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# Fossil Fish Ossiculiths from the Cenomanian of South India<sup>1)</sup>

By Somanahalli Sambe Gowda<sup>2)</sup>

With 3 figures in the text

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## I. INTRODUCTION

In paleontologic literature it is not uncommon to find description of fossils under «incertae sedis» and speculations about their relationship with very well defined groups. Such fossils of doubtful relationship can always be put in their proper pigeon-hole by the systematist when he studies their association with living organisms on the one hand and fossil objects on the other. The fruitful results of such studies have been published by FRIZZELL & EXLINE (1958a, 1958b), showing that certain microfossils occurring in the Eocene of Texas can be identified as gastroliths of crustacean forms and ossiculiths of teleostomous fishes. Careful and thorough search by paleontologists for this kind of microfossil in the fossil sediments is sure to increase our knowledge of such fossils. In fact this has already been proved by further occurrence of gastroliths in the Jackson Eocene of Louisiana (U.S.A.) in another report by FRIZZELL & HORTON (1961). In the writer's Cretaceous material, which is from South India, are found fish ossiculiths which are identical with those of Texas Eocene. A description of the Indian specimens with drawings and photographs is given below.

The writer wishes to thank very sincerely Professor DON L. FRIZZELL of the Missouri School of Mines (U.S.A.), who was kind enough to check the identity of Indian specimens with the Texas types and to enter into lengthy correspondence. The encouragement and the facilities provided by Professors L. VONDERSCHMITT and M. REICHEL are gratefully acknowledged.

## II. DESCRIPTION

The two specimens described here are designated *A* and *B* only for convenience.

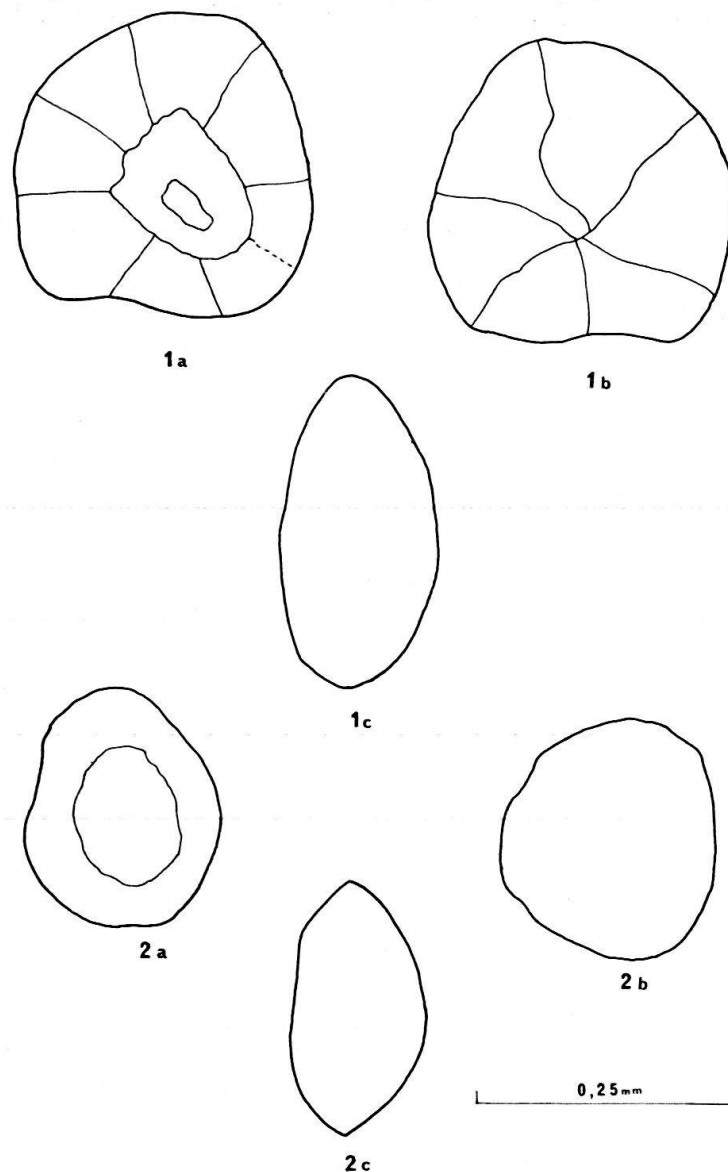
*Specimen A* (figs. 1a–c and 3a–b): The specimen is trigonal in outline as seen from the two lateral sides (figs. 1a–b and 3a–b). It is biconvex equally on both sides (fig. 1c). The periphery is smooth and slightly angular. The two sides of the specimen differ in structural features. One of the sides (figs. 1a and 3a) shows two or even three (?) distinct zones which are clearly marked off on the surface and can be clearly seen when the specimen is covered by some clarifier like glycerine. Of

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these three zones only two are structural; the other, which is the innermost and slightly excentric in position, is more of compositional and/or textural nature unlike the other two succeeding zones. The innermost zone appears to be similar to the outermost (peripheral) zone in composition only (fig. 3a). In the dry state (when the specimen is not in clarifier), the zone conforms in shape to the middle zone (fig. 1a). The other two zones are structural in nature and are formed by an incised line which runs around and divides the area into two, middle and peripheral. The shape of the two areas (zones) is also triangular like the outline of the specimen. The incised line marking the boundary between the peripheral and middle zones can be seen clearly, as shown in fig. 3a. The peripheral zone is divided into seven or eight (?) petaloid parts by radial lines which run from periphery towards the centre. These radial lines are flush with the surface and are seen distinctly when the surface of the specimen is slightly moistened. The radial line shown by the dotted



**Fig. 1a-c.** Outline sketches of specimen *A*; a – top view, b – bottom view, c – peripheral view.  
**Fig. 2a-c.** Outline sketches of specimen *B*; a – top view, b – bottom view, c – peripheral view.

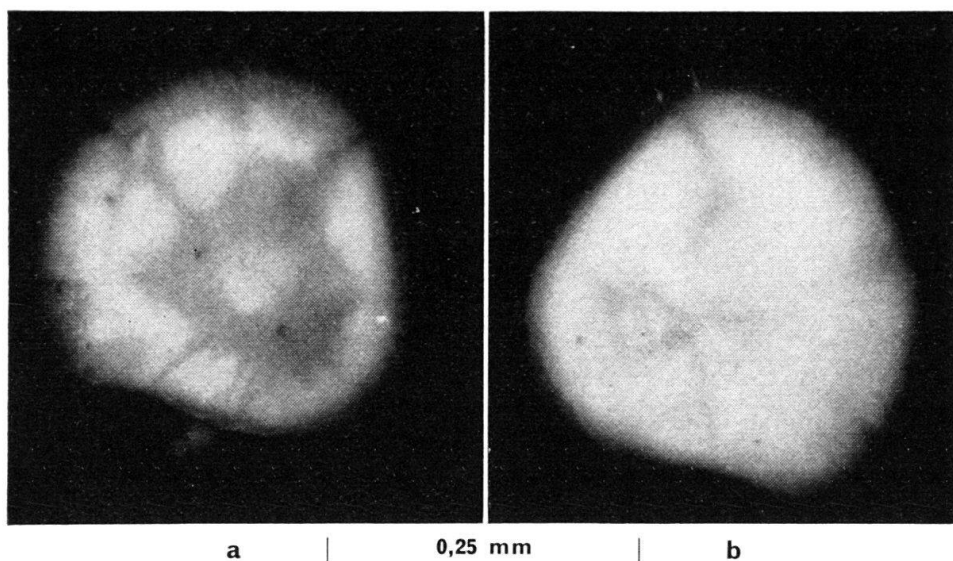


Fig. 3a-b. Photographs of specimen *A*; a - top view, b - bottom view.

line in fig. 1a is not clearly seen and hence the doubt as to the number of the petaloid parts of the zone.

Following the terminology adopted by FRIZZELL & EXLINE (1958a), the side just now described is to be known as «top». The other side of the specimen is to be known as «bottom». On this side of the specimen are radiating lines which converge towards a point which is excentric in position. One of these radial lines, after running straight for some distance, is deflected slightly and curved (figs. 1b and 3b).

Measurements: Maximum length, measured in two directions normal to each other, 0.32 and 0.30 mm; thickness 0.15 mm.

*Specimen B* (fig. 2a-c): The specimen is trigonal in outline as seen from the two lateral sides. The top side is less convex and the bottom side more convex. On the top side are seen two zones which are formed by an incised line which is deeper than that in specimen *A*. The central zone is bigger than that in the other specimen. Unlike specimen *A*, there are no radiating lines on the two lateral sides of the specimen.

Measurements: Length, measured in two directions normal to each other and through the centre of the specimen, 0.25 and 0.27 mm; thickness 0.12 mm.

### III. REMARKS

The recognition of ossiculiths as organic objects and as belonging to fishes has little importance in micropaleontology according to FRIZZELL and EXLINE (1958a, p. 281), excepting that such objects are not confused with other microfossils. The description of the Indian specimens given above shows not many differences, except in size, with Texas Eocene specimens. It is evident that more is added to the knowledge of the «inconsistent» characters of ossiculiths. It is also established now that they occur widely both in space and time. Probably more knowledge of them

would be gained in course of time if they occurred abundantly in the fossil samples and in a variety of recent fishes. We might be able, then, to find criteria to recognise variations which may be used for establishing a valid system of nomenclature as in the case of other «-liths». There were, before, many «general» and also inconsistent forms among fossils which have become more «specialised» forms after detailed studies. It is hoped that micropaleontologists will take the trouble to describe such objects as these ossiculiths and to add some knowledge to what has been contributed hitherto on such microfossils.

#### IV. OCCURRENCE

The two specimens described above were recovered from a core sample of clay at a depth of 76 feet from the surface, near a locality ( $11^{\circ} 14'$ :  $78^{\circ} 59'$ ) which is one and a half miles due north-west of Odhium village in the district of Trichinopoly. The clay is dated as Upper Cenomanian because of the occurrence of such planctonic foraminiferal species as *Rotalipora appenninica* and *Praeglobotruncana stephani*.

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