

11. - THE COMPENSATION OF THE SEA-FLOOR SPREADING IN THE NORTHERN RED SEA ALONG THE AQABA-GOLBASI STRIKE SLIP FAULTZONE.

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Spreading activities in the Gulf of Aden and the Red Sea were not simultaneously but occurred individually at different phases within the two rift troughs. Therefore lateral strike slip motions play an important role in allowing the offset of Arabia away from Africa towards the Toros-Zagros instable belt. Injection of oceanic crust within the Northern Red Sea trough does not extend into the Gulf of Suez. This essentially initiates the plate displacements of Arabia with respect to the Sinai-Palestine block and the Levant slivers. The offset of the Arabian plate is caused by directed compressional stresses on the plate, pushing the continental crust away from the rift-center (here the Red Sea). This is indicated - besides shield warping reactions, occasional folding and thrusting - by the fault pattern of S-Jordan (Ram area) and folding almost perpendicular to the fault zone in SE-Turkey.

The Levant (Aqaba - Wadi Araba - Jordan Valley - Beqa'a - Ghab - Hatay - Gölbası) faultzone provides a good example of lateral crustal displacements. An offset of about 107 km between the Sinai-Palestine block and the Arabian plate is clearly indicated by shelf displacements between S-Sinai and N-Saudi Arabia and is also deduced from faciès comparisons across both sides of the faultzone in Palestine (Freund, 1970).

However, only the Aqaba- Wadi Araba-Jordan valley zone is a straightforward example of lateral strike slip motions. North of Lake Hula the faultzone forks in three branches 1) the W-Lebanon fault, 2) the Beqa'a zone and 3) into the pre-existing Palmyra Fold Arch. South of Homs the Beqa'a lineament seems to bifurcate into 1) the N-trending Ghab zone and 2) the fold belt E of Homs. Within the ultrabasics and ophiolites of the Hatay area a rather complex fault pattern occurs, until finally the last single branch of the Levant lineament appears to link and disappear within the ophiolites of the Elazığ-Bitlis nappes (Toros Mts.). Thus North of Lake Hula the lateral throw along the Levant lineaments becomes less due to loss by branching into several zones of crustal weakness of the Arabian Shield. A further structural complication is indicated by the Tripoli-Homs cross-lineament, which cuts (causes ?) the area of bending between the Beqa'a and Ghab zones.

The structural connection of the Levant strike slip fault zone with the Palmyra Arch and especially through the Hatay zone into the overthrust belts of the Toros-Zagros chains allows a) complete uncoupling of Arabia from its northwestern microplates, which are of continental or oceanic structure (Kizil Dag) and even in places tectonically mixed (up-duction in Hatay ?). It allows: b) for compensations of the crustal extension in the rift troughs in the SW of Arabia by crustal shortening and probable subduction in the Toros-Zagros instable belt. To conclude, the displacement of Arabia truncates the E-Mediterranean oceanic structures. Oceanic relicts of the Pre-Oligocene Tethys preserved in the Hatay area and within the ophiolite zones of the Toros-Zagros belts.

GLANGEAUD - Avez-vous tenu compte des résultats obtenus par l'équipe franco-italienne dans le Golfe d'Aden et la région des Afars. Ils peuvent permettre de résoudre le problème que vous posez, en tenant compte de tout le bloc arabe, et non seulement d'une partie. Ces mouvements sont en effet actuellement en pleine activité avec volcanisme actif et flux de chaleur.

Réponse : I did not work myself in Afar zone. Afar problem is really recent. Our observations are much older. I should like to discuss that privately.