A typical example (fig. 1*b*) is a composite drawing of five measured crystals. Other forms present are $c\{001\}$, $g\{012\}$, $m\{110\}$, $o\{120\}$, $b\{010\}$, $n\{111\}$, and $\epsilon\{\bar{1}12\}$. Not shown on the drawing are the form $t\{013\}$ present as very narrow but brilliant faces between $c\{001\}$ and $m_{(x)}\{011\}$, and narrow faces of $\lambda\{\bar{1}13\}$, $\kappa\{\bar{1}15\}$ between forms $\epsilon\{\bar{1}12\}$ and $c\{001\}$. This habit is similar to that of the crystals from Andreasberg figured by Dana.

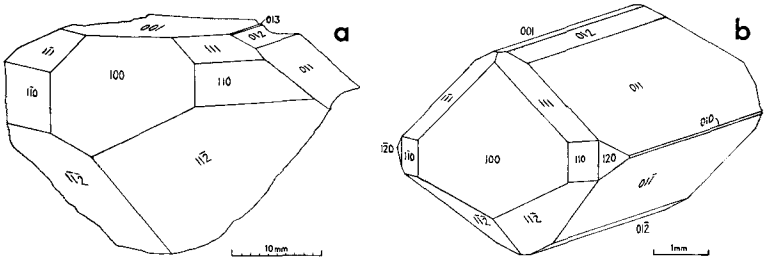

FIG. 1. Crystals of datolite from the north bay of Meldon railway quarry.

The well-known pseudomorphs of 'haytorite' after datolite in the calc-silicate assemblage at Haytor iron mine on the east side of Dartmoor (Reid *et al.*, 1912) have not been found at Meldon where there is no evidence for the late action of siliceous solutions following the pneumatolytic changes.

Department of Geology, W. R. DEARMAN
University of Newcastle-upon-Tyne.

References

DEARMAN (W. R.), 1959. Quart. Journ. geol. Soc. Lond., vol. 115, p. 65.
—— 1963. Geologists' Association Guides No. 33.
REID (C.) *et al.*, 1912. The Geology of Dartmoor. Mem. Geol. Surv. U.K.
SHARKAWI (M. A. H. El), and DEARMAN (W. R.), 1966. Econ. Geol., vol. 61 (in press).

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Lamellae of uncertain origin in the gem garnets from Simla village, Jhunjhunu district, Rajasthan, India

DURING the sinking of a well, gem variety grossular and almandine garnets were recovered from a soft pinkish calcareous fine-grained clayey rock associated with ortho-amphibolite below the sandy soil capping

near Simla village (28° 04′ N., 56° 00′ E.) in the Jhunjhunu district, Rajasthan. The rocks belong to the Delhi series of Sikka *et al.* (1964).

The garnets are transparent ruby red to pale rosy red, deep red, purple, or rarely cinnamon brown in colour. Very few specimens possess dodecahedral crystal faces; commonly they are rounded to sub-rounded, ranging up to 1 cm in diameter. Their specific gravity ranges from 3·50 to 4·24 and average refractive index from 1·745 to 1·799 and 1·81.

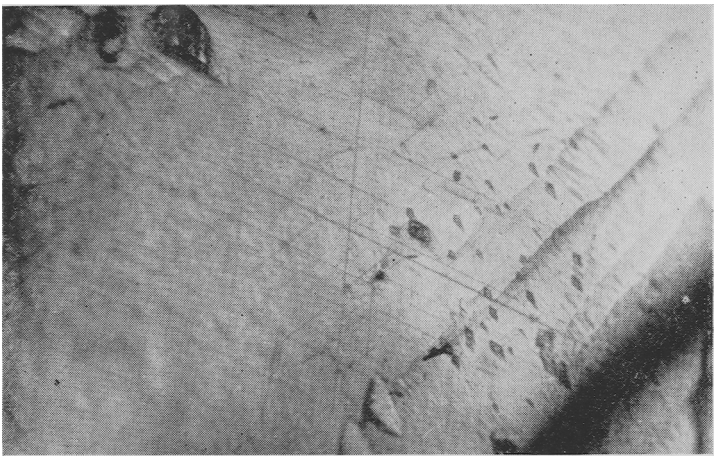

FIG. 1. Photomicrograph of a fragment of the gem garnet (plane-polarized light) showing cleavage-like linear markings and inclusions.

The majority of the garnets are isotropic; some show faint pleochroism and a few show anomalous interference colours. The inclusions though present are not abundant; they are better seen in fragments than in thin sections. Rocket-shaped and bubble-like inclusions range up to 0·075 cm in length and 0·025 cm in breadth. In many garnets triangular inclusions have been noted, arranged in rows and probably due to etching. Occasionally the rosy-red garnets are fringed with honey-brown and deep brown margins, which can be seen imperceptibly passing into the pinkish-red garnets; some garnets show concentric zones within.

It is interesting to record that a few garnets show two sets of perfectly developed, apparently rhombohedral, linear markings, which are either continuous or interrupted at short intervals (fig. 1). These lead a casual observer to think that they are either partings or cleavages (parting has been described from garnets by Winchell (1937)).

In the present case the linear markings appear, under very high magnification, to be lamellar twinning characteristic of calcite, as suggested by M. J. Buerger of the Massachusetts Institute of Technology. His observation that 'it may be the outcropping of a small sheet of unmixed material of another crystal structure' also holds true to a certain extent. In fact the pseudomorphic cleavage and relicts of the calcite are still retained in the garnet groundmass. Not much can be said at this stage about the rocket-shaped and triangular inclusions present in the garnet, which may be an intergrowth of some other species of mineral in the garnet and this intergrowth may have resulted from unmixing of some material. Further work on the problem is in progress and will be published later.

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Department of Geology,
Panjab University,
Chandigarh-3, India.

M. N. SAXENA

References

SIKKA (D. B.), ROYCE (J.), and NEHRU (C. E.), 1964. *Mineral Market*, Nov.–Dec.
WINCHELL (A. N.), 1937. Elements of Optical Mineralogy, John Wiley & Sons, Inc., New York.

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Isotopic ages of charnockites and other Indian rocks

THE principal conclusion of Grasty and Leelanandam (1965) that the charnockites of Kondapalli suffered metamorphism about 450 M yr ago and that this cycle is represented in Travancore (India) and Ceylon, has already been reported by Aswathanarayana (1964*a*) on the basis of Rb–Sr and K–Ar ages of whole rocks and separated biotites from charnockites and granites of Kondapalli and Visakhapatnam. Unfortunately, the authors missed this paper at the time of submission of their report for publication. This led them to make statements such as: 'As far as the authors are aware, there are no published isotopic ages on any Indian charnockites' (p. 530) and that the ages 'are the lowest recorded for any Archaean rock or mineral in India' (p. 531). Attention is drawn to the work of Afanas'ev *et al.* (1964), Vinogradov and Tugarinov (1964),