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***Dentokrithe*, a new genus of Ostracoda**

ABSTRACT

Dentokrithe, a new ostracode genus of Kriethinae is described from Tertiary sediments. Three species are included, *D. autochthona* (Lyubimova and Guha) from the Lower Miocene of western and southern India, *D. bartonensis* (Jones) from the Upper Eocene of England (possibly also of Belgium and Netherlands), and *D. indica* (Tewari and Tandon) from the Middle Eocene of western India.

INTRODUCTION

Brady, Crosskey and Robertson (1874) introduced *Krithe* as a new name for the ostracode genus *Ilyobates* Sars 1866, as the latter was preoccupied. They also regarded the type species of *Ilyobates*, the Recent *I. praetexta* Sars, 1866, as junior synonym of *Cythere* (*Cythereideis*) *bartonensis* Jones, 1857. Subsequently Brady and Norman (1889) designated *C. (C.) bartonensis* as the type species of *Krithe*, which has since been accepted by many authors (e.g. Keij, 1957; and Moore, 1961). A survey of the literature, however, shows that a different opinion has been expressed by some workers about the type species of *Krithe*. According to Morkhoven (1963) the two forms *C. (C.) bartonensis* and *I. praetexta*, are not identical and the type species of *Krithe* is *I. praetexta* by monotypy. Pokorný (1965) and Benson and Tatro (1964) have held the same view. Haskins (1970) recorded the occurrence of a single tooth in *Krithe* [= *Cythere* (*Cythereideis*) *bartonensis* Jones] from its type locality, and on the basis of hinge structure and dorsal outline he disagreed that specimens from the post-Tertiary of Norway designated as *K. bartonensis* by Brady, Crosskey and Robertson (1874) are conspecific with the type of the species. The original diagnosis of *Ilyobates* (= *Krithe*) specifically states that the genus has no hinge teeth (Sars, 1866, pp. 59, 60).

The present authors have come across 2 species—*Krithe autochthona* Lyubimova and Guha (in Lyubimova, Guha and Mohan, 1960) and *K. indica* Tewari and Tandon, 1960—from the Tertiary sediments of western and southern India which have a well-developed tooth similar to the one described by Haskins (1970) in *K. bartonensis* from its type locality. Detailed examination of the three forms with teeth shows that they can no longer be placed in the genus *Krithe*. They constitute a distinct group which separated from simple hinged *Krithe* in the Eocene time to evolve independently through the later Tertiary period. A new genus *Dentokrithe* is diagnosed and described herein to accommodate the toothed forms. While *I. praetexta* is regarded as the type species of *Krithe* as suggested by Morkhoven (1963) and others (*supra cit.*), *C. (C.) bartonensis* is proposed as the type species of *Dentokrithe*.

The illustrated specimens of *Dentokrithe autochthona* and *D. indica* are deposited in the museum of the Department of Geology, University of Rajasthan, Udaipur, India (RUGDMF), and the specimens of *D. bartonensis* are deposited in Robertson Research International Limited, 'TY' N-Y-Coed', Llanrhos, Llandudno, Gwynedd, LL30 1SA, North Wales, England (RRPS).

SYSTEMATICS

Subclass OSTRACODA Latreille, 1806
Order PODOCOPIDA Müller, 1894
Suborder PODOCOPINA Sars, 1866
Superfamily CYTHERACEA Baird, 1850
Family CYTHERIDEIDAE Sars, 1925
Subfamily KRITHINAE Mandelstam in Bubikan, 1958

Genus *Dentokrithe* Khosla and Haskins, n. gen.

Name: After the tooth-structure present in the hinge.

Type species: *Cythere (Cytherideis) bartonensis* Jones, 1857.

Diagnosis: A genus of typical Krithinae shape, marginal zone and central muscle scars; hinge in left valve consists of a groove separated from interior of valve by a bar which bears a distinct, smooth, posterior tooth, in right valve corresponding to tooth of left valve a socket present in dorsal margin.

Description: Carapace elongate or ovate in lateral outline and convex in dorsal; left valve larger than right valve; dorsal margin straight or arched, ventral weakly convex, straight or concave; anterior margin evenly rounded, posterior forming an angle with ventral margin. Valve surface smooth. Inner lamella wide along anterior and ventral margins and narrow along posterior margin; anterior vestibulum broad; selvage peripheral except at posteroventral end in right valve where it runs at some distance from the outer margin giving it an indented appearance; marginal pore canals moderate in number, and are both simple

and branching. Central muscle scars comprise a vertical row of 4 adductor scars and a V-shaped frontal scar. Hinge in left valve consists of a dorsal groove separated from the interior of the valve by a bar which bears a distinct, smooth posterior tooth; in the right valve, corresponding to the tooth of left valve, is a socket in the dorsal margin.

Discussion: This genus is clearly related to *Krithe* in shape, marginal zone and central muscle scars but differs in the hinge structure. *Krithe* has a very simple hinge, consisting of a dorsal groove in the left valve which fits the dorsal edge of the right valve. In *Parakrithe*, which also resembles the present genus in shape and most of internal characters, the dorsal groove of left valve has faint crenulation along the posterior one-fourth.

Remarks: The reported occurrences of the genus, so far, are from the Upper Eocene rocks of England (possibly also of Belgium and Netherlands), and Tertiary rocks of western and southern India.

Dentokrithe autochthona (Lyubimova and Guha)

Plate 1, figures 1–6

Krithe autochthona LUBIMOVA and GUHA, in Lubimova, Guha and Mohan, 1960, pp. 25–26, pl. 2, fig. 4.—GUHA, 1968, pp. 213–214, pl. 2, fig. 2.—KHOSLA, 1978, p. 272, pl. 2, figs. 18–20; pl. 6, fig. 10. *Krithe indica* var. *kutchensis* TEWARI and TANDON, 1960, p. 153, text-fig. 6, figs. 2a–b.

Material: 53 complete carapaces and 5 open valves from Lower Miocene beds near Nandana (22°07'46"N, 69°17'41"E), District Jamnagar, western India; 10

PLATE 1

1–6 *Dentokrithe autochthona* (Lyubimova and Guha)

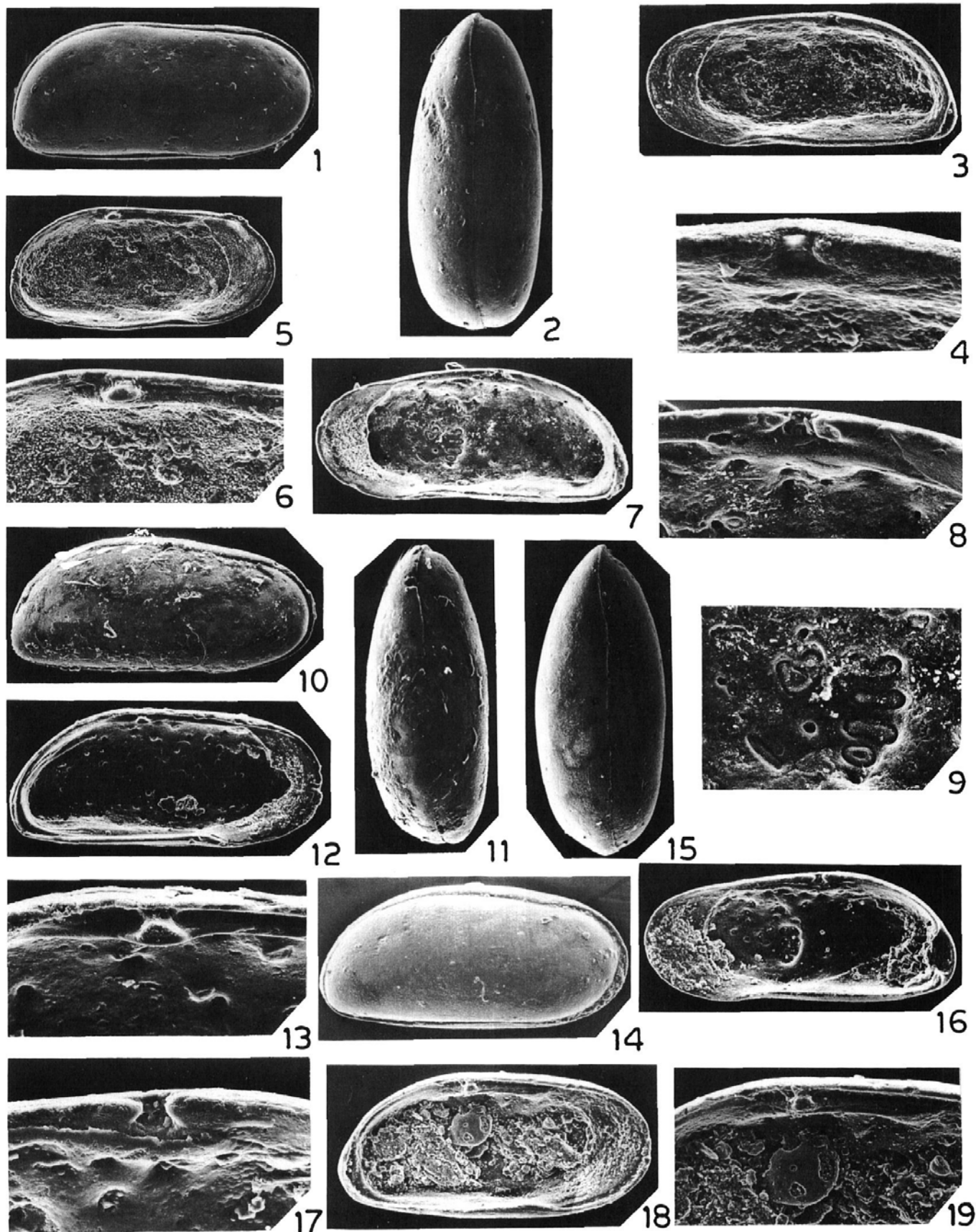
1–2, hypotype I (RUGDMF No. 104), a complete carapace; 1, right valve view, × 73; 2, dorsal view, × 74. 3–4, hypotype II (RUGDMF No. 105), a right valve; 3, internal view, × 65; 4, median part of hinge, × 260. 5–6, hypotype III (RUGDMF No. 83), a left valve; 5, internal view, × 58; 6, median part of hinge, × 175.

7–13 *Dentokrithe bartonensis* (Jones)

7–9, topotype I (RRPS No. 1000), a right valve; 7, internal view, × 76; 8, median part of hinge, × 300; 9, central muscle scar pattern, × 300. 10–11, topotype III (RRPS No. 1002), a complete carapace; 10, right valve view, × 77; 11, dorsal view, × 73. 12–13, topotype II (RRPS No. 1001), a left valve; 12, internal view, × 73; 13, median part of hinge, × 300.

14–19 *Dentokrithe indica* (Tewari and Tandon)

14–15, topotype I (RUGDMF No. 106), a complete carapace; 14, right valve view, × 78; 15, dorsal view, × 80. 16–17, topotype II (RUGDMF No. 107), a right valve; 16, internal view, × 80; 17, median part of hinge, × 320. 18–19, topotype III (RUGDMF No. 108), a left valve; 18, internal view, × 83; 19, median part of hinge, × 160.



complete carapaces and 13 open valves from Lower Miocene beds near Cheropadi (23°22'10"N, 68°44'35"E), District Kutch, western India; two open valves from Lower Miocene beds of Quilon (8°53'N, 76°35'E), south India.

Description: Carapace elongate in lateral view with greatest height less than half the length, a little posterior to middle; left valve larger than right valve, overlapping all along the margins except for posteroventral end; dorsal margin nearly straight, merges gradually with anterior margin, and steeply slopes downward from posterior 1/3 of length, ventral straight in left valve and slightly concave in right; anterior margin evenly rounded, posterior convex meeting ventral margin nearly at right angle, posteroventral end rounded off; in dorsal view carapace pointed anteriorly and broadly rounded posteriorly, maximum width a little behind middle. Valve surface smooth. Anterior vestibulum broad and with wide entrance. Marginal pore canals 9–10, mostly branching; other internal characters as for genus.

Dimensions: Hypotype I (RUGDMF No. 104), a complete carapace, length 0.77 mm, height 0.40 mm, width 0.36 mm. Hypotype II (RUGDMF No. 105), a right valve, length 0.86 mm, height 0.41 mm. Hypotype III (RUGDMF No. 83), a left valve, length 0.85 mm, height 0.44 mm.

Remarks: The types of present species were described by Lyubimova and Guha (*supra cit.*) from the Lower Miocene beds of Chaasra, Kutch, western India. These authors also recorded the species from the Middle Eocene beds of other parts of Kutch. The latter report of the species is incorrect and the Middle Eocene specimens belong to *Dentokrithe indica* (Tewari and Tandon, 1960). The 2 species clearly differ in overall shape, anterior vestibulum and marginal pore canals. *Dentokrithe autochthona* also occurs in Lower Miocene beds of Saurashtra (Guha, 1967; Khosla, 1978), and south India (Guha, 1968), and Late Oligocene beds of Bombay High (Guha, 1975).

***Dentokrithe bartonensis* (Jones)**

Plate 1, figures 7–13

Cythere (*Cytherideis*) *bartonensis* JONES, 1857, p. 50, pl. 5, fig. 23.

Krithe bartonensis (Jones).—KEIJ, 1957, p. 85, pl. 8, figs. 11–17.—HASKINS, 1970, p. 13, pl. 1, figs. 5–14.

Remarks: This species has already been adequately discussed by Keij (1957) and Haskins (1970).

Dimensions: Topotype I (RRPS No. 1000), a right valve, length 0.75 mm, height 0.34 mm. Topotype II (RRPS No. 1001), a left valve, length 0.78 mm, height 0.38 mm. Topotype III (RRPS No. 1002), a complete carapace, length 0.73 mm, height 0.36 mm, width 0.32 mm.

***Dentokrithe indica* (Tewari and Tandon)**

Plate 1, figures 14–19

Krithe indica TEWARI and TANDON, 1960, p. 152, text-fig. 2, figs. 5a–b.—KHOSLA, 1972, p. 485, pl. 1, fig. 21.

Material: 34 complete carapaces and about 200 open valves from Middle Eocene beds near Lakhpat (23°50'N, 68°47'E), District Kutch, western India.

Description: Carapace elongate in lateral outline with greatest height, nearly half the length, a little posterior to middle; left valve larger than right valve and overlapping all along margins; dorsal margin gently arched and gradually merging with anterior and posterior margins, ventral slightly convex in left valve and concave in right valve; anterior margin evenly rounded, posterior obliquely rounded forming acute angle with ventral margin; in dorsal view carapace biconvex, maximum width near middle. Valve surface smooth. Anterior vestibulum broad and with narrow entrance; marginal pore canals about 10, mostly simple; other characters as for genus.

Dimensions: Topotype I (RUGDMF No. 106), a complete carapace, length 0.71 mm, height 0.36 mm, width 0.33 mm. Topotype II (RUGDMF No. 107), a right valve, length 0.71 mm, height 0.33 mm. Topotype III (RUGDMF No. 108), a left valve, length 0.69 mm, height 0.36 mm.

Remarks: The species occurs commonly in the Eocene beds of Kutch and Rajasthan, western India.

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