

DISCOVERY OF STROMATOLITES FROM THE SIRBAN LIMESTONE OF RIASI, JAMMU & KASHMIR STATE

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ABSTRACT—The present paper incorporates the discovery of the stromatolites *Collenia columnaris* Fenton & Fenton and *Collenia purii* n. sp. from the Sirban Limestone exposed in the Katra Hill, Riasi, Jammu & Kashmir State. The Sirban Limestone may be referred to pre-Cambrian age due to the presence of *Collenia columnaris* Fenton & Fenton in it.

INTRODUCTION

The present paper records for the first time the occurrence of stromatolites in the Sirban Limestone which extends from Riasi ($33^{\circ} 05' : 74^{\circ} 50'$) to the Poonch ($33^{\circ} 46' : 74^{\circ} 05'$) Valley in the form of large and small inliers and has so far been considered devoid of organic remains.

Wadia (1937) described the geology and stratigraphical position of this limestone and doubtfully considered it to be of Permian or Permo-Carboniferous age.

Kalkowsky (1908) was the first geologist who applied the name "Stromatolite" to laminated structures of problematical origin. Logan *et al.* (1964) explained in detail the origin and structure of stromatolites. Srinivasa Rao (1949), Mathur *et al.* (1958), Mathur (1965), Misra and Valdiya (1961), Valdiya (1962, 1969), Raja Rao *et al.* (1965), Sen (1966), Dixit (1966) and Misra & Kumar

(1969) have recorded the occurrence of stromatolites from the different formations of India.

The authors collected samples from the Sirban Limestone, exposed in the Katra Hill ($32^{\circ} 59' : 74^{\circ} 56'$) and between the road cutting from Riasi to Salal ($33^{\circ} 09' : 74^{\circ} 50'$), for micropalaeontological investigation in the years 1968 and 1969. The path which leads from Katra city to the famous goddess Durga's temple has very good exposures of the Sirban Limestone having stromatolites. The steps of the path are made up of Sirban Limestone and few of them also contain fairly preserved stromatolites.

The following general geological sequence has been marked within the Sirban Limestone.

Dark grey massive dolomitic limestone
Light grey dolomitic limestone
Medium grey dolomitic limestone

TABLE 1

Author	Year	Formation	Age
Fenton & Fenton	1931	(a) Algal beds in the Belt Series of Glacier National Park.	Pre-Cambrian
	1937	(b) Hell Roaring member of the Altyn Limestone, Ravalli Group, Belt Series of the north western United States.	Pre-Cambrian
Keller <i>et al.</i>	1960	(a) The Burzyan Series of Southern Urals, the Uchur Series of south eastern Siberia.	Lower Riphean
		(b) The Yurmatian Series of Southern Urals, the Maya Series of southeastern Siberia.	Middle Riphean
Korolzuk	1960	Pre-Cambrian sediments of eastern Siberia; <i>Mastoviella (Collenia) columnaris</i> (Fenton & Fenton).	Pre-Cambrian
Krylov	1960	(a) The Burzyan Series of Southern Urals.	Lower Riphean
		(b) The Yurmatian Series of Southern Urals.	Middle Riphean
Semikhatov	1960	The Sukhopitskaya and Lower Tungusika Series of Turukhan-Yenisey Ranges in western Siberia.	Middle Riphean
Korolev & Krylov	1962	(a) The Kirgiz Series of Northern Tien-Shan Range.	Lower Riphean
		(b) The Kenkol'su Series of Tien-Shan Ranges.	Middle Riphean
Zhuravleva & Komar	1962	(a) The Lower Bilyakhsk Series of the Anabar massif in northeastern Siberia.	Lower Riphean
		(b) The Middle Bilyakhsh Series of the Anabar Ranges.	Middle Riphean
Misra & Kumar	1969	Gangolihat Dolomities, Calc Zone of Pithoragarh.	Late Proterozoic
Valdiya	1969	(a) Gangolihat Dolomities, Calc Zone of Pithoragarh.	Between 1100 and 900 million years
		(b) Lower Shali Limestone, <i>Collenia columnaris</i> ?	Between 1100 and 900 million years
		(c) Grey siliceous dolomitic limestone of the Fawn Limestone, Semri Series, Vindhyan System.	Older than 1110+60 m. y.

Distribution of *Collenia columnaris* Fenton & Fenton in the various formations of the world.

Medium grey thin bedded limestone
 Dark grey dolomitic limestone inter-
 bedded with light grey dolomitic limestone
 Light bluish grey dolomitic limestone

DESCRIPTION

The stromatolites generally occur in the medium grey and light grey limestones. The following species of the stromatolites have been identified in this formation.

Family Spongiostromota PIA

Genus *Collenia* Walcott 1914

Collenia columnaris Fenton & Fenton 1937
 Pl. 1, Fig. 1

Colonies large, thin laminae marking convex concentric layers.

Fenton and Fenton (1931, 1937) have described the occurrence of *C. columnaris* from the algal beds in the Belt Series of Glacier National Park and Hell Roaring member of the Altny Limestone, Ravalli Group, Belt Series of the northwestern United States. Koroljuk (1960) has mentioned this species under the new generic name *Masloviella columnaris* occurring in the pre-Cambrian sediments of eastern Siberia.

Collenia purii n. sp.

Pl. 1, Fig. 2

Description. Vertical, cylindrical to sub-cylindrical column which slightly tapers upward; fine laminae forming highly convex (approaching towards cone shape) concentric layers, lamina overlaps the preceding ones.

Comparison and Remarks. The present species differs from the species *C. columnaris*, *C. symmetrica* Fenton & Fenton, *C. nailensis* Misra & Kumar, *C. albertensis* Fenton & Fenton and *C. willisii* Fenton & Fenton in having fine laminae forming highly convex (approaching towards cone shape) concentric layers.

The species has been named in honour of Dr. Harbans Singh Puri, Micropalaeontologist, Florida Geological Survey, Tallahassee, Florida, U. S. A.

Type Locality. Katra Hill.

Type Horizon. Sirban Limestone, referred to pre-Cambrian age.

Conclusion. According to Koroljuk (1960) *Masloviella (Collenia) columnaris* (Fenton & Fenton) is confined to the pre-Cambrian formations. Table I showing the distribution of *C. columnaris* in the various formations of the world, also supports that this species has only been reported so far from the pre-Cambrian formations. Hence, the Sirban Limestone may be referred to pre-Cambrian age on account of the occurrence of *C. columnaris* in it.

ACKNOWLEDGEMENT

The authors are indebted to Dr. R. C. Misra, F. N. I., Professor & Head Department of Geology and Dean, Faculty of Science, University of Lucknow, Lucknow, for providing facilities and encouragement. The financial assistance from the Council of Scientific and Industrial Research, Rafi Marg, New Delhi, is thankfully acknowledged.

EXPLANATION OF PLATE 1

1. *Collenia columnaris* Fenton & Fenton x ca 1/7. 2. *Collenia purii* n. sp. x ca 1/7.



1



2

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