

LETTERS TO THE EDITOR

To the Editor of Tellus

My dear Colleague,

Herewith a letter from Dr. Herman of the Department of Agriculture, Canada, on the question of nitrogen in precipitation. I have got the permission of Dr. Herman to ask you to be kind to publish the letter.

Yours sincerely
Anders Ångström

Dr. Anders Ångström
Swedish Meteorological &
Hydrological Institute

Dear Sir,

On reading the contribution by yourself and Dr. Högberg, On the Content of Nitrogen ($\text{NH}_4\text{-N}$ and $\text{NO}_3\text{-N}$) in Atmospheric Precipitation which appeared in Tellus, 4, 1; 1952, on page 42 you make a hypothesis, "does the concentration approach zero or a negligible value?" From our study now in progress we conclude that the concentration may reach zero.

In a one year's study of soil fertility furnished by the precipitation we have found that 2.004 pounds of $\text{NH}_4\text{-N}$ and 0.907 pounds of $\text{NO}_3\text{-N}$, or 2.92 pounds of total nitrogen was supplied per acre for the twelve-month period, as well as 6.07 pounds of sulphur (S) per acre by the total precipitation experienced here. Now last year was somewhat abnormal for we experienced little snowfall and a continuation of our study may reveal an entirely different picture from year to year.

What we consider of interest is the following occurrence.

On August 15 we experienced one of our customarily yearly cyclonic rainstorms. When the storm struck Kentville, N.S. a rainfall of 2.19 inches was recorded for the day rain. Analysis of the rainfall for $\text{NH}_4\text{-N}$ and $\text{NO}_3\text{-N}$ gave zero readings. As we never had experienced negative readings previ-

ously, I wrote to Dr. Hornstein, Meteorologist-in-Charge, Dominion Public Weather Office, Halifax to find out if records of precipitation were on file from United States cities in the path of the storm. I received the following information. "The storm was of tropical origin; the air within the storm had been hovering over the subtropical regions for several weeks and was reasonably homogeneous, having taken on all the characteristics of a tropical air mass. Reporting stations along the eastern seaboard of North America indicated that rain was falling throughout the period of the storm's northward advance and in many cases the records indicated exceptionally large rainfall amounts, both in the United States and Canada, as shown by the following statistics."

	inches
Norfolk, Va.....	5.80
Atlantic City, N.J.	7.29
Nantucket, R.I.	2.54
Block Island.....	4.86
Providence, R.I.	3.03
New York City.....	1.59
Bridgeport, Conn.....	0.91
Philadelphia, Pa.....	0.64
Eastport, Me.....	2.73
Yarmouth, N.S.	2.99
Kentville, N.S.	12.90

¹ Total for 24 hour period

The above record of precipitation reveals a picture of the abnormal rainfall of tropical origin. The storm proceeded on to Labrador, then turned and petered out in Quebec Province on its way back.

From our negative findings for $\text{NH}_4\text{-N}$ and $\text{NO}_3\text{-N}$ on examination of the heavy day rain we can only assume that the nitrogen forms being investigated were "washed out" of the atmospheric precipitation.

Kentville, October 30, 1953.

Yours very truly,
F. A. Herman
Chemist, In Charge.