

Released upon receipt
but intended for use
July 31, 1933

A Science Service Feature

? WHY THE WEATHER ?

Mailed July 24, 1933

THE STRENGTH OF LIGHTNING

By Charles Fitzhugh Talman
Authority on Meteorology

The strength of current in lightning was measured in an indirect way by Dr. F. Pockels some years ago. Many substances are magnetized by the passage of an electric discharge in their vicinity. Pockels found that when basalt rock is magnetized in this way, the amount of magnetism is a measure of the greatest strength^{of} current to which it has been exposed. He examined specimens of basalt from the top of Mount Cimone, in the Apennines, where lightning strokes are common, and found^{many} of them more or less magnetized. He also exposed blocks of basalt close to a branch of a lightning-rod in the same region. He thus obtained values for the strength of current in lightning discharges ranging from 11,000 to 20,000 amperes.

Dr. W. J. Humphreys, of the United States Weather Bureau, has published an estimate obtained in another manner. This is based upon the effects of a stroke of lightning upon a hollow copper lightning-rod. The rod was crushed and partly melted by the discharge. The crushing was believed to be due to what is known to physicists as the "pinch phenomenon," a squeeze resulting from the magnetic field produced by the passage of an electric current. From the force involved in the collapse of the rod and also from the heat necessary to cause fusion, the strength of current was estimated to be somewhere in the neighborhood of 90,000 amperes.

(All rights reserved by Science Service, Inc.)

SCIENCE SERVICE
21st and Constitution Ave.
Washington, D. C.