

# INVESTIGATION INTO SHOALS OF THE COAST OF ANNAM

(Extract from the *Annales Hydrographiques*, Paris, 1931-1932)

## INVESTIGATION OF THE JUNIATA BANK.

The *Octant*, having sailed from Phan-Rang bay about 10 p.m. on the 23rd of April, reached a point a few miles East of Poulou-Cécir-de-Mer at about 6 a.m. on the 24th, and set a course for the charted position of the Juniata Bank where she arrived at about 10 a.m.; a buoy was laid out in this position in a depth of about 150 fathoms (280 metres), and the examination carried out round this buoy lasted till about 6 p.m.; the *Octant* returned nightly to anchor near the buoy; afterwards she went back to Cam-Ranh where she arrived about 7 a.m. on the 27th. The weather was reasonably good.

The numerous astronomical observations taken by the *Octant's* officers under the directions of the captain, Lieutenant de Vaisseau CALAS, established the fact that the buoy was moored at a point very near that marked on the chart and did not drag in the course of the work.

The sounding was carried out by following lines radiating round the buoy. This point was utilised, by keeping it on a steady bearing, to lay off a course which was subsequently steered by dead reckoning for some miles after losing sight of the buoy. A new course was then set by dead reckoning, and the estimation rectified when the buoy hove in sight again. A dozen radiating lines were thus made, and were completed by other soundings filling up the spaces or increasing the number of observations at points considered to be more interesting. The diameter of the zone explored was about 15 miles.

With regard to the soundings themselves, the following scheme was carried out. Ultra-sonic sounding was abandoned, the depths being greater than 110 fathoms (200 m.), and we made use of sounding by detonations. We thus carried out about a hundred soundings by electrically detonating cartridges of dynamite by the method laid down by Ingénieur principal MARTI. As a set-off, the microphone not being in very good condition, the echoes of rifle shots, which should normally have been sufficient to register a reading, given relatively shoal depths, produced no result. Without this hitch the number of results obtained would have been increased tenfold.

Finally a dozen soundings were taken with a graduated Warluzel line, 190 fathoms (350 metres) long, with its sinker in place. After correction, the agreement between the soundings thus obtained and those given by the detonations was remarkable.

No marked peak was found. The depths seem to increase at a fairly uniform gradient from North-West to South-East and from 140 to 250 fathoms (250-450 metres). A slight super-elevation of about 5 fathoms (10 metres) was observed in the Southern part of the zone explored. Wherever we had occasion to take the nature of the bottom, we found very soft green clay, always of the same kind. Without being absolutely categorical on the non-existence of a *peak*, we think that the possibility of its existence at the spot marked on the chart is less strong now than before the execution of the work. It is nearly certain that a *bank* as shown on the chart does not exist, particularly a *sand-bank*.

## INVESTIGATION OF THE DUPERRÉ BREAKERS.

The *Octant* weighed and proceeded from Phang-Rang at 5-30 p.m. on the 9th of May; she took station a few miles East of Padaran Lighthouse, and from there steered towards the charted position of the "Duperré Breakers", where she arrived on the morning of the 10th. A buoy was streamed, drifting only with the current, around which sounding was commenced. By night a lamp was lit on this buoy, and the *Octant* gave up her sounding and hove to, coming up periodically to leeward and in sight of the buoy. This prevented too serious a drift during the night, away from the point to be explored. Once during the course of the work the buoy was brought back towards this point from which it had shifted materially. The *Octant* returned to Phan-Rang at 10 a.m. on the 12th of May, after setting a preliminary course towards Cam-Ranh. The weather

was fine enough, but less so than during the examination of the "Juniata", especially during the return passage during which the South-East monsoon blew fairly hard.

The position of the buoy was kept under close surveillance thanks to the astronomical observations compiled by the *Octant's* officers. The mass of these observations enabled its track to be defined, as well as the different courses (which had to be suitably transferred) made good during the sounding round this central datum point.

The drifting buoy was fitted out like an enormous current-measuring float. It was so ballasted as to ride nearly awash and not to offer too much resistance to the wind. Enormous cross pieces built of wood and canvas were suspended about 16 1/2 fathoms (30 metres) below the water-level and caught the whole effect of the current.

This system, the idea of which is due to Lieutenant de Vaisseau CALAS, commanding the *Octant*, was preferred to that of Lieutenant de Vaisseau MAILLOUX, which consisted in mooring a fixed mark by a Warluzel line. The latter method could have been used with assurance for a detailed examination within a small radius, especially if depths of less than 550 fathoms (1,000 metres) had been found, but it seemed to us to be unreliable at depths of 1,100 to 1,650 fathoms (2,000-3,000 metres), and above all not to lend itself to the examination of a big area, as the mark would hardly be visible beyond 2 or 3 miles and we would risk not being able to find it again if we got too far away by dead reckoning.

The experiment would however have been made with interest if the fatigue occasioned by this expedition had not necessitated the fullest use being made of the time spent on the spot.

Here are the results obtained as far as concerns the soundings properly so-called :

After using ultra-sound up to depths of 110 fathoms (200 metres) we used rifle shots, which gave good results up to 710 fathoms (1,300 metres), the microphone in use during the examination of Juniata having been replaced by an apparatus recently arrived from France; on the return trip the state of the sea prevented us from obtaining any result in analogous conditions, for the parasitic noises due to the beating of the waves against the hull became confused with the echoes. Beyond 710 fathoms (1,300 metres) we took soundings successfully by detonating dynamite cartridges. The greatest sounding obtained was about 1,480 fathoms (2,700 metres). The number of soundings obtained by this method was about 200, spread over the whole stay in the neighbourhood.

Finally two soundings were taken at a depth of about 1,260 fathoms (2,300 metres) with a Warluzel line fitted with its sinker. The reading when the lead touches bottom is not very clear. None the less this operation gave a rough check on the soundings obtained by detonation. The lead having been lost in the course of one of these two soundings at the moment of returning on board, only one sample of the bottom was obtained. It was soft mud.

To recapitulate, we found in the depths of about 1,100 fathoms (2,000 metres) a superelevation rising to 875 fathoms (1,600 metres). On the other hand no reef and no suspicious colouring was observed. Both by night and day we met ships, about ten or so during three days, which did not seem to be in fear of any danger between wind and water. If we reflect that for nearly half a century large numbers of ships have been regularly passing this spot and have never fallen in with or seen any danger, we are led to conclude that the sought-for hazard is not correctly placed on the chart.

However we do not consider that the exploration of the zone is disposed of, and if time had permitted it would have been desirable to undertake a second expedition centred on the depth of 875 fathoms (1,600 metres) and embracing a region comparable in dimensions with that already studied.

