

in marine meteorology was, by order of the Secretary of War, turned over to the care of the United States Navy.

The next step toward enlarging the sphere of meteorological work in the United States was the successful combination of the whole civilized world in the study of the atmosphere as a unit. Already in July, 1869, Prof. Abbe had offered an international exchange between his own observation system under the auspices of the Cincinnati Astronomical Observatory and Le Verrier's European system.¹ One of the important steps toward attaining this object was to secure its indorsement by the other meteorological services of the world; this was the object of Gen. Myer's trip to Europe and the Vienna Congress in September, 1873. He first secured individual cooperation between the various other services and the United States, which was rather readily accomplished since they were then all favorably disposed toward this country. Finally he brought the project before the International Meteorological Congress for its approval as related in the REVIEW for February, 1914, page 94.

These efforts led to the establishment of the "Bulletin of International Meteorological Observations taken simultaneously at 7:35 a. m. [later changed to 7:00 a. m.], Washington mean time." The published daily bulletins cover the period from January 1, 1875, to June 30, 1884, while the corresponding daily charts extend from January 1, 1875, to December 31, 1887. On June 30, 1884, the publication of the daily bulletin was discontinued, but the daily map, the monthly summary, and the annual review were continued until their final cessation with December 31, 1887. Beginning July 1, 1884, the size of the published daily international chart was enlarged to four times its former size, and about July, 1885, the published monthly charts, accompanying the Monthly Summary and Annual Review, were enlarged to the same size, i. e., to the size of the manuscript compilation.

The international data in these bulletins were carefully worked over into a homogeneous system by rules established before the publication of the first number for 1878, and expressed in both English and metric measures. The daily bulletins appeared regularly just about one year after the dates to which they pertained. The material thus presented was primarily intended as a basis for the study of the dynamics of the atmosphere, and not for climatological study as such. It is a mistake to treat them from the latter point of view; the charts present strictly simultaneous daily conditions over the whole Northern Hemisphere and are based on a larger number of simultaneous observations than those used for the Daily Weather Map of the Northern Hemisphere that began with January 1, 1914.

The Bulletin of International Meteorological Observations with its charts was widely distributed throughout the world; a copy was sent to each of the cooperating observers. The data it contains seem, nevertheless, to have been used by very few persons outside the Weather Bureau. N. A. H. Poincaré, then president of the Meteorological Society of France, used the charts to locate the daily positions of the centers of tropical high pressures; he showed that these move northward or southward according as the moon is north or south of the Equator, thereby establishing the existence of an appreciable fortnightly lunar tide which is, however, without an appreciable influence on our daily weather.

¹ Assoc. sci. de France, Bull. hebdl., Aug. 15, 1869, 6:100.

John P. Finley,² then lieutenant, plotted from the daily charts the distribution of storm tracks throughout the Northern Hemisphere. An interesting, valuable summary of the distribution of pressure and storm tracks is given in the Annual Report of the Chief Signal Officer, United States Army, for 1891, Appendix 17, pages 747-777, and a similar summary compiled by the late Prof. E. B. Garriott is presented on a much larger scale with charts in Weather Bureau Bulletin A.³

It has been stated⁴ that the Bulletin of International Simultaneous Observations represents the finest piece of international cooperation in precise scientific work that the world has ever seen, paralleled only by the Ephemerides Mannheimensis of 1780-1790, or by Sabine's work in terrestrial magnetism, or by the International Polar Expeditions of 1882-83. It is very regrettable that meteorologists have so far made practically no use of its daily, monthly, and annual maps and its extensive series of homogeneous, simultaneous observations. The large scale of the charts makes them particularly adapted to detailed studies, such as that outlined on page 672, by Prof. W. J. Humphreys.

The Weather Bureau Bulletin of International Simultaneous Observations had a valued supplement in the Tägliche synoptische Wetterkarte des Nordatlantischen Ozeans, issued jointly by the Deutsche Seewarte and the Danske Meteorologiske Institut beginning with 1884; but this expensive publication relates to the North Atlantic ocean only.—C. A.

DO CLOUDS YIELD SNOW EASIER THAN RAIN?

By DOUGLAS F. MANNING.

[Dated, Alexandria Bay, N. Y., Jan. 25, 1915.]

In the MONTHLY WEATHER REVIEW for February, 1914, there was published an article of mine under the above title. Perhaps the following brief description of a snowfall that occurred here on January 21, 1915, may be of interest to the readers. The day was almost calm, the temperature hovered around 10°F., and the slight air movement was from the north. The sky had a peculiar grey or milky appearance, the sun shone rather feebly and could be looked at with the naked eye, but there was no halo or corona present; one looking toward the horizon could see that this gauze-like veil of cloud had a tendency to form in rolls running from northeast to southwest, but so thin and shallow that when looking straight upward one could hardly believe that the sky was clouded. From about 9:30 a. m. until some time after 4 p. m., large feathery flakes of snow filled the air. The flakes were of the most exquisite formation; sometimes they ceased falling for a brief period only to start again. The snow fell to the depth of about 4 inches, but was of such a light, fine texture that it would hardly have been measurable as water. It is very certain that no precipitation could possibly have occurred from any such cloud in the summer season. This cloud sheet was of low altitude.

² See Sailors' Handbook of Storm Tracks, etc., by J. P. Finley. Boston, 1889.

³ Dunwoody, Henry Harrison Chase. Summary of International Meteorological Observations. Washington, 1893. 10 leaves, 61 charts. 19 by 23½". (Weather Bureau Bull. A.)

⁴ See report of the International Meteorological Congress held at Chicago, Ill., Aug. 21-24, 1893. Part II. Washington, D. C., 1895. p. 267. (Weather Bureau Bull. 11, pt. 2.)