OS VALES SUBMARINOS PORTUGUESES E O DIASTROFISMO DAS BERLENGAS E DA ESTRAMADURA

by

CARLOS FREIRE DE ANDRADE

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REVIEW.

The Geological Service of Portugual has kindly sent to the International Hydrographic Bureau a very important volume which treats of the questions relating to the geology of the coasts of Portugal and the Estramadura. Chapter III is of particular interest to us as its subject is the study of the submarine valleys which are encountered off the coasts of Portugal. The most important and those which have been most investigated are those bearing the names of the valleys of Cape St. Vincent, of Setubal, of Lisbon, of Cascais and of Nazaré. A summary has been given in the English language from which we extract the following conclusions :—

On the origin of the submarine valleys very little data is available. As regards the Nazaré submarine valley, it was probably formed during the archean diastrophism, modified lately by terciary alpine movements, by the elimination of some section of the valley by the partial filling up with the sandy deposits of pliocene and quartenary age, and finally, by the atmospheric erosion during the quartenary of a section of the submarine valley nearest the coast.

This part of the submarine valley falls to a depth of 984 feet and is the continuation of the land valley of Nazaré, where the village of that name is built. No indication of important diastrophism was found there in connection with this part of the submarine valley.

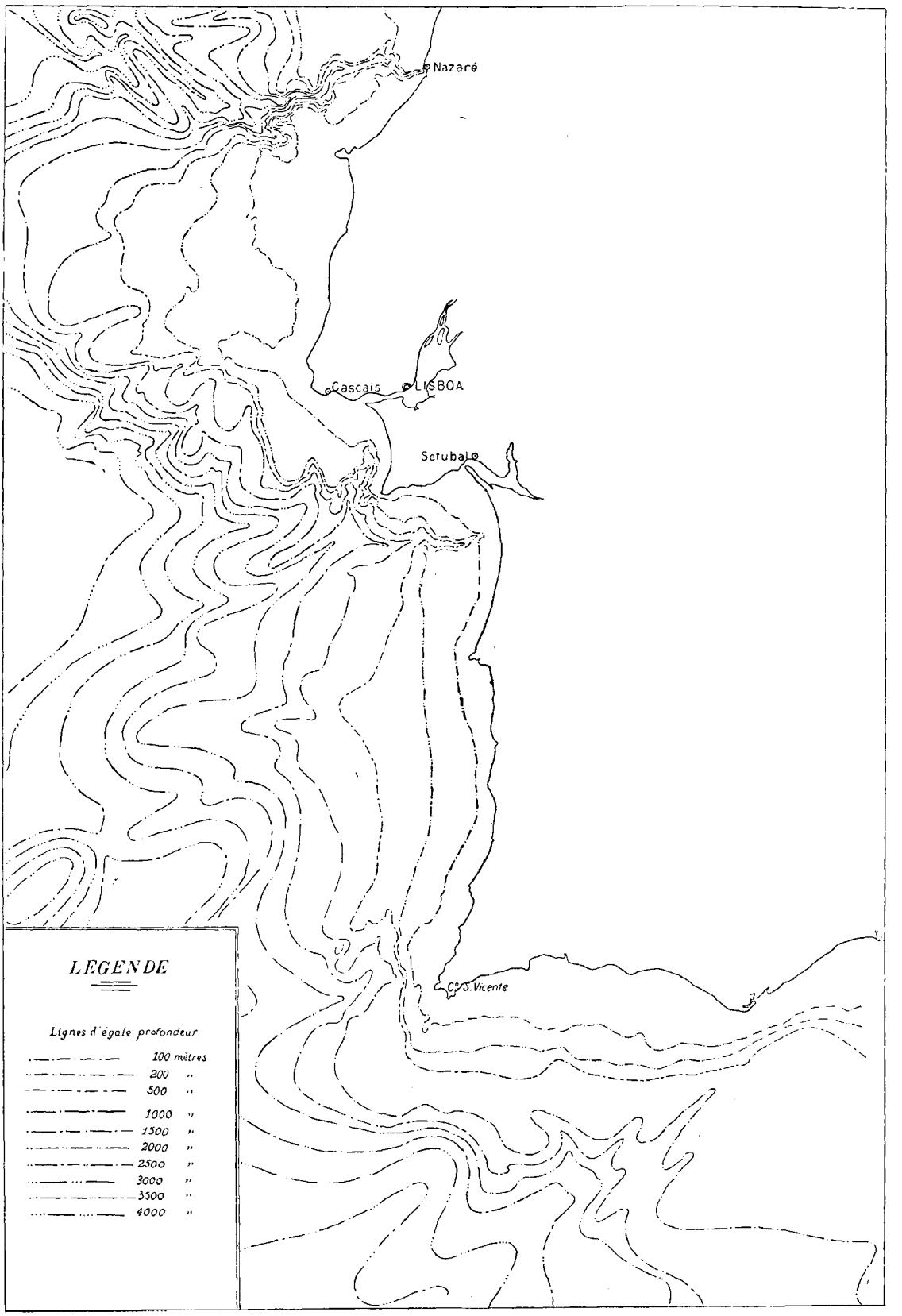
The submarine valleys of Cascais and Lisbon are not so important as the one mentioned above. The only data which can be obtained is found on the right bank of Tagus and on the coast from S. Julião to Cascais.

These submarine valleys were probably formed during the post-cenomanian diastrophism, and connected with the eruption of the Sintra granite and the Lisbon area basalts. It was found that certain faults on the coast were in line with and parallel to these submarine valleys and, by the investigation of numerous faults of this type, it was thought that these submarine valleys were formed by the retreat, nearly horizontally to the interior of the continental shelf, of a section of the continental talus between the 656 feet and the 3,280 feet bathymetric lines.

They are, then, depressions caused on the continental talus and derived from the sum of the partial horizontal displacements of the numerous faults that outcrop on the coast.

The Setubal submarine valley shows no tectonic connection with the coast south of the mouth of the river Sado.

Probably this valley is a sincline fold related to the complicated folding and thrusting of the Serra da Arrabida. If this is so, this valley was formed in tertiary times, during the alpine movements. The pressure was from south to north and the tertiary and mezozoic rocks were thrust against the massive blocks of jurassic limestone found in Serra da Arrabida.



The Portuguese Submarine Valleys.

The Cape St. Vincent submarine valley parallel to the Cascais and Lisbon valleys was probably formed at the same time. At Sines and S. Tiago do Cacem and even at Vila Nova de Milfontes some indications were found showing that this valley is, in all probability, of tectonic origin.

Numerous submarine valleys, not mentioned above, are found in the sea-bottom off the coast of Portugal, and below the 656 feet bathymetric line. Of these quite a large number are of tectonic origin and are the traces, on the sea bottom, of a diastrophism that may be found on the continent.

P. V.