

the line was again checked, and this time the accumulators showed that the weights had become detached, so the line was hove in, and a little red clay was found in the sounding tube, and one of the thermometers had been broken by the pressure. The depth not having been ascertained with sufficient accuracy, another sounding was taken with 4 cwt. of sinkers attached, and the line was checked at 3000, 3475, 3800, and 4000 fathoms, but on each occasion the accumulators indicated that the weights were still attached; finally the time-intervals increased so rapidly that the moment the rod reached the bottom was known with considerable accuracy; thus, between 4400 and 4425 fathoms the interval was 36 seconds; between 4425 and 4450 fathoms, 38 seconds; between 4450 and 4475 fathoms, 37 seconds; and between 4475 and 4500 fathoms, 52 seconds; showing conclusively that the weights struck the bottom between 4475 and 4500 fathoms.

The two thermometers sent to the bottom the second time were both broken by the pressure. Mixed with the mud brought up in the tube on this occasion was some mercury out of these broken thermometers, which, falling faster than the sinkers, reached the bottom first, and, owing to the perfect stillness of the sea at this great depth, was caught by the rod descending exactly on the spot where the quicksilver had fallen.

A curious circumstance about this sounding was that the time-intervals went on increasing from 0 to 3500 fathoms, after which they remained nearly stationary at 35 seconds for each 25 fathoms until the bottom was reached, which apparently indicates that from 3500 to 4500 fathoms the impetus of the falling sinkers increases in exact proportion to the friction of each additional fathom of line.

On the passage to Japan, the ship passed over the position of Lindsay Island reported by Captain Lindsay of the British schooner "Amelia" to be in lat. $19^{\circ} 20' N.$, long. $141^{\circ} 15\frac{1}{2}' E.$, four miles in length, of a dark brown colour, very barren, and 40 feet high. On the 29th March, at 5 A.M., the position of the Challenger by star observations was lat. $19^{\circ} 8' N.$, long. $141^{\circ} 16' E.$, and a northward course was shaped until 8 A.M., when being in lat. $19^{\circ} 24' N.$, long. $141^{\circ} 13' E.$, by observations of Venus and the sun, a sounding in 2450 fathoms was taken. The day was fine and clear, and from the masthead a radius of at least 12 miles was commanded, so that Lindsay Island would have been seen did it exist anywhere near the locality assigned it. Either it is much out of position or Captain Lindsay must have mistaken a cloud for land, or, what seems still more improbable although it has been known to occur, the island has now disappeared through some volcanic action.

The bed of the ocean, from the Admiralty Islands to Japan, was, with the exception of the one deep sounding of 4475 fathoms before mentioned, fairly level, the average depth being about 2450 fathoms. At one sounding, however, 100 miles north of the Admiralty group, the bed of the ocean rose to 1850 fathoms in the immediate neighbourhood of the Carolines, indicating that these islands are situated on a large plateau.