perature coefficients" obtained by critical comparison of historic and modern data. (See Les Hivers, p. 10 ff.) The departures of the coefficients from the normal of 50 (as given on p. 200 of the work mentioned) are found totaled in Table 4.[1]

Relative to the last result, 247 and 203, see remark on the winter of 1895.

TABLE 4.—*Totals of the departures of the temperature coefficients*

C		D	
1606–1627	306	1628–1649	138
1695–1716	388	1717–1738	135
1784–1805	336	1806–1827	222
1873–1894	247	1895–1916	203

The above table is numbered 5 in the original text.

These statistical data appear to indicate the correctness of the conclusion that the very remarkable phenomenon pointed out by Prof. A. Wagner is to be referred to a long-period oscillation coming to light for centuries in the historical data on winter temperatures. It was shown at an earlier date [2] that this 89-year periodicity agrees with—and is thus caused by—an oscillation in solar activity, both in the changing size of the spotted part of the sun's sufrace and also in the variable duration of the period of time between a minimum and the following maximum; the agreement becomes apparent also from the coincidence of an unusual cold wave at the close of the eighteenth century with an accelerated and intensified sunspot activity [3] at the same time. In conclusion I should like to add that I consider this 89-year periodicity not as a single period, but as a resonance or interference phenomenon at the coincidence of probably numerous independent periods, of which, however, no individual one has any considerable amplitude.

It would be interesting to test whether the 89-year oscillation comes more plainly into view in middle Eurpoe (as here for western Europe) in my newly revised data (Les hivers).—*Translated by W. W. Reed.*

COMMENTS ON THE INFLUENCE OF VEGETATION ON STREAMFLOW

By FRANCIS E. COBB, President and State Forester

[North Dakota School of Forestry, Bottineau, N. Dak., February 7, 1931]

I am much interested in the article [4] by Harry B. Humphrey and B. C. Kadel in regard to the influence of trees on stream discharge.

A small stream, Oak Creek, flows along the border of our campus, originating in springs located about 4 or 5 miles in the foothills of the Turtle Mountains. This is an intermittent creek and it is very common for this stream to discontinue flowing during the summer. In dry springs it may not flow after June. Sometimes it continues as late as August and occasionally runs throughout the year. However, it is commonly noticed that in the summer when it does not flow it always begins flowing as far down as we are located in the fall after the leaves have fallen from the trees. Sometimes it starts to flow even earlier than this. The article in question would lead me to believe that the growth of trees, which is quite heavy along its entire course to where we are located, have a great deal to do with the discontinuance of the flow during their growing period. It has often been wondered why after a dry summer it should begin in the fall even before the freezing of the ground, and this is apparently an explanation.

An article also in this same issue in regard to the passing of the mirage from the Weather Bureau at Dodge City, Kans., is also of interest.

We are a cooperative observer of the Weather Bureau at Bismarck and are naturally interested in all phenomena relative to weather conditions. Southeast of this town on clear, warm days during the entire summer a mirage lies, giving the appearance of a very large lake with tall trees on the banks and looks as though the farm houses in that section were entirely flooded, except for their upper stories This entire territory is in crop and apparently no difference appears whether the crop is growing or harvested. I merely note this as a matter of interest inasmuch as here it does not depend on whether the prairie is bare or in crop.

ARCTIC WEATHER STATIONS

By C. F. TALMAN

Just as, in the Southern Hemisphere, an outpost for weather observations maintained by the Argentine Government at Laurie Island, in the subantarctic South Orkneys, is operated by a small party who spend a year in complete isolation—being then replaced by another party—so in the far north the Russian Government has a number of weather stations whose staffs are relieved annually. The most northerly is the one established in Franz Josef Land in 1929. These arctic stations, like the one at Laurie Island, are equipped with radio.

Last summer the ice breaker *Sedov* visited the station in Franz Josef Land, where the seven members of the staff were found in good health. They were replaced by a new staff of 10 men and 1 woman. The latter, the wife of the director, is to conduct biological investigations.

From Franz Josef Land the *Sedov* proceeded through ice fields to the archipelago north of the Taimyr Peninsula formerly known as Emperor Nicholas II Land but now called Severnaya Zemlya (Northern Land). Some previously unknown islands were discovered, including a group of small ones to which the name Kamenev Islands was given, and in one of these a new station was established, in latitude 79° 24′ north and longitude 91° 3′ east. Four men were left here, with provisions for three years.—*Why the Weather—Scientific Service (Inc.).*

LIGHTNING FROM A CLEAR SKY, JANUARY 20, 1931

By FRED MYERS

[Weather Bureau, Tatoosh Island, January 20, 1931]

At 4:17 a. m. a flash of lightning was observed overhead and slightly toward the north. The sky was clear with about 2 strato-cumulus clouds along the horizon from the southwest to the northwest. There were six or eight flashes from 4:17 a. m. to 4:32 a. m., no more being observed until 5:15 a. m. when a single flash occurred in about the same location as the others.

Light rain had been falling during the night, ending about 2:45 a. m., the sky clearing by 4 a. m., the stars were shining brightly and the clouds could be seen distinctly in the west. The lightning appeared to flash across the sky and not to the ground. No thunder followed the flashes. This is the first time lightning has occurred from a clear sky at this station as far as can be determined.

The wind was from the south about 23 miles per hour, the temperature 48°; the barometer 30.16 and humidity 92 per cent at 4:45 a. m. (120 meridian time).

[1] This is Table 5 in the original text.
[2] C. Easton. Peterm. Mitt. 1905 and Proceedings Kon. Akad. v. Wetensch. te Amsterdam, 4/5, 5/6, *Bd.* VII, VIII.
[3] Compare *Astronom. Mitt.*, R. Wolf and A. Wolfer. Zurich. A sunspot curve for 1745–1873 by Wilh. Myer is published in Das Weltgebäude, 1898, p. 295.
[4] See MONTHLY WEATHER REVIEW, October, 1930, vol. 58, p. 397, ff.

While only a few flashes were observed, the "howler"[1] on the composite telephone was very noisy, sounding like static on a radio. This was probably due to lightning near Port Angeles. The Navy radio operator said that he had not noticed any lightning, but that the static had been bad all night.

CLIMATOLOGICAL SUMMARY FOR CHILE NOVEMBER AND DECEMBER, 1930

By J. BUSTOS NAVARRETE

[Observatorio del Salto, Santiago, Chile]

November.—Atmospheric circulation was less active than in October. Important depressions crossed the extreme southern region in the following periods: 8th-10th, 18th-20th, 24th-26th, and 27th-29th. Anticyclones, all moving from southern Chile toward Argentina, were charted from 4th to 7th, 12th to 17th, and 24th to 26th.

December.—Despite the advance of the season the atmospheric circulation continued active, ending in a severe storm in the south near the summer solstice. Well defined depressions crossed the southern region during the periods 2d-3d, 10th-13th, and 18th-21st. Anticyclones showed but little intensity, the one with greatest development being that of the 22d-26th moving from southern Chile toward northeastern Argentina and Brazil.—*Translated by W. W. Reed.*

[1] The composite phones "ring" by a buzzer arrangement which is heard through the "howler." This is nothing more than a receiver with a small horn to amplify the sound. It is connected to the line so that any noise on the line is heard through the "howler."

FRANKLIN G. TINGLEY, 1871–1931

Franklin Ginn Tingley was born October 8, 1871, at Marion, Ind., and died at Hyattsville, Md., January 26, 1931. He was educated at the public schools of his native town and at Purdue University, from which he was graduated with the degree of bachelor of civil engineering. He was appointed to the Weather Bureau July 16, 1898, and was one of the pioneer observers of the West Indian weather service organized by the bureau during the Spanish-American War primarily for the protection of the American fleet in Caribbean waters. After a brief period of instruction at Washington, he served at Kingston, Jamaica, as assistant to W. B. Stockman, who was in charge of the West Indian service. When the headquarters of the service were moved from Kingston to Habana in January, 1899, Tingley remained at Kingston in charge of the station. In June, 1899, he was transferred to Habana. In August, 1899, on account of illness, he was recalled to the United States, and served successively at the Atlanta, Wilmington, and Jacksonville stations of the Weather Bureau. In November, 1901, he was assigned to the central office at Washington, where for many years he was connected with the administrative branch of the bureau.

Meanwhile he became deeply interested in certain scientific problems, especially as bearing upon the question of extending the period of weather forecasts. In June, 1916, he was assigned to the climatological division to pursue his studies of forecasting and also to take charge of the marine section of that division. On April 1, 1920, the marine section was made a separate division, and Tingley became its chief. He served in this capacity up to the time of his death. The marine work of the bureau was greatly enlarged under his capable direction, including, among its more recent developments, a comprehensive revision of wind-roses for the Pilot Charts and the beginnings of a far-reaching study of surface-water temperatures.

Modest, gentle, and unselfish to an extraordinary degree, Tingley won the affection of everybody with whom he came in contact. His death was a grievous personal loss to his late colleagues and associates.—*C. F. T.*

BIBLIOGRAPHY

C. FITZHUGH TALMAN, 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:

Ashbel, Dob.
Die Niederschlagsverhältnisse im südlichen Libanon, in Palästina und im nördlichen Sinai. Berlin. 1930. 79 p. figs. 23 cm. (Inaug.-Dissert. Friedrich-Wilhelms-Univ. Berlin.)

Clyde, George D.
Establishing snow courses and making snow surveys. Logan. n. d. 16 p. illus. 23 cm. (Utah agric. exper. sta. Circ. 91. Dec. 1930.)

Gallé, P. H.
Klimatologie van den Indischen Oceaan. V. Neerslag. VI. Frequentie van luchtdrukkingen en stormachtige winden. VII. Tropische cyclonen. Amsterdam. n. d. 31 p. illus. plate (fold.). 24 cm. (K. Ned. met. inst. no. 102. Med. en verh. 29c.)

Harmer, Paul M.
Prevention of wind injury to crops on muck land. East Lansing. n. d. 8 p. illus. 23½ cm. (Agric. exper. sta. Mich. state coll. Soils sec. Circ. bull. no. 103. March, 1927.)

Hölcke, Theodor.
Der Einfluss der Höhenlage auf die Niederschläge in Thüringen. Weimar. (1930. 47 p. figs. map (fold.). 21 cm. (Mitt. der Thür. Landeswett. Heft 2.)

International commission for the study of clouds.
International atlas of clouds and of states of the sky. Abridged edition for the use of observers. Paris. 1930. ii, 41 p. 41 plates. 32 cm.

International meteorological organisation.
1r rapport de la Commission internationale de l'année polaire 1932–1933. Compte-rendu des travaux de la commission pendant sa première année de travail. Procès-verbaux-des séances de la réunion à Leningrad août 1930. Leyde. 1930. iv, 152 p. figs. plates. 24½ cm. (Sec. de l'Organ. mét. internat. No. 6.)

Kochergin, V.
Atmosfernye osadki Zakavkaz'ia. Tiflis. 1928. xxv, 347 p. 25 cm. [Rainfall in Transcaucasia.] (Transcaucasian water admin. Div. sci. invest. no. 51.)

McEwen, George F.
Results of evaporation studies conducted at the Scripps institution of oceanography and the California institute of technology. Berkeley. 1930. p. 401–415. 27½ cm. (Bull. Scripps inst. ocean., Tech. ser., v. 2, no. 11.)

Pettersson, Vilhelm I., & Pettersson, Otto.
Cartes synoptiques trimestrielles donnant la température et la salinité de l'eau de surface de l'océan Atlantique Nord. n. p. n. d. [3 p.] fig. plates (fold.) 35 cm.

Richard, W.
Wetter und Verkehrswesen. v. p. figs. 30 cm. (Die Reichsbahn. nr. 37–39. Jahrg. 1929. 11, 18, 25 Sept.)

Welter, L.
Note sur l'organisation de la protection météorologique de la navigation aérienne en Afrique Occidentale Française. [Paris. 1930.] 8 p. figs. 25½ cm. (Bull. du comm d'études hist. et scient. de l'Afrique Occident. Franç. Année 1930. T. 13.)