

permanganate test everywhere, and at all depths. The gas contained in the water was carefully analysed, and it was found, as a general result, that the amount of free carbon dioxide increased and the proportion of oxygen diminished with increased depth. There seemed to be reason to believe, however, that the quantity of carbon dioxide depended to a great degree upon the abundance of the higher forms of life. Mr. Lant Carpenter used always to predict a bad haul for the zoologists when he found the proportion of carbon dioxide to the oxygen and nitrogen unusually low. The great increase in the quantity of carbon dioxide was just above the bottom. The general average of thirty analyses of surface-water gives the following as the proportions of the contained gases present:—Oxygen 25·1, nitrogen 54·2, carbon dioxide 20·7; this proportion was subject, however, to great variations. Intermediate water gave an average percentage of oxygen 22·0, nitrogen 52·8, and carbon dioxide 26·2; while bottom waters gave—oxygen 19·5, nitrogen 52·6, and carbon dioxide 27·9. But bottom water, at a comparatively small depth, often contained as much carbon dioxide as intermediate water at much greater depths. In one of the serial soundings, in which the water was taken at every 50 fathoms, three analyses gave the following singular result:—

	750 Fathoms.	800 Fathoms.	Bottom, 862 Fath.
Oxygen . . . . .	18·8	17·8	17·2
Nitrogen . . . . .	49·3	48·5	34·5
Carbon dioxide . . . . .	31·9	33·7	48·3

The greatly increased percentage of carbon dioxide in the stratum of sea-water immediately overlying