

« D. JOAO DE CASTRO » BANK.

from an article published in the *Anais do Club Militar Naval* September-October 1942, by first Lieutenant E. H. ALBANO OLIVEIRA and some information taken from the records of the International Hydrographic Bureau.

In December 1720, between the islands of São Miguel and Terceira, took place one of the most striking submarine eruptions ever recorded in the volcanic history of the Azores. It produced a small island, about one league in diameter, which could be seen eight leagues off.

The appearance of this island was announced in Paris to the Naval Council, by the French Consul, at Lisbon, Mr. MONTAGNAC who heard of it through a French vessel returning from the Santa Maria Island. The information was communicated to the Regent by a letter, dated 11th March 1721.

As early as January 2nd 1721, the Municipal Council of Ponta Delgada, having heard of the eruption and appearance of the island, held an extraordinary meeting and decided to make enquiries, the results of which were to be forwarded to His Majesty.

On April 2nd, Mr. SAUVAIRE, French Consul, in Madrid, also sent a letter to the Regent, on the subject, quoting the evidence given by Captain Jean ROBÇON, commanding the English corvette *Richarte Isabel*, who had endeavoured by order of the Terceira governor, to reconnoitre the island but had not been able to come near it on account of the fire blazing from it.

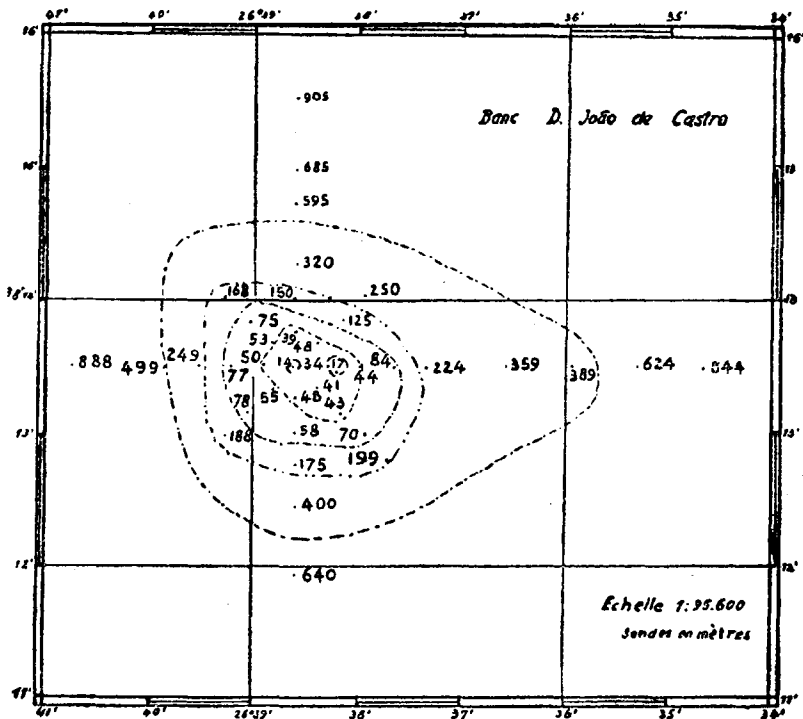
This letter wrongly attributed to the new island a latitude of 39°29'N., although the accompanying chart indicated 38°29'. But this error of 1° in Latitude gave rise to some discussion and threw even doubts on the existence of the island. So much so, that the Marquis de SAINTE-MAURE, the harbour master of Rochefort, writing on the 19th July 1721 to the Naval Council and stating that to his knowledge, a privateer from Algiers had chased a vessel in that neighbourhood and had given up his prize for fear of encountering reefs after the vessel had taken refuge in the new island, expressed the opinion, that a heap of volcanic matter floating on the water, had created the illusion of an island. This was also the view expressed by TOFINO, the Spanish governor, who was instructed to effect a survey of the Azores in 1788.

Similar phenomena took place in 1811 near the São Miguel Island. After the eruption of the 1st February opposite the Ginetes peak and that of 13th July near the Ferraria point, appeared the island of Sabrina which disappeared very soon after and whose approximate position was given by

soundings effected in that region by the Adjacent Islands hydrographic expedition in 1940.

The documents and letters forwarded to Paris by Mr. MONTAGNAC which have been since communicated to the Académie des Sciences and published in his Memoirs in 1722, are sufficient to prove that TOFINO was mistaken.

On December 1st 1721, the French Consul at Faial, M. Joseph d'HARRIAGUE, sent a letter to the Council in which be confirmed the volcanic appearance in December 1720, in the middle of the sea, of an islet, half a league in circumference. Fifteen days after this eruption, an English pilot and the chief pilot of Terceira still saw the fire caused by the eruption and perceived the island which they located between Terceira, Pico and São Miguel, 16 leagues south of Terceira and 12 leagues East of Pico. The former gave the latitude as 38°23', the latter as 38°28'. Soon after, the naval paymaster of Calais, sent to the council an extract of pilot Jean Morel's log book, this man who arrived in the harbour on the 20th December 1721, had also seen the island, which the Portuguese called : the *Island of Good Jesus* ; because of its appearance on the 31st December 1720 at midnight, which was accompanied by an earthquake. He located it 15 leagues N.-W. of the São Miguel Island.



D. Joao de Castro Bank
 Soundings in meters effected on the 17th October 1941
 Scale 1/95,600

Mr. MONTAGNAC, on being requested to give further accurate information, sent to the Council, on November 4th 1721, reports made by two French vessels which had returned from the Azores.

Captain Jérôme FASCERY, Commanding the ship *La Liberté* from Antibes, had sent a ship's boat to attempt to land on the island. He saw water spouting out as if gushing forth from a boiler furnace, more than 20 fathoms high. The latitude of the island was $38^{\circ}24'$, its circumference a little less than one league. It could be seen 8 milles off. He annexed to his report a picture of the island taken one third of a league away in a N.-N.-E. direction, on July 24th 1721. Pilot Louis LENTIER, on the French vessel *La Fortune-Constante* also supplied two pictures made North and South of the island on the 18th July 1721, together with a detailed description. He sent a ship's boat which attempted to land on the southern side and which, effecting a sounding, two cable's lengths from the shore, did not reach the bottom with sixty fathoms of wire. He went nearer westward, still sounding without reaching the bottom, but observing changes in the colour of the water and noticing smoke which looked like coming out of a boiler furnace. Closer to the land, soundings gave 4 fathoms but it was not possible to land on account of the rough sea. The island looked almost round, surrounded by a rim of black gravel with a small lagoon in the centre. Its latitude was $38^{\circ}24'$; it was situated about half way between São Miguel and Terceira.

On the 25th February 1722, the Naval Council received a letter from Mr. CHAMPENESLIN, the Harbour Master of Brest, written on the basis of information supplied by Mr. MAYER, originating in the Portuguese ship *São Francisco Xavier*, that called at the Azores on her home ward bound voyage from China, and coming from pilots of his district. Without giving the latitude of the island, he asserted that it was less than 39° . He stated that the new island had been seen on the 13th September 1721 between 7 and 8 a.m. The weather having become overcast, they came back on the 25th to look at it and they observed a latitude of $38^{\circ}25'$ N.

The letter also contained a description of the island and added that the latter had begun to diminish and Mr. ANDRIEU, French Consul at São Miguel, was supposed to have notified that in September 1722 it was almost at water level.

On March 10th 1722, Mr. SAUVAIRE, notified that several ship masters, who had arrived at Madeira had stated positively to him that the island had completely disappeared without leaving any trace. Mr. MONTAGNAC gave the same information on July 21st 1722 to the Naval Council, on the strength of a report made by the French ship master Jean-Baptiste BENARD on board the vessel *Notre-Dame de la Chandeleur*. A great breaker, about a league long was supposed to be seen where it had been located.

Subsequently to that date, no more mention was made either of the island

or its disappearance. In 1943-44, Captain A. T. VIDAL, of the British Navy effected a hydrographic survey of the Azores region, and although his excellent work included over 150 soundings between São Miguel and Terceira, he did not come across the spot assigned to the submarine eruption of 1720.

A shoal was however mentioned in the 1862 edition of the *Nautische Tafeln*, with the approximate position :

Latitude 38°16' to 38°18' N.
Longitude 26°41' to 26°50' W.

The "*Description Nautique des Açores*" by KERHALLET (1865), also mentioned the shoal and stated that indications had been supplied to him by Commander B. PRATT, of the English Vessel *William of Bangor*, by master Victorino FALCAO of the barque *Tres Amigos of St. Jorge* and also by George PERKINS of Plymouth.

In 1874, the supplements of the "*Dépôt des Cartes et Plans de la Marine*", stated the French Commander GRASSET, of the Vessel *Cornelia* did not hesitate to deny the existence of a shoal or any danger to navigation.

On April 3rd 1914, the German S.S. *Cincinnati* reported having seen in latitude 38°15' N. and longitude 26°36' W., a high wave rising and falling three times, which might be ascribed to the existence of shoals.

On December 28th 1920, at 9.20 a.m. an Officer of the Dutch S.S. *Barendrecht*, when going over a spot situated in latitude 38° 16' N. and longitude 26°39' W., noticed the light green colour of the water and the existence of breakers which are characteristic of shoals (U.S. H.O. N. to M. N° 5/459-1921). After which, the Washington Hydrographic Office made a mention on its charts of that region : *breakers observed in 1920*.

The "Pilot Chart of North Atlantic Ocean" for June 1927, noted the doubtful existence in that zone of banks and dangers to navigation.

The German Cruiser *Amazon*e investigated this shoal on May 24th 1927 in clear weather and a N.-E. sea. He effected a sounding with a steel wire machine and a hand sounder without reaching the bottom and found no trace of any bank in the region of 38°16' N. and 26°39' W. This result was announced in the *Nachrichten für Seefahrer*, of July 30th 1927, N° 3.310, with the mention that there was certainly no shallow bank in the neighbourhood of that position.

After this investigation, the British Admiralty, by Notice to Mariners N° 33/1.411, of 1927, deleted the mention "Reported (1921) Breaks", from its charts.

The Washington Hydrographic Office did the same in 1939.

However, the "*Annalen der Hydrographie*" of 1927, reported on

page 243, some soundings made in September 1926 with a Behm Echo Sounder, by the cable-ship *Norderney*. The latter effected a sounding and reached the bottom at 717 meters in latitude $38^{\circ}29'$ N. and longitude $26^{\circ}51'$ W. among depths of over 1,000 meters. This sounding was plotted on the 3rd Edition of the General Bathymetric Chart of the Oceans, published in April 1935.

Special Publication N° 20 of January 1928 of the International Hydrographic Bureau also mentioned in N° 63, in latitude $38^{\circ}15'$ N. and longitude $26^{\circ}40'$ W. the reference: "Shoal, breakers near 1,097 meters, reported in 1920". Concerning the publication and shoal N° 63, the Director of the Portuguese Hydrographic Office, was kind enough to notify the Bureau by his letter N° 153 of June 14th 1927, that "the depth found in that position is so great that it cannot be supposed that the sea has at any time broken on the bottom. To be sure, any breaker which the observer may have noticed, must be the result of some seismic wave which rose in a direction opposite to that of the swell, the region being pre-eminently of a seismic nature".

"The view of this Direction is that the reported shoal does not exist. The position being somewhat on the route between the islands of São Miguel and Terceira, its approaches are very much frequented and the report has never been confirmed".

A second edition of the same work (Part A, January 1932) reproduces the information given in the 1st Edition, gives an account of the *Barendrecht's* report and of the *Amazones's* fruitless investigations, and marks N° 63 with an asterisk to indicate that this bank was investigated and found to be non-existent.

The French chart N° 1,266—Edition N° 3, March 1936, however, kept on a cross surrounded by dots in latitude $38^{\circ}17'$ N. and longitude $26^{\circ}46'$ W., with the legend: "Rocky bank emerged from bottom 1849 and not found again (P.D.)".

The distinguished vulcanologist, Director of the Meteorological Office of the Azores, José AGOSTINHO, published in 1936 an important work entitled: "*A Erupção Submarina de 1720 entre a Terceira e São Miguel*". After a very close critical examination of all the information collected, he concluded with the conviction that there existed a bank in the neighbourhood of the area comprised between:—

Latitude $38^{\circ}15'$ to $38^{\circ}16'$ N.

Longitude $26^{\circ}36'$ to $26^{\circ}38'$ W.

and ascribed its origin to a submarine eruption and to the phenomenon of appearance and disappearance of an island.

In 1938, the German surveying vessel *Altair* carried out some survey work in that region, the results of which have been published by the oceanographer Wüst. She effected a sounding of 272 meters, on May 26th, about

5 miles E.N.E. off the position of the bank located in 1941, by N.H.D. *João de Castro*. It is probable that the position of this sounding is not quite accurate and that it rested on the bank level stretch.

The O.N.H. *Carvalho de Araujo* effected some soundings in that area in 1940, without finding depths of less than 1.000 meters. Yet the views advanced by José AGOSTINHO were to be confirmed by the work carried out by the Adjacent Islands Hydrographic Expedition. On July 28th 1941, the N.H.D. *João de Castro* left Ponta Delgada at 8.45 a.m. for Angra do Heroísmo. She directed her course to go over the spot marked "Breakers" on the Azores American Chart N° 5.384 and began sounding operations at 2.10 p.m. with a great depth *Veslekari* Sounder. The latter recorded at once a depth of 340 meters and 500 meters soon after. Reversing her course, the vessel found a decreased depth down to 75 meters. A sounding effected with a hand sounder at the same time as an echo sounding by sounder *M.S. XII* for depths of 300 meters resulted in a better depth estimation.

Two reading scales were available on the sounder, one for depths of more than 300 meters (deep) one with lines from 50 to 50 meters for depths from 300 to 60 meters (shallow) also one with lines from 10 to 10 meters for depths of less than 60 meters.

The *deep* scale having recorded a depth of 85 meters which decreased down to 50 meters, it was certain that a bank had been found, so that the *shallow* scale was then used and recorded a slow decrease in depth from 49 to 40 meters followed by an increase up to 50 meters, and a rapid one up to 65 meters. The vessel was making slow headway against wind and sea.

Sailing over the same course in the opposite direction and using the *shallow* scale, it was noted that the depth decreased down to 40 meters and suddenly down to 20 meters to increase again rapidly up to 40 meters.

Reversing again over the same course, depths of 20 meters, then 40 then 65 were again obtained. The *deep* scale being again resorted to, a rapid increase from 65 to 300 meters was observed.

To the recorded 20 meters should be added 3 m. 50, as the sounder was adjusted according to the depth of the keel; 1 m. 50 should also be taken off on account of the height of the vessel. A minimum depth of 22 meters was therefore finally obtained. A poor visibility did not permit to see land. By careful dead reckoning sailing as far as "Angra do Heroísmo", it was possible to ascribe to the bank the following approximate co-ordinates.

Latitude 38°14',5 N.

Longitude 26°39',0 W.

According to the international custom adopted in such cases, it was decided to call this shoal : *D. João de Castro Bank*.

On October 11th, about 11 a.m., the vessel returned to the bank. She

found many gravel bottoms at depths of 40 to 47 meters and anchored at 11.47 a.m. The anchor gripped quite well. But the wind, which was N.-E. having freshened, it was impossible to effect soundings from boats; soundings were made from the vessel with an echo sounder and a steel wire machine. The minimum sounding obtained that day was 18 meters. The weather was still over cast and the position had to be fixed by dead reckoning.

On the 17th of the same month, as the weather seemed to be fine and clear, the vessel left Ponta Delgada at 4.50 a.m. and being on the spot at 10 a.m. anchored a buoy and made several sun observations during the day, with gave the following result :—

Latitude $38^{\circ}13',5$ N.
Longitude $26^{\circ}38',6$ W.

which values were more satisfactory than those obtained previously by D.R.

However the wind freshened and blew E.N.E. causing a swell which prevented the use of motor boats. Lines were therefore made by D.R. and echo soundings on the basis of the buoy position and by following the directions of cardinal and intercardinal points. The records made with the *M.S. Sounder-XII*, twice showed very sudden decreases in depth when sailing close by the buoy. A minimum depth of 12 meters was recorded, which, with draught and tide corrections, gave 14 meters as the minimum depth of rock needles which were sure to exist and might constitute a danger to surface navigation in sea troughs. The steel wire machine and the hand lead had only given a value of 17 m. 50, because the lead could not be placed exactly on the top of some of those rocks.

Thus the *N.H.D. João-de-Castro* began her hydrographic work under a lucky star ; she gave proof of the efficiency of her modern equipment, which enabled her to associate with a striking accident of the submarine floor the name of a great Portuguese navigator, who was responsible for three excellent "Sea Rutters" in the second quarter of the XVIth Century, in which reference was made for the first time to the deviation of the magnetic needle.

P. V.

