

FIRST RECORD OF PRECAMBRIAN MICROBIOTA FROM THE BLAINI FORMATION IN MUSSOORIE AREA, LESSER HIMALAYA, UTTAR PRADESH

The Blaini Formation in the Blaini-Krol-Tal succession of the Krol Belt is struggling for its rightful position in the stratigraphy of India in general and of Himalaya in particular ever since Medlicott (1864) recognised the Blaini Boulder Bed Limestone association in Simla region. There are two school of thoughts about its age, one noticing its unfossiliferous nature argues for Purana (Precambrian) age (Holland, 1908), whereas the other stressing its similarity with the Talchir Boulder Bed of the Peninsula favouring an Upper Carboniferous age (Oldham, 1887; Pilgrim & West, 1928; Auden, 1934, 1937). However, the former view did not get much support as almost all the palaeontological finds more or less fitted well with the latter view. In spite of the fossil records suggesting Permo-carboniferous age (Shrivastava & Venkataraman, 1975; Prasad & Bhatia, 1975; Ghosh & Srivastava, 1962; Tewari & Singh, 1979) and a younger age to overlying Krol sediments (Sitholey *et al.*, 1954; Lakhanpal *et al.*, 1958; Sah *et al.*, 1968; Tewari, 1979; Sinha, 1975). Krishnan and Swaminath (1959), Gansser (1974) and Valdiya (1973) considered it to be Precambrian. Valdiya (1980), however, reviewed in favour of Devonian age though there were records of Precambrian oncolites (Gundu Rao, 1970) and calcareous algae (Gansser, 1974) from the overlying Krol Formation.

In recent years, there have been several significant palaeontological finds (Batt *et al.*, 1983, 1985; Kumar *et al.*, 1983, 1987; Tripathi *et al.*, 1984, 1986; Kumar, Joshi & Mathur, 1987; Singh & Rai 1983a, 1983b; Tewari, 1984) from the overlying succession of the Krol and Tal formations which have conclusively led to assign the age of succession from Late Precambrian to Early Cambrian.

The fixing of the age of the Krol and the Tal succession with the latest Precambrian to Early Cambrian probably made the underlying Blaini Formation still older, and thus called for re-examination of the Blaini Formation for any possible microbiota was noticed for the first time in petrographic thin section of rocks of the Blaini Formation exposed in Maldeota Section of the Mussoorie Syncline, Dehradun District, Uttar Pradesh (Text-fig. 1). Due to poor preservation, though present in sufficient number, the identification poses problems.

Geological Setting

A good section of the Blaini Formation is exposed along either banks of the Song River in the southern limb of the Mussoorie Syncline. In this section, the Blaini Formation rests unconformably over the Saknidhar Formation (Kumar, 1981; Nagthar Formation, Auden, 1934), and is overlain by the Krol Formation; the contact of the latter in some sections is faulted. The details of lithostratigraphy are given in (Text-fig. 2). The microbiota (Figs. 1-6) have been recorded from Members B and E.

Check list of Microbiota

ALGAE

Huroniospora Barghoorn, 1965 (Figs. 4, 5)

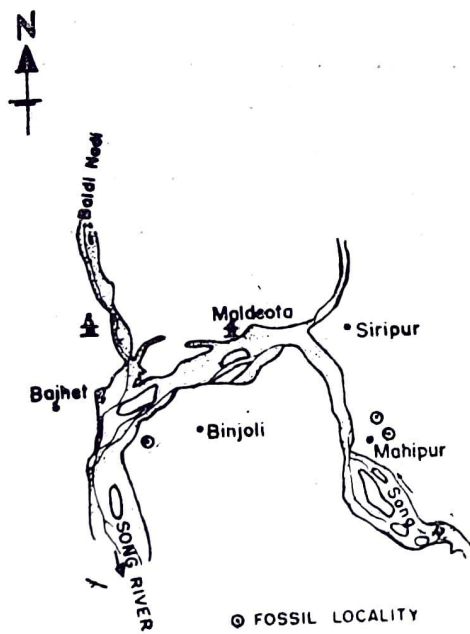
Myxococcoides Schopf, 1977 (Fig. 3)

Gunflintia Barghoorn, 1964 (Fig. 1)

ACRITARCH

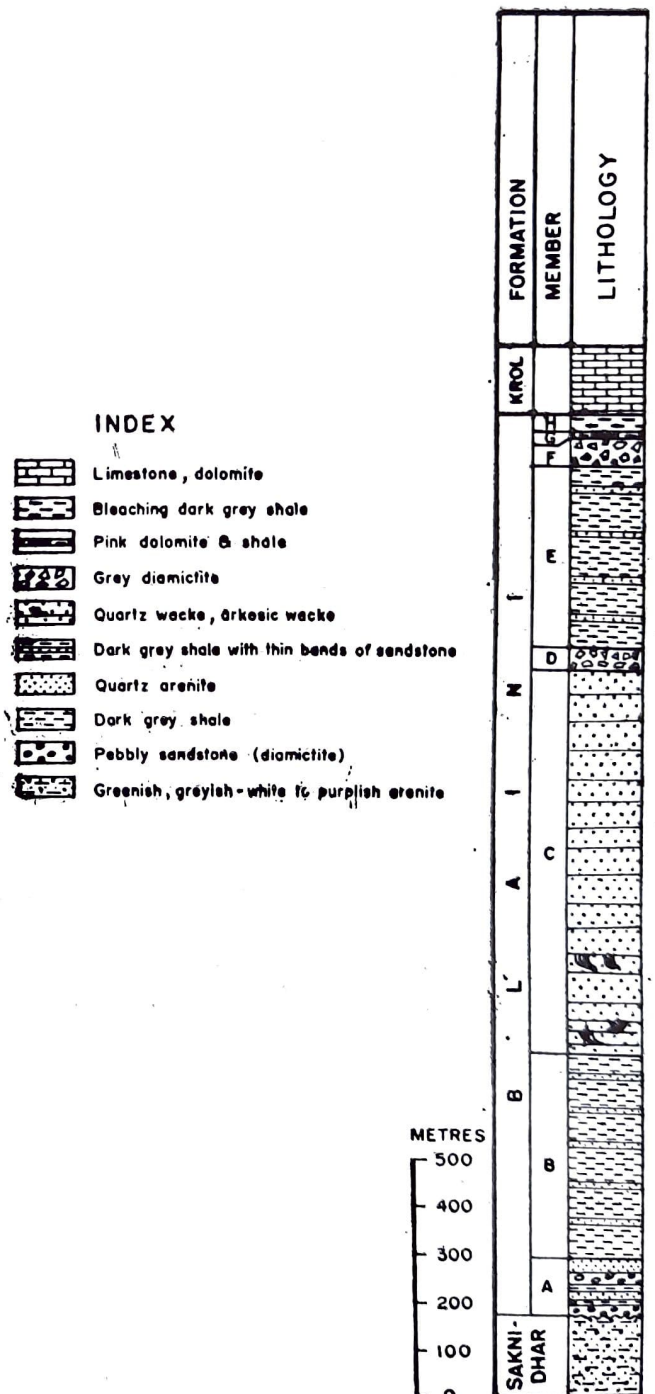
Leiosphaeridia Timofeev, 1956 (Fig. 5)

Lophosphaeridium Timofeev, 1956 (Fig. 2)

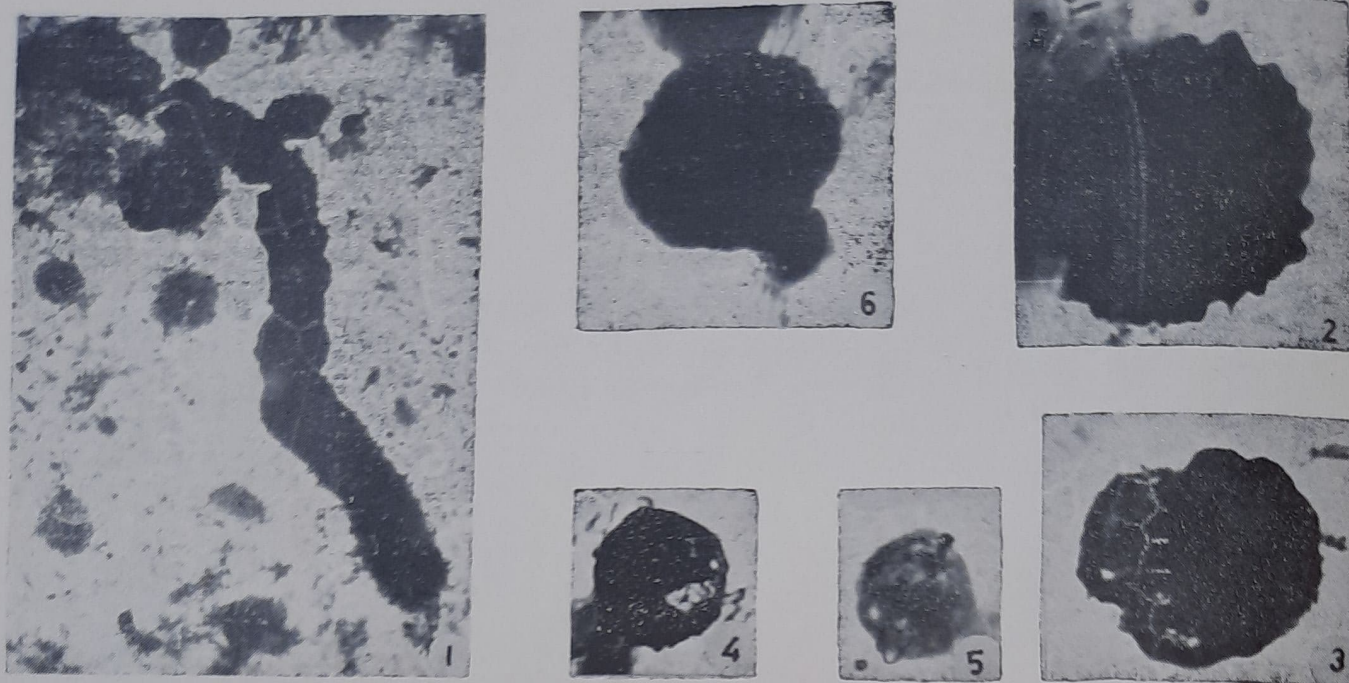


• Raipur (DEHRADUN)

Text-figure 1—Map showing the location of the Maldeota Section in southern limb of Mussoorie Syncline.



Text-figure 2—Lithocolumn of the Blaini Formation in Maldeota Section.



Figures 1-6—1, *Gunflinita* $\times 1200$: slide no. Z/19; 2, *Lophosphaeridium* sp. $\times 1200$: slide no. Z/19; 3, *Myxococcoides* Schopf; 4, 5, *Huroniospora* Barghoorn $\times 1200$, slide no. Z/19; and 6, *Leiosphaeridia* sp. $\times 1200$: slide no. Z/20.

Discussion

The present assemblage of the microbiota recorded for the first time from Blaini, though quite common, is poor in preservation. The algal forms are either solitary *Huroniospora*, colonial-*Myxococcoides* and filamentous *Gunflinitia*. They occur frequently in thin sections. The representation of the arctitarch, on the other hand, is uncommon. Only two forms, *Leiosphaeridia* and *Lophosphaeridium* are recognisable. The former is long ranging from Late Proterozoic to Ordovician, whereas the latter ranges from Late Proterozoic to Cambrian. *Lophosphaeridium* is significant stratigraphically as its lower vertical range is not below 750 million years (Timofeev, 1956). It is, therefore, inferred that the Blaini Formation may be of Late Precambrian (Vendian) in age. This inference gets further support from the recent finds of fossils of Late Precambrian age from the overlying succession of the Krol-Tal Formation as mentioned earlier.

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