

Temperature.	Salinity.		
	0 per thousand.	20 per thousand.	35 per thousand.
	O. in c.c. per litre.	O. in c.c. per litre.	O. in c.c. per litre.
0° C.	10.29	9.01	8.03
10° C.	8.02	7.10	6.40
20° C.	6.57	5.88	5.35
30° C.	5.57	4.96	4.50

At 30° C. a litre of water which is saturated with oxygen contains little more than half as much as at 0° C. There is therefore normally more oxygen in the cold water-masses of the Arctic and Antarctic regions than in the warm water-masses of the tropics. The salinity is not such an important factor in the solubility of oxygen as the temperature.

Marine animals need oxygen for respiration, and therefore consume some of that contained in the water. By the act of respiration carbonic acid is produced and dissolved in the water. The same thing goes on through the respiration of plants. These are some of the principal oxygen-consuming processes. But plants assimilate besides breathing; that is to say, they make use of the carbonic acid by dissociating it into oxygen and carbon; they employ the carbon for building up cells, while the oxygen is again dissolved in the water. This is the chief oxygen-producing process, but it is carried on only through the influence of light-rays. It is doubtful what rays are the most important for marine plant life, and in what quantity they are necessary. Experiments have shown that many higher aquatic plants assimilate much better in yellow light than in blue or violet light; this is the case with most adherent green algæ, and hence they are found in the upper water-layers near the surface, where there is enough yellow light. The red algæ, on the other hand, assimilate better in blue light than in yellow, and therefore live in deeper water than the former. We know nothing of the assimilation by the plankton-algæ of the various light-rays; we only know that they need light, and that they are found in the upper water-layers, but not in deep water. The production of oxygen in the sea is thus limited to the upper layers, while the consumption of oxygen takes place wherever there are living organisms (excepting certain bacteria). Now, supposing the processes of assimilation and of respiration