SHORT COMMUNICATIONS

A note on feed and asymmetric devices for mineral separation

MECHANICAL methods of separating large quantities of particular minerals from a rock have obvious advantages over heavy liquid separation. Techniques vary and methods preferred by individual mineralogists are often little known outside the laboratory of the designer. Certain modifications of equipment used in this laboratory are described that are particularly related to mica separation and to the feed problems found with most separators.

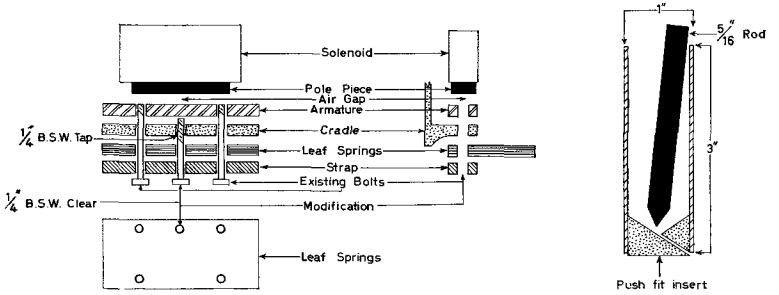

FIG. 1. Improved feeder for magnetic separators.

The separator described by Faul and Davis (1959) is particularly useful for separation of micas from quartz, feldspar, &c., and of chlorite from biotite. Some of these separations are impossible on an isodynamic separator, and may be difficult with heavy liquids. Our design is similar to that described by the above authors, but instead of a Syntron vibra-flow feeder, which is not available in this country, we have used a Syntron feeder type F.Ol. The critical part of this vibrator is the air-gap of the armature. A simple modification that allows continuous tuning of the plate consists in drilling and tapping a $\frac{1}{4}$-in. B.S.W. hole through the cradle, leaf springs, and strap as shown (fig. 1). The central screw is then adjusted in relation to the already existing bolts to obtain critical resonance of the plate, as shown, by placing minerals on the plate and observing their behaviour. A simple arrangement of two removable trays on four U brackets, with eight Eclipse button magnets to retain the plates, allows a sample collection as desired.

One of the major problems in mechanical separation is the feeding of the sample. The most desirable feeder should be continuously variable, and capable of providing very fast or very slow feeds. Those used here, both for the isodynamic separator and the mica separator, are essentially similar to those described by Faul and Davis (1959), with the difference that they are made from brass and have exchangeable plugs with different sizes of orifice (fig. 1). They are made from 1 in. diam. thin-walled brass tube, with a push-fit plug that has a shallow polished conical base. $\frac{1}{16}$ in. diam. holes were used for general purposes; smaller or larger holes may better suit particular problems. The feeders are attached to 6-volt or 24-volt relays, controlled by small variable potentiometers. Faul (personal communication) suggests the use of aluminium hoppers and there is probably little difference between the two. When feeding fine material below 200 mesh, the presence of a $\frac{5}{16}$ in. brass rod bevelled at 60°, as shown, to fit the cone at the base of the feeder, results in a fine feed of material and prevents clumping or stoppage. Such a device allows the separator to be run for many hours without attention, and material of 350 to 400 mesh has been handled satisfactorily.

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Reference

Faul (H.) and Davis (G. L.). Amer. Min., 1959, vol. 44, pp. 1076–1082.

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The occurrence of prehnite in appinitic rocks from Donegal, Ireland

Prehnite may be formed in a wide variety of geological environments. It has been recorded from both acid and basic plutonic rocks as a product of either hydrothermal alteration or calcium metasomatism. This note is to record two unusual occurrences of prehnite in ultrabasic rocks of the appinite suite associated with the Ardara granite pluton of Donegal, Ireland. The general geology of this area has been described by Akaad (1956).

The first occurrence is in a hornblendite from the Millponds Complex collected from 850 yards southwest of Kilrean post office. The rock contains approximately 94 % green hornblende, 3 % sericitised plagioclase, and 3 % brown biotite. Large biotite crystals (average diameter 3 mm) are set in a groundmass of somewhat smaller hornblende crystals.