

## THE FERTILIZING VALUE OF RAIN AND SNOW.

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In the ascension and descension of water—the continuous rise of aqueous vapour from land and water surfaces, and its interrupted fall as rain and snow—we have natural phenomena of the greatest importance to the maintenance of vegetable and animal life on the earth. Some few years ago the writer traced in a lecture before the Ottawa Field-Naturalists' Club, the various ways in which this constant circulation of the world's water supply affected our health and commerce, and how above all it was necessary for the growth of our crops. As one of the minor ways in which rain and snow contributed towards the maintenance of plant life, it was pointed out that in their fall through the atmosphere they cleansed it of certain nitrogen compounds—ammonia and nitrates—gaseous compounds arising from the combustion of fuel, from the oxidation of food in animals, from the decomposition of nitrogenous organic matter in the soil and from electric discharges in the atmosphere, and it was further shown that these compounds brought down by the rain and snow furnished to our crops a notable amount of most valuable food. It was with the object of determining, as closely as might be possible, the average annual amount of available nitrogen so furnished per acre, that some years ago the analysis of each fall of rain and snow was undertaken in the chemical laboratories of the Experimental Farm, Ottawa. This work has afforded interesting data, some of which may now be presented.

During the year ending February 28, 1911, the rainfall was 19.67 inches and the snowfall 73.0 inches, a total precipitation of 26.97 inches—practically 10 inches below the average for this locality. Omitting many of the details we may state that this precipitation furnished 5.271 lbs. of nitrogen per acre. This is about 1 lb. more than we obtained for the first year of observation (ending Feb. 29, 1908), but markedly less than that for the following year (ending Feb., 1909), viz. 8.364 lbs. per acre. This latter we concluded was abnormally high and was to be accounted for by the extensive bush fires which heavily charged the atmosphere with smoke for at least two of the summer months in 1908. A summary of the four years' investigation may be given in tabular form.