schists are consistently oriented in a more or less well-defined girdle; that is, they are *B*-tectonites in the terminology of Sander (1930). The micas also show a strong preferred orientation; the poles of (001) cleavages generally lie in a strong point maximum, normal to the foliation, but there is a gradation to a girdle, which generally coincides with the girdle of quartz *c*-axes. The axes of these girdles (*b*-axes) plunge to the southeast over the whole area of outcrop of the schists, and Phillips emphasizes that they are everywhere parallel to the megascopic linear structures, including fold axes, lineation, and rodding and mullion structures.

Some of the quartz diagrams show a preferred orientation of the *c*-axes in two intersecting (*Okl*) girdles, instead of a single (*ac*) girdle. Phillips considers that such orientations are due either (*a*) to a "crossed strain" causing rotation in a plane normal to the first girdle, or (*b*) to the influence of later movements on simple girdle patterns. He concludes that "*b*-axes . . . have a similar significance to fold-axes, and it can safely be asserted that the deformation . . . has acted in a plane more or less perpendicular to them." In Phillips' view, the fabric evidence indicates that this deformation, which was concurrent with the regional metamorphism, was "prior to the dislocation phase [thrusting] of the Caledonian movements."

Phillips examined the effect of the "dislocation metamorphism" on the Moine schists and concluded that the later movements had had little, if any, effect on the schist fabrics. The larger relict grains in partially mylonitized rocks show the typical girdle fabrics and *b*-axes parallel to those in the schists. Cambrian and Torridonian rocks from the foreland and the zone of thrusts show little evidence of preferred orientation of quartz; but in a few such rocks from the thrust zone Phillips found an incipient girdle of quartz *c*-axes, with a northwest-southeast strike, "with its *b*-axis perpendicular to the direction of movement in the post-Cambrian dislocations." He concludes that these data lend support to Read's view that the "Moine series and its metamorphism are of pre-Torridonian date, whilst a Lewisian age is not excluded."

Phillips (1945) has strikingly demonstrated the homogeneity of the fabric over the total area of outcrop of the Moines. He infers, from the contrast in fabrics between the Moine schists and the rocks in the thrust zone, that schist fabrics were not imprinted during the thrust movements. He now ascribes the "crossed-girdle" patterns of quartz to "overprinting" on simple *B*-tectonite patterns (single girdles) by the thrust movements; the slight divergences of orientation between quartz and mica girdles in some specimens are also attributed to this overprinting. Later (1947, 1949, 1951) Phillips drew attention to certain similarities between Moine and Lewisian fabrics. While hesitating to press the identity of these fabrics, he emphasizes that the similarity favors the hypothesis that the general Moine metamorphism was of Lewisian age (1951, pp. 234–235).

Since the existence of the Moine thrust was first established, the parallelism of the thrust outcrop with the general strike of the Moine schists throughout the Highlands has led many investigators to assume that the thrusting and the tilting and folding of the schists was caused by the same large-scale movements. The down-dip (east-southeast and southeast) lineations were considered to be a type of slickensides produced by the movement of the Moines to the northwest. Thus

Phillips' interpretation of the schist fabrics stimulated a brisk controversy on the relationship among fabric "girdles," lineations, and deforming movements. Structural workers in Norway (Strand, 1945; Kvale, 1945, 1947) and elsewhere (Martin, 1935; Cloos, 1946) have expressed the view that girdles may be produced by shearing in a direction either parallel or perpendicular to the girdle plane. Anderson (1948) went further, suggesting that the axes of girdles (*b*-axes of Phillips) and lineations are invariably parallel to the direction of shear movement. This view is consistent with Cloos's interpretation of the lineations in the Moines in the south of the Assynt area (Cloos, 1946).

Wilson (1952) describes a spectacular example of quartz-filled tension gashes in the Moine schists near Melness. His kinematic analysis of the structures reveals a "south-south-westward direction of movement" which "shows no relationship to the Caledonian thrusting . . . five miles away to the west"; this direction of movement approximates to that invoked by Phillips to account for the microfabrics of neighboring rocks. Later, Wilson (1953) demonstrated the widespread occurrence of fold axes and other *B*-structures (lineations, mullions, rodding) with east-west or northwest-southeast trend in the Moine schists. He considers that they "owe their forms primarily to tectonic movements which acted in directions perpendicular to the elongation of the structures."

Wilson draws attention to the contrast in tectonic style between the recumbent folds in the Moine schists and the dislocations in the thrust zone, and stresses the independent origin of the two sets of phenomena. He concludes, with Read (1934) and Phillips (1951), that the evidence is in favor of a pre-Torridonian age for the Moine schists; the Moine orogenic phase, for which he suggests the term Sutherlandian, was probably the same as the Laxfordian phase of metamorphism in the Lewisian rocks of the foreland (Sutton and Watson, 1951).

McIntyre (1954) reviewed the history of research on the Moine thrust and re-examined the evidence for dating the movements. He concludes, with Read, Phillips, and Wilson, that there is no genetic significance to be attached to the parallelism of the linear structures in the mylonites and Moine schists: "It may ultimately be possible to correlate the folds and the thrusts in a single movement-picture, but with our present knowledge we must assume that they constitute two separate tectonic events which were separated by an interval of time of unknown length." With regard to the ages of the two events, McIntyre had previously stated (discussion of Wilson, 1953) that "the folding of the Highlands may prove to be post-Cambrian. If this is indeed the case . . . the Moine Thrust could be Middle Old Red, Hercynian or even Tertiary, for all that is *known* to the contrary." In the intervening period, however, it was shown that the thrusting was definitely older than a monchiquite-fourchite dike, probably of Permian age, which cuts the mylonites of A'Mhoine (McIntyre, 1954).

I began a study of the tectonics of the thrust zone in Assynt in 1953 and noted that many of the linear structures in the rocks of the mylonite zone, previously taken to be slickensides parallel to the direction of thrusting, are in fact *B*-lineations similar to those described in the Moine schists. After this discovery, McIntyre, Weiss, and I made a reconnaissance study of exposures of the thrusts between Skye and Eireboll. The results of this study have been summarized in