in the monoclinic fabric. Sander has defined one of these as *a* in orthorhombic *B*-tectonites. He considers that the orthorhombic *B*-tectonites have originated by slip on one or more pairs of slip planes intersecting in the *B*-axis (fig. 2, *b*), in response to a flattening or squeezing. In a body subjected to such a deformation there is a resultant elongation in a direction normal to the axis of flattening in the plane containing this axis and the poles of the slip planes. Sander designates this axis *a*. This *a*-axis is not, however, strictly analogous to *a* in monoclinic fabrics, for, although it is the direction of maximum elongation in the body, it is not a direction of slip movement, as the *aB*-plane is normal to the axis of flattening and there is no shear movement along this plane. Moreover, it is not possible, with our present imperfect knowledge of the mechanism of deformation of minerals such as quartz, to identify slip planes in many orthorhombic tectonites as, for example, in the lineated quartzites described below. Consequently, it is impossible in these rocks to fix the orientation of the *B*- and *a*-axes, as defined by Sander. In discussing orthorhombic fabrics I have adopted the descriptive notation employed by Weiss (1959, p. 147). The planes of symmetry are designated p_1, p_2, and p_3, and it follows that the symmetry axes are the intersections of these planes: $[p_1:p_2]$, $[p_2:p_3]$, and $[p_1:p_3]$ (fig. 2, *c*). This system of notation is adequate for reference and does not necessitate the selection of a *B*-axis from two or three similar axes of symmetry. Thus the use of the terms *a* and *c* is confined, in the present work, to monoclinic fabrics or to those elements of a fabric which have monoclinic symmetry.

According to the terminology adopted here, the expression "folds in *a*" is meaningless; the fold axis is *B* in monoclinic fabrics. "Noncylindroidal" folds are triclinic structures, and an *a*-axis has never been defined for fabrics with this order of symmetry. In rocks that are folded about two mutually perpendicular axes (*"Querfaltung,"* Koark, 1952; "cross folds," King, 1956), the fabric should be described with reference to two *B*-axes ($B \perp B'$ tectonites).

Interpretation of the Fabrics of Deformed Rocks

The fabric of a rock comprises the geometry of all the structural elements (foliation, lineations, textural relations, and orientation of mineral grains) in the rock. The type of movement which the rock has undergone may, to some extent, be inferred from its fabric. Sander (1911) first suggested that the orientation of the fabric elements records in some way the movements that have given rise to the fabric. Later (1930) he developed this idea and postulated that the symmetry of the fabric of a tectonite has the same symmetry as the movements that produced the fabric. Three types of symmetry—orthorhombic, monoclinic, and triclinic—are common in the fabrics of tectonites, and Sander has interpreted such fabrics in terms of a "movement picture" with the same order of symmetry.

Though numerous writers on petrofabric analysis have neglected symmetry, the principle has been used frequently in the interpretation of fabric data. The validity of the principle has been questioned (Kvale, 1947, 1953; Anderson, 1948), but all recent experimental work on deformation of rocks and other materials tends to support the theory, with certain qualifications (Turner, 1957). Both Weiss (1955) and Turner (1957) have considered the effect of original anisotropy

in rocks, and conclude that the symmetry of the final fabric may be influenced by the symmetry of the fabric of a rock before deformation, as well as the symmetry of the deforming movements. Paterson and Weiss (1961) examined in detail the application of symmetry arguments to deformed rocks; they clarified the meaning of symmetry as applied to fabrics and movements and restated the principle in more rigorous terms: "Whatever the nature of the contributing factors [e.g., initial fabric, stress, movement], the symmetry that is common to them cannot be higher than the symmetry of the observed fabric, and symmetry elements absent in the fabric must be absent in at least one of the contributing factors" (p. 880).

Where evidence of the mechanism of deformation of minerals is known from experimental studies, as for calcite and dolomite, it may be possible to determine the orientation of the stress from features such as twin lamellae (Turner, 1953). In the present study the fabrics of dolomite rocks are interpreted dynamically, using information obtained from experimental deformation of dolomite (Turner *et al.*, 1954). All other fabric data are interpreted kinematically on the basis of the principle of symmetry, with due regard to the conditions outlined above.

Terminology of Mylonitic Rocks

The term "mylonite" was first used by Lapworth (1885) for rocks developed along the thrusts constituting the Moine thrust zone in Eireboll, on the north coast of Sutherland. It was subsequently used by geologists working in the thrust zone for all the crushed rocks in the zone. The term was carefully defined by Lapworth, however, and many of the rocks mapped as mylonites in the thrust zone do not conform to his rather restricted definition (Christie, 1956, 1960). In particular, many of the finely laminated rocks that constitute the zone generally referred to as the Moine thrust show considerably more recrystallization than is consistent with the use of the term "mylonite." These are really augen schists (Lapworth, 1885) and blastomylonites (Sander, 1912), and many might be described as quartz schists and chlorite schists. These rocks are texturally similar to the overlying Moine schists, and there is a gradation from the true mylonites, which occur in the lower part of the zone of finely laminated rocks, into the schists; the gradation is characterized by an upward increase in grain size, a decrease in the degree of lamination, and an increase in the degree of neomineralization and recrystallization. Laminated mylonites, augen schists, and blastomylonites are referred to collectively as *primary mylonitic rocks* (Christie, 1960).

In a number of localized areas in the thrust zone, other types of crushed or mylonitized rocks occur. At several localities, notably at Knockan Crag and near the Stack of Glencoul, both the primary mylonitic rocks and the Moine schists have been redeformed and crushed to form breccias consisting of disoriented fragments in a very fine-grained matrix of crushed material. These are termed "kakirites" (Quensel, 1916). Where this deformation is most intense the product is an extremely fine-grained rock, which lacks well-developed planar structure and shows no neomineralization or recrystallization. The term "cataclasite" (Grubenmann and Niggli, 1924) is used for these rocks. Many of the rocks of pelitic composition in the zone have the textural features of phyllonites (Sander, 1911; Knopf, 1931), indicating that they have originated by deformation of rocks