zeolites at a high temperature. The same process may well have operated in the present area.

School of Studies in Geology A. C. CHATTERJEE
Vikram University, Ujjain
Madhya Pradesh, India

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On the ferroan gahnite of Mamandur, Madras State, India

GAHNITE occurs as segregations in quartz veins and quartzo-feldspathic gneisses in the base metal prospect in Mamandur area, South Arcot Dt., Madras State, India (Sheet No. 57 P/4; 12° 00′ N, 79° 01′ E). The occurrence of gahnite is restricted to the area of base metal mineralization, which could mean that the two are related in some way. The base metal mineralization is mainly localized in the biotitized amphibolite and is structurally controlled by a north–south trending vertical fault. The economic minerals in this area include sphalerite, chalcopyrite, galena, covelline, chalcosine, pyrrhotine, anglesite, etc. Along the strike of the lode towards the north-east, where gahnite occurs in the quartzo-feldspathic rock, the latter shows kaolinization up to a depth of three feet.

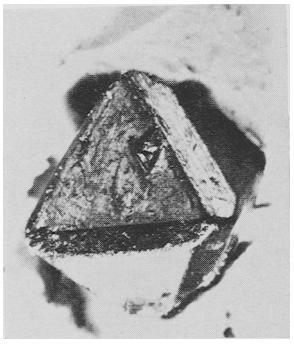

FIG. 1. Crystal of ferroan gahnite; ×15.

The resistant nature of this mineral is evident from its occurrence as crystals (placer), while the associated rocks have been altered either wholly or partly and are highly friable. The soil samples collected from places as far as 500 ft from the main mineralized area (for detailed geochemical studies) contain fines of this mineral, the presence of which gives rise to anomalous zinc values in the soils of the area.

The mineral is dark greyish-green to greenish-black in colour, with a specific gravity of 4·50. The individual crystals, which vary in size from 1 mm–1·5 cm, are mostly octahedral with well-developed faces of the octahedron and dodecahedron (fig. 1).

The octahedral faces show striations parallel to the edges ⟨110⟩. Cleavage traces are noticed only in a few grains. The optical study shows light to dark green polarization colours and high relief, with well-developed fractures; the mineral is isotropic.

The cell-edge, calculated from X-ray powder data, is 8·098 Å, intermediate between those of gahnite (*a* 8·062 Å) and hercynite (*a* 8·119 Å).

Well-developed crystals of gahnite, collected by hand picking, were analysed by standard wet chemical methods after sodium peroxide attack. The chemical analysis of the mineral gives: SiO_2 1·10 %, Al_2O_3 57·86 %, FeO (total iron expressed as FeO) 7·79 %, MnO 0·50 %, ZnO 32·50 %, total 99·75 %. The atomic ratios calculated to 32 oxygen are: Zn 5·69: Fe^{2+} 1·53; Mn 0·09; Al 15·90. From the chemical analysis, the mineral could be called ferroan gahnite. Further work (by way of chemical analysis of more samples and the determination of trace element content of gahnite) is in progress and will be reported elsewhere.

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Department of Applied Geology S. M. GANDHI
University of Saugar
Sagar, M.P., India.

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A modified closure for high-pressure cold-seal pressure vessels

IN 1963 Luth and Tuttle (1963) described modifications of the original Tuttle (1949) cold-seal pressure vessel that enabled the useful working limits of the apparatus to be extended to approximately 11 kb and 750 °C. The essence of this modification was the transmission of pressurized fluid (argon) through $\frac{3}{16}$-inch O.D. tubing to a hardened cone that was forced into the pressure vessel by a thrust washer and closure nut. Lubrication of the closure nut and thrust washer were recommended to prevent rotation of the cone and consequent galling in its seat on tightening.

This type of vessel has been manufactured for some years now by the Tem Press Co.[1] and we have used their product with considerable success. Our experience in using

[1] State College, Pennsylvania.