

A Science Service Feature

Released on receipt
but intended for use
November 18, 1926

? WHY THE WEATHER ?

Mailed November 11, 1926

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THE EARTH'S ANCIENT ATMOSPHERE

When the earth was so hot that no solids were present and water now in the oceans was vapor in the atmosphere, our atmosphere was very much deeper than at present. P.G. Nutting of the U.S. Geological Survey figures that at one time water vapor extended out 1,000 miles from the earth, or one fourth its radius. At temperatures over 5,000 degrees centigrade the earth had no solid crust. So much oxygen, hydrogen, and water vapor were at large that atmospheric pressure equalled 20 to 30 tons per square inch instead of a paltry 15 pounds as at present. The atmosphere was 90% oxygen. Between the temperature of 2,000 degrees and 3,000 degrees centigrade oxidation occurred on a great scale; in fact, so much free oxygen was removed from the atmosphere that the pressure dropped from about 20 to 3 tons per square inch. Down to a temperature of perhaps 400 degrees centigrade, the water remained all in the atmosphere, condensing perhaps high up but probably always evaporating lower down, before reaching the surface. But when the mean annual temperature reached about 374 degrees centigrade and the pressure around $1 \frac{1}{2}$ tons per square inch or something over 200 atmospheres, suddenly about 14 per cent of the water vapor was deposited as fluid on the surface of the earth - a tremendous transformation. From this temperature down to 300, torrential rains of water continued to accumulate until the oceans reached two thirds of their present volume. At 200 degrees centigrade all but 6 per cent. of the present ocean water had been precipitated.

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21st and B Sts.,
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