

the same direction as that shown by our experiment. A trial of the temperature at the bottom was made with the deep-sea thermometer, and was found to be $56\frac{1}{2}^{\circ}$; while at the surface it was 69° . The land to the westward of Algoa Bay was now in sight, and it was not a little remarkable as we came on soundings how soon we passed into a smooth and quiet sea, from a rough and tossing one, exhibiting all the turbulent characteristics that are caused by the meeting of powerful currents.

On the 9th, the wind being contrary, we continued standing in towards the land, and in the afternoon were not more than ten miles from the coast. The temperature of the air and water was 68° .

The next day the wind blew from the same direction, and as the weather was fine, I determined to stand off to the edge of the bank previously spoken of, in order to obtain the assistance of the current running there, to carry us to the westward. At 4 P. M. we tried the set and velocity of the current, on soundings in eighty-five fathoms water, and found its direction to be east-northeast; its rate, a quarter of a knot per hour. During the last twenty-four hours, while on soundings, the set of the current was thirty-three miles N. 62° E. At 6 P. M. the temperature of the water changed from 67° to 75° , and with this variation of temperature, we found we were again entering the turbulent sea. In the tacks we made, off and on, the temperature rose and fell during each of them, several degrees, and the turbulent and smooth water formed a well-defined line.

On the 11th, we still continued in the rough water; the temperature at the surface being 75° , but that at one hundred fathoms depth was only 65° ; with two hundred and fifty fathoms of line, there were no soundings. In the evening the water became remarkably phosphorescent; in fact, to a greater degree than I had ever previously observed, except at the Cape de Verde Islands, while on our outward voyage. After we had passed the pitch of the Cape, the direction of the current was found to be changed, having set us, in twenty-four hours, forty miles, on a course N. 40° W.

I am satisfied that the use of thermometers would be beneficial to those navigating around this Cape; for by keeping in water of a temperature above 70° , they would, although exposed to a rougher sea, be carried more rapidly around the Cape, and would discover that they had passed it by encountering the cold water which is flowing rapidly to the northwest. In fact, it is obvious to me that the anomalies of current and temperature existing in this neighbourhood, can only be accounted for on the hypothesis of an upper and under current of different temperatures. The former of these is the warm, the latter