Yule Marble.—The Yule marble is a very pure rock composed of moderately coarse, occasionally twinned, interlocking grains. In an average of data from traverses both normal and parallel to the foliation, the grain size is near 0.5 mm. The foliation is strong, and there is not marked lineation. According to Turner and others (1956), the initial fabric (before their deformation experiments) is quite homogeneous with respect to the c-axis distribution.

The optical data, diagram *C*, plate 2, is taken from Turner and others (1956) and represents 300 c-axes of the calcite grains. The plane of the projection here and in the x-ray petrofabric diagram is the T-section (see Turner and others, 1956, p. 1264). The rock sections used in the x-ray petrofabric analysis consist of four inclined 45° to the T-section and two normal to the T-section. The well-known point maximum which lies normal or at a high angle to the foliation is obvious in both diagrams, but there are some differences in detail. It appears that a weak girdle might exist lying in the plane of the T-section as determined optically but a similar girdle lies normal to the T-section in the x-ray diagram. In better agreement with the x-ray data is the c-axis diagram of Yule marble compiled by Higgs, Friedman, and Gebhart (1960, p. 286) showing a weak girdle also normal to the T-section. The small maximum to the left and below the center of the diagram is probably not real (see p. 9).

Possible explanations for these deviations will be discussed below.

Cypress Lake Dunite.—The optic analysis on this specimen from northwest Washington was carried out by C. B. Raleigh. Results were compiled on a- and c-axis distributions.

The dunite is relatively coarse grained, having an average grain size near 1 mm. For this reason one study was made using the usual one scan per rock slice, and another study was made using four scans from different parts of the rock slices, taking an average of the data.

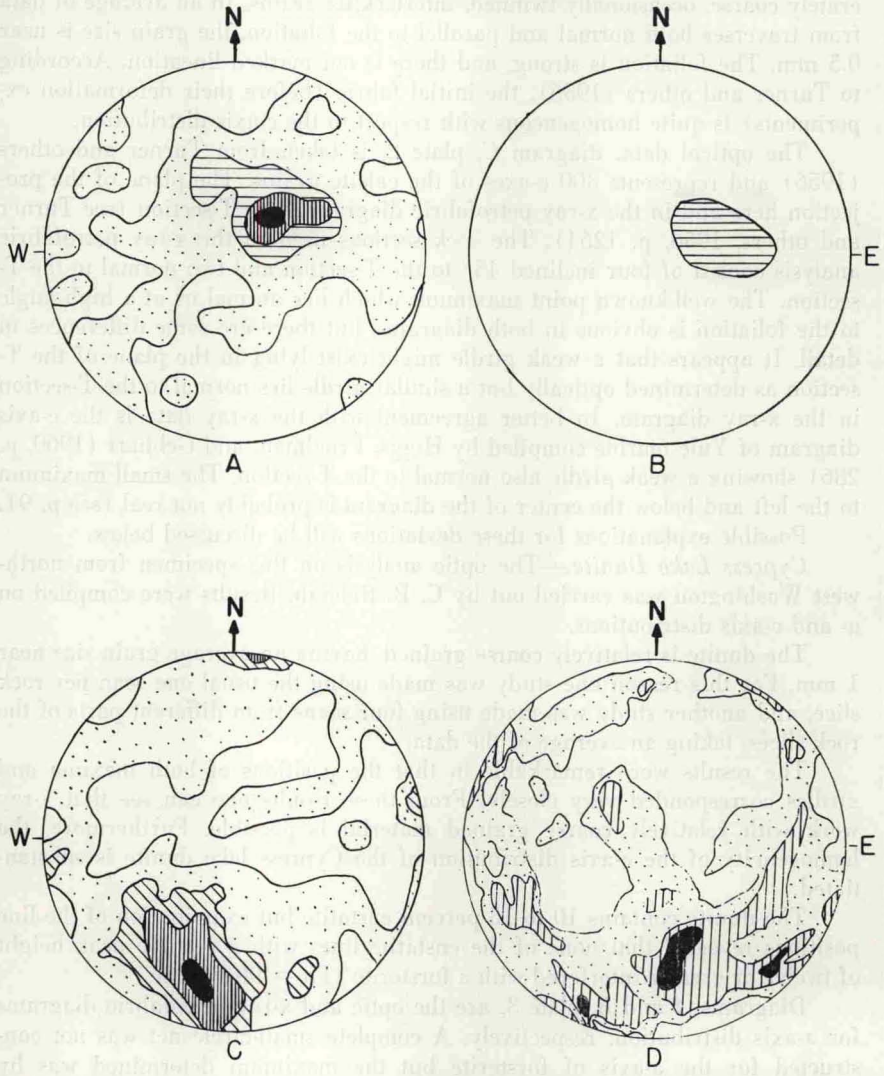
The results were remarkable in that the positions of both maxima and girdles corresponded very closely. From these results one can see that x-ray work with relatively coarse grained material is possible. Furthermore, the homogeneity of the c-axis distribution of the Cypress lake dunite is substantiated.

The dunite contains 10 to 15 percent enstatite but examination of the line positions revealed that none of the enstatite lines with a relative peak height of twelve or greater interfered with a forsterite (Fo = 90+) line.

Diagrams *A* and *B*, plate 3, are the optic and x-ray petrofabric diagrams for a-axis distribution, respectively. A complete small-circle net was not constructed for the a-axis of forsterite but the maximum determined was by construction as discussed in a foregoing section. Of course, the weak girdle determined by optical means could not be delineated by construction.

Diagrams *C* and *D*, plate 3, represent the optic and x-ray petrofabric diagrams, respectively, for c-axis distributions. The x-ray data differ from that of the optic diagram in that the strong point maximum of the latter is spread out into a broad zone lying in a girdle that dips moderately south to southeastward. Other petrofabric data determined by Raleigh (personal communication) show that the general pattern in these dunites is a girdle dipping moderately southwestward.

PLATE 3



A. Dunite, specimen 0A10 from Cypress Island, Northwest Washington. 150 a-axes, contours 0.7, 4, 7, 10% per 1% area. Schmidt Equal Area Net. After C. B. Raleigh.

B. Location, by construction from 17 small circles of abnormally strong reflection value, of point maximum from dunite specimen 0A10, Cypress Island, Northwest Washington. Ruled area represents reflection intensity $\geqslant 3\frac{1}{2}$ times powder pattern. Schmidt Equal Area Net.

C. Dunite, specimen 0A10 from Cypress Island, Northwest Washington. 150 c-axes, contours 0.7, 2.7, 4, 7% per 1% area. Schmidt Equal Area Net. After C. B. Raleigh.

D. X-ray petrofabric diagram of dunite from Cypress Island, Northwest Washington, representing c-axis concentration. Contours 1.1, 2.2, 3.6 times powder intensity. Schmidt Equal Area Net.