

SCLEROCOCCUS: A NEW TYPE OF FOSSIL ALGA FROM THE JUTOGH 'E', SIMLA HILLS

P. K. MAITHY

Birbal Sahni Institute of Palaeobotany, 53 University Road, Lucknow 226 007, India

&

O. N. BHARGAVA

Geological Survey of India, 529, Sector 18 B, Chandigarh 160 017, India

ABSTRACT

A new type of fossil alga, *Sclerococcus* gen. nov., is recorded from the Jutogh 'E' Member of the Simla area. The alga is characterised by the presence of sclerotic thickenings on the cells.

Key-words — *Sclerococcus*, Chroococaceae, Jutogh Group, ?Cambrian (India).

सारांश

शिमला पहाड़ियों में जटोघ 'ई' से एक नवीन प्रकार का शैवालाश्म : स्क्लेरोकोक्कस - प्रभात कुमार माइती एवं श्रींकार नाथ भार्गव

शिमला क्षेत्र के जटोघ 'ई' सदस्य से एक नवीन प्रकार का शैवालाश्म, स्क्लेरोकोक्कस नव प्रजाति, अभिलिखित किया गया है। यह शैवालाश्म कोशिकाओं पर दृढ़ स्थूलनों की उपस्थिति से अभिलक्षणित है।

INTRODUCTION

SAH, Maithy and Bhargava (1977) reported for the first time the presence of microbiota (palynomorphs) from the 'B' Member of Jutogh Group. On the basis of the microbiota Vendian age was assigned to this bed. Recently, a new characteristic form showing algal organisation has been recorded from the Jutogh 'E' Member.

The Jutogh Group of the Simla area is divisible into five mappable formations.

| MEMBER | LITHOLOGY |
|-------------|---|
| E Formation | Carbonaceous schists, staurolite and garnet schists, marble and garnetiferous amphibolite (450 m). |
| D Formation | Cross-bedded pale, white to grey quartzite, with interstratified carbonaceous graphitic schist in upper part (500 m). |
| C Formation | Chlorite-sericite phyllite, minor quartzite, rare garnetiferous schist (1100 m). |
| B Formation | Pale grey to white ripple marked quartzite with |

MEMBER

A Formation

.....Jutogh Thrust.....

The material yielding the microbiota was collected by one of us (O.N.B.) from the Jutogh 'E' Formation about 16 m above its contact with 'D' Member, approximately 800 m WNW of Dhenda along the Simla (Jutogh)-Mandi Highway. The material is fine grained marble, dirty-white to greenish in colour. Preparations and studies were made according to the methods suggested by Pflug and Maithy (1977) to avoid contaminations.

DESCRIPTION

Division — Cyanophyta
Class — Cyanophyceae
Order — Chroococcales
Family — Chroococaceae

Genus — *Sclerococcus* gen. nov.

Diagnosis — Cells spherical, with radial scleroid-like thickenings radiating from

the centre of cell to the margin on one surface and the other with varied sculpture; solitary or in the form of irregular flat colony, enveloping sheath for individual cell or colony absent.

Genotype — *Sclerococcus jutoghensis* sp. nov.

Comparison — In its flat irregular colonial organisation and without enveloping sheath *Sclerococcus* gen. nov. compares with several known Precambrian and Cambrian forms, viz., *Aphanocapsa* Maithy & Shukla (1977), *Nanococcus* Oehler (1977), *Sphaerophycus* Schopf (1968) and *Corymbococcus* Awarmik & Barghoorn (1977). But all these forms differ in the absence of thick sclerotid thickenings on cell walls. The closely comparable form *Palaeoglaucocystis* Maithy & Mandal (1982), recorded from the Upper Bhanders of Rajasthan, differs in having rugulate type of thickenings. Moreover, the cells are enveloped all round by non-lamellated sheath. On the other hand, in *Sclerococcus* the scleroid thickenings project out beyond the boundary of the cells giving fimbriate appearance to cell margin. Moreover, the encrusting sheaths around the cells are also missing.

Sclerococcus jutoghensis sp. nov.

Pl. 1, figs 1-9

Diagnosis — Cell spherical or oval in outline, either solitary or in groups of 2-10

cells, arranged in chain or irregular patterns, 10-20 μm ; one surface with branched or unbranched scleroid thickenings radiating from the centre of cells to margin, margin fimbriate; other surface smooth.

Holotype — Slide no. 6062 of the Birbal Sahni Institute of Palaeobotany Museum, Lucknow.

Locality — 800 m WNW of Dhenda along Simla-Mandi Highway.

Horizon — Jutogh 'E' Member (?Cambrian).

Description — Cells are commonly spherical, occasionally oval. Mostly they are solitary. Frequently they form colony of 2-10 cells. In colonies, the cells are arranged in a single row or form irregular pattern. Scleroid thickenings of cells are branched and closely adpressed, giving rough appearance to cells. Scleroid thickenings also project beyond the cell margin. Hence, the outline shows fimbriate appearance. The other surface of cell is smooth.

Remarks — Although biota plays a significant role in biostratigraphy, but no conclusion on the age of Jutogh 'E' can be drawn on the basis of present record of *Sclerococcus* as its vertical and horizontal distributions are not known. However, similar comparable form has been recorded by Eisenack (1960, pl. 1, fig 3a, b, c) from the lime surface on *Esthonus* shale from the Silurian of Baltic Island.

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EXPLANATION OF PLATE

PLATE I

Sclerococcus jutoghensis gen. et sp. nov.

1. Solitary cells or 3-5 cells arranged in groups. $\times 1000$. 2-9. Solitary cells enlarged to show the structures (in figs 5 and 6, the sclerotic thickenings are shown).

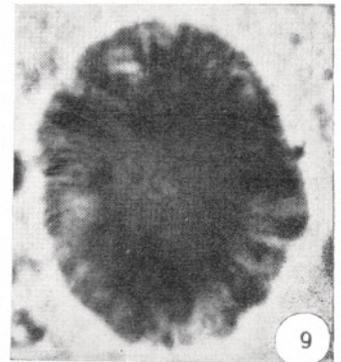
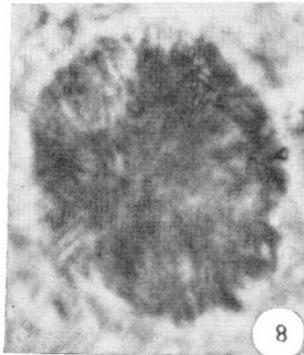
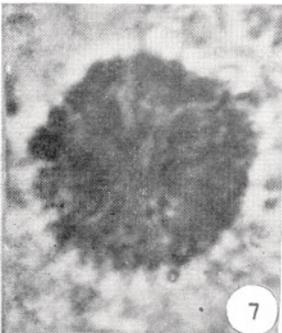
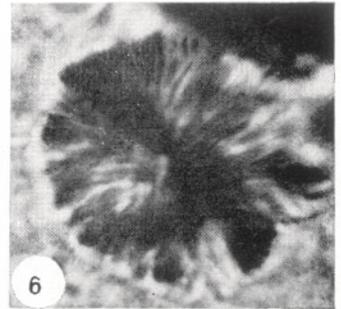
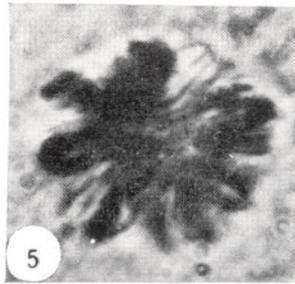
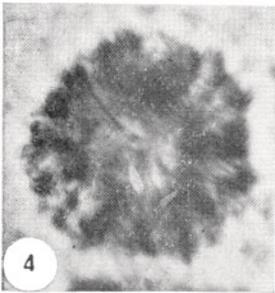
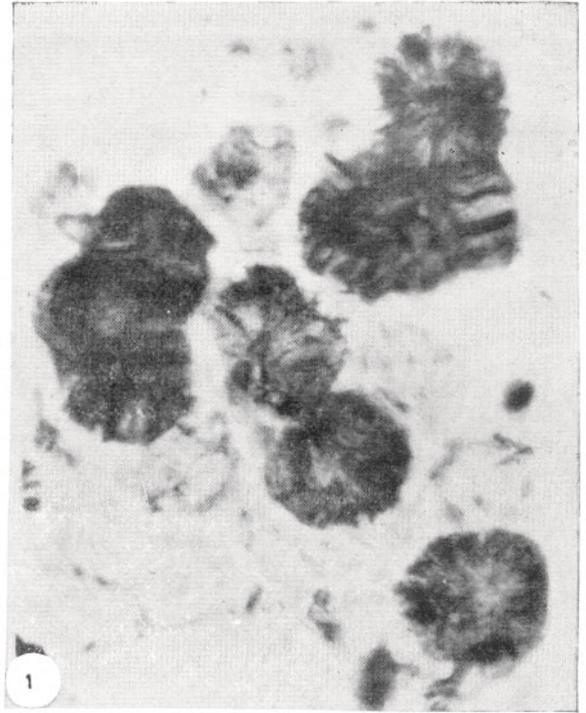
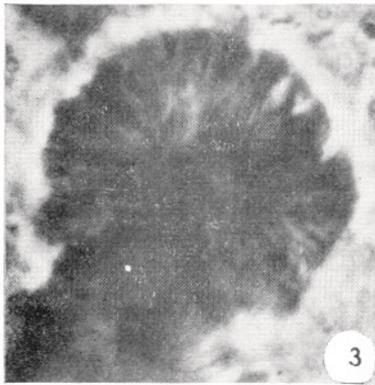
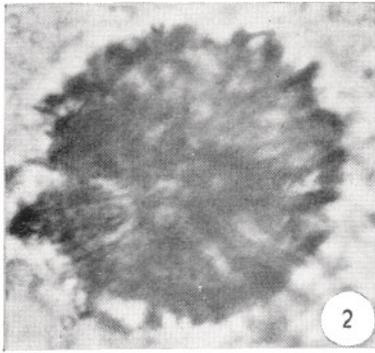


PLATE 1