charging car is to be placed on the furnace feed floor. Electric power is being substituted for steam in the machine shop. The flue dust chamber has been extended 200 feet, and other additions and improvements have been made to keep pace with the steadily increasing demands that are being made upon the capacity of these important reduction works.

In view of the successful operation of the works as at present constituted during the past year the following description from the official records of the superintendent, Mr. A. W. B. Hodges, will doubtless prove of interest:

The power-house, which is within 1,000 feet of the smelter building and about 100 feet below it, is 117 feet long and 30 feet wide. All the batteries are built on one long concrete foundation. The power for the blowers, to overhaul one battery. By this arrangement they are practically equal to duplicating engines. A single roinch turbine wheel developing 40 horse-power net is directly connected with one Westinghouse four-pole lighting generator of 22.5 kilowatts capacity at 125 volts. This is for lighting the entire plant and is selfcontained.

One single 13-inch horizontal turbine water-wheel, which will develop 55 horse-power, is belted to a triplex pump of a double-action type, having a guaranteed capacity of 750,000 gallons each 24 hours, against a maximum pressure of 100 pounds to the square inch, or against a 200-foot head. This pump will furnish water and pressure to granulate the slag as it runs continuously from the furnaces and was built by the Stilwell-Bierce & Smith Vaile Co., Dayton, Ohio.



THE GRANBY SMELTER-FURNACE-FEEDING ROOM.

sampling works, etc., is furnished by a duplicate set of 16-inch turbine water-wheels, operating under an effective head of 45 feet to develop 240 horse-power. These are mounted in pairs on horizontal shafts and are cased in a steel flume mounted on beams. These wheels are connected with the flume by a steel intake pipe, 4 feet 6 inches in diameter, and discharging into a single draft tube, 16 feet long, set  $45^{\circ}$  downward inclination. The wheel used is the New American, made by the Dayton Globe Iron Works.

These two pairs of turbines are each directly connected with one Westinghouse alternating - current generator, having a capacity of 108 kilowatts at 250 volts. During the day all are in use, running at three-quarters capacity, but they are so arranged that one battery will run the works during the night, giving an opportunity

The original smelter plant consisted of two doubledecker, steel-jacketed furnaces, 160 by 44 inches. The total height of the furnace, from the charge to the furnace floor, is 14 feet. The jackets come within 18 in. of the charge floor. These furnaces were designed and guaranteed to smelt 500 tons per day. The actual capacity has greatly exceeded this amount, the average being about 600 tons, and often exceeding 700 tons. The furnaces are set in a building 10 x 104 feet, and are 39 feet apart from centre to centre. The downtakes of the furnaces are connected with the big flue chamber 10 x 10 feet on the inside, and 800 feet in length. The stack is 11 x 11 feet, inside measurement, and 153 feet high. The blower room is 50 x 58 feet, and is 12 feet from the furnace building. It contains three No. 8 Connorsville blowers, one for each furnace, and one in re-