panels, in addition, control the outgoing high-tension lines. Mimic bus connections, and the indicating lamps on the board assist the operator. The recording meters are placed on panels in the rear of the main board. The second switchboard is used only for station service, and controls the main lighting, the motor generator, the battery charging, the crane, the battery, and pump circuits. Illumination is secured by means of incandescent lamps connected to three phases of the 110-volt station circuit. Every third light is wired in such a manner that by means of a no voltage release switch on the service switchboard, these lamps may be quickly thrown over to the battery circuit in case alternating current energy is off.

The water used for cooling the transformers is obtained from wells with auxiliary connections to the city of Niagara Falls and Ontario Power Company's systems. The water, after passing through the transformer coils, is carried to a sprinkling cooling tank, which is an open concrete basin, 6 feet in depth, in two sections, each 30 by 60 feet, with the top just above the ground level. The water is delivered to the basin through sprinklers designed to reduce the temperature of the water, and located some distance above the surface. Duplicate motor-driven pumps are installed for operating this system. The duplicate oil tanks are also installed in the basement, the capacity of each is slightly greater than the oil capacity of one transformer. The transformers are provided at their tops with oil blow-offs piped to a main, running into the "bad" oil tank, which is provided with an oil sealed blow-off and a valve at the bottom for draining purposes. Oil filters and dryers are installed between the tanks, and the oil, after being filtered, is pumped back into the "good" oil tank. An oil pump is also provided for pumping pure treated oil to an "intermediate" oil tank placed on the main floor at an elevation that permits the oil to be drawn into any of the transformers by exhausting the air from the cases by a specially installed motor-driven air compressor and vacuum pump which is pumped to the different transformer cases. This equipment may be operated as a vacuum pump for drawing oil into the case, or as a compressor for pumping in air to assist gravity in emptying it. The high-tension oil switch tanks are connected by pipes to a switch oil tank in the basement, also connected to the oil filter.

All stations in the system are equipped with similar oil and air circulating systems. The water system is varied in the different stations to suit local conditions, but in such case duplicate pumps are provided unless the station is connected to the local mains. The construction room is located near the end of the building, and contains a 45-ton traveling crane, with electric hoist, hand bridge and trolley travels. The control room is situated near the erection room in an enclosed gallery overlooking high-tension switch and erection rooms. From this gallery the operator has an unobstructed view of the erection and high-tension switch rooms. Eventually, the erection and control rooms will be located in the centre of the building, and 344 feet long by 50 feet wide.

The high-tension switch room extends along one side of the building, contains all the high-tension transformer lines, disconnecting switches and high-tension busbars.

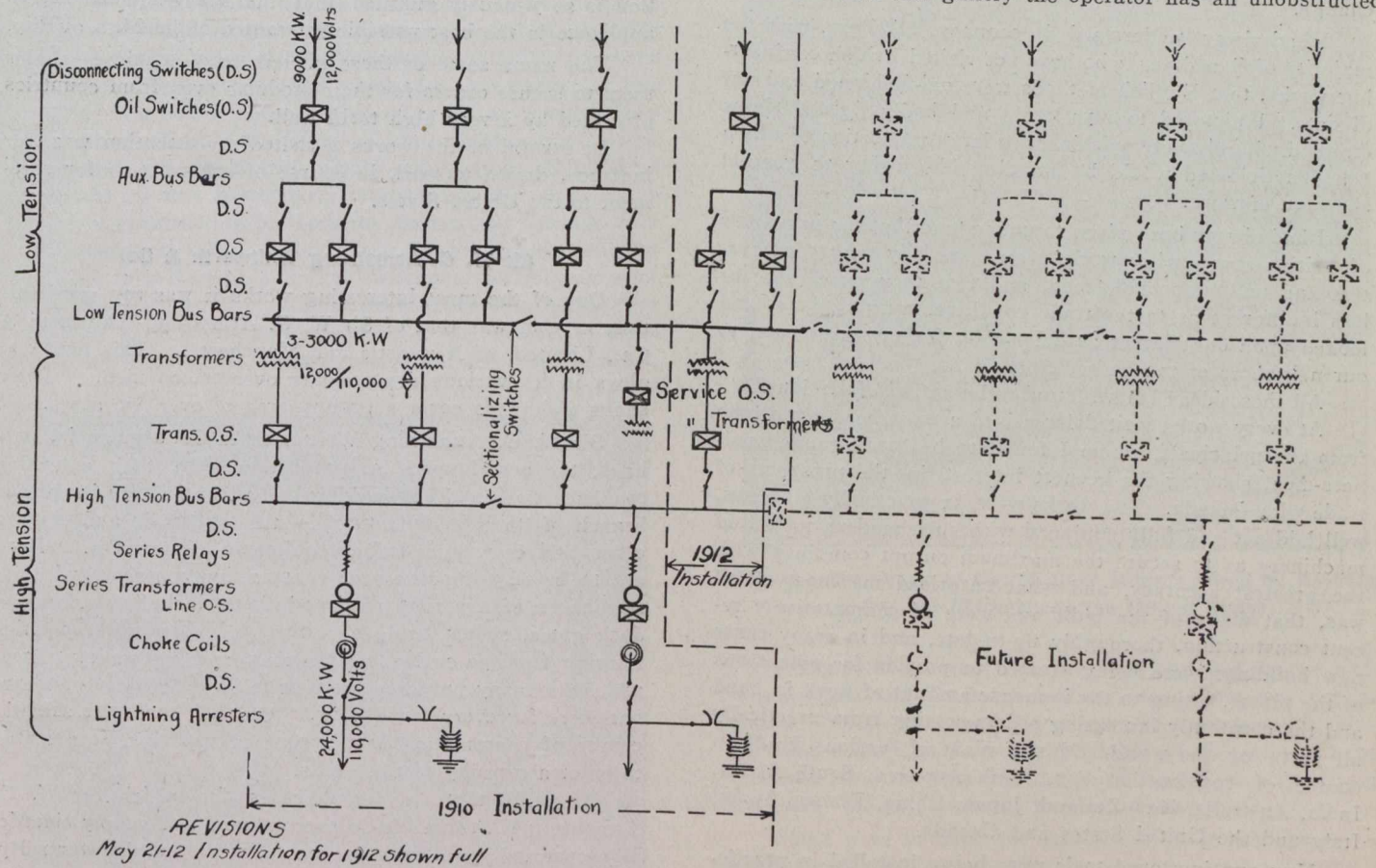

Fig. 24.—Wiring Diagram of Niagara Station.

A wrecking expedition is now at work over the hulk of the old ship Pewabic which sank in Thunder Bay nearly fifty years ago. The vessel is one hundred and sixty feet below the surface and in order to allow the diver to work at this depth a device known as the iron man is being used. It is known that the Pewabic carried over four hundred tons of copper and it is planned to bring this to the surface, a couple of hundred pounds at a time on days when the lake is calm. The use of the iron man is expected to work a revolution in deep water work. The divers are connected by telephone to the surface.