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#### COPROLITES FROM THE PALEOCENE OF PONDICHERRY AREA OF SOUTH INDIA

THE Paleocene time-unit of the geologic column, covering the Danian sector also, has attracted the attention of a large number of stratigraphers and paleontologists who are concerned with the Cretaceous-Tertiary boundary problem. As a result of this concern, the necessary and special attention is paid to the succession of strata as developed in the type area of Paleocene in Denmark where the Danian as part of the Paleocene succession is developed and to which a reference is frequently made by workers dealing with such a succession.

The Paleocene succession in Pondicherry consists of different rock types with the characteristic mega and microfossils on the basis of which correlation with Paleocene of Denmark was attempted by Kossmat<sup>1</sup>, Gowda<sup>2</sup> and Rajagopalan<sup>3</sup>.

Another interesting attribute or parameter is now found in the Pondicherry area. This is the occurrence of a litho-unit showing the abundant occurrence of coprolites to the exclusion of all other fossils (Fig. 1). It may be of interest to note that, so far, coprolites have not been reported from any stratigraphic horizons from the Indian Subcontinent. These coprolites are all elliptical in shape and vary in size from 0.5 mm to 2 mm. Their colour also varies from white to brown and even to black sometimes. In cross section they are elliptical to circular in shape and show no internal structure.

The chemical tests of these coprolites have revealed an impure calcareous phosphatic composition. The dry-test on charcoal, using cobalt nitrate, gave characteristic blue encrustation when blue flame was used. The wet-test consisted of dissolving the crushed material of the coprolites in concentrated nitric acid and getting canary-yellow precipitate on adding fresh solution of ammonium molybdate.

These coprolites are believed to be of animals belonging to Echinodermata, in particular to those of Echinoidea according to Voigt<sup>4</sup>. Such coprolites "from the Lowest Paleocene" succession in Denmark were noticed by Brotzen<sup>5</sup>. The same Paleocene while extending into Sweden also reveals the abundant occurrence of such coprolites at the base of the Paleocene, in a conglomerate at Klagsbam according to Brotzen<sup>5</sup>.

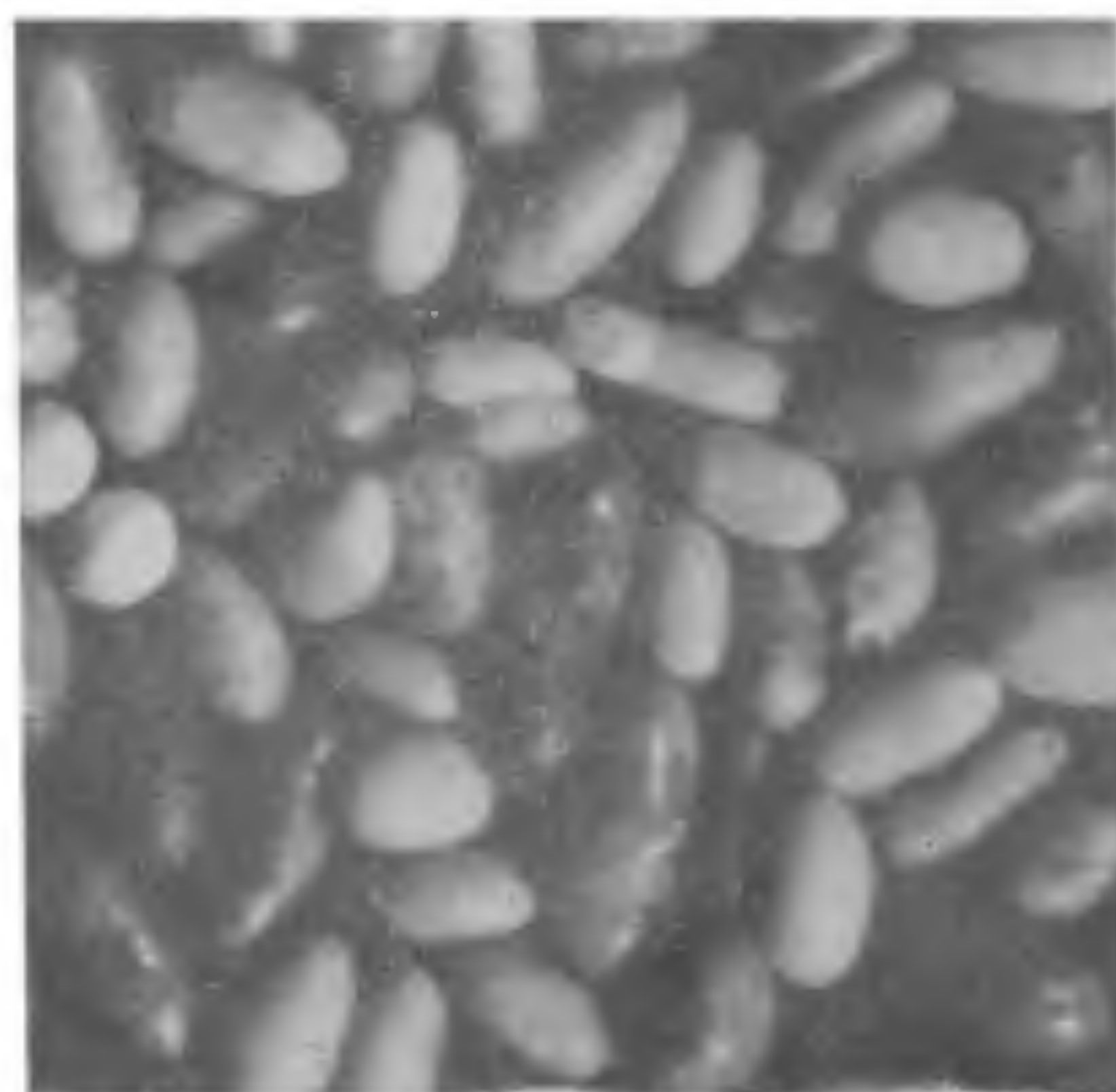


FIG. 1. Coprolites from the sandstone in well sections near Maravathankuppam, Irumbai and Saidarampat, Pondicherry area,  $\times 15$ .

In Pondicherry area, the rock type which shows abundant occurrence of coprolites is not a conglomerate as in Denmark and Sweden but a friable sandstone bed which grades laterally into glauconitic marl. The important fact to be noted is that the coprolites occur abundantly at the base of the Paleocene succession in such far-off places like Pondicherry in South India of the Indo-Pacific province and Denmark and Sweden in north-western part of Europe of the Atlantic province. The present discovery of coprolites in Pondicherry area helps in establishing one more attribute common to the Paleocene succession in the type area of Paleocene in Europe and that in Pondicherry area in South India. This common attribute is in addition to the biological attributes already discovered earlier.

The coprolite-bearing lithological horizon in Pondicherry area may be used as a control in mapping the distribution of Paleocene in Pondicherry area both in outcrops and in subcrops. It would be interesting to know whether such coprolite-bearing rock units occur in other parts of the

South Indian region marking the base of the Paleocene.

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A NOTE ON THE LATE MIDDLE EOCENE NANNOFOSSILS FROM LAKHPAT, KUTCH

THE samples (L1 and L2) were collected from the cream coloured fossiliferous argillaceous limestone exposed in southeastern part of the Lakhpatt fort (23° 49' 30" N: 68° 27' 0" E) for studying their calcareous nannofossils. These samples have not only yielded a rich assemblage of nannofossils but also a rich assemblage of foraminiferids. The foraminiferids include *Nummulites exponens* (Sowerby), *Discocyclina dispansa* (Sowerby), *D. sowerbyi* Nuttal, *Globigerina frontosa* Subbotina, *G. ouachitaensis* Howe and Wallace, *G. yeguaensis* Weinzierl and Applin, *G. praebulloides oclusa* Blow and Banner, *Globigerinopsis kugleri* Bolli, Loeblich and Tappan, *Globigerinatheca barri* Bronnimann, *Orbulinoides beckmanni* (Saito), *Globorotalia centralis* Cushman and Bermudez, *Truncorotaloides collectea* (Finlay), *T. rohri* Bronnimann and Bermudez, *T. topilensis* Cushman and *Pseudohastigerina micra* (Cole). The foraminiferal assemblage of these samples (L1 and L2) are referred to *Nummulites exponens* biofacies (Sen Gupta<sup>1</sup>) and to *Orbulinoides beckmanni* Zone (Samanta<sup>2</sup>). Sen Gupta<sup>1,3</sup> and Samanta<sup>2</sup> have recorded the geological set up at Lakhpatt (Table I).

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TABLE I

Age	Lithological Units	Large Foraminiferal Zones (Sen Gupta <sup>1</sup> )	Planktonic Foraminiferal Zones (Samanta <sup>2</sup> )	Nannoplankton Zone (Present work)	Thickness in meters
Oligocene	Foraminiferal limestone	4			9
	Light coloured fossiliferous limestone; argillaceous at places with abundant foraminiferids and few mollusks	3	<i>Truncorotaloides rohri</i> Zone		4.6
		2	<i>Assilina exponens</i> biofacies <i>Discocyclina</i> biofacies	<i>Disocoaster-tani nodifer</i> Zone	45
Middle Eocene	Highly Laterized foraminiferal limestone and limonite-rich clay containing minor bands of gypsum with two species of <i>Nummulites</i> only		<i>Orbulinoides beckmanni</i> Zone		5
? Cretaceous-Eocene	Laterites and Deccan Traps				