

# FOSSIL HOLOTHUROIDEA FROM KUTCH, INDIA—PART II

K. S. SOODAN

*Institute of Petroleum Exploration, Oil and Natural Gas Commission, Dehradun*

## ABSTRACT

*Jumaraina* a new genus of fossil holothurian sclerites under family *Theeliidae* Frizzell & Exline, 1955 is erected to receive four new species, i.e. *Jumaraina gujeratica*, *J. indica*, *J. kutchensis* and *J. jhurioensis*. These species have been recorded from Jhurio Formation exposed at Jumara and or Jhurio dome areas of Kutch. This is an additional contribution to the scanty knowledge of fossil sclerites from India.

## INTRODUCTION

The author has studied in detail the fossil holothurian sclerites recorded from the Jhurio Formation (SOODAN & BHATIA, 1970, 1972; SOODAN, 1972a, b and c; MATHUR, *et al.*, 1970) exposed at Jumara and Jhurio domes, Kutch.

In the present paper the author has systematically described and illustrated, under family *Theeliidae* Frizzell & Exline, 1955, a new genus *Jumaraina* with four new species. *Jumaraina gujeratica*, *J. indica* and *J. kutchensis* have been recorded from Jumara dome area and *J. jhurioensis* from Jhurio dome area of Kutch.

## DISCUSSION

The fossil holothurian sclerites recorded from Kutch and discussed in this paper are in the form of wheels which can be placed under family *Theeliidae* Frizzell & Exline, 1955. Detailed examination revealed their non similarity with any of the known genera of family *Theeliidae*. *Auricularites* Deflandre-Rigaud, 1950 and *Theelia* Schlumberger, 1891 are the only two genera with which these sclerites can be compared to some extent. FRIZZELL and EXLINE (1955 and 1966—in *Treatise on Invertebrate Paleontology*) have given the diagnostic characters of genus *Theelia* Schlumberger as, "...6-10 spokes; rim dentate on inner margin; teeth not extending to the periphery as seen from above; centre imperforate and typically with hemispherical or conical tubercle or button." genus *Auricularites* Deflandre-Rigaud is described to be characterised as, "...Tinny wheels resembling genus *Theelia* Schlumberger but with much more (12-28) spokes; ...with smooth or extremely fine dentate rim."

Further it is noted that so far only two species of genus *Auricularites* are described and illustrated. Both the species, i.e. *A. parviradiatus* Deflandre-Rigaud and *A. arcuatus* Deflandre-Rigaud is having hemispherical or conical tubercle or button.

In the sclerites recorded from Kutch the following observations are made:

- (1) None of the sclerites show dentate characters of the inner margin of the rim if seen from above.

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(2) Sclerites have 6, 7, 11 and 12 spokes.

(3) All the sclerites have prominent hemispherical tubercle in the centre of the wheels.

Now if the smooth nature of the sclerites is considered as an important character of genus *Auricularites* Deflandre-Rigaud then the sclerites with 6 spokes (figures 4a-b), with 7 spokes (figures 3a-b), 11 spokes (figures 1a-b) and 12 spokes (figures 2a-b) and all having hemispherical tubercle cannot be taken as belonging to genus *Auricularites* Deflandre-Rigaud. On the other hand if dentate nature of the inner margin of the rim and hemispherical tubercle are considered the important characters of genus *Theelia* Schlumberger then none of the sclerites can be taken to belonging to genus *Theelia*.

Further as the type specimens and type species are inviolate the present author is left with no choice except to erect a new genus, under family *Theeliidae* Frizzell & Exline 1955, characterised by the presence of smooth inner margin of the rim if seen from above and hemispherical tubercle in the centre of the imperforate wheel.

#### SYSTEMATIC DESCRIPTION

*Phylum*—ECHINODERMATA

*Class*—HOLOTHUROIDEA

*Family*—THEELIIDAE Frizzell & Exline, 1955

*Genus*—**Jumaraina** gen. nov.

*Type species*—*Jumaraina indica* gen. et sp. nov.

*Diagnosis*—Sclerites in the form of wheels; spokes 6-12 may be more; rim inclined to the plane of the wheel, curving upwards and inwards, smooth on the inner margin; central portion imperforate, plane on the ventral side, hemispherical or conical tubercle or button in the central imperforate part seen from above; diameter variable within the range of the family.

*Stratigraphic range*—So far recorded from Jhurio Formation.

*Comparison*—*Jumaraina* gen. nov. is very similar to genus *Theelia* Schlumberger but differs in having smooth inner margin of the rim. From genus *Auricularites* Deflandre-Rigaud this differs in always having smooth margin of the rim and hemispherical tubercle or button on the dorsal side.

*Specific characters*—The species of the genus *Jumaraina* can be differentiated depending on the number of spokes, their disposition nature of the central portion and the rim.

*Derivation of name*—The genus *Jumaraina* is named after the locality Jumara dome, Kutch, Gujerat State, Western India from where it is recorded.

***Jumaraina indica*** sp. nov.

Pl. 1, Figs. 3a-b

*Description*—Sclerites in the form of wheels with 7 spokes; circular in outline; smooth periphery; spokes thick and broad in the outer 2/3rd part and slightly constricted at the junction with rim, abruptly thinning towards the central part; interspoke space broad mere towards the rim; rim thin at an angle with the plane of the wheel, curving upwards and

inwards, moderately high, much broader on the dorsal side, inner margin smooth central part small smooth and imperforate on the ventral side, large hemispherical tubercle on the dorsal side; diameter of holotype .16 mm

*Distribution*—Jhurio Formation.

*Locality*—Jumara dome, Kutch, Gujerat.

*Comparison*—*Jumaraina indica* differs from other species in having 6 spokes and their nature.

***Jumaraina gujeratica* sp. nov.**

Pl. 1, Figs. 2a-b

*Description*—Sclerites in the form of 12 spoked wheels; scalloped outline; spokes of moderate thickness gradually tapering towards the centre of the wheel, joins the rim at the saddle part of the scallops; interspoke space long and triangular arched out at the outer side of the wheels; rim thin at an angle with the plane of the wheels, curving upwards and inwards, smooth at the inner margin, much broader on the dorsal side; central part smooth on the ventral side and hemispherical tubercle on the dorsal side; diameter of the holotype .26 mm.

*Distribution*: Jhurio Formation.

*Locality*—Jumara dome, Kutch, Gujerat.

*Comparison*—*Jumaraina gujeratica* differs from other species of the genus in the number of spokes, their nature and the shape of the interspoke space.

***Jumaraina kutchensis* sp. nov.**

Pl. 1, Figs. 1a-b

*Description*—Sclerites in the form of 11 spoked wheels; scalloped periphery; spokes thin and long, gradually narrowing toward the centre of the wheel, joins the rim at the saddle part of the rim; interspoke space triangular, arched out towards the periphery of the wheel; rim thin curved upwards and inwards and smooth at the inner margin, placed at an angle with the plane of the wheel, much broader on the dorsal side; central part smooth on the ventral side and with hemispherical tubercle on the dorsal side; diameter of the holotype .25 mm

*Distribution*—Jhurio Formation.

*Locality*—Jumara dome, Kutch, Gujerat.

*Comparison*: *Jumaraina kutchensis* differs from *J. gujeratica* in having 11 spokes, bigger interspoke space and smaller hemispherical tubercle on the dorsal side.

***Jumaraina jhurioensis* sp. nov.**

Pl. 1, Figs. 4a-b

*Description*—Sclerites in the form of 6 spoked wheels; circular in outline; spokes thick

and broad in the outer 2/3rd, gradually thinning towards the centre of the wheel, slightly constricted at the junction with the rim; rim placed at an angle with the plane of the wheel, curved upwards and inwards, much broader on the dorsal side, inner margin smooth; central part small smooth and imperforate; large hemispherical tubercle on the dorsal side; diameter of the holotype .20 mm

*Distribution*—Paleocene.

*Locality*—Jhurio dome, Kutch, Gujerat.

*Comparison*—*Jumaraina jhurioensis* differs from *J. indica* in having 6 spokes, thick spokes and smaller interspoke space.

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#### EXPLANATION OF PLATE 1

All the Holotypes are deposited in the Palaeontology Laboratory, Institute of Petroleum Exploration, Oil and Natural Gas Commission, Dehra Dun. In the figures 'a' indicates dorsal side and 'b' indicates ventral side of the sclerites.

- 1a-b. *Jumaraina kutchensis* sp. nov.  $\times ca$  130.  
2a-b. *Jumaraina gujeratica* sp. nov.  $\times ca$  123.  
3a-b. *Jumaraina indica* sp. nov.; a  $\times ca$  131, b  $\times ca$  112.5.  
4a-b. *Jumaraina jhurioensis* sp. nov.  $\times ca$  92.5.

