depending on the time interval between successive critical shocks, rather than on the absolute intensity of the triggering shock. While, with the almost total lack of quantitative information, it would be futile to attempt the correlation of an individual band with any one time interval between successive shocks on the seismograph record, the comparison of the respective patterns may still be useful in revealing corresponding regularities, thereby suggesting, on the one hand, the minimum intensity a shock must have in order to give rise to the formation of a layer and, on the other hand, the minimum time that must elapse between successive shocks to produce a measurable record in the pattern of layering. Alternatively, such a comparison may offer a means of evaluating the amount of seismic control in the development of the layering by statistically analyzing the amount of agreement between the details of a seismograph record and the pattern of vertical variation in the layering of the intrusion.

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A SIMPLE APPARATUS FOR TRIMMING THIN SECTIONS

DAVID A. COPELAND, *Department of Geology, Pomona College, Claremont, California*

A rock chip mounted on a glass slide can be quickly and evenly trimmed to a thickness of 60 microns or less, using the apparatus described here. It consists of a slide holder (Fig. 1), vacuum source and a vacuum line with a liquid trap (for cutting fluid). It is used in our laboratory with a Felker model 41-A cut-off machine, with rimlock diamond blade $7\frac{3}{4}$ inches in diameter.

In operation, a glass slide with rock chip mounted is pressed into the slide recess so that it bears firmly in the lower and back walls of the re-

cess. The vacuum system is then activated, which pulls the slide, against an O-ring, up against the face of the recess, and holds it there throughout the trimming operation. The holder with slide is fed through the saw by hand. Hand feeding allows the rate of feed to be determined by the resistance of the rock to cutting. It allows the operator to work as quickly as considerations of saw blade life and rock hardness permit, and to "ease up" as the last of the cut is made, to keep the saw from plucking off the corner of the chip.
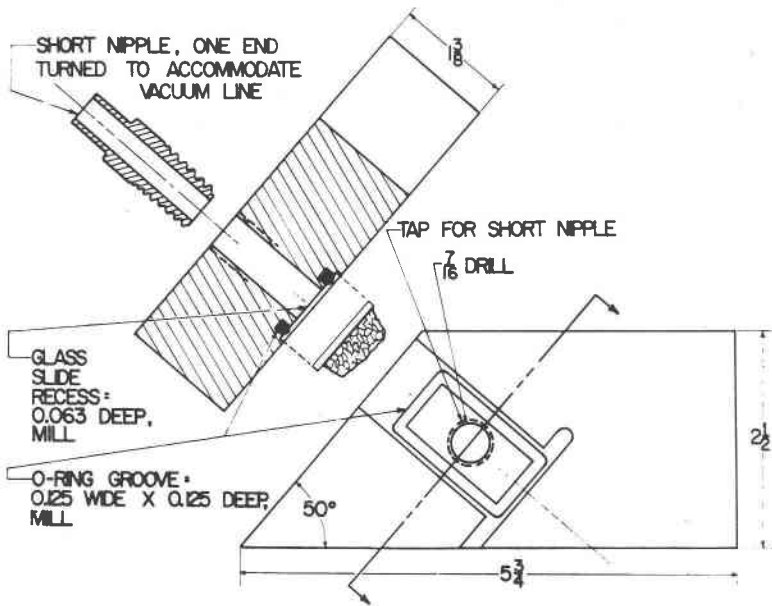

FIG. 1. Details of slide holder. Side elevation shows holder in working position. In operation its movement would be toward the left-hand side of the figure.

The holder will allow a succession of chips to be trimmed to uniform thickness of 60 microns or less, depending upon the rock type and state of weathering. The thickness may be determined in practice either by eye as the saw first touches the chip, or, given a set of glass slides of strictly equal thickness, by setting a fence on the saw table to give a desired chip thickness when the holder is held against it. (A fence with micrometer lateral adjustment would be a worthwhile adjunct to this apparatus.)

Figure 1 shows the orthogonal relationships of all surfaces except those determined by the 50° angle. All dimensions were arrived at empirically (including the 50° angle), given the following considerations: the holder should be bulky enough to be handled easily and safely, made of dimen-

sionally stable material (we used aluminum), and so designed that, when
the saw has cut halfway through the chip, the long axis of the glass slide
is approximately radial to the saw blade. Note, given this last condition,
that an angle of less than 50° would make the saw more "self-energizing";
i.e., the saw would have a greater tendency to pull the work through. This
would give less "feel" to resistance to cutting, but a smoother feed; a
compromise is reached at 50°. Note also that the groove continuing the
back wall of the slide recess, which is a coincidental result of machining
the recess with an end mill, forms a useful drain for rock-flour and
cutting-fluid "mud"; there is no corner to become clogged.

The holder was made in our shop for a cost of approximately $30. Any
vacuum source capable of reaching about 25 inches is adequate. Our ex-
perience indicates that most sections can be trimmed in less than one
minute. For the petrographic laboratory already equipped with an ade-
quate trim saw, the holder described here will allow the making of thin
sections as rapidly as will more elaborate equipment and at far less cost.

This apparatus was developed during geochemical studies supported
by the new NSF URP program (grant GE-2804).

DISCUSSION ON "TRIDYMITE-CRISTOBALITE RELATIONS AND STABLE SOLID SOLUTIONS"

by D. M. ROY AND R. ROY, *Am. Mineral.* **49**, 952, 1964

P. K. FOSTER, *New Zealand Pottery and Ceramics Res. Assoc.,
Lower Hutt, New Zealand*

There are a number of points in this paper which warrant discussion.
The authors point out (p. 953) that a phase change is proof of instability
of the starting material under the conditions of an experiment, but is no
proof of the stability of the product. However, they appear to have de-
cided in advance what the stable phase is, and later, to have interpreted
experimental results as proof of stability. It appears desirable to clarify
whether they mean (p. 953) that instability only, and not stability, can
be definitely proved.

It is agreed that a phase change proves instability of the starting ma-
terial under the relevant conditions, and accordingly discussion of the
electrolysis experiments of Flörke (1956), also described elsewhere,
(Flörke, 1961; Holmquist, 1961), is necessary. These appear to establish
that tridymite is not a form of pure SiO_2, and becomes unstable as im-