SHORT COMMUNICATIONS

A note on manganophyllite from Goldongri, India.

In 1957, during general reconnaissances of the Goldongri manganese mine, Panchmahal district, Gujrat State, India, a few specimens were collected that on examination revealed an interesting manganiferous mica. The occurrence of manganophyllite from this area (Jothvad) was reported by the late Sir Lewis Fermor.[1] As far as is known to the author no work has been undertaken on this manganophyllite since Fermor's time.

The mica occurs as small flakes and sometimes forms aggregations of thin scales in quartzite and in a winchite–blanfordite rock. It varies from brown to reddish brown with a bronzy lustre. Under the microscope it is observed that the mica is distributed throughout the whole section but especially along the cleavages of the amphibole and pyroxene. The optical characters of the mica are: $\beta = 1{\cdot}59$–$1{\cdot}60$; $2V_\alpha = 20°$–$32°$; the optic axial plane is parallel to {010}; pleochroism, α pink with an orange tinge, β and γ yellowish brown to dark brown, absorption $\gamma = \beta > \alpha$. The optical characters together with the presence of manganese indicate that the mica belongs to the manganophyllite group of Fermor. There is, however, great variation in pleochroism, in a few cases some lamellae interlaminated with the manganophyllite lamellae show pleochroism similar to that of biotite; owing to this interlamination of manganophyllite and biotite the determination of its pleochroic scheme is a matter of difficulty. Other associated minerals are: predominantly winchite, blanfordite, biotite, quartz, microcline, plagioclase, and manganese ore of braunitic nature.

The optical characters of the mica are very similar to those of manganophyllite described by Rao[2] from Tirodi mine, Madhya Pradesh, India. In pleochroism it differs slightly from the manganophyllite described by Fermor from the present area. The cause of variation in pleochroism is not clearly understood. Fermor reported the presence of both uniaxial and biaxial manganophyllites.

Optic axial angles for reported Indian manganophyllite range from 0 to 40° (table I). The cause of this variation is not known; Rao[2] opines that it may be due to the effect of manganese or iron on the optical characters of the mineral. In this connexion it will not be out of place to mention the suggestion made by Fermor (p. 196): 'Some of these micas are uniaxial and some of them biaxial, sometimes strongly so. It is

possible that some of them may be manganophyllite, but it is almost certain that there are two or more species amongst them.'

TABLE I. Optic axial angles of Indian manganophyllites.

Reported by	Locality	$2V_\alpha$
Fermor (1909)	Jothvad (Goldongri)	Some uniaxial and some biaxial
Fermor (1909)	Sitapathur	Uniaxial
Fermor (1909)	Junawani	Biaxial
Kilpady & Dave (1954)	Sitapathur	10°
Bilgrami (1952)	Sitasaongi	18°–22°
Kilpady & Dave (1954)	Sitasaongi	Between 35° and 36°
Raghava Rao (1955)	Tirodi	23°–40°
Basu (1958)	Ramtek-Chorbaoli	10°
Present author	Goldongri (Jothvad)	20°–32°

From the available data on manganophyllites it is apparent that there is a continuous variation in the optical axial angle, which probably indicates that there is a continuous variation in the composition of the mica and it seems difficult to demarcate it into any recognizable species.

Bilgrami,[3] Kilpady,[4] Basu,[5] and Rao[2] suggested that the manganophyllite has developed from the amphibole, with which it is constantly associated. In the present case, however, it does not seem to have developed from the amphibole; under the microscope it is observed that manganophyllite occurs both in the winchite–blanfordite portion and also in the quartz–feldspar portion of the rock and therefore its origin cannot be stated with certainty, but considering the fact that the granite and pegmatite intrusives are found in close proximity it is not unlikely that it may have had an igneous origin though the necessary manganese was probably absorbed from the adjacent manganese ore body.

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Dept. of Applied Geology,
University of Saugar,
Saugar (M.P.), India.

V. K. NAYAK

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