

Account of a horizontal rainbow observed at sea / by C. Collingwood.

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ACCOUNT OF
A HORIZONTAL RAINBOW
OBSERVED AT SEA.

BY

DR. C. COLLINGWOOD, F.L.S. ETC.

[With a Plate.]

ON May 5th of the present year I witnessed a most remarkable phenomenon. I was in lat. $25^{\circ} 19'$ S. and long. $54^{\circ} 13'$ E., the weather very fine and bright, and we were sailing with a light breeze. Observing signs of a squall blowing up from the S.S.E. while I was sitting reading on deck, I got up and went to the port gangway to watch its approach. It was about half-past one P.M., and the sun was therefore in the N.N.W., exactly opposite the approaching squall, upon which was already developed a rainbow of low altitude (12° to 15°). While gazing at it my attention was arrested by a yellowish-brown haze upon the horizon immediately under the centre of the arc, which, although very faint, appeared from its position to have some connexion with the squall or with the rainbow; and I was thus induced to watch it attentively. At first it was a mere indefinite tinge of colour on the distant horizon, and for two or three minutes it seemed to undergo no change; but at

length by slow degrees it increased in intensity, and then appeared to spread over the water, looking as though a cloud of reddish dust was hanging over the sea. For some minutes I was quite at a loss how to account for it, but carefully watched to see what would be the upshot. It now became rapidly intensified in brightness, and presently prismatic, and then slowly spread forward across the sea towards us, and at length presented the appearance of a brilliant horizontal bow lying upon the sea, its apex just capping the horizon, and its limbs seeming to fade away upon the water halfway between the eye and the horizon (Plate III. fig. 4). As the horizontal bow increased in intensity the vertical one gradually faded away, and quite vanished immediately after the former had reached its greatest brilliancy, which was most marked about the centre or apex.

In the horizontal bow the red colour was upon the outer or convex side, while in the vertical bow the red was on the inner or concave side. The *horizontal* bow was therefore the *primary* bow, and the vertical bow the secondary or reflected one. Hence we had the remarkable spectacle of a secondary bow appearing before the primary bow was at all developed, and fading in proportion as the latter reached its greatest intensity. The vertical bow, however, was always much less bright than the horizontal bow ultimately became. This latter, when once the prismatic colours became fully developed, seemed rapidly to approach us from the horizon, the limbs appearing to shoot forward, becoming broad, and spreading a wide coloured space upon the blue water on either side; and the bow, when complete, had somewhat of a horseshoe-shape, as though foreshortened. When it had reached its greatest intensity, being then of amazing brilliancy, it suddenly faded and disappeared, and the vertical bow, which had been growing very faint, disappeared at the same time. Throughout the whole duration of the phenomenon the apex of the horizontal bow maintained precisely its original position upon the horizon, namely where I had first been struck by the appearance of the luminous haze; and from the time I first observed this appearance till the time when the whole vanished was about ten minutes. During this time a small drizzling rain fell, which was scarcely sufficient to wet the deck, and the squally effect passed away to the S.W.

Fig. 4.



