tion of quartz for the three schist specimens are not unlike those for the quartzites and the primary mylonitic rocks, but the preferred orientation is noticeably weaker. The orientation diagrams consist of two partial girdles, intersecting in an axis normal to the prominent lineation, with the strongest maxima situated near the axis of intersection of the girdles. The symmetry is orthorhombic.

The diagrams showing the preferred orientation of poles of {001} cleavages of mica in the schist specimens (D14, D17, D20) consist of a strong maximum normal to the foliation (S), spreading into a girdle normal to the only lineation (L) in specimens 68 and X24, and the weaker lineation (L_2) in specimen X36. The girdles in diagrams D17 (specimen X24) and D20 (specimen X36) each contain two submaxima, defining statistical *s*-planes (S_1 and S_2) in the fabric. These *s*-planes are not equally inclined to S. The symmetry of diagram D14 is orthorhombic and that of diagrams D17 and D20 is monoclinic.

In each of the schist specimens the symmetry of the quartz diagrams does not agree with the symmetry of the mica diagrams, and the over-all symmetry of the microfabric is monoclinic in specimen 68 and triclinic in specimens X24 and X36 (see the synoptic diagrams D18 and D21).

The preferred orientation of quartz in the vein in specimen 66 is weaker than that in the primary mylonitic rocks, but the pattern (diagram D5) is similar in its essential features to that in some of the quartzites (e.g., diagram D4) and mylonitic rocks (e.g., diagram D7). The diagram shows maxima near positions I and IV of Sander's diagram, and the symmetry is almost orthorhombic.

INTERPRETATION

The symmetry of the quartz fabric in all the analyzed specimens is characteristically nearly orthorhombic, and a few of the rocks, notably the quartzites of Type I (diagrams D2 and D3), show perfect orthorhombic symmetry. Moreover, there is a strong resemblance among individual diagrams from each of the four main groups, as a comparison of, for example, diagrams D8 (quartzite of Type I), D9 (quartzite of Type II), D6 (primary mylonitic rock), and D13 (Moine schist) will readily show. In view of these similarities there can be no doubt that the quartz orientation in the quartzites, the primary mylonitic rocks, and the Moine schists was induced during the same phase of deformation.

Diagram D15 is an idealized "crossed-girdle" pattern showing the planes of symmetry. Such symmetry planes are drawn in the quartz patterns for individual specimens. For the purpose of discussion the symmetry planes are named p_1, p_2, and p_3, and the orientation of p_1, p_2, and p_3 in relation to the girdles is uniquely specified in diagram D15. With this arbitrary definition of the symmetry planes, the symmetry axes $[p_1:p_2]$, $[p_2:p_3]$, and $[p_3:p_1]$ also have a unique orientation in relation to the girdles. The symmetry axes of the quartz fabric in all the analyzed specimens are shown in the synoptic diagram D24. The geographical orientation of the axes is remarkably constant for all the specimens, indicating a high degree of homogeneity in the quartz fabric throughout the area. The maxima of quartz [0001] axes from all the diagrams are shown in the synoptic diagram D23, oriented with reference to geographical coördinates. The orthorhombic symmetry of this diagram is a further illustration of the homogeneity of the quartz fabric throughout the area.

The preferred orientation of quartz and mica in the analyzed specimens is similar to that in many of the Moine schists described by Phillips (1937). Many of Phillips' quartz diagrams show the crossed-girdle type of pattern with orthorhombic symmetry. His investigations indicate that the commonest type of mica diagram in the schists consists of a single maximum of cleavage poles normal to the foliation, similar to D14, but he also obtained diagrams (Phillips, 1937, D24) with paired maxima inclined to the foliation, as in my diagrams D17 and D20. Phillips states that the degree of preferred orientation in the Cambrian and Torridonian rocks below the Moine thrust is not high (1937, pp. 601–603), and the only constructive effect that he observed in these rocks was the formation of a weak girdle of quartz axes about an axis trending parallel to the outcrop of the thrust. Later studies of the Tarskavaig Moine series (Phillips, 1939) seemed to confirm these observations. Phillips concludes (1937, p. 603) that "in many of the rocks in immediate association with the thrust planes the visible lineation is no longer parallel to the *b*-axis, but is a true direction of stretching or slickensides (*Rillen*)." My analyses show, however, that the Cambrian quartzites in the vicinity of the Moine thrust in Assynt are characterized by a stronger preferred orientation than the Moine schists to the east of the thrust, and that the pattern of preferred orientation of quartz bears the same relationship to the lineation in these rocks as in the Moine schists. Although some of the Cambrian quartzites show mylonitic textures (cf. Phillips, 1937, p. 602), some are characterized by complete recrystallization of the granulated material, and the quartz fabric of these rocks is so similar to that of the primary mylonitic rocks and the schists that there can be no doubt that they date from the same phase of deformation. The variability of the angle between the girdles in the common crossed-girdle type of patterns in the Moine schists has been discussed by Phillips (1945, pp. 217–218); he considers that the girdles were produced by "overprinting on a previously existing simple *B*-tectonite fabric [*ac*-girdle] during the Caledonian overthrusting" (1945, p. 218). Variation in the angle between the girdles is also apparent in my diagrams, but the angle between the girdles is greatest in some of the Moine schist diagrams (D16, D19) and least in the primary mylonitic rocks and the quartzites, which should obviously show the maximum effects of the "overthrusting" movements. It is clear, then, that some other explanation must be sought for the formation of the crossed-girdle patterns.

Petrofabric studies carried out in many parts of the world have shown that quartz fabrics with orthorhombic symmetry, notably of the crossed-girdle type, are of common occurrence. Numerous examples have been described from the granulites of Saxony (Sander, 1915, 1930), the Finnish granulites (Sahama, 1936), and the Finnish quartzites (Hietanen, 1938); patterns of the crossed-girdle type have also been recorded in Dalradian quartzites (Weiss *et al.*, 1955), in quartz tectonites in the Appalachians (Balk, 1952), and in the basement gneisses of Kenya (Weiss, 1959). Such patterns are so commonly developed that I believe they represent a special type of quartz fabric, as most investigators have maintained (Sander, 1930; Turner, 1948; Fairbairn, 1949).

In contrast to the dominant orthorhombic symmetry of the quartz fabric, the symmetry of the megascopic fabric is generally monoclinic and locally triclinic. This may be seen in the folded specimens, X21 and 52. The axis of the fold in