

The relation of these two curves to the sun-spot curve is not clear.

*The temperature-relation.*—A variety of material was collated to illustrate this relation and the conclusion was reached that the reaction of terrestrial temperature to solar changes due to variations in the spottedness of the sun is quite complex and that there are apparently other influences not fully understood.

The rainfall relation is likewise not obvious. I conclude as a final summation of the results of the study:

(1) There are some striking resemblances between the curves of weather elements and that of sun spots, but with numerous irregularities of short period not removed by the smoothing processes.

(2) The change in weather conditions frequently precedes the change in sun spottedness which leads to the inference that they are not related as cause and effect.

(3) There is some evidence that the effect of solar variations differs with the season and the locality.

(4) The problem is quite complex and the meteorological records are of inadequate length for the purpose.

#### MILD WINTER OF 1924-25 IN BERLIN

Dr. G. Hellmann in the April, 1925, number of the *Meteorologische Zeitschrift* briefly summarizes the winter of 1924-25 in Berlin. That winter, counting from December 1 to February 28, as usual, proved to have been the third mildest in the last 160 years, the winter of 1795-96 only being milder and the winter of 1868-69 being almost exactly as mild; the latter, however, was broken by a ten-day cold period in January. An unusually warm February—about 4.3° C. above normal—was common to both winters. \* \* \* The temperature in 1924-25 ranged from -7.5° to 15.3° C. (18.5°-59.5° F.).

The winter belongs to the dry-mild type and this type occurs less frequently than the wet-mild type.

Doctor Hellmann notes that the usual spell of inclement weather which usually follows a very mild winter was not lacking.

Here in the United States, although February was exceptionally warm, both March and April were devoid of unseasonable weather.—A. J. H.

#### THE NATIONAL ELIMINATION BALLOON RACE FROM ST. JOSEPH, MO., MAY 1, 1925

Extracts and notes based on a report by W. S. Belden, United States Weather Bureau, St. Joseph, Mo.]

The National Elimination Balloon Race in 1925 started from the aviation field in St. Joseph, Mo., late in the afternoon of May 1. Five balloons were entered in the race.

At St. Joseph, May 1 was clear with temperature considerably below normal, ranging from 39 to 62 degrees. Northwest wind prevailed from 3 p. m., April 28 to 8 p. m., May 1. The wind attained gale force on the forenoon of the 29th and was light to fresh on the 30th and 1st, the maximum velocity for a period of five minutes on each of the last two dates being 24 miles per hour from the northwest. The wind on the afternoon of May was rather gusty, the extreme velocity covering a period of two to three minutes of each hour from 1 to 6 p. m. being at the rate of 23 to 25 miles per hour.

Each pilot was furnished detailed meteorological reports and charts based on aerological observations made at 12 well distributed stations on the afternoon of

April 30 and at 7 a. m. and 11 a. m., May 1. Numerous pilot balloon runs were made May 1 at the local aviation field by the United States Army meteorological service. Other information furnished by the Weather Bureau included daily weather maps, daily weather bulletins, forecasts for Missouri, Kansas, Nebraska and Iowa, a special weather summary and indications issued by the district forecaster at Chicago, based on special noon observations May 1, and schedules of radio broadcasts for the benefit of the contestants, three of which carried radio receiving sets. Forecasts and summaries of upper air conditions were broadcast for the benefit of the pilots at intervals during the time the balloons were in the air. These radio bulletins were prepared by the Weather Bureau at Washington and Chicago and sent by telegraph to a number of broadcasting stations that were most favorably located with respect to the probable path of the balloons.

On starting, the balloons were carried to the south-southeast. Those rising to higher levels within a few hours after starting moved more in a southeasterly direction and at a greater speed than those keeping nearer the ground. The courses of all the balloons were the results of winds flowing from a ridge of high pressure which extended from Canada to the Gulf of Mexico. The winning balloon, piloted by Mr. W. T. Van Orman, aided by Mr. C. K. Wollam, landed near the town of Reform, Ala., exactly 36 hours out, and 585 miles from St. Joseph.

#### OROGRAPHIC WIND AS AN AID TO GLIDING FLIGHT IN AIRPLANES

The remarkable development in man's ability to take advantage of the upthrust of air over ridges for prolonged gliding flight, is shown by the report (*Aviation*, April 20, 1925, p. 439) of the achievements of Lieutenant Thoret and a pupil of his, both of the French Air Service. In 1923 Lieutenant Thoret remained in the air for 7 hours, with his engine completely cut off. Sergeant Wernert recently glided for 9 hours and 17 minutes in the same manner. On the day when he established this record, a high wind was blowing across the ridge which is the scene of the soaring tests, developing, as nearly as can be inferred from the description, a standing wave about 2 km. wide and 4 to 5 km. long over the ridge. Along the crest of the ridge Wernert glided at some 50 to 300 yards above and in front of it, "at all times maintaining a great reserve of flying speed. He tacked up and down in front of the hill all day" and finally toward sunset, the air becoming disturbed in a manner ascribed to cooling of the air in the shadow of the hill, soaring flight became increasingly difficult. "A perfect landing was made by moonlight."—B. M. V.

#### METEOROLOGICAL SUMMARY FOR APRIL AND MAY, 1925, FOR ARGENTINA, CHILE, PARAGUAY, AND BOLIVIA

[Reported by Señor Julio Bustos Navarrete, El Salto Observatory, Santiago, Chile]

*April.*—During April the weather was rather rainy in all of the southern part of the continent, while in northern Argentina and in Uruguay it was generally of the type occurring with the domination of high atmospheric pressure. On the Bolivian plateau there were days with severe cold, and frosts were frequent.

On the 2d and 3d scattered rains fell in Argentina.

The first important cyclonic depression appeared on the 5th; it controlled conditions in central and southern Chile,

and caused moderately heavy rains from Valparaiso to Chiloe. From the 6th to the 14th high pressure prevailed over the southern Chilean Provinces and it was accompanied by fair weather over the entire central belt.

In Argentina and Paraguay scattered rains occurred again on the 11th and 12th.

On the 15th an important atmospheric depression appeared from the west and began to influence conditions in southern Chile; on the 16th the center of this area with a minimum pressure of 29.65 inches (753 mm.) was situated off Isla Mocha; on the 17th it was found more to the north, but the convergent winds, which were abnormal by excess [that is, of velocity too great in proportion to the pressure gradient],<sup>1</sup> caused a filling up according to the law of Guilbert.

Between the 15th and the 20th there were several depressions moving from west to east and causing continued unsettled weather in the extreme southern part of the continent.

Some snow fell in Magellanes on the 22d; this was followed by a heavier fall on the 25th accompanied by a cold wave.

Another period of atmospheric disturbance in the southern region began on the 26th. On the 28th a depression extended from the Juan Fernandez Islands to Isla Mocha and caused continued rains from Concepcion southward. On the 30th an extensive depression dominated conditions over the entire southern part of the continent. At Cabo Raper the pressure fell to about 28.94 inches (735 mm.) and at Temuco and on the island of Huafo the north wind attained a velocity of 63 miles per hour. In all southern Chile the rainfall was very heavy.

*May.*—In all of the southern region of the continent the first half of the month was rainy, but the remainder was relatively dry with periods of severe cold. The lowest temperatures were observed in the region of Chos Malai, Las Lajas, and Bariloche (Chubut) in Argentina and Lonquimay in Chile, stations which lie within the

"cold pole" of the continent of South America.<sup>2</sup> In this region minimum temperatures frequently fluctuated between 23° and 14° and even ranged down to 9°.

During the passage of a depression across the southern region from the 1st to the 3d rain fell over southern and central Chile northward to the province of Aconcagua (north of Santiago). Scattered precipitation occurred in Rio Negro on the 1st and 1 inch of rain fell at Buenos Aires on the 3d.

The rise in pressure on the 4th was accompanied by a general fall in temperature in southern Chile.

From the 5th to the 7th a depression was approaching off the coast of central Chile; on the 8th it began to affect conditions on the continent and heavy rains fell between Coquimbo and Chiloe. At the same time another depression between Buenos Aires and Bahia Blanca was accompanied by heavy rains and electrical storms.

On the 9th there was a second rise in pressure over southern Chile and by the 10th this resulted in an important anticyclonic area with maximum pressure above 30.32 inches (770 mm.) in Chiloe. This center with certain changes persisted until the 19th and the period of its duration was characterized by severe cold waves in the southern part of the continent.

The depression which crossed the southern region on the 20th was accompanied by rains between Malleco and Magellanes on the 21st.

On the 22d pressure rose again in southern Chile, forming an extensive center with maximum pressure 30.39 inches (772 mm.) between Isla Huafo and Cipolletti, Argentina, and bringing another severe cold wave.

During the passage of a depression on the 23d the pressure fell to 28.82 inches (732 mm.) at Punta Arenas, and on the following day there was heavy snowfall in the region of Magellanes.

The southern anticyclonic center was reestablished on the 25th and the pressure was above 30.32 inches (770 mm.) at Valdivia; this center with some changes persisted until the close of the month and brought another period of severe cold.

<sup>2</sup> These stations lie between latitudes 37° and 41° S., and the elevations above sea-level range from 2,340 to 3,180 feet.

<sup>1</sup> See Fassig, O. L.: Guilbert's Rules for Weather Prediction, Mo. Weather Rev., May, 1907, 35: 210, and on pp. 211-212, the translation by Fassig of Guilbert's "Principles of Forecasting the Weather."

## BIBLIOGRAPHY

C. FITZHUGH TALMAN, in Charge of Library

### RECENT ADDITIONS

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