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A Science Service Feature

? WHY THE WEATHER ?

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THE ATMOSPHERE AND ITS PROPERTIES

Planets have atmospheres because their gravitational attractions are sufficient to prevent gaseous molecules from escaping into space. We know that these gases have come largely from the planetary bodies themselves - additions are constantly being made to our atmosphere by the emissions of volcanoes. It seems quite evident that the atmospheric mixtures have varied in the course of geological ages, presumably with increases of the heavier, more inert gases, such as nitrogen. And it is reasonable to expect that planetary atmospheres are fairly permanent. Our own atmosphere, in its present favorable condition, appears stable enough.

The earth's atmosphere has been closely studied. We all know how air, acting as any other mixture of gases, is essentially transparent, highly mobile and elastic, and capable of unlimited expansion. We know that air is practically 76 to 78 per cent nigrogen, 20 to 21 per cent oxygen, about 1 to 3 per cent water vapor, and 1 per cent. argon, with small parts of carbon dioxide and minute amounts of other gases. Dust is always present. We have read of, and perhaps experimented with, the pressure of the atmosphere and noted its changes with storms, or with ascent and descent in elevators or on hills or mountains.

Of the higher atmosphere we know little. We suppose it is largely of very attenuated hydrogen and helium. And we surmise from luminous phenomena that it extends to heights of several hundred miles, while computations show it might extend as far as twenty or twenty-five thousand miles above the earth's surface. But beyond 500 miles at least the atmosphere is so rare as hardly to justify being called a gas.

(Tomorrow: The Gulf Stream Source of Moisture)

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