

48. STRUCTURAL FRAMEWORK OF SELECTED REGIONS OF THE WESTERN MEDITERRANEAN

PREFACE

The western Mediterranean drill sites of DSDP Leg 13 (i.e., Sites 121, 122, 123, 124, 133 and 134) were located on seismic reflection profiles obtained in the spring of 1970 during the "Polymede" cruise of the R/V *Jean Charcot*.

The high quality "Flexotir" recordings were highly instrumental in delineating the Upper Miocene salt layer (Auzende *et al.*, 1971) and proved invaluable to the success of the drilling campaign. In keeping with the spirit of this informal international cooperation, the scientific party from the Centre Océanologique de Bretagne (CNEXO) have been invited to incorporate the drilling results with their

new geophysical data and present for the *Initial Reports* a series of brief synopses concerning the structural framework of various regions of the western Mediterranean visited by the *Glomar Challenger*.

W.B.F.R.

REFERENCE

- Auzende, J. M., Bonnin, J., Mauffret, A., Olivet, J. L. and Pautot, G., 1971. Upper Miocene salt layer in the western Mediterranean basin. *Nature*. 230, 82.

48.1. ALBORAN SEA

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INTRODUCTION

The Alboran Sea (Figure 1) is a narrow sea (200 km wide), closed on the west by the "Arc of Gibraltar" and opening in the east into the Balearic Basin. The Betic chains extend along its northern border, the Rif chain extends along its southwest border, and its southern border is essentially formed by the Atlas Foreland. The Betico-Rif ensemble forms an arc having divergent structures (dipping away from the Alboran Sea). South of the sea, the Rif structures turn towards the northeast in contact with the autochthonous and semiautochthonous Atlas Foreland. The Rif and the Betic chains are affected by numerous northeast-southwest and northwest-southeast lateral faults whose role seems important (Kornprobst, 1971; Andrieux *et al.*, 1971; Jacquin, 1970), but is not explained yet. All of these structures are of Alpine age (essentially between late Eocene and middle Miocene).

The Alboran Sea poses three sets of problems as follows: (a) problems relating to the age and formation of the basin in relation to the surrounding mountains; (b) tectonic and sedimentary problems relating to the Messinian episode; and (c) problems concerning the interpretation of the recent movements, since the Alboran Sea, southern Spain, and Morocco are the seat of intense seismic activity. We will successively study: (1) the nature and the structure of the basement; and (2) the sedimentary covering, essentially with reference to Drilling Site 121 and to continuous seismic profiles.

THE BASEMENT

A topographic map of the basement (Figure 2) has been drawn using the Flexotir profiles obtained during the Polymede cruise of the R. V. *Jean Charcot* (1970) and the air-gun profiles of the R. V. *Glomar Challenger* and the R. V. *Conrad* (Ryan, 1969) as well as certain profiles of the Geomede cruise of the R. V. *Jean Charcot* (Glangeaud *et al.*, 1968).

In the description of the basement, we will distinguish the following units (Figure 2):

- 1) The Alboran Ridge, known to us as the southern Alboran Ridge.
- 2) The northern Alboran Ridge, parallel to the southern one and separated from it by a narrow basin — the Alboran Strait.
- 3) The Cape of Gate shelf and the Caldeira shelf — vast zones of shoals attached to the continent.
- 4) The eastern basin which is surrounded by these two zones of shoals and separated from the Balearic Basin by an important slope.
- 5) The eastern trench separating the southern Alboran Ridge from the Caldeira.
- 6) The northern marginal basin situated in the western half and limited in the south by a rise in the basement.
- 7) The western Alboran Basin divided into several basins by reliefs of basement.
- 8) The Rif margin.