

ocity of the blood any better understood. It is estimated, however, that there may be one ounce thrown forward at each contraction of the ventricle. Thus, if there are 30 pounds in the body weighing 150, it would take 480 pulsations to send it forward. Allowing 72 pulsations per minute, there pass through the lungs 72 ounces of blood. There are 23 inhalations in a minute, which would expose about 3 ounces of blood to the air at each breath. By this calculation it would require about 160 breathings, or between six and seven minutes to aerate all the blood.

What this propelling power is, is still unsettled in the minds of physiologists. Some claim it to be an electro-galvanic or nervous fluid, unconsciously passing in a current. This theory is claimed to be sustained by the experiment of ligating or dividing the pneumogastric nerve, arresting the circulation of the blood as well as breathing, which may be restored by passing a current of galvanism through the severed parts. Others claim that it is the vivifying power of oxygen on the blood ; while others with more show of reason, that it is from both, that there is a mutual dependence between nerve power and atmospheric stimulation. In the new born infant, there is no independent venous and arterial circulation set up until air is admitted into the lungs, when the blood is set in motion. In death the heart usually continues a feeble motion after the last breath, probably from the supply of oxygen retained in the blood. In suspended animation, our first effort is to get air into the lungs. As soon as this is accomplished the heart is put in motion, though it is an entirely involuntary action ; unless we suppose that the air first acts on the nerve centres, and that they direct the heart to act. That the blood comes into the lungs *venous* and goes out *arterial* is a fixed fact, as is also that it gives off carbonic acid gas, and takes in oxygen. It is also demonstrated that oxygen is the cause of this change to vermilion in the color of the blood. It cannot be produced by any other substance. By no gaseous mixture, without free oxygen, can life be long sustained.

In every inspiration about half a cubic inch of oxygen is taken up, by about three ounces of blood (on the basis of the previous calculation). This would be nearly nine cubic feet per day, Atmospheric air is composed of about 20 parts of oxygen and 80 of azote or nitrogen. Thus, we consume each day about 45 cubic feet of air. The corpuscles alone absorb this oxygen, and the nuclei are vivified. *A priori* it would follow that the blood is, in a large degree, dependent