

Model for supracrustal emplacement of ophiolites during plate separation, with implications for nappe systems and the plate kinematics of the Alpidic and Caledonian belts

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Oman-type ophiolite occurrences are distinct from those of California-type. Oman-type ophiolites exhibit basal HT metamorphic aureoles and/or cap coevally stacked slide-nappe piles, or did so before tectonic disruption; internal igneous stratigraphy may be incomplete. Their genesis and emplacement always seem to follow one or more substantially earlier separative SOB-forming events (**). Fresh splitting of a well-sedimented deep floored SOB(*) would produce an igneous ridge (embryo MOR) standing far above the adjacent floor.

It is proposed that this edifice bursts its side, causing a huge quasi-solid lateral discharge (maintained by axial upwelling) (***), sliding upon and metamorphosing the basin floor sediments whose H₂O penetrates the hot mass, lowering its solidus and inducing the characteristic H₂O-dominated magmatic sequences and metamorphism which have led others to infer an island arc environment. The model explains the widespread internal tectonisation and unconformability between igneous units and avoids the difficulty of cutting huge slices out of sub-oceanic mantle (****). Upwarping of the basin floor will initiate further sliding and successive decollements within the overridden, overpressured sediments. Uplift and tectonisation of the pile usually occurs later, during basin closure and crustal collision. Major effects upon plate kinematic interpretation in the Caledonide and Alpidic belts will be outlined (*****).

The following explanations were included in the given talk (the abstract area was limited and smaller typewriter fonts not available):-

- * SOB = small oceanic basin (Menard 1967)
- ** usually set at P3 or Tr3 in the Oman case
- *** ... often carrying a portion of the already-formed ridge superstructure upon its back, and ...
- ****without crumpling them despite their evidently plastic high-temperature state.
- ***** In the Alpidic belt the J3 and K2 groups of HEOs (= Oman-type) mark the starts of additions to the oceanic area, ensuring there was plenty of ocean to close in the Tertiary.