

outlet. A bund has been constructed now and the water flowing through is used for irrigation purposes.

The lake has a maximum length of a mile in an east-west direction, while the maximum width in a north-south direction is four-fifths of a mile. It has, however, an irregular outline with extensions in the east, west and south. The low range in the north is studded with numerous granitic hills, about 100 feet high, the higher ones rising to about 150 feet. The western end is particularly well forested, while the eastern end is bare. The following trees, shrubs and climbers, deciduous in character, occur on the granitic hills above the north-western corner of the lake :—

*Shorea robusta*, *Butea frondosa*, *Garuga pinnata*, *Odina Wodier*, *Buchanania latifolia*, *Agoneissus pendula*, *Phyllanthus Emblica*, *Acacia Catechu*, *Helicteres Isora*, *Ziziphus Oenoplia*, bamboo, which is thin and wiry and *tendu*.

In the west there is a low and broken chain of hills, with the maximum height of about 100 feet. Towards the south-west corner there is high ground again, where a cluster of blocks of granite is to be observed. Adjoining the college buildings of the Mahakoshal Mahavidyalaya on the south-east is low ground traversed by streams feeding the lake, during the monsoon. It may be noted, therefore, that the shoreline in the north and some distance on the west is rocky, while in the south and south-east it is alluvial through the deposition brought by the incoming streams.

On the banks of the lake, aquatic vegetation, particularly water hyacinth (*Eichhornia crassipes*) along with *Carex Wallichiana*, grass and bushes are to be seen. The extent of this aquatic vegetation is variable. When the rocks come close to the shore, this aquatic vegetation is restricted in extent. When the rocks project into the lake no aquatic vegetation is seen. Aquatic vegetation, particularly water hyacinth, extends for a considerable distance towards the south, viz., the direction in which the stream flows from Gokalpur. The aquatic vegetation in the lake itself deserves study by a botanist.

On the west is a bund for controlling the flood level. Beyond the bund there is a channel which serves as an inundation canal during the monsoon. In the rainy season, the water rises by about 2 ft. as compared to the level in December, 1948.

Towards the south-eastern end the difference between the high and low water levels in December, 1948 was about 100 feet, but at other places this must vary with the slope. It may be noted that these banks are eminently cultivable in winter since the soil is rich in humus.

The lake is fed also by the Pariat tank, so as to minimise the fluctuations in lake level. It also supplies drinking water to Jubbulpore. During the monsoon, its water is used for rice cultivation and in the other seasons, for raising sugarcane and vegetables in the surrounding villages, viz., Katia, Bedla, Suhagi, Amkhera, etc.

The detritus from small streams pouring into it must be, gradually, making the lake shallower. It may be pointed out that those in charge of the lake would kindly see that it does not reduce in size or degenerate into a marshy depression as a result of this deposition. It is even likely that it has been already reduced in size in the south-east. Measures to counteract this effect are urgently called for. Fisheries and sport can be developed in this somewhat large reservoir so close to Jubbulpore. Finally, there is no denying the fact that the lake must have a salubrious effect on the climate of the neighbourhood.

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July 29, 1949.

#### ON ORGANIC REMAINS FROM THE VINDHYANS (PRE-CAMBRIAN)

ATTENTION has been drawn to the occurrence of organic-like forms (Chapman,<sup>1</sup> M. R. Sahni,<sup>2</sup> Fox,<sup>3</sup> Auden,<sup>4</sup> and Rode<sup>5</sup>) in the Vindhyan. The most convincing evidence for it comes from the Suket shales from a horizon at the junction of the Lower and Upper Vindhyan, roughly equivalent of the Rohtas stage of the Son Valley, from which Chapman described some primitive brachiopods. These were later revised and redescribed under a new family Fermoriidae by M. R. Sahni.<sup>2</sup> The author has made a collection of rocks with structures suggestive of organic origin from the Lower Vindhyan of the Son Valley and Karwi area, Banda District, U.P., and a preliminary note (Misra<sup>6</sup>) was published on a previous occasion. The present note records three forms, indicative of organic origin.

1. GLAUCONITE GRAINS OCCURRING AS  
CASTS OF ORGANISMS

A detailed study of the sandy glauconitic limestones from the Lodhwara hill (25° 13'-80° 55') north of Karwi overlying the Bundelkhand granite, shows much glauconite in two distinct forms: (1) rounded, ovoid, and sausage shaped bodies (see Fig. 1)

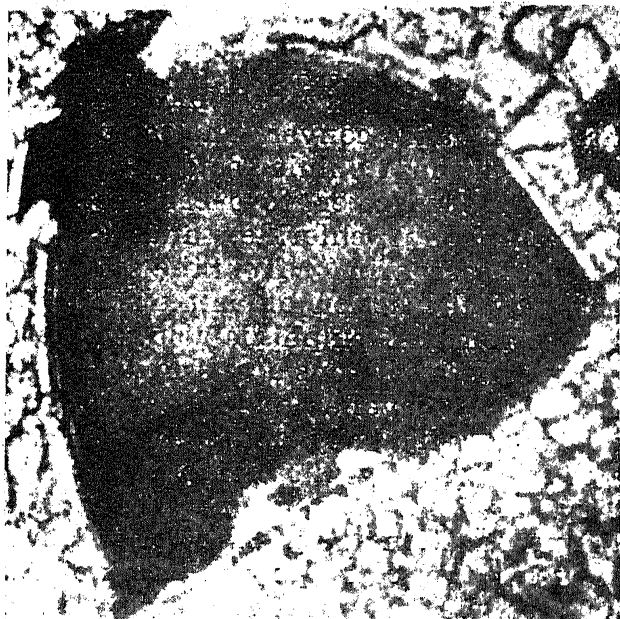


FIG. 1. A broken piece of glauconite infilling of an organism.  $\times 110$ . Loc.—Lodhwara Hill, Karwi, Banda District, U. P.

with clearly defined boundary walls and (2) irregular particles without any wall structures. The wall material in (1) is either transparent (Fig. 1) or (2) opaque consisting of carbonaceous matter. The carbonaceous nature was confirmed by strongly heating a thin slice on platinum foil. It may be noted that Sederholm<sup>7</sup> figured bodies with boundary walls of carbonaceous matter from the Pre-Cambrian rocks of Finland and he considered them to be carbonised remains of very primitive plants. The forms I have figured therefore appear to be infillings of some organisms. A very striking result is obtained by treating uncovered slides with safranin. While the calcereous matrix and the detrital grains of quartz remain unaffected, the glauconitic bodies stain a brilliant brownish red.

2. REMAINS OF ALGA (FIG. 2)

The carbonaceous limestones collected from the Banjari quarries (south of Dehri-on-Sone, on the Dehri-Rohtas Light Railway) which come from a horizon towards the top of the Rohtas stage have yielded a microscopic verticillate alga with

a slender jointed stalk terminated by a globular head. The dark portions (seen in the photo) are carbonaceous and represent the original protoplasmic matter. The globular head consists of radiating black carbonaceous patches and represent fertile sporangia. The dark segments in the stalk appear to represent verticillate deciduous sterile branches (see Fig. 2). The earliest



FIG. 2. An alga (Dasycladaceae).  $\times 110$ . Loc.—Banjari, Shahabad District, Bihar.

known Dasycladaceae, are from Ordovician rocks: the genera described are *Cœlosphæridium*, *Cyclocrinus* and *Apidium* from the Ordovician of the Baltic region, and all these are characterised by a globular head consisting of radially spreading branches at the top of the axis as in the Vindhyan alga. It may be further noted that from the Ordovician of Spiti, Cowper Reed<sup>8</sup> described *Cœlosphæridium.shianensis* [= *Pasceolus* (?) *shianensis* Reed].

I am grateful to Prof. S. R. N. Rao, for identification of the alga and helpful suggestions.

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November 15, 1949.

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