valves handling high pressure steam are extra heavy. Two branches supply the steam header in the engine room, and valves are provided to cut off a part of the plant in case of accident.

The electric generating plant has a rated capacity of 497 K.W., and consists of two 186 K.W., one 75 K.W. and one 50 K.W. units. Fig. II. shows a view of part of the engine room. The generators are compound wound, have interpoles, and are of the three-wire direct current, 115-230 volt type, with static balancers capable of compensating for a 25 per cent. unbalance of the load. These machines are designed to carry full load continuously with a temperature rise not to exceed 35 deg. C., to carry 50 per cent. overload safely for two hours, and to with-

stand a momentary overload of 100 per cent. Heavy duty non-condensing engines are direct connected to these generators, and the large units operate at 200 R.P.M. and the small ones at 275 and 290 R.P.M. One of the large units is operated during the day shift, and furnishes current for power, including the elevators and for lighting.

Low tension current for the operation of the fire alarm, the emergency vault lights, and all the call bells in the building is furnished by two direct current motor-generator sets, each having a capacity of 50 amperes at 20 volt. There are also two storage batteries, each having a capacity of 200 ampere hours on the eight-hour rating, which are operated in conjunction with the motor-generator.

Fig. III. shows the main switchboard located in the engine room. The pressure gauge panel is mounted as an extension of the switchboard. The entire board is constructed of white Italian marble two inches thick, and is 21 feet long by

7 1-2 feet high. The equipment of the board contains all necessary instruments, and switches to control the generating equipment and the distribution of the current to the various service panels throughout the building. The power circuits distribute 230 volt current to panel boards, from which branches extend to the motors operating the various services. The lighting is operated upon a three-wire system from the switchboard to the distribution panels, where the branch circuits are balanced between the neutral bus bar and the positive and the negative buses.

There are 31 motors, having an aggregate of 528 horse-power, in the building, and there are about 1.400 lighting outlets including the receptacles in the base boards. All of the wiring for lighting and power, and the greater part of the low



FIGURE III. MAIN SWITCHBOARD.

tension and telephone circuits are enclosed in steel conduits, in accordance with the Underwriters' rules for the highest class of construction.

Steam for heating is distributed through an overhead system, consisting of mains in the attic and risers in the walls of the building. All of the building except the savings department on the ground floor and the main banking room is heated by 17,000 square feet of direct steam radiation, operated on a vacuum system. All offices have the temperature automatically controlled by vapor disc thermostats located upon interior walls or columns and operating the diaphram steam inlet valves on the radiators. The drain connection to each radiator is equipped with a vapor disc type of thermostatic trap, which allows all water and air to escape to the return piping, but holds all the steam back in the radiator.



Two 8 and 12 x 12 inch vacuum pumps, shown

FIGURE IV. VACUUM CLEANER, BOILER FEED AND HOUSE PUMP.