To Dr. Aitken his researches were everything. He shrank from public appearances and had no ambition to take a leading part in the conduct of scientific societies. He was equally indifferent to the conventional opinions which dominate so many scientific workers, and cared little for scientific orthodoxy if the plain leading of observation and experiment ran athwart its canons.—*Extract from Symons's Met'l Magazine, Dec., 1919, pp. 125–126.*

COMPOSITION OF THE ATMOSPHERE OF THE SOIL.

[Reprinted from Scientific American, New York, Apr. 6, 1919, p. 428.]

From 10 to 20 per cent by volume of the soil is composed of air, but this "atmosphere of the soil" differs from the superficial atmosphere in composition and is likewise more variable. The percentages of its constituents vary likewise from season to season. Recent investigations of this subject by two English scientists, Messrs. Russel and Appleyard, at Rothamstead in England, furnish some interesting data. To a depth of 0.15 meter the soil atmosphere is very similar to that of ordinary air, though containing a litle more carbon dioxide, but the total amount of carbon dioxide plus oxygen is less than in the air. During periods of active nitrification the percentage of oxygen diminishes, and this is one of the conditions which characterizes the so-called "awakening" of the earth in spring.

Besides the atmosphere entangled in the interstices of the soil there is a certain amount of air dissolved in the water and the colloids the soil contains, but this is almost entirely deprived of oxygen.

From November to May the curves follow the temperature, but from May to November the percentage of oxygen in the atmosphere of the soil increases with every rainfall (as does bacterial activity), which proves that the soil-atmosphere is renewed by the rain. This fact indicates that rain is superior to irrigation. As might be expected, soil which is covered with turf contains more carbon dioxide and less oxygen than arable earth. The composition of the soil-atmosphere appears to be but slightly affected by variations in barometric pressure, by temperature, by velocity of the wind, or by crop conditions.

THE NITROGEN COMPOUNDS IN RAIN AND SNOW.

By F. T. SHUTT and R. L. DORRANCE.

[Reprinted from Science Abstracts, Sec. A, Feb. 28, 1919, Sec. 146.]

The paper summarizes the results of 10 years' work on the nitrogen compounds brought to the earth by rain and snow at a station near Ottawa. A total of 65.8 pounds of nitrogen per acre was furnished in this way in the 10 years, made up of 34.1 pounds in the form of free ammonia, 10.1 pounds of albuminoid ammonia, and 1.6 pounds of nitrates and nitrites. The rain was caught in a tray 60 inches by 30 inches. Every separate fall of rain of more than 0.01 inch was analyzed, while in the case of continuous precipitation measurements were made twice a day. During a period of severe drought when bush fires were prevalent in the neighborhood the scanty rain was particularly rich in free ammonia. Rain was found on the average to be approximately twice as rich as snow in nitrogen compounds, but the individual samples showed more variability with rain than with snow.

THE ROARING OF THE MOUNTAIN AND ASSOCIATED PHENOMENA.[1]

By W. J. HUMPHREYS.

[Author's abstract.]

In many mountainous regions it is a common thing to refer to the "roaring" of the mountain as a sign of a general storm, within 6 to 24 hours, and the "sign" is a good one.

In the Alleghenies, for instance, where the general trend of the ridges is northeast to southwest, an approaching cyclone very often causes the winds to blow across the crests from the southeast, or in such direction as to bring precipitation. In such cases noises on the windward side of a mountain are often distinctly heard in the leeward valley where at other times they are quite inaudible; the sighing of the wind among the trees on the top is roughly focused by the wind also onto this valley, and merged into a cataract roar; the crest is soon mantled with cloud; a separate cloud billow parallels the mountain over the valley; and the winds beat strongly on a relatively narrow belt near or beyond the foot of the mountain. After a shorter or longer interval, the crest cloud thickens, the sky becomes covered throughout, and the precipitation begins. Such is the typical course of events when the mountain roars—all interesting and all explainable.

[1] Presented before the American Meteorological Society, St. Louis, Dec. 30, 1919.

SOME APPLICATIONS OF RADIOTELEGRAPHY TO METEOROLOGY.[1]

By Prof. J. C. JENSEN, Nebraska Wesleyan University.

[Author's abstract.]

It is the experience of every radio operator that his efficiency in receiving will be much lessened during the summer months because of ever-present static interference. Observations extending over several seasons in the writer's station, 9YD, show that there is a definite relation between the radio transparency and amount of static disturbance of the atmosphere and the distance and violence of an approaching storm. This is peculiarly true of local thunderstorms which have always proved difficult for the forecaster. This suggests the desirability of concerted action for the simultaneous observation of storms as they pass a given region, along the lines proposed in antebellum days by the British Association for the Advancement of Science. A series of radio stations associated with the Weather Bureau would also be of great value both in gathering additional data during the day and in sending out storm and cold-wave warnings.

DISCUSSION.

Mr. J. P. Henderson remarked that the times of maximum static seems to be different in different parts of the world.

Prof. Jensen stated that the maximum static occurs at twilight, and with a falling barometer. It is at least on clear days following a LOW.

Lieut. Keyser asked if static was more troublesome in summer than winter.

Prof. Jensen replied in the affirmative, and also noted that it was greater in cloudy weather, and in tropical regions.

Lieut. Keyser remarked that radio-directional apparatus had been used to locate thunderstorms.

[1] Presented before the American Meteorological Society, St. Louis, Mo., Dec. 30, 1919.