

**Milham says:**

If the temperature is very low—at least below zero Fahrenheit—fine ice needles are formed instead of snowflakes.<sup>1</sup>

**In Davis' Elementary Meteorology we read:**

When precipitation occurs in the polar regions at temperatures lower than  $-5^{\circ}$  to  $-10^{\circ}$  small ice needles and not snowflakes are formed.<sup>2</sup>

The observation on November 7, and Mr. Bentley's experience, show that the ice needle form of snow crystal does occur at temperatures considerably higher than is generally supposed. \* \* \*

**PHYSICAL OCEANOGRAPHY AND MARINE METEOROLOGY OF THE PACIFIC**

At the Scripps Institution of Oceanography, La Jolla, Calif., on November 6 and 7, 1925, was held a conference for the discussion of the bearing of the physical oceanography and marine meteorology of the Pacific upon the climate of the western United States. Dr. T. W. Vaughan, Director of the Scripps Institution, outlined in effect the objects of the conference as follows:

The object of the conference is to bring together for mutual benefit representatives of those interested in the study of the physical features and the meteorology of the northeastern part of the Pacific and those wishing to apply results of such studies to investigations of the climate of the western part of the United States. Special attention is directed to the problem of fog forecasting and seasonal rainfall forecasting. Therefore representatives of the United States Navy, Coast and Geodetic Survey, Weather Bureau, of those engaged in hydroelectric power development, the use of water for irrigation, farm management, and forest protection were invited to join with the institution staff to consider problems of mutual concern. \* \* \* The conference should also help prepare the American representatives for their part in the science congress to be held in Japan during October and November, 1926.

Progress in obtaining ocean water temperatures in the Pacific was outlined by Dr. G. F. McEwen, an abstract of whose paper follows:

**PRELIMINARY REPORT ON OCEANOGRAPHIC OBSERVATIONS FURNISHED BY THE UNITED STATES NAVY DURING RECENT MANEUVERS IN THE PACIFIC**

A program was planned involving hourly measurements of sea temperatures by means of thermometers already attached to condenser intakes for the use of engineering departments. Opportunities were provided for calibrating the thermometers with which the destroyer fleet of 30 ships are equipped. During the maneuvers of the fleet in the Pacific from April to October, 1925, over 22,000 temperature observations were made, over 1,000 water samples, and about 260 plankton catches were collected. During April there were 6,400 temperatures and 400 water samples taken on a cruise from San Diego southwest 200 miles to Guadaloupe and return; San Francisco to Hawaii, 7,500 temperatures and 650 water samples; Hawaii to Australia and New Zealand, returning by way of Samoa, 6,600 temperatures, 160 water samples, 200 plankton catches. A preliminary examination of part of the data indicated a very good agreement between the results. Such intensive data are well suited to give detailed information on horizontal temperature gradients of interest in certain meteorological problems. Such information also constitutes a basis for estimating the rate of flow in ocean currents. The practicability of making such observations having been thus demonstrated, similar programs will probably be arranged in the future, thus providing an ever-increasing amount of intensive observations and collections at the surface that could not be obtained in any other way.

The outlook for solving the problem of fog forecasting was discussed by Mr. Dean Blake, meteorologist of the San Diego station of the Weather Bureau, who pointed out that correlation of data from land, sea, and air may yield rules that should improve the percentage of accuracy of fog predictions. Maj. E. H. Bowie, district

forecaster at San Francisco, dealt with "The Northeast Pacific Anticyclone and Its Relation to California Climate." Doctor McEwen reviewed his work of the past nine years on the relation between ocean temperatures and seasonal rainfall. (See his paper in this Review.) A. Wilstam, of the southern California Edison Co., in a paper on the application of Doctor McEwen's seasonal rainfall forecasts to forecasting the seasonal water supply for hydroelectric plants, showed that:

The summer ocean temperature data supplied by the Scripps Institution are found to be closely enough correlated with the following seasonal rainfall to be given consideration in preparing the yearly budget of the Southern California Edison Co.; 7 to 8 indications out of 9 have proved to be in the right direction.

Edgar Alan Rowe discussed "The Value of Long Range Rainfall Forecasting to Irrigation and Water Supply Projects in Southern California from an Engineering Standpoint"; James G. France, "Seasonal Forecasting and its Value to the Agriculturist in San Diego County"; and J. E. Elliott, "Seasonal Forecasting and its Bearing on Forestry Problems." Abstracts of the four papers last mentioned appear in the December, 1925, issue of the Bulletin of the American Meteorological Society.—*B. M. V.*

**TORNADO NEAR SALEM, IN THE WILLAMETTE VALLEY, OREG.**

Mr. E. L. Wells, meteorologist in charge of the Portland, Oreg., station of the Weather Bureau, sends a detailed account of his investigations into the reported occurrence of a tornado in the Willamette Valley on November 11, 1925. The following paragraph gives his conclusions:

It is quite evident that the storm was a rather poorly defined tornado, which reached the ground at a few places in a path extending from a point north of Independence to a point in the Liberty district, southwest of Salem, a distance of about 5 miles; at no place was the path well outlined, as for the most part damage was confined to old, weak structures, and others escaped injury; the destruction was mostly confined to the right side of the path, where the whirl was moving in the same direction as the whole storm, and therefore most of the wreckage was carried forward.

Mr. Wells states that this appears to be the first tornado observed west of the Cascade Range in Oregon.—*B. M. V.*

**METEOROLOGICAL SUMMARY FOR SOUTHERN SOUTH AMERICA, NOVEMBER, 1925**

By SENOR J. B. NAVARRETE

[El Salto Observatory, Santiago, Chile]

[Translated by B. M. V.]

The month of November was characterized in general by a relatively stable condition of the atmosphere, in which the southern anticyclone was frequently the dominating feature, favoring rising temperatures and hot waves in the central zone.

The early days of the month had generally good weather, but with violent winds between the coasts of Chiloe and Arauco, with fairly high temperatures in the interior of the Provinces of Aconcagua, Santiago, O'Higgins, Colchagua, Curico, and Talca. The high-pressure center was situated during this period between Chiloe and Cape Raper, fluctuating about a mean value of approximately 770 mm. (1,026 mb.).

<sup>1</sup> Milham's Meteorology, p. 241.

<sup>2</sup> Davis' Elementary Meteorology, p. 286.

On the 11th, an important atmospheric depression appeared in the west and affected the southern zone, causing bad weather with violent winds and rain between Concepcion and Chiloe Provinces. This was the beginning of a period of frequent atmospheric changes in the southern zone which lasted until the 23d; depressions succeeded one another at intervals of two to four days as they crossed the southern area. During this period, temperatures were moderate in the south and high in the central zone where fine weather was persistent.

On the 24th the southern anticyclone reestablished itself and lasted until the end of the month; during this period general fine weather prevailed, with southerly winds; the temperature rose rapidly, causing intense hot waves in the central zone, with maximum temperatures of 33° C. (91° F.) in the shade.

#### METEOROLOGICAL SUMMARY FOR BRAZIL, NOVEMBER, 1925

By J. DE SAMPAIO FERRAZ

(The Meteorological Office, Rio de Janeiro)

The country was visited by four anticyclones the tracks of which were irregular and abnormally far south on account of the activity of the continental LOW.

The first two HIGHS appeared in the Argentine on the 9th and 12th respectively, both deflected to a southerly

track by the continental depression. From the 13th to 19th this system dominated the whole center and south of the continent.

The third anticyclone made its appearance on the 20th, following the usual northeastern track, with "surges." The last HIGH, the largest of the month, was first seen on the chart of the 24th, bringing down the temperature generally and producing fresh winds in the south on the 25th, 26th and 27th, on account of the strong contrast in pressure between it and the continental LOW, whose occasional vigorous activity was the leading feature of the month.

Rains were generally plentiful in the center and south, excepting in Bahia, although irregular in distribution in some States. In northern Brazil precipitation was below normal, perhaps because of the southern position of the tracks of the anticyclones. Rio de Janeiro had a cool, damp, and unsettled November. On the 29th the city was struck by a passing gale.

Crops were generally good. Cotton harvesting continued, but the crop was less plentiful than in the previous year. Coffee, as indicated by actual yield, will not give a normal crop, having suffered from earlier droughty conditions, although the weather of the present month ran favorably. Cane, cocoa, and tobacco were in good condition, but slightly damaged in the north by rain deficiency.

#### BIBLIOGRAPHY

C. FITZHUGH TALMAN, Meteorologist in Charge of Library

##### RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

##### Aircraft development corporation.

Metacled airships. A proposal to the United States government from the Aircraft development corporation . . . Detroit. 1925. 37 p. plates (part fold.) 29 cm.

##### Nagaoka anniversary volume.

Anniversary volume dedicated to Prof. Hantaro Nagaoka, by his friends and pupils on the completion of twenty-five years of his professorship. Tokyo. 1925. xvi, 422 p. illus. plates. 26 cm. [Contains articles of meteorological interest.]

##### Antevs, Ernst.

Retreat of the last ice-sheet in eastern Canada. Ottawa. 1925. iii, 142 p. figs. plates (part fold.) 25 cm. (Canada, Dept. of mines. Geol. surv. mem. 146. No. 126, geol. ser.)

##### Barbé, M. G.

Climatologie de la région du Rhin. Paris. 1924. 33 p. plates. 31 cm. (Mem. Off. nat. mét. de France. No. 8.)

##### Bindewald, Hilmar.

Winde und Niederschläge im Klima des Damaralandes. Giessen. 1925. [4 p.] 21 cm. (Dissert. der Hessischen Ludwigs-Universität zu Giessen. 1924.) [Manifolded.]

##### Boerema, J.

Uitbreiding van regenbuien te Batavia. (Extension of rain-showers at Batavia.) Weltevreden. 1925. 54 p. figs. 27½ cm. (K. Mag. en met. observ. te Batavia. Verhandelingen. No. 15.)

##### Clayton, H. H.

Les variations de la radiation solaire et le temps. Paris. 1925. 28 p. figs. 31 cm. (Mem. Off. nat. mét. de France. No. 11.)

##### Cook, William C.

Climatic variations and moth flight at Bozeman. p. 229-234. 27 cm. (Exc.: Canadian entom., Oct., 1924.)

Distribution of the alfalfa weevil (*Phytonomus posticus* Gyll). A study in physical ecology. Washington. 1925. p. 479-491. figs. 23½ cm. (Repr.: Journ. agric. research, v. 30, no. 5. Washington, Mar. 1, 1925.)

##### Diehl, Walter S.

Standard atmosphere—Tables and data. Washington. 1925. 28 p. 29 cm. (Nat. adv. comm. aeron. Report no. 218.)

Engineers study tornado forces. p. 14-16. illus. 28½ cm [Extr.: Illinois cent. mag., Chic., Sept., 1925.]

##### Fabry, Charles.

Ozone as an absorbing material for radiations in the atmosphere. 20 p. figs. plate (fold.) 23 cm. (Mass. inst. tech., Bull. v. 60, no. 56, Jan., 1925. Contrib. Rogers lab. physics, ser. 2, no. 24.) [Repr.: Journ. math. & physics, v. 4, no. 1, Jan., 1925.]z

##### Gregg, Willis Ray.

Aeronautical meteorology. New York. [c1925.] xii, 144 p. illus. maps. diagrs. plates. 22 cm.

##### Hellmann, G.

Grenzwerte der Klimaelemente auf der Erde. p. 200-215. 25½ cm. (Sitzungsber. preuss. Akad. der Wissensch. 11. 1925. Sitzung phys.-math. Klasse vom 26. März.)

Die Verbreitung der Hydrometeore auf der Erde. p. 285-298. 25½ cm. (Sitzungsber. preuss. Akad. der Wissensch. 15. 1925. Sitzung phys.-math. Klasse vom 30 April.)