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Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel

Hemiptera: Fam. Aradidae

by Nicholas A. Kormilev and Ernst Heiss

A b s t r a c t : A lot of Aradidae from Bhutan, collected during the Bhutan Expedition 1972, of the Basel Museum of Natural History contained representatives of four subfamilies: *Aradinae*, *Calisiinae*, *Aneurinae* and *Mezirinae*. The authors describe the following new species: *Calisius himalayensis* n. sp., *Aneurus bhutanensis* n. sp., *Neuroctenus bhutanensis* n. sp., *Arbanatus affinis* n. sp., *Wuiessa longicornis* n. sp., *Wuiessa wittmeri* n. sp., *Usingerida similis* n. sp., Of particular interest are the records of the very rare *Aradus mirabilis* Bergroth, of *Calisius himalayensis* n. sp., as with this record, the gap in distribution, caused by lack of material, shrinks again, and the two new species of the genus *Wuiessa* Hsiao, known up to now only by one species from China.

By the kind offices of Dr. Walter Wittmer we have had a privilege to study a very interesting lot of Aradidae from Bhutan, collected during the Basel-Bhutan Expedition of the Museum of Natural History in 1972, for which we express him our sincere gratitude.

The lot contained representatives of four subfamilies: *Aradinae*, *Calisiinae*, *Aneurinae* and *Mezirinae*.

Of particular interest was *Aradus mirabilis* Bergroth, 1892, originally described from Burma, Carin Cheba, 900-1100 m., a pretty rare species, much more rare than its closely related species, *Aradus foliaceus* Kormilev, 1957, recorded from various parts of Indo China.

The subfamily *Calisiinae*, one of the oldest among Aradidae, has almost world-wide distribution, with exception of more temperate and frigid areas. Until recently, it had a large gap in distribution, from Seychelles Ils to New Guinea and Australia. A few years ago this gap started to shrink: Kiritshenko recorded it from Russian Central Asia (1959: 180), Bloete recorded it from Java (1965: 8), and the first author from Viet Nam and Laos (1970: 703). Now we are able to close this gap even more, describing a new species from Bhutan.

In 1964, Hsiao established a new genus of *Mezirinae*, *Wuiessa* (1964: 601) for a new species from China, Yunnan. Now we are able to describe two new species from Bhutan.

In the descriptions, the first figure in ratios represents the length, and the second the width of measured portion, 25 units = 1 mm. The length of abdomen, for convenience, was taken from the tip of scutellum to the tip of hypopygium (♂), or segment IX (♀) respectively, only in *Calisius* it was taken from the fore border of connexivum I to the tip of segment IX.

Subfamily **Aradinae** Amyot et Serville, 1843
 Genus *Aradus* Fabricius, 1803

Aradus mirabilis Bergroth, Foto 1

Aradus mirabilis Bergroth, 1892, Ann. Mus. Civ. Stor. Nat., Genova, (2) 12: 710.

1 ♂, Bhutan, Thimphu, 31.V.1972, Basel Bhutan Expedition, 1972.

Subfamily **Calisiinae** Stål, 1873
 Genus *Calisius* Stål, 1858 (1860)

Calisius himalayensis Kormilev et Heiss, n. sp., Fig. 4—6, Foto 2

Female. Elongate ovate; head, pronotum partially, base of scutellum, and connexivum externally, are granulate; scutellum on disc roughly punctured.

Head longer than its width across eyes (16:14); anterior process obovate, granulate and slight incised anteriorly, reaching basal 1/4 of antennal segment III; antenniferous tubercles dentiform, divaricating, blunt apically, reaching 3/4 of antennal segment I. Eyes moderately large, protruding. Postocular tubercles minute, not reaching outer border of eyes. Infraocular carinae consisting of 3 larger and 2 smaller, rounded granules; vertex with V-form, rough granulation. Antennae longer than width of head across eyes (17:14); antennal segments I to III subcylindrical, IV fusiform; relative length of antennal segments I to IV are: 25:3.5:5.5:6. Labium reaching hind border of labial groove.

Pronotum half as long as its maximum width (10.5:23.5); fore lobe narrower than hind lobe (17:23.5); collar with 2 (1+1) large, round tubercles; lateral borders of fore lobe with 6 (3+3) granules, humeri with a double row of granules: 3 in the upper and 2 in the lower row; fore disc with 2 (1+1) large granules corresponding to 2 granules of collar; hind disc with 4 (2+2) carenae formed by granules fused together.

Propleuron with an oblique row of 2 or 3 granules.

Scutellum much longer than its maximum width (35:18). Basal border with 4 (2+2) granules; lateral borders of basal, triangular elevation each with a double granule in the middle; scutellar carena with a semiobliterated granulation; 2 (1+1) oblique, arquate carinae extend from the base of basal elevation to lateral borders of scutellum. Disc of scutellum densely and roughly punctured, punctures of the same size throughout the disc. Lateral borders and tip of scutellum with obliterated granulation.

Hemelytra. The visible portion of corium with obliterated granulation.

Abdomen ovate, longer than its maximum width (40:26, measured from above, actual width 32). Connexivum I with 1 pale granule; connexiva II to VI each with a double row of granules: in the upper row each segment has 2 black and 1 pale granules; connexivum VII with 1 black and 1 pale granules; in the lower row granules are smaller, 3 to 4 on each segment; sometimes these granules are almost obliterated. Paratergites consisting of a cluster of 3 granules, reaching basal $\frac{1}{4}$ of a tricuspidate segment IX. Spiracles minute and difficult to observe, II to VI ventral, placed far from border; VII lateral, placed on a granule; VIII terminal, also placed on a granule.

Venter with a row of granules between connexivum and venter itself.

Legs. Femora finely granulate on inferior side.

Color: testaceous, partially darker; scutellum with a median, round, pale spot on $\frac{3}{4}$ of its length.

Total length 2.90 mm; width of pronotum 0.94 mm; width of abdomen 1.04 mm.

Holotype ♀, (Basel Museum), Bhutan, Phuntsholing, 200—400 m, 5.V.1972; Basel-Bhutan Expedition, 1972.

Calisius himalayensis n. sp. is related to *C. antennalis* Horvath, 1913, from New Guinea, but has scutellar carina with obliterated granulation, and scutellum with only one, median, round, pale spot.

Subfamily *Aneurinae* Douglas et Scott, 1865

Genus *Aneurus* Curtis, 1825

Aneurus bhutanensis Kormilev et Heiss, n. sp., Fig. 1—3, Foto 3

Male. Elongate ovate, 2.48× as long as its maximum width; head, and fore lobe of pronotum granulate, hind lobe more finely granulate; scutellum concentrically granulate.

Head slightly longer than its width across eyes (17:16) anterior process conical, rounded anteriorly, reaching tip of antennal segment I; genae slightly shorter than clypeus. Antenniferous tubercles truncate anteriorly, acute antero-laterally. Eyes semiglobose, moderately protruding. Postocular tubercles angular, reaching outer borders of eyes. Infraocular callosities large, ovate. Vertex transversely rugose. Antennae 1.68× as long as width of head across eyes (27:16), antennal segment I barrelshaped, II fusiform, III subcylindrical, tapering toward base, IV elongate fusiform; relative length of antennal segments I to IV are: 5:5.5:5.5:11. Labium short, reaching line connecting fore borders of eyes.

Pronotum less than half as long as its maximum width (16:35); fore lobe narrower than hind lobe (25:35). Collar thin, sinuate anteriorly; antero-lateral angles evenly rounded, fore border and lateral border of fore lobe forming a right angle; lateral borders of hind lobe slightly convex, strongly converging anteriorly and finely crenelate; hind border straight. Fore disc granulate and with 2 (1+1) crescent-shaped callosities; hind disc very finely granulate, granules forming transverse rows.

Scutellum subtriangular, shorter than its basal width (14:21); lateral borders evenly convex, tip rounded. Disc granulate: granules at the base forming longitudinal, tortuous rows; in the middle concentrical, tortuous rows, and on periphery very fine, concentrical rows.

Hemelytra reaching $\frac{3}{4}$ of tergum VII; corium reaching slightly beyond basal $\frac{1}{3}$ of scutellum.

Abdomen ovate, longer than its maximum width (75:50); discs of connexiva sparsely and finely granulate; exterior borders of connexiva finely crenelate. PE- angles (postero-exterior) of connexiva II to VI angular, distinctly protruding; PE-VII rounded. Paratergites triangular, truncate posteriorly, reaching slightly beyond middle of an acorn-shaped hypopygium, the latter is slightly longer than its maximum width (11.5:10), transversely, tortuously rugose on apical $\frac{2}{3}$ of disc. Spiracles II, V-VII lateral, III-IV ventral, VIII terminal.

Legs very finely granulate.

Color brown; head, pronotum, scutellum and hypopygium, are dark brown.

Total length 4.96 mm; width of pronotum 1.40 mm; width of abdomen 2.00 mm.

Holotype ♂ (Basel Museum), Bhutan, 21 km O Wangdi Phodr., 1700 to 2000 m.; Basel Bhutan Expedition, 1972.

Aneurus bhutanensis n. sp. is closely related to *A. insularis* Kormilev, 1970, from Hainan I., but is slightly longer and narrower; antennae relatively shorter, only $1.68\times$ as long as width of head across eyes ($1.75\times$ in *A. insularis*); scutellum more triangular and without triangular, longitudinally striate area in middle of disc. Paratergites are shorter and truncate posteriorly, hypopygium slightly longer than wide (shorter than wide in *A. insularis*).*

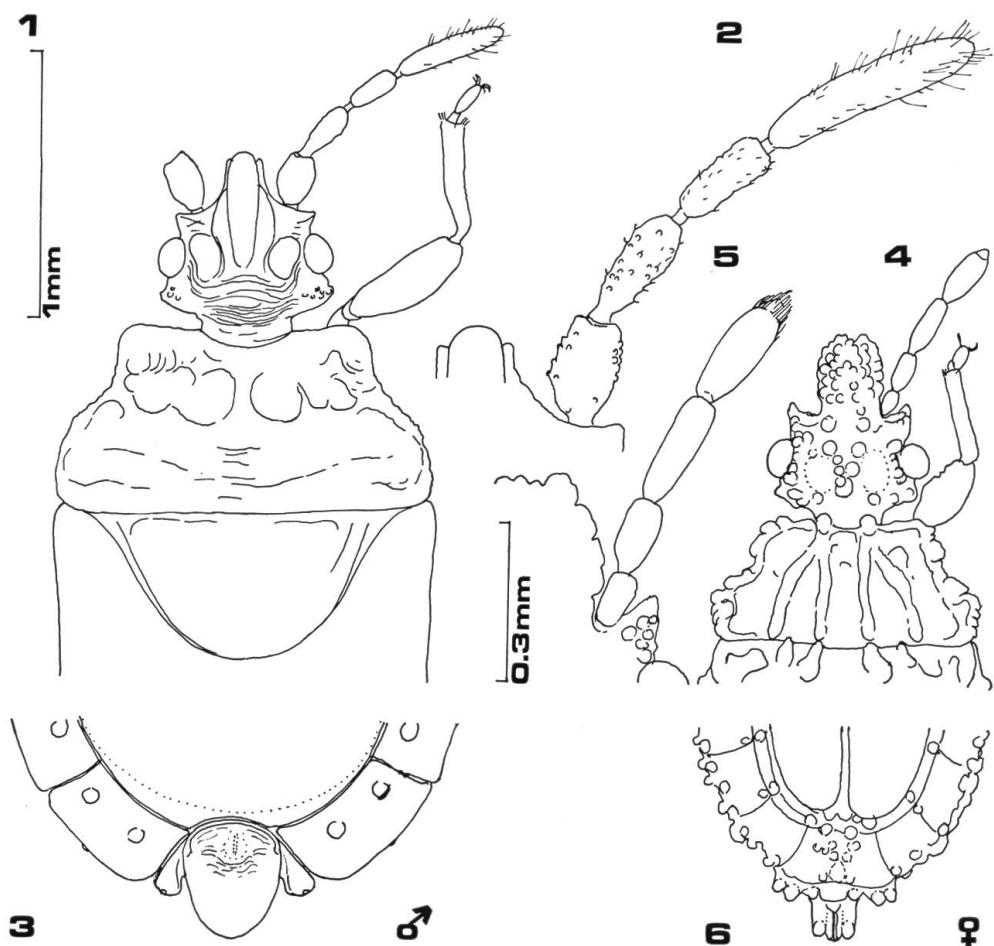
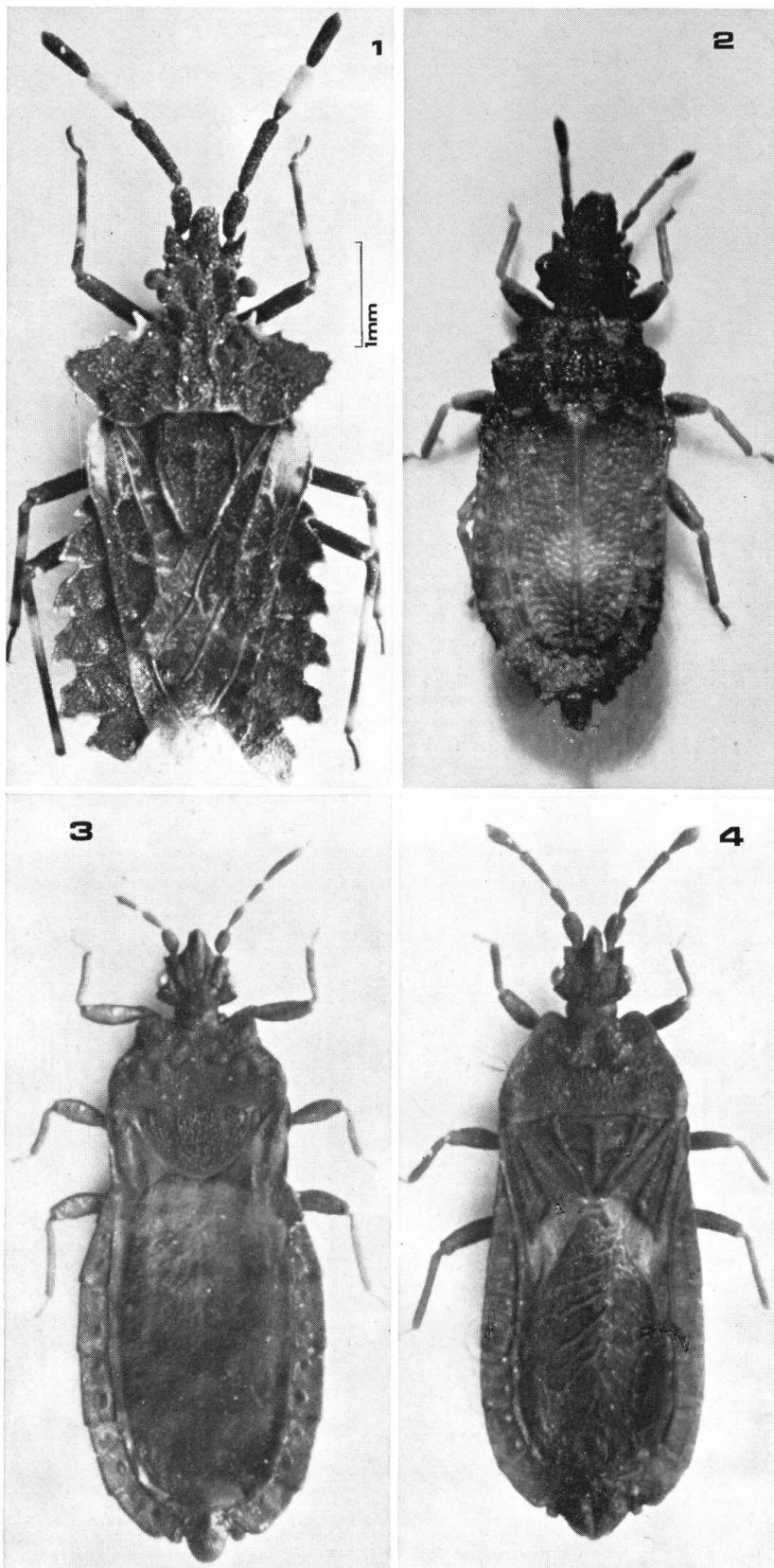


Fig. 1—6 *Aneurus bhutanensis* n. sp. (1—3) and *Calisius himalayensis* n. sp. (4—6: 1: Holotype ♂, head and pronotum; 2: antenna; 3: terminal abdominal segments, dorsal view; 4: Holotype ♀, head and pronotum; 5: antenna; 6: terminal abdominal segments, dorsal view.

* In our description of *Aneurus nepalensis* Kormilev et Heiss 1973 (Ent. Rec. J. Var. 85 [6]: 144) it has been erroneously printed that only the spiracles III to V are placed ventral. As shown in fig. 3 and used in our key to oriental *Aneurus*-species, also spiracle VI is placed ventral.



Subfamily **Mezirinae** Oshanin, 1908
 Genus *Neuroctenus* Fieber, 1861

***Neuroctenus bhutanensis* Kormilev et Heiss, n. sp., Fig. 11—14, Foto 7**

Male. Elongate ovate; head, pronotum laterally, tergum VII, and hypopygium, finely granulate; middle of pronotum posteriorly, and apical $\frac{2}{3}$ of scutellum, transversely rugose.

Head almost as long as its width across eyes (δ -25:24.5, φ -25.5:25). Anterior process with parallel sides, declivous, rounded and slightly incised apically; reaching, or slightly produced beyond tip of antennal segment I. Antenniferous tubercles acute and diverging. Eyes semiglobose, protruding. Postocular tubercles blunt, not reaching outer border of eyes. Vertex granulate, granules arranged into transverse rows. Antennae thin and long, relative length of antennal segments I to IV are: δ -10:9:10.5:12.5, φ -10:9:11:13; antennal segment I clavate, II—III tapering toward base, IV fusiform. Labium short, reaching line connecting middle of eyes.

Pronotum less than half as long as its maximum width (δ -21:50, φ -23:52.5); fore lobe narrower than hind lobe (δ -38:50, φ -38:52.5). Collar thin, sinuate anteriorly; antero-lateral angles angularly rounded, produced forward as far as collar laterally. Lateral borders of fore lobe rounded and converging, interlobal notch sinuate, lateral borders of hind lobe subparallel, rounded, converging anteriorly; hind border evenly sinuate. Fore disc granulate and slightly raised sublaterally; interlobal depression thin; hind disc transversely rugose medially, granulate laterally.

Scutellum shorter than its basal width (δ -25:33, φ -29:35); lateral borders straight, carinate, sometimes slightly sinuate before apex. Disc longitudinally striate on basal $\frac{1}{3}$, transversely rugose on apical $\frac{2}{3}$; median ridge visible only on apical $\frac{2}{3}$ of disc.

Hemelytra reaching $\frac{3}{4}$ of tergum VII (δ), or hind border of tergum VI (φ). Corium slightly produced beyond fore border of connexivum III; its apical angle acute, apical border twice, shallowly sinuate.

Foto 1—2 1: *Aradus mirabilis*, Bergroth, δ , Bhutan Thimphu; 2: *Calisius himalayensis* n. sp., Holotype φ .

Foto 3—4 3: *Aneurus bhutanensis* n. sp., Holotype δ ; 4: *Arbanatus affinis* n. sp., Holotype δ .

Abdomen ovate, longer than its maximum width across segment V (δ -95:65, φ -107:70). Connexivum flat, very finely granulate; PE-angles III to VI slightly protruding. Paratergites (δ) clavate, reaching $1/2$ of cordate hypopygium, which is shorter than its maximum width (15:25); disc of hypopygium is flat, granulate, granules forming transverse rows on basal half. Paratergites (φ) angularly rounded, almost reaching tip of a rounded posteriorly segment IX. Spiracles II to VII ventral, placed far from border, VIII lateral and visible from above.

Legs granulate, serrate on posterior border.

Color ferruginous, membrane black, labium and tarsi yellow-brown.

Total length: δ -7.24, φ -7.36 mm; width of pronotum: δ -2.00, φ -2.10 mm; width of abdomen: δ -2.60, φ -2.80 mm.

One paratype (φ) was larger 7.84 mm.

Holotype δ (Basel Museum), Bhutan, Phuntsholing-Thimphu, 16. IV. 1972; Basel-Bhutan Expedition, 1972.

Allotype φ , (Basel Museum), collected with holotype.

Paratypes: 6 $\varphi\varphi$, collected with holotype; 1 φ , Bhutan, Nobding, 41 km O Wangdi Ph. 2800 m, Basel-Bhutan Expedition, 1972; 2 φ , Bhutan km 87 von Phuntsholing 22. V. 72; (Basel Museum and collection of Authors).

Neuroctenus bhutanensis n. sp. is closely related with *N. taiwanicus* Kormilev, 1955, originally described from Taiwan, but later also recorded from China (Fukien) and Viet Nam, but may be separated at once by a cordate hypopygium.

Genus *Arbanatus* Kormilev, 1955

Arbanatus Kormilev, 1955, Quart. Jour. Taiwan Mus.; 8: 180.

Pictinellus Usinger and Matsuda, 1959, Class. Aradidae, p. 288.

Arbanatus affinis Kormilev et Heiss, n. sp., Fig. 7—10, Foto 4

Male. Elongate ovate, slightly widening backward; head, pronotum and base of scutellum, granulate, rest of scutellum transversely striate.

Head shorter than its width across eyes (δ -15:17, φ -16:17.5); anterior process pointed, or slightly incised anteriorly, genae being longer than clypeus and contiguous in front of it, reaching $3/4$ of antennal segment I; anteniferous tubercles subacute, with parallel outer borders. Eyes semiglobose, protruding. Postocular tubercles minute, acute, not reaching outer borders of eyes; postero-lateral borders behind them serrate. Vertex granulate. An-

tennae strong, less than twice as long as width of head across eyes (δ -32:17, φ -33: 17.5); antennal segment I clavate, II and III strongly tapering toward base, IV fusiform; relative length of antennal segments I to IV are: δ -8: 5.5:9.5:9, φ -8:6:10:9. Labium reaching hind border of labial groove, which is closed posteriorly.

Pronotum half as long as its maximum width (δ -19:38, φ -19.5:39). Collar sinuate anteriorly, antero-lateral angles slightly expanded, rounded and produced forward far beyond collar. Lateral borders subparallel, slightly convex at humeri, reborded, straight and strongly converging anteriorly. Hind border shallowly sinuate. Fore disc depressed medially, depression flanked by 2 (1+1) granulate ridges; laterad of them with 2 (1+1) elongate callosities; slightly raised again and granulate mesad of expanded lateral borders. Interlobal depression deep; lateral notch absent; hind disc granulate.

Scutellum long, but shorter than its basal width (δ -16:18, φ -17.5:19); lateral borders carinate and sinuate before apex; the latter not carinate. Disc granulate on basal $1/4$, transversely raised on 2nd quarter; sharply, transversely rugose on apical half. Median carina thin.

Hemelytra reaching $3/4$ of tergum VII (δ), or slightly produced over fore border of tergum VII (φ). Corium reaching basal $1/4$ of connexivum III; its apical angle acute, its apical border slightly sinuate.

Abdomen ovate; longer than its maximum width across segment IV (δ -68:45, φ -70:47). Connexiva II and III fused together, separated only by a thin carina; PE-angles III to VI barely produced; PE-VII rounded in both sexes. Discs of connexiva very finely punctured. Paratergites (δ) small, obliquely truncate, reaching half of hypopygium; the latter cordate, slightly inflated laterad of tip inferiorly, so it looks more rounded than it is; shorter than its maximum width (10:15); disc is triangularly depressed and with a thin, double, median carina. Paratergites (φ) angularly rounded, reaching $1/2$ of a tricuspidate segment IX. Spiracles II and VIII lateral, III to VII ventral.

Legs finely granulate.

Color testaceous; membrane black, yellowish at base; labium and tarsi yellow.

Total length: δ -4.80, φ -4.92 mm; width of pronotum: δ -1.52, φ -1.56 mm; width of abdomen: δ -1.80, φ -1.88 mm.

Holotype δ (Basel Museum), Bhutan, km 87 von Phuntsholing, 22. V. 1972; Basel-Bhutan Expedition, 1972.

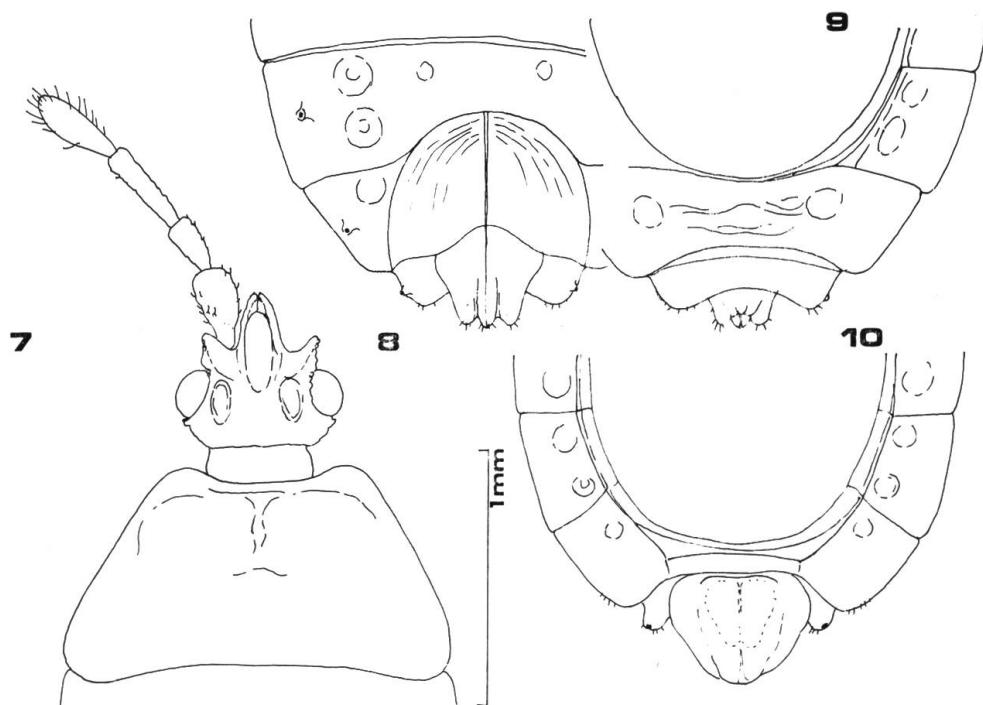


Fig. 7—10 *Arbanatus affinis* n. sp. 7: Holotype ♂, head and pronotum; 8: Paratype ♀, female terminal abdominal segments, ventral view; 9: ibid. dorsal view; 10: Holotype ♂, terminal abdominal segments, dorsal view.

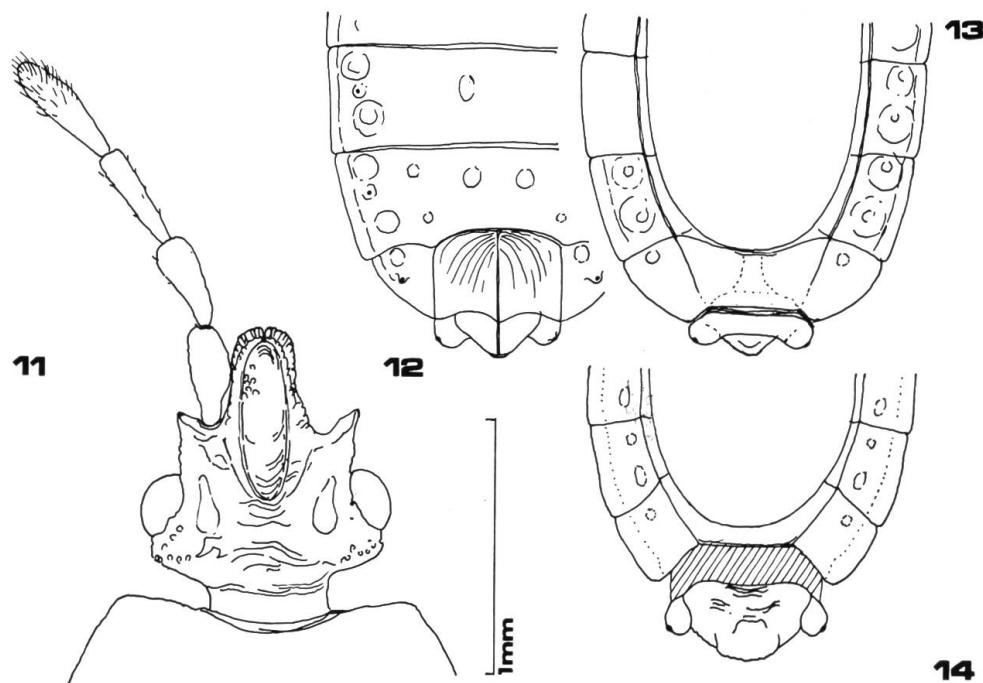


Fig. 11—14 *Neuroctenus bhutanensis* n. sp. 11: Holotype ♂, head and pronotum; 12: Paratype ♀, female terminal abdominal segments, ventral view; 13: ibid. dorsal view; 14: Holotype ♂, terminal abdominal segments, dorsal view.

Allotype ♀ (Basel Museum), collected with the holotype.

Paratypes: 4 ♂♂, collected with the holotype, (Basel Museum and collection of Authors).

Arbanatus affinis n. sp. is related to *A. majusculus* (Hsiao), 1964, from China, Yunnan, but is slightly larger, relative length of antennal segments is different: segment IV is shorter than III (longer in *A. majusculus*); shape of hypopygium is also different, and by spiracles VIII lateral and visible from above (ventral, placed close to margin in *A. majusculus*).

Genus *Wuiessa* Hsiao, 1964

***Wuiessa longicornis* Kormilev et Heiss, n. sp., Fig. 15—18, Foto 5**

Male. Elongate ovate; head, pronotum, apical half of scutellum, connexivum exteriorly, tergum VII and hypopygium, finely granulate; body covered with spare, short, rusty hairs.

Head as long as its width across eyes (♂-33:33, ♀-34:34); anterior process conical, slightly incised anteriorly, reaching $\frac{3}{5}$ of antennal segment I; antenniferous tubercles pointed, diverging. Eyes small semiglobose, strongly protruding, but not pedunculate. Postocular tubercles minute, spiniform, reaching, or slightly produced beyond outer border of eyes. Vertex raised and granulate; infraocular callosities elongate ovate, with a thin, median sulcus; infraocular carinae with a row of fine granules. Antennae long and thin, $2\frac{1}{2} \times$ as long as width of head across eyes; relative length of antennal segments I to IV are: ♂-23:17:27:17, ♀-23:16:25:16. Labial atrium closed, split-like; labium slightly produced beyond hind border of labial groove, which is open posteriorly.

Pronotum less than half as long as its maximum width (♂-32:77, ♀-32:78). Collar thin, sinuate anteriorly; antero-lateral angles produced into rounded lobes, directed forward; interlobal notch forming a blunt angle; lateral borders of hind lobe subparallel, rounded and converging anteriorly: hind border evenly sinuate. Fore disc with 2 (1+1) high, round tubercles; between them and lateral borders are placed 2 (1+1) narrow and low ridges, with a row of small granules on their tops. Interlobal depression moderately deep. Hind disc granulate, humeri raised.

Scutellum triangular, shorter than its basal width (♂-35:46, ♀-35:43); lateral borders carinate, convex on basal half, sinuate on apical; basal border reflexed; tip rounded and not carinate. Disc with a stout, cross-shaped median ridge, depressed just behind transverse bars. Lateral of the basal $\frac{1}{4}$

of median ridge are placed 2 (1+1) large, round depressions; smaller depressions are placed lateral of the depressed portion of median ridge. Apical half of disc is transversely rugose.

Hemelytra reaching $\frac{1}{2}$ of tergum VII (δ), or hind border of tergum VI (φ); corium reaching $\frac{2}{3}$ of connexivum III; baso-lateral borders of corium rounded and expanded beyond lateral borders of pronotum, or abdomen; apical border of corium sinuate inferiorly, second sinus is mesad of tip, the latter is rounded. Membrane large, with anastomosed veins.

Abdomen ovate, longer than its maximum width across segment IV (δ -107:98, φ -115:100); PE-angles II to VI protruding, rounded; PE-VII formings small, rounded lobes. Discs of connexiva wide, granulate externally and with 2 round, callous spots inferiorly; midlateral glabrous areas distinct. Paratergites (δ) clavate, reaching tip of cordate hypopygium, the latter shorter than wide (15:25), with a stout, rounded median ridge, not reaching posterior, narrowed portion of disc. Paratergites (φ) rounded and produced backward, reaching $\frac{1}{2}$ of a tricuspidate segment IX. Spiracles II to VI ventral, placed far from border; VII sublateral, but not always visible from above; VIII dorso lateral.

Legs unarmed, but with setigerous granulation.

Color: piceous, membrane black.

Total length: δ -8.28, φ -8.64 mm; width of pronotum: δ -3.08, φ -3.12 mm; width of abdomen: δ -3.92, φ -4.00 mm.

Holotype δ (Basel Museum), Bhutan, Chimakothi, 1900—2300 m; 14.V.1972; Basel-Bhutan Expedition, 1972.

Allotype φ (Basel Museum), collected with holotype.

Paratypes: 6 δ & 10 φ , collected with holotype, (Basel Museum and collection of Authors).

Wuiessa longicornis n. sp. may be separated from *W. unica* Hsiao, 1964, from China, Yunnan, by smaller size; antero-lateral angles of pronotum more rounded anteriorly and produced beyond collar; lateral borders of abdomen more undulate, particularly in the male, and by antennal segment II as long as IV (shorter in *W. unica*).

Wuiessa wittmeri Kormilev et Heiss, n. sp., Fig. 19—21, Foto 6

Female. Elongate ovate; covered with short, curled, rusty hairs.

Head as long as its width across eyes (27.5:27.5); anterior process slightly constricted at base, rounded and incised anteriorly, reaching $\frac{1}{2}$ of

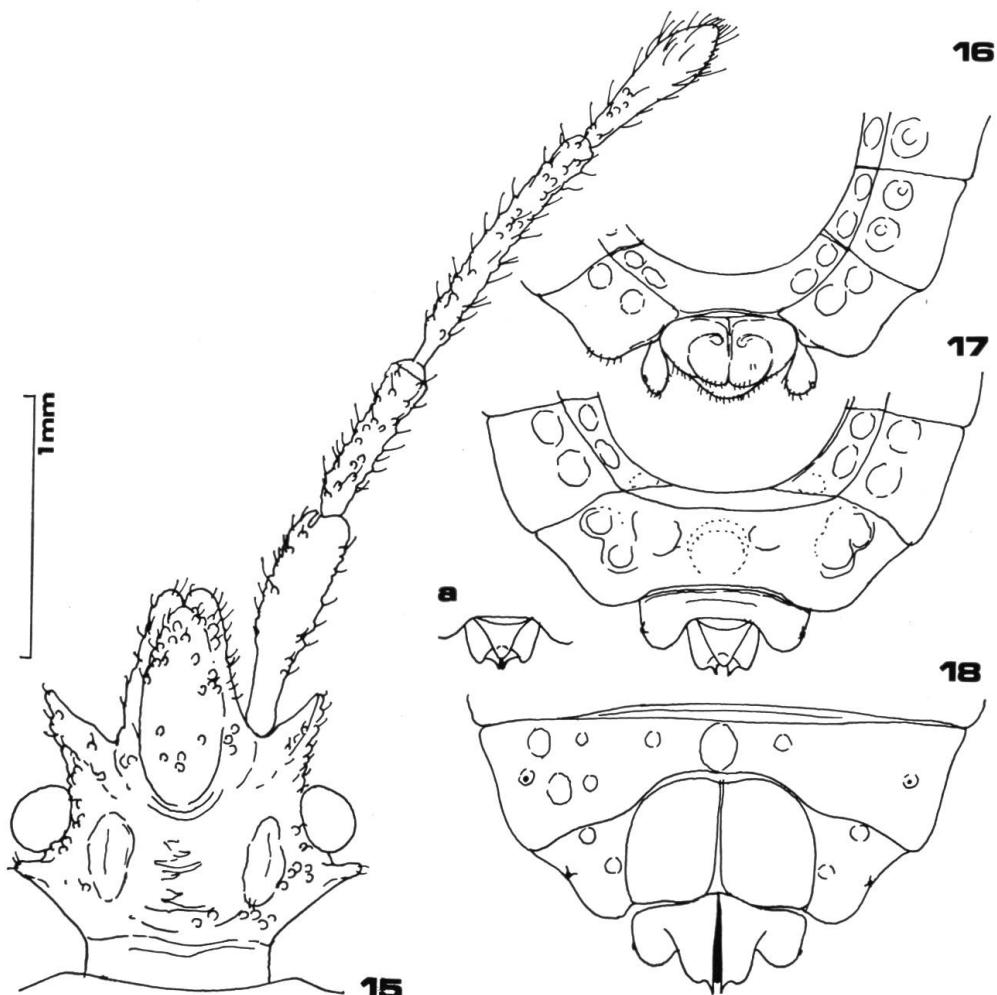


Fig. 15—18 *Wuiessa longicornis* n. sp. 15: Holotype ♂, head and pronotum; 16: ibid. terminal abdominal segments, dorsal view; 17: Paratype ♀, female terminal abdominal segments, dorsal view; a: normal position of tips of segment IX; 18: ibid. ventral view.

antennal segment I; antenniferous tubercles truncate anteriorly, with acute antero-lateral angles and slightly diverging. Eyes semiglobose, strongly protruding. Postocular tubercles acute, not reaching outer borders of eyes. Vertex with 2 (1+1) parallel rows of setigerous granules. Antennae long and thin, $2.6 \times$ as long as width of head across eyes (71.5:27.5); relative length of antennal segments I to IV are: 21:13:25:12.5. Labium not reaching hind border of labial groove, which is open posteriorly.

Pronotum less than $\frac{1}{2}$ as long as its maximum width (32:70); fore lobe narrower than hind lobe (47:70); collar thin, granulate; anterior borders

sinuate; antero-lateral angles produced into 2 (1+1) small, oblique, rounded apically lobes, not reaching level of fore border of collar. Lateral borders of fore lobe, behind antero-lateral angles, slightly diverging backward; interlobal notch obtuse; lateral borders of hind lobe rounded, strongly converging anteriorly, straight, and less converging posteriorly, granulate. Hind border shallowly sinuate. Fore disc with a narrow and deep median sulcus, flanked by 2 (1+1) small, but high, oblique ridges; between these ridges and lateral borders disc is slightly raised. Hind disc with spare, fine, setigerous granulation.

Scutellum shorter than its basal width (30:35); basal border reflexed, lateral carinate; tip rounded, not carinate; lateral borders convex on basal, sinuate on apical half. Disc with a stout median ridge, depressed in middle; granulate laterad of ridge.

Hemelytra reaching slightly over fore border of tergum VII; corium reaching $\frac{2}{3}$ of connexivum III; its baso-lateral borders reflexed and slightly sinuate; apical angle reflexed and rounded; apical border sinuate interiorly, incised exteriorly.

Abdomen ovate; connexivum wide and slightly reflexed; exterior portion of connexiva, each with 2-3 longitudinal sulci; interior portion raised, and with 2 round, callous spots; hind border of connexiva raised. PE-angles II to VI protruding, angular (II to IV), or rounded (V to VI); PE-VII forming small, rounded lobes directed sideways. Tergum VII semicircularly raised. Paratergites angular, with blunt tips, reaching $\frac{1}{2}$ of an incised segment IX. Spiracles II to V ventral placed far from border; VI ventral, placed near the border; VII lateral and visible from above; VIII dorso-lateral.

Legs unarmed.

Color: dark ferruginous; membrane sepia-brown; tibiae and tarsi brown.

Total length 8.08 mm; width of pronotum 2.80 mm; width of abdomen 4.04 mm.

Holotype ♀ (Basel Museum), Bhutan, Chimakothi, 1900—2300 m; 21.V.1972; Basel Bhutan Expedition, 1972.

It is a pleasure to dedicate this species to Mr. Walter Wittmer who collected most of the here treated Aradidae.

Wuissa wittmeri n. sp. is the smallest of all three species in this genus; its antero-lateral lobes of pronotum are also the smallest in the genus, and position of spiracles is different, spiracles VII being lateral and visible from above.

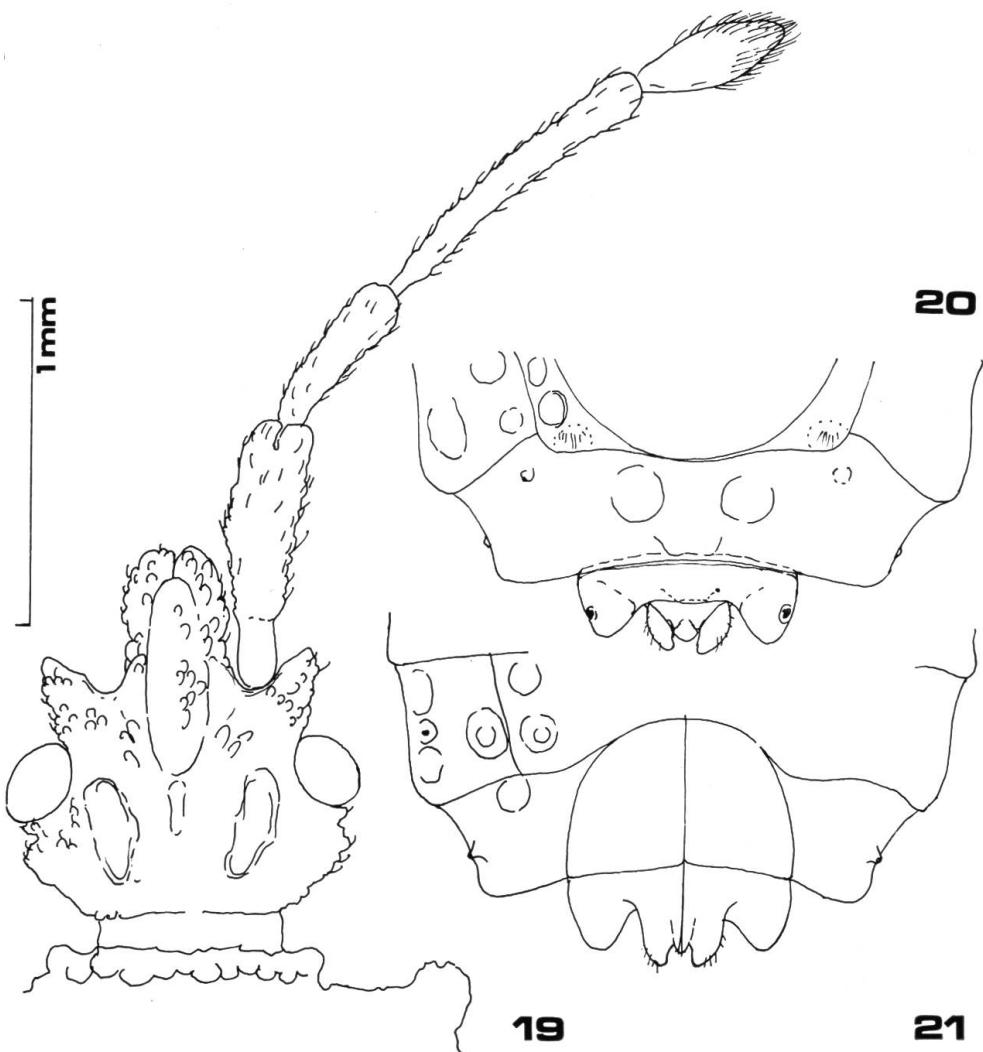


Fig. 19—21 *Wuiessa wittmeri* n. sp. Holotype ♀, head and pronotum; 20: ibid. terminal abdominal segments, dorsal view; 21: ibid. ventral view.

Genus *Usingerida* Kormilev, 1955

Usingerida similis Kormilev et Heiss, n. sp., Fig. 22—25, Foto 8

Male. Elongate ovate; covered with short, curled, yellow hairs; head, pronotum and scutellum, finely granulate.

Head longer than its width across eyes (δ -28:25, ♀-30:26); anterior process robust, constricted laterally, rounded and slightly incised anteriorly, reaching $\frac{3}{4}$ of antennal segment I; antenniferous tubercles acute, slightly divaricating. Eyes semiglobose, protruding. Postocular tubercles minute,

acute, not reaching outer borders of eyes. Vertex with V-form rows of granules. Antennae long and thin, more than twice as long as width of head across eyes (53.5:25); relative length of antennal segments I to IV are: ♂-14:15.5:12:12, ♀-13:17:12:12. Labium long and thin, produced beyond fore border of prosternum; labial groove open posteriorly.

Pronotum less than half as long as its maximum width (♂-30:71, ♀-30:70); fore lobe narrower than hind lobe (♂-43:71, ♀-47.5:70). Collar very thin, sinuate anteriorly; anterior borders lateral of collar sinuate; antero-lateral angles produced into oblique, rounded lobes. Lateral borders of fore lobe parallel behind antero-lateral angles; lateral notch forming an obtuse, or even right angle; hind side of the lateral notch is reborded, forming a small tooth exteriorly; lateral borders of hind lobe convex medially, sinuate in front and behind convex portion; hind border trisinuate. Fore disc with a deep and narrow median sulcus, flanked by 2 (1+1) high, round tubercles; between tubercles and lateral borders are placed 2 (1+1) smaller tubercles. Interlobal depression is deep. Hind lobe is raised at humeri; disc with an interrupted, zig-zag, transverse ridge medially.

Scutellum shorter than its basal width (♂-30:36, ♀-30:39). All borders carinate; lateral convex at base, sinuate at apex; tip narrowly rounded. Disc with 2 (1+1) tubercles in baso-lateral angles; median ridge is stout, tapering toward tip.

Hemelytra almost reaching hind border of tergum VII (♂), or reaching hind border of tergum VI (♀); corium reaching hind border of connexivum III. Baso-lateral borders of corium reflexed and sinuate; apical angle broadly rounded and carinate; apical border convex exteriorly, deeply sinuate interiorly. Membrane large, finely wrinkled.

Abdomen ovate; as long (♂), or slightly longer (♀) than its maximum width across segment IV (♂-81:81, ♀-85:83). PE-angles of connexiva angular, protruding; PE-VII forming a right angle (♂), or a blunt obtuse angle (♀). Paratergites (♂) thin, reaching $\frac{1}{2}$ of a conical hypopygium, the latter rounded posteriorly; disc raised medially. Paratergites (♀) narrowly rounded, reaching $\frac{1}{2}$ of a truncate segment IX. Spiracles II to VII ventral, placed far from border, VIII lateral and visible from above.

Metathoracic scentgland openings long, narrow, closed.

Legs finely granulate, but without teeth or spines.

Color: brown to ferruginous, mottled with yellow and black.

Total length: ♂-7.00, ♀-7.04 mm; width of pronotum: ♂-2.84, ♀-2.80 mm; width of abdomen: ♂-3.24, ♀-3.32 mm.

Holotype ♂ (Basel Museum), Bhutan, km 87 from Phuntsholing, 22.V.1972; Basel-Bhutan Expedition, 1972.

Allotype ♀ (Basel Museum), Bhutan, Nobding 41 km O Wangdi Phodrang, 2800 m 17.—18.VI.1972; Basel-Bhutan Expedition, 1972.

Paratypes: 6 ♀♀, 2 ♂♂ collected with allotype; 8 ♂♂, 4 ♀♀ collected with holotype, 1 ♂, Bhutan, 21 km O Wangdi, Phodrang, 5. VI. 1972, 1700 to 2000 m; 1 ♀, Bhutan, Gogona 3100 m, 10.—12.VI.1972; Basel-Bhutan Expedition, 1972, (Basel Museum and collection of Authors).

Usingerida similis n. sp. is related to *U. verrucicollis* (Walker) 1873, from Ceylon, but is larger, antennal segment II distinctly longer than III, III as long as IV.

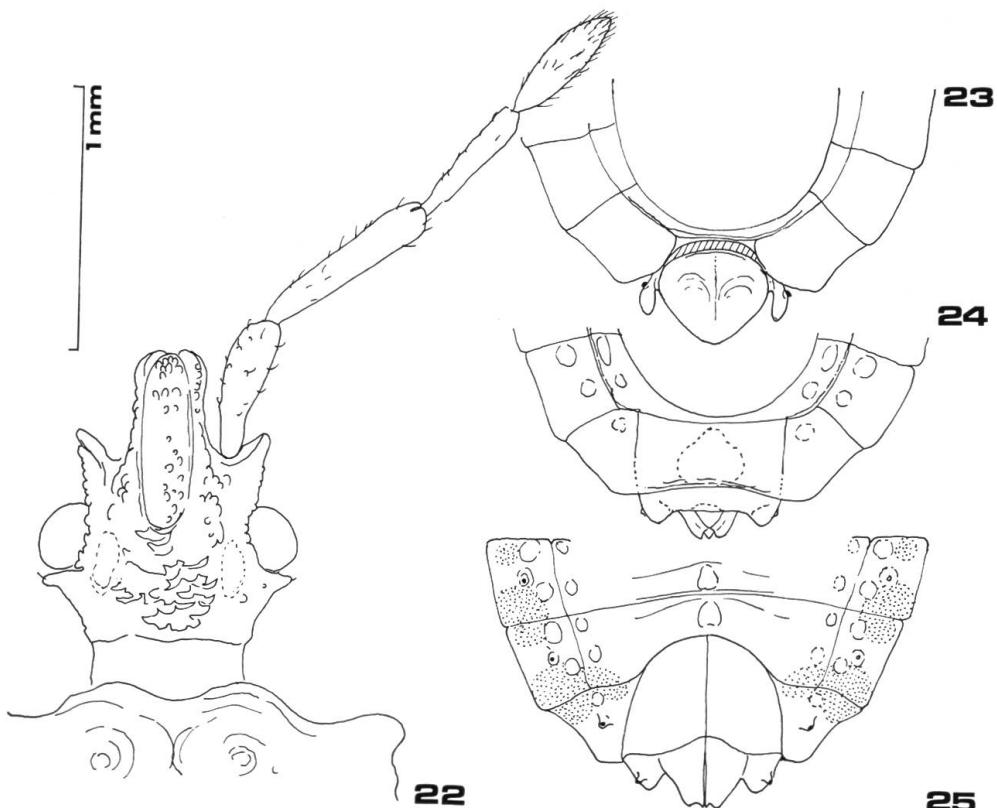
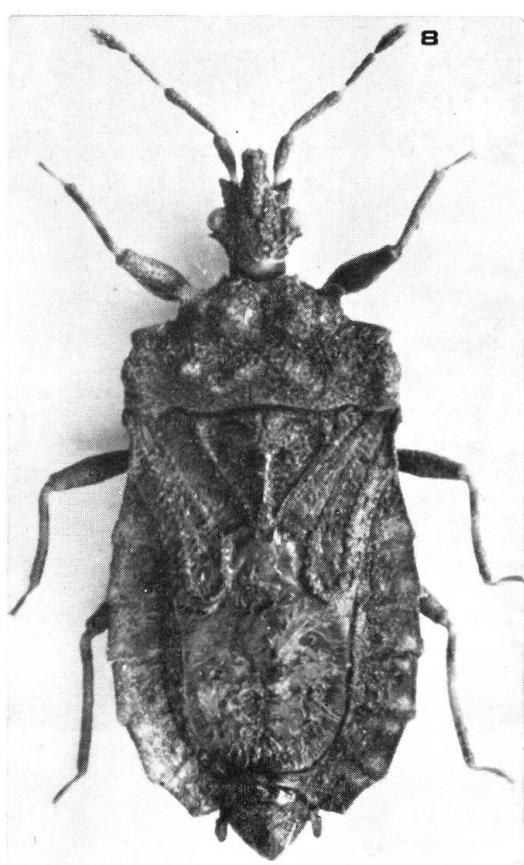
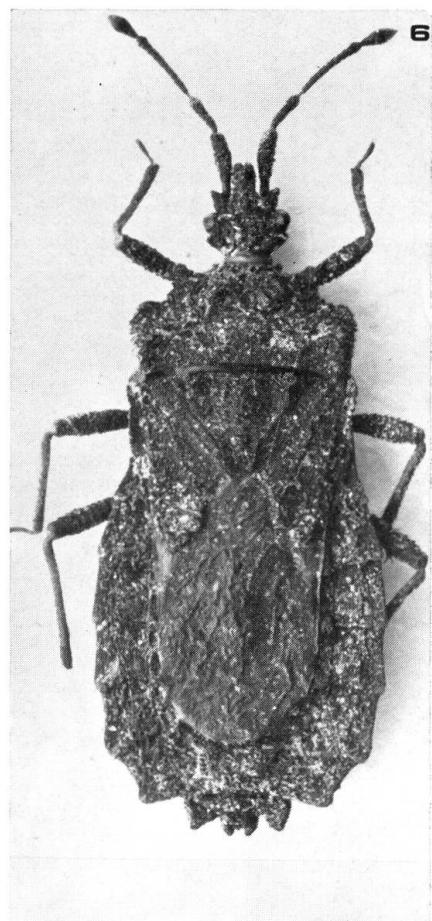
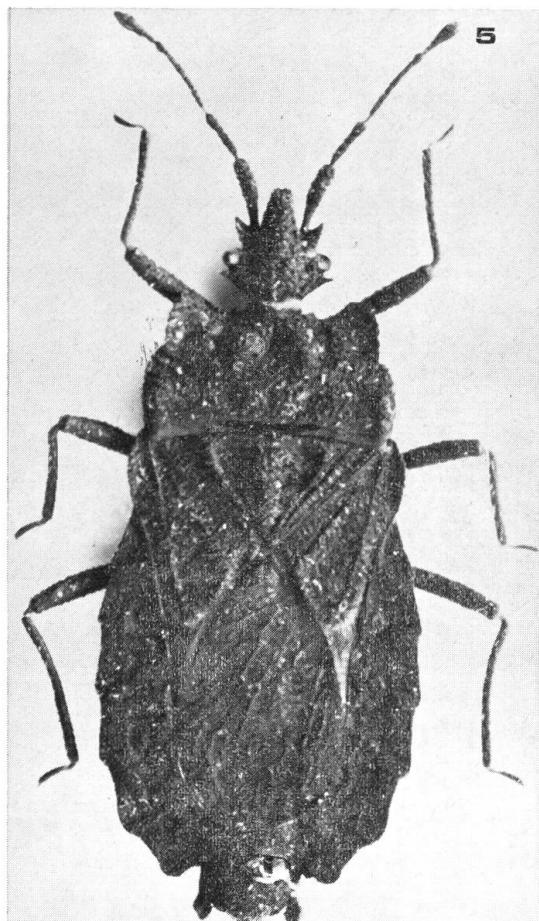


Fig. 22—25 *Usingerida similis* n. sp. 22: Holotype ♂, head and pronotum; 23: ibid. terminal abdominal segments, dorsal view; 24: Paratype ♀, female terminal abdominal segments, dorsal view; 25: ibid., ventral view, dotted are the yellow coloured areas.



Genus *Daulocoris* Usinger et Matsuda, 1959***Daulocoris robustus* Kormilev***Daulocoris robustus* Kormilev, 1971, Pac. Ins. Mon. 26: 105.

Described from Thailand and recorded also from Bhutan. ♂♂ & ♀♀, Bhutan, Nobding km 41 O Wangdi Phodrang, 2800 m; 17—18.VI.1972; Basel-Bhutan Expedition, 1972. ♂♂ & ♀♀, Bhutan, km 87 from Phuntsholing, 25.V.1972; Basel-Bhutan Expedition, 1972.

Genus *Mezira* Amyot et Serville, 1843***Mezira (Zemira) hsiaoii* Bloete, 1965***Mezira membranacea* Hsiao (not *Fabricius*), 1964, Ac. Ent. Sinica; 13: 597.*Mezira hsiaoii* Bloete, 1965, Zool. Verh., 75: 36.*Mezira (Zemira) hsiaoii* Kormilev, 1971, Pac. Ins. Mon., 26: 40.

Originally recorded from China, later recorded from Viet Nam and Laos.

1♂, Bhutan, Phuntsholing Thimphu, 1680 m, 22.V.1972; Basel-Bhutan Expedition, 1972. 5♂♂ & 6♀♀, Bhutan, 87 km from Phuntsholing, 14.V. and 22.V.1972; Basel-Bhutan Expedition 1972. 1♂, Bhutan Tongsa, 2150 m; 24.VI.1972; Basel-Bhutan Expedition, 1972; 1♂, Bhutan, Nobding 41 km O Wangdi Phodrang 2800 m, 17—18.VI.1972; Basel-Bhutan Expedition 1972.

Zusammenfassung

Das Studium der Aradidenausbeute aus Bhutan, welche während der Bhutan-Expedition 1972 des Naturhistorischen Museums Basel aufgesammelt wurde, brachte neue Erkenntnisse über die Zusammensetzung der noch wenig erforschten Aradidenfauna dieses Landes. Im Material fanden sich Vertreter aus 4 Subfamilien, wobei sich nachstehende Arten als neu erwiesen und beschrieben wurden:

Calisius himalayensis n. sp., *Aneurus bhutanensis* n. sp., *Neuroctenus*

Foto 5—6 5: *Wuissa longicornis* n. sp., Holotype ♂; 6: *Wuissa wittmeri* n. sp., Holotype ♀.

Foto 7—8 7: *Neuroctenus bhutanensis* n. sp., Holotype ♂; 7: *Usingerida similis* n. sp., Holotype ♂.

bhutanensis n. sp., *Arbanatus affinis* n. sp., *Wuiessa longicornis* n. sp., *Wuiessa wittmeri* n. sp., *Usingerida similis* n. sp.

Von besonderem Interesse sind der Fund des sehr seltenen *Aradus mirabilis* Bergroth, von *Calisius himalayensis* n. sp., wodurch eine auf Unkenntnis durch Materialmangel beruhende Verbreitungslücke dieser alten Gattung verringert wird und die 2 neuen Arten der Gattung *Wuiessa* Hsiao, von der bisher nur eine Art aus China bekannt worden ist.

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