A Science Service Feature

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? WHY THE WEATHER ?

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OUR UNCHANGING ATMOSPHERE

Since the first accurate observations nearly 150 years ago there appears to have been no change in the composition of the atmosphere. Oxygen still constitutes nearly 21 per cent. of the molecules in any volume of dry air, carbon dioxide about 0.03 per cent., and nitrogen and other gases the other 79 per cent. The world over these percentages are virtually the same. Carbon dioxide does range from 0.02 to 0.04 per cent., with corresponding slight changes of oxygen in the opposite direction. Water vapor varies over a range of about 4 per cent. The continuity of life for millions of years is another indication of fairly constant atmospheric composition.

There are several reasons for this constancy of the atmosphere. One is the enormous amount of atmospheric gases stored in and receivable by the oceans and the rocks. Any rise of fall in the pressure of any gas in the atmosphere would result in an increase or decrease of the amount in reserve. This would tend to offset the change. Another reason, in this case for the constancy of oxygen and carbon dioxide, is the balance which vegetation tends to maintain by absorbing the carbon dioxide of combustion and returning oxygen to the air. Still a third is what might be called the saturation of the space about the sun near the earth's orbit with free-moving gas molecules. Some molecules of gas are probably continually escaping from the earth, but they merely move then in orbits about the sun. Molecules escaping some time ago are probably being recaptured about as fast as others are escaping. So there is apparently a governing reservoir of atmospheric gases outside the earth's atmosphere as well as at its surface.

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