Filtered oil is stored under vacuum in tanks and dispensed to the transformer by pumps which are immersed in oil and sealed to allow for a small induction of air into the oil. Excess oil passes through high-capacity cellulose filters before returning to the raw oil tanks. This oil system can deliver over 500 gpm of fine oil to the assembly floors.

A special laboratory houses a spiral-type surge generator consisting substantially of four posts with capacitors arranged between the posts which spiral to a height of approximately 30 ft. This large generator is capable of surging through a transformer an amount of electricity equivalent to a bolt of lightning.

An Elliott 2000-kva, 3-phase, 240-cycle synchronous motor-generator set has been installed for induced testing of completed transformers. Accurate adjustment of generator voltage over a wide range is obtained by the use of a constant-voltage pilot exciter with a separately-excited, adjustable-voltage main exciter, together with a potentiometer type rheostat and a vernier rheostat in the main exciter field circuit.

The control equipment includes a three-frame 5-kv indoor Multumite switchgear structure manufactured by the I-T-E Circuit Breaker Company. One frame houses the induction motor protective equipment and includes 1200-ampere, 100,000-kva interrupting capacity, 3-pole air circuit breaker; 2-element thermal motor overload protective relay; 3-element instantaneous overcurrent elements for system short-circuit protection; undervoltage protective relay; and single-phase ammeter with 3-phase selector switch. One frame houses the generator control equipment and includes Triplex ammeters and voltmeters for the a-c generator output and d-c ammeter, d-c voltmeter, and circuit breaker for the generator field circuit. The potential transformers for both motor and generator circuits are housed in drawers in the rear of this frame. One frame houses the generator protective equipment and includes a breaker similar to the electrically-operated air circuit breaker mounted in the motor protective frame except suitable for 2400-volt, 3-phase 240-cycle service; direct-current overcurrent protective relays are used in series with solenium rectifiers for 240-cycle operation. Overtemperature protection for motor and generator stator windings and bearings are provided by means of temperature detector elements in the machines and auxiliary relays and indicating lights on the switchgear. The temperature circuits are so arranged that a critical temperature in either the bearings or stators will cause the generator field breaker to trip open and thus remove the load from the a-c generator; the lights provide visual indication of the fault.

New and enlarged facilities include a new magnetics laboratory, an electrical laboratory with instrument calibration, a chemical laboratory, and a mechanical research department.

LIGHT'S DIAMOND JUBILEE

THIS YEAR, the entire electrical industry celebrated the seventy-fifth anniversary of the first successful electric light.

It is not easy to realize that those of us who have reached 75—indeed, most of us who have passed 50 years—were born into a world illuminated by gas or kerosene.

Of course, the succession of scientific miracles that such people have seen in their lifetime is nearly incredible. But none of them, certainly, exceeds in importance the development of practical uses for electricity, and practical devices to generate it, distribute it, and put it to work.

It was in 1879 that Thomas Edison created his electric lamp—a carbonized filament which burned in a vacuum. By 1882 he began operation



of the Pearl Street Station in New York City, the first "central station" for the large scale commercial generation and distribution of electricity.

The Elliott Company's electrical divisions, Ridgway and Crocker-Wheeler, both had their beginnings within 10 years of the construction of this pioneer central station. Both divisions contributed significantly to the early development of electric motors and generators. Between them, they were active in the initial electrification of such diverse industries as steel, coal, printing, and street railways, as well as in the development of electrical street lighting.

We're proud of our modest contributions to the fabulous growth of the use of electricity. This year, along with our fellow electrical manufacturers, we join the country's utility industry in a salute to the past and a hope for the future. This hope is well expressed in the emblem above which identifies Light's Diamond Jubilee—"*Light for Freedom . . . Power for Progress*"