surface-waters. (2) Analyses of waters below the surface; and these last may be again subdivided into (*a*) intermediate, and (*b*) bottom-waters.

The total quantity of dissolved gases in sea-water, whether at the surface or below it, was found to average about 2·8 volumes in 100 volumes of water.

The average of thirty analyses of surface-waters made during the expedition gave the following proportions:—

	Percentage.	Proportion.
Oxygen	25·046	100
Nitrogen . . .	54·211	216
Carbonic acid . . .	20·743	80
	100·000	

These were thus distributed over the three cruises, and the maxima and minima of each constituent are thus shown:—

	Number of analyses.	Average percentage.			Average proportion.			Oxygen.		Nitrogen.		Carbonic Acid.	
		Oxygen.	Nitrogen.	Carbonic Acid.	O.	N.	CO_2	Max. per cent.	Min per cent.	Max. per cent.	Min. per cent.	Max. per cent.	Min. per cent.
First Cruise .	19	24·47	52·95	22·58	100	216	92	28·78	19·60	62·95	46·35	32·0	12·72
Second Cruise.	2	31·33	54·85	13·82	100	175	44	37·10	25·56	59·63	50·07	24·37	3·27
Third Cruise .	9	24·86	56·73	18·41	100	228	74	45·28	13·98	68·67	41·42	27·14	5·64

It is interesting to remark that surface-water contains a greater quantity of oxygen and a less quantity of carbonic acid during the prevalence of strong wind. The following is an average of five analyses made under such conditions:—

		Per cent.	Proportion.	General average.	
5	Oxygen	29·10	100	25·046	100
	Nitrogen . . .	52·87	182	54·211	216
	Carbonic acid . .	18·03	62	20·743	83

In the two cases which presented the remarkable small *minima* of carbonic acid with a great excess of oxygen, the water had been accidentally taken from immediately abaft the paddles, where it had been subject to violent agitation in contact with air.