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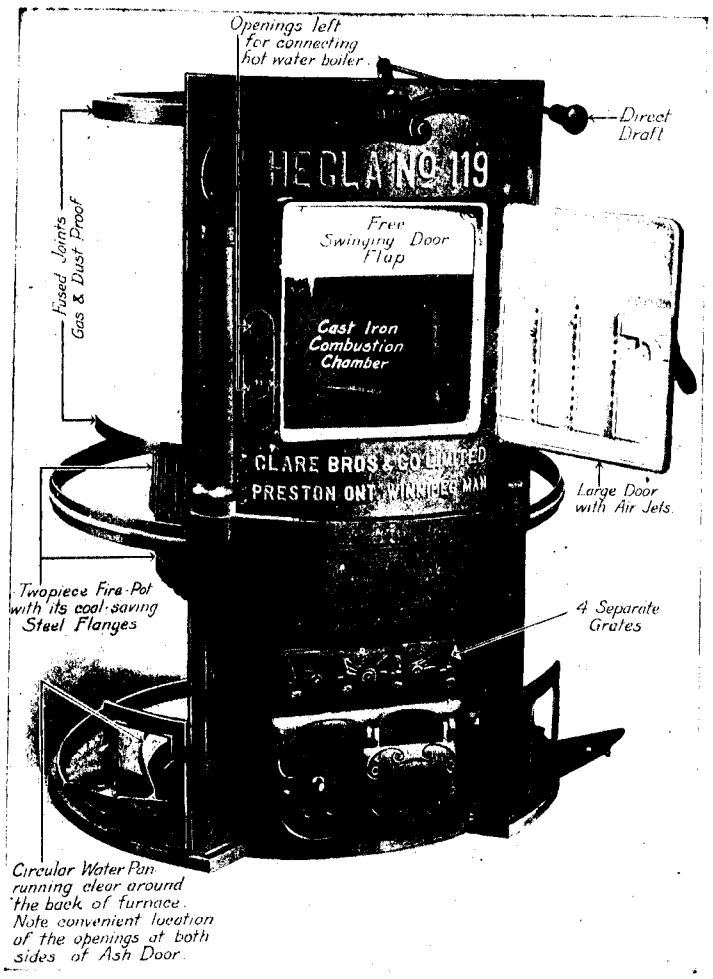

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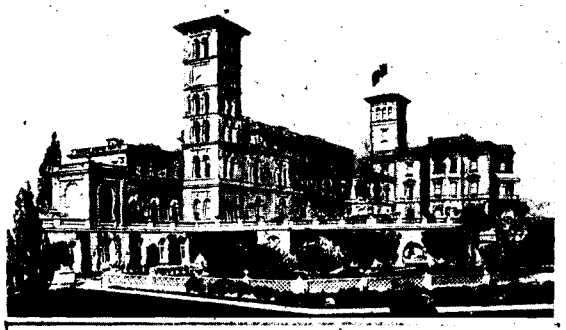

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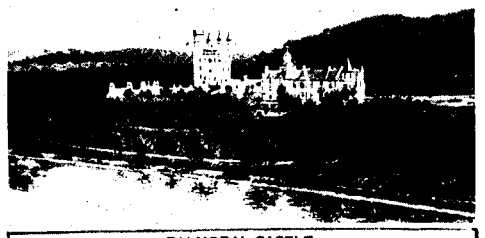

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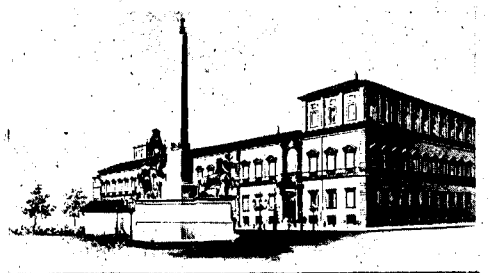

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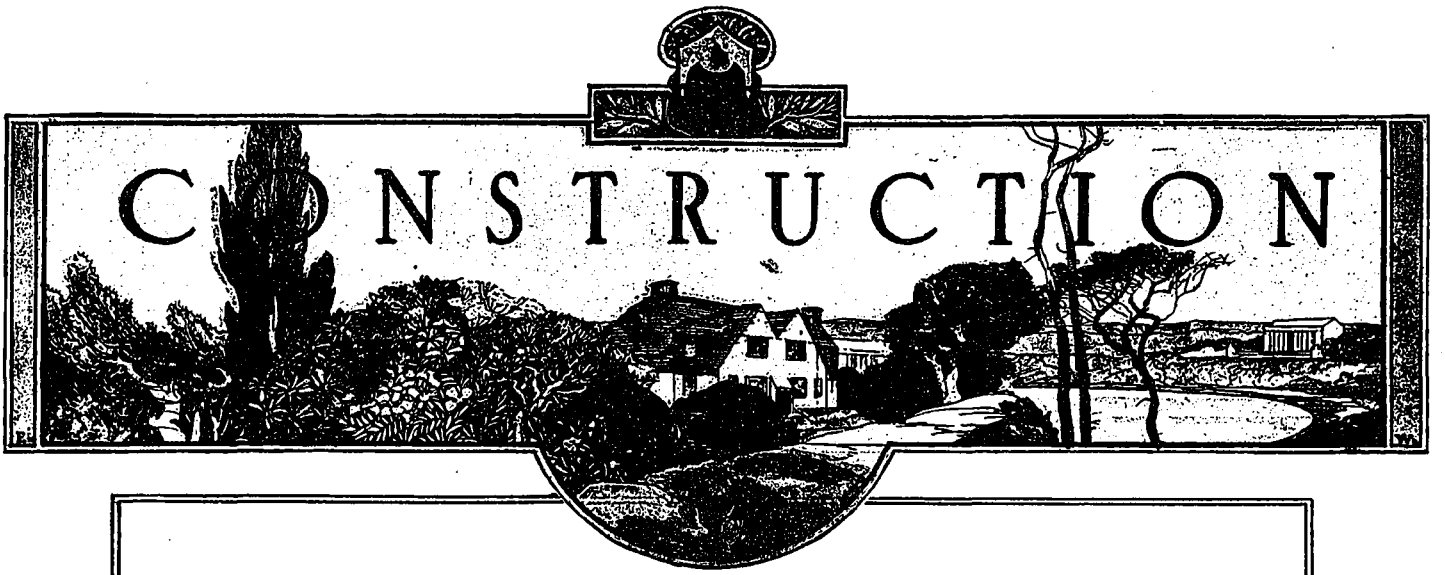

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BRANCH OFFICES
MONTREAL NEW YORK

COLONIAL MANTEL IN JOHNSON HOUSE, ON HAMILTON STONE ROAD NEAR ST. CATHARINES, ONT.

Observations

THE MODERN HOTEL.

In order to establish and maintain a reputation the hotel of to-day must have an attractive exterior, a home-like feeling within, comfortable bedrooms, good food and genial management. The tastes of the people must be met, and while the designer fails to grasp at times the main essentials, still the vast majority of hostelries seem to be a complement to the heterogeneous mass which lives within. It is no longer necessary to appeal to the lovers of display and gaudy decoration, but rather to those of refined tastes. The character, the charm, the restfulness—all weigh heavily in the layman's view of a successful hotel. And every day witnesses a rise in the wholesome standard of real art in this phase of work.

THE FEAR FOR ITALY'S TREASURES

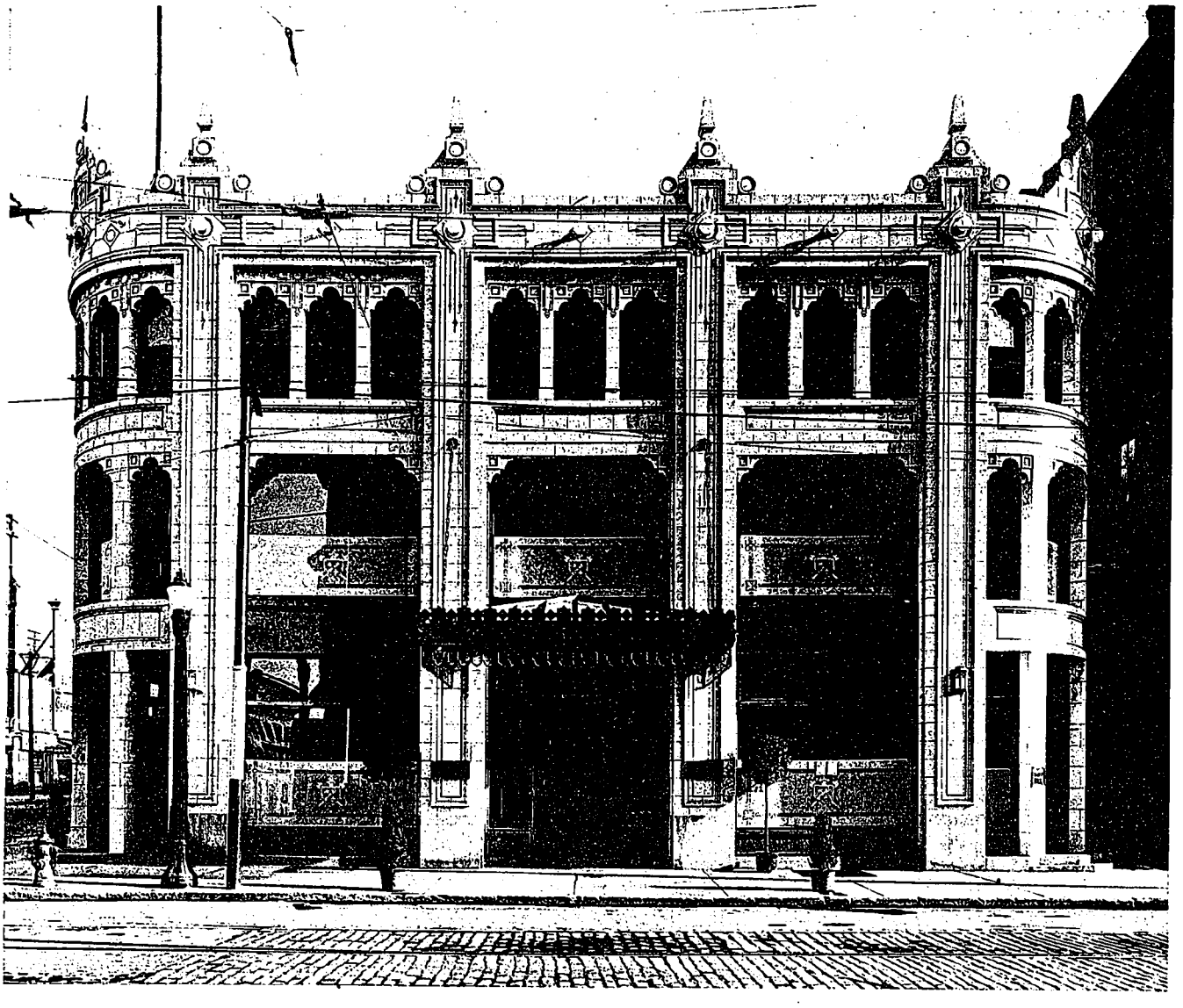
Italy's entrance into the present world's conflict is a matter of sincere regret to all lovers of art—not from a commercialistic viewpoint, but from the dread that some of her priceless treasures may become a pile of ruins. Only recently was Venice, "the most glorious and perfect shrine of all that is best in human achievement," attacked by a hostile foe. What the future holds in store for her we do not wish to contemplate, but a silent prayer is being offered for the preservation of her palaces, her paintings and her endless glories. Were we living in an artistic age there might be some ray of hope in case she falls a prey to the ravages of the enemy, but once the splendor of Venice passes away it will be gone forever. Many of us have enjoyed loafing in the lazy gondolas as we drank in the beauties of her Byzantine, Gothic and Renaissance architecture, the supreme manifestations of Italian art for ages. And in order to awaken our sleeping memories and present to others a little touch of the spirit which endears this city of canals to everybody there is presented in this issue an article by Sir Martin Conway, with a few additional paragraphs taken from Ruskin's Stones of Venice.

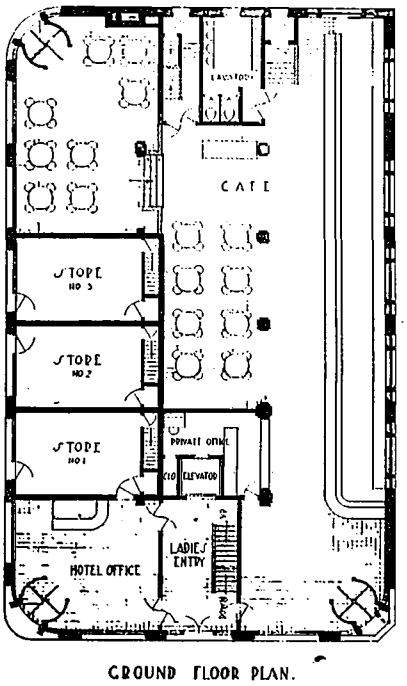
AN OPPORTUNE TIME TO BUILD.

In considering the various phases of building enterprises does it not seem advisable to push through to completion whatever projects may be already contemplated. The cheapness of labor and materials is still the potent argument, although the dependence of building trades, manufacturers, etc., upon the work being executed should be a matter of no little import in planning for the general welfare of our country. One other point should be suggested in this connection—the increase in the cost of building is bound to occur after the signing of peace terms. Then there will arise conditions innumerable; labor may be extremely scarce, either on account of the amount of work or troubles arising amid the buzz of prosperity, when profits are not equitably proportioned; materials will leap to their former prices and may go far beyond, so that instead of saving twenty per cent. on present rates the cost may mean an increase of forty per cent. With the work delayed by the war, in addition to that which circumstances will demand, it is safe to predict a tremendous boom in the building world directly after the crisis is over. And if this is true, as many experts prophesy, then the client who builds now will ever be thankful he took advantage of existing conditions, from a financial viewpoint as well as a mental attitude.

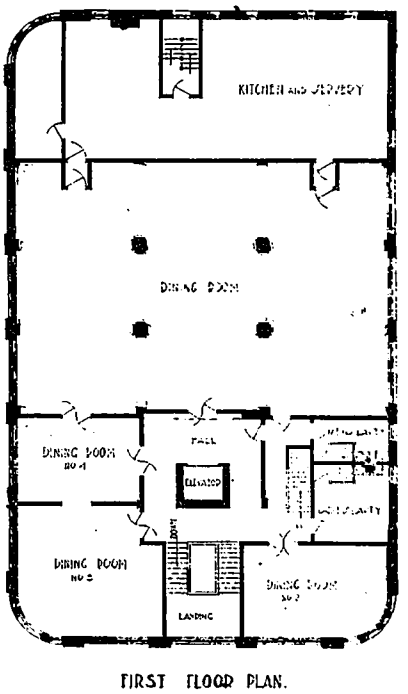
WORTHY PROJECTS FORGOTTEN.

How often the lofty inspiration of an individual or a corporation quickly fades away. Probably every week we read with extreme satisfaction that some big undertaking is about to be started which will prove a boon to the citizens. Recently the Toronto Board of Control approved of a new post office square; the various railways and manufacturing plants agreed to use a smokeless fuel or instal smoke prevention plants; the Electric Light Company declared themselves as ready and willing to clear all the business section of service poles and bury the wires in conduits; the G.T.R. and C.P.R. announced work immediately upon their new Union Station. All these, like other worthy projects, have awakened hopes within which have been gradually smothered by the passing of time. Were these going ahead in addition to the Bloor Street Viaduct and the Waterfront development Toronto would be enjoying an unusual period of prosperity. There is nothing more conducive to hard times than hoarding up the means whereby honest and non-speculative enterprises may be assured. The banks, the financiers and the Government cannot grow careless, but for the sake of Canada's future welfare let them honestly weigh what it means to every individual person to further such work, and then there will be no bitter distress among the people, and in spite of war we will have live wide-awake communities.

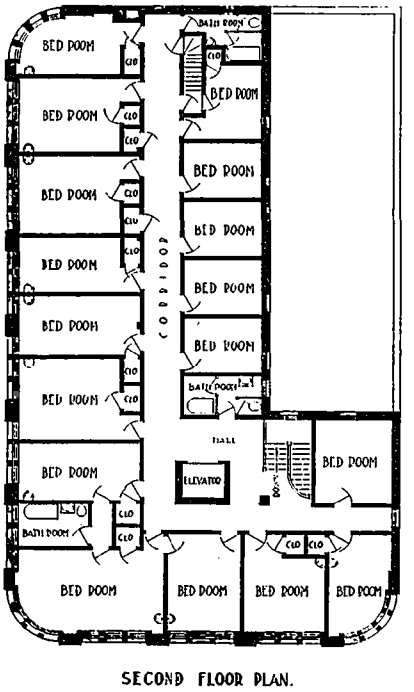




GROUND FLOOR PLAN.



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

ST. CHARLES HOTEL, TORONTO.

HYNES, FELDMAN & WATSON, ARCHITECTS.

The Modern Hotel and Restaurant

IN the development of the modern hotel or public restaurant one of the chief essentials is the practical arrangement of the plan. How to economize in the utility of space, so that every square foot of flooring is available and still maintain a proper sequence between the various departments is a matter of no little import. This is especially true in hotels where the entire building forms a complete unit and the harmonious working of each division is dependent upon the facilities for handling the *tout ensemble.*

The St. Charles Hotel, located at the corner of Bay and Richmond streets, Toronto, presents many interesting features. It lends an unusual and attractive appearance in its novel treatment; the light cream terra cotta piers, with their panelling extending to the frieze, furnishes an upward motive; the window trimmings and marquise in bronze harmonize with the general color scheme; the exterior, with globe lights at the intersection of each pier with the frieze above, provides adequate lighting to give the proper effect in the evenings.

In designing the St. Charles, the height was fixed, as wood joisting, which has been employed in this connection, is only allowed in buildings not exceeding thirty-five feet. Otherwise the structure is absolutely fireproof, consisting of steel, brick and terra cotta on a concrete foundation. In limiting the height of the entire building for the reason stated above, the dining-room, barroom, etc., were forced to forego high ceilings, and consequently had to be designed in low relief. The dining-room, forty by sixty feet, is rather spacious for the height, which appearance has been counteracted by the constructional columns being encased in very large piers, the bold effect being softened by trellis work with shirred silk behind. Within each pier and at the top have been placed changeable lights, which throw out a softened glow, ranging from a delicate red to a light green. The walls of the room are finished in a Belgian gray, the trellis work being a pale green with light blue strips enclosing it, which shade is also found in parts of the cornice. On the ceiling the beams have a trellis band with sufficient foliage to give it a slight touch of home comfort; the large panels are of cream effect with a greenish band around, from which in low relief stand out the Tango dancing figures, revealing a desire to eliminate period and historic ornament and depict instead one of the chief functions which enters into modern social life. From each of the nine ceiling panels hangs a lighting fixture of silver finish, which, with the wall brackets of like material, furnish ample artificial illumination. The six large windows are draped in old rose curtains, a shade similar to that found in the screens and large centre rug.

Fully as interesting as the dining-room, but quite differently decorated, is the barroom. The floor is of square red tile, and the seven-foot dado of a variegated mat glaze tile, with a pre-

ENTRANCE TO PRIVATE DINING ROOM, ST. CHARLES HOTEL.

THE BAR, ST. CHARLES HOTEL.

dominating bluish tone and wide recessed joints. The portion above the dado when finished will have a conventionalized design representing the seasons; the ceiling ivory white to give proper value to the semi-direct lighting scheme of dull bronze fixtures, each one having eight small frosted globes beneath. Space has been planned for a double row of tables, to be used as a cafe in connection with the bar, while adjoining is another cafe opening into it but raised two feet higher, which guarantees a certain amount of privacy.

The private dining-room is tastily decorated with deep foliage tapestry effect, in harmony with the dull bronze finish of the pilasters, cornice, ceiling and trimmings. The ladies' reception-room has a general tone of Belgian gray; the hardwood floor partly covered with a heavy old rose rug, trimmings of white woodwork; walls of cherry floral design. The building cost $100,000.

Directly north of the St. Charles Hotel, on the corner of Queen and Bay streets, is the Bowles' Lunch, a frank solution of the difficult problem in designing an attractive two-storey structure, with the ground floor mainly plate glass. The exterior is of pink granite base, ivory matt glazed terra cotta, asbestos roof, copper windows, Circassian walnut doors with white enameled trim. The restaurant space has a two-inch hexagonal ceramic tile floor, verde antique base, seven-foot veined statuary marble wainscot, walls and ceiling of cream matt glazed tile with eight-inch plaster cornice between. Among the furnishings are the counters and sugar tables of Skyros marble, chairs of mahogany, cigar stand of Circassian walnut. In the small cigar store, treated with walnut and cork tile flooring, is a series of decorative panels in color, which depict the colonists meeting the Indians, bartering for trade, loading tobacco on boat, feast in cabin, landing in England, selling of tobacco, receiving knighthood—finally contentment and pleasure.

In the basement is installed an automatic refrigeration plant, ventilating equipment, helps' suite, boiler room, ice boxes and barber shop. There are two intakes at Queen street, through which the air is drawn over temporary coils, air washer and reheater, after which it is drawn into the main restaurant and then exhausted by a roof fan. The basement is finished in white enameled brick for walls and red quarry

DINING ROOM, ST. CHARLES HOTEL.

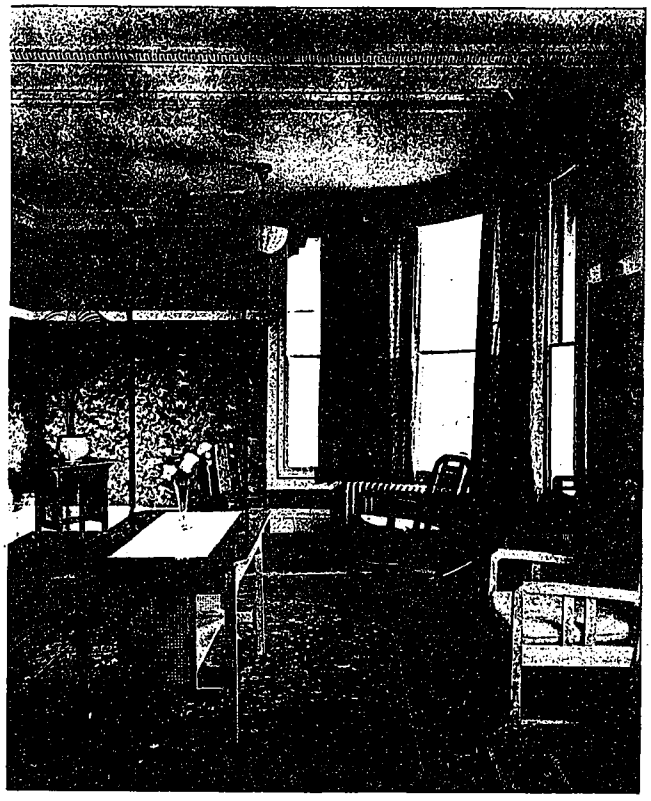
tile for floors. Over the restaurant is the billiard room, forty-two by eighty-eight feet, with a clear span. The floor is of cork tile, the walls of an eight-foot mahogany wainscot, with ivory tinted plaster above. The cost of the entire building was $96,000.

East of Bowles' Lunch, on Queen street, is McConkey's new restaurant of absolute fireproof construction, and designed so as to carry eleven storeys, the remaining ones to be built as desired. The exterior is faced in green and white matt glazed terra cotta, with green Tynus marble used for the pedestals of the large pilasters. The entrance hall, designed similar to the main restaurant, opens directly into it as well as to the second floor, by a marble stairway. Accommodations have been made for one hundred and sixty special chairs with wide service arms. The walls have an apollino green and pink marble dado, five feet high, with marble pilasters every seventeen feet, which carry the heavy beamed ceiling. Above the dado the walls and ceiling are covered with dull glazed white tile, paneled with green lines; in the centre of the wall surface is a painted tile panel set in green frame. The ceiling and beams are protected by six by three inch dull white tiling laid in herring-bone pattern, carried down at the sides to form a large cove.

On the second floor the restaurant will seat at tables one hundred and eighty-five. Extending from the eight-foot dado of fumed oak are heavy pilasters with moulded base and caps of same material reaching to the large cross beams, which in turn are joined by smaller wooden beams, forming spaces for decorative plaster effects. A marble dado seven feet high and tile floor is placed in the ladies' public lavatory; also in the men's public toilet located in the basement.

HOTEL HEATING AND VENTILATION

IN discussing the subject of heating, Werner Nygren, consulting engineer, in a special hotel number of the "Architectural Review," claims that the modern American hotel leads in almost every convenience and improvement which mark our progress. As a direct result of this, conditions have developed which were never even thought of when the older hotels were designed. When hotels were built on a small scale, having little or no plumbing, illum-



LADIES' RECEPTION ROOM, ST. CHARLES HOTEL.

inated by oil or gas, and heated by open fireplaces, many physical discomforts were willingly put up with, and the engineering problems which at that time had to be solved were comparatively simple. This is not the case to-day, when a hotel is not only a stopping-place for those who travel, but also a public restaurant, a place of amusement, a club, and a home—all of which necessitate an equipment both costly and complex.

The introduction of steam heat added very little complication. The high-pressure steam plant nowadays required to furnish steam for cooking, refrigeration, and the generation of electric current for light and power has, on the other hand, brought about considerable complication. Conditions incidental to the plant, together with conditions resulting from the tendency to design the hotel with the idea of utilizing every square foot of its plot, even to the extent of going into the ground for space, have created the demand for the extensive ventilating apparatus which to-day forms a prominent part in the equipment of the up-to-date hotel.

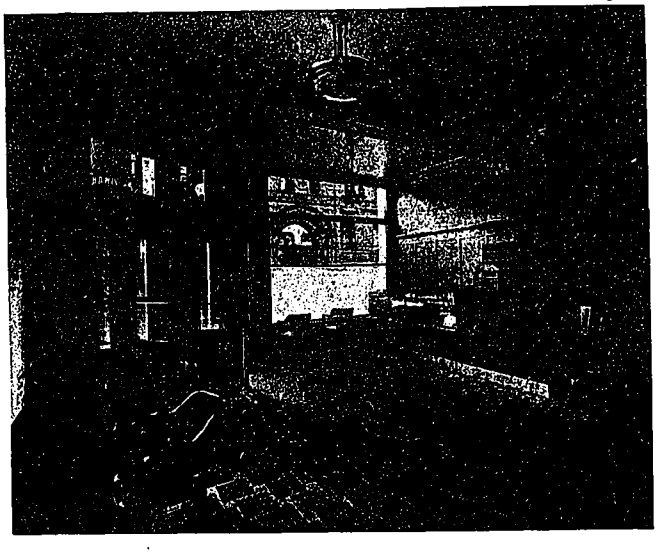
A great deal is expected from a ventilating plant in such a hotel. Besides keeping the air pure and fit for breathing purposes, it is required to provide the greatest possible bodily comfort, not only for the guests, but also for the help which toils in the kitchen and other hot and disagreeable departments. It is, therefore, very important that it be given the proper attention when designed, as it cannot do full justice to its purpose under adverse conditions. The mere designing of ventilating-apparatus does not include all that which rightly belongs to this department of engineering. The experienced engineer makes it his business to advocate, specify, or take proper measures against excessive heat and chilling effects, and to confine such heat or chilling effects as cannot be prevented, which otherwise would have a disturbing influence.

If proper precautions are not taken it is futile to expect satisfactory results from any heating and ventilating apparatus, least of all in a hotel. It does not occur to the average person that a room can be well ventilated unless it is kept at a low temperature. Yet this is perfectly possible, and often the case. Besides overheating due to warm floors and walls, which is the most common complaint, down-draft from windows, cold ceilings and wall-surfaces, as well as depositions of moisture, frequently laid directly to defective ventilation, are usually the result of neglect in taking the proper precautions.

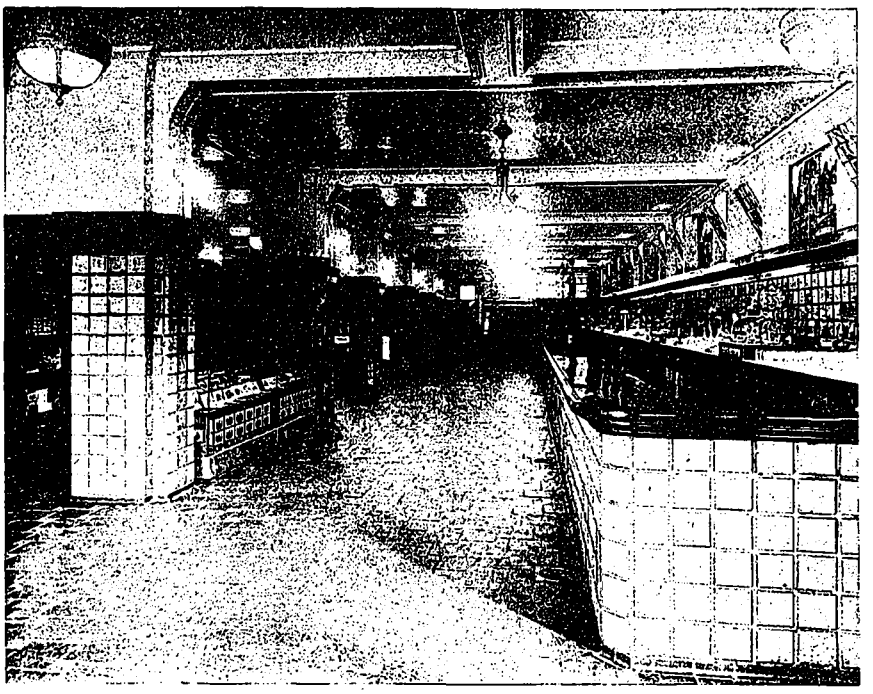
Heating Methods.—Direct heating by means of radiators placed on the outside walls beneath the windows is generally satisfactory, and the simplest heating method for a hotel. Indirect heating, either by warm fan-blast or warm air heated by indirect stacks, if well designed, will give satisfactory results. Heating by radiators having direct communication with the outside air, known as the direct-indirect system, is too unreliable and generally unsatisfactory to be recommended for a hotel.

Irrespective of method, the heating should, as far as possible, be accomplished independently of the ventilation. While the two processes must be considered together, inasmuch as they have considerable influence upon each other, it is of the utmost importance that they do not conflict.

To introduce fresh air supply at high temperature for the combined purpose of heating



MAIN OFFICE, ST. CHARLES HOTEL.



THE BAR, ST. CHARLES HOTEL.

and ventilating public rooms should, therefore, be avoided, as it becomes very difficult to secure the proper control by such means. Wherever space conditions permit the installation of radiators it is by far the simplest to accomplish the heating by direct radiation, and introduce fresh air supply for ventilation at room temperature or slightly above or below same. Moreover, it is a decided advantage to instal heating-surfaces below the windows in rooms of this kind, as such heating-surfaces will tend to counteract down-draft and heat the air entering through leaks around the window-sash during strong winds.

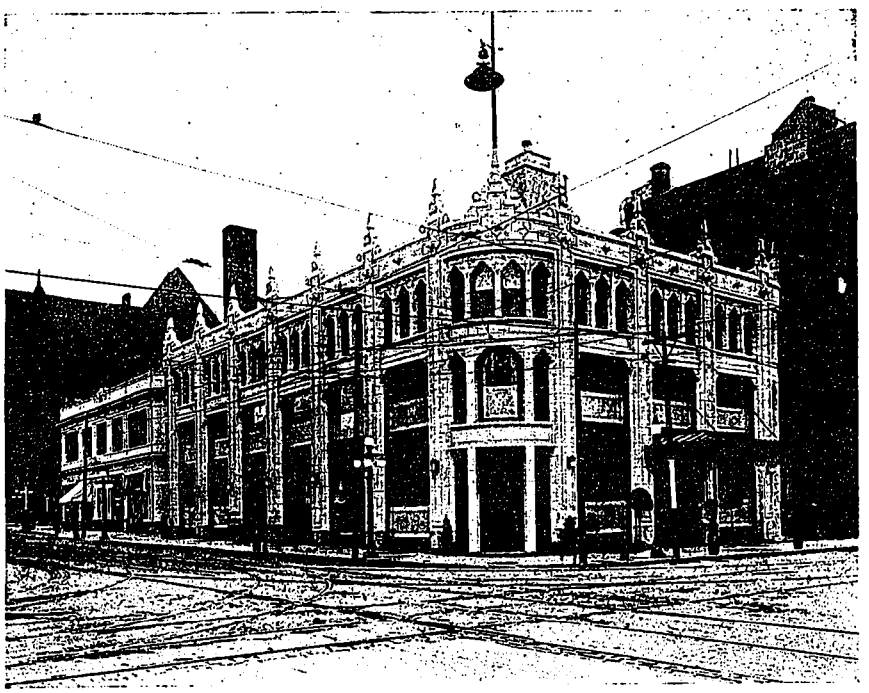
If, on the other hand, as is sometimes the case, radiators are objectionable, indirect heating must be resorted to. This, however, is usually coupled with considerable difficulty, as it involves additional flues and registers, which are objectionable in highly decorated rooms, and indirect heating-stacks, ducts and fans, which add complication to the apparatus and occupy valuable space in the rooms below.

Fan-blast is required for heating of this character, as natural-draft indirect heat will not operate for rooms kept under a plenum, as is the case with the public rooms in a hotel, where the first consideration is to push back, as far as possible, the air from kitchens and serving-rooms which carries odors.

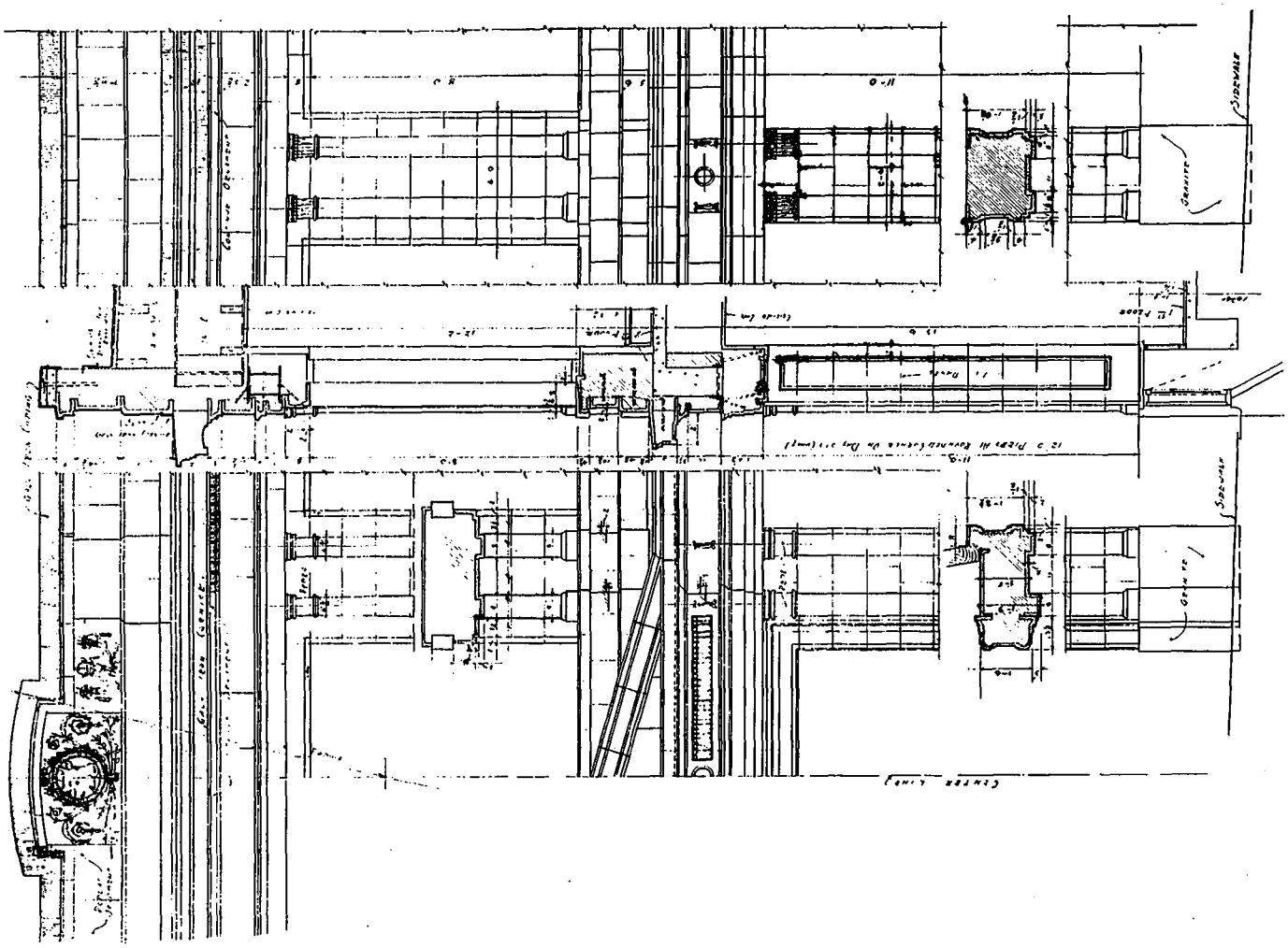
With a heating system of this kind the greatest difficulty is to provide space for flues and registers. In order to secure satisfactory results, it is important that the warmed air be introduced near the floor, and in such a manner that it is evenly distributed over the outside walls and at the windows, and to do this without disagreeable drafts. The low velocity which is required to accomplish this necessitates very large and unsightly registers. Floor-registers are not to be recommended, because they invariably become receptacles for all kinds of dirt.

When heating with stacks at the base of the individual flues it is preferable to control the air and leave the steam on the heating-stacks continually. The control of the air can be done either by by-passing the air around the stacks when no heat is required or else by shutting off the air supply. The latter is usually to be preferred, as it is extremely difficult to avoid draft from registers located near the floor when the temperature of entering air is at or below the room temperature.

In dealing with indirect heat for the bedroom portion of the hotel, it is impracticable to heat the air by individual stacks and individual flues, due to structural conditions, leaving no other alternative than to heat air at central stations and distribute it by means of fans. To instal a system of this kind has also many difficulties in



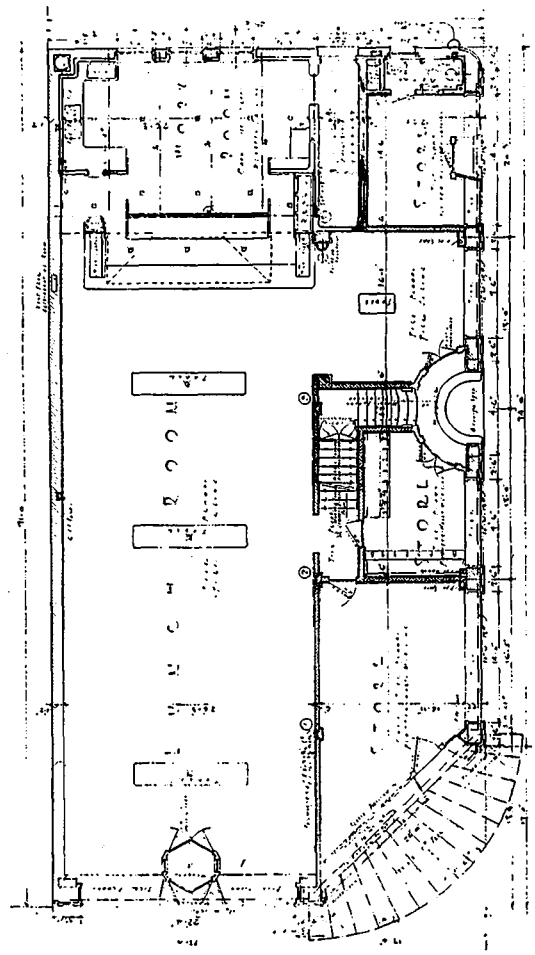
ST. CHARLES HOTEL.

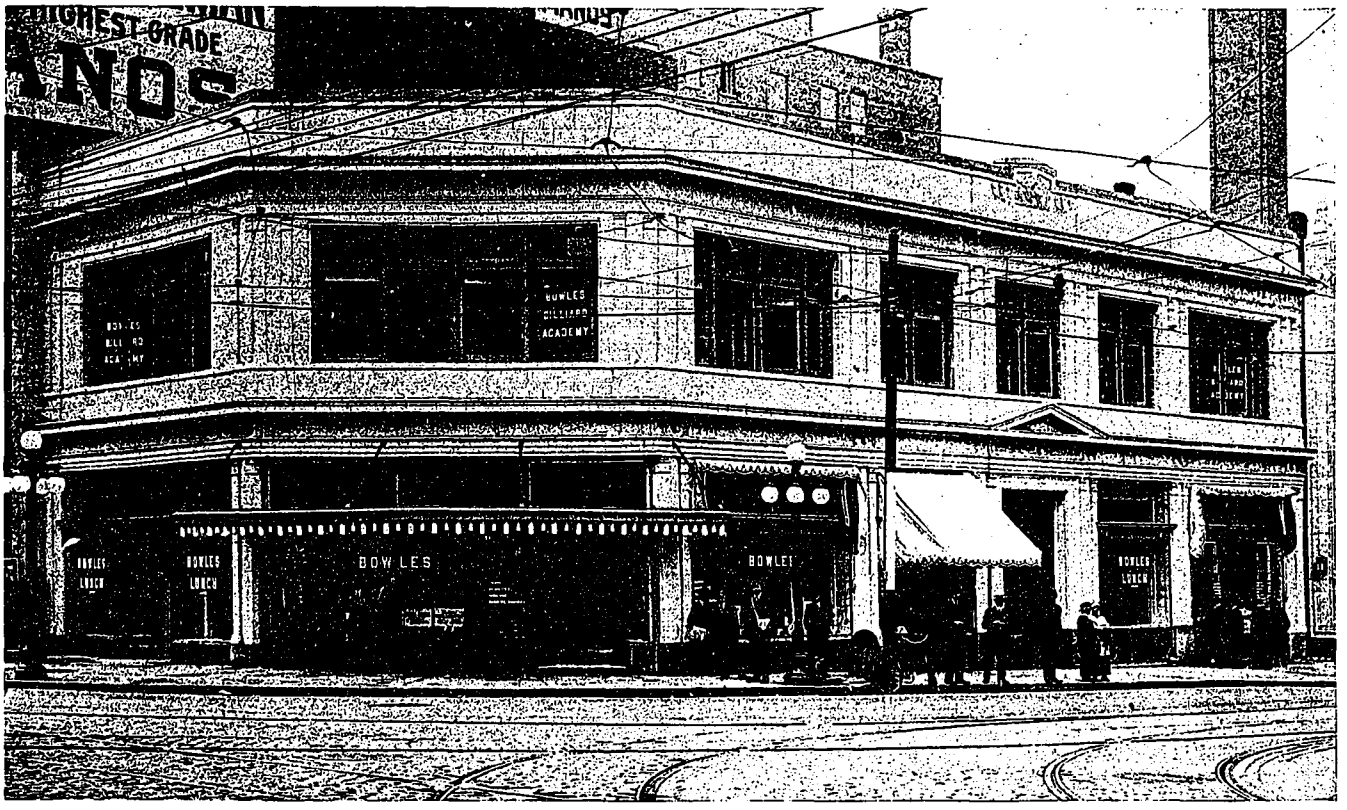


DETAILS AND GROUND FLOOR PLAN.

BOWLES LUNCH BUILDING, TORONTO.

HAND, HARRIS & MERRITT, ARCHITECTS.





BOWLES LUNCH ROOM, TORONTO.

the way of securing the proper space conditions necessary for the distributing system.

All the above statements as to the heating hold good for either steam or hot-water heating. While steam heating is usually adopted for hotels, this does not signify that steam heating is superior. There is no good physical reason why hot-water heating is not used for a hotel. It is somewhat more costly to instal, and since the economy in operation does not enter to any great degree when large quantities of exhaust-steam are available, as is usually the case in hotels, it nearly always goes by the board, despite its advantages. Larger radiators are required for hot-water than for steam heat. This is of some consequence with the architect, who usually finds it difficult to make room for even the steam radiators.

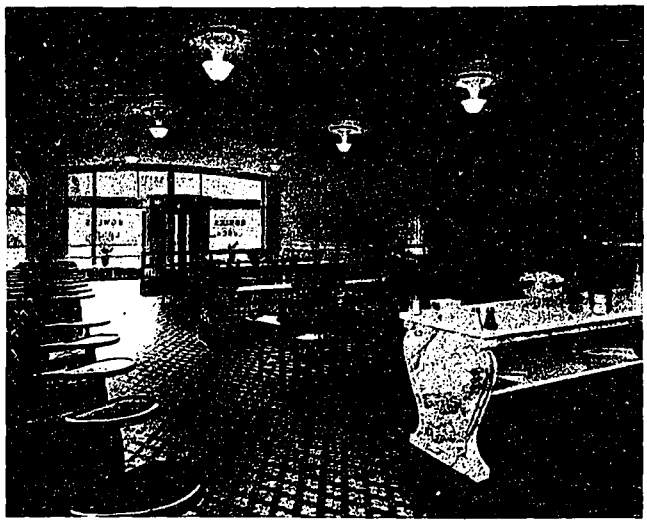
Steam Distribution for the Heating.—In heating a hotel the exhaust-steam from the plant should be utilized and circulated at a pressure not exceeding two pounds per square inch, and all heating-surfaces and piping proportioned in accordance with this pressure.

A return-line vacuum system is preferable to an ordinary two-pipe gravity system, and very much superior to any one-pipe system; first, because steam circulation can then be established at any pressure above, at, or slightly below the atmospheric pressure; second, because the air expelled from the steam is carried away by the return-pipes, together with the water of condensation, thus doing away with air-valves on the radiators; third, because each radiator requires but one control-valve for operation, as the return-valve is automatic and requires no other attention than an occasional adjustment; fourth, because the pipe sizes can be reduced considerably, particularly the radiator connections and the return-piping; and, fifth, because dry returns can be used, which permit mains to be run at the basement ceiling instead of at the floor, thus eliminating trenches.

While there are a number of vacuum return-line system appliances on the market for which all sorts of claims are made, there are but a few that can be relied upon; and it is, therefore, as difficult as it is important to select the right kind. It must be borne in mind that the success of a system of this kind for hotel work depends as much upon noiseless operation and a minimum amount of adjusting as upon the fulfilment of the freely offered guarantees as to economy. Appliances of this kind which have proved successful in factories, mercantile establishments and even office buildings, may prove a complete failure in a hotel.

Temperature Control.—Automatic temperature regulation plays a more important part in a hotel than in almost any other kind of a building. In public rooms, particularly if artificially ventilated, it is not possible to secure a uniformly satisfactory result without it. In the bedroom portion, where hand-control is often all that is provided, automatic regulation is found both practical and economical.

Thermostatic regulation for bedrooms eliminates the unfavorable impression made upon a guest entering his room and finding it cold or ex-

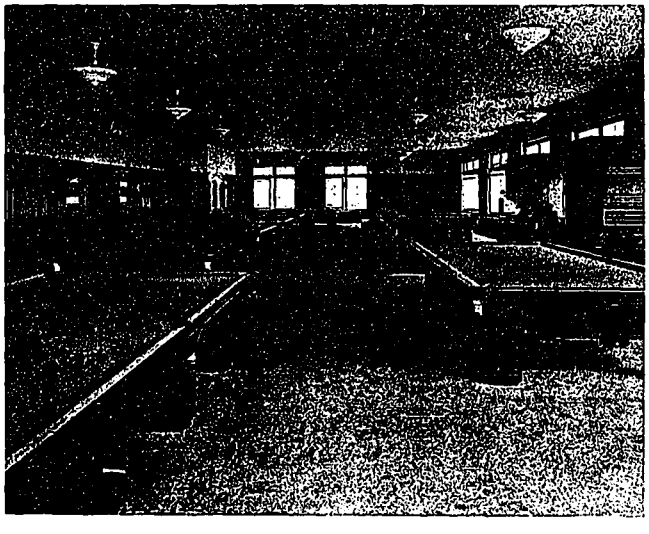


RESTAURANT, BOWLES BUILDING.

cessively warm, due to the fact that the heat has been left turned on or off for a long period—an impression which creates in his mind the idea that there is something wrong either with the heating or with the management.

Automatic heat regulation is also a good investment. It eliminates waste of steam through overheating, which is a saving in fuel when exhaust steam is not sufficient for the heating purposes.

Concealing of Radiators.—In a great many hotels it is customary to screen the radiators. This is purely a matter of consistency in the architecture and has no material influence upon the heating, provided ample openings at the top and bottom are provided for air circulation. Proper screening requires but a very slight increase in heating-surface above the minimum required with the radiators exposed. All radiator screens should be designed with removable fronts, hinged tops, and be properly lined so as to permit cleaning; otherwise, they are apt to become receptacles for the great accumulation of dust and dirt of all kinds.



BILLIARD PARLOR, BOWLES BUILDING.

Ventilating Requirements for Public Rooms.—As previously alluded to, the ventilating problem involves certain measures that will reduce the ventilating requirements to a minimum. An ounce of prevention is worth a pound of cure in ventilation as much as in any other instance. Warm floors and partitions will under certain weather conditions make a room with the sweetest atmosphere seem stuffy and ill-ventilated. No matter how much fresh air is forced into such a room, it will not be comfortable.

In general, it is not possible to force a very large quantity of fresh air into any room without disagreeable drafts if the entering air is cooler than the room temperature; nor is it possible to exhaust an unlimited quantity of air, for the same reason. Moreover, any attempt to reduce excessive heat by the introduction of a large quantity of air at moderate temperature would mean apparatus of abnormal size, and to do this by a moderate quantity of air at a very low temperature would involve artificial cooling; either of which would increase the first cost, as well as the operating expenses, far beyond what it would cost to apply the proper protection for preventing excessive heat transmission.

The unsightliness of registers when too large or too numerous is another reason why it is important to minimize as much as possible both the fresh air supply and the exhaust ventilation. It must be remembered that the register openings should under any and all conditions be in direct proportion to the amount of air. The mistaken notion that any amount of air can be forced through an opening, and the repeated hints that a few more revolutions of the fans will compensate for reduction in area of register openings, do not alter the physical laws governing this principle. The sum and substance of it is that the registers must be sufficiently large to permit the passage of the required quantities of air at a certain velocity, which velocity, if too great, will create disagreeable drafts and possible noise at the registers. How great this velocity should be is in turn dependent upon the location of the registers, height of the rooms, etc. The direction of the air-flow must also be taken into account in determining the sizes of the air-supply registers.

The above refers, of course, to such public rooms as require a continuous change of air for the combined purpose of keeping the air in the room occasionally pure and offsetting the heat given out by the occupants and the illumination.

Precautions which materially reduce the ventilating requirements are: walls with air-spaces around shafts containing hot pipes and ducts; partitions with air-spaces separating rooms which are necessarily hot from rooms desired to be kept at a lower temperature; the application of non-conducting material on ceil-

ings over rooms and spaces in which a high temperature cannot be avoided, as well as on walls and partitions where space conditions do not permit air-space construction; a thorough and complete blocking-off of all furring-spaces at floors, particularly at the floor above the basement, so as to prevent undesirable heat rising into the furring-spaces; and proper non-conducting covering on all steam and hot-water pipes and on flues and ducts conveying heat, including those concealed in furring, suspended ceilings and shafts.

The amount of ventilation required for each room is a matter of special study, as it depends entirely upon local conditions to such an extent that two cases are seldom alike. Ballrooms, banquet-rooms, dining-rooms, cafes, lounging and smoking-rooms, require different amounts. All require, however, both air-supply and exhaust-ventilation by mechanical means. The dining-rooms, cafes, foyers, reception-rooms, and writing-rooms can, as a rule, be well ventilated by admitting the air-supply near the ceiling and exhausting through registers near the floor; and in individual cases, both near the floor and the ceiling; still, there is no hard-and-fast rule for a successful treatment.

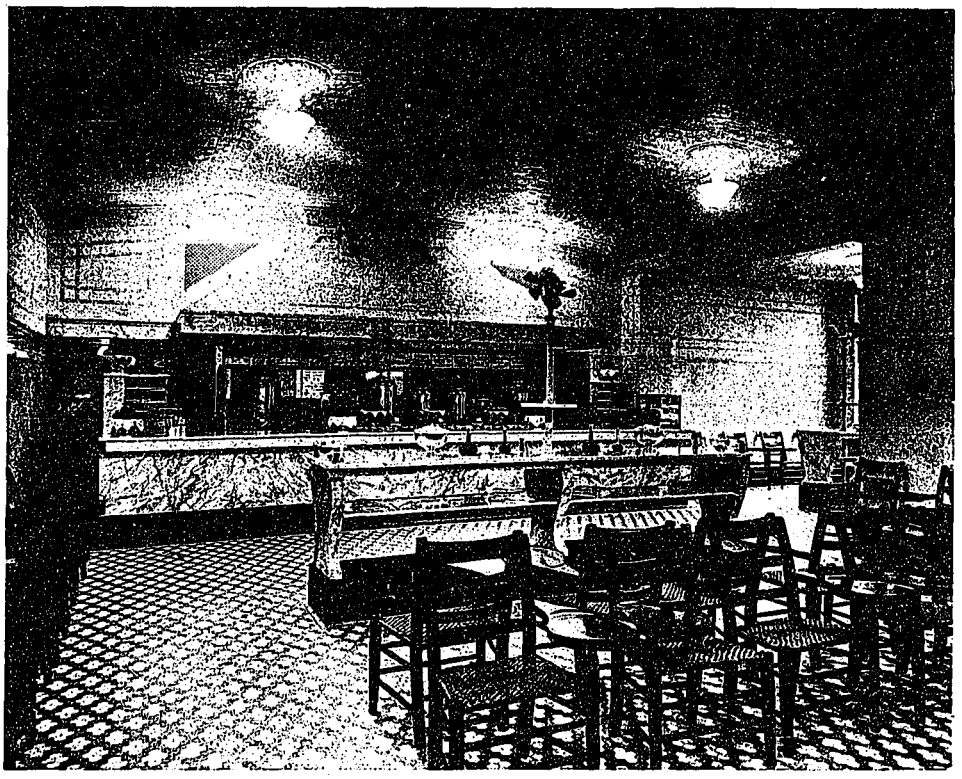
Ballrooms, banquet-rooms and other similar rooms where large groups of people come together should preferably be provided with special ventilating systems arranged for reversing, so that the fresh-air supply can alternately be admitted near the ceiling when the exhaust is taken near the floor, and vice versa.

This method of reversing, which is quite new, is by no means an expensive feature, as no additional registers or flues are required. The air-supply registers are merely changed to exhaust registers and the exhaust to supply registers when the reversing occurs.

In case of a ballroom, which is usually of considerable size, it is by far the best to provide individual air-supply and exhaust fans, as the problem warrants. In such a case the reversing device can be situated near the room which it serves, although it is not important where this device is located as long as it is accessible and can be properly connected with the air ducts. Incidentally, it is always desirable to have an individual air-supply fan for a ballroom, as it affords a convenient means for a rapid raising of the temperature of the room after dancing by introducing the air-supply at a high temperature until the desired room temperature is reached

In the case of banquet-rooms and other smaller rooms kept at constant temperature, in which upward ventilation is at times desirable, the reverser can as a rule be located in the basement, the air-supply taken from a main trunk duct supplying several rooms, and the exhaust taken from the reverser to a general exhaust fan.

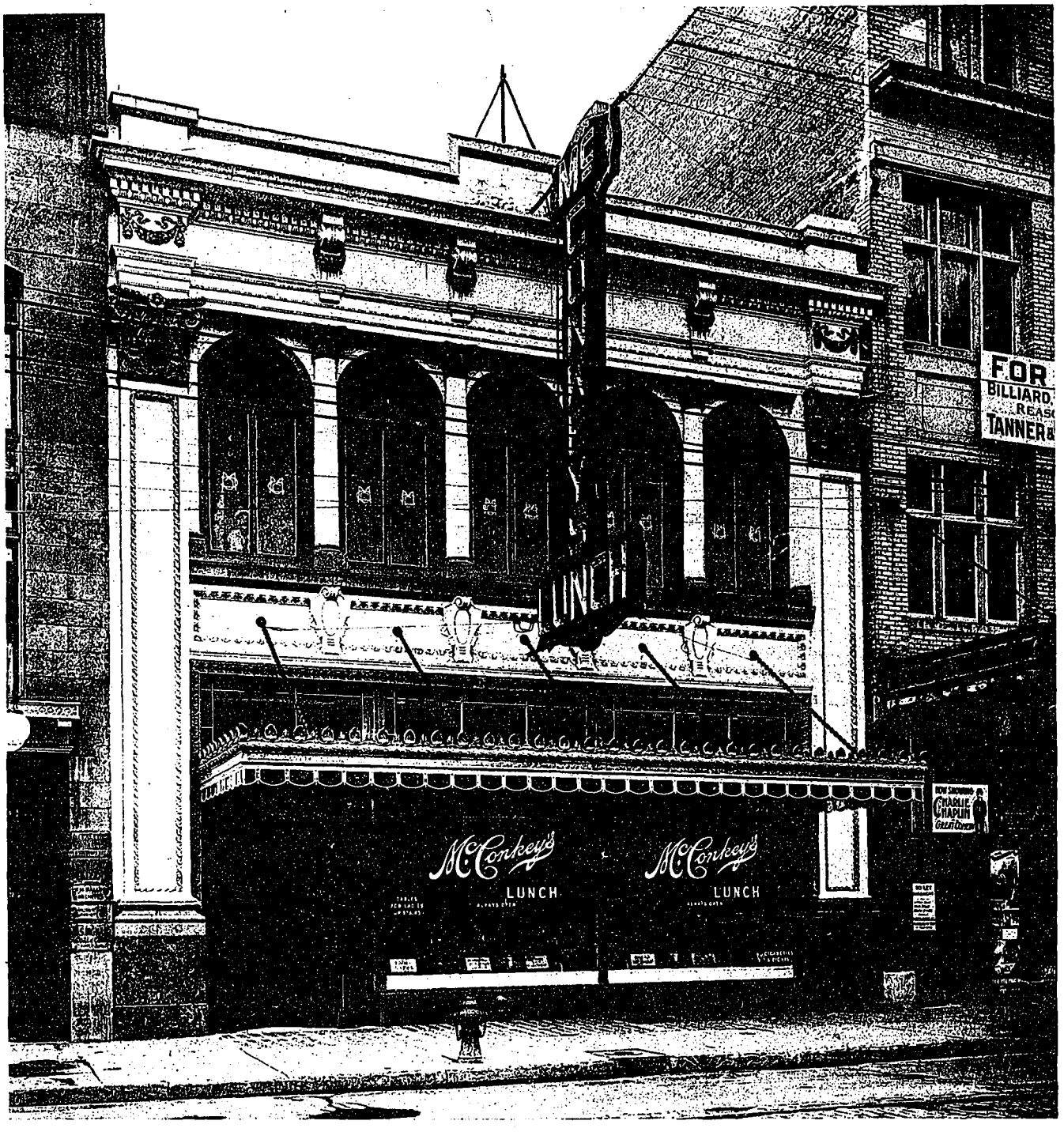
Toilet-rooms require, as a rule, no air-supply ventilation, but should have very active exhaust and be provided with louvres or registers in the doors for ingress of air to make the exhaust-ventilation effective. Interior bathrooms should be ventilated in a similar manner.

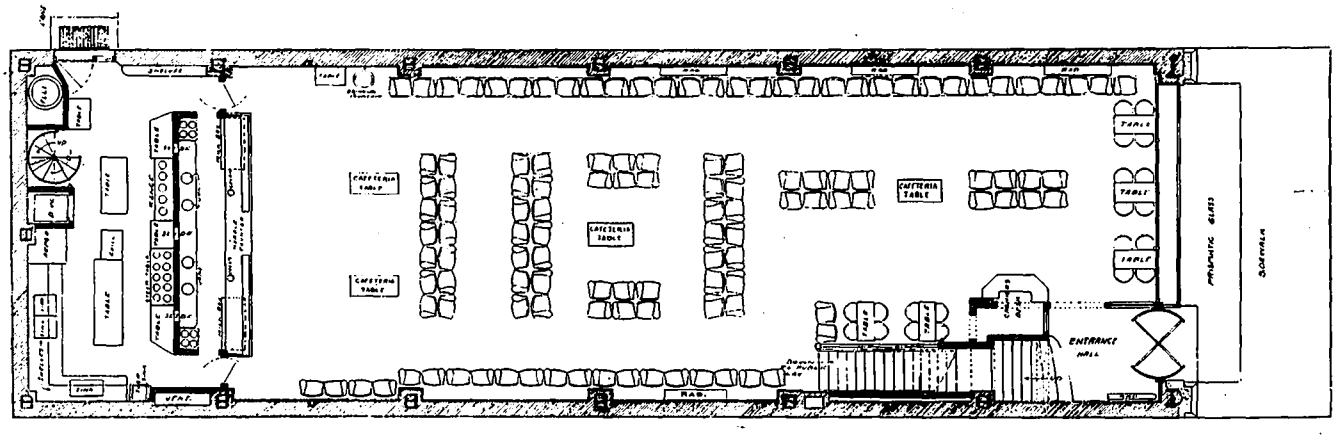


DETAIL OF RESTAURANT, BOWLES BUILDING.

Treatment of the Air-Supply.—The fresh air supply before it is introduced is required to be cleaned at all times, tempered in the colder weather, and humidified only under exceptional conditions, and when specially required.

The cleaning of the air is done either by air-washers or by dry filtering. The tempering is done by passing the air over coils or stacks before it enters the blowers. The moistening is done by the air-washers, when such are installed, and by evaporating water in pans located in the tempering-coil casings when no air-washers are used. The moistening requirement in a hotel is, however, very small, and in some localities entirely uncalled for. For this reason air-washers are objectionable in hotels near the sea-





GROUND FLOOR RESTAURANT,

McCONKEY'S LUNCH BUILDING, TORONTO.

E. J. LENNOX, ARCHITECT.

coast, where the atmosphere is usually moist, because they add moisture at times when excessive moisture prevails. Dry filtering by means of cheese-cloth filters is, on the other hand, unsatisfactory in very smoky localities, although it answers very well in hotels located where the atmosphere is reasonably clear, as in New York and Boston.

The tempering of the air-supply is a very important process, that must be done evenly and accurately. Automatic heat-control for the tempering-coils is indispensable in connection with this process.

Ventilation of Working Departments.—The ventilation of the boiler-room, engine and machinery rooms, kitchens, bakeries, sculleries, serving-rooms, pantries, laundries and similar rooms is of the utmost importance, and cannot very well be excessive. In matters of this kind it is important, besides securing comfort for the employees, that all heat, vapor and odors be confined as much as possible to the respective departments. This can be accomplished only by proportioning the ventilation in such a manner that the exhaust-ventilation in these departments becomes greatly in excess of the fresh air supply. The reverse should, of course, be the case in the ventilation of the public rooms, so as to establish air currents away from the public rooms. Local ventilation and heat-removal are of paramount importance. In the case of the kitchen, a powerful exhaust should be provided from the hoods over the ranges, broilers, kettles, bain-maries, urns, etc. The same holds good over bakery ovens and boilers, dryers and mangles in laundries. In the boiler-room, engine room, pump and machinery rooms, the air-supply should, as far as possible, be distributed near the floor, and the exhaust taken from the ceiling, avoiding strong air currents over hot surfaces. The air-supply for a kitchen must be distributed with considerable care, as the temperature of a kitchen is under any condition necessarily high, and cold drafts are, therefore, very objectionable.

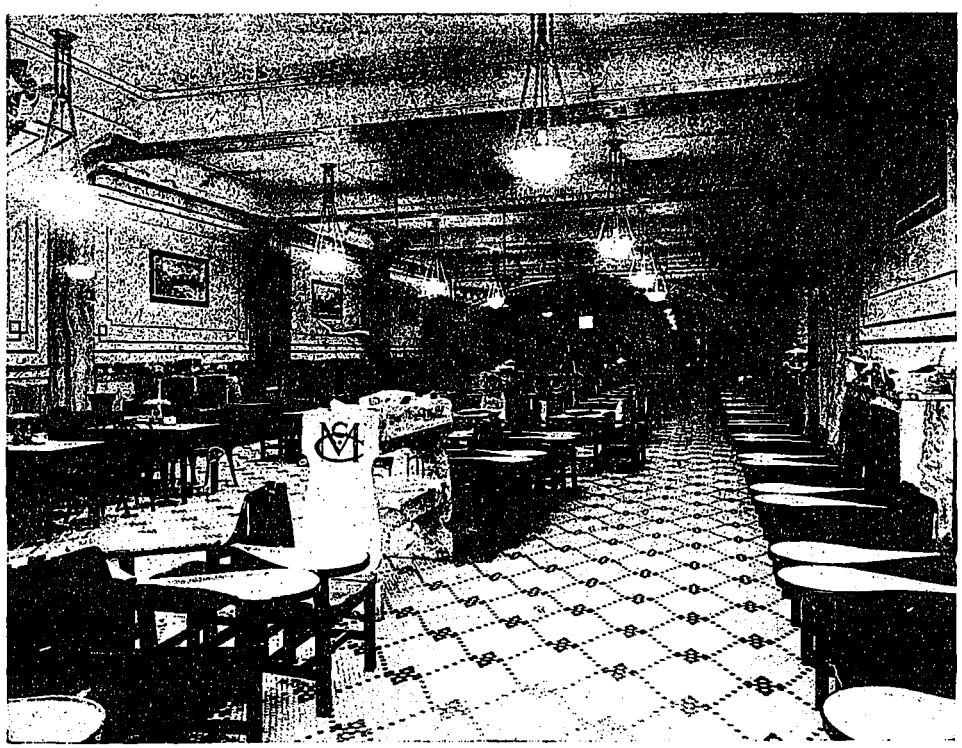
Considerable fresh cold air must constantly be supplied to a hotel kitchen in order to keep down its temperature and make the exhaust-ventilation effective. Such constant air-supply should, therefore, be distributed all around the room, and as far as possible from the ranges and steam fixtures. It is not always possible to introduce air at low temperature at the ranges, on account of the draft; and since it is inadvisable to add any heat to the air-supply, on account of the temperature in the room, it is most expedient to arrange for an intermittent air-supply near the ranges and steam fixtures, as shown in diagram below.

Air taken from a cooler portion of the room can thus be recirculated, merely producing a fanning effect, at times when it is objectionable to introduce unheated air, and air at external temperature introduced when not found objectionable.

Ventilating Apparatus.—Centrifugal fans are the proper type to use for the air-supply system. The same type should also be used for exhausting air under any appreciable resistance, while disc fans can be, and often are, used for exhausting air when the flue-velocity is low and the resistance is slight.

Both air-supply and exhaust fans should be made as large as practicable, to insure efficiency with the minimum operating cost.

Fans should all be driven by slow-speed electric motors, direct-connected to the fan-shafts, and designed for variable speeds of consider-



GROUND FLOOR RESTAURANT, M'CONKEY'S BUILDING.

able range. The slow-speed principle is very important, because it is more economical to run large ventilating fans at slow speed than small fans at high speed, and, furthermore, the slow-speed fans are practically noiseless.

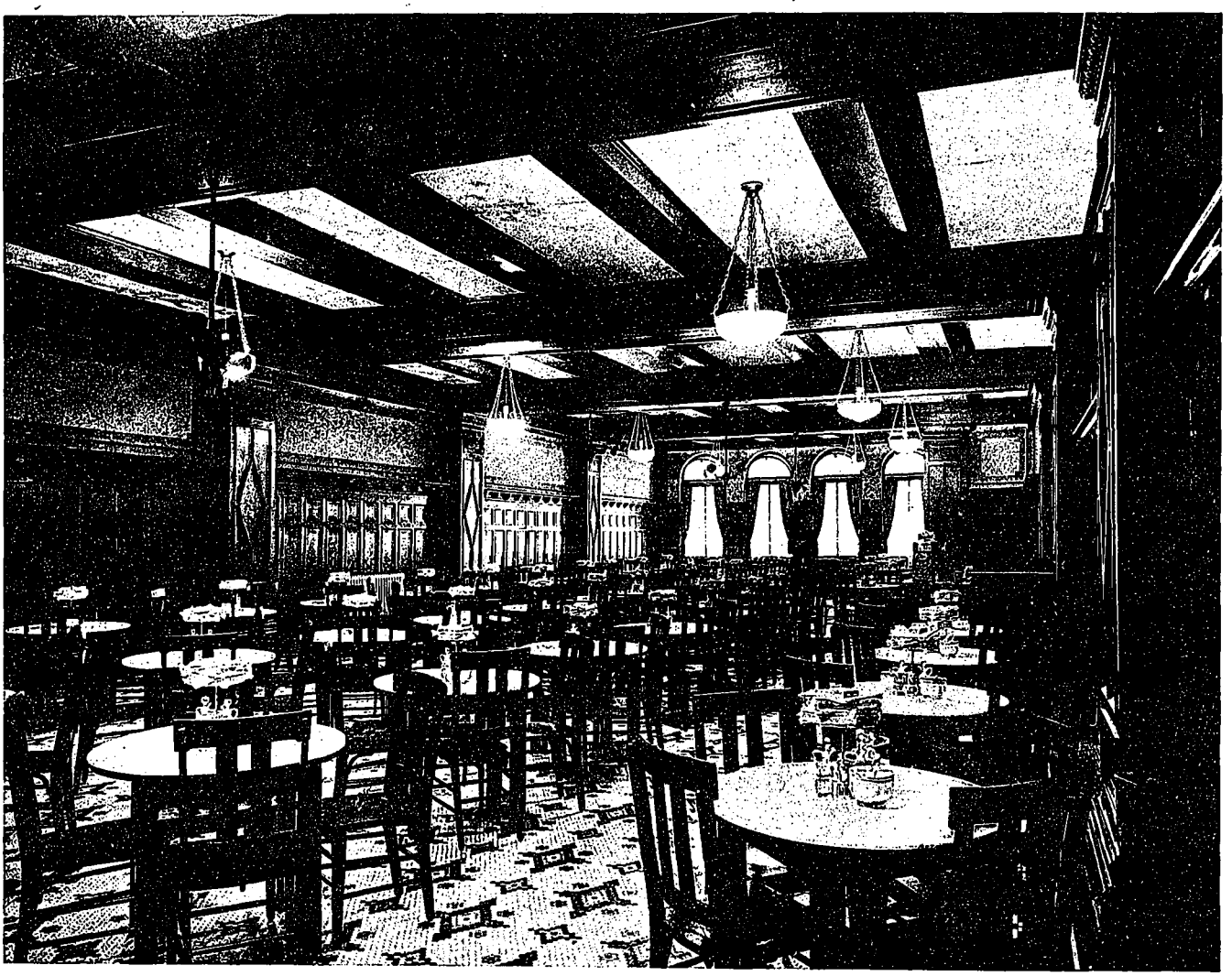
For conveyance of air, galvanized iron ducts and flues should be used throughout, in each case forming a continuous passage for the air

from the air-supply fans to the registers, and from the exhaust-registers to the exhaust-fans. Air passages formed for furring, suspended ceilings and plastered coves are not only unsanitary, but increase the fire risk to such an extent that they should never be resorted to.

The velocities and formation of the ducts and flues cannot be entered upon to any extent in this article. For the sake of economy in operation, it is advisable to proportion the ducts and flues as generously as possible. Individual air-supply flues should not be proportioned for a higher velocity than twelve feet per second, four feet per second. There is, however, no hard-and-fast rule, as local conditions are determining factors to a very large degree.

The disposition of ducts and flues is no small problem. This can be solved only by the most exhaustive study when the plans are being prepared. Vertical flues naturally go back of the furring, whereas the main ducts are generally run at the basement ceiling.

Central Plant.—The power plant, which by necessity is a part of every large hotel, is in itself a large problem and too intricate to be more than briefly commented upon in this article.



SECOND FLOOR RESTAURANT, M'CONKEY'S BUILDING.

whereas the velocity in the individual flues for exhaust should not exceed ten feet per second. The velocity in the main ducts can, of course, be considerably higher, depending in turn upon their size and length. A velocity of thirty feet per second may be considered conservative in the main trunk ducts at the blowers, with the reduction in velocity as the distance from the fans increases and the cross-sectional area decreases. The same holds good in reverse proportion for the exhaust ducts, with the exception that the velocity at the inlets of the exhaust-fans should not exceed twenty-two to twenty-

Some of the larger hotels in this country have boiler plants ranging from two to three thousand horse-power capacity and electric generating plants capable of developing from 1,200 to 1,500 kilowatts. Such an equipment, with the number of appurtenances and the piping required in connection with the same, together with the main appurtenances of the heating and ventilating apparatus, the refrigerating and ice-making plant, elevator machinery, pumps, tanks and heaters of the plumbing system, air compressors, pneumatic tube and vacuum sweeping equipments, usually occupies an entire sub-basement.

Interior Decorations

IN referring to interior decorations, Henry J. Davison, whose best work is found in the Bankers' Club of America and the Lawyers' Club at New York City, states that certain colors have a certain definite effect on masses of people. The human soul has so many prejudices that individuals are affected differently, according to past associations and experiences with certain colors. Just as a strain of music or a waft of perfume recalls to us in a flash some terrific emotion experienced many years past, and supposedly forgotten, so a certain color may be associated with some extremely disagreeable experience and therefore always bring us extreme discomfort. For instance, when we enter a lavender room we suddenly may become pensive and melancholy, or perhaps, irritable; and may be wholly ignorant of the fact that the color has brought up disagreeable memories.

During his discourse Mr. Davison said:—"Do not imagine that all this is vague theory. I have made color a life-time study and deduced facts which sound like didactic statements from literally thousands of instances. That is the only way scientists determine anything; they study innumerable cases, and when they find the same conditions prevailing under the same circumstances every time they deduce a law which operates unfailingly.

"I remember a big piece of work I did in a house, a part of which consisted of a yellow and also of a blue room. Two powerful captains of finance frequented the club. One passionately loved the yellow room. He used to say naively, 'I can sit in the yellow room all day.' Undoubtedly, this was due to the fact that he was a self-made man who had worked hard and never had had any warmth or color in his life. This golden glow meant to him relaxation—the joys of boyhood.

The other man inevitably drifted to the blue room, showing a predilection for blacks and blues; for recesses and shadows. He is a lawyer who protects millions of dollars—an abstractive man, who loves spider webs, the spinning of schemes. Every shadow and recess in a room delights him. He cannot stay away from that blue room. This is because he never explodes or gives way to irritability or passion. Not having the outlet his pent up energies crave the stimulus of color.

"Red is universally aggressive. Orange expresses heat. Have you never questioned why the Italians and Spanish, although living in hot countries, always dress in red and yellow, and eat red peppers and violent drinks? It is because they give out so much heat that they are obliged to restock their heat and energies.

"Blue stands for serenity and coolness. Violet is mystic and contemplative. There is no doubt in my mind that the theological symbolism of color, which is a tremendous study in itself, was founded upon actual knowledge of psychology. You know that even as late as the Italian Renaissance the great painters, such as Raphael, were obliged by the church to express certain theological symbols, such as blue for the Madonna's robe, signifying religion or faith; green for hope, and white for purity.

"Take our everyday lives; although in general the sexes are differentiated somewhat in taste and expression, color is not so much a matter of sex as of temperament. Strong elemental colors are regarded as masculine, while the tinted ones, to which white has been added, expressing subtlety and delicacy, are feminine. Still, I have seen strong, manly men sometimes react to exquisite colors. People of the same sex but different temperament express wholly different colors and forms.

"Can you imagine Queen Elizabeth and Marie Antoinette wearing the same costumes and enjoying the same furniture? The dominant, aggressive, masculine queen wore certain costumes and surrounded herself by certain strong, well built furniture. The dainty, aristocratic French sovereign expressed her period by delicate Dresden china figures, spindle legged furniture and all sorts of fragile, rococo and ornate furniture and tapestries.

"If you do not think that color has a real physical effect on people you should see some men almost go crazy if subjected to violet. A doctor experimented recently with an apparatus —I think they call it a pulsometer—which showed the pulse going up or down, according as the person was subjected to one or another color.

"In Yale University tests were made which showed that men when subjected to red displayed 50 per cent. more muscular efficiency than under other colors. The effect was measured by instruments on their wrists, and it was shown that when subjected to purple the pulse would go away down."

"Nations have color, and national tastes change. We could express America by one color, France by another, with real meaning. Chickens have been fed aniline dyes and the egg that forms is in concentric rings, each being of the color fed the hen at the time that portion of the egg was forming. This is a mere physical experiment.

"But it is people who are eternally fascinating. Always and forever we are asking, What is art? Tolstoy answered, 'The transference of emotion.' William Morris said 'art is man's joy in his work.' Color is rejection—or the bouncing away. Color is a language. It has an alphabet, spelling, grammar and paragraphs. The three letters in the color alphabet are red, yellow and blue. Every room must have some of each of these, whatever the proportion. Sometimes I call them the parents. (You know, of course, that there are 3,000,000 colors.) Red marries Yellow and they have one child—Orange. All the rest of the three million colors and tints are their offspring.

"Tints, of course, merely have more or less white mixed in. Mixed color is dirty. Not one house painter in eight hundred can mix colors. Pure color is 'grayed' or 'browned' or 'blacked.' The shade produced depends on time and the effect of one color soaked into another. No dyer can guarantee absolutely what color will finally emerge. Color depends on what company we keep. Colors must be very fastidious; they cannot risk evil associates, lest their blood be debased.

"All artists use the same paint; they are marvellous only in the mixture of the colors and the proportions used."

"Decoration is applied psychology! If your house does not express you it is a setting without a stone. Your taste may be guided, but if your abode merely expresses the conventional schemes or predilections of a hired decorator it is a Smith house or a Jackson room, but not the emanation of your soul!

"The history of household furniture is intimate and fascinating. It usually is founded on physical facts and customs. For instance, the chair of a certain period had high rungs, because in that age, even in king's houses, there was no sanitation, and garbage, water, dirty little animals and rats might render the floor unfit for milady's dresses. So she kept her feet well up from the stone floor!

"In most forms of art expression, however eccentric they may appear, there is a reason. But when we get away from home furnishings, from tapestries of delicate hue, and spindle legged or carved mahogany, or gilt furniture, and come to the realm of human beings, there enters in a spirit of mysticism, of uncertainty, of eternity. That is why we speak of soul portraiture, which sounds vague and irrational to the dull realists, but is founded on eternal verities.

"If it is scientifically proved that different colors actually affect a person's temper and mood, it stands to reason that we should study not only color effects in general but in their relation to individual men and women. Why torture a sensitive young girl by giving her a blue bedroom if it render her nervous, depressed and melancholy? She may not realize what it is that is affecting her spirits and nerves, but that should be the concern of the color specialist.

"In deciding on your own color schemes avoid affectation and the following of some didactic teacher. Be yourself. Each individual is a facet of the diamond of life. Why should a hustling, rich society women or a practical prosperous business woman garbed in a tailor-made suit of the twentieth century go in for 'periodism' and dwell in an ornate Marie Antoinette room? Nothing is more absurd and incongruous. If folks understood color and harmony there would be no friction and fewer divorces!

"Every work of art is, in one sense, a lie. Painters cannot paint light. They cannot reproduce Niagara on a three foot canvas. Truth is reached through error, as it were—through the great illusion. In entering a crowded, busy downtown skyscraper office building in the heart of New York the visitor must be impressed with distance, with dim, cathedral-like spaces.

"The Bankers' Club is, in floor space (100,000 square feet), the equivalent of a 400-room hotel! A decorator not only must select colors which will not throw the occupants of a room into a rage, but he must have a thought for eye strain and ear strain; must regard the nose, the sense of touch, the palate, and even the legs!

"Americans are wearing out their eyes because of the intense light of the many windowed office buildings. The top storey of a steel skyscraper has no skyline or vista or partitions, so that the decorator has some problem to make it cosey and homelike.

"People are just waking up to the fearful strain of noise in a big city. The vibrations from hundreds of voices crossing and recrossing each other in a room are as real and assail the nerves as disagreeably as little popguns shot off in every direction! I try to counteract this in color and line and bring about repose and serenity.

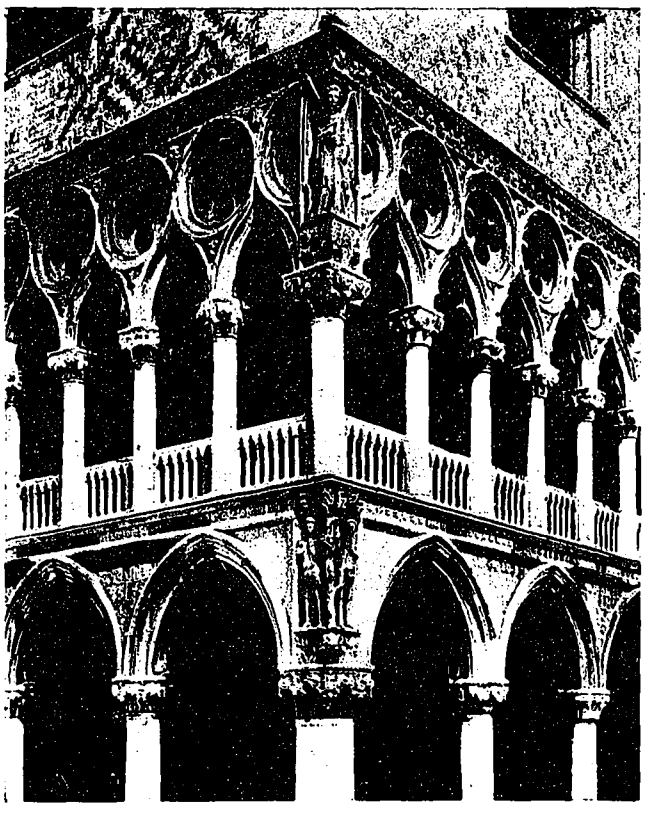
"So much for the eye and ear. The nose must not be assailed by unpleasing odors in a club, and the palate must be pleased with the aid of lovely æsthetic surroundings. This former takes in ventilation.

"Even the texture of fabrics and leathers has an effect on the temper and the soul, so that the body-fitting chairs must have certain materials in upholstery to inspire peace."

VENICE

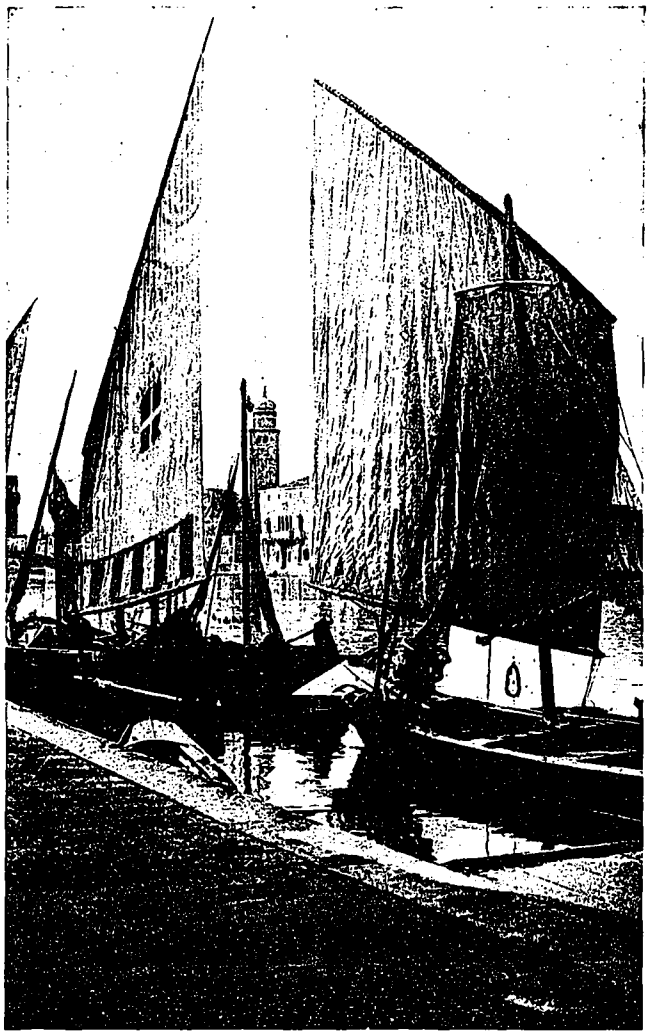
Arti cleby Sir Martin Conwayin "Country Life." Photos taken by F. R. Major.

THAT Italy should have come into the war as our ally is, of course, matter of satisfaction to all her lovers, but it is a satisfaction tempered with fear. For Italy is the trustee of so much that all the civilized world holds dear —the priceless treasures of art bequeathed to her by her ancestors of so many bygone generations. The very landscape of Italy is precious, and even her smaller and remoter towns contain monuments not to be paralleled elsewhere. Thus little Cividale, close to the Austro-Italian frontier and on one of the main highroads leading north-east out of the plain of Venetia, is alone worth more than money could repay; and Cividale has heard the guns. Cividale, Udine, Aquileia, Grado—how pleasantly the names slip from the tongue, and what charming memories each evokes in those who really know their Italy. But the light of all of them pales into insignificance before the sun-bright glory of Venice—Venice which all the world worships and everyone knows to be unique. Even Rheims, splendid as it was, was only one of several superb Gothic cathedrals of the highest rank, but Venice is not one of several, not even one of two. It stands alone in the world; there is no city like it. Once, indeed, Venice did not stand so unrivalled, but that was before the Ottoman conquest of Constantinople. The old Constantinople of East Imperial days has been wiped out by the unspeakable Turk, excepting only her central gem, the church of Hagia Sophia, and that is but a shell, swept and garnished of all the fair furniture it was designed to hold and to set off. Venice is, as it were, a piece of old Constantinople preserved in the pious west, whereby we are able to learn what Constantinople once was like. That was the great Venice—the Venice of the twelfth, thirteenth and fourteenth centuries—the Venice of St. Mark's and the Doge's Palace, and the Byzantine and early Gothic palaces along the Grand Canal. Time has worn much of that older Venice away, but what remains of it includes, perhaps the most precious of all the buildings that now stand anywhere together, still in use, on the face of the earth.



DETAIL OF PLAZZA DUCALE.

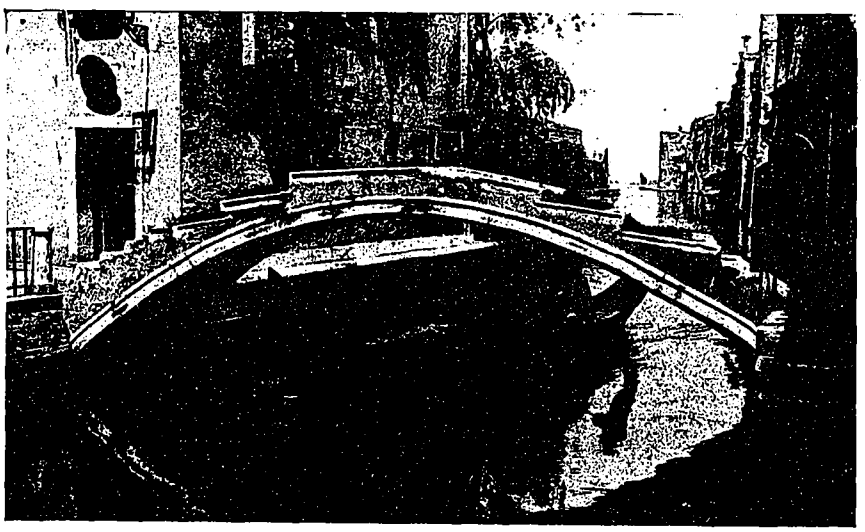
The glory of Venice is St. Mark's. Hagia Sophia may be a yet more beautiful building, but St. Mark's is a building with its treasures complete within. Both are essentially



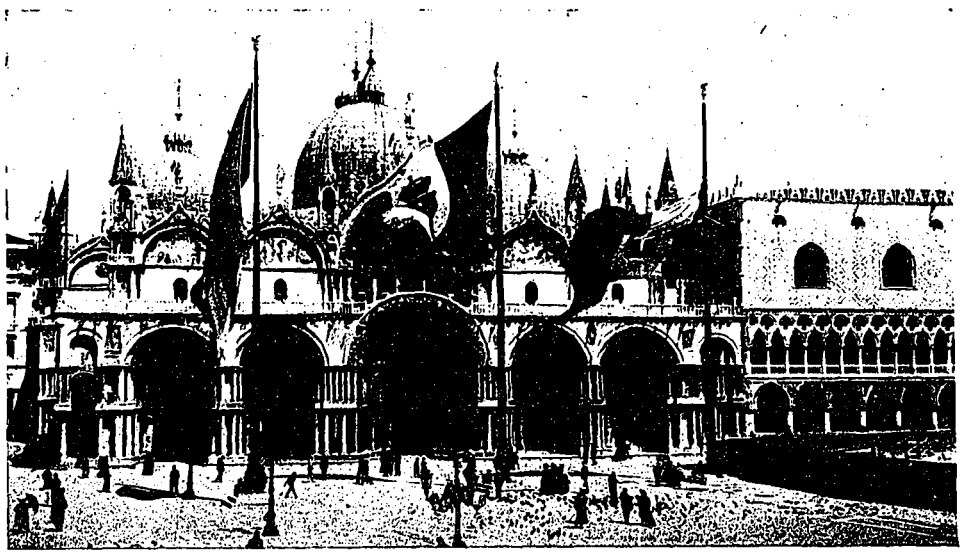
SCENE IN CHIOGGIA.

Byzantine buildings, one representing the first great epoch of Byzantine splendour, the other expressing the revived glories of the Byzantine Renaissance. But whereas Hagia Sophia was built at one effort, St. Mark's was a growth. Two earlier churches stood successively on its site. The third is more perfect than either. The brick core of it was begun about the time of our Norman Conquest, and from that day till the sixteenth century almost every generation added to the beauty and wealth of the monument. Wherever victorious Venetian fleets penetrated they brought home some precious marbles, some finely carved capitals, or other rare objects to be built into the shrine of "their own Evangelist." If they plundered it was not after Teutonic fashion for destruction's sake, but in order to create. The brick walls of St. Mark's are now wholly covered with fair marbles, many of them inlaid with sculpture or mosaic. The facade is adorned by scores of columns and capitals, some of them of exceeding rareness. The interior vaults are wholly lined with mosaic. All the altars, the lamps, the pulpits, the galleries, are precious as in no other church, and many of them have come from unrecorded eastern shrines. Sometimes they are built up out of fragments, preserved and re-used in new combinations and now venerable in their reassemblage. No interior in the world can compare with that of St. Mark's for splendour. The subdued lustre of gold, the rich harmony of color in marble, porphyry and glass, the bronze lamps and doors, the fine sculpture in many materials—all are rich, all are rare, and every detail is historically interesting. If we could know whence came and who brought each marble panel or porphyry shaft which now finds its almost perfect position in the complex whole, we should by them alone be able to form a catalogue of the great men and great deeds of Venice. Yet even more wonderful than the objects themselves is the art whereby they have been combined into this incredible whole, this matchless unity, this summary of the passions and strivings and adorations of half a thousand years, and those the centuries that included the crusades and the great age of chivalry and the making of Europe.

The foundation of Venice was caused by the invasion of the older Huns, the Huns who could not help being barbarians of the lowest class because they never had had a chance to be civilized. They came raging and ravaging down into Italy, and the people of Aquileia fled from their fury and took refuge on the islands among the lagoons, where they founded first Torcello and then Rialto (afterwards called Venice). Torcello still remains, like a stranded vessel of an ancient type, upon its sandbank, with churches that look older than they are, but yet are ancient enough. The soil of Torcello yields carved stones that may have come from Aquileia



TYPICAL VENETIAN BRIDGE.



MAIN FACADE OF ST. MARK S.

itself, and below them yet older antiquities, going back to the days when Mediterranean commerce was in the hands of Mycenæan people.

Venice, Torcello, Murano, Malamocco, Chioggia—how they sing through one's memory! For these places capture the affection of everyone as no other place can. Even Italy cannot rival them elsewhere. Florence, Rome, Capri, Palermo—lovely and fair as they are—possess no equal fascination, nor do Como, nor the Alps, nor Geneva's lake, nor the cathedral cities of France, love them as we may. Venice is above and beyond them all, the very centre and kernel of the beauty of the world. A day in Venice is an epoch in the lifetime of any really living person, anyone not wholly dead to beauty, anyone with a soul not altogether atrophied. That wonderful lagoon, so sunny, so still, with the graceful boats strewn about and the matchless tower of St. George and the Campanile reflected to left and right in the mirror of the landlocked sea! The incredible fascination of the Doge's palace, with its tessellated wall, faintly pink, above the lace-like interlacings of the wonderful colonnade, which Ruskin revealed to the admiration of the world! How it all draws together and leads the gliding gondola on to the mouth of the Grand Canal, that water highway fringed with palaces where sea and city meet and blend! Palace after palace, Byzantine, Gothic, Renaissance, succeed one another, each like the home of a fairy prince, glittering with broken reflected lights from below. Here there is a little garden where pinks blossom on the parapet and oleanders peep over the walls. And there is a little courtyard with its carved well-head in the midst, and other little palaces looking down upon it all around. Everywhere is some attractive detail, some bit of exotic carving framed aloft on a house facade, a mere writhing, perhaps, of two clasped beasts, or a couple of birds flanking a vase, or a Byzantine emperor within a round medallion—spoil from some far off victory which the owner of the palace brought home and affixed for remembrance of a great deed of war. The little canals, too, with their endless bendings and twinings, how delightful they are! Each house that is reflected in them different from its neighbor, different in date, in style, in size—answering the special needs and likings of a particular man or family and no other. What glimpses we get through door and window into dark, mysterious passages and chambers, within which surely no ordinary men and women can dwell! Here, if anywhere, should be the home of romance, of the unexpected, the unusual, the unimagined.

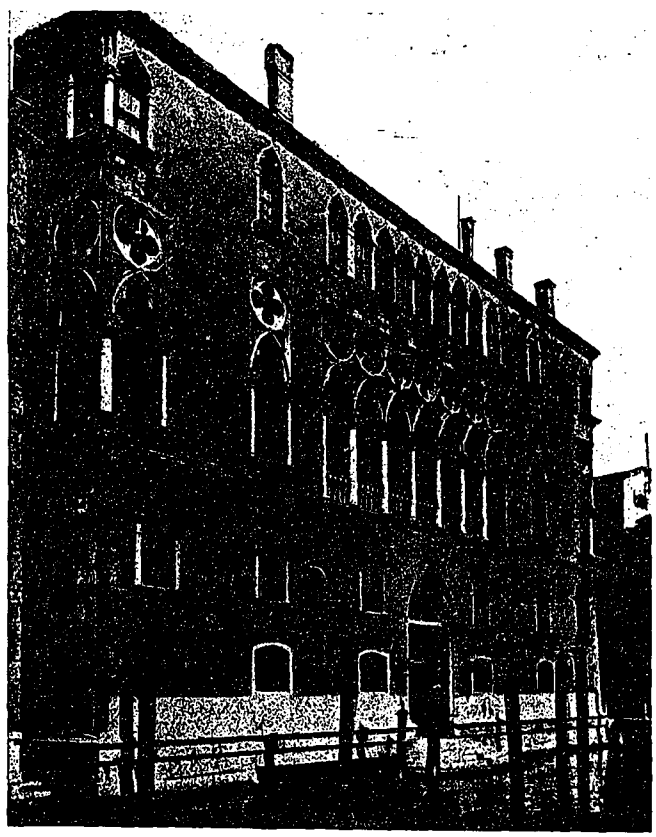
That, after all, is the keynote of Venice to the foreigner—Romance! If we were to live there it would go, no doubt, as it is liable to vanish from the Alps and the sea and the desert when we become too familiar with them. The worst of living too long and seeing too much

A NARROW THOROUGHFARE.

CHURCH OF S. M. DELLA SALUTE.

is that everything is liable to become commonplace in these dangerously material days. We no sooner become conscious of what seems to be a mystery than we must needs examine and explain it and drive the mystery away; and with the mystery gone romance vanishes also. What a loss! For life has nothing so precious to give as romance, which is a state of mind the very reverse of scientific understanding. It is romance that gives to youth its glory, to manhood its ideal, and gilds the memories of old age for those who have preserved the rare jewel of that power. For most people romance is banished from their every-day life, gone beyond recall from their homes. Such can only for a brief spell recover it by wandering forth into some new world. They may find it in music or in the drama till those also become stale, or they may catch a renewed glimpse of it in some flaming sunset or a sudden vista of snowy mountains. But it is at Venice that they are most sure to come up with romance once more and so renew the thrill of childhood if only for a moment in their *blase* hearts.

It is remarkable that the love which all the world now bears towards Venice should be a modern emotion. The strangeness of the place was always famed abroad, but of its beauty we read little or no mention in the older writers. Coryat and such travellers were more amused by Venetian society than by Venice itself; yet the city must have been more resplendently beautiful in their day than ever since, for later centuries have seen a sad destruction of its beauties and a replacement of many a rare feature by the ordinary. It is easy now to realize that the culmination of the beauty of Venice must have come about the beginning of the sixteenth century, at which time the Hungarian, Albert Durer, spent a year within it, and we possess the letters he then wrote home to his friends. In none of them does he make any reference to the beauty of Venice. Yet, if it is glorious now in its decay, what must it have been then, when it was alive with an art-inspired folk, splendidly dressed and magnificent in their ways of life and their almost continuous ceremonials. Even the Renaissance was splendid in Venice and left the old work respectfully unharmed. That period was followed by one of sordid neglect and indifference which lasted almost down to the days of Ruskin. Turner and other English artists, indeed, had preceded him and had interpreted the beauty of Venice in their pictures and drawings; but he first, with any power and emphasis, made the stones of Venice appeal in language to the ears and through them presently to the eyes of men. Turner taught Ruskin, Ruskin taught England, and England taught the world to see Venice for what she is; and only just in time, for the days of great peril for her were come, and there was barely time to save what threatened to vanish away after centuries of neglect. The renewed interest was at first



A VENETIAN PALACE.

rather injurious than salutary, as the destructive restoration of the Fondaco dei Turchi still glaringly demonstrates. But a better understanding followed, with the result that St. Mark's was rescued none too soon, and the Doge's Palace likewise, and many another old *casa* or *palazzo* that would have been pulled or fallen down had the old indifference continued.

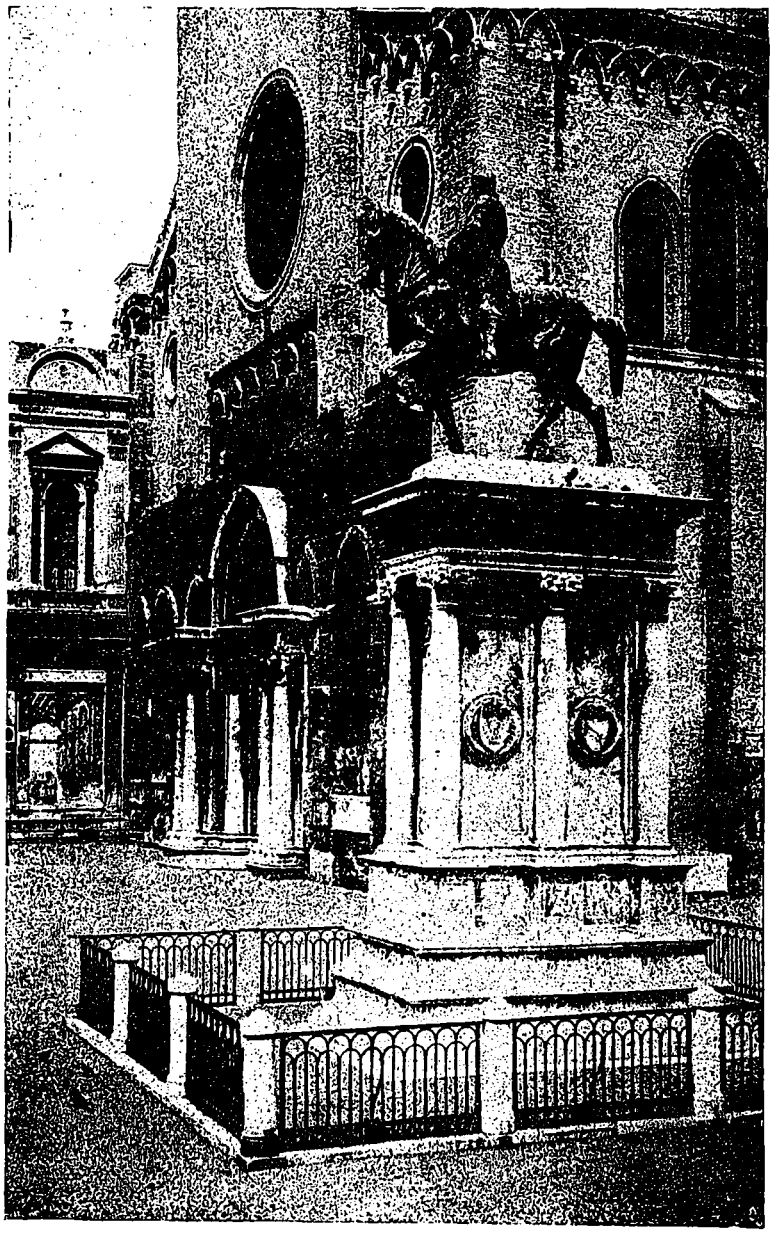
And now all is in peril at Venice as at Constantinople, and any day we may hear of some ghastly tragedy—a bomb on St. Mark's, a shell in the Doge's Palace, a torpedo under the Rialto. Such knowledge is not ours only, but still more keenly realized by our Italian Allies. It will add strength to their patriotism and will make them yet more determined to conquer and keep the hated enemy off their sacred soil. That they may be enabled so to do will be the prayer of every lover of things beautiful.

AS the boat drew nearer to the city (Venice), the coast which the traveller had just left sank behind him into one long, low, sad-colored line, tufted irregularly with brushwood and willows; but, at what seemed its northern extremity, the hills of Arqua rose in a dark cluster of purple pyramids, balanced on the bright mirage of the lagoon; two or three smooth surges of inferior hill extended themselves about their roots, and beyond these, beginning with the craggy peaks above Vicenza, the chain of the Alps girded the whole horizon to the north—a wall of jagged blue, here and there showing through its clefts a wilderness of misty precipices, fading far back into the recesses of Cadore, and itself rising and breaking away eastward, where the sun struck opposite upon its snow, into mighty fragments of peaked light, standing up behind the barred clouds of evening, one after another, countless, the crown of the Adrian Sea, until the eye turned back from pursuing them, to rest upon the nearer burning of the campaniles of Murano, and on the great city, where it magnified itself along the waves, as the quick silent pacing of the gondola drew nearer and nearer. And at last, when its walls were reached, and the outmost of its untrodden streets was entered, not through towered gate or guarded rampart, but as a deep inlet between two rocks of coral in the Indian Sea; when first upon the traveller's sight opened the long ranges of columned palaces,—each with its black boat moored at the portal,—each with its image cast down, beneath its feet, upon that green pavement which every breeze broke into new fantasies of rich tessellation; when first, at the extremity of the bright vista, the shadowy Rialto threw its colossal curve slowly forth from behind the palace of the Camerlenghi; that strange curve, so delicate, so adamantine, strong as a mountain cavern, graceful as a bow just bent; when first, before its moonlike circumference was all risen, the gondolier's cry, "Ah! Stali," struck sharp upon the ear, and the prow turned aside under the mighty cornices that half met over the narrow canal, where the plash of the water follow-

A SHADED STREET.

HOUSES ALONG THE GRAND CANAL.

ed close and loud, ringing along the marble by the boat's side; and when at last that boat darted forth upon the breadth of silver sea, across which the front of the Ducal palace, flushed with its sanguine veins, looks to the snowy dome of Our Lady of Salvation, it was no marvel that the mind should be so deeply entranced by the visionary charm of a scene so beautiful and so strange, as to forget the darker truths of its history and its being. Well might it seem that such



COLLEONI'S STATUE.

a city had owed her existence rather to the rod of the enchanter than the fear of the fugitive; that the waters which encircled her had been chosen for the mirror of her state, rather than the shelter of her nakedness; and that all which in nature was wild or merciless,—Time and Decay, as well as the waves and tempests,—had been won to adorn her instead of to destroy, and might still spare, for ages to come, that beauty which seemed to have fixed for its throne the sands of the hour-glass as well as of the sea.

And although the last few eventful years, fraught with change to the face of the whole earth, have been more fatal in their influence on Venice than the five hundred that preceded them; though the noble landscape of approach to her can now be seen no more, or seen only by a glance, as the engine slackens its rushing on the iron line; and though many of her palaces are for ever defaced, and many in desecrated ruins, there is still so much of magic in her aspect, that the hurried traveller, who must leave her before the wonder of that first aspect has been worn away, may still be led to forget the humility of her origin, and to shut his eyes to the depth of her desolation. They, at least, are little to be envied, in whose hearts the great charities of the imagination lie dead, and for whom the fancy has no power to repress the importunity of painful impressions, or to raise what is ignoble, and disguise what is discordant, in a scene so rich in its remembrances, so surpassing in its beauty. But for this work of the imagination there must be no permission during the task which is before us. The impotent feelings of romance, so singularly characteristic of this century, may indeed gild, but never save the remains of those mightier ages to which they are attached like climbing flowers; and they must be torn away from the magnificent fragments, if we would see them as they stood in their own strength. Those feelings, always as fruitless as they are fond, are in Venice not only incapable of protecting, but even of discerning, the objects to which they ought to have been attached. The Venice of modern fiction and drama is a thing of yesterday, a mere efflorescence of decay, a stage dream which the first ray of daylight must dissipate into dust. No prisoner, whose name is worth remembering, or whose sorrow deserved sympathy, ever crossed that "Bridge of Sighs," which is the centre of the Byronic ideal of Venice; no great merchant of Venice ever saw that Rialto under which the traveller now passes with breathless interest: the statue which Byron makes Faliero address as of one of his great ancestors was erected to a soldier of fortune a hundred and fifty years after Faliero's death; and the most conspicuous parts of the city have been so entirely altered in the course of the last three centuries, that if Henry Dandolo or Francis Foscari could be summoned from their tombs, and stood each on the deck of his galley at the

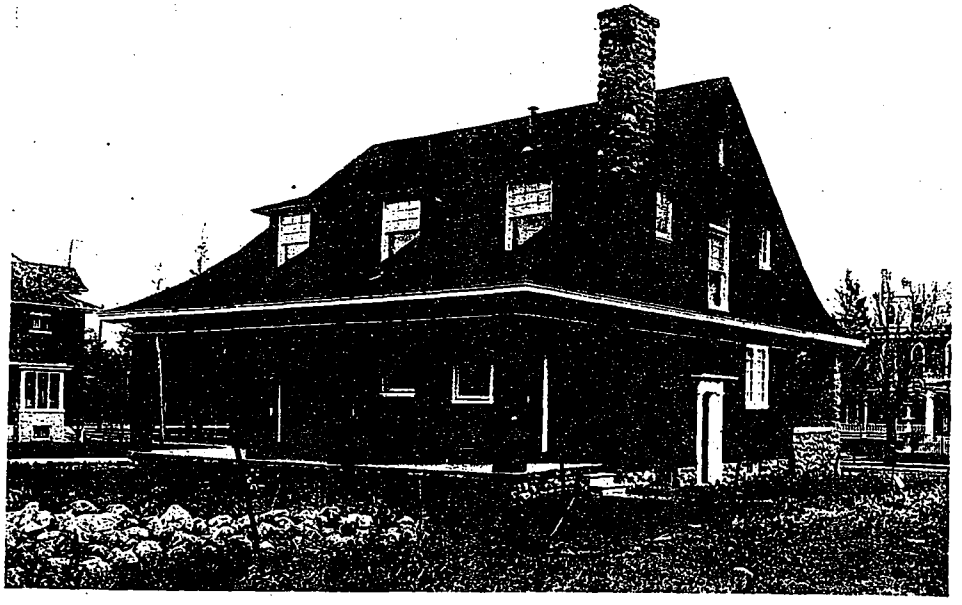
entrance of the Grand Canal, that renowned entrance, the painter's favorite subject, the novelist's favorite scene, where the water first narrows by the steps of the Church of La Salute,—the mighty Doges would not know in what spot of the world they stood, would literally not recognize one stone of the great city, for whose sake, and by whose ingratitude, their grey hairs had been brought down with bitterness to the grave. The remains of *their* Venice lie hidden behind the cumbrous masses which were the delight of the nation in its dotage; hidden in many a grass-grown court, and silent pathway, and lightless canal, where the slow waves have sapped their foundations for five hundred years, and must soon prevail over them for ever. It must be our task to glean and gather them forth, and restore out of them some faint image of the lost city, more gorgeous a thousand-fold than that which now exists, yet not created in the day-dream of the prince, nor by the ostentation of the noble, but built by iron hands and patient hearts, contending against the adversity of nature and the fury of man, so that its wonderfulness cannot be grasped by the indolence of imagination, but only after frank inquiry into the true nature of that wild and solitary scene, whose restless tides and trembling sands did indeed shelter the birth of the city, but long denied her dominion.

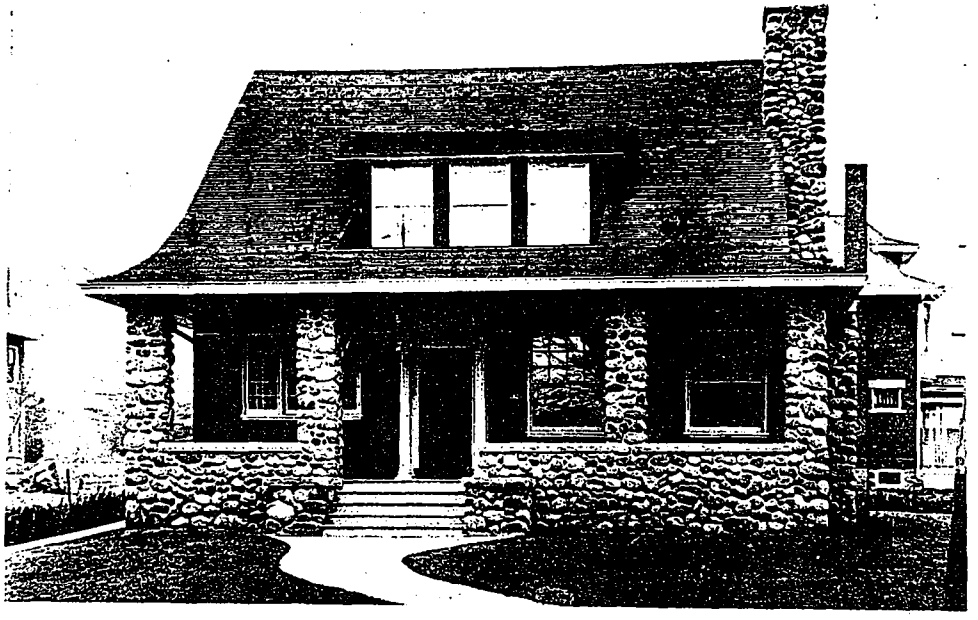
Seven miles to the north of Venice, the banks of sand, which near the city rise little above low-water mark, attain by degrees a higher level, and knit themselves at last into fields of salt morass, raised here and there into shapeless mounds, and intercepted by narrow creeks of sea. One of the feeblest of these inlets, after winding for some time among buried fragments of masonry, and knots of sunburnt weeds whitened with webs of fucus, stays itself in an utterly stagnant pool beside a plot of greener grass covered with ground ivy and violets. On this mound is built a rude brick campanile, of the commonest Lombardic type, which if we ascend towards evening (and there are none to hinder us, the door of its ruinous staircase swinging idly on its hinges), we may command from it one of the most notable scenes in this wide world of ours. Far as the eye can reach, a waste of wild sea moor, of a lurid ashen grey; not like our northern moors with their jet-black pools and purple heath, but lifeless, the color of sackcloth, with the corrupted sea-water soaking through the roots of its acrid weeds, and gleaming hither and thither through its snaky channels. No gathering of fantastic mists, nor coursing of clouds across it; but melancholy clearness of space in the warm sunset, oppressive, reaching to the horizon of its level gloom. To the very horizon, on the north-east; but, to the north and west, there is a blue line of higher land along the border of it, and above this, but farther back, a misty band of mountains, touched with snow. To the east, the paleness and roar of the Adriatic, louder at momentary intervals as the surf breaks on the bars of sand; to the south, the widening branches of the calm lagoon, alternately purple and pale green, as they reflect the evening clouds or twilight sky; and almost beneath our feet, on the same field which sustains the tower we gaze from, a group of four buildings, two of them little larger than cottages (though built of stone, and one adorned by a quaint belfry), the third an octagonal chapel, of which we can see but little more than the flat red roof with its rayed tiling, the fourth, a considerable church with nave and aisles, but of which, in like manner, we can see little but the long central ridge and lateral slopes of roof, which the sunlight separates in one glowing mass from the green field beneath and grey moor beyond. There are no living creatures near the buildings, nor any vestige of village or city round about them. They lie like a little company of ships becalmed on a far-away sea.

Then look farther to the south. Beyond the widening branches of the lagoon, and rising out of the bright lake into which they gather, there are a multitude of towers, dark, and scattered among square-set shapes of clustered palaces, a long and irregular line fretting the southern sky.

Mother and daughter, you behold them both in their widowhood,—Torcello and Venice.

The decay of the city of Venice is, in many respects, like that of an outwearied and aged human frame; the cause of its decrepitude is indeed at the heart, but the outward appearances of it are first at the extremities. In the centre of the city there are still places where some evidence of vitality remains, and where, with kind closing of the eyes to signs, too manifest even there, of distress and declining fortune, the stranger may succeed in imagining, for a little while, what must have been the aspect of Venice in her prime. But this lingering pulsation has not force enough any more to penetrate into the suburbs and outskirts of the city; the frost of death has there seized upon it irrevocably, and the grasp of mortal disease is marked daily by the increasing breadth of its belt of ruin. Nowhere is this seen more grievously than along the great north-eastern boundary, once occupied by the smaller palaces of the Venetians, built for pleasure or repose; the nobler piles along the grand canal being reserved for the pomp and business of daily life. To such smaller palaces garden ground was attached, opening to the water-side, which was wont to be covered in the evening by gondolas; the space of it between this part of the city and the island group of Murano being to Venice, in her time of power, what its parks are to London.—*W. Ruskin.*



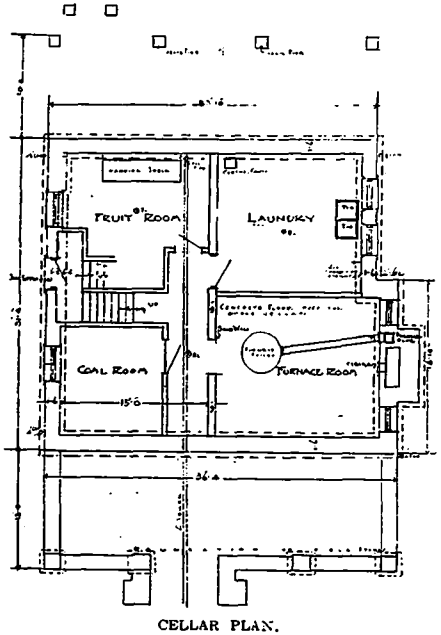


FRONT AND REAR VIEWS.

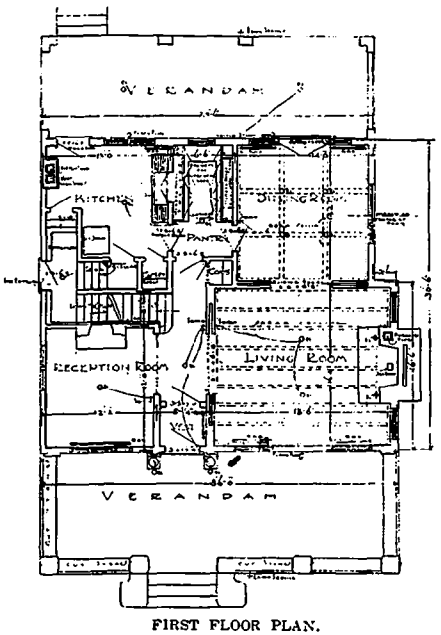
HOUSE AT HAMILTON, ONTARIO.

HERBERT H. NEW, ARCHITECT.

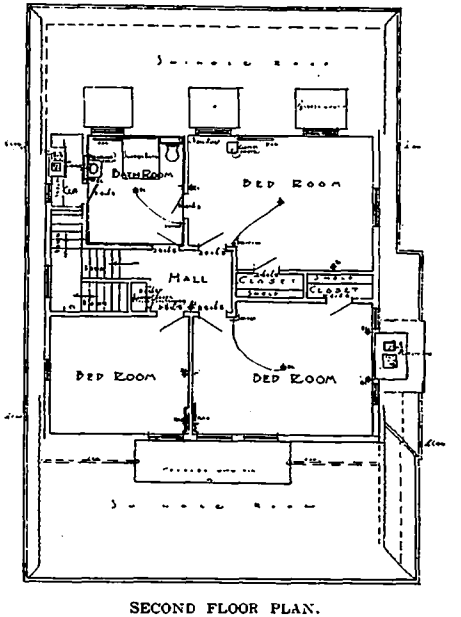
Building on Main street is designed in shingles stained brown, columns and chimneys in field stone, roof of green shingles. Upon the interior the living room, hall and stairs of quartered oak, with a four-foot six-inch panel dado and beamed ceiling; field stone fireplace and bookcases. Reception room in white pine finished in white enamel; dining-room in birch stained mahogany, with panelled dado five feet six inches and beamed ceiling; kitchen painted white. Second floor in white, with birch doors stained mahogany. Hot water heating. Cost approximately $5,000.



CELLAR PLAN.



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

Cottage Housing

MAURICE B. ADAMS, F. R. I. B. A.

THE need of cottage provision is undoubtedly one of the most pressing problems of the day, and linked with it certainly is the question as to how best to get the laborer "back to the land." Temperament and love of excitement, with the increasing zest for amusement, have had a good deal to do with this difficulty of keeping able-bodied men and women on the land. Certainly it will never be accomplished unless you make it worth a man's while to stay on the soil, and that must be done by degrees to be permanent and effective.

Occupying ownership furnishes the only true solution of this extremely far-reaching national difficulty. Cottages have little in common with the Mistress Art of architecture, but are the outcome of daily needs, traditions, manners, and habits of workaday families engaged on the land—not the sediment of society, for the dregs of humanity have less than a nodding acquaintance with the aristocracy of industry.

In sparsely-populated agricultural localities, cottages should not be so isolated as often happened in the past, although no doubt the farm laborer does still need to be located near his work. Children's education has to be thought of, and much misery is caused in times of sickness by being beyond the reach of a helping hand. Besides all this, neighborliness is an enormous factor in life. Groups of cottages, therefore, are preferable, and also are less expensive to carry out than single ones. Combined water supply and drainage cost so much less than individual installations. Successful cottage-work must depend on simple ideas, avoiding any attempt at architecture in the ordinarily understood sense of the word—that is to say, cottages must be free of all affectation of style. Pleasing proportions and nice groupings unassumingly managed constitute the sum-total, all told, for good results. To worry a rustic's cottage, by the wayside or in the hedgerow, with platitudinous detail can only arise from a loss of artistic judgment or sterility of imagination. To waste labor and material trying to make a tricky villa resemble an old-world cottage is sheer folly. The historic charm of these homes originated from frank conditions and methods indigenous to the soil, with workmanship done in a vernacular way.

The value of scale in color must be recognized in any well-thought-out design. Red brick is apt to look crude or too assertive; so, if a choice is possible, darker or brindled shades and thin shapes are preferable. Purple slates are out of place with red brick in a clay district where tiles are made. Slates go better with masonry, and red pantiles, though cheap, are too big in scale for little structures. Flint facing with red-brick or tile-dressings wants a lot of beating, provided a cream-colored mortar is used. Snap flintwork is too expensive for cottages. When random masonry is employed with wide, uneven joints, the walling is much increased in interest by garnetting with pebbles or little pieces of black ironstone stuck into the mortar. I have used salt-glazed bricks with good effect for house-walls facing the sea and actually built on the shingle shore. For walls under bay-windows, salt-glazed brick is also valuable, keeping out the damp, so often a source of trouble in such positions, owing to the water running down from much glass surface. Grey stocks look nice for cottages; but the size of bricks makes them difficult to use unplastered. Cob cottages roofed with thatch nearly always look delightful; they are warm in winter and cool in summer, and last a long time. Deep eaves are essential, of course, and the plinth of the walls of thatched buildings should be tarred or asphalted, on account of the drips from the roofing. Unbroken roof-lines are of the utmost consequence in buildings of this class, while horizontal proportions are so essential that not even breadth of walling—always so valuable—can claim a prior place for insuring success.

The only reliable way in which to produce satisfactory cottages—which must, of course, be modern—is to intelligently learn the lessons taught by the old vernacular work scattered up and down the countryside. May I enumerate a few very simple points which occur to me, though most of them are patent to anyone who uses his eyes? When half-timbering is employed, never use small scantlings, but follow historic solid methods and sizes, with curved stuff as grown, and carefully selected, for the shaped framings in honest carpentry, well pinned, and in oak left from the saw or adze to weather. It will stand quite well in big scantlings, if green. Old and seasoned oak fresh worked will shrink and split more or less when exposed to the wind, sun and rain. Teak makes the best sills, and will not so readily turn up and twist in hot weather. Brick nogging or pargetted fillings look best in grey lime, properly used, with sharp sand of light color, and it has a better appearance than Portland cement. Concrete-breeze slabs, used either double or singly, can be grooved into the timber framings and rendered over. The natural surface of lime mortar should be left untouched, for color-wash

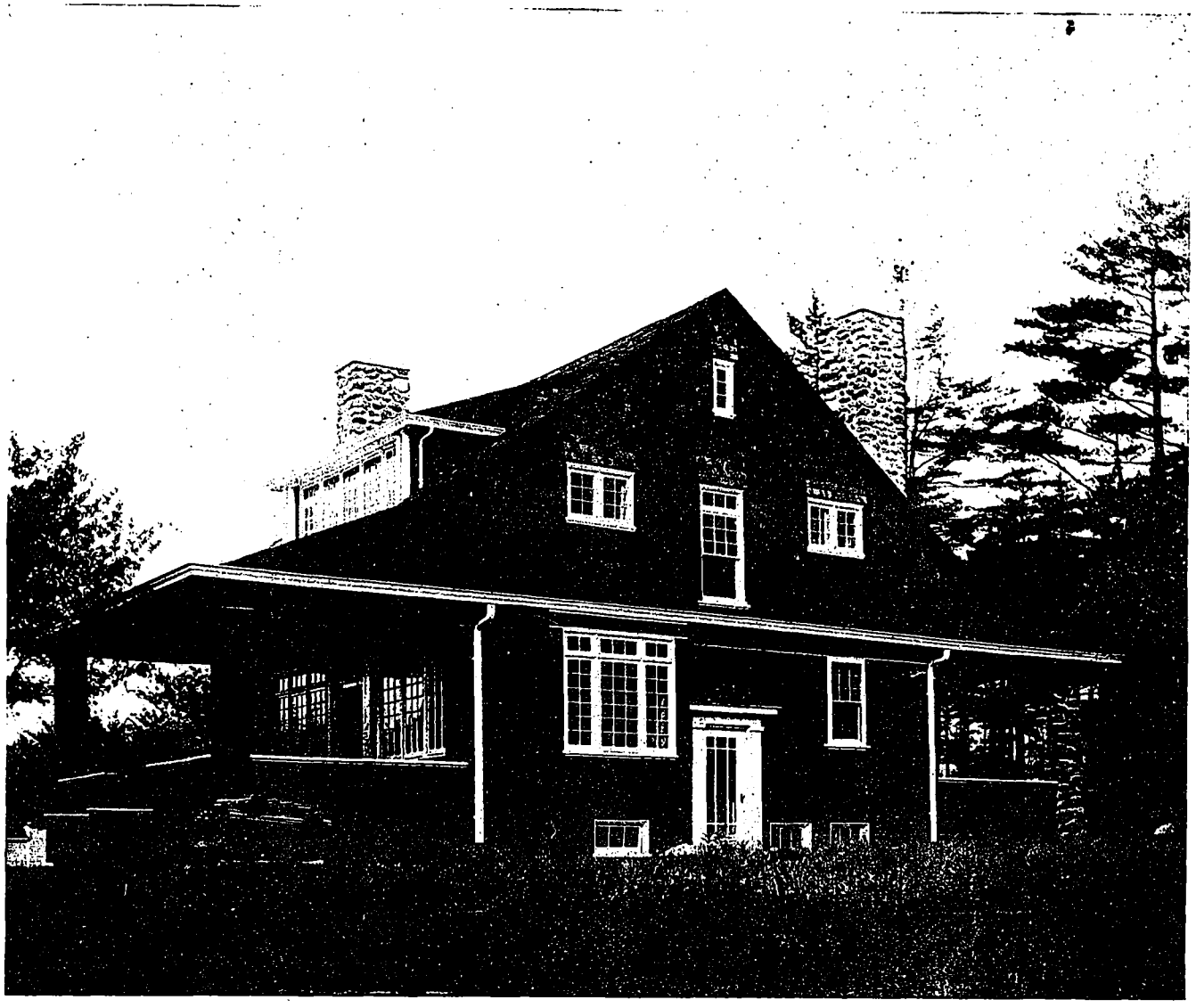
is not to be compared with it. Decorated, diapered and trowelled pargettings are familiar in many parts of England, also plastered figure-work and foliations of great beauty.

Deep eaves always improve the appearance of cottages, and when tile-hanging is used, the bottom verge-courses should tilt out boldly with a decided drip, throwing the water off the lower walling and keeping it dry, besides adding a welcome shadow just where it is wanted to give emphasis to horizontal lines, so very characteristic of old domestic work. When barge-boards are used, they are preferably plain in cottages. Cob-walling suggests rounded corners and restriction to one-storey building. Windows and door openings in cob walls are pleasingly strengthened with random-ended courses of red roofing-tiles for the jambs. If a little decoration is needed occasionally, terra-cotta pins pushed into the face of the cobwork, in diapers or other simple patterns, sparsely managed to emphasize points, and not scattered about, will be found effective.

Nothing adds to the charm of home interiors like good plastering, and artistic attention to stucco detail repays itself more than anything. For example, in ceiling-coves above the walls, or to soffits for bay treatments, in buildings where handsome ceilings and rich cornices might be out of key with the general scheme, much effect can be obtained for trifling extra cost. On the other hand, it always seems a doubtful expedient to affect a barnlike eccentricity by using rough construction such as we see adopted for gentlefolks' cottages, under the supposition that this style of thing is very arty and chic, particularly when combined with random-built masonry or rough brickwork in big fireplaces which smoke like fun, and, to stop their nuisance, end up by resorting to the use of American stoves for anthracite coal. Fussy-shaped ingle-nooks in such rooms surely are reminiscent of old bar-parlors with rough ceiling-beams and big posts of timber of little use structurally, and looking more fit for the cow-byre than a modern parlor.

On the other hand, there is undoubtedly a perfectly natural and artistic quaintness, at once homely and comfortable, without evident effort, as the outcome of taste in the use of long low windows or pretty oriels and commodious bays, with pleasant vistas, so unassuming and befitting in cottage interiors, with peeps through the open casements into the sunlight and the garden suggesting the mystery of perspective and beyondness. Contentment is inspired by such simple possibilities, and the treatment, being reposeful, is unlikely to wane or become out of fashion. Meretricious effects soon tire, having only a transient character, which is apt to become uncanny. When good-patterned wall-papers are judiciously used, they are comfortable to live with, and last a long time. Whitewashed walls show off oak furniture and pictures to advantage, displaying tulips and roses delightfully. Consequently, no better setting need be required for well-dressed ladies. In Englishmen's houses the chimney-piece and fireplace is the centre of home comfort, where refinement and individuality of treatment ought to find recognition. A pretty grate is certainly a desideratum. Choice carpets and well-chosen rugs are of the utmost importance in any well-furnished home. Few things tell more as an evidence of an artistic temperament. Easy-chairs of good shapes are essential, and are not exclusively a concession to old age. Activity in labor or sport equally justifies the enjoyment of rest, and where better than in the home? Why should clubs have the monopoly? Cottages for workaday people ought to harmonize with precisely the same qualifications as to restful ideas; but they can scarcely be made too simple. Lime-white for walls is more suitable than paltry-patterned wallpapers, and is far more sanitary. Rounded corners to angles of walls next the ceiling, as well as along the skirting, are less likely to harbor dirt, and are more readily cleansed. Ledged doors with latches are more appropriate than panelled doors with mortised locks.

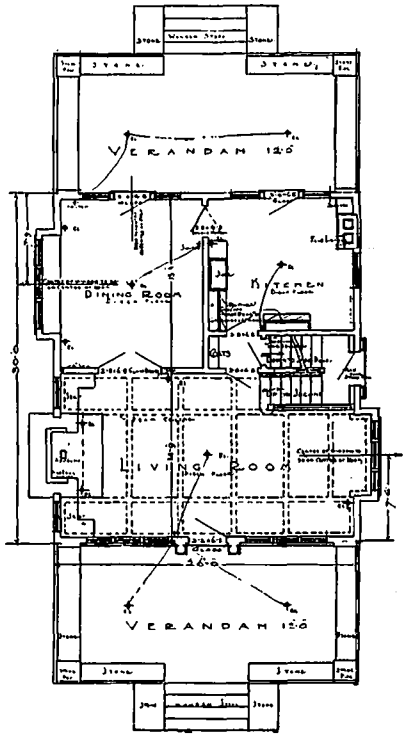
The outstanding drawback about so-called "standard cottages" for laborers in country places is their inadequate size, giving no room "to swing a cat"; and yet healthy men and growing boys, working from morning till night in the open fields, developing their muscles like cart horses, are to be cramped up, with scarcely more than a gangway between the table and the hearth to turn in, or stretch out their tired limbs when the day's task is over. After being exposed to the wind and weather from sunrise to sunset, such people rather enjoy a stuffy atmosphere at night time, when they like to feel warm: hence their disinclination to open the windows. But that is no reason why their keeping room fire should be set in a draught between the front and back doors. As a matter of fact, one door is, generally speaking, sufficient for a house of this sort. It is a mistake to provide parlors. They encourage taking a lodger, leading to troubles later, and parlors are occupied for storing a lot of dust-collecting rubbish, and seldom are used except for funerals. In middle-class cottages it is wise to reduce the parlor in order to enlarge the living room, or the parlor may be arranged as an alcove out of the other, for use at meal times. But a small separate room in which to see visitors and for personal business is desirable. Staircases in the better type of cottage should be located out of sight of the front entrance.



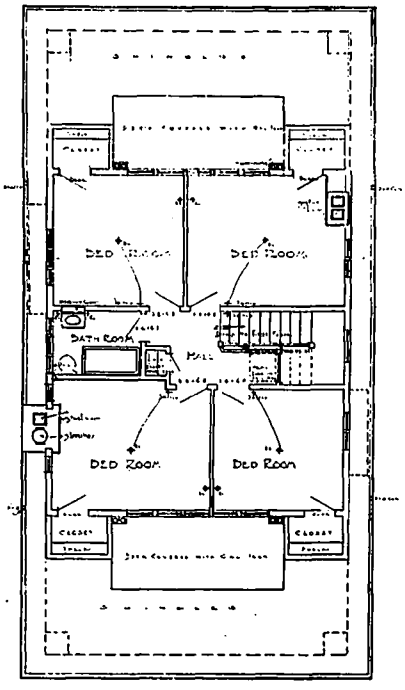
HOUSE AT PORT NELSON, ONT.

HERBERT H. NEW, ARCHITECT.

A summer home located at Pine Cove, Port Nelson, Ontario, one facade overlooking the lake. Exterior treated in shingles stained brown, with verandah and chimneys of field boulders. Interior finished in Georgia pine on first floor; living and dining-rooms stained dark brown, and kitchen in natural wood; second floor painted white. Living room contains boulder stone fireplace opening four feet in width. Cost approximately $3,500.

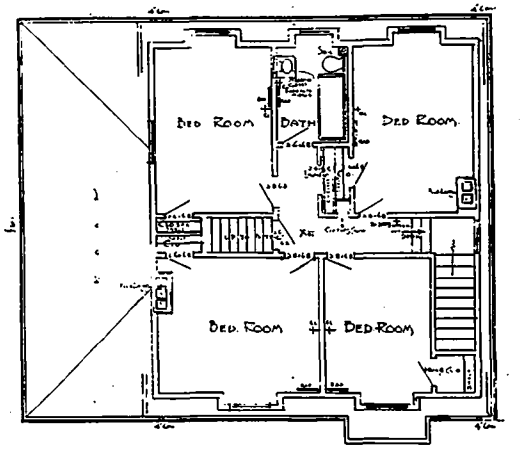


FIRST FLOOR PLAN.



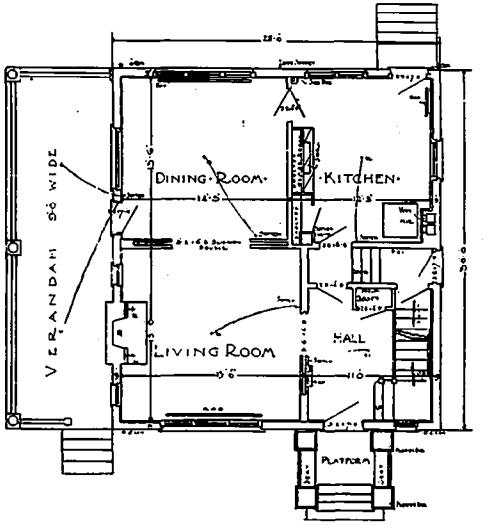
SECOND FLOOR PLAN.

HOUSE ON FAIRLEIGH AVENUE, HAMILTON, ONTARIO.
HERBERT H. NEW, ARCHITECT.

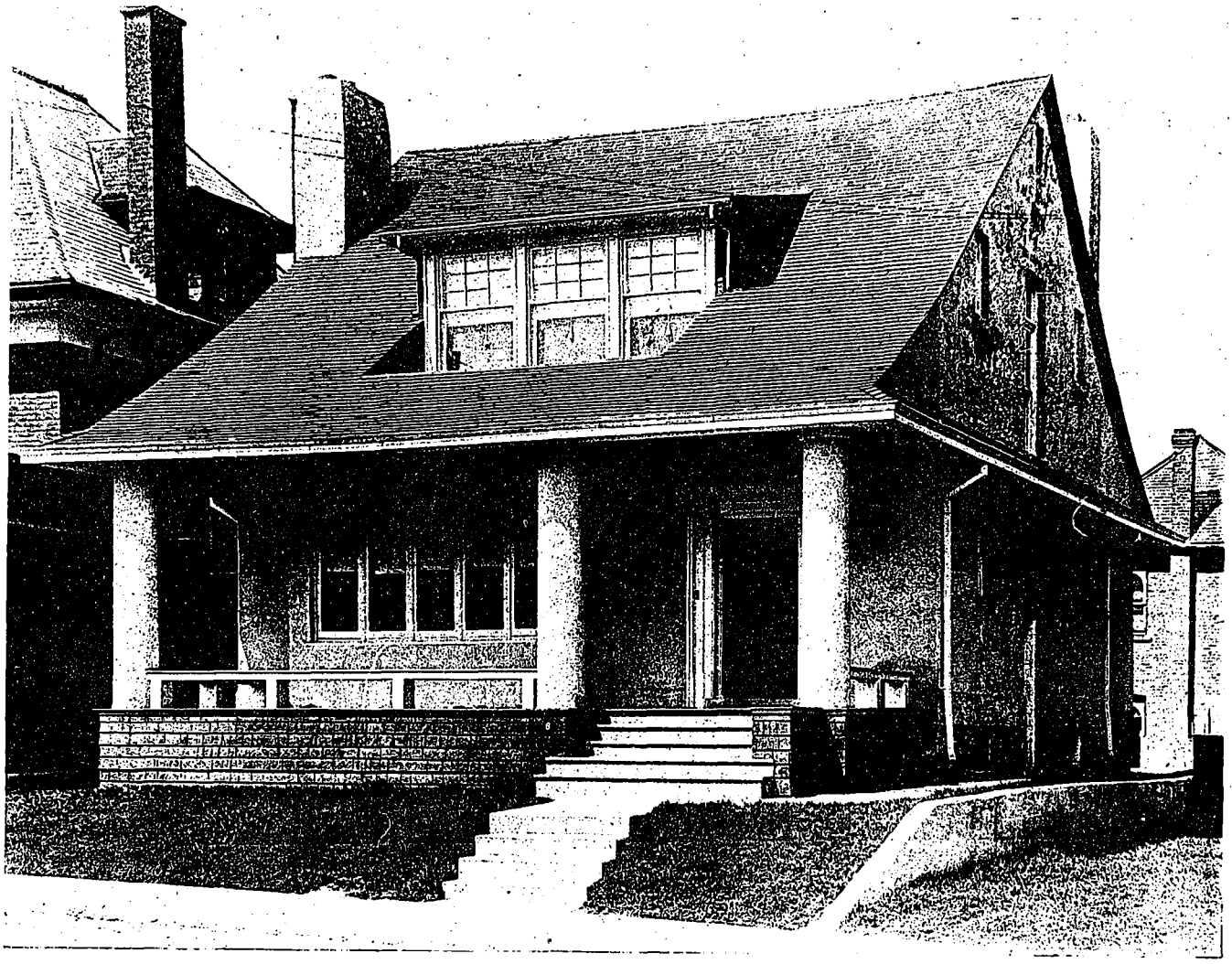


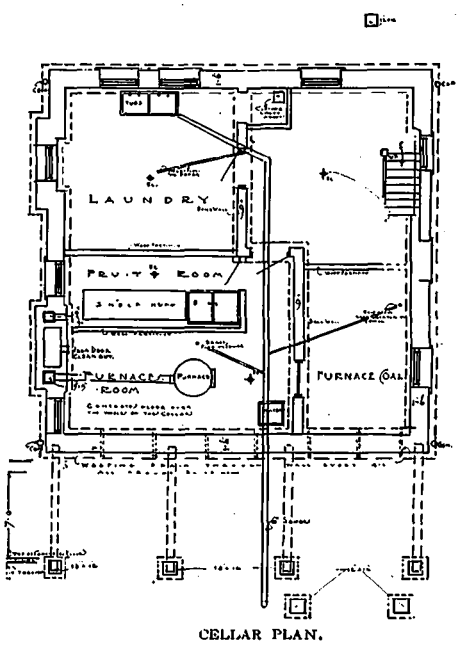
SECOND FLOOR PLAN.

Interior finished on first floor, except kitchen, in white wood stained brown. Birch floors and pressed brick fireplace in living room. Second floor painted white throughout. Exterior of pressed brick; first and second stories of shingles stained green. Hot water heating. Cost $3,500.

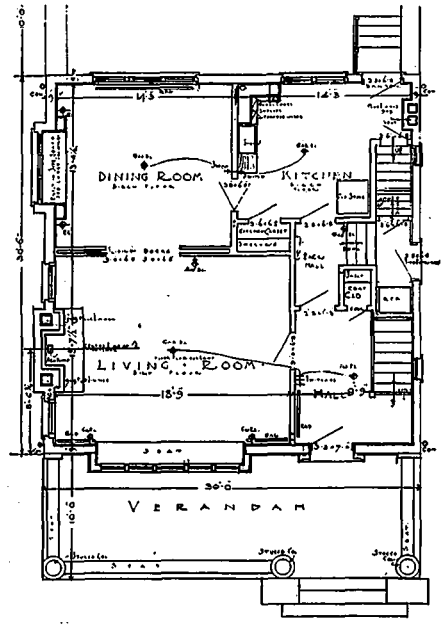


FIRST FLOOR PLAN.

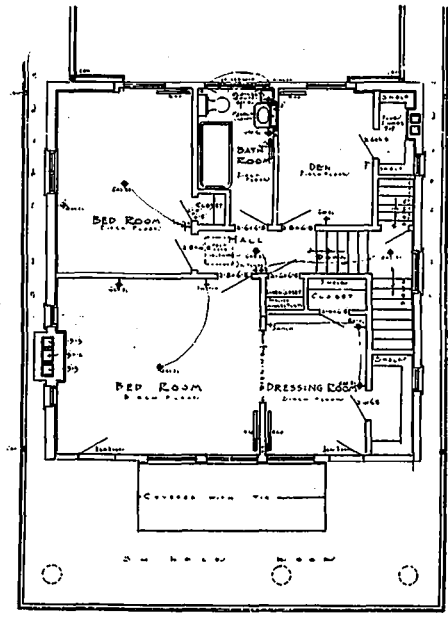




CELLAR PLAN.



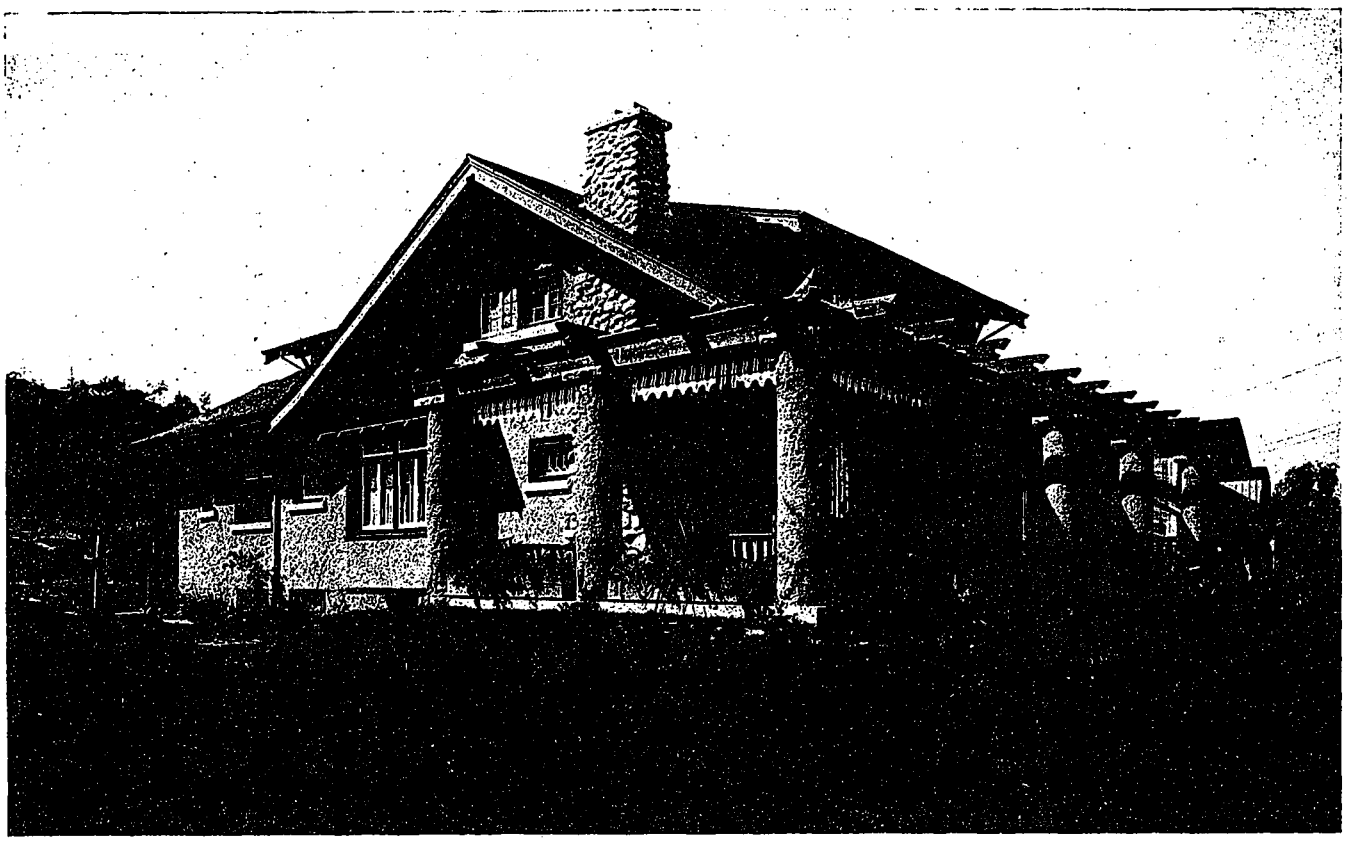
FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

HOUSE AT HAMILTON, ONTARIO.
HERBERT H. NEW, ARCHITECT.

Exterior of dwelling located on Mapleside avenue, designed in stucco on rough stock brick, with verandah stucco columns. Interior is finished in birch stained mahogany on first floor, with the exception of kitchen. Pressed brick fireplace in the living room; built-in sideboard in the dining-room, which is panelled with three-inch strips and plate rail five feet six inches from the floor. This building represents one of Hamilton's inexpensive residences.



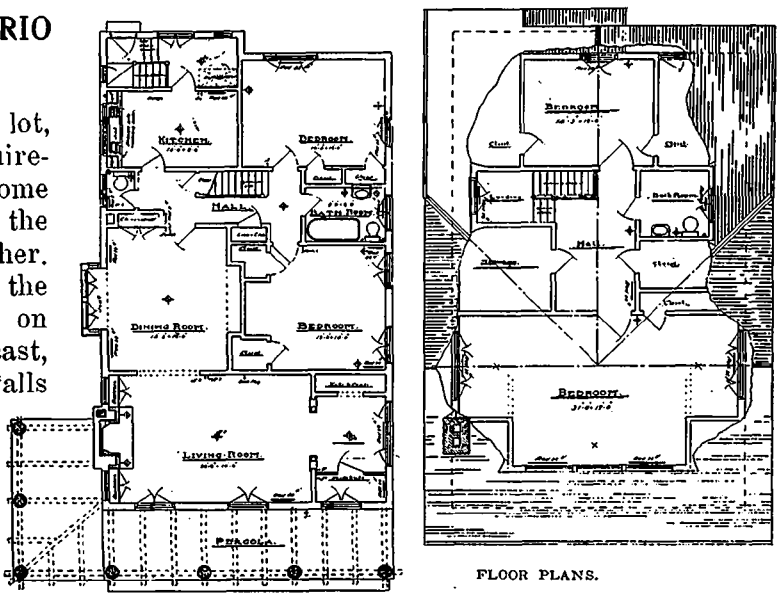
BUNGALOW AT HAMILTON, ONTARIO

W. H. HUNKIN, Architect

THIS bungalow stands on a fifty-foot lot, and was designed to meet the requirements of the owner, who desired a home which might be as cool as possible during the summer, and easily warmed in cold weather. The result has been obtained by building the external walls with hollow tile, finished on the outside with Portland cement roughcast, colored to a pale buff. The foundation walls are of cement concrete, with footings of the same material, and a weeping drain constructed of 4-inch field tile pipe, covered with broken tile and a foot of very coarse gravel, in addition to 6 inches of hard dry filling under the cellar floor. The pergola floor is of concrete 6 inches thick; the columns of 18-inch line pipe set on end and filled solid with cement concrete; stone caps, and roughcasted the same as the walls.

The living room has large French windows, opening on to the pergola; a dark red brick mantel with heavy shelf; bookcases on each side with windows over and a beam and column opening between living room and vestibule.

The dining-room bay window is fitted with a box seat, a built-in china cabinet, and a recess facing the window with console and mirror over. The bedrooms are well provided with closets, while a linen closet is located in the stair hall, and a cupboard for brooms, etc., under the stairs.



FLOOR PLANS.

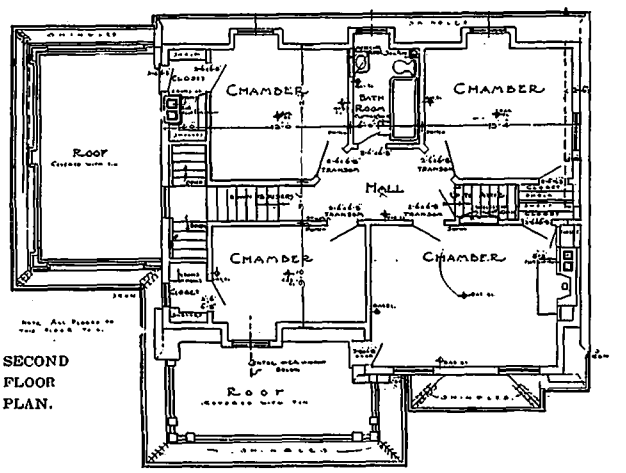
The kitchen is fitted with a built-in cabinet, complete with drawers, cupboards, etc., combining in a practical manner the essentials necessary to a building of this nature, where the one floor comprehends the larger part of the plan.

The plumbing is of the best quality, and includes an automatic gas-boiler and porcelain enamelled tubs in laundry. The trim throughout is of whitewood, finished in white enamel, and the floor of all rooms on the ground floor except kitchen and bathroom are double; finished with narrow oak strips and polished with sanitary floor polish. The building is warmed by a system of gas heating, and cost when completed 17 cents per cubic foot.

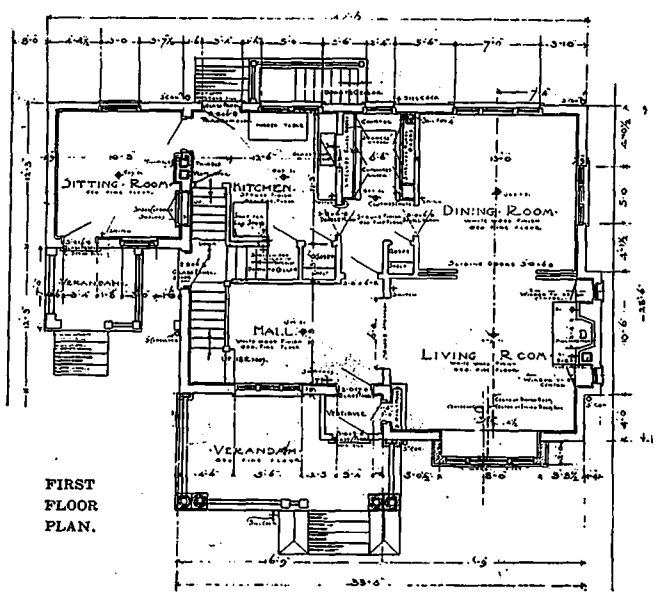
HOUSE AT HAMILTON, ONTARIO.

HERBERT H. NEW, ARCHITECT.

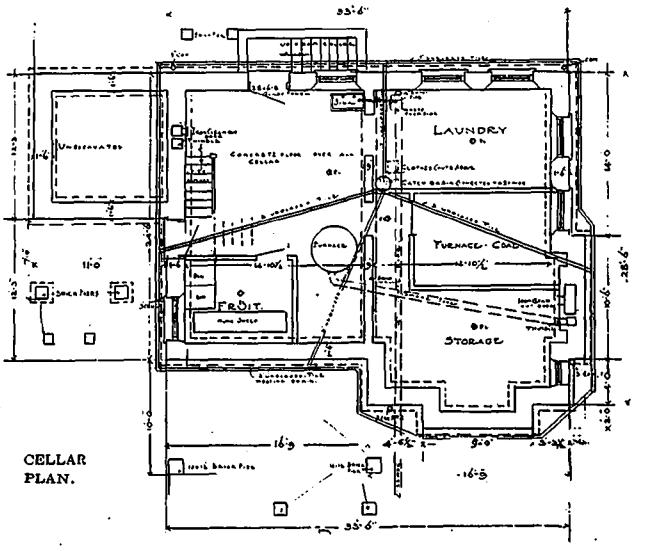
Located on Glenfern avenue, exterior is treated in local red pressed brick with shingles above stained brown on gable ends and green on roof. Interior finish consists of white wood stained brown on first floor with pantry and kitchen of painted white pine; on second floor woodwork painted white with doors stained mahogany. Floors throughout of birch. Hot water heating. Cost approximately $5,000.



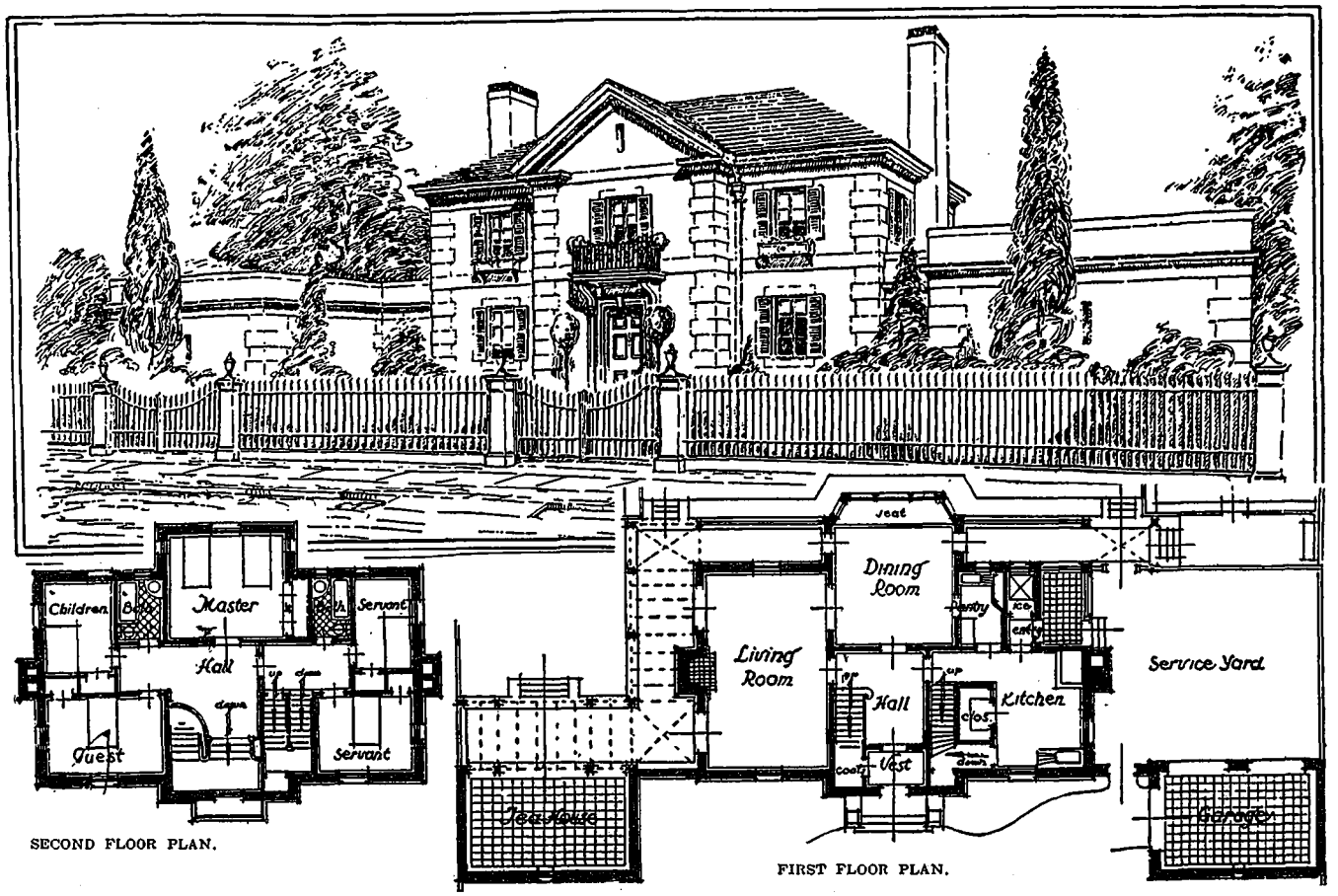
SECOND FLOOR PLAN.



FIRST FLOOR PLAN.



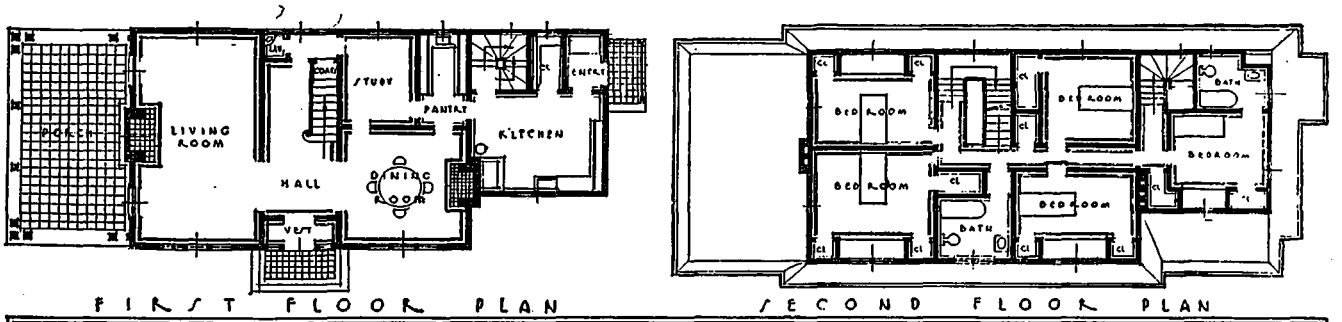
CELLAR PLAN.



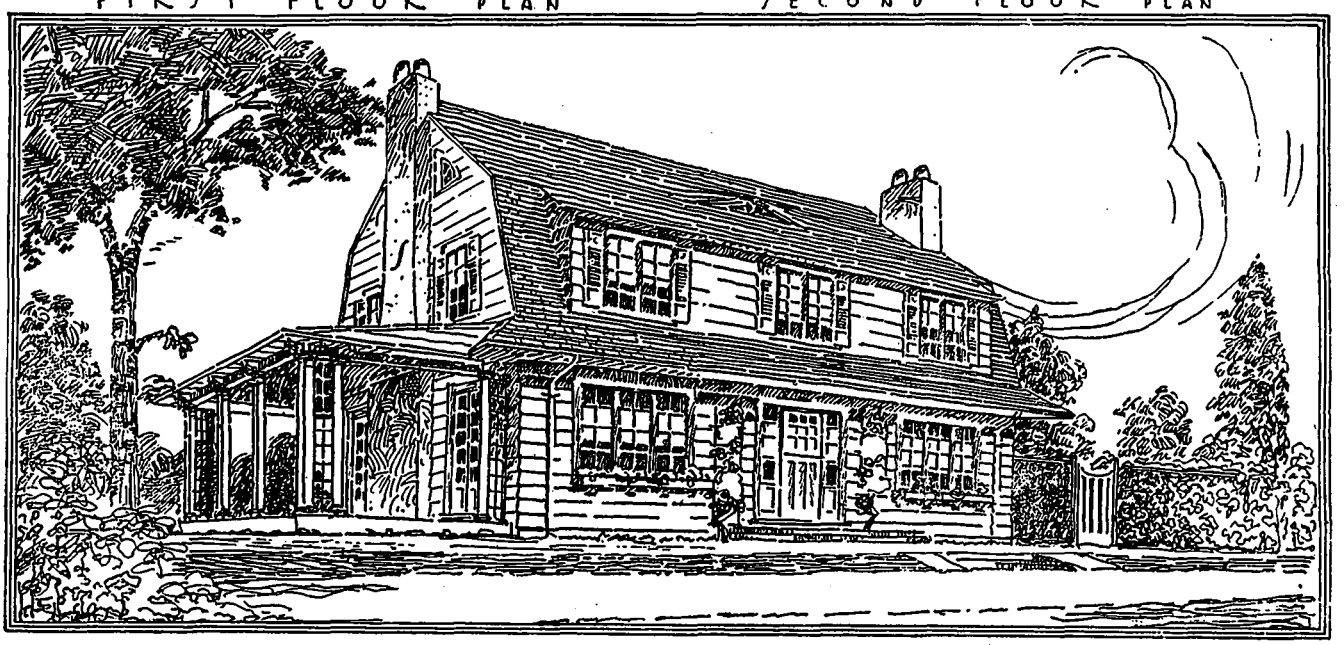
SECOND FLOOR PLAN. FIRST FLOOR PLAN.

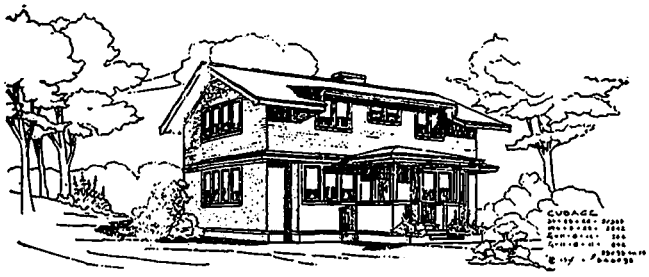
COUNTRY HOUSE COMPETITION FOR $7,500 HELD BY THE "NEW YORK SUN."

The house above, by C. M. Foster, is of terra cotta block construction with exterior of warm gray stucco. The other design, by L. C. Licht, consists of wide clapboards ten inches to the weather.

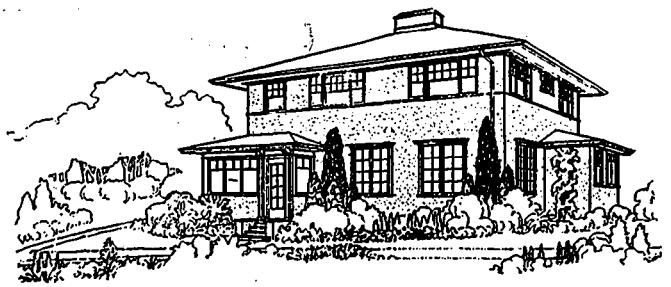


FIRST FLOOR PLAN SECOND FLOOR PLAN





PRIZE DESIGN.

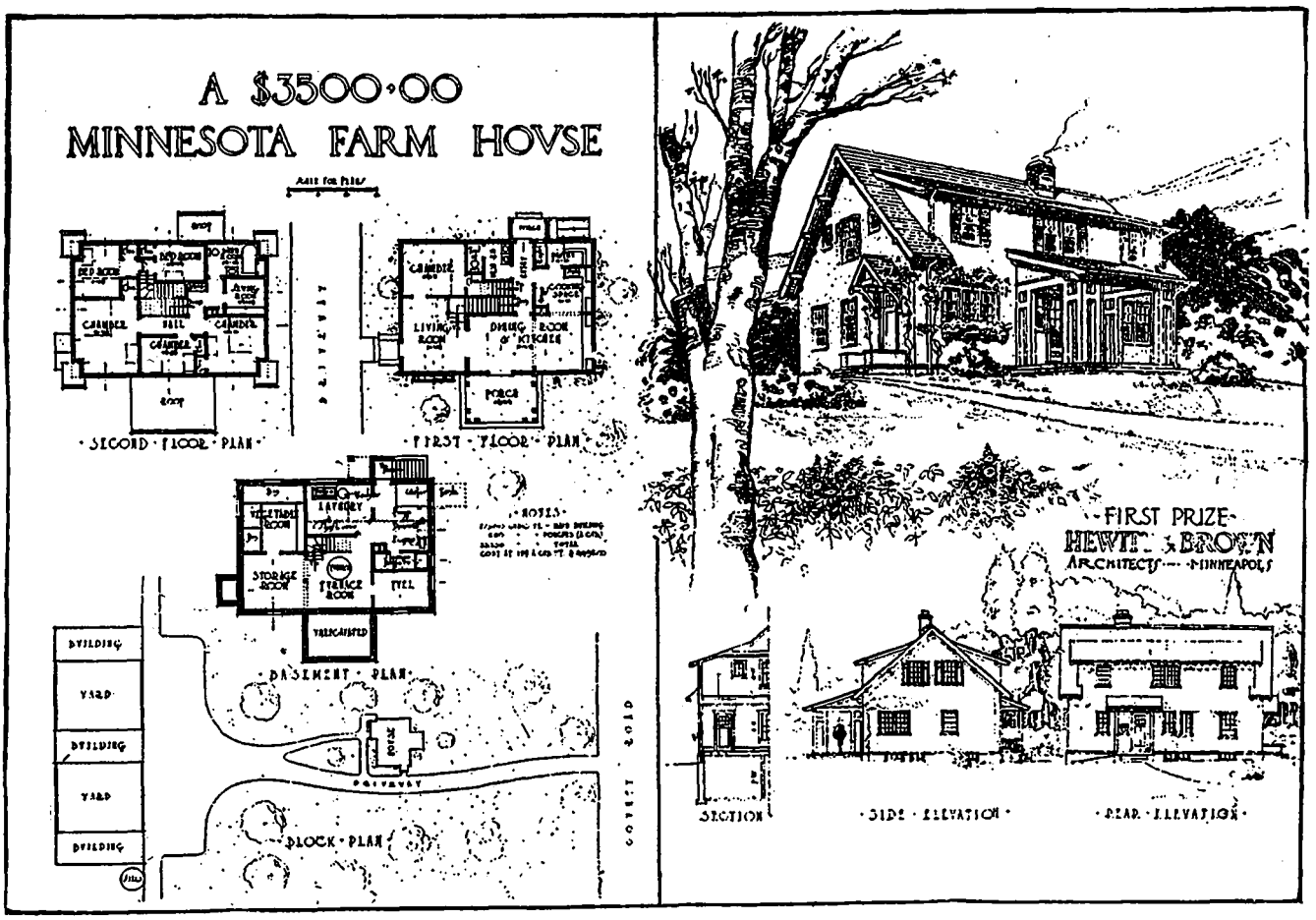


PRIZE DESIGN.

Competition for a Farm House

A COMPETITION for a model farm house was held recently by the Minnesota Art Society, which organization is an active force in the Minnesota State Government. The programme for this model farm house competition provided for ten rooms at a cost of $3,500. The location of the house is assumed to be on a partly wooded knoll, near a country road, and adjacent to other farm buildings. There is a basement under the entire house, providing space for heating, water supply, and lighting apparatus and for storage rooms. On the first floor is a living-room, a bedroom, a dining-room, a kitchen, or a dining-room and kitchen combined, a pantry with space for refrigerator, and a washroom and closet for the farm help. On the second floor there are five bedrooms, a bathroom, and a small sewing-room. The two bedrooms for the use of the farm help are separate from the others, being approached by a special stairway leading from the washroom on the first floor. The methods of heating and lighting and the character of the plumbing are determined by the limit of cost and the house is figured on a basis of 15 cents to the cubic foot of space, with the porches estimated at one-fourth of the total cubage.

The results of this competition have been so satisfactory that it is to be hoped some similar scheme may be promulgated in behalf of our own agricultural districts. When Canada depends so much on the yearly crop every effort should be made to induce the sons and daughters to remain at home, and this can only be brought about by making the home attractive and comfortable.



FIRST PRIZE DESIGN, HEWITT & BROWN, ARCHITECTS.

The Use of Graphs in Recording Business Data

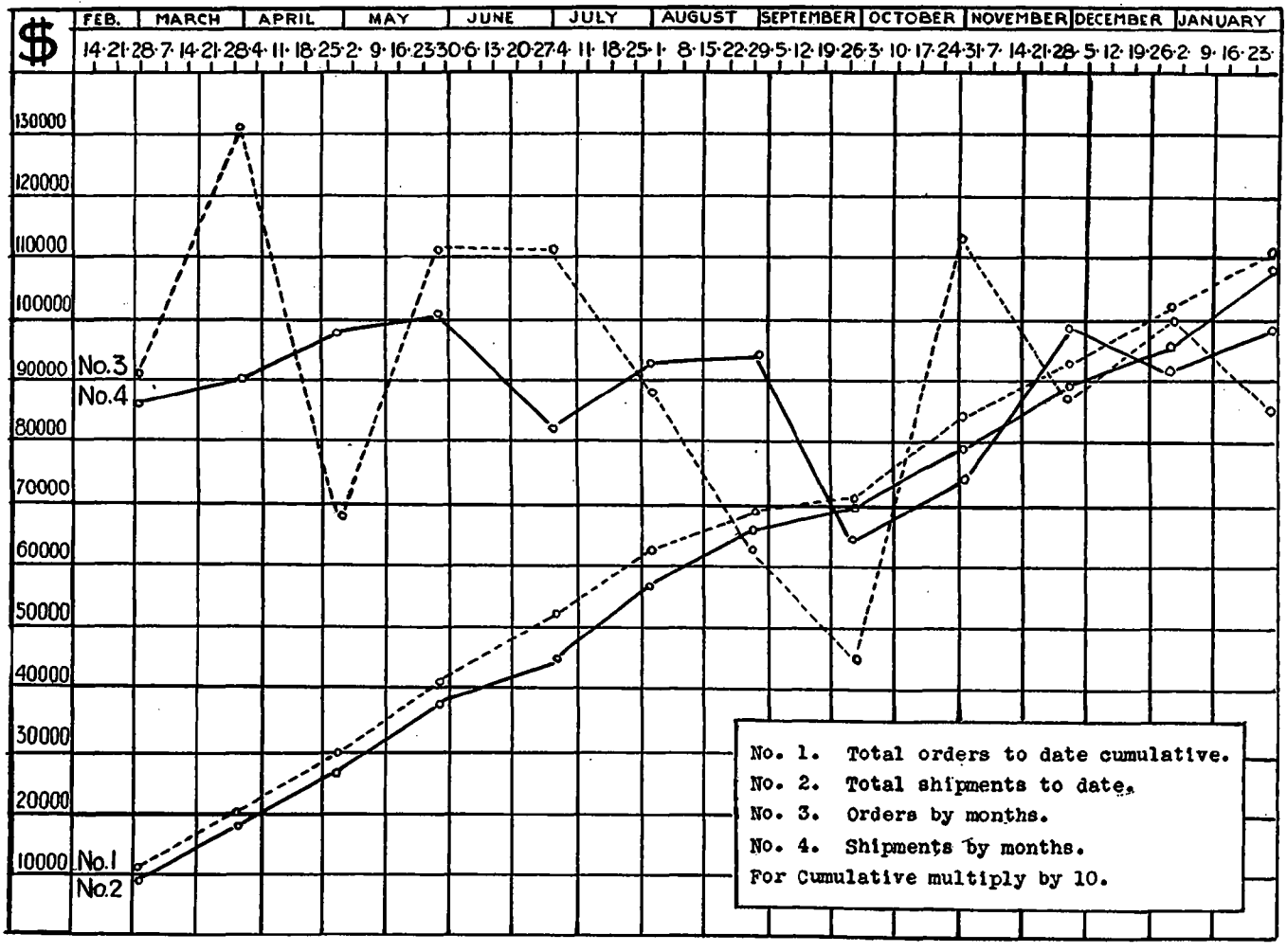
WILFRED G. ASTLE

IN the different departments of any business institution there is always accumulating a mass of figures relating to the different phases of the business. These records, if properly tabulated and arranged, are valuable assets. A study of the data at hand permits forecasting the future, and also provides a means of detecting leaks and losses, rising costs, decreased sales and diminishing profits.

All records should be arranged so that comparisons can be made. This is illustrated even in the daily papers, when in the bank clearance reports or records of the movement of grain and live-stock, figures are shown for yesterday, the same day last week, the same date last month, and the same date last year. The arrangement of data so that comparisons can be made always permits of recording the history of a business by means of graphs, which are like pictures in that they convey facts to the mind more directly and clearly than descriptions. The use of graphs can be applied in many ways to give a clear mental vision of the condition of any business. The average financial statement, for instance, is not readily analyzed by men who are not used to such analysis, and as a supplementary visualization of such statements and in other ways the graphic method has distinguished advantages.

Graphs consist of lines drawn on cross-section paper, and these lines connect points which have been placed on the paper, the points representing by scale in one direction on the paper the date on which the record was taken, while the position of the point in the other direction represents by scale the record of that date.

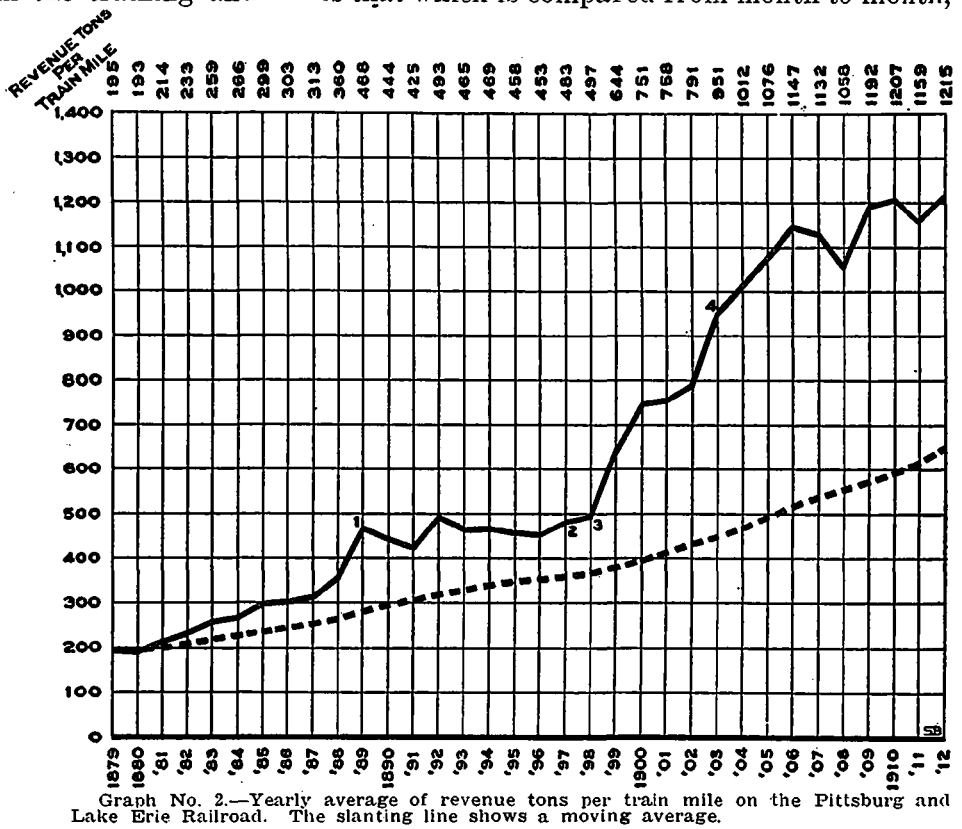
Graphs were first used by mathematicians to represent values indicated by different equations. After the mathematician came the engineer, who by means of graphs made maps of proposed routes of railroads, showing the difference in elevation at each point along all the proposed route. By these maps he was enabled to choose a route with few grades and with a minimum of cuts and fills, and his work was greatly facilitated, while the cost of the work



Graph No. 1.—Representation of relation between Orders and Shipments, manufacturing season, February, 1914, to February, 1915.

was as low as possible, future maintenance and cost of operation taken into consideration. Mechanical engineers make use of graphs in indicating the performance of engines and dynamos under different speeds and loads, or a combination of both, which enables them to determine under which condition the machine works at highest efficiency.

When men of engineering training began to enter the commercial field as sales managers, etc., they brought with them the training and knowledge which enabled them to picture by graphs the results which were being obtained by them in business. Instances have been known where the most important and radical steps were inspired by reflection over a graphical chart. On the other hand, there are managers who can appreciate only the numerical and tabulated figure method of making charts or reports, and who consider any conversion of numerical records into graphs as needless waste of time. It is well worth while for those who have not used graphical methods to consider that every successful manager makes scientific use of his imagination when his intuition or judgment tells him that certain steps are necessary, and if certain helps to guide this intuition or judgment can be gotten from graphical charts which do not require a great deal of time or expense to prepare, then these charts are certainly worth while.



Graph No. 2.—Yearly average of revenue tons per train mile on the Pittsburg and Lake Erie Railroad. The slanting line shows a moving average.

This graphic method of stating statistics, though inferior to the numerical in accuracy, has the advantage of enabling the eye to take in at once a series of facts. This advantage is not of first importance when considering only one set of facts. Accuracy is then more essential than ease and rapidity of representation. But ease and rapidity are essential when comparing many sets of facts, because if the mind is delayed long in taking in the general effect of one set, it loses count of the others. Therefore, the function of the graphic method can be defined as the comparison of different sets of statistics.

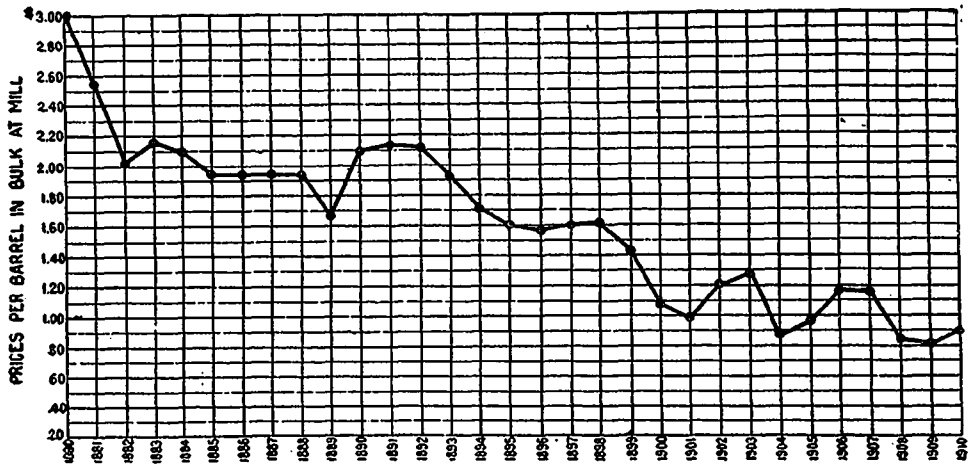
Another function of graphic charts is the indication of the true influence of one set of facts upon another, as for instance, it is known that cost varies with output. Therefore, in starting a new business or shaping new plans it might be desirable to know just what this variation was likely to be in order to estimate how much business would be necessary to overcome the initial expenses, and what profits should be realized from a given volume of business. Graphs will show far more clearly than statistical tables the variations of two factors in relation to each other.

Still a third class of information which can be advantageously studied with the aid of graphs is that which is compared from month to month, such as costs, sales, output, etc. Almost any kind of information can be plotted with time, as the horizontal co-ordinate, and the desired information as the vertical. Curves should always work out from the left-hand side and never from the bottom up. The advantage is that the curve can be kept up to date, that comparisons with previous and standard conditions are grasped more easily and present the results over a long period of time. For instance, the average market price of a product for every business day in the year can be shown in much less space than is possible in any other way. In the matter of output, sales, costs, etc., it is customary to carry in addition to the quantity for the period, the cumulative total for the year. The height of this curve always shows the total business to date and its slope shows whether the tendency is to increase, remain stationary or fall off. Conditions making for or against improvement may be caught and reached sooner than they would be if tabulations of figures were used. For instance, note how quickly you catch the relation between orders and shipments

in graph No. 1. It also shows a cumulative total and illustrates the plotting of two or more curves to scale on the same chart.

There are three elements in graphical records which are important, namely, the selection of material to be graphically recorded, the devising of methods of presenting it, and the use to be made of the graphs after they are plotted. There is no advantage in making records which are not to produce some effect, either in impelling toward improvement or in indicating unusual conditions. In using the graphs the method adopted by some companies of making them the basis for special or regular conferences is to be commended. The important thing is to be sure that the graphs appeal effectively to the individuals most directly concerned.

Information may be charted in many different ways. Under present conditions, if six men were given a set of figures and asked to chart these figures, the six resulting charts would be widely divergent in method. Though variety in method of charting is sometimes desirable in large reports where numerous illustrations must follow each other closely, or in wall exhibits where there must be a great number of charts in rapid sequence, it is better, in general, to use a variety of effects simply to attract attention, and to present the data themselves according to standard well known methods.



Graph No. 3.—United States Geological Survey Chart, showing the prices of cement from 1880 to 1910. Columns of printed figures or a series of vertical bars could not portray this information as vividly as it is brought out by the use of the curve shown above.

Graph No. 2 is worthy of attention as a model of good practice which may be studied carefully by any one just beginning to plot curves. This graph shows the yearly average of revenue tons per train mile on the Pittsburg and Lake Erie Railroad. The dotted line in this graph represents a progressive average of all the points on the curve above. The dotted line, of course, coincides with the solid line at the first point where there is only one point to consider in the average. Figures for the dotted lines are obtained by averaging the figures for the first two years, then the first three years, then the first four years, etc., until the last point on the dotted line represents an average for all the points on the solid line.

The following features of graph No. 2 are pointed out for the benefit of any one who may have curves to plot: 1. The zero line is a much broader line than the co-ordinate lines. 2. Heavy lines are not used at the right- and left-hand edges, since the chart does not start or end at the beginning or end of time. 3. All lettering is so made that it can be read horizontally or from the right-hand edge of the sheet. 4. Years are given with four figures for every tenth year ending in zero. Other years are indicated with two figures, to be more quickly read. 5. All lettering and figures on this chart were made by hand, showing the perfection which may be attained in lettering. 6. The curve itself stands out clearly from the co-ordinate lines. 7. Figures at various points along the curve indicate matters which are worthy of special notice. Foot notes are not given here, however, as they are only of highly technical interest. 8. Figures for the value of points on the main curve are given at the top of the chart immediately above each corresponding point on the curve. Values may be read correctly from the upper figures rather than guessed at by estimating them roughly on the left-hand scale. 9. The statement, "Revenue tons per train mile," at the upper left-hand corner, is purposely printed diagonally so that it may serve as a heading for each of the two columns of figures, one at the left and the other at the top of the chart. The diagonal arrangement gives a neater effect than can be obtained otherwise. 10. Though figures for the dotted curve could be shown at the top of the chart, the dotted line is of only minor interest here. It is accordingly best to avoid the two columns of figures at the top in order that the figures for the main curve may stand out more prominently.

Graph No. 3 gives a good idea of the utility of the curve method of showing concisely a large quantity of data. If the figures for the price of cement had been expressed in dollars and shown in a long numerical column, there would be very few readers who would take the trouble to follow the long column of figures and notice the fluctuations from year to year. The curve, however, gives all the variations in price at a glance and shows in most striking manner the great re-

(Continued on page 363.)

CONSTRUCTION

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Vol. VIII Toronto, August, 1915 No. 8

(Continued from page 362.)

duction which occurred in the price of cement as manufacturing facilities improved and increased. A curve of this kind greatly stimulates thought, for one immediately wishes to know the cause of each of the peaks and valleys in the curve. One gets a vista of recurring periods of financial boom and of financial depression, and a glimpse of such factors as new developments in methods of manufacturing cement and the constantly increasing demand for the product.

While I would not advocate the indiscriminate adoption of the graphical method of recording data, there are many cases where such presentation will put life and vitality into statistics whose study otherwise would be largely neglected. An examination of present practice leads to the conclusion that where data are filed merely for reference at long intervals they may be more compactly recorded in tabular form. Where the purpose is to arouse interest and co-operation on the part of those who have it in their power to reduce costs or to improve performance, the graphical form is, by all odds, preferable. Just as the "eye-gate" is a much readier entrance to the mind than the "ear-gate," so the diagram or picture appeals to the mind more graphically than does a number represented by figures.

The use of graphs by large corporations, and the building up of a national business in the sale of graphic data by a statistical organization, should indicate to broad-minded business men that graphic methods are valuable.

* * *

PREFACE to "Engineering for Architects," by De Witt Clinton Pond, Instructor of Architectural Engineering at Columbia University: "Architects often encounter problems in engineering that can be solved with the aid of simple mathematics and a handbook, published by a steel manufacturing company. It is the case, however, that for a certain problem the method of attack is unknown, and the architect is forced to go to an engineer or else risk failure of his structure. In some cases unnecessary cost is incurred through lack of knowledge of the supporting strength of structural members, and the need of such kowledge is felt. It is to furnish such information that this book has been written. The author does not pretend to introduce any new methods of calculation, nor to give the only methods that may be used. He is simply placing at the disposal of architects such information as will make possible the design of floor beams, girders, column sections, grillage beams, and simple roof trusses. There are, of course, shorter methods that experienced engineers employ; there are entirely different ways in which structural members may be designed; but in case nothing whatever is known of design, it is the hope of the author that this book will give such information as will make the solving of simple engineering problems possible." Published by the Columbia University Press, New York City. $2.00 net.

* * *

THE SECOND edition, revised, of the book entitled "Bungalows, Camps and Mountain Houses," has just been issued by the William T. Comstock Co., New York City. The work presents the thoughts and ideas of thirty-two different architects, all recognized designers of bungalows. The new edition contains two hundred illustrations, showing eighty designs with exteriors, interiors and plans. A feature of the new edition is the article by C. E. Schermerhorn, A.A.I.A., being a condensed account of the requirements for planning a bungalow. It contains a plate showing twenty-two different schemes for laying out the floor plans of a bungalow, and in addition a lot of little detail sketches showing how to plan conveniences in the house, such as built-in furniture, kitchen arrangements, closet space, cupboards, etc. Price in cloth, $2.00.

RALPH T. COE, manager of the Canadian Sirocco Co., Ltd., Windsor, since the organization of the company, has resigned to enter the engineering service and sales field in New York State. Mr. Coe has been appointed district manager for Warren, Webster & Co., and the American Blower Co., and will have offices at 519 Insurance Building, Rochester, as well as at 19 Live Stock Exchange Building, Buffalo.

* * *

THE OLD brown stone mansion, one of the survivals of that not yet distant period when our merchant princes thought Murray Hill the centre of residential New York, has been acquired by the H. W. Johns-Manville Company with the unique idea of showing in appropriate surroundings all the various lighting fixtures for the modern home or office. The old rooms have been restored and handsomely furnished and each one filled with lighting fittings appropriate to its character. Drawing, dining and bedrooms, hall, stairs and office, all have their correct setting, and here the architect or his client can come and study quietly the exact effect of each form of light and each kind of fixture. Hitherto the trouble in displaying lighting equipment has been that it was impossible to get a correct idea of the complete fixture in advance. The metal parts came from one house, the glassware from another; and, if any special design or scheme were called for, it was only obtainable after considerable trouble. Under the new arrangement the various departments of lighting design will be co-ordinated and in co-operation with the architect, it will for the first time be possible to arrange a lighting system which shall form an architectural unit with the building as a whole. Here may be seen to advantage the Frink system, the Mitchell Vance lighting fixtures, and the Gill Company's Parian glassware, all handled by the Johns-Manville Company.

* * *

THERE WOULD be no need of the slogan "build now" if work were going ahead as fast as greenhouses and conservatories in the Canadian field. The Lord & Burnham Co., Ltd., are manufacturing in their new plant at St. Catharines, Ontario, material for the following buildings: Complete erection of a range of curvilinear greenhouses, consisting of palm house, show house, and other compartments, for Sir John Eaton, Toronto; complete erection, including masonry, workroom buildings, etc., of two iron frame greenhouses, each seventeen feet eight inches by fifty-eight feet four inches, for Sir William Mulock, Toronto; a palm house, grapery and general growing house of curved eave construction, for Major W. H. Merritt, of St. Catharines, Ont.; a curved roof conservatory, together with a glassed-in pergola, for G. K. Fraser, Hamilton, Ont.; a curved eave greenhouse eighteen feet by forty-one feet eight inches, for F. Magee, Port Elgin, N.B. The foregoing houses are all for private estates, and all of full iron construction. Commercial greenhouses are being erected for Wm. Mousley & Sons, Weston, Ont.; A. N. Carriere, Strathmore, Que.; R. L. Dunn, St. Catharines, and H. Newsome, St. Thomas, Ont. Lord & Burnham Company, Limited, have received more work in Canada during the first five and a half months of 1915 than they have previously received during any full year since coming to Canada.

* * *

ORRIN S. GOAN, of New York City, was elected president of Berry Brothers, varnish makers, of Detroit, at a meeting of the company's directors, which selection gives the company a head who will be able to devote all his time to its interests. Mr. Goan was named a director of the company to fill the vacancy due to the death of George H. Russel. W. R. Carnegie, heretofore assistant treasurer, was elected successor of Mr. Russel as treasurer. Other officers of the company are: Vice-president, E. W. Pendleton; secretary, Edwin Lodge; assistant secretary, F. L. Colby; general manager, James S. Stevenson. Its capitalization is $3,000,000, of which $1,500,000 is seven per cent. cumulative preferred stock. Besides the plant in Detroit it operates others in Chicago, Baltimore, Cincinnati, St. Louis and San Francisco. Plans for opening plants in Europe were interrupted by the war.

* * *

CLARK T. MORSE, formerly Montreal and Toronto district manager for the Canadian Sirocco Co., Ltd., has been transferred to the head office at Windsor, Ont., to take charge of the engineering and sales work in place of R. T. Coe, resigned. A. M. Nichol contiues in charge of Eastern Canadian sales, with headquarters in McGill Building, Montreal.

* * *

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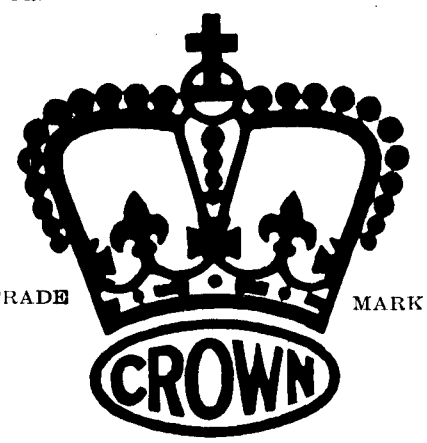
TRADE  MARK

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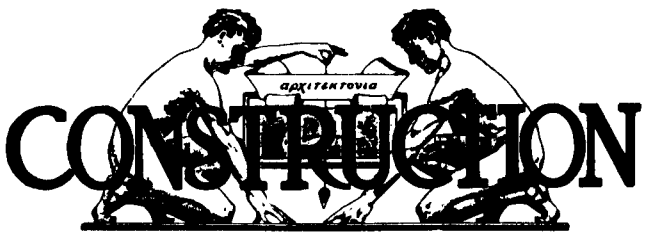

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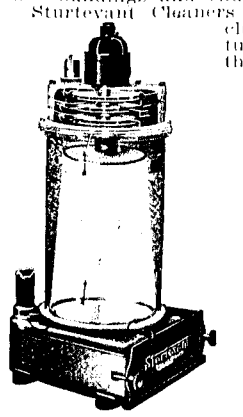

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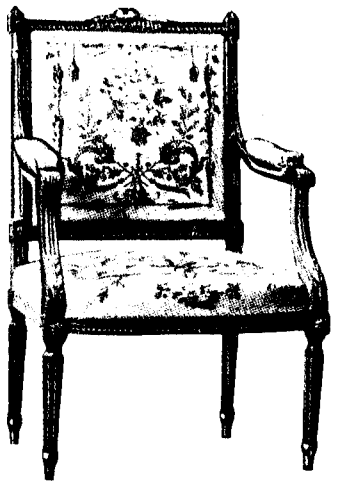

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PEDLAR'S "PERFECT" PRODUCTS MADE IN CANADA

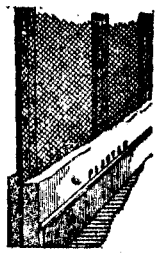
Buildings of Modern Construction

call for fire-proof materials of the highest grade.

Architects and engineers specify Pedlar's "Perfect" Expanded Metal Lath for buildings of modern construction, because it is fire-proof, rust-proof and vermin-proof.

This metal lath is so constructed as to provide the best possible clinch.

We have special facilities for turning out Pedlar's "Perfect" Metal Lath in large quantities, and big stocks are always kept on hand at the various branches for prompt shipment.



Pedlar's "Perfect" Metal Lath is furnished in large sheets, size 96 in. x 24 in. ready for use. The slight extra cost is more than compensated for by the saving of labor in applying. Nearly all the large buildings erected within the past few years have been fire-proofed with Pedlar's "Perfect" Expanded Metal Lath—a proof of its acknowledged superiority.

Always specify with our "Perfect" Lath, Pedlar's Steel Corner Beads, curved and straight. Pedlar's "Perfect" Steel Wall Plugs —the best nailing base for brick walls.

PEDLAR'S "PERFECT" EXPANDED METAL LATH

means longer life—absolute fire protection—cooler houses in summer and warmer in winter. Will not warp or twist, and cannot break the plaster. Supplied painted or galvanized.

Write Nearest Branch for Lath Booklet "C." and free samples.

THE PEDLAR PEOPLE, Limited

(Established 1861)

Executive Office and Factories: OSHAWA, CANADA

Branches: Montreal, Ottawa, Toronto, London, Winnipeg.

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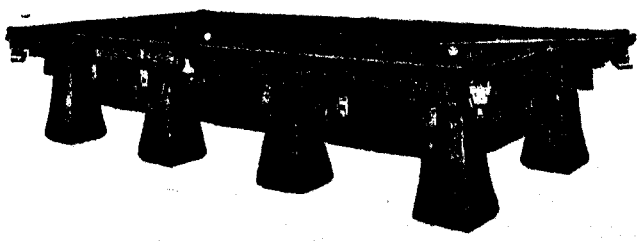

A BRUNSWICK Table is not only enjoyable to those who play billiards for an hour or two to relax the brain after a hard day at the office, or who play for the beneficial exercise obtained, but a Brunswick table—the result of over sixty years' experimenting, testing, trying out different moulds, various compositions of rubber,—is after trial acknowledged by experts and billiard proprietors of long standing to be incomparable as to speed and angle.

The Brunswick "Special Monarch" Cushion for full size tables is a strong, durable, quiet cushion; is the speediest by actual test; true at the openings; needs no artificial re-inforcing and does not get hard or flabby.

The compound construction of the Brunswick tables is possible only where the heaviest machinery and special appliances are at hand and is not attempted by any other firm.

Illustrated catalog and proof of superior speed and durability sent on request. Write Dept. C,

The Brunswick Balke Collender Co., of Canada, Limited

"THE MADE IN CANADA CO."

Toronto **Montreal** **Winnipeg** **Vancouver** **Edmonton**

LARGEST MAKERS IN THE WORLD OF HIGH-CLASS BILLIARD TABLES