The Southern Uplands Fault and its relation to the metamorphic rocks of Connemara

SIR – The Connemara Massif of Dalradian metasediments and igneous rocks in western Ireland (Fig. 1) is bounded both to the N and S by large faults which may have significance on a crustal scale. Along its northern margin the massif is separated from the lower and mid-Ordovician of Murrisk by two major fault systems, the Doon Rock Fault, which has a postulated minimum of 5600 m of movement (Dewey, Rickards & Skevington, 1970), and the related Lough Nafooey Fault. The latter was active during Ordovician sedimentation and there are southerly derived, base of slope proximal turbidites (Archer, 1975, unpubl. thesis, Galway Univ.) to its N, although the Murrisk Ordovician/Connemara Massif contact is not exposed, indirect evidence suggests that it is faulted along its entire length.

Along the southern margin of the Connemara Massif the relationship has been obscured because of the occurrence of the Galway Granite. However, the probably Arenig South Connemara 'Series' on Gorumna and Lettermullen Islands (McKie & Burke, 1955) and in the Skird Rocks to the W of the Galway Granite, indicate that there is a similar geological history on both sides of the massif. Along the southern margin at least 4000 m of these Ordovician rocks, which contain proximal turbidites probably derived from the N, are overturned and moderately to steeply dipping. Mapping has shown (Max *et al.*, in press) a very large fault between the Skird Rocks' Ordovician and the metamorphic rocks of the Connemara Massif to the west of the Galway Granite (Leggo, Compston & Leake, 1966), which is probably on the same order of magnitude as the Doon Rock and Lough Nafooey fault systems to the N. This southern bounding fault to the Connemara Massif may well have been active during Ordovician sedimentation and had largely ceased to be active prior to the introduction of the Galway Granite (Max *et al., op. cit.*).

These major faults are significant for two reasons. Firstly, the Connemara Massif can be regarded as a horst area in a regional context, which must have been actively ascending during lower Ordovician times. Secondly, the southern boundary fault would be the northern-most large scale fault in this part of western Ireland which could be reasonably correlated with the Southern Uplands Fault. Other related geophysical lines appear to have less geological significance. On the Continental Shelf there is a major linear magnetic feature (Weir & Bailey, 1974) which can be traced to about the vicinity of the Skird Rocks and probably indicates the western continuation of this major fault. To the E of the Skird Rocks the Galway Granite obscures the geophysical picture, but as the granite appears to anneal the trace of the fault, the southern margin of the Connemara Massif can be regarded as lying *within* the granite, where it would pass into the line of the Southern Uplands Fault in the vicinity of Galway town.

There has been considerable controversy concerning the continuation of the Southern Uplands Fault into and through Ireland (Bailey & Holtendhal, 1938; McKerrow, 1959; George, 1960; Leake 1963; Dewey, 1969, Rast & Crimes, 1969; Weir, 1973). However, recent mapping (Max *et al., op. cit.*) and geophysical evidence support the view of Leake (1963) and have allowed more significance to be assigned to the Skird Rocks Fault in that it can be regarded as the main westward continuation of the Southern Uplands Fault Line.

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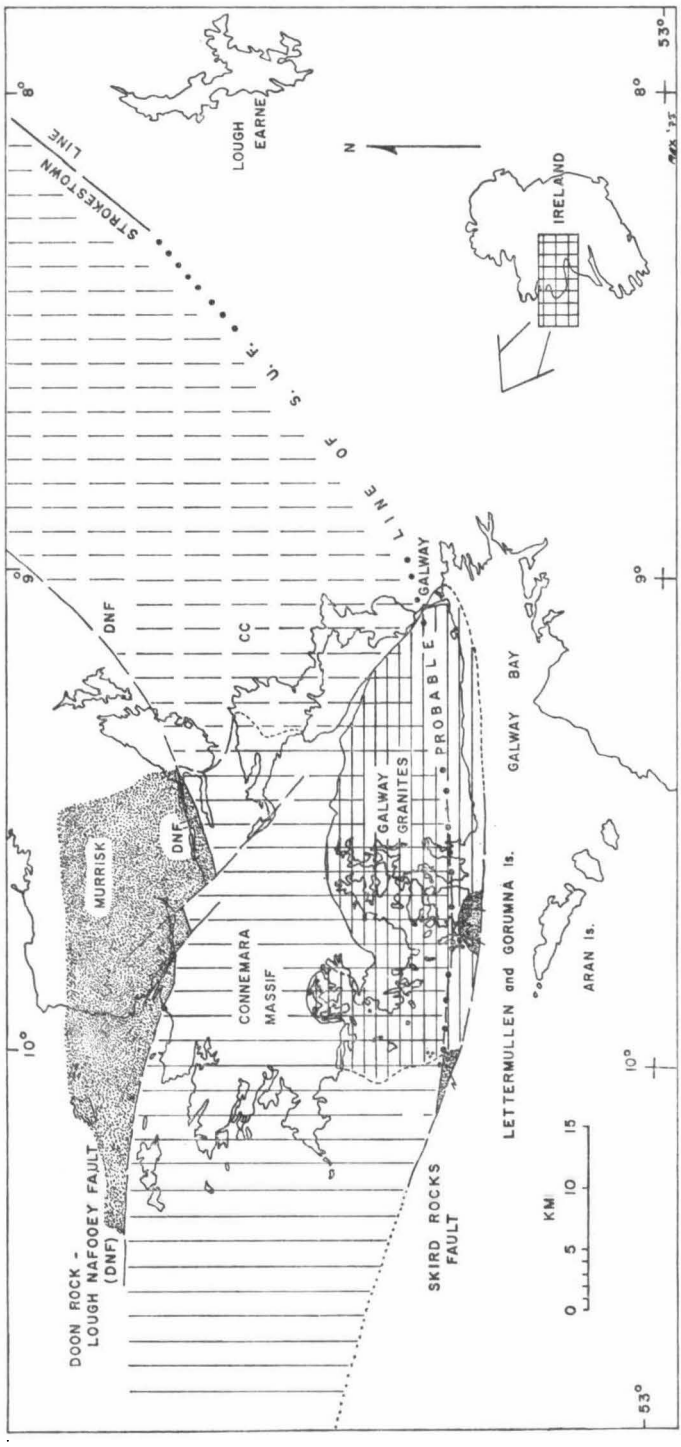

Figure 1. Generalized geological and structural map showing the probable eastern and western extensions of the Connemara massif. Vertical lines show the massif and its probable pre-Galway Granite extent; broken vertical lines show the massif hidden beneath post-Ordovician sediments. Close shading indicates Ordovician rock with the northern and eastern margins in Murrisk not shown. Silurian rocks are not shown. Areas south of the SUF and north of the DNF lines are undifferentiated, mainly Carboniferous rocks.

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Association of sessile tubular foraminifera and cyanophytic algae

(Plate)

SIR – In ancient deposits association of sessile tubular foraminifera with cyanophytic algae is common. The problem, however, of the nature of observed associations remains unresolved and controversial. The possibility of symbiosis has been suggested by several workers (Johnson, 1950; Henbest, 1958, 1963), while others (e.g. McCrone, 1963) have questioned such an interpretation and considered that co-occurrence of foraminifera and algae is fortuitous. In the lower Zechstein (late Permian) carbonate rocks of west Poland sessile tubular foraminifera occur in great abundance in places. The pattern of foraminiferal distribution allows some comments on existing controversies.

Great concentrations of foraminifera are related to central parts of carbonate mounds that are built by algal and bryozoan biolithites. The sessile foraminifera are rockforming and constitute up to 40% of the rock volume in places, but usually they are associates of

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