

Iron Company shipped 882 tons of water pipe and six tons of specials.

**GALT, ONT.**—John Scott has let the contract for remodelling the opera house block. The Canadian Office & School Furniture Co., of Preston, will supply the seats.

**PICTON, ONT.**—The contract for seating First Methodist church has been let to the Globe Furniture Co., of Walkerville, price \$2,600; interior finish will be in white oak. Power & Son, Kingston, architects.

**TORONTO, ONT.**—The Board of Control have accepted the tender of the Toronto Fence & Ornamental Iron Works Co. for elevator enclosures for the new city hall, at the price of \$8,450. A Cleveland company tendered \$100 above this figure.

**HAMILTON, ONT.**—The contract for the extension of the radial railway to Port Nelson has been let to W. I. Degear, of Grimsby. The contract for sewers on Hughson street, Hunter street and West avenue has been given to J. J. Armstrong, at 28, 38 and 39½ cents respectively.

**MONTREAL, QUE.**—H. R. Falbord, architect, has accepted the following tenders for the erection of a residence on Esplanade avenue, corner Rachael street, for James Stewart: Excavating and masonry, Martineau & Prenoveau; brick-laying, Ovil Chamberland; carpenter and joiner's work, Damien Lalonde; roofing, David Ouimet; plastering, Stephen Gosselin; painting and glazing, Napoleon Desjardins; plumbing, heating and tin-smithing, David Ouimet; iron work, Dominion Bridge Co.; cost \$6,500. The same architect has let contracts as follows for five private residences to be built at corner Western avenue and Prince Albert street, Westmount, for Charles Depocas: Excavating, drainage and masonry, Godfroi Guilbault; carpenter and joiner's work, Damien Lalonde; plastering, Stephen Gosselin; iron work, Dominion Bridge Co.; other trades not let; cost \$20,000.

#### PUMPS FOR CONTRACTORS' USE.\*

As much loss is often occasioned through the employment of pumps of a type and construction unsuited to the duty they have to perform, a few notes on the selection and management of those particularly adapted to contractors' purposes may be of service. In view of the rough usage which a pump usually meets with in contracting work, the first points to be desired in its construction are strength and simplicity, with freedom from liability to

\* J. L. Crathorne, in the Contract Journal.

breakdowns. For this reason, the more complicated pumps, such as the direct-acting, duplex, and compound steam-pumps, are to be avoided, except where the pump is to be fixed permanently and where great economy of fuel is desirable.

**CENTRIFUGAL PUMPS.**—First in the list of contractors' pumps must be placed the centrifugal. Where considerable quantities of water have to be expeditiously lifted to a moderate height, this pump is unrivalled, and will work with water containing an amount of gritty and solid matter which would quickly choke up those pumps which depend on valves in their action. Sand, gravel, leaves, and even small pieces of wood will pass through a centrifugal pump without affecting its working. The action of this pump is briefly as follows: A number of curved blades forming a circular fan are attached to a spindle, which is rapidly revolved in a cast-iron case. The revolution of the blades produces a continuous partial vacuum, which is filled up by the water coming through the suction pipe; as the blades sweep round, the water is forced through an opening into the delivery pipe. The action of the blades being continuous, a constant stream of water is expelled. Belting is usually employed to transmit power from the motor to the pump, though a high-speed engine is sometimes coupled direct to the spindle in the larger sizes. As regards construction, the blades of the pump should be of steel, not cast or malleable iron, which is sometimes used for cheapness, as the fan being, in the latter case, cast in one piece, it is difficult to obtain a perfect balance. Owing to the high speed at which these pumps are run, the accurate balancing of the fan is of great importance; should the blades be ever so little out of balance, centrifugal action is set up and the bearings and spindle are rapidly worn away—this also applies to the driving pulley. The standards which support the bearings are best cast on to the bed plate, instead of bolted to it as in the former case; the bearings cannot get out of line when once properly fitted. The spindle should be of steel, running in bearings of ample length, provided with adequate means of lubrication.

To facilitate inspection and cleaning, one side of the pump is usually removable; handholes should also be provided. Recent experiments tend to show that the water is best admitted at the tips of the blades, thereby reducing the churning action or eddy friction in the pump. Though the centrifugal pump will work with a suction up to 18ft. or 20ft., a moderate lift is to be preferred—say, 6ft. to 8ft. The quantity of water discharged increases as the lift decreases. In addition to lifting, centrifugal pumps will force the water to a moderate height with economy—say, 12ft. or 15ft., beyond which another type of pump is to be preferred. When it is required to start the pump the suction pipe has to be filled with water, as it will not draw until the water reaches the blades. This "priming" may be accomplished either by pouring water through a plug in the pump case, or a small air-exhauster driven from the spindle may be employed.

(To be Continued.)

The style of the Canadian Office & School Furniture Co., Preston, Ont., has been changed to the Canadian Office & Furniture Co.

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