Letters to the Editors

Sirs,—Fyfe and Weir's recent paper (1976) records evidence from which several points of regional significance may be made.

Firstly, they conclude that the major axial rise in the Lower Palaeozoic of the Southern Uplands must lie some distance southeasterly of the present outcrops of the Moffat Shales. However if Dewey's (1971) concept of ocean floor movement and subduction in South Scotland is in broad terms correct then no major axial rise is necessary as an essential feature of the palaeogeography and locus of Black Shales, which were simply distal open ocean deposits.

Secondly, it is intriguing to incorporate Fyfe and Weir's important evidence for a very early pre-folding age for their southeasterly translating thrusts into Dewey's (1971) theoretical evolution of the Southern Uplands. If, for example, saw-tooth basement fracturing in the style of Dewey's (1971, fig. 5) Stage F (contemporaneous with folding) was actually active in the earlier Stage B (pre-folding) then the faults would have been contemporaneous with sedimentation, forming asymmetric sub-basins deepest in the NW (with flysch) and shallowing to the SE where shales could mark the minimally sinking edges of the fault-bounded tilting basement blocks. Shales in this position would of course have major faults on their SE margins, as described by Toghill (1970) and Fyfe and Weir. Such NW–SE facies variation from flysch to shales has been reported by Kelling (1961) and Welsh (1964).

The consequences of progressive deformation of strongly asymmetric sediment wedges of this kind include a satisfactory mechanism for producing the complex monoclinal fold style of South Scotland. In addition southeasterly translating thrusts and even décollement within each asymmetric wedge are feasible and perhaps even necessary elements of the deformation. However it is implicit in this model that Fyfe and Weir's speculative major décollement either does not exist or need not have the precise origin or configuration they ascribe to it.

References


William Welsh

Department of Geology and Mineralogy, University of Aberdeen.

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