specimen X21 is parallel to the regional maximum of fold axes (*B*). The quartz orientation is similar in both limbs of the fold, and the symmetry axis $[p_1:p_2]$ of the quartz fabric does not coincide exactly with the axis of the fold (*B*). The fold in specimen 52 was selected for analysis because the fold axis is inclined at a large angle to the regional maximum, though the style is similar to that of the majority of folds in the primary mylonitic rocks. The quartz orientation is similar in both limbs of the fold (diagrams D10, D11). Thus the quartz orientation is homogeneous in both the folds examined. Such a relationship of the internal fabric in different parts of a fold is generally taken to indicate that the fold is a shear fold produced by slip on a single set of *s*-surfaces transecting the fold (Sander, 1930; Knopf and Ingerson, 1938, p. 159). The symmetry axes of the quartz fabric, however, are unrelated to the *B*-axes or to the axial planes of the folds, and it is more likely, in my opinion, that the quartz was reoriented throughout the rock after the folding took place. As Sander has stated: "It is quite possible to find a homogeneous imprint and preferred orientation imposed on folds of any origin" (1934, p. 44). A lack of agreement between the quartz fabric and the megascopic fabric is also evident in a number of the other diagrams (D6, D8, D13, D16, D19); in these diagrams the foliation does not coincide with any of the planes of symmetry of the quartz fabric. The evidence of the fabric of these specimens suggests that the foliation was passive or "dead" when the quartz orientation was induced.

Detailed studies in the granulite terrains of Saxony by Sander (1915, 1930) and others, and of Finland by Sahama (1936), are of particular relevance to the present investigation, for, although the so-called "granulites" of the Moine series are, in general, neither mineralogically nor texturally similar to true granulites, there seems to be a close similarity between the fabrics of the two groups of rocks. Sander found that the Saxon granulites show orthorhombic symmetry, with quartz in many instances oriented in crossed (*Okl*) girdles. He interpreted the fabric in terms of a flattening achieved by slip on two equivalent (*hOl*) slip planes, combined with yielding on (*Okl*) planes. Whereas the orthorhombic symmetry of the fabric indicates that there was little tectonic transport while this fabric was being produced, Sander considers that the quartz fabric reflected only the final imprint (*Aufprägung*) of deformation, which may have been preceded by translative movements of considerable magnitude. Sahama's extensive study (1936) of the Finnish granulites shows that they possess a similar type of quartz fabric; the fabric is predominantly orthorhombic and the commonest type of orientation pattern consists of crossed girdles. The symmetry of the fabric becomes triclinic, however, when the megascopic fabric elements are considered. The quartz orientation is remarkably uniform over the whole area of the granulites, and Sahama attributes the triclinic symmetry of the fabric to a superposition of two deformations; he considers that the quartz was reoriented by a late overprint, obliquely superposed on the preëxisting megascopic fabric during a separate and unrelated deformation. He infers that the type of movement during this late deformation was a flattening combined with a small amount of translation.

The relationship between the quartz fabric and the megascopic fabric in the Moine schists and the mylonitic rocks of Assynt is analogous to that described by

Sahama in the Finnish granulites, although the divergence between the megascopic fabric axes and those of the quartz fabric is more marked in the Finnish rocks. The homogeneity of the quartz fabric over the whole Assynt area and in individual folds indicates that it was imprinted during a late phase of deformation with orthorhombic symmetry. The symmetry axis $[p_1:p_2]$ of the quartz fabric, however, is statistically parallel to the *B*-axis of the folds in the area (diagram D24), a fact strongly suggesting that the two phases of deformation were genetically related. I believe that the quartz orientation was induced by the final (orthorhombic) imprint of the same deformation that produced the folding in the rocks, as Sander has suggested for the Saxony and the Finnish granulites (1934, p. 41).

TABLE 4

Types of Homogeneous Strain without Transport

Type of strain	Changes of dimension parallel to three mutually perpendicular axes		
	A	B	C
1. Biaxial	Shortened	Unchanged	Elongated
2. Triaxial	Shortened	Elongated	Elongated
3. Triaxial	Shortened	Shortened	Elongated

In view of the diversity of opinions on the mechanism by which quartz acquires a preferred orientation (Fairbairn, 1949, pp. 117–133), no attempt is made to account for the quartz orientation. The orthorhombic symmetry of the patterns and the homogeneity of the fabric over the area denote, however, that the final imprint of the deformation was fairly intense and homogeneous, and involved little or no tectonic transport. A strain of this type may be described in terms of shortening or elongation parallel to three mutually perpendicular axes, A, B, and C (the principal axes of strain), and there are three shape transformations that a body may undergo as a result of such a strain (see table 4).

According to the principle of symmetry, the symmetry axes of the quartz fabric $[p_1:p_2]$, $[p_2:p_3]$, and $[p_3:p_1]$ represent strain axes of this type. It is impossible to determine the exact nature of the deformation from the symmetry evidence, but the dimensional orientation in some of the rocks is instructive in this connection. In quartzites of Type I, the large "relict" quartz grains have almost certainly developed from the original grains of the orthoquartzite.* The grains in the undeformed quartzites are approximately equidimensional, whereas those in the deformed rocks are extremely flattened in the foliation and elongated parallel to the lineation. The rocks appear, on this evidence, to have been intensely flattened

* The granules between the large quartz grains in quartzites of Type I (pl. 9) may have originated by mechanical granulation or by recrystallization; from the appearance of the grains and the texture, the latter mechanism seems likely. These quartzites, however, represent a stage in the transition from undeformed orthoquartzites to rocks consisting entirely of granulated or "crush" quartz; moreover, the large size of the grains in comparison with the recrystallized grains in the quartzites of Type II suggests that they have been produced from the original grains of the sedimentary quartzites without complete disintegration. The grains were probably derived directly from the original clastic grains of the orthoquartzite by a process involving plastic deformation and perhaps some recrystallization.