amounting to nearly 2 inches, and to the vapour tension in the air, which has a range of 1 inch. The following examples will illustrate this: in the Antarctic Ocean at the highest latitudes attained, the barometer stood generally at about 28·8 inches, the temperature being 29° F. The tension of vapour at this temperature is 0·16 inch, consequently the pressure of dry air was 28·64 inches. In equatorial regions the barometric pressure was usually about 29·8 inches and the temperature 80° F. At this temperature the tension of aqueous vapour is 1·023 inch, therefore the pressure of dry air was 28·777 inches, or nearly identical with that in the Antarctic Ocean. Between these two regions is that of the trade winds, characterised by a high barometer and low humidity. Here the barometer is as high as 30·4 inches, the temperature 70° F., and the relative humidity 80 per cent., therefore the vapour tension is 0·54 inch; consequently the pressure of dry air is here 29·86 inches, or quite 1 inch more than is the case either at the Equator or at the Antarctic Circle.

On the 18th, 20th, and 21st December 1875, when the ship was passing through an area of high pressure off the west coast of South America, the gases were extracted from a number of samples of surface water. The mean barometric pressure on these days averaged 30·2 inches, the temperature was 58° F., and the humidity 85 per cent. The vapour tension was therefore 0·41 inch, the pressure of dry air 29·79 inches. The analyses of the gases extracted from those waters gave the following results per litre of water :—

Analyses of Gases extracted from Surface Waters of South Pacific.

Date, December 1875.		18th.	20th.	21st.
Total gas, ... c.c.	V_0	19·57	22·08	19·87
Carbonic acid (CO_2) in total gas, per cent.	...	12·94	18·59	11·14
Gas freed from carbonic acid (CO_2), .	v_0	17·04	17·98	17·66
Oxygen, . . . per cent.	...	33·95	34·36	34·66
Carbonic acid, . . . c.c.	...	2·53	4·10	2·21
Nitrogen, ... „	...	11·25	11·80	11·54
Oxygen, ... „	...	5·79	6·18	6·12
Nitrogen, . . calculated c.c.	...	11·05	11·24	11·24
Oxygen, . . . „	...	5·77	6·06	5·92
Excess of nitrogen, . . . c.c.	...	0·20	0·56	0·30
Excess of oxygen, . . . „	...	0·02	0·12	0·20