-6 - SOME GEODYNAMIC ASPECTS OF THE ALPINE CHAINS OF GREECE -

by JACOBSHAGEN V.

The outer mountain chains of Greece are characterized by many features of an island arc orogen :

- negative gravity coinciding with Mediterranean Ridge outside the Crete arc (FLEISCHER 1964) ;
- High seismic activity on the whole. Along the Crete arc the hypocenters are marking a subduction zone with a dip to N-NE (GALANOPOULOS et al. 1970, CAPUTO et al. 1970) ;
- The Crete arc is accompanied inside by an even active andesitic volcano zone ;
- Earthquake mechanism solutions suggest a crustal drift from Anatolia and from the Greek mainland to the southern Aegean Sea (RITSEMA 1969) ;
- The crustal movements are ruled by the North Anatolian Line (PAVONI 1961), a big righthand transcurrent fault. This fault seems to join the western limitation of the Vardar Zone having the function of a transform fault : At present the amount of horizontal movement along this line is thought to be compensated by the distraction of the Gulf of Thessaloniki.

To develop a satisfying geodynamic model geoscientists must try to reconcile their imagination with a lot of geological facts and to fill up certain gaps of geophysical and geological knowledge on these regions. Special attention has to be payed to the following problems :

- The islands of the Crete arc, now parts of a ridge within the originating mountain belt, belong to the Hellenide system, their internal nap structures being developed in Lower Tertiary. Which are the relations between the Alpine system of the Hellenides and the Crete arc ?
- Contrary to the assumed compressional tectonics in front of the Crete arc the Aegean islands and the surrounding coastal areas testify nothing than giant distraction processes during the Neogene and the Quaternary. In the North Aegean Trench faulting seems to have reached even the upper mantle. The lower limitation of an Aegean plate should be sought within the mantle. A second shear horizon must be assumed within the crust to explain the distraction phenomena near the surface.

These problems and others are faced by German geoscientists cooperating within the program "Geodynamics of the Mediterranean" of the German Research Council. They are divided in three groups working on the :

1. Alpine structures
2. Geophysical activity and the state of the crust
3. Young Cenozoic history of the Aegean region.

Investigation are concentrated on 2 critical traverses crossing the Greek mainland and the Aegean Sea.

List of German research projects of the first group

Leader	Cooperation in Greece	Project
D. RICHTER (Aachen)	Dr. Mariolakos	Ionian flysch of the Western Peloponnesos
W. SCHWAN (Erlangen)		a) Tectonics of the Central Peloponnesos b) Special tectonics of the Parnassos Unit
H. RISCH (Berlin)		Upper Cretaceous paleogeography of the Northern Peloponnesos
V. JACOBSHAGEN (Berlin)	I.G.S.R.	Tectonics of the Argolis peninsula. Paleogeography of the Argolian flysch
V. JACOBSHAGEN and W. SKALA (Berlin)	Prof. Papastamatiou and I.G.S.R.	Tectonic analysis of the Northern Sporades and the Pelion
E. WALLBRECHER (Berlin)		Tectonic analysis of the Psara Island
K.W. TIETZE(Marburg)	I.G.S.R.	Nap structures of Chios

Leader	Cooperation in Greece	Project
S. DUERR (Marburg)	I.G.S.R.	South-eastern part of Cyclades Massifs
W. SANNEMANN (Wuerzburg) S. KUSS (Freiburg)	I.G.S.R.	Geologic structure of Western and Central Crete and the isle of Gavdos
G. KAUFFMANN		Upper Paleozoic stratigraphy and paleogeography of the Aegaan region

Interventions à la suite du 7-6 -

MERCIER - Dans le Vardar on a une phase ante-aptienne NS avec la direction NE Jurassique supérieur, plis transverses encore métamorphiques N 70. Après le Crétacé supérieur une deuxième phase N 50°. Après l'Eocène supérieur une phase avec la direction hellénique.

Réponse : It is the same system as in the Island of Chio. I prefer local comparisons; same directions cannot be spread over the all area. It has to be precised by very detailed local studies. We refer to Uppermost Cretaceous Flysch (Maestrichtian ?) there are 3 directions sequences. We have to start very hard work to follow regional axes pattern to know the origin of sediments.

MERCIER - Les directions transverses synmétamorphiques fini-crétacées sont importantes et sont les mêmes que dans le Vardar.