

A Science Service Feature

Released upon receipt
but intended for use
November 24, 1933

? WHY THE WEATHER ?

Mailed November 17, 1933

EXPLORATIONS OVERHEAD

By Charles Fitzhugh Talman,
Authority on Meteorology.

Just as astronomers explore the depths of celestial space without going thither in person, so meteorologists are rapidly unlocking the secrets of the atmosphere far overhead without quitting its habitable levels. Personal ascents in "stratosphere" balloons up to a height of ten or twelve miles have contributed relatively little to our knowledge of the high atmosphere.

By a method of comparing photographs taken simultaneously from two or more places the actual height and location of any lofty visible phenomenon of the atmosphere can be determined. Such phenomena include the various details of auroral displays, meteors and their trails, and two varieties of cloud occasionally seen far above the level of cirrus, the highest cloud of the troposphere.

The aurora has been seen at levels ranging from 40 to more than 600 miles above the earth, and its spectrum reveals the composition of the atmosphere at such levels. Meteors give an indication of the density of the air in which they become luminous, and from this information some interesting facts have come to light concerning probable atmospheric temperatures at high levels. Movements of meteor trails and of the clouds above mentioned tell us something about the circulation of the high atmosphere. The timing of sound waves from explosions gives further information about high-air temperatures. The spectroscope reveals the amount and location of ozone in the atmosphere, and this substance is found to exercise a varied rôle in atmospheric affairs.

Last but not least, the vast upper story of the atmosphere called the "ionosphere" by which radio signals are reflected back to earth is sounded and explored by these same signals. The disturbances of this lofty region are associated with magnetic storms, earth currents, auroras and outbreaks of solar activity; hence its investigation is now throwing light upon a wide range of scientific problems.

(All rights reserved by Science Service, Inc.)

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