$\{02\bar{2}1\}$. The angle between [0001] and the pole of the lamellae, $\{02\bar{2}1\}$, is $62\frac{1}{2}°$. The applied stresses which would be most effective in causing twin-gliding on $\{02\bar{2}1\}$ with a negative sense are also shown in figure 1a: a compression applied in a direction designated C, or a tension in a direction T. For either, the coefficient of resolved shear stress on $\{02\bar{2}1\}$ would have the maximum possible value, 0.5.

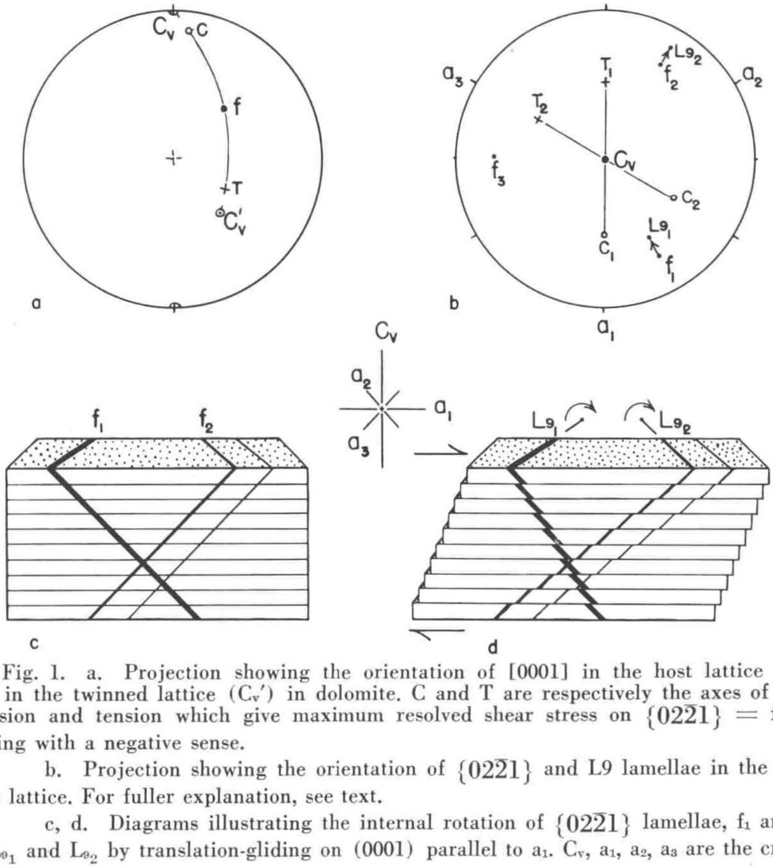

Fig. 1. a. Projection showing the orientation of [0001] in the host lattice (C_v) and in the twinned lattice (C_v') in dolomite. C and T are respectively the axes of compression and tension which give maximum resolved shear stress on $\{02\bar{2}1\}$ = f, for gliding with a negative sense.

b. Projection showing the orientation of $\{02\bar{2}1\}$ and L9 lamellae in the dolomite lattice. For fuller explanation, see text.

c, d. Diagrams illustrating the internal rotation of $\{02\bar{2}1\}$ lamellae, f_1 and f_2, to L_{9_1} and L_{9_2} by translation-gliding on (0001) parallel to a_1. C_v, a_1, a_2, a_3 are the crystal axes.

The second kind of inference is drawn from internally rotated $\{02\bar{2}1\}$ lamellae of the type designated L_9 by Turner, Griggs, Heard and Weiss (1954). Following Turner, et al., it is assumed that these have been rotated by translation on $\{0001\}$ parallel to one of the *a* crystallographic axes. In the experimentally deformed Dover Plains rock only one set of L_9 lamellae were found in any grain; but in the specimen here described two sets of L_9 lamellae are present in several grains, allowing unique identification of the active glide direction. The orientation of these two sets of lamellae in the dolomite lattice is shown in figure 1b. Figures 1c and d illustrate diagrammatically the phenomenon of translation-gliding on $\{0001\}$ in dolomite. The lattice orientation (C_v, a_1, a_2, a_3) is unchanged by gliding. Pre-existing $\{02\bar{2}1\}$ lamellae, f_1 and f_2, are internally rotated about axes which are the intersections of the lamellae $\{02\bar{2}1\}$ with the glide plane $\{0001\}$, that is, the *a* crystal axes. The sense of internal rotation about the axes of internal rotation is the same as the sense of shear on the glide plane. Following gliding parallel to a_1 the lamellae f_1 and f_2 are rotated about a_3 and a_2 respectively and so assume the new orientations L_{91} and L_{92}. If three sets of $\{02\bar{2}1\}$ lamellae are present in a grain before the inception of translation-gliding on $\{0001\}$, the axes of potential internal rotation are parallel to the three *a*-axes of the lattice. But it is evident that only two sets of lamellae can undergo rotation by gliding, since the axis of potential rotation for the third set is parallel to the glide line. Since a_2 and a_3 are the axes of internal rotation of L_{91} and L_{92}, the only possible glide direction is a_1 and the sense of slip on the glide plane is given by the sense of rotation of the L_9 lamellae. Optimum directions of compression and tension which would give maximum resolved shear stress on the $\{0001\}$ glide system so deduced are C_1 and T_1. Such axes of compression and tension may be determined for all grains in which two sets of L_9 lamellae are recorded. For grains in which only one set of L_9 lamellae is present or is accessible for measurement, there is a choice of two possible glide directions and there are two alternative orientations of both C and T. For example, if only L_{91} lamellae are present (fig. 1b), the axis of internal rotation of L_{91} is a_2 and the active glide line may be either a_1 or a_3; the inferred directions of applied stress are C_1 and T_1 or C_2 and T_2.

THE LOCH AILSH DOLOMITE

Description of the Fabric.—The specimen (M14) described below is a pure, massive crystalline dolomite with no trace of foliation or lineation. The only impurity in the rock is quartz, in the form of small, isolated grains making up considerably less than 1 percent of the rock. The dolomite grains, which are more or less uniform in size (average mean grain diameter = 0.54 mms.), show a high degree of post-crystalline strain: all contain well-developed $\{02\bar{2}1\}$ twin lamellae, and a few show undulose extinction. There is considerable granulation along grain boundaries, the minute interstitial granules comprising approximately 27 percent of the rock (measured by means of a point counter in 3 mutually perpendicular sections). There is a weak dimensional orientation of the main grains: the majority of the grain sections in all three sections are equidimensional, but a limited number in each section are slightly elongate parallel to a common direction in the fabric.

To overcome limitations due to orientation of any single section relative to the fabric, the analysis was carried out on three mutually perpendicular sections cut from the specimen. Lamellae which are inclined at low angles (less than 35°) to a section are not accessible for measurement with the universal stage, so that there is a corresponding central "blind spot" in every fabric diagram. Since the three $\{02\bar{2}1\}$ planes in dolomite are inclined to each other at approximately 80°, one set of lamellae is inaccessible in most grains. It should be noted that L_9 lamellae can be recorded satisfactorily only if the intersection [L_9: $02\bar{2}1$] can be rotated into parallelism with the micro-