The Canadian Builder and Carpenter

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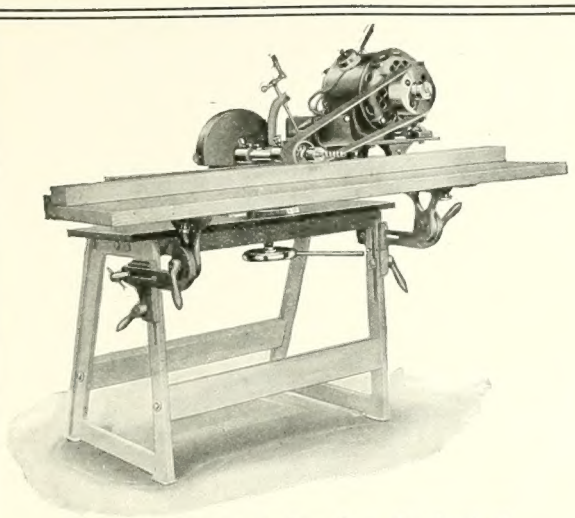

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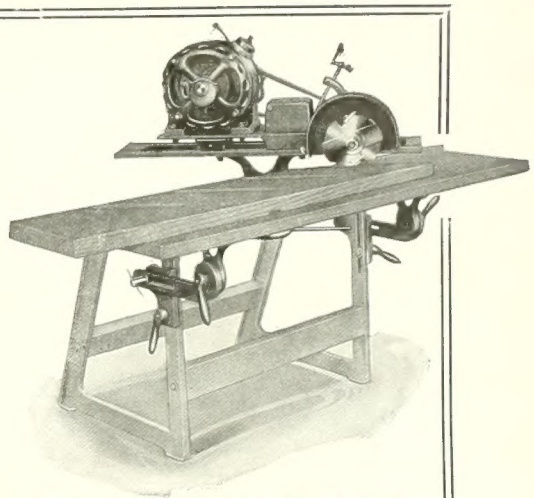

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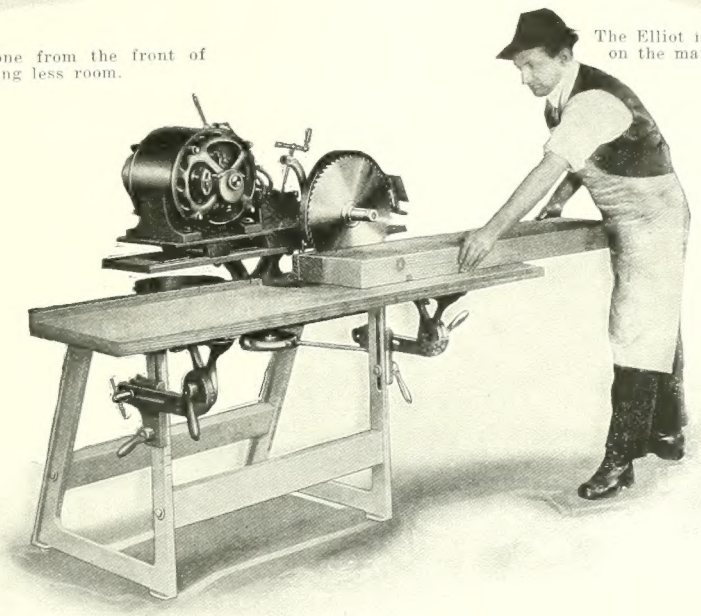

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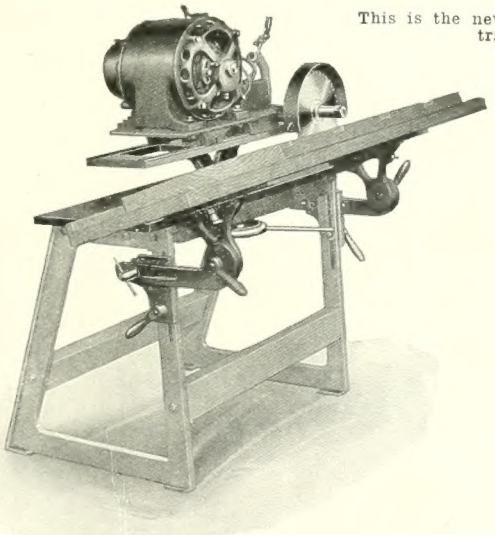
This is the new No. 3 Elliot Woodworker. The illustrations speak for themselves.



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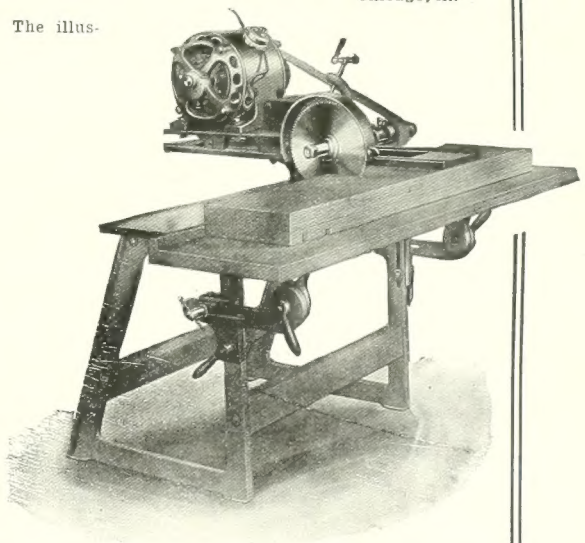

The Carriage Swings a complete circle and is marked in degrees, so that any metre is possible.

The Elliot Woodworker Limited

College & Bathurst St. Toronto **2405 Woodward Ave. Detroit**

A PRACTICAL MONTHLY PAPER

The Canadian Builder and Carpenter

PUBLISHED END OF FIRST WEEK

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VOL. 5 TORONTO, MAY, 1915 No. 5

Editorial Contents

If it's Concrete Machinery You Want go to Wettlaufer

We manufacture and sell a complete line of concrete machinery—machinery that is favorably known all over Canada because it stands-up on the job and does the work. The name "Wettlaufer" on a concrete machine stands for complete satisfaction to the user.

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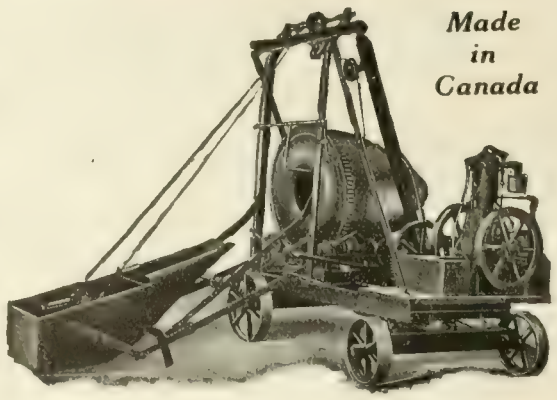

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Wettlaufer No. O. Improved Hand Mixer

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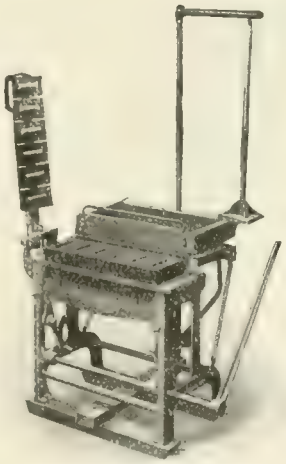
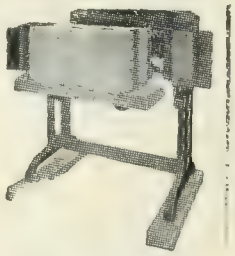
We will be glad to send catalogues on any of our machines free to readers of The Canadian Builder and Carpenter.

Also if you wish a complete set of catalogues for reference, write us, and we will send them to you.



Wettlaufer Brick Machine



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Layout and Construction Features of a Windsor Factory

The Remington Arms-Union Metallic Cartridge Co. have erected a large new addition to their factory at Windsor. The roof and floor construction are especially interesting, and special reference is made to them in this article

STAFF ARTICLE

A FACTORY with many special construction features has been erected by the Remington Arms-Union Metallic Cartridge Co., Windsor, Ont. The new factory building, recently erected, is divided into nine squares of 50 ft. side, making a building 150 ft. square. To this is now being added another building 50 ft. square, which is connected to the one shown in the illustration at the centre of the right side, where a doorway may be seen.

The walls of this building are of solid brick, while the floor is of concrete. The method of constructing the floor is of interest.

Method of Building Up Floor

The concrete floor is on a level with the concrete foundation, which may be seen in the halftone illustration. Below the floor level is a 3 ft. fill of gravel, laid in the following manner: A dam of sand was built around an area of convenient size. The area inside the dam was flooded with water, and the gravel was sprinkled in the water. The height was thus raised one foot over the whole area of the building. This operation was then twice repeated, until the desired three-foot raise was reached.

The result of this method of washing the gravel was that a very hard fill was secured.

The top covering of the floor is maple fastened to ties imbedded in the concrete.

Roof is Saw-Tooth Type

The roof is of the saw-tooth type, the slope of the separate being 30 degrees. The skeleton work of the building is of steel with the roof trusses carried on plate girders spanning about 50 ft.

The roof in general was constructed of 24-gauge asbesto-steel, covered with a smooth concrete slab about 1½ ins. thick, in which is imbedded a wire mesh of mild steel. The mesh is fastened to the bottom of each corrugation, as shown in Fig. 2, and is held at the bottom of slab, giving the roof a maximum of strength. The steel sheets are covered on both sides with asphalt and white asbestos, making an attractive finish for the interior roof, and eliminating the necessity of plastering.

The sheets were fastened to the roof purlins, and the sidelaps of the sheets are placed to form a continuous joint in the corrugations. The roofing sheets thus give a continuous appearance on the under side.

Construction Equipment

The necessary equipment for the roof construction consisted of a 1-3 cu. yd. concrete mixer connected to a 10 h.p. steam engine. A 40-ft. tower, equipped with a cage to hold one wheelbarrow, was erected at the centre of the south wall. The mixer was located at the base of the tower. A horse was used to raise the material, but a counterweight was also used to decrease the load the horse had to lift.

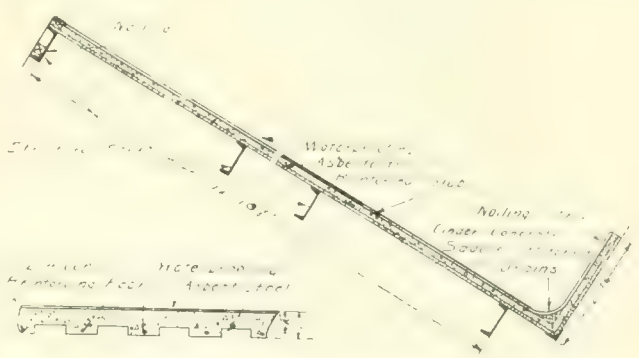


Fig. 2. Structural details showing the arrangement of the asbesto steel, concrete slab, structural steel purlins and gutter details.

A 5-ft. runway was erected across the roof at right angles to the roof gables, and the concrete was delivered to the various roof sections from this runway.

Fig 1.--New factory building erected by the Remington Arms-Union Metallic Cartridge Co., Windsor.

Small triangular horses assisted in supporting the runway, which was moved across the roof as the work proceeded.

Screeds were nailed to the slabs in placing the concrete, and these were left in the concrete to serve as nailing strips for the waterproofing. Dry concrete was placed in the gutter the entire length of the roof section. Then the slab was poured, and both roof and gutter were finished at the same time. On account of the pitch, the concrete mixture was very dry.

The ventilators were bolted to the sheets before the concrete was poured, and the metal of the asbestos sheets cut out for the round openings before the sheets were erected. "Bird" standard waterproofing was used, and the flashings at the parapet walls and the ridges were the standard asbestos protected material used for flashing purposes.

Typical Example of Modern Warehouse and Office Building

Holbrooks, Limited, English manufacturers of sauce and pickles, have erected, at 77 Florence Street, Toronto, general offices for America and warehouse space for Ontario, including packing and shipping space, janitor's apartments, and stables. It is a type of branch warehouse which might be followed by other manufacturers. The building was designed by T. Pringle & Son, engineers and architects, Toronto.

This building is of standard mill construction with reinforced concrete footings and foundations up to the first floor level. From the first floor up the walls are of brick pier construction to permit of windows of the maximum width. The bottom of the windows is kept six feet up from the floor in the warehouse portion of the building, to allow merchandise to be placed along the walls. The lintels over the windows are of reinforced concrete.

Columns and beams are of yellow pine and the floors consist of 2 in. x 5 in. spruce on edge, with 7/8 in. maple wearing floor over, except the basement floor, which is of concrete. The roof consists of 2 in. x 3 in. spruce on edge, with 7/8 in. roofing boards over and five-ply "Barrett Specification" tar and gravel roof.

Duplex steel beam hangers and column caps are used throughout the building.

The portion of the building occupied by the stables and feed loft is of fireproof construction and is entirely shut off from the rest of the building by brick walls.

Steel sash with wired glass is used throughout the building, with the exception of the windows in the offices and the janitor's quarters. The elevator and stairs are enclosed in a separate brick tower, the openings at each floor being provided with automatic fire doors.

Wire-cut brick is used and the trim on the front of the building is artificial stone.

Shipping Facilities

Facilities for handling stock are provided by a large receiving and shipping platform at the rear, served by a Grand Trunk Railway siding. Adjacent to the receiving door at the rear there is provided a gravity chute, by means of which merchandise is delivered to the basement when the elevator is in use carrying stock to the upper floors.

There is a large shipping door at the east side of the building, by means of which stock is delivered to teams for city distribution. A twelve-foot concrete driveway provides access to the stables, shipping door and the receiving platform at the rear.

Offices on First Floor

The offices occupy approximately 2,100 square feet of the first floor, and consist of waiting lobby, general office, general manager's office, assistant manager's office, sales manager's office, and sample room. The office trim is of chestnut, the walls being paneled to a height of seven feet. The windows in the offices have casement sash glazed with plate glass.

Janitor's Quarters, Rest Room and Lunch Room

Commodious quarters, consisting of five rooms, have been provided for the janitor at the front of the top floor of the building.

In conjunction with janitor's apartments, a large bright room has been set aside as a rest room and lunch room for the employes, where they may obtain a hot lunch. A side entrance to the stair tower is located at

New warehouse designed for Holbrooks, Limited, by T. Pringle & Son, Toronto.

the west side of the building for the use of the janitor and warehousemen. The remainder of the top floor is used as a bonded warehouse.

Heating System

The heating system installed is the Dunham "Vacuo-Vapor" system and a standard firebox boiler is used. An ash hoist is conveniently located adjacent to the boiler room and delivering to the side driveway. The boiler room is enclosed by a 2 in. expanded metal and cement partition and the floor is two feet below the level of the basement floor, to allow sufficient drop for the return piping. Built-up wall coils are used throughout the building with the exception of the offices and janitor's quarters, where radiators are installed. Modulation valves are used on the radiators in the offices and Dunham traps on the return end of all units.

The electric wiring for the lighting system is carried in conduits. General lighting in the warehouse portion is obtained by drop pendants. The office lighting consists of 300-watt nitrogen lamps in Frink direct-indirect fixtures, which provide a uniform light with a minimum shadow.

Owing to the peculiar contour of the street line, and in order to utilize all available space, it was necessary to design the building with the north-east corner cut off.

Buying Materials Economically—Careful Estimating Necessary

This article, reproduced from "Record and Guide," gives ideas for buying building materials, showing what constitutes a safe margin to allow for waste. Construction costs are shown by individual items. See the price list in this issue for current Canadian prices of materials and compare them with prices quoted in this article

IN estimating the cost of buildings for which plans have not been prepared, it is customary to figure in cents per cubic foot. In city property the cost will run from six cents for a frame dwelling with shingle roof, pine floors and finish, without bathroom or furnace, but otherwise a good house, to 20 cents for a brick dwelling fitted with good plumbing, bath, furnace, hardwood finish and well painted inside and out. A speculative building in a city with ten-foot ceilings would cost from 15 to 18 cents a cubic foot, or $1.50 to $1.80 a square foot.

Tenements and cottages to rent usually are figured at from 13 to 16 cents a cubic foot or from $1.30 to $1.65 a square foot.

The typical New York flat is generally figured at from 31 to 40 cents a cubic foot, hotels range from 35 to 45 cents a cubic foot for first-class structures, from 28 to 40 for second-class structures, and from 24 to 30 for third-class buildings.

Churches run from 20 to 35 cents for plain ones, and from 30 to 45 cents for ornamental ones.

Construction costs differ. In a city like New York, of course, they will be higher than in other cities. Wages for labor are higher here than in any other city in the country. It costs more to haul material, and the demand is steady enough to warrant high prices for materials whether made here or out of town. The average cost of a fireproof building of about 500,000 cubic feet in volume and with floor areas of approximately 40,000 square feet, which would cost 20 cents to erect in New York, would cost 13 to 15 cents per cu. ft. in a smaller city.

Where the Wastes Occur.

The greatest waste is in the purchase of common brick and lumber, although large sums are lost through careless handling or storage of perishable materials, such as Portland cement, lime and plaster. Carelessness is governed by management, hence it is not an item to be considered under the head of purchase of building materials. Losses arising from careless figuring are inexcusable because it is possible to reduce the element of waste in any building operation to a minimum even without the aid of an expert estimator.

It is then necessary only to have the dimensions of your building to make estimates. Gillette's rules are standard. In estimating the number of joists for each room (we are now speaking especially of speculative dwelling operations in the suburbs) count the actual number and add one joist; for an extra joist is needed for the wall. Joists are nearly always bridged and for this purpose 2 x 4 material is used.

Estimating Lumber.

Allow 25 lin. ft. of 2 x 4 bridging for each "square" (100 square feet of flooring). Where 2 x 12-in. joists are placed 16 in. apart it will be found that the 2 x 4-in. bridging amounts to 9 per cent. of the number of feet, board measure, of joists. On a plain roof count the number of rafters and add one. In estimating the number of studs for walls and partitions allow one stud for every lineal foot of wall or partition where studs are spaced 16 in. centre to centre. This seemingly large allowance is made to cover the doubling of studs at corners, doors and windows. To estimate the quantity of shiplap or sheeting calculate the exact surface to be covered, deducting openings, then add 15 per cent. for sheeting and 17 for shiplap on floors, 17 for sheeting and 20 for shiplap on sidewalls and 20 for sheeting and 25 for shiplap on roofs.

Sheeting is laid with 2 in. space on cheap roofs. In such cases deduct accordingly. When sheeting and shiplap are laid diagonally add 5 per cent. to the foregoing figures to allow for waste in sawing both ends.

Lumber comes in even lengths, 16 feet generally being the maximum. It is, therefore, necessary to examine each area to be covered to see if the standard length will cover it or whether there will be waste on each length, and figure accordingly. In figuring the amount of siding required, calculate the exact surface, deducting openings, and add 33 per cent. if 6-in. siding laid four and a half to weather is used. If it is 4-in. siding, add 50 per cent. to the surface.

Figuring Flooring.

Flooring comes in two classes—dressed or square edged flooring and dressed and matched flooring. The square edge flooring ordinarily has a face width of about half an in. less than its normal width, thus a piece of 6-in. square edge flooring has a face width of 5½ in., and a piece of 4-in. flooring has a face width of 3½ in. The loss in the case of the flooring with 5½ in. face is 9 per cent., and in the case of the 3½ in. face the loss is 14 per cent.

But in addition to these mill losses there is usually waste owing to bad ends, etc., so that after estimating the exact area of floor, 11 per cent. should be added for 6-in. flooring and 20 per cent. for 4 in. flooring. Add 17 per cent. for 6-in. flooring where dressed and matched flooring is used, 25 per cent. for the same in 4-in. flooring, 33 per cent. in 2¼-in. dressed and matched, and 40 per cent. in 1¾-in. dressed and matched flooring.

Extra allowance must be made if the floor is to be laid under partitions, and if the architect has so spaced the joists that full lengths cannot be used, there may be a very large waste not included in the above allowances. This, by the way, is one of many instances where the inexperienced builder, figuring close, finds himself overwhelmed with extras. Estimate flooring less than one inch thick as one inch. Ceiling and wainscoting are estimated exactly as dressed and matched flooring is estimated.

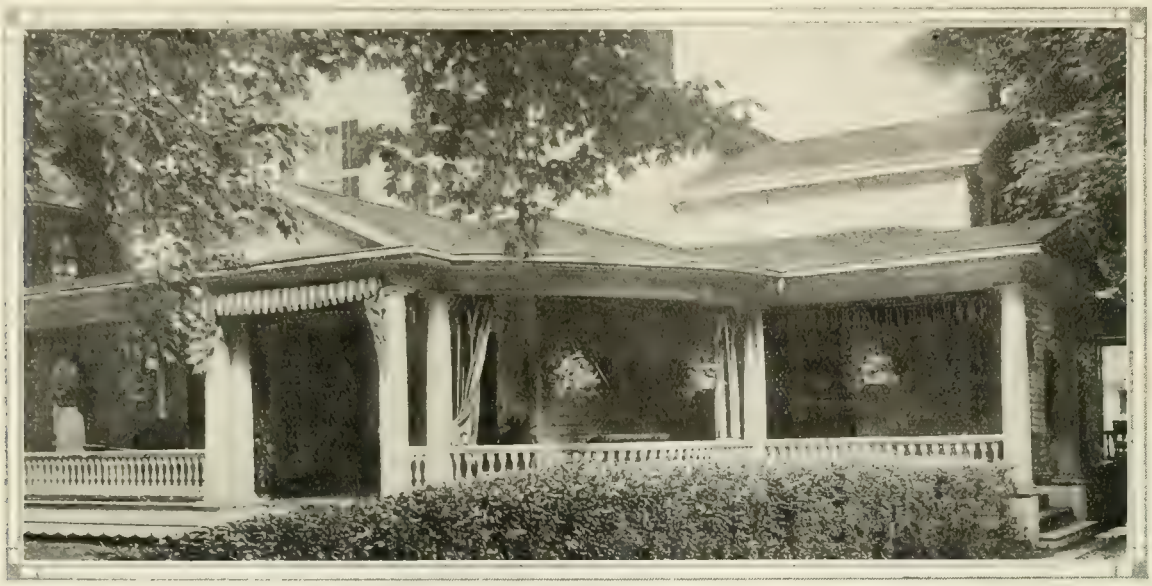
Buying Common Brick.

In the purchase of common brick there is a great deal of waste. Bats, or half brick, result from careless dumping or loading on trucks, and the building department permits only a small percentage of these to go

into a wall, generally depending upon the weight the wall has to sustain.

Common brick is sold at so much a thousand, depending upon the season of the year, supply and demand. The term "run of kiln" means that the brick so sold is taken from the kiln without being selected as to hardness, color or texture. "Culled" brick is that from which all so-called pale or light hards have been eliminated and they possess a "true metallic ring" when knocked together in the hand, thus showing thorough burning and soundness.

A thousand brick are figured at 40 cu. ft. when laid. There also are companies which deal in second-hand brick, but these seldom or never go into fair grade work except mill construction, and are not important as a marketable building material any more than are second-hand steel, trim and lumber.



A residence at Welland, Ont. Special attention is drawn to the roomy verandah, the columns and balusters for which were supplied by Batts Limited, West Toronto.

Mortar Formulae.

The mortar item is an important one for the builder to consider, and in this he must guard himself against waste. A barrel of Portland cement weighs 380 pounds and four cloth bags make one barrel. Each empty bag weighs one and one-half pounds. If cement is bought in bags a charge of ten cents each is made, but a refund of from eight to ten cents is allowed upon a return of the bags. Cement cannot now be bought in wooden barrels.

Lime mortar may be mixed one part lime to three of sand, this proportion consuming about nine-tenths of a barrel of lime per thousand of brick, kiln count, the brick being laid with three-quarter-inch joints. A common allowance in estimating the cost of mortar for standard size brick is one barrel of lime and six-tenths of a cubic yard of sand a thousand, kiln count.

About one-half a cubic yard of mortar is usually allowed per cubic yard of brick masonry, or seven-tenths of a cubic yard of mortar for a thousand of brick when the brick are laid with half-inch joints. If cement mortar is used, the number of barrels of cement per cubic yard of mortar will seldom be less than 1.6 per thousand of brick, or eight-tenths barrel per cubic yard of brick masonry, for if the mortar is made leaner it will not trowel well and causes more loss in labor than is saved in cement.

*Standard grades of lime are sold by the barrel—220 pounds net. When shipped in bulk 2½ bushels of 80 pounds per bushel are usually called a barrel. A barrel holds about 3.6 cubic feet. The average yield of lime paste from the best limes is 2.6 barrels of paste for each barrel of quicklime. This paste is usually mixed with two parts sand by measure. It, therefore, takes about 1½ barrels of the best quicklime to make a cubic yard of mortar.

A word may here be said about the purchase of lime in bulk. Good lime is protected against air slaking, and for that reason it is sealed and certified with the manufacturer's certificate within. This lime sells for a dollar a barrel. Many builders buy their lime in open carload lots, for about 60 cents a barrel, and think they are getting a bargain. As a matter of fact, such lime is air slaked and it will take two of these 60-cent barrels to do the work of one barrel of certified lime. Here is where many builders lose money. It is a leak that would be instantly stopped if the builder would only take the time to investigate. Most individual builders do not know this difference until they find their original estimate way out of proportion to what their actual building cost proves to be.

Estimating Lathing.

The standard size of wood lath is ¼ x 1½ in. x 4 ft. There is a special lath, however, which is made in 32-in. lengths. Lath are sold by the thousand in bundles of 50 or 100 lath in each. The price is usually around $5 per 1,000, and 1,500 are required to cover 100 sq. yds. Allow ten pounds of threepenny nails for 100 sq. yds. when joists are 16 in. on centres, and 1,250 lath are usually counted a day's work for a lather.

The total cost of wood lathing should be somewhere around $8.64 per 100 sq. yds. Metal lath runs in weight from 2.65 to 2.84 lbs. a square yard, and the

*In Canada lime is sold by the cwt., but this paragraph on lime is reproduced to show methods of handling lime in certain U.S. centres.

cost varies from 15 cents to 20 cents a square yard. The total cost per 100 sq. yds. for metal lathing should not be much over $18.50. These figures include the cost of scaffolding and are on a 6,000 sq. yd. basis.

Plastering Estimates.

Plastering is generally applied in three coats—scratch, brown and white or finish. On brick walls the scratch coat is often omitted. Plaster is made either with lime or gypsum, known also as plaster of Paris. Some plasters are made with lime gauged with Portland cement. Whatever kind of plaster is used, sand and hair are mixed with the plaster. The hair comes in paper bags which are supposed to contain one bushel of hair when beaten up, and supposed to weigh seven pounds. Some cement plasters are sold with the proper amount of hair mixed in. Cement plaster is commonly sold in 100-lb. sacks, four sacks to the barrel.

In making lime plaster one part of lime paste is used to 2 or 2½ parts of screened sand. About 1¾ yards of sand are required per 100 yards of three-coat plaster and about four barrels of lime or cement plaster and two bushels of hair.

Excavating, front brick, stone, stucco and other exterior material vary in cost according to the character of the work, but none of these represent such serious leakages as do the items herein enumerated.

Concrete Chimneys for Houses and Small Buildings.

Defective flues and poorly constructed chimneys are the causes of most of the fires in dwelling houses. On this account the chimney is one of the most important structural features of the building, and it is the opinion of architects that the money spent for a good chimney is one of the best investments. A properly constructed chimney should have as few joints as possible, for it is at the joints that the fire finds its way through to the surrounding structure. A concrete chimney when built as a solid monolithic will be entirely free from joints and thus will eliminate the danger of fire from this source.

Forms

In building the outside forms, the two side forms can be made continuous throughout the entire height and should be well braced in a vertical position. For the end faces, boards can be nailed on as the construction of the chimney progresses. As the concrete at the bottom hardens, the lower boards can be removed and used again at the top, thus promoting greater economy.

The inside of the chimney can be made either square or round, but the round flue is preferable, on account of its greater efficiency. In square or rectangular flues there are dead air-spaces in the corners which are apt to induce cold air currents up and down the chimney and cause the accumulation of soot.

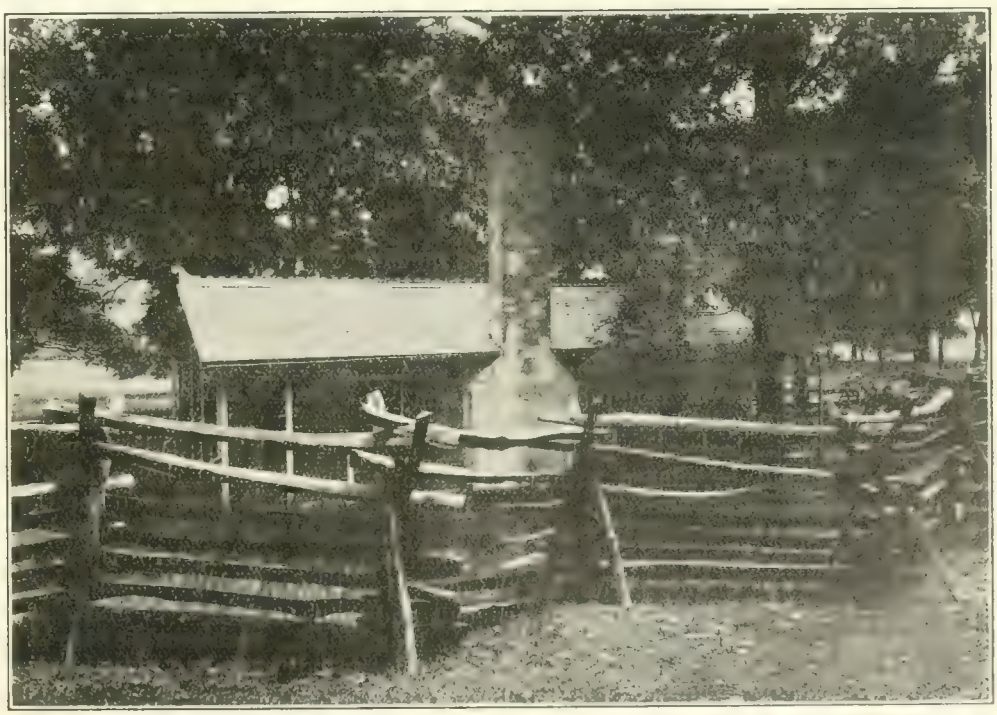
Where a round flue is built the forms can be greatly simplified by using terra cotta or dense concrete tiles. These tiles may then be left in place.

Size and Reinforcing

All flues should be of ample size and should be carried as straight as possible to a point above the highest part of the roof. They should be independent, having no connection with other flues or openings, and should have the same area throughout.

For heaters the flue should start at a point near the cellar floor, about 3 or 4 feet below the smoke pipe entrance, and should be provided with a cleanout door at the bottom for the removal of accumulated dust and soot. Its size should never be smaller than the smoke pipe leading from the heater.

For heaters and kitchen ranges either an 8-inch or 10-inch flue will do, but the 10-inch flue will probably give



Frame building with concrete chimney.

the better service. The 10-inch flue is the size most commonly used, but this will, of course, vary somewhat under special conditions.

For fireplaces the size of the flue is governed by the fireplace opening. For burning wood or bituminous coal the flue should be 1-10 to 1-8 of the opening, and for anthracite coal 1-12 to 1-16 will suffice. Where trouble with down-drafts is encountered, it is advisable to put a revolving top on the chimney.

The thickness of the concrete from the flue surface to the outside of the chimney and between flues should be not less than 6 inches, although for small flues 4 inches will sometimes be sufficient. Vertical reinforcing rods, ¼ of an inch in diameter, should be placed in the corners and at the centres of the sides. Horizontal rods, ¼ of an inch in diameter, should be placed on all sides, 12 inches apart, and should be securely

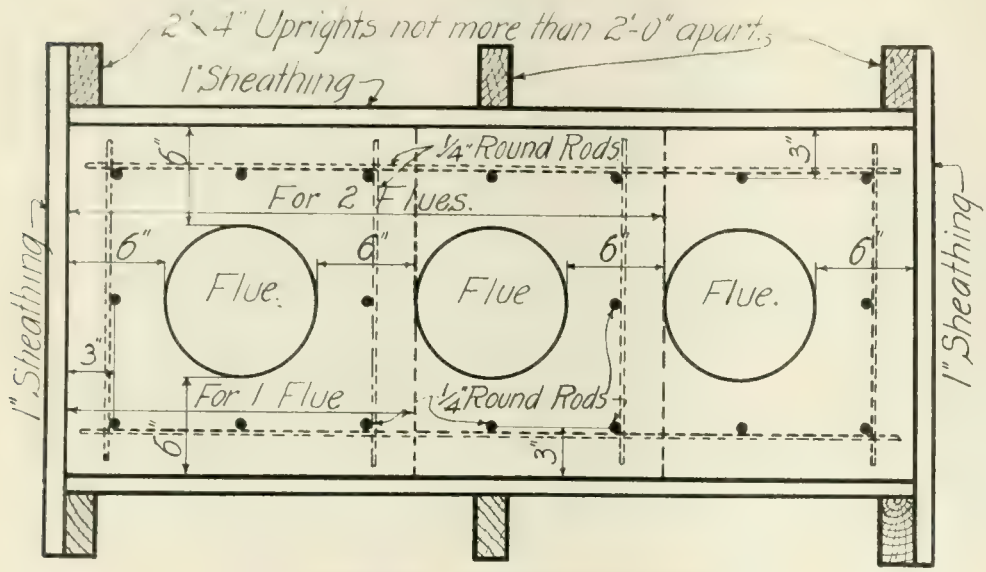


Fig. 1. Construction details of a concrete chimney.

wired to the vertical rods where they cross. By this means the reinforcing will form a rigid frame before placing the concrete.

Construction

All chimneys should have good foundations and should be built independent of the house. They should preferably be carried to a depth equal to that of the cellar, but at least below the frost line, usually 4 or 5 feet. The foundation consists of a slab 12 to 18 inches thick, and 9 inches larger on every side than the outside dimensions of the chimney.

The concrete should be of a fairly wet mixture, in the proportions of 1 part cement, 2 parts sand, and 4 parts broken stone or gravel, ranging in size from ¼ of an inch to 1 inch or 1¼ inches. The concrete should be well spaded when placing to make it dense and waterproof. It should be placed preferably in one continuous operation, but where this cannot be done care should be taken to get a good bond between the work done the previous day and the fresh concrete. This can be done by thoroughly scrubbing the old surface with a stiff brush, using a mixture of cement and water. Then place a layer of mortar about an inch thick, consisting of 1 part cement and 1 part sand. The old surface should be left rough, with a stone sticking out to afford a mechanical bond.

Where the chimney passes through the roof there should be no offset, but provision against leakage should be provided by the use of copper flashing. The part above the roof can be finished in any ornamental way desired. Fig. 1 shows the principal dimensions of the chimney, including arrangement of reinforcing and forms.

Proposed Changes in Nova Scotia's Mechanics' Lien Act

A bill is before the Nova Scotia Legislature which is causing some interest among contractors. It is an act to amend and consolidate the Mechanics Lien Act, the main provision of which is that workmen's wages shall be a claim prior to that of the mortgage. The desirability of the measure, as seen by the man who introduced the act, was brought to his attention, it is understood, by the case of a number of jobs in New Glasgow and elsewhere, in which the workmen lost considerable amounts in unpaid wages because of the contractors' neglect.

Clause 12 of this Act provides that the owner shall, as the work advances and materials are delivered, deduct from any payments to be made by him in respect of the contract, and retain for a period of thirty days, after the completion or abandonment of the contract, 20 p.c. of the value of the work, service, and materials. Such value shall be calculated on the basis of the contract price, or if there is no specific contract price, then on the basis of the actual value of the work, service, or materials. Where the contract price or actual value exceeds $15,000, the amount to be retained shall be 15 p.c., instead of 20 p.c. It is provided that every agreement, verbal or written, on the part of any workman, employe in any kind of manual labor dealt with in this act which might provide that this act shall not apply, or that the remedies provided by it shall not apply, will be null and void. The section does not apply to a manager, officer or foreman, or to any other person whose wages are more than $5 a day.

Clause six of the act provides that any person who performs any work or service upon or furnishes any materials in constructing or repairing any one of a score or more of constructive works and building operations for any owner or contractor, shall by virtue thereof have a lien for the price of such work or materials upon the building or work, and the land upon which it is erected for the whole amount of his claim. Where work or service is done upon the land of a married woman, with the consent of her husband, he shall be deemed to be acting as well for himself so as to bind his own interest and also as her agent, unless before doing such work or service or furnishing the same he shall have had actual notice to the contrary.

The lien shall have priority over all judgments, executions and assignments made after such lien arises, and over all payments or advances made on account of any

Fig. 1—Cottage with screened-in dining room and wide verandah

Fig. 3—Cottage all on one floor

THIS is the season when each warm day makes Canadians think of the woods and the lakes, with their hunting, fishing and recreation. Scarcely a season passes without a great addition to the number of cottages erected at the various summer retreats. It is a good time for builders and carpenters to get after this class of business.

The two cottages shown herewith are two different types, one with an upstairs and one on one floor. They are simple, convenient designs, giving a maximum of room and comfort.

The Screened-In Dining Room

An excellent feature of the cottage shown in Fig. 1 is the screened-in dining room, which cannot help but appeal to any owner. In this particular instance, a full view of the lake is obtained. In wet weather waterproof canvas screens are fastened with automobile fasteners.

It would be an easy matter to extend the verandah of the cottage shown in Fig. 3 to the left of the cottage. By enclosing the rear of the verandah an extra bedroom may be easily provided.

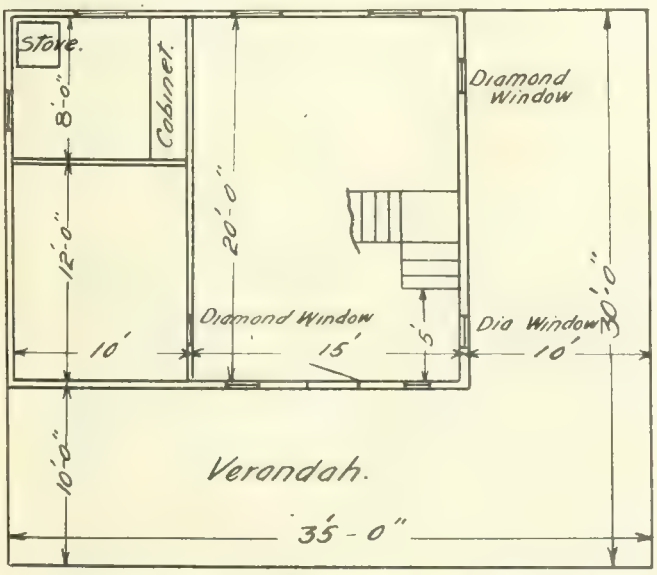


Fig. 2—Cottage shown above. There is a door from the verandah to the 10 x 12 ft. screened dining room and from the dining room to the kitchen and also to the dining room proper

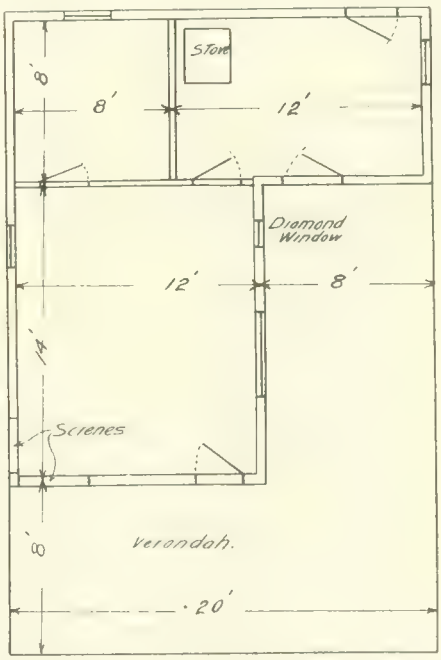


Fig. 4—The two screens make an open corner which is covered with waterproof canvas when it rains. Board frames replace the screens when the cottage is not in use.

conveyance or mortgage after notice in writing of such lien to the person making such payments. The act sets forth that all payments up to eighty per cent. or eighty five per cent., where the contract price or actual value exceeds $15,000, of such price or value made in good faith by an owner to a contractor, or by a contractor to a sub-contractor, or by one sub-contractor to another sub-contractor, before notice in writing, such lien given by the person claiming the lien to him shall operate as a discharge pro tanto of the lien.

Payments of the percentage required to be retained may be validly made so as to discharge all liens or charges in respect thereof after the expiration of the period of thirty days unless in the meantime proceedings have been commenced to enforce any lien or charge against such percentage.

Wage earners shall be entitled to enforce a lien in respect of a contract not completely fulfilled. When a contractor makes default in completing his contract the percentage shall not as against a wage earner claiming a lien, be applied by the owner or contractor to the completion of the contract or any other purpose. The act does not apply to any public street or highway or to any work done thereon by a municipal corporation.

Such is an outline of the act now pending before the Legislature, and which is regarded with distrust by the loan companies and money lenders. They say, further, that building operations will be handicapped by it and that there are few contractors strong enough to operate under its provisions calling for the retention of so large a proportion of the contract price.

Granite Concrete Block Company

The Granite Concrete Block Company, Limited, has been organized, with factory and offices at corner of Yonge Street and St. Clair Ave., Toronto. Equipment manufactured by the Cast Stone Block & Machine Co., Limited, Windsor, has been installed for the manufacture of granite-faced cement blocks, either rock or smooth face, and the regular concrete blocks.

The blocks are beautiful in appearance, and being guaranteed waterproof retain the beauty. They thus give a building the appearance of granite without the expense.

Made in Various Sizes

The blocks are made 8x8x16 ins.; 8x8x8 ins.; 12x8x8 ins.; 4x8x8 ins., and 12x8x16 ins., with rock or smooth granite finish or plain cement.

Methods of Manufacturing

At present twenty-five cars, each having a capacity of 30 blocks, are in use. One of these cars containing 30 blocks is shown in the illustration. A number of granite-faced blocks are also shown. The total output of the twenty-five cars is 750 per day, but an additional 50 cars are being added to the equipment. The output will then be trebled.

The first operation in the manufacture of these blocks is facing up the plate with crushed granite, this being done in a machine for the purpose. In fact, all operations are done mechanically, to secure a uniform product. The necessary forms which permit manufacturing in quantities are all rigidly made and kept well oiled, to produce a uniform product and eliminate spoiled blocks.

The mixer is a Goold, Shapley & Muir, of 8 cu. ft. capacity, two mixes being required to a car. The mixer is operated by a 2½ h.p. gasoline engine of the same make, and has a capacity of 40 cars per day.

After being poured the cars are kept in the heat for twenty-four hours. They are then run out on the service tracks and placed on the platforms to "cure" for thirty days. Transfer tables are used in the factory and in the factory yard to facilitate the handling of the cars.

Officers of the Company

The officers of the company are: J. A. Livingstone, president and general manager; J. A. McDonald, vice-president; and R. Robinson, president.

Plans are being prepared for the erection of a new modern factory to be erected this fall. It will have all necessary conveniences, including steam driers, etc.

A car on which blocks are made and a quantity of granite-faced blocks. An idea of what a finished wall looks like may be had from the blocks piled up in the centre of the picture.

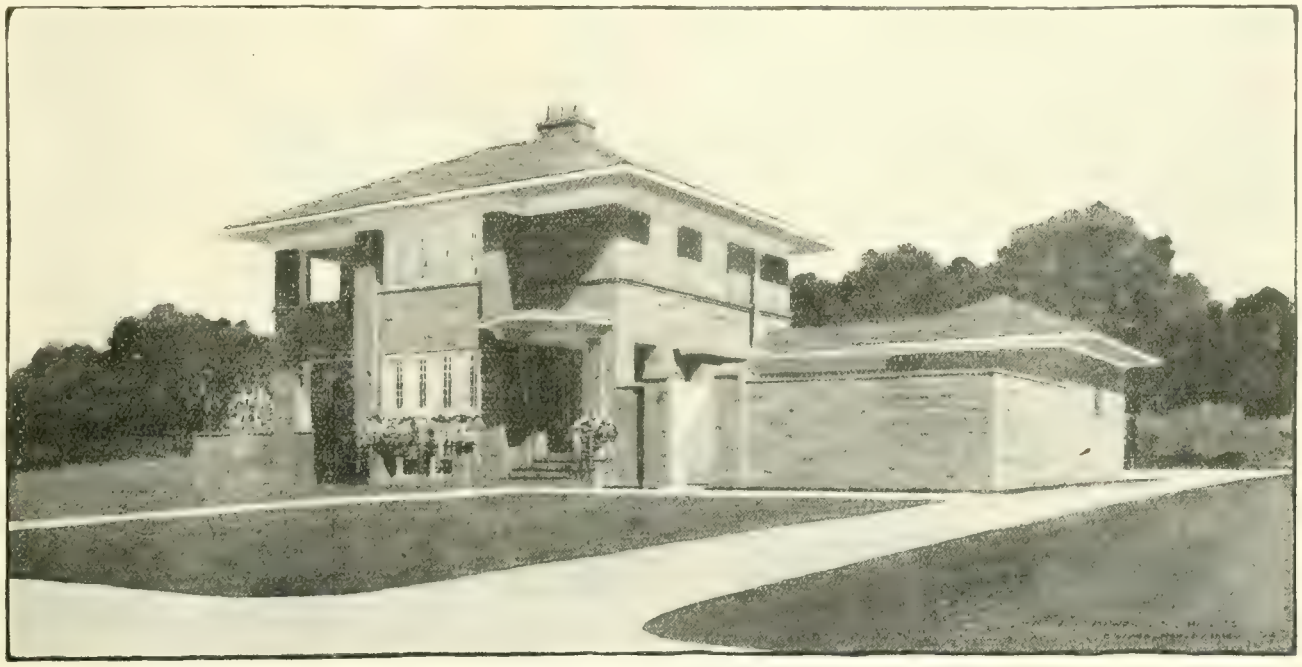
An Attractive Brick House for Panama-Pacific Exposition

This house was erected as a model by the Panama-Pacific Clay Products Association. Plans are published by courtesy of "Brick and Clay Record." Description accompanies the plans.

THE Panama-Pacific Clay Products Association was organized to promote the use of burned clay products through publicity and, as a part of the initial campaign, to build a modern, low-cost, fire-resistant residence at the Panama-Pacific International Exposition.

The illustrations herewith are those that have been submitted by Spencer & Powers, architects of wide renown—especially for residence work—to the officials of the Panama-Pacific International Exposition. A site has been secured among the state buildings, and at the intersection of two principal roadways.

As the floor plans show, the house will contain six generous-sized rooms, and a sleeping porch, the latter 8 x 11 ft. A terrace and a "service court"—both paved with brick—are provided, as well as an 8 x 10 ft. porch, in addition to the entrance porch. These are both paved with burned clay tile.



Attractive brick house erected at the Panama-Pacific International Exposition, San Francisco (see floor plans on next page).

Garage Connected With House

The garage has been connected with the house, in order to give a certain breadth to the structure, made necessary by the large buildings that will be near it. In securing estimates on the house, to apply to its construction in various parts of the country, separate estimates will be taken on the house and the garage, so that the cost of the house alone may be determined and compared with the cost of the same house erected at other points.

The specifications call for solid brick walls, or to be more exact, brick walls with an air space. All four sides have been faced with moderate-priced, rough-faced face brick of a dark red color, with a free variation of color. The mortar joints are generous in width, rough in texture, and, while not attempting to depart from the standard running-bond, has produced a very pleasing wall.

The interior partitions are of hollow clay tile. The ceilings are metal lath of approved type. The roof is of clay tile, probably a vitreous tile of a medium red color, unglazed.

A driveway of paving brick, laid under N.P.B.M.A. specifications, extends from the main road, past the garage and back of it—the garage entrance being in the rear.

First Officers of the Association

The first board of directors of the Panama-Pacific Clay Products Association is as follows:

President—Herman L. Matz.

Vice-President—W. P. Varney.

Treasurer—Chas. Brown.

Secretary—Louis F. Desmond.

Directors—E. K. Cormack, J. J. Lyon, C. J. Hill, Thomas C. Moulding, R. C. Penfield, Wm. Schlake, Arthur D. Rogers, Frederic W. Donahoe, Theo. A. Randall, and Gordon Keith.

* *

The Professor and the Baby

The learned professor was talking the usual nonsense to the baby, "No, no oo musn't tick oo's footsy—"

Just then he caught sight of the visitor, blushed furiously, and muttered:

"No, no; you must not expose your pedal extremities by extending them beyond the protective covering of the blankets, or you will lay your system open to attacks of catarrhal affection."

Cost of a Damp-Proof Timber Floor

Engineers are frequently called upon to design and build floors in industrial buildings where water under a head is not encountered, but where protection against dampness must be provided, says J. A. Holmes in an article in Engineering News. This applies to basement and ground floors where the practice was formerly to carry such floors on heavy timbering, supported by piers, thus providing an air space, and more recently by laying the floor directly on a concrete base and spiking to strips embedded in the concrete.

Neither of these methods prevent decay. More recent and extensive practice is to introduce a damp-proof construction under the wood surface directly on the ground. If water is present, a system of under drainage is necessary.

Tarred Sand Floor.

Where the ground has sufficient natural drainage and no tile is required, the foundation course is laid directly on the ground. On this foundation is spread a layer of tarred sand in which planks are bedded by ramming and on which the hardwood wearing surface is laid and nailed. A floor of this character provides a rigid foundation for machinery and will support the heaviest materials in storage.

A damp-proof floor of this kind was recently built, on which a careful record of cost was kept. The floor was laid in the basement of a manufacturing building on the natural earth, hardpan and sand, without underdrains. The ground was prepared by the contractor for the building by rolling or puddling, therefore, the costs given in the accompanying table are for materials and labor above the ground.

The soft-coal cinders used for the foundation course were purchased from the railroad and delivered in cars on a siding from which they were shoveled directly into the basement where used. Materials were delivered and the work performed in the winter, so that storage in the basement obviated the necessity of heating the cinders when mixed with the tar. Tar was purchased from the local gas works and 14 gal. used per cu. yd. of cinders.

The cinders were spread, rolled and tamped to a thickness of 4 in; the shrinkage from measurement in cars to place was 36 per cent. Sand and tar were heated outside the building and mixed in the basement. This mixture, while warm, was spread over the cinders and screeded off ⅜ in. above the bottom of the plank; planks being laid to grade for screeding. Into the sand while still warm, the 3-in. planks were firmly bedded by ramming.

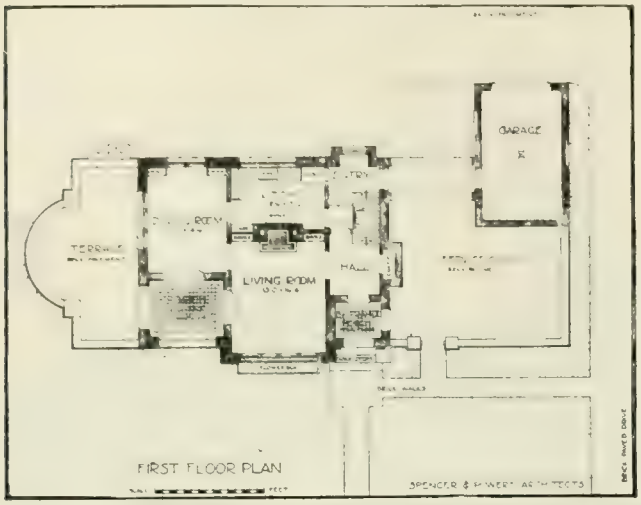
Sand, Tar, Plank, then Maple Top Floor.

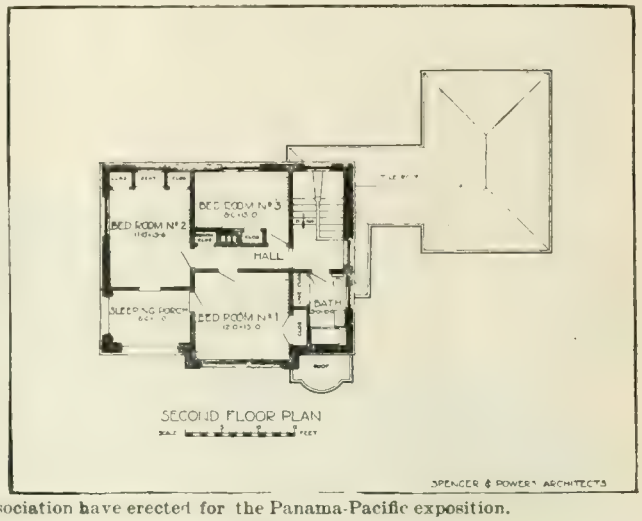
For specially prepared tars, 50 to 60 gal. per yd. of sand were specified. On this work the greatest amount of tar that the sand could be made to contain, without making a soft, wet mixture, was 35 gal. per cu. yd., the same kind of tar being used in both cinders and sand.

The plank was 3-in. kyanized hemlock, planed one side to a uniform thickness of 2¾ in. and not less than 6 in. wide, random lengths, square edged and saw butted; laid to break joints and toe nailed but not driven tightly together. There was no loss of plank by cutting.

Over the plank were placed two layers of felt and one of pitch. The felt weighed 14 lb. per 100 sq. ft. and was laid to break joints one-half the width of the sheet; no pitch was allowed to come in contact with either plank or top floor. The loss in area of felt due to lapping was 21 per cent.

Over the felt at right angles to the plank was laid a maple-top floor 1 1-16 in. thick.





Floor plans of the house the Panama-Pacific Clay Products Association have erected for the Panama-Pacific exposition.

Cost of Damp-Proof Floor.

Materials and labor	Thickness of material in place	Quantity per sq. yd.	Unit cost	Cost per sq. yd.	% of waste and shrinkage	Cost per sq. yd.*
Cinders	4 in.	0.151 cu. yd.	$0.50 per cu. yd.	$0.076	36	$0.076
Tar in Cinders.		0.0381 bbl.	2.00 per bbl. (57 gal.)	0.076		0.076
Sand	1 in.	0.045 cu. yd.	1.00 per cu. yd	0.045	68	0.045
Tar in Sand		0.0276 bbl.	2.00 per bbl. (57 gal.)	0.055		0.055
Felt	2 ply	3.10 lb.	35.00 per ton	0.054	21	
Pitch on Felt		3.32 lb.	17.00 per ton	0.028		
Teaming, tar			0.50 per hr.	0.039		0.039
Labor, roofers.			0.375 per hr.	0.433		0.358
Supt., Roofers.			0.50 per hr.	0.100		0.078
Kyanized plank	2½ in.	0.027 M.	33.50 per M.	0.905	00	0.756
Maple top floor	1 1/16 in.	0.0134 M.	45.00 per M.	0.603	40	0.603
Nails		1.2 lb.	2.10 per cwt.	0.027		0.027
Carpenters			0.41 per hr.	0.475		0.475
Labor			1.75 per day	0.230		0 230
Supt.			0.50 per hr.	0.080		0.080
Totals	9 in.			3.226		2.898
			Materials	1.869		1.638
			Labor	1.357		1.260

*Cost omitting felt, pitch on felt, labor placing felt and pitch and using untreated hemlock plank @ $28.00 per M.

The waste and shrinkage due partly to laying, but mostly to manufacture, was 40 per cent.; in other words while the market price of flooring was $45 per M, the

shrinkage in manufacturing that must be paid for, plus a small loss by waste in laying, brought the cost up to $63 per M.

In this work, two distinct classes of labor or trades were employed, roofers in this case and carpenters, and though they worked together, their organizations were separate. For this reason, the combined items for superintendence is high and that for superintendence of roofers unnecessarily so. Reducing the item for superintendence of roofers and using untreated plank and leaving out the felt and pitch between plank and top floor, the cost would be reduced as shown in the last column of the table.

The Quantity System of Estimating

The following editorial on the above subject appearing in a recent issue of the "Brickbuilder" cannot fail to impress every member of the profession with the necessity of some modification of the present method of estimating the cost of buildings:

"A few months ago we brought to the attention of our readers the general dissatisfaction which is felt with present methods of estimating and their resultant effect on competitive bidding, calling attention at the same time to the efforts which are being made to establish an American System of Quantity Surveying, which it is claimed will be effective in bringing about better conditions of estimating, equally beneficial to owner and contractor. We published in recent issues expressions of opinion from chapters of the American Institute of Architects and from individual architects, which came to us as a result of our presentation of this subject. Their letters indicated that they recognized the need for improved methods in estimating, and that they were agreeable to welcome and further any sincere efforts which were made to attain this end.

"The advocates of the Quantity System are constantly enlarging their sphere of influence, and as the advantages to both owner and contractor become more apparent they are arousing the interest and securing the support of the architectural profession. This is, however, as it should be, for architects should be eager to support and adopt any measure which will effect a clear and just understanding between owner and contractor. In the architect's professional employment he assumes the unique and exceptional legal combination of an agent for the owner and at the same time arbitrator between the owner and the contractor. Such an exceptional duty makes the office of an architect particularly difficult, and it is evident that anything which can be construed to lessen the difficulties which may arise in the fulfilment of his duties should be warmly welcomed by him. It is easily acknowledged that the chief disputes which arise between owner and contractor, and which require arbitration on the part of the architect, are due to misinterpretation of what the contract calls for, and in the settlement of charges incurred by extra work which are due in some cases to omissions in specifications and other causes directly chargeable to the architect, and in others of equal frequency, to express desires on the part of the client to include other items than those in the original contract.

Reasons for Misunderstandings

"The first reason for such misunderstandings, however, the Quantity System of Estimating as proposed would remove, for before completing the bill of quantities all omissions and other defects would be determined and cleared up, with the result that the documents, when they reach the contractor, will be as complete and accurate as it is possible to make them.

"It is not so with plans and specifications, which may be, and often are, contradictory and capable of two or more interpretations. In such cases the bidder has forced upon him a condition which causes and encourages guesswork methods as to what another person has in his mind, as to what he really means by certain lines and words, and occasions often arise when it is difficult, if not impossible, to determine what the true intention is until perhaps after the estimate has been submitted.

"The bill of quantities carefully prepared will entirely remove this dangerous element of chance. It should be furnished to each bidder and contain everything which is essential for the contractor to have when making up his figures. It should be prepared by efficient men whose competency and integrity have been assured, and should further be guaranteed by them and made the basis of the contract equally with the drawings and specifications."

An attractive den in a house at 43 Riverdale Ave., Toronto. Note the gas grate.

Gypsum as a Fireproofing Material*

At the National Fire Prevention Convention, held in Philadelphia, in 1913, the British Fire Prevention Committee's proposed standards of fire resistance, submitted at the International Fire Prevention Congress in London in 1903, classified as (1) Temporary Protection; (2)Partial Protection, and (3) Full Protection, were adopted. The Gypsum Industries' Association, on April 6, 1914, formulated proposed "Standards of Fire Resistance," which not only follow the British principles, but include in these proposed standards the required heat, time and water tests for the full, partial and temporary protection of roof construction, vertical inclosures and the protection of steel members. Tables were prepared from the evidence gained from tests upon gypsum and the standard requirements for all materials as adopted by the American Society for Testing Materials and the National Board of Fire Underwriters. According to the British principles, temporary protection implies resistance against fire for at least three-quarters of an hour; partial protection implies resistance against a fierce fire for at least one hour and a half; full protection implies resistance against a fierce fire for at least two hours and a half.

In deciding upon any material for fireproofing the following should be the required conditions:

Low Conductivity of Heat

This is an important factor and one of the strongest points in favor of gypsum. The calcination report made by the National Board of Fire Underwriters showed that a six-inch block of gypsum, subjected for four hours to a temperature of 2,200 degrees Fahr., had a temperature of 1,980 degrees one inch back from the face of the fire; 1,255 degrees two inches back; 315 degrees three inches back; 223 degrees four inches back; 211 degrees five inches back from the face of the fire; and at the back face, or opposite side of the block, the temperature was only 208 degrees, thus only nine and one-half per cent. of this great heat passed through the six inches of gypsum in four hours.

The reason for this remarkable resistance to heat is due to the chemically combined water of crystallation, which is about 20 per cent. by weight. The heat breaks up these crystals and liberates the water, the process being slower as the heat penetrates further into the gypsum. As long as there are any water crystals in the gypsum to be broken up, the material will not warm appreciably above the temperature of boiling water.

Low Amount of Expansion

There is no appreciable expansion in gypsum when exposed to high degrees of temperature. In the fireproofing of buildings, this is a very important feature, because expansion tends to disrupt or destroy the structure or material by buckling, and in steel frame construction this feature becomes a very serious consideration.

Incombustibility

Gypsum and gypsum plasters are incombustible.

Lightness

Since it is generally conceded that every pound of material added to the weight of a building which is not necessary for strength or stability is detrimental to the structure, the use of the lightest materials for fireproofing should be encouraged, resulting in a saving in the sizes of steel members, the foundations, and the cost.

Strength

The Chicago Board of Fire Underwriters' test of June 22, 1910, made at the Chicago laboratories, on 18 full-size three-inch gypsum partition tile, selected at random from 50 samples, showed an average crushing strength of 12,603 pounds to the tile, or over an average area of 90.2 square inches the average crushing strength was 139.7 pounds. As the weight of this tile is about 0.28 lb. per square inch on bedding surface, a non-bearing partition of gypsum would have to be about 500 feet high before it would crush of its own weight.

Adaptability

Gypsum is peculiarly adaptable to any form of construction requiring careful fitting and setting. When used in slabs or tile, these are easily sawn or cut to fit any desired location. The same material can be delivered on the work in plaster form, which requires merely to be mixed with water, after which it can be poured into forms like concrete for the construction of monolithic floor, roof systems or steel protection.

Water Effect

The Underwriters' Chicago tests showed that thoroughly saturated specimens absorbed about nine pounds of water, or 34 per cent. by weight. These saturated tile, when crushed, showed a strength equal to over 33 per cent. of the dry specimen, and when these tile were allowed to dry in the air at ordinary temperatures and then crushed, the average strength compared with tile that had never been soaked was 98.7 per cent., practically a return to the original strength of the material.

Corrosion

The corrosion of metals, protected or unprotected, is still a debatable question, but so far investigation seems to confirm the growing opinion that any attack upon metals covered with the commercial plasters of to-day is just as likely to be due to acids contained in the protective coatings, improper galvanizing or coating, or to exposure to atmosphere or moisture.—V. G. Marani.

* From Journal of Cleveland Engineering Society.

Six-Room Houses of a Desirable Type

The plans shown on the opposite page are of houses erected by Messrs. Livingston & Maerker, on Morley Avenue, Toronto. The group of three are of brick veneer construction, and the front and sides, above the first floor, are of stucco and paneled. This gives an excellent appearance and breaks up that "sameness" so common in certain districts.

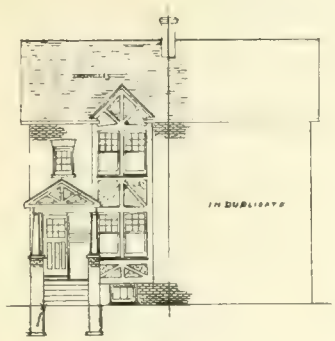
There is a grade entrance at the rear approaching the cellar and, in the case of the centre house, the yard is reached through an entrance to the basement at the front.

The total cost of these three dwellings, exclusive of land, was $4,800.

Pair Cost $3,800

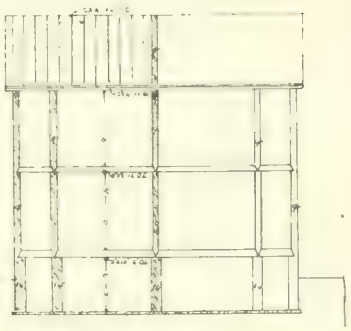
The pair of houses shown cost $3,800 to build. They are of red solid brick construction and built on brick foundations. Like the other three, the gables are stuccoed and paneled on top and sides.

Both are equipped with warm-air furnaces and wired for electric light. The basements have concrete floors.



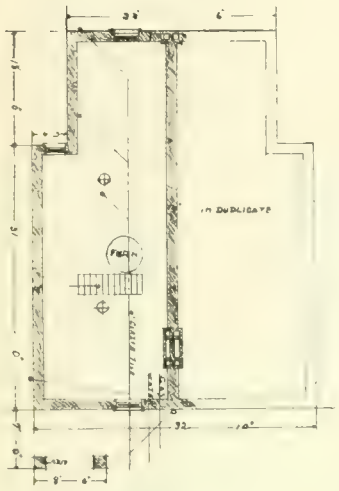
FRONT ELEVATION

SIDE ELEVATION

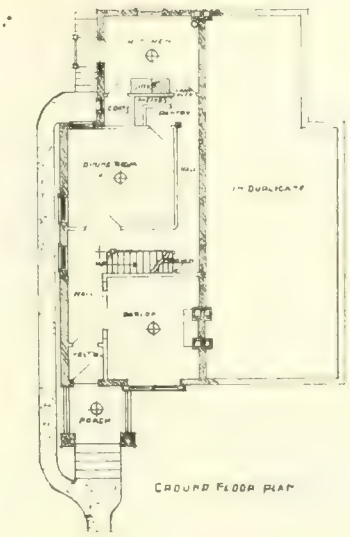


SECTION

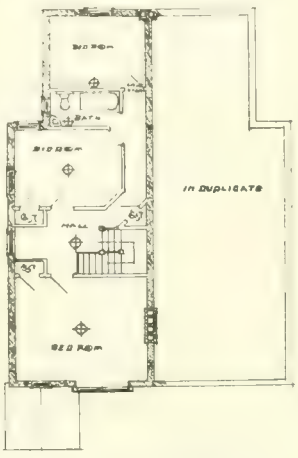
SCALE ⅛ INCH TO FOOT



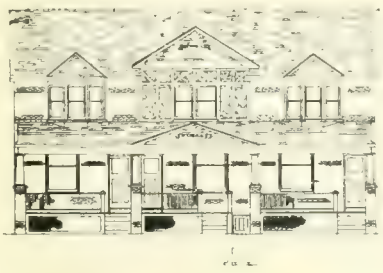
BASEMENT PLAN



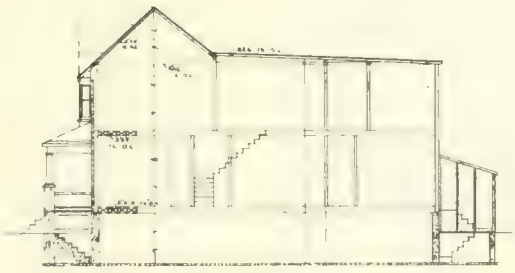
GROUND FLOOR PLAN



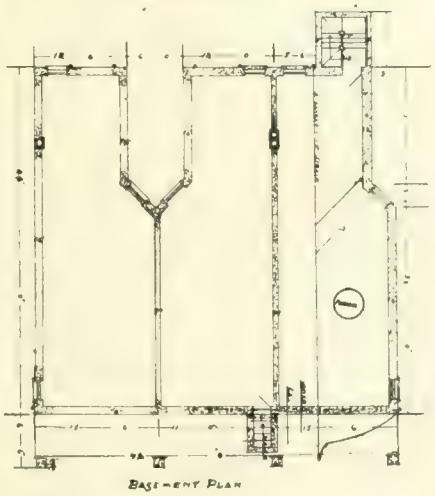
FIRST FLOOR PLAN



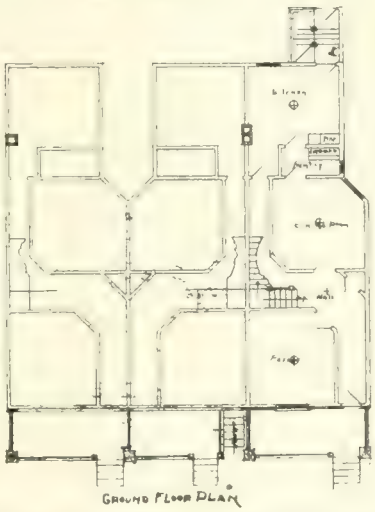
FRONT ELEVATION



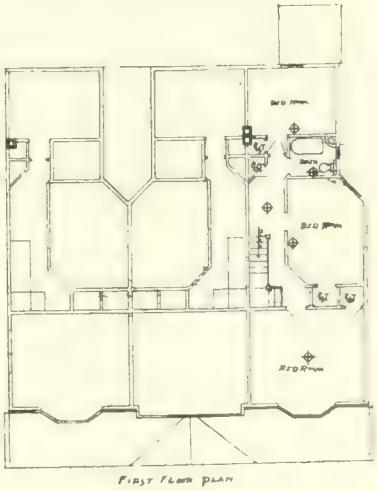
CROSS SECTION



BASEMENT PLAN



GROUND FLOOR PLAN



FIRST FLOOR PLAN

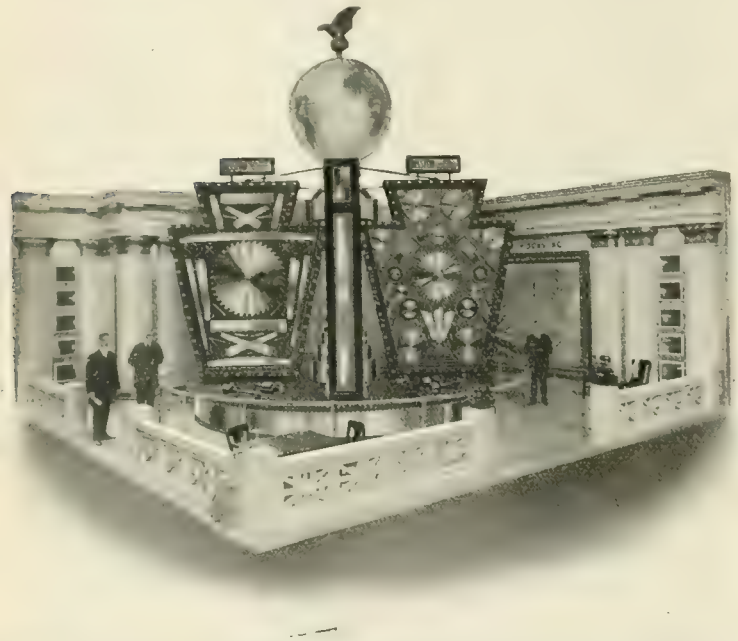
Dwellings erected by Messrs. Livingstone & Maerker on Morley Avenue, Toronto.

"Art Kraft" Embossed Metal Shingles

The Sarnia Metal Products Co., Sarnia, Ont., has issued a catalogue dealing with the "Art Kraft" embossed metal shingles. The advantages of these shingles are pointed out, an important feature being that they are waterproof and that they are indestructible. Illustrations show these metal shingles, ridge finish, porch flashing, gable end finish, etc., made in galvanized iron, painted iron, tin, and copper. Readers of The Canadian Builder & Carpenter will find the catalogue of considerable interest.

Stationary Vacuum Cleaners for Residences

Stationary vacuum cleaners for residences have been placed on the market by Jas. J. Martindale, 159 Richmond St. West, Toronto. These are the "Tuec," manufactured also in the United States by the United Electric Co. The Tuec system consists of an air tank with necessary motor-operated fan, installed in the basement, and a system of piping installed between the studding, leading from the tank to various parts of the house. These systems may be installed in houses already built or in a new house. As many vents may be made as desired, and hose connections may be made wherever there is a vent. The cleaner is put into operation by pressing an electric button.



Display of Henry Disston & Sons, Philadelphia and Toronto, at the Panama-Pacific Exposition, San Francisco. This display is to commemorate the 75th anniversary of the house of Disston in the saw business. Included in the exhibit are saws for every use, files, plumbs and levels, bricklayers' and plasterers' trowels, squares, bevels, mortise gauges, screwdrivers, machine knives, barker, chipper, molding, leather splitting, paper trimming, cane and cloth knives and machetes are also displayed.

A catalogue giving full information has been prepared by Mr. Martindale, and will be sent to readers of The Canadian Builder & Carpenter on request.

Advertising "Build Now and Save Money"

The Stinson-Reeb Builders' Supply Co., Montreal, have issued a number of stickers (stamp size) supporting the "Build Now" movement, containing the following prominently displayed in the centre of the stamp: "Build now and save money." Below is a statement which suggests the use to which these stamps may be put by builders securing a supply of these or stickers.

Another set of stickers issued by the Stinson-Reeb Builders' Supply Co. is that showing various buildings in which their materials are used. These are very attractive, are printed in colors, and are 2 x 2¾ inches in size. For instance one shows the Canadian Bank of Commerce Building, Montreal, in which "Flawless" hardwall plaster has been used; another, Fort Garry Hotel, Winnipeg, in which "Medusa" waterproofing has been used; etc.

Sarnia Metal Products Co. Open Toronto Office

The Sarnia Metal Products Co., Limited, Sarnia, Ont., has opened an office in Toronto to handle the business in that city and vicinity. Mr. George W. Britnell, vice-president of the Toronto Builders' Exchange, has been appointed to manage the Toronto office.

Mr. Britnell needs no introduction to the building trade of this vicinity. He has been connected with the Exchange in Toronto for several years and is well known throughout the locality.

News of Builders' Exchanges

Toronto Exchange Members in a Shooting Competition

The McGregor-McIntyre Co., of Toronto, have formed a Home Guard from the employes of the firm, and the company has fitted up several miniature ranges and presented the men with rifles.

On Saturday, April 24, about ten members of the Toronto Builders' Exchange spent an enjoyable afternoon at the plant of the McGregor-McIntyre Co., and held a shooting competition with a team from that firm.

The result was a bad beating for the Exchange members, but they promise to do better the next time. Jim McKenzie was top man for the builders.

New Exchanges Being Organized

Mr. A. E. Flower, secretary of the Toronto Builders' Exchange, and Mr. T. R. Wright, president of the exchange at London, recently visited Sarnia, Ont., with the idea of forming a builders' exchange in that city. The meeting was well attended and both Mr. Flower and Mr. Wright pointed out the benefits to be derived from a builders' exchange. The result was that a committee was appointed to draw up by-laws and elect officers.

Mr. Flower also spoke on the Workmen's Compensation Act. He laid particular stress on the new amendments, especially those appertaining to the building industry, which have been secured through the efforts

of the Provincial Association of Builders' Exchanges.

Mr. Geo. Gander and Mr. Flower assisted in the reorganization of the Galt exchange.

Ladies' Night at the Toronto Exchange

On April 9 the members of the Toronto Exchange held a "Ladies Night," when a pleasant evening was spent in euchre and dancing. The large room was tastefully decorated for the occasion and, to talk like the Society Editor, the floor was in perfect condition.

Handsome prizes were given to the winners at cards, Mrs. Jack Robinson receiving a Crown Derby plate and Mr. Jewry a nickelplated set of coat and trouser hangers in a case.

An impromptu dance was held on April 23, when about 30 couples had an enjoyable evening.

New Exchange to be Established at Guelph

As a result of organization work, conducted by Messrs. Flower and Gander, of the Toronto Exchange, a builders' exchange is to be formed at Guelph. Mr. Flower and Mr. Gander visited Guelph for the second time on April 26, and a committee was formed to draw up a set of by-laws and make other arrangements for the formation of an exchange.

Montreal Exchange Members Visit Mount Royal Tunnel

On April 22 the members of the Montreal Builders' Exchange and their friends paid a visit to the new Canadian Northern Railway tunnel through Mount Royal. Mr. S. P. Brown, managing engineer for Mackenzie & Mann, conducted the party through and showed them the machine shops and other points of interest.

Building Conditions Improving

That the building trade in Canada is not by any means stagnant is evidenced by the fact that the manufacturers of the Elliot woodworking machine have been working to the limit of their capacity since the first of the year. While many manufacturing concerns, particularly those engaged in the manufacture of machinery, have been compelled, through various circumstances, to cut down their staff of workmen, such has not been the case with this particular concern; in fact, the Elliot company has taken on extra hands and double shifts are being worked in order to fill the demand for their machines. This fact speaks for itself. While conditions in any county or district are largely judged by building operations, in the larger centres, where there are so many of a pessimistic frame of mind, you hear the expression "Trade is fierce," in the somewhat smaller centres business is going on as usual, as if there was no world war.

In this connection, it might be mentioned that the Elliot manufacturers are now turning out a machine that has several improvements on the Nos. 1 and 2 now on the market. Perhaps the main feature of this new machine is the index plate on the top of the board. This allows of the machine swinging around in a complete circle, makes it more rigid, and permits of it being set to any degree. Then, too, all the work can be done from one position; a man does not need to travel from one side to the other and all the boring is done from the front instead of from the back.

Another feature is the tilting work table, which permits of work being ripped on the bevels. Work up to six inches thick can be cut with ease.

Further information may be had from the Elliot Woodworker Co., Limited, Toronto.

Nova Scotia Town Planning Act

A Town Planning Act has been passed into law in Nova Scotia. Under the Act a Local Town Planning Board must be appointed in every urban and rural municipality, and a town planning controller has to be appointed for the whole province. No street can hereafter be laid out, nor any subdivision made unless the plans are approved by this board. Within three years every board must either prepare a town planning scheme or a set of town planning by-laws with the following minimum requirements:

(1) The distance between buildings to be not less than 60 ft. and up to 100 ft. on opposite sides of existing streets, both in respect of new buildings and reconstructed buildings, and to be not less than 80 ft. on new main thoroughfares, whatever the width of the street.

(2) Land to be reserved for new main thoroughfares not less than 60 ft. in width, and provision made for allowing narrow streets of from 24 ft. to 40 ft. where not required for through traffic.

(3) The number of dwellings to be limited on each acre, all windows of dwellings to have adequate light and air, separate areas to be prescribed for dwellings, factories, stores, etc.

Improved woodworking machine manufactured by Elliot Woodworker, Limited, Toronto.

Price List of Building Materials—Revised to Date

EDITOR'S NOTE—Great care is exercised in obtaining prices for this department. They are as accurate as it is possible for us to make them. We know, however, that because of varying conditions, different dealers' prices are bound to vary somewhat; and our purpose in publishing this department is to give readers an idea of prices, rather than absolutely definite information.

In some cases a range of prices appears. This is given to cover the variation in quotations given by different dealers, and also to cover slight variations in conditions of measurement or purchases, which space will not permit us to specify in detail.

We will be glad to give readers prices on materials not appearing here (hardwood flooring and hardware trim for instance), and also the names of dealers from whom such materials can be obtained. Such information will be supplied promptly if you write us specifying in detail what is desired.

PRICE AT MONTREAL

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	$24.00
2 x 4 in. to 2 x 12 in., 16 ft.	26.00
2 x 4 in. to 2 x 12 in., 18 ft.	28.00 to 30.00
1 in. hemlock No. 1	22.00
No. 1 hemlock decking	23.00 to 25.00
No. 2 hemlock dimensions and 1 in.	26.00 to 30.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough	$32.00 to 40.00
2 in. white pine, mill stock	29.00 to 33.00
⅞ x 8 and 10 in. pine shelving	36.00 to 45.00
⅞ x 12 pine shelving	42.00 to 50.00
No. 1 white pine flooring	40.00
No. 1 spruce flooring	30.00
No. 1 pine decking, D2S	40.00
No. 1 pine V. or beaded sheeting	40.00
No. 2 pine V. or beaded sheeting	30.00

Pine Trim for Paint Finish

4 in. casing, per 100 ft.	$1.75
5 in. casing, per 100 ft.	2.10
8 in. pine base, per 100 ft.	3.25
10 in. pine base, per 100 ft.	4.20
4 in. pine window stool, per 100 ft.	2.75

Shingles, Lath Roofing, Etc.

No. 1 pine lath	5.00
No. 2 pine lath	4.50
No. 1 spruce lath	4.00

Cedar Posts—Fence

5 in. at small end	5c. foot
7 in. at small end	7c. foot

Hardware

Nails, wire, common	$2.30 base keg
Nails, cut, common	2.50 " "
Sash weights, cast iron	1.50 per 100 lbs.
Tarred felt paper	.43 roll
Building paper	.35 roll

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	17.00
No. 1 dry pressed buff bricks	21.00
Red stock bricks	11.50
Grey stock bricks	12.00
Wire cut brick for foundation work	10.00
Fire brick	25.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	15c. foot

Price at Montreal—*Continued*

Cement, Plaster, Stone, Etc.

Cement (bags extra)	1.90 bbl.
Sand, for cement or brick work	.95 ton
Lime	.38 per 100 lbs
Hydrated lime	10.00
Mortar color	5.00 bbl.
Plaster of paris	2.35
Crushed stone 2 in.	1.40
Crushed stone, 1 in.	1.60
Crushed stone, ⅜ in.	1.75
Hardwall plaster	$9.50 to 12.00 neat 6.50 sanded ton
Gravel	1.35 yard
Hair (plaster)	.03 per lb.

PRICE AT TORONTO

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	$21.00 to 29.00
2 x 4 in. to 2 x 12 in., 16 ft.	21.00 to 29.00
2 x 4 in. to 2 x 12 in., 18 ft.	24.00 to 30.00
1 in. hemlock No. 1	22.00 to 26.00
No. 1 hemlock decking	24.00 to 28.00
No. 2 hemlock dimensions and 1 in.	18.00 to 23.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough	$25.00 to 33.00
2 in. white pine, mill stock	29.00 to 34.00
⅝ x 8 and 10 in. pine shelving	33.00 to 40.00
⅞ x 12 pine shelving	45.00 to 48.00
No. 1 white pine flooring	34.00 to 37.00
No. 1 spruce flooring	27.00 to 32.00
No. 1 pine decking, D2S	26.00 to 31.00
Spruce decking	27.00 to 32.00
No. 1 pine V. or beaded sheeting	35.00 to 39.00
No. 2 pine V. or beaded sheeting	30.00 to 33.00

No. 1 Common Yellow Pine

2 x 4 in. to 2 x 14 in., 10 to 16 ft.	$24.00 to 36.00
2 x 4 in. to 2 x 14 in., 18 to 20 ft.	29.00 to 38.00
2 x 4 in. to 2 x 14 in., 22 to 24 ft.	31.00 to 40.00

Yellow Pine Finish

4/4 x 6, 8, 10 and 12 B. & B. smoke finish	$41.00
5/4 x " " " "	45.00
6/4 x " " " "	45.00
8/4 x " " " "	45.00
4/4 x " " " steam finish	45.00 to 50.00
5/4 x " " " "	48.00 to 50.00
6/4 x " " " "	48.00 to 50.00
8/4 x " " " "	50.00 to 55.00

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

Price List of Building Materials—*Continued.*

Price at Toronto—*Continued*

Pine Trim for Paint Finish

4 in. casing, per 100 ft.	$1.80 to 2.00
5 in. casing, per 100 ft.	2.00 to 2.50
8 in. pine base, per 100 ft.	2.75 to 3.25
10 in. pine base, per 100 ft.	4.00 to 4.50
4 in. pine window stool, per 100 ft.	3.00

Hardwood Trim, Flooring, Etc.

Quotations will be given on request.
See editor's note above.

Shingles, Lath Roofing Etc.

XXX B. C. cedar shingles	$3.35 per M
N. B. extras	4.00
No. 1 pine lath	5.00 to 6.00 per M
No. 2 pine lath	4.75 to 5.00
No. 1 spruce lath	4.25
Roofing	1 ply—$1.60 per sq.
	2 ply— 2.00 "
	3 ply— 2.40 "

Cedar Posts—Fence

5 in. at small end	.25 each
7 in. at small end	.50 each

Hardware

Nails, wire, common	$2.35 cwt.
Nails, cut, common	2.95
Sash weights, cast iron	2.00
Tarred paper	.60 roll
Building paper, plain	.50

Glass

United inches	Star	D.D.
Up 25 (per 100-ft. box)	$6.50	8.60
26-40	$7.00	10.00
41-50	7.40	11 70
51-60	8.00	12.00
61-70	8.75	12.75
71-80	9.50	13.85
81-85	10.50	17.50
86-90		18.85
91-95		19.20
96-100		22.75
101-105		32.00
106-110		36.00

Less 20 p.c. F.O.B. Toronto.

Wired glass	18c. to 20c. per sq. ft.

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	$14.00 to 18.00 pr M
No. 1 dry pressed buff bricks	14.50 to 18.00
Red stock bricks	10.00 to 12.50
Sand lime brick	8.50
Grey stock bricks	10.50 to 12.50
Sewer brick	8.75 to 9.50
Wire cut brick for foundation work	8.00 to 9.00
Porous terra cotta bricks	12.00 to 15.00
No. 1 enamelled bricks, all colors, from	80.00 to 150.00
Fire brick	26.00 to 30.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	16c. foot
Verandah post caps, 16 in.	1.45 each
Verandah post caps, 20 in.	1.75 "
Chimney caps, 1 flue in 1 piece	2.00 "
Chimney caps, 2 flues in 2 pieces	3.50 "
Chimney caps, 3 flues in 3 pieces	5.00 "

Cement, Plaster, Stone, Etc.

Cement (bags extra)	$1.85 bbl. (1.55 in car lots)
Sand, for cement or brick work	1.20 a yard
Lime	.38 cwt.
Hydrated lime (Canadian)	10.60 ton
Hydrated lime (American)	11.60 "
Mortar color	black, 3; red, 2
Plaster of paris	$1.50 to 2.50
Crushed stone, 2 in.	1.20
Crushed stone, 1 in.	1.25
Crushed stone, ⅝ in.	1.25
Hardwall plaster	9.10
	5.00 sanded
Gravel	1.50
Hair (plaster)	.07 lb.

Price at Toronto—*Continued*

PRICE AT WINNIPEG

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	$29.00
2 x 4 in. to 2 x 12 in., 16 ft.	29.00
2 x 4 in. to 2 x 12 in., 18 ft.	29.00

Shingles, Lath Roofing, Etc.

XXX B. C. cedar shingles	$4.00 & 3.50 per M
No. 1 pine lath	5.75 per M
Metal lath	.16 to .20
Roofing felt (2-ply)	2.50 per roll

Hardware

Nails, wire, common	$3.70 per keg
Nails, cut, common	3.70
Sash weights, cast iron	2.75 cwt.
Tarred felt paper	1.00 per roll
Building paper	.75
Insulating paper	1.25

Glass

United inches	Single	Double
Up 25	$6.00	8.00
26-40	6.50	9.00
41-50	7.00	10.25
51-60	7.50	11.00
61-70	8.00	11.75
71-80	8.50	12.75
81-85		15.75
86-90		16.75
91-95		17.75
96-100		21.00
101-105		23.50
106-110		27.00

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	$25.00 to 50.00
No. 1 dry pressed buff bricks	30.00 to 40.00
Red stock bricks	25.00
Sand lime brick	12.00
Porous terra cotta bricks	18.00 per M
No. 1 enamelled bricks, all colors, from	100.00
Fire brick	52.50
Oriental brick	35.00
Sewer pipe, 4 inch	.11 per ft.
Sewer pipe, 6 inch	.18½ per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	$2.60 per bbl.
Sand, for cement or brick work	1.85 a yard
Lime	.34 per bu.
Hydrated lime	12.00 per ton
Mortar color	.05 per lb.
Plaster of paris	.75 per bag
Crushed stone, 2 in.	2.65 per yard
Crushed stone, 1 in.	2.90

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

Professional Directory

Architects, Engineers, Patent Attorneys, Etc.

Price List of Building Materials—*Continued.*

Price at Winnipeg—*Continued*

Crushed stone, ⅜ in.	2.90
Hardwall plaster	13.00 per ton
Gravel	1.85 per yard
Hair (plaster)	1.25 per bale

PRICE AT VANCOUVER

Shingles, Lath Roofing, Etc.

XXX B. C. cedar shingles	$2.20 & 2.10 per M
No. 1 pine lath	2.25 per M

Hardware

Nails, wire, common	$3.25 per keg
Nails, cut, common	4.25
Tarred felt paper	.90 per roll
Building paper	.70

Price at Vancouver—*Continued*

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	$42.00 per M
No. 1 dry pressed buff bricks	42.00
Red stock bricks	13.00
Fire brick	45.00
Sewer pipe, 4 inch	.25 per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	$3.00 per bbl.
Lime	1.35 per bbl.
Hydrated lime	4.25 per bbl.
Plaster of paris	4 50 per bbl.
Hardwall plaster	14.50 per ton
Hair (plaster)	14.50 per ton

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INDEX TO ADVERTISERS