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? WHY THE WEATHER ? Mailed May 15, 1931

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ARCTIC ICE AND ARCTIC CLIMATE

Cold weather makes ice, but, conversely, ice makes cold weather. The latter fact has an important bearing on the climatic history of the Arctic regions according to Dr. C. E. P. Brooks, of the British Meteorological Office, who argues as follows:

The greater part of the Arctic Ocean is covered by a mass of floating ice, of which only the fringes break up in summer. The temperature of the air above this ice is very low -- near the north pole it is about 30 degrees Fahrenheit below zero in January -- but calculations show that this temperature is almost entirely produced by the ice. If the latter could be swept away, the mean temperature even in midwinter would be about 27 degrees above zero. If the ocean were free of ice and the temperature as determined by conditions other than the presence of ice -- which Brooks calls the "akryogenous" (iceless) temperature -- were only five degrees higher than it is now, the Arctic Ocean would not freeze.

When an ice cap has once formed, its mere presence suffices to lower the actual temperature by some 50 degrees, and this makes it very stable, so that it is able to survive minor changes of climate, just as it survives the seasonal change from winter to summer. Hence to sweep it away the "akryogenous" temperature must be well above 28 degrees -- the freezing point of sea water -- for many years.

Brooks thinks that, possibly because of changes in the amount of heat received from the sun, this has actually happened at times within the past few thousand years; that the ice cover of the Arctic Ocean has been melted away; and that some striking changes have resulted in the climates of neighboring lands.

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