

A Stereo-Atlas of Ostracod Shells

edited by R. H. Bate, J. W. Neale, Lesley M. Sheppard
and David J. Siveter

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Contributions illustrated by scanning electron micrographs of Ostracoda in stereo-pairs are invited. Full instructions may be obtained on request from any one of the Editors or Editorial Board. Format should follow the style set by the majority of papers in this issue. Descriptive matter apart from illustrations should be cut to a minimum; preferably each plate should be accompanied by one page of text only. Blanks to aid in mounting figures for plates may be obtained from the Editors. Completed papers should be sent to Ms. L. M. Sheppard, Department of Palaeontology, British Museum (Natural History), Cromwell Road, London SW7 5BD.

Acknowledgments

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In order to obtain maximum information and benefit from the use of the *Stereo-Atlas* it is essential that the user view the micrographs stereoscopically. Small pocket-sized stereo-viewers are most suitable for this purpose. Two suppliers are:

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Air Photo Supply Corp., 158 South Station, Yonkers, New York 10705. U.S.A.

The front cover shows a ventral view of the Cretaceous *Pattersonocypris micropapilosa* Bate preserved with appendages.

Plates reproduced by Torr of Silverstone, Northants., England.

ON *BULBOSCLERITES UNICORNIS* (NECKAJA)

by Roger E. L. Schallreuter
(University of Hamburg, German Federal Republic)

Bulbosclerites unicornis (Neckaja, 1952)

- 1952 *Mica unicornis* sp. nov. A. I. Neckaja, *Trud̄y vses neft nauchno-issled. geol. - razv. Inst.*, **60** (= *Mikrofauna SSSR* 5), 217, 229, 230, pl. 3, figs. 1, 2.
1962 *Rectella unicornis* (Neckaja); L. I. Sarv, *Eesti NSV Tead. Akad. Geol. Inst. uurimused*, **9**, tab. 1.
1967 *Rectella ? unicornis* (Neckaja); R. E. L. Schallreuter, *Geologie*, **16** (5), 616.
1973 *Rectella unicornis* Neckaja; A. I. Neckaja, *Trud̄y vses neft nauchno-issled. geol. - razv. Inst.*, **324**, 70.
1979 *Bulbosclerites unicornis* (Neckaja); R. E. L. Schallreuter, *Taxonomy, Biostratigraphy and Distribution of Ostracodes* (Ed. N. Krstić), Proc. VII Internat. Symp. Ostracodes, 26.

Holotype: Vsesojuznyj neftjanoy naučno-issledovatel'skij geologorazvedočnyj institut (VNIGRI), Leningrad, no. 14 - 128, carapace.

Type locality: Raion of Kamariku, Estonia; approx. lat. 59° 10' N, long. 26° 10' E. Porkuni Stage (F₂), uppermost Ordovician.

Explanation of Plate 7, 74

Fig. 1, LV, ext. lat. (GPIH 2343, 570 μm long); fig. 2, RV, ext. lat. (GPIH 2344, 620 μm long).
Scale A (100 μm; x 175), fig. 1; scale B (100 μm; x 155), fig. 2.

Figured specimens: Geologisch-Paläontologisches Institut, University of Hamburg (GPIH), nos. 2343 (LV: Pl. 7, 74, fig. 1), 2344 (RV: Pl. 7, 74, fig. 2), 2345 (car.: Pl. 7, 76, fig. 1) and 2346 (LV: Pl. 7, 76, fig. 2). All the figured specimens are from the Öjlemyrflint (Upper Ordovician) erratic boulder no. Sy 2 of the Kaolinsand (Pliocene-Pleistocene), near Braderup, Isle of Sylt (N Frisian Is., N Sea); lat. 54° 56' N, long. 8° 21' E; coll. by Ulrich von Hacht, 1976.

Diagnosis: Species of *Bulbosclerites* with length up to 0.70mm. Length/height ratio >2.00. Posterodorsal process of the right valve is projected as a spine.

Remarks: The type-species *B. longa* Knüpfer (*Freiberger ForschHft.*, ser. C, 234, 1968) is larger (0.78mm) and relatively higher (length/height ratio <2.00) and its posterodorsal process on the right valve is more bulb-like rather than spine-like as in *B. unicornis*. The latter possesses stop pegs in the left valve (see Pl. 7, 76, fig. 2 and Schallreuter, 26, 1979).

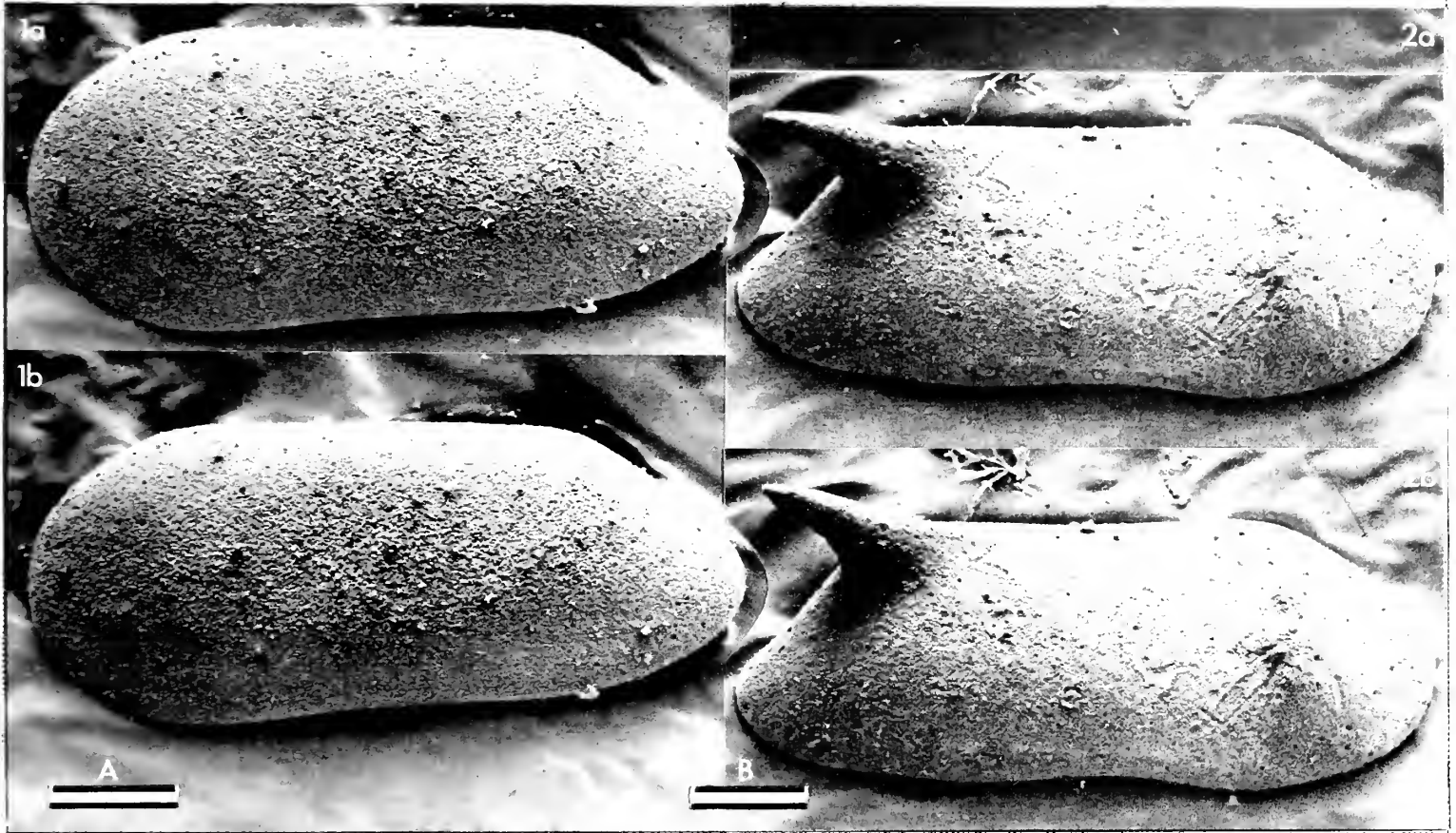
The spine in the holotype of *B. unicornis* (Neckaja, *op. cit.*, pl. 3, figs. 1, 2) is considerably shorter than those in the specimens figured herein (Pl. 7, 74, fig. 2; Pl. 7, 76, fig. 1); it is possible that the material represents a distinct subspecies.

The assignment of *Parasclerites postnodus* Blumenstengel (*Ibid.*, 182, 1965) to the genus is questionable because of the more ventral position of the relatively weak, broad, knob-like inflation of the right valve.

Distribution: Porkuni Stage (F₂), uppermost Ordovician, of Estonia. Öjlemyrflint (Upper Ordovician) erratic boulders of the Isle of Gotland (Baltic Sea) and of the Kaolinsand (Pliocene - Pleistocene) of the Isle of Sylt (N Frisian Is., N Sea).

Explanation of Plate 7, 76

Fig. 1, car., ext. vent. obl. (GPIH 2345, 575 μm long); fig. 2, LV, int. dors. obl. (GPIH 2346, 590 μm long).
Scale A (100 μm; x 170), figs. 1, 2.





ON *PACHYDOMELLOIDES BRADERUPENSIS* SCHALLREUTER sp. nov.

by Roger E. L. Schallreuter
(University of Hamburg, German Federal Republic)

Pachydomelloides braderupensis sp. nov.

Holotype: Geologisch-Paläontologisches Institut, University of Hamburg, no. 2460, LV.
[Paratype: no. 2462, LV].

Type locality: Middle Ordovician Hornstein erratic boulder no. Sy 52 of the Kaolinsand (Pliocene – Pleistocene), near Braderup, Isle of Sylt (N Frisian Is, N Sea), Germany; lat. 54° 56' N, long. 8° 21' E.

Derivation of name: After the type locality, Braderup, Isle of Sylt.

Figured specimens: Geologisch-Paläontologisches Institut, University of Hamburg (GPIH) nos. 2459 (RV: Pl. 7, 78, fig. 1), 2460 (LV: Pl. 7, 78, fig. 2), 2461 (LV: Pl. 7, 80, fig. 1) and 2462 (LV: Pl. 7, 80, fig. 2). From the lower Upper Viruan (Middle Ordovician) Hornstein erratic boulders nos. Sy 39 (2461) and Sy 52 (2459, 2460, 2462) from the type locality; coll. by Ulrich von Hacht, 1978.

Explanation of Plate 7, 78

Fig. 1, RV, ext. lat. (GPIH 2459, 617 µm long); fig. 2, LV, ext. lat. (GPIH 2460, 636 µm long).
Scale A (100 µm; x 145), fig. 1; scale B (100 µm; x 125), fig. 2.

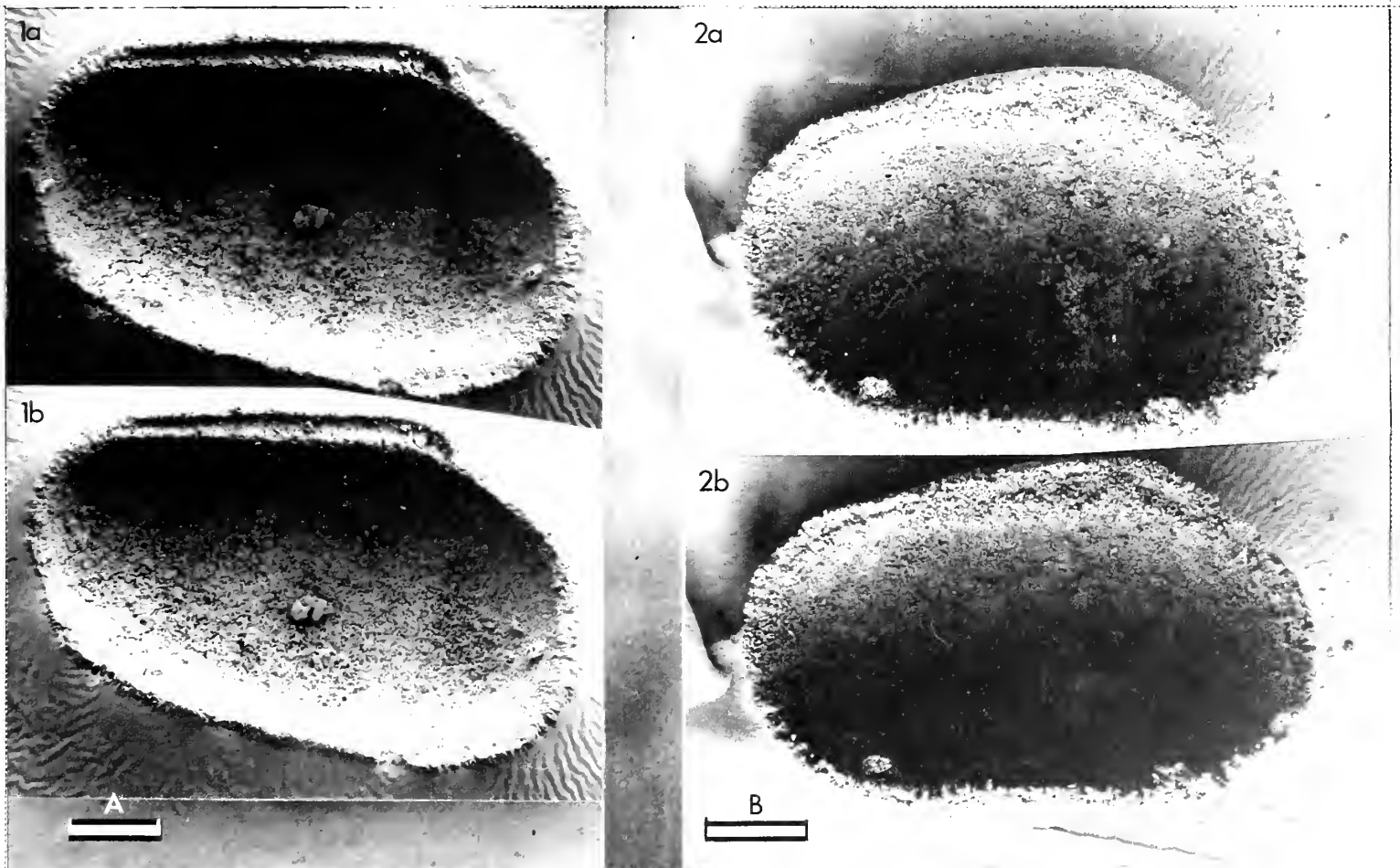
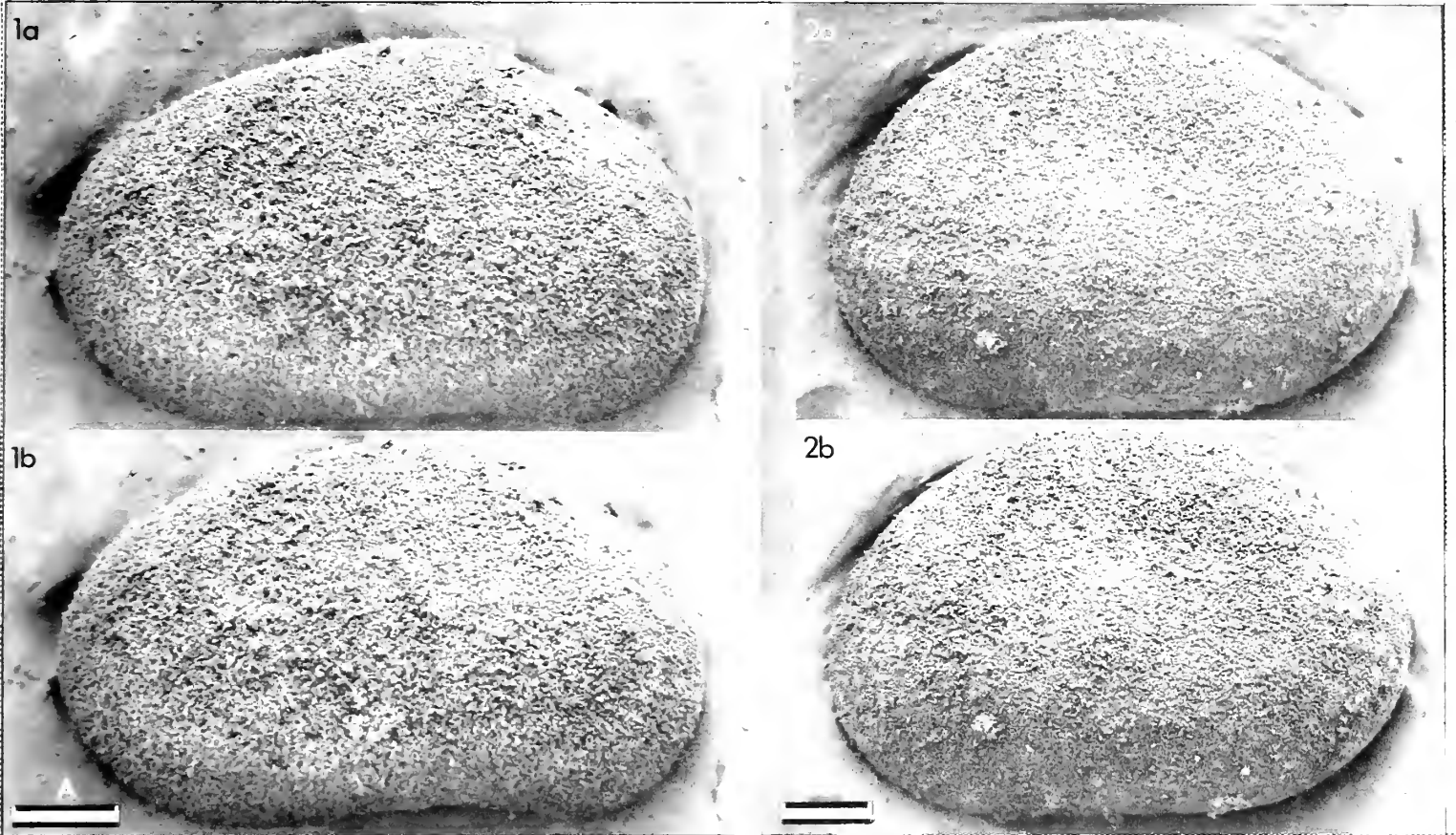
Diagnosis: Species of *Pachydomelloides* with length up to 0.64mm (holotype). Posterior end relatively broadly rounded. Sulcament not observed, perhaps lacking.

Remarks: *P. valcourensis* Swain (*J. Paleo.*, 36 (4), 739, 1962), the type-species, and *P. imperfecta* (Krause) (*Z. Deutsch. geol. Ges.*, 48 (1896) (4), 935, 1897) are both much larger, being more than 1mm long. Both species possess an inner sulcament (subvertical ridge) which has not been observed in *P. braderupensis*, but this may be a factor of preservation or of infraspecific variation. Furthermore, in both species the posterior end of the left valve seems to be more acuminate (cf. Swain, *op. cit.*, pl. 111, fig. 8a) than in *P. braderupensis*. Stop pegs (stop ridges, internal prongs), present in *P. braderupensis* (Pl. 7, 80, figs. 1, 2), were not mentioned in the description of the type-species but were observed by Krause (*op. cit.*, 936, pl. 25, fig. 11) in *P. imperfecta*.

Distribution: Lower Upper Viruan (Middle Ordovician) Hornstein erratic boulders of the Kaolinsand (Pliocene – Pleistocene) near Braderup, Isle of Sylt (N Frisian Is, N Sea), Germany.

Explanation of Plate 7, 80

Fig. 1, LV, int. lat. (GPIH 2461, 622 µm long); fig. 2, LV, int. lat. (GPIH 2462, 633 µm long).
Scale A (100 µm; x 135), fig. 1; scale B (100 µm; x 140), fig. 2.



ON *CYPRIDEIS UNDOSA* VAN HARTEN sp. nov.

by Dick van Harten
(University of Amsterdam, The Netherlands)

Cyprideis undosa sp. nov.

1980 *Cyprideis* sp., L.P.A. Geerlings *et al.*, *Proc. K. ned. Akad. Wet.*, Amsterdam, ser. B, 83, 29 - 37 (*pars*).

Holotype: Geological Institute University of Amsterdam, coll. no. PA 8768, ♀ LV.

[Paratypes: Geological Institute, University of Amsterdam, coll. nos. PA 8769 - 8774].

Type locality: N bank of Rio Almanzora, approx. 5km NE of Vera, Province of Almería, Spain; Grid Ref.; UTM 300.5, 763.5 (see text-fig. 1).

Light greenish grey laminated marl with *Chara* and abundant brown reed-like plant remains; Messinian.

Derivation of name: Latin *undusus*, full of waves; alluding to the sinuous course of ventral margin.

Explanation of Plate 7, 82

Fig. 1, ♀ LV, ext. lat. (holotype, PA 8768, 890 μm long); fig. 2, ♀ RV, ext. lat. (paratype, PA 8769, 880 μm long); fig. 3, ♀ car., ext. dors. (paratype, PA 8770, 890 μm long).

Scale A (250 μm ; x 70), figs. 1 - 3.

Figured specimens: Geological Institute, University of Amsterdam, coll. nos. PA 8768 (holotype, ♀ LV: Pl. 7, 82, fig. 1), PA 8769 (♀ RV: Pl. 7, 82, fig. 2), PA 8770 (♀ car.: Pl. 7, 82, fig. 3), PA 8771 (♀ LV: Pl. 7, 84, fig. 1), PA 8772 (♂ LV: Pl. 7, 86, fig. 1), PA 8773 (♂ RV: Pl. 7, 86, fig. 3), PA 8775 (♀ car.; Pl. 7, 84, fig. 2), PA 8776 (♀ RV: Pl. 7, 84, fig. 3; Pl. 7, 88, fig. 3), PA 8777 (♀ RV: Pl. 7, 86, fig. 2), PA 8778 (juv. - 1 RV: Pl. 7, 88, fig. 1), PA 8779 (juv. - 1 RV: Pl. 7, 88, fig. 2).

All figured material is from the type locality near Vera, Spain; Grid Ref. UTM 300.5, 763.5; Messinian, light greenish grey laminated marl with *Chara* and brown reed-like plant remains; coll. by H. Dronkert and L.P.A. Geerlings.

Diagnosis: Medium-sized species of *Cyprideis* with a sinuous ventral margin (notably so in the males) and conspicuous surface pitting. High nodding potential (see text-fig. 2). Anterior margins non-denticulate. Right valve may carry up to two posteroventral spines.

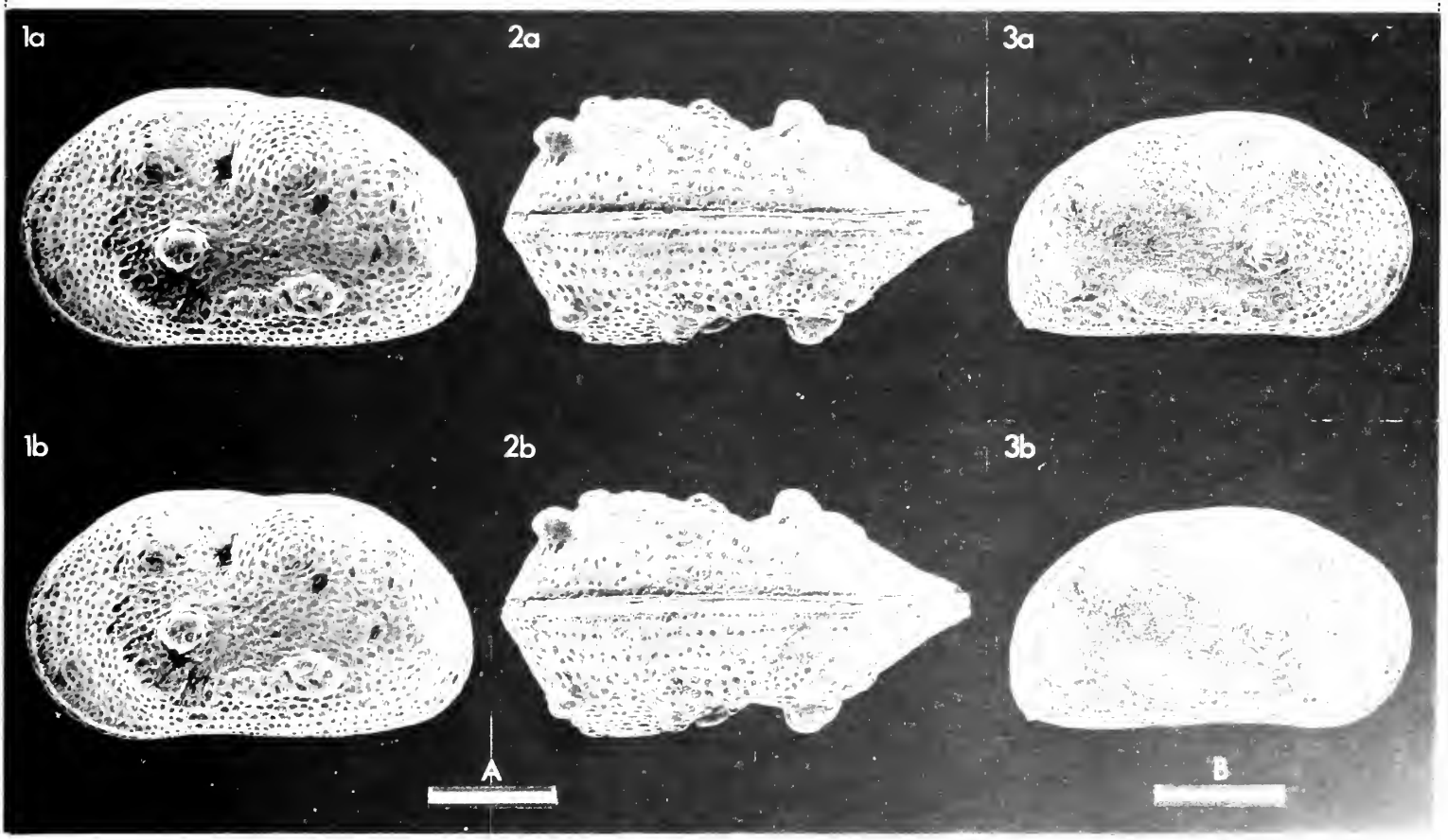
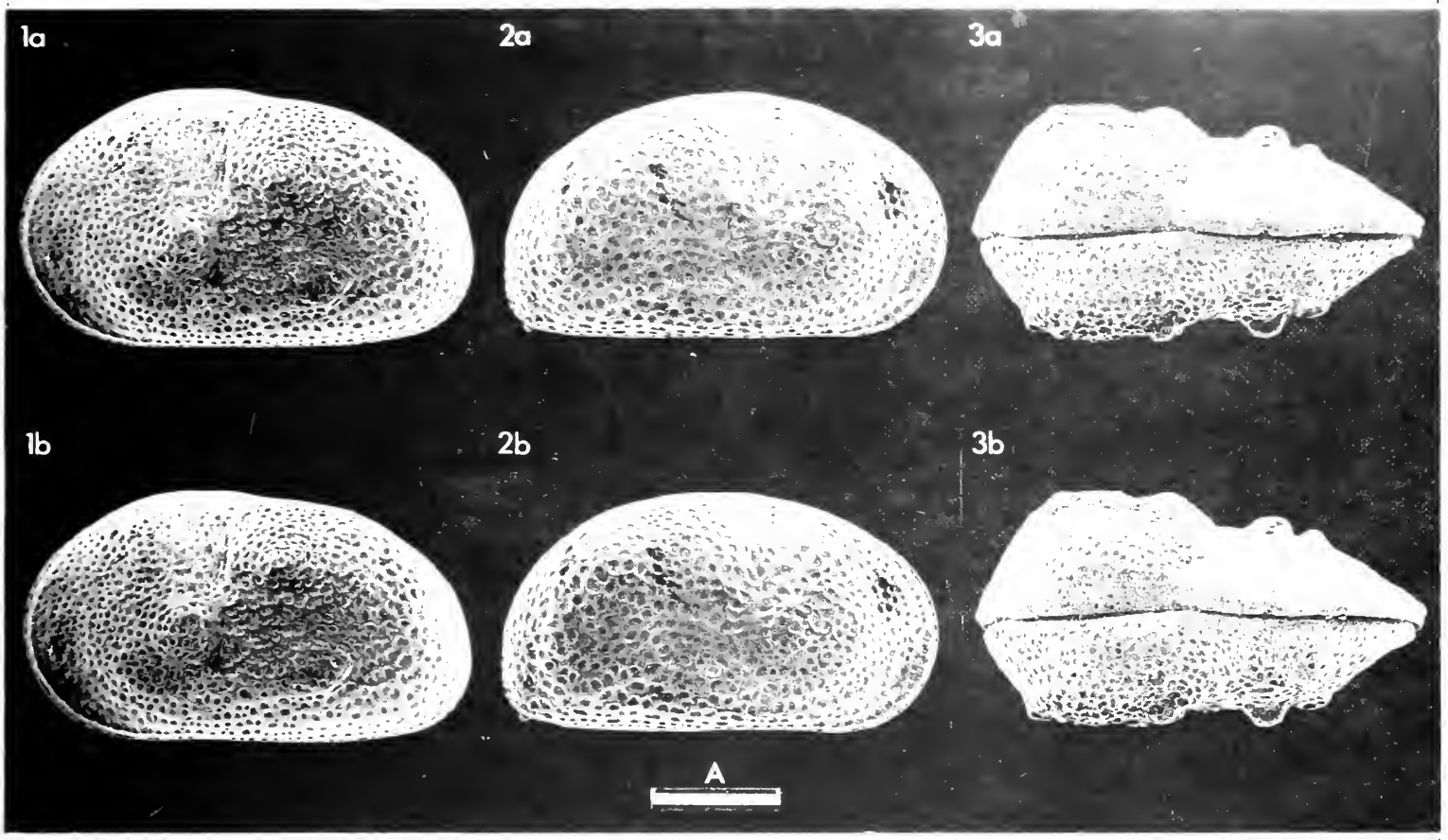
Remarks: As to size, ventral sinuosity and type of ornamentation, this species resembles *Cyprideis seminulum* (Reuss), in particular the subspecies *C. seminulum portaferricum* Krstić (see M. A. Bassiouni, *Geol. Jb. B* 31, 92, pl. 1, figs. 7 - 10, 1979). The two species significantly differ in the lateral outline of the posterior part of their shells, in their nodding characteristics and in the presence of anteromarginal denticulation. At the type locality *C. undosa* sp. nov. is sympatric with *C. agrigentina* Decima (*Paleont. Ital.* 57, 108, 1964) and *C. calabra* Decima (*op. cit.*, 127).

A shallow, oligohaline palaeoenvironment is inferred for the new species.

Explanation of Plate 7, 84

Fig. 1, ♀ LV, ext. lat. (paratype, PA 8771, 890 μm long); fig. 2, ♀ car., ext. vent. (PA 8775, 930 μm long); fig. 3, ♀ RV, ext. lat. (PA 8776, 790 μm long).

Scale A (250 μm ; x 70), figs. 1, 2; scale B (250 μm ; x 71), fig. 3.

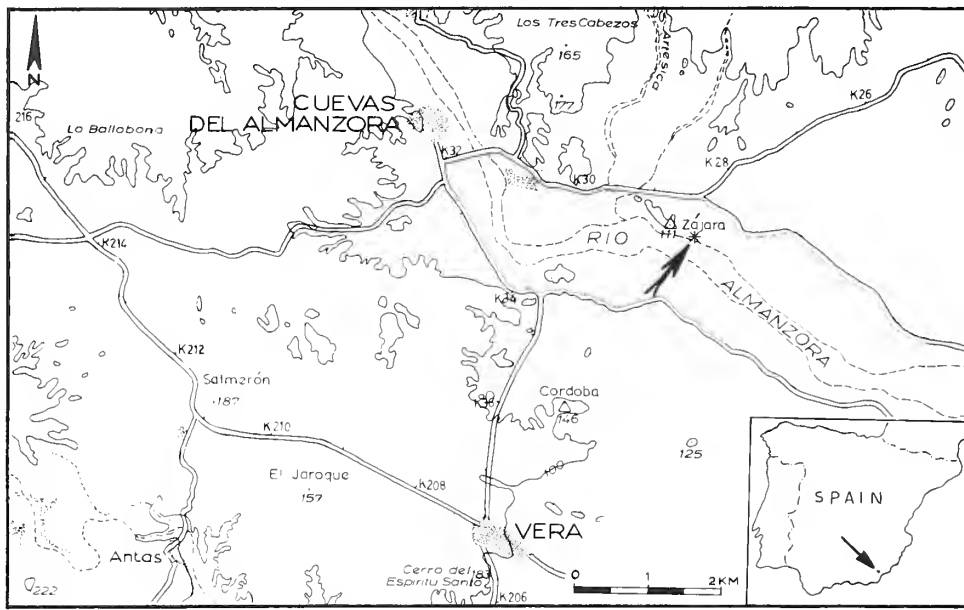




Distribution: Outside the type locality *C. undosa* has been found in beds of comparable age near Sorbas, SE Spain. It seems to be associated with the freshening conditions that succeeded the deposition of evaporites in

the Messinian of the western Mediterranean area (see T.B. Roep & D. van Harten, *Ann. Géol. Pays Hellén.*, Tome hors série, fasc. 3, 1037 - 1044, 1979 and Geerlings *et al.*, *op. cit.*).

The vertical range of the species is not known but probably rather restricted.

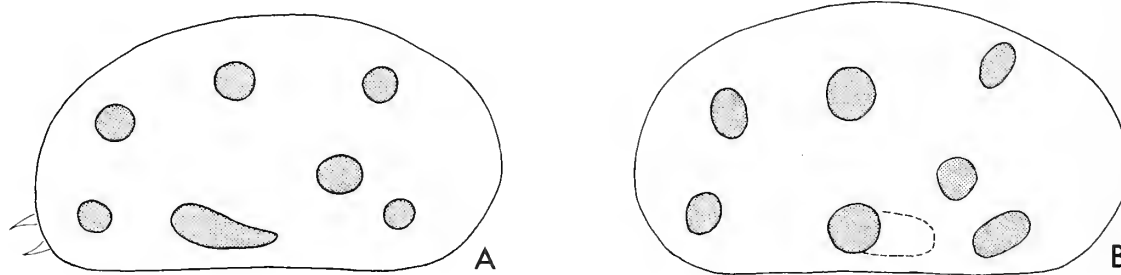


Text-fig. 1. Map of Vera area. Type locality indicated with arrow.

Explanation of Plate 7, 86

Fig. 1, ♂ LV, ext. lat. (paratype, PA 8772, 900 μm long); fig. 2, ♀ RV, int. lat. (PA 8777, 860 μm long); fig. 3, ♂ RV, ext. lat. (paratype, PA 8773, 930 μm long).

Scale A (250 μm ; x 70), figs. 1, 2; scale B (250 μm ; x 65), fig. 3.



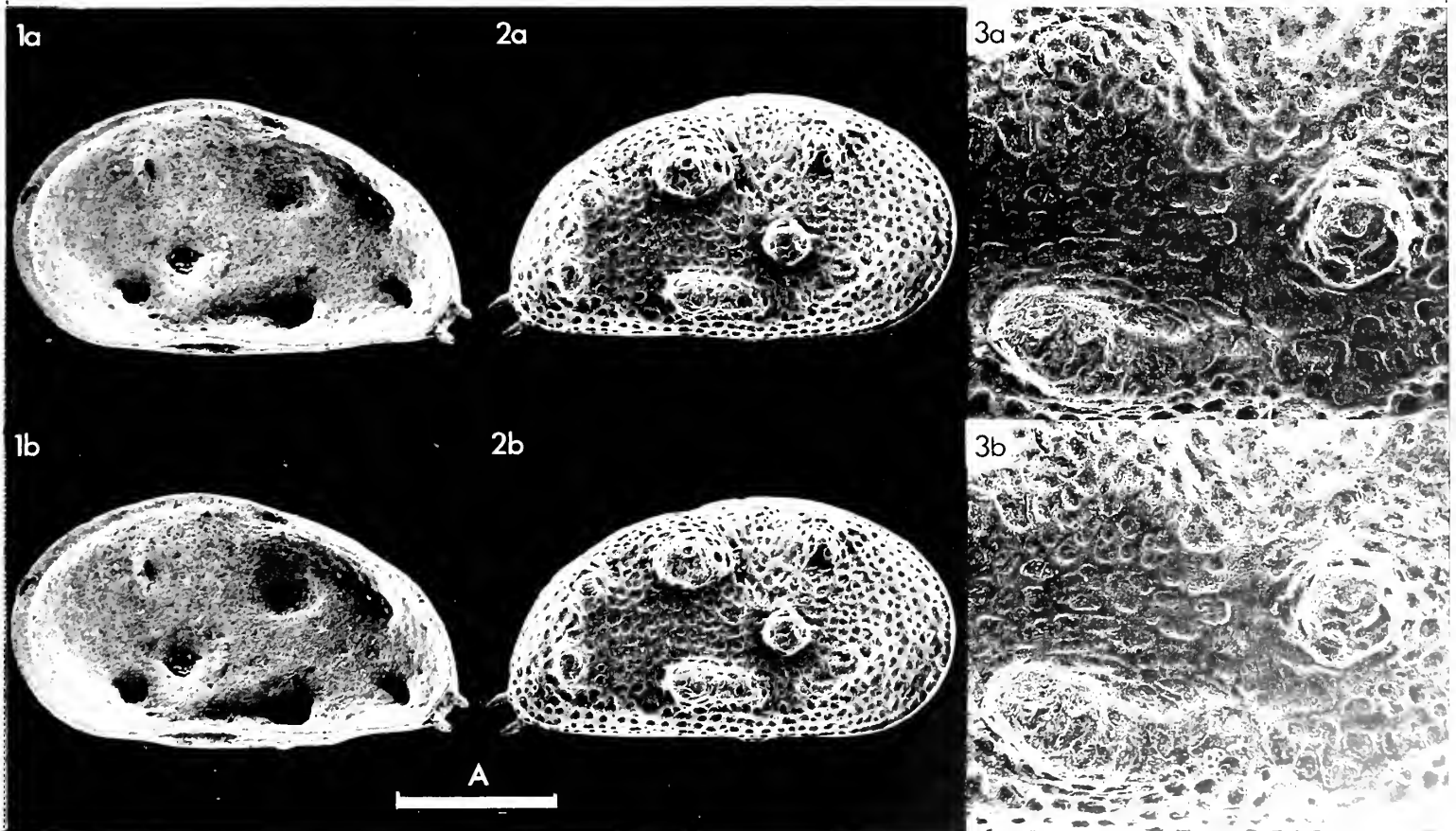
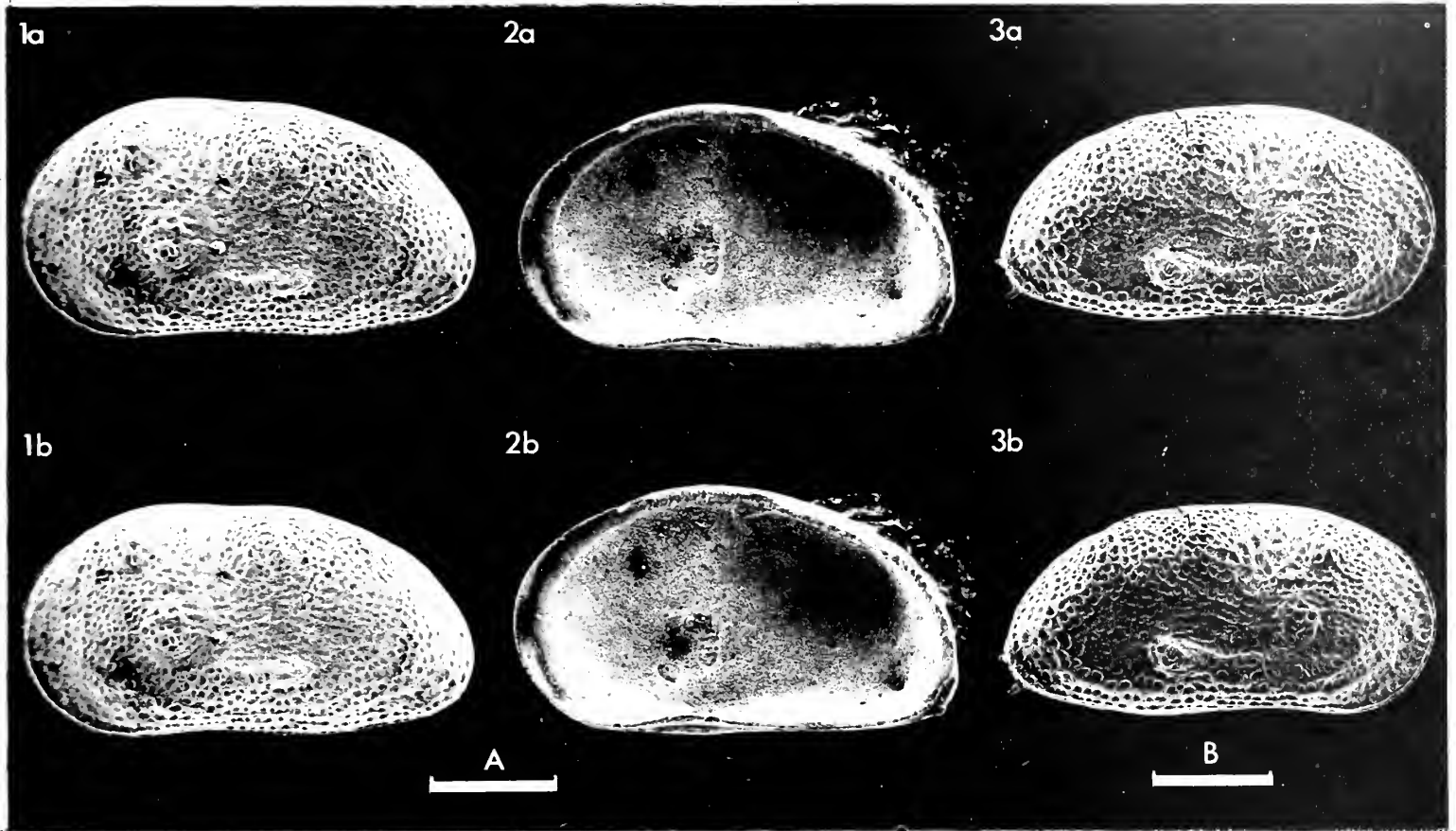
Text-fig. 2. Ext. lat. view of ♀ RV showing possible positions of nodes in *Cyprideis undosa* sp. nov. (A) as compared with Sandberg's general scheme (B). B after Sandberg (1964).

Acknowledgement: I am grateful to Hans Dronkert and Peter Geerlings who kindly provided the material on which this paper is based.

Explanation of Plate 7, 88

Fig. 1, juv. - 1 RV, int. lat. (PA 8778, 710 μm long); fig. 2, juv. - 1 RV, ext. lat. (PA 8779, 710 μm long); fig. 3, ♀ RV, ext. lat., central group of nodes (PA 8776).

Scale A (250 μm , x 86), figs. 1, 2; scale B (100 μm ; x 172), fig. 3.



ON *CYPRIDEIS EXUBERANS* VAN HARTEN sp. nov.

by Dick van Harten
(University of Amsterdam, The Netherlands)

Cyprideis exuberans sp. nov.

Holotype: Geological Institute, University of Amsterdam, coll. no. PA 8780, ♀ LV.
[Paratypes: Geological Institute, University of Amsterdam, coll. nos. PA 8781 - 8786].

Type locality: N bank of Arroyo de Abejuela, W of bridge in road from Elche de la Sierra to Ferez, Province of Albacete, Spain; lat. 38° 22' N, long. 02° 03' W. Yellowish calcarenite with *Chara* and abundant small gastropods; lacustrine, Miocene – Pliocene.

Derivation of name: Latin *exuberans*, abounding; alluding to rather exaggerated nature of diagnostic features.

Explanation of Plate 7, 90

Fig. 1, ♀ LV, ext. lat. (holotype, PA 8780, 780 µm long); fig. 2, ♀ RV, ext. lat. (paratype, PA 8782, 730 µm long); fig. 3, ♀ car., ext. dors. (PA 8790, 790 µm long).
Scale A (250 µm; x 75), figs. 1 - 3.

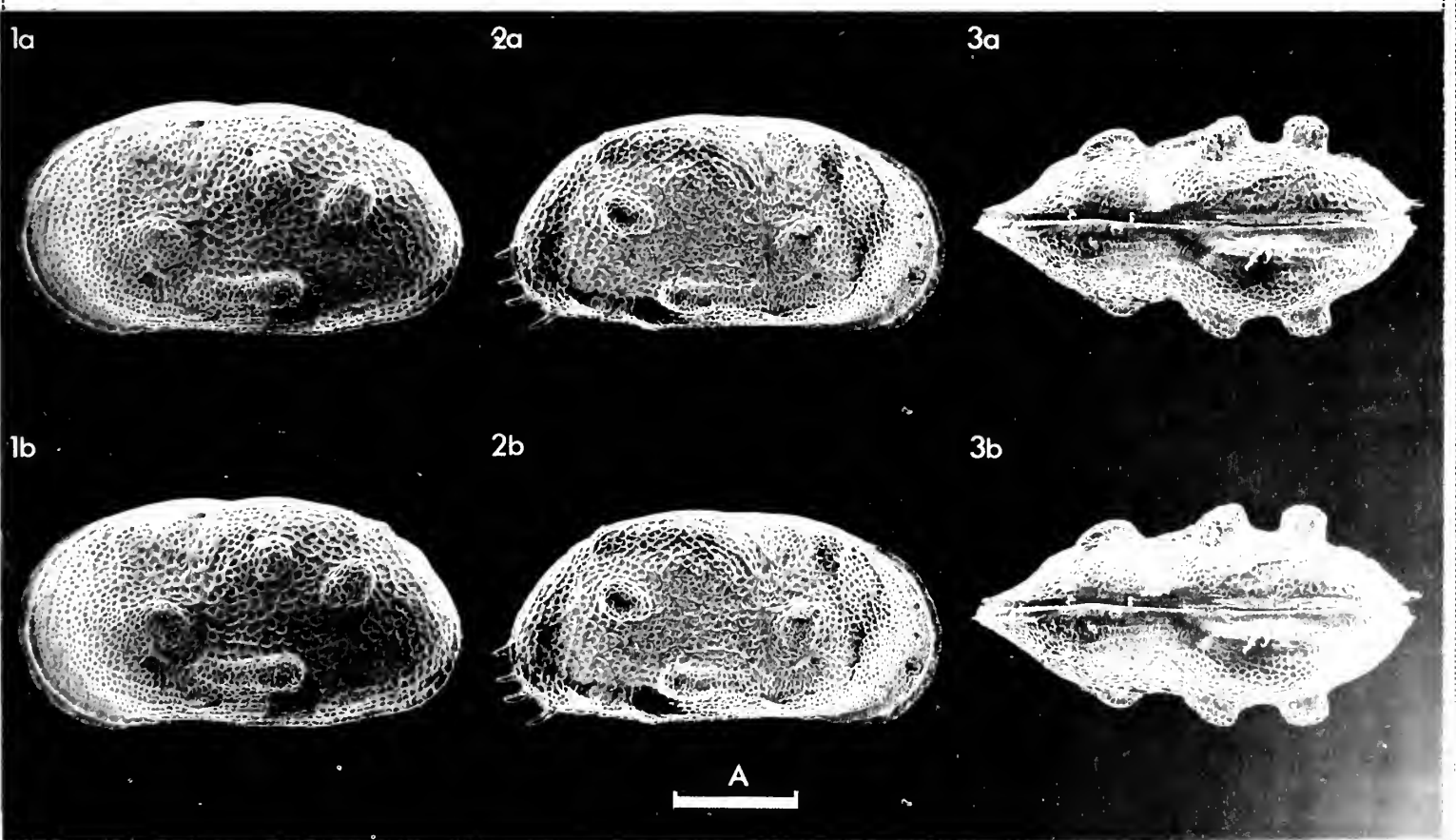
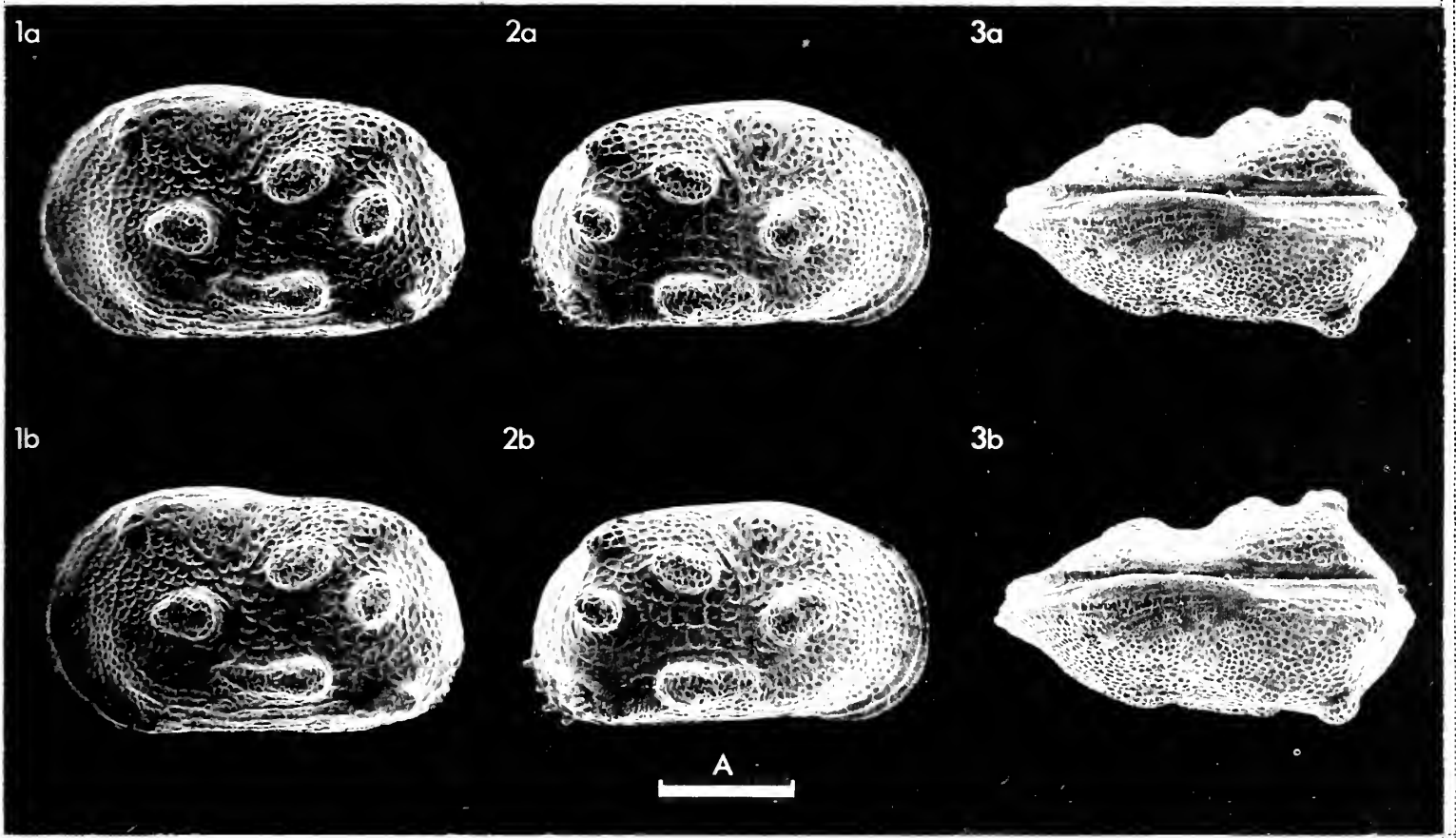
Figured specimens: Geological Institute, University of Amsterdam, coll. nos. PA 8780 (holotype, ♀ LV: Pl. 7, 90, fig. 1), PA 8782 (♀ RV: Pl. 7, 90, fig. 2), PA 8783 (♂ RV: Pl. 7, 92, fig. 2), PA 8784 (♂ LV: Pl. 7, 92, fig. 1), PA 8785 (♀ car.: Pl. 7, 94, fig. 3), PA 8786 (♂ car.: Pl. 7, 92, fig. 3), PA 8789 (♂ LV: Pl. 7, 96, fig. 4), PA 8790 (♀ car.: Pl. 7, 90, fig. 3), PA 8791 (juv. - 1 LV: Pl. 7, 98, fig. 2), PA 8792 (juv. - 1 LV: Pl. 7, 98, fig. 1), PA 8793 (juv. - 1 RV: Pl. 7, 100, fig. 2), PA 8794 (♀ LV: Pl. 7, 94, fig. 2), PA 8795 (♀ LV: Pl. 7, 96, fig. 3), PA 8796 (♀ RV: Pl. 7, 96, fig. 2), PA 8797 (♀ RV: Pl. 7, 94, fig. 1; Pl. 7, 96, fig. 1), PA 8798 (juv. - 1 RV: Pl. 7, 98, fig. 3; Pl. 7, 100, fig. 1), PA 8799 (juv. - 3 RV: Pl. 7, 100, fig. 3).

All figured material is from the type locality, between Elche de la Sierra and Ferez, Spain; lat. 38° 22' N, long. 02° 03' W; Miocene – Pliocene, yellowish calcarenite with *Chara* and abundant small gastropods; coll. by Dr. T. Geel.

Diagnosis: Medium-sized species of *Cyprideis* with box-like shape and conspicuous surface pitting. High nodding potential. Posteroventral node tends to be elongated and dorsoventrally compressed. Anomalous node may develop near posterodorsal corner. Anterior margins non-denticulate. Right valve with four posteroventral spines, some or all of which may be somewhat under-developed in the adults.

Explanation of Plate 7, 92

Fig. 1, ♂ LV, ext. lat. (paratype, PA 8784, 910 µm long); fig. 2, ♂ RV, ext. lat. (paratype, PA 8783, 880 µm long); fig. 3, ♂ car., ext. dors. (paratype, PA 8786, 890 µm long).
Scale A (250 µm; x 68), figs. 1 - 3.



Remarks: *C. exuberans* is a very distinctive species that is not likely to be confused with any other described taxon of the genus. The nodding characteristics are quite exceptional in several respects. As many as seven nodes may develop on each valve but their location deviates from Sandberg's well-known scheme (see text-fig. 1): there is an anomalous node position in the posterodorsal area whereas Sandberg's position no. 5 is unoccupied (see P. A. Sandberg, *Stockh. Contr. Geol.*, 12, 42, 1964). Another notable feature is that the whole of the population seems to be capable of developing nodes: among the adults of the type sample (i.e. 249 left valves, 238 right valves and 30 carapaces) not a single smooth shell was found. A third anomaly is that the species does not comply with the rule that nodes are more common on juveniles than they are on adults (Sandberg, *op. cit.*, 47; see also T. I. Kilenyi, *Micropaleontology*, 18, 47 - 63, 1972). In *Cyprideis exuberans* sp. nov. the nodes make their ontological appearance in the juvenile - 2, in the type sample c. 30% of the individuals being affected. In the penultimate instar all but very few of the right valves are noded whereas c. 25% of the left valves are smooth.

To all appearance there is bimodality in the size distributions of the juv. - 1 and juv. - 2 instars (see text-figs. 2, 3). This is indicative of sexual dimorphism. As the same thing has been reported for *C. baetica* van Harten (D. van Harten, *Scripta Geologica*, 32, 6, 1975) and *C. torosa* (Jones) (W. - M. Rohr, *N. Jb. Geol. Paläont. Abh.* 158, 346 - 380, 1979), the existence of pre-adult sexual dimorphism may well be a generic feature in *Cyprideis*.

From the associated fauna and flora a shallow oligohaline, possibly even limnetic, palaeo-environment is inferred for the type sample.

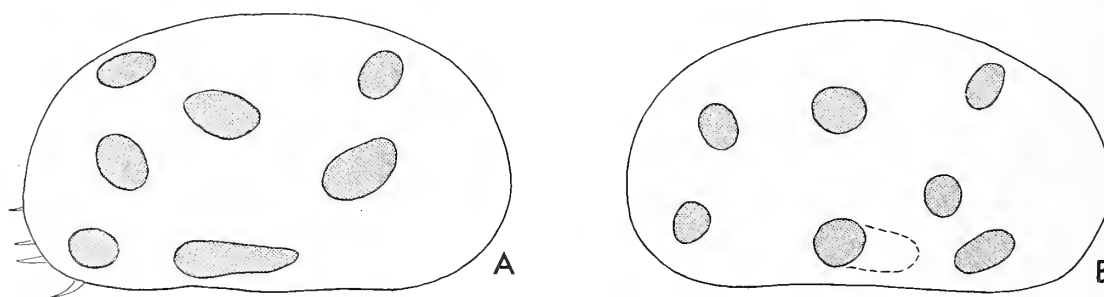
Explanation of Plate 7, 94

Fig. 1, ♀ RV, int. lat. (PA 8797, 730 μm long); fig. 2, ♀ LV, int. lat. (PA 8794, 780 μm long); fig. 3, ♀ car., ext. vent. (paratype, PA 8785, 800 μm long).

Scale A (250 μm ; x 75), figs. 1 - 3.

Distribution: So far, the species is only known from the type locality. There is some doubt about the actual age of the *stratum typicum*. According to L. Jerez-Mir (*Geologia de la zona prebetica, en la transversal de Elche de la Sierra y sectores adyacentes*, thesis University of Granada, 750 pp., 1973) the lacustrine deposits at issue most probably belong to the Upper Miocene; however, a Pliocene age would not be utterly out of the question (Jerez-Mir, *op. cit.*, 505 - 508).

Acknowledgement: I am indebted to Tiny Geel for providing the material on which this paper is based and for supplying information on the stratigraphical setting.

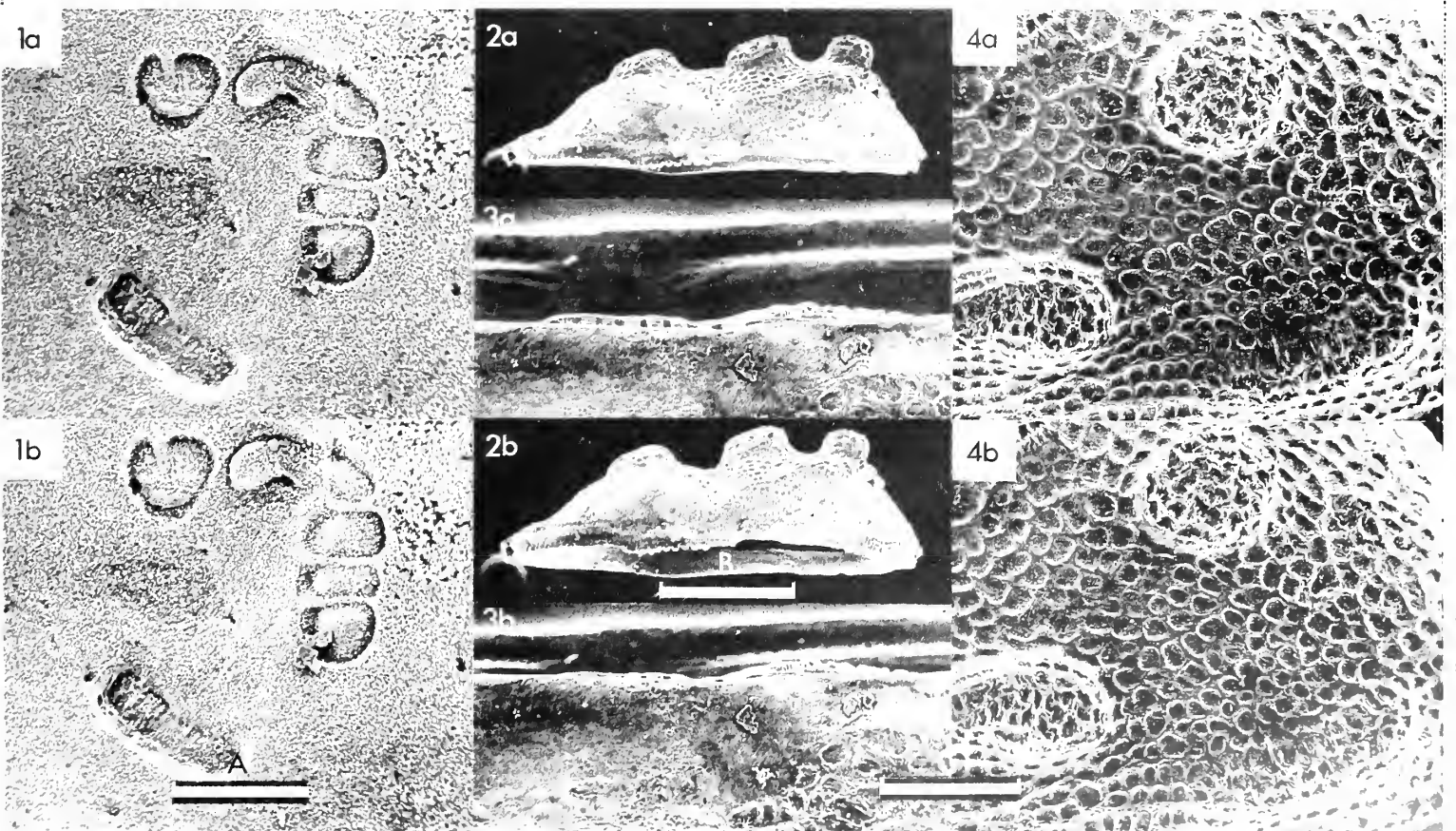
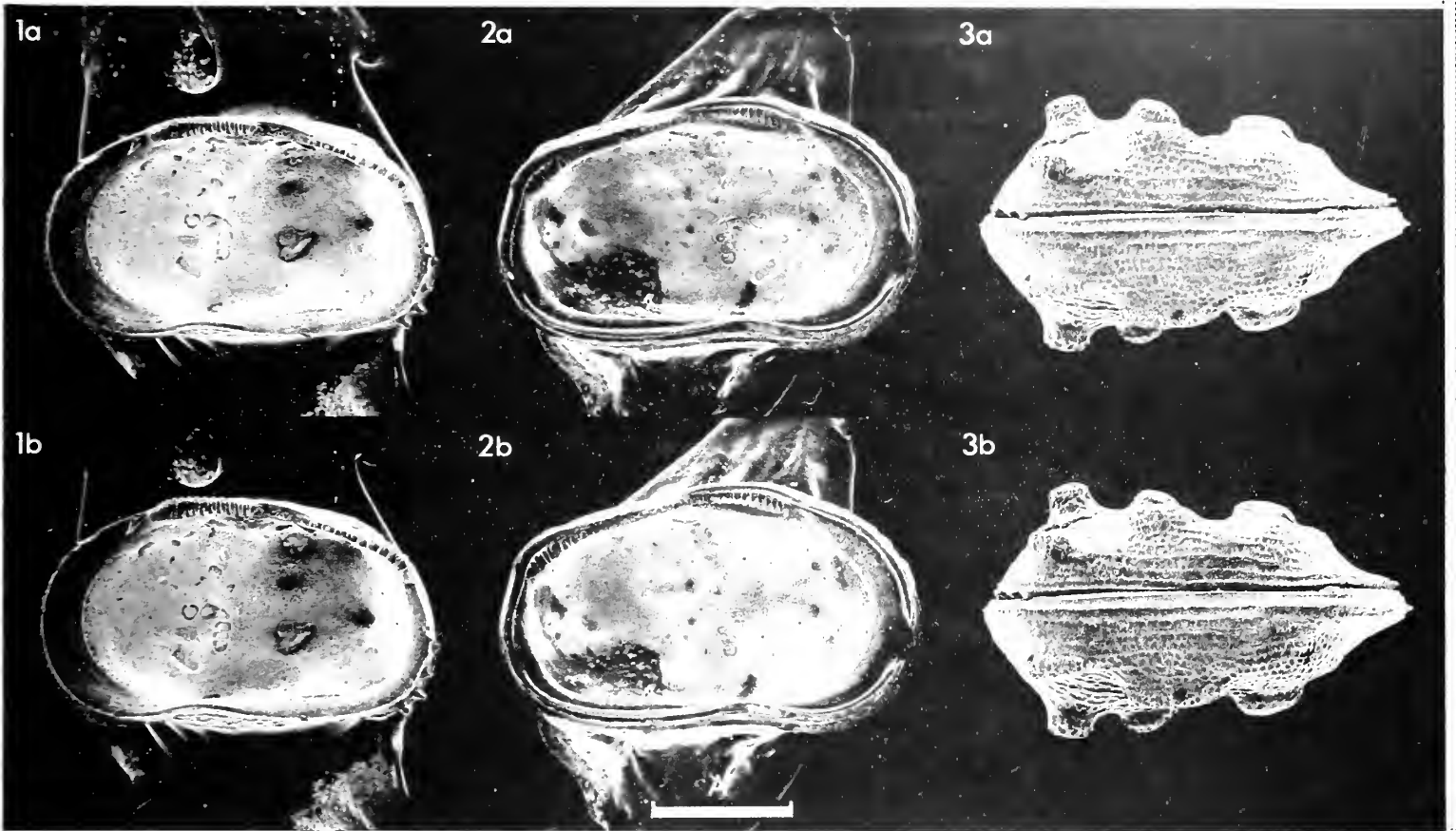


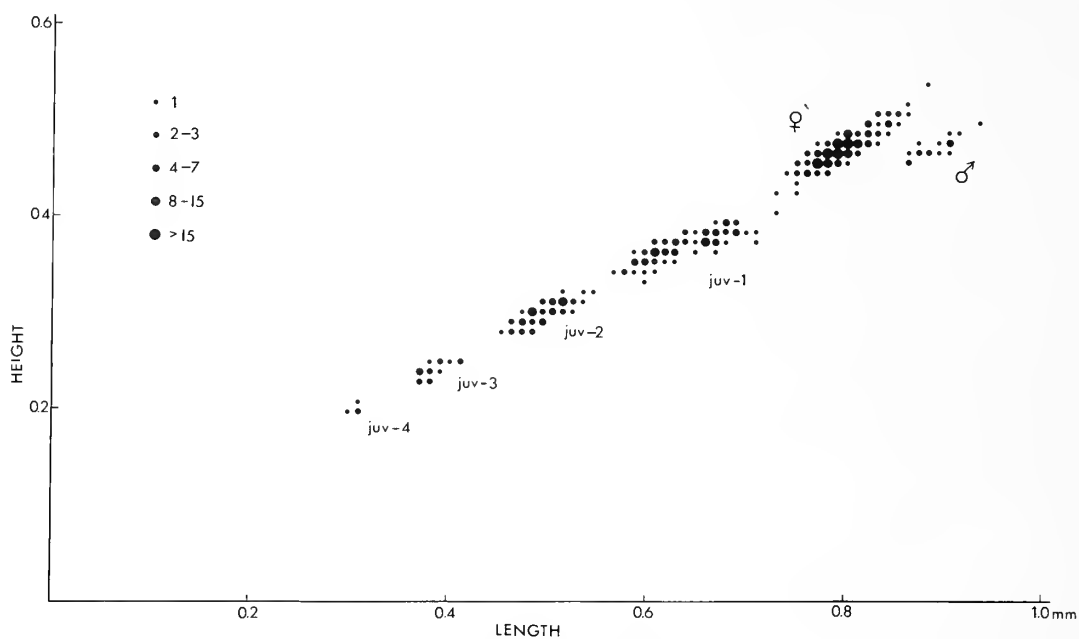
Text-fig. 1. Ext. lat. view of ♀ RV showing possible positions of nodes in *Cyprideis exuberans* sp. nov. (A) as compared with Sandberg's general scheme (B). B after Sandberg (1964).

Explanation of Plate 7, 96

Fig. 1, ♀ RV, int. lat., musc. sc. (PA 8797); fig. 2, ♀ RV, ext. dors. (PA 8796, 780 μm long); fig. 3, ♀ LV, ext. dors., ant. and median hinge elements (PA 8795); fig. 4, ♂ LV, ext. lat., detail of post. vent. area (PA 8789).

Scale A (50 μm ; x 375), fig. 1; scale B (250 μm ; x 75), fig. 2; scale C (100 μm ; x 190), figs. 3, 4.



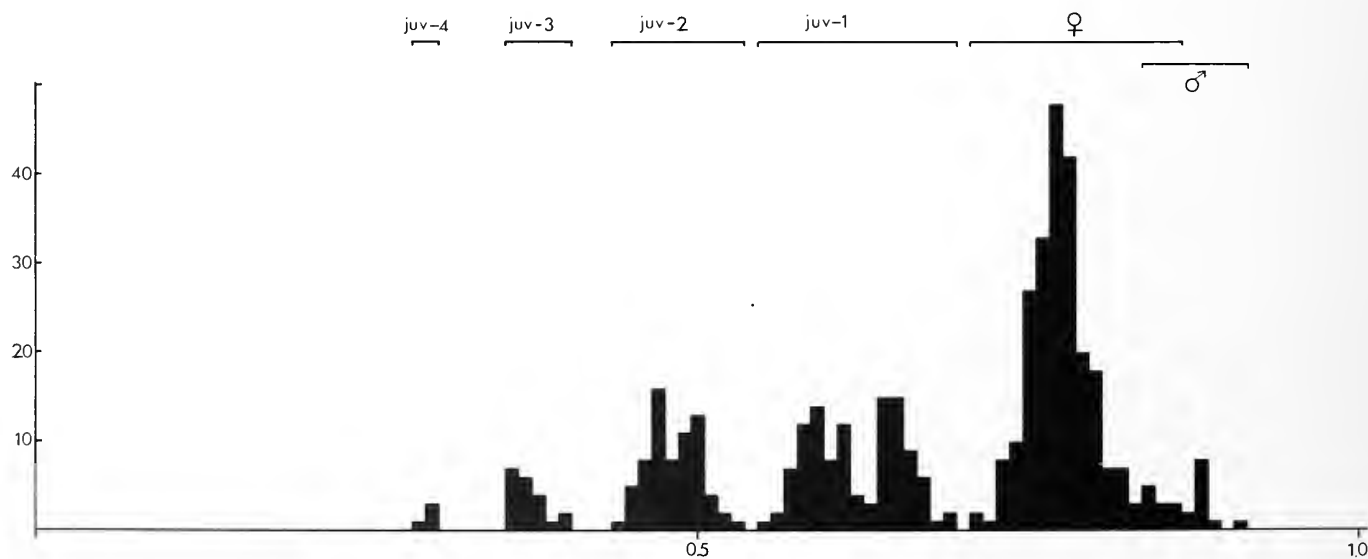


Text-fig. 2. Length/height diagram for left valves in type sample.

Explanation of Plate 7, 98

Fig. 1, juv. - 1 LV, ext. lat. (PA 8792, 700 μ m long); fig. 2, juv. - 1 LV, ext. lat. (PA 8791, 680 μ m long); fig. 3, juv. - 1 RV, int. obl., post. vent. spines (PA 8798).

Scale A (250 μ m; x 81), figs. 1, 2; scale B (50 μ m; x 407), fig. 3.

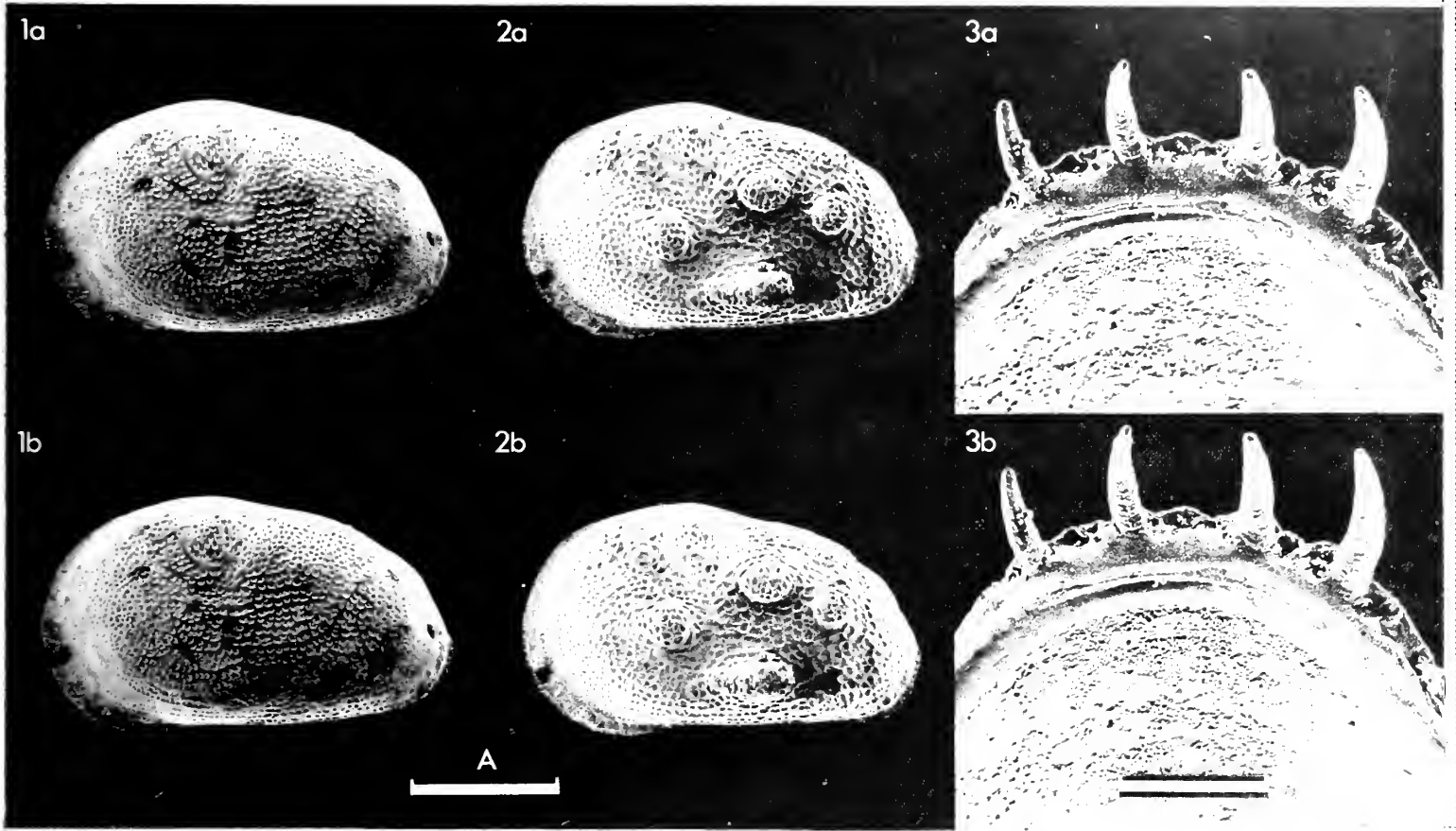


Text-fig. 3. Histogram of length for left valves in type sample.

Explanation of Plate 7, 100

Fig. 1, juv. - 1 RV, int. lat. (PA 8798, 650 μ m long); fig. 2, juv. - 1 RV, ext. lat. (PA 8793, 640 μ m long); fig. 3, juv. - 3 RV, ext. lat. (PA 8799, 410 μ m long).

Scale A (250 μ m; x 81), figs. 1, 2; scale B (150 μ m; x 145), fig. 3.





ON *XESTOLEBERIS POSTANGULATA* BATE & SHEPPARD sp. nov.

by Raymond H. Bate & Lesley M. Sheppard
(British Museum [Natural History], London)

Xestoleberis postangulata sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) 1980.147, ♀ car.

[Paratypes: Brit. Mus. (Nat. Hist.) 1980.148 - 154]

Type locality: Abu Dhabi lagoon, central lagoon terrace, sample no. 6514b.

Derivation of name: Pertaining to the distinct posteroventral projection on each valve.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. 1980.147 (holotype, ♀ car: Pl. 7, 102, fig. 1), 1980.148 (♀ RV: Pl. 7, 102, fig. 2), 1980.149 (♀ LV: Pl. 7, 102, fig. 3; Pl. 7, 104, figs. 5, 6), 1980.150 (♀ car: Pl. 7, 104, fig. 1), 1980.151 (♀ car: Pl. 7, 104, figs. 2, 9), 1980.152 (♀ RV: Pl. 7, 104, figs. 3, 4, 8), 1980.153 (LV: Pl. 7, 104, fig. 7).

Diagnosis: Small oval *Xestoleberis* having sharply angled posteroventral corner. Hinge paraperatodont; sieve plates with central setal pore and two or three concentric rows of sieve pores. Anterior and posterior marginal canals branching.

Explanation of Plate 7, 102

Fig. 1, ♀ car. lt. lat. (holotype, 1980. 147, 417 µm long); fig. 2, ♀ RV, ext. lat. (paratype, 1980.148, 417 µm long); fig. 3, ♀ LV, int. lat. (paratype, 1980.149, 383 µm long).

Scale A (100 µm; x 143), figs. 1, 2; scale B (100 µm; x 151), fig. 3.

Remarks: *X. postangulata* is a rare member of the littoral phytal fauna of the Abu Dhabi lagoon and nearshore shelf. In the lagoon, the species is present within the deeper water channels (depth about 7m), near the entrance to the lagoon and on the shallower water terraces (see text-fig. 3).

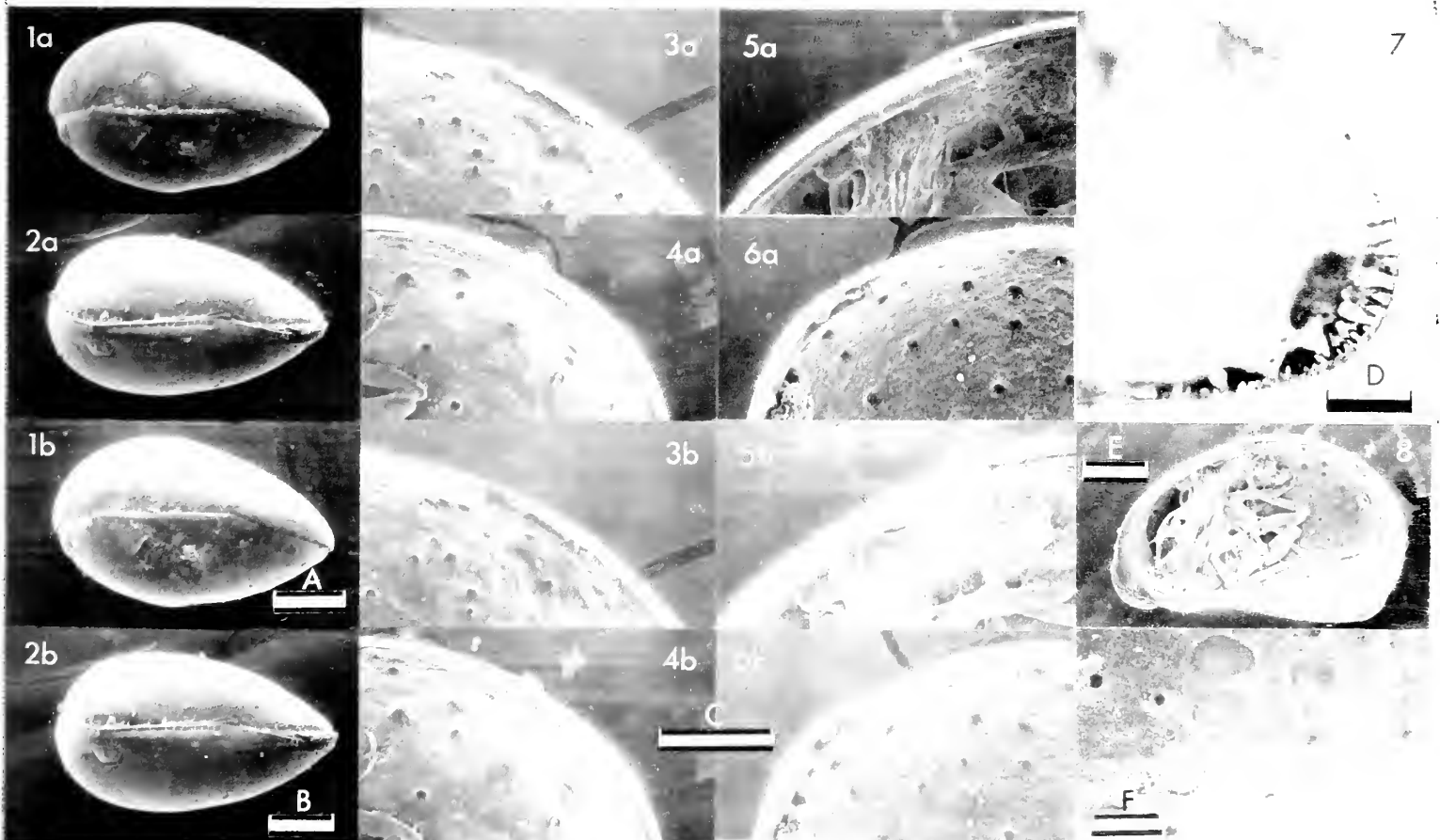
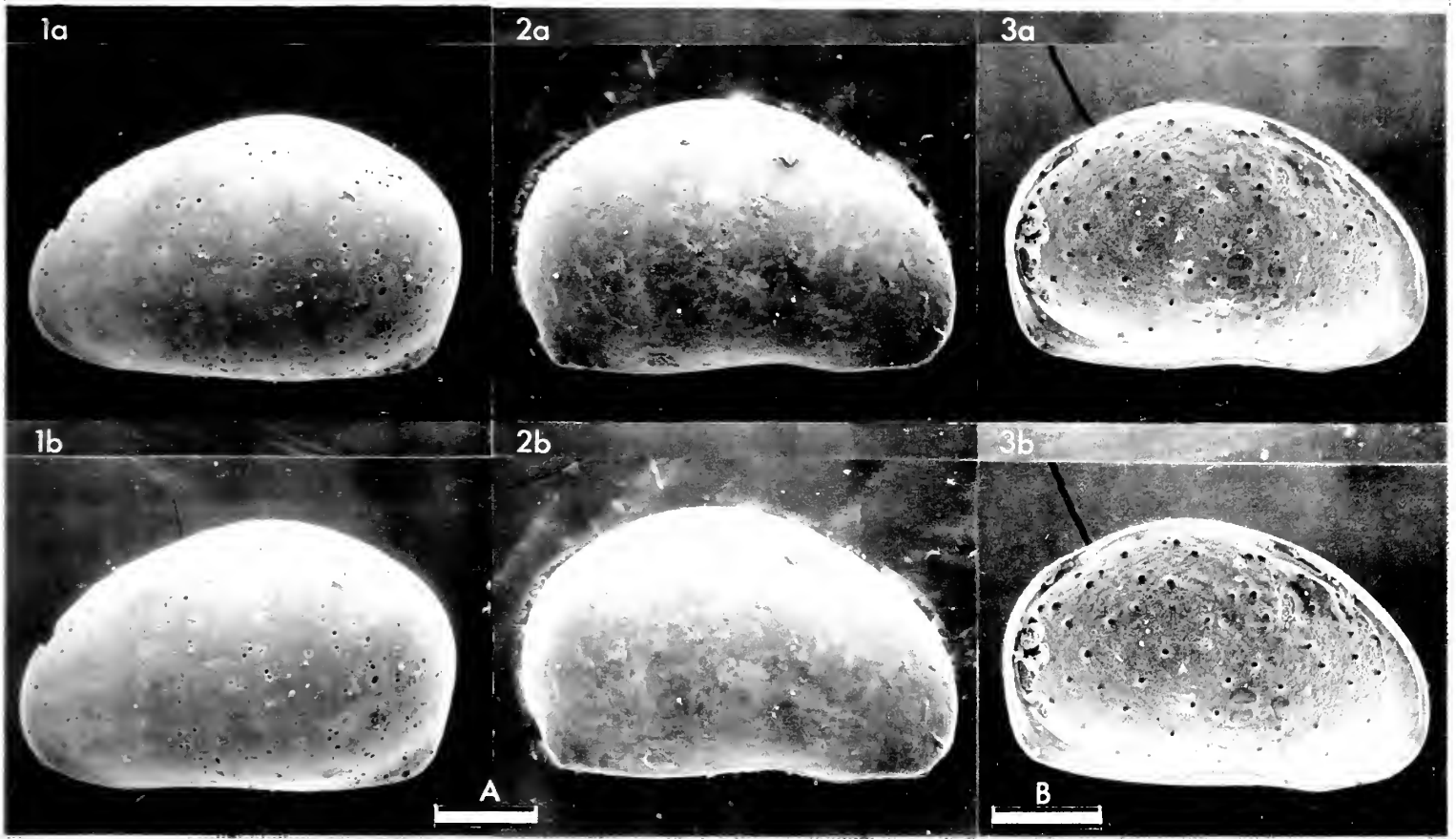
The species is dimorphic, dimorphism being recognised by the more slender outline of the males in dorsal view (♂ paratype 1980.10 measuring length 417 µm; height 255 µm; width 221 µm.) By comparison the ♀ holotype 1980.1 measures: length 417 µm; height 262 µm; width 245 µm. The hinge in *X. postangulata* is paraperatodont, a term introduced by Bate, 1972 (*Spec. pap. Palaeont.*, 10, 45) for certain members of the Cytheruridae; this type of hinge being characterised by having strongly developed dentition at the anterior and posterior ends of a smooth median element (see Pl. 7, 104, figs. 5, 6).

In addition to the small sieve plates present on the lateral and ventral surfaces, a smaller number of simple, rimmed, normal pores are present (not figured here). Apart from the present species only *X. ventribullata* Hartmann, 1962 (*Mitt. Hamburg Zool. Mus. Inst.*, 60, 227) from the Atlantic Coast of Argentina has a comparable posteroventral angular projection of the carapace but this is not so well developed as in *X. postangulata*. There is also a marked difference in the anterior margin of both species, that of *X. ventribullata* being very much broader than in *X. postangulata* (see text-fig. 2), while the anterior marginal canals are totally dissimilar.

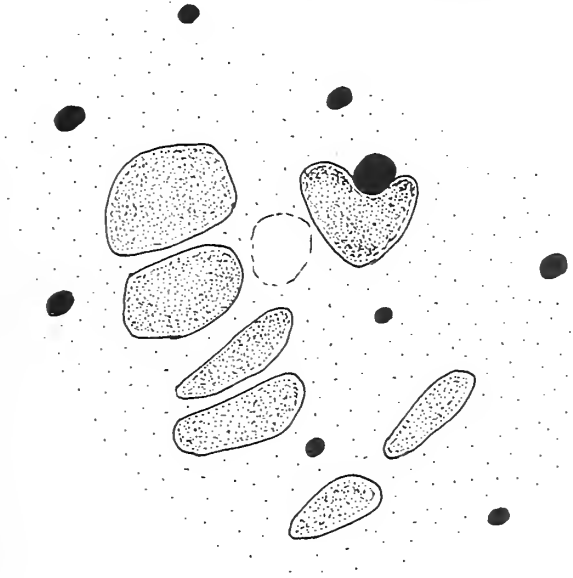
Explanation of Plate 7, 104

Fig. 1, ♀ car., ext. dors. (paratype, 1980.150, 408 µm long); fig. 2, ♀ car., ext. vent. (paratype, 1980.151, 425 µm long); figs. 3, 6, ♀ RV, hinge (paratype, 1980.152); figs. 4, 5, ♀ LV, hinge (paratype, 1980.149); fig. 7, ♀ LV, RPC (paratype, 1980.153); fig. 8, ♀ RV, int. lat. (paratype, 1980.152, 417 µm long); fig. 9, ♀ car. NPC sieve pl. (paratype, 1980.151).

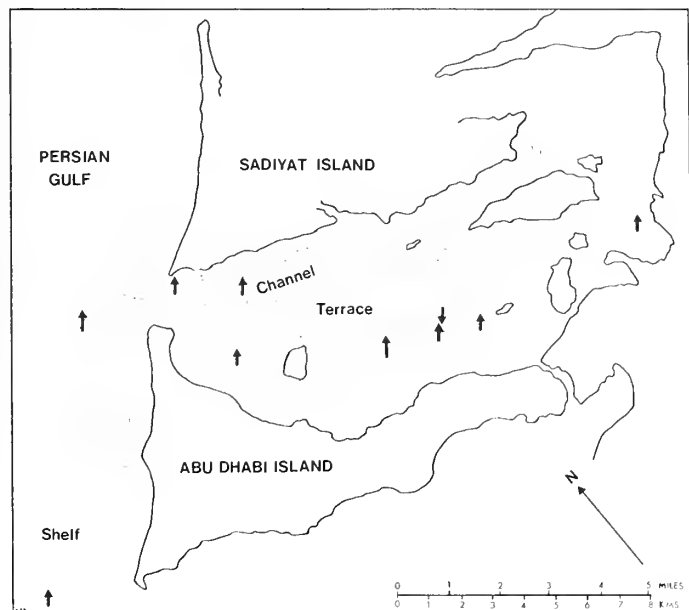
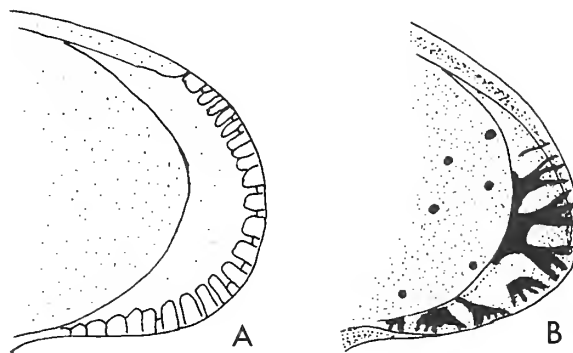
Scale A (100 µm; x 98), fig. 1; scale B (100 µm; x 94), fig. 2; scale C (200 µm; x 321), figs. 3, 4, 5, 6; scale D (200 µm; x 236), fig. 7; scale E (100 µm; x 95), fig. 8; scale F (25 µm; x 1190), fig. 9.



Text-fig. 1. Muscle scars, LV, paratype 1980.149 x 700.



Text-fig. 2. Comparison of LV anterior outlines of:
A - *X. ventribullata* Hartmann 1962.
B - *X. postangulata* sp. nov.



Text-fig. 3. Distribution of *Xestoleberis postangulata* sp. nov. within and outside Abu Dhabi lagoon. Arrows point to location of sample of which only those indicated, out of a total of 83, contained the species.

ON *QUADRALEBERIS EXQUISITA* BATE & SHEPPARD gen. et sp. nov.

by Raymond H. Bate & Lesley M. Sheppard
(British Museum [Natural History], London)

Genus *QUADRALEBERIS* gen. nov.

Type species: *Quadraleberis exquisita* sp. nov.

Gender: Feminine.

Derivation of name: Latin *quadrus*, square – relating to the very square outline of the carapace + *leberis*, used here to relate the genus to the family Trachyleberideidae and not to the Latin word for skin.

Diagnosis: Genus of Trachyleberideidae having quadrate (female) to rectangular (male) outline, dorsal and ventral margins straight and almost parallel. Eye node distinct. External muscle scar node absent. Carapace triangular in dorsal view, widening to posterior. Anterior and posterior margins spinose. Posterior ventrolateral region with short but distinct projection. Hinge holamphidont. V-shaped frontal scar, undivided adductors. Normal pore apertures simple; anterior marginal pore canals long, slender, numerous; duplicature broad, without a vestibule. LV larger than RV.

Explanation of Plate 7, 108

Fig. 1, ♂ LV, ext. lat. (holotype, 1980.155, 950 μm long); fig. 2, ♂ RV, ext. lat. (paratype, 1980.156, 900 μm long); fig. 3, ♀ RV, ext. lat. (paratype, 1980.157, 880 μm long).
Scale A (200 μm ; x 63), fig. 1; scale B (200 μm ; x 67), figs. 2, 3.

Remarks: *Quadraleberis*, although lacking an external muscle scar node typical of the Trachyleberideidae is, nevertheless, considered to belong to this family on all the other characters of the carapace. *Quadracythere* Hornibrook, 1952 has a divided frontal scar as well as a ventrolateral keel and is easily distinguished on this evidence (as also is the subgenus *Hornibrookella* Moos, 1965). Similarly, *Bensoncythere* Hazel, 1967 has a divided frontal scar and thus belongs to the Hemicytheridae. *Robertsonites* Swain, 1963 is a trachyleberid genus having a quadrate outline but that is perhaps the only similarity when compared with *Quadraleberis*. Although there are a number of genera that superficially appear to have features in common with *Quadraleberis* this is not borne out on closer examination. Indeed, it is considered that our new genus most probably represents a new subfamily of the Trachyleberideidae characterised by the absence of an external muscle scar node.

Quadraleberis exquisita sp. nov.

- 1976 *Quadracythere* (*Quadracythere*) sp. A Kwang Ho Paik, *Doctorate Diss. Univ. Kiel*, 85, pl. 6, figs. 101 - 104.
1977 *Quadracythere* (*Quadracythere*) sp. A Kwant Ho Paik, "Meteor" *Forsch-Ergebnisse*, C, 28, pl. 6, figs. 101 - 104.

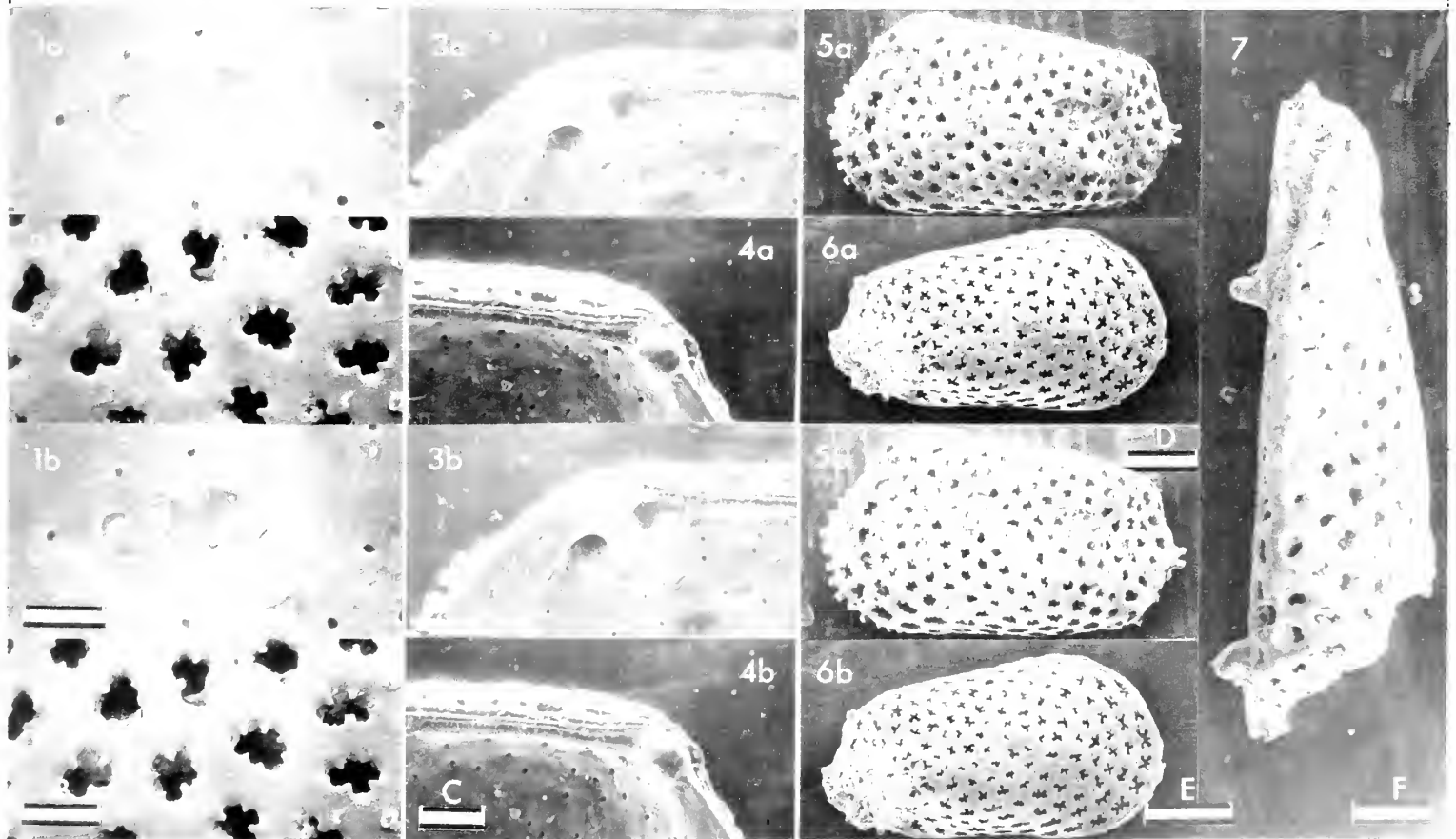
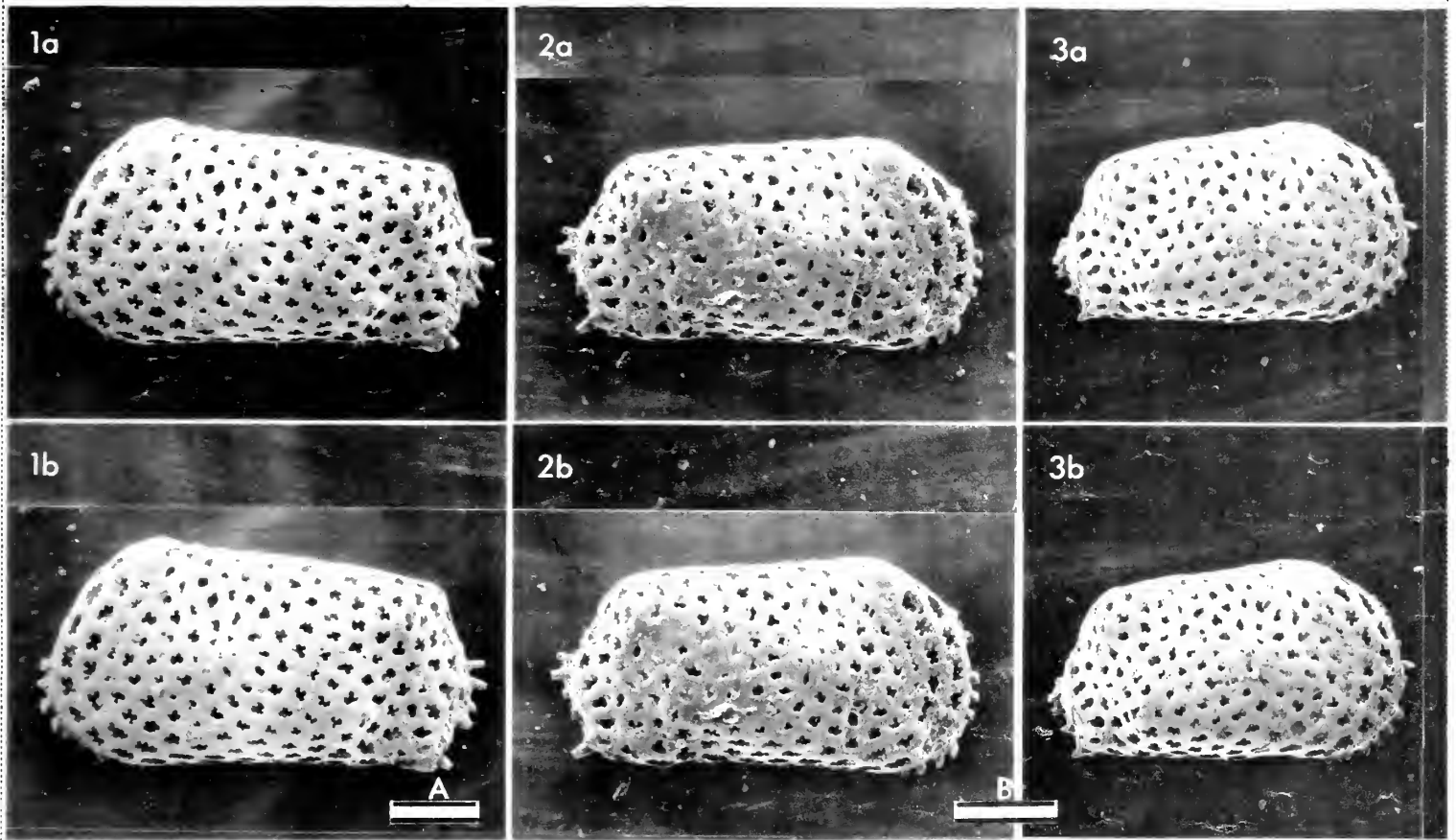
Holotype: Brit. Mus. (Nat. Hist.) no. 1980.155, ♂ LV.
[Paratypes; Brit. Mus. (Nat. Hist.) nos. 1980.156 - 161].

Type locality: Sample G3 station 2, Persian Gulf (see text-fig. 2).

Figured specimens: Brit. Mus. (Nat. Hist.) nos. 1980.155 (holotype, ♂ LV: Pl. 7, 108, fig. 1; Pl. 7, 110, fig. 2), 1980.156 (♂ RV: Pl. 7, 108, fig. 2), 1980.157 (♀ RV: Pl. 7, 110, fig. 7), 1980.158 (♂ RV: Pl. 7, 110, figs. 1, 3, 4), 1980.159 (♀ RV: Pl. 7, 108, fig. 3), 1980.160 (juv. RV: Pl. 7, 110, fig. 6), 1980.161 (♀ RV: Text-fig. 1).

Explanation of Plate 7, 110

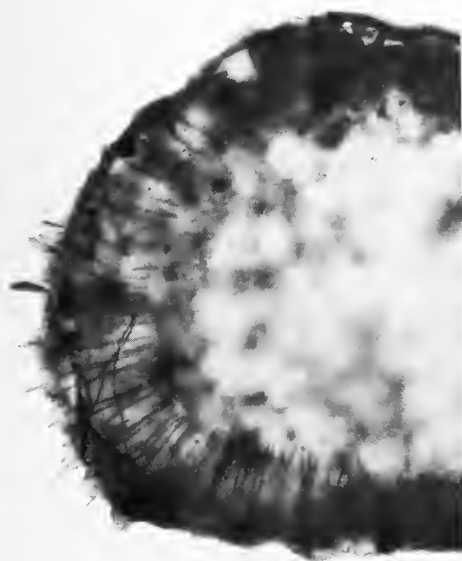
Fig. 1, musc. sc. (paratype, 1980.158); fig. 2, ornament (holotype, 1980.155); figs. 3, 4, ♂ RV, terminal hinge elements (paratype, 1980.158); fig. 5, ♀ LV, ext. lat. (specimen lost); fig. 6, juv. RV, ext. lat. (paratype, 1980.160, 680 μm long); fig. 7, ♀ RV, dors. (paratype, 1980.157, 825 μm long).
Scale A (20 μm ; x 550), fig. 1; scale B (50 μm ; x 211), fig. 2; scale C (100 μm ; x 51), figs. 3, 4; scale D (200 μm ; x 51), fig. 5; scale E (200 μm ; x 66), fig. 6; scale F (100 μm ; x 109), fig. 7.



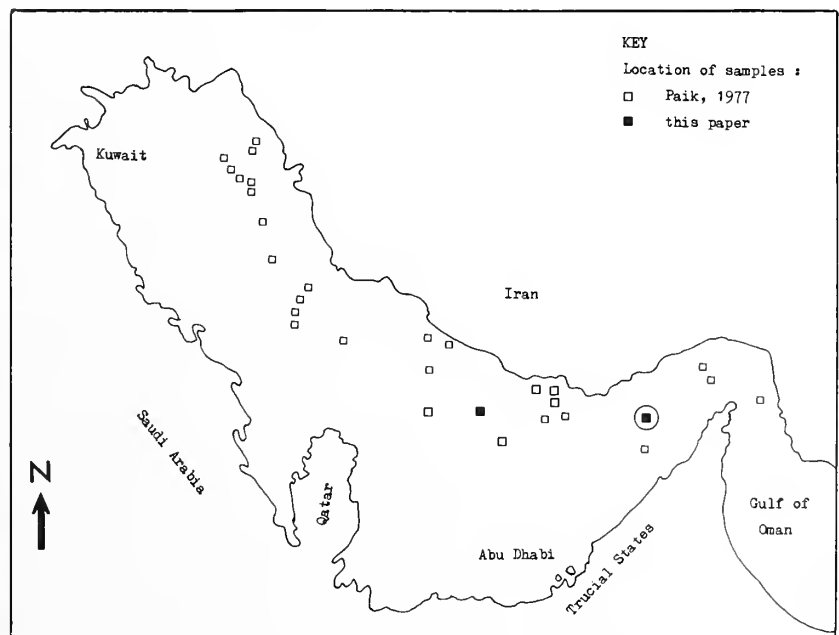
Diagnosis: *Quadraleberis* with a striking trefoil ornamentation arranged anteriorly in rows paralleling anterior margin, elsewhere more irregular with some tendency towards being concentrically aligned. Intensity of ornamentation greater in juvenile instars. Hinge holamphidont with dentate/loculate median element. Up to 46 long, slender, anterior marginal canals.

Remarks: *Quadraleberis exquisita* sp. nov. has the same trefoil ornamentation as described for *Anebocythereis amoena* Bate, 1972 (*Spec. pap. Paleont.*, 10, 53, pl. 14, figs. 1, 2) but differs generically on carapace outline. Indeed the very angular outline of this species clearly sets it apart from all other members of the Trachyleberideidae. The muscle scars (Pl. 7, 110, fig. 1) are typical of this family though the absence of a muscle scar pit (and external node) are in contrast with members of the Trachyleberideinae. This species has been described by Paik 1976 from the deeper waters of the Persian Gulf with sizes ranging between 0.80 - 0.82mm for the female and 0.86 - 0.90mm for the male. The length of our specimens is slightly larger than this with, at the same time, a slightly increased number of anterior marginal canals (up to 46 instead of 39 - 42). There is no doubt, however, that our species is the same as that described by Paik.

Distribution: Recorded here from stations G6 st6 (lat. 26° 35' N, long. 53° 24' E) and G3 st2 (lat. 26° 10' N, long. 55° 20' E) in the deeper waters of the Persian Gulf from material collected by Dr Graham Evans, Imperial College, London in 1962. Paik's material, collected during the "Meteor"-Expedition in 1965, also comes from the deeper water of the Gulf, as well as from the Gulf of Oman, from depths ranging from 63 to 196 metres and from a calc. marl substrate. Shallow water faunas described by Jain, 1978 (*Bull. Ind. Geol. Assoc.*, 11) from the West Coast of India do not contain this species even though many other species are common to the two regions. Water depth is thus an important factor in the distribution of *Q. exquisita*.



Text-fig. 1, anterior marginal pore canals, ♀ RV. 1980.161 x 148.



Text-fig. 2, distribution of *Quadraleberis exquisita* gen. et sp. nov. in the deeper water regions of the Persian Gulf. Type locality, sample G3 st. 2, ringed.

ON *MICROPNEUMATOCY THERE TUMIDA* STEPHENS & WARE sp. nov.

by Jill Stephens and Martin Ware

(*Soekor, Johannesburg; University College of Wales, Aberystwyth*)

Micropneumatocythere tumida sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) OS 11739, ♀ LV.
[Paratypes: Brit. Mus. (Nat. Hist.) nos. OS 11740 - 11746].

Type locality: Kirtlington Mammal Bed (see E. F. Freeman, *Palaeontology*, 22 (1), 135 - 166, 1979), Forest Marble, Upper Bathonian, Old Cement Works quarry, Kirtlington, Oxfordshire. Nat. Grid Ref.: SP 494199.

Derivation of name: Latin *tumidus*, swollen: refers to ventrolateral tumidity.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. OS 11739 (holotype, ♀ LV: Pl. 7, 114, fig. 1; Pl. 7, 116, fig. 4), OS 11740 (♀ RV: Pl. 7, 114, fig. 2), OS 11741 (♂ LV: Pl. 7, 114, fig. 3), OS 11742 (♂ RV: Pl. 7, 114, fig. 4; Pl. 7, 116, fig. 5), OS 11743 (♂ car.: Pl. 7, 116, fig. 1), OS 11744 (♀ LV: Pl. 7, 116, fig. 2), OS 11745 (♂ RV: Pl. 7, 116, fig. 3), OS 11746 (♂ RV: Pl. 7, 116, fig. 6). All from the type locality and horizon.

Diagnosis: An inflated, dimorphic species of *Micropneumatocythere*, suboval in lateral outline, with maximum tumidity at midlength ventrolaterally and strong ventral overlap. Cardinal angles indistinct. Surface ornamented with faint open reticulation and fine punctae. Normal pore canals contain sieve-plates. Other features as for genus.

Explanation of Plate 7, 114

Fig. 1, ♀ LV, ext. lat. (holotype, OS 11739, 530 µm long); fig. 2, ♀ RV, ext. lat. (paratype, OS 11740, 470 µm long); fig. 3, ♂ LV, ext. lat. (paratype, OS 11741, 580 µm long); fig. 4, ♂ RV, ext. lat. (paratype, OS 11742, 570 µm long).
Scale A (200 µm; x 82), fig. 1; scale B (200 µm; x 86), fig. 2; scale C (200 µm; x 81), fig. 3; scale D (200 µm; x 88), fig. 4.

Size:	Range (Mean):	♀♀ LV	♀♀ RV	♂♂ LV	♂♂ RV
Length µm (10 valves)		470 - 550 (501)	460 - 510 (479)	560 - 580 (575)	550 - 600 (567)
Height µm (10 valves)		340 - 390 (359)	300 - 330 (313)	340 - 370 (356)	300 - 350 (323)

Remarks: At the type horizon *Micropneumatocythere tumida* was associated with *M. brendae* Sheppard, *M. postrotunda* Bate, *M. subconcentrica* (Jones), and *M. cracens* Bate & Sheppard. As with *M. cracens*, males of *M. tumida* are the more distinctive, readily distinguished from all known members of the genus by their midlength tumidity. Females are very similar to those of *M. brendae* and *M. falcata* Sheppard. They are distinguished from smooth forms of *M. brendae* by their characteristic tumidity, a less strongly arched LV dorsal outline, and absence of vertical ridges in the accommodation groove. They have a shorter caudal process than *M. falcata*, the LV posterodorsal slope is convex rather than slightly concave, and maximum tumidity is more ventral.

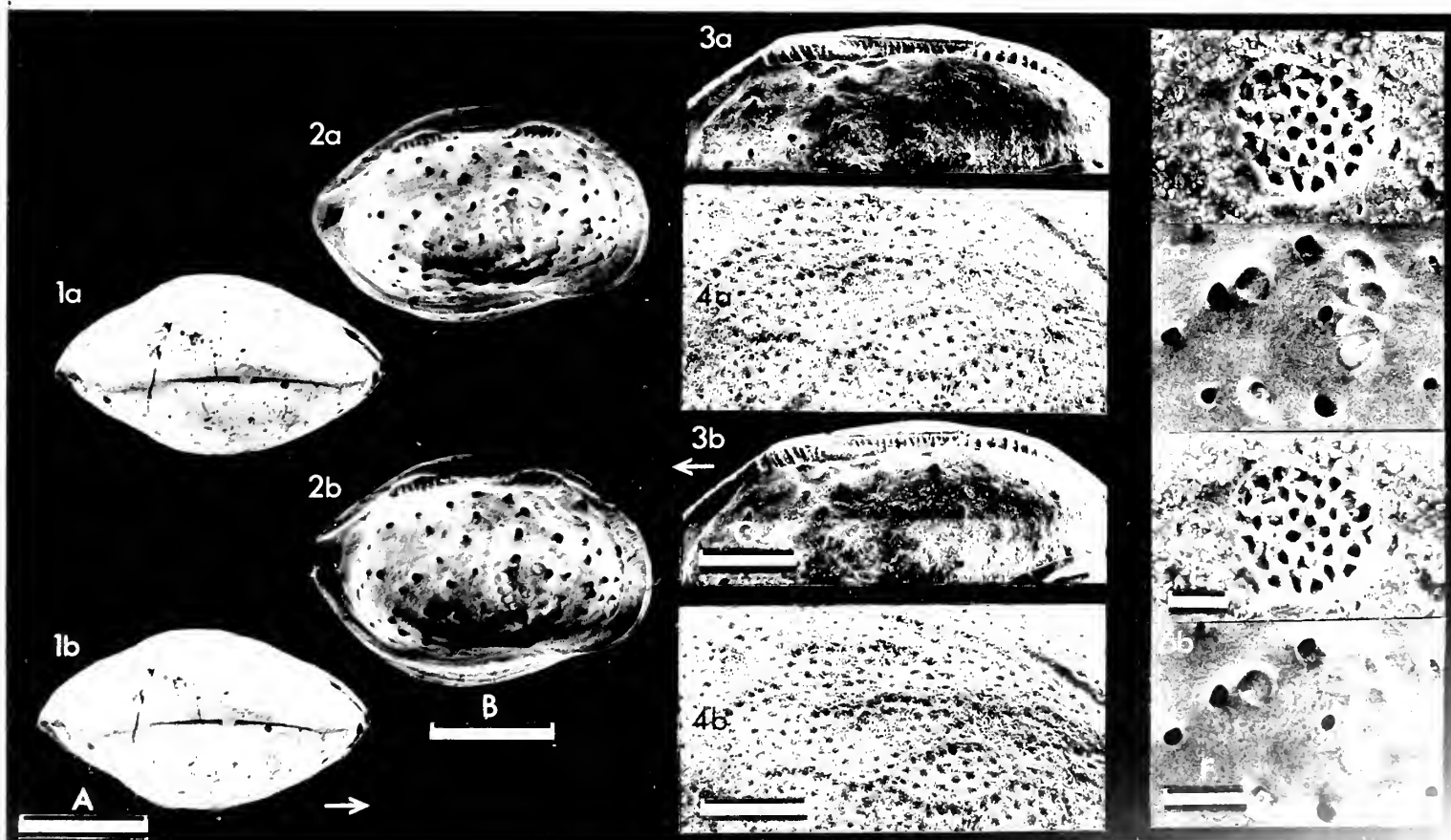
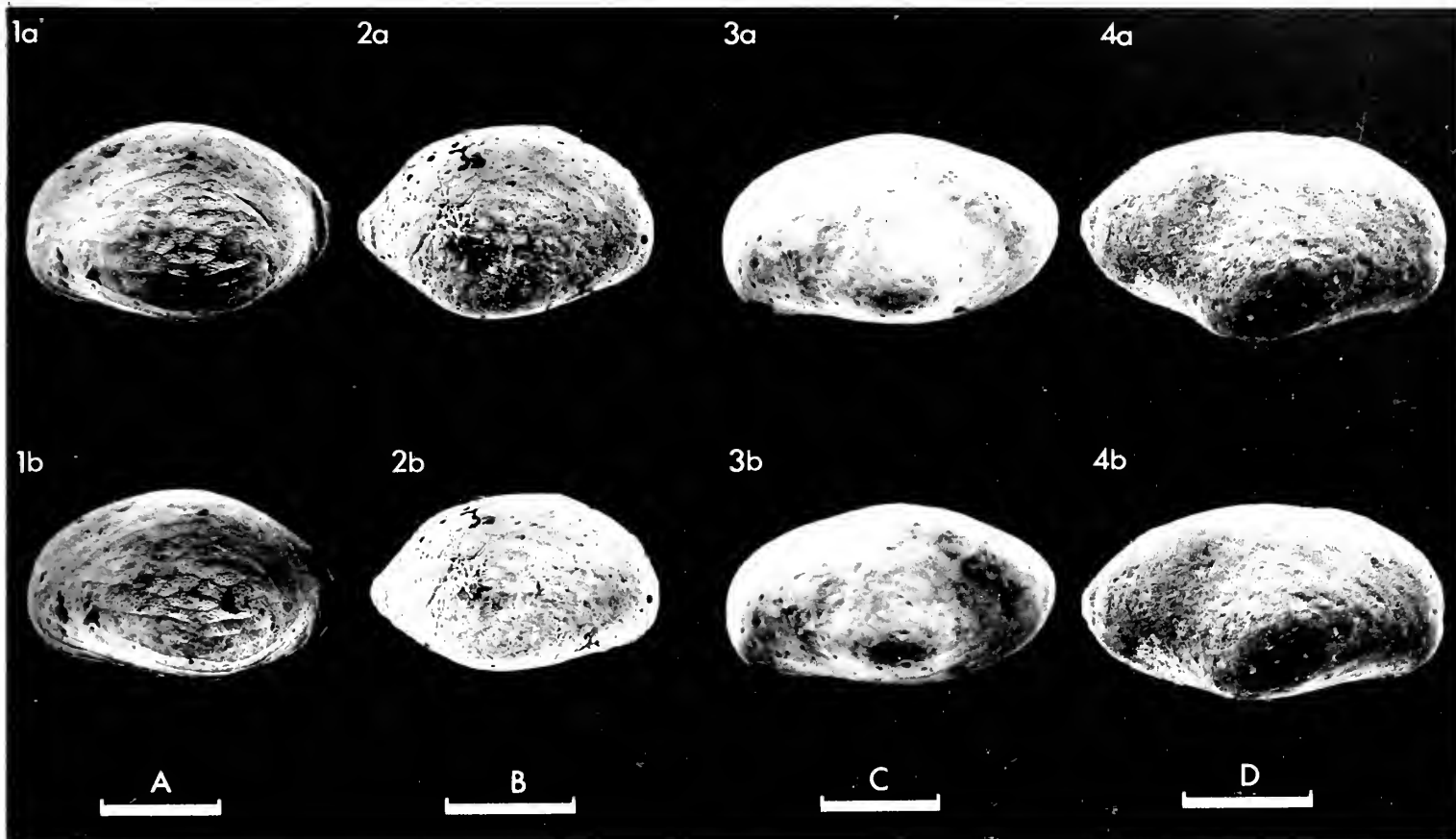
Sieve-plates have not previously been recorded in this genus. *M. tumida* also exhibits precocious sexual dimorphism.

Because of the mixed assemblages from which *M. tumida* has been recovered, its salinity tolerance is uncertain: it was probably a shallow-marine species with only limited tolerance of brackish conditions.

Distribution: *M. tumida* is known only from the type locality and the White Limestone and Forest Marble of the neighbouring Portland Cement Manufacturers' quarry at Shipton-on-Cherwell (Nat. Grid Ref.: SP 477175).

Explanation of Plate 7, 116

Fig. 1, ♂ car., ext. dors. (paratype, OS 11743, 560 µm long); fig. 2, ♀ LV, int. lat. (paratype, OS 11744, 550 µm long); fig. 3, ♂ RV, hinge (paratype, OS 11745, 570 µm long); fig. 4, ♀ LV, ornament and sieve-pores (holotype, OS 11739, 530 µm long); fig. 5, ♂ RV, sieve-plate (paratype, OS 11742, 570 µm long); fig. 6, ♂ RV, adductor scars (paratype, OS 11746, 570 µm long).
Scale A (200 µm; x 83), fig. 1; scale B (200 µm; x 83), fig. 2; scale C (100 µm; x 134), fig. 3; scale D (40 µm; x 360), fig. 4; scale E (4 µm; x 1,813), fig. 5; scale F (40 µm; x 285), fig. 6.



ON *PROCYTHEROPTERON PROLONGATUM* (SHARAPOVA)

by Nicholas Fuller
(University College, London)

Procytheropteron prolongatum (Sharapova, 1939)

- 1939 *Cytheropteron prolongatum* sp. nov. E. G. Sharapova, *Trudy NGRI*, A126, 23, pl. 2, fig. 23.
1955 *Protocythere prolongata* (Sharapova, 1939); P. S. Lyubimova, *Trudy VNIGRI*, new series, 84, 112, pl. 8, figs. 2a - c.
non v.1955 *Cytheropteron* cf. *prolongatum* (Sharapova, 1939); G. Schmidt, *Abh. senckenb. naturf. Ges.*, 491, 60, pl. 2, fig. 34.
1978 *Procytheridea prolongata* (Sharapova, 1939); D. M. Pyatkova & M. N. Permyakova, *Jurassic Foraminifera and Ostracoda of the Ukraine*, 154, pl. 69, figs. 5a - d.

Holotype: Collection of the Petroleum Geological Prospecting Institute (NGRI) Leningrad, no. 51 - 20.

Type locality: Depth 267 - 273m in Well no. 1, 1km E of the Lenin Farm, left bank of Chalykla River, along flank of the Ozinki Dome, in Western Obshchiy Syrt, Soviet Russia. Lower Volga stage, *T. Perisphinctes panderi* zone.

Explanation of Plate 7, 118

Fig. 1, ♀ LV, ext. lat. (OS 11767, 520 μ m long); fig. 2, ♀ LV, int. lat. (OS 11768, 520 μ m long); fig. 3, ♀ RV, ext. lat. (OS 11769, 510 μ m long).

Scale A (100 μ m; x 90), fig. 1; scale B (100 μ m; x 100), fig. 2; scale C (100 μ m; x 105), fig. 3.

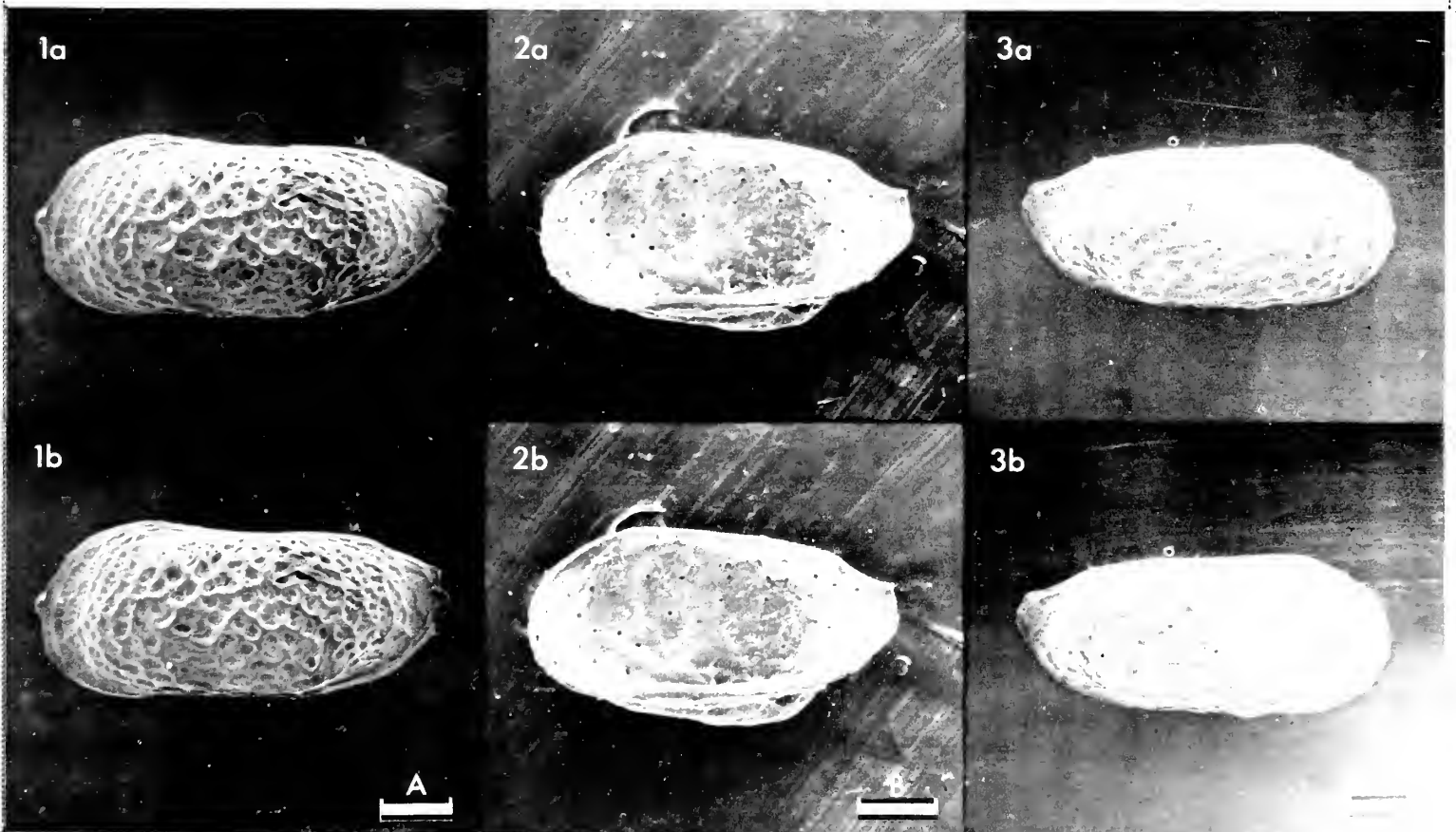
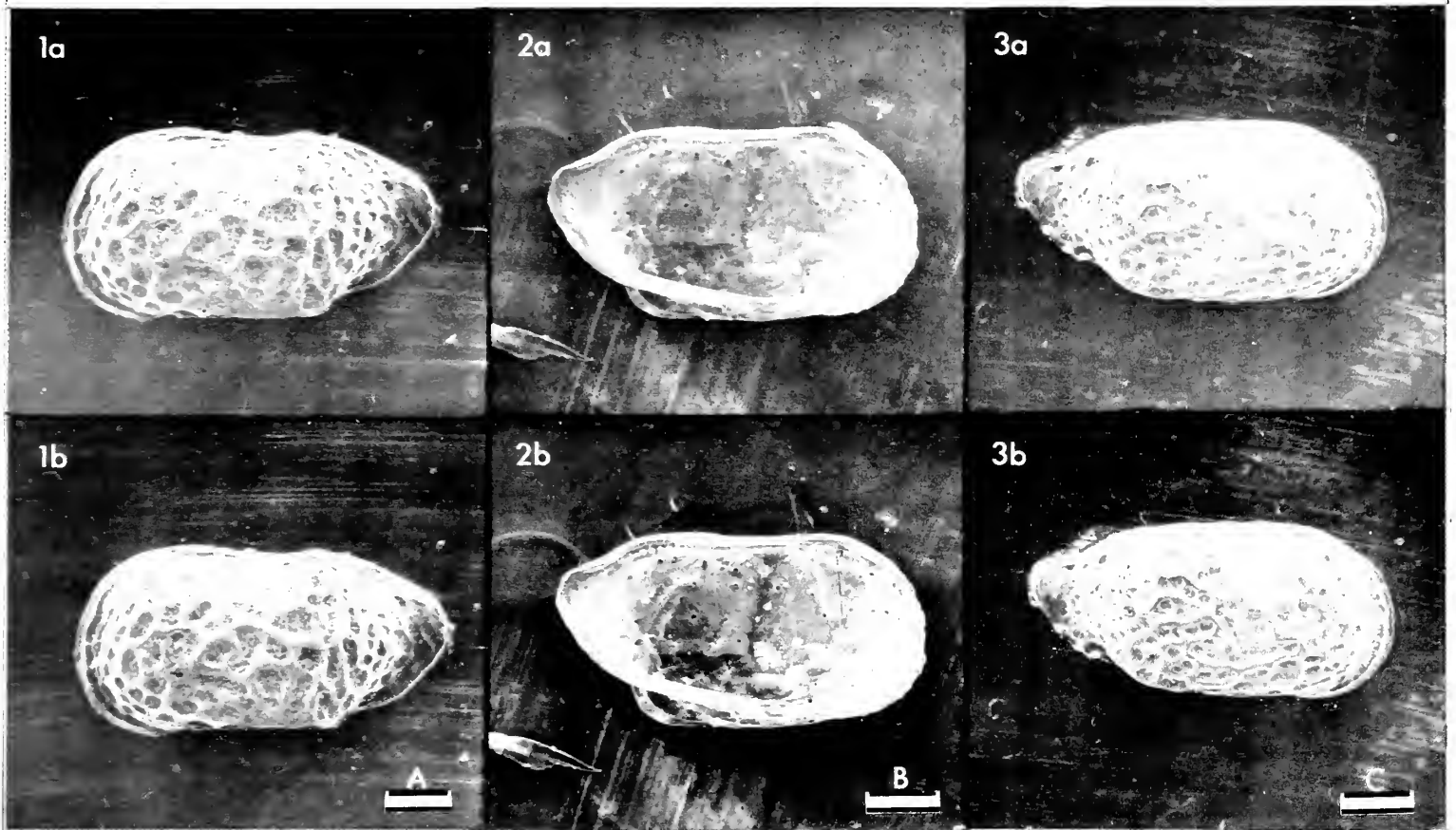
Figured specimens: Brit. Mus. (Nat. Hist.) nos. OS 11767 (♀ LV: Pl. 7, 118, fig. 1), OS 11768 (♀ LV: Pl. 7, 118, fig. 2; Pl. 7, 124, fig. 1), OS 11769 (♀ RV: Pl. 7, 118, fig. 3), OS 11770 (♂ LV: Pl. 7, 120, fig. 1), OS 11771 (♀ RV: Pl. 7, 120, fig. 2; Pl. 7, 124, fig. 3), OS 11772 (♂ RV: Pl. 7, 120, fig. 3), OS 11773 (juv. A - 1 LV: Pl. 7, 122, fig. 1; Pl. 7, 124, fig. 5), OS 11774 (juv. A - 2 LV: Pl. 7, 122, fig. 2), OS 11775 (juv. A - 3 LV: Pl. 7, 122, fig. 3), OS 11776 (♀ LV: Pl. 7, 124, fig. 2), OS 11777 (♀ RV: Pl. 7, 124, fig. 4).

Specimens OS 11773, OS 11776 from Bed 8 (*Subplanites pseudoscythicus* Zone, Lower Volgian), others from Beds 3 and 4 (*Aulacostephanus autissiodorensis* Zone, Upper Kimmeridgian) at Gorodische, 25km north of Ul'yanovsk, River Volga, U.S.S.R.. Bed numbers of Mesezhnikov, M. S., Dain, L. G., Kuznetsova, K. I. and Yakovleva, S. P., *International Colloquium on Upper Jurassic stratigraphy and the Jurassic/Cretaceous boundary in the Boreal Realm - Jurassic/Cretaceous boundary beds in the Middle Volga area (A prospectus to Geological Excursions)*, All-Union Petroleum Research Geological Prospecting Institute, (VNIGRI), Leningrad, fig. 1, 1977.

Explanation of Plate 7, 120

Fig. 1, ♂ LV, ext. lat. (OS 11770, 545 μ m long); fig. 2, ♀ RV, int. lat. (OS 11771, 490 μ m long); fig. 3, ♂ RV, ext. lat. (OS 11772, 565 μ m long).

Scale A (100 μ m; x 100), fig. 1; scale B (100 μ m; x 110), fig. 2; scale C (100 μ m; x 95), fig. 3.



Diagnosis: Rectangular, inflated, tapering to prominent caudal process. Coarsely reticulate surface ornament. Narrow anterior marginal rim. Some sieve type normal pores, particularly in posterodorsal portion of valves. Anterior pore canals vary in number between 7 and 9, simple and relatively straight, widely spaced, not all reach margin. No pore canals observed in posterior region. Pronounced sexual dimorphism. Hinge hemimerodont, in the LV terminal crenulate sockets are separated by a smooth median bar. Adults and three juvenile stages recognised.

Remarks: First assigned to the genus *Cytheropteron* Sars 1866 in 1939 by E. G. Sharapova, this ostracod lacks true *Cytheropteron* characters in having a smooth median hinge bar and no prominent posteroventral alar processes. Subsequently assigned to the genus *Protocythere* Triebel 1938 by P. S. Lyubimova (1955), this species is not considered to belong to the genus through lack of an antimerodont hinge and 3 characteristic longitudinal ridges of *Protocythere*. More recently D. M. Pyatkova and M. N. Permyakova (1978) attributed *P. prolongatum* to *Procytheridea* Peterson 1954, however this genus is also characterised by an antimerodont hinge, possesses wide marginal areas and has a different central muscle scar pattern. Some confusion also arises in assigning this species to the genus *Procytheropteron* as this genus has been described twice, first by P. S. Lyubimova (1955), whose description complies with *P. prolongatum* in all respects saving that she describes the radial pore canals as "frequent and present in great numbers at the anterior end". In 1956 M. I. Mandelstam also described a genus *Procytheropteron* and *P. prolongatum* agrees more closely with his description, differing in one small detail, namely that Mandelstam's genus has a gently convex LV dorsal margin. This difference is not considered significant here at a generic level.

Explanation of Plate 7, 122

Fig. 1, juv. A - 1, LV, ext. lat. (OS 11773, 430 μm long); fig. 2, juv. A - 2, LV, ext. lat. (OS 11774, 415 μm long); fig. 3, juv. A - 3, LV, ext. lat. (OS 11775, 340 μm long).
Scale A (100 μm ; x 116), fig. 1; scale B (100 μm ; x 120), fig. 2; scale C (100 μm ; x 147), fig. 3.

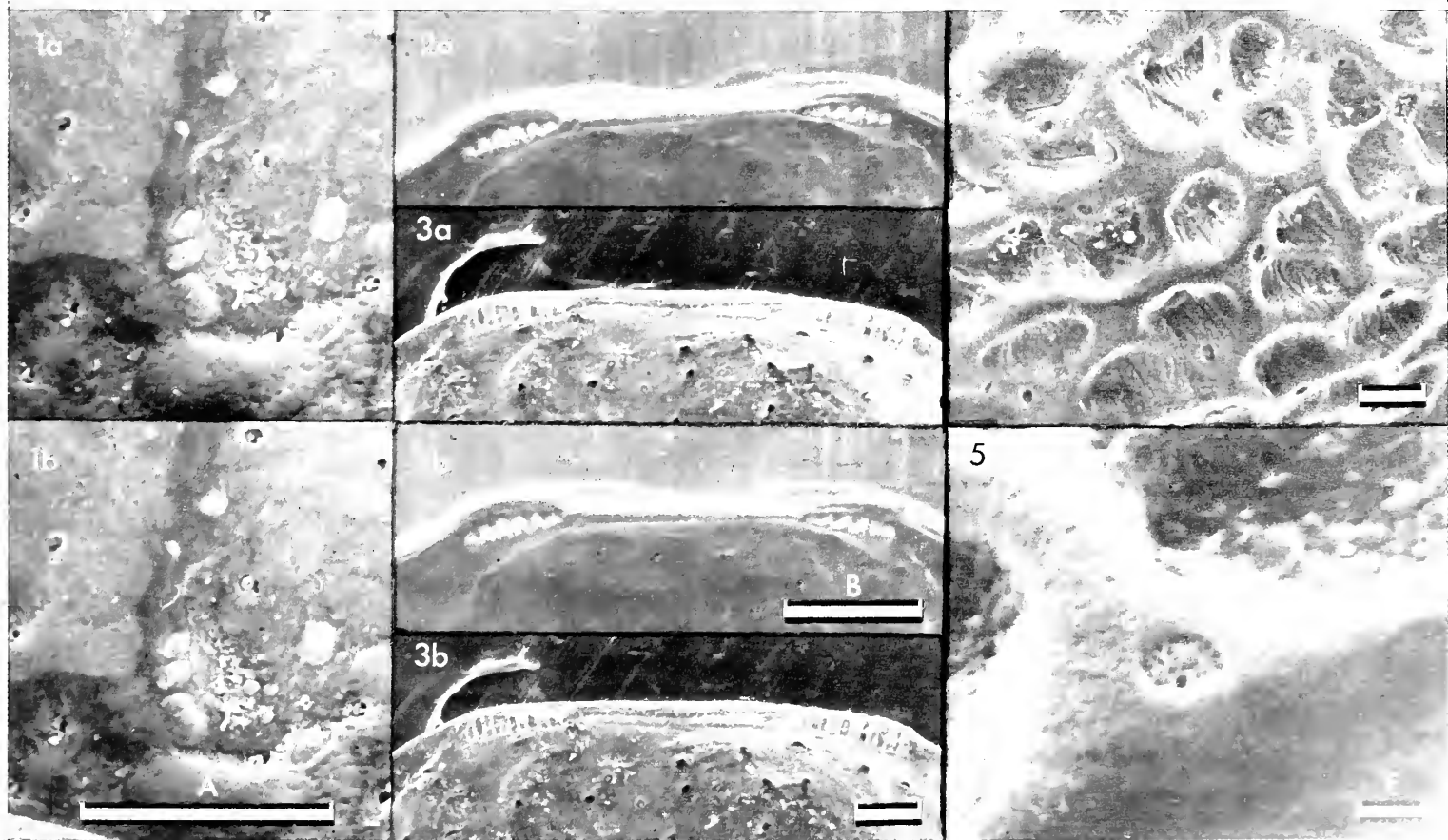
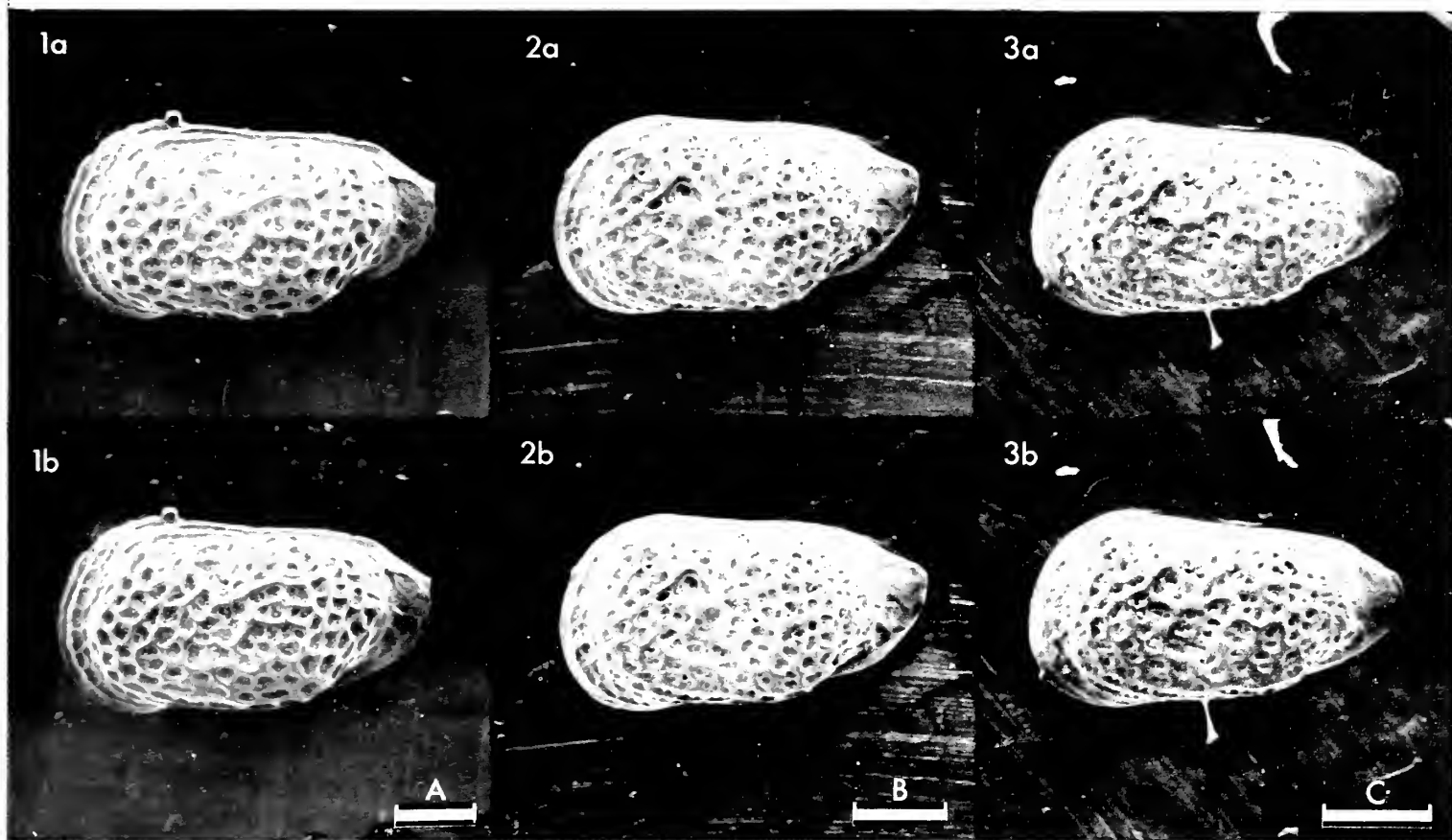
Remarks: Van Morkhoven (*Post-Palaeozoic Ostracoda*, 2, 258 and 385, Elsevier, 1963) considers *Procytheropteron* (*cont'd.*) Lyubimova a synonym of *Neocythere* Mertens 1956. *Neocythere* s.s., however, possesses an amphidont hinge. The subgenus *N. (Physocythere)* Kaye 1963 has a merodont hinge, but lacks other features of *Procytheropteron*, notably the well developed caudal process. A caudal process is not specified in either diagnosis but is a feature of *P. obesum* Lyubimova 1955, the type-species of *Procytheropteron*. One feature of *P. prolongatum* not hitherto mentioned in any descriptions of this species is the presence of several well developed, though small "sieve-type" normal pores in the posterodorsal region (see Pl. 7, 124, fig. 5).

P. prolongatum is found in association with *Galliaecytheridea miranda* (Lyubimova), *G. volgaensis* (Mandelstam), *G. mandelstami* (Lyubimova), *G. gorodischensis* (Fuller and Lord), *G. ramosa* (Lyubimova), *Protocythere bisulcata* (Sharapova), *Mandelstamia ventrocornuta* (Sharapova), *Oligocythereis kostytschevkaensis* (Lyubimova) and *Cytherella* spp.

Distribution: Upper Kimmeridgian, Lower and Middle Volgian of Gorodische in the Volga region; known also from the Ukraine. A similar form is recorded by G. Schmidt (1955, *op. cit.*) from 30km S of Hannover.

Explanation of Plate 7, 124

Fig. 1, ♀ LV, int. lat. musc. sc. (OS 11768); fig. 2, ♀ LV, int. lat. hinge (OS 11776); fig. 3, ♀ RV, int. lat. hinge (OS 11771); fig. 4, ♀ LV, ext. lat. detail of ornament (OS 11777); fig. 5, juv. A - 1, ext. lat. sieve pore (OS 11773).
Scale A (100 μm ; x 345), fig. 1; scale B (100 μm ; x 195), fig. 2; scale C (40 μm ; x 190), fig. 3; scale D (20 μm ; x 370), fig. 4; scale E (4 μm ; x 3700), fig. 5.



ON SEMICYTHERURA TELA HORNE & WHITTAKER sp. nov.

by David J. Horne and John E. Whittaker

(Geology Department, Bristol University, and British Museum [Natural History], London)

Semicytherura tela sp. nov.

1969 *Semicytherura nigrescens* (Baird) pars; I. Yassini, *Bull. Inst. Geol. Bassin Aquitaine*, 7, 88, pl. 17.

Holotype: Brit. Mus. (Nat. Hist.) 1980.134, ♀ LV.

[Paratypes: Brit. Mus. (Nat. Hist.) nos. 1980.135 - 139].

Type locality: Blue Anchor, Somerset, W England (S shore of Severn Estuary); approx. lat. 51° 12' N, long. 3° 24' W. Recent, littoral.

Derivation of name: Latin, *tela, ae* – woven stuff or web. The fine ornamentation gives the carapace the appearance of being draped with cobwebs or fine netting.

Explanation of Plate 7, 126

Fig. 1, ♀ LV, ext. lat. (holotype, 1980.134, 360 μm long); fig. 2, ♂ LV, ext. lat. (paratype, 1980.135, 380 μm long); fig. 3, juv. -1 LV, ext. lat. (paratype, 1980.136, 330 μm long).

Scale A (100 μm; x 170), figs. 1 - 3.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. 1980.134 (holotype, ♀ LV: Pl. 7, 126, fig. 1), 1980.135 (♂ LV: Pl. 7, 126, fig. 2; Pl. 7, 128, fig. 3), 1980.136 (juv. -1 LV: Pl. 7, 126, fig. 3), 1980.137 (♀ LV: Pl. 7, 128, fig. 1), 1980.138 (♂ car.: Pl. 7, 128, fig. 2), 1980.139 (♂ copulatory appendage: Text-fig. 1).

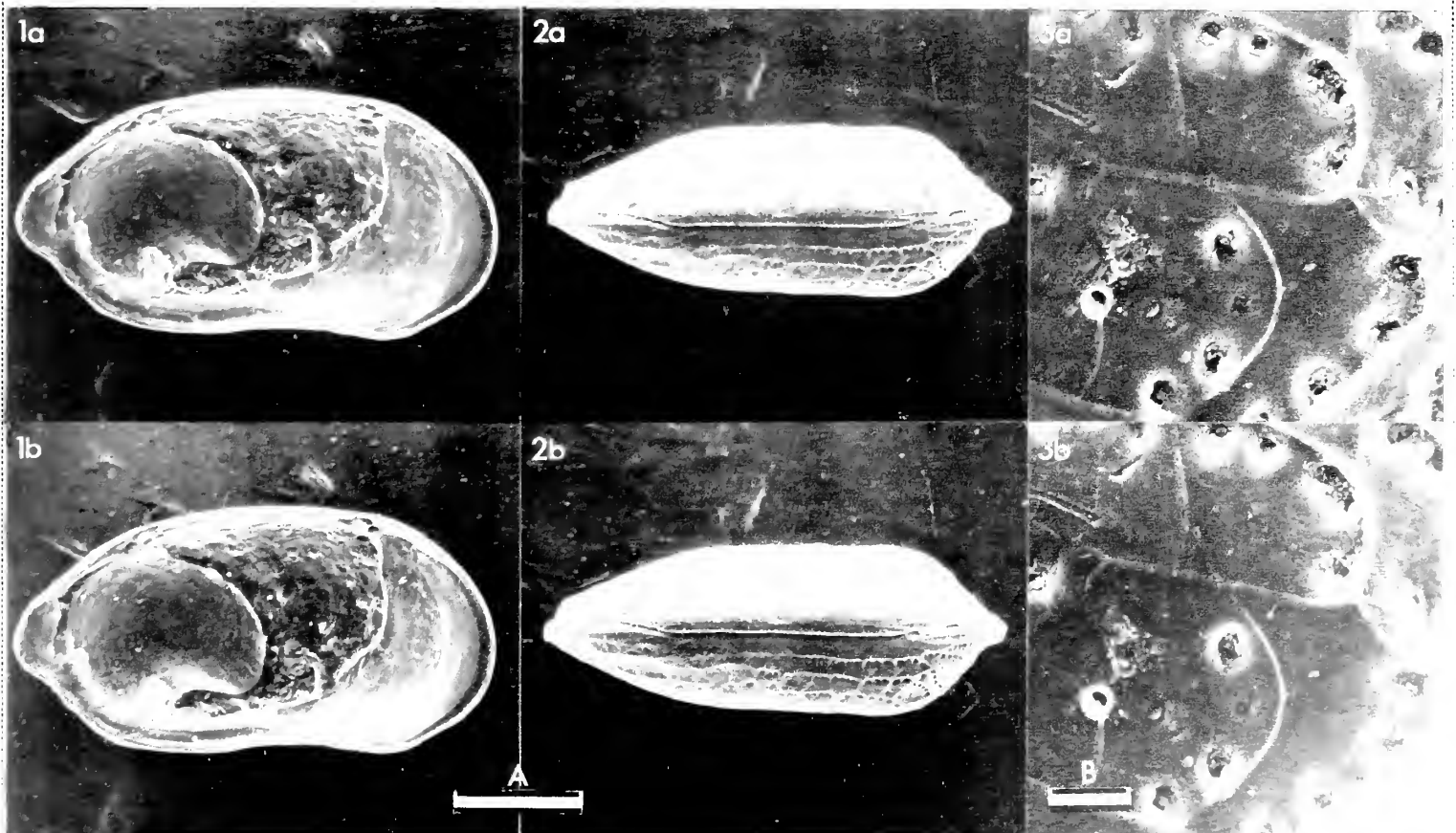
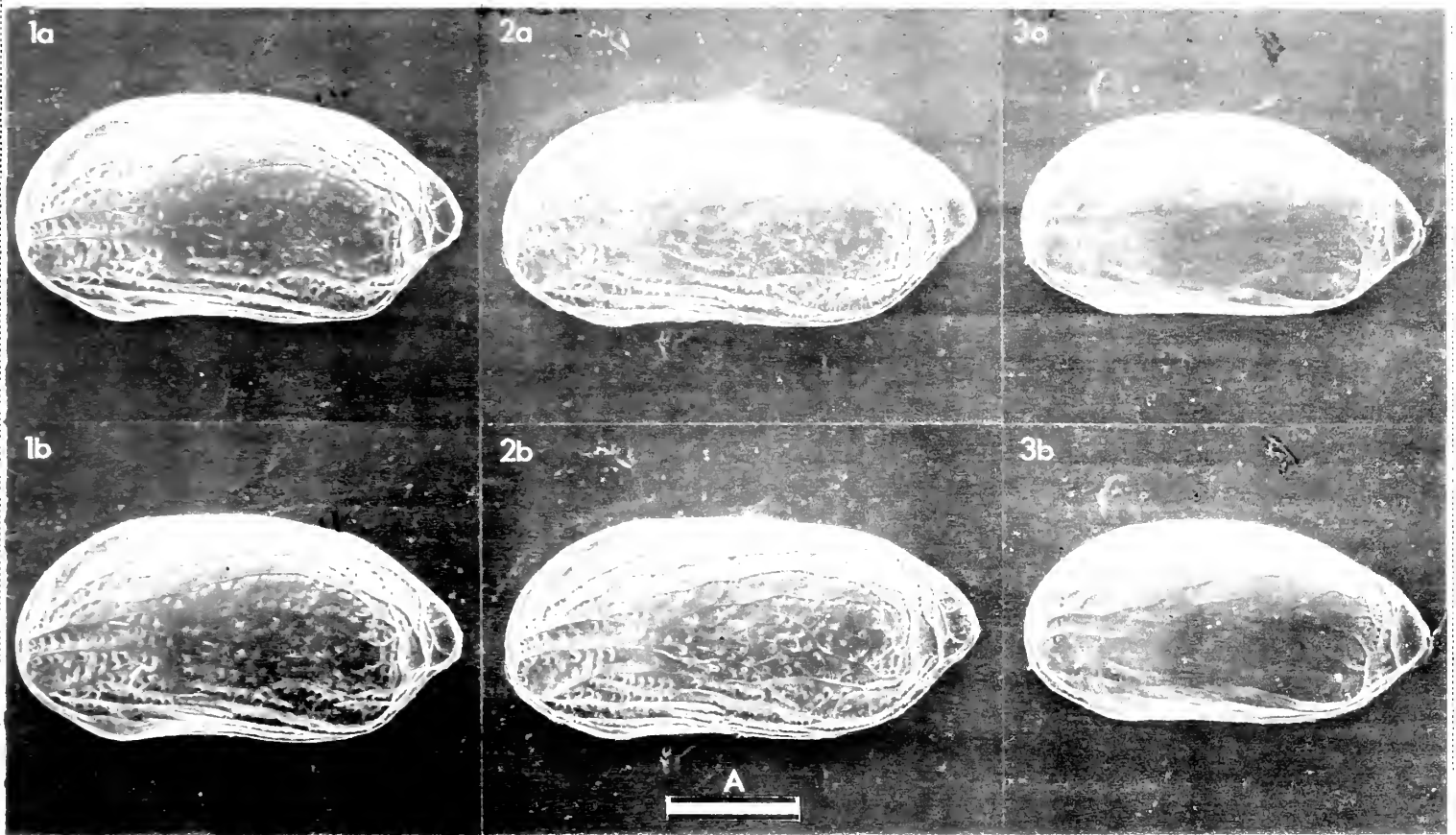
1980.134 - 137, 139, collected alive from *Corallina officinalis* in rocks-pools at the type locality by D. J. Horne, 22nd July 1978; salinity and water temperature ranged between 28.5 and 29.2‰, and 10 to 19°C, respectively, measured over a spring tide. 1980.138 was collected alive from *Cladophora* by J. E. Whittaker, at Osmington Mills, Weymouth Bay, S England (approx. lat. 50° 38' N, long 2° 23' W), 3rd August 1968; salinity 33.9‰, water temperature 19°C.

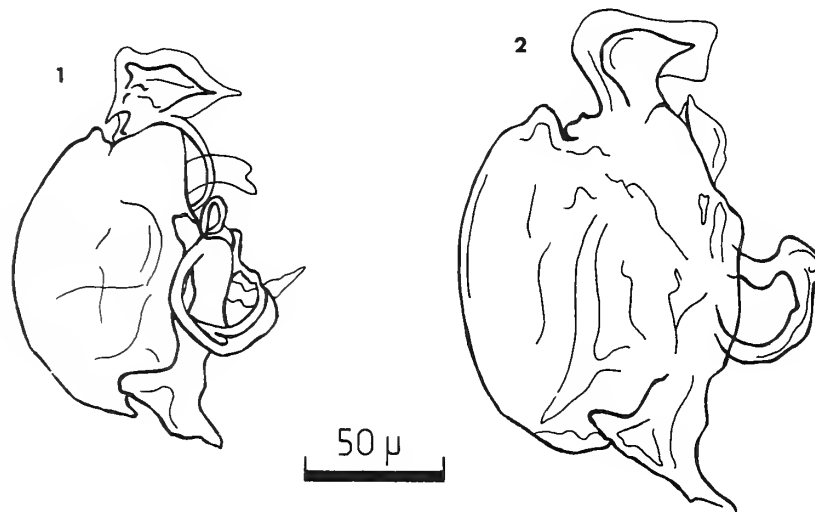
Diagnosis: Very small *Semicytherura* (<0.40mm long) with ornamentation of fine lateral ridges and associated rows of shallow pits, developing into reticulation in the posterior half. Males smaller, more elongate and inflated posteriorly. Copulatory organ characteristic, with a triangular lappet and a finger-like projection on the ventral margin.

Explanation of Plate 7, 128

Fig. 1, ♀ LV, int. lat. (paratype, 1980.137, 380 μm long); fig. 2, ♂ car., ext. dors. (paratype, 1980.138, 370 μm long); fig. 3, ♂ LV, detail of mid-posterior region (paratype, 1980.135).

Scale A (100 μm; x 170), figs. 1, 2; scale B (10 μm; x 1,100). fig. 3.





Text-fig. 1, ♂ rt. copulatory appendages (1980.139); text-fig. 2, ♂ rt. copulatory appendage (1980.140) of *Semicytherura nigrescens* (Baird), shown for comparative purposes. Both come from specimens collected at Blue Anchor, Severn Estuary, from littoral algae.

Remarks: This species has probably been confused in the past with *Semicytherura nigrescens* (Baird) (see Whittaker, *Stereos-Atlas of Ostracod Shells*, 2, 69 - 76 1974), from which it can be distinguished by its smaller size, stronger ornamentation, and distinctive copulatory organ (cf. text-figs. 1 and 2). *S. tela* was found by one of us (J. E. W.) in the "type-material" of *S. nigrescens sensu* Yassini, from the Arcachon Basin, at Bordeaux University, and would seem to possess a more extensive geographical distribution than is at present recognised. It is much too small to be considered synonymous with *S. similis* (Sars, 1866).

Distribution: Recent; *S. tela* has so far been recorded from three regions on the British coasts. In the Fiet and Weymouth Bay, S England, it was found on filamentous green-algae such as *Enteromorpha* and *Cladophora*, in salinities from 31 - 35‰, while in the Bristol Channel and Severn Estuary, it has been collected at several localities between Porlock Bay and Sand Point, in intertidal samples of *Corallina*, *Laminaria* holdfasts and *Sabellaria* worm-tubes, within the salinity range 20 - 35‰. K. Trier has recently sent us material collected from tidal pools in S W Wales. As mentioned above it also occurs in the Arcachon Basin, S W France.

ON *ACANTHOCYHEREIS DECORIS* SIDDIQUI

by Qadeer A. Siddiqui
(*Saint Mary's University, Halifax, Canada*)

Acanthocythereis decoris Siddiqui, 1971

1971 *Trachyleberis (Acanthocythereis) decoris* sp. nov. Q. A. Siddiqui, *Bull. Brit. Mus. nat. Hist. (Geol.) Suppl.* 9, 83, pl. 42, figs. 3 - 6, 8, 9.

Holotype: Brit. Mus. (Nat. Hist.) IO 4359, ♂ car.

Type locality: Rakhi Nala section, Sulaiman Range, Pakistan; lat. 29° 57.5' N, long. 70° 60' E. Upper Chocolate Clays, Kirthar Formation, Upper Eocene.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. OS 10040 (♀ car.: Pl. 7, 132, fig. 1), OS 11737 (♂ car.: Pl. 7, 132, figs. 2, 3; Pl. 7, 134, figs. 1 - 3), both from the type locality above; Upper Chocolate Clays, sample no. 3604, Kirthar Formation, Middle Eocene.

Explanation of Plate 7, 132

Fig. 1, ♀ car., ext. lt. lat. (OS 10040, 765 μm long); fig. 2, ♂ car., ext. rt. lat. (OS 11737, 791 μm long); fig. 3, ♂ car., ext. post. (OS 11737).

Scale A (200 μm; x 77), fig. 1; scale B (200 μm; x 82), fig. 2; scale C (100 μm; x 96), fig. 3.

Diagnosis: A species of *Acanthocythereis* in which the eye-tubercle is rounded and distinct; subcentral tubercle indistinct; shell surface reticulate with conjunctive papillae; anterior, posterior and ventral margin decorated with a double row of short spines and/or papillae.

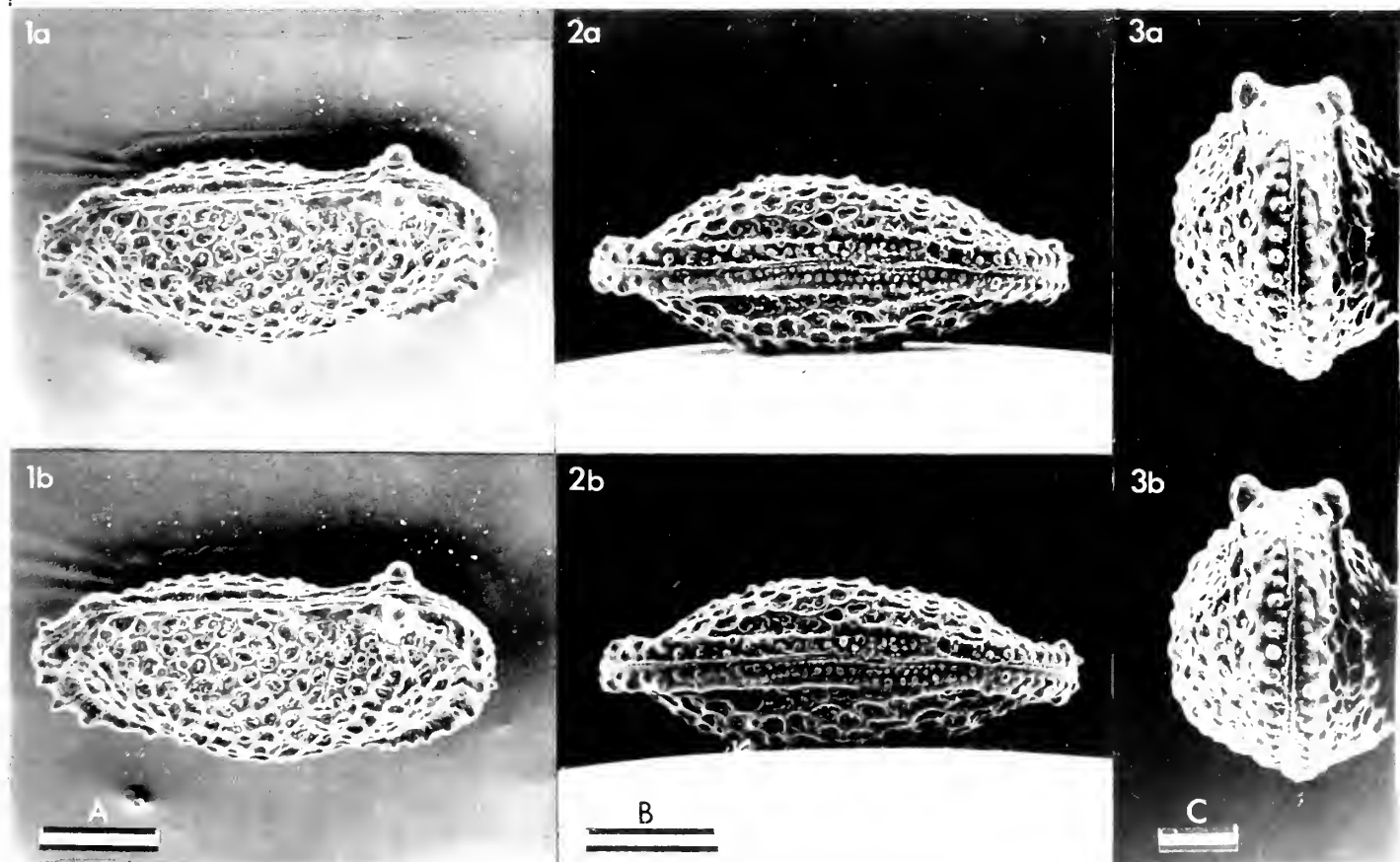
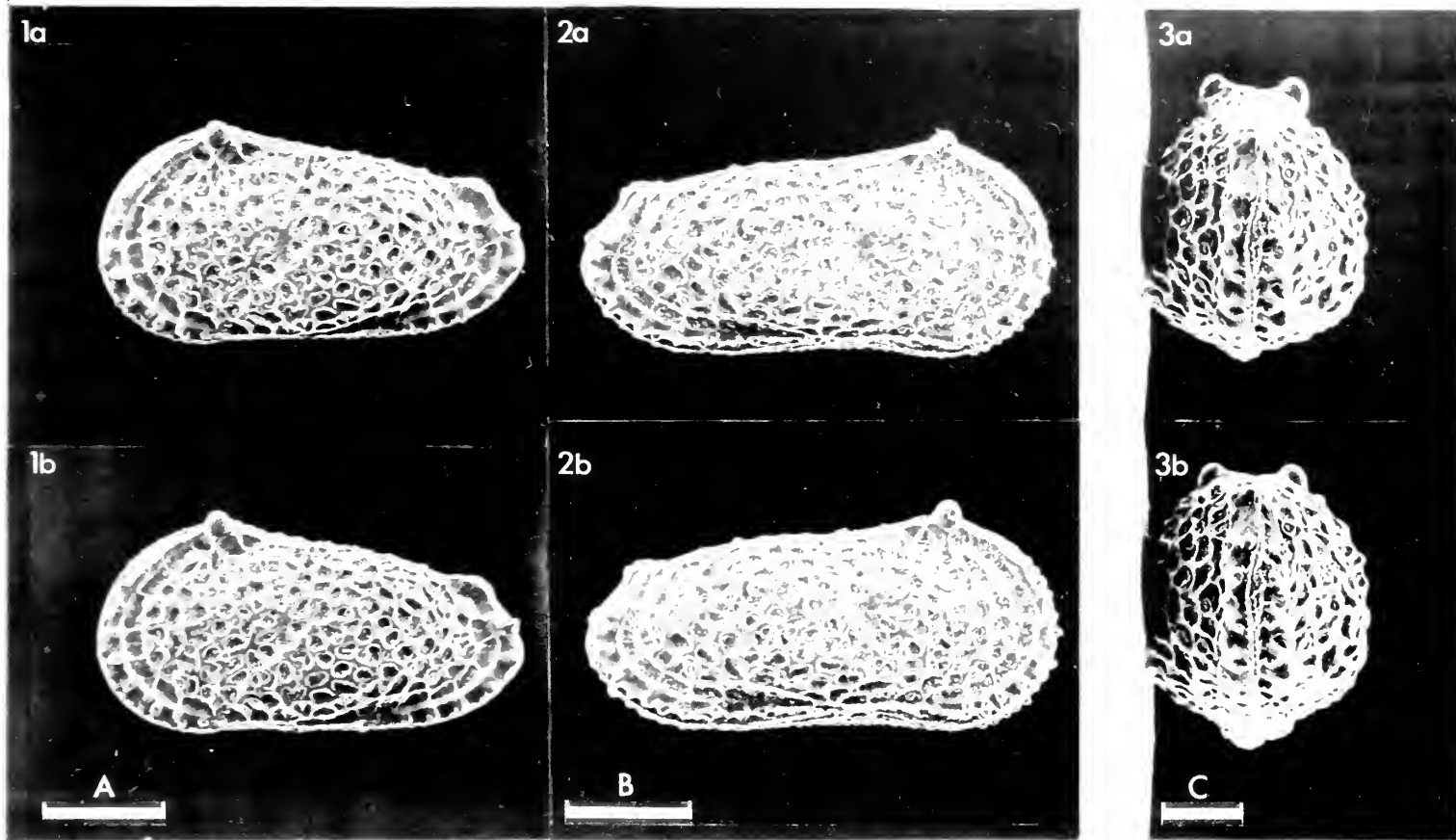
Remarks: The subcentral tubercle in this species seems to vary; in some specimens it is almost indistinct. In a few specimens papillose spines occur on shell surface.

Distribution: Rakhi Nala and Zao River sections of the Sulaiman Range, Pakistan (Middle - Upper Eocene).

Explanation of Plate 7, 134

Fig. 1, ♂ car., ext. dors. (OS 11737, 791 μm long); fig. 2, ♂ car., ext. vent. (OS 11737); fig. 3, ♂ car., ext. ant. (OS 11737).

Scale A (200 μm; x 79), fig. 1; scale B (200 μm; x 82), fig. 2; scale C (100 μm; x 96), fig. 3.



ON *CALLISTOCY THERE MEDITERRANEA* (MÜLLER)

by Neriman Doruk
(*Ege University, Izmir, Turkey*)

Callistocythere mediterranea (Müller, 1894)

1894 *Cythere mediterranea* sp. nov. G. Müller, *Zool. stat. Naples, Monogr.*, no. 21, 353, pl. 27, fig. 34; pl. 28, fig. 13; pl. 32, fig. 34.

Holotype: Zoological Museum, Berlin (see Diebel, *Geologie*, 11, no. 2, 249, 1962).

Type locality: Bay of Naples, Italy. Recent.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. **Io 5175** (♂ RV: Pl. 7, 136, fig. 1), **Io 5176** (♀ LV: Pl. 7, 136, fig. 2; Pl. 7, 138, figs. 1, 3), **Io 5177** (♂ RV: Pl. 7, 138, fig. 2). **Io 5175** was dredged from Urla Bay, west coast of Turkey and is Subrecent, shallow water marine (littoral). Approx. lat. 38° 19' N, long. 26° 47' E. **Io 5176** and **Io 5177** were from drillings off the south coast of Turkey, 450ft. below sea floor, Plio-Pleistocene, presumed shallow water marine (littoral); approx. lat. 36° 26' N, long. 35° 04' E.

Explanation of Plate 7, 136

Fig. 1, ♂ RV, ext. lat. (**Io 5175**, 512 μm long); fig. 2, ♀ LV, ext. lat. (**Io 5176**, 532 μm long).
Scale A (250 μm; x 166), fig. 1; scale B (250 μm; x 156), fig. 2.

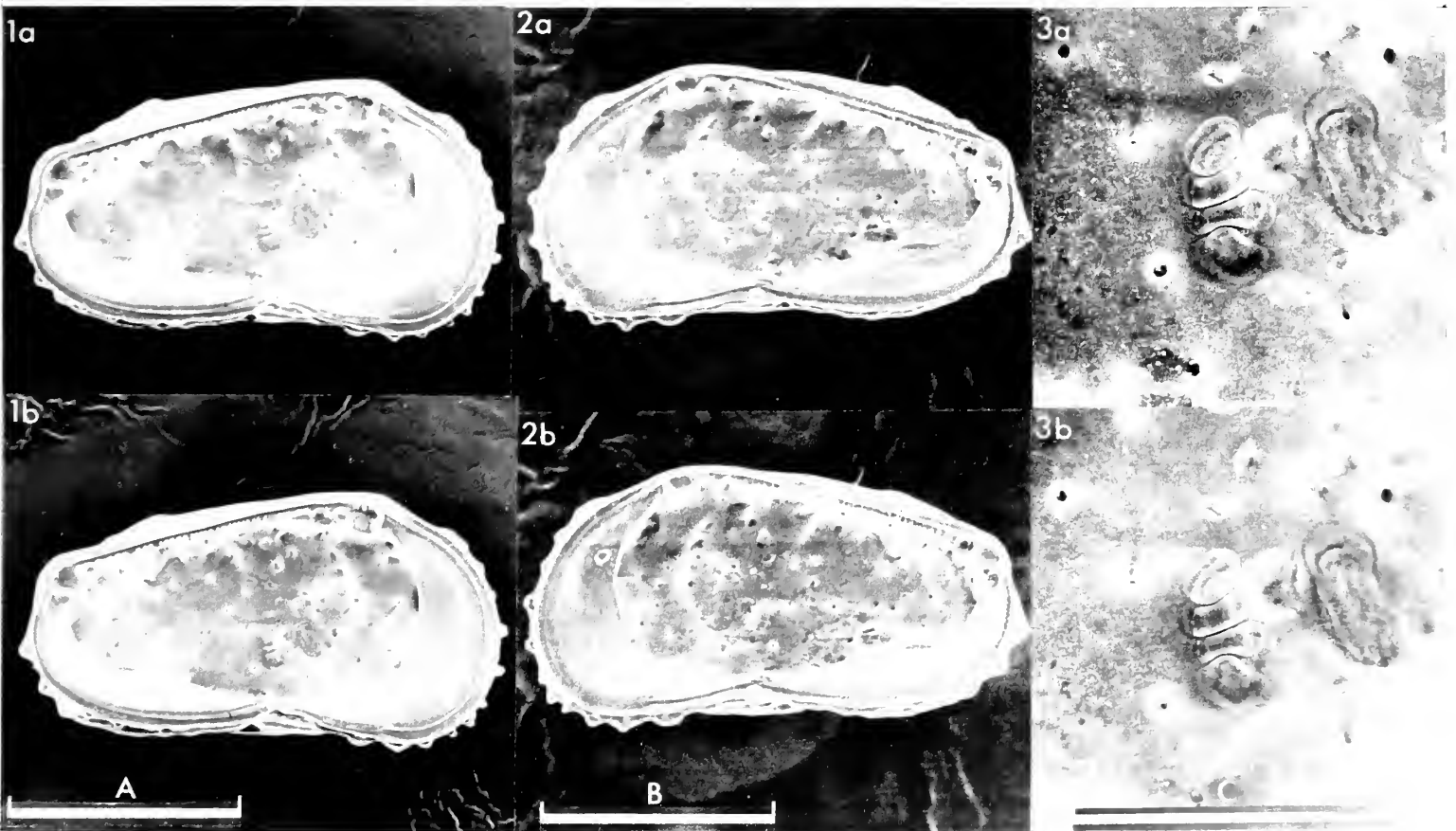
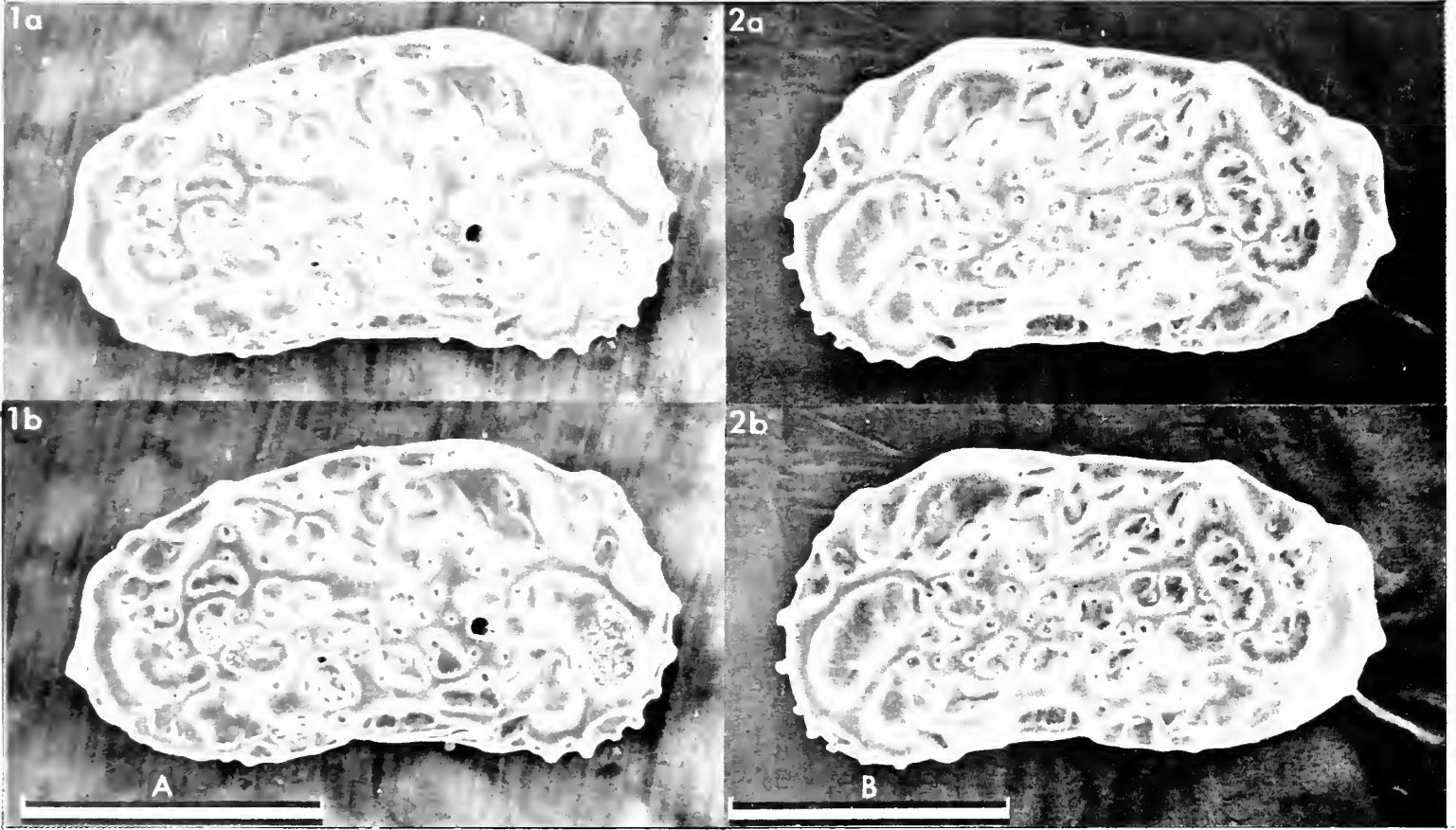
Diagnosis: Diagnostic rib pattern associated with nine anterior marginal denticulations.

Remarks: *Callistocythere mediterranea* has not been rediscovered from the type locality since G. W. Müller's first record. It seems, however, to be a common species in the Eastern Mediterranean.

Distribution: Recent; Gulf of Naples and Urla Bay (Turkey); Pleistocene, south coast of Turkey.

Explanation of Plate 7, 138

Figs. 1, 3, ♀ LV, (**Io 5176**, 532 μm long): fig. 1, int. lat.; fig. 3, musc. sc.; fig. 2, ♂ RV, int. lat. (**Io 5177**, 530 μm long).
Scale A (250 μm; x 126), fig. 1; scale B (250 μm; x 130), fig. 2; scale C (100 μm; x 453), fig. 3.





ON *CALLISTOCY THERE MONTANA* DORUK sp. nov.

by Neriman Doruk
(Ege University, Izmir, Turkey)

Callistocythere montana sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) no. Io 5168, ♂ RV.

Type locality: Road cutting 3km S W of Kuzucubelen (Mersin region of Turkey), approx. lat. 36° 48' N, long. 34° 27' E. Tortonian (Middle to Upper Miocene). Grey sandy clay with abundant foraminifera and molluscan shell fragments. Presumed intermediate depth – marine shelf.

Derivation of name: Latin “mountainous”, referring to ornamentation.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. Io 5168 (♂ RV: Pl. 7, 140, fig. 1; Pl. 7, 142, figs. 2, 3), Io 5169 (♂ LV: Pl. 7, 140, fig. 2). All figured specimens from the type locality, about 4 metres from the base of the section.

Explanation of Plate 7, 140

Fig. 1, ♂ RV, ext. lat. (holotype, Io 5168, 462 μm long); fig. 2, ♂ LV, ext. lat. (Io 5169, 420 μm long).
Scale A (250 μm; x 186), fig. 1; scale B (250 μm; x 205), fig. 2.

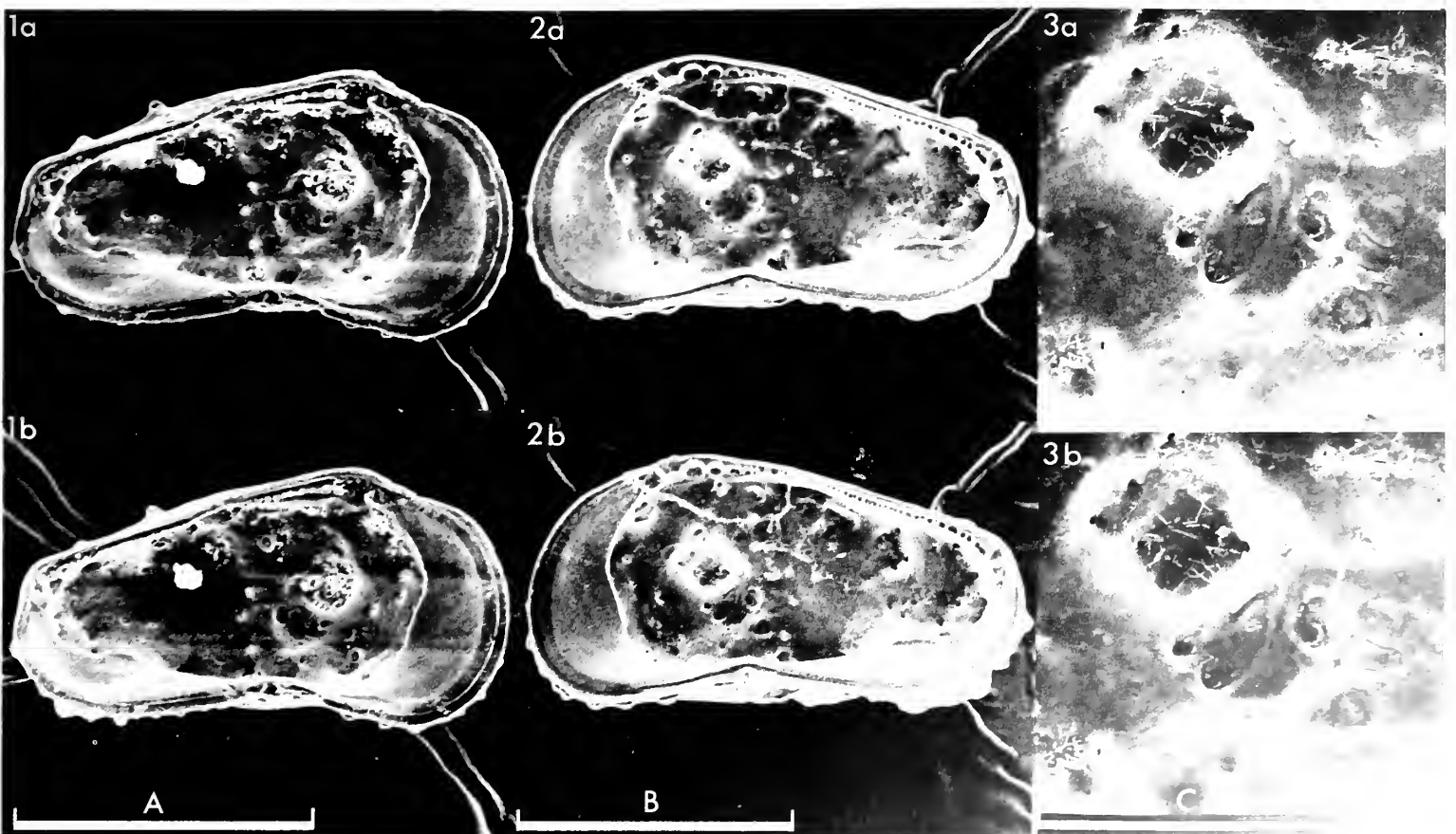
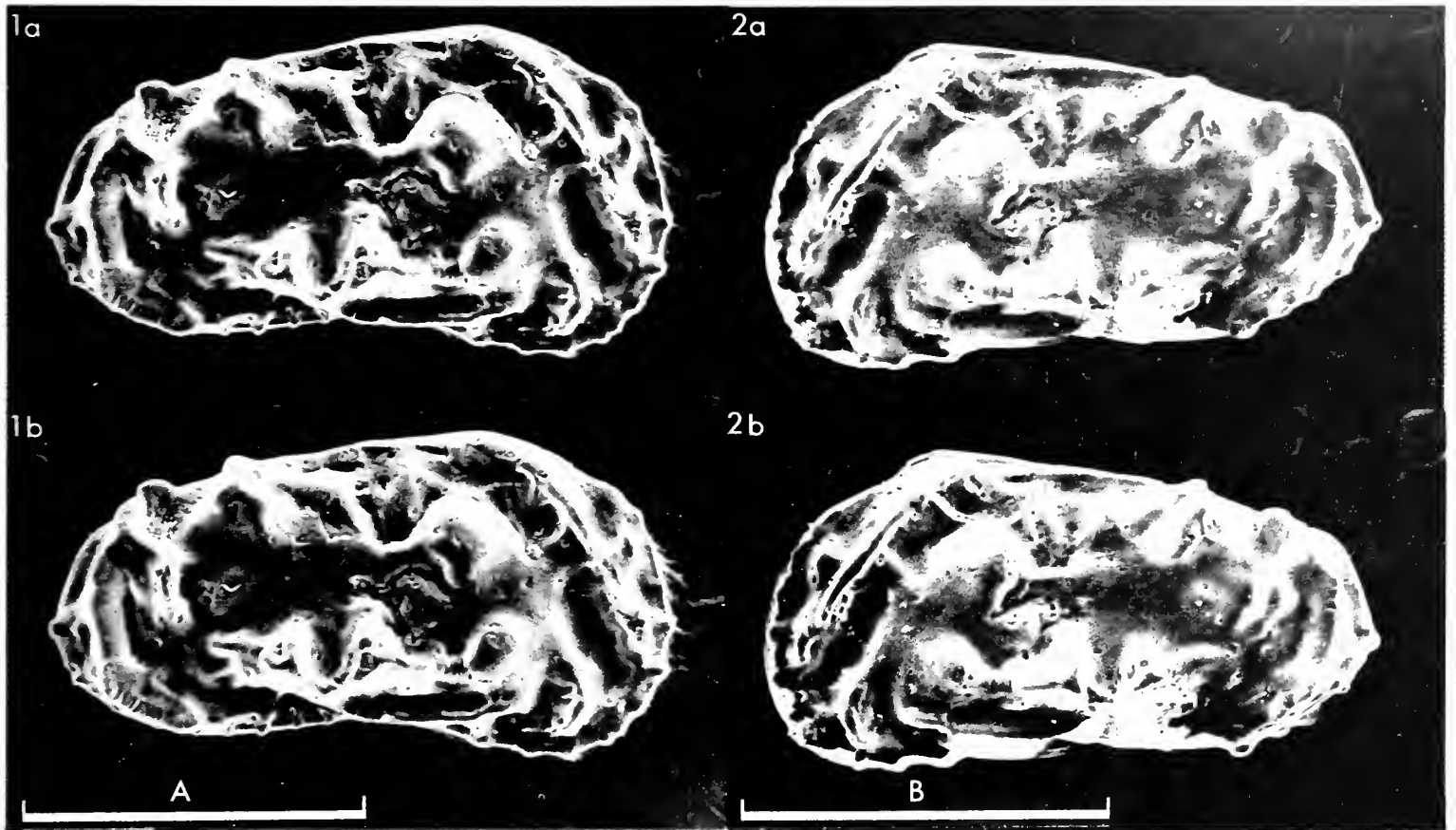
Diagnosis: Ornamentation diagnostic; surface between costae and tubercles smooth.

Remarks: Strength of costae and tubercles varies in intensity on the carapace. Sexual dimorphism pronounced; males less high posteriorly, females subrectangular. Ornamentation more strongly marked in males.

Distribution: Known, so far, only from the type locality.

Explanation of Plate 7, 142

Fig. 1, ♂ LV, int. lat. (specimen lost); figs. 2, 3, ♂ RV, (holotype Io 5168, 462 μm long); fig. 2, int. lat.; fig. 3, musc. sc.
Scale A (250 μm; x 169), fig. 1; scale B (250 μm; x 151), fig. 2; scale C (100 μm; x 453), fig. 3.



ON *PARACYTHERIDEA INSCITA* DORUK sp. nov.

by Neriman Doruk
(Ege University, Izmir, Turkey)

Paracytheridea inscita sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) no. **Io 5209**, ♀ RV.

Type locality: Road cutting between Babatorun and Com, 1km S W of Babatorun (Turkey); approx. lat. 36° 04' N, long. 36° 15' E. Upper Miocene: yellow sandstone with abundant foraminifera and mollusc shells; presumed shallow water marine.

Derivation of name: Latin, "clumsy", referring to heavy ornamentation.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. **Io 5209** (♀ RV: Pl. 7, 144, figs. 1, 3; Pl. 7, 146, figs. 2, 3), **Io 5210** (♂ LV: Pl. 7, 144, fig. 2), **Io 5211** (♂ LV: Pl. 7, 146, fig. 1). **Io 5209** and **Io 5211** are from the type locality, 10 metres from the base of the section. **Io 5210** is from a stream cutting 200 metres south of Sarılı, Turkey, 2 - 3 metres from the base of the section. Tortonian, bioclastic limestone with molluscan shells, presumed shallow water marine. Approx. lat. 36° 07' N, long. 36° 13' E.

Explanation of Plate 7, 144

Figs. 1, 3, ♀ RV (holotype, **Io 5209**, 678 µm long): fig. 1, ext. lat.; fig. 3, papillate sola; fig. 2, ♂ LV, ext. lat. (**Io 5210**, 673 µm long).

Scale A (250 µm; x 115), fig. 1; scale B (250 µm; x 113), fig. 2; scale C (50 µm; x 368), fig. 3.

Diagnosis: Heavily ornamented.

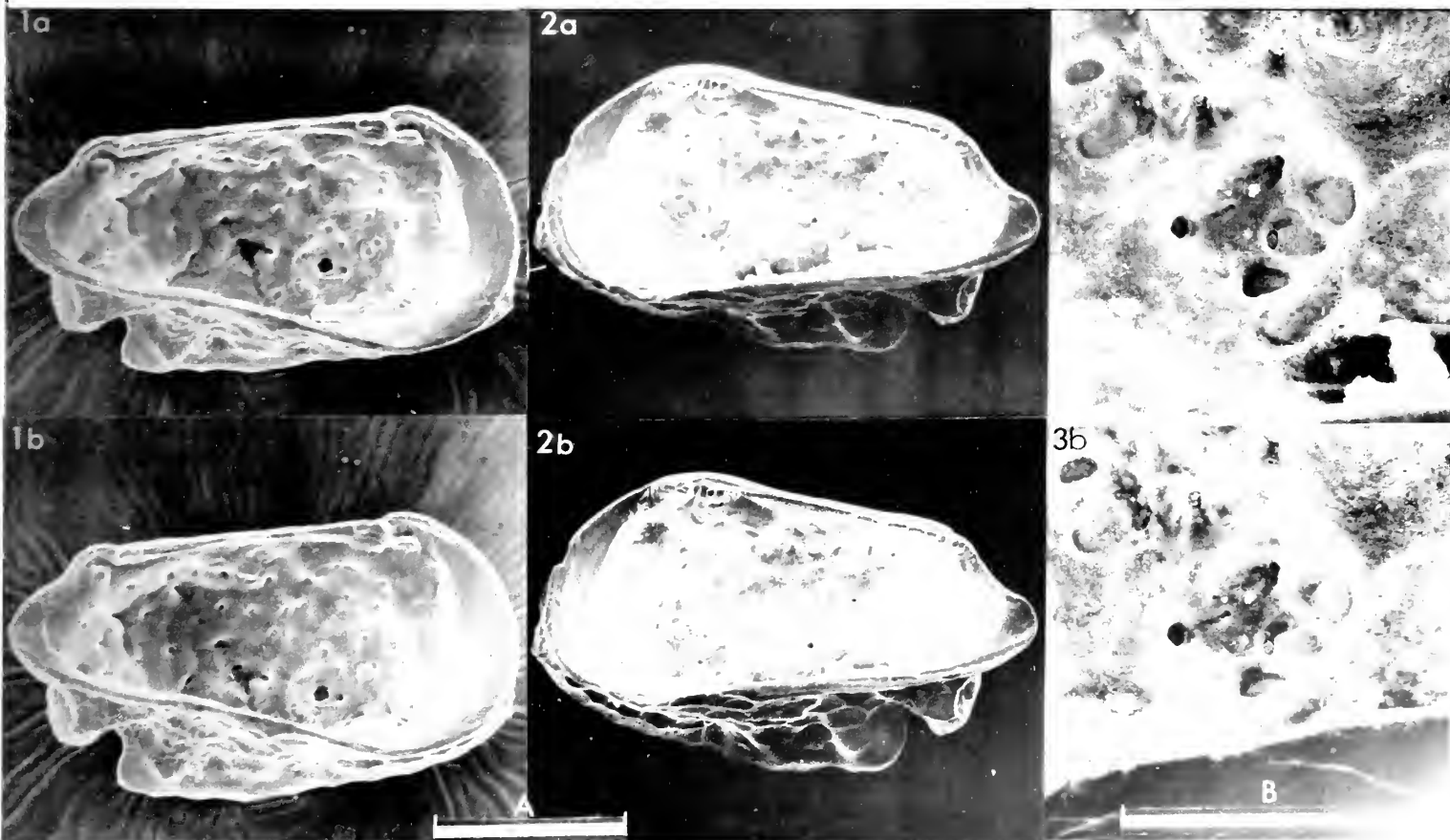
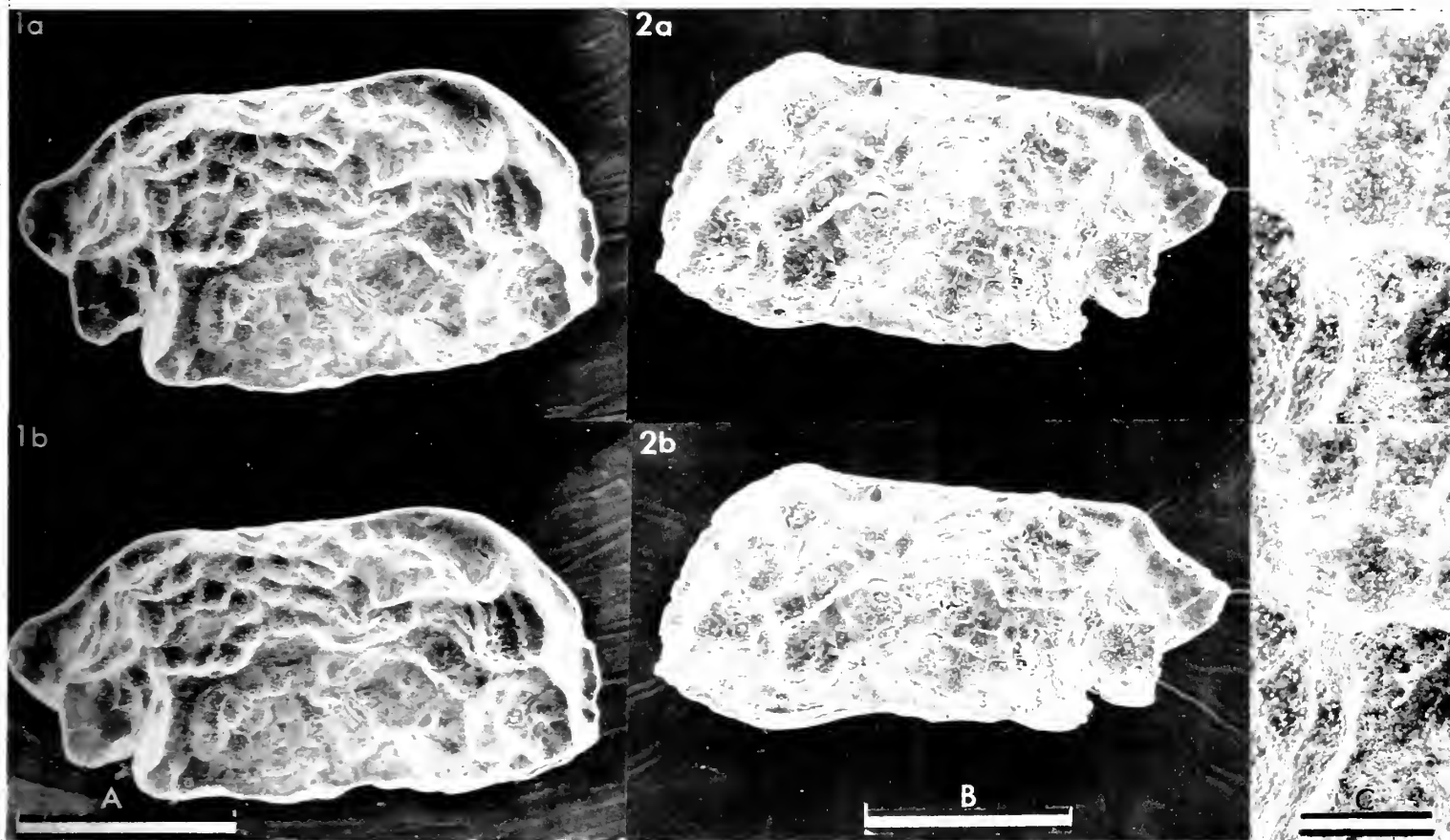
Remarks: Similar to *P. triquetra* (Reuss) but less triangular in lateral outline. Slightly variable in the strength of the ribs.

Males a little less high (see Pl. 7, 144, fig. 2) than females.

Distribution: Upper Miocene; Antakya region of Turkey.

Explanation of Plate 7, 146

Fig. 1, ♂ LV, int. lat. (**Io 5211**, 673 µm long); figs. 2, 3, ♀ RV, (holotype, **Io 5209**, 678 µm long); fig. 2, int. lat.; fig. 3, musc. sc. Scale A (250 µm; x 101), figs. 1, 2; scale B (100 µm; x 404), fig. 3.





ON *PARACYTHEREIDEA HEXALPHA* DORUK sp. nov.

by Neriman Doruk
(Ege University, Izmir, Turkey)

Paracytheridea hexalpha sp. nov.

- 1971 *Paracytheridea* sp. 6, P. J. Barbeito-Gonzalez, *Mitt. Hamburg, zool. Mus. Inst.*, Bd. 67, 305, pl. 30, figs. 1a, 2a.
1972 *Paracytheridea* sp. A, H. Uffenorde, *Göttinger Arb. Geol. Paläont.*, 13, 87, pl. 9, fig. 10, pl. 12, fig. 9.

Holotype: Brit. Mus. (Nat. Hist.) no. **Io 5213**, ♀ LV.[Paratypes: Brit. Mus. (Nat. Hist.) nos. **Io 5212**, **5214**, **5215**].*Type locality*: Drillings off south coast of Turkey; approx. lat. 36° 26' N, long. 35° 04' E. Pleistocene.*Derivation of name*: Greek, six + letter *alpha*, with reference to synonymy.

Explanation of Plate 7, 148

Fig. 1, ♀ RV, ext. lat. (paratype, **Io 5212**, 890 μm long); fig. 2, ♀ LV, ext. lat. (holotype, **Io 5213**, 823 μm long); fig. 3, surface ornament (paratype, **Io 5214**).

Scale A (250 μm; x 90), fig. 1; scale B (250 μm; x 96), fig. 2; scale C (100 μm; x 282), fig. 3.

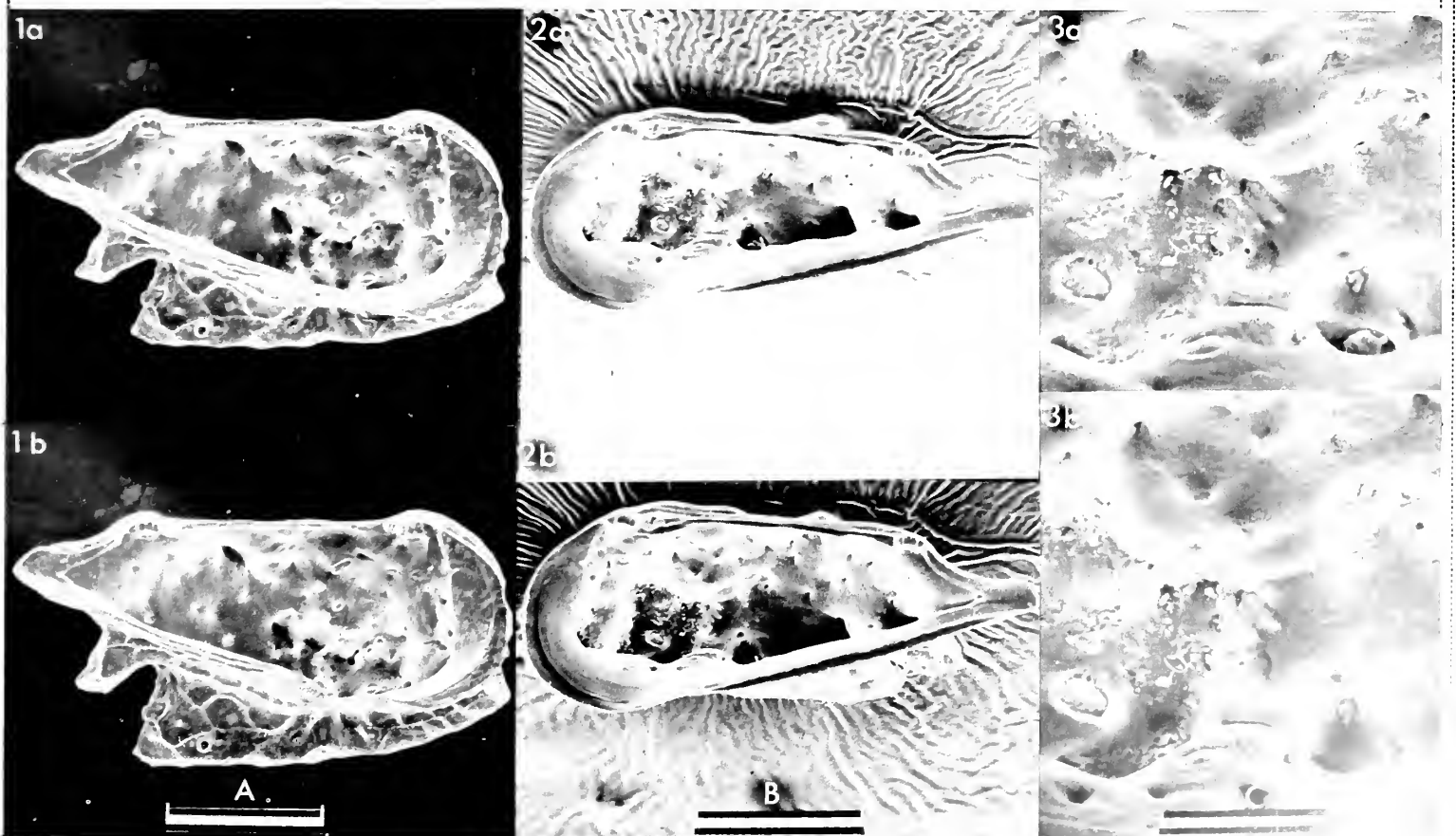
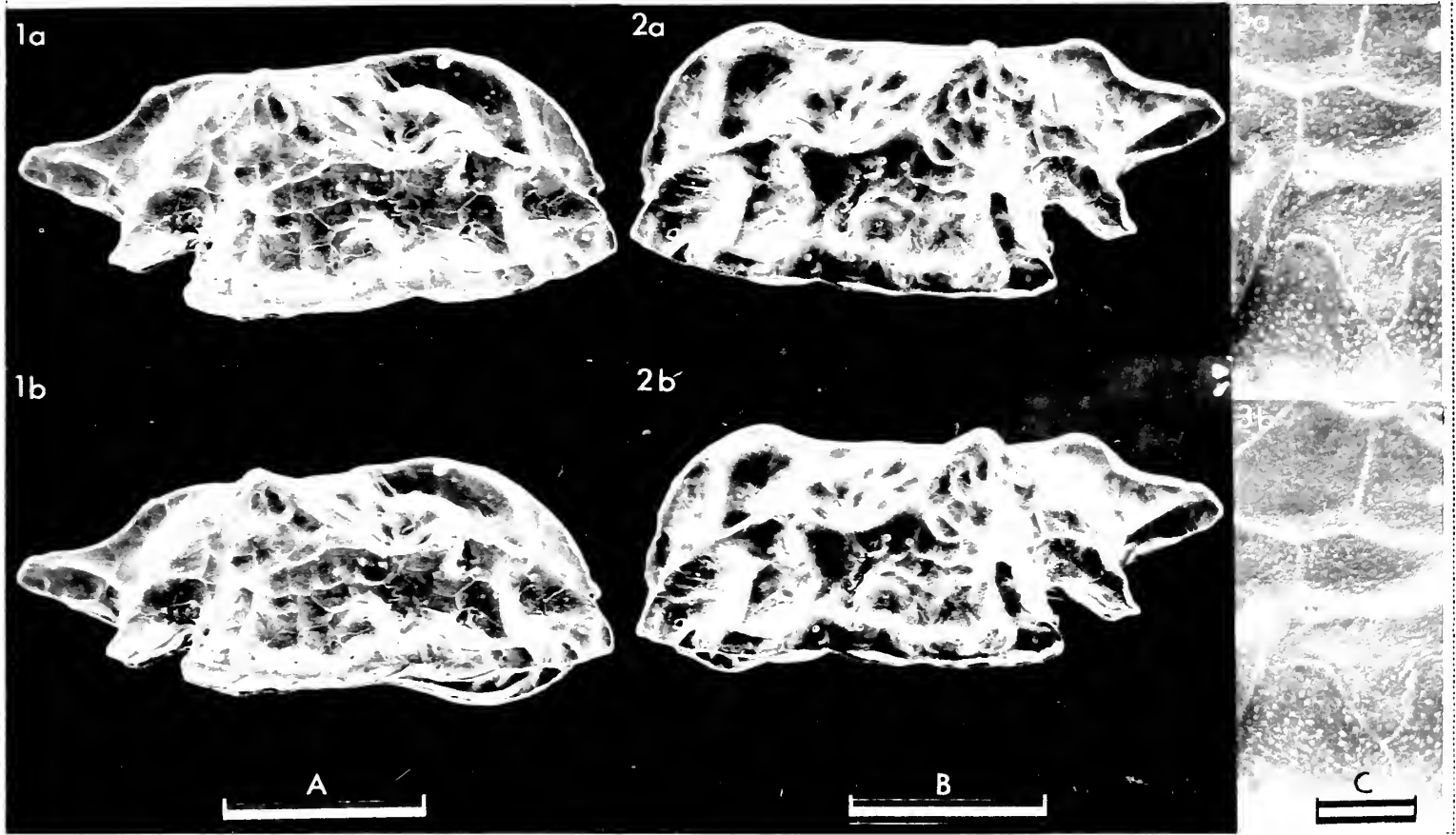
Figured specimens: Brit. Mus. (Nat. Hist.) nos. **Io 5212** (♀ RV: Pl. 7, 148, fig. 1), **Io 5213** (holotype, ♀ LV: Pl. 7, 148, fig. 2; Pl. 7, 150, fig. 1), **Io 5214** (LV: Pl. 7, 148, fig. 3), **Io 5215** (♂ RV: Pl. 7, 150, figs. 2, 3). **Io 5212** and **5213** from the type locality, depth 450 - 480ft. — presumed shallow marine. **Io 5214** and **Io 5215** from Urla Bay (west coast of Turkey), about 30ft. depth. Subrecent, presumed littoral; approx. lat. 38° 19' N, long. 26° 47' E.

Diagnosis: Papillate solae with mural ghosts.*Remarks*: Close to *Paracytheridea bovetensis* (Seguenza) but differs by having a weaker reticulation and more attenuated posterior processes. Sexual dimorphism is indicated by the presence of more elongate males.*Distribution*: Recent of the Adriatic Sea and Pleistocene to Recent from Turkey.

Explanation of Plate 7, 150

Fig. 1, ♀ LV, int. lat. (holotype, **Io 5213**, 823 μm long); fig. 2, ♂ RV, int. lat. (paratype, **Io 5215**, 723 μm long); fig. 3, ♂ RV, musc. sc. (paratype, **Io 5215**).

Scale A (250 μm; x 90), fig. 1; scale B (250 μm; x 96), fig. 2; scale C (100 μm; x 282), fig. 3.



ON *LEPTOCY THERE MULTIPUNCTATA* (SEGUENZA)

by Neriman Doruk
(Ege University, Izmir, Turkey)

Leptocythere multipunctata (Seguenza, 1884)

- 1884 *Cythere multipunctata* G. Seguenza, *Il Naturalista Siciliana*, 29, pl. 1, figs. 9a - b.
1950 *Leptocythere multipunctata* (Seguenza); G. Ruggieri, *Giorn. Geol. ser. 2*, 21, 52, pl. 1, figs. 8, 15.
1972 *Leptocythere multipunctata multipunctata* (Seguenza); W. Sissingh, *Utrecht Micropaleont. Bull.*, 6, 91, pl. 5, fig. 9.

Holotype: Probably lost during the Messina earthquake of 1908 (Ruggieri, *Boll. Soc. Paleont.*, 2, no. 1, 3, 1963).

Type locality: Rizzola, near Syracuse, Sicily; Calabrian, Quaternary.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. **Io 5180** (♀ RV: Pl. 7, 152, fig. 1; Pl. 7, 154, fig. 2), **Io 5181** (♂ LV: Pl. 7, 152, fig. 2; Pl. 7, 154, figs. 1, 3). Both are from drillings off Iskenderun Bay, S Turkey at a depth of 610 feet below sea floor, approx. lat. 36° 07' N, long. 36° 13' E; Pliocene - Pleistocene; presumed shallow marine.

Diagnosis: Carapace with diagnostic outline; shell surface irregularly pitted with numerous puncta.

Explanation of Plate 7, 152

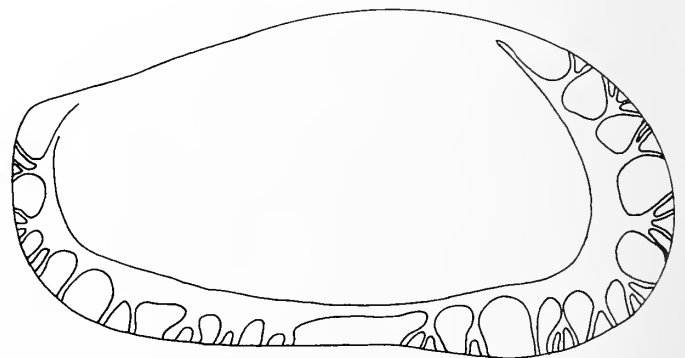
Fig. 1, ♀ RV, ext. lat. (**Io 5180**, 470 µm long); fig. 2, ♂ LV, ext. lat. (**Io 5181**, 450 µm long).
Scale A (250 µm; x 173), fig. 1; scale B (250 µm; x 188), fig. 2.

Remarks: Some authors have distinguished 2 subspecies of *L. multipunctata* on the size of the surface puncta (e.g. Sissingh 1972, *op. cit.*) but as a certain amount of variation in puncta size is seen in the present material from the same sample, these are here considered to be one species.

Sexual dimorphism is only slightly observed in this species with females being slightly higher than the males. Marginal pore canals branching (see text-fig. 1).

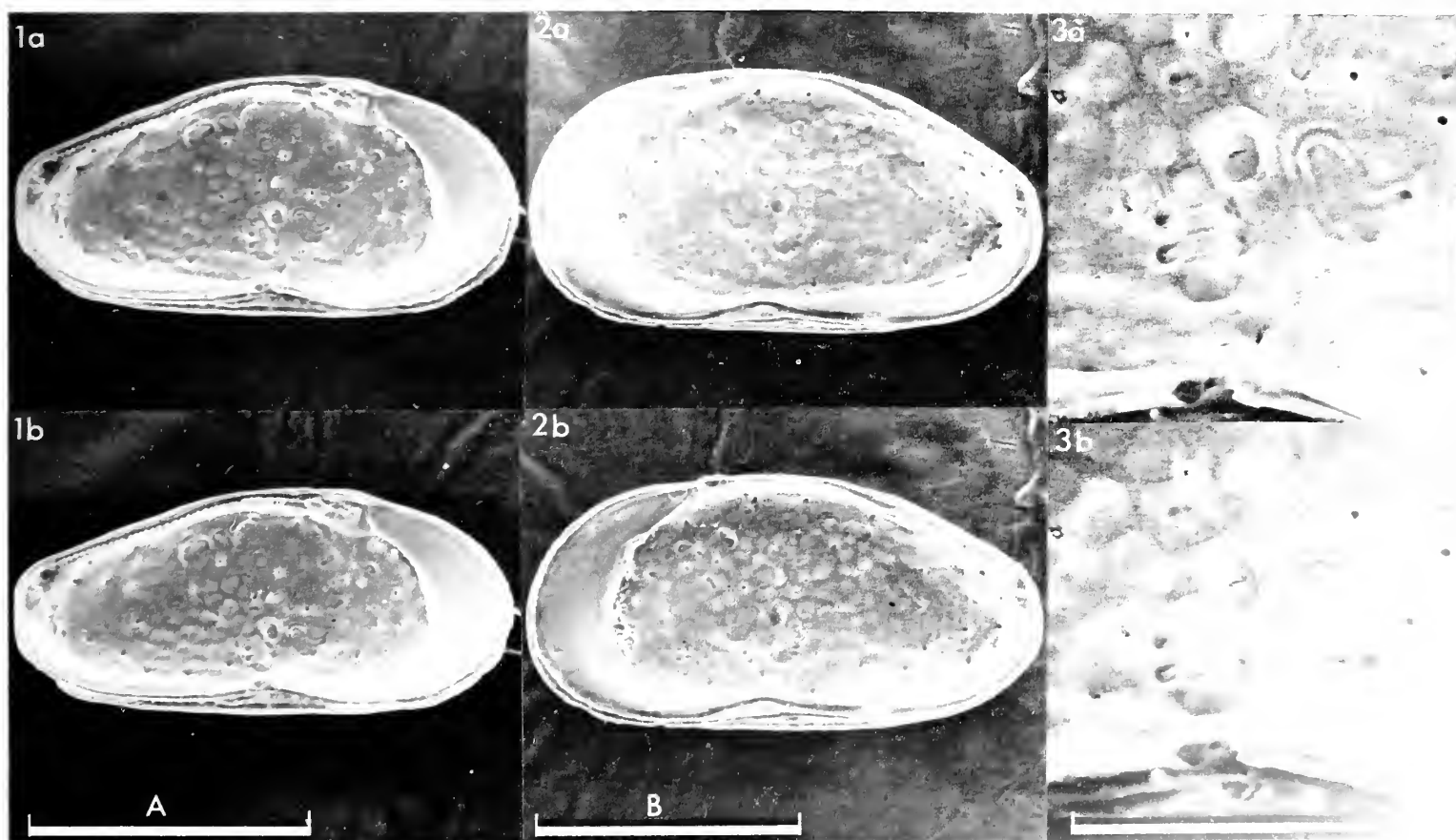
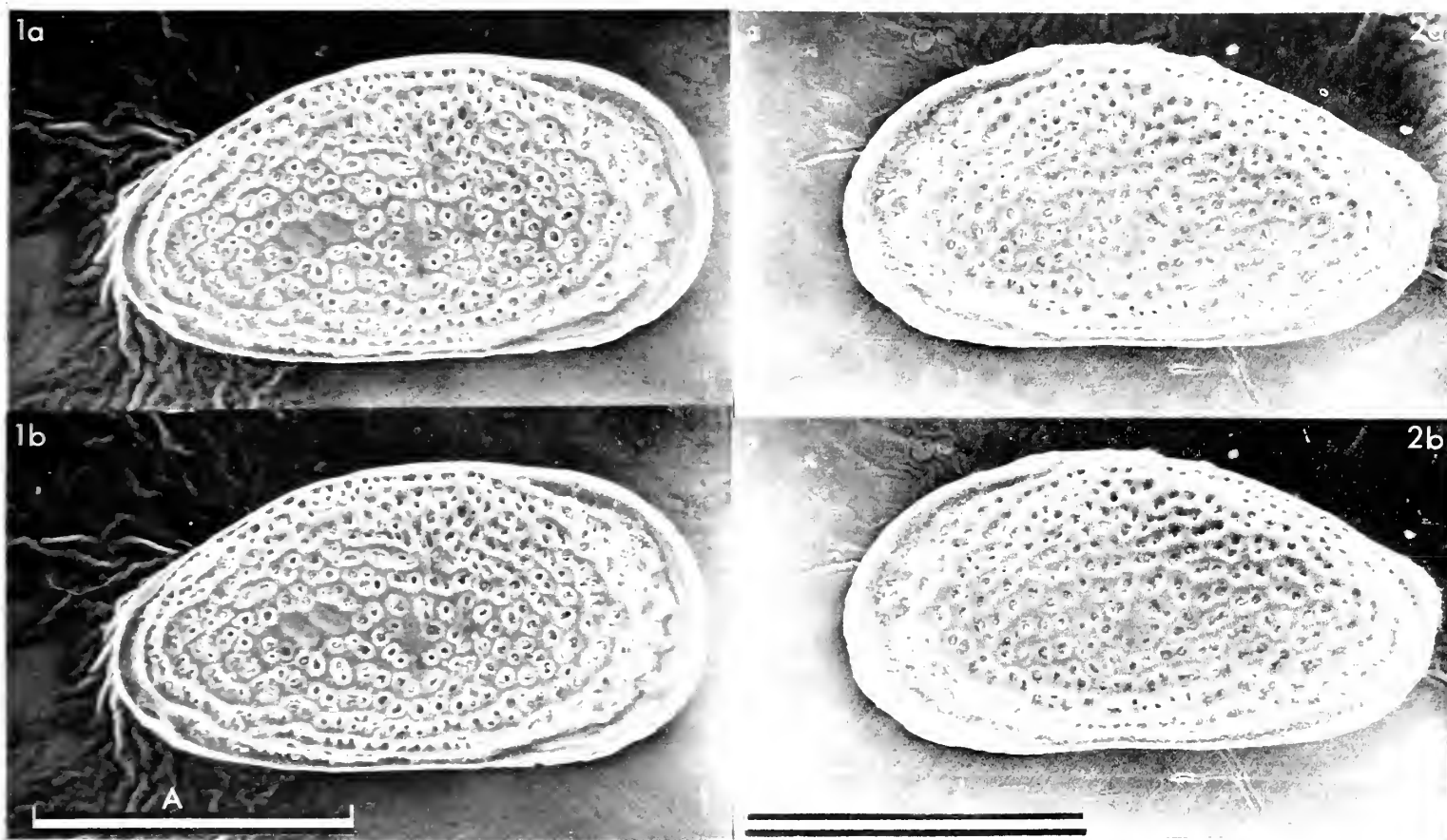
Distribution: Recent: Adriatic, Porto-Corsini (Ruggieri, 1950, *op. cit.*). Quaternary: Syracuse, Sicily (Seguenza, 1884, *op. cit.*); Imola, Italy (Ruggieri, 1950). Upper Pliocene - Pleistocene: Aegean Islands (Sissingh, 1972, *op. cit.*) and S Turkey (present paper).

Text-fig. 1. Marginal pore canals
of *L. multipunctata*, ♀ RV, **Io 5180** (x 66).



Explanation of Plate 7, 154

Figs. 1, 3, ♂ LV (**Io 5181**, 450 µm long): fig. 1, int. lat.; fig. 3, musc. sc.; fig. 2, ♀ RV, int. lat. (**Io 5180**, 470 µm long).
Scale A (250 µm; x 159), fig. 1; scale B (250 µm; x 148), fig. 2; scale C (100 µm; x 477), fig. 3.





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and David J. Siveter

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