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Post Miocene Ostracodes From Pelotas Basin, Southern Brazil. Taxonomy - Part I

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Abstract — The taxonomic study of the Post Miocene ostracodes that occurs in seven drillings, 2-MO-1-RS, 2-CI-1-RS, 2-CA-1-RS, 2-PS-1-RS, 2-PN-1-RS, 2-GA-1-RS and 2-GA-2-RS that were made by PETROBRÁS, at Pelotas Basin, Rio Grande do Sul State, Brazil, has permitted the identification of *Brasiliocythere reticulispinosa* gen. et sp. nov. and of the new species *Argenticytheretta levipunctata*, *A. variabilis*, *Caudites posdiagonalis*, *Ambostracon crucicostatum*, *Coquimba bertelsae*, *Bradleya pelotensis*, *Henryhowella rectangularata*, and *H. spinosa*. Four species, previously described from these sediments, have been identified: *Cytheretta punctata*, *Callistocythere litoralensis*, *C. marginalis*, and *Coquimba tenuireticulata*. It is presented also the indetermined species *Protocytheretta* sp. and *Quadracythere* sp.

Resumo — O estudo taxonômico dos ostracodes do intervalo Pós-Mioceno, contidos em sete perfurações, 2-MO-1-RS, 2-CI-1-RS, 2-CA-1-RS, 2-PS-1-RS, 2-PN-1-RS, 2-GA-1-RS e 2-GA-2-RS realizadas pela Petróleo Brasileiro S.A., PETROBRÁS, na Bacia de Pelotas no Rio Grande do Sul, permitiu a determinação de *Brasiliocythere reticulispinosa* gen. et sp. nov. e de nove outras espécies novas: *Argenticytheretta levipunctata*, *A. variabilis*, *Caudites posdiagonalis*, *Ambostracon crucicostatum*, *Coquimba bertelsae*, *Bradleya pelotensis*, *Henryhowella rectangularata* e *H. spinosa*. Permitiu, ainda, registrar a ocorrência de *Cytheretta punctata*, *Coquimba tenuireticulata*, *Callistocythere litoralensis* e *C. marginalis*. São apresentadas, também, duas espécies indeterminadas, *Protocytheretta* sp. e *Quadracythere* sp.

INTRODUCTION

The purpose of this paper is to describe the genera and species which have been encountered in the course of our studies on the Post Miocene ostracodes fauna of the Pelotas Basin, Southern Brazil, in seven drillings made by PETROBRÁS: 2-MO-1-RS, 2-CI-1-RS, 2-CA-1-RS, 2-PS-1-RS, 2-PN-1-RS, 2-GA-1-RS and 2-GA-2-RS (Fig. 1). It is the first stage of the study of this fauna. The second stage will be the taxonomy of the species of *Cyprideis*, *Cypris*, *Perissocytheridea*, *Krithe*, *Limnocythere* and *Costa*; and the third one the biostratigraphical correlation and paleoenvironmental analysis. In previous papers (Sanguinetti, 1979, 1980) the ostracodes of the Miocene of the drillings here examined were studied in detail, with emphasis on taxonomy and biostratigraphy. The criterion utilized for the identification of the upper boundary of the Miocene is the proposed by Sanguinetti (1980).

The type material has been deposited in the Museu de Paleontologia, Universidade Federal do Rio Grande do Sul, UFRGS, (nº MP-O-677 to MP-O-768).

The Pelotas Basin (Fig. 1) is situated in the east coast of the Rio Grande do Sul and Southern of Santa Catarina states, below parallel 28°40'S. It presents a NE-SW general direction and comprises approximately an area of 70.000 km² since the coast up to depth of 300 m (Gomide, 1989). The predominant lithology is made up of mudstones and loose or consolidated sandstones, with sporadic occurrence of silt, pebbles and calcareous rocks (chalk). In the subsurface the sediments presents microfossils that show a marine environment in the deeper beds, and alterned marine,

mixohaline and freshwater in the more superficial ones. In the surface occur Pleistocene mammals and ostreides as well as Holocene mollusks.

The description of the drillings is in Sanguinetti (1980).

Figura 1 — Location Map of the Drillings (Sanguinetti, 1980).

TAXONOMY

Ordo Podocopida Müller, 1894
 Sub Ordo Podocopina Sars, 1865
 Super Familia Cytheracea Baird, 1950
 Familia Cytherettidae Triebel, 1952

Argenticytheretta Rossi de Garcia, 1969 emend.

[non] *Bensonia* (Cantor M.S.) Gray, 1847, p. 150

[non] *Bensonia* Pfeiffer, 1855, p. 119

[non] *Bensonia* Malaise, 1935, p. 166

Bensonia Rossi de Garcia, 1969b, p. 218-219, pl. 1, fig. 1a-c; fig. 3

Diagnosis — Large ovoid carapace inflated at the median portion, smooth surface or covered with concentric punctae and/or almost invisible subparallel ribs. Slight anterior vestibule. Regular duplicature.

Type-species: *Cytheretta argentinensis* Rossi de Garcia, 1966 p. 206-207, lam. II, fig. 4a-b.

Remarks — Rossi de Garcia (1969b) created the genera *Bensonia*, *Grekoffiana* and *Argenticytheretta*. However, according to Sanguinetti (1979), *Grekoffiana* and *Argenticytheretta* are synonyms for *Bensonia*. Being called the attention by Dr. K. G. McKenzie upon the fact that *Bensonia* might not be a suitable name, it was found out that, according to Gray (1847), and to Neave (1950), respectively it had already been used by Cantor M. S. and by Pfeiffer (1855) for molluscs and also by Malaise (1935) for insects. According to Keen (1972), *Grekoffiana* is a synonym for *Protocytheretta* Puri, 1958. Hence, it was adopted the name *Argenticytheretta* in this paper which would be a synonym for *Bensonia* Rossi de Garcia, 1969.

Argenticytheretta levipunctata sp. nov.

Plate 1, Figures 1-10

Bensonia sp. aff. *B. minipunctata* Sanguinetti, 1979, In: Bertels, Kotzian & Madeira-Falcetta 1982, p. 140, pl. 6, figs. 2a-d.

Derivatio nominis: By surface of carapace with small and shallow punctae.

Holotypus: Female — Carapace, n° MP-0-677.

Paratypus: Male — Carapace, n° MP-0-678.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-MO-1-RS, sampling (15 m).

Diagnosis — Finely punctured surface without defined ribs, punctae linearly arranged. Wide duplicature. Minute vestibule at ventral and posterior regions; marginal pore canals displayed in groups ranging from two to four.

Description — External view: Unequal valves. Female carapace oval and elongated in lateral view. Dorso-posterior portion with strong transversal re-entrance followed by earlike prominence at level of

the cardinal angle. Anterior border evenly rounded with marginal crenulation. Ventral border convex with slight anteroventral sinuosity. Weak eye tubercle marked posteriorly by slight, inclined re-entrance. Greatest height at the mid-length. Surface with small less marked punctae that are not orderly arranged except at the sub-marginal region where they present linear arrangement. Right valve is smaller and presents a less arched dorsal border with little anterior re-entrance and ends posteriorly in a straight line. In dorsal view oval and elongated carapace, anterior and posterior extremities in acute angle; the greatest width is slightly posterior. Left valve overlapping the right one along the whole extension of the hinge. Internal view: Hinge holamphidont. Wide and regular duplicature. Marginal pore canals more concentrated at the median region, usually joined in groups of two to four, being most of them simple and sinuous. Line of concrescence coincides with the inner margin except at ventral and posterior regions, where it forms a minute vestibule. Muscle scars in number of five, being four of them arranged in a vertical row and the fifth in V-shaped. Discrete sexual dimorphism. Female with carapace slightly higher and more inflated.

Dimensions — Holotypus: Female, carapace, n° MP-0-677; width: 0.419 mm; left valve, length: 0.823 mm, height: 0.472 mm; right valve, length: 0.794 mm; height: 0.427 mm. Paratypus: Male, carapace, n° MP-0-678; width: 0.399 mm; left valve, length: 0.843 mm; height: 0.460 mm; right valve, length: 0.806 mm; height: 0.411 mm.

Remarks — *A. levipunctata* sp. nov. differs from *A. fuegoensis* Rose, 1975 for it has a more elongated and oval carapace, a well-marked posterior cardinal angle of the right valve and softer and more evenly arched dorsal and ventral borders; posterior border forming a more acute angle with clear triangular prominence at midheight. Duplicature is wider and the marginal pore canals grouped in two up to four.

Material — Few carapaces and valves of males, females and juvenile instars.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-MO-1-RS, samplings (15 m, 18 m, 21 m, 24 m, 27 m, 33 m, 36 m, 42 m, 51 m); 2-CA-1-RS, core 6 (29.10-32.15 m), core 7 (32.15-35.20 m); core 8 (35.20-38.28); core 9 (38.28-41.30 m); 2-PS-1-RS, samplings (42-45 m), (54-57 m). Pleistocene, Chuí Formation, CORSAN drilling: G484-PDS-2 (31-41.5 m).

Argenticytheretta variabilis sp. nov.

Plate 1, Figures 11-19

Derivatio nominis: By width variation of duplicature.

Holotypus: Female — Left valve, n° MP-0-679.

Paratypi: Female — Right valves, n° MP-0-680 and 682; Female — left valve, n° MP-0-681.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, sampling (283-285 m).

Diagnosis — Quite rounded valves tending to

almost globe-shaped. Ventral region inflated, mainly at the right valve; stronger punctae at the central region and linearly arranged in many concentric and parallel rows to the carapace outline; inner lamella with variable width.

Description — External view: Female carapace with unequal valves. Left valve with strongly arched dorsal border, without cardinal angles, earlike prominence at the posterodorsal region. Anterior rounded border with neat marginal denticulation. Strongly convex ventral border. Posterior border strongly arched with approximately six denticles. Surface with neat stronger punctuation at the central area. At the marginal region the punctae are arranged in concentric rows parallel between themselves and the valve outline throughout all the peripheric region of the valves, including the dorsal margin. Weak eye tubercle. Maximum height at the median portion. Right valve differs from left because it is narrower and presents almost straight dorsal border, with an anterodorsal re-entrance and a slightly posterior cardinal angle. In dorsal view oval and elongated carapace with anterior and posterior extremities in acute angle. Greatest width immediately posterior to the central region. Internal view: Hinge holamphidont. Duplicature wide. Very minute vestibule. Many simple or bifurcated marginal pore canals, sinuous or almost straight. Four muscle scars arranged in vertical rows; three inferior ones with horizontal orientation and the fourth superior with vertical position. V-shaped frontal muscle scars. No sexual dimorphism was registered.

Dimensions — Holotypus: Female, left valve, n° MP-0-679; length: 0.823 mm; height: 0.529 mm. Paratypi: Female, right valve, n° MP-0-680 length: 0.813 mm; height: 0.460. Female, left valve, n° MP-0-681, length: 0.745 mm; height: 0.476 mm; width: 0.187 mm. Female, right valve, n° MP-0-682; length: 0.747 mm; height: 0.427 mm; width: 0.212 mm.

Remarks — *A. variabilis* sp. nov. differs from *A.*

midipunctata (Sanguinetti, 1979) by the surface with linearly arranged rounded punctae and the lack of distinct longitudinal ribs. Valves shorter and the maximum height at the median region. Weak eye tubercle. A more rounded left valve, tending to globular-shaped; strong and evenly arched dorsal border. Right valve with almost straight dorsal border and centro-ventral portion much more inflated. Posterior border more angulate. The width of the duplicature of *A. variabilis* is changeable.

Material — Some female valves.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CI-1-RS, samplings (186-189 m), (198-201 m), (210-213 m), (283-285 m), (288-291 m), (294-297 m), (306-309 m); 2-MO-1-RS, samplings (351 m, 399 m, 429 m, 504 m); 2-CA-1-RS, core 27 (132.80-135.85 m).

Cytheretta Muller, 1894

Cytheretta punctata Sanguinetti, 1979

Plate 2, Figures 1-4

Cytheretta punctata Sanguinetti, 1979, p. 126, pl. 2, figs. 2a-e, pl. 9, figs. 5a-b.

Cytheretta punctata Sanguinetti, 1979, In: Zabert, 1978, p. 122, pl. 4, fig. 26.

Cytheretta sp. Madeira-Falcetta *et al.* 1980, pl. 3, fig. 1.

Cytheretta punctata Sanguinetti, 1979, In: Bertels, Kotzian & Madeira-Falcetta, 1982, p. 138, pl. 4, figs. 1a-d.

Holotypus: Female — Carapace, n° MP-0-406.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-PN-1-RS, core 4 (202-205 m).

Homotypi: Female — Right valve, n° MP-0-683. Male: Carapaces n° MP-0-684 and 685.

Locus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, samplings (12-15 m) and (18-21 m).

Plate 1

Figures 1-10 — *Argenticytheretta levipunctata* sp. nov.

Female. Holotypus n° MP-0-677

1 - Right valve, lateral view. 76X

2 - Left valve, lateral view. 74X

3 - Left valve, hinge. 76,5X

4 - Right valve, hinge. 76,5X

8 - Left valve, posterior marginal pore canals. 129,5X

9 - Left valve, anterior marginal pore canals. 129,5X

10 - Left valve, central muscle scars. 129,5X

Male. Paratypus n° MP-0-678

5 - Right valve, lateral view. 82,5X

6 - Left valve, lateral view. 78X

7 - Right valve, central muscle scars. 130X

Figures 11-19 — *Argenticytheretta variabilis* sp. nov.

Holotypus n° MP-0-679

11 - Left valve, lateral view. 74X

13 - Left valve, hinge. 75X

Paratypus n° MP-0-680

12 - Right valve, lateral view. 81X

14 - Right valve, hinge. 75X

17 - Right valve, anterior marginal pore canals. 135X

18 - Right valve, posterior marginal pore canals. 135X

19 - Right valve, central muscle scars. 135X

Paratypus n° MP-0-681

15 - Left valve, lateral view. 82X

Paratypus n° MP-0-682

16 - Right valve, lateral view. 80X

Diagnosis — Valves unequal: left valve ovoid, right valve ovoid-elongate. Wide longitudinal ridges, light and intercalated by punctae.

Dimensions — Homotypi: Female, right valve, n° MP-0-683; length: 0.608 mm; height: 0.335 mm. Male carapace, n° MP-0-684; left valve, length: 0.551 mm; height: 0.295 mm; right valve, length: 0.551 mm; height: 0.265 mm. Male, carapace, n° MP-0-685; length: 0.610 mm; width: 0.247 mm.

Remarks — The present species shows identical characteristics of *C. punctata* Sanguinetti, 1979.

Material — Few male and female valves and one male carapace.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CA-1-RS, core 4 (23-26.50 m); 2-MO-1-RS, samplings (27 m, 48 m, 135 m, 141 m, 249 m); 2-CI-1-RS, samplings (12-15 m), (18-21 m), (30-33 m); Miocene, Pelotas Basin, PETROBRÁS drillings: 2-PS-1-RS, core 5 (270-273 m); 2-GA-2-RS, core 6 (111.55-114.60 m), core 8 (117.65-120.70 m); 2-PN-1-RS, core 4 (202-205 m). Pleistocene, Chuf Formation, CORSAN drillings: PDS-2 (29-30.1 m); PDS-3 (25-33 m). Holocene, Quinta Formation, CORSAN drilling: ALB (8.80-10.66 m).

Protocytheretta Puri, 1958.

Paracytheretta. In: Puri, 1952, p. 209.

Paracytheretta. In: Swain, 1955, p. 365.

Grekoffiana Rossi de Garcia, 1969b, p. 219-220.

Protocytheretta sp.

Plate 2, Figure 5

Hypotypus: Carapace, n° MP-0-686.

Locus: Pelotas Basin, PETROBRÁS drilling: 2-MO-1-RS, sampling (24 m).

Dimensions — Width: 0.251 mm; right valve, length: 0.568 mm; height: 0.242 mm; left valve, length: 0.568 mm; height: 0.272 mm.

Remarks — It presents external characteristics extremely similar to *Protocytheretta* sp. registered by Bertels (1975).

Material — One carapace and two valves of juvenile instars.

Occurrence — Pelotas Basin, PETROBRÁS drilling: 2-MO-1-RS, samplings (18 m, 24 m).

Familia Hemicytheridae Puri, 1953

Sub Familia Hemicytherinae Puri, 1953

Brasilicythere gen. nov.

Australicythere. In: Valicenti, 1977, pl. 1, fig. 6.

Australicythere. In: Sanguinetti, 1979, p. 55, pl. 5, figs. 3a-d; pl. 11, figs. 4a-b.

Diagnosis — Subrectangular carapace. Narrower posterior portion. Surface with strong primary reticulation covered by spines and neat ventro-median ridge. Convex ventral border. Discret caudal process. Hinge holamphidont.

Type-species: *Brasilicythere reticulispinosa* gen. et sp. nov.

Remarks — *Brasilicythere* differs from *Australicythere* Benson, 1964 by the absence of a vertical posterior ridge; heavier pattern of ornamentation and with spines; absence of secondary reticulation; more elongate carapace; narrower posterior portion; convex ventral border passing in ascendent and

Plate 2

Figures 1-4 — *Cytheretta punctata* Sanguinetti, 1979.

Female. Homotypus n° MP-0-683

1 - Right valve, lateral view. 81X

Male. Homotypus n° MP-0-684

2 - Left valve, posterior marginal pore canals. 179X

3 - Left valve, central muscle scars. 179X

4 - Left valve, anterior marginal pore canals. 179X

Figure 5 — *Protocytheretta* sp.

Hypotypus n° MP-0-686

5 - Right valve, lateral view. 80X

Figures 6-16 — *Brasilicythere reticulispinosa* gen. et sp. nov.

Male. Holotypus n° MP-0-714

6 - Right valve, lateral view. 80X

10 - Right valve, anterior marginal pore canals. 131X

11 - Right valve, central muscle scars. 131X

12 - Right valve, posterior marginal pore canals. 131X

15 - Right valve, hinge. 73,5X

Male. Paratypus n° MP-0-715

8 - Left valve, lateral view. 82X

13 - Left valve, sieve normal pore canal. 3500X

14 - Left valve, hinge. 73,5X

16 - Left valve, ornamentation. 350X

Female. Paratypus n° MP-0-716

9 - Right valve, lateral view. 80,5X

Female. Paratypus n° MP-0-717

7 - Carapace, dorsal view. 80X

Figures 17-24 — *Caudites posdiagonalis* sp. nov.

Holotypus n° MP-0-718

17 - Left valve, lateral view. 80,5X

18 - Right valve, lateral view. 80X

19 - Left valve, central muscle scars. 145X

20 - Left valve, hinge. 75X

21 - Right valve, hinge. 75X

23 - Right valve, anterior marginal pore canals. 145X

24 - Right valve, posterior marginal pore canals. 145X

Paratypus n° MP-0-719

22 - Carapace, dorsal view. 79X

continuous curve to the posterior portion; and the presence of a discrete caudal process. The muscle scars pattern justify its inclusion in the Hemicytherinae Subfamily. Included species: *Australicythere* sp. 4 (in: Valicenti, 1977); *Australicythere bensoni* Sanguinetti, 1979.

***Brasilicythere reticulispinosa* sp. nov.**

Plate 2, Figures 6-16

Derivatio nominis: By presence of reticulation covered by spines.

Holotypus: Male — Right valve, n° MP-0-714.

Paratypi: Male — Left valve, n° MP-0-715; Female — Right valve, n° MP-0-716; Carapace, n° MP-0-717.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-MO-1-RS, sampling (42 m).

Diagnosis — Elongate subrectangular carapace; rounded cardinal angles; evenly rounded anterior border surface with short spines; delicate but conspicuous mid-ventral ridge.

Description — External view: Valves approximately of the same size. Subrectangular male carapace in lateral view. Irregular dorsal border of the right valve by the presence of spines; gentle anterior cardinal angle and a conspicuous posterior one. Wide evenly rounded denticulate anterior border and higher than the posterior one. Convex ventral border with gentle sinuosity at the anterior quarter. Acuminate and denticulated posterior border with the upper half concave showing a discrete caudal process. Surface with strong reticulation covered by spines presents laminar and oblique ridge, at the ventromedian region; subcentral tubercle followed by one re-entrance; well developed ocular tubercle followed by sulcus. Parallel to the outline of all the entire free margin there is a delicate submarginal ridge that becomes laminar at ventral region. Left valve presents more rounded posterior region, without posterodorsal concavity. In dorsal view inflated carapace. Anterior portion with sagitate shape. Internal view: Hinge holamphidont. Duplicature with maximum width at anteroventral portion. Marginal pore canals normally simple and very close to each other, very few with distal extremities fused, most of them grouped at the anterior portion. Line of concrescence and inner margin coincident. Central muscle scars constituted by ventral row of four scars, being the two intermedian subdivided. The three frontal ones present the two ventral almost fused. Neat sexual dimorphism, being the female higher and shorter with caudal process more conspicuous.

Dimensions — *Holotypus*: Male, right valve, n° MP-0-714; length: 0.764 mm; height: 0.398 mm; width: 0.206 mm. *Paratypi*: Male, left valve, n° MP-0-715; length: 0.760 mm; height: 0.426 mm; width: 0.220 mm. Female, right valve, n° MP-0-716; length: 0.745 mm; height: 0.427 mm. Female carapace, n° MP-0-717; length: 0.782 mm; width: 0.398 mm.

Remarks — The present species differs from *Brasilicythere bensoni* (Sanguinetti, 1979) by presenting more rounded and less neat cardinal angles, more evenly rounded anterior border; the ventral border pass to posterior one in rather even curve; the spines are more delicate and the ventromedian ridge less developed.

Material — Five female and male valves, one female carapace and some valves of juvenile instars.

Occurrence — Pelotas Basin, PETROBRÁS drilling: 2-MO-1-RS, samplings (15 m, 18 m, 21 m, 30 m, 42 m).

Sub Familia Orionininae Puri, 1973

***Caudites* Coryell & Fields, 1937.**

***Caudites posdiagonalis* sp. nov.**

Plate 2, Figures 17-24

Derivatio nominis: From *Caudites diagonalis*.

Holotypus: Carapace, n° MP-0-718.

Paratypus: Carapace, n° MP-0-719.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, core 1 (103.07-108 m).

Diagnosis — Subrectangular, laterally compressed carapace; short caudal process; incipient intercostellar reticulation; neat ventral ridge. In dorsal view, very elongate carapace and parallel sides, wide and rounded anterior extremity, posterior one ending in a rounded angle.

Description — External view: In lateral view, subrectangular and elongate carapace. Neat anterior and posterior cardinal angles. Maximum height coincident with the eye tubercle and the anterior cardinal angle. Right valve with a slightly concave dorsal border sloping backwards. A strongly rounded anterior border, presents conspicuous angulosity at the limit with the ventral border. Neatly sinuous ventral border with strong concavity at the central region. Posterior border with a discrete caudal process. Surface with an arched and anteriorly wide ridge which runs parallel to the anterior border. Two transversal enforcement come out from this ridge. The upper one originates the dorsal ridge and the other, anteroventral, that covers up to the subcentral tubercle from where it bifurcates: the dorsal branch slightly arched extends itself till the posterodorsal region; the inferior one descends to mid-ventral region where it joins to the extremity of the ventral ridge and extends until the posteroventral border. Between these two branches, right after the subcentral tubercle, there is a deep sulcus parallel to a small ridge. The three longitudinal ridges are linked together at the posterior portion by a transversal ridge. Intercostellar reticulation is irregular in shape and also in distribution. Parallel to anterior border and anterior ridge there is a wide and shallow sulcus with only one row of nets. In dorsal view, quite elongate carapace with parallel sides. Posterior extremity ending in discrete caudal process.

Internal view: Hinge holamphidont. Duplicature of median width presenting three attached areas; the upper one split into two. Numerous marginal pore canals, being bulbous, straight and simple. Muscle scars constituted by three frontal in oblique row, and a group of five scars a little behind. Sexual dimorphism has not been observed.

Dimensions — Holotypus: Carapace, n° MP-0-718; right valve, length: 0.833 mm; height: 0.377 mm; left valve, length: 0.823 mm; height: 0.388 mm; Paratypus: Carapace, n° MP-0-719; length: 0.823 mm; width: 0.244 mm.

Remarks — *C. posdiagonalis* sp. nov. differs from *C. diagonalis* Sanguinetti, 1979 by having a more rectangular shape, the presence of intercostellar reticulation, less pronounced ridges and a more conspicuous subcentral tubercle; from *C. ohmertii* Coimbra & Ornellas, 1987 by presenting a shorter caudal process, more developed intercostal reticulation, conspicuous angulosity at the limit between the ventral and anterior margins, marginal pore canals bulbous and central muscle scars less numerous. It differs, yet, by the pattern of secondary fusions of the inner lamella. Probably *C. posdiagonalis* sp. nov. has its phylogenetic origin of *C. diagonalis*.

Material — Several valves and carapaces of adult specimens and juvenile instars.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CI-1-RS, core 1 (103.07-108 m); 2-CA-1-RS, core 27 (132.80-135.85 m).

Sub Familia Urocythereidinae Hartmann & Puri, 1974

Ambostracon Hazel, 1962.

Ambostracon crucicostatum sp. nov.

Plate 3, Figures 1-12

Derivatio nominis: By the arrangement of ridges as approximately cross-shaped.

Holotypus: Female — Carapace, n° MP-0-720.

Paratypi: Female — Carapace, n° MP-0-721. Male — Carapaces, n° MP-0-722 and 723. Left valve, n° MP-0-727.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, core 1 (103.07-108 m).

Diagnosis — Subtrapezoidal carapace in lateral view. Surface with rough reticulation with few definite networks. Short, delicate and strong ridges diverge from the subcentral tubercle; the vertical one forms with the median a oblique ridge, something like a cross with unequal arms.

Description — External view: In lateral view, subtrapezoidal carapace. Right valve with dorsal border straight but presenting irregularities due to ornamentation. Rounded cardinal angles and being present at the anterior eye tubercle the maximum height. Amply rounded anterior border with flexure

point at the anteroventral region. Almost straight ventral border. Posterior border presents the upper half concave and the lower one with prominent larger acute angle with incipient spines. Surface with subcentral tubercle; primary ornamentation constituted of rough irregular reticulation with few definite networks; three longitudinal ridges: the dorsal, the median and the ventral that inflect upwards. Short, delicate and strong ridges diverge from the subcentral tubercle. The vertical one forms with the median and oblique ridge something like a cross with unequal arms. At the anterior portion it presents a straight and oblique thick ridge running from the anteroventral angle till the eye tubercle. In dorsal view oblong carapace with neat constriction slightly before the mid-length of the carapace. Anterior extremity ends in a wide quadrangular prominence. Posterior extremity is narrower and ends in a discrete caudal process. Dorsal commissure with sinuities coincident with the anterior and posterior cardinal angles. Internal view: Hinge holamphidont. Wide and regular duplicature; line of concrescence and inner margin coincident. Straight, long and simple marginal pore canals, approximately fifty in number at the anterior extremity. Muscle scars not well visible, being four in a vertical row with the lower median split into two and probably two frontal ones. Strong sexual dimorphism. Male presents longer and narrower subrectangular carapace, with posteroventral angle less prominent, and more conspicuous cardinal angles. In dorsal view, less inflated.

Dimensions — Holotypus: Female carapace, n° MP-0-720; right valve, length: 0.578 mm; height: 0.312 mm; left valve, length: 0.584 mm; height: 0.319 mm. Paratypi: Female, carapace, n° MP-0-721; length: 0.608 mm; width: 0.267 mm. Male, carapace, n° MP-0-722, right valve, length: 0.637 mm; height: 0.311 mm; left valve, length: 0.647 mm; height: 0.331 mm. Male carapace, n° MP-0-723; length: 0.647 mm; width: 0.262 mm.

Remarks — The species presents some males (Pl. 3, Fig. 12) with more marked reticulation network and rougher ridges; more developed anteromarginal denticulation and a less conspicuous cross formed by the vertical, the longitudinal, the oblique and the median ridges. The hinge is less neatly crenulated.

Material — Several carapaces and approximately three hundred male, female valves and juvenile instars.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CI-1-RS, core 1 (103.07-108 m), sampling (186-189 m); 2-MO-1-RS, sampling (126 m, 135 m, 138 m, 150 m, 153 m, 237 m).

Sub Familia Coquimbinae Ohmert, 1968.

Coquimba Ohmert, 1968.

Coquimba bertelsae sp. nov.

Plate 3, Figures 13-22

Patagonacythere sp. 2 Bertels, 1975, p. 351, Pl. 5, fig. 10.

Patagonacythere sp. Vicalvi, Kotzian & Forti-Esteves, 1977, p. 93, Est. IV, fig. 2.

Coquimba sp. 1 Dias-Brito, Moura & Würdig, 1988, p. 481, Est. 2, fig. 28.

Derivatio nominis: In honour to Dr Alwine Bertels.

Holotypus: Female — Carapace, n° MP-0-728.

Paratypi: Female — Carapace, n° MP-0-729. Male — Carapaces, n° MP-0-730 and 731.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, core 1 (103.07-108 m).

Diagnosis — Subtrapezoidal and elongate carapace. Nodular portion of the ventral ridge and ventroposterior inflated region coincident. Incipient dorsal ridge. Two anteromedian inflated and rounded areas. Reticulum with slightly defined network.

Description — External view: In lateral view, elongate and subtrapezoidal. Right valve with the maximum height and eye tubercle coincident. Dorsal border almost straight sloping backwards with cardinal angles, being the anterior earlike in shape and the posterior one conspicuous. Strongly rounded anterior border. Straight ventral border passing in an ascendent gentle curve to the posterior border; it also presents irregularities due to the presence of short spines. Posterior border with concave dorsal half; lower half acuminate. Surface with reticulum formed by slightly defined networks. It presents at the first two thirds one ventral and conspicuous ridge, nodular at the last third. The nodular portion, the inflated posteroventral region and the dorsal incipient ridge are coincident.

The dorsal ridge, in turn, is linked to the ventral one by a posterior elongate, transversal and inflated area. Subcentral tubercle conspicuous. Between the subcentral tubercle and anterior border there are two inflated and rounded regions. Parallel to the free margin, there is a feeble submarginal ridge followed, at the anterior extremity by a shallow sulcus, a weak ridge and by another wide deep sulcus. In dorsal view, female carapace presents the anterior half as inflated as the posterior one with a central lateral constriction. Internal view: Hinge holamphidont. Vestibulum conspicuous in the antero and posteroventral portions. Marginal pore canals straight and simple. Muscle scars typical of the genus. Neat sexual dimorphism. Male carapace larger, quite longer and narrower in dorsal view.

Dimensions — *Holotypus*: Female, carapace n° MP-0-728; right valve, length: 0.519 mm; height: 0.259 mm; left valve, length: 0.527 mm; height: 0.271 mm. *Paratypi*: Female, carapace, n° MP-0-729; length: 0.568 mm; width: 0.265 mm. Male, carapace, n° MP-0-730; right valve, length: 0.539 mm; height: 0.269 mm; left valve, length: 0.531 mm; height: 0.265 mm. Carapace, n° MP-0-731; length: 0.539 mm; width: 0.224 mm.

Remarks — The present species differs from *Coquimba hartmanni* Ohmert, 1968 by presenting cardinal angles more rounded with gentler earlike prominence; one posterior vertical elongate and inflated area that links the dorsal incipient ridge to the ventral one; ventral ridge nodular at the last third; presence of two rounded inflated areas between eye tubercle and anterior margin.

Material — Approximately eight hundred specimens

Plate 3

Figures 1-12 — *Ambostracon crucicostatum* sp. nov.

Female. *Holotypus* n° MP-0-720

1 - Right valve, lateral view. 80,5X

2 - Left valve, lateral view. 81X

4 - Left valve, hinge. 77X

5 - Right valve, hinge. 77X

6 - Right valve, anterior marginal pore canals. 138,5X

7 - Left valve, posterior marginal pore canals. 138,5X

Female. *Paratypus* n° MP-0-721

3 - Carapace, dorsal view. 81,5X

Male. *Paratypus* n° MP-0-722

8 - Right valve, lateral view. 82,5X

9 - Left valve, lateral view. 81,5X

11 - Left valve, central muscle scars. 144,5X

Male. *Paratypus* n° MP-0-723

10 - Carapace, dorsal view. 78X

Male. *Paratypus* n° MP-0-727

12 - Left valve, lateral view. 78X

Figures 13-22 — *Coquimba bertelsae* sp. nov.

Female. *Holotypus* n° MP-0-728

13 - Right valve, lateral view. 81,5X

18 - Right valve, anterior marginal pore canals. 124X

19 - Right valve, posterior marginal pore canals. 124X

Female. *Paratypus* n° MP-0-729

16 - Carapace, dorsal view. 80X

Male. *Paratypus* n° MP-0-730

14 - Right valve, lateral view. 82,5X

15 - Left valve, lateral view. 80X

17 - Left valve, central muscle scars. 143X

21 - Left valve, hinge. 79X

22 - Right valve, hinge. 78X

Male. *Paratypus* n° MP-0-731

20 - Carapace, dorsal view. 78,5X

Figures 23-32 — *Coquimba tenuireticulata* Kotzian, 1982 emend.

Female. *Homotypus* n° MP-0-733

23 - Left valve, lateral view. 78,5X

Female. *Homotypus* n° MP-0-732

24 - Right valve, central muscle scars. 132X

Female. *Homotypus* n° MP-0-734

25 - Carapace, dorsal view. 79X

Male. *Homotypus* n° MP-0-735

29 - Right valve, lateral view. 81X

27 - Right valve, hinge. 76,5X

Male. *Homotypus* n° MP-0-736

28 - Left valve, lateral view. 84X

26 - Left valve, hinge. 77X

31 - Left valve, posterior marginal pore canals. 128,5X

32 - Left valve, anterior marginal pore canals. 128,5X

Male. *Homotypus* n° MP-0-737

30 - Carapace, dorsal view. 83X

comprising valves and male, female carapaces and juvenile instars.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CI-1-RS, core 1 (103.07-108 m), samplings (162-165 m), (186-189 m); 2-MO-1-RS, samplings (144 m); Quaternary of Buenos Aires Province (Argentina) and São Paulo coast (Brazil). Recent of Sepetiba Bay, Rio de Janeiro State, Brazil.

Coquimba tenuireticulata Kotzian, 1982 emend.
Plate 3, Figures 23-32

Coquimba tenuireticulata Kotzian, 1982 In: Bertels, Kotzian & Madeira-Falcetta, 1982, p. 148, Pl. 7, fig. 2.

Holotypus: Male-Carapace, n° MP-0-490.

Locus typicus: Palmares do Sul, Southern Brazil (Borehole G414-PDS-29, 31-41.5 m).

Homotypi: Female — Right valve, n° MP-0-732; Left valve, n° MP-0-733; Carapace, n° MP-0-734; Male — Right valve, n° MP-0-735; Left valve, n° MP-0-736; Carapace, n° MP-0-737.

Locus: Pelotas Basin, PETROBRÁS drilling: 2-CA-1-RS, core 9 (35.20-38.28 m).

Diagnosis — Subtrapezoidal carapace; strong and double anterior ridge; vertical posterior salience like an inflated ridge. Surface reticulated.

Dimensions — *Holotypus*: Female, right valve, n° MP-0-732; length: 0.510 mm; height: 0.251 mm. Paratypi: Female, left valve, n° MP-0-733; length: 0.500 mm; height: 0.254 mm. Carapace, n° MP-0-734; length: 0.549 mm; width: 0.255 mm. Male, right valve, n° MP-0-735; length: 0.510 mm; height: 0.228 mm. Left valve, n° MP-0-736; length: 0.492 mm; height: 0.235 mm. Carapace, n° MP-0-737; length: 0.500 mm; width: 0.208 mm.

Remarks — The present species has identical characteristics to *C. tenuireticulata* Kotzian, 1982. However, is emended because was possible to observe sexual dimorphism and then define the holotype as a male. Besides, the muscle scars pattern typical for this genus also is identified.

Material — Several male and female valves and few carapaces.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CA-1-RS, core 8 (35.20-38.28 m), core 9 (38.28-41.30 m); 2-CI-1-RS, sampling (42-45 m); 2-MO-1-RS, sampling (15 m, 18 m, 21 m, 24 m, 150 m); Pleistocene, Chuí Formation, CORSAN drilling: G484-PDS-2 (31-41.5 m).

Familia Leptocytheridae Hanai, 1957

Callistocythere Ruggieri, 1953

Callistocythere litoralensis (Rossi de Garcia, 1966) emend.

Plate 4, Figures 1-11

Perissocytheridea litoralensis Rossi de Garcia, 1966, p. 206, Pl. 11, fig. 3a-c.

[non] *Perissocytheridea litoralensis* Rossi de Garcia, 1969a, p. 279, Pl. I, fig. 4.

Callistocythere litoralensis (Rossi de Garcia, 1966) In: Whatley and Mognilevsky, 1975, Pl. II, fig. 10, 11.

Callistocythere sp. A Whatley & Mognilevsky, 1975, p. 515, Pl. I, fig. 16-18.

Callistocythere sp. Bertels, 1975, p. 335, Pl. 5, fig. 3.

Callistocythere litoralensis (Rossi de Garcia, 1966) Zabert & Herbst, 1977, p. 154, Pl. 2, fig. 8.

Callistocythere litoralensis (Rossi de Garcia, 1966) In: Zabert, 1978, p. 133, Pl. 6, fig. 39.

Plate 4

Figures 1-11 — *Callistocythere litoralensis* (Rossi de Garcia, 1966) emend.

Female. *Homotypus* n° MP-0-738

1 - Right valve, lateral view. 82X

2 - Left valve, lateral view. 79X

4 - Left valve, hinge. 74,5X

5 - Right valve, hinge. 76X

6 - Left valve, posterior marginal pore canals. 132X

7 - Left valve, central muscle scars. 132X

8 - Left valve, anterior marginal pore canals. 132X

Female. *Homotypus* n° MP-0-739

3 - Carapace, dorsal view. 81X

Male. *Homotypus* n° MP-0-740

9 - Right valve, lateral view. 80,5X

10 - Left valve, lateral view. 80X

Male. *Homotypus* n° MP-0-741

11 - Carapace, dorsal view. 80,5X

Figures 12-21 — *Callistocythere marginalis* Zabert, 1978 emend.

Female. *Homotypus* n° MP-0-742

12 - Right valve, lateral view. 84,5X

13 - Left valve, lateral view. 84,5X

16 - Left valve, hinge. 77,5X

17 - Right valve, hinge. 77,5X

20 - Right valve, anterior marginal pore canals. 133,5X

21 - Right valve, posterior marginal pore canals. 133,5X

Female. *Homotypus* n° MP-0-743

14 - Carapace, dorsal view. 80,5X

Male. *Homotypus* n° MP-0-744

15 - Carapace, dorsal view. 88X

18 - Right valve, lateral view. 80X

19 - Right valve, central muscle scars. 163,5X

Figures 22-28 — *Bradleya pelotensis* sp. nov.

Holotypus n° MP-0-749

23 - Left valve, lateral view. 77X

25 - Left valve, hinge. 75,5X

Paratypus n° MP-0-750

22 - Right valve, lateral view. 77X

24 - Right valve, central muscle scars. 137,5X

26 - Right valve, hinge. 76,5X

27 - Right valve, anterior marginal pore canals. 137,5X

28 - Right valve, posterior marginal pore canals. 137,5X

Callistocythere litoralensis (Rossi de Garcia, 1966), In: Sanguinetti, 1979, p. 141, Pl. 6, fig. 1c,d, 2a.

[non] *Callistocythere litoralensis* (Rossi de Garcia, 1966) In: Sanguinetti, 1979, p. 141, Pl. 6, fig. 1a,b, 2b; Pl. 12, fig. 1a,b.

Callistocythere sp. Madeira-Falcetta et al. 1980, Pl. 3, fig. 4.

Callistocythere sp. Bertels, Kotzian & Madeira-Falcetta, 1982, p. 148, Pl. 7, fig. 3a-c.

Holotypus: CM 27. Departamento de Paleontologia, Instituto Nacional de Geologia Y Minería, Buenos Aires, Argentina.

Locus typicus: Cantera Municipal, Victoria, Provincia de Entre Ríos, Argentina.

Homotypi: Female — Carapaces, n° MP-0-738 and 739. Male — Carapaces, n° MP-0-740 and 741.

Locus: Pelotas Basin, PETROBRÁS drilling: 2-CA-1-RS, core 8 (35.20-38.28 m).

Diagnosis — Subrectangular carapace, surface pitted and with ridges parallel to free margin at peripheral region and approximately circular at the anterocentral one.

Dimensions — Homotypi: Female, carapace, n° MP-0-738; left valve, length: 0.392 mm; height: 0.219 mm; right valve, length: 0.382 mm; height: 0.222 mm. Carapace, n° MP-0-739; length: 0.382 mm; width: 0.172 mm. Male, carapace, n° MP-0-740; left valve, length: 0.374 mm; height: 0.206 mm; right valve, length: 0.372 mm; height: 0.205 mm. Carapace, n° MP-0-741, length: 0.372 mm; width: 0.152 mm.

Remarks — *C. litoralensis* (Rossi de Garcia, 1966) is very similar to *C. marginalis* Zabert, 1978. The differences between these species are presented in the remarks of *C. marginalis*.

Material — Several valves and complete male, female carapaces and juvenile instars.

Occurrence — Miocene (Entre Ríos Formation) Cantera Municipal, Victoria, Provincia de Entre Ríos; Upper Miocene (lower member of Parana Formation) Provincia de Santa Fe, Argentina; Miocene of Pelotas Basin, Brazil; Pleistocene and Holocene, of Provincia de Buenos Aires. Recent at the littoral of Argentina and Uruguay. Post-Miocene: Pelotas Basin, PETROBRÁS drillings: 2-CA-1-RS, core 4 (23-26.50 m), core 6 (29.10-32.15 m), core 7 (32.15-35.20 m), core 8 (35.20-38.28 m), core 9 (38.28-41.30 m), core 10 (41.30-44.35 m), core 13 (50.45-53.50 m), core 15 (56.55-59.60 m), 2-MO-1-RS, samplings (18 m, 33 m, 120 m, 126 m).

***Callistocythere marginalis* Zabert, 1978 emend.**

Plate 4, Figures 12-21

Perissocytheridea litoralensis Rossi de Garcia, 1969a, p. 279, Pl. I, fig. 4

[non] *Perissocytheridea litoralensis* Rossi de Garcia, 1966, p. 206, Pl. 11, figs. 3a-c.

Callistocythere marginalis Zabert, 1978.

Callistocythere litoralensis (Rossi de Garcia, 1966) In: Sanguinetti, 1979, p. 141, Pl. 6, fig. 1a,b and 2b; Pl. 12, fig. 1a, b.

[non] *Callistocythere litoralensis* (Rossi de Garcia, 1966) In: Sanguinetti, 1979, p. 141, Pl. 6, fig. 1c,d and 2a.

Holotypus: Female — Carapace, PMP, n° 1097.

Locus typicus: PMD 1018-93-94 m, Drilling of right side of Paraná River, Provincia de Santa Fé, Argentina.

Homotypi: Female — Carapaces, n° MP-0-742, and 743. Male — Carapace, n° MP-0-744.

Locus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, core 1 (103.07-108 m).

Diagnosis — Carapace ornated with coarse sulci and ridges; two central-dorsal, vertical, parallel and almost straight sulci.

Dimensions — Homotypi: Female, carapace, n° MP-0-742; left valve, length: 0.392 mm; height: 0.219 mm; right valve, length: 0.392 mm; height: 0.219 mm. Carapace, n° MP-0-743; length: 0.412 mm; width: 0.190 mm. Male, carapace, n° MP-0-744; width: 0.154 mm; left valve, length: 0.374 mm; height: 0.193 mm; right valve, length: 0.374 mm; height: 0.198 mm.

Remarks — *C. marginalis* Zabert, 1978 differs from *C. litoralensis* (Rossi de Garcia, 1966) in presenting the dorsal border more curved; straighter ventral border; surface with pits joined together and forming strong sulci. The anterior central dorsal sulcus forms a irregular circle at the anteromedian region; the other ones are approximately concentric.

Material — Approximately five hundred carapaces, adult valves and juvenile instars.

Occurrence — Miocene (Entre Ríos Formation) Cantera Municipal, Victoria, Provincia de Entre Ríos. Upper Miocene (lower member of Paraná Formation), Provincia de Santa Fé, Argentina. Miocene, Pelotas Basin. Post Miocene, Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, core 1 (103.07-108 m), sampling (162-165 m); 2-MO-1-RS, sampling (123 m, 129 m, 135 m); 2-CA-1-RS, core 22 (84-87 m), core 27 (132.80-135.85 m).

Familia Hemicytheridae, Puri, 1953

Sub Familia Thaerocytherinae Hazel, 1967.

***Bradleya* Hornibrook, 1952**

***Bradleya pelotensis* sp. nov.**

Plate 4, Figures 22-28

Derivatio nominis: From Pelotas Basin, Brazil.

Holotypus: Left valve, n° MP-0-749.

Paratypus: Right valve, n° MP-0-750.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, sampling (294-297 m).

Diagnosis — Subrectangular carapace; strong reticulation with the first two sockets of bridge fused forming an elongate socket; left valve with an almost

straight dorsal border; maximum height coincident with ocular region.

Description — External view: Subrectangular carapace. Left valve, with the maximum height coincident with ocular region. Dorsal border almost straight and shorter than ventral one. Anterior cardinal angle more pronounced than the rounded posterior one. Posterior border hemipolygonal with strong spines at ventral mid-length. Ventral border convex. Anterior border obliquely rounded, garnished with neat irregular spines. Strong and conspicuously reticulate surface without secondary reticulation. At anterior median region, the reticulum networks present the structure named bridge by Benson (1972) but at posterior region it presents one longitudinal row of sockets of the same size or more developed than those of the bridge. Weak ocular ridge. The dorsal ridge weaker than ventral one. This last one is sharp pointed at posterior region from where it runs obliquely upwards and disappears in the reticulum. In dorsal view, ovate carapace with the widest part at posterior half. Internal view: Hinge holamphidont. Wide duplicature with the widest part at ventral third. Marginal pore canals almost straight, some bifurcate or crossed. Line of concrescence coincident with the internal margin. Central muscle scars typical for the genus. Sexual dimorphism not observed.

Dimensions — Holotypus: Left valve, n° MP-0-749, length: 0.804 mm; height: 0.463 mm; width: 0.241 mm. Paratypus: Right valve, n° MP-0-750, length: 0.804 mm; height: 0.470 mm; width: 0.234 mm.

Remarks — The present species differs from *Bradleya rheingantzi* Sanguinetti, 1979 in presenting highest part coincident with ocular region and reticulation more delicate with the loss of the muri between the first two sockets of the bridge forming a single elongate socket. The occurrence of this species in sediments immediately above the Miocene and great affinity between the two species suggests their phylogenetic relation being this species possibly originated from *Bradleya rheingantzi*.

Material — Few adult and young valves.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CI-1-RS, samplings (258-261 m), (283-285 m), (288-291 m), (294-297 m); 2-MO-1-RS, samplings (288 m, 300 m, 309 m, 327 m, 333 m, 339 m, 441 m).

Quadracythere Hornibrook, 1952

Quadracythere sp.

Plate 5, Figures 11-16

Hypotypi: Female — Right valve, n° MP-0-767. Male — Left valve, n° MP-0-768.

Locus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, sampling (18-21 m).

Dimensions — Hypotypi: Female, right valve n° MP-0-767: length: 0.735 mm; height: 0.454 mm; width: 0.207 mm. Male, left valve, n° MP-0-768: length: 0.

745 mm; height: 0.392 mm.

Remarks — The present species, in lateral view, is very similar to *Quadracythere* sp. Bertels, 1975.

Material — Few valves of adult and juvenile instars.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CI-1-RS, samplings (12-15 m), (18-21 m), (30-33 m); 2-CA-1-RS, core 4 (23-26.50 m); 2-MO-1-RS, samplings (18 m, 141 m).

Familia Trachyleberididae Sylvester-Bradley, 1948

Sub Familia Trachyleberidinae Sylvester-Bradley, 1948

Henryhowella Puri, 1957

Howella Puri, 1956, p. 274

[non] *Howella* Ogilby, 1899, p. 734

Henryhowella spinosa sp. nov.

Plate 5, Figures 1-10

Derivatio nominis: By surface with well developed spines.

Holotypus: Female — Left valve, n° MP-0-763.

Paratypi: Female — Right valve, n° MP-0-764. Male — Left valve, n° MP-0-765 and right valve n° MP-0-766.

Locus typicus: Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, sampling (294-297 m).

Diagnosis — Subrectangular carapace; surface covered with well developed spines concentrated at marginal regions.

Description — External view: In lateral view, female left valve with the highest part and anterior cardinal angle coincident. Straight dorsal border, with irregular outline due to the presence of spines and neat cardinal angles. Wide and evenly arched anterior border with flexure point approximately at midheight presents neat and more or less irregular denticulation. Slightly sinuous ventral border obscured by marginal spines. Posterior border formed by soft and irregularly denticulate curve. Carapace surface strongly ornamented with spines. The outline of the carapace is garnished with a narrow strip of irregular spines, the longer ones at antero and posteroventral limits. Well developed eye and subcentral tubercle. In dorsal view, ovate carapace with the anterior and posterior extremities rounded and the widest part at posterior half. Internal view: Hinge holamphidont. Well developed duplicature wider at anteroventral region, coincident with the area where most marginal pore canals are grouped. Line of concrescence coincident with inner margin. Long, simple or ramified marginal pore canals. Four muscle scars: three elongate and in vertical row, the fourth one dorsal displaced backwardly and in vertical position plus a V-shaped frontal scar. Line of concrescence coincident with inner margin. Neat sexual dimorphism. Male, in lateral view is narrower and shorter, presenting the right valve with the posterior cardinal angle neater and carapace less inflated, in dorsal view.

Dimensions — Holotypus: Female, left valve,

length: 0.882 mm; height: 0.609 mm; width: 0.294 mm. Paratypi: Female, right valve, n° MP-0-764; length: 0.882 mm; height: 0.580 mm; width: 0.253 mm. Male, left valve, n° MP-0-765; length: 0.843 mm; height: 0.519 mm; width: 0.271 mm. Right valve, n° MP-0-766 length: 0.862 mm; height: 0.538 mm; width: 0.270 mm.

Remarks — *H. spinosa* sp. nov. is similar to *Henryhowella evax* (Ulrich & Bassler, 1904) (in Sanguinetti, 1979, pl. 8, fig. 1f) but it presents the carapace shorter, almost rectangular-shaped; the posterior border with more uniform curvature, and much longer and sharp-pointed spines.

Material — Few male and female valves.

Occurrence — Pelotas Basin, PETROBRÁS drilling: 2-CI-1-RS, samplings (276-279 m), (283-285 m), (288-291 m), (294-297 m), (300-303 m).

***Henryhowella rectangulata* sp. nov.**

Plate 6, Figures 1-16

Derivatio nominis: By rectangular shape of the valves. *Holotypus*: Female — Left valve, n° MP-0-757.

Paratypi: Female — Right valve, n° MP-0-758; Carapace, n° MP-0-759. Male — Left valve, n° MP-0-760; Right valve, n° MP-0-761; Carapace, n° MP-0-764.

Locus typicus: Pelotas Basin, Rio Grande do Sul, PETROBRÁS drilling: 2-CI-1-RS, core 1 (103.07-108 m).

Diagnosis — Subrectangular carapace. Subcentral developed tubercle. Reticulate surface with small and blunt spines. Males with well developed ventroposterior spines.

Description — External view: Female carapace in lateral view, subrectangular, highest anteriorly. Left valve with dorsal border straight. Prominent anterior and posterior cardinal angles. Arched anterior border with neat denticulation. Ventral border lightly convex. Posterior border evenly rounded. Narrow posterior portion. Surface with strong ornamentation formed by reticulum covered by blunt spines. Anterior portion with small spines disposed parallel to the border; in the posterior portion they are more strong and longitudinally disposed dorsal, median and ventrally. Well developed eye and subcentral tubercle. In dorsal view, oval carapace widest at the subcentral tubercle area. Right valve with cardinal angles weak and posterior portion arched. Internal view: Hinge holamphidont. Marginal area large with long, simple or ramified pore canals. Narrow anterior vestibule. Muscle scars in number of four arranged in vertical row and the frontal one in V-shaped. Sexual dimorphism strong. Male carapace in lateral view more elongate and rectangular. In dorsal view more narrow and elongate. Vestibule present in almost all the free margin.

Dimensions — *Holotypus*: Female, left valve, length: 0.823 mm; height: 0.453 mm. *Paratypi*: Female — right valve; length: 0.823 mm; height: 0.446 mm. Carapace; length: 0.804 mm; width: 0.442 mm. Male, left valve; length: 0.862 mm; height: 0.473 mm. Right valve; length: 0.862 mm; height: 0.439 mm. Carapace; length: 0.882; height: 0.426 mm.

Remarks — The present species differs of *Henryhowella evax* (Ulrich & Bassler, 1904) Puri, 1957 by the presence of different ventroposterior margin; primary reticulation covered by blunt spines; long,

Plate 5

Figures 1-10 — *Henryhowella spinosa* sp. nov.

- Female. *Holotypus* n° MP-0-763
1 - Left valve, lateral view. 76X
3 - Left valve, anterior marginal pore canals. 124,5X
4 - Left valve, central muscle scars. 124,5X
5 - Left valve, posterior marginal pore canals. 124,5X
6 - Left valve, hinge. 72,5X
8 - Left valve, hinge. 83X
Female. *Paratypus* n° MP-0-764
2 - Right valve, lateral view. 79X
7 - Right valve, hinge. 75,5X
Male. *Paratypus* n° MP-0-765
9 - Left valve, lateral view. 79,5X

Male. *Paratypus* n° MP-0-766
10 - Right valve, lateral view. 79X

Figures 11-16 — *Quadracythere* sp.

- Female. *Hypotypus* n° MP-0-767
11 - Right valve, lateral view. 78,5X
13 - Right valve, hinge. 78,5X
14 - Right valve, anterior marginal pore canals. 122X
15 - Right valve, central muscle scars. 122X
16 - Right valve, posterior marginal pore canals. 122X
Male. *Hypotypus* n° MP-0-768
12 - Left valve, lateral view. 77,5X

simple and branching marginal pore canals; more developed eye and subcentral tubercle.

Material — Some carapaces and isolated valves.

Occurrence — Pelotas Basin, PETROBRÁS drillings: 2-CI-1-RS, core 1 (103.07-108 m); 2-CA-1-RS, core 27 (132.80-135.85 m).

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Plate 6

Figures 1-16 — *Henryhowella rectangulata* sp. nov.

Female. Holotypus n° MP-0-757

1 - Left valve, lateral view. 74X

3 - Left valve, hinge. 77X

Female. Paratypus n° MP-0-758

2 - Right valve, lateral view. 79X

4 - Right valve, hinge. 77X

5 - Right valve, anterior marginal pore canals. 133,5X

6 - Right valve, central muscle scars. 133,5X

7 - Right valve, posterior marginal pore canals. 133,5X

9 - Right valve, sieve normal pore canals. 3500X

Female. Paratypus n° MP-0-759

8 - Carapace, dorsal view. 80,5X

Male. Paratypus n° MP-0-760

10 - Left valve, lateral view. 79X

13 - Left valve, hinge. 74,5X

Male. Paratypus n° MP-0-761

11 - Right valve, lateral view. 81X

14 - Right valve, hinge. 75,5X

15 - Right valve, anterior marginal pore canals. 151,5X

16 - Right valve, posterior marginal pore canals. 151,5X

Male. Paratypus n° MP-0-762

12 - Carapace, dorsal view. 77,5X