ECHINOLAMPAS JIGNIENSIS, A NEW SPECIES OF CASSIDULOID ECHINOID FROM THE EOCENE ROCKS OF JAMMU HIMALAYA

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Abstract

The Middle Eocene strata exposed around Kalakot, district Rajauri (Jammu & Kashmir) have yielded a few specimens of cassiduloid echinoid *Echinolampas* Gray, which are described herein as a new species. *Echinolampas jigniensis* sp. nov. is characterised by its large, globular test with the petals reaching upto the ambitus. The stratigraphic distribution of the genus *Echinolampas* in Tertiary rocks of India has also been discussed in brief.

Introduction

Echinolampas Gray, 1825 is a common cassiduloid genus found in the Tertiary rocks of the world and is still surviving in the present seas. In India d'Archiac and Haime (1853) were the first to record the genus and described the species *Echinolampas subsimilis* from the Eocene rocks of Kutch. Subsequently Medlicott (1869) reported the genus and described the species *E. sphaeroidalis* d' Archiac from the Eocene rocks of Lairyngao, Assam (now in Meghalaya). Duncan and Sladen (1883) described several species of the genus from the Eocene, Oligocene and Miocene rocks of Kutch. Roy and Dasgupta (1970) collected more specimens from Kutch and after restudying the collection of Duncan and Sladen, described three forms, namely A, B and C corresponding to *E. alta*, *E. insignis* and *E. kutchensis* respectively. Tandon (1973) recorded a species of the genus from Oligocene rocks of Kutch. Srivastava and Srivastava (1981) reported *Echinolampas* sp. from the Eocene rocks of Jammu Himalaya; their specimens supplemented with further collections from Jammu Himalaya are being described and illustrated as a new species in this paper.

Srivastava (1985, 1988) while reviewing the Tertiary echinoids from India has observed that the various species of *Echinolampas* (known mainly from the Tertiary rocks of Kutch) have limited stratigraphic distribution/range (Table 1).

Table 1—Stratigraphic and geographic distribution of Echinolampas species in India

MIOCENE	
Echinolampas wynnei Duncan & Sladen	+
E. jaquemonti d'Archiac	+
E. sphaeroidalis d'Archiac	+
E. indica Duncan & Sladen	+
E. vicaryi d'Archiac and Haime	+
OLIGOCENE	
E chiplonkari Tandon	+
E. damesi Duncan & Sladen	+
E guvarensis Srivastava	+
E. placenta Duncan & Sladen	+
E. kieri Srivastava	+
E. haimei Duncan & Sladen	+
E. feddeni Duncan & Sladen	+
EOCENE	
E alta Duncan & Sladen	+
E. cooki Srivastava	+
E. granti Srivastava	+
E. jhadwensis Srivastava	+
E. merhi Srivastava	+
E. nummuliticus Duncan & Sladen	+
E. insignis Duncan & Sladen	+
E. kachensis Duncan & Sladen	+
E. subsimilis d' Archiac	+
E. sphaeroidalis d' Arehiac	+
E. jigniensis sp. nov.	+

The specimens have been collected from the hard, compact and dark grey limestone of Middle Eocene age exposed in Jigni Coal Mine area (74°21' 30" : 33° 14' 30"), along the Sair *nala* near Sair (74° 25' 00" : 33° 13' 00") and near Metka (74° 28' 00" : 33° 12' 30") in Rajauri District, Jammu and Kashmir (Text-figs. 1, 2). These rocks form the upper part of the Subathu Formation in the area.

The Subathu-Murree beds exposed in the area form a part of WNW–ESE trending anticline. The Great Limestone is exposed in the core, surrounded by narrow rims of Subathu beds which in turn are overlain by Murrees (Rao, 1988). The Great Limestone s overlain by grey, carbonaceous shales with ioal seams followed by green shale, marl cnd nummulitic limestone. In the upper aart, alternating layers of arenaceous shales pnd limestones is the characteristic in the area. Middle and upper parts of the Subaahu Formation in the area are highly fossiliferous and have yielded echinoids alongwith foraminifers, gastropods and bivalves.

In the systematic description of the species, the classification adopted in Moore's Treatise (Kier, 1966) has been followed.

Systematic Description

Genus — *Echinolampas* Gray, 1825

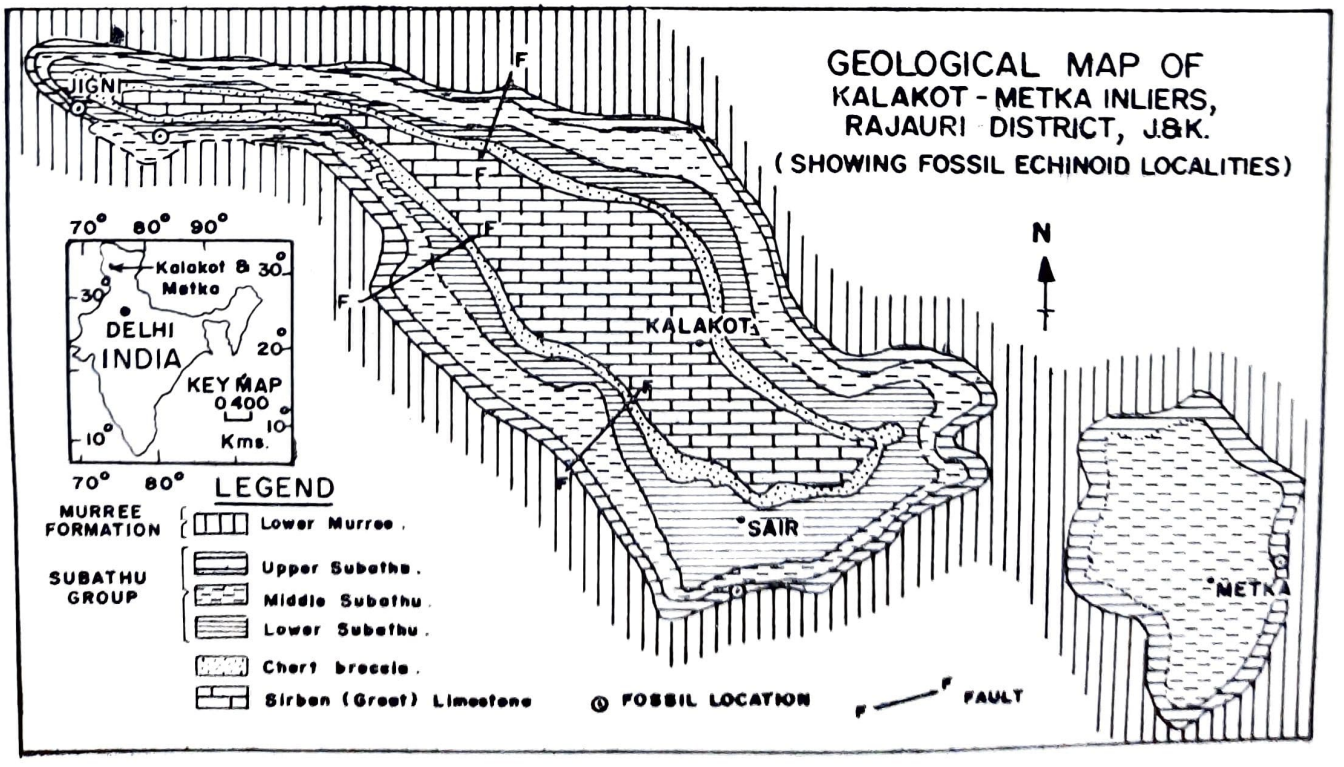
Echinolampas jigniensis sp. nov.
pl. 1, figs. 1-4; pl. 2, figs. 1-5

Etymology—The species has been named after the village Jigni from where the holotype was collected.

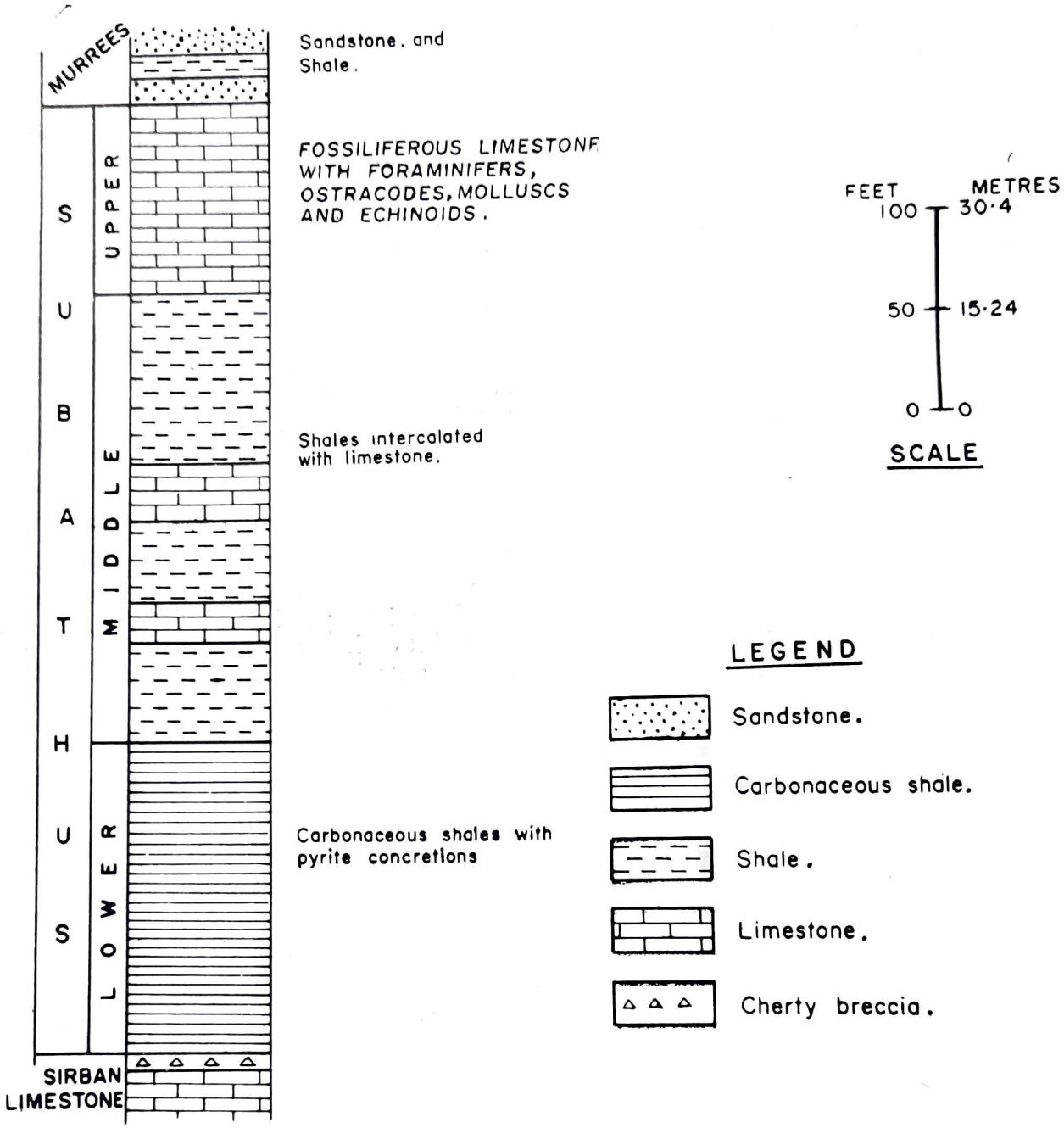
Material—Four specimens; preservation fairly good ; Holotype no. NRF-2/353; paratype nos. NRF–2/354 NRF–2/355 and NRF-2/356. The paratypes NRF-2/355 and NRF–2/356 are deformed.

Diagnosis—Test very large, subpentagonal, globular with the highest point at the centre of the test; apical system eccentric anteriorly; petals reaching almost upto ambitus, III narrowest and I and V are broadest; peristome central; periproct inframarginal, close to the posterior ambitus.

Description—Test very large, subpentagonal, globular, broadly rounded posteriorly, slightly protruded anteriorly and has maximum width against petals II and IV. The highest point of the test is at the centre. Apical system anteriorly eccentric, not well preser-



Text-figure 1



Text-figure 2

ved to exhibit details. Ambulacral petals long, reaching almost upto the ambitus and open; III is narrowest and I and V are broadest. Ambulacral plates simple and each plate is perforated by a pore pair (outer pore is elliptical and inner one is circular in shape) constituting the poriferous zone. Both the pores are conjugated with a slightly curved groove. Peristome is a depression and almost situated centrally. Periproct inframarginal, close to the posterior ambitus and transversally oval in shape. The test is ornamented with non-perforated and non-crenulated small tubercles which are situa-

ted in small circular scrobicules. These are dense on the oral surface than on the aboral surface.

Measurements (in cm)

Species	Length	Breadth	Height	Ratio between length, breadth and height
E. jigniensis sp. nov. (NRF-2/353)	12.71	10.92	6 67	1.0 : 0.85 : 0.52
E. jigniensis sp. nov. (NRF-2/354)	12.46	11.27	6.46	1.0 : 0.90 : 0.51
E. tumida	11.70	10.70	6.40	1.0 : 0.91 : 0.54
E. alta	8.75	7.28	6.04	1.0 : 0.83 : 0.69
E. nummulitica	9.60	7.70	3.40	1.0 : 0.80 : 0.35

Remarks—The present species is close to *Echinolampas tumida* described from the Nari Series (Oligocene) of Sind by Duncan and Sladen (1884) but it differs in having the highest point of the test at the centre; the petals reaching almost upto the ambitus and broadest petals are I and V whereas in the species from Sind the highest point of the test is eccentric anteriorly at the apical system, petals do not reaeh upto the ambitus and width of the petals I and V is identical to that of II and IV.

The new species has a globular, large test whereas in *E. alta* Duncan and Sladen described from Eocene of Kutch (Duncan & Sladen 1883) the test is small and helmet shaped. Further in new species the petal III is narrowest whereas in the species from Kutch the width of petals II, III and IV are equal.

Another Eocene species *E. nummulitica* Duncan & Sladen reported from Kutch (Duncan & Sladen 1883) and Sind (Duncan & Sladen 1884) differs in having a smaller and elongated oval test with short ambulacral petals of equal width. Further, in the new species the periproct is transversally oval whereas in *E. nummulitica* it is transversally elliptical.

Localities—Holotype (NRF-2/353) is from Jigni (Type Locality), Paratypes NRF-2/354 is from Metka, NRF-2/355 is from about 1 km east of Jigni and NRF-2/356 is from about 0.75 km south of Sair in district Rajauri (J. & K.).

Horizon—Upper part of Subathu Formation, Middle Eocene.

Repository—Geological Survey of India, Northern Region, Lucknow.

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Explanation of plates

Plate 1

1-4. *Echinolampas jigniensis* sp. nov. (holotype no. NRF-2/353).
1. Aboral view, × 0.4.
2. Oral view, × 0.5
3. Lateral view, × 0.4.
4. Parts of ambulacra V and interambulacra 5 showing plates, × 1.

Plate 2

1-5. *Echinolampas jigniensis* sp. nov. (paratypes).
1. Specimen no. NRF-2/354, aboral view, × 0.5;
2. Specimen no. NRF-2/354, lateral view, × 0.5;
3. Specimen no. NRF-2/355, lateral view, (part) × 0.5;
4. Specimen no. NRF-2/356, lateral view, (part) × 0.5;
5. Specimen no. NRF-2/355, ambulacral petals showing plates, × 1.

1

3

2

4