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OSTRACODS FROM THE OLIGOCENE POLONEZ COVE
FORMATION OF KING GEORGE ISLAND, WEST ANTARCTICA
(Plates 12—18)



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An ostracod assemblage is described from glacio-marine sediments of the Polonez Cove Formation (Oligocene), King George Island (South Shetland Islands, West Antarctica). The assemblage comprises representatives of 16 new species of 15 genera and subgenera. At the generic level the assemblage appears somewhat similar to that known from the *Pecten* Conglomerate stratotype section of Cockburn Island (west Weddell Sea) and shows some affinities with the ostracod fauna of New Zealand and Australia.

Key words: Ostracods, Oligocene, Antarctica.

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MAŁŻORACZKI Z OSĄDÓW FORMACJI POLONEZ COVE (OLIGOCEN) WYSPY KRÓLA JERZEGO, ANTARKTYKA
ZACHODNIA

Streszczenie. — W pracy przedstawiono rezultaty badań nad małżoraczkami oligoceńskimi z osadów lodowcowo-morskich tak zwanego zlepieńca pektenowego na Wyspie Króla Jerzego w Antarktyce Zachodniej. Opisano 16 nowych gatunków małżoraczków, należących do 15 rodzajów i podrodzajów, reprezentujących rząd Podocopida, nadrodziny: Bairdiacea i Cytheracea, wśród których pod względem ilości gatunków dominuje rodzaj *Oculocytheropteron*. Stwierdzono, że rodzajowo, rozpoznany zespół małżoraczków wykazuje pewne podobieństwo do zespołu małżoraczków ze stratotypowego odsłonięcia zlepieńca pektenowego na Wyspie Cockburn, a także wykazuje powiązanie z równowiekowymi małżoraczkami z Nowej Zelandii i Australii.

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INTRODUCTION

Glacio-marine sediments of the so-called *Pecten* Conglomerate (= Low Head Member of the Polonez Cove Formation) of King George Island (fig. 1), in which the ostracods have been found, crop out in lower part of cliff between Low Head and Lions Rump (see BIRKENMAJER 1980, 1982, 1983, 1987 this volume, GAŽDZICKI 1984, GAŽDZICKI and PUGACZEWSKA 1984). Recently the ostracod-bearing sediments have been shown to be of the Oligocene age on

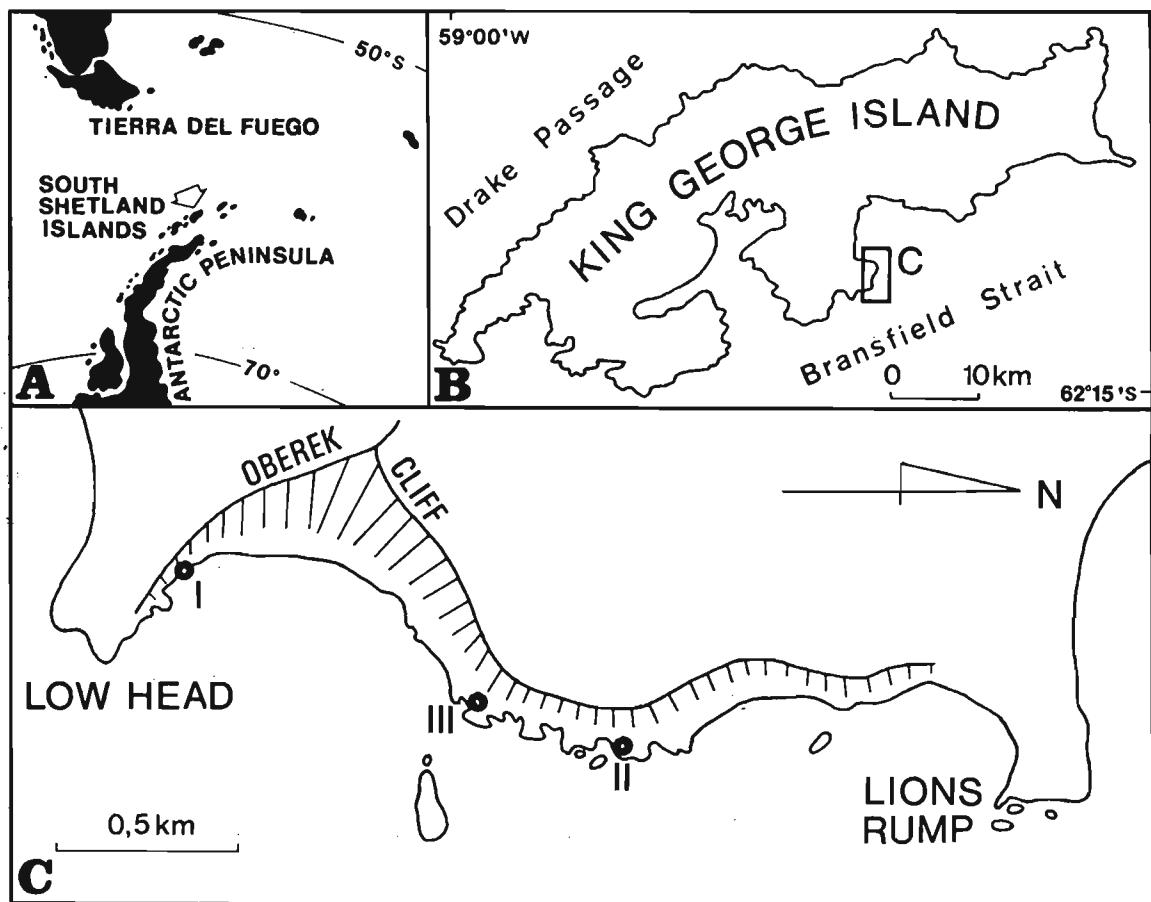


Fig. 1

Map showing position of King George Island in the South Shetland Islands (A), location of the Low Head — Lions Rump area (B and C); sampling profiles (I—III) for ostracods are indicated.

the basis of the coccolith record (GAŽDZICKA and GAŽDZICKI 1985a, b) and radiometric datings (cf. BIRKENMAJER and GAŽDZICKI 1986). The described material was collected by A. GAŽDZICKI (Institute of Paleobiology, Polish Acad. Sci.) in the course of the Third and Fifth Polish Antarctic Expeditions to the H. ARCTOWSKI Station in the years 1978—79 and 1980—81 (BŁASZYK and GAŽDZICKI 1980; GAŽDZICKI and WRONA 1982). Samples richest in ostracods came from the profiles II (layers 2 and 3) and III (GAŽDZICKI and PUGACZEWSKA 1984, pl. 1, figs. 1 a, 1 b), see also Table 1. Samples with a total weight of 100 kg were subjected to repeated maceration in Glauber salt. The ostracod assemblage recovered comprises about 200 specimens, including over 100 relatively well preserved carapaces and some moulds. Before taking SEM micrographs, specimens were washed in sodium pyrophosphate to clean the carapaces.

This paper presents the first extensive palaeontological study on ostracod fauna of the Tertiary in West Antarctica, supplying new data on this group of microfossils in the *Pecten* Conglomerate of Cockburn Island, from which ostracods were reported for the first time by MÜLLER in HENNIG (1911).

Table 1

Number of complete carapaces and valves of ostracods recorded in the profiles I, II and III at Low Head — Lions Rump, King George Island, West Antarctica

SPECIES	LOW HEAD — LIONS RUMP			
	Profile I Layer 11	Profile II		Profile III
		Layer 2	Layer 3	
? <i>Bythocypris weseleensis</i> sp. n.	—	—	3	—
<i>Paibenborchella</i> sp.	—	2	—	—
<i>Hemicytheridea kinggeorgeensis</i> sp. n.	—	4	7	20
<i>Eucythere (Rotundacythere) polonezensis</i> sp. n.	—	—	4	—
? <i>Copitus ezcurraensis</i> sp. n.	—	1	1	5
<i>Phalocythere (Otarocystere) tokarskii</i> sp. n.	—	1	5	7
<i>Atlanticythere bransfieldensis</i> sp. n.	—	—	2	2
? <i>Falsobuntonia antarctica</i> sp. n.	—	3	2	3
<i>Quadracythere gazdzickii</i> sp. n.	—	—	5	1
<i>Reussicythere piaseckii</i> sp. n.	—	1	1	2
<i>Neobuntonia southshetlandensis</i> sp. n.	—	—	1	2
<i>Loxoconcha rolnickii</i> sp. n.	—	—	3	—
<i>Loxocauda</i> sp.	—	—	1	—
<i>Hemicytherura arctowskii</i> sp. n.	—	3	17	13
<i>Cytheropteron litwini</i> sp. n.	—	—	3	—
<i>Oculocytheropteron rakuai</i> sp. n.	—	—	8	—
<i>Oculocytheropteron lowheadensis</i> sp. n.	1	2	2	2
<i>Oculocytheropteron</i> sp.	—	—	—	2
<i>Xestoleberis birkenmajeri</i> sp. n.	—	—	6	—

The described collection is housed in the Institute of Paleobiology of the Polish Academy of Sciences, Warsaw (abbreviated ZPAL).

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SYSTEMATIC DESCRIPTION

Order **Podocopida** MÜLLER, 1894
 Superfamily **Bairdiacea** SARS, 1888
 Family **Bythocyprididae** MADDOCKS, 1969
 Genus *Bythocypris* BRADY, 1880
 ? *Bythocypris weseensis* sp. n.
 (pl. 12 : 1a—d)

Holotype: Carapace ZPAL O.XXVII/1, pl. 12 : 1.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: after the Wesele Cove.

Material. — Three poorly preserved carapaces.

Diagnosis. — Carapace bean-like in lateral outline. Right valve overlapping the left along free margin. Surface smooth.

Dimensions (in mm):

	length (l)	height (h)	width (w)
Carapace ZPAL O.XXVII/1	0.80	0.32	0.24

Description. — Carapace bean-like in lateral outline. Right valve larger than the left and overlapping the latter along the whole free margin. Dorsal margin arcuate, ventral margin biconvex with a median concavity. Anterior end uniformly rounded, posterior end elongate, rounded, about one-third lower than the former. Carapace longest close to the ventral margin, and the highest at about a third of its length from the anterior margin. Surface smooth.

Remarks. — The described ?*Bythocypris weseensis* sp. n. differs from *B. chapmani* NEALE, 1975, reported from the Upper Cretaceous of western Australia in the lower and narrower carapace with its more elongate posterior part. The differences are similar also in the case of *B. sp. aff. B. pachyconcha* VAN DEN BOLD (1966a) from the Miocene and Pliocene of Venezuela, and *B. gohrbandti* ESKER, 1968, described from strata ranging in age from the Upper Maastrichtian to Pliocene of Tunisia (DONZE *et al.* 1982). The species described here is assigned to the genus *Bythocypris* tentatively, because of the above mentioned poor preservation of the carapaces.

Occurrence. — King George Island, Low Head-Lions Rump, profile I, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

Superfamily **Cytheracea** BAIRD, 1850
 Family **Cytheridae** BAIRD, 1850
 Genus *Paijenborchella* KINGMA, 1948
Paijenborchella sp.
 (pl. 12 : 2a—b)

Material. — Two poorly preserved moulds.

Dimensions (in mm):

	l	h	w
Mould ZPAL O.XXVII/2	0.68	0.38	0.33

Remarks. — The mould is assigned to the genus *Paijenborchella* taking into account lateral outline and poorly marked median sulcus.

Occurrence. — King George Island, Low Head — Lions Rump, profile II, layer 2; Polonez Cove Formation, Low Head Member (Oligocene).

Genus *Hemicytheridea* KINGMA, 1948*Hemicytheridea georgeensis* sp. n.

(pl. 12 : 3a—d, 4a—d)

Holotype: Carapace ZPAL O.XXVII/3; pl. 12 : 3.*Type locality*: Low Head — Lions Rump, profile II, layer 2.*Type horizon*: Polonez Cove Formation, Low Head Member (Oligocene).*Derivation of the name*: after King George Island.**Material.** — Thirty one carapaces and two left valves of both male and female individuals.**Diagnosis.** — Carapace trapezoidal in lateral outline. Anterior end truncated, rounded, posterior end broadly rounded. Posterior cardinal angle distinct. Lateral surface reticulated.

Dimension (in mm):

	l	h	w
Carapace ♀, holotype ZPAL O.XXVII/3	0.68	0.36	0.32
Left valve ♂, paratype ZPAL O.XXVII/4	0.75	0.36	—

Description. — Carapace trapezoidal in lateral outline. Left valve slightly larger than the right. Dorsal margin straight, ventral margin almost straight. Anterior end truncated but rounded, posterior end broadly rounded. Posterior cardinal angle varying from 100 to 105°. Carapace longest somewhat below the mid-height, highest in the anterior and widest in the posterior part. Surface reticulation of irregular fossae which vary in outline. Sculptural elements arranged almost parallel to anterior and posterior margins in anterior and posterior parts; middle part of carapace surface displaying a single, vertical, faint depression from which the fossae are arranged in 2 to 3 convex-upward's rows which continue towards the posterior. Fossae narrow, elongate and randomly distributed in mid-dorsal area; set obliquely to hinge line dorsally in the posterior part. Sexual dimorphism clearly marked: carapaces of female individuals shorter and more convex in posterior part.**Remarks.** — *Hemicytheridea georgeensis* sp. n. is most similar to *H. reticulata* KINGMA, 1948 from northern Sumatra, from which it differs in its much larger size and outline of reticulation fossae in the mid-dorsal, median and mid-anterior lateral areas of the carapace.**Occurrence.** — King George Island, Low Head — Lions Rump, profile III, profile II, layers 2 and 3; Polonez Cove Formation, Low Head Member (Oligocene).Family *Eucytheridae* PURI, 1954Genus *Eucythere* BRADY, 1868Subgenus *Rotundracythere* MANDELSTAM, 1958*Eucythere (Rotundracythere) polonezensis* sp. n.

(pl. 18 : 1a—f)

Holotype: Carapace O.XXVII/23; pl. 18 : 1.*Type locality*: Low Head — Lions Rump, profile II, layer 3.*Type horizon*: Polonez Cove Formation, Low Head Member (Oligocene).*Derivation of the name*: after Polonez Cove.**Material.** — Four well-preserved carapaces.**Diagnosis.** — *Eucythere (Rotundracythere)* with small circular pits at carapace surface, and fine reticulation with polygonal fossae in anterior part.

Dimension (in mm):

	l	h	w
Carapace ZPAL O.XXVII/23	0.48	0.32	0.30

Description. — Carapace subtrapezoidal in lateral outline. Left valve larger than the right. Dorsal margin strongly bent, ventral margin almost straight. Anterior end rounded, posterior

end truncated but rounded. Carapace longest somewhat below the mid-height, highest in the middle part, and widest in the posterior part. Anterior lateral surface of carapace ornamented with fine reticulation with polygonal fossae; the rest of the surface covered with small circular pits. Large, central, circular tubercle surrounded by a marked furrow on its anterior, posterior and dorsal sides. Eye tubercle absent. Five longitudinal ribs occur ventrally on all the valves.

Remarks. — *Eucythere (Rotundocythere) polonezensis* sp. n. resembles *E. (R.) pseudosubovalis* WHATLEY and DOWNING, 1983 from the Middle Miocene of Australia, differing in reticular ornamentation of posterior part of valve and larger and less numerous pits.

Occurrence. — King George Island, Low Head — Lions Rump, profile II, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

Family **Neocytherideidae** PURI, 1957

Genus *Copytus* SKOGSBERG, 1939

?*Copytus ezcurraensis* sp. n.

(pl. 12 : 5a—b; pl. 13 : 2a—b)

Holotype: Carapace ZPAL O.XXVII/5; pl. 12 : 5, pl. 13 : 2.

Type locality: Low Head — Lions Rump, profile II, layer 2.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: after the Ezcurra Inlet.

Material. — Seven poorly preserved carapaces.

Diagnosis. — Carapace cylindrical, subrectangular in lateral outline. Left valve larger than the right. Posterior end semicircular, anterior end truncated but rounded.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/5	0.84	0.32	0.24

Description. — Carapace cylindrical, subrectangular in lateral outline. Left valve larger than the right. Dorsal margin straight, almost parallel to the ventral. Posterior end truncated but rounded, posterior end semicircular. Carapace longest close to the ventral margin, highest in the anterior part, and widest in the posterior part. Surface smooth.

Remarks. — ?*Copytus ezcurraensis* sp. n. differs from *C. rara* MCKENZIE, 1967 from the Lower Miocene of New Zealand (SWANSON 1969) in its lower and shorter carapace, and from the Recent *C. elongatus* BENSON, 1964 from Sulzberger Bay, Antarctica, and *C. elongatus* reported from the Halley Bay, Antarctica (NEALE 1967), in its steeper anterior end. The new species differs from *C. sp.* from the Lower Miocene of Tierra del Fuego (ECHEVARRIA 1982) in the larger size of carapace and the lack of fine ribs in the anteroventral part. ?*Copytus ezcurraensis* sp. n. is assigned to the genus *Copytus* with reservations because of poor preservation of the available specimens.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layers 2 and 3; Polonez Cove Formation, Low Head Member (Oligocene).

Family **Trachyleberididae** SYLVESTER-BRADLEY, 1948

Genus *Phalcocythere* SIDDIQUI, 1971

Subgenus *Otarocythere* AL-FURAIH, 1980

Phalcocythere (Otarocythere) tokarskii sp. n.

(pl. 13 : 1a—d)

Holotype: Carapace ZPAL O.XXVII/6; pl. 13 : 1.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: In honour of Dr. ANTONI TOKARSKI, member of Polish Antarctic Expeditions.

Material. — Thirteen partly damaged carapaces.

Diagnosis. — Carapace almost rectangular in lateral outline. A weakly marked ridge with tubercle in the central part is traceable close to the dorsal margin. Eye tubercle and posterior hinge ear clearly marked. Alar lateroventral process steeply truncated in posterior part. Surface ornamented with fine reticulation.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/6	0.84	0.52	0.50

Description. — Carapace almost rectangular in lateral outline. A weakly marked ridge with tubercle in its central part is traceable close to the dorsal margin. Ventral margin with a median concavity. Anterior end rounded, posterior end truncated but rounded. Posterior cardinal angle is 100°. Carapace longest at mid-height, highest in the anterior part, and widest in the posteroventral part. Eye tubercle and posterior hinge ear clearly marked. Muscle tubercle poorly developed. Alar lateroventral process steeply truncated in posterior part. Tiny tubercles occur between admarginal flanges along the anterior and posterior margins. Surface of carapace finely reticulated.

Remarks. — *Phalcocythere (Otarocythere) tokarskii* sp. n. differs from *P. (O.) intercalata* AL-FURAIH, 1980 in the presence of a tubercle in the central part of a weak ridge close to the dorsal margin and in its finely reticulated surface.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layers 2 and 3: Polonez Cove Formation, Low Head Member (Oligocene).

Genus *Atlanticythere* BENSON, 1977

Atlanticythere bransfieldensis sp. n.

(pl. 13 : 3a—d)

Holotype: Carapace ZPAL O.XXVII/7; pl. 13 : 3.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member, (Oligocene).

Derivation of the name: after the Bransfield Strait.

Material. — Four poorly preserved carapaces.

Diagnosis. — *Atlanticythere* with heavily reticulated surface with polygonal depressions. Inframural pores sparse. Wavy admarginal flanges close to anterior and posterior margins.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/7	1.08	0.56	0.52

Description. — Carapace ovate-rectangular in outline. Dorsal and ventral margins straight; anterior and posterior ends rounded. Carapace longest at mid-height, highest in the anterior part, and widest in the posteroventral part. Eye tubercle present. Surface heavily reticulated with polygonal depressions. Inframural pores sparse. Ventral side with poorly-visible, short, oblique ribs. Short spines mainly present at the posterior margin. A wavy, weakly-dentate and markedly thickened admarginal flange occurs along the anterior and posterior margins.

Remarks. — *Atlanticythere bransfieldensis* sp. n. differs from *A. ?neogenica* BENSON, 1977 from the Lower Miocene of South Atlantic in its heavier reticulation, the presence of an eye tubercle, an its larger size.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layer 3: Polonez Cove Formation, Low Head Member (Oligocene).

Subfamily **Trachyleberidinae** SYLVESTER-BRADLEY, 1948Genus *Falsobuntonia* MALZ, 1982*?Falsobuntonia antarctica* sp. n.

(pl. 14 : 1a—d)

Holotype: Carapace ZPAL O.XXVII/8; pl. 14 : 1.*Type locality*: Low Head — Lions Rump; profile II, layer 2.*Type horizon*: Polonez Cove Formation, Low Head Member (Oligocene).*Derivation of the name*: from its occurrence in Antarctica.**Material.** — Eight poorly preserved carapaces.**Diagnosis.** — *?Falsobuntonia* with ribs along anterior and ventral margins and three tubercles in the posterior part. Posterior cardinal angle is 95°.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/8	0.76	0.38	0.28

Description. — Carapace elliptical-rectangular in outline. Left valve larger than the right. Dorsal margin almost straight, ventral margin with median concavity. Anterior margin steeply rounded, posterior margin broadly rounded. Carapace longest at mid-height, highest one-third of the length from the anterior end, and widest one-third of the length from the posterior end. Posterior cardinal angle is 95°. Eye tubercle missing. Carapace almost smooth, except for very fine reticulation in posterior part, and with three tubercles: two in the posteroventral part and one in the posterodorsal. Ribs running along the anterior and ventral margins join the proximal tubercle posteroventrally; moreover, a number of fine tubercles occur between the ribs and the anterior margin and close to the posterior margin.**Remarks.** — The above mentioned features of external morphology make *?Falsobuntonia antarctica* sp. n. most similar to *F. taiwanica* MALZ, 1982. However, the available material appears insufficient for analysis of internal structure of valves so the species is only assigned to the genus *Falsobuntonia* with reservations.**Occurrence.** — King George Island, Low Head — Lions Rump, profile III, profile II, layer 2 and 3; Polonez Cove Formation, Low Head Member (Oligocene).Family **Hemicytheridae** PURI, 1953Genus *Quadracythere* HORNIBROOK, 1952*Quadracythere gazdzickii* sp. n.

(pl. 14 : 3a—c, 4)

Holotype: Carapace ZPAL O.XXVII/9; pl. 14 : 4.*Type locality*: Low Head — Lions Rump, profile II, layer 3.*Type horizon*: Polonez Cove Formation, Low Head Member (Oligocene).*Derivation of the name*: In honour of Dr. A. GAJDICKI, member of the Polish Antarctic Expeditions.**Material.** — Six carapaces and two poorly-preserved valves.**Diagnosis.** — *Quadracythere* with rib running along free margin, and clearly marked latero-ventral ridge. A number of curved rows of fossae form the reticulation in the posterior part.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/9	0.80	0.48	0.38
Right valve ZPAL O.XXVII/10	0.78	0.40	

Description. — Carapace almost trapezoidal in lateral outline. Dorsal and ventral margins straight; anterior and posterior ends steeply rounded. Carapace longest at below mid-height,

highest in the anterior part, and widest in the posteroventral part. Eye tubercle present. Surface of carapace reticulated. Large almost quadrangular reticulation fossae arranged in rows spreading radially from the large muscle node, and curved upwards in the posterodorsal part. Infra-mural pores sparse. Lateroventral ridge almost reaching posterior margin in posterior part, and ending at a rib running parallel to almost the whole free margin (except for a section in the posterodorsal part of the valve).

Remarks. — *Quadracythere gazdzickii* sp. n. is most similar to *Q. mediaruga* HORNIBROOK, 1953 from the Lower Miocene of New Zealand, from which it differs in the presence of a latero-ventral rib.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layer 2 and 3; Polonez Cove Formation, Low Head Member (Oligocene).

Genus *Reussicythere* BOLD, VAN DEN 1966

Reussicythere piaseckii sp. n.

(pl. 14 : 2a—d)

Holotype: Carapace ZPAL O.XXVII/11; pl. 14 : 2.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: In honour of Dr. JACEK PIASECKI, member of the Polish Antarctic Expedition.

Material. — Four poorly preserved carapaces.

Diagnosis. — *Reussicythere* with finely reticulated surface and with ribs parallel to anterior and posterior margins. Single spine in posteroventral part of each valve.

Dimensions (in mm):

	1	h	w
Carapace ZPAL O.XXVII/11	0.78	0.36	0.28

Description. — Carapace almost trapezoidal in outline. Left valve slightly larger than right. Dorsal margin straight, ventral margin incurved in middle part. Posterior end steeply rounded, anterior margin truncated but rounded. Carapace longest at below mid-height, highest at one-quarter of the length from the anterior end, and widest in the posterior part. Surface ornamented with very fine reticulation with polygonal fossae. Three fine ribs occur along the whole free margin, and a single, posteriorly — directed spine in posteroventral part of each valve.

Remarks. — *Reussicythere piaseckii* sp. n. differs from *R. reussi* (BRADY, 1869) described from Colon Harbour, Panama, by VAN DEN BOLD (1966b), in its reticulate ornamentation and the parallel ribs which occur along the free margin.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layer 2 and 3; Polonez Cove Formation, Low Head Member (Oligocene).

Family ?*Hemicytheridae* PURI, 1953

Genus *Neobuntonia* HARTMANN, 1981

Neobuntonia southshetlandensis sp. n.

(pl. 15 : 2a—d)

Holotype: Carapace ZPAL O.XXVII/12; pl. 15 : 2.

Type locality: Low Head — Lions Rump, profile III.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: after the South Shetland Islands.

Material. — Three poorly preserved carapaces.

Diagnosis. — *Neobuntonia* with heavily pitted surface and parallel ribs along anterior and ventral margins. A sulcus occurs in the posterior part of the muscle node. Eye tubercle missing.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/12	0.50	0.26	0.26

Description. — Carapace bean-like in outline. Dorsal margin curved, ventral margin incised in the middle. Left valve slightly larger than the right. Anterior and posterior ends obliquely rounded. Carapace longest close to the ventral margin, highest at one-third of the length from the anterior end, and widest in the posterior part. Eye tubercle missing. Surface heavily pitted. Five ribs parallel to the margin occur anteriorly and ventrally. Ribs oriented in direction consistent with the length of carapace in its posterior part. Sulcus in the posterior part of muscle node.

Remarks. — *Neobuntonia southshetlandensis* sp. n. differs from *N. sibertorum* HARTMANN, 1981 from the tropical and subtropical eulittoral of eastern Australia in its more obliquely rounded anterior and posterior ends, surface ornamented with ribs, and lack of an eye tubercle.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

Family *Loxoconchidae* SARS, 1925

Genus *Loxoconcha* SARS, 1866

Loxoconcha rolnickii sp. n.

(pl. 15 : 1a—d)

Holotype: Carapace ZPAL O.XXVII/13; pl. 15 : 1.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: In honour of Eng. KRZYSZTOF ROLNICKI, member of the Polish Antarctic Expeditions.

Material. — Three poorly preserved carapaces.

Diagnosis. — A *Loxoconcha* which is trapezoidal-ovate in lateral outline. Reticulation fossae large in mid-part of valve, varying in size in the anterior, and small in the posterior. Ventral side with longitudinal ribs.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/13	0.44	0.26	0.23

Description. — Carapace trapezoidal-ovate in lateral outline. Dorsal margin straight, ventral incised in middle part. Anterior end steeply rounded, posterior end broadly rounded. Carapace longest at mid-height, highest in the anterior part, and widest in the posterior part. Lateral surface of carapace weakly reticulated. Reticulation fossae varying in shape but generally larger and deeper in mid-part than in the anterior and posterior. Ventral side ornamented with longitudinal ribs, gradually passing into the ornamentation elements of the central part of the valve.

Remarks. — *Loxoconcha rolnickii* sp. n. is most similar to some species such as *L. helenae* CROUCH, 1949 (see VALENTINE 1976), *L. stavensis* BLAKE, 1950 and *L. delemontensis* OERTLI, 1956, differing in outline of dorsal, ventral and anterior margins and style of ornamentation of lateral surface. The Antarctic form differs from all the above mentioned in a marked reduction in the size of fossae in the peripheral part of valve.

Occurrence. — King George Island, Low Head — Lions Rump, profile II, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

Genus *Loxocauda* SCHORNIKOV, 1969
Loxocauda sp.
 (pl. 15 : 3a—d)

Material. — A single carapace, damaged anteriorly and posteriorly.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/14	1.04	0.44	0.34

Remarks. — The figured carapace was assigned to the genus *Loxocauda* on the basis of similarity of lateral outline only.

Occurrence. — King George Island, Low Head — Lions Rump, profile II, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

Family Cytheruridae MÜLLER, 1894
 Genus *Hemicytherura* ELOFSON, 1941
Hemicytherura arctowskii sp. n.
 (pl. 16 : 1a—d, 2a—c, 3a—d, 4a—d)

Holotype: Carapace ZPAL O.XXVII/15; pl. 16 : 3.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: In honour of the first Polish explorer of Antarctica, Professor HENRYK ARCTOWSKI.

Material. — Thirty-three, well-preserved specimens, including some identifiable as males and females.

Diagnosis. — *Hemicytherura* with longitudinal, twice branching median rib and ventral rib. Reticulate surface, including second order ornamentation occurring between the ribs.

Dimensions (in mm):

	l	h	w
Carapace ♀, ZPAL O.XXVII/15	0.44	0.28	0.23
Left valve ♂, ZPAL O.XXVII/16	0.46	0.25	—
Carapace premature ZPAL O.XXVII/17	0.40	0.24	0.22
Carapace juvenile ZPAL O.XXVII/18	0.38	0.20	0.20

Description. — Carapace trapezoidal-ovate in outline. Dorsal margin slightly curved, ventral margin incised in middle part. Anterior margin truncated but rounded, posterior margin somewhat elongate, sharp-pointed. Carapace longest at mid-height, highest at one-third of its length from the anterior end, and widest in the middle part. Lateral surface ornamented with three longitudinal, finely pitted ribs: ventral, medial and dorsal. Ventral rib bent downwards in its posteroventral part and branching mid-ventrally; shorter branch oriented transversely, towards medial rib. Medial rib branching twice: once in the mid-posterior part and thereafter in the posterodorsal. In both cases second-order ribs surround 6 polygonal fossae, similar to reticulation fossae covering the lateral surface of valve between the ribs. Dorsal rib parallel to dorsal margin, with a branch oriented downwards in the mid-dorsal part. Second order ornamentation represented by numerous fine pits which occur in the reticulation fossae. Ventral side of carapace with fine longitudinal ribs, 3 to 4 in number on each valve. Female individuals more convex in the posterior part, shorter and higher than the males.

Remarks. — *Hemicytherura arctowskii* sp. n. resembles the Recent *H. gravis* HORNIBROOK, 1953 from New Zealand, differing in its less incurved dorsal margin and the double bifurcation of the medial rib.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layer 2 and 3; Polonez Cove Formation, Low Head Member (Oligocene).

Subfamily **Cytheropterinae** HANAI, 1957
 Genus *Cytheropteron* SARS, 1866
Cytheropteron litwini sp. n.
 (pl. 16 : 5a—d)

Holotype: Carapace ZPAL O.XXVII/19; pl. 16 : 5.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: In honour of helicopter pilot of the Polish Antarctic Expedition, Mr. JÓZEF LITWIN.

Material. — Three poorly preserved carapaces.

Diagnosis. — *Cytheropteron* with flat lateral surface delineated by a rib which is offset in its posterodorsal part. Lateral surface ornamented with tiny pits.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/19	0.54	0.34	0.34

Description. — Carapace semicircular in lateral outline. Dorsal margin arcuately bent, ventral margin slightly incised in the middle. Anterior end truncated but rounded, posterior end wedge-like. Carapace longest at somewhat below mid-height, highest anteromedianly, and widest in posteroventrally. Lateral surface delineated by a rib running some distance in from the dorsal margin and offset in its posteroventral part. Lateral surface ornamented with tiny pits, larger in the medial part and finer in the anterior and posterior parts. Sulcus poorly marked in ventral part. Right valve slightly overlapping the left at dorsal side, along medial hinge section. Ventral valve almost flat, with numerous longitudinal ribs and inter-rib area ornamented with very fine pits.

Remarks. — *Cytheropteron litwini* sp. n. is most similar to *C. testudo* SARS, 1869 (see WHATLEY and DOWNING 1983) from the Miocene and Pleistocene of the south-western Pacific and the Middle Miocene of south-western Australia, and *C. testudo* from the Pleistocene of São Paulo Plateau and Rio Grande Rise (BENSON 1977), differing in the clearly offset rib in the posterodorsal part, the coarser pits on the lateral surface, and the more dorsally situated posterior end of carapace. Moreover, valves of the former are longer and higher. The Antarctic form differs from *C. strictum* BOLD, VANDEN, 1972 in the lack of reticulate ornamentation and larger size of carapace, and from *C. arcticum* NEALE and HOWE, 1973, known from the cold waters of Russian Harbour, Novaya Zemlya, in ornamentation and smaller length of valves.

Occurrence. — King George Island, Low Head — Lions Rump, profile II, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

Genus *Oculocytheropteron* BATE, 1972
Oculocytheropteron rakusai sp. n.
 (pl. 17 : 1a—d)

Holotype: ZPAL O.XXVII/20; pl. 17 : 1.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: In honour of Professor STANISŁAW RAKUSA-SUSZCZEWSKI, the chief of several Polish Antarctic Expeditions.

Material. — Eight well-preserved carapaces.

Diagnosis. — *Oculocytheropteron* with reticulate lateral valve surface. Posterior part of valve with reticulation of concentrically arranged, small, circular pits. Mid-ventral concavity partly obscuring ventral margin.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/20	0.48	0.32	0.30

Description. — Carapace subtrapezoidal in lateral outline. Left valve slightly larger than the right. Dorsal margin curved, ventral margin incised in mid-anterior section. Anterior end truncated but rounded, posterior end elongate, sharp-pointed. Carapace longest at mid-height, highest in the anteroventral part, and widest in posteroventrally. Surface reticulate with pits of varying shape and size, which decrease in size towards the anterior, ventral and posterior parts of the valve and are concentrically arranged in the posterior part. Lateral surface delineated by a fine rib along anterior, ventral and posterior margins. Mid-ventral concavity partly obscuring ventral margin. On the dorsal side of the carapace, the medial part of the dorsal margin is situated in a deep furrow. Left valve overlapping the right in anterior and posterior parts of dorsal margin. Ventral side of both valves ornamented with 5 longitudinal ribs, curving outwards, the two shorter of which are confined to the anterior part only.

Remarks. — *Oculocytheropteron rakusai* sp. n. differs from *O. lowheadensis* sp. n. in its reticulation of small, concentrically arranged pits in the posterior part of the valve.

Occurrence. — King George Island, Low Head — Lions Rump, profile II, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

Oculocytheropteron lowheadensis sp. n.

(pl. 17 : 2a—d, 3a—d)

Holotype: Carapace ZPAL O.XXVII/21; pl. 17 : 2.

Type locality: Low Head — Lions Rump, profile III.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: After the Low Head locality.

Material. — Seven poorly preserved carapaces.

Diagnosis. — *Oculocytheropteron* with lateral valve surface reticulate. Posterior part of valve with rectangular pits arranged in two curved, convex-upwards rows. Posteroventral convexity partly obscuring ventral margin.

Dimensions (in mm):

	l	h	w
Carapace ♀, ZPAL O.XXVII/21	0.52	0.28	0.30
Carapace ♂, ZPAL O.XXVII/22	0.58	0.30	0.28

Description. — Carapace subtrapezoidal in lateral outline. Left valve slightly larger than the right. Dorsal margin somewhat curved, ventral margin sinusoidal. Anterior margin truncated but rounded, posterior margin sharply rounded. Carapace longest at mid-height, highest in the anteromedial part, and widest posteroventrally. Eye tubercle poorly marked. Surface ornamented with large, rectangular pits arranged in slightly convex-upwards rows in the posterior part; subquadrate in outline and almost concentrically arranged in the anterior part. Lateral surface delineated by a fine rib along the anterior, ventral and posterior margins. Posteroventral convexity partly obscuring ventral margin. On the dorsal side of the carapace, medial part of dorsal margin situated in a deep furrow. Left valve overlapping the right in anterior and posterior sections of dorsal margin. Ventral side of carapace ornamented with 5 longitudinal and outwardly curved ribs, the two shorter of which appear confined to the anterior part only. Sexual dimorphism clearly marked: male individuals longer and more slender than the female ones.

Remarks. — *Oculocytheropteron lowheadensis* sp. n. differs from *O. rakusai* sp. n. in its reticulation of large, rectangular pits arranged in slightly convex-upwards rows in the posterior part, and large, almost symmetrically arranged pits in the anterior part.

Occurrence. — King George Island, Low Head — Lions Rump, profile III, profile II, layer 2 and 3, profile I; Polonez Cove Formation, Low Head Member (Oligocene).

Oculocytheropteron sp.
(pl. 17 : 4a—c)

Material. — Two moulds.

Dimensions (in mm):

	l	h	w
Mould ZPAL O.XXVII/24	0.55	0.31	0.31

Remarks. — The figured mould was assigned to the genus *Oculocytheropteron* on the basis of its general morphology only.

Occurrence. — King George Island, Low Head — Lions Rump, profile III; Polonez Cove Formation, Low Head Member (Oligocene).

Family *Xestoleberididae* SARS, 1928

Genus *Xestoleberis* SARS, 1866

Xestoleberis birkenmajeri sp. n.

(pl. 18 : 2a—d)

Holotype: Carapace ZPAL O.XXVII/25; pl. 18 : 2.

Type locality: Low Head — Lions Rump, profile II, layer 3.

Type horizon: Polonez Cove Formation, Low Head Member (Oligocene).

Derivation of the name: In honour of Professor KRZYSZTOF BIRKENMAJER, the scientific leader of earth sciences research groups during several Polish Antarctic Expeditions.

Material. — Six poorly preserved carapaces.

Diagnosis. — Carapace with strongly curved dorsal margin and incised ventral margin.

Left valve larger than the right. Surface of carapace smooth.

Dimensions (in mm):

	l	h	w
Carapace ZPAL O.XXVII/25	0.52	0.32	0.32

Description. — Carapace semicircular in lateral outline. Left valve larger than the right. Dorsal margin strongly curved, ventral margin incised in middle part. Anterior margin obliquely rounded, posterior margin subobliquely rounded. Carapace longest at below the mid-height, highest close to the middle of its length, and widest lateroventrally at the mid-length in lateroventral part. Surface of carapace smooth. Carapace ovate in outline in dorsal view. Ventral side flattened. Contact line somewhat sinuous.

Remarks. — *Xestoleberis birkenmajeri* sp. n. is most similar to *X. sp.* from sediments of the continental shelf of the Otago Peninsula, New Zealand (SWANSON 1979), from which it differs in its completely smooth lateral surface and larger size of carapace.

Occurrence. — King George Island, Low Head — Lions Rump, profile II, layer 3; Polonez Cove Formation, Low Head Member (Oligocene).

CONCLUSIONS

The analysed ostracods belong to genera represented (except for the genus *Oculocytheropteron*) by single species. All the described species appear to be new and cannot be used as index fossils at the present stage of studies. Some palaeogeographical and palaeoecological conclusions

are drawn but they should be treated as hypothetical to some extent as studies on the ostracod fauna in this region of Antarctica are still at a fairly early stage. However, comparisons with previously described assemblages show that the present assemblage from strata of the Low Head Member appears fairly closely related at a generic level to those known from the Tertiary and Recent sediments in New Zealand, Australia, and partly Argentina (HORNIBROOK 1952, SWANSON 1969, 1970; WHATLEY and DOWNING 1983, HARTMANN 1981, BATE 1972, ECHEVARRIA 1982). It comprises species of the genera *Oculocytheropteron*, *Neobuntonia*, *Quadracythere*, and *Eucythere* (*Rotundacythere*). The identified ostracod assemblage comprises representatives of species of both deep-water and shallow-water genera (*cf.* MORKHOVEN 1963), with a marked predominance of the latter. The occurrence together of deep- and shallow-water forms gives further support to the idea that the origin of the sediments of the Low Head Member is due to storms (GAJDZICKI 1984).

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EXPLANATIONS OF PLATES 12—18

All ostracods are from Low Head — Lions Rump area, Polonez Cove Formation, Low Head Member (Oligocene)

PLATE 12

?*Bythocypris weselensis* sp. n.

- Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; × 80; holotype (ZPAL O.XXVII/1); profile II, layer 3.

Paijenborchella sp.

2. Mould; *a* right lateral view, *b* left lateral view; $\times 60$; (ZPAL O.XXVII/2); profile II, layer 3.

Hemicytheridea kinggeorgeensis sp. n.

3. Carapace ♀; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view, $\times 80$; holotype (ZPAL O.XXVII/3) profile II, layer 2.
 4. Left valve ♂; *a* lateral view, *b* internal view, *c* dorsal view, *d* ventral view; $\times 80$ (ZPAL O.XXVII/4); profile II, layer 2.

?*Copytus ezcurraensis* sp. n.

5. Carapace; *a* dorsal view; *b* ventral view; $\times 80$; holotype (ZPAL O.XXVII/5); profile II, layer 2.

PLATE 13

Phalcocythere (Otarocythere) tokarskii sp. n.

1. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 80$; holotype (ZPAL O.XXVII/6); profile II, layer 3.

?*Copytus ezcurraensis* sp. n.

2. Carapace; *a* right lateral view, *b* left lateral view; $\times 80$; holotype (ZPAL O.XXVII/5); profile II, layer 2.

Atlanticythere bransfieldensis sp. n.

3. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 70$; holotype (ZPAL O.XXVII/7); profile II, layer 3.

PLATE 14

?*Falsobuntonia antarctica* sp. n.

1. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view; $\times 80$; holotype (ZPAL O.XXVII/8); profile II, layer 2.

Reussicythere piaseckii sp. n.

2. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 80$; holotype (ZPAL O.XXVII/11); profile II, layer 3.

Quadracythere gazdzickii sp. n.

3. Right valve; *a* lateral view; *b* dorsal view, *c* ventral view, $\times 80$, (ZPAL O.XXVII/10); profile II, layer 3.
 4. Carapace; left lateral view; $\times 80$, holotype (ZPAL O.XXVII/9); profile II, layer 3.

PLATE 15

Loxoconcha rolnickii sp. n.

1. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 100$; holotype (ZPAL O.XXVII/13); profile II, layer 3.

Neobuntonia southshetlandensis sp. n.

2. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 140$; holotype (ZPAL O.XXVII/12); profile III.

Loxocauda sp.

3. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 70$; (ZPAL O.XXVII/14); profile II, layer 3.

PLATE 16

Hemicytherura arctowskii sp. n.

1. Juvenile carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 110$; (ZPAL O.XXVII/18); profile II, layer 2.
2. Premature carapace, *a* left lateral view, *b* dorsal view, *c* ventral view; $\times 110$; (ZPAL O.XXVII/17); profile II, layer 3.
3. Carapace ♀; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 100$; holotype (ZPAL O.XXVII/15); profile II, layer 3.
4. Left valve ♂; *a* lateral view, *b* internal view, *c* dorsal view, *d* ventral view; $\times 100$ (ZPAL O.XXVII/16); profile II, layer 3.

Cytheropteron litwini sp. n.

5. Carapace; *a* right lateral view, *b* left view, *c* dorsal view, *d* ventral view; $\times 80$; holotype (ZPAL O.XXVII/19); profile II, layer 3.

PLATE 17

Oculocytheropteron rausai sp. n.

1. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 110$; holotype (ZPAL O.XXVII/20); profile II, layer 3.

Oculocytheropteron lowheadensis sp. n.

2. Carapace ♀; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 100$; holotype (ZPAL O.XXVII/21); profile III.
3. Carapace ♂; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 100$; (ZPAL O.XXVII/22); profile II, layer 3.

Oculocytheropteron sp.

4. Mould of carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view; $\times 80$; (ZPAL O.XXVII/24); profile III.

PLATE 18

Eucythere (Rotundracythere) polonezensis sp. n.

1. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 100$; *e* central part of left lateral surface; $\times 300$; *f* enlarged lateral pits; $\times 3000$; holotype (ZPAL O.XXVII/23); profile II, layer 3.

Xestoleberis birkenmajeri sp. n.

2. Carapace; *a* right lateral view, *b* left lateral view, *c* dorsal view, *d* ventral view; $\times 100$; holotype (ZPAL O.XXVII/25); profile II, layer 3.

