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? WHY THE WEATHER ? Mailed February 28, 1933

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NEW GEOLOGICAL WEATHER RECORDS

A good many years have passed since the Swedish geologist Baron de Geer discovered some remarkable yearly weather records in rocks that were once the clay beds of lakes fed by the summer melting of glaciers during the declining stage of the last Ice Age. The glacial streams carried much sediment into these lakes. Coarse sediment sank quickly to the bottom, but fine sediment remained for a long time in suspension, finally settling down after the flow of the streams had ceased with the oncoming of winter. The rocks resulting from this process are banded with alternate layers of coarse-grained and fine-grained material; the former light in color, the latter dark. Each pair, representing a year's deposit, is called a "varve."

Because more ice melted and more sediment was deposited in hot summers than in cool, some varves are much thicker than others, and these differences give us an interesting record of yearly variations of temperature for certain portions of the earth and for particular periods of the remote past. Most known varves of the kind just described were formed toward the close of the last Ice Age, but some during earlier Ice Ages.

An entirely different sort of varve has recently been discovered. It consists of two very thin layers; a darker one consisting of organic material and a lighter one of mineral material. Varves of this kind are supposed to have been formed, not by the melting of ice, but by deposits of sediment in lakes and seas containing an abundance of minute organisms. The remains of these tiny living creatures deposited at a particular season each year - probably when their mortality was greatest on account of the cooling of the water - are believed to have formed the dark layers. As the amount of living matter in the water varied with temperature, the layers are supposed to indicate by their relative thickness variations of temperature from year to year, just as do the glacial varves.

Non-glacial varves are probably much more widely distributed than glacial varves and were formed during much longer periods of time. Thus they open up a new and promising method of studying prehistoric weather.

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