

round laminated internally projecting fields, 36 in number, thus giving a frequency of 60 p. p. s.

The exciter consists of one 20 k. w., 125 volt, form "H" generator, running at 385 revolutions per minute, being directly connected to its wheel shaft similarly to the alternator. This method of connecting the exciter to a separate wheel is a comparatively new feature in engineering practice, possessing many valuable features

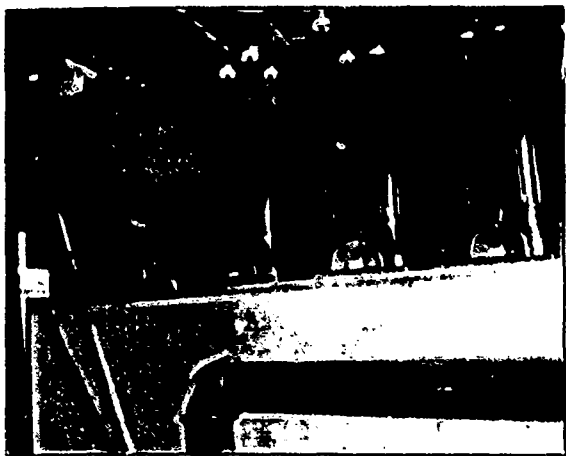


FIG. 4.—STEP-UP TRANSFORMERS IN POWER HOUSE.

over the usual method of belting from the generator shaft, and one the success of which will be watched with some interest. The exciter has capacity for exciting four machines similar to the one now in use, so that when the present equipment is doubled there will still be a large reserve of exciting power. A view of the generator and exciter is shown in Fig. 2.

The low tension switch-board, as shown in Fig. 3, is placed directly in front of the generators, so that the attendant has everything in plain view and within easy reach without having to move from the board. The board is of polished blue Vermont marble. Each panel, of which there are three at present installed, is in one piece, 80 inches high and 30 inches wide, this size enabling a very pleasing and symmetrical distribution of the apparatus contained. There is mounted on the boards the usual equipment of instruments and switches, the former of the Inclined Coil type, finished in black oxide, the latter being single-pole and quick-break for the heavier currents and of the ordinary double pole type for the smaller circuits. The three panels as installed control the generator, the exciter and the low tension side of the step-up transformers. When the capacity of the plant is increased three more panels will be added, one each with the additional machine and exciter, and one for the synchronizing instruments and paralleling switches which will then be necessary. The low tension transformer switches are arranged so that any one of the three transformers can be instantly cut out of service without in the least affecting the operation of the system; thus even should they be supplying a 24-hour service they can be regularly inspected and cleaned without danger to the attendant. Provision is also made on the board so that when the plant is increased either machine can be run separately on either set of transformers or all can be run in parallel.

All the low tension wiring is carried under-ground in conduits placed in the cement floor and covered by iron checker plate, this keeping all leads out of the way and free from liability to damage, at the same time giving

facilities for inspection not excelled by overhead open work.

The three step-up transformers (Fig. 4) are rated at 135 k. w. each and give a pressure of 11,000 volts to the line. They are of the Canadian General Electric Company's standard air blast type, the primary and secondary windings being so arranged with ventilating blocks between that a very large radiating service is presented to the air blast provided by the blower, and thus the weight and floor space are both kept within very moderate limits; they run very cool under even heavy overloads, and the efficiency is high.

The blower is of the Buffalo Forge Co.'s standard low pressure type, 50 inches in diameter, and, like the exciter, is capable of delivering about four times its present output. It is driven by a two horse-power 500 volt induction motor, placed on the floor level. The blower stands on top of the air chamber similarly to the transformers, the discharge being down into the air chamber, which is of ample dimensions to allow the transformers being inspected and cleaned without difficulty.

The high tension panels, two in number, are placed close to the transformers, in order to keep down the amount of high tension wiring necessary. One contains six s. p. snap break switches, separated by marble barriers and controlling the transformer primaries, being connected so that any transformer can be cut off the line instantly if necessary. The other panel contains ground detectors of the astatic type, which are permanently connected to the line, and thus give a continuous indication of the state of its insulation. The high potential board is shown in Fig. 5.

The lines from the high tension panel ascend vertically to a wire cupola placed in the centre of the roof, going through its walls in heavy porcelain tubes to a cross arm bolted to the wall, and from there directly to the first pole. The eaves of the cupola are extended so as to



FIG. 5. HIGH POTENTIAL SWITCHBOARD IN POWER HOUSE.

thoroughly protect the lines from any wet or dirt and the point where they pass through its walls. This cupola also contains the lightning arresters, of the Wirt type, one for each line, each consisting of a number of 2,000 volt arresters connected in series.

THE POLE LINE.

The transmission line, fourteen miles in length, runs from the power house for about three-quarters of a mile