right circular cylinder approximately 5/8 in. in diameter and 1 in. long. The specimens were then mounted in a steel lapping ring with the desired propagation direction perpendicular to the face of the lapping ring. The proper orientation of the specimen was checked by means of a back reflection Laue X-ray photograph while the specimen was mounted in the lapping ring. At this point the surfaces of the specimen were carefully cut off with an end mill until only a few thousands of an inch protruded from the lapping ring. The protruding surfaces were then removed by alternate grinding on fine metallographic polishing paper and etching, until the specimen surfaces were flush with the lapping ring. Removal from the lapping ring completed the sample preparation. This method of preparing the acoustic reflecting surfaces is justified by the fact that a fuzzy, but still discernable single crystal X-ray pattern may be obtained from the surface at the end of preparation.

Since cadmium is hexagonal it was necessary to make measurements in more than one crystalographic direction to obtain all five elastic constants and their pressure derivatives. The final dimensions and orientations of the specimens are given in Table 1. The normals to the reflecting surfaces of the A