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## Occurrence of *Botryococcus* from the Lower Cretaceous rocks of Cauvery Basin, Tamil Nadu

*Botryococcus*, an oil-producing colonial green alga, is generally known to occur in Tertiary and Quaternary rocks of India. It is also reported from Permian sediments of India.

In course of drilling for groundwater in the area, about 1.2 km west and 1.3 km

north of Kattarambakam village of Vannur taluk, South Arcot district, Tamil Nadu (Figure 1), carbonaceous shale, sandstone, coal and clay were encountered. The palynological studies of the carbonaceous shale samples revealed the presence of abundant green alga *Botryococcus*<sup>1</sup>.

*Botryococcus* is well preserved, honey yellow to brownish yellow in colour and occurs either as solitary autospores or bodies of two to four chambered cups (Figure 2) or as multicup aggregates. The colonies are mostly botryoidal (Figure 2) or spheroidal in shape and range from 120 to 160 µm in diameter. The diameter of the two- or four-chambered cups ranges from 16 to 28 µm (Figure 2). Further, it is also noticed that some of the colonies appear as irregular lumps of varying dimensions (Figure 2). In the present assemblage the thimble (inner part of cup) invariably remained empty.

*Botryococcus* is known to thrive in fresh to brackish shallow waters with undisturbed conditions in the area of relatively low rainfall<sup>2</sup>. The excellent state of preservation of all the developmental stages (i.e. autospores, two-to-four-chambered cups and multicup aggregates) is indicative of rapid burial of this algal bloom in quiet shallow oxygenated waters without much transportation<sup>2,3</sup>.

The qualitative analysis of the associated microfossil assemblage revealed the presence of characteristic palynomorphs referable to *Aequitriradites* sp., *Microcachryidites* sp., *Dictyosporites speciosa*, *Cicatricosisporites australiensis*, *Appendicisporites tricornitatus*, *Neorais-trikia* sp., *Cooksonites* sp., *Gothanipollis*

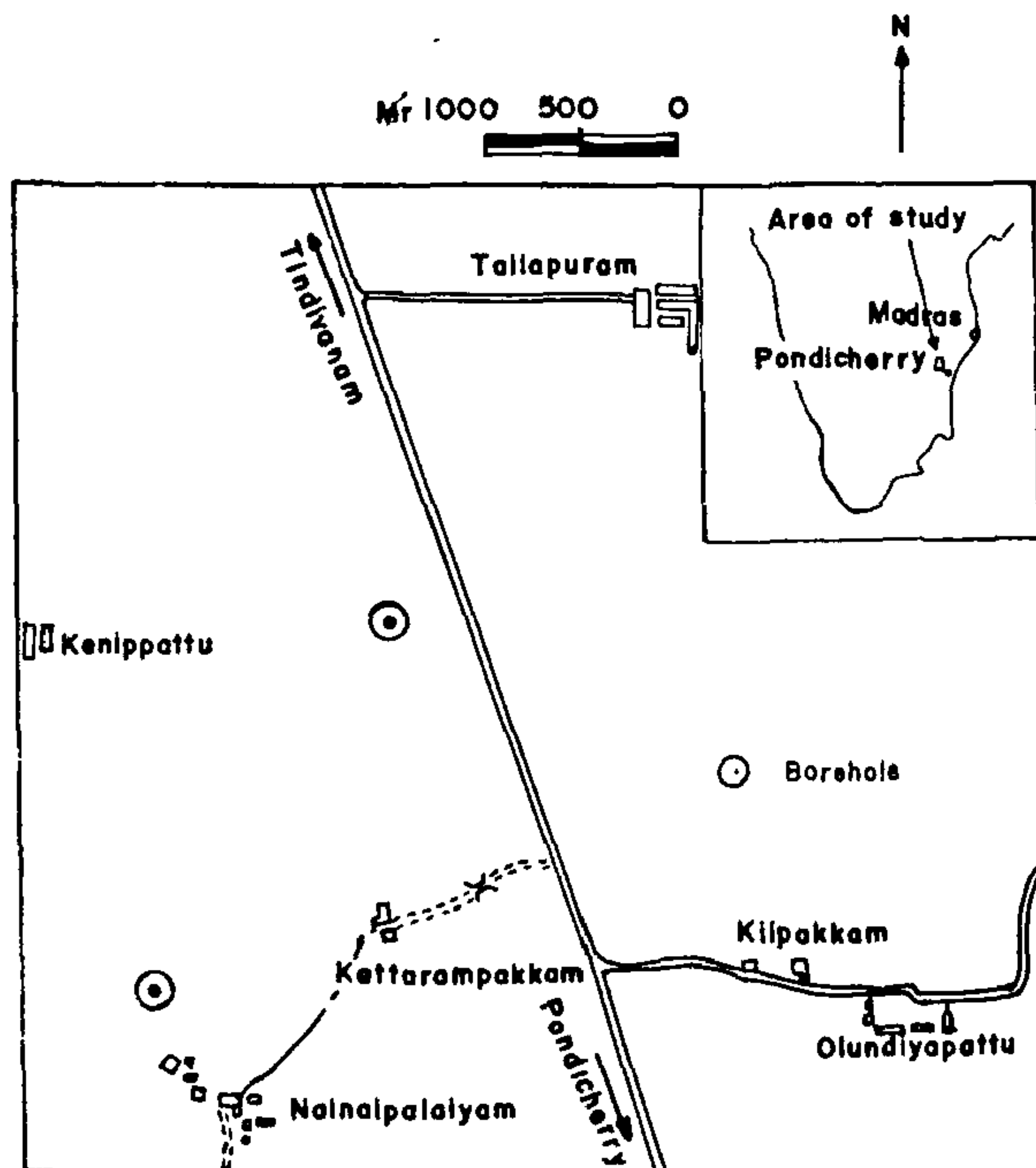


Figure 1. Location map of the study area.

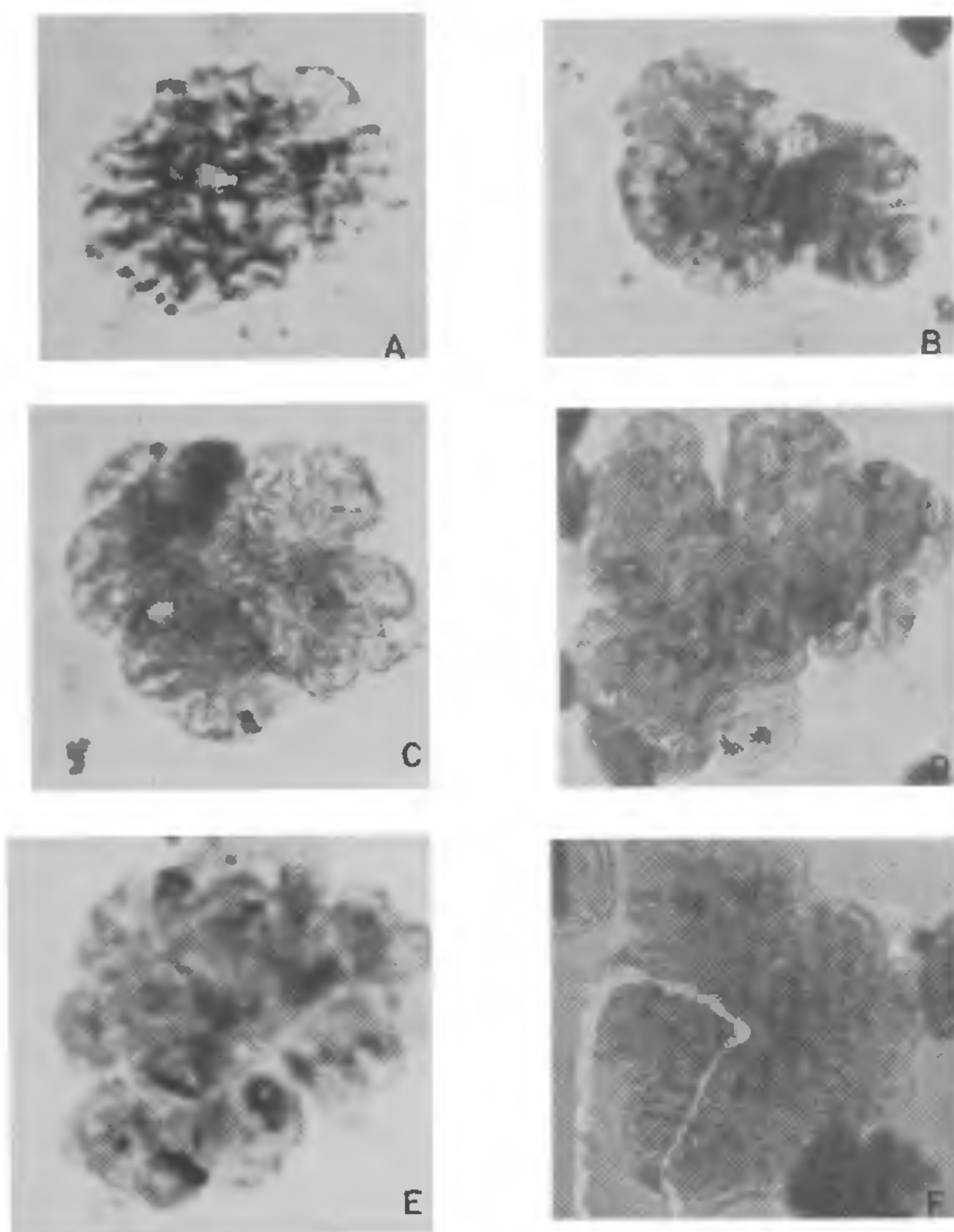


Figure 2. *Botryococcus* showing different stages of preservation. Solitary autospore ( $\times 960$ ); Two-chambered cup ( $\times 960$ ), Four-chambered cup ( $\times 900$ ), Botryoidal nature ( $\times 450$ ), Multicup aggregate ( $\times 900$ ); Abraded form ( $\times 400$ ).

sp., *Crybelosporites stylosus*, *Triporoletes reticulatus* and *T. radiates* (common occurrence) show a close resemblance with the *Triporoletes reticulatus* zone of this *Botryococcus*-bearing palynoassemblage from Kattarambakam.

Most of the fossil records of *Botryococcus* in India are from Eocene<sup>5-7</sup>, Miocene<sup>6-9</sup> and Pleistocene sediments<sup>10</sup>. Occurrence of this alga is also reported from Permian rocks of India<sup>11-14</sup>. The present

record of *Botryococcus* from the Lower Cretaceous (Late Albian) sediments from Kattarambakam is significant for it is the first record of this alga from Cretaceous of India.

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## Enechelon faults along West Coast of India and their geological significance

Subsequent to the advent of modern remote sensing technology, mapping and analysis of various lineaments and fractures and their correlation with geophysical and ground geological data have become a matter of great interest to geoscientists. The West Coast of India is one such region which has always attracted the attention of geoscientists and many have studied the region. The

significant amongst them are the studies by Jacob and Narayanaswamy<sup>1</sup>, Ramachandran<sup>2</sup> and Nair<sup>3</sup>. Jacob and Narayanaswamy<sup>1</sup> have observed that the Western continuity of the Palghat gap extends right up to 9° channel, separating Laccadives and Maldives. Ramachandran<sup>2</sup> has carried out very exhaustive analysis of lineaments by integrating total intensity aeromagnetic,

Bouger gravity anomaly and Landsat lineament data sets. On the basis of such an integration, he has identified four sets of lineaments in WNW-ESE to NW-SE, NNW-SSE, N-S to NNE-SSW and NE-SW directions.

Nair<sup>3</sup> has carried out structural interpretation for the entire West Coast of India and brought out certain newer information on the neotectonic activities