

TRANSACTIONS
OF THE
AMERICAN INSTITUTE
OF
ELECTRICAL ENGINEERS

JULY TO DECEMBER, 1920.



VOL. XXXIX, PART II

PUBLISHED BY THE
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
33 WEST THIRTY-NINTH STREET
NEW YORK, N. Y., U. S. A.
1920

LIFE AND PERFORMANCE TESTS OF O F LIGHTNING ARRESTERS

BY N. A. LOUGEE
General Electric Co.

I—LIFE RUN TESTS OF O F ARRESTERS

SINCE the first papers on the oxide film (O F) lightning arrester were given a little over two years ago,¹ the arrester has proved itself to be a worthy piece of apparatus by performance in regular

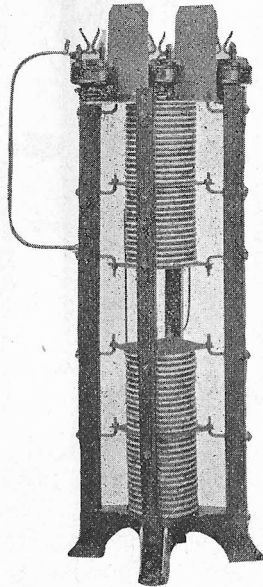


FIG. 1—OXIDE FILM LIGHTNING ARRESTER FOR INDOOR SERVICE ON THREE-PHASE CIRCUITS, 5000-7500 VOLTS

service. Several hundred arresters up to 73-kv. rating, are now installed on both indoor and outdoor circuits, and higher voltage units will soon be in service. Figs. 1, 2, 3 and 4 show the typical designs used.

1. *The O F Lightning Arrester*, TRANS., A. I. E. E., Vol. XXXVII, 1918.

In Fig. 1, the three phase legs and the ground leg are all arranged in one stack, the bottom section being the ground leg. In Fig. 2, the three phase legs are the upper sections and the ground leg is the lower section. In Figs. 3 and 4, the three phase legs and ground leg are set up parallel to one another. Fig. 5 shows the covered sphere gap used with the outdoor design, which permits of an indoor setting. Due to the small leakage current of these arresters (about 0.010 ampere),

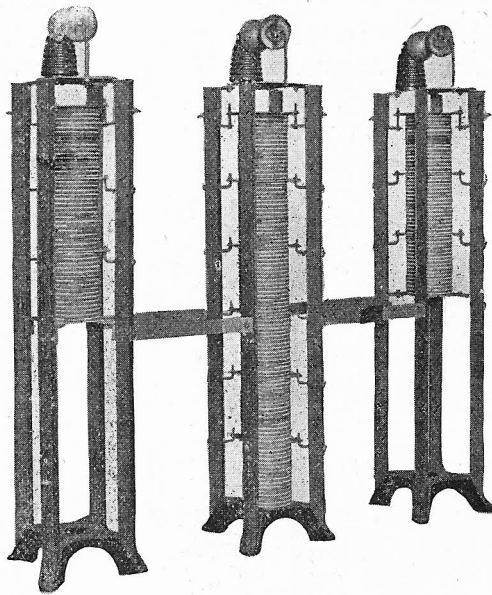


FIG. 2—OXIDE FILM LIGHTNING ARRESTER FOR INDOOR SERVICE ON THREE-PHASE CIRCUITS, 15,000-25,000 VOLTS

it is not necessary to use horn gaps to aid in breaking the arc, and it is, therefore, possible to use the covered sphere gap which has previously been described in the Transactions of the Institute.² Fig. 6 shows the testing device used and its method of operation, about which more will be said a little later.

The life of a lightning arrester is a very important factor, and one that has to be estimated from both operating and laboratory data. Operating data ob-

2. *The Effect of Transient Voltages on Dielectrics—II*, F. W. Peek, Jr., TRANS., A. I. E. E., Vol. XXXVIII.

