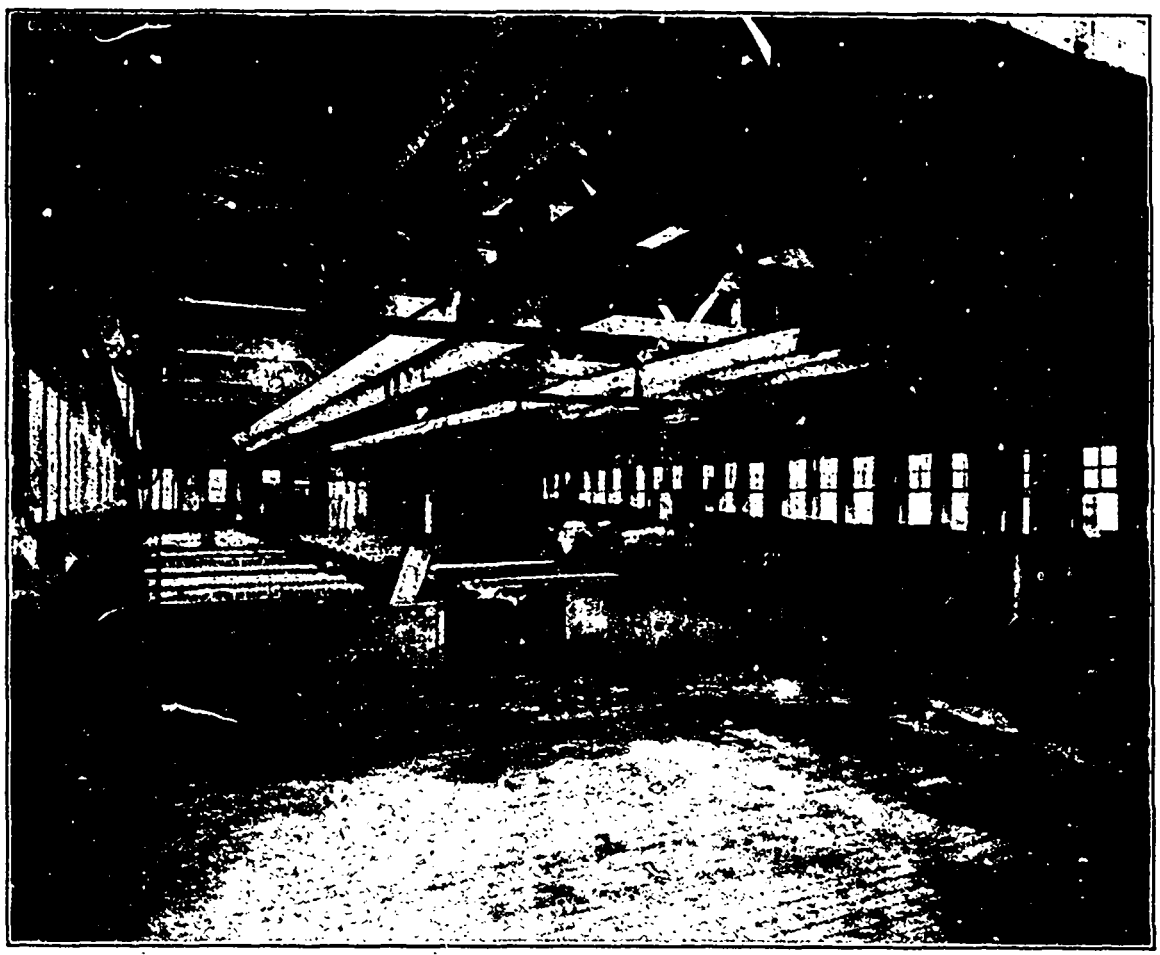
high brick smoke stack. These several buildings together cover two acres, which area is enclosed by a high board fence topped with four barbed wires.

Illustration No. 2 gives an interior view of the melting room, the dimensions of which are about 60 by 120 ft. The bars of bullion are delivered here after having been sampled at the smelter. On the left are the two 30-ton melting kettles, the nearer one at present used for pig lead and the other for bullion. It is intended to shortly put in a 50-ton kettle for pig lead and use both the smaller kettles for melting the bullion. The melted bullion is pumped by a steam pump from the melting kettle to the anode moulds, four of which are placed at a time on a mould carriage. Each anode contains about 350 lb. of bullion. After casting, the anodes are placed on cars, ten on each car, the spacing between the anodes being similar to that in the electrolytic depositing tanks, so that the whole carload may be picked up by a carrying device and placed directly in the tank. Cars loaded with anodes, ready for removal to the tank room, are shown in the background of the illustration.

The dimensions of the tank room, which originally contained the whole of the refinery appliances as at first operated, are about 60 by 170 ft. The two rows of electrolytic depositing tanks shown on the right of illustration No. 3 comprises the 28 tanks put in when this industry was inaugurated here; the other two rows, containing 44 tanks set lower, are a later addition to this portion of the plant. The tanks are made of 2-in. cedar, bolted together and thoroughly painted with rubber paint. Each tank is 86 in. long, by 30 in. wide by 42 in. deep, and each receives 20 anodes of lead bullion which is refined by the Betts electrolytic process. This involves the dissolution of the lead contained in the bullion or anode, and its precipitation upon a cathode by electrolysis, which is a chemical change induced by the passage of a current of electricity through a chemical compound in solution. The solution used as an electrolyte contains lead fluosilicate with an excess of fluosilicic acid. It is prepared at the refinery by the simple solution of quartz in hydrofluoric acid, with the subsequent addition of lead carbonate or white lead. The anodes are suspended in the tanks; each has an area of 26 by 33 in., exposed to the electrolyte on each side. The anodes may contain any or all of the elements—generally about three per cent of these impurities—



No. 3.—Canadian Smelting Works, Trail B. C.
Tank Room, Showing Electrolytic Depositing Tanks.