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OBSERVATIONS UPON BOGS OF NORTHERN IOWA

CHARLES CARTER

Observations upon bogs in the vicinity of the Okoboji Lakes in Northern Iowa were made in summers of 1936-37-38. The area was about thirty-five by twenty-five miles.

The locations of these bogs are for the most part on the east or north slope of glacial hills in the Wisconsin and Iowan drift sheets.

In general these bogs are rounded elevations a foot to twenty feet in height. Water issues from the apex of a mound and flows down over the surfaces forming small pools. The flow is independent of local rainfall. The temperature is uniform in all bogs studied although they were miles apart. The temperature was $8\frac{1}{2}$ to $9\frac{1}{2}$ degrees Centigrade.

There is a general agreement in the chemical content of the bog waters and in the pH measurement. This is true only of the issuing waters. As the water moves down the slope it changes rapidly in temperature and content. Considerable variation was observed in pools situated a few feet from each other. These changes were sharply reflected in plant and animal life.

A region covering about four acres near the South West shore of Silver Lake in Dickinson County was selected for detailed study. The area contains four bogs or mounds. These mounds are about twenty feet above the surface of Silver Lake. Three of these hillocks were explored in the summer of 1938. A four inch pipe was sunk to a depth of 31 feet in one and to 25 feet in the other two. Materials from the various levels was preserved. In well No. 1 glacial clay with gravel was struck at fifteen feet. The material above the clay was made up entirely of plant material in various stages of decay. At twenty feet fine sand appeared in the water which flowed out of the pipe. This flow continued for 48 hours. The hole continued in glacial drift to the depth of thirty-one feet. The rate of flow was twelve gallons per minute. This continued undiminished from July 6th to September 1st when the last observation was made.

Two other holes were sunk — one about thirty five yards and the third about three hundred yards from well No. 1. Both encountered the organic matter, flowing sand, and glacial clay at

the same levels as in No. 1. The total flow of the three wells was thirty gallons per minute.

In all the bogs a layer of tufa is forming a few inches below the surface. How thick this layer is was not determined.

An analysis of an air dried sample shows:

CaCO ₃	87%
Silica	8-10%
Organic	3-5%

Mineral Analysis of Silver Lake Bog from hill-top cold spring:

	Parts Per Million
Alkalinity	347
Silica	23.8
Oxides	12.4
CaCO ₃	441.6
CaSO ₄	358.9
MgSO ₄	346.8

Mineral Analysis Bog Water Silver Lake at edge of hillock:

Alkalinity	268.4
Silica	954.2
Oxides	13.8
CaCO ₃	268.4
CaSO ₄	860.0
MgSO ₄	269.0
Additional sulfates	300.0

Mineral Content of the Water of Silver Lake:

	Parts Per Million
Alkalinity Carbonate	0.0
Alkalinity Bicarbonate	114.
Siliceous residue	9.4
Oxides of Al and Fe	2.6
Calcium Carbonate	128.2
Magnesium Carbonate	5.1
Magnesium Sulfate	165.6

(All analyses were made by Dr. B. H. Peterson.)

From the data gathered it seems the hillocks are built up by vegetation growing abundantly due to constant water flow. The waters are part of an underground flow. This flow may contribute to the deeper lakes in the vicinity. There are differences between the bog waters and the water of Silver Lake a few hundred feet away. Further studies of the bogs would be desirable.

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