Washington.—The mean temperature was 47.0°, or 1.5° below normal; the highest was 80°, at Lind on the 15th, and the lowest, 18°, at Cedonia on the 13th. The average precipitation was 3.80, or about 0.50 above normal; in the western section it was about 1.50 above normal; the greatest monthly amount, 14.01, occurred at Clearwater, and the least, 0.7, at Moxee. The month was cold throughout, the temperature being the lowest of any April since 1896, and the spring the most backward since 1893. Farming operations have been greatly delayed, and crops have made poor progress.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 53.4°, or 1.2° above normal; the highest was 93°, at Morgantown and Uppertract on the 30th, and the lowest, 18°, at Beverly on the 5th. The average precipitation was 1.84, or 1.12 below normal; the greatest monthly amount, 3.17, occurred at Charleston, and the least, 0.92, at Oldfields.—*C. M. Strong.*

Wisconsin.—The mean temperature was 47.2°, or about 2.0° above normal the lowest temperatures occurred from the 1st to the 3d, and the highest from the 25th to 29th. The average precipitation was 2.42, or slightly below normal; the distribution was excellent.—*W. M. Wilson.*

Wyoming.—The mean temperature was 41.5°, or about normal; the highest was 92°, at Carbon on the 24th, and the lowest, 3° below zero, at Sheridan on the 1st. The average precipitation was 0.86, or 0.60 below normal; the greatest monthly amount, 2.30, occurred at Fort Yellowstone, while none fell at Cody and Wamsutter.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

SUN SPOTS AND HAWAIIAN ERUPTIONS.

By CURTIS J. LYONS (dated Honolulu, April 27, 1897.)

The following table showing the relation between the years of least sun spots, as actually observed by astronomers, and the dates of the more prominent volcanic outbursts on Hawaii certainly suggests some connection between the two. The sun-spot periods are from the United States MONTHLY WEATHER REVIEW for December, 1897:

Years of minimum sun spots.	Years of most important lava flows or eruptions.
(?)	1790 (Kilauea Keoua eruption)
1799	1801 Hualalai.
1810	(?)
1823	1823 Mauna Loa.
1833	1832 Mauna Loa and Kilauea.
1843	1840 Kilauea.
	1843 Mauna Loa.
1856	1852, 1855, 1859 Mean 1856. Mauna Loa.
1867	1868 Mauna Loa.
1878	1880-81 Mauna Loa.
1889	1887 Mauna Loa, south slope.
1900 (Probable)	....

The variation in number of sun spots during the average 11-year cycle is strongly marked, the ratio of maximum to minimum being about as 80 to 10, and sometimes greater. It is an accepted fact, I believe, that the solar heat is slightly greater when there are the fewest spots, but how this should cause volcanic outbreak does not appear. It may be the expansion, on account of solar heat, of a fluid interior breaking through a rigid crust.

The next minimum period is due about 1900, as near as can be estimated from past intervals, so without being in any way alarmists, it is reasonable for us to look for a probable lava flow at some time between now and 1901. The Hawaii lava flows are generally confined to desolate parts of the island.

This is not to be considered as a prediction but simply a statement of facts. The lava flows of Mount Ætna have followed, in a measure, the same period.

NOTE.—We publish the above note at the request of Mr. Lyons, but must call attention to the fact that if there be any causal connection, or any true chronological coincidence between the minimum sun spots and the important eruptions on Hawaii, then this relation should, also, be established by studying the agreement of the years of maximum sun spots with the years of no eruption. The above paper presents only one side of the question; the truth can only be attained by studying all sides, and by demonstrating that the eight approximations here quoted were not purely accidental. Everything points to an intimate connection between solar, terrestrial, and cosmic phenomena, but the nature and limitations of this connection can only be ascertained by a more elaborate study of such hypotheses as are implied in the above interesting note by Mr. Lyons.—ED.

A TALK ON ELEMENTARY METEOROLOGY.

By GEORGE MILLARD DAVISON, A. B.

[Given before the Teachers' Institute of Fulton County, N. Y., April 11, 1899.]

NOTE.—This present paper by Mr. Davison, principal of Gloversville High School, illustrates the general style of a popular lecture for teachers and scholars. The subject of meteorology is now being introduced into all the public schools as a necessary subject of instruction. The subjects touched upon in Mr. Davison's lecture before the Teachers' Institute of Fulton County would, of course, be treated more at length in several separate talks when the teachers present the matter to young pupils. The general object of such a lecture is to give the teachers briefs of points that must be elaborated in the class room. In the present crude condition of instruction in meteorology it is, of course, not to be expected that the most advanced physical theories with regard to atmospheric phenomena shall be presented to young pupils, or even that they should be understood by all the teachers. The subject must first be taught more thoroughly, both by the study of nature and of text-books, in the universities, colleges, and normal schools. Meanwhile elementary lectures, such as this by Mr. Davison, will serve as a model for plain talks to the children and their teachers.—ED.

In discussing the subject of meteorology, to-day, I shall not limit it to its commonly accepted meaning, as that which concerns the weather, but shall treat it in its general meaning as seen in the derivation of the word, namely, phenomena which have to do with air; nor shall I discuss obscure things, about which even scientists know comparatively little, but shall talk of ordinary phenomena, with which all are more or less familiar.

To the child all space seems empty, except that which is occupied by something he can see or touch, as houses, trees, rocks, etc. Air he does not see; but if you put into his hand a fan and ask him to wave it vigorously to and fro, he will discover that the fan meets with resistance which can only be overcome by the exertion of muscular effort on his part. In this way you can prove to him that air is a real, tangible substance. That it is made up of several different substances you can show by this simple experiment: If in a saucer partly filled with water I place a lighted candle and over it invert a tumbler so that the lower rim is slightly immersed in the water, the candle soon goes out. The fact that the water is drawn up into the tumbler shows that the volume of air has been diminished. If now I lift the tumbler carefully and put in a lighted match, the match goes out, showing that the tumbler contains a substance which will not burn nor support combustion. This is chiefly nitrogen. The other substance of which air is largely composed—that which enables fire to burn and which was exhausted when the tumbler was placed over the lighted candle—is oxygen. It is oxygen which, when taken into the lungs, cleanses the blood and thus supports life.