

The lean-to portion of melting house is divided into three floors in height. The ground floor is used for bulk storage of minerals used in the making of steel, fireclay, brick, etc., and for repair shops. The first floor, which is level with charging platform, is used for storage of minerals in small quantities in bins, for use at the individual furnaces, space for rebricking furnace roofs, and narrow gauge tracks to each furnace for conveying scrap from scrap shed. On the second, or top floor, are placed the service transformers, and transformers and electrical recording and regulating instruments connected with the furnaces.

Directly south of and adjoining the melting house, is the scrap shed, 608 ft. in length, 80 ft. in width, being constructed of timber with a triangular Howe type truss of 80 ft. clear span. This shed is covered on the outside with galvanized, corrugated iron, it being necessary to cover scrap to facilitate handling with a magnet in winter. The building has a capacity of about 12,000 tons of scrap.

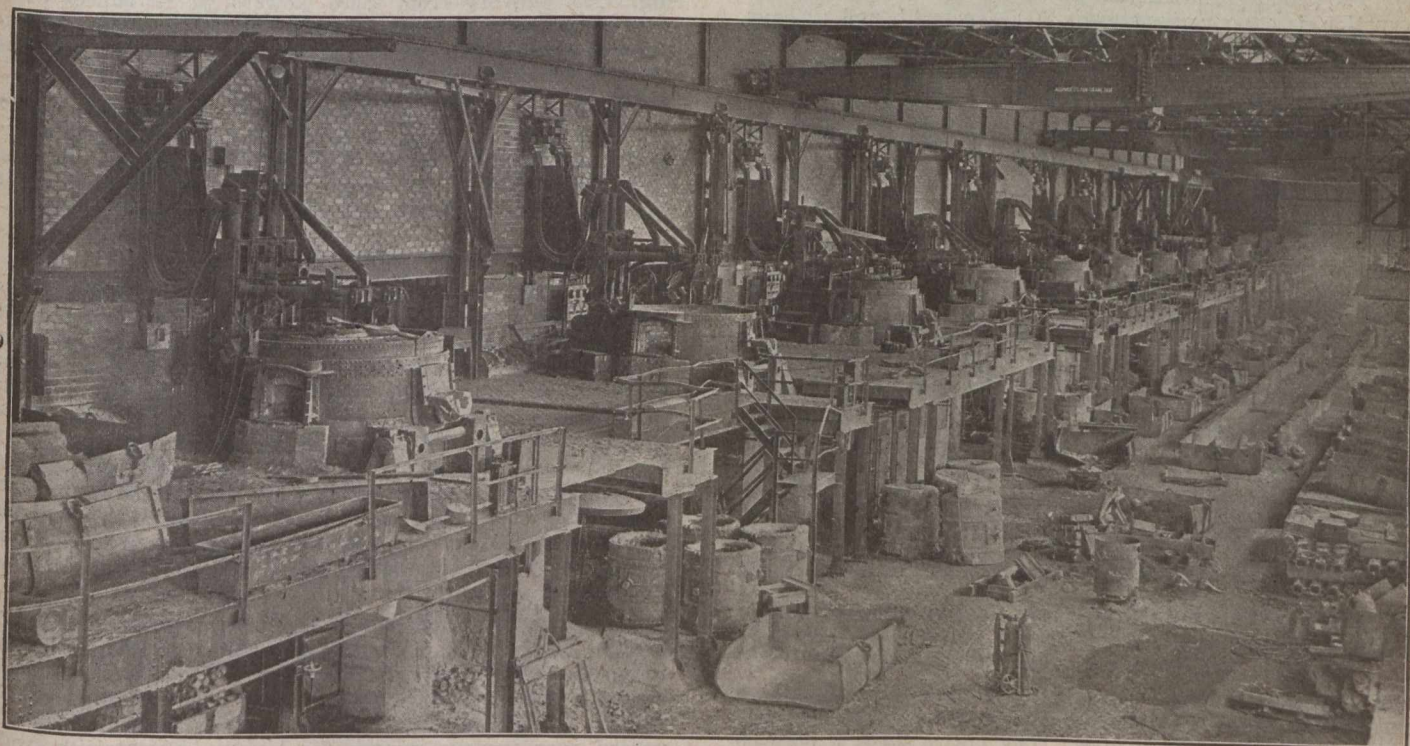
All of the cranes are supported by independent columns, bearing directly on the concrete and pile foundations.

On the pouring floor, or pit, are located jib cranes used for stripping the ingots from the moulds, and the necessary smaller equipment.

The regulation of the furnace is accomplished automatically by means of the Thury regulators, which are common to this type of furnace, and mounted in the transformer room, while the indicating instruments and winch operating controllers are mounted behind the furnaces which they serve. This automatic regulating equipment produces a uniformly constant current at the electrodes, subject to control by the operator in charge.

Each furnace is equipped with three electrodes 17 ins. in dia., supported by water-cooled copper holders, which are in turn supported by an arm at right angles to the mast, each holder being thoroughly insulated electrically from the arm.

The furnace electrodes are raised and lowered by means



BATTERY OF TEN ELECTRIC FURNACES AT BRITISH FORGINGS, LTD., TORONTO

On the north side of the melting house is placed the moulding shop, which is of ordinary frame construction, 100 ft. in length by 40 ft. in width. On the east end are located two core drying ovens, each 36 ft. by 14 ft.

The entire building is provided with standard gauge tracks to provide for incoming material and to convey slag and refuse to the dumps.

Steel Plant Equipment and Operation

There are 10 electric furnaces, each of 6 tons capacity, of the Heroult 3-phase type. They are constructed with a steel plate shell, the sides and the arched roof being lined with silica brick, while the bottom is lined with magnesite brick. Each furnace rests on two trunnions, which are supported by concrete piers on concrete and pile foundations. A brick-lined steel pan is provided under each furnace to protect the tilting mechanism against accidental bursting of the furnace shell. Jib cranes are provided to handle the electrodes and to facilitate general furnace repairs.

The main portion, or melting house proper, is equipped with five overhead electric travelling cranes, with main hoisting capacities of from 15 to 25 tons, each provided with an auxiliary hoist of 5 tons capacity.

In the scrap shed are two 10-ton electrically operated travelling cranes, each equipped with one 55-in. electro magnet used for unloading scrap from the freight cars and elevating same to the charging floor.

of a motor-operated hoisting mechanism or winch, the motors in turn being controlled by the regulator.

The electrical energy supplied is 13,000 volts, 3 phase, 25 cycle, coming through six feeders connecting the plant with the Hydro-Electric sub-station at Strachan Ave.

During the entire period of the war the plant was used exclusively for the manufacture of shell steel and forgings. The operation in melting house was generally as follows:—

Steel scrap turnings and borings from the various shell machinery plants in the Dominion, were shipped to this plant and deposited in the scrap shed before referred to, or in stock piles on the ground, in different convenient points. The E.O.T. cranes in scrap shed lifted, with the magnets, and deposited this scrap into hoppers, which in turn discharged into small dump cars running on narrow gauge tracks, over the weighing scales, to the sides of each furnace. It was dumped on the floor and shovelled into the furnaces by hand. The process of reducing this to a molten state, and the required chemical composition by the addition of various ferro-alloys and fluxing materials, takes about 3½ to 4 hours per heat. When this has been accomplished, and a test made, the portion of floor directly in front of the furnace is raised by a counter weight, and the ladle brought directly under the spout of the furnace, where it is held suspended by an E.O.T. crane. The furnace is then tilted and the molten metal is poured into the ladle, which has been preheated by a