

Meteorographs have been greatly improved recently by the invention of duralumin, "thermostatic" metal, and Friez's distance thermograph. This thermograph will record indoors, which allows most of the meteorograph apparatus to be installed under substantial shelter, only a few elements being exposed outside.

The highest meteorological observatory equipped with recording instruments in North America is on the summit of Mount Rose, Nevada, 10,800 feet above sea level. Dr. J. E. Church, Jr., who established the station 20 years ago and is still in charge of it, first placed maximum and minimum thermometers on the summit to obtain some idea of winter temperatures in the high Sierras. Soon he discovered that "frost forecasts could be made with considerable certainty from the mountain top in advance of instrumental indications below." This proved sufficient to obtain government support for the observatory to erect a building and devise instruments that could make a very complete record without attention for weeks or months together.

A large tank was provided to catch and hold the entire snowfall of the winter, to aid in estimating the probable irrigation water for the Reno district the following summer. Mr. Fergusson, designer of the meteorograph for the observatory on El Misti, Peru, made a similar instrument for Mount Rose. It records pressure, temperature, wind direction and velocity, and relative humidity. The observations obtained on this mountain summit have formed the basis for a study of the general climatology of Mount Rose, the relation of climate to the plant environment, and the relation of timber to the conservation of snow.—*Adapted from C. F. Brooks' "Why the Weather" (Science Service).*

MEASUREMENTS OF SOLAR RADIATION AND THEIR INTERPRETATION

A correction by C. F. MARVIN

Following the publication of my note on "Measurements of Solar Radiation and their Interpretation" in the February BULLETIN, p. 29, Dr. Abbot called at the Weather Bureau on March 21, in order to discuss certain differences of view concerning statements therein. I am happy to say that as a result a better understanding has been reached on a number of points.

(1) *Geometric vs. effective angular aperture.* The angular apertures given in the table on page 29 of the February BULLETIN were computed by the formula for *geometric* aperture,

$$\tan \frac{1}{2} \theta = \frac{a + b}{2D} \quad (1)$$

in which θ is the angle, and a , b and D the diameters of openings in the inner and outer diaphragms and the distance between diaphragms, respectively. I recognized that this was only a simple and convenient definition, based purely upon geometric relations. Dr. Abbot, however, now points out that while technically correct, it conveys an exaggerated

impression of the *effectiveness* of this sky area. He demonstrates that the effect of the sky area thus measured on the instrumental readings is equivalent to sky radiation through a smaller angle given quite approximately by the equation for *effective* aperture,

$$\tan \theta' = \frac{b}{D} \quad (2)$$

As this angle is only little more than half the size of the geometric angle, the ratio of sky area to solar disk will be roughly one-fourth the quantities published in my note. While equation (1) gives the total angle of aperture, the writer commends equation (2) as giving the *effective* equivalent of (1) and as being the proper angle to use in estimating the sky effect on solar measurements.

(2) Dr. Abbot takes exception to the following words in the third paragraph, page 30:

"Such changes after publication make relationships and weather forecasts based on telegraphed solar values, highly fictitious, irrational, and little less than absurdities."

In deference to Dr. Abbot's point of view that this sentence is an undeserved characterization of certain publications on solar and weather relationships by the Smithsonian Institution, the writer has no hesitation in retracting the whole sentence. No reflection upon the Smithsonian Institution publications was in mind. I only desired to express the disappointment the investigator feels when changes are made in provisional values of the solar constant.

Acknowledgement by C. G. Abbot:

On behalf of the Smithsonian Institution, and of my colleagues who, at personal sacrifice, have labored conscientiously at desks and on desert mountains for many years, in the hope of making their solar researches a worthy contribution to human knowledge, I desire to thank Professor Marvin for making the above corrections, and to assure him that we welcome cordially the better understanding of which he writes.

May I add that the changes of provisional values, which he deplors, were incident to the demands for early publication which workers in the field have made insistently; and that definitive values for the years 1920 to 1926 are now far advanced towards completion.

HYPERBAR AND INFRABAR

Professor McAdie has sent in the following communication:

"In the discussion of the Glacial Anticyclone, pp. 16-17 of the January BULLETIN, mention is made of the terms 'hyperbar' and 'infrabar.' I regret that I was not at the meeting to help a little in a better understanding of these terms.

"Professor C. F. Brooks was quite right in saying that I considered 'ease of use as more important than logic of source.' The sole objection, however, is that the words are hybrids. Hyperbar is from the Greek *hyper*, meaning above or excess, which is quite different from *hypo*,