the casting ladle, thoroughly draining the furnace, and then cast into ingots, when the next charge was added and the operation repeated as described above.

A full report describing the entire operation at this plant of all the heats made would be very lengthy.

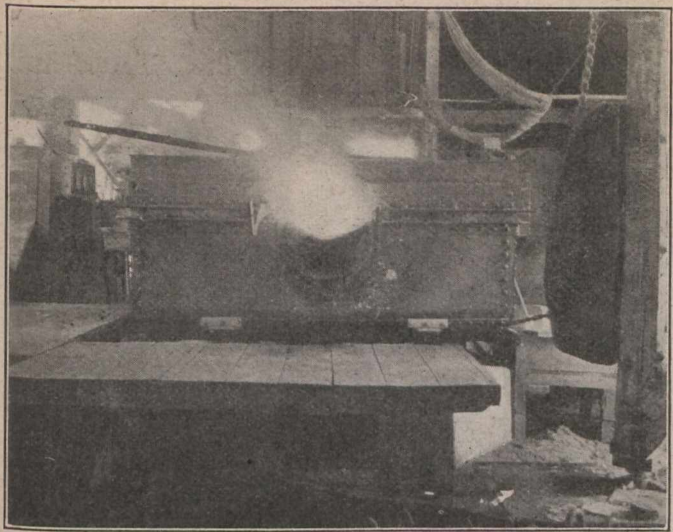

FIG. 3—FURNACE IN OPERATION.

During the making of the first ten or twelve heats no attention was paid to getting definite results, but the first runs were for the purpose of familiarizing the men with the process and the furnace operation, and also to ascertain the best methods of charging, refining, etc.

Some of these heats were made with the material in the form of bricks, which were being preheated in the stack of the furnace before charging, and while this method did not give the best results in every respect, it is believed that the future operation of a large plant would be along these lines, or along the lines of preheating the mixture without briquetting, because from a theoretical standpoint, this method is ideal, making use, as it does, of the waste heat of the furnace for a partial reduction of the material.

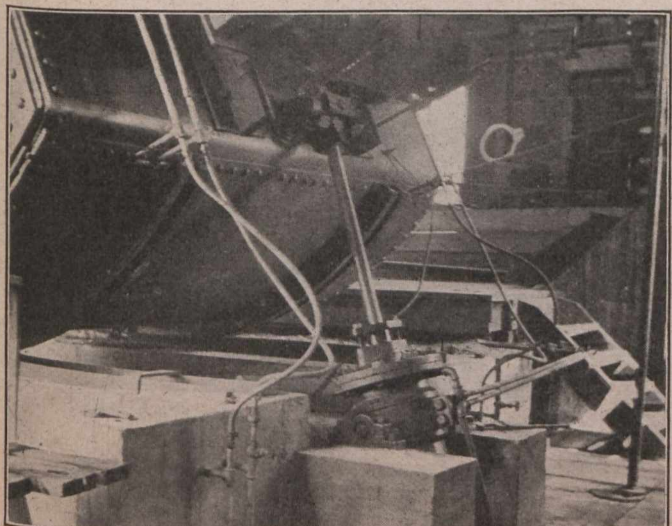

FIG. 4—FURNACE TIPPING ARRANGEMENT.

The best results obtained came from the method of charging loose material into the furnace in bulk; these results proved beyond a doubt the commercial possibility of the process for making steel from a mixture in which a large quantity of ore is used, and it leaves the possibility for still better records, when proper arrangements are made for a preliminary treatment of this mixture by the waste heat of the furnace before charging.

An average of the second half of the run in which the material was charged in bulk, as above described, gave a result that proves conclusively that one gross ton of steel can be easily made for one-quarter of an electric horsepower year.

An average of the same heat proved that the electrode consumption would be less than 50 pounds of electrodes per gross ton, and the yield of the metallic contents charged into the furnace, owing to its non-oxidizing atmosphere, is better than that obtained in the regular open hearth practice.

In making steel by this process, and laying aside entirely the fact that it is a commercial proposition, owing to the low cost of production, the results obtained in the quality of steel made were more than satisfactory. It must be borne in mind that the largest part of the material from which this steel is made is iron in its native state, in the form of ore, and that when this material is mixed with granulated pig iron all of the metallic contents come direct from the native

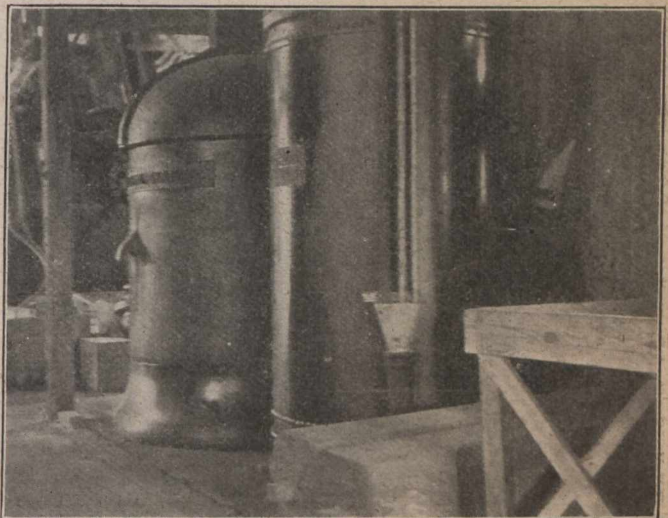

FIG. 5—TRANSFORMER ROOM.

iron. The physical qualities of the steel thus made are in every respect superior to steel made by the regular process of scrap and pig, even when the chemical analyses are about the same.

Then the high heat in the electric furnace permits of a better condition for refining and pouring. In a number of heats made at this plant, in which the sulphur and phosphorus in the mixture were above 0.2, these in the steel were almost eliminated, a result that it would be impossible to bring about in the regular open hearth practice.

Mr. Horace W. Lash, the president of The Canadian Lash Steel Process Co., Ltd., is a steelmaker of national reputation, and for years has been closely associated with the steelmaking world; he is vice-president of the Garrett-Cromwell Engineering Co., of Cleveland, Ohio, Mr. Lash has spent four years perfecting this process in an experimental way before these tests were made, and the results of the tests have proven beyond a doubt that the Lash process is in every respect a commercial proposition. Particularly is this so for Canada, which country is greatly blessed with numerous water powers, and an abundance of magnetic iron ore, which