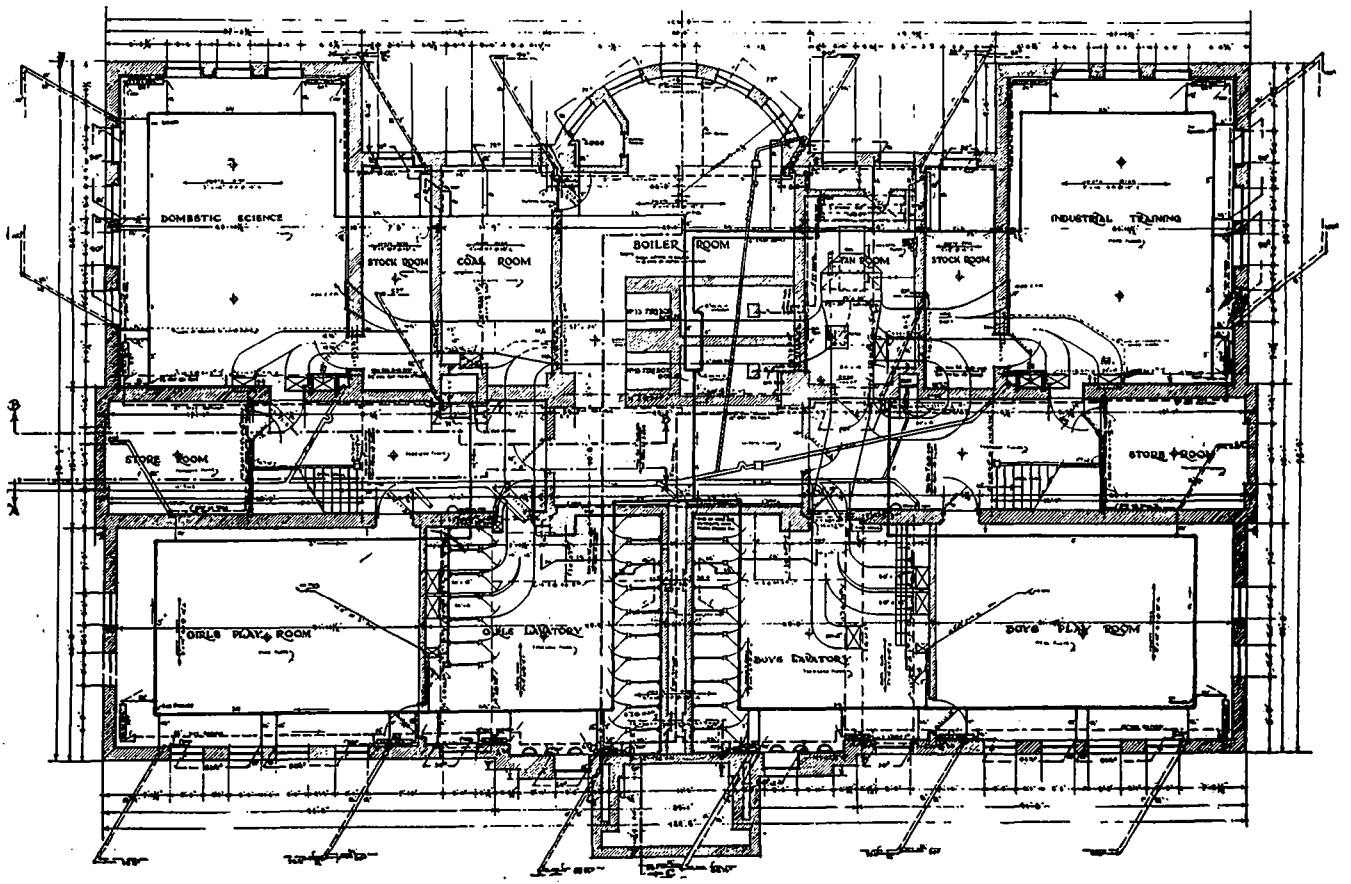
A recent issue of "National Petroleum News" published some interesting pictures of automobile service stations constructed of hollow building tile. Beautiful effects were shown to have been attained in both cases illustrated, and in describing the structures, the "News" stated that oil companies should take into consideration, in planning and building service stations, that the style of architecture employed plays an important part. Further, that with the present high prices of building materials prevailing, hollow tile, brick and stucco constitute as cheap a structure as any that can be designed. The great advantage of this combination of materials is that it lends itself easily to an attractive and harmonious style of architecture which may be determined by local conditions, making its use pre-eminently suited for service stations.

The first of the illustrations shown was that



FIRST FLOOR PLAN, SARNIA PUBLIC SCHOOL.

of a station at Houston, Tex., which is constructed of hollow tile covered with stucco and brick, and which is roofed with a red Spanish tile. The structure is very beautifully set off by a grove of oaks, in which it is placed. The second illustration is that of a service station in Cleveland, Ohio, which was designed to be attractive in the midst of winter's snowy background, and also when set off with flowers and shrubbery.



BASEMENT PLAN, SARNIA PUBLIC SCHOOL.

Manitoba University Architectural Education

Four Year University Course and an Evening Class in Design. Examples of Some Students' Work.

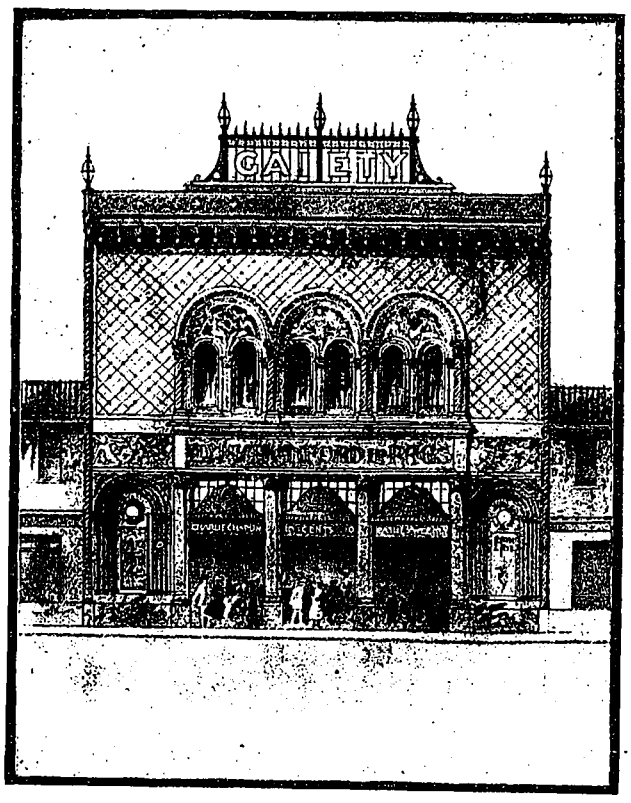
IN 1913, at the instance of the Manitoba Association of Architects, the University of Manitoba created a chair in architecture and established a Department of Architecture. Arthur A. Stoughton, a graduate of the Columbia University School of Architecture, and a pupil of the Ecole des Beaux Arts, in Paris, who had been in professional practice for many years, was called to take charge of it.

He proceeded to arrange a complete four years' course, similar in scope to that of first rate schools in Canada and the United States, which leads to the degree of Bachelor of Architecture. He has carried it on during this period, administering the principal architectural subjects and the design himself. Teaching and practical work in all the usual subjects of construction, design, theory, history, ornament, and the like, are supplemented by a growing equipment of books, plates, documents, drawings, slides, casts, models and samples.

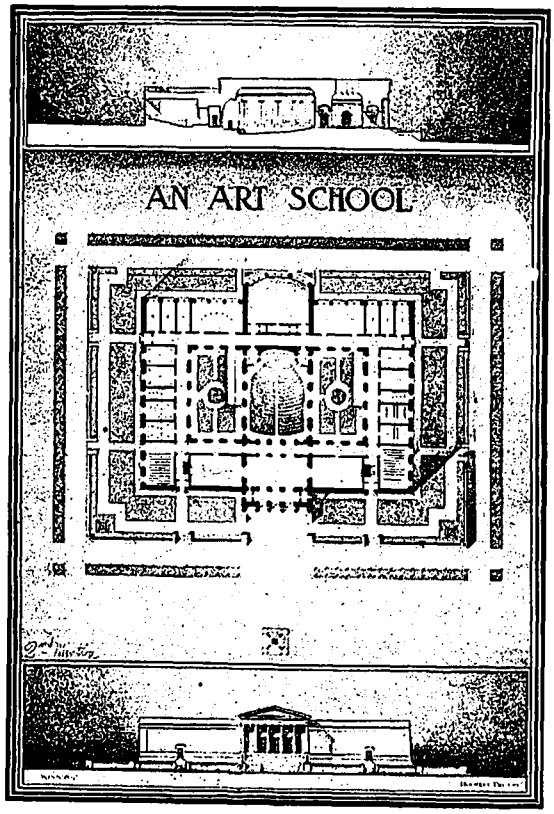
Besides the regular university courses, there has been carried on an evening class in design for draftsmen.

The department is at last properly housed with ample space and increasingly adequate equipment. The removal of a large part of the University work to the old Court House, remodeled, is a specially happy event for architecture, owing to the marked contrast between the former cramped and dark quarters in the attic of the terrace and the present accommodation by which a sufficient number of high and airy rooms of generous size are put at its disposal. Space and suitable surroundings are a great incentive to study and work and the members of the department react strongly to the stimulus. The effect of the physical change has been very beneficial.

Wall and other space being available, a number of drawings by students of the Columbia School of Architecture and other plates have been framed and hung. A number of casts have been bought giving examples of architectural detail and ornament in various styles, by which the actual character and handling of carving in different periods may be closely studied. The collection of books, plates and photographs is growing rapidly, and the increasing magazine files present a wealth of illustration of current work. The library, lecture room and drafting room are now fitted in a most complete way with suitable tables, bookcases, blackboards, shelves and racks, so that books and plates may be classified and casts and illustrations displayed. Even the hall, now well lighted, makes an excellent exhibition room and the whole suite of rooms has a distinctly attractive aspect.



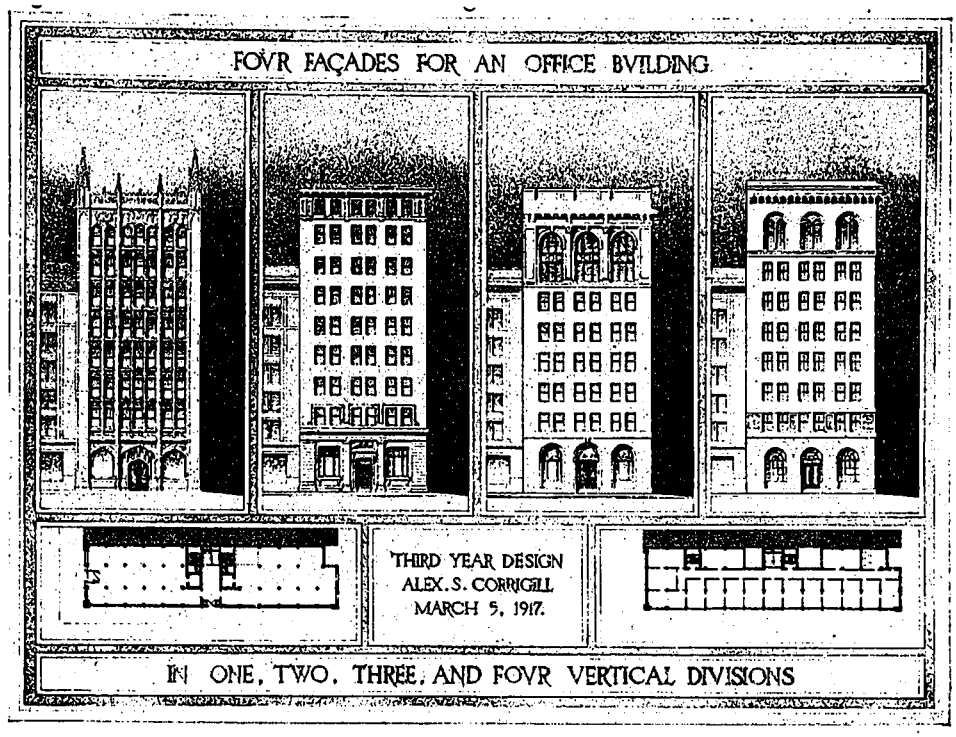
A MOVING PICTURE THEATRE.



AN ART MUSEUM IN A LARGE CITY.

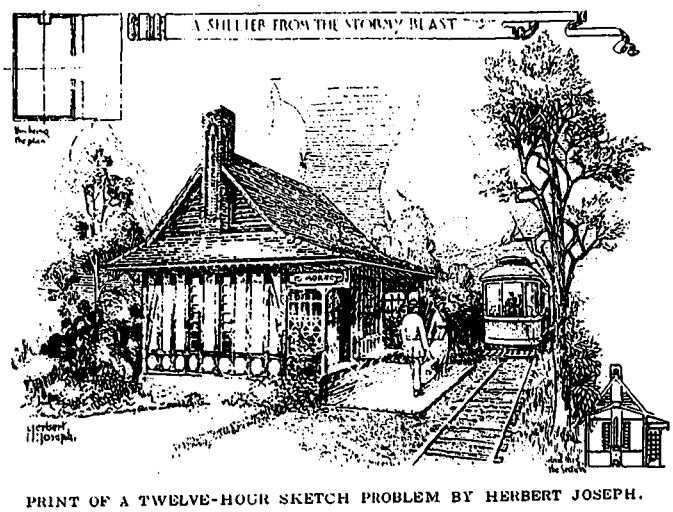
The important things are, however, the industry and enthusiasm of the students and work which is being done. The time table claims nearly all the hours of the day until five and some whole Saturdays, and many evenings are also spent by the men in the department, completing drawings they are interested in, or in study and examination of the very considerable collection of architectural material in the department library.

This material forms a basis for the courses in Elements, History, and Theory of Architecture, in the History of Ornament and in Design which form the main part of the distinctly architectural training. Civilization in all ages has written its story and left its record in monuments of the past. It is a fascinating pursuit to spell out the sentences of this world's history in the changing features and details of the architectural periods. It is only through a grasp of the rationale, origins and development of the elements of architectural design that we can get a proper point of view and secure the key to the solution of the present-day architectural problems. For architecture to be a vital art, then or now, it is necessary that it should answer to all practical requirements; should have constructive soundness and charm of form, and be the reflection of the needs and aspirations of the people. Lines of origin and development of forms and ornament are therefore described; principles of composition are elucidated and the significance of all these is made clear by reference to the photographs, plates and pages of the periodicals. At the same time the artistic possibilities of the various materials used in the structure and decoration and their craftsmanship as affecting their form as well as their harmonious combinations are carefully considered historically and for present-day use.



Good architecture must be based on sound construction however, and a large place is therefore given to mathematics, the sciences, the properties and use of steel and wood, stone and concrete, and other materials used in building, and their technical and practical application for architectural purposes. The methods of embodying these requirements in drawing and specifications are also treated. The subjects of heating and ventilation, plumbing and drainage, electric lighting, acoustics, specifications, building construction and office practice are taken up in special courses.

Good sound construction and architectural design are thus made central in the training of the architect. Design is a many-sided work and it is pursued in a variety of forms. Gathering up its materials from past periods through a development as long as the ages, and receiving its inspiration from the art instinct of mankind, architecture addresses itself to the splendid effort of creating structures of beauty, perfectly fulfilling their purpose and answering to present requirements. In other words, it seeks to solve all the practical problems in buildings which shall have the added charm of fine proportions: well related masses, and well chosen materials; suitable details and proper embellishments. There is a wide range of subjects and an embarrassment of choice in covering the field in the time at the disposal of the students.



PRINT OF A TWELVE-HOUR SKETCH PROBLEM BY HERBERT JOSEPH.

There are public and government buildings; semi-public, as libraries, theatres, churches, schools and institutions. There are office buildings, stores and factories; there are houses, large and small; there are single buildings and group plans and town-planning schemes; there are the landscape treatment of grounds and the architectural embellishment of cities, such as monuments, bridges and park structures. There is the design of mass and detail, and of ornament and interior decoration. There is the creation of effects in material, texture and color. Most important of all, there is the execution of one's ideas in the actual materials of the finished building. Thus, finally, the creation of the imagination becomes real and objective and the plan and the exterior and interior effect, including the surroundings without and the furnishings within, present a complete and harmonious composition.

Some illustration of the scope and variety of the work in design and drawing is given on these pages. The larger cuts show original compositions, with shadows accurately cast, tendered in India ink washes. The office building problem called for four variations on one theme—several compositions and styles adapted to the same plan, involving a study of mass and detail. Other programmes during the year have been a monument, a small private house, an art museum in a large city, and the staircase and central rooms of a federal building. The study and presentation of each of these in the way shown cover a period of four or five weeks. From time to time a whole Saturday is devoted to a twelve-hour design of some small structure or decorative composition, rendered in pencil or pen and ink. The evening class in design for men who are occupied in offices during the day, has continued its work during the year.

Summer work is required in the form of time spent in an office or on a building operation, out-of-door sketching in pencil or water color, drawing from the cast, or a report on a study of some subject or book related to the course. A number of sketch problems also will probably be worked out. The men of the department who are in service are urged to "keep their hands in" by making sketches wherever they may be and, where it is not impossible, even doing sketch problems in design of subjects suggested by the department.

CANADIAN BUILDING WOODS

The Forest Products Laboratories of Canada, established at Montreal by the Department of the Interior, in co-operation with McGill University, have undertaken an investigation of the woods of the different species of trees in Canada, so that reliable and authoritative information may be available as to the strength, durability, and other qualities of Canadian woods and their adaptability for use in structural work and manufactures of various kinds. Such investigations have only begun at the Canadian Laboratories, and the only Canadian species in regard to which fairly complete information has been obtained is Douglas fir, but as there is a special interest at the present time in regard to structural timbers, particularly in a comparison between Canadian and foreign timbers, it has been considered advisable to issue a preliminary study on structural timbers, using the information now available from many sources, and particularly the results of investigations made at the laboratory of the Forest Service of the United States. This preliminary report, entitled "Canadian Woods for Structural Timbers," is now being distributed by the Department of the Interior as Bulletin No. 59. It will be found that Canadian timbers rank high for structural purposes. The results of an exhaustive series of mechanical and physical tests of Douglas fir made at the Forest Products Laboratories of Canada are now in course of publication, and similar tests of other important Canadian woods are in progress, the results of which will be published as soon as they are available.

A DISCOVERY IN OLD BUILDINGS

A new type of prehistoric building—the pueblo constructed in the open and unattached to cliffs—has been discovered in the Mesa Verde National Park of the United States in Colorado by J. Walter Fewkes of the Smithsonian Institution. In announcing the discovery, the Institution estimated that the specimen unearthed, resembling in most particulars the terraced community building of the cliff dwellers, might date back six centuries. The pueblo is in the Mummy Lake group, and Dr. Fewkes believes there are many scores of similar structures near. It contains forty domiciliary rooms and four circular, ceremonial kivas on the two floors resurrected, and there are evidences that originally a third story topped the structure.

An old octagonal brick chimney 125 ft. high and 12 ft. in diameter at the base, belonging to the Solvay Process Co., Detroit, was so badly weathered that a large quantity of mortar had fallen out of the joints, and much of the brick was eaten away to a maximum depth of several inches. The chimney was repaired at a cost of about $1,500 by thoroughly cleaning the exterior surface, removing the loose mortar and soft brick, and enclosing it with No. 28 A-1 triangular mesh furred out 1 in. from the original surface of the brick. The metal fabric was then enclosed in a solid mass of concrete with a minimum thickness of 2 in. beyond the original surface that was shot into place with a pressure of about 50 lb. per square inch.

Development of Vacuum Steam Heating

By A. J. Dickey, Toronto.

HEATING of this form is truly a twentieth century development. Like other of the engineering sciences, the development in heating has taken place under the pressure of necessity. Our present day sky-scraper would have no place in the affairs of men were it not for the development of the science of structural engineering that has provided the steel skeletons. The change in the character of our buildings due to the advent of steel, has brought with it development in every other line, and one of great importance to the architect is "Heating."

In the early days of steam heating and small office buildings, the radiators were formed by a continuation of steam pipes direct from the boiler and back again, without valves for regulating the amount of heat. The heat to be emitted to the room was regulated by covering or uncovering the hot steam pipes to meet the requirements. By degrees the one pipe steam system was evolved with its single pipe connection to conduct the steam to the radiators, and the water of condensation away by the same route. In one respect at least, the original system had an advantage over this one pipe system, in that over-heating was dispensed with through the partial covering of the radiators or steam coils; the one pipe system requiring to be turned "on" or "off" entirely. Both the early and later type system were susceptible to troubles from air in radiators and knocking in pipes and requiring keen manipulation to get rid of either.

The next development was the two pipe steam system, with one pipe supplying steam to the radiator and another one carrying away the condensation. This system answered the requirements very well, at least satisfied the demand at that early time, until tall buildings became a necessity.

The death knell of the one and two pipe plain gravity systems was sounded with the erection of the first tall office building. It was apparent that some means besides the pressure of the steam must be provided to facilitate anything like an even distribution of steam through the radiator. As a result, a mechanical means of drawing on, or creating a "pull" on the returns from the system was provided. It proved a big improvement, but as new buildings increased in size, it became strongly apparent that some means must be provided to intercept the flow of steam from the radiators into the return piping system, and do it automatically, without obstructing the free exit of air and water of condensation.

The extraordinary need for a satisfactory radiator trap for vacuum heating has brought many different types in different stages of perfection onto the market, but experience has pretty well established the superiority of the thermostatic type trap, because of its automatic operation over such a wide range of pressures within the heating system.

There are some architects that cling to the old type one or two pipe systems of heating, either because they secure exceptional results or they are not posted on the results to be gained from vacuum steam heating; we might add also, vapor heating.

Vacuum heating is the name applied to that form of steam heating which provides a system of steam piping for conducting steam at one-half to one pound pressure to the radiators, and a distinct system of return piping for carrying the air and water away from the radiators, with some mechanical means provided for the extraction of the air and water of condensation from the return piping system.

A vacuum pump, either steam driven or electrically driven, is the mechanical means provided for the extraction of the air and water and to create the pull on the return line system.

It is quite obvious that if all the points in the steam supply system that collect air and water were connected direct to the return piping system without some device to prohibit the passing of steam, then the steam will leak past steam main drip, and from radiators into the return piping system, and will expand in its gaseous form to dispel the "pull" of the vacuum pump, with the result that the mechanical means provided would do no useful work.

It is quite as obvious then, that if on the end of each and every radiator and every steam main drip a steam trap is imposed that automatically passes air and water of condensation under varying pressure conditions, and at the same time prohibits the passage of steam, then under such conditions, the vacuum pump does do useful work by creating a "pull" on the returns of the heating system which extend to each and every steam trap and with the obvious result that there is a positive "differential" in pressure between the steam supply to a radiator and the return from it.

This means positive circulation with immediate response on opening of the control valve on the radiator.

In view of the importance attachel to the functions of the steam traps in vacuum heating, it is fitting that mention be made of some of the features necessary, yes, even vital, to the suc-

cessful vacuum system, and that should continue so year after year.

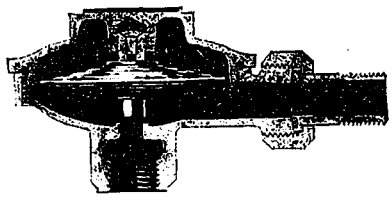
For illustration, the writer will refer to a radiator trap and compare it with what we might impose as an ideally perfect trap.

Major functions: 1st—Pass air; 2nd—Pass water; 3rd—Close for steam.

These major functions must be performed continuously and under varying conditions of steam pressures.

In addition, it must be a trap of certain minor functions:

1. Simple in construction.
2. Free of loose or sliding parts to avoid sticking and thus interrupted operation.
3. It must not clog up.
4. It must not get out of order.
5. It must have long life.



The cut here illustrates a section of a radiator trap, and represents the interior arrangement with the heart of the trap, the corrugated hollow, diaphragm disc, permanently fastened into the cover, but suspended directly over the discharge opening of the trap.

This trap is known as the Hollow Disc Thermostatic type. The corrugated disc member is charged with a combination of volatile fluids and the disc hermetically sealed under predetermined correct condition. The fluids thus sealed never can lose their power of expansion or contraction under varying temperature conditions.

The disc in each trap should be carefully adjusted to perform the three major functions—pass air, pass water, and close for steam. The volatile fluids used, together with the hollow corrugated disc construction, provide that these major functions are performed over the range of pressure from 15 inches vacuum up to 10 lbs. steam pressure.

Dealing with the minor functions:

It is apparent that nothing could be more simple. Air and water has a direct passage from radiator to return pipe. Disc member is susceptible to temperature conditions in the radiator and responds to them.

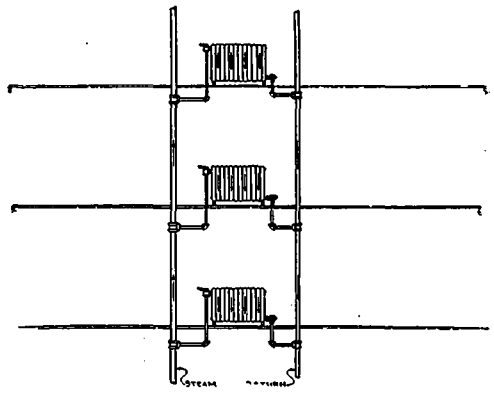
It is free of any loose working parts; there are no sliding contacts to collect grease and dirt.

It is very unlikely to clog up because of the very large opening through the trap and the clearance between the valve and its seat.

Since the perfection of the vacuum trap, a newer and larger field has opened up in vacuum heating and vapor heating. Numerous vacuum systems operate on a vacuum condition *in the radiators* instead of steam pressure. All objections formerly caused by air-binding, water hammering, poor circulation, have been removed, and economies of startling figures have time and again been produced.

Any large or small industrial plant should have vacuum heating, it is the proven method in which heat can be circulated to each radiating unit, and, further, such a system lends itself to plant extensions readily.

Large buildings, groups of buildings and office buildings, where exhaust steam is available, should by all means have vacuum heating, with the other up-to-date devices for controlling temperature and humidity automatically.



The drawing shown here will serve to forcibly impress the value of traps on vapor heating system in smaller office buildings, schools, hospitals, residences, etc., if the following is kept in mind.

The radiator connections should be made with supply at the top of hot water type radiators. The reason is plain when you consider that air is heavier than steam and will naturally settle to bottom of radiator, permitting of an even, free circulation in the radiator.

As the lower radiators in the system fill entirely with steam, the trap closes and no steam, consequently no pressure is built up in the return piping system, and only a small pressure is necessary on the supply piping system to effect circulation, as each radiator trap on the system, in its turn, will close when the radiator it is connected to is full of steam.

This is simply the natural following of nature's laws and, after all, our tasks are always easier when we take advantage of nature's assistance instead of working against the laws.

The adherence to this principle in the case of the vacuum system in the Woolworth Building, New York City, the highest building in the world, was responsible for complete circulation through all radiators with about four ounces pressure on the feed mains in sub-basement. This test was made before the vacuum pumps were started up.

It is obvious that there are great possibilities for vapor heating in buildings that do not require the vacuum system. The vital difference is the absence of a vacuum pump in a vapor system, in which case the air from the system is vented to atmosphere from the return system through open free vent, and water of condensation returns to the boilers by its own weight.

WAR'S EFFECT ON U. S. BUILDING

The *Architectural Forum,* commenting upon the entry of the United States into the world war, draws attention to the need for industrial building and proper housing for munition workers, and makes the following comment of equal interest to Canadian and United States architects:

"A good many architects have a tendency to fall in too readily with the condition we call business depression, and quietly wait for 'bad times' to become better, the meanwhile deploring the timidity of actual or prospective clients, yet doing nothing to influence opinion or improve matters. This attitude is in direct contrast to that which they should display. Architecture is a creative force, and architects should assume the role to which their profession entitles them. The architect is given the power to visualize, and this great advantage should be used in a constructive capacity. He should not be content to follow conditions as others make them, but by the very nature of his profession he should be a moulder of opinion and himself a maker of conditions.

"With the entry of the United States into the world war, it was only inevitable and natural that the architect would encounter timidity on the part of clients occasioned by uncertainty as to future happenings. This should not be a signal that building operations have come to an end or that the profession of architecture should go into retirement till peace has been declared and our daily routine restored to its normal, comfortable pace. It should be the opportunity for the architect to rise to the full height of his power and give constructive evidence of his ability.

"The inevitable expansion which will come through the enlarged sphere of this nation's influence will require much necessary private building, both commercial and residential. The architect may, however, well ask: What of that all-too-familiar individual, the man who needs to build, but feels he will be wiser to wait until conditions are more settled before he goes on with his building project. Conditions, after all, are largely what this man and a few hundred thousand like him are timid enough to make them. The very thing which they individually deplore is a creation and figment of their own collective weakness. The application of a little constructive psychology, directed and charged with sound judgment, forceful personality, and strong confidence, will go far to offset this temporary nervousness on the part of clients. Business as usual may be (as some English people found it) a damaging fallacy if used merely to inflate unwarranted optimism, but certainly any tendency toward the general suspension of business is a policy not only detrimental, but actually destructive, and hence unpatriotic.

"Let the architect exert all his power toward the strengthening of general confidence and against any tendencies which reflect unfounded timidity. Let him also, at this time of intense co-operation among all citizens of this nation, expect more from himself; let him see the part he may play in meeting present problems. Every American architect to-day should be conscious of his true relation to the industrial world, especially in the realm of the building trades, and should be fired with a convincing patriotic zeal to keep architectural activity alive through every means in his power, be his project large or small."

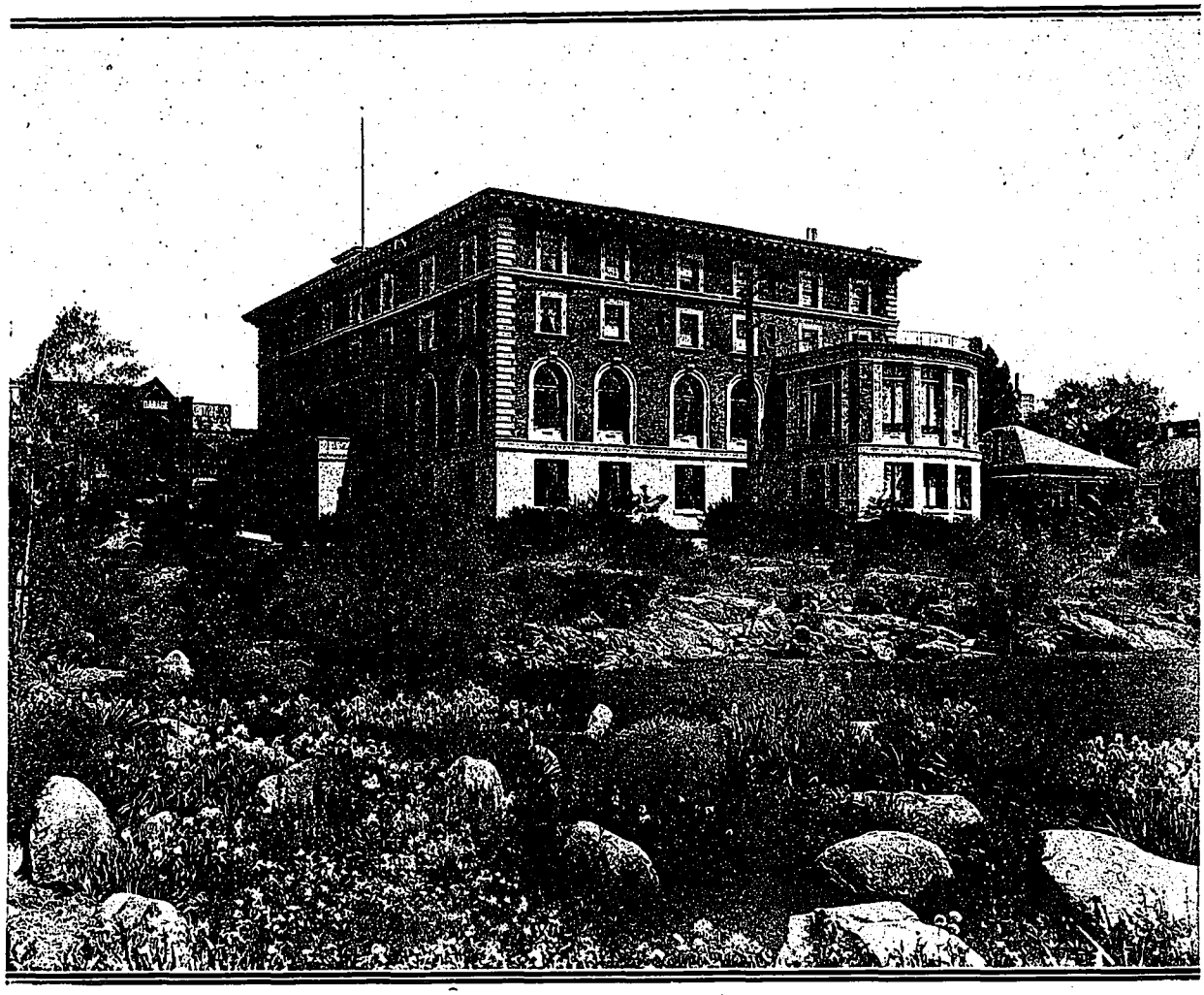
Doing nothing for others is the undoing of one's self. We must be purposely kind and generous, or we miss the best part of existence. The heart that goes out of itself gets large and full of joy. This is the great secret of the inner life. We do ourselves the most good doing something for others.—Horace Mann.

The formula for the successful business man is the same as for all earthly endeavors. Love your business and the work which you are here to perform; be endowed with an imagination that can build an ideal for you to work towards, and then be blest with a continuity of purpose that can and will make your dreams come true.

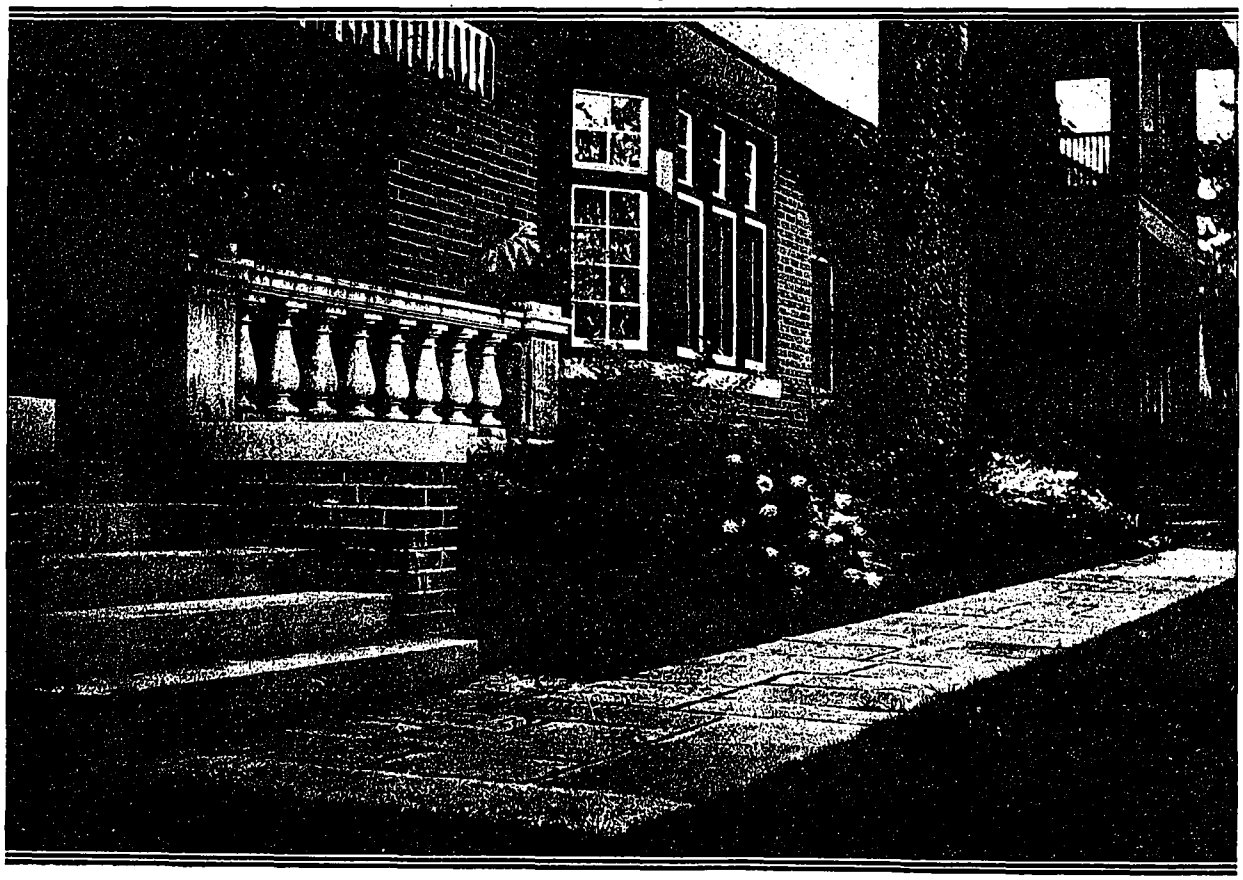
From the Court of Appeals of California we have a decision to the effect that where a building is completed pursuant to contract, an architect's certificate may not be rightfully refused, and the contractor may recover a balance due him without presenting it, in a case where the property owner has waived previous certificates from the architect.

The French Government has given a contract to Kennedy, Mitchell & Co., of New York and London, for rebuilding some of the devastated towns and villages. The arrangement has been carried out by the Bank of France and one of the first New York banks, and the contract is for $40,000,000. The present contract, which applies to the Argonne and the neighborhood of Verdun, is only the precursor of many others.

AUDITORIUM IN ABERDEEN SCHOOL, MONCTON, N.B.



UNION CLUB, VICTORIA, BRITISH COLUMBIA.



A GARDEN AT THE RESIDENCE OF MR. STUART STRATHY, TORONTO.

CONSTRUCTION

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

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Canada's Confederation Celebrated

The corner-stone of Canada's new Parliament Buildings was laid at Ottawa on July 2, the fiftieth anniversary of the birth of the Dominion.

In 1867 Canada comprised four provinces, embracing a narrow strip along the lower lakes and the St. Lawrence, with a limited frontage on the Atlantic. In 1917 there are nine provinces (besides a large unorganized territory), embracing half a continent, stretching from the Pacific to the Atlantic, and from the United States to the North Pole.

From an area of 540,000 square miles, and a population of 3,600,000, Canada has grown to 3,729,665 square miles, and about 7,600,000 population.

In 1867 immigration was small and sporadic. In 1913 it reached 402,000, and in 1914, 385,000. Canada, since 1900, has taken the place of the United States as the chief magnet for old-world immigration.

The total value of Canadian field crops rose from $195,000,000 in 1901 to $841,000,000 in 1915. The value of live stock is estimated at $800,000,000.

At Confederation there were 2,278 miles of railway in Canada, with an investment of $257,000,000. To-day there are 35,582 miles, involving a capital of $1,876,000,000.

The value of lumber products in 1871 was $34,156,483; at present it is about $175,000,000.

Imports in 1868 amounted to $68,500,000; in 1917, $845,300,000. Exports in 1868 were $45,500,000, as compared with $1,151,300,000 for 1917. Customs duties amounting to $8,800,000 were collected in 1868, compared with $147,600,000 for the fiscal year ending in 1917.

Thirty-five Canadian cities issued building permits totalling $38,783,994 in 1916, and $32,285,721 in 1915. Fifty-two Canadian cities issued building permits totalling $166,114,508 in 1913, and $94,807,577 in 1914.

Thrift in Building Costs

The high cost of many classes of building materials has raised a serious problem for architects and has prevented the erection of many buildings for which plans have been drawn and building funds arranged for.

An architect in an Ontario city, for instance, prepared plans for a residence for a client, but when the figures were secured from the contractors, the prospective builder found it impossible to go ahead, so much higher were the figures than his estimated cost. By substituting stucco board for brick, however, the costs were lowered and the building gone ahead with, instead of being indefinitely postponed.

While retaining the principle of using the highest quality of building materials, the present is a time when every worthy substitute which commends itself should be considered. Building costs are likely to remain high for several years, and anything which tends to lessen the cost will help to encourage a renewal of building activity.

Building Permits Show Increase

While permits in many Canadian cities are not so numerous as during the active spring months, both Toronto and Montreal showed a substantial increase for the six months ending June 30.

Toronto's figures for June, 1917, were $693,244, compared with $573,889 in June, 1916, and for the six months, $3,326,228, compared with $2,684,409, an increase of $641,919, for the first half of the year.

Montreal permits for the six months totalled $2,466,659, an increase of $32,315 over the total of $2,434,344 permits issued during the first half of 1916.

The figures for all Canadian cities are not available as yet, but as the large cities show an increase, and the Western Provinces are also "coming back" with increased building expenitures, there is every reason to feel that the figures for all Canada will show a gain, not only for the first half of 1917, but also for the whole year.

Recent Quebec Legislation Affects Builders

An Address by Andrew R. McMaster, K.C., Before the Montreal Builders' Exchange.

At the last session of the Legislature of the Province of Quebec, some very important changes were effected in the privileges accorded to workmen, suppliers of materials, builders, and architects, on the property of which the value has been increased by their work or materials. I will endeavor to sketch the new features of the law, wherein it differs or resembles the former enactments, and what procedure must now be followed in order to avail oneself of the advantages conferred.

To devise a satisfactory law of builders' privilege is not an easy task. There are several interests which may conflict—that of the workman, that of the supplier of materials, that of the builder, and that of the owner. The task is rendered more difficult by the attitude of many principal contractors and owners, who seem to regard the registration of privileges not merely as burdens placed on the properties in which they are interested, but as in very deed hostile acts warranting immediate reprisals by way of loss of contract or otherwise.

The supplier of materials and the sub-contractor is often between Scylla and Carybdis—fearful of losing his rights as a privileged creditor if he does not register and fearful of losing at least the good-will of the principal contractor, the architect, and the owner, if he does.

The new law, as did the old, gives to the workman, the supplier of materials, the builder, and the architect, a right of privilege over other creditors on the immoveable, but only to the extent to which their work and materials have enhanced its value.

NEW LAW CHANGES ORDER OF PRECEDENCE.

A change made affects the order of those entitled to the privilege. Under the old law the order of precedence was as follows: The laborer, the workman, the architect, the builder, the supplier of materials. Under the new, the laborer and workman are combined, the word "workmen" being used to designate "the artisan, the laborer, and generally everyone who makes his living by manual labor"; next comes the supplier of materials; next the builder, which term includes both contractor and sub-contractor; and last the architect.

The privilege of the workman exists for arrears up to twenty days, whether he was engaged by a proprietor putting up a building for himself, or by a contractor. No formality is necessary for the creation or preservation of this privilege, and it lasts until thirty days after the construction is ready for the use for which it is intended. Within this thirty days the workman must sue his debtor, who will usually be the contractor or a sub-contractor, and he must call the proprietor and the registrar into the case.

In order to protect the proprietor against this undisclosed hypothec or mortgage on his property, the law allows him to retain on the contract an amount sufficient to pay these privileged claims, and refuses to the builder the right to exact any payment on account of the contract price before furnishing to the proprietor a statement of all amounts due by him for labor and materials.

NEW LAW MORE CERTAIN.

The provisions of the new law differ somewhat widely from the old. Under it the workman did not have to register his privilege so long as the work was being proceeded with, but he had to give notice to the proprietor of the fact that he had not been paid, either in writing or verbally before a witness, when each payday came round. Then within thirty days from the time the building had become ready for the purpose for which it was intended, he had to register his claim.

The trouble was that, under the old law, the workman who availed himself of his rights and gave notice to the proprietor, was himself only too often the recipient of a notice to immediately quit his job. The new law, in restricting and limiting the privilege, has made it more certain.

The supplier of materials is given a privilege on the building in which the materials supplied to the owner or builder have been used or for the construction of which they have been specially prepared.

The privilege is created by the registration of a notice given to the creditor or his representative, and applies only to those furnished or specially prepared, but not delivered, for the immoveable in question. The law offers one striking novelty. It gives the supplier of materials a privilege for the price of materials specially prepared for a building, although they have not been delivered on the job or incorporated into the building. The law also grants to the unpaid supplier a right to revendicate, in case of the insolvency of owner or builder, the materials he has supplied, so long as they have not been incorporated in the building.

SUPPLIER OF MATERIALS HAS MORE RIGHTS.

The old law merely directed the supplier to advise the proprietor of the contracts made by him for the delivery of materials before they were delivered, mentioning their cost and the immoveable for which they were intended. Failure to give this notice lost the supplier his privilege. The old law further provided that, in order to meet the privileged claims of the supplier of materials, the proprietor was entitled to retain on the contract price an amount equal to that mentioned in the notices he had received. The supplier, to retain his privilege, must now sue his debtor within thirty days of the date at which the construction is ready for the purpose for which it was intended. Under the old law the supplier had to sue within three months of the giving of the notice to the proprietor if he desired to retain his privilege. This often brought about an absurd state of affairs, in that the delay for suit had often expired before the merchandise had been used, or even before all of it had been delivered.

In many cases—perhaps in most—the sub-contractor is also a supplier of materials. In such event he should conduct himself as such, giving what notices are required.

In the event of being merely a sub-contractor, to create this privilege he must advise the proprietor of the contract he has made with the principal contractor, and within thirty days after the end of the work he must register his claim and give notice to the proprietor. He only gets a privilege for the work he does subsequent to the notice that he has given the proprietor of his contract with the principal contractor. In other words the creation of his privilege is subjected to two conditions—first, a condition precedent the notice to the proprietor of the subs' contract with the principal contractor; second, a condition subsequent: the registration of a statement of his claim within the stated delay. Within six months after the end of the work a suit must be taken, or the privilege will become extinct.

The proprietor may retain, on the contract price, sufficient to meet the claims of the sub-contractor. Under the old law, the sub-contractor was obliged, in order to create his privilege, to advise the proprietor of his contract with the principal contractor within eight days of its signing, and, if he failed so to do, he lost his privilege. The new law is fairer and less rigorous.

THE BUILDER AND ARCHITECT'S CLAIM.

The builder or the architect's claim is created by the registration within thirty days after the end of the work of a statement of claim of which notice is given to the proprietor within the same delay.

As far as the workmen's claim is concerned, no notice or registration is necessary, but the workman must take a suit against the debtor within a delay of thirty days after the end of the work. In this suit the proprietor and the registrar must be brought in, the proprietor because his property is sought to be charged, the registrar so that he can make note of the suit in his books, and thus give warning of the existence of the privilege to anyone proposing to buy or lend money on the property. In order to obviate a multiplicity of suits for small sums the law provides that several workmen may join in one action.

In dealing with the procedure involved in this department of law, it will be noted that two basic requirements are laid down—notice to the proprietor of the immoveable and registration. The notice to the proprietor is to advise him of the rights which are being created against his property, the registration is to advise those desiring to deal with the owner concerning the property, or with the builder, of the situation.

Following out these principles, we have seen that the supplier of materials obtains his privilege only upon the registration of a notice which has been given to the proprietor, and applies only to those supplies furnished or specially prepared and not delivered, after the registration of such notice.

The privilege so created will become extinguished after thirty days after the end of the work, unless the supplier takes a suit meanwhile, into which he must call the proprietor and the registrar.

SUB-CONTRACTOR'S COURSE OF ACTION.

The sub-contractor to create his privilege must, as we have seen before, advise the proprietor of the contract he has made with the principal contractor. I believe it would be well to have this notification to the proprietor served by a bailiff, or, if the mails are used, sent certainly by registered letter. Registration, in the registry office, must follow within thirty days of the end of the work.

An amendment of article C.C. 2103 repeats some of the provisions already enacted, but conveniently and clearly sets forth the essential characteristics of the notice or memorial of the creditors' claim: (a) The claim must be drafted in the form of an affidavit of the creditor or his representative and sworn to before a justice of the peace, a commissioner of the superior court, or a notary; (b) it must contain the name, occupation and residence of the creditor; the nature and amount of the claim, and the cadastral number of the immoveable upon which the construction is being placed.

I consider that the following practice will meet fully the requirements of the law and also be found convenient:

That the claim be prepared in triplicate. That at the foot of the claim there be appended a notice to the proprietor, drawing his attention to the claim, and a further notice to the registrar, requiring its registration. Let the claim and notice be served on the proprietor by a bailiff, and then put before the registrar both the remaining documents, asking him to affix his certificate of registration to both. Then file with him the document which does not bear the bailiff's return or affidavit of service, and retain the one which does. The privileged creditor will thereupon have in his possession a copy of his claim bearing upon it satisfactory proof of its having both been served and registered.

CANCELLATION OF PRIVILEGE.

A further amendment which has been made, and which I believe will prove useful, is the following:

After the expiration of six months after the date of the registration of any privileged claim, or from that date to the end of the work, whichever be the latest, if no action has been taken to preserve it, any interested party may call upon the registrar to radiate the privilege by the following procedure:

The party interested prepares an application to the registrar demanding the cancellation on the ground that the six months from the end of the work or the registration of the claim, which ever be the latest, has expired; this application he supports by his affidavit. Then, in order that an opportunity be afforded to the privileged creditor to take such steps as he may deem necessary to protect himself, this application must be served on the privileged creditor or his representative eight days before it is filed with the registrar.

If a suit has been taken, the registrar is bound to radiate the registration, not only by direction of a judgment, which might go without saying, but also on production of a certificate from the prothonotary that the action has been discontinued.

RAPID DEVELOPMENT OF THE HIGH BUILDING.

In less than two decades the tall building in New York has doubled in height.

The highest building in the world used for office purposes in 1899 was the Park Row Building, opposite the New York City Post office. It is 382 feet high. The Woolworth Building, since erected, on the opposite side of Broadway, is 792 feet high.

CONSTRUCTION NEWS

Information of Special Interest to Architects, Contractors, and Manufacturers. Construction Building Reports will Give You Up-to-date Information Every Day on all New Buildings About to be Erected or in Course of Erection.

BUSINESS BUILDINGS.

Chatham, Ont.—The Canadian Bank of Commerce, Toronto, contemplates alterations to their bank, at the corner of Sixth and King streets.

Hamilton, Ont.—The Bell Telephone Company, Hamilton, are erecting an exchange building at the corner of Garfield and Dunsmuir streets, to cost $30,000, and have awarded the following contracts: mason, brick work, concrete and terra cotta, H. Yates, 24 Leeming street; steel, Hamilton Bridge Works Company, Limited; carpenter, John Poag & Company, Westinghouse avenue; roofing, J. E. Riddell, 12 Ferguson avenue north; plastering, Hannaford Brothers, 232 Robinson street; plumbing and heating, Alexander McKenzie, 164 Wentworth street; iron stair, Canada Wire & Iron Goods Company, 182 King William street; painting and glazing, Goodale & Laidlaw, 20 Hunter street east; steel door and metal sash, A. Mathews, Limited, 256 Adelaide street west, Toronto; terrazzo, Italian Mosaic & Tile Company, 429 Spadina avenue, Toronto; W. J. Carmichael, Montreal, is the architect.

Niagara Falls, Ont.—The Canadian Bank of Commerce, Toronto, Ont., are erecting a bank building at Niagara Falls, and have awarded the plumbing contract to Sheppard & Abbott, 78 Harbord street, Toronto.

London, Ont.—The Bell Telephone Company, Montreal, are erecting a telephone building, and have awarded the following contracts: general contract, Pounder Brothers, Stratford, Ont.; heating and plumbing, Boxall & Mathie, Lindsay, Ont.; W. J. Marmichael, Montreal, is the architect, and I. J. McNab, Construction Department, Bell Telephone Building, Toronto, is the superintendent of construction.

Toronto, Ont.—The Canadian Housen Van Winkle Company, Morrow avenue, are erecting an office building, garage and residence at the corner of Morrow and Silver avenues, to cost $10,000, and their architect, F. S. Mallory, 65 Adelaide street east, has awarded the following contracts: steel, Hepburn & Disher, 18 Van Horne avenue; stone work, George Webb, 448 Summerhill avenue; brick and hollow tile, Don Valley Brick Works, Dominion Bank Building. The Bankers' Bond Company, Limited, 20 Victoria street, contemplates the erection of an office building on Bay street, to cost $20,000.

CIVIL ENGINEERING.

Ottawa, Ont.—A. E. Farley and J. H. Murphy, Banque Nationale Building, Ottawa, have been awarded the general contracts for the erection of a bridge for the County of Carlton.

Sandwich, West, Ont.—Ernest Renaud, Township of Sandwich, has been awarded the general contract for the erection of four bridges for the Township of Sandwich.

Toronto, Ont.—The Canadian Pacific Railway Company will erect a reinforced concrete viaduct over the Reservoir ravine, to cost $200,000.

CLUBS, HOSPITALS, THEATRES AND HOTELS.

Byron, Ont.—Architects Watt & Blackwell, Bank of Toronto Building, London, Ont., are preparing plans for a nurses' home for the Byron Sanatorium, to cost $25,000.

Hamilton, Ont.—Plans have been prepared for a theatre for MacKay Brothers, 104 Lister Building, to cost $20,000.

London, Ont.—The Hospital Commission of London, Ont., contemplates the erection of a soldiers' hospital, to cost $300,000. The Queen Alexandra Sanatorium contemplates the erection of a nurses' home.

Petrolia, Ont.—Architect J. M. Moore, 418 Richmond street, London, Ont., is preparing plans for a maternity hospital for the hospital trustees of Petrolia, to cost $10,000.

Toronto, Ont.—Architects Chapman & McGiffin, 95 King street east, have prepared plans for clubrooms for E. & R. Wood, Royal Bank Building, to cost $5,000.

FIRE LOSSES.

Bruce Mines, Ont.—The Post and Customs Offices and several general stores were destroyed by fire; loss $150,000.

Lanark, Ont.—The woollen mills of the Caldwell, Boyd & Company, Limited, were destroyed by fire; loss $150,000.

Langford, Ont.—The storage building of the Standard Chemical Company was destroyed by fire.

Montreal, Que.—A large storing warehouse of William Rutherford Lumber Company was destroyed by fire; loss $40,000.

Proton, Ont.—The barn and implement house of William Wright, 8th Concession, Proton, was destroyed by fire.

Regina, Sask.—The plant of the North Star Drilling Company, Regina, was destroyed by fire; loss $18,000. The plant of the Regina Storage and Forwarding Company was destroyed by fire; loss $27,000.

Sorel, Que.—The offices of the Canadian Steamships, Metropolitan Insurance Company, Sorel Newspaper Company, Bell Telephone Company, and the Dominion Government, at Sorel, were destroyed by fire.

Sterling, Ont.—The factory of the Sterling Cheese Box and Veneering Company was destroyed by fire.

St. Jacques L'Archigan, Que.—The parish church at St. Jacques L'Archigan was damaged by fire to the extent of $50,000.

Thamesville, Ont.—The grain elevators of J. B. Stringer & Company and T. M. Syers & Son were destroyed by fire; loss $20,000.

Victoria, B.C.—The lumber mills of the Cameron Lumber Company were destroyed by fire; loss $100,000.

MISCELLANEOUS.

Belleville, Ont.—The City of Belleville contemplates the erection of bath houses at Victoria Park, to cost $5,000.

Blenheim, Ont.—The Pere Marquette Railway contemplates the construction of a reservoir.

Coniston, Ont.—Engineer W. L. Dethloff, Coniston, is preparing plans for a dry house for the Mond Nickel Company, Limited, Coniston, to cost $30,000.

Leamington, Ont.—Joseph Simpson, Talbot road, Rawleigh Township, contemplates the erection of a large barn.

London, Ont.—The London-Petrolia Barrel Company, London, are having plans prepared for a storage building and dry kiln of reinforced concrete; to cost $10,000.

London, Ont.—Beatty Brothers, London, Ont., are erecting a foundry and cupola building on York street, to cost $50,000, and their architect, Wm. G. Murray, Dominion Savings Building, has awarded the following contracts: general contract, John Putherbough, 1006 Wellington street; sheet metal, Fleming & Houghtby, 246 Talbot street, painting and glazing, George Howe, 427 Adelaide street.

Ottawa, Ont.—Thomas A. Stitt, Wellington street, will erect a garage on Wellington street, to cost $5,000.

Toronto, Ont.—The Imperial Munition Board, Imperial Life Building, will erect a garage on Dupont street, to cost $12,000, and their architect, J. B. Carswell, Imperial Munition Board, has awarded the general contract to the Dickie Construction Company, Ryrie Building.

Toronto, Ont.—Engineers Harkness & Oxley, Confederation Life Building, have prepared plans for a machine shop for John Inglis, 14 Strachan avenue, to cost $45,000. The Polson Iron Works, Toronto, will erect a boiler shop at the foot of Sherbourne street, to cost $60,000, and have awarded the general contract to McGregor & McIntyre, 1139 Shaw street, Toronto. The Consumers' Gas Company, 18 Toronto street, are erecting a booster house at Front and Parliament streets, to cost $10,000, and their architects, Burke, Horwood & White, Ryrie Building, have awarded the following contracts: concrete, Crescent Concrete Company, Temple Building, Toronto; roofing, G. Duthie & Son, 30 Widmer street, Toronto.

Toronto, Ont.—The Swift Canadian Company, St. Clair avenue, are erecting a fertilizer plant, stock pens and dressing rooms on St. Clair avenue, to cost $40,000, and have awarded the following contracts: roofing and waterproofing, Carmichael Waterproofing Company, 267 Delaware avenue, Toronto; plumbing, Sheppard & Abbott, 78 Harbord street; steel sash, Trussed Concrete Steel Company of Canada, Limited, 34 King street west, Toronto; the John V. Gray Construction Company, Confederation Life Building, are the general contractors. The Swift Canadian Company, St. Clair avenue, are erecting a cooler building on St. Clair avenue, to cost $150,000, and have awarded the general contract to Archibald & Holmes, Excelsior Life Building, Toronto.

Windsor, Ont.—Architect A. H. McPhail, Board of Trade Building, is preparing plans for an addition to a garage for the City of Windsor, on Pitt street east, to cost $17,000.

Windsor, Ont.—W. C. Kennedy, Chatham street west, Windsor, is erecting an auto service station at the corner of Chatham and Pelissier streets, to cost $46,000, and their general contractors, R. Westcott & Company, Chamber of Commerce Building, have awarded the electric wiring contract to McNaughton-McKay Company, Wyandotte street east; G. Jacques, Hydor Building, is the architect.

PLANTS, FACTORIES AND WAREHOUSES.

Bridgeburg, Ont.—The Genesee Pure Food Company, LeRoy, New York, will erect a factory at Bridgeburg, Ont., and have awarded the general contract to Alexander Shumway Utz & Company, Rochester, New York.

Chatham, Ont.—The Public Utilities Commission contemplates the erection of a cold storage plant.

Ford, Ont.—The Chalmers Motor Car Company, Detroit, will erect a factory on St. Lukes road, to cost $250,000.

Hamilton, Ont.—The Canadian Cotton Mills Company, McNab street, are erecting an addition to their factory on McNab street, to cost $60,000, and their architects, McPhie & Kelly, Bank of Hamilton Building, have awarded the following contracts: general contractor, G. E. Mills, 614 King street east; steel sash, A. B. Ormsby Company, Limited, 48 Abell street, Toronto, Ont.

Hamilton, Ont.—The Canadian Cotton Mills Company, MacNab street, are erecting an addition to their factory on MacNab street north, to cost $60,000, and their architects, McPhie & Kelly, Bank of Hamilton Building, have awarded the general contract to G. E. Mills, 614 King street east. The Canadian Westinghouse Company, Hamilton, are erecting a factory and office building on Langford avenue north, to cost $200,000, and have awarded the following contracts: plastering, Hannaford Brothers, 232 Robinson street; elevators, Otis-Fensom Company, 50 Bay street, Toronto; heating, Adam Clark, 7 Main street west; Prack & Perrine, Lumsden Building, Toronto, are the architects.

Harrow, Ont.—The Quality Canners, Limited, Harrow, are

erecting a factory, to cost $35,000, and have awarded the mason contract to J. A. Secord, Harrow, Ont.

Kitchener, Ont.—The W. E. Woelfle Shoe Company, 127 Walnut street, are erecting an addition to their factory on Walnut street, to cost $8,000, and their architect, Charles Cowan, Victoria street, has awarded the following contracts: general contract, mason, carpenter work, concrete, plastering and roofing, H. Dunker & Son, Kitchener; plumbing, sheet metal and steel, Wm. Knell & Company.

London, Ont.—E. Leonard & Sons, York street, architects and owners, have prepared plans for an addition to their factory on York street, to cost $10,000, and have awarded the general contract to Harry Hayman, 491 Ontario street.

Montreal, Que.—The Canadian Cordage Company are erecting a warehouse on St. Patrick street, to cost $40,000, and have awarded the general contract to L. E. Dowling, 167 Yonge street, Toronto, Ont.

Niagara Falls, Ont.—The Herbert Morris Crane & Hoist Company, 79 Peter street, Toronto, are erecting a factory on Stanley street, to cost $80,000, and their engineers, Harkness & Oxley, Confederation Life Building, Toronto, have awarded the steel work contract to the Dominion Bridge Works, Toronto.

Saskatoon, Sask.—The Sawyer-Massey Company, Saskatoon, will erect a warehouse on First avenue north, and have awarded the general contract to James Priel, Saskatoon.

South Vancouver, B.C.—The Harvey Creosoting & Lumber Mills Company, South Vancouver, will erect a large electric plant, to cost $30,000.

Toronto, Ont.—The Willards Chocolate Company, Limited, 260 Spadina avenue, are erecting a factory on Wellington street west, and the general contractors, S. L. Yolles and Harry Rotenberg, 67 Baldwin street, have sub-let the following contracts: mason, Witchall & Son, 156 St. Helen's avenue; carpenter, Geo. L. Robinson, 107 Armstrong avenue; metal sash, A. B. Ormsby Company, Limited, 48 Abell street.

Toronto, Ont.—Roberts Brothers, 241 Dovercourt road, architects and general contractors, have prepared plans for a factory for W. J. Keens, 68 Spadina road, to cost $100,000, and have awarded the stone work contract to the Peerless Artificial Stone, Limited, Coxwell avenue. The B. F. Johnson Soap Company, 155 George street, are erecting a factory at the corner of Carlaw and Natalie streets, to cost $100,000, and their architects, Prack and Perrine, Lumsden Building, have awarded the mason and concrete contracts to John E. Russell, 30 Logan avenue, and P. H. Navin.

Toronto, Ont.—The Canadian General Electric Company, King and Simcoe streets, Toronto, are erecting a warehouse at the corner of King and Simcoe streets, to cost $100,000, and their architects, Burke, Horwood & White, Ryrie Building, have awarded the following contracts: mason, Holtby Brothers, Heppburne street; carpenter, George Sparling, 759 Dufferin street; roofing, A. Mathews, Limited, 255 Adelaide street west; steel sash, Steel & Radiation, Limited, Fraser avenue; painting, F. C. Davies, 218 Montrose avenue; plumbing, heating and sprinklers, Bennett & Wright, 72 Queen street east; plastering, R. C. Dancy, 153 Spadina road; elevators, Otis-Fensom Elevator Company, 59 Bay street.

PUBLIC BUILDINGS AND STATIONS.

London, Ont.—The Canadian Pacific Railway Company are preparing plans for rebuilding their station on Richmond street, at the cost of $15,000; M. Williams is the local superintendent.

Ottawa, Ont.—The Public Library Board of the City of Ottawa contemplates the erection of a branch library, to cost $15,000.

Sudbury, Ont.—The town of Sudbury has purchased a site at the corner of Elm and Lorne streets for the erection of a library building, to cost $15,000.

RESIDENCES, STORES AND FLATS.

Barrie, Ont.—A. L. McKinnon, Barrie, is erecting a residence on Bayfield street, to cost $5,000, and has awarded the following contracts: plastering, mason and carpenter, W. D. Minnikin; concrete, T. W. Tooke, Barrie.

Brantford, Ont.—The Soldiers' Aid Society, of Brantford, contemplates the erection of a permanent home for the returned soldiers.

Ford, Ont.—Architects G. Jacques & Company, Hydro Building, Windsor, are preparing plans for a bungalow for C. T. Montreuil, Ford, Ont., to cost $8,000.

Hamilton, Ont.—The Crafton & Company, James street north, are erecting a department store on James street north, to cost $100,000, and their architect, G. J. Hutton, Bank of Hamilton Building, has awarded the following contracts: electric work, J. Dynes, 28 Avalon place; sprinkler system, Adam Clark, 7 Main street east; tile and marble, Kent, Garvin & Company, Catharine street. Architect F. W. Warren, Bank of Hamilton Building, has prepared plans for a residence for Henry Dunham, Cannon street east, on Main street east, to cost $5,000.

Hamilton, Ont.—Dr. O. W. Neimer, 412 Barton street east, is erecting a residence on Sherman avenue north, to cost $12,000, and his architect, G. J. Hutton, Bank of Hamilton Building, has awarded the following contracts: sheet metal and roofing, Dennis & Jocelyn, 13 Walnut street; electric wiring, J. Dynes, 20 Avalon place; painting and glazing, P. Thompson, 13 Walnut street north. Dr. Stewart, Beach street, is erecting a residence at the corner of Proctor and Main streets, to cost $7,000, and his contractor, John Poag & Company, Westinghouse avenue, has sub-let the following contracts: plastering, Hill Brothers, 307 Emerald street north; electric wiring, J. Dynes, 20 Avalon place. Architects Scott & Wardell, Sun Life Building, are preparing plans for a residence for the Pattison estate, on the corner of Park and King streets, to cost $15,000. J. W. Gathercole, 439 King street west, will erect an apartment house on King street west, to cost $11,000, and has awarded the following contracts: general contract, G. E. Gaylord, 54 Lamoreaux street; carpenter, Mr. Wyer, Chatham street.

London, Ont.—Mr. P. Gray, 198 York street, will erect a residence on York street, to cost $6,000, and has awarded the general contract to Harry Hayman, 490 Ontario street.

Monteith, Ont.—The Provincial Department of Public Works, Parliament Buildings, Toronto, Ont., will erect a men's residence at Monteith, to cost $26,000, and has awarded the general contract to Jeffrey & Stevens, North Bay.

Ottawa, Ont.—The Brown Estate are erecting an apartment house on Laurier avenue, to cost $49,000, and their architects, Richards & Abra, 126 Sparks street, have awarded the following contracts: carpenter, A. Richards & Company, Ottawa; marble and tile, A. K. Mills & Son, 191 Sparks street; plastering, Murphy & Morrow, Billings avenue; painting and glazing, Ritchie & Nunn, 280 Sunnyside avenue; electric wiring, J. E. S. Lewis, Ottawa; plumbing and heating, W. G. Edge, Booth Building.

Ottawa, Ont.—Leon Petergorsky, 351 Chapel street, is erecting an apartment house at Ottawa, to cost $25,000, and has awarded the following contracts: electric wiring, Marchand & Donneley, 128½ Sparks street; heating and plumbing, Coldrey & Chapman, 330 Rideau street. Major McKeen, Ottawa, is erecting a residence on Buena Vista road, to cost $11,000, and his architects, Millison & Burgess, Union Bank Building, have awarded the following contracts: plastering, Murphy & Morrow, Billings avenue; painting and glazing, G. T. Greene, 792 Bank street; heating and plumbing, Coldrey & Chapman, 330 Rideau street. James & Kent, Castle Building, have commenced work on alterations to an apartment house for Dr. J. F. Argue, 1390 O'Connor street, to cost $16,200; Taylor & Horwood, Castle Building, are the architects.

Ottawa, Ont.—G. D. Findlayson, 479 Slater street, is erecting a residence on Carling avenue, to cost $10,000, and has awarded the following contracts: general contract, G. A. Crain, 285 Clenow avenue; plastering, Frank Hunt, 115 Arlington street; painting and glazing, Ritchie & Nunn, 280 Sunnyside avenue; heating and plumbing, Hallaway & Son, 373 Somerset avenue. The general contractors, Taylor & Lockey, 23 First avenue, are excavating for an apartment house for the Brown Estate, on Laurier avenue north, to cost $49,000; Richards & Abra, 126 Sparks street, are the architects. W. G. Smith, 465 Somerset street, is erecting an apartment house on Somerset street, to cost $11,000, and has awarded the following contracts: general contract, N. Hollister, 512 Bay street; plastering, Murphy & Morrow, 498 Cooper street; painting and glazing, A. J. Moore, 80 Flora street; electric wiring, Stanley Lewis, 817 Lyon street; heating and plumbing, J. T. Blyth, Frank street. George Crain, 285 Clenow avenue, general contractor and owner, is erecting an apartment house on Nepean street, to cost $18,000, and has awarded the following contracts: plastering, Murphy & Morrow, Ottawa; painting and glazing, G. H. Higman & Son, 176 Rideau street; heating and plumbing, J. T. Blyth, Frank street.

Renfrew, Ont.—T. A. Low, Renfrew, Ont., is erecting a residence at the corner of Stewart and Bruce streets, to cost $10,000, and their architect, W. E. Noffke, Central Chambers, Ottawa, has awarded the plumbing and heating contract to W. A. Derry, Patrick street, Renfrew.

Toronto, Ont.—Plans have been prepared for a residence for C. Gardner, 3 Northcliffe avenue, to cost $5,000. Architect W. Bredin Galbraith, Excelsior Life Building, is preparing plans for a residence to be erected on the west bank of the Humber river, south of Bloor street, to cost $5,800. Architect P. H. Finney, 79 Adelaide street east, is preparing plans for an apartment house for himself on Roncesvalles avenue, to cost $25,000. Robert Brothers, 241 Dovercourt road, are erecting an apartment house at the corner of Roxton and Arthur streets, to cost $60,000, and have awarded the electric wiring contract to George Armstrong, 1217 College street.

Toronto, Ont.—W. H. Cawthra, 60 Forest Hill road, is making an addition and alteration to his residence, at the cost of $11,000, and his architects, Eden Smith & Sons, 33 Scott street, have awarded the following contracts: mason, T. & A. G. Ham, 83 Salem avenue; roofing, G. M. Bryan, 503 Yonge street; carpenter, Robinson & Wilson, 34 Alcina avenue; plastering, W. H. Little, 62 Tranby avenue; painting, F. G. Roberts & Company, 106 Wells street; wiring, R. A. L. Gray & Company, 85 York street; plumbing, Fiddes & Hogarth, 122 King street east; heating, Jos. Morrison, 8 St. Mary street; hardware, Canada Hardware Company, Limited, 39 Richmond street east.

Toronto, Ont.—T. J. Medland, 130 King street east, will erect a residence on Keele street, to cost $18,000, and his architect, J. A. McKenzie, Lumsden Building, has awarded the following contracts: mason, Wm. Edwards, 337 Rusholme road; carpenter, John Lambert, 312 Westmoreland avenue; plastering, Taylor & Nesbitt, 18 Havelock street; plumbing, McNaughton & McKenzie, 1029 Shaw street; painting and glazing, F. G. Roberts Company, 106 Wells street; electric wiring, W. H. Douglass, Toronto. Architects Ellis & Ellis, Manning Chambers, are preparing plans for a residence for C. M. Hall, 245 Glendonwynne road, on Glendonwynne road, to cost $7,000. The Standard Reliance Mortgage Company, 84 King street east, will erect two pairs of residences on Maughan crescent, to cost $10,000. Architects Wickson & Gregg, Kent Building, are preparing plans for an alteration to the residence of Sir J. C. Eaton, Davenport road, to cost $5,000. Jas. McKenzie, 53 Lyndhurst avenue, has had plans prepared for a residence on Lyndhurst, to cost $5,000.

Windsor, Ont.—Jos. Major, 640 Peter street, has commenced work on a duplex residence on Pelissier street, for W. Turner, 91 Oak street, to cost $5,500. B. Mechanic, 102 Mercer street, has commenced work on a store and flat building, on Windsor avenue, for H. Croll, 107 Glengary street, to cost $5,000.

SCHOOLS, CHURCHES AND COLLEGES.

Agincourt, Ont.—The Anglican Church of Agincourt contemplates the erection of a church. Robert Oakley is the trustee.

Hamilton, Ont.—The Ruthenian Church, Gray street, are erecting a church on Gray street, to cost $16,000, and has awarded the general contract to R. A. Nicholson, 47 Dundurn street north.

Hamilton, Ont.—The Board of Education, City Hall, is erecting an eight-room school on Beach road, to cost $70,000, and has awarded the following contracts: mason and concrete, W. H. Cooper, Clyde Block; carpenter, George F. Smith, 20 Carrick avenue; sheet metal and roofing, Dennis & Jocelyn, 13 Walnut street; steel, Canada Wire & Iron Goods Company, King William street; plastering, Hannaford Brothers, 232 Robinson street; painting and glazing, Dobson & Company, 121 Victoria

avenue; electric wiring, Culley & Breay, 35 King street west; heating and plumbing, Adam Clark, 7 Main street; tile work, Kent, Garvin & Company, 20 Catherine street north; Stewart & Witton are the architects.

London, Ont.—The City of London contemplates the erection of a vocational school in connection with the Bryon Sanatorium.

Ottawa, Ont.—The Public School Board of Ottawa is erecting an addition to Bolton Street School, and has awarded the general contract to A. I. Garvock, 136 Lewis street; W. B. Garvock, Superintendent of Buildings, Creighton Street School, is the architect.

Ottawa, Ont.—Architects Millison & Burgess, Union Bank Building, are preparing plans for a presbytery for the St. Thomas Aquinas Parish, Billings Bridge, to cost $7,000. Architects Millison & Burgess, Union Bank Building, are preparing plans for a presbytery for the Blessed Sacrament Church, Fourth avenue, to cost $10,000.

Schumacher, Ont.—The Public School Board of Schumacher is erecting a school, to cost $18,000, and has awarded the general contract to Hill, Clark, Francis, Limited, Timmins, Ont.; J. P. MacLaren, 104 Sparks street, Ottawa, is the architect.

Stratford, Ont.—The Central Methodist Church are erecting an addition to their church and Sunday-school, to cost $17,000, and their architect, A. G. Garner, Box 232, Stratford, has awarded the following contracts: general contract, A. G. Everett, 51 Chestnut street; steel, Stratford Bridge & Iron Company, Erie street; plumbing, J. R. Myers & Son, 99 Ontario street; plastering, W. Soeder, 210 Huron street.

Toronto, Ont.—Architect H. F. Secord, 2 College street, has prepared plans for an addition to the Royal College of Dental Surgeons, College street, to cost $25,000.

Toronto, Ont.—The Separate School Board, 67 Bond street, are erecting a school at the corner of Roncesvalles and Westminster avenues, to cost $20,000, and their architect, C. J. Read, Confederation Life Building, has awarded the following contracts: mason, John McGlue, 285 Sherbourne street; concrete, Queen City Concrete Paving Company, 179 Broadview avenue; steel, Reid & Brown, 63 Esplanade street east; carpenter, Madden Brothers, 552 Adelaide street west; painting and glazing, M. J. Phelan, 133 Queen street east; plastering, Taylor & Nesbitt, 18 Havelock street; sheet metal and roofing, H. W. Pask, 49 Concord avenue; electric wiring, Canada Electric Co., 183 Church street; heating, plumbing and gas fitting, T. Regan, Toronto.

Trenton, Ont.—Architects S. A. Coon & Son, Excelsior Life Building, Toronto, are preparing plans for an addition of four rooms to Dufferin Avenue School, for the Public School Board of Trenton, Ont., to cost $30,000.

Yarmouth Township, Ont.—The general contractors, Horton Brothers, St. Thomas street, have commenced work on a church for the Anglican Church, to cost $5,500; E. Horton, 84 Myrtle street, St. Thomas, is the architect.

Yarmouth Township, Ont.—The Anglican Church, Synod of Huron, are erecting a church, to cost $5,500, and their architect, E. Horton, 84 Myrtle street, St. Thomas, has awarded the following contracts: general contract, Horton Brothers, St. Thomas, Ont.; heating and sheet metal, W. H. Bradley, 66 Ross street; electric wiring, Roberts & Sandham, 521 Talbot street; carpenter, D. F. Shafter & Company, 131 Curtis street; painting, Jos. Newbury.

Windsor, Ont.—The Holy Trinity Church contemplates the erection of a church on Hall street, to cost $25,000; A. H. McPhail, Board of Trade Building, is the architect.

CONTRACTS BETWEEN ARCHITECTS AND CLIENTS.

The statement has frequently been made that fewer than ten per cent. of the agreements under which architects render professional services are expressed in writing. Such a condition, if it exists, is not only one of danger, but it seems to indicate lax business methods. Certain it is that cases in which architects have undertaken important work on mere verbal orders are numerous, and not infrequently the resulting misunderstanding has occasioned loss to one party or the other. A number of these in which there appeared serious disagreements have been submitted to the courts for adjudication. A case decided in February of this year by the Supreme Court of Minnesota only illustrates again the unwisdom of trusting to memory or the ability to establish the terms of an agreement without a written document. In this instance the owner admitted that he had employed the architect to make sketches for the structure, but denied that he had entered into a definite arrangement with him to make working plans and specifications and to superintend the construction of the building. The architect, on the other hand, claimed that he was regularly employed to render complete architectural services, and entered suit on that basis. In deciding against the architect the court held that when it is understood between the parties that the entire agreement is to be put in writing, the fact that it was never written out and executed is strong presumption of no contract at all; that the writing of the contract is a condition precedent to its completion.

It seems to be a usual practice for the average architect to enter into a mere verbal agreement with an owner to prepare sketches and procure preliminary estimates for a building. At a subsequent interview, perhaps, he will agree to proceed to another stage and prepare working drawings and specifications, and procure actual estimates. At a later time the owner may possibly instruct him to let contracts and supervise the work. When the work is finally completed, or even if the operation is halted at any one of the successive stages, it is frequently difficult to establish the basis upon which the work has been done. In fact, it is this loose and haphazard method of agreement between architect and owner that leads to a majority of the misunderstandings and resulting suits at law by which architects endeavor to secure compensation for services rendered. A definite understanding and written agreement before any work is undertaken, with supplemental modifications, additions, or revisions mutually agreed upon as occasion arises, would prevent these disputes or render their determination comparatively simple and inexpensive. It is to be hoped that architects will soon come to a realization of this fact in the interest not only of their own incomes, but as a measure that will result in better feeling on the part of the public, and a higher regard in general for the architect's business ability.—The American Architect.

CONTRACTORS and SUB-CONTRACTORS

As Supplied by The Architects of Buildings Featured in This Issue

Administration Building, Board of Education, Toronto.

Ash Hoists, W. D. Beath & Son.
Boilers, Jenckes Machine Co.
Brick, Exterior, Don Valley Brick Works.
Brick, Fancy, Don Valley Brick Works.
Brick, H. N. Dancy & Son.
Carpentering Work, F. Armstrong.
Carpets and Rugs, T. Eaton Co.
Casements, Trussed Concrete Steel Co.
Chimneys, Dominion Bridge Co.
Doors, Batts, Limited.
Electric Contractor, A. R. Rice & Co.
Electric Fixtures, McDonald & Willson.
Elevators, Otis-Fensom Co.
Expanded Metal, Pedlar People.
Fire Doors, W. E. Dillon Company.
Fire Escapes, Canadian Ornamental Iron Co.
Flooring, Terrazzo, Venetian Mosaic & Tile Co.
Furniture, Office Specialty and Charles Rogers & Sons.
Glass, Consolidated Plate Glass Co.
Hardware, Jobbers, Aikenhead Hardware Co.
Hardware, Yale & Towne.
Heat Regulators, Johnson Temperature Regulating.
Hollow Tile, Don Valley Brick Works.
Interior Woodwork, D. Springman.
Kitchen Equipment, Gurney Foundry Co.
Marble, Canadian Glass Mantle & Tile Co.
Motors, Canadian Blower Co.
Ornamental Iron, Canadian Ornamental Iron and Luxfer Prism Co.
Plaster, A. D. Grant.
Plumbing Fixtures, Cluff Bros. and Imperial Products Co.
Pumps, Darling Bros.
Radiators, Dominion Radiator Co.
Reinforcement, Trussed Concrete Steel Co.
Roofing, W. E. Dillon Co.
Stone, John Vokes.
Structural Iron, Dominion Bridge Co.
Telephone Equipment, Bell Telephone Co.
Tile, Canada Glass Mantle & Tile.
Vaults, Goldie & McCulloch.

High School of Commerce, Toronto.

Ash Hoist, Turnbull Elevator Manufacturing Co.
Blackboards, Geo. M. Hendry Co., Ltd.
Boilers, John Inglis Co.
Brass Railing, Toronto Brass Mfg. Co.
Brick Contractor, R. Robertson & Son.
Brick, Exterior, John Price.
Brick, Fancy, Don Valley Brick Works.
Carpenters, Crocker & Ledrew.
Cement, Canada Cement Co.
Coal Chute, Canadian Ornamental Iron Co.
Concrete Work, A. C. Richmond.
Desks, Canadian Office & School Furniture Co.
Doors, Batts, Limited.
Electric Contractor, Fred Armstrong Co.
Electric Panel Boards, Trumbull Vanderpool Elec. Mfg. Co.
Expanded Metal, Pedlar People.
Fire Alarm System, Northern Electric Co.
Fire Doors, D. M. Rowe.
Fire Extinguishers, Booth-Coulter Co.
Fire Hose, Dunlop Tire & Rubber Goods Co.
Flooring, Concrete, A. C. Richmond.
Flooring, Terrazzo, Mississiqui Lautz Co.
Furniture, N. S. Houghton, G. L. Reynolds, T. Eaton Co., R. Simpson Co., Adams Furniture Co., Grand & Toy, Art Metropole, Geo. M. Hendry Co., Office Bureau Co., L. S. Levinter.
Glass, Consolidated Plate Glass Co. and Luxfer Prism Co.
Hardware, Jobber, Vokes Hardware Co.
Hardware, Toronto Lock Mfg. Co.
Hose Reels, Wilson & Cousins.
Heat Regulators, Johnson Temperature Regulating Co.
Kitchen Equipment, Geo. Sparrow & Co.
Laboratory Equipment, N. S. Houghton.
Marble, Canadian Glass Mantle & Tile Co.
Moving Picture Machine, Spencer Lens Co., Buffalo, and Victor Animatograph Co., Davenport, Iowa.
Ornamental Iron, Shipway I., B. & W. Co.
Paints, Andrew Muirhead Co.
Paint Contractor, James Phinnemore.
Plaster Contractor, James A. Berridge.
Plumbing Contractor, Purdy, Mansell & Co.
Plumbing Fixtures, Cluff Bros.
Pumps, Bawden Machine Co.
Radiators, Gurney Foundry Co.
Roofing, Cruise Bros.
Seating, Berlin Interior Hardwood Co. and Canadian Office & School Furniture Co.
Stone, Indiana Limestone, Ohio Sand Stone.
Structural Iron, Dominion Bridge Co.
Telephone Equipment, S. H. Couch Co., Boston, Mass.
Traps, C. A. Dunham Co.
Ventilators, Canadian Blower Co.

Aberdeen School, Moncton, N.B.

Blackboards, Slatington Blackboard Co.
Boiler Feed Pump, Smart Turner Co., Hamilton.
Boilers, Taylor Forbes Co.
Cast Iron Soil Pipe, Thomas Robertson Co., Montreal.
Cement, Canada Cement Co.
Desks, Canadian Office & School Furniture Co.
Electric Contractor, Perry Bros., Moncton.
Expanded Metal, Pedlar People.
Fire Alarm System, Holtzer-Cabot Co.
Flooring Composition, Atlantic Flooring Co., St. John.
Heating Engineers, Fred M. Hoadley, Montreal.
Hardware, Jobber, W. H. Thorne & Co., St. John.
Hardware, Sargeant & Co.
Plaster, Albert Mfg. Co., Hillsborough, N.B.
Plumbing Fixtures, James Robertson Co.
Plumbing, Hagen & Co., Amherst.
Radiators, Taylor Forbes Co.

Stone, Sackville Freestone Co.
Structural Iron, Maritime Bridge Co.
Terra Cotta, Atlantic Terra Cotta Co., New York.
Varnish, Pratt & Lambert, Buffalo.
Ventilators, B. F. Sturtevant Co. of Canada.
General Contractor, Paul Lea Co., Moncton.

Cote Des Neiges School, Montreal.

Brick, Exterior, National Brick Co. of Lapraírie and E. Rochefort.
Doors, W. J. O'Leary & Co.
Floor Reinforcing, Canadian Selgwart Beam Co.
Heating Engineers, T. Lessard & Sons.
Lumber, British Columbia.
Marble, Smith Marble & Construction Co.
Plumbing, T. O'Connell.
Stone, C. Piche, Montreal.
Structural Iron, Phoenix Bridge & Iron Works.
Terra Cotta, Montreal Terra Cotta Co.
Tile, Smith Marble & Construction Co.
Traps, C. A. Dunham Co.
General Contractor, E. N. & U. Boileau.

Beamsville High School.

Boilers, Spencer Heater Co. of Canada, Ytd.
Brick, Exterior, Milton Pressed Brick Co.
Brick, Sun Brick Co.
Expanded Metal, Pedlar People.
Glass, Leeks & Potts Co.
Heating Engineers, A. Rodgers & Co.
Hardware, Rice, Lewis & Co.
Hollow Tile, Sun Brick Co., Ltd.
Interior Woodwork, J. A. Hewitt, Beamsville.
Plumbing, A. Rodgers & Co.
Radiators, Steel & Radiation.
Stone, Queenston Quarries.
Structural Iron, Toronto Structural Iron Co.
General Contractor, Duncan Mavor, Beamsville.

Galt Public School.

Blackboards, North Bangor Slate Co., Bangor, Pa.
Boilers, Goldie & McCulloch Co.
Brick, Milton Pressed Brick Co.
Cement, Canada Cement Co.
Electric Contractor, Scott & Bennett.
Expanded Metal, Metal Shingle and Siding Co.
Flooring, Hardwood, J. R. Eaton Co.
Hardware, Jobber, Aikenhead Hardware Co.
Heaters, Sheldons, Limited.
Heating Contractors, Geo. E. B. Gringer Co.
Heat Regulators, Johnson Temperature Regulating Co.
Hollow Tile, National Fireproofing Co.
Hose Reels, Wilson & Cousins.
Interior Woodwork, Georgian Bay Shook Mills.
Ornamental Iron, Canada Wire & Iron Goods Co.
Plumbing Fixtures, Taylor & Brown.
Pumps, McDougall Co., Galt.
Radiators, Dominion Radiator Co.
Reinforcement, Trussed Concrete Steel Co.
Roofing, Paterson Mfg. Co.
Stone, A. & E. Nobs Co., London.
Structural Iron, Dominion Bridge Co.
Varnish, Pratt & Lambert.
Ventilators, Sheldons, Ltd.
General Contractor, P. H. Secord & Sons.

Sarnia Public School.

Blackboards, Turnbull & Cutliffe.
Boilers, Weil Boiler Co.
Brick, Exterior, Milton Pressed Brick Co.
Casements, Trussed Concrete Steel Co.
Cement, Ontario Blue Lake Cement Co.
Desks, Globe Furniture Co.
Electric Contractor, Mackenzie Electric Co.
Flooring, Terrazzo, Italian Mosaic & Marble Co.
Floor Reinforcing, Trussed Concrete Steel Co.
Glass, Pilkington Bros.
Hardware, Aikenhead Hardware Co.
Heat Regulators, Powers Regulator Co.
Hollow Tile, National Fireproofing Co.
Interior Woodwork, Shultz Bros. Co.
Marble, Adamson Marble Co.
Ornamental Iron, W. D. Beath & Son.
Plaster, Hewitson & Potter.
Plumbing, Anguish & Whitfield.
Plumbing Fixtures, Imperial Products, Ltd.
Radiators, American Radiator Co.
Stone, Central Canada Stone Co.
Structural Iron, Sarnia Bridge Works.
General Contractor, Shultz Bros. Co.

Brighton School, Brighton, Ont.

Blackboards, Lehigh Structural Slate Co.
Boilers, Dominion Radiator Co.
Brick, Sun Brick Co.
Hardware, Rice Lewis & Co.
Hollow Tile, Sun Brick Co.
Plumbing Fixtures, Imperial Products, Ltd.
Radiators, Dominion Radiator Co.
Stone, John Vokes and Cement Products Co.
Structural Iron, McGregor & McIntyre.
Telephone Equipment, Stromberg Carlson Co.
Vacuum Cleaners, Tuec Co.
Varnish, International Varnish Co.
General Contractors, Dickie Construction Co.

HOLT ROOF VENT CONNECTIONS.

The Paterson Mfg. Co., manufacturers of Barrett Specification roofing, have issued a booklet describing an improved line of roof leader and vent connections. The Holt connection, with its roof lock-fittings and its very important expansion-joint feature, is an ideal device, and will prevent leaks around outlets due to settling of roof-deck caused by shrinkage or settlement, or expansion and contraction in the leader-lines, and by entirely eliminating sheet-metal outlet-boxes it does away with the collapsing, condensation and leaks characteristic of that form of outlet. Its series of three gravel stops entirely prevent any loose gravel, leaves or roof rubbish from washing into and clogging the down-spout.

The connection is made entirely of copper and cast iron, and therefore it insures service as lasting as any part of the roof and provides a flexible connection, made possible by an expansion-joint fitting which is entirely lacking in any other form of roof or leader-connection. The outlet is also made integral with the roof-deck by means of a lock-fitting which entirely prevents any strain or movement at the roof-line.

It is designed for use with any kind of flat or nearly flat roof construction—gravel, metal, inlaid slate, tile or felt—and for any place where vent-pipes, leader-lines, steam-stacks, flagpoles—in fact, any fixtures passing through the roof—require flashing.

MATERIAL SALESMEN VALUABLE TO ARCHITECTS.

To know that his architect subscriber considers the advertising pages of his architectural publication a vade mecum and a "compendium of useful knowledge" regarding all materials and appliances usable in his work may be very satisfactory to the publisher, but he is more satisfied when the advertisement prompts the architect to investigate the peculiar attributes of the advertised article so that he can apply it to that use most fitting to a particular design. It is not always possible to examine the material or appliance advertised in place or operation, or even on exhibition, but with a systematized business there is always time to converse with the intelligent salesman when he calls. Too few architects recognize the value of such interviews and their direct relation to the duty of giving the best service possible to the client. In this country, where the architect definitely specifies the material, and at whose dictum, rather than that of the paying owner, it is installed, this gathering of a detailed knowledge of materials is as important as the designing of stable construction. Even more so, because the contractor or superintendent can catch an apparent instability in plan, while the material once specified, only a superficial inspection of its quality, and none of its comparative fitness to the particular purpose is probable after it is specified. Thus the granting of a thorough interview to a salesman is as much a part of the day's work as an inspection and checking up of the plans going through the drafting room. New materials and new methods are evolved daily, and as just as rapid changes are taking place in design, a thorough knowledge of those materials most adaptable to the design is indispensable to the progressive architect. The advertising pages of his architectural journal furnish the information regarding the main qualities and purpose of a material, from which can be surmised its fitness to a particular purpose. The salesman gives the detailed information, and an inspection of the article itself decides the matter. The knowledge gained is in the direct interest of the client, and therefore has a direct influence on the reputation of the architect for capability in his community. The reputation of Dankmar Adler was based as much upon his intimate knowledge of materials and appliances as that of his genius for construction, and he acquired much of this knowledge from the expert representatives of manufacturers of materials.—The Western Architect.

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