released into the rock, accounting for the late quartz, and some of the alteration of the plagioclase may date from this time.

The localization of the boron metasomatism argues a non-ionic method of introduction, since the rock on either side of the vein is identical to that originally occupying the position of the introduced material. A boron-bearing hydrothermal solution, limited to the easy passages afforded by the shear zones, explains the occurrence better. The ultimate origin of the hydrothermal solution was probably the Galway Granite.

Department of Geology,
The University,
Manchester 13.

R. E. K. BENJAMIN

References

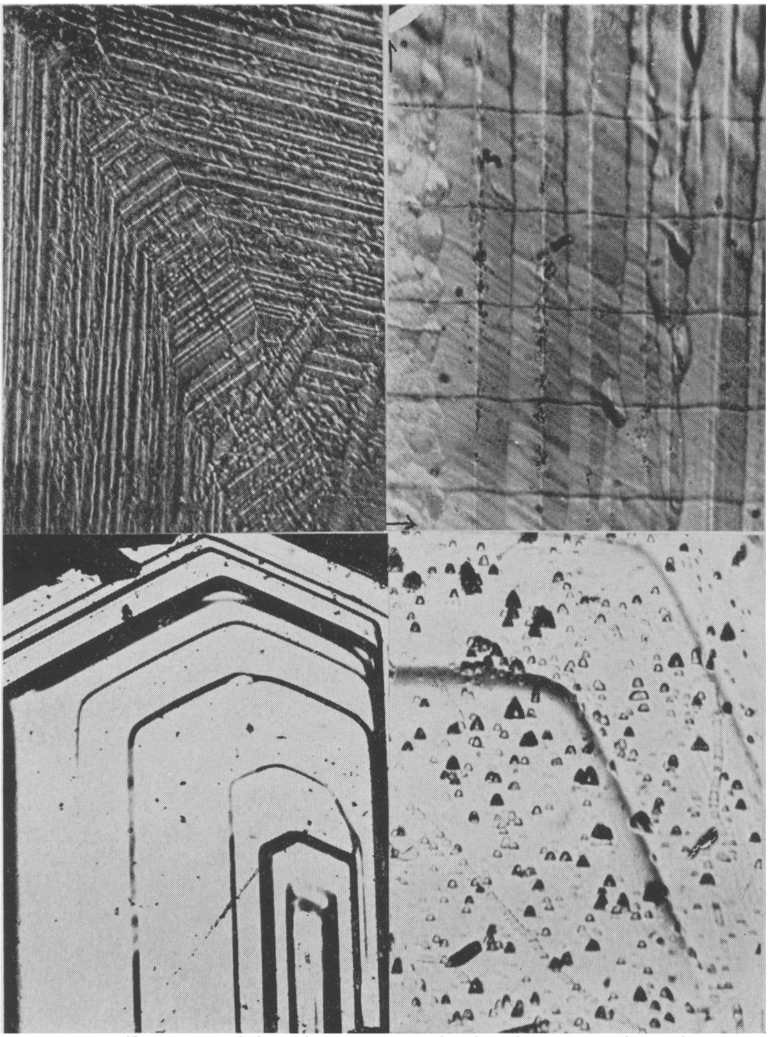
CARSTENS (H.), 1965. Norsk Geol. Tids., vol. 45, p. 397 [M.A. **17**-614].
LEGGO (P. J.), COMPSTON (W.), and LEAKE (B. E.), 1966. Quart. Journ. Geol. Soc., vol. 122, p. 91 [M.A. **18**-1].
RILEY (J. P.), 1958. Anal. Chim. Acta, vol. 19, p. 413 [M.A. **14**-87].

[*Manuscript received 5 July 1967*]

Etching of baryte

THIS communication reports some microtopographical observations on the etching of natural and synthetic baryte crystals; as far as the authors are aware, little has been reported on the dissolution phenomena of these crystals.

Natural baryte crystals were cleaved along (001) and examined under a Vickers projection microscope after depositing silver over them by the thermal evaporation technique. They were then etched in cold conc. H_2SO_4 for a few minutes. Figs. 1 ($\times 170$) and 2 ($\times 360$) represent a photomicrograph and a light-profile picture (Tolansky, 1952) respectively of a lightly etched cleaved surface. The etching has developed three sets of parallel lines over the whole surface, representing the intersection of $d\,\{102\}$, $m\,\{110\}$, and $O\,\{011\}$ with the cleavage plane (fig. 1); similarly oriented etch pits appear in all the three sets. At a higher magnification (fig. 2) it is seen that these alternately raised and depressed lines are crossed by more widely spaced bands at which the elevation changes abruptly; no regularity in these changes of elevation, or in the depths of the lines themselves, could be found. This is revealed by a histogram (not shown) constructed from measurements. A close



FIGS. 1 to 4: FIG. 1 (top left). Photomicrograph of a cleavage surface of natural baryte crystal etched in conc. H_2SO_4 for six minutes ($\times 170$). The lines parallel to the longer side of the figure are traces of $O\{011\}$, followed in a clockwise direction by traces of $m\{110\}$ and of $d\{102\}$. FIG. 2. (top right). Light profile photomicrograph of a small region of fig. 1 ($\times 360$). FIG. 3 (bottom left). Dome $d(102)$ face of a synthetic baryte crystal showing various stratigraphical growth sheets ($\times 120$). FIG. 4 (bottom right). Etch pattern on a small region of the dome face $d(102)$ of fig. 3 ($\times 270$).

examination of the lines discloses that they are slightly inclined to each other. These observations suggest a mosaic growth of stratigraphical sheets.

Synthetic baryte crystals were obtained by slowly cooling a fused mixture of barium chloride and sodium sulphate (or potassium sulphate) in a gradient furnace at a temperature of 1060° C and extracting the fused crystalline mass with water. Almost all crystals examined so far exhibited domes, with *d* (102) more prominent than *O* (011) faces; *c* (001) was of rare occurrence. This indicates that the rate of growth of *c* is faster than that of *O* and *d* for the crystals grown by the fusion process. A typical photomicrograph (fig. 3, ×120) of a (102) face of a synthetic baryte crystal shows loops having flat surfaces, indicating a platy growth. Etching of this crystal in conc. H_2SO_4 (fig. 4, ×270) gives rise to conical depressions, with triangular and trapezium outlines on the surface as opposed to rectangular etch pits on (001) faces (fig. 2); there are a number of different types of linear arrays of etchpits, which are not concentrated on the edges of the growth layers and have the same orientation on the different growth sheets. These points suggest the etchpits to be the seat of some specific defects, a selective action of etchant, and the flatness of the growth sheets, which are parallel to each other to the extent that etching failed to reveal any inclination. Further work is in progress and will be published shortly.

Acknowledgements. The authors are grateful to Professor N. S. Pandya for his keen interest in the work and one of us (C.L.S.) expresses his thanks to U.G.C. for the award of a research scholarship.

Department of Physics,
Faculty of Science,
Maharajah Sayajirao University,
Baroda—2 (India).

J. R. PANDYA
C. L. SARAF

Reference

TOLANSKY (S.), Zeits. Electrochem. 1952, vol. 56, p. 263.

[*Manuscript received 12 June 1967*]

A klementite from chlorite–sericite schist, Wajula, Distr. Almora, U.P., India

DURING investigations on the Chandpur rocks (Auden, 1937) of Wajula (29° 56′ N.; 79° 38′ 30″ E.) the authors came across a dark olive-green variety of chlorite occurring in the quartz veins associated with the