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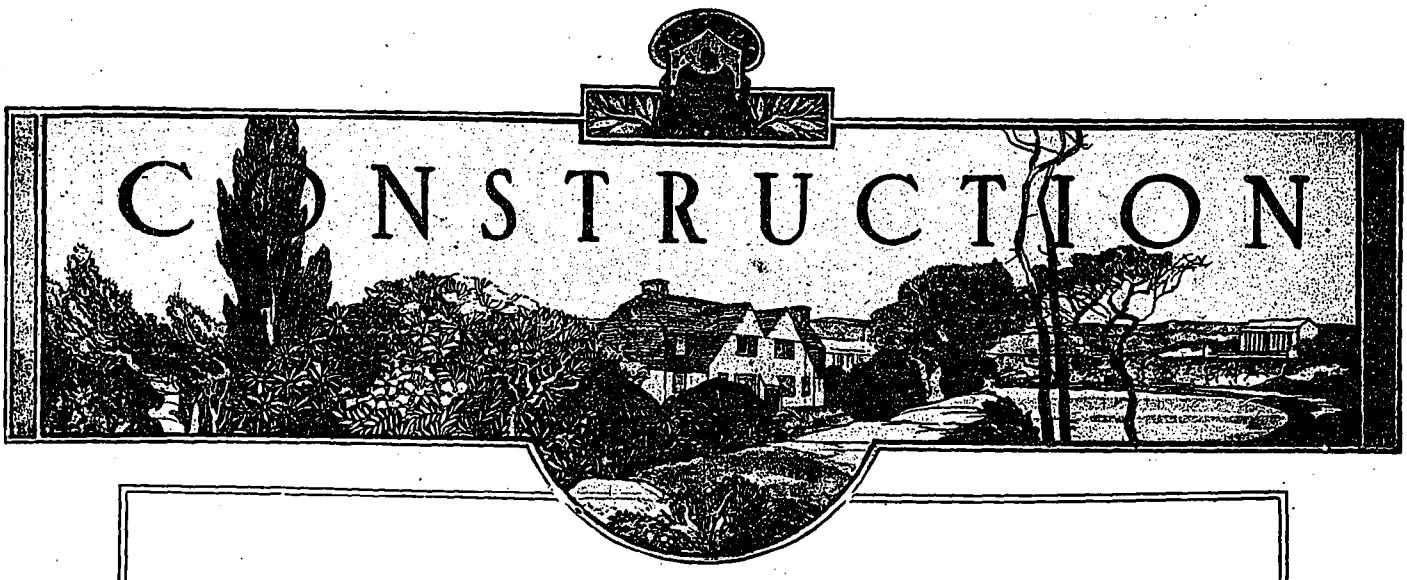

July, 1918 Volume XI, No. 7

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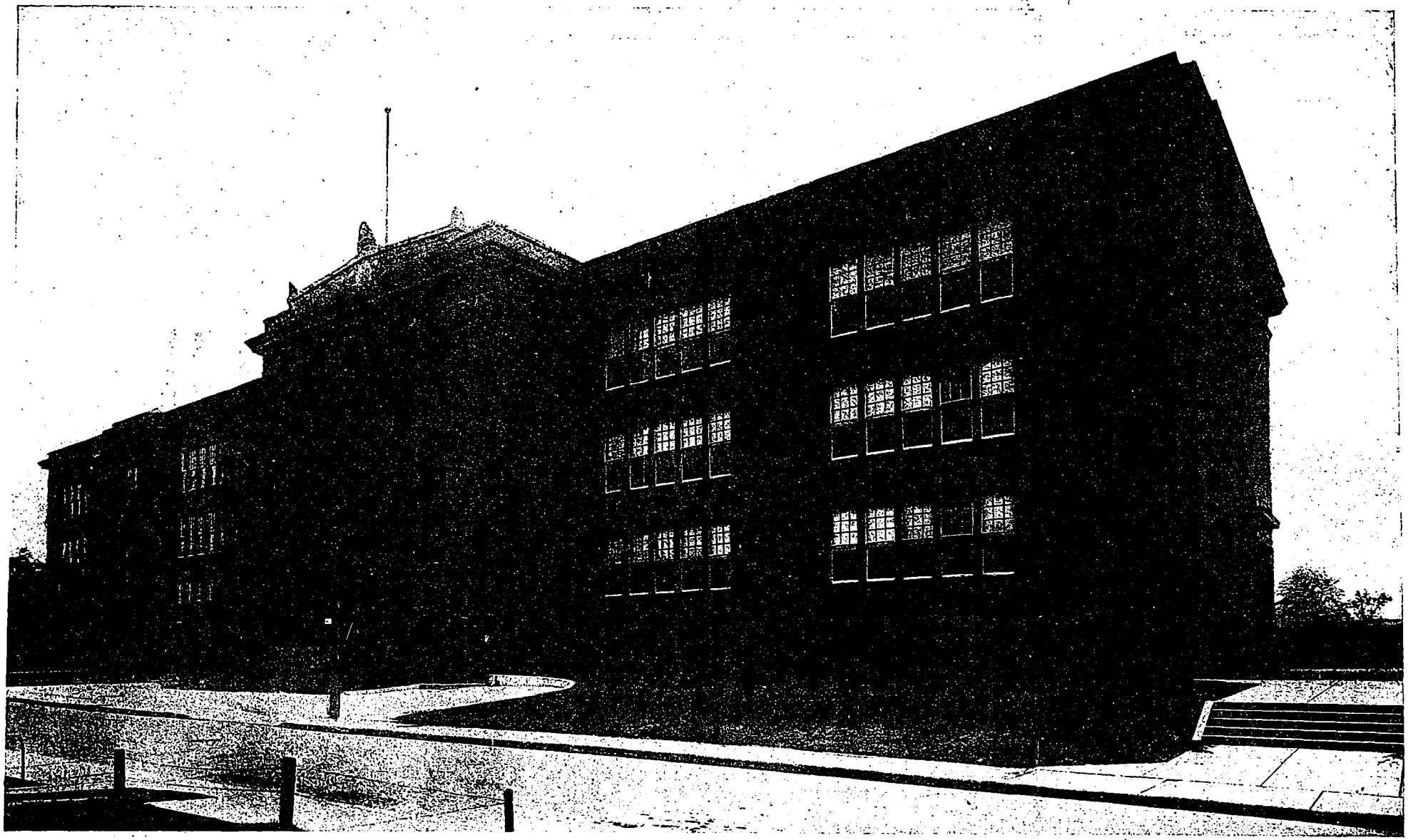


NEW PARK SCHOOL, TORONTO.

J. C. PENNINGTON, ARCHITECT.

New Park School, Toronto

TORONTO has not only maintained an expansive policy in the establishing of educational buildings, but has recently completed the largest public school building erected in Canada. This is the new Park School which contains thirty-four rooms and provides accommodation for seventeen hundred pupils. It is built on a site adjoining the old school of that name on Sydenham street between Sumach and Sackville streets, and gives vastly superior accommodation for the building it replaces.

The object foremost in mind in designing the building was to provide a modernly equipped structure which would adequately and efficiently serve a thickly populated section, without attempting any elaboration which would require an unnecessary expenditure. Special care has been given to the subject of heating and ventilation, and the lighting of the classrooms which are placed on either side of wide fireproof corridors extending to eight separate entrances at both ends and the centre of the building. The structure is three stories high, two hundred and seventy-two by seventy-two feet, with a rear extension fifty-five by seventy-two feet, and the total cost of its erection was $188,000, which brings the cost to approximately $5,500 per classroom.

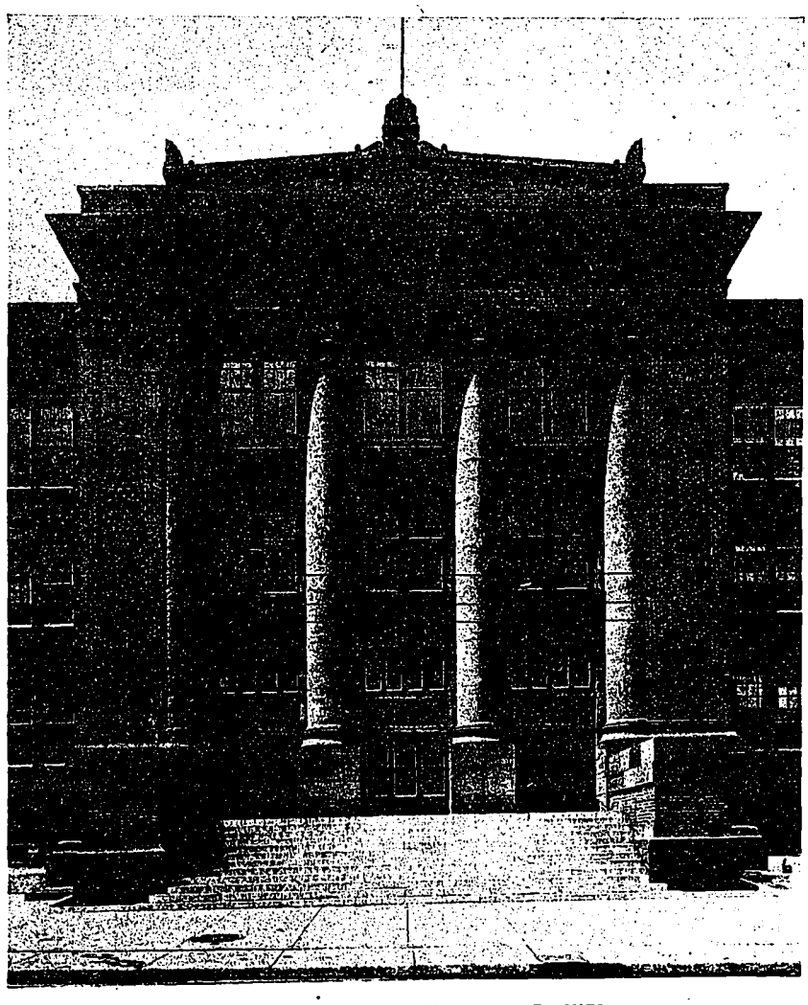
Besides the regular classrooms, there are two larger and special rooms to accommodate the departments of household science and manual training. A kindergarten room, double the size of the ordinary rooms, is located on the ground floor, and so arranged that it can be thrown open in combination with a large hall space, thus providing a large audience room without the cost of making part of the building exclusive for that purpose. This combination has been made a feature of the Toronto public schools for a number of years.

By placing the principal's office and waiting room ensuite in the front projection a scheme results which divides the main entrance into two separate vestibules with hallways leading to the main corridor. This makes a convenient and practical arrangement which is further carried out in the mezzanine immediately overhead which provides a kitchen and lunch and rest rooms for the teaching staff.

The exterior of the school is quite simple in treatment and free from any ornate effects except in the heavy columns of the entrance. The walls are of red stock brick trimmed with New Brunswick sandstone, and rest upon concrete foundations.

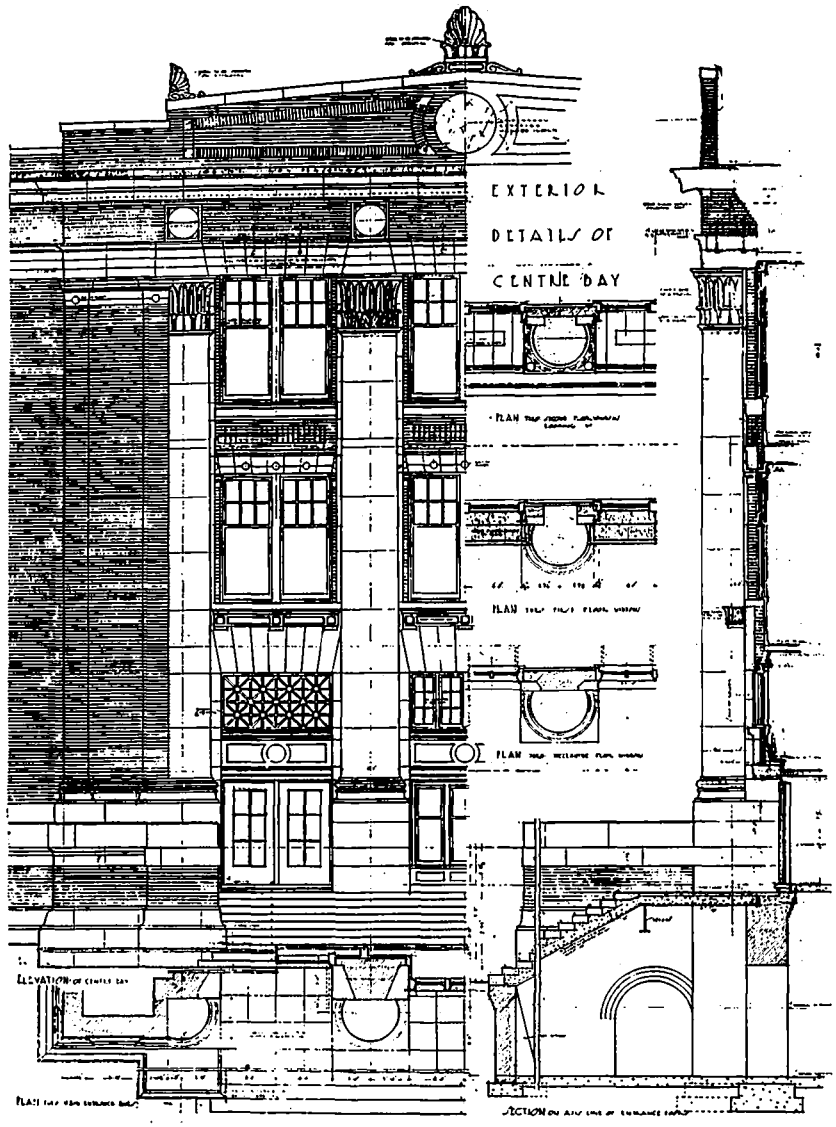
While the construction is termed "second class," the structure is protected by fireproofing at all essential points. The corridor floors are of terrazzo laid over a four-inch concrete slab with "I" beams spanning from wall to wall. These are connected from floor to floor with a system of iron stairs. The main partitions range in thickness from fourteen and a half inches below to nine inches in the upper storey, and are built of solid brick. The secondary partitions dividing the principal's office and waiting room, lavatories, manual training room and domestic science room, are of four and six inch hollow tile.

In the classrooms wood joist construction is employed with maple super-floors. These classrooms, which are twenty-four by thirty-nine feet in size,

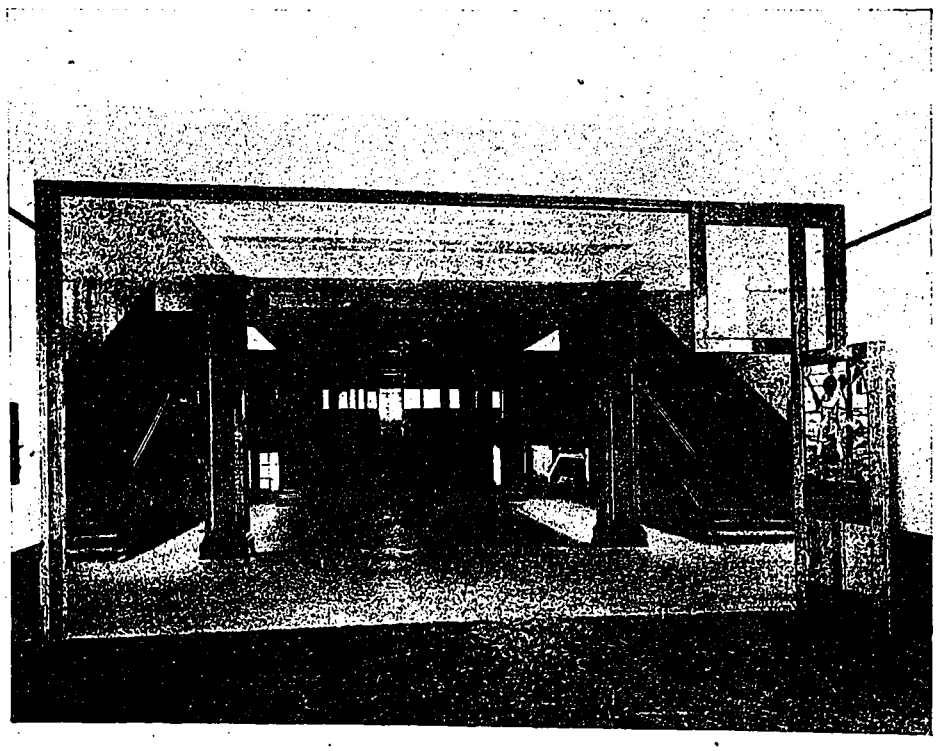


MAIN ENTRANCE, NEW PARK SCHOOL, TORONTO.

DETAILS OF MAIN ENTRANCE.



DETAILS, NEW PARK SCHOOL, TORONTO.



VIEW OF CORRIDOR, NEW PARK SCHOOL, TORONTO.

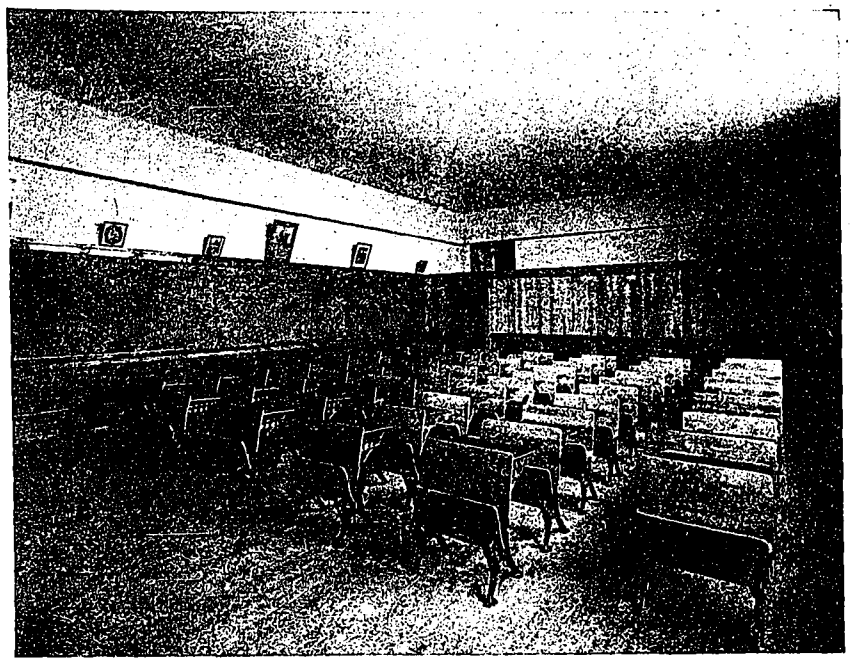
have accommodation for fifty pupils each, and are lighted by large group windows which bring the light into the room on one side only, to the left of the student, as approved by authorities on school building design in reference to the subject of outside illumination.

Modern lavatories for both pupils and staff are provided on all floors, including the basement. The basement is well above the grade, and is hence both well lighted and ventilated. It contains girls' and boys' assembly rooms and a large drill hall, and has several separate exits direct to the outside grounds. The boiler room floor is five feet below

the general basement floor level.

The plumbing, heating and ventilation represent a very complete installation, embodying the most approved principles as regards design and sanitary equipment. The classrooms, in addition to being heated with a direct steam radiation, are ventilated with a modern system of forced fresh, warm air, which is originally derived from intakes located at the sides of the main entrance.

The plan also provides for the usual medical inspection rooms and similar offices, and there are spacious wardrobe compartments in connection with each of the classrooms on all three floors.



TYPICAL CLASS ROOM, NEW PARK SCHOOL, TORONTO.

Personality in Decoration

If there is one profession in which the personal equation holds sway to a remarkable extent, says the "Decorative Furnisher," it is certainly the profession of interior decorating.

A decorator is weak or strong, in his work, according to whether his personality is weak or strong. The more decided his characteristics are, the more definite and peculiar unto itself will be his work.

The man who has no definite likes and dislikes is quite apt to be a poor decorator. His thoughts do not express themselves, materially, in any unique desirable, concrete way; they are more apt to be vacillating, in fact, and the resulting schemes that grow from them will possess neither charm nor individuality.

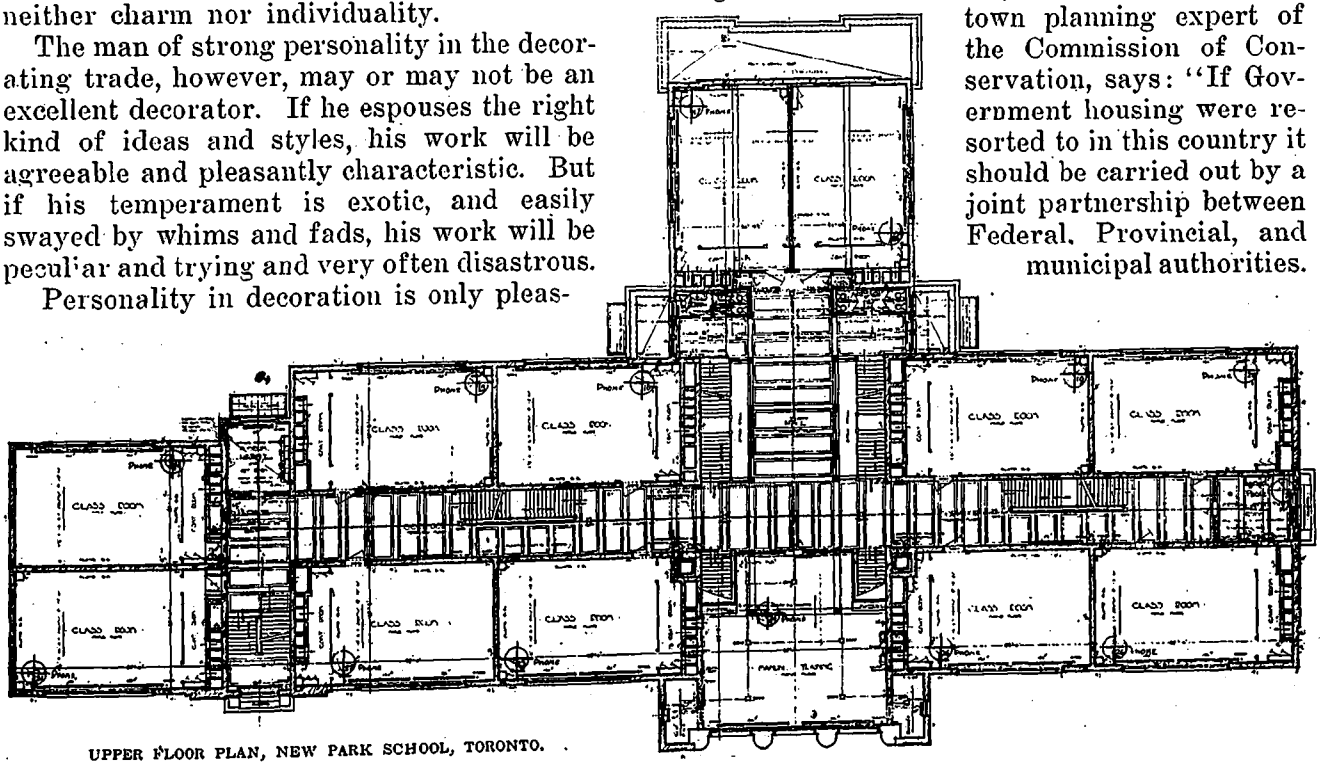
The man of strong personality in the decorating trade, however, may or may not be an excellent decorator. If he espouses the right kind of ideas and styles, his work will be agreeable and pleasantly characteristic. But if his temperament is exotic, and easily swayed by whims and fads, his work will be peculiar and trying and very often disastrous.

Personality in decoration is only pleasing when it develops accepted schemes to a remarkable degree of richness and charm. Good taste is only satisfied when it feasts on decoration that measures up to and beyond the standard of usage and good custom.

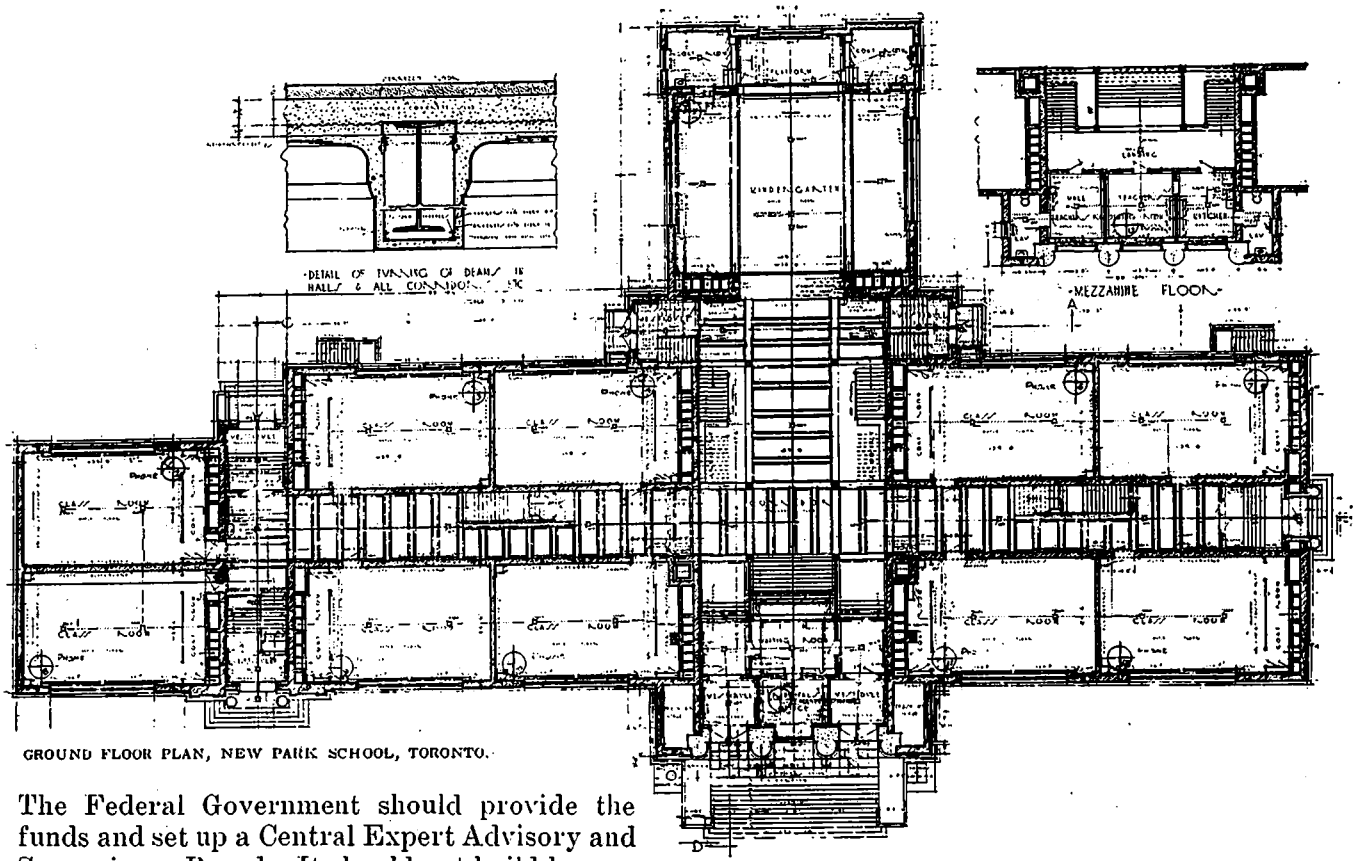
Personality that is individual, because it departs from the accepted canons of art may appeal for a short time, because it is striking, but it is never lasting nor satisfying.

Canada's Industrial Housing Situation

In commenting on the housing situation, which still continues a subject of wide discussion in many parts of the country, vitally affecting the industrial class, Mr. Thomas Adams, town planning expert of the Commission of Conservation, says: "If Government housing were resorted to in this country it should be carried out by a joint partnership between Federal, Provincial, and municipal authorities.

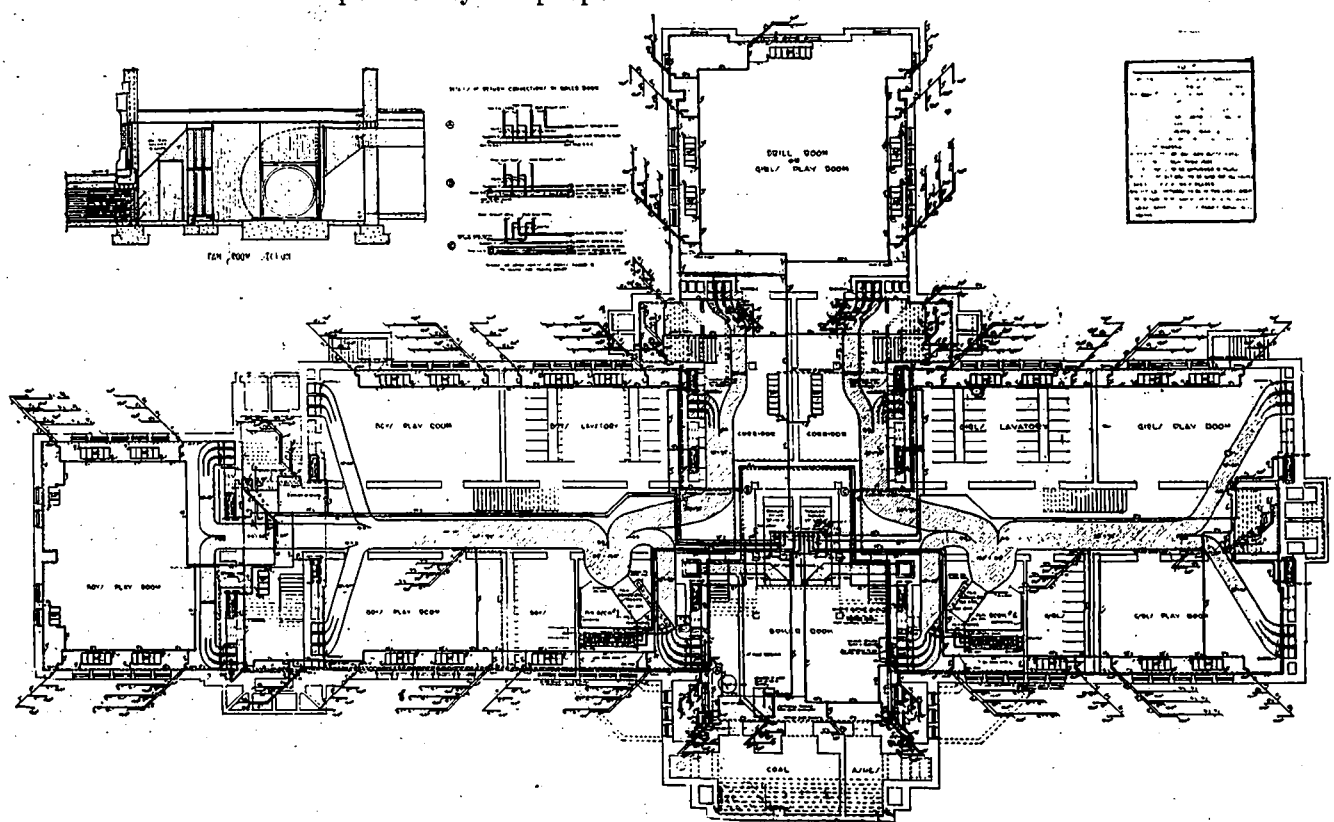


UPPER FLOOR PLAN, NEW PARK SCHOOL, TORONTO.

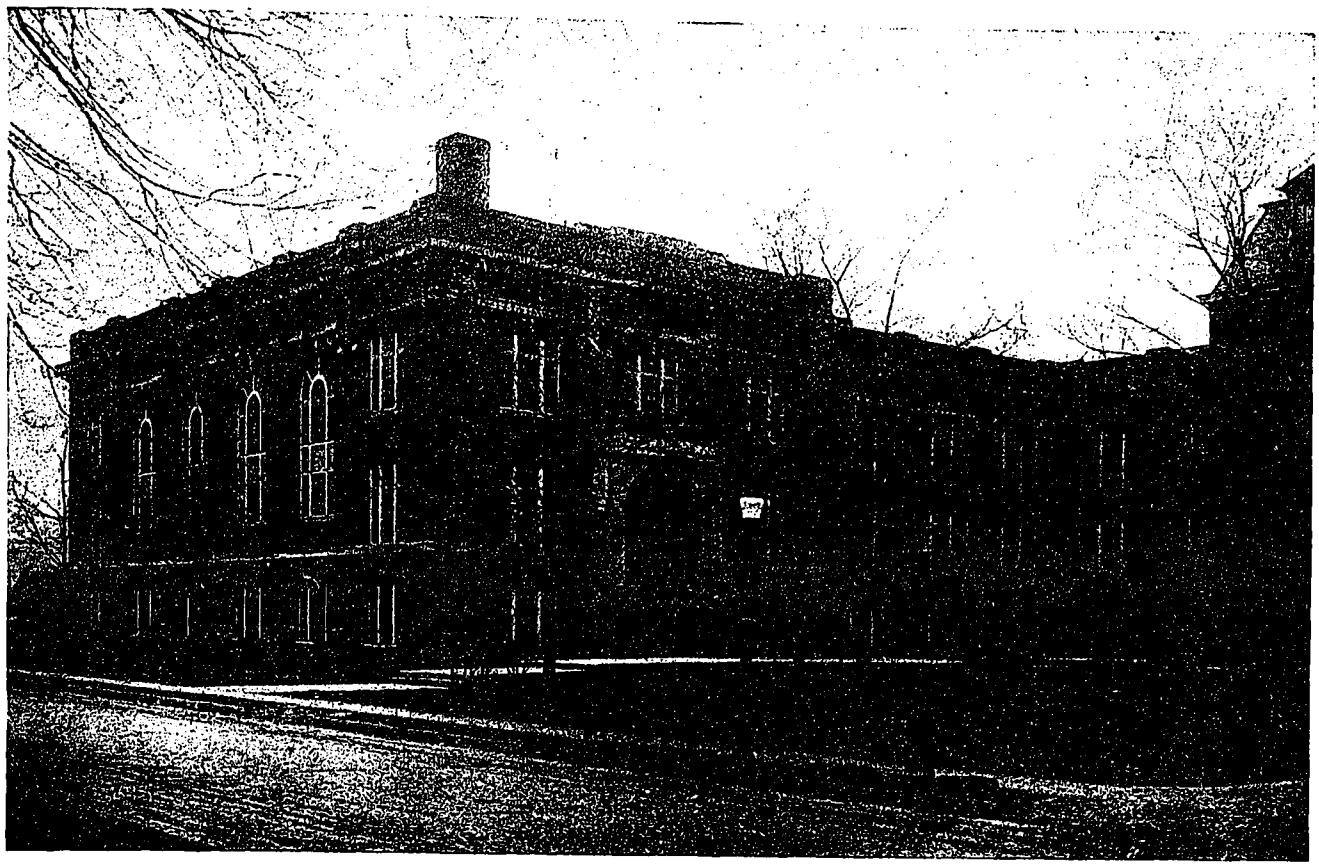


GROUND FLOOR PLAN, NEW PARK SCHOOL, TORONTO.

The Federal Government should provide the funds and set up a Central Expert Advisory and Supervisory Board. It should not build houses directly under its own control except for employes in Government factories, arsenals, naval establishments, or railroads. In all other cases housing operations in connection with war industries and returned soldiers should be carried out by the municipalities, with the aid of funds and expert advice provided by the Federal Government, through the agency of Provincial Governments. Department of Provincial Governments should take the responsibility for proper housing schemes, under the regulations of the Federal Government and subject to its supreme control in matters of finance. For the present no housing scheme should be carried out with the aid of public funds unless for some purpose directly connected with war production, but all such schemes should consist of permanent buildings, so as to make them contribute to the solution of the general problem of reconstruction after the war."



BASEMENT (HEATING AND VENTILATION) PLAN, NEW PARK SCHOOL, TORONTO.

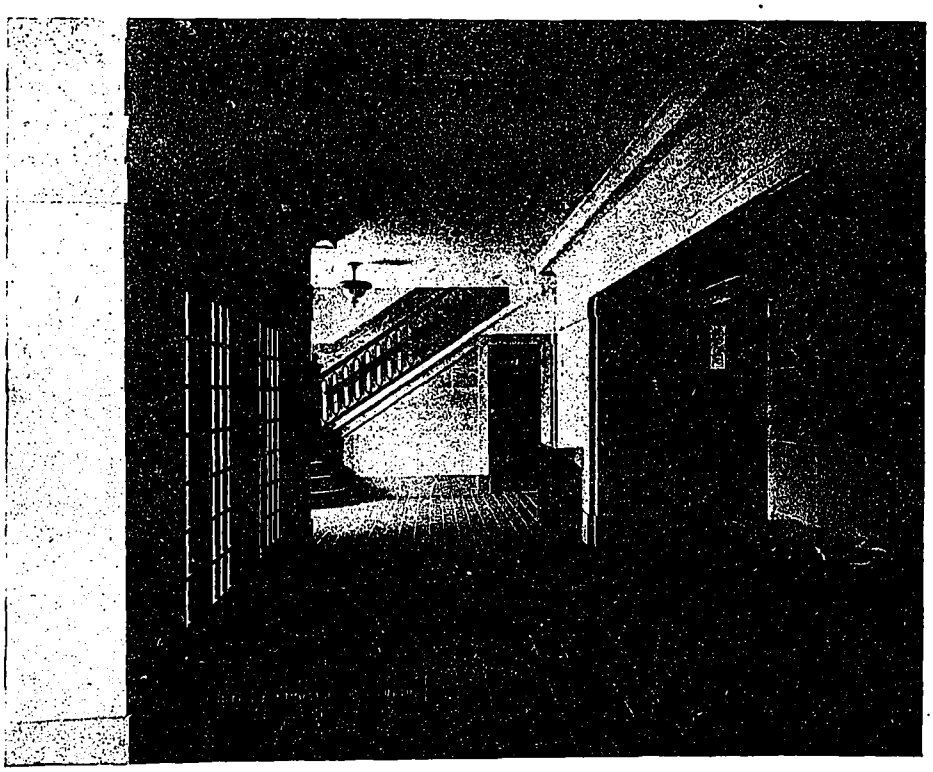


SECTION OF NEW WING, COLLEGIATE INSTITUTE, WINDSOR, ONT. J. C. PENNINGTON, ARCHITECT.

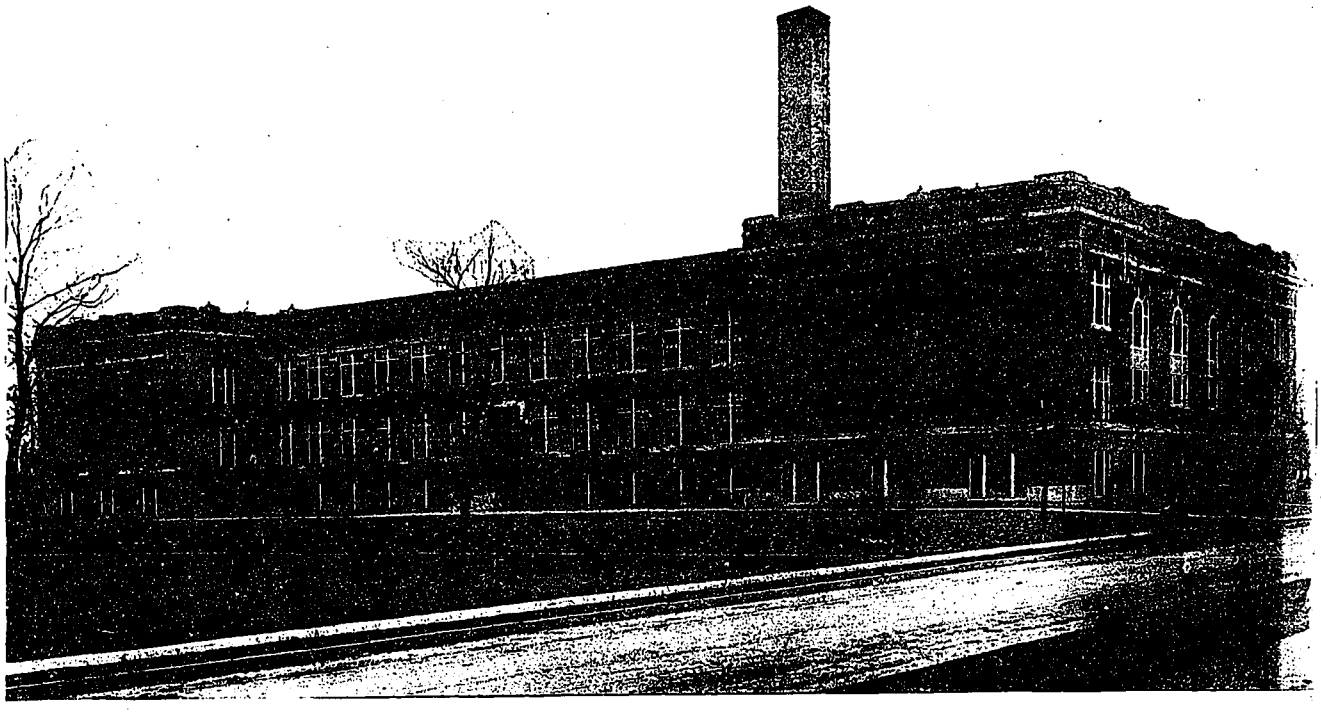
Collegiate Institute, Windsor, Ontario

THE enlarged Collegiate Institute at Windsor, Ont., which was formally opened in February of this year, provides facilities calculated to meet the present needs of a growing population and the increasing demand for commercial and vocational training. In addition to the complete high school curriculum there are class accommodations for the teaching of household science and manual skill, including a department of mechanics of benefit to students who are desirous of qualifying to enter any of the several large local automobile industries.

The general scheme of the building preserves the old school facing Ann street, which was erected thirty years ago, and to which a four-room addition was built in 1906. To this the new part, conforming in plan to the letter I, gives increased accommodation more than doubling the previous classroom capacity, in addition to providing a large auditorium and gymnasium for assembly purposes and physical development. The practical work of the manual training classes is carried out in shops located in the east end of the new section. These shops are



ENTRANCE TO AUDITORIUM, COLLEGIATE INSTITUTE, WINDSOR, ONT.

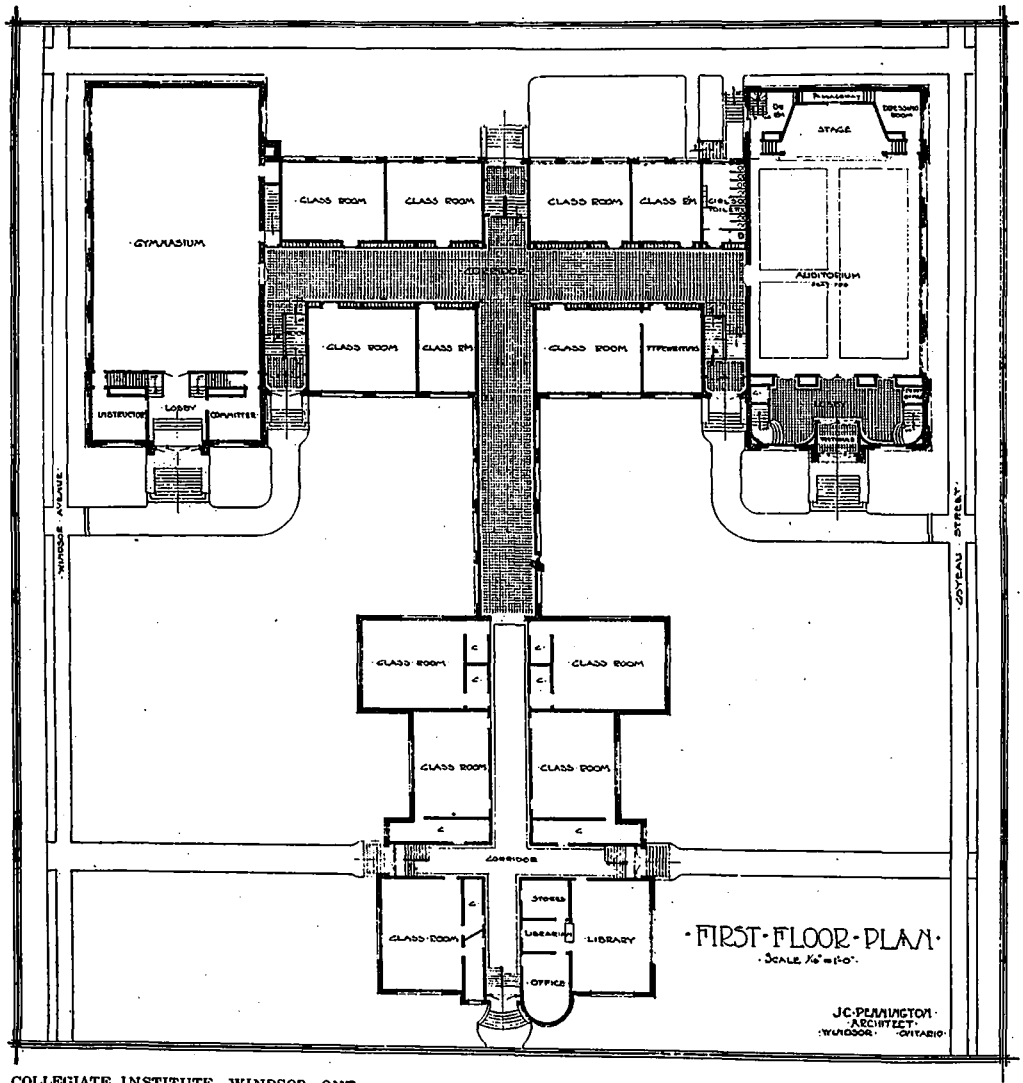


SOUTH ELEVATION, COLLEGIATE INSTITUTE, WINDSOR, ONT.

underneath the auditorium. These shops are underneath the auditorium so that the noise of the workshops will not disturb the other classrooms. The bench room is equipped with twenty-four individual benches and three carpenter benches, and is provided with six speed lathes and a band saw, all separately motor driven. Individual motors are also used to operate the equipment in the mill room, which includes a surfacer, a variety saw, a jointer and a boring machine, as well as two forges, while in the sheet metal and plumbing room modern tools and appliances are available for instructions in these two particular trades.

Spacious corridors and separate entrances at the front, sides and rear enable the students to enter or leave the building without the slightest semblance of crowding or disorder. Arranged along the corridors, which are 16 feet wide, are a system of metal lockers built directly into the wall, thereby eliminating any projection and contributing to the general appearance of neatness.

The laboratories for physics, chemistry and senior biology are located on the second floor,

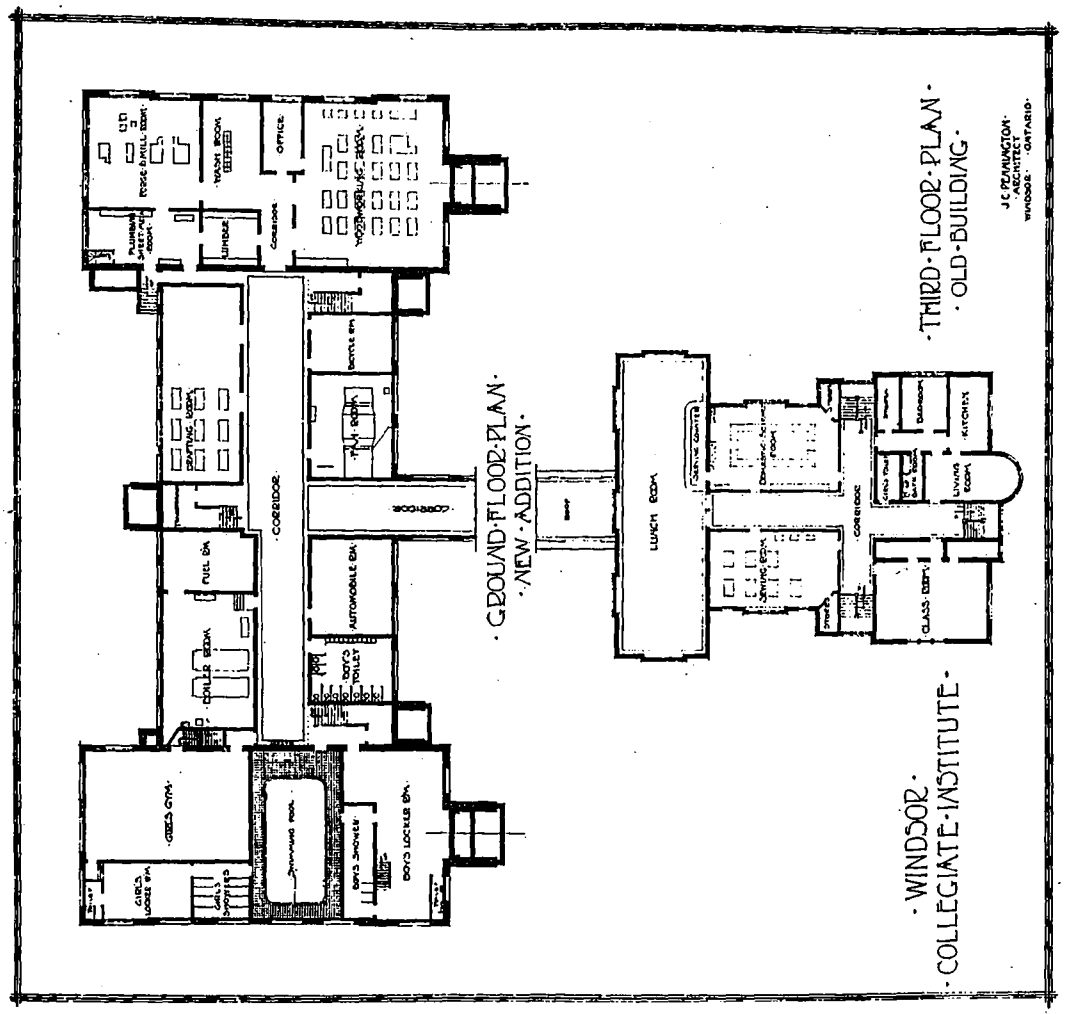


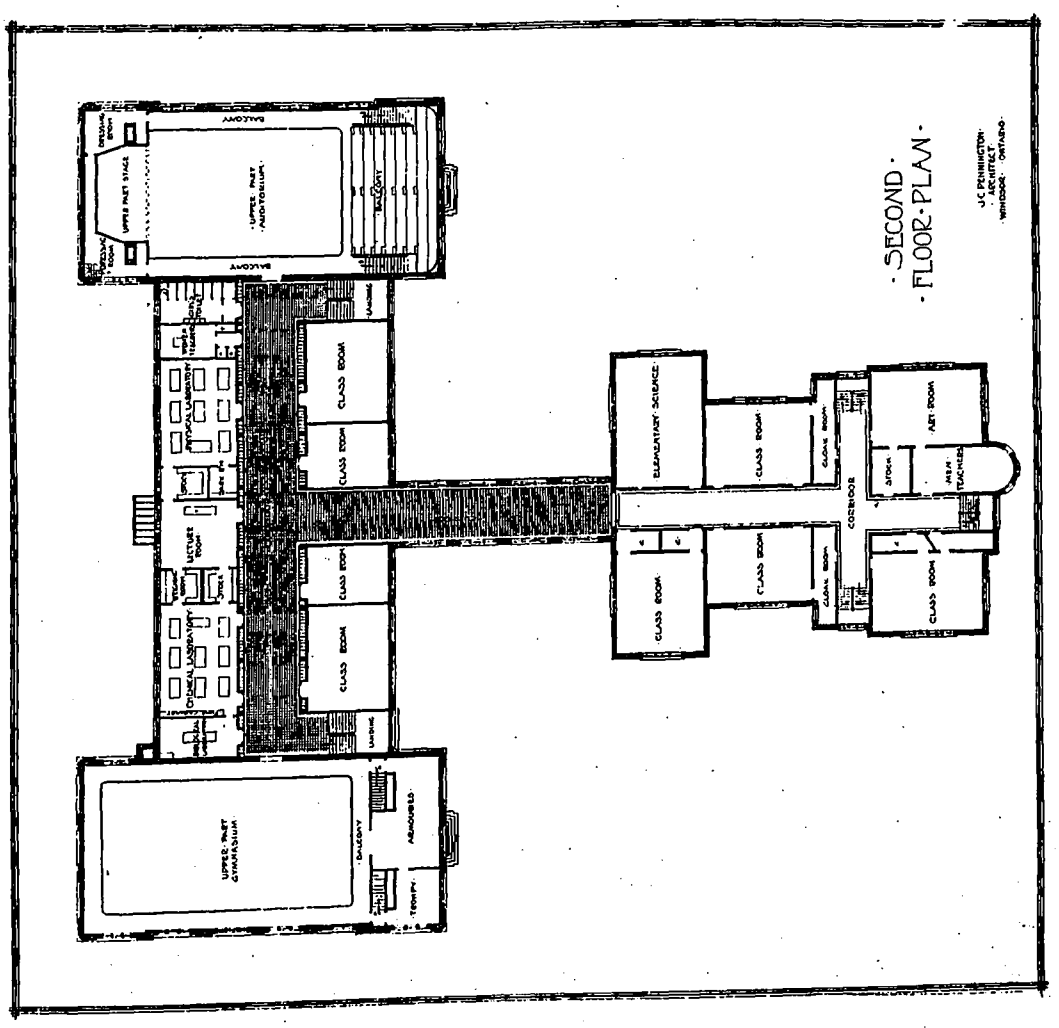
COLLEGIATE INSTITUTE, WINDSOR, ONT.

J. C. PENNINGTON, ARCHITECT.

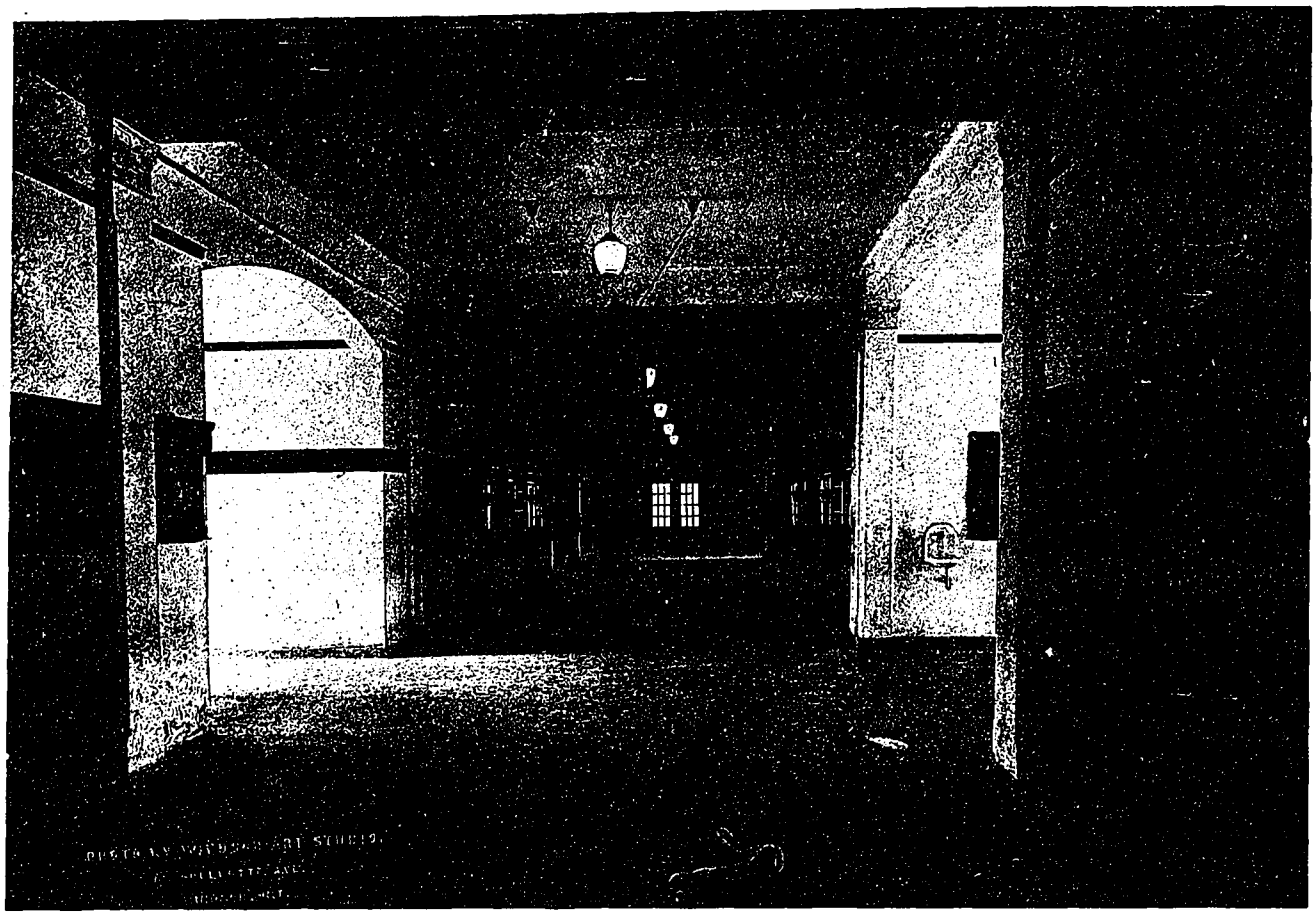
with doors between the laboratories and stock rooms, affording communication to the entire suite. The tables in the physical laboratory are provided with electric terminals, connected to the switchboard so that either alternating or direct current may be supplied to the student as needed. A 7 K.W. motor generator set and storage battery provides D.C. current of any voltage or amperage, within certain limits. The tables in the chemical laboratory are supplied with gas and hot and cold water, while an electric fan is employed to ventilate the fume cupboards.

The construction of the new part is of reinforced concrete, with outside brick walls, terrazzo corridor floors and oak trim generally where wood is used. The auditorium is finished in Caen stone and mahogany woodwork. The auditor-





COLLEGIATE INSTITUTE, WINDSOR, ONT. J. C. PENNINGTON, ARCHITECT.



VIEW OF CORRIDOR, COLLEGIATE INSTITUTE, WINDSOR, ONT. J. C. PENNINGTON, ARCHITECT.

ium is 53 x 107 feet, and has a seating capacity of 750, and is so arranged that pupils may enter it for assembly from the first and second floors. It is designed with an outside entrance, so that it can be used without opening the remainder of the building, and is thus available as a community centre for general culture purposes.

The gymnasium is also 53 x 107 feet, with the floor space entirely free from obstructions for class training and games. On the ground floor are the locker room, shower bath and swimming pool. There is also a smaller gymnasium for the physical training of the girls, with its own locker room and shower baths. At certain times the girls also have the use of the larger gymnasium.

In the part constituting the old building the whole of the top floor has been rearranged for the teaching of domestic science and arts. The class kitchen for teaching cookery is a large, airy and well-lighted room, with places for twenty-four students. The kitchen is furnished with electric plates for individual work, modern cooking utensils, a gas range, refrigerator and sink. The sewing room, in which designing, cutting, dressmaking, etc., are taught, is equipped with tables, sewing machines, electric irons, fitting room and cupboards. There is also a model apartment, consisting of dining-room, kitchen, bedroom and bathroom, in which the students are given practical lessons in furnishing, decorating and managing a house.

The building is heated by steam, and the temperature is automatically controlled by thermostats. Ventilation is provided by a fan system, in which the air, taken from the outside of the building, or from the interior, is washed and heated to a fixed temperature.

Secondary clocks controlled by a master clock in the office give the time in each classroom. This master clock also controls the signal system for changing classes.

In addition to the day classes, the school is open practically every evening of the week for instruction in subjects of industrial value to persons employed in the trades and industries. The Board of Education is willing to teach any subject of industrial or educational value if a class of fifteen persons apply for it and it is at all practicable to do so.

Antique Statue of Pentelikon Marble

In the course of his excavations on the Palatine, Commendatore Giacomo Boni, the celebrated Italian archæologist, has just unearthed a magnificent statue of Victory, carved from marble from the renowned ancient quarries of Mount Pentelikon, near Athens, which dates from the fifth century before Christ The figure is eighty-five centimeters (nearly three feet) high, and is very pure, simple and majestic in style, corresponding in pose to the celebrated Torso of Victory by Phidias, now in the British Museum. Friezes from the Parthenon and other works of the most perfect Greek style have also been discovered.—"Stone."

The Small Country Schoolhouse

By Creighton Barker, M.D., Bureau of Municipal Research, New York City.

IT is scarcely possible to imagine a more unfortunate environment for the formative mind of the school child than that presented by the traditional country school. However, it may be said to the credit of the rural communities that many of them are eager to better existing conditions.

In many communities the school buildings not only house under compulsion twenty per cent. of the total population for eight hundred hours each year, but they also serve as chapels and general meeting places for the people in social and quasi-political gatherings. This community-centre function has only been partially developed, but it is actually a service that the schoolhouse should render and that is quite as important as housing the classes in the three R's. In the past, home and school were total strangers. The reasons for the estrangement between these two principal centres of education are to be found, on the one hand, in a misconception as to the school's object and, on the other, in social conditions.

The school, it was held, had no other duty toward the community than to supply the children with book knowledge. That a sound and natural development of community spirit and social betterment should go together with the intellectual development of the children, and form a natural foundation for all education, the school never considered. To fulfill its purpose completely the school must extend its influence beyond its walls into the homes of the community and into business and social intercourse.

There is at present a very commendable tendency in certain localities to consolidate a group of adjacent district schools under one roof and to transport the children from their homes to the school in omnibuses or automobiles. Such a plan not only insures improved accommodations for the school children, but also effects economies in teachers' salaries, heating and repairs. Various schemes have been followed out in making this consolidation. If it be a group of schools within the same township, the so-called union school has been constructed; and the various districts pay per capita rate for the children attending the school. If, however, the children are drawn from two or three townships, frequently the towns will co-operate in constructing the building and then pay the educational costs proportionately, or one town may erect a building independently and per capita costs are paid by the other towns. When such a building is contemplated a more pretentious and completely equipped plant is possible than was ever afforded by the familiar one-room rural schoolhouse.

It is scarcely possible to outline a definite plan for such a building, since many variations must be considered in each locality, such as site, structural materials and capacity. There are, however, certain fundamental standards which must be taken into consideration, and should be adopted everywhere without variance.

LIGHTING.

The subject of illumination is highly technical, and the practical application of the principles involved, in so far as daylight illumination is concerned, is not easy, due to the absence of working standards. Recently, however, certain requirements for the daylight illumination of classrooms have been deduced. The object of these requirements is:

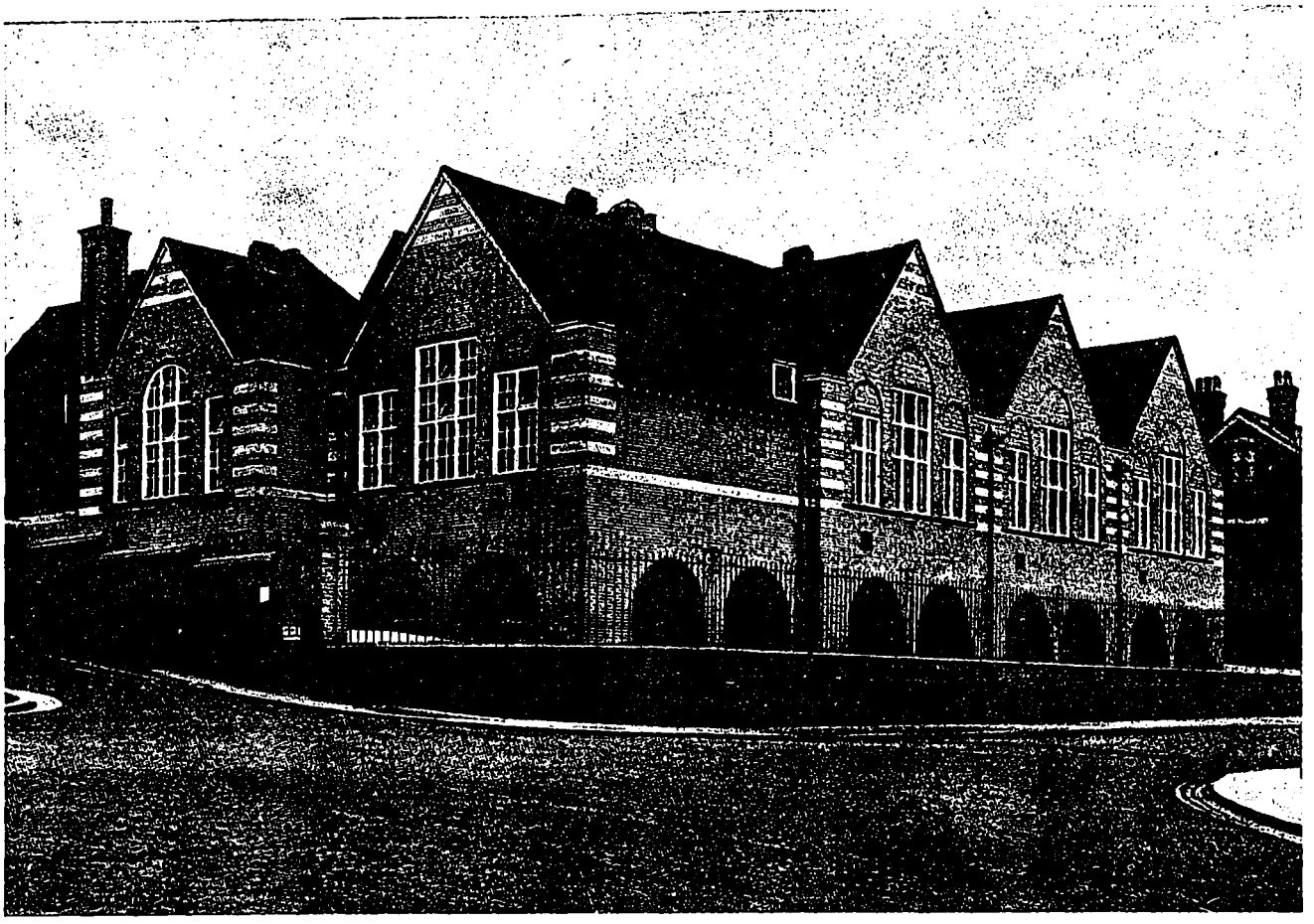
1. To insure a maximum of light from the right direction.
2. To insure a maximum diffusion with avoidance of objectionable glare.
3. To make suitable provision for regulation of the light by increasing or diminishing the amount admitted, as necessity may demand.

In order that sufficient light may enter the classroom properly to illuminate all desks, certain standards have been adopted.

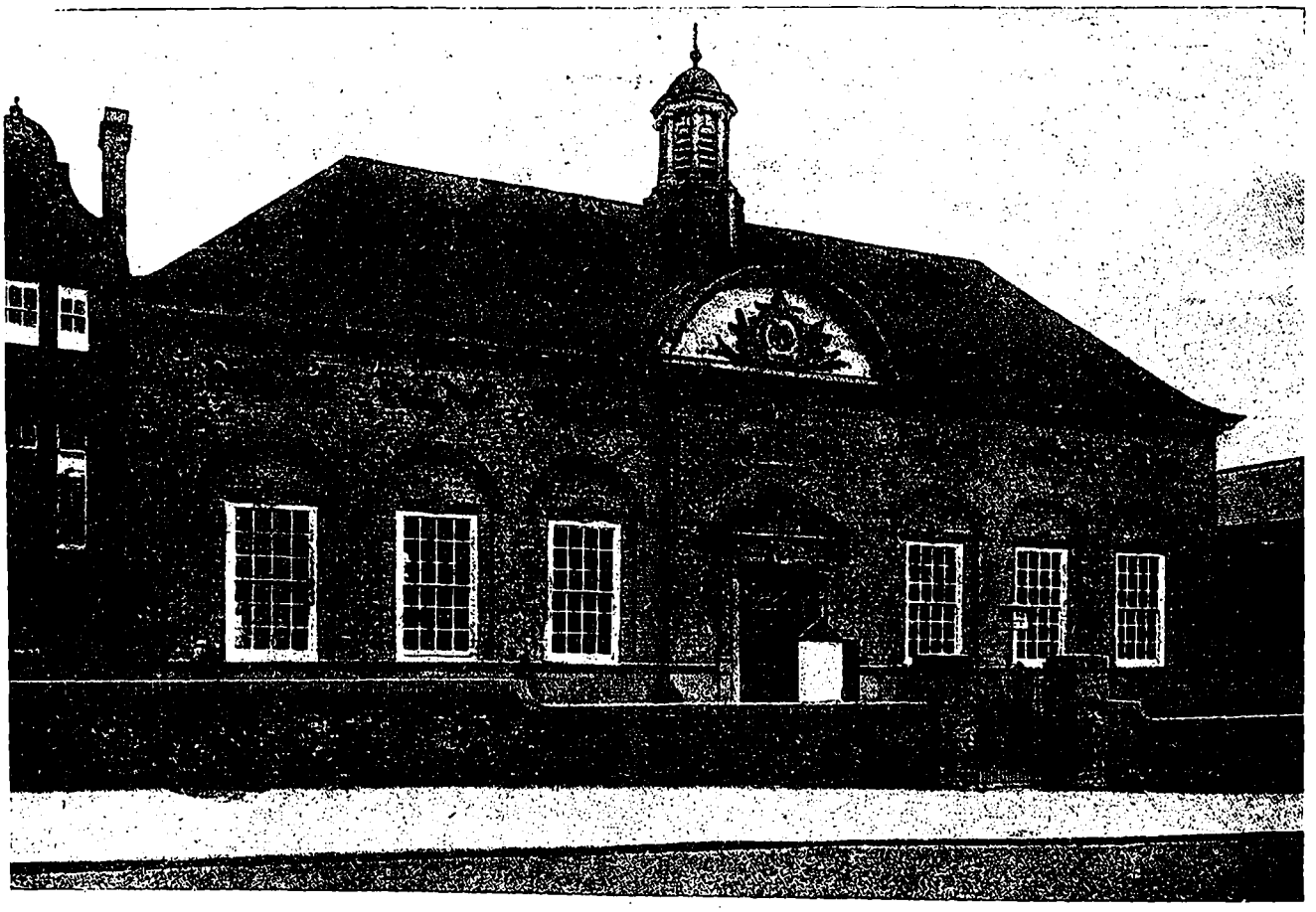
The most widely accepted standard is the one which requires the glass area of classroom windows to be not less than one-fifth of the floor space of the classroom. This standard, however, does not cover all the factors which should be taken into consideration. In order to have each desk properly illuminated, it has been suggested that the child sitting at the desk should be able to see a part of the sky vault from the seat, and that this visible sky surface be measured by a reduced solid angle of not less than fifty square degrees. This presupposes that the angle of incidence of luminous rays—that is, an angle formed by a plane from the upper surface of the desk cutting the upper edge of the window and another plane from the same point cutting the lower edge of the visible sky surface—should not be less than five degrees, which is best effected by extending the windows as nearly as possible to the ceiling. This and other arbitrary standards of illumination demand wide modification, because they take into consideration direct light only without reference to the factor of reflected light from any source.

The most rational illumination standard is the actual measurement of light by the illuminometer at each desk. The illuminometer reading at each desk should not be less than ten foot candles under all conditions

Not only is an abundance of light necessary, but it must be admitted from the proper direction if the maximum effect is to be secured with



ELEMENTARY SCHOOL, SUTTON COLDFIELD, ENGLAND. *From The Builder.* CROUCH, BUTLER & SAVAGE, FF.R.I.B.A., ARCHITECTS.



BOROUGH OF SUTTON COLDFIELD, ENGLAND, TECHNICAL SCHOOL. *From The Builder.* CROUCH, BUTLER & SAVAGE, FF.R.I.B.A., ARCHITECTS.

the least discomfort to the eye. Unilateral window arrangement to the left of the pupils is generally adopted in this country. Frequently the shadow of a very stout child seated between the window and the desk occupied by a child who is much smaller reduces the illumination of the latter's desk. In addition to this objection, whenever unilateral illumination is practiced the desks immediately adjacent to the windows frequently receive illumination of too great intensity, which is hard to regulate without throwing a part of the classroom in shadow. Two-sided classroom illumination, with windows on the left and in rear of the pupils, is to be preferred. The only reasonable objection to this arrangement is the annoying effect on the teacher, who is seated facing the rear windows. There is no valid reason for this location of the teacher's desk, and the disadvantage is readily obviated by placing the teacher's desk diagonally across the left hand front corner of the classroom.

The illumination of the classroom is frequently defective, because measures have not been taken to secure a maximum diffusion of light. The diffusion of light depends upon the fact that all materials affect light and under carrying conditions scatter it to a greater or lesser degree.

Glare is observed when light rays are nearly parallel to the eye level. Therefore, light sources situated above this level are more likely to be free from glare. For this reason the lower edge of the classroom windows should be well above the visual level of the seated pupils.

Certain polished surfaces, largely through their color, reflect a dangerous glare. For this reason the side walls of the schoolroom should have a mat surface free from gloss. In the case of the ceilings, however, no such objections exist, because the light reflected from them is at the greatest possible angle to the visual level and is not likely to produce a glare. Classroom walls should be colored in a manner to obtain reflection with a maximum of diffusion—shades of the primary colors, yellow and green, are to be selected, because they not only have a high reflection coefficient, but also absorb other rays, not concerned in illumination, which may be injurious to the sight.

The regulation of intensity of light should receive careful attention. The most effective means for such regulation is the use of translucent window shades backed by an opaque shade to shut out direct sunlight. The shade fixtures would be of a type to permit the adjustment of the shades from either the top or the bottom of the window.

HEATING.

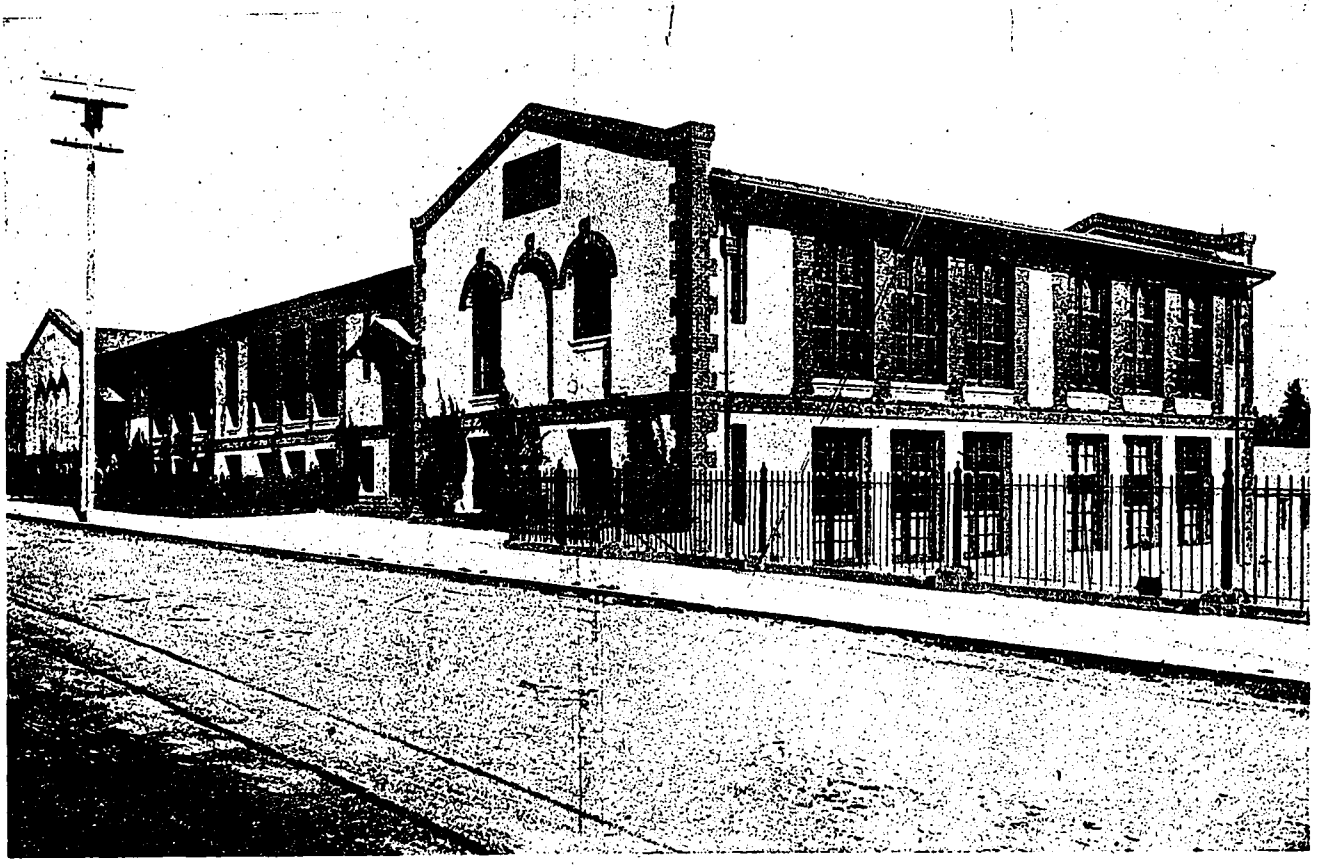
Under the conditions ordinarily encountered in rural schoolhouse construction the problems of heating and ventilation are so closely allied that they must be considered together. This is due to the necessity of warming the fresh air introduced into the classrooms in cold weather to replace that removed in the course of ventilation. Under ordinary circumstances a stove is the only heating apparatus available for the rural schoolhouse, and from an economic standpoint this is the most effective method for warming a schoolroom, since the modern base-burner stove utilizes seventy or eighty per cent. of the fuel value of coal. There are many defects in the heating with a closed stove, and an attempt to overcome these defects has been made in adapting the jacketed stove. In such a heating apparatus the stove is surrounded by a sheet-iron jacket with a fresh air intake at the bottom which penetrates the wall of the building. Connected with the stovepipe is a perpendicular foul air outlet with an opening at the base, through which the foul air from the lower part of the room is carried out. This outfit serves both as a heating and ventilating apparatus and should provide sufficient change of air.

The measure of sufficient change of air is somewhat indefinite, but an arbitrary standard has been accepted which requires fresh air to be supplied in volume sufficient to keep the amount of carbon dioxide down to not more than six parts in ten thousand. Various States have different requirements in regard to the amount of air each pupil should receive per minute. These average about thirty cubic feet per minute or one thousand eight hundred cubic feet per hour. The number of air changes necessary to supply this amount depends upon the cubic capacity of the classroom and the number of pupils. The cubic space allowed each child should be large enough to demand not more than six changes of air per hour in order to avoid drafts, and it may be stated that two hundred and twenty-five cubic feet of space and twenty square feet of floor space should be allotted to each child.

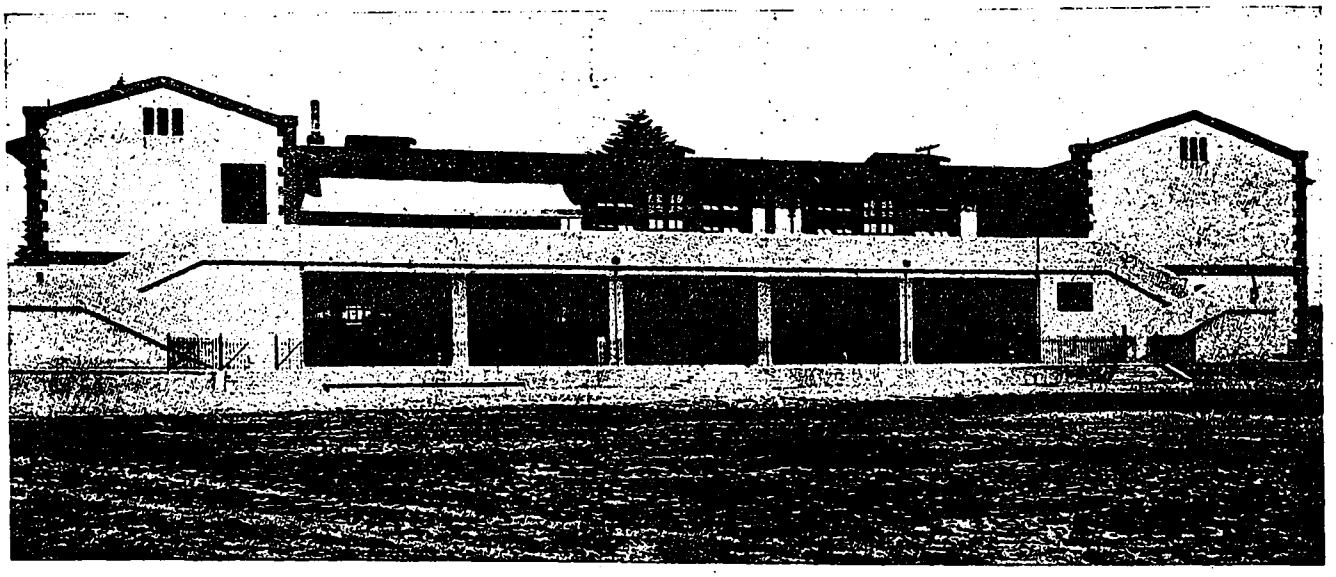
BLACKBOARDS.

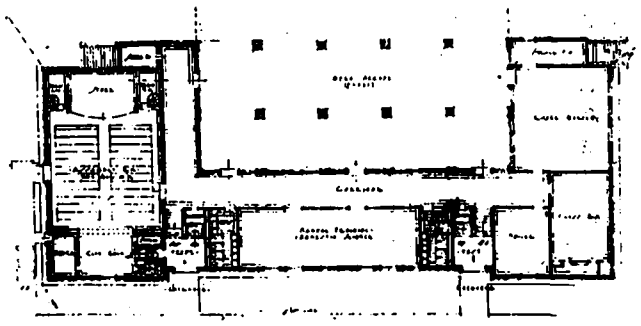
Blackboards are an essential for classroom instruction and careful attention should be given to their construction, with consideration as to their distance from the floor level and their location in relation to the windows.

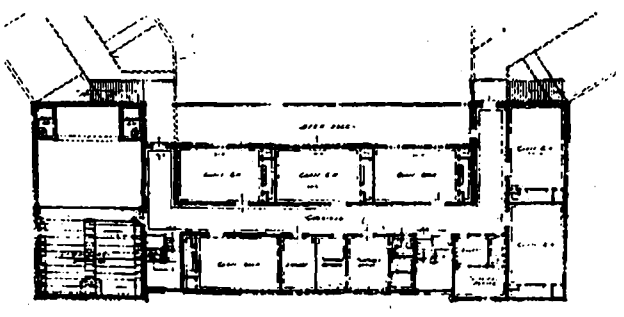
The use of wood can no longer be tolerated as blackboard material. The surface of such boards soon acquires a polish which causes a glare that interferes with vision. Composition blackboards are now on the market, which give good service for a short time. Most of these, however, have no great lasting qualities and soon acquire a roughened surface which interferes with writing and vision. In the end the cheapest blackboard material is slate. To meet the requirements of an ideal blackboard, however, slate must present a black surface and not the usual gray of the cheaper slate. It has been



M'CHESNEY ELEMENTARY SCHOOL, OAKLAND, CALIFORNIA. JOHN J. DONOVAN, ARCHITECT.







REAR ELEVATION, M'CHESNEY ELEMENTARY SCHOOL, OAKLAND, CALIFORNIA. *From the "Western Architect."*

stated that a classroom cannot have too much blackboard space. This statement demands qualification, because it was evidently made without due regard to classroom illumination. Where the demands for large blackboard surfaces are imperative, blackboards may be provided with curtains of light color, by which they may be covered when not in use and thereby obviate the absorption of light by the dark surface.

The location of blackboards is of the utmost importance. They should never be placed between windows nor in obscure parts of the classroom. The best location for blackboards is on the front wall. This space may be supplemented by utilizing the right hand wall if left sided illumination is adopted. In both of these locations the blackboards receive good light and are visible without discomfort to the entire class.

The pupils may be protected to a large extent from chalk dust by the installation of shallow troughs from three to four inches wide, which are placed at the bottom of the blackboards and covered by detachable wire screen of coarse mesh. This arrangement protects the fingers, crayons and erasers from the accumulation of powdered chalk. Dust from this source is irritating to the respiratory mucous membrane. The troughs should receive daily attention and be emptied after school hours.

COATROOMS.

No single feature of rural schoolhouse construction has been so consistently neglected as the proper accommodations for the care of wraps and other articles of extra clothing of the school children. The coatrooms in the country schools should provide ample space for drying wraps.

The most suitable location for a coatroom is open to much argument. Just why the coatroom should open into the classroom, as has been advocated by some, is not apparent, and furthermore there is but little to commend the practice of ventilating the classroom through the coatroom by an outlet placed in the lower part of the communicating door. In general, the coatroom should be easily accessible with an outside exposure to insure the admission of sunlight and window ventilation.

The width usually advised for coatrooms is four feet, with fifty linear feet of wall space for each twenty-five pupils. Suitable pegs or hooks should be provided and located on the walls at various levels for the accommodation of children of different heights. Racks or frames for drying moist clothing are rarely seen, but are a most valuable species of furniture in the coatroom.

The addition to the schoolhouse of a room that will be available as a meeting place for people of the community is an innovation that cannot be too highly commended. Finally, both the auditorium and the surroundings of the schoolhouse should receive careful attention. Flowers and shrubbery should be set out and placed under the care of the pupils.—"Architectural Record."

Research Into Properties of Concrete.

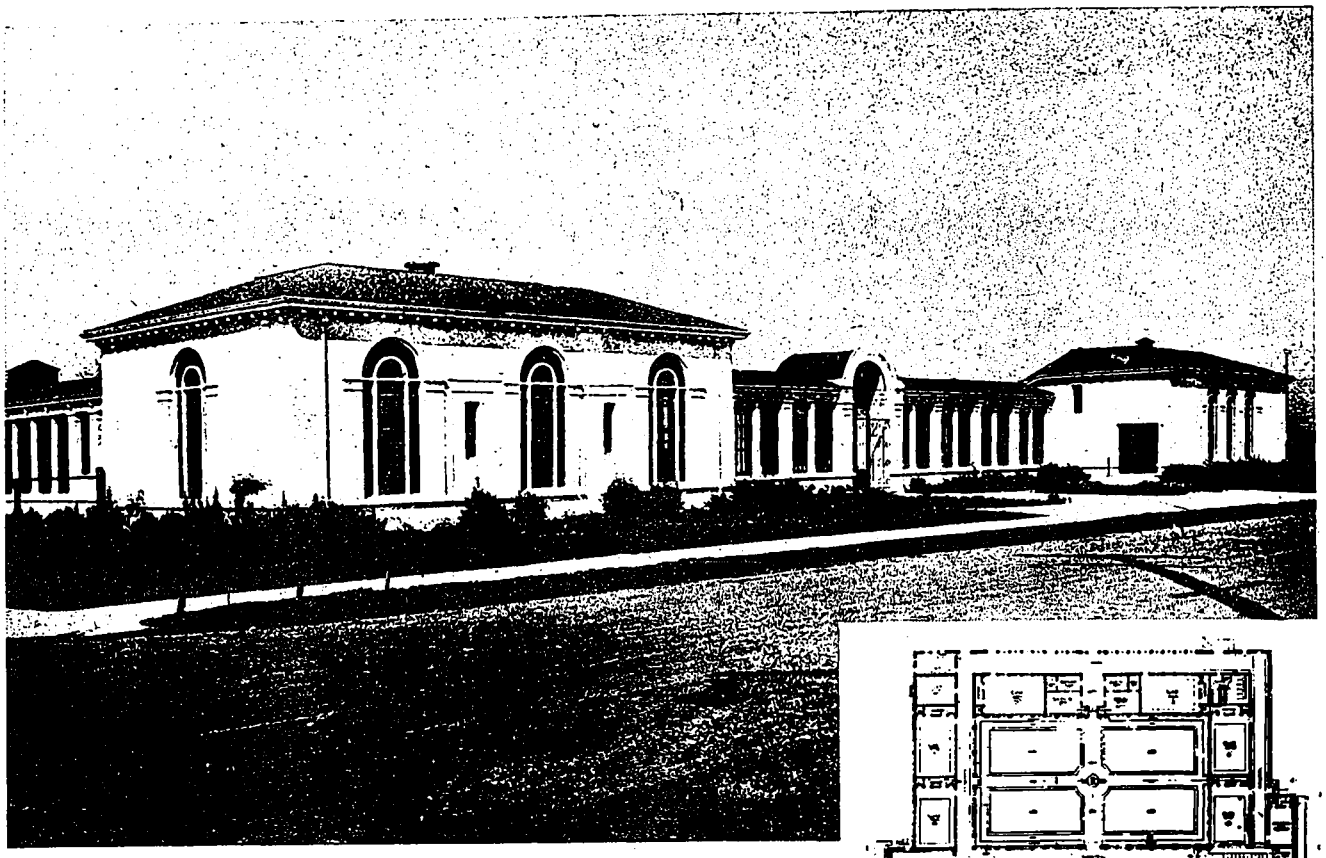
At a recent meeting of the Minneapolis Engineers' Club, Professor Abrams of Lewis Institute, Chicago, delivered an address on "Results of Recent Researches in the Properties of Concrete."

Tests to the number of approximately fifty thousand a year were made to determine valuable data governing concrete construction. The results of many of these tests have never been published. The only public utterances ever made regarding them were in the address of Professor Abrams at the auditorium in the Main Engineering Building at the University of Minnesota, and in a recent similar address at the Lewis Institute before an audience of engineers from twenty-one States.

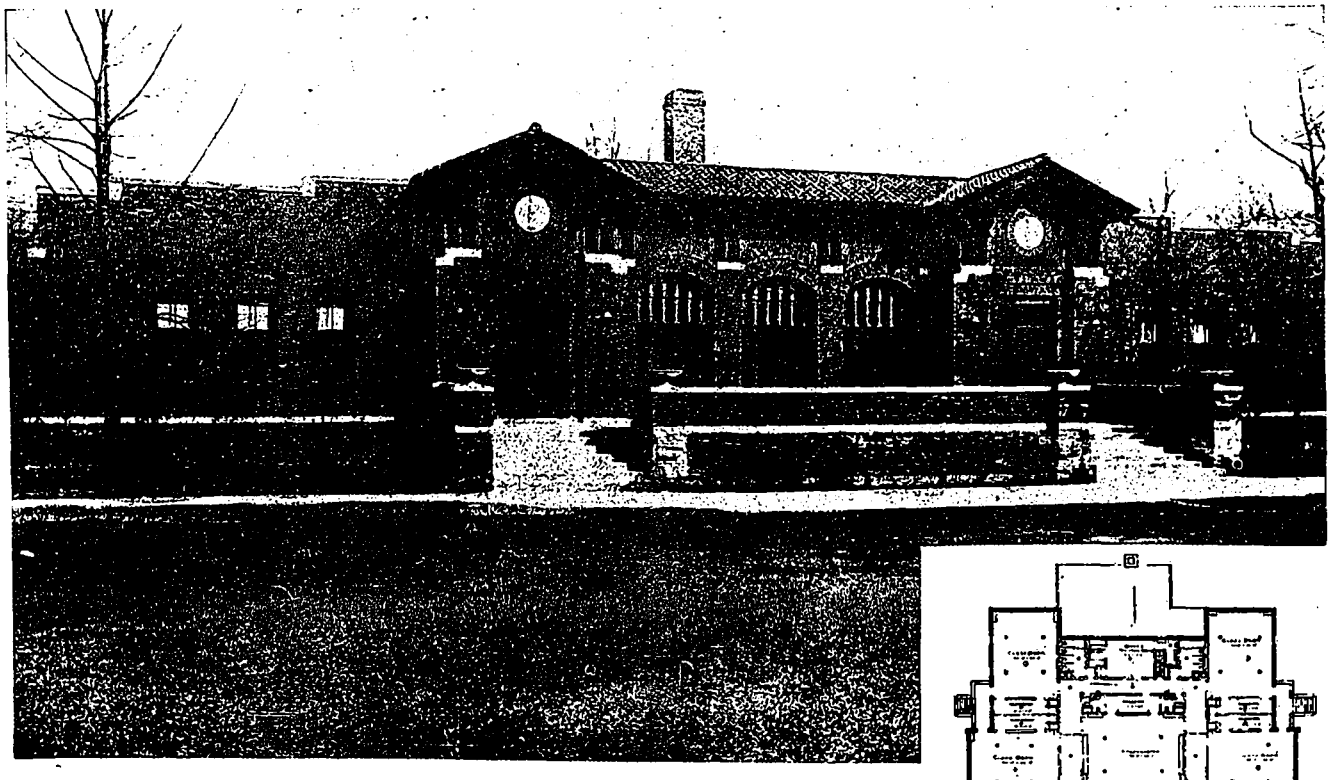
While there is not time in the limits of a single address to go very exhaustively into the subject, Professor Abrams was able by the aid of slides to present to his auditors a fairly comprehensive idea of some of the important results achieved. Two or three points stood out prominently as the unmistakable results of the series of tests. One is that the engineer who permits aggregates to be flooded makes a grave mistake. Professor Abrams said that excessively wet concrete never gives the strength that drier concrete gives, and it is a mistake to believe that excess water merely runs away, without permanently harming the quality of the concrete.

Professor Abrams said that the use of concrete is very largely a question of correct proportioning. Four or five different theories have been presented, and the ordinary method of proportioning is based mostly on arbitrary selectioning, but the proper method must take into account the properties of the materials themselves. Cement to-day, he said, requires the least attention of all the materials entering into concrete. Only lately has serious attention been paid to water, but the tests at Lewis Institute have proven that water is absolutely the most important element going into concrete—the element that requires the greatest care and knowledge in its use.

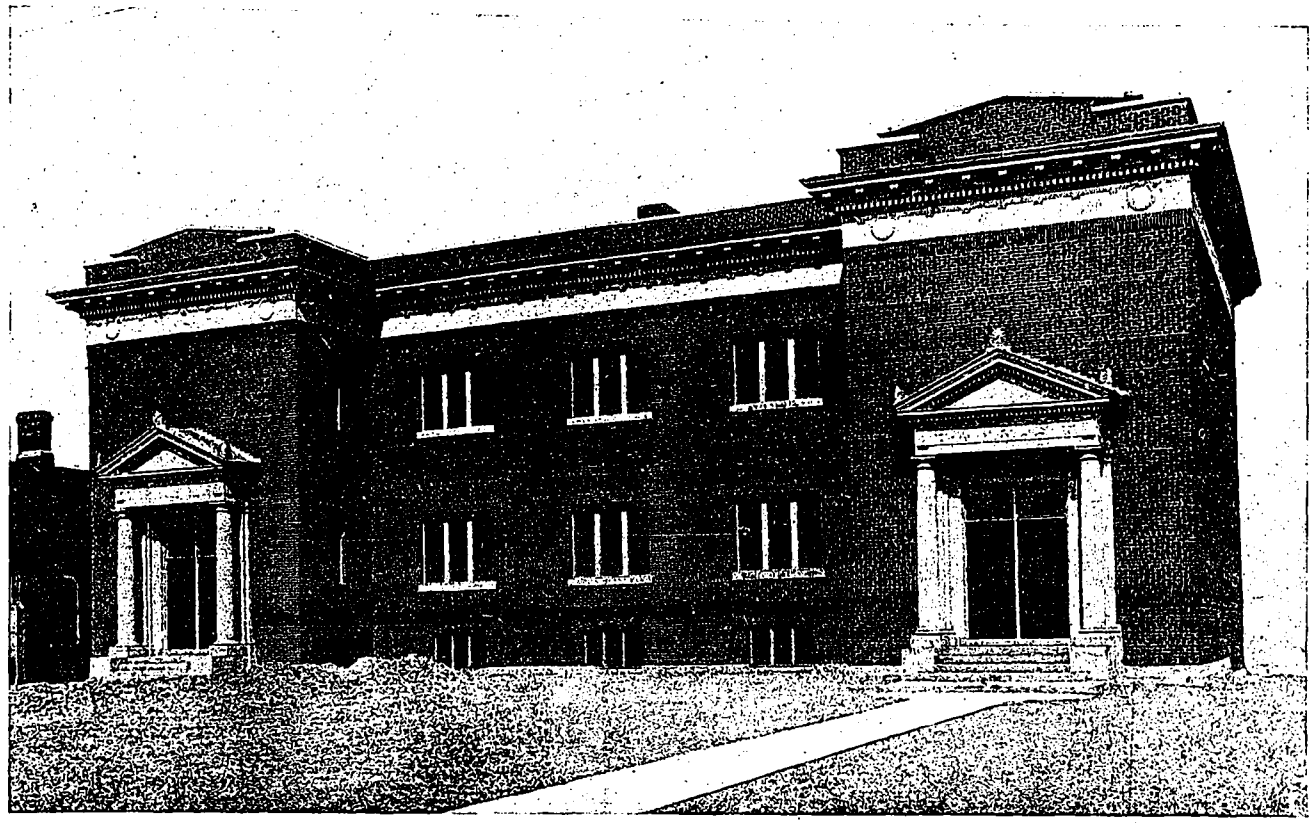
The quantity of water necessary to get the best results depends upon the nature of the aggregates used. Some aggregates are of a porous nature, and absorb so much water that it is necessary to use more water than in non-absorbent aggregates or the mixture will be too dry. It is necessary to use more water in a fine aggregate than in a coarser aggregate. Exhaustive tests showing strength obtained by the use of relative sizes of aggregates, varying materials used as aggregates, and by dry or wet mixes, have been made at Lewis Institute.



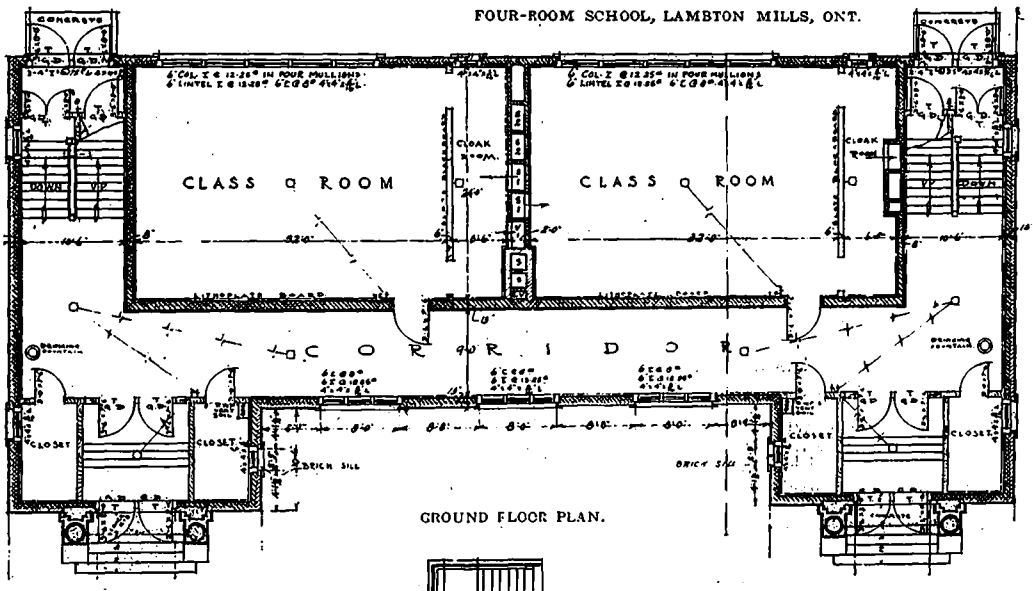
SANTA FE ELEMENTARY SCHOOL, OAKLAND, CALIFORNIA.
JOHN J. DONOVAN, ARCHITECT.
From the "Western Architect."



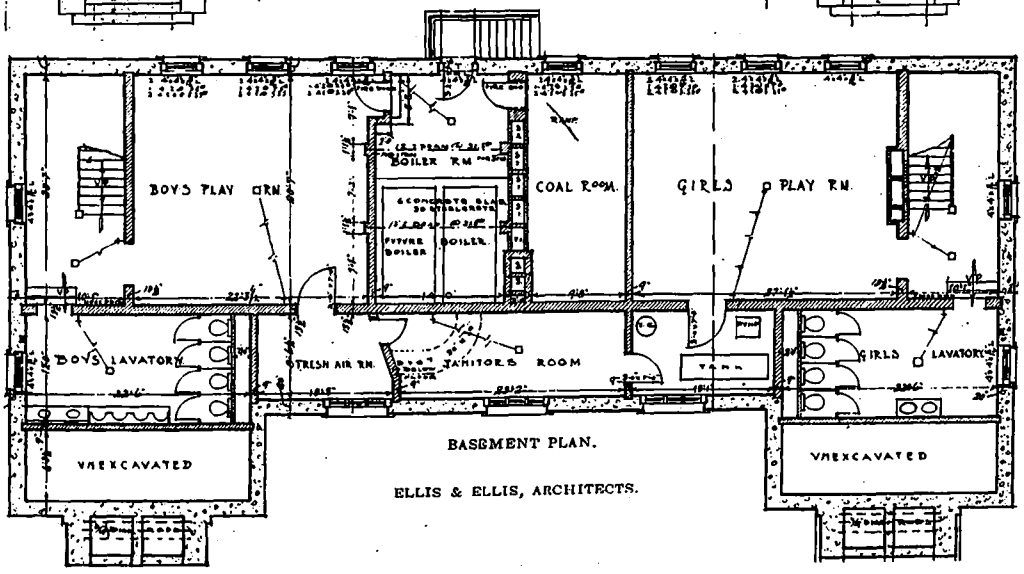
GRAMMAR SCHOOL, HIGHLAND PARK, ILLINOIS.
HOLMES & FLINN, ARCHITECTS.
From the "Western Architect."



FOUR-ROOM SCHOOL, LAMBTON MILLS, ONT.



GROUND FLOOR PLAN.



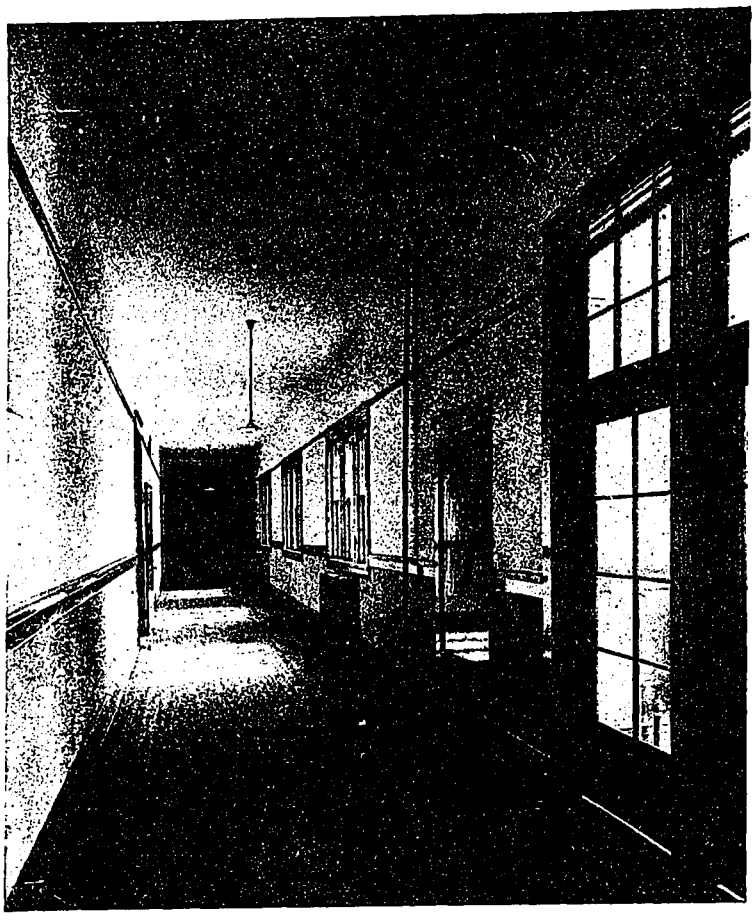
BASEMENT PLAN.

ELLIS & ELLIS, ARCHITECTS.

A Joint Meeting Held

The local section of the American Society of Mechanical Engineers met jointly with the Toronto branch of the Engineering Institute of Canada on the evening of July 3rd, at the Engineers' Club, 96 King street west. Papers were presented by Mr. Edward Maybee on the subject of "Patents of Invention," and by Mr. Holmes, of the Invalided Soldiers' Commission, who spoke on "The Training of Disabled Soldiers in the Industries." A good attendance was reported.

Mr. A. J. Rowley has opened an office for architectural practice in the Western Trust Building, Regina, Sask.



CORRIDOR, LAMBTON MILLS SCHOOL.

New School, Lambton Mills, Ontario

The new Lambton Mills School is planned on the unit system, which involves the principle of a preconceived scheme providing for future accommodation as part of a general plan. While at present it contains only four classrooms, provision is made for adding to the building up to the size of sixteen classrooms. These extensions will be made so that as each addition is carried out the structure will have a finished and complete appearance. The design, which has a Georgian feeling, is somewhat more meritorious than is usually found in the average school in the smaller communities and country districts. The brick work is exceptionally well done, consisting of a plain, simple effect which derives the suggestion of a pattern from headers placed at every eighth row. Rug brick is the material used, backed by hollow tile, the entrances and trimming being of Indiana limestone.

Quite an interesting feature of the plan are the corridors, which are placed so that direct outside light is obtained along their entire length. The general practice in both this country and the United States is to flank both sides of the corridors with classrooms and to depend on transoms and end windows for light. The later arrangement gives a more economical building, but it is claimed by some that this advantage is gained at the sacrifice of proper light and attractiveness. With the corridors placed as in this building, the lighting makes it possible to adorn the walls with pictures and paintings, thus making the corridors serve effectively as a sort of art gallery in connection with the school.

The basement and ground floor plans only are shown herewith. The upper floor follows the same general arrangement as the floor below, with the exception that immediately over the entrances the space is utilized for the principal's office and a large teachers' rest room, each of which have adjoining lavatories and lockers. The general interior trim is of Southern pine of beautiful grain and transparency, giving a very pleasing effect, the detail being quite simple. Each classroom has a ventilated wardrobe compartment, and is fitted with an inter-communicating phone and electric call and fire alarm bells. The recreation rooms and lavatories for both sexes are located in the basement.

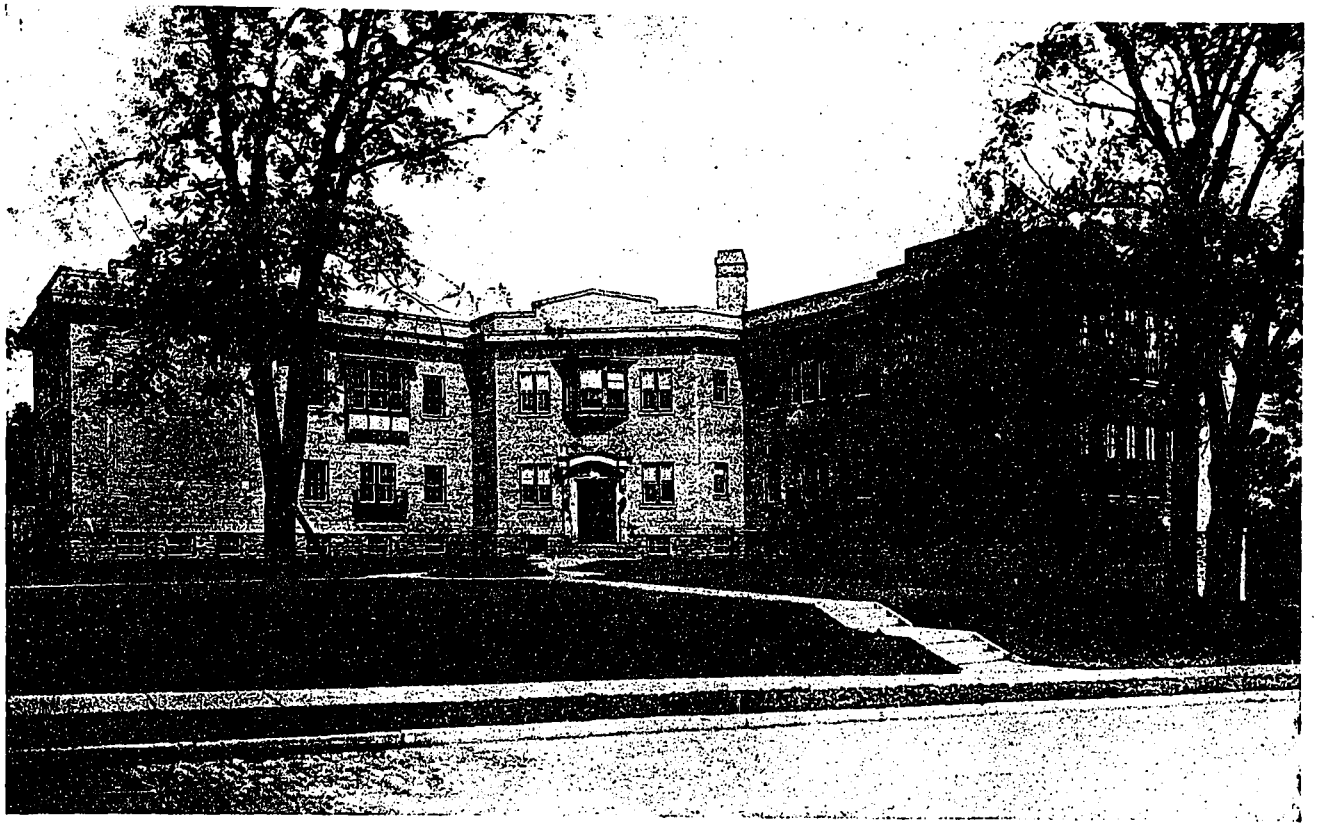
The heating and ventilating is done by a very complete plenum system, each pupil and occupant being supplied with thirty cubic feet of fresh properly tempered air per minute. The district in which the school is located has not as yet any sewerage connection, but in lieu of this for the time being a system of modern chemical closets has been installed.

Colonel Lowe Honored.

A complimentary dinner was recently given by T. S. Rogers, K.C., chairman of the Halifax Relief Commission, in honor of Col. Robert S. Lowe, who since the explosion has been in charge of the reconstruction, and who for his services in those six months has declined to accept any remuneration. Among citizens prominent in public life present were: Premier Murray, Judge Wallace, Mr. Fowke and Hon. A. K. McLean, who paid tribute to the magnificent service rendered by Col. Lowe to the Relief Committee. Following the dinner Col. Lowe left for Ottawa on business connected with contracts in Ontario, but will return to Halifax from time to time to supervise the work which is being carried out by the company of which he is general manager.

A New Use For Luminous Paint

A Boston hotel with a large electrical sign, when compelled to cut off its illumination under the recent U.S. Fuel Administration order prohibiting such uses of current, had the sign painted with luminous paint, which is said to be a fairly satisfactory war-time substitute.

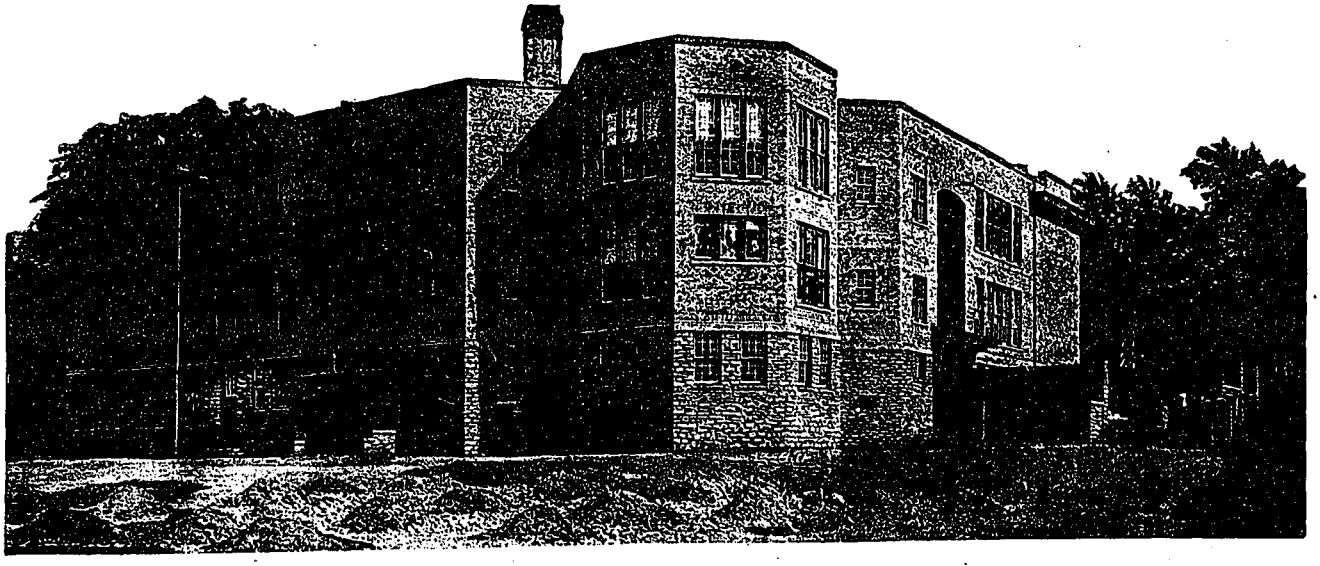


NORTHEAST VIEWPOINT, RIVERVIEW SCHOOL, LONDON, ONT. L. E. CARROTHERS AND J. V. MUNROE, ARCHITECTS.

London (Ontario) Schools

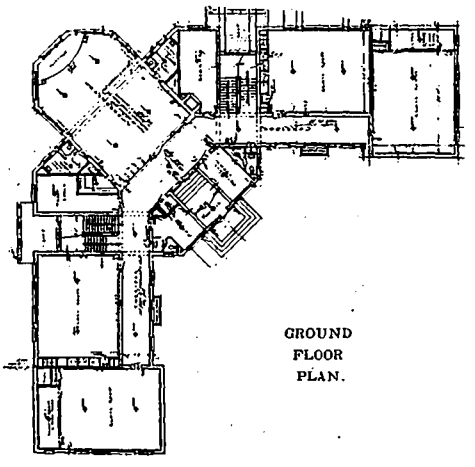
A SURVEY of the school situation in London, Ont., five years back emphasized the fact that the city had outgrown its existing accommodations; that in consequence of this, overcrowding had resulted, and that it was necessary to utilize buildings never intended for school purposes in order to house the children of one or two certain districts. Since then seven new schools have been erected, including five structures of standard type, a modern one-storey school, and the new half-million-dollar technical and art school, which is to be ready this coming September for the opening of the fall term.

The new buildings, which represent the work of local architects, are situated so as to effectually serve both the central and outlying districts, and therefore give accommodations conveniently accessible to the children of all sections. They are surrounded by sufficient grounds for both lawns and recreation purposes, and conform to accepted standards of plan and equipment, based upon safe economical construction and approved sanitary conditions.



SOUTHWEST VIEWPOINT, RIVERVIEW SCHOOL, LONDON, ONT.

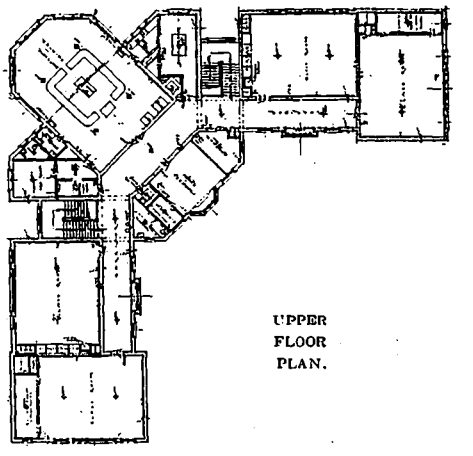
Examples of the types of buildings erected are illustrated in the four accompanying subjects, viz., the Riverview School, Lord Roberts' School and the Tecumseh and Aberdeen Schools. The former is an eight-room school, built on the side of a hill, and hence is somewhat unusual in the arrangement of its plan. The building is in the shape of an L, which is well adapted to the corner on which it stands, and gives an excellent view from the rooms to the river in the rear. Features of the plan are the bays, with seats in the corridors, the three exits and the separate kindergarten and teachers' entrance. The exterior design is simple and pleasing in its balance and general proportions. Local white brick, laid in red colored cement mortar, is used for the wall, and Bedford stone for the entrance. The sub-basement is in concrete, and the corridors, boiler room, coal room and stair-



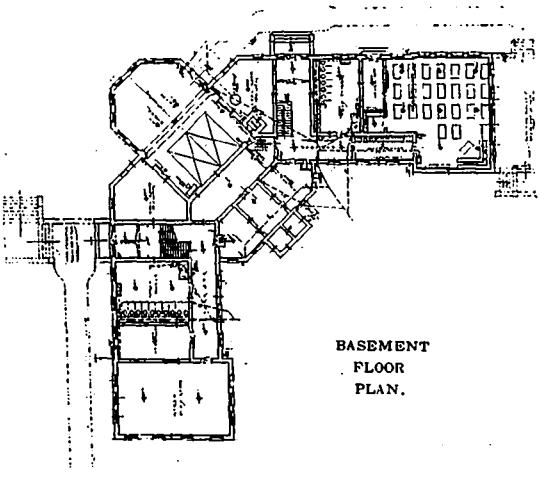
GROUND FLOOR PLAN.

RIVERVIEW SCHOOL, LONDON, ONT.

L. E. CARROTHERS AND J. V. MUNROE, ARCHITECTS.



UPPER FLOOR PLAN.

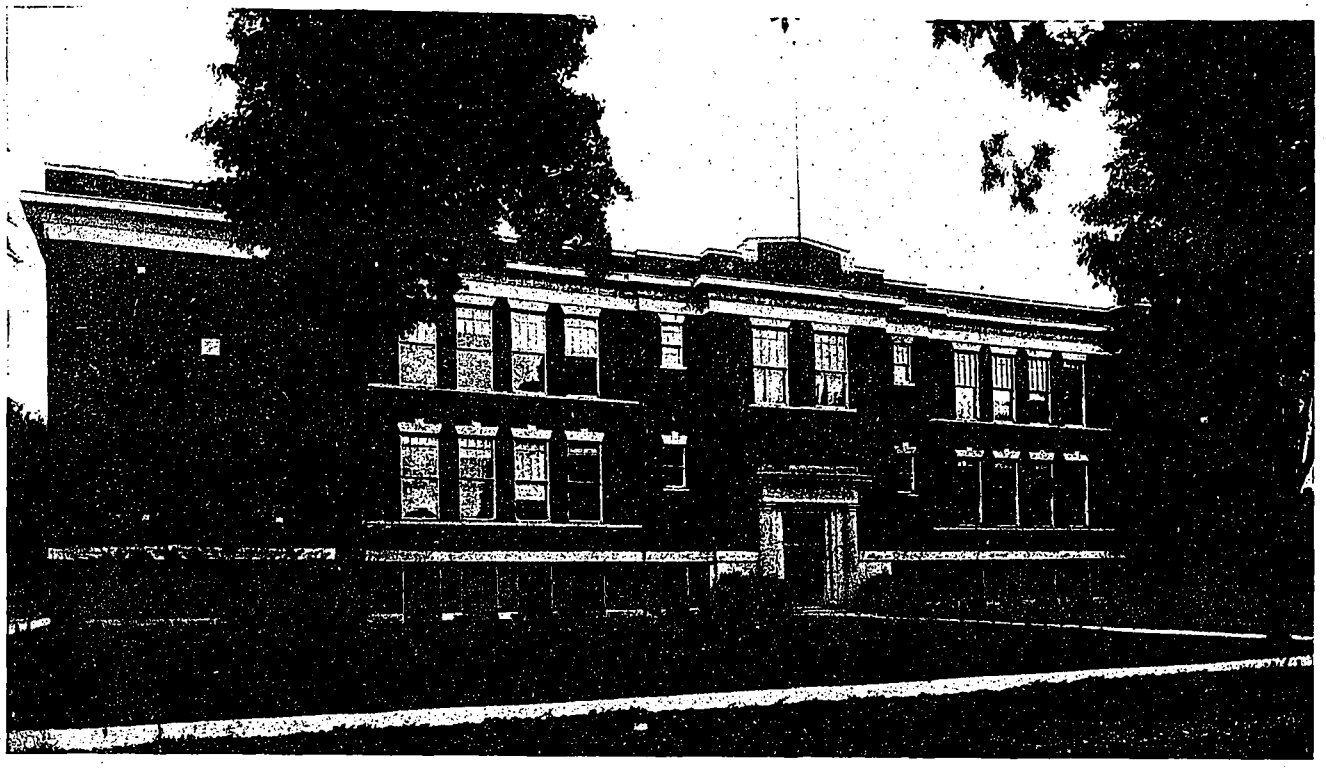


BASEMENT FLOOR PLAN.

cases are fireproof. Both the corridors and lavatories have terrazzo floors. The heating installation consists of a two-pipe vapor system, said to be very economical and efficient, and the plumbing fixtures are of the latest porcelain type, the lavatories and all parts of the building being ventilated by motor-driven fans. While the slope of the ground necessitated an expensive foundation, the structure was built at a cost of $53,300, or approximately 13½ cents per cubic foot.

Considering the type of construction employed in these various schools, and the fact that their erection was carried out during the period of the war, the matter of expenditure has been well controlled. The cost of the new Lord Roberts' School was $70,000, or approximately 17 cents per cubic foot. This building has thirteen classrooms, a library and an indoor swimming pool. The corridor floors are of concrete, surfaced with terrazzo, which is also used in the domestic science room, the main partitions being of brick throughout. The introduction of the swimming pool in the basement scheme has been successfully done without any encroachment on space required for other purposes. It comprises a most desirable feature, and will undoubtedly be more generally adopted in future schools. The swimming pool room occupies 29 x 33 feet, of which 26 x 13 feet is taken up by the tank itself. Both the tank and the floor are of concrete, finished with a waterproof hardener. The plumbing, heating and ventilating installation of the building are along approved modern lines, all classrooms and corridors receiving a supply at regular intervals of fresh, washed, tempered air. The lavatories are located in the basement, and have metal partitions and porcelain fixtures. The closets are exceptionally well ventilated, the air being drawn through seat vents into ducts and carried to a roof exhaust.

Both the Tecumseh and Aberdeen Schools are built on similar lines to the construction just described. They were erected in 1914-15, and were to a large extent the nucleus of London's present up-to-date school system. The buildings are decidedly modern in every respect, having rug brick exteriors, fireproof corridors and stairs, maple floors in classrooms and Georgia pine trim, stained and varnished. The plumbing is thoroughly up-to-date, as are also the heating and ventilation. Both schools are planned for such future extensions as may be required from time to time.



ABERDEEN SCHOOL, LONDON, ONT. WATT & BLACKWELL, ARCHITECTS.

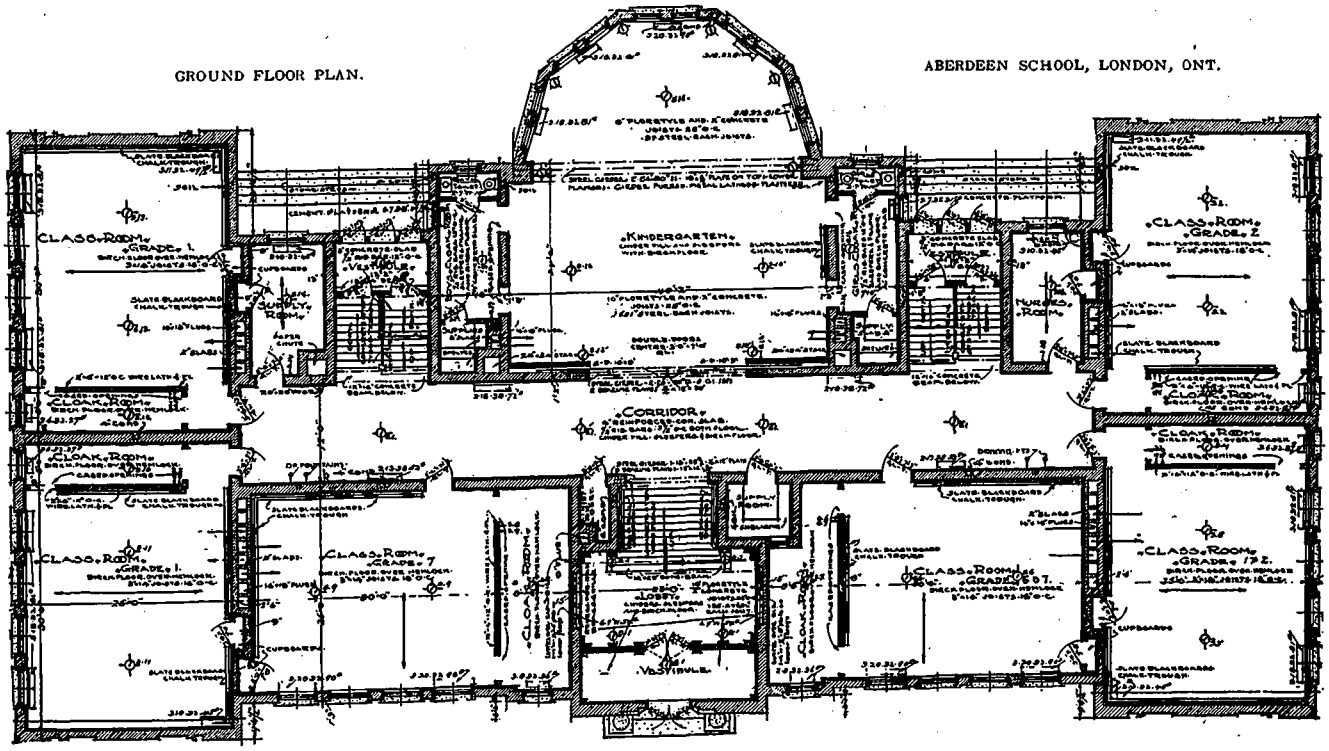
Building Costs Will Not Decrease.

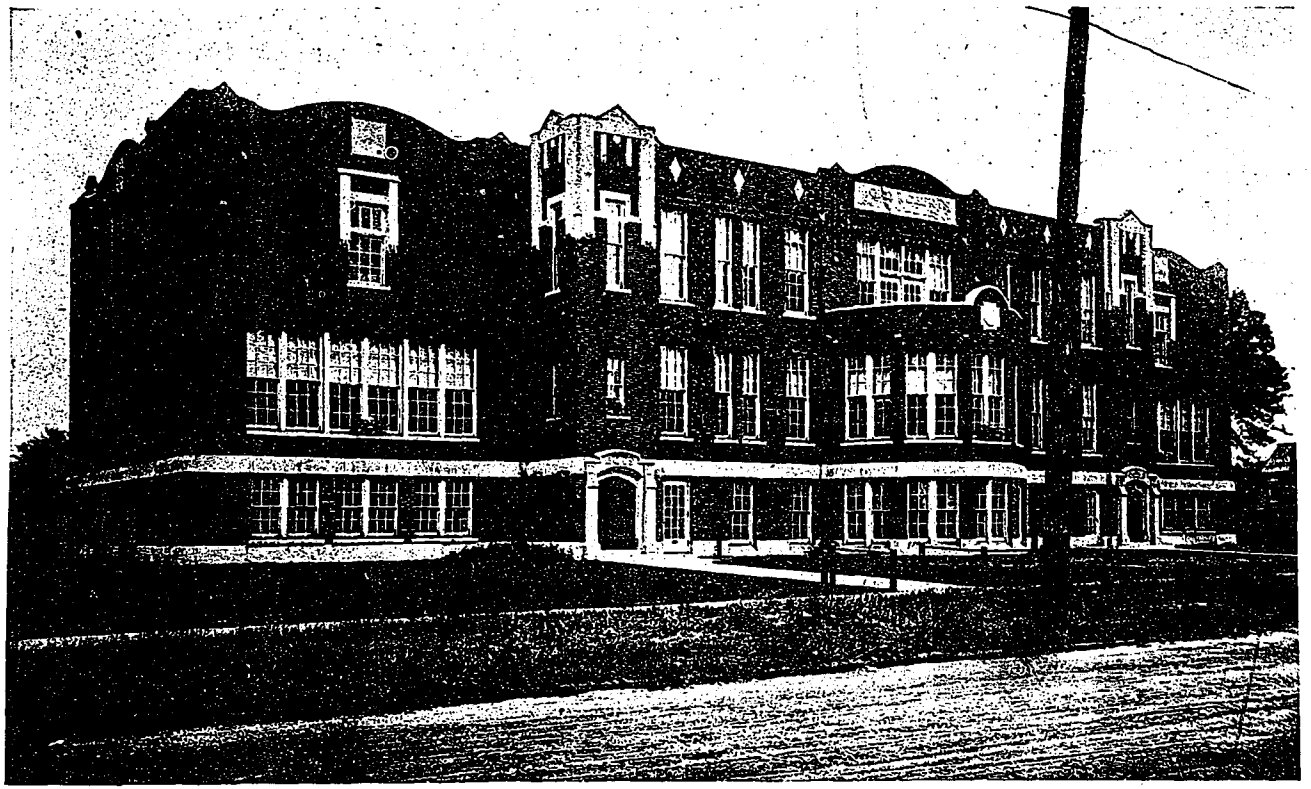
Building material costs are adjusting themselves. People who have an interest in construction generally are beginning to understand that the days of low cost—if they ever come again—are far distant. The war has caused a huge increase in everything that goes into building. The increase thus far has been excessive, it is true, but not so excessive as some may think.

Labor prices will remain high for a long time. The decrease in men through losses in the war, the rebuilding of shattered Europe, even after peace comes, and the consequent demand for labor, means that, under the working of the inexorable law of supply and demand, labor is going to be high for a long time. This applies both to skilled and unskilled labor.

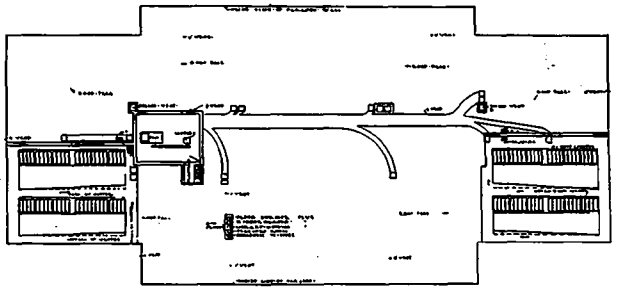
For practically the same reason material costs are going to remain high. It will not only be because of the manufacture of war necessities, but from the demand for peace necessities which will come after the war. Institutions of production have been destroyed and will have to be rebuilt. Demands of an extraordinary

GROUND FLOOR PLAN. ABERDEEN SCHOOL, LONDON, ONT.





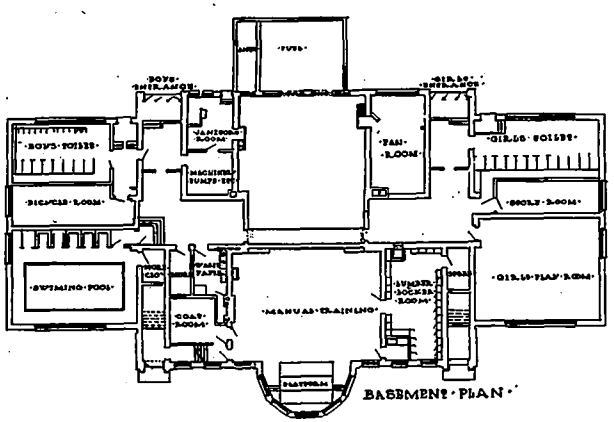
EXTERIOR VIEW, LORD ROBERTS SCHOOL, LONDON, ONT.



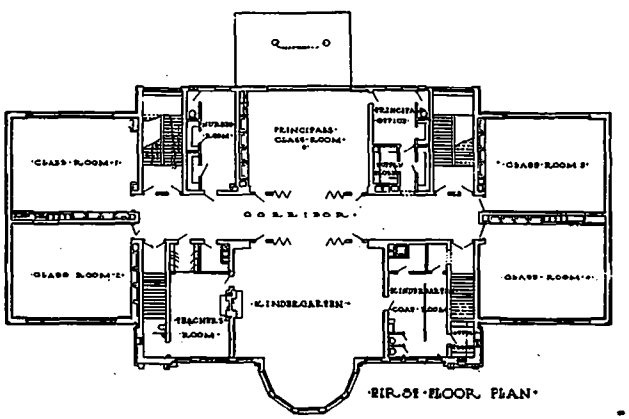
PLAN OF ROOF & EXHAUST DUCTS

LORD ROBERTS SCHOOL,
LONDON, ONT.

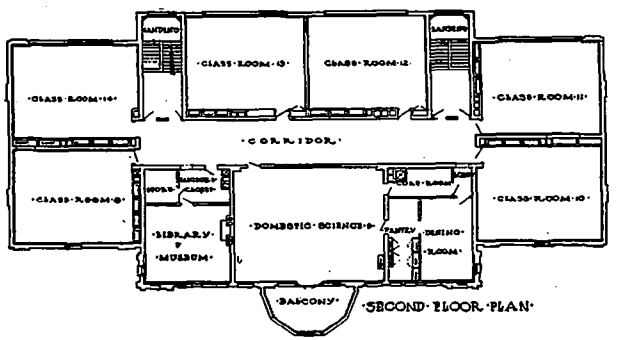
M'BRIDE & GILBERT,
ARCHITECTS,
AND
A. E. NUTTER,
ASSOCIATED ARCHITECT.



BASEMENT PLAN

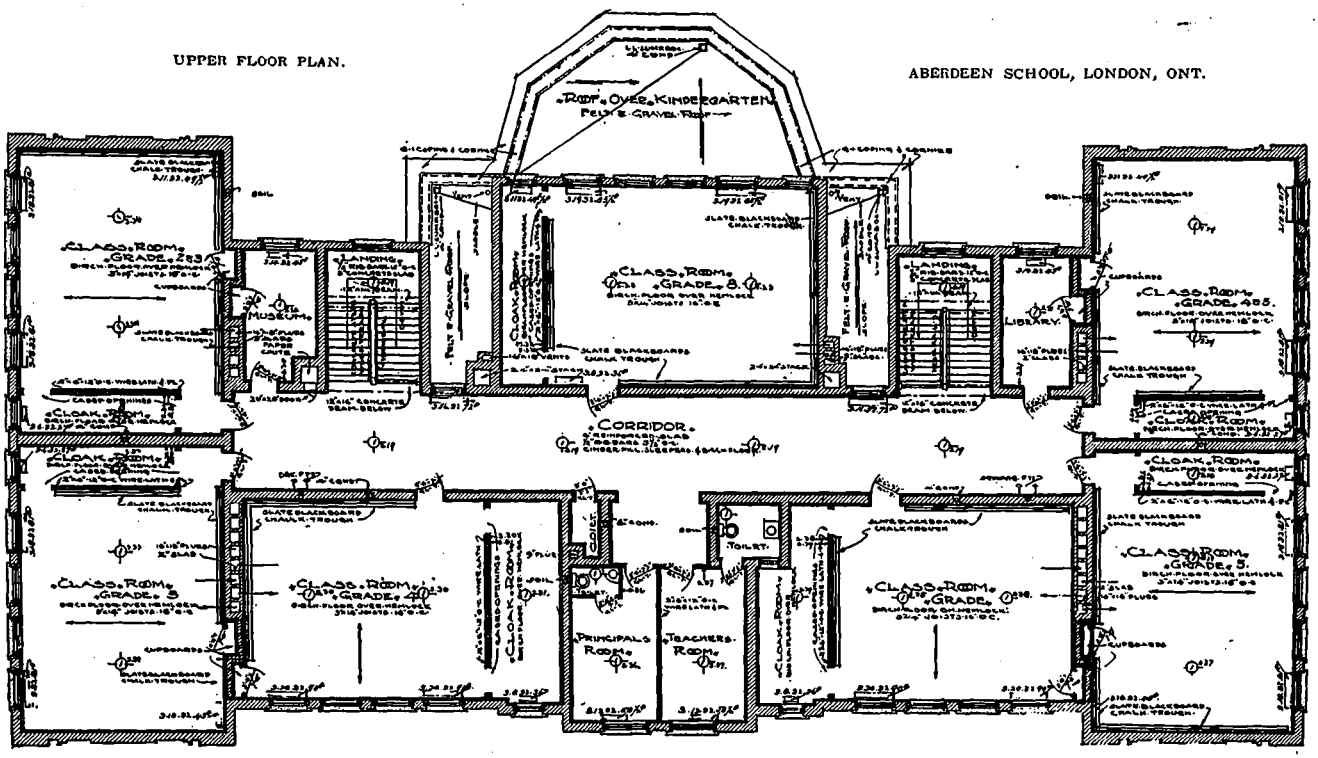


FIRST FLOOR PLAN



SECOND FLOOR PLAN

UPPER FLOOR PLAN. ABERDEEN SCHOOL, LONDON, ONT.

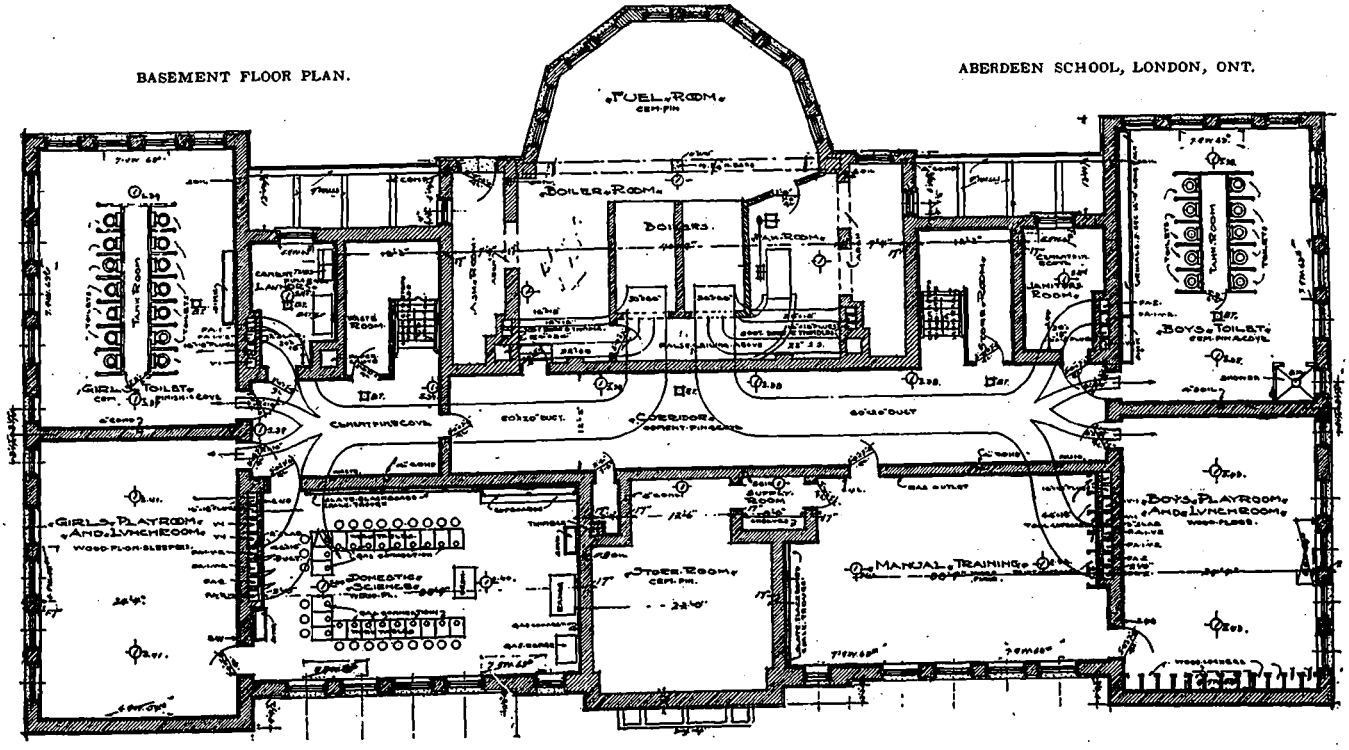


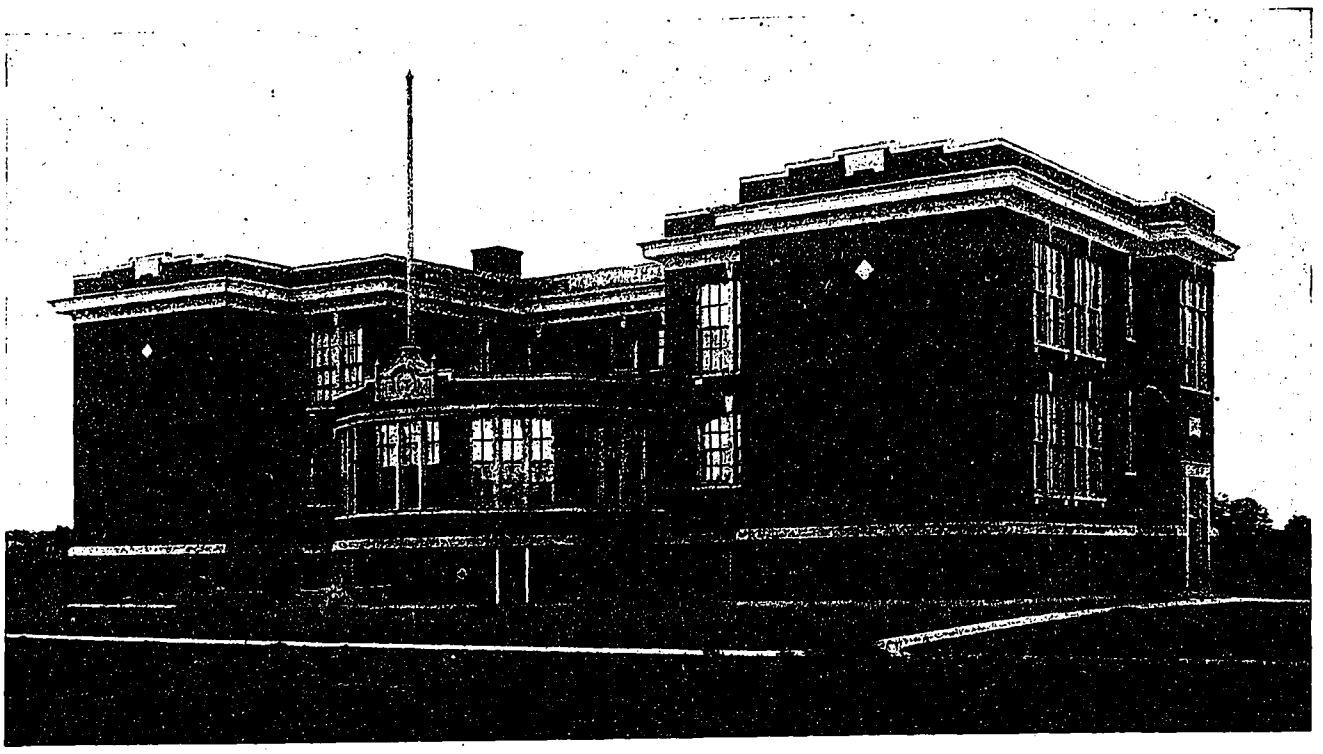
nature have been made upon every branch of industry and production, and factories which have supplied these demands have been demolished in the war zone, while others have been converted to other uses.

In short, all industry has been metamorphosed, and to get it to a sound basis will mean the consumption of huge quantities of material, aside from that directly required in the process of reconstructing that portion of the world shattered in the war. That means a continuance of high building costs.

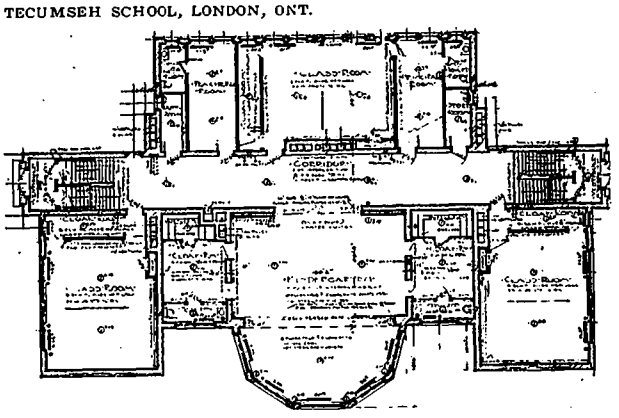
Now, what will builders do? Inevitably they must adjust themselves to changed conditions, and they are already beginning to do so. They are realizing that high costs are stable now, and they must predicate future operations upon high costs. That does not mean a restriction of building. It really means an extension, and, once the people interested get the idea out of their heads that by waiting they will save money in material and labor, they will adjust themselves to changed conditions.—"National Real Estate Journal."

BASEMENT FLOOR PLAN. ABERDEEN SCHOOL, LONDON, ONT.

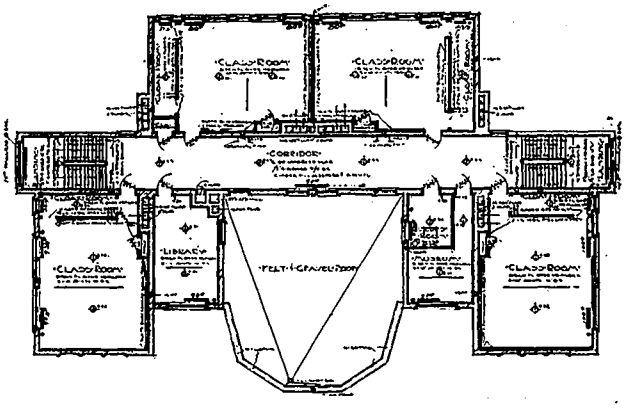




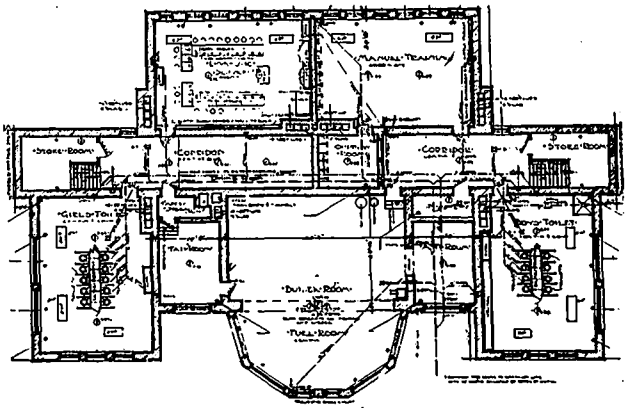
TECUMSEH SCHOOL, LONDON, ONT. WATT & BLACKWELL, ARCHITECTS.



GROUND FLOOR PLAN.



UPPER FLOOR PLAN.

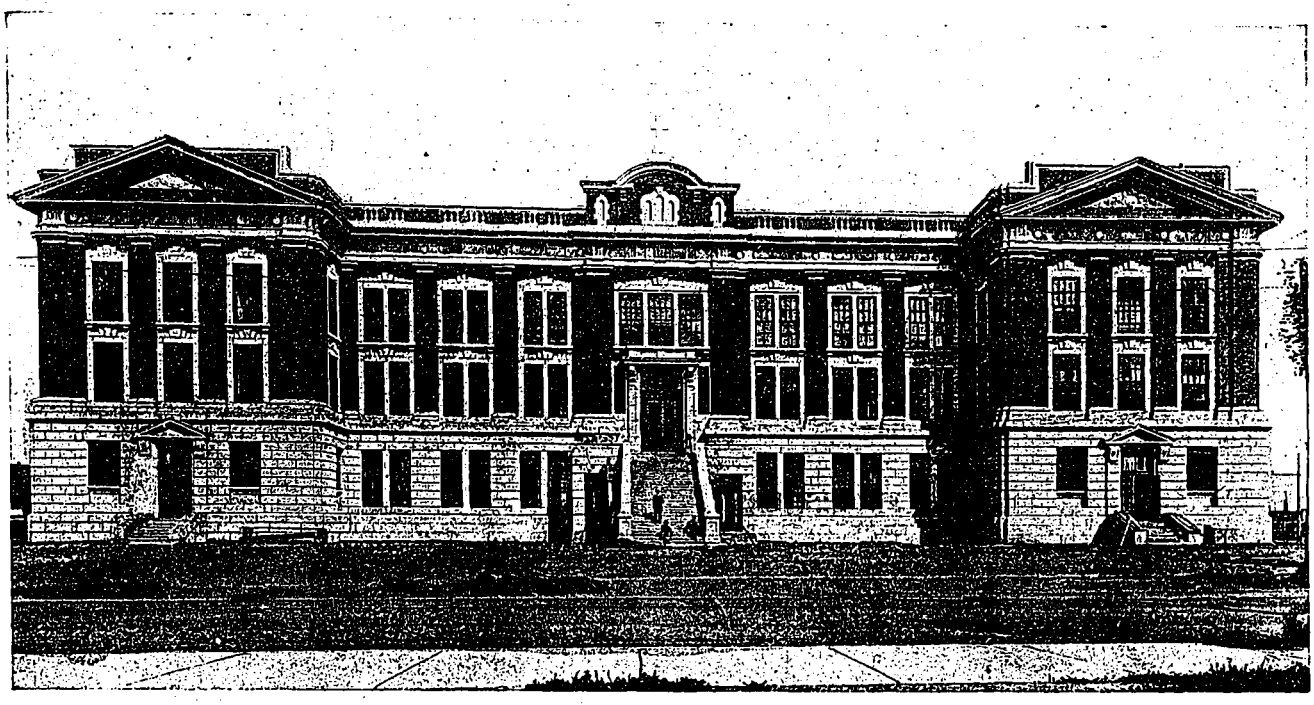


BASEMENT FLOOR PLAN.

A Test of Concrete

We are told by a contemporary of a remarkable test that has just been carried on in Chicago in pursuance of scientists' efforts to ascertain the "point of destruction" in reinforced concrete. A building erected in 1909 for heavy printing work has now to be demolished to make way for Chicago's new Union Station. The sixth floor, chosen for the test, was a four-way flat slab construction, designed for a live load of 250 lbs. per square foot. Into this flat was conveyed a million and a quarter pounds of pig iron, applied in increments of approximately 200 lbs. per square foot, until a weight of 910 lbs. per square foot had been reached. The time between the first and last loads covered a period of twelve days. Professor. A. N. Talbot, of the University of Illinois, who conducted the experiment, estimated that a load of 1,500 lbs. per square foot would have been necessary to produce a collapse, and he therefore decided that it would be of far greater value to watch the recovery of the floor after the removal of the load than to cause a complete collapse of the structure which had been made use of for the above test.

Building operations in practically all sections are equally as good, if not ahead, of the summer period last year. From a large number of sections come very good reports, including an improvement in the amount of work undertaken by the Federal Government, and the establishing of new industrials such as the large chemical works to be built at Walkerville, Ont.,



ACADEMIE DU ST. NOM. DE MARIE, MONTREAL. C. A. REEVES, ARCHITECT.

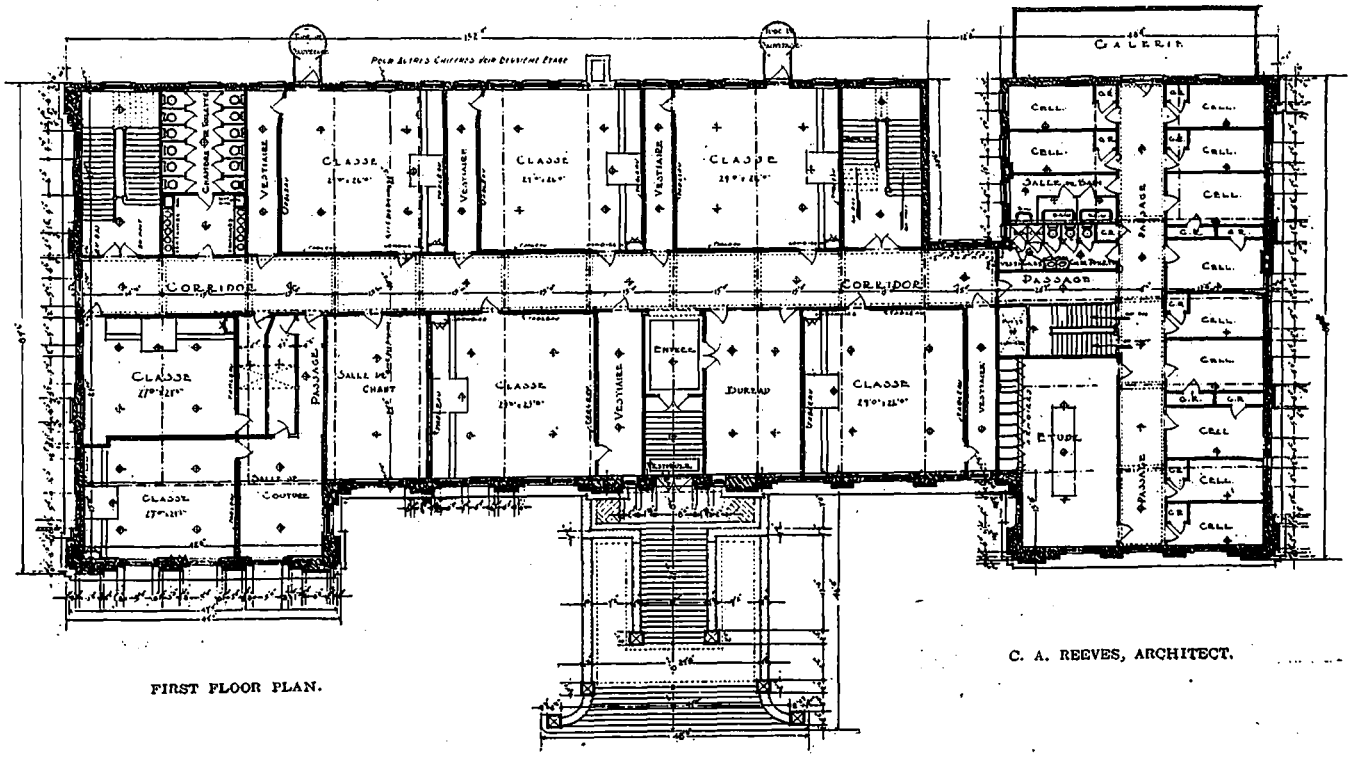
Academie du St. Nom. de Marie, Montreal

THE above building is one of two new schools of similar design recently completed at Maisonneuve for the Catholic School Commissioners of Montreal. It contains in all fifteen class rooms for girl students, a large recreation hall, library, etc., and a residential section for the nuns, who will also have supervision of the boys' school built on a nearby site. The construction is along approved modern lines consisting of steel framework, concrete floors and hollow tile partitions. The exterior is of cut stone with brick work above.

Three entrances, both at the front and rear, give convenient means of ingress and egress on the street and playground sides. The corridor stairs are of iron and marble, the general interior trim of chestnut, and the walls and floors of the lavatories finished in white tile.

In the residential wing, the accommodations provide twenty-two bedrooms, a chapel and sacristy, community hall, refectory, wardrobe, and four separate toilets.

The construction and equipment of the building cost $250,000, including a hot water heating plant and modern ventilating system installed in accordance with approved methods of engineering practice.



FIRST FLOOR PLAN. C. A. REEVES, ARCHITECT.

CONSTRUCTION

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A Point in Controversy

More or less discussion has recently been indulged in by members of the Toronto Board of Education as to the best procedure of obtaining plans for the erection of future schools. Dr. Noble, one of the oldest trustees, emphatically declares himself in favor of inviting architects to submit designs in competition for all work hereafter proposed and recently introduced a motion to this effect. Dr. Noble contends that the erection of buildings under the Board's own architectural department has been both unsatisfactory and too costly, and that competitive methods would give the best and most satisfactory results.

While others also support this proposal, there are some who are opposed to any change. Dr. Hunter, likewise a member of long standing, quite believes that the present system not only fulfills its purpose, but in a recently published article on school architecture, holds that it is probably the best. While admitting that "we owe much of our progress to chivalrous, honest, intelligent competition," which he says cannot be too highly appreciated, he still contends "that with a competent official who has long experience in highly specialized work, the Board should get equally as good if not better service than from any competition of outside firms."

Perhaps Dr. Hunter has some grounds on which to base his statement. We are free to grant that the public schools erected in Toronto during the past ten years are of a more advanced type than their predecessors, being safer and more efficiently planned and more sanitary in every way, and credit is certainly due to those responsible for the work. But in allowing this, we are at the same time prone to the idea that it is not altogether a matter of specialization which counts but rather the faculty to grasp and understand a definite set of principles and to apply them intelligently to the problem involved.

The Toronto Technical School was not the work of specialists in the restricted sense of the term, but was built from plans submitted in competition by a firm of architects who, both previously and since, have done much other important and successful work entirely different in character. The Technical School competition gave the promoters a final choice of at least three designs from any one of which a good building could have been erected, and at the same time resulted in a degree of comparison which enabled them to select the best and most suitable scheme.

Other instances could also be cited including a number of university schools, which were designed by firms whose efforts have not been limited to one class of work. And while it might be argued that these are buildings of a more advanced and costly type, they involved related but more difficult problems requiring a high order of architectural skill for their proper solution.

Specialization is to be commended, but ability is what really counts. Where the two go hand in glove an ideal combination exists. A way out of the controversy would be to put the point in question to a test. This could be done by arranging a competition in which the Board's own architectural department and outside firms could participate. It would be fair to all parties and unquestionably derive the best results.

Plans have just been completed for a new consolidated schoolhouse for East Zorra, by Architect W. W. Lachance, Welland, Ont. The building will contain six regular classrooms, two agricultural classrooms, household science department, assembly room, gymnasium and manual training department. The estimated cost of the building is $65,000. Tenders will be called for immediately. The plans are approved by the Department of Education.

National Housing and National Life*

By Professor S. D. Adshead, M.A.

USED in its modern sense "Housing" does not mean "house building," and although in all probability at least one-half of the time and energy of those of us who are members of the architectural profession is devoted to the building of houses, at the same time it is doubtful if one-hundredth part of our professional energy has been expended on "Housing." The term "Housing," as used to-day, means "the providing of living accommodation for the working classes," and when we have it on reliable authority that over 90 per cent. of the plans for working-class houses submitted to Local Authorities for their approval have not been prepared by architects, I think I am justified in asserting that the interest of our profession in this class of work has been, to say the least, negligible. This is a very serious statement to have to make, and one that is surely deserving of our closest attention.

The subject under discussion, National Housing and National Life, suggests at the outset an entirely new aspect of the position; let us therefore consider it from two points of view: (1) The interest of the general public in housing, and (2) the responsibility of the architect in regard thereto. That there exists at the moment a popular interest in housing amounting almost to an obsession on the part of the nation no one will dispute, and it is an interest which has the support of every phase of social and political opinion; indeed, so important has the question become that it is now recognized that the minimum accommodation and rent of a working man's house are bound to become factors of first importance in national standard values upon which will be built any new system of national finance. . . . . .

It is a well-recognized fact in economics that rents are not subject to the same fluctuations as are the prices of consumable articles like tea, sugar and bread. Nor are they subject to the same conditions of supply and demand. A rise in the price of building materials and in the cost of labor does not produce a corresponding rise in rent. It simply discourages building, and people crowd more tightly into houses already built. Crowding at the present moment is abnormal, and the cost of building is extraordinarily high, and yet if 500,000 new houses were built under the present conditions, or anything like that number, and if economic rents were to be fixed accordingly, they would not all be occupied. A big proportion of the working classes would continue to live in crowded houses that were let at a much lower rent than the new houses, and would prefer to spend their increased wages in another way; hence the need for a national housing subsidy.

It may be considered by some that, in order to enable the working man to pay an economic rent for the new houses that it is proposed to erect at exceptional cost, the case would be met more directly by raising wages correspondingly. This may be so ultimately, but at the outset it would mean, as I have endeavored to show that overcrowding would continue, and the extra wage would continue to flow into the pockets of the owner of the older property.

But this question of rent is not a matter of primary importance to us architects, except as indicating that the new houses that are to be built will not entirely depend in the amount of their accommodation upon the ordinary laws of demand and supply. They will be regulated by the accepted national principle that a house with less accommodation than four rooms is not considered satisfactory where there is any likelihood of its being occupied by a family. To-day there is a universally recognized appreciation of the influence of the house and its surroundings and associations on the lives of the people generally. The house must have an interest which the tenant can feel is his own. The standard repeat and the by-law street have been condemned and are for ever doomed. This opens out to us the panorama of an entirely new world and affords opportunities for the architect which his imagination never before conceived.

Housing schemes must be laid out on town-planning lines; they must be placed as far as is possible without the confines of the city. They must be thought of not as spaces covered with packing-cases but as a collection of homes associated with one another in sharing the benefits of public buildings and public amenities. They must have gardens, interesting outlooks both back and front, and all the considered requirements of a complete community. No doubt, some schemes will be urban and built within the city, but they will be laid out on quite new and interesting lines. I think that our slum areas will be gradually cleared and the inmates of the worst of them accommodated in well-controlled flats. We have yet a type of town building to erect which shall consist of a huge quadrangle of flats arranged around a square laid out with cobbles or gravel and decorated with flowers, and where the communal kitchen, the common washhouse, central heating and central lighting, and all the so-much-discussed advantages of communal and common sharing could be tried.

*Excerpt from discussion at the twelfth Informal Conference, held at the Royal Institute of British Architects.

Having now sketched out what is to be, let me now come to my second point—viz., the qualifications of the architect to accept the responsibility of carrying out this comparatively new branch of his work. I mention the word "qualifications" in this connection because I wish to make it particularly clear that if architects are to undertake this kind of work—though they as a profession may not realize it—they have a great deal to learn about town planning, they have a great deal to learn about a modern system of housing, and they have a great deal to learn both of a practical and common sense nature that is at the moment much better understood by the engineer and the surveyor. In my opinion, the surveyor and engineer have, since the passing of the Town Planning Act, studied the subject in all its bearings, both much more seriously and much more generally than have the architects, and this not only in its immediate relation to the width and construction of streets but also with the wider view which we architects associate with architectural effect. I say this because I feel that our profession must bestir itself if it is to qualify itself to undertake the great work that undoubtedly lies ahead.

Let me make myself quite clear, and let me say that the housing scheme of the future will depend for its success upon an entirely different set of interests from those that have obtained in the past. It will not be the interest that we have been wont to associate with the picturesque village of the past, those humble records of a rural history spread over long and restful periods of slow change in architectural style, in the different use of materials and in the weathering of brick and stone. The new schemes cannot depend upon any interests like these. They were built under totally different conditions from those obtaining to-day; their builders were country carpenters and their workmen real craftsmen, or if in Georgian days, when contracting became common, they worked under some inborn architectural influence, were not entirely absorbed in pocketing discounts and juggling with advances, and were quite simple men.

Nor again will the cottage of the future be built by the speculative gentlemen purely as a commercial enterprise, as have practically all the workmen's houses erected since the middle of last century. No, the housing scheme of the future will be laid out on town-planning lines, and the commercial aspect will not loom largest in the field; and whilst nowhere will there be standard streets it goes without saying that the cottages themselves will be built to standardized plans. But both cottage and street will now for the first time be considered conjointly, and in the grouping and composition that will follow will lie the architect's opportunity.

The recent cottage competition has proved a valuable and instructive lesson to the architectural profession. A general inspection of the designs submitted shows very clearly that as a profession we have not yet realized that the cottage of the future cannot be the cottage of the past, the former being necessarily a unit in a composition, the latter having an individual entity.

I sincerely hope that cottage building in the future will come to be the work of the architect. It is his own fault if it doesn't, but he must not think of cottages separately. I think that the profession would do well to have an exhibition of housing schemes. . . . . The profession must hold on to this housing while the nation is interested.

Concrete Beautiful

By T. J. Clark, A.I.C., in The "Builder," London.

IT has been stated that any style of architecture may be imitated and reproduced in concrete. True; but this violates one of the essential canons of art, since, as Ruskin says, "Art is Truth"; and to employ one material for the imitation of another is to debase the uses of the material so employed, and stultify that which it imitates. It is not the function of concrete —and this we state with all emphasis—to pretend to be other than it is. Of its strength and durability there is no longer any question; the nature of the material needs but a brief consideration in order to realize its perfect adaptability to any design; and the great variety of effects which may be obtained by legitimate surface treatment in order to produce a pleasing appearance, render unnecessary, as well as illogical, any attempt to make concrete masquerade as brick or stone.

It may be taken as an axiom that every house should be a home, and every home should be as healthful, as comfortable and as beautiful as it can be made. The first two aspects of the question it is outside the scope of this article to consider, but a few suggestions will be offered which may assist in the realization of the third.

The most prominent feature of a building, and that which has the greatest effect upon the eye is its design and style. Reference has already been made to the adaptability, in this connection, of concrete, one of whose chief characteristics is plasticity; and when it is remembered that it may be moulded to any desired shape, it will be seen that the capable designer,

possessed of imagination, will find ready to his hand a medium for the expression of artistic feeling, and one which offers unlimited opportunities for originality of conception and for variety and breadth of treatment. Large masses may be so treated that they combine the suggestion of great strength with simplicity, dignity and beauty of form, while smaller masses, as represented by dwelling-houses, can be so designed as to suggest daintiness, comfort and home. But whether for large masses or small, the design should be such that it takes advantage of and emphasizes the characteristics of the material instead of being a mere copy of some existing design or style. By thinking and working on these lines, the architect will realize that science has provided him with a material which, as far as its architectural possibilities are concerned, is in its early infancy, and by means of which he may break away from established tradition, inaugurate a new era in architectural development, and create a new style.

This part of the subject is too wide to be dealt with in detail within the limits of the space at our disposal, but the imaginative mind will perceive in concrete an architectural material full of rich promise, teeming with possibilities, and presenting for consideration and solution problems of absorbing interest.

Next to the general design of a building, its most noticeable features are color and texture. Here, again, concrete presents a wide field for effort in the direction of surface treatment, since it contains within itself the elements for the production of rich and beautiful effects. While the characteristic grey of this material is eminently suitable for large masses, the smaller structure seems to demand more warmth of tone and greater variety of texture—a surface broken by flecks of light and color. These may be secured by various means more or less legitimate, but the method which will appeal most strongly to the advocates of concrete pure and simple, and which alone will be here considered, is that of exposing the aggregate. If this method be adopted it will be seen at once that there is practically no limit to the variety of surface which may be produced with regard to both color and texture. In the ordinary, untreated concrete surface, no matter what aggregate is employed, the particles are so mixed with and coated by the cement as to result in that uniformity of tone to which so many objections have been raised. By a judicious selection of the aggregate, however, and the adoption of means for exposing it to view, a great variety of very charming effects may be obtained. Materials which may be suggested as being suitable for this purpose are marble chippings of various colors and sizes, different colored gravels and sands, red or blue granite, or combinations of these in various proportions which may be determined by a series of experiments.

The aggregate having been selected and the best proportions ascertained, the whole secret of obtaining, on the surface, the full effect of its richness and variety of color and texture lies in removing the film of cement mortar by which the particles of the aggregate next the face are coated. This may be done by one of three methods, viz., scrubbing, tooling, or sand-blasting.

The removal of the mortar film by brushing is best performed while the concrete is green, and to this end the forms must be removed as soon as may be done without injury to the structure. An ordinary scrubbing brush or a wire brush, used with a liberal application of water, will generally serve the purpose if the concrete is not too hard, but if it is found that the color of the aggregate is not fully brought out by this treatment, a solution of hydrochloric acid diluted with three or four parts of water may be employed. Where this is done, care must be taken that every trace of the acid is immediately removed from the surface of the concrete by well washing with pure water, preferably by means of a hose. By this method the aggregate is brought into semi-relief and its color is fully revealed.

It sometimes happens, however, that the shuttering cannot be removed before the concrete is too hard for this treatment; when this is the case, another method is available, viz., that of bush-hammering. The action of the bush-hammer, whose face is cut into broad-based teeth, produces an effect similar to that obtained in the process of brushing, by cutting away the cement mortar and leaving the aggregate exposed. If necessary, the acid solution may be used as a clearing agent to supplement the effect of the tooling.

Sand-blasting is another means by which the same purpose may be effected when the concrete is hard. In this process a fine stream of sand is forced through the nozzle of a compressed air machine, and by impinging sharply upon the concrete surface removes the mortar from the face of the aggregate.

By either of these methods delightful effects may be produced which will amply repay the extra time and labor expended upon them, and many of these can be obtained by the use of quite common and inexpensive aggregates. Where, however, the cost of a specially selected material would prohibit its use for the whole of the concrete work of the walls, another method may be employed, by which the special mixture is applied as a facing material only, backed by the ordinary concrete of the wall. A simple method of doing this is to apply the facing mixture to the surface of the wall-form to the thickness of one or two inches, immediately before the ordinary concrete is placed in position. The tamping should be confined mainly to the back-

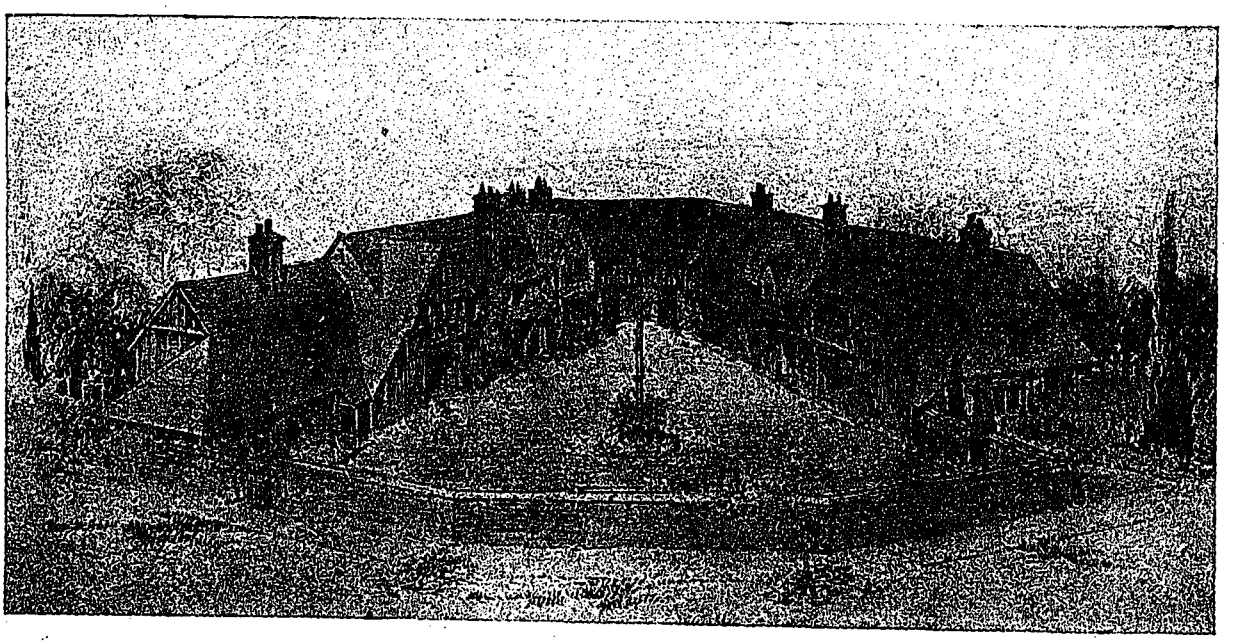
ing, which will then be driven into the facing, and the aggregate of the latter forced outwards, so that not only will the two thicknesses be formed into one homogeneous body, but the aggregate which it is desired to expose will be found at or near the surface when the shuttering is removed.

An alternative method of depositing the facing mixture in the required position, and one that is often employed, is by the use of iron sheeting, which is placed inside the wall-form, its distance from the outer shuttering being from one to two inches, according to the thickness decided upon for the facing. The form is thus divided longitudinally into two compartments, which are then filled with concrete, the outer space with the special mixture, and the inner with the ordinary material. The iron sheet is then gradually withdrawn, the backing meanwhile being tamped against the facing. To obviate the difficulty experienced in placing the material within so narrow a space as that containing the facing mixture, the iron sheet is not usually more than one foot high, and to keep it in position it must be clamped to the form, and handles may be riveted to it, in order to facilitate its withdrawal. After the shuttering has been removed the surface may be treated by scrubbing or bush-hammering as before.

By selecting suitable aggregates either for the whole body of the concrete, or for use as a facing, similar effects may be produced by the same methods on the surface of concrete blocks. The operations may be carried out either after the wall has been built, or by treating the blocks before they are used upon the work. The latter will be found to be the more convenient plan, since after the blocks are taken out of the mould they have to be stored for a considerable period before they can be used, and by that time have become thoroughly hard. By scrubbing them, however, shortly after they are cast, and while the concrete is green, the work is rendered easier and much less time is occupied in the process.

The decoration of the interior may be carried out in various ways—indeed, there is no limit to the number and richness of the effects which may be produced. The walls, or portions of them, may be "brushed" or the surface may be left smooth and suitable points of accent selected for enrichment. Mosaic patterns worked out in colored marbles, burnt clays or other material may be laid in precast slabs and either incorporated into the wall by being laid next the form during concreting, or cemented into recesses left in the wall for the purpose. Such recesses are cast by fastening slabs of wood in the desired position on the inner face of the form before the concrete is filled in. Or again, patterns may be designed, and the particles forming them glued on to sheets of stout paper, which are attached to the form in the required position and the concrete filled in behind them.

Much more could be written on this fascinating subject, but enough has been said to show that by following up the line of thought here suggested, and by a combination and extension of the methods above described, the opportunities afforded for the exercise of the imagination and for the expression of artistic feeling, both with regard to design and surface treatment, are unlimited. Much of the work done in the early days was crude and lifeless; in their enthusiasm for concrete the strong, the durable, the hygienic, the workers of that time lost sight of the possibility of concrete the expressive, the satisfying, the beautiful. To-day, science and experience are demonstrating to us the value of concrete as a structural material; to-morrow the architect and the designer will reveal to us its inherent beauty and its varied charm.



AN ATTRACTIVE APARTMENT HOUSE FOR MILL OPERATIVES AT DANIELSON, CONN.

CATALOGUES and BOOKLETS

GRAVITY ROLLER HINGES.

Among the new devices on the market is the Carpenter Gravity Roller-Bearing Hinge for toilet room doors, office railing gates, partition doors, etc. The basic principle of this hinge is the replacement of spring action by gravity action, which the manufacturer axiomatically observes "never wears out." It consists of five parts only and has no pins or superfluous parts to get loose or out of order. The upper hinge is essentially a heavy casting with a pivot carried in a pocket. The lower hinge is of similar design with the weight of the dooor carried on a wheel rolling on a double incline. A more complete description together with practical illustrations is contained in a folder issued by the R. F. Carpenter Company, Cleveland, Ohio, which will be sent upon request.

BLOWERS, FORGES, AIRWASHERS, ETC.

A most comprehensive line of blowers and forges adaptable to every use for which equipment of this kind is required, is illustrated in a 112 page catalogue issued by the Buffalo Forge Company, Buffalo, N.Y. It consists mainly of excellent half-tone cuts with practical information and alphabetic and numerical indexes which will be found to be a very convenient feature. The company manufactures steam engines and turbines, fan system apparatus for heating, ventilating, drying and mechanical draft. Also air-washers, humidifiers and dehumidifiers, combination woodworking machines, etc. The Canadian factory is located at Kitchener, Ont., under the name of the Canadian Blower & Forge Company. This plant together with the company's works at Buffalo is shown in the frontispiece.

"THE INDUSTRIES OF BRITISH COLUMBIA."

One certainly feels better acquainted with the importance of British Columbia after examining the publication under the above title, regarding a copy of which we are indebted to the Progress Publishing Company, Vancouver. It represents a most thorough compilation issued for the Manufacturers Association of British Columbia, which gives a complete summary of the various industrial and natural resources of the Pacific Coast district. In addition to giving statistics on the lumber trade, mining, fisheries, power development and agricultural and manufacturing activities centred in that province. it contains much useful information of a general character. The book incorporates one hundred and thirty-eight pages in all, and is illustrated with interesting views covering a large number of subjects.

FUEL ECONOMY.

Fuel economy at the present time is one of the nation's biggest problems, and anything which will effect a saving of fuel elements is a matter of utmost importance. One way to help out the situation is to increase the boiler efficiency so as to get the most perfect combustion and heat value. The fact that air is allowed to filter into a boiler through a porous brick setting causes an enormous fuel loss, and because the air doesn't hiss and constantly call attention to its escape, the loss goes on unchecked. In order to overcome this a preparation has been put on the market called "Nox-Aer-Leek," which, it is claimed, stops the infiltration of air, thereby raising the percentage of CO_2 gas and effecting a saving in coal bills.

"Nox-Aer-Leek" is a plastic cement composed of elastic bitumen fused with non-drying oils and asbestos fibre. It is trowelled on the exterior walls of the boiler setting and makes the setting air-tight and moisture proof. It adheres firmly to the brick, and will not dry out or become hard and brittle. Instead, it is said to remain permanently elastic, contracting and expanding with the walls. "Nox-Aer-Leek" is one of the products of the Barrett Mfg. Company, who have warehouses in all the principal Canadian cities, and who will gladly supply prices and full information as to its covering capacity and efficiency to any one interested.

CONTRACTORS and SUB-CONTRACTORS

As Supplied by the Architects of Buildings Featured in This Issue

LORD ROBERTS SCHOOL, LONDON, ONT.

Boiler, E. Leonard & Sons.
Brick, Interprovincial Brick Company.
Brick, Milton Pressed Brick Company.
Electric fixtures, Benson & Wilcox.
Electric wiring, Commercial Company.
Fire doors, Dennis Wire & Iron Works Co., Ltd.
General contractor, Samuel Willis.
Heating and plumbing, Noble & Rich.
Heat regulators, Canadian Power Regulator Company.
Iron stair, Dennis Wire & Iron Works Co., Ltd.
Masonry and concrete, John Putherbough.
Plastering, William Scott & Son.
Reinforcing, Trussed Concrete Steel Company.
Roofing, Walter Scott.
Steel partitions, Dennis Wire & Iron Works Co., Ltd.
Terrazzo floors, Italian Mosaic & Marble Company.

ABERDEEN SCHOOL, LONDON, ONT.

Boilers, Pease Foundry Company.
Brick, Milton Pressed Brick Company.
Electric wiring and fixtures, Commercial Electric Company.
General contractor, John Hayman & Sons.
Glass, Hobbs Manufacturing Company.
Hardware, Cowan Hardware Company.
Heat regulation system, Canadian Power Regulator Company.
Plumbing, Eggett & Company.
Plumbing fixtures, Standard Ideal Company.
Plumbing fixtures, Standard Sanitary Company.
Vacuum system, Tuec Vacuum Cleaning System.

TECUMSEH SCHOOL, LONDON, ONT.

Boilers, E. Leonard & Sons.
Brick, Milton Pressed Brick Company.
Electric wiring and fixtures, Commercial Electric Company.
Glass, Hobbs Manufacturing Company.
Hardware, Cowan Hardware Company.
Heat regulating system, Johnston Temperature Regulator Company.
Plumbing fixtures, Standard Ideal Company.
Plumbing fixtures, Standard Sanitary Company.
Plumbing, Noble & Rich.

PARK SCHOOL, TORONTO

Ash hoists, Herbert Morris Crane & Hoist Company.
Boilers, John Inglis Company.
Brick, Bell Brothers.
Concrete, A. C. Richmond.
Electric wiring, A. R. Rice & Company.
Fire alarm system, Wilson & Cousins.
Hardware, Vokes Hardware Company.
Heating contractor, Purdy, Mansell Limited.
Heat regulators, Johnston Temperature Regulator Company.
Hollow tile, Don Valley Brick Works.
Interior woodwork, Wm. Williamson.
Marble, Canada Glass, Mantle & Tile Company.
Mason contractor, Lucas & Son.
Metal lath, Trussed Concrete Steel Company.
Ornamental iron, Canadian Wire & Iron Goods Company.
Painting, J. R. Bell.
Plumbing fixtures, Imperial Products Company.
Plumbing fixtures, Twyford & Company.
Plumbing, Purdy Mansell Limited.
Radiators, Dominion Radiator Company.
Seating, Canadian Office & School Furniture Company.
Seating, Globe Furniture Company.
Sheet metal, W. E. Dillion Company.
Stained glass, Luxfer Prism Company.
Stone, Queenston Quarry Company.
Structural iron, Hepburn & Disher.
Terrazzo, Venetian Marble & Mosaic Company.

LAMBTON MILLS' (ONTARIO) SCHOOL

Boilers, Pease Foundry Company.
Brick, William Pierce.
Carpenters, Hudson & Mosley.
Chemical closets, Kaustine Company, Ltd.
Electric wiring, W. H. Moon & Company.
Hardware, Canada Hardware Company.
Heating, R. Patterson.
Painting, R. G. Johnston.
Paints, International Varnish Company.
Plastering, Taylor & Nesbitt.
Plumbing, R. Patterson.
Roofing, J. H. Kidd.
Stone, John Vokes.
Structural steel, Hepburn & Disher.

COLLEGIATE INSTITUTE, WINDSOR, ONT.

Boilers, Kewaunee.
Brick, Chick Contracting Company.
Cement, Canada Cement Company.
Clocks, International Business Machines.
Cut stone, Ritchie Cut Stone Company.
Electric wiring, McNaughton-McKay.
Fire alarm system, McNaughton-McKay.
Flooring, W. A. Hadley.
General contractors, Well & Gray, Limited.
Hardware, Baxter Hardware Company.
Heat regulators, Canadian Power Regulator Company.
Hollow tile, National Fireproof Company.
Interior woodwork, Windsor Lumber Company.
Lockers, Canada Wire & Iron Goods Company.
Ornamental iron, Page Wire Fence Company.
Paints, C. M. Bennett.
Plumbing fixtures, Windsor Hardware Company.
Radiators, American Radiator Company.
Radiator traps, C. A. Dunham Company.
Reinforcing, Steel Company of Canada.
Roofing, Canadian Roofing Company.
Structural iron, Canadian Bridge Company.
Terrazzo, Bertini Company.
Ventilators, Canadian Sirocco Company.

ACADEMIE DU ST. NOM DE MARIE, MONTREAL

Ash hoist, Gillis & Geohagen.
Blackboards, Lepage Marble Works Company.
Boilers, Spencer Heater Company of Canada.
Brick, Ulric Paris.
Cement, Alex. Bremner.
Flooring, A. Choquette.
General contractor, A. Choquette.
Hardware, Durand Hardware Company.
Interior woodwork, Carriere & Frere.
Hollow tile, Montreal Terra Cotta Lumber Company.
Ornamental iron, Montreal Architectural Iron Works, Limited.
Paints, Colas & Charest.
Plumbing fixtures, Jas. Robertson Company.
Radiators, Warden King Company.
Stone, Victor Quarries.
Tera cotta, Montreal Terra Cotta Lumber Company.
Ventilators, Modern Heating & Engineering Company.

TIME CLOCKS FOR SCHOOLS.

The International Business Machines Company, Limited, installed in the new Windsor Collegiate Institute a Master Clock and 36 Secondary Clocks. The Secondary Clocks are distributed throughout the different parts of the building, and are all controlled electrically by the Master Clock, so that there is uniform time throughout the entire institute. This equipment also embodies the automatic ringing of bells for the dismissal of classes and the recalling of same.

The International Business Machine Company's products are made in Canada and they are building a new factory, at Royce and Campbell Avenues, Toronto, to take care of the increased demands for their different time recording equipments, which are becoming so universally used throughout the Dominion.

They also recently installed one of their splendid equipments in the London Technical School, and have a long list of public buildings and large manufacturing plants among their prominent users.