

## HALL BANK - A NEW TABLEMOUNT IN MOZAMBIQUE CHANNEL

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*(Note. This article was originally prepared some years ago but has not been previously submitted for publication).*

When the American whaling barque *Pilot* ran into shoal water shortly after dawn on 5th January 1850 she was, according to her Master, Captain WHITE, in latitude 21° 10' S, longitude 38° 57' 5 E — about midway between Madagascar and Portuguese East Africa.

As the bottom could be clearly seen it was estimated that the depth was not greater than 3 fathoms, while up to windward lay several patches of even shallower appearance.

Captain WHITE reckoned that the shoal water extended 1½ to 2 miles and said it lay 295° (by compass) from Bassas da India, though this does not agree with his latitude and longitude.

Exactly 107 years later — to the day — H.M.S. *Owen* was steaming up from the south-westward to carry out a final investigation with a view to establishing once and for all the existence or otherwise of this Pilot Shoal. Throughout the intervening years the feature had figured on marine charts and maps (figure 1) despite the fact that it had never been found again by any of the ships habitually passing through this area. Indeed, in 1878 H.M.S. *Fawn* (Commander W.J.L. WHARTON, R.N.) spent 4 days searching for it in ideal conditions and obtained a sounding of 1 620 fathoms with a bottom of grey mud; while in 1904 H.M.S. *Pearl* took several casts in the area finding no bottom at 100 fathoms and seeing no indication of shoal water.

Several hours before dawn on 5th January 1957 *Owen* was still, by dead reckoning, some 35 miles to the southward. No sights had been obtainable the previous evening and the currents had been uncertain. Some anxiety was therefore felt when the sea-bed revealed by the Deep Sea Echo-Sounder suddenly started sloping upwards from a featureless abyssal plain at 1 700 fathoms. When, after 10 minutes, it had risen by 3 600 feet, it was deemed prudent to stop the ship and wait for the dawn. It was just possible that the currents had set her up against Pilot Shoal or even the Bassas da India reef.

While lying stopped in a calm sea a continuous and unmistakable sonar response was obtained from an area of shoaler water close east-

ward. When dawn broke, however, star-sights confirmed the dead-reckoning position; so, clearly, a new feature of undetermined extent and depth had been discovered.

Before investigating it further, however, *Owen* spent the whole day carrying out a thorough survey of the area within a radius of 15 miles of the alleged position of Pilot Shoal, finding only a smooth bottom sloping gently northward from 1 730 to 1 600 fathoms (Figure 2). This effectively disproved its existence anywhere near the charted position.

Although the new feature's bearing from Bassas da India differed by 50° from that given by Captain WHITE, its distance off agreed closely, and it did not seem beyond the realm of possibility that some elementary error had been made. Accordingly *Owen* returned to the southward and, after relocating the feature by E/S, carried out a zig-zag search for the approximate summit. In a depth of 248 fathoms a floating beacon carrying an electric light and radar-reflector was anchored with 300 fathoms of 1-inch mooring wire.

From the mean of three sets of independently observed morning and evening stars the position of this beacon was fixed as latitude 21°50'5 S, longitude 39°01'2 E. For a period of 20 hours the ship sounded over the feature, fixing her position at regular intervals by radar ranges and visual bearings of the beacon. Figure 3 shows the results of this survey — carried out on a scale of 1/72 000.

Time did not permit the survey to be extended as far as the abyssal plain on all sides but the surrounding depths are apparent from previously charted soundings supplemented by those since taken on passage. The feature is revealed as an isolated tablemount with a circular flat top 5 miles in diameter canted slightly upward to the south-west and elevated about 9 000 feet. The least depth found was 238 fathoms.

During the survey the weather and sea conditions were perfect. The water was exceptionally clear, a transparency observation by Secchi disc giving a depth of 150 feet. The bathythermograph recorded a negative thermocline from 78° F at the surface to 72° F at 370 feet. Numerous fish were observed over the summit, including a number of sharks attended by their striped pilot-fish.

Several attempts were made to obtain samples of the summit. On one occasion the nose-piece of the corer was badly buckled, indicating a hard rock bottom, but this was thought to be just off the summit. Finally a successful strike was made with another corer on the flat part of the summit, close to the position of the beacon, in a depth of 248 fathoms. On this occasion a short coring-tube was used and it was appreciably bent by the impact; a penetration of 4 inches was achieved, however, resulting in a good healthy sample which had to be gouged out with a screw-driver.

The sample, weighing about 10 ounces, had a stiff soap-like consistency. Though it has darkened appreciably with time, it was originally of a whitish hue bearing a wealth of different coloured particles — of which some appeared sandy, some calcareous and some coralline. Preliminary analysis at the British Museum (Natural History) identified it provisionally as parasepiolite.

The existence of this feature (whose flat top is almost certainly the result of wave-cut action) is considered fresh evidence of terrestrial subsidence in the Mozambique Channel, supporting the theory that Madagascar was once connected with East Africa (probably till Lower Cretaceous times).

For want of a better name (the name Owen having been used extensively in the western part of the Indian Ocean, and no obvious geographical name having suggested itself) the feature has come to be called after the ship's Commander — i.e. (in oceanographical parlance) Hall Tablemount. On British Admiralty charts since 1960 it is shown as Hall Bank.

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