One cubic foot of air, at 32° F., weighs 1.29 ounces. Air rushes into a void with the velocity a heavy body would acquire by falling in a homogeneous atmosphere. Air is eight hundred and forty times lighter than water. The atmosphere supports water at thirty-three feet; homogeneous atmosphere, therefore, $33 \times 840 = 27,720$ feet.

A heavy body falling one foot acquires the velocity of eight feet per second.

Velocities are as the square-roots of their heights; therefore to find the velocity corresponding to any given height, expressed in feet per second, multiply the square root of the height in feet by eight.

For air we have $V = \sqrt{27,720} = 166,493 \times 8 = 1,332$ feet per second. This, therefore, is the velocity with which common air would rush into a void, or, 79,920 feet per minute; some say 80,880 ditto.

The thermometer, when first invented, about two hundred years ago, air, spirits of wine, and oil were made use of; but all these have given way to quicksilver.

Fahrenheit is used in England; Reaumur and the Centigrade thermometers on the continent. The thermometer is on the principle of the expansion and contraction of quicksilver. Plunge it into boiling water, it stands at 212°, and 32° denotes the freezing-point. Between these the space is divided into 180.

Zero (0) is extremely cold; 32° freezing-point; 55° for temperate heat; 76° summer heat; 98° blood heat; 112° fierce heat; 176° spirits of wine boils; 212° water boils; $\frac{1}{10}$ of an inch in a yard is $\frac{1}{220}$ for 90° Fahrenheit.

Mercury is fourteen times heavier than water; therefore, if the pressure of the atmosphere will balance thirty-four feet of water, it will only balance $\frac{1}{14}$ part of that height of mercury, viz., a little more than twenty-nine inches.

In the barometer, if the air be dense, the mercury rises in the tube and indicates fine weather; if the air becomes lighter the mercury falls and indicates rain. Standard altitude in England varies between twenty-eight and thirty-one inches; the difference is called the state of variation.