A NEW ECHINOID FROM THE EOCENE LA MESETA FORMATION OF SEYMOUR ISLAND, ANTARCTIC PENINSULA

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A new cidaroid echinoid is described from the lowermost part (Unit I, Telm1) of the La Meseta Formation (Eocene) on Seymour Island, Antarctic Peninsula. It is represented by several specimens of the new species, *Austrocidaris seymourensis* sp. n., of the subfamily Ctenocidarinae Mortensen, 1928, hitherto known from the living forms, and one uncertain occurrence from the Eocene of Patagonia. An extremely shallow-marine habitat the new species comes from, and bathymetric requirements of the present-day species, indicate that the extant genus *Austrocidaris* H.L. Clark, 1907, escaped a vertical shift into greater depths after the Eocene time, a feature so typical of other marine faunas recorded in the La Meseta Formation.

Key words: Echinoidea, taxonomy, La Meseta Formation, Tertiary, Antarctica.

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INTRODUCTION

The purpose of this paper is to describe a newly discovered cidaroid echinoid from the La Meseta Formation (Eocene) on Seymour (Marambio) Island in the Antarctic Peninsula sector.

Several specimens of reasonably well preserved tests, with basal parts of some primary spines adhered, were found by Andrzej GAŹDZICKI during the Argentine-Polish field party in the austral summer season of 1993–94. The collected material represents a new species, assigned to the subfamily Ctenocidarinae MORTENSEN, 1928, which is poorly represented in the fossil record (FELL 1966, p. *U*323). The studied echinoid material was collected at the locality ZPAL 1, near the López de Bertodano Bay, southwest of Cross Valley (Text-fig. 1). This location has recently been named *Bill Hill* (GAŹDZICKI and TATUR 1994) to honor Professor William (*Bill*) J. ZINSMEISTER.

At this locality, gray to red-brown limonitic sandy siltstones and sandstones with intercalations of shelly hash and fossil-bearing horizons form up to 2 m thick interval of basal facies (Unit I, Telm1) of the La Meseta Formation (SADLER 1988; STILWELL and ZINSMEISTER 1992).

The studied echinoids, are housed in the Collection of the Institute of Paleobiology of the Polish Academy of Sciences, Warszawa, under the Catalogue Numbers ZPAL E. VII/1–5.

Previous reports on echinoids collected during the Polish Antarctic Expeditions (JESIONEK-SZYMAŃSKA 1984, 1987) concern rather poor specimens of Tertiary age from King George Island, South Shetland Islands. This echinoid material came from the so-called "*Pecten* Conglomerate" (= Low Head Member of the Polonez Cove Formation) attributed to Pliocene, and later corrected to be of Oligocene age (JESIONEK-SZYMAŃSKA 1984; BIRKENMAJER and GAŹDZICKI 1986), and from the Cape Melville Formation of Lower Miocene age (JESIONEK-SZYMAŃSKA 1987). Of the cidaroids, JESIONEK-SZYMAŃSKA (1984, 1987) described some fragmentary material and one almost complete, strongly weathered test of ?*Notocidaris* sp.

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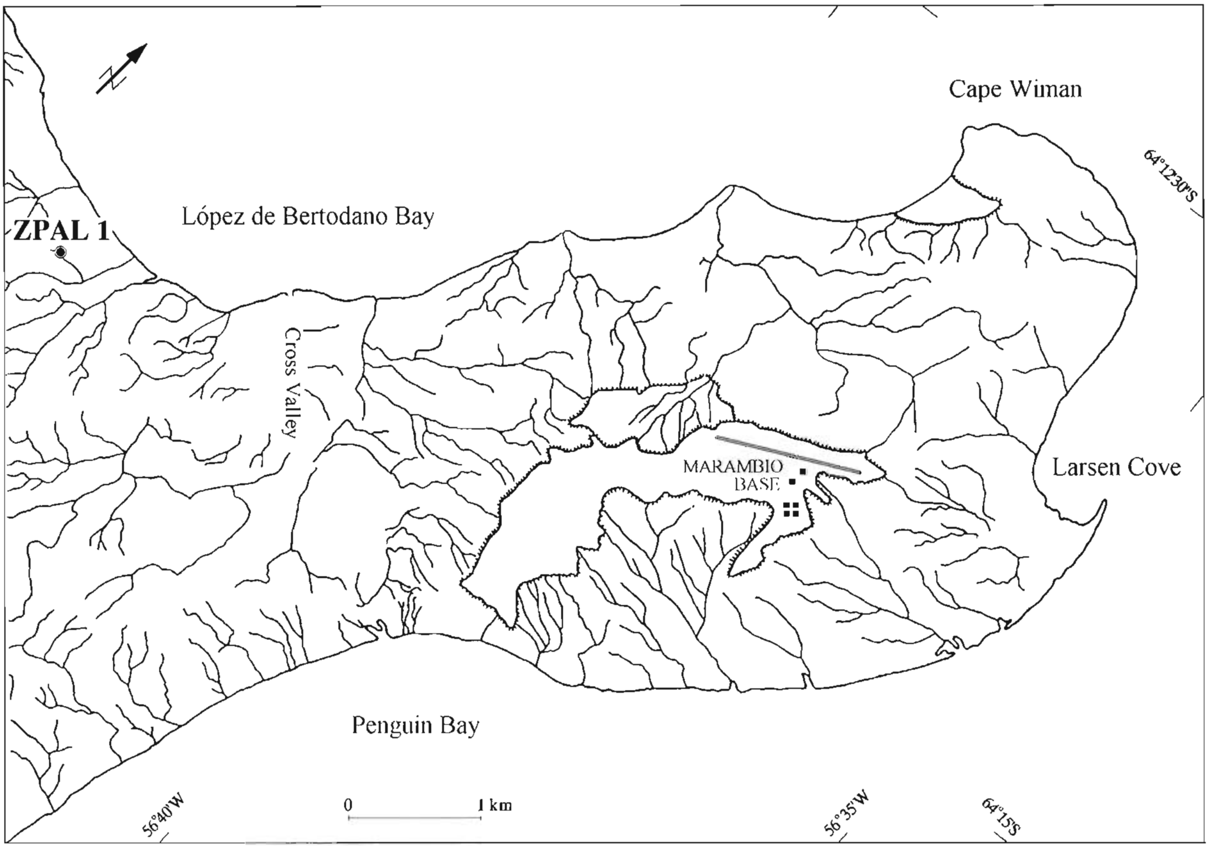

Fig. 1
Morphologic sketch-map of the northern part of Seymour Island showing the locality (ZPAL 1, *Bill Hill*) where the studied echinoid faunule of *Austrocidaris seymourensis* sp. n. was collected.

PREVIOUS REPORTS ON THE SEYMOUR ISLAND ECHINOIDS

The Cretaceous and Tertiary shallow-marine sequences of Seymour Island have long been known to yield ubiquitous fossils, quite often taxonomically unique (FELDMANN and WOODBURNE 1988). Since the beginning of the Antarctic paleontological research the echinoids have always been noted as an important, although usually rare, component of successive biotic assemblages on Seymour Island. The first report was that by LAMBERT (1910) on the Upper Cretaceous *Cyathocidaris*, represented by three species, and on two Tertiary irregular forms (*Cassidulus*, and *Schizaster*) collected by the 1901–03 Swedish South Polar Expedition (LAMBERT 1910; HOTCHKISS 1982). This was also the first report of any fossil echinoids from Antarctica.

The Tertiary sequence of Seymour Island (Seymour Island Group) has subsequently been stated to range from the Paleocene to possibly the Lower Oligocene (ELLIOT and TRAUTMAN 1982). The upper part of this sequence has been distinguished by ELLIOT and TRAUTMAN (1982) as the La Meseta Formation of late Early Eocene to possibly early Oligocene age (ZINSMEISTER and CAMACHO 1980; STILWELL and ZINSMEISTER 1992; TAMBUSSI *et al.* 1994). Its depositional environment has recently been interpreted by PORĘBSKI (1995) as a tectonically controlled (subsiding) incised-valley estuary.

Echinoids have been known to occur, sometimes even abundantly, in the La Meseta Formation, although not recognized taxonomically (HOTCHKISS 1982, pp. 679 and 682), except for LAMBERT's (1910) forms revised as *Stigmatopygus* and *Abatus*, and supplemented with a new material of the latter genus, by McKINNEY *et al.* (1988).

To the present author's knowledge, cidaroid echinoids have not hitherto been recorded from the Tertiary sequence of Seymour Island. Moreover, the Southern Oceans cidaroid subfamily Ctenocidarinae, to which the studied forms belong, have not been recovered from any fossil deposits of the whole Antarctica, at least to the time of a summarizing review by HOTCHKISS (1982, p. 681), and except of an uncertain occurrence in the Eocene of Patagonia (DE LORIOL 1902; FELL 1966, p. *U*323).

The fauna of the La Meseta Formation is composed of a wide range of diverse shallow-marine invertebrates. The whole assemblage has been discussed by RASMUSSEN (1979), FELDMANN and WOODBURNE (1988), STILWELL and ZINSMEISTER (1992), FELDMANN (1994), BAUMILLER and GAŹDZICKI (1994, 1996 this volume). The assemblage includes numerous molluscs (gastropods and bivalves), brachiopods, crustacean decapods, balanomorph barnacles, crinoids and starfishes, many genera of which live today only at greater depths. It has therefore been suggested that they migrated into deeper waters due to the deteriorating climatic conditions controlled by the onset of Cenozoic glaciation of West Antarctica, the oldest spell of which is dated as the Early/Middle Eocene (BIRKENMAJER 1992; see also GAŹDZICKI *et al.* 1992).

All specimens of studied cidaroids were collected from a single exposure in the basal facies of Unit I (Telm1) of the La Meseta Formation, at locality ZPAL 1, *Bill Hill* (Text-fig. 1). They co-occur with multilamellar bryozoans (GAŹDZICKI and HARA 1994; HARA 1995), brachiopods (BITNER 1996 this volume), stylasterids (STOLARSKI in preparation) and scleractinian corals (STOLARSKI 1996 this volume).

Among the echinoderms associated with the cidaroids at the locality ZPAL 1 important are the excellently preserved starfishes *Buterminaster elegans* BLAKE reported by BLAKE and ZINSMEISTER (1988). No less important are crinoids, described recently by BAUMILLER and GAŹDZICKI (1994, 1996 this volume) and represented in this locality by the isocrinid, *Eometacrinus australis* BAUMILLER *et* GAŹDZICKI, 1996, and the peculiarly shaped, aberrant cyrtocrinid *Cyathidium holopus* STEENSTRUP, 1847, the latter having heretofore been known typically from the older Paleogene of Europe, precisely from the famous Danian occurrence at Fakse in Denmark (RASMUSSEN 1972).

SYSTEMATIC PALEONTOLOGY

Order **Cidaroida** CLAUS, 1880

Family **Cidaridae** GRAY, 1825
Subfamily **Ctenocidarinae** MORTENSEN, 1928
Genus *Austrocidaris* H.L. CLARK, 1907
Austrocidaris seymourensis sp. n.
(Pls 28–31 and Text-figs 2–3)

Holotype: The specimen ZPAL E. VII/1, presented in Pl. 28: 1a–1c.
Type horizon: Telm1, La Meseta Formation; Eocene.
Type locality: ZPAL 1 (*Bill Hill*), Seymour Island, Antarctic Peninsula.
Derivation of the name: After a neo-Latinized adjective of the Seymour Island; in reference to the locality of the newly established species.

Diagnosis. — Test. Low, with narrow, sunken, naked median furrow, and characteristic pits at the median angles in *IA*; interambulacrals with a strongly elevated scrobicular ring; scrobicular tubercles and miliaries not very numerous; bosses large and very squat; areoles deep and narrow; adapical primary tubercles subcrenulate; ambulacrals slightly sinuate, one-fourth wide as the *IA*; pores non-conjugate, closely spaced, distinctly oblique, separated by a narrow but strongly elevated wall, non-perforate; poriferous zone as wide as the interporiferous zone of the plate; two or three ambulacral tubercles. Apical system. Small, amounting about 40% of horizontal diameter; ocular plates strongly convex; ocular pore situated about one-third of the plate height, near the outer angle, not surrounded by the elevated wall. Primary spines. Short, circular in cross-section, slightly tapering; shaft covered by small thorns, longitudinally arranged.

Material. — Five, almost complete tests with few broken primary and several secondary (scrobicular) spines adhered; Aristotle's lanterns partly preserved in position; all tests are more or less compressed; two of them have the surface strongly abraded.

Dimensions (in mm):

Coll. Number	*hd*	*vd*	Number of *IA*	Number of *A* per *IA*	Figured in
Holotype					Pl. 28: 1–4
ZPAL E. VII/1	19	(6)	5–6	9–10	Pl. 29: 1–3
Paratypes:					
ZPAL E. VII/2	23	(6)	6–7	9–10	Pl. 30: 1–5
ZPAL E. VII/3	(23)	8	5–6	9–10	Pl. 31: 1
ZPAL E. VII/4		9	6–7	9–10	Pl. 31: 2
ZPAL E. VII/5		7	6–7	9–10	Pl. 31: 3

Abbreviations used: *hd* — horizontal diameter, *vd* — vertical diameter, *A* — ambulacral plates, *IA* — interambulacral plates; in brackets are measurements of compressed specimens.

Description. — The test (Pl. 28: 1a–1c; Pl. 30: 1a–1c and Pl. 31: 1–3) is small, and low (compactionally collapsed), the height exceeding one-third of the horizontal diameter. The aboral and oral sides are slightly sunken. The edge of the peristome is slightly pentagonal in outline.

The slightly sinuate ambulacra (Pl. 28: 3a–3b and Pl. 29: 3b) are about one-fourth as wide as the interambulacra; the poriferous zone is as wide as the non-poriferous part of the plate or a little wider; the pores are non-conjugate, placed obliquely, closely spaced together, slightly amygdaloid in outline, separated by a narrow, but conspicuous, raised wall, non-confluent (Pl. 28: 3b). The ambulacral plates are very narrow and sinuous in outline (Pl. 28: 3b and Pl. 29: 3b); the pores are large, and they cover almost the whole poriferous zone; the upper side of the pores is narrow, but distinctly raised. The primary ambulacral tubercles are conspicuous. At the lower edge of the plate there occurs a smaller tubercle. Sometimes, at the oral side there also occurs a third, miliary tubercle. The median furrow is not distinct. There are 9–10 ambulacral plates to each interambulacral plate at the ambitus.

The interambulacral plates are high, numbering 6–7 in a series; the areoles are narrow and deep (Pl. 29: 1c and Pl. 30: 3a); the 2–3 proximal areoles are confluent. The perforate tubercles are large, with prominent, swollen bosses; some adapical tubercles are furnished with delicate crenulation (Pl. 29: 1–2). The scrobicular ring (Pl. 29: 1a–1c) is strongly elevated; scrobicular tubercles are prominent, not numerous; the other secondary tubercles are also not numerous, and scarcely diminishing towards the narrow, sunken, median furrow. The region of the admedian angles is distinctly sunken (Pl. 28: 2 and Pl. 29: 1a–1c), shaped into pits triangular in outline. The adradial and admedian zones are narrow.

The apical system is relatively small, up to about 40% of the horizontal diameter (Pl. 28: 1a and Pl. 30: 1a). The ocular plates (Pl. 28: 4) are strongly convex, a little broader than high. The ocular pore is situated at one-third of the plate height, near the outer angle. There is no elevated wall surrounding the pore, and the tubercles cover a part of the plate, above the ocular pore. The genital plates (preserved inside the tests) are regular, subtriangular in outline; the (?)female genital pore is large, situated near the outer edge (Text-fig. 2); almost the whole surface of the plate is adorned with small tubercles. The madreporite is not recovered.

The peristome (Pl. 28: 1c), slightly pentagonal in outline, is of the same size as the apical system. Aristotle's lanterns partly preserved, with its ossicles (joined demipyramids with a tooth, rotulas) kept almost in their life position.

The primary spines (Text-fig. 3 and Pl. 30: 3–5) are short, generally shorter than the horizontal diameter of the test. They are slender, circular, slightly tapering. The shaft is covered by small thorns, longitudinally arranged. The neck is 1mm long; the collar is a bit shorter than the neck, and increasing in size towards the milled ring; the base is of the same length as the collar (Pl. 30: 3–4). The scrobicular spines (Pl. 29: 3c and Pl. 30: 2) are spatulate, flattened, and appressed.

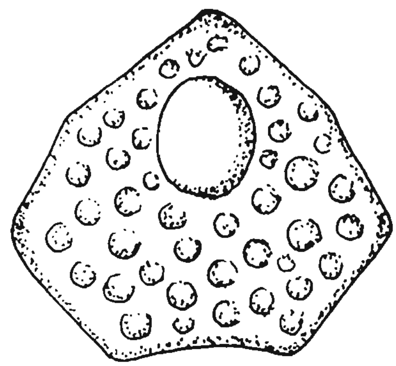

Fig. 2
Sketch of the genital (?female) plate of *Austrocidaris seymourensis* sp. n., × 6.

Remarks. — The studied specimens are assigned to the subfamily Ctenocidarinae MORTENSEN, 1928, due to such features as the oblique, very closely arranged pores in the ambulacrals, the mode of joining of the interambulacral plates with a narrow, but well marked, sunken median furrow, as well as the shape and sculpture of primary spines (MORTENSEN 1928). An oblique and close arrangement of pores in the ambulacrals is also known (MORTENSEN 1928) in some representatives of the genera *Goniocidaris* DESOR, 1846 and *Rhopalocidaris* MORTENSEN, 1927 in the relative subfamily Goniocidarinae MORTENSEN, 1928. The studied specimens, however, differ from the latter subfamily, by their lack of horizontal grooves in the interambulacrals, and by the shape, length, and sculpture of their spines.

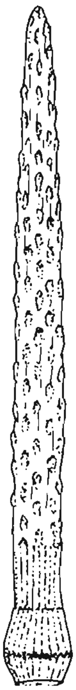

Fig. 3
Sketch of the primary spine of *Austrocidaris seymourensis* sp. n., × 3.

Within the subfamily Ctenocidarinae MORTENSEN, 1928, there occur several genera displaying features very similar to each other, both among the present-day forms, as well as the very few, uncertain fossil ones (FELL 1954, 1966; JESIONEK-SZYMAŃSKA 1984, 1987). This is particularly true if only the structure of the tests and spines is taken into account. Of such genera, especially *Ctenocidaris* MORTENSEN, 1910; *Eurocidaris* MORTENSEN, 1909; *Notocidaris* MORTENSEN, 1909; *Ogmocidaris* MORTENSEN, 1921; and *Austrocidaris* H.L. CLARK, 1907, should primarily be indicated (MORTENSEN 1909, 1910, 1921, 1928; FELL 1954, 1966; cf. also H.L. CLARK 1907). The most important and distinctive features of their tests and spines, and a comparison with those of the studied material are listed in Table 1.

It is worth to note, that the examined specimens are the most similar to those of the genera *Ogmocidaris* and *Austrocidaris*. In the present-day faunas, these two genera are distinguishable by the structure of their peristome plates and pedicellarids, the both not preservable in the fossil state.

An analysis of the structure of the tests, that is a comparable diameter of the test and apical system, the presence of subcrenulate tubercles, and a lack of the wall surrounding the ocular pores particularly, involved an attribution of the studied specimens to the genus *Austrocidaris* H.L. CLARK, 1907.

In the fossil state, only one species of that genus has hitherto been known, namely *Austrocidaris jorgensis* (DE LORIOL, 1902) from the Eocene strata of Patagonia. That species has been recorded solely by a few isolated interambulacral plates (DE LORIOL 1902; MORTENSEN 1910, p. 25 and 1928, p. 141).

The specimens of *Austrocidaris seymourensis* sp. n. differ distinctly from the latter, *A. jorgensis* (DE LORIOL, 1902), by their much smaller size, and much lower number of secondary (scrobicular and miliary) tubercles, and probably by the narrower median furrow.

The preservation of the tests of *Austrocidaris seymourensis* sp. n. that bear the spines adhered and Aristotle's lanterns nearly in position suggest their rapid burial, most likely due to such a hydrodynamic agent, as *e.g.* storm agitation and deposition.

Occurrence. — Seymour Island, La Meseta Formation: ZPAL 1 (*Bill Hill*), Telm1.

FINAL CONCLUSIONS

The subfamily Ctenocidarinae MORTENSEN, 1928, to which the newly established species *Austrocidaris seymourensis* sp. n. belongs, is confined today to the circum-Antarctic region (FELL 1966) where it appeared already in the Eocene of Patagonia (DE LORIOL 1902; noted with a question mark by FELL 1966, p. *U*323) and of the herein reported Seymour Island, having not yet been recognized from intermediate ages.

Within this region, the representatives of the family Cidaridae GRAY, 1825, are typical components of all the echinoid faunas (MORTENSEN 1909, 1921, 1928; FELL 1954). Noteworthy is not only their taxonomic variability, but also a very peculiar behavior and/or morphologic adaptation, primarily expressed by the parental care of their broods, as first recognized *i.a.* in *Austrocidaris* and illustrated by WYVILLE-THOMSON (1876; re-figured *e.g.* by MORTENSEN 1928, fig. 25/2, and FELL 1966, fig. 241/3). The brooding may result in modification of the architecture of the tests, to produce very specialized brood structures (marsupia) and individualize the marsupiate type of the cidaroid tests, and to create separate taxa, even at the genus level. Such marsupiate cidaroids appear on Seymour Island as early as the uppermost Cretaceous (Maastrichtian) as has been recently demonstrated by BLAKE and ZINSMEISTER (1991), who described a unique female specimen of a new taxon *Almucidaris durhami* BLAKE *et* ZINSMEISTER, in which all five genital plates have been transformed into deep brood chambers.

Various non-cidaroid marsupiate echinoids are also quite common in Eocene strata of south-eastern Australia (PHILIP and FOSTER 1971). It is thus highly probable that the marsupiate forms of cidaroids, the studied genus *Austrocidaris* and its new species including, may also be present in the La Meseta Formation on Seymour Island.

It is also hoped that future collecting in the La Meseta Formation on Seymour Island may provide more echinoid material to study the phylogeny, behavioral evolution and/or migration of the extant taxa, to comply the echinoid data with those of other echinoderms from the La Meseta Formation, including the starfishes (BLAKE and ZINSMEISTER 1988), and the crinoids (MEYER and OJI 1993; BAUMILLER and GAŹDZICKI 1994, 1996 this volume).

Finally, it is reasonable to record that of all the genera of the subfamily Ctenocidarinae MORTENSEN, 1928, the only genus found in shallow-marine environments (MORTENSEN 1909, 1910, 1921; FELL 1954) is *Austrocidaris*. It was MORTENSEN (1910, pp. 17–18) who recorded *Austrocidaris* from low waters, commonly on stony bottoms with algae, down to sublittoral depths (10–17, maximum 40 m). Thus, understandable is the presence of the newly established species *A. seymourensis* sp. n. in the basal facies of the La Meseta Formation (Unit I, Telm1) which have always been regarded as shallow, or even extremely shallow-marine (SADLER 1988), and recently interpreted as estuarine (PORĘBSKI 1995). Among other echinoderms associated with the studied faunule of *A. seymourensis* sp. n., consistent with that statement is the presence of the aforementioned crinoid *Cyathidium holopus* STEENSTRUP, 1847, which in its type locality of Danian age in Denmark lived in shallow waters, within the photic zone, although in cryptic habitats (RASMUSSEN 1972). The present-day occurrence of this species is, however, confined to much greater depths, not lesser than 380 m (RASMUSSEN 1972). Similarly distributed is also the crinoid genus *Metacrinus*, living today at depths not lesser than 96 m (BAUMILLER and GAŹDZICKI 1994), while the closely related *Eometacrinus australis* BAUMILLER *et* GAŹDZICKI, 1996, lived in the same setting as *Austrocidaris seymourensis* sp. n. On the other hand, the comatulid *Notocrinus seymourensis* BAUMILLER

Table 1

Distinctive features of the tests and spines of some genera included into the subfamily Ctenocidarinae MORTENSEN, 1928, to compare with those of the studied *Austrocidaris* species. Compiled after the referenced papers (CLARK 1907; MORTENSEN, 1909, 1910, 1921, 1928; FELL 1954, 1966).

Characters \ Genus	*Ctenocidaris*	*Eurocidaris*	*Notocidaris*	*Ogmocidaris*	*Austrocidaris*	*Austrocidaris seymourensis* sp.n.
height of the test	low	low	low	low	low	low
number of *IA* plates	8–9	6–8	5–7	6–7	6–8	6–7
number of *A* per *IA* plates	5–6	6–7	6–7	8–9	5–8	9–10
apical system	45%	45%	55%	55%	40%	40%
ambulacral pores	oblique, confluent	oblique, confluent	oblique, confluent	oblique, non-confluent	oblique, non-confluent	oblique, non-confluent
tubercles	no traces of crenulation	no traces of crenulation	no traces of crenulation	no traces of crenulation	upper tubercles subcrenulate	upper tubercles subcrenulate
median furrow in *IA*	no naked median furrow	not sharply naked, sunken median furrow	naked sunken median furrow	well marked median furrow	well marked narrow median furrow	well marked narrow median furrow
median furrow in *A*	no naked median furrow	no naked median furrow	no naked median furrow	well marked median furrow	usually well marked median furrow	(?) no naked median furrow
ocular pore	surrounded by elevated wall	surrounded by elevated wall	surrounded by elevated wall	not well marked elevated wall	not surrounded by wall	not surrounded by wall
primary spines	short (= *hd*), with thorns	short (= *hd*), with thorns	long, two or three times as long as *hd*	long, two or three times as long as *hd*	generally short (= *hd*)	short (lesser than *hd*)

et GAŹDZICKI, 1996, known from the Telm2, the locality ZPAL 6 situated (BAUMILLER and GAŹDZICKI 1994, 1996 this volume), nearly that one yielding *Austrocidaris seymourensis* sp. n. belongs to the genus which is found today in Antarctic shallow shelf waters very close to Seymour Island coasts (MEYER and OJI 1993). This suggests that some echinoderms, such as the cidaroid *Austrocidaris* and the comatulid crinoid *Notocrinus*, which were components of faunal assemblages of the La Meseta Formation on Seymour Island, have escaped the general trend of an offshore shift into oceanic depths since post-Eocene time, and have managed to survive in shallow waters since the onset of glacial conditions in Antarctica.

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PLATE 28

Austrocidaris seymourensis sp. n. 120

Fig. 1. Test, a – aboral view, b – lateral view, c – oral view; × 3.
Fig. 2. Interambulacrum with narrow, sunken median furrow.
Fig. 3. Ambulacrum, a – ambulacrum with associated interambulacral plates, b – ambulacral plates with non-conjugate pores.
Fig. 4. Ocular plate.

Holotype ZPAL E.VII/1, ZPAL 1, Telm1, magnification in SEM photos (Figs 2–4) indicated by bars.

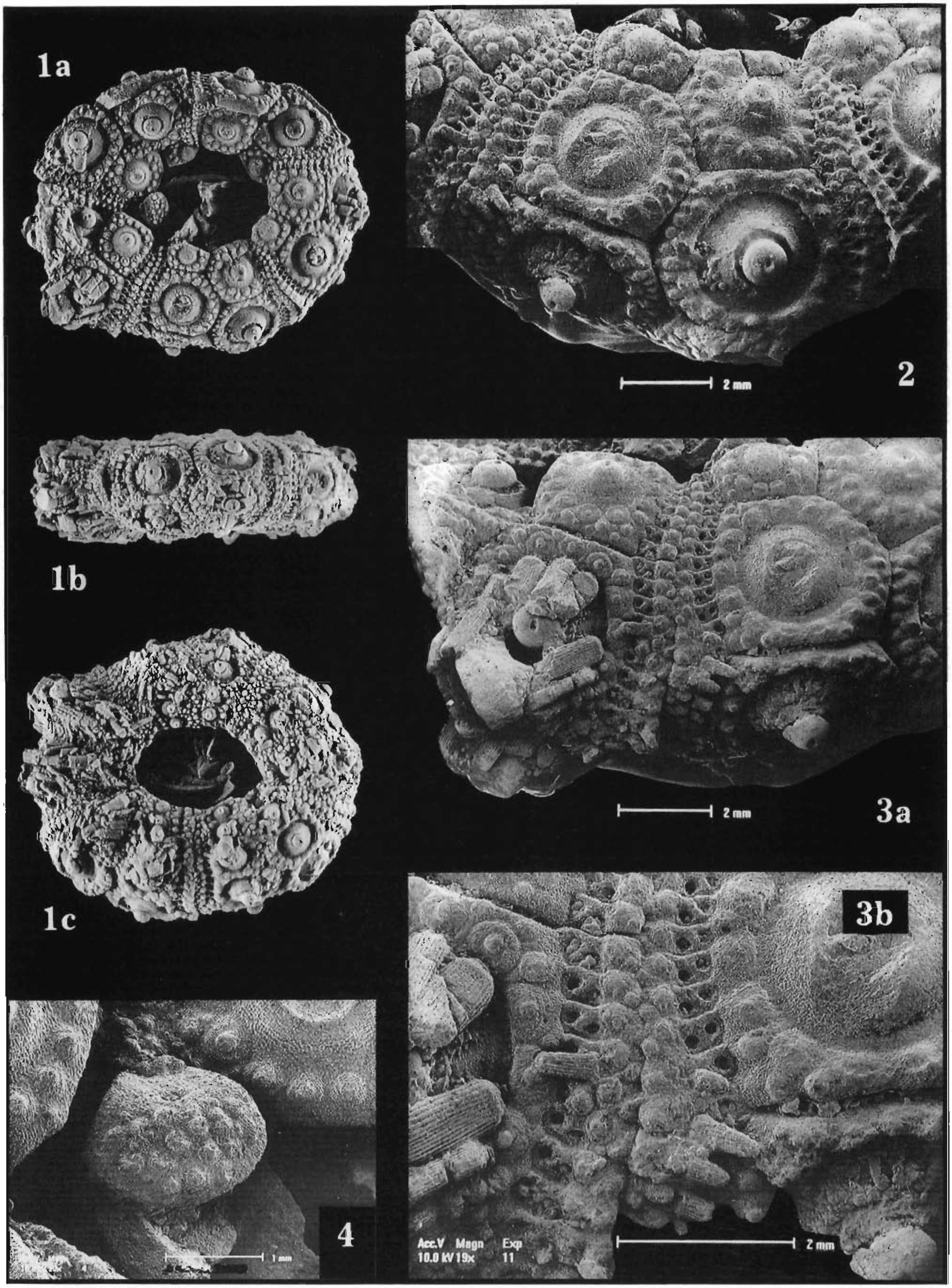

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PLATE 29

Austrocidaris seymourensis sp. n. 120

Fig. 1. Interambulacrum, a – interambulacral plate with perforate tubercle (arrowed), b – interambulacral plate with swollen boss and narrow areole, c – interambulacral plate with elevated scrobicular ring.

Fig. 2. Adapical interambulacral tubercle with delicate crenulation.

Fig. 3. Ambulacrum, a – ambulacrum with associated interambulacral plates and ocular plate, b – aboral part of ambulacrum, c – interambulacral tubercle with adhered scrobicular spines.

Holotype ZPAL E.VII/1, ZPAL 1, Telm1, magnification in SEM photos (Figs 1–3) indicated by bars.

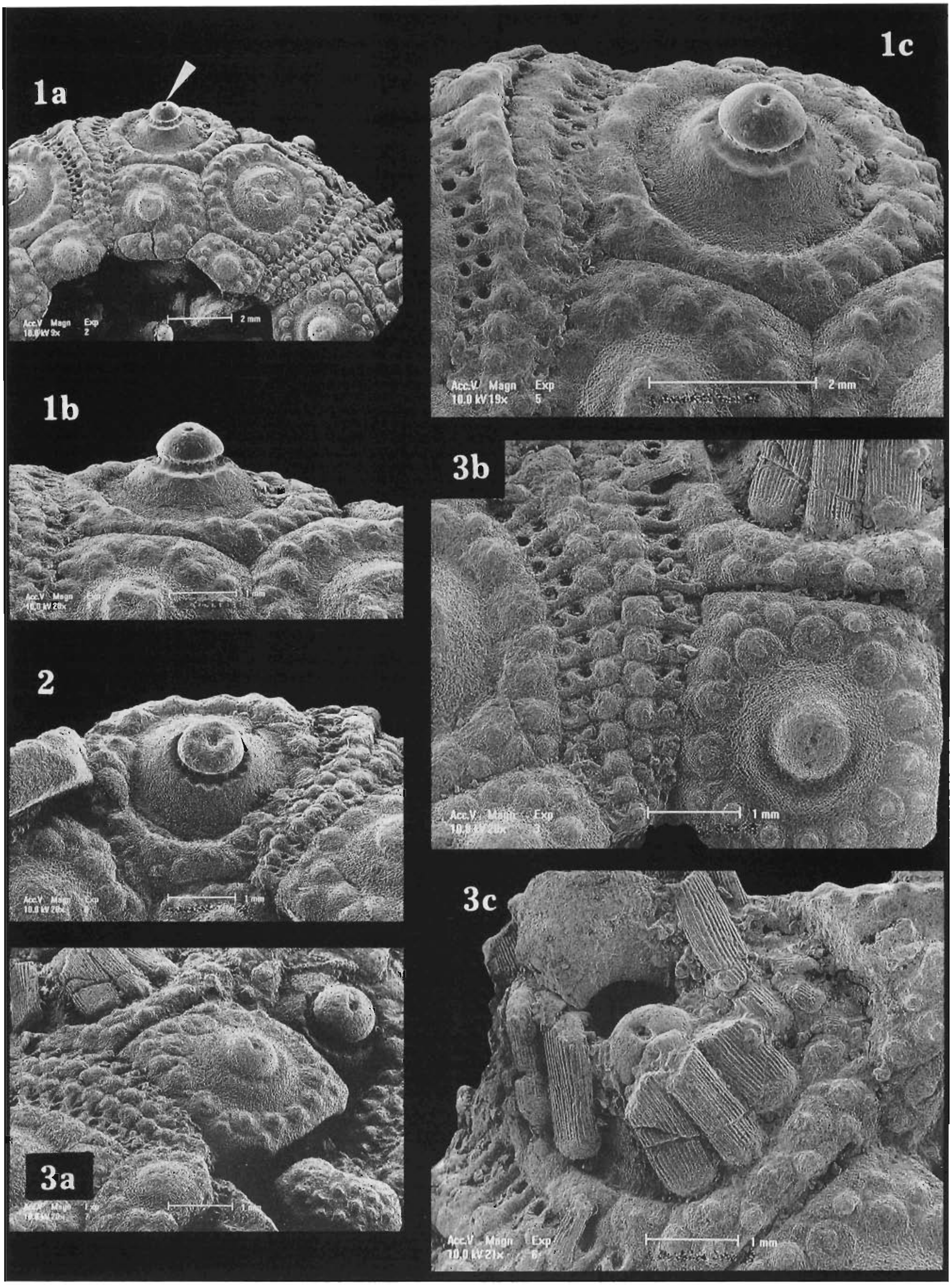

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PLATE 30

Austrocidaris seymourensis sp. n. 120

Fig. 1. Test, a – aboral view, b – lateral view, c – oral view; × 3.
Fig. 2. Fragment of primary spine with appressed scrobicular spines.
Fig. 3. Fragment of primary spine attached to tubercle, a – interambulacrum with spine, b – close-up of spine base.
Fig. 4. Fragment of primary spine, a – basal part of spine, b – base, collar, neck and fragment of shaft.
Fig. 5. Cross-section of primary spine.

Paratype ZPAL E.VII/2, ZPAL 1, Telm1, magnification in SEM photos (Figs 2–5) indicated by bars.

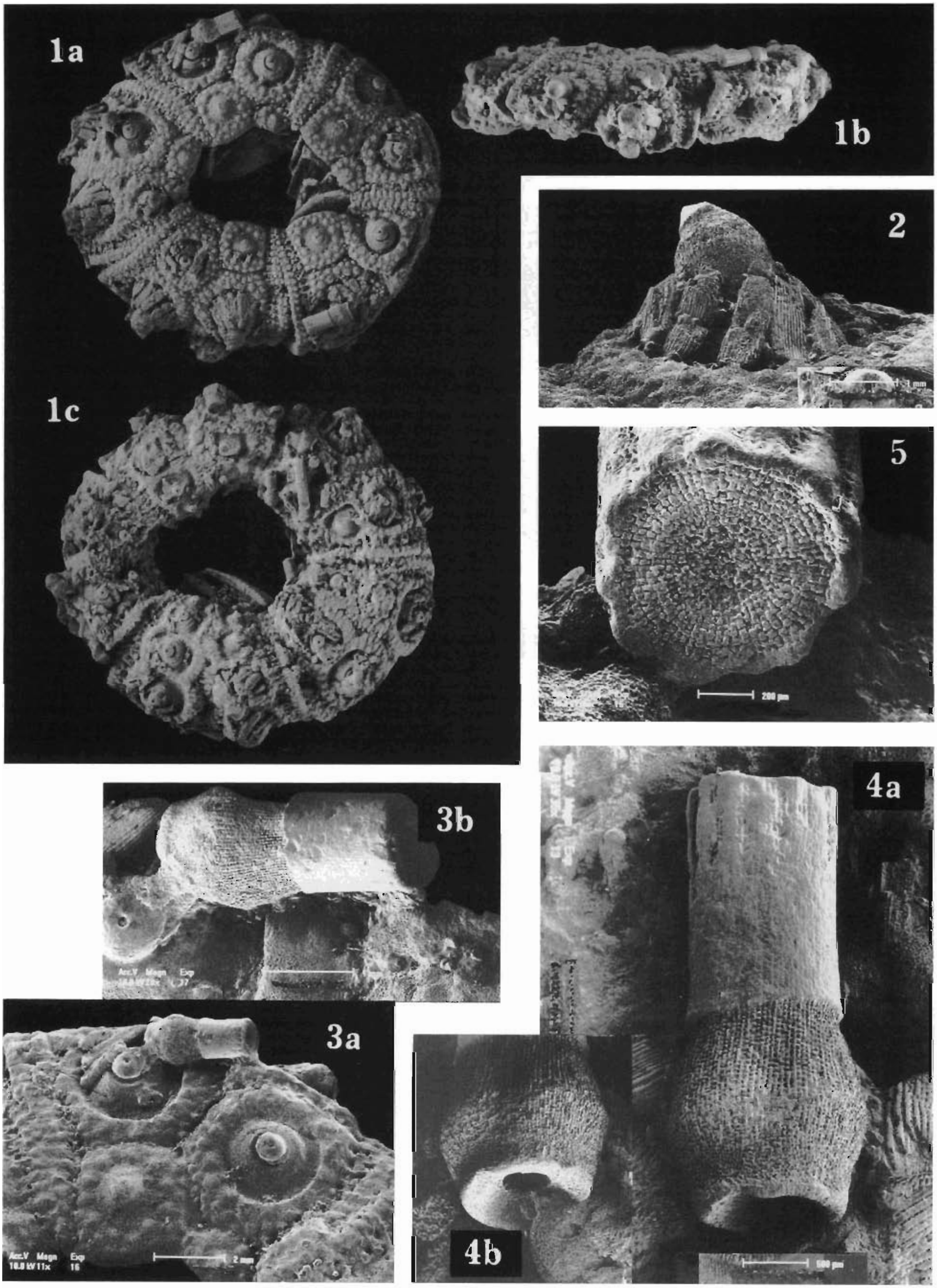

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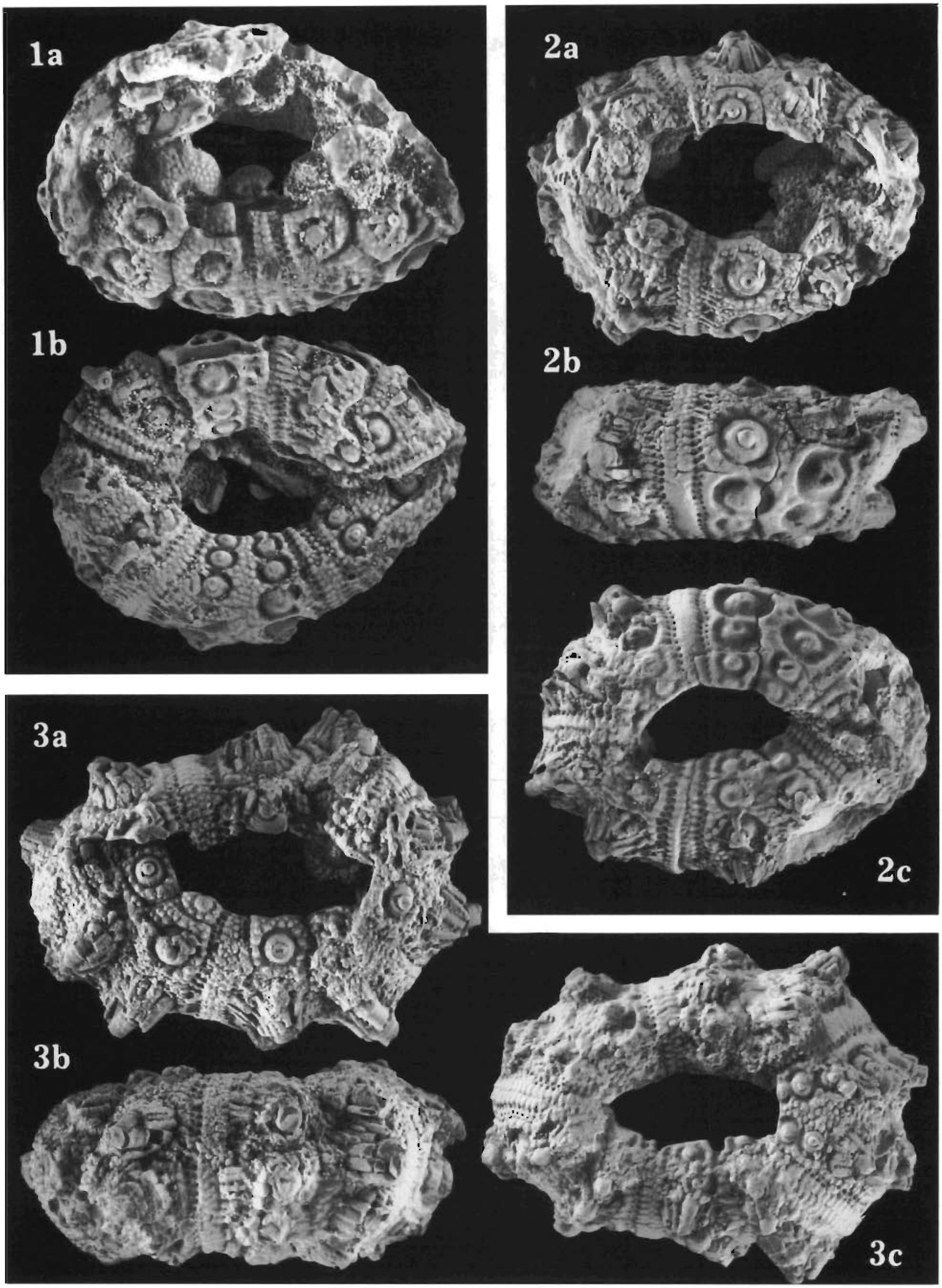
PLATE 31

Austrocidaris seymourensis sp. n. 120

Fig. 1. Test, a – aboral view, b – oral view; ZPAL E.VII/3 (paratype), ZPAL 1, Telm1, × 3.
Fig. 2. Test, a – aboral view, b – lateral view, c – oral view; ZPAL E.VII/4 (paratype), ZPAL 1, Telm1, × 3.
Fig. 3. Test, a – aboral view, b – lateral view, c – oral view; ZPAL E.VII/5 (paratype), ZPAL 1, Telm1, × 3.



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