

## GENUS *SCHACKOINELLA* FROM THE EOCENE ROCKS OF KUTCH, INDIA

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### ABSTRACT

Genus *Schackoinella* Weinhandl is recorded from the Eocene succession of southwestern Kutch. It is represented by *Schackoinella tricamerata* Mohan and Soodan and three new species, *Schackoinella agrawali*, *Schackoinella singhi* and *Schackoinella tewarii*. *Schackoinella agrawali* sp. nov. and *Schackoinella singhi* sp. nov. are found in the Lower Eocene, whereas *Schackoinella tewarii* sp. nov. ranges from Lower to Middle Eocene. *Schackoinella tricamerata* is restricted to Middle Eocene.

### INTRODUCTION

The genus *Schackoinella* Weinhandl seems to be quite an uncommon genus as it is known only from the Late Miocene (Sarmation) of Australia (Weinhandl, 1958), the Middle Eocene of India (Mohan and Soodan, 1969), the Recent sediments of yellow sea (Haman and Christensen, 1971) and the Upper Eocene of Western Australia (Quilty, 1975).

The present paper records the occurrence of *Schackoinella tricamerata* Mohan and Soodan from the Eocene rocks of southwestern Kutch with three new species namely *Schackoinella agrawali*, *Schackoinella singhi* and *Schackoinella tewarii*. These species have been recorded from rocks exposed around Nareda (23° 34' 30" : 68° 41' 30"), Bermota (23° 27' 45" : 68° 38' 25") and Jhadwa (23° 30' 30" : 68° 36' 30") villages, southwestern Kutch, India. The lithounits of these areas consist of clay, shale, calcareous and sandy marl and limestone.

*Schackoinella agrawali* sp. nov. and *Schackoinella singhi* sp. nov. are restricted in the Lower Eocene rocks, while *Schackoinella tricamerata* Mohan and Soodan is present only in the Middle Eocene rocks. But *Schackoinella tewarii* sp. nov. ranges from the Lower to Middle Eocene rocks of Kutch (Fig. 1).

### SYSTEMATIC DESCRIPTION

*Superfamily* Discorbacea EHRENBERG, 1836  
*Family* Glabratellidae LOEBLICH and TAPPAN 1964  
*Genus* *Schackoinella* WEINHANDL, 1958  
*Schackoinella tricamerata* MOHAN and SOODAN  
 (Plate I—7-9)

*Schackoinella tricamerata* Mohan and Soodan, 1969, *Jour. Pal. Soc. India*, vol. 12 (1967), pp. 9-11.

*Remarks* : The forms present conform in their characters with *Schackoinella tricamerata* Mohan and Soodan, described from the *Globigerinoides kugleri*—*Globigerina frontosa* Assemblage Zone, Middle Eocene, Baranda—Bernana region, Kutch.

*Average measurements in mm* :

Longer diameter of test=0.225, shorter diameter of test=0.162, thickness=0.156.

*Locality* : About 3.2 km S15° E of Baranda village in a nala section.

*Horizon* : Babia stage (Lutetian).

*Repository* : Author's collection, Hypotype No. L.U.I.P 1013.

*Schackoinella agrawali* sp. nov.

(Plate I—1-3)

*Description* : Test high, trochospiral with two to two and a half whorls of chambers, spiral side with 9-10 inflated chambers, increasing in size with growth, each chamber with a short blunt spine except for the last chamber in which spine is absent, umbilical side with three chambers; sutures distinct, slightly curved backward on the spiral side, distinctly depressed and slightly curved on the umbilical side; wall calcareous, finely perforate and radial in structure; surface smooth; aperture extra-umbilical, elongated in shape, broad at the base and narrow towards top.

*Measurement in mm* :

Specimen	Diameter of test		Thickness
	Longer	Shorter	
Holotype No. L.U.I.P. 1014 .. ..	0.150	0.137	0.125
Paratype No. L.U.I.P. 1015 .. ..	0.143	0.132	0.106
1016 .. ..	0.150	0.135	0.117

†Deceased on January 15, 1978.

NAME OF SPECIES B I O Z O N E	LOWER EOCENE			MIDDLE EOCENE											
	NUMMULITES ZONE	MOLLUSCAN ZONE	ASSILINA ZONE	UNFOSSILIFEROUS ZONE	CORBULA SUBEXARATA ZONE	DICOT LEAF ZONE	CROCODYLUS ZONE	UNFOSSILIFEROUS ZONE	NUMMULITES PERFORATUS ZONE	NUMMULITES BEAUMONTI ZONE	FASCIOLITES (F) ELLIPTICA ZONE	DISCOCYCLINA (D) DISPANSA ZONE	ASSILINA CANCELLATA ZONE	ASTEROCYCLINA ALTICOSTATA ZONE	NUMMULITES MACULATUS ZONE
<u>SCHACKOINELLA AGARWALI</u>															
<u>SCHACKOINELLA SINGHI</u>															
<u>SCHACKOINELLA TEWARI</u>															
<u>SCHACKOINELLA TRICAMERATA</u>															

Fig. 1. Range of *Schackoinella* spp. in Eocene rocks of Kutch.

*Comparison and Remarks* : *Schackoinella agrawali* sp. nov. differs from *Schackoinella tricamerata* Mohan and Soodan, in the gradual increase in size of chambers, in having short blunt spine in each chamber except the last chamber, in high trochospiral test and in having elongated umbilical aperture which is broad at the base and narrow towards top.

*Type Locality* : About 200 metre North of Nareda village in a nala section.

*Type Horizon* : Kakdi Stage (Ypresian).

*Repository* : Holotype No. L.U.I.P. 1014 and paratypes No. L.U.I.P. 1015 to 1016 in author's collection.

*Etymology* : This species is named after Prof. S. K. Agrawal, Head of the Geology Department, Banaras Hindu University, Varanasi, in recognition of his contributions in Palaeontology and Stratigraphy of Kutch.

*Schackoinella singhi* sp. nov.

(Plate I—4-6)

*Description* : Test high trochospiral, with two to two and a half whorls, spiral side with 9-11 chambers, generally inflated but few globular, rapidly increasing in size, each chamber with a short pointed spine except the last two chambers, umbilical side with four chambers; sutures distinct, curved backward on the spiral side and distinctly depressed and slightly curved on the umbilical

side; wall calcareous, finely perforate and radial in structure; surface smooth; aperture umbilical, somewhat oval in shape and shared by all the chambers in the last whorl.

*Measurement in mm :*

Specimen	Diameter of test Longer	Thickness Shorter
Holotype No. L.U.I.P. 1017 .. ..	0.156	0.143
Paratype No. L.U.I.P. 1018 .. ..	0.150	0.137
1019 .. ..	0.143	0.137

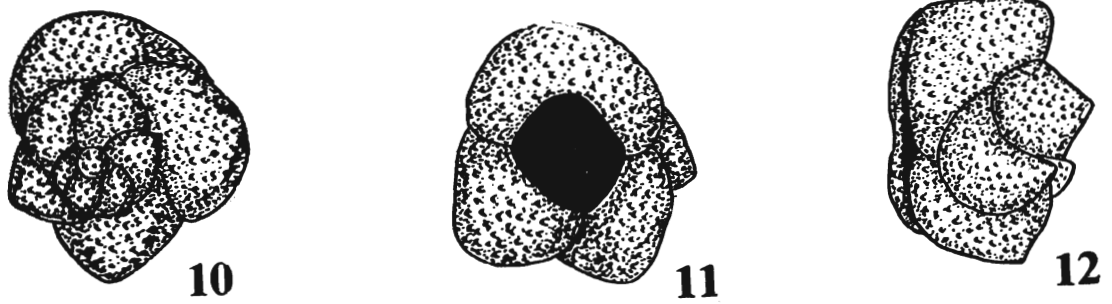
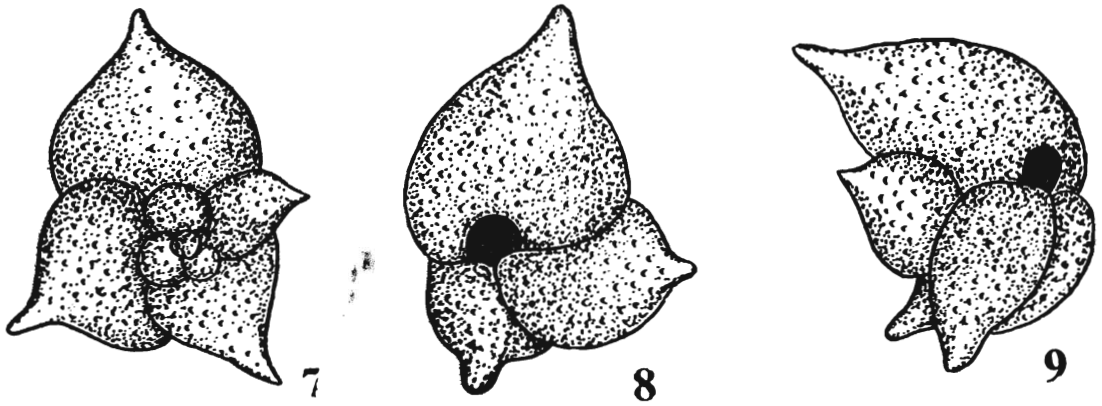
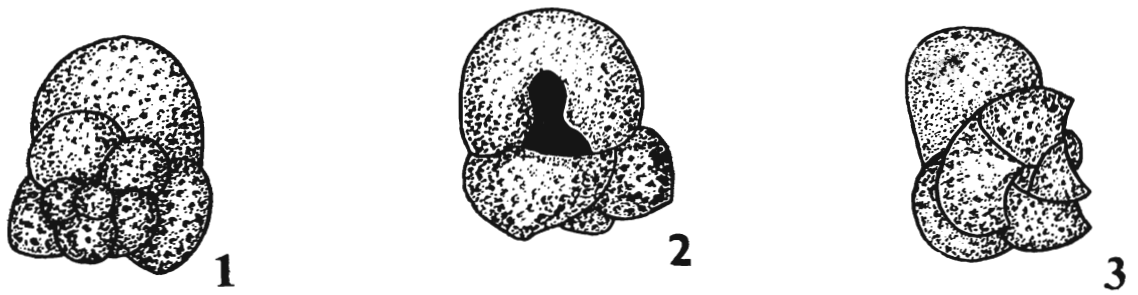
*Comparison and Remarks* : *Schackoinella singhi* sp. nov. differs from *Schackoinella sarmatica* Weinhandl, in having somewhat oval umbilical aperture and shape and arrangement of chambers in the last whorl.

*Type Locality* : About 200 metre North of Nareda village in a nala section.

*Type Horizon* : Kakdi Stage (Ypresian).

*Repository* : Holotype No. L.U.I.P. 1017 and paratypes No. L.U.I.P. 1018-1019 in author's collection.

*Etymology* : This species is named after Prof. S. N. Singh, Head of the Geology Department, Lucknow University, Lucknow, in recognition of his contributions in the field of Micropalaeontology.



*Schackoinella tewarii* sp. nov.

(Pl. I—10-12)

*Description* : Test high trochospiral with two to two and a half whorls, chambers inflated, gradually increase in size, dorsal side with 9-11 chambers, each chamber with a short blunt spine which merges into chamber body, umbilical side with four chambers; sutures distinct, slightly depressed and curved backward on the spiral side, distinctly depressed and slightly curved on the umbilical side; wall calcareous, finely perforate and radial in structure; surface smooth; aperture umbilical, somewhat quadrangular in shape and shared by last three chambers of the last whorl.

*Measurement in mm* :

Specimen	Diameter of test		Thickness
	Longer	Shorter	
Holotype No. L.U.I.P. 1020 .. ..	0.187	0.162	0.125
Paratype No. L.U.I.P. 1021 .. ..	0.175	0.156	0.112
1022 .. ..	0.193	0.156	0.106

*Comparison and Remarks* : *Schackoinella tewarii* sp. nov. differs from *Schackoinella singhi* sp. nov. in shape, arrangement of chambers and in having gradual increase in size of chambers while in the latter species chambers increase suddenly in size. The species also differs from *S. singhi* in the shape of umbilical aperture. *Schackoinella tewarii* sp. nov. also differs from *Schackoinella wadae* Quilty, in having curved sutures on the dorsal side. In the latter species, sutures are straight.

*Type Locality* : About 3.6 km S 15° E of Baranda village in a nala section.

*Type Horizon* : Babia Stage (Lutetian).

*Repository* : Holotype No. L.U.I.P. 1020 and paratypes No. L.U.I.P. 1021-1022 in author's collection.

*Etymology* : This new species is named after Prof. B. S. Tewari, Head of the Geology Department and Director of Centre of Advance Study, Punjab University, Chandigarh, in recognition of his contribution towards geology of Kutch.

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## EXPLANATION OF PLATE

## PLATE I

- 1-3. *Schackoinella agravalis* sp. nov. × 207  
 1. Dorsal view showing the nature of coiling.  
 2. Ventral view.  
 3. Apertural view.
- 4-5. *Schackoinella singhi* sp. nov. × 242  
 4. Dorsal view showing the nature of coiling.  
 5. Ventral view.  
 6. Apertural view.
- 7-9. *Schackoinella tricamerata* Mohan and Soodan × 238  
 7. Dorsal view showing the nature of coiling.  
 8. Ventral view.  
 9. Apertural view.
- 10-12. *Schackoinella tewarii* sp. nov. × 214  
 10. Dorsal view showing the nature of coiling.  
 11. Ventral view.  
 12. Apertural view.