

during its passage through the lungs; and we have only collateral evidence to guide us in the inquiry.*

The most obvious effect resulting from the action of the air is a change of colour from the dark purple hue, which the blood has when it is brought to the lungs, to the bright vermilion colour, which it is found to assume in those organs, and which accompanies its restoration to the qualities of arterial blood. In what the chemical difference between these two states consists may, in some measure, be collected from the changes which the air itself, by producing them, has experienced.

The air of the atmosphere, which is taken into the lungs, is known to consist of about twenty per cent. of oxygen gas, seventy-nine of nitrogen gas, and one of carbonic acid gas. When it has acted upon the blood, and is returned from the lungs, it is found that a certain proportion of the oxygen, which it had contained, has disappeared, and that the place of this oxygen is almost wholly supplied by an addition of carbonic acid gas, together with a quantity of watery vapour. It appears also probable that a small portion of the nitrogen gas is consumed during respiration.

For our knowledge of the fact of the disappearance of oxygen we are indebted to the labours of Dr. Priestley. It had, indeed, been long before suspected by Mayow, that some portion of the air inspired is absorbed by the blood; but the merit of the discovery that it is the oxygenous part of the air which is thus consumed is unquestionably due to Dr.

* Some experiments very recently made by Messrs. Macaire and Marcet, on the ultimate analysis of arterial and venous blood, taken from a rabbit, and dried, have shown that the former contains a larger proportion of oxygen than the latter; and that the latter contains a larger proportion of carbon than the former: the proportions of nitrogen and hydrogen being the same in both. The following are the exact numbers expressive of these proportions:

| | Carbon. | Oxygen. | Nitrogen. | Hydrogen. |
|----------------|---------|---------|-----------|-----------|
| Arterial blood | 50.2 | 26.5 | 16.3 | 6.6 |
| Venous blood | 55.7 | 21.7 | 16.2 | 6.4 |

Mémoires de la Société de Physique et d'Hist. Naturelle de Genève. T. v. p. 400.