Nora Creina Bay 42 miles to the north-west. The Nora Creina stone, although showing marked differences from the Lake Bonney group in surface features and internal structure, was included as a member of the same fall because of the similarity in olivine composition of the stones from the two localities (data supplied by Dr. Brian Mason). It was concluded that the Nora Creina stone was not found *in situ* but had been transported at some time in the past, probably by aborigines, whose camp-sites are common in the area.

Further work by Dr. Mason on the pyroxenes in stony meteorites has shown that the Nora Creina stone is distinct from the Lake Bonney group, and represents a separate fall. The coordinates of the Nora Creina meteorite are 37° 19′ S, 139° 51′ E.

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Bixbyite and manganophyllite from Kajlidongri, India

A DETAILED mineralogical examination of the manganese ore and silicate minerals of the Kajlidongri manganese mine (22° 37′ N., 74° 31′ E.), Jhabua District, Madhya Pradesh, was undertaken by the author[1] during the period 1957–61. Among the minerals reported were bixbyite and a manganiferous mica.

Bixbyite. An isotropic opaque mineral, with a yellowish colour under the ore microscope, reflectivity 21 to 22 % (green light, in air) was identified as bixbyite from its X-ray powder pattern, which closely matches those reported by Fleischer and Richmond[2] for material from Thomas Range, Utah, and by Roy[3] for material from India (there is some uncertainty over the solubility relations and nomenclature of the Mn_2O_3–Fe_2O_3 system, and the name bixbyite is here used, following Roy, for all isometric $(Mn,Fe)_2O_3$).

The bixbyite is associated with braunite and hematite, in a variety of textures: banded, intergrowth, replacement, vein, and relict colloform. Its tendency to a porphyroblastic relation to other ore minerals is considered to be due to a greater intensity of metamorphic processes in silica-poor manganiferous sediments. Some bixbyite was formed before the braunite, and some later. A second generation of braunite is attributed to replacement of bixbyite, with released Fe_2O_3 crystallizing as hematite. It is, however, thought, on the basis of the phase system results of Mason[4] and Muan and Somiya,[5] that the bulk of the hematite represents the iron present in the original manganiferous sediments.

The present study of the Kajlidongri bixbyite and its association with primary braunite–hematite and secondary braunite–hematite suggests that there are both iron-poor and iron-rich bixbyites, and this when correlated with physical and chemical environments may prove useful in deciphering the geological thermometry of the manganese ore deposits.

Manganophyllite. A mica showing reddish-brown, orange, and coppery-red colours occurs frequently in a variety of rocks in several parts of the mine, including winchite-schists, winchite-quartzites, and pyroxene-bearing rocks. In the first two rocks, the mica occurs as small flakes, but in the pyroxene-bearing rock small books of mica, dark reddish-brown or even almost black, were found. It is commonly associated with, and sometimes interlaminated with biotite. Accessory minerals include: winchite, blanfordite, plagioclase, calcite, biotite, apatite, and manganese oxides. Several specimens were examined, and gave: α $1{\cdot}593 \pm 0{\cdot}002$, pale pink, sometimes with an orange tinge, γ $1{\cdot}633 \pm 0{\cdot}002$, yellowish brown, with sometimes a tinge of pink or reddish brown, $2V_\alpha$ 30 to 40°. In a few cases where the mica occurs in winchite-schist, an unusual pleochroism was seen: α pale rose or pale crimson, β pinkish brown, γ deep rose red. Chemical tests showed 2·56 % MnO and a large amount of magnesia and iron.

These characters are consistent with the manganophyllite group of Fermor.[6] Micas reported as manganophyllite show considerable variation in optic axial angle (Nayak[7]) and in pleochroic colours,[8] and it has been suggested that they may represent more than one species; a detailed study of these micas would be desirable.

Manganophyllite is usually associated with amphiboles, and it has been suggested by several workers that it has developed from them, but at the Kajlidongri mine its relationship with other minerals, supported by metamorphic textures, definitely indicates a metamorphic origin from sediments rich in manganese, magnesia, and iron.

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Meteoric origin of the secondary minerals of the Deccan Trap lavas

FERMOR (1925) made a detailed investigation of the secondary minerals in the basaltic lavas penetrated by borings at Bhusawal, and showed much evidence for a late magmatic origin for them. Although later workers on the Deccan Traps have accepted the view of Fermor, it is