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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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.

The prehnite is closely associated with the biotite, lenticular layers of prehnite being interleaved in all the large biotite crystals. The ratio of prehnite to biotite is about 1:5. All the prehnite has this mode of occurrence and none is present in the hornblende. Fig. 1 shows the appearance of the prehnite–biotite intergrowth in thin section.

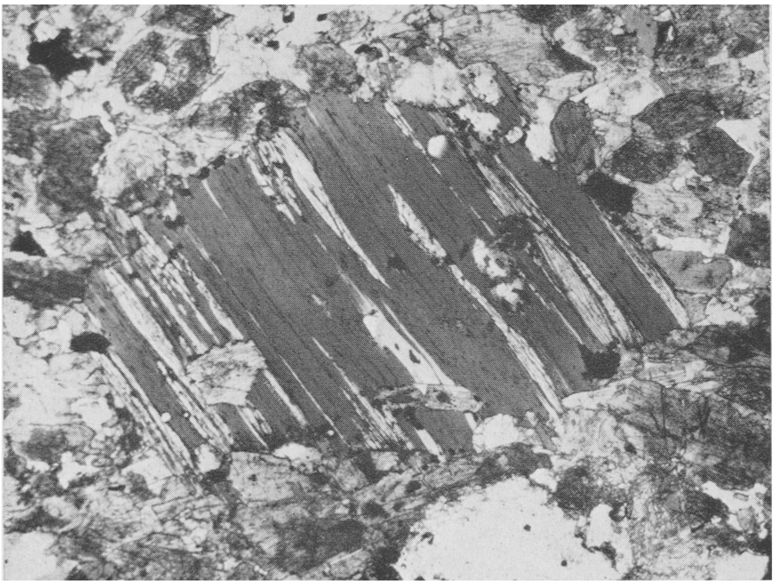

FIG. 1. Lenticular inclusions of prehnite in biotite.

Several biotite crystals were separated from the rock and broken up to obtain a few small grains of prehnite. Its identity was confirmed by means of an X-ray powder photograph. The separated prehnite was in the form of very thin (001) cleavage flakes, so that only two of its refractive indices could be measured easily; these were α 1·619$\pm$0·002 and β 1·626$\pm$0·002. The optical axial angle of a number of grains was measured on a universal stage; $2V_{\gamma}$ was found to vary from $58° \pm 1°$ to $64° \pm 1°$ with a mean value of 60°.

The second occurrence is in an appinite from the Meenalargan Complex, 650 yards southeast of the highest point of Meenalargan Hill. This rock contains approximately 70 % green hornblende, 30 % sericitised plagioclase and 2 % brown biotite. Again the prehnite occurs as lenticular inclusions parallel to the cleavage of biotite. Both of the rocks containing prehnite are massive, unweathered, and not veined by later material.

The experiments of Coombs *et al.* (1959) show that at water pressures up to 5000 bars prehnite is not stable above 450° C, so that a magmatic origin is very unlikely. The extremely close association with biotite, itself only a minor constituent of the rocks, must be taken into account in considering the origin of the prehnite. The compositions of biotite and prehnite are too dissimilar for one to have been produced from the other, particularly as both minerals appear to be quite fresh and free from any complementary breakdown products. A possible explanation of this occurrence is that the biotite and prehnite formed simultaneously from the surrounding hornblende as a result of low temperature potassium metasomatism.

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[*Manuscript received 1 June 1964.*]

Hydromagnesite from Hindubagh, Zhob Valley, West Pakistan

THE Hindubagh area constitutes a large igneous complex that includes serpentinites, peridotites, harzburgites, chromitites, &c., and is the important chrome ore producing district of Pakistan. So far there has been no mention of this mineral in the literature on this area.

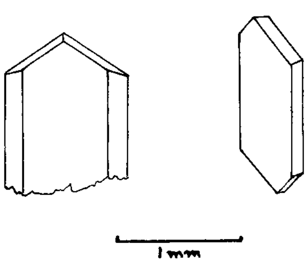

FIG. 1. Two common habits of hydromagnesite from Hindubagh.

The hydromagnesite occurs on the joint surfaces of sheared serpentinite, as pearly white crusts, tufts, and aggregates of radiating, colourless, and tiny crystals (max. 1 mm long); they show polysynthetic twinning with {100} as the twin plane. Due to the small size of the crystals, the twinning is best appreciated under the microscope. The mineral is biaxial positive with a moderate $2V$ and has $\alpha = 1{\cdot}516$