or shortened parallel to [p_2:p_3], and elongated parallel to [p_1:p_2]. The deformation may have been biaxial with no change of dimension parallel to [p_3:p_1], or it may have been triaxial with slight shortening or elongation parallel to this axis. This interpretation accords well with the common interpretation of quartz fabrics of the crossed-girdle type (Sander, 1930; Sahama, 1936; Turner, 1948), in terms of "flattening" (*Plättung*). The degree of flattening and elongation parallel to the lineation and the folds during this final imprint may have been quite extensive. It must be noted that, although this elongation does represent a type of movement, it is not "tectonic transport"; the passage of the elongating mass over the rigid basement or foreland, however, would give rise to shear movement (transport) relative to the foreland in this direction.

It is probable that there was a gradual transition during the deformation from the translative (monoclinic) movement normal to B to the final (orthorhombic) imprint involving flattening and elongation. If a body of rocks is shortened by folding or thickening of the strata, the vertical dimension becomes increasingly greater. Eventually a stage will be reached when the lower rocks are flattened under the influence of the weight of superincumbent rocks. The mass is constricted in the direction of shortening and the elongation produced by this flattening will be parallel to the horizontal axis that is normal to the direction of shortening, that is, the fold axis. I consider that such an evolutionary sequence of deformations occurred in the Moine schists and the mylonitic rocks in the Assynt area, and that the quartz was reoriented during the final stages of the sequence, after the translative movement normal to the fold axes had ceased. It is not unlikely that during the intermediate stages of the deformation folding about B and elongation parallel to B (= [p_1:p_2]) occurred simultaneously.

It has been pointed out that the quartz and mica diagrams for the Moine schists are heterotactic. The strongest maximum in each of the mica diagrams defines the foliation, which was passive during the final orthorhombic stages of the deformation. Thus these maxima are relics from the early (monoclinic) phase of movement. However, the *s*-planes S_1 and S_2, defined by submaxima in the mica diagrams, were probably produced during the final stages of the deformation. Similarly, slight departures from orthorhombic symmetry in the quartz orientation in some of the specimens may reflect the influence of an earlier preferred orientation dating from the monoclinic phase of deformation. On the other hand, they may have been caused by slight irregularities in the movement during the final imprint of the deformation.

The northeast-trending quartz veins in the primary mylonitic rocks and the Moine schists are extensively deformed and granulated where the rocks have suffered secondary deformation, indicating that the veins were emplaced before the inception of the secondary phase of deformation. The preferred orientation of quartz in the vein in specimen 66 (diagram D5) is similar to that in the primary mylonitic rocks and the schists; the symmetry of the pattern is almost orthorhombic and there are crossed girdles containing maxima with the same orientation as those in the other diagrams. The grains in the vein also show some degree of flattening normal to the foliation in the surrounding rock. This evidence suggests that the veins have been affected to some extent by the final

orthorhombic phase of the primary deformation, and must therefore have been emplaced before the close of the deformation. It has been inferred above that there was some degree of elongation parallel to [p_1:p_2] (=B) during this phase of deformation, and the veins were probably formed by infilling of extension fissures normal to the direction of elongation.

The quartz fabric of the primary mylonitic rocks and the Moine schists is of special importance, as it reveals evidence of a phase of deformation which is not reflected in the megascopic fabric of the rocks. During the final stages of the primary deformation, when the quartz was reoriented, the foliation and the folds were passive. The movement during this phase of deformation was extremely penetrative and homogeneous, and was probably achieved by indirect componental movement (Knopf and Ingerson, 1938), that is, by recrystallization of quartz and feldspar. The relationship between the symmetry axes of the early monoclinic movements and the late orthorhombic imprint is such that there would be little change in the orientation of early-formed linear structures during the later stages of deformation. Flattening of the rock mass, however, would have the effect of changing the form of the folds so that the limbs of recumbent folds were compressed and the profiles generally "flattened." The closely appressed nature of many of the folds in the primary mylonitic rocks may be due to flattening during the final orthorhombic stages of the primary deformation.

TECTONIC SYNTHESIS

Introduction

From the evidence described in the foregoing sections, a consistent kinematic picture emerges for the whole area. Several phases of deformation have been inferred from the fabric data in the mylonitic rocks along the Moine thrust and in the rocks in the zone of dislocation. In the following sections separate phases of deformation in the Moine schists, the mylonitic rocks, and the rocks in the zone of dislocation are correlated, and a kinematic synthesis is made on the basis of the megascopic and microscopic fabric of all the rocks in the area. Finally, the evidence on the age of the movements is briefly reviewed.

Structural Correlations

Figure 24, *a*, is a synoptic diagram showing the maxima of fold axes in the mylonitic rocks along the Moine thrust at the Stack of Glencoul, Loch Ailsh, and Cnoc a' Chaoruinn. The diagram shows the close relationship between the folds in secondary mylonitic rocks (B_n, B_s) and the Ben More thrust. The planes S_n and S_s represent the mean orientation of the foliation in the primary mylonitic rocks in the northern and southern areas respectively; the plane representing the Ben More thrust is based on the average orientation of the thrust at several localities where it is exposed in the zone of dislocation. The axes of folds in the secondary mylonitic rocks at the Stack of Glencoul (B_n) and Cnoc a' Chaoruinn (B_s) are parallel to the intersection of the thrust and the foliation in the primary mylonitic rocks in both areas. This fact confirms the hypothesis advanced above, that the later folding about approximately north-south axes was contemporaneous with movement on the Ben More thrust, and that the folds