TWO NEW FORMS OF STROMATOLITES FROM THE KAJRAHAT LIMESTONE (LOWER VINDHYAN), DALA AREA, DISTRICT MIRZAPUR, U. P.

R. C. MISRA*, S. N. SINGH AND S. KUMAR

Department of Geology, University of Lucknow, Lucknow

**Ramkrishna Marg, Faizabad Rd. Lucknow*

ABSTRACT

The paper records the occurrence of two new forms of stromatolites, *Conophyton vindhyaensis* and *Colonella kajrahatensis* from the Kajrahat Limestone of Semri Series (Lower Vindhayan) in the Dala area, Mirzapur district, U. P. On the basis of the presence of these primitive forms of stromatolites, the Kajrahat Limestone is assigned Lower Riphean age.

INTRODUCTION

Stromatolites are the macro-sedimentary structures produced by organic activity. These have been successfully and extensively used for the correlation of Precambrian formations of the world, particularly in U.S.S.R. In India, the stromatolites have been reported and described from the different Precambrian formations of Peninsular and Extra-peninsular India. VALDIYA (1969), while describing the stromatolites from various calcareous horizons of Vindhyans and Himalayan region, has attempted their correlation with the U.S.S.R. Riphean succession. The record of stromatolites from Kajrahat Limestone is significant due to the fact that no stromatolite has so far been reported from the horizon older than the Fawn Limestone of the Semri Series.

GEOLOGY

The geology of the area has been described by AUDEN (1933). In the area under consideration, the Lower Vindhyan is represented by the Semri Series. Its stratigraphic succession is given in Table 1.

Table 1—(after Auden, 1933)

Semri Series (Lower Vindhyan)	Rohtas Stage	Limestones and shales
	Kheinjua Stage	Glauconitic sandstones Fawn Limestone Olive shales
	Porcellenite Stage	Porcellenites
	Basal Stage	Kajrahat Limestone Basal Conglomerate
	Unconformity	
	Bijawar Formation	Phyllites & Slates

STROMATOLITES FROM THE KAJRAHAT LIMESTONE

Stratigraphically Kajrahat Limestone occupies the upper part of the Basal Stage of the Semri Series. It is a dark greyish to bluish grey microcrystalline limestone, and is well-bedded with siliceous bands. A few lenticles of the pisolitic limestone have also been observed in the upper part of the limestone sequence. The development of the stromatolites is seen near the contact of limestone with porcellenites. Out of the two new forms, *Colonella kajrahatensis* is extensively developed while the development of *Conophyton vindhyaensis* is restricted only to a few bands.

SYSTEMATIC DESCRIPTION

The nomenclature for the stromatolites proposed by Cloud and Semikhatov (1969) and Raaben (1969) has been followed by the authors in this paper.

Supergroup—Conophytonida Raaben, 1969

Group—Colonella Komar, 1966

Form—**Colonella kajrahatensis** new form
(Pl. 1, Figs. 1, 2)

Colonies elongate, subcylindrical, almost perpendicular to the bedding plane. Internal laminae moderately convex with nonenveloping marginal zone. Lateral surface full of small projections and undulations. Size ranges from less than 1 to 14 cm in height. Circular to oval in outline in transverse section with concentric rings. Diameter ranges from less than 1 to 6 cm.

Remark—The form under description resembles *Kussiella kussiensis* but does not show ramification. It also resembles *Collenia columnaris* but differs in having nonenveloping laminae and lateral surfaces of small projections.

Locality—In the hillocks about 2 km from Dala on Dala-Chopan motor road.

Type Horizon—Upper part of the Kajrahat Limestone.

Repository—Holotype specimen no. S1-73 in the Museum of Geology Department, Lucknow University.

Supergroup—Conophytonida Raaben, 1969

Group—Conophyton Maslov, 1937

Form—**Conophyton vindhyaensis** new form
(Pl. 1, Fig. 2)

Colonies perpendicular to the bedding plane. Internal laminae in the form of inverted cones. Height of the columns ranges from 12 to 17 cm. Circular in transverse sections with concentric rings but where the crowding of the form has been observed, subcircular to pentagonal with rounded corners. The diameter ranges from 5 cm to 30 cm.

Remark—The present form does not resemble any form described so far in the available literature.

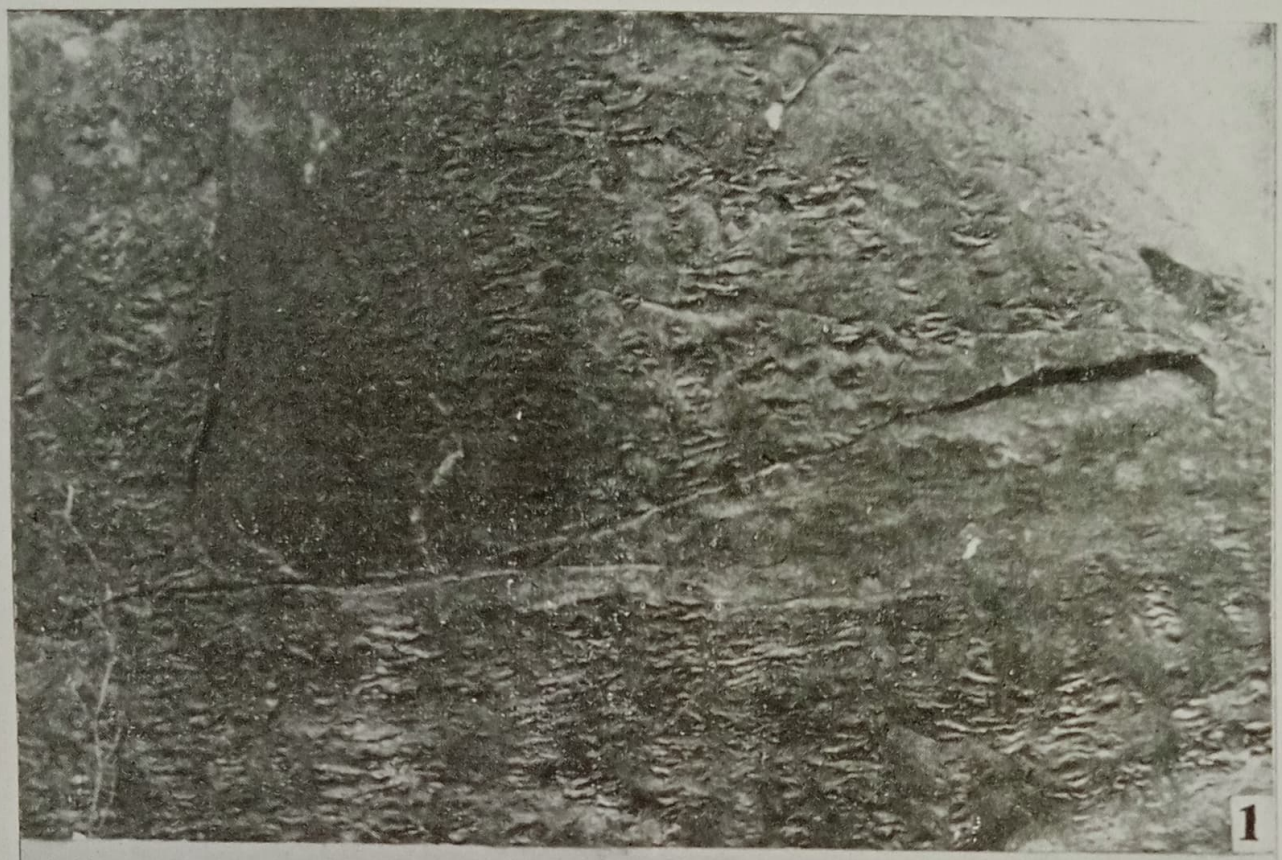
Locality—On the hillocks about 2 km from Dala on the Dala-Chopan motor road.

Type Horizon—Upper part of the Kajrahat Limestone.

Repository—Holotype specimen no. S2-73 in the Museum of Geology Department, Lucknow University.

CONCLUSIONS

Valdiya (1969), while correlating the Lesser Himalayan Carbonate Formations with Vindhyan Formations, has referred the Fawn Limestone to upper part of Lower Riphean


1


2

on the basis of the presence of typical Middle Riphean form *Conophyton cylindricus*. The record of the forms, *Conophyton vindhyaensis* and *Colonella kajrahatensis*, exhibiting primitive characters, lead us to the conclusion that the Kajrahat Limestones are Lower Riphean in age. On the basis of stratigraphic succession the Fawn Limestone is Middle Riphean and not Lower Riphean as suggested by VALDIYA (1969). The radiometric age given by VINOGRADOV AND TUGARINOV (1964; *in* MISRA, 1969) for Glauconitic sandstone, as 1110± 60 million years, supports this contention.

REFERENCES

AUDEN, J. B. (1933). Vindhyan sedimentation in the Son Valley, Mirzapur district., India. *Mem. geol. Surv. India* **62** : 141-250.

CLOUD, P. E. JR. & SEMIKHATOV, M.A. (1969). Proterozoic stromatolite zonation. *Am. Jour. Sci.* **267** (9) : 1017-1061.

MISRA, R. C. (1969). The Vindhya System. Presidential Address. 56th Session. *Indian Sci. Cong.* Bombay.

RAABEN, M. E. (1969). Columnar stromatolites and Late Precambrian stratigraphy. *Am. Jour. Sci.* **267** (1): 1-18.

VALDIYA, K. S. (1969). Stromatolites of the Lesser Himalayan Carbonate Formations and the Vidhyans. *Jour. geol. Soc. India* **110**(1): 1-25.

EXPLANATION OF PLATE 1

1. *Colonella kajrahatensis*, Kajrahat Limestone, Dala area, District Mirzapur, U.P. ×4.
2. In the upper part *Conophyton vindhyaensis*, and in the lower part, *Colonella kajrahatensis*, Kajrahat Limestone, Dala area, District Mirzapur, U. P.