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New Palaearctic Aradus species in the betulae-group (Heteroptera, Aradidae)

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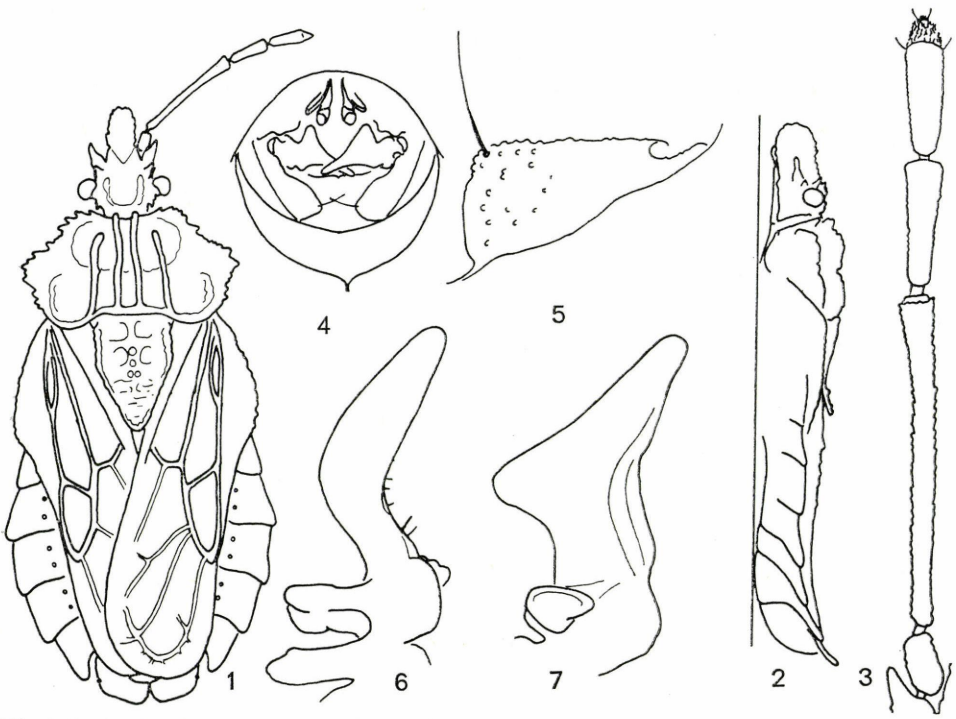
T. VÁSÁRHELYI: New Palaearctic Aradus species in the betulae-group (Heteroptera, Aradidae). — *Annls hist.-nat. Mus. natn. hung.* 1988 80: 57–63.

Abstract — Descriptions of *Aradus obscurus* sp. n. from the southern part of the Mediterranean and of *A. obtectus* sp. n. previously considered *A. pictus* BAER. in the literature are given, and the differences between the latter two species are tabulated. With 34 figures.

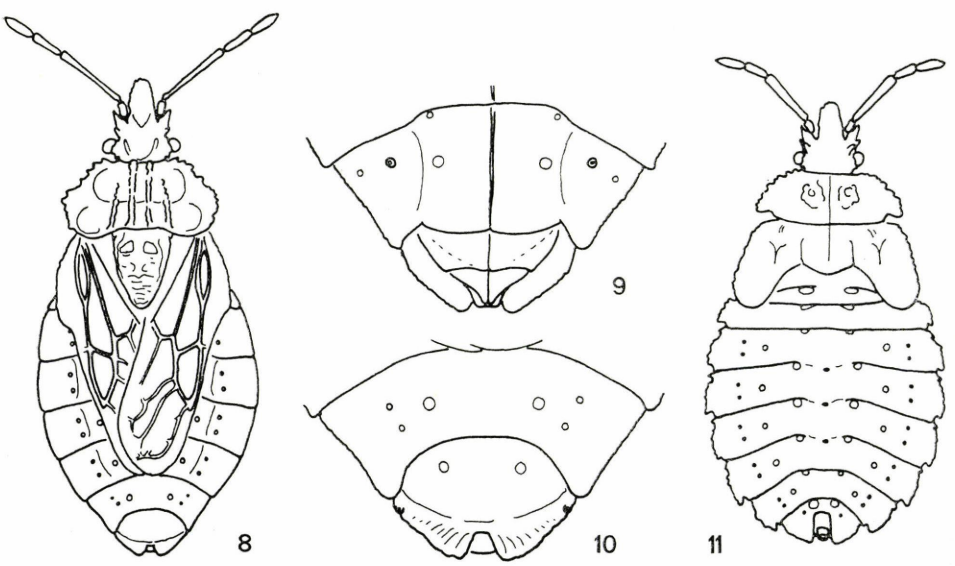
In the course of revision of the Palaearctic *Aradidae*, I had the priviledge to investigate materials from different institutions. It was during this study that I found two undescribed species, both, for different reasons, considered a different species. The case of *A. obscurus* is the simpler of the two: HORVÁTH detected that the only male at hand was an unknown species but he never described it (see the respective data on the labels of the holotype). KORMILEV identified it as *A. brenskei* KRUEPER. Investigation of the male genitalia and further comparative material revealed its present status. *Aradus pictus* was described by BAERENSPRUNG (1859) on the basis of material from the Parnassus collected by KRUEPER, and his figure, though small, shows all the distinguishing characters except the male genitalia, colouration and lack of white teeth on the legs and antenna. FABRICIUS described *A. varius* (1803), and FALLÉN misidentified this species as *varius*. The first good description of the species, under the name *varius*, is given by FIEBER (1861) with the character of the missing white teeth. It was this paper, or this character, which probably led later entomologists not to investigate the species accurately, and after REUTER (1902) clarified the difference of FABRICIUS' and FALLÉN's *varius*, "*pictus*" became a "holopalaearctic" species. Here again investigation of the male genitalia and the original type material helped to clarify the situation. *Aradus pictus* (BAER.) seems to be a Mediterranean species and the rest of the Palaearctic is inhabited by *obtectus*. The figure given by WAGNER (1955) is the paramer of real *pictus*, though the hairs are located somewhat differently, those by VÁSÁRHELYI (1976) and KANYUKOVA (1984) show details of male genitalia of *obtectus*. The figures of this paper, with the exception of Figs 5, 25–28, were made with the help of a drawing apparatus.

Aradus pictus BAERENSPRUNG, 1859

The original paper mentions the locality: "Unter Fichtenrinde auf dem Parnass (Krüper)." The original type series is deposited in the Zoological Museum of the Humboldt University, Berlin and consists of 4 females and 1 fragment, all bearing the label: "Graec. Krp." One female, bearing also the labels "8805" "pictus v. Barenspr." [handwriting] and "typus" is designated here as l e c t o t y p e. Two paralectotype females bear the label "Aradus pictus Bär. (varius auct. nec Fabr.), Reuter det." [handwriting]. Other materials investigated: "Parnass", "Graecia, Krueper" (possibly part of the type series sent to G. Horváth, 1 female), "Graecia" (2 females of different collectings), "Parnass" (1 male, 1 female possibly of the same collecting), "NT Valsental" (1 male), "Graecia, Parnas" (1 male) and "Anavriti, Ellas" (1 female).



Figs 1–7. *Aradus obscurus* sp. n.: 1–2 = male, 3 = antenna, 4 = male genitalia, 5 = parandrium, 6–7 = paramer in two views



Figs 8–11. *Aradus obscurus* sp. n.: 8 = female, 9 = tip of abdomen of female, ventral view, 10 = same, dorsal view, 11 = L_5 larva

Aradus obscurus sp. n. (Figs 1–11)

Adults: Macropterous, brownish with yellow and black colouration. Legs and antennae with whitish tubercles. — Head longer than wide across eyes. Clypeus long, protruding. Antenniferous tubercles long, pointed, with lateral tooth positioned somewhat posterior when compared to other species of the group. Antennae long, slender, relative lengths of antennal joints I to IV as 9 : 49 : 20 : 22 (male), 10 : 48 : 22 : 20 (female). Preocular tubercle long, pointed, subvertical. Vertex convex, with large, blunt tubercles. Rostrum reaching about 1/3 of metasternum, relative lengths of rostral joints I to IV as 6 : 71 : 60 : 50. — Pronotum wider on male than on female. On male, lateral margin obtuse-angled, on female more or less rounded, margin irregularly, roughly serrate. Fore disc strongly convex, hind disc elevating posteriorly. Lateral carinae short, not obvious on hind disc, midlateral carinae reaching from top of fore disc to hind margin, median carinae reaching from evenly sinuate anterior margin to straight hind margin, subparallel. — Scutellum long, with median longitudinal carina, in the middle formed by granulation only. Anterior part with two sublateral, yellow depressions, posterior part transversely wrinkled. Margin basally and apically more elevated. — Hemelytra with relatively long basal dilatation, on male almost reaching hind border of genital chamber, on female reaching hind border of tergite VII. On membrane cubitus and media originating closer to each other than media to radius (the left hemelytron of the male holotype shows fusion of the former two basally. Trochanter and femur fused on fore and middle legs. — Abdomen oval, much longer on female than on male. Dorsolaterotergites clearly delimited from tergites, posterolateral edges on male rounded, strongly protruding, lateral border on male straight or slightly concave. Posterolateral edges on female angulate, lateral border medially slightly convex, on apical segments concave. Tip of abdomen of female is shown on Figs 9–10. Genitalia of male characteristic of the betulae-group. Tergite IX consisting of two lobes (Fig. 4), paramer similar to that of the allied species (Figs 6–7), but with developed, curious basal protrusions.

Fifth instar larva: Characteristic for this group of closerly allied species (*betulae* and *brenskei*), perhaps larger and more oval (Fig. 11). Relative lengths of antennal joints I to IV as 12 : 46 : 19 : 23. Tip of segment 8 much surpassing that of segments 9 and 10.

Measurements (male — female): total length of body 9.2–10.6 mm, length of head 1.6–1.9 mm, width of head 1.5–1.6 mm, length of antenna 3.5–3.4 mm, length of pronotum 1.5–1.4 mm, width of pronotum 3.5–3.4 mm, length of scutellum 1.8–1.9 mm, width of scutellum 1.2–1.3 mm, maximum width of abdomen 4.3–5.1 mm. Fifth instar larva: total length of body 9.2 mm, width of head 1.5 mm, width of pronotum 2.8 mm, width of abdomen 4.8 mm.

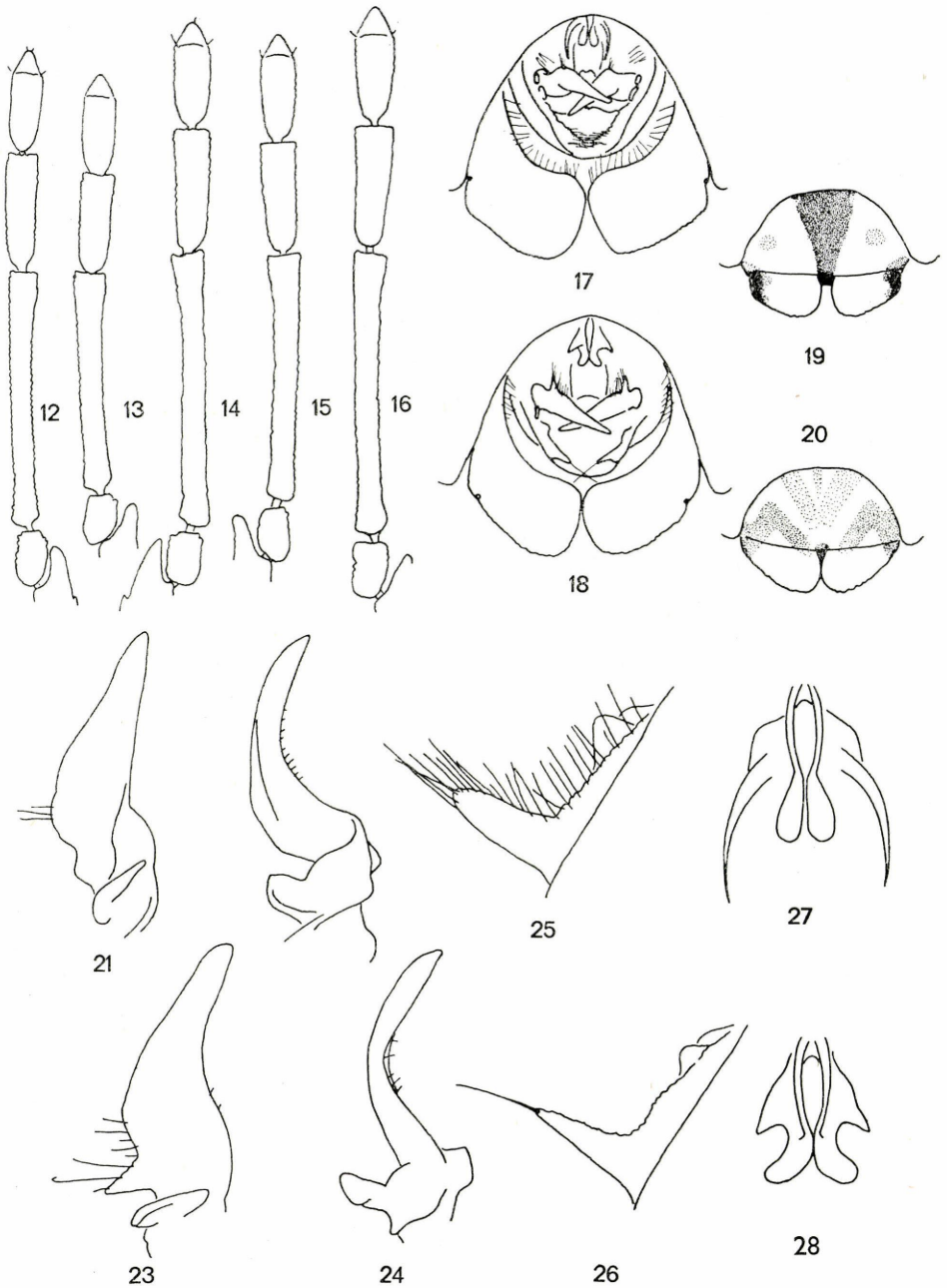
Material — Holotype, male: "Philippeville, Algerie, A. Thery", "Muz." "n. sp., spinis anteocul, color antenn" [with G. HORVÁTH's handwriting], "Coll. Mus. Nat. Hung.", "Aradus brenskei Reuter, det. N. Kormilev, '54". — Paratypes, 1 female and 4 L_5 larvae: "Dr. F. Leuthner, Djebel Akrab. 85, N. Syrien", "Zool. Mus. Berlin"; 1 female (prepared onto dorsal side): "Massif des Mouzaia", "5268", "Collection de Bergevin", 1 female with the same locality data but written in handwriting (latter two from Mus. Helsinki).

The type material is deposited in the Hungarian Natural History Museum, Budapest, in the Zoological Museum of the Humboldt University, Berlin, and in the Zoological Museum of the University of Helsinki, Helsinki.

The new species is closely related to *A. brenskei* REUT. but differs in some characters, e. g. in *brenskei* lateral tooth on antenniferous tubercle positioned more anteriorly, preapical tubercle less developed, antenna thicker, scutellum shorter, abdomen of female longer and more narrowing posteriorly, media and radius originating more closely to each other, etc., and there are clear differences in the male genitalia too.

Aradus obtectus sp. n.

Since the species is widespread all over the Palaearctic Region and is described in different papers and handbooks, a formal description seems unnecessary. I compare the two species, which are rather similar concerning most details of their body. Some of the differences are not clear owing to the great variability of *obtectus* and to the few specimens of *pictus* at hand. Specimens of the latter species show certain variability too, e.g. in the ratio of antennal joints to the width of head or to other joints, or in the form of the female last tergite. That is why variability is shown for the antenna (Figs 12–16) and for the tip of abdomen of the female (Figs 31–34). Though there is some tendency for differenti-



Figs 12–28. *Aradus pictus* BAER. and *A. obtecus* sp. n.: 12–16 = antenna, 17–18 = tip of abdomen of male, 19–20: characteristic coloration of tip of abdomen of female, 21–24 = paramer in different views, 25–26: parandrium, 27–28: tergite 9. — Figs 12, 14, 17, 19, 21–22, 25, 27: *A. pictus* Baer., Figs 13, 15–16, 18, 20, 23–24, 26, 28: *A. obtectus* sp. n.

ation in the geographically distinct materials of *obtectus*, some basic features of outer morphology as well as the male genitalia show little variation and the differences are not consequent, therefore further division of the species is unjustified. The relative length of the antennal joints varies greatly (e.g. on the largest specimen of *obtectus*, from Görgény, Fig. 16., joint 2 is relatively longer than on *pictus*, but the ratio of joints 3 and 4 is characteristic of obtectus). Colouration varies from orange and reddish-brown to grey. There is considerable variation in the shape of sclerites on the ventral side of the female abdomen and in the shape of last segment too. Specimens from Melnik have poorly developed eighth laterotergites (Fig. 34.), possibly of genetic failure, since 2 specimens out of 5 have similarly deformed and atrophied laterotergite on the left side.

DIFFERENCES IN THE SPECIES

pictus	*obtectus*
Antennal formula 10 : 49 : 22 : 19 (male) and 10 : 49 : 22 : 19 (female)	Antennal formula 11 : 47 : 21 : 21 (male) and 10 : 48 : 21 : 21 (female)
Antennal joint 2 longer, more narrowing in the middle (Figs 12, 14)	Antennal joint 2 thicker, shorter (Figs 13–14)
Laterotergite of segment 8 of male and female produced more posteriorly beyond spiracles (Figs 17, 29, 31–32)	Laterotergite of segment 8 of male and female produced less posteriorly beyond spiracles (Figs 18, 30, 33–34)
Colouration of last segment of female brownish-black in the middle and especially on the lateral edge of laterotergites (Fig. 19)	Coloration of last segment of female reddish (Fig. 20)
Paramer without basal protrusion (Figs 21–22)	Paramer with basal protrusion and with long hairs (Figs 23–24)
Parandrium apically less narrowing, margin with long hairs in the whole length (Fig. 25)	Parandrium apically almost pointed, with a sole long hair (Figs 23–24)
Medial lobe of tergite 9 curling laterally, lateral lobe long, curled, pointed, produced posteriorly (Fig. 27)	Medial lobe of tergite 9 curling laterally, lateral lobe short, produced laterally (Fig. 28)
Posterior margin of genital chamber with long, fine hairs (Fig. 27)	Posterior margin of genital chamber bare, only basally with some hairs (Fig. 28)

Material — Considering the large number of specimens and localities, in the case of paratypes only the text of the first label is given.

Holotype (male) and allotype (female) (both on the same pin): "Karpates, Cruce-Moldav., col. Montandon". — Paratypes in the Hungarian Natural History Museum (Budapest): "Karpates, Cruce-Moldav. col. Montandon" 2♂, 5♀; "Morea, Cumani, Brenske" 2♂, 2♀; "Romania, Piatra Craiului, Curmatura 1000 m" 1♂, 3 larvae; "Lucski, 4. 8. 85." 3♀, 2 larvae; "Mehádia, Pável" 1♂; "Bártfa, Mihalovics" 1♀; "Verestorony, Csiki" 1♂, 1 larva; "Ferencfa, Horv. 1908" 1♂; Görgény, 28.5.92." 1♀; "Pietrosz, 10. 7. 87." 1♂, 2♀, 2 larvae; "Körösmező, Csiki 1911" 1♂; "Radnai-hegys. Csiki" 1♂; "Moravia, Paskau 79, Reitter" 1♀; "Spalato 79" 1♂; "Latif Pulaj" 1♀; "Kephallenia, Paganetti" 1♂; "Caucasus, Thana-Tal, F. König" 1♂; "Vinogradovka, Ussuri kr. Kiritshenko, 7. VI. 929." 1♂, 1♀; "Ushkania nad lu. z. ber. oz. Baikal, Kiritshenko 27. VII. 950." 1♂, 1♀; "259" 1♂. — In the private collection of Mr. E. Heiss (Innsbruck): "Gramaisertal, Ti leg, Knabl" 1♂; "Zagradenja Drama (Gr.), 15. 9. 1986." 1♂, 1♀; "Südfrankr., Umg. Digne, Prads, VI. 79. Heiss" 2♂, 1♀; "Südfrankr., Umg. Digne, Prads-Tertiers" 1♂; "Tölgyes, Siebenbürgen" 1♂. — In the Zoological Institute of the Academy of Sciences of the USSR (Leningrad): "Vinogradovka, Ussuri kr. Kiritshenko, 2. VI. 929" 1♂, 1♀; "Promisel Ozherpach, liman Amura, Tshernavin, 29–31. VII. 915" 1♂, 1♀; "st. Mshinskaya. Luzhsk. r. Leningr. V. Stark 12. VI. 931." 1♀; "Guzeripl Gos. Kavkaz. Zapovedn. 931. Slashevskiy, 11. X." 1♀; [almost illegible handwriting, lcear is "Guzeripl., 9–IV–35"] 2♂, 1♀; "Alma Ata, Kazakhst., Parphentiev, 20. VIII. 945." 1♂. 1♀; "Listvenitshnoe, lu.-z. Baikal, Kiritshenko, 22. VIII. 950." 1♀; "Pestshanka, Troitskosavsk. u' Zabaik. Michno 14. VIII. 926." 1♂. — In the Zoological Museum of the University of Helsinki (Helsinki): "Morea, Cumani, Brenske" 1♀; "G: a Sandön, Mjöberg" [G : a written in three different ways on different labels] 2♂, 2♀; "Djurdjura" 1♀; [handwriting, "Djurdjura" readable] 1♀. — In the Zoological Museum of the Humboldt University (Berlin): "Bialowies." 1♀; "No. 500, Mon-

tenegro, Maglic-Mratinje 1600–1700 m. 30. 6. 11. Spaney-Schumacher S. V." 1♂, 2♀, 8 larvae; "Herkulesbad, Elisabethhöhe, 13. 6. 32." 1♀; "Stirovaca, 1102 m, Croatia, Meusel, 15. 6. 10." 1♀; "Croatia" 1♂; "Mons Zeejak, 1623 m, Croatia, Meusel, 25. 5. 10." 1♂, 1♀; "Zwiegel h. W. Falkenstein, Seidenstücker, okt. 1949" 1♀. — In the Zoological Insitute of the Bulgarian Academy of Sciences (Sofia): "Bulgaria, Melnik, 25. 7. 1956. M. Josifov leg." 4♀. — In the private collection of J. Zdenek (Prague): same as in Sofia, 1♀ — In the collection of Dr. P. Štys (Prague): "Fennia OB, Pisavaara naturpark, 23. 6. 1951, Håkån Lindberg" 1♀; "Central Slovakia, Slovenské Rudohorie Mtns, Dobroc, mont. prim. forest, P. Nohel, 30. September, 1973" 2♀; "Slovakia, V. Fatra, Alpa kisky, cca 900 m, 29. 7. 72. Štys/127" 1♂, 3♀; "Slovakia V. Fatra, H. Harmanec, 2. 8. 72. Štys/149" 2♀; "Boh. Orlické hory, Prázovka u Sedivin, 7. 3. 77. Štys/1 Picea" 4♀; "ČSSR, Silesia, Sil. Beskydy Mts., Mt. Mionsi, P. Nohel 17. X. 1971." 2♀. — In the State Natural History Museum (Stuttgart): "E-Prov. Teruel, SW Valderrobres, 500 m., 18. 4. 1984., W. Schawaller leg." 1♀. — In the Slovakian National Museum (Bratislava): "Zvolen, Slov., IV. 53. A. Olexa" 1♂; "Slov. Zvolen" 2♂; "Slov. Kremnica, V. 55. Olexa" 4♀; "Slov. Vrutky, Olexa IV. 55." 1♂; [illegible handwriting with pencil] 2♂.

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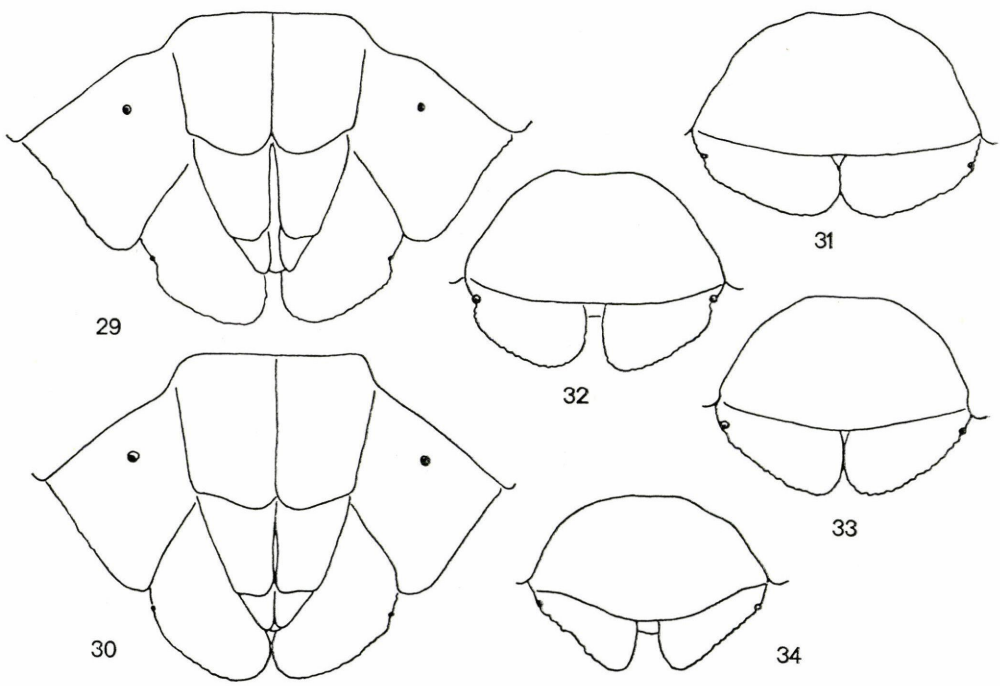

Figs 29–34. *Aradus pictus* BEAR. and *A. obtectus* sp. n.: 29–30 = female genitalia, 31–34 = last segment, dorsal view, 29 and 31–32 = *A. pictus* BAER, 30 and 33–34: *A. obtectus* sp. n.

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