New Montreal Locomotive Works.

The shops of the Locomotive and Machine Co., of Montreal (Ltd.), were expected to be completed by Sept 1. The shops are located about two miles east of Montreal, on a strip of land between the St. Lawrence river and the Montreal Terminal Ry. A large wharf and pier is to be built along the river so as to increase the shipping facilities. This will give a through water route to Europe as well as connection with the Great Lakes system of this continent.

The ultimate capacity of the works will be about 300 locomotives a year. The company will also do a general business in machine and structural work, steel buildings, bridges, roof trusses, etc.

All the steel work has been manufactured on the ground, and the design and erection has been under the direct supervision of M. J. Butler, Chief Engineer. A temporary shop containing the machinery for handling the structural material has been built. Most of the building material was bought in Europe. The duty rates were largely responsible for this, although the fact that material could be obtained quickly was also a determining fac-The duty between the United States tor. and Canada on steel shapes weighing less than 35 lbs. per yard is 35 cents per 100 lbs., and on shapes weighing 35 lbs. per yard or over, the duty is 10% of the value of the material. Between England and Canada there is a preferential duty one-third less than that above noted. It is also interesting to know that the duty between Canada and the United States is 60 cents per 100 lbs. on all sizes. These rates make it advantageous for Canadians to purchase raw material in England, and it also gives Canadian builders a chance to compete with builders in other parts of the British Empire.

The plant consists of a machine shop about 420 ft. x 132 ft., a foundry 220 ft. x 65 ft. 5 in., a boiler shop 380 ft. x 67 ft., an erecting shop 340 ft. x 66 ft., a smith and forge shop 340 ft. x 66 ft., a two-story pattern shop 109 ft. x 63 ft., a pattern store house 109 ft. x 63 ft., and a power house 105 ft. x 71 ft. A structural shop about 310 ft. x 198 ft. is also to be built. It is also intended, at some future date, to build a steel castings shop. The general store house and offices are at the southern end of the grounds.

The machine shop, boiler shop, foundry, erecting shop and smith shop are arranged in a group—the machine shop extending north and south, and the other shops connecting with it to the west. The machine shop is arranged so that the several departments are close to the shops from which the material is sent. For instance, the frame department is at the south end of the machine shop, close to the smith shop, and the cylinder department is at the north end of the shop close to the foundry. The power house has a central location.

A large reservoir is at the north end of the property, and the drainage from the roofs of all the buildings flows into it. A 1,000 gal. pump is in the engine house and furnishes the water supply to the several buildings—the suction pipe coming from the above-mentioned reservoir. A rotary pump having a capacity of 700 gallons a minute is placed near the St. Lawrence river, and is run by a motor. In dry weather this pump draws water from the river and delivers it to the reservoir. Drinking water is obtained from an artesian well.

The area (in square feet) of the several principal buildings, is given by the following table:

Machine shop	· •	•	•	• •	·		• •	•	•	• •	• •	·			•	• •	55.440
Erecting shop		•					• •									• •	22,440
Foundry	÷.,						,										14.388
Boiler shop						٠											25,460
Smith shop																	22.440

The machine shop is by far the largest department, while the boiler shop is next in size. It will also be noted that the area of the erecting shop is relatively small. This large surplus of machine shop area was purposely provided, the feeling being that delays can usually be traced to the machine shop. A surplus of erecting pits is a useless expense unless the machine shop and other departments are able to furnish material as quickly as it can be assembled.

POWER HOUSE.—The power house is divided into two parts by a 2 ft. partition wall. The boiler room is 50 ft. x 74½ ft. inside, and the engine room is 49 ft. x 67 ft. The boiler room contains four 250 h.p. boilers, set in two batteries of two each. The boilers are fitted with underfeed stokers, and an induced draft system is used. The boilers were made in Glasgow, Scotland. They are designed to operate at 200 lbs. pressure, and are provided with superheaters which deliver steam at a temperature of about 450 deg. F.

The engine room contains one 18 in. and 34 in. x 42 in. compound condensing engine. It is belted to a 400 k.w. direct current generator. The three-wire system is used, giving two voltages of 110 and 220 respectively. Surplus power is supplied by the Montreal Light, Heat & Power Co., and a motor generator set has been installed in the engine room for transforming and stepping down the high potential a.c. current from the power company's line. Two air compressors will be installed. They will have capacities of 2,000 ft. and 1,250 ft. a minute respectively. MACHINE SHOP.—The machine shop is 420

ft. long, and is divided longitudinally into two bays, each 66 ft. wide. The clear he under the roof trusses is about 29 ft. The clear height The trusses are 8 ft. $4\frac{34}{4}$ in deep at the centre. The roof of each bay is surmounted by a monitor running the length of the shop. Ádditional overhead lighting is obtained from skylights placed at intervals in the roof. Each bay is traversed by a 10-ton electric travelling crane, having a span of 62 ft. 81/2 The crane runways are supported on in. brackets riveted to the supporting columns. The general design of the steel work for all the buildings is practically the same. In addition to the traveling crane, there are about 26 jib cranes, with air hoists distributed throughout the shop. The capacity of these hoists range from 1,500 lbs. to 8,000 lbs.

FOUNDRY.—The foundry is 220 ft. x 65 ft. 5 in. A 15-ton crane having a span of 40 ft. serves the molding floor. The inside runway of this crane is supported on steel columns. Air blast is supplied from a structural steel pressure blower running at a maximum speed of 1,990 r.p.m. The blower is driven by a 60 h.p. motor, running at 675 r.p.m. The brass foundry is at the east end of the building on the second floor.

BOILER SHOP.— The boiler shop is 380 ft. x 66 ft. 10 $\frac{1}{2}$ in., and is served by a 20-ton electric travelling crane having a five-ton auxiliary hoist. The span of the crane is 63 ft. 5 $\frac{3}{4}$ in. The riveting tower is at the east end of the shop. The rails rest on 10 in. x 10 in. timber sleepers. Standard gauge tracks run along each side of the erecting pit. The paint shop is on an elevated floor at the east end of the building. The shop is served by two 60-ton electric travelling cranes having each a span of 65 ft. 6 $\frac{3}{4}$ in. The general details of the steel work are the same as those of the other shops, except that the clear height under the trusses is 42 ft. 9 in.

SMITH AND FORGE SHOP. — This shop is 340 ft. x 66 ft. $4\frac{1}{2}$ in. The shop is not provided with a travelling crane, but has a liberal supply of air hoist jib cranes, which cover practically the entire floor area.

There are altogether about 100 Westinghouse motors throughout the shops, ranging from 5 to 60 h.p. All lathes and small tools are arranged in groups approximating 20 h.p. each. All large and isolated tools have an individual motor drive.

There are a number of interesting tools being furnished these shops. The 84 in. x 84 in. x 36 in. planer is arranged to have a 32 h.p. motor mounted on top of the housing.

The 24 in. crank-pin lathe weighs about 7,-250 lbs. Both the back gear and triple gear are at the front of the lathe, thus bringing all stresses on the bottom of the bearings. The ratio of back gearing is 8.52, and the ratio of the triple gearing to the face plate is 31.8. The carriage is 34 in. long and has two plain block rests, with clamping bolts for the tools. Each rest has a separate cross feed, operated either by hand or power, thus enabling the operator to cut both from the back and front of the work, each cut supporting the other.

Another interesting machine is the large vertical miller. It is claimed to be the largest vertical milling machine ever built for locomotive work, and is intended mainly for the guide yoke work. A stack of guide yokes can be clamped on this table and finished without resetting. The crane, which is provided, swings on the centre of the spindle. The carriage of the machine is 60 in. in diameter over tee slots. The machine will admit work 24 in. high, and the carriages have a cross feed of 65 in., and an in-an-out feed of 50 in. The spindle is counter-weighted and can be quickly adjusted. The shipping weight of the machine is about 60,000 lbs.

The fans for the heating apparatus are in a wing to the machine shop. The air is delivered to underground ducts, and the discharge pipes have three openings, discharging upward and along the sides of the walls respectively.

The company is capitalized at \$1,000,000, and has the following officers: M. J. Haney, President; J. T. Davis, Vice-President and General Manager; R. T. Shea, General Superintendent; M. J. Butler, Chief Engineer, and D. Shirrell, Mechanical Engineer.

We are indebted to R. T. Shea, General Superintendent, for the details of the above description.—Railroad Gazette.

Grain Shipments from Montreal.-The lake shipments of corn for the port of Montreal have increased considerably in the past few weeks. For a longer period-during the first seven months of the present year-over 9,000,000 bushels of wheat and almost 4,000,ooo bushels of corn have passed through the port of Montreal, as against a trifle over 1,000,000 bushels of wheat and 4,000,000 bushels of corn through the port of Boston. This gain at this Canadian exporting port is due almost entirely to the action of the Dominion Government in making the Canadian canals free. Grain can now be shipped from Chicago to Montreal for export to Liverpool 3 cents a bushel cheaper than it can be routed by part-rail part-lake through Boston. When it is known that a fraction of a cent a bushel will divert all the grain that can possibly go through a port, the advantage that Montreal has over American ports will be readily seen.

The Toronto Ry. Co. has installed magnetic switches at several of the junction points, which are reported to be operating successfully. These switches will obviate the necessity of employing men at the junctions to shift the points.

A new steamboat line is to be established between Ottawa and Rockland, Ont., by Alphonse Prevost, of the latter place, who has purchased a passenger-freight steamer for \$4,000.

Mackenzie, Mann & Co. are reported to be negotiating for the purchase of the Cape Breton Ry., which has been completed for 30 miles from Point Tupper to St. Peters, N.S.

The Hamilton, Ont., city council has signed the new agreement with the Bell Telephone Co.