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TAMOPOCORIS ASIATICUS GEN. AND SP. N. – A NEW APHELOCHEIRINE FROM VIETNAM AND FURTHER STUDIES ON NAUCORIDAE (HETEROPTERA)

In recently collected material from Vietnam we have discovered a remarkably small species of Aphelocheirinae, resembling superficially representatives of the Neotropical subfamily Potamocorinae. Its size is comparable only to the recently described *Aphelocheirus pygmaeus* La Rivers from India. A detailed comparison of both species with the genus *Aphelocheirus* has shown that while La Rivers' (1971 b) species belongs to this genus but should be classified in a separate, new subgenus, our Vietnamese species is generically distinct. In addition to the respective descriptions we provide also a generic key to Potamocorinae and Aphelocheirinae where also the main differences existing between these subfamilies, are summarized, and an annotated review of the higher classification of the Naucoridae and World list of the species of the Aphelocheirinae and Potamocorinae.

ACKNOWLEDGEMENTS

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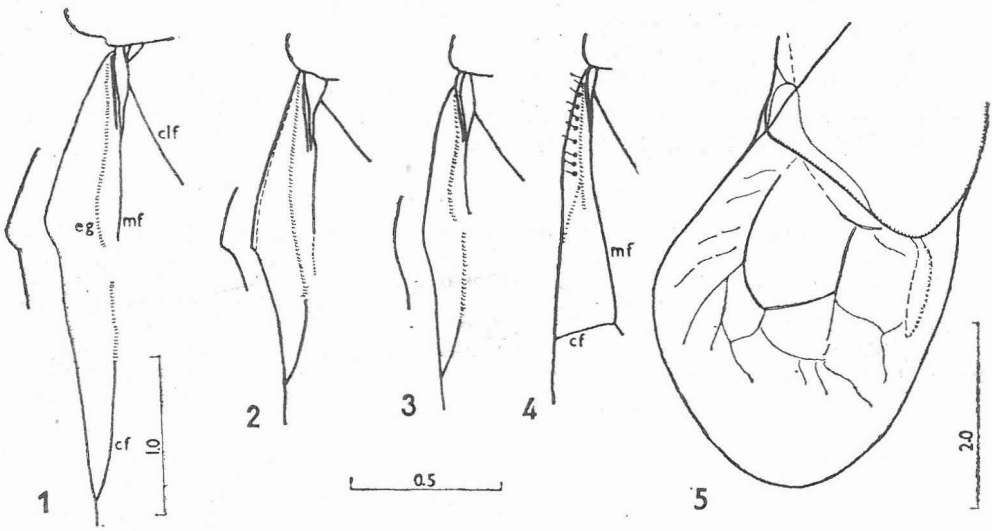
KEY TO THE GENERA OF POTAMOCORINAE AND APHELOCHEIRINAE

1 (4) Antennae long, considerably extending beyond lateral margins of head and visible from above (or, if caudally directed, extending to half the length of the prothorax).
Labium slender, at most sligthly shorter than fore femora, usually distincly longer, reaching at least the apices of fore coxae.
Head narrow, elongate, strongly produced in front of eyes.

Fore tarsus 1– or 3– segmented (segments free or 2 and 3 partly fused), freely mobile against the tibia; with two well developed claws. Macropterous, coleopteriform, or micropterous.

2 (3) Labium not extending onto mesosternum, reaching the apices of fore coxae; its 3rd segment shorter or subequal to 4th, gradually tapering distad, proximally about 1.5 times as wide as distally.
Dorsal part of eyes not separately convex against vertex; only the posterolateral ocular angle contiguous with the anterior margin of pronotum due to the extensive development of postocular region. Posterior margin of the ventral part of eye simply tranverse, antenna inserted posteriorly and laterally to the inner posterior ocular angle.
Tarsal formula 1–2–2.
Macropterous or coleopteriform, then elytra not abbreviated.
Macropterous: boundary between membrane and corium vague, sinuate, outer posterior angle of corium sickle-shaped, produced along the costal margin to the apex of wing; membrane semisclerotized; clavus and corium with dense, deep, rather regular alveolae; costal fracture transverse, meeting medial fracture shortly before its termination under about right angle (fig. 4); emboliar flare absent.
Lateral margins of head and pronotum and anterolateral margin of corium (fig. 4) with erect hairs; head, pronotum and scutellum almost smooth.



Figs. 1–4: Emboliar part of corium. 1: *Aphelocheirus plumipes* (Osh.); 2: *Aphelocheirus (Micraphelocheirus) pygmaeus* La Riv., paratype; 3. *Tamopocoris asiaticus* sp. n., paratype; 4: *Potamocoris parvus* Hung., paratype. Insets in figs. 1–3 show the outer angle of the emboliar flare in the most exposed position. Fig. 5: *Aphelocheirus plumipes* (Osh.), venation of the right membrane.
Lettering: cf. = costal fracture; clf = claval fracture; eg = emboliar groove; mf = medial fracture.

Posterior margin of pronotum broadly, plainly and straightly excavate, consequently the posterolateral angles lobately produced; humeral angles not indicated.
Abdominal venter without pruinosity, all shiny.
Spiracles obsolescent, externally invisible.
Second ventrite without statexta.
Ventral laterotergites separate from medial parts of ventrites.
Male ventrites 5 and 6, and the parameres symmetrical.
Length 2.6—3.0 mm.
South and Central America ..... Potamocorinae USINGER, 1941

a (b) Macropterous; fore wings of the usual shape, subdivided into clavus, corium and membrane. Eyes large, about as wide as vertex. Scutellum sub-equilateral. Hind tibiae with very sparse swimming hairs. Female ventrite 5 with sharply delimited and conspicuous medial triangular depression ..... *Potamocoris* HUNGERFORD, 1941

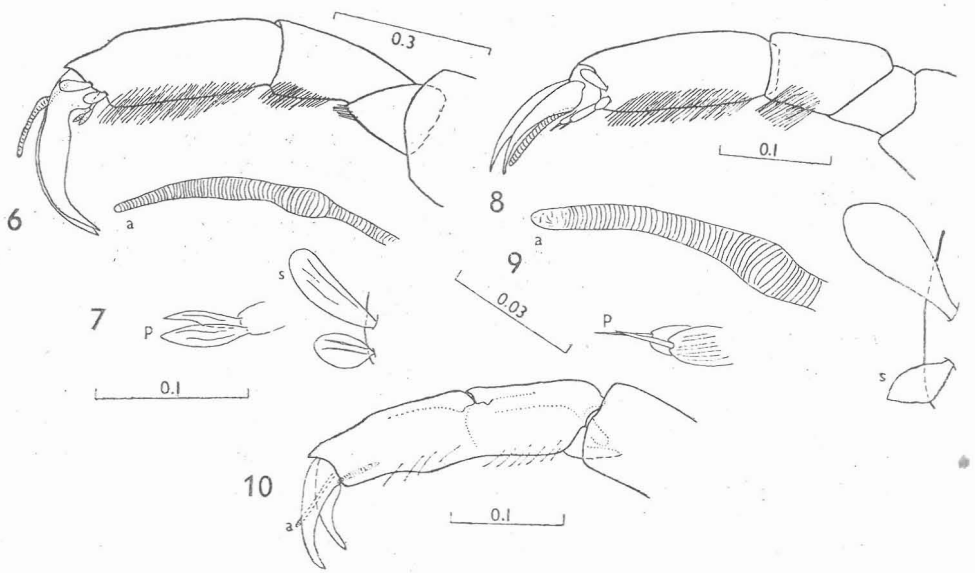
b (a) Coleopteriform; fore wings sclerotized, fully covering abdomen, meeting in a straight commissure, not differentiated into regions. Eyes small, vertex about 2.5 times as wide as eye. Scutellum short, broadly transverse. Hind tibiae distally with dense swimming hairs. Female ventrite 5 simple ..... *Coleopterocoris* HUNGERFORD, 1942

3 (2) Labium extending at least to half the length of the mesosternum and always exceeding apices of fore coxae; 3rd segment at least 2.1 times as long as 4th, proximally often bulbose and at least 2.2 times as wide proximally as distally.
Dorsal part of eyes separately convex against the vertex; at least half of the external margin of eye (and always the whole posterior margin of eye) contiguous with the anterior margin of pronotum, postocular region not visible dorsally.
Posterior margin of the ventral part of eye variously developed, but always directed latero-caudad, and the antenna inserted mesally of eye or behind its inner ventral posterior angle.
Tarsal formula 3—3—3, first segment always minute.
Macropterous or micropterous.
Macropterous: boundary between corium and membrane sharp, straight,outer posterior angle of corium rounded, not produced (fig. 5); membrane mebranaceous; clavus and corium with irregular shallow subalveolar corrugations; costal fracture and medial fracture running against each other in the direction of the body axis (figs. 1—3); emboliar flare present.
Lateral margins of head, pronotum and forewing without erect hairs; head, pronotum and scutellum deeply alveolate.
Posterior margin of pronotum straight to variously sinuate, often with developed humeral angles, never as above.
Abdominal venter with plastron-holding microtrichia giving it a pruinose appearance; microtrichia absent on dot-like spots posterior and medial to the spiracles and on medio-anterior parts of ventrites.

Abdominal spiracles large, closed by "rosettes", opening by many minute pores.
Second ventrite with a large, conspicuous, oval pressure receptor ("statexta") covered by silvery hairs and situated laterad to the spiracles.
Ventral laterotergites not individualized.
Male ventrite 5 (often also 6, 7, 8) and parameres asymmetrical.
Length 3.6—11 mm.
Eastern Hemisphere .... Aphelocheirinae DOUGLAS et SCOTT, 1865

a (b) For tarsus (figs. 6—9): segment 1 with a dorsal edge, ventrally pilose or bare; segments 2 and 3 freely movable, ventrally covered with numerous trichoid hairs; apex of segment 3 with two large, leaf-like sensila on anterior edge; unguitractor with two leaf-like or setose parempodia. Hind tibia with long and dense swimming hairs. Labium reaching at least $^3/_4$ of mesosternum and its apex situated at least immediately in front of the middle coxae; 3rd segment at least about 2.5 times as long as 4th ..... *Aphelocheirus* WESTWOOD, 1840

α (β) Fore tarsus (figs. 6, 7): first segment ventrally pilose; unguitractor with two leaf-like parempodia. Labium exceeding the apex of mesosternum, its apex reaching between middle coxae; 3rd segment more than 3 times as long as 4th. Eyes dorsally strongly elongate, with



Figs 6, 8, 9: Right fore tarsus (cleared); tibial hairs not drawn. Figs. 7, 9: Pretarsal structures and apicitarsal sensilla. 6, 7: *Aphelocheirus aestivalis* (Fab.); 8, 9: *Aphelocheirus (Micraphelocheirus) pygmaeus* La Riv., paratype; 10: *Tamopocoris asiaticus* sp. n., holotype.
Lettering: a = arolium; p = parempodia on the unguitractor; s = leaf-like apicitarsal sensilla.

or without hyperoche angle; antennal insertion more or less mesad of the inner ventral eye margin. Macropterous and micropterous. Length 7—11 mm ..... subgen. *Aphelocheirus* s. str.

β (α) Fore tarsus (figs. 8—9): first segment ventrally bare; unguitractor with two setose parempodia. Labium reaching $^3/_4$ of mesosternum, its apex reaching just in front of middle coxae; 3rd segment about 2.5 times as long as 4th. Eyes dorsally moderately elongate without hyperoche angle; antennal insertion posterior to inner posterior ventral ocular angle. Macropterous. Length 4 mm.....
...subgen *Microphelocheirus* subgen. n. (for *A. pygmaeus* La Rivers)

b (a) Fore tarsus (fig. 10): segment 1 without dorcal edge, ventrally bare; segments 2 and 3 dorsally distinct and articulating, ventrally immovably fused and without sulcus, their ventral surfaces with a few trichoid hairs only; apex of segment 3 without specialized sensilla; unguitractor without parempodia. Hind tibia with short and sparse swimming hairs. Labium reaching 1/3—1/2 of mesosternum, its apex distant from middle coxae; 3rd segment about 2.1 times as long as 4th. Eyes and antennal insertion basically as in subgen. *Micraphelocheirus*. Macropterous. Length 3.6—3.9 mm .....,,,,
,,,,,,,,.....*Tamopocoris* gen. n. (for *T. asiaticus* sp. n.)

4 (1) Antennae short, not extending beyond lateral margins of head, not visible from above and not extending onto prothorax.
Labium thick, much shorter than fore femora, not extending to the apices of fore coxae (as long as fore femora and reaching the apices of fore coxae in † *Angaronecta*).
Head usually broadly transverse and mostly not or very slightly produced in front of eyes (distinctly produced in all Tanycricini, *Asthenocoris, Cryphocricos, Cataractocoris*, etc.).
Fore tarsi one- or two-segmented (then segments fused), with 2, 1 or 0 small claws, the tarsus more or less fused to tibia, immobile, sometimes not individualized.
Macropterous or brachypterous (almost micropterous in *Cryphocricos*, sub-coleopteriform in † *Sphaerodemopsis*) .....
.....other subfamilies of Naucoridae

Tamopocoris gen. n.

Small size, slightly more than 3.5 mm, elongate oval, 1.9 times as long as broad.

Head in front of eyes only slightly narrowed, terminally broadly rounded; head strongly, deeply and densely alveolate, dorsal inner adocular grooves developed along proximal half of eyes only. Eyes distincly arched, dorsally moderately elongate, without hyperoche angle, with nearly the whole width touching the anterior margin of pronotum. Antennae long and slender, projecting, visible from above, antennal insertion posterior to inner posterior ventral ocular angle. Labium reaching $^1/_3$—$^1/_2$ of mesosternum, its apex distant from middle coxae; 3rd segment about 2.5 times as

long as 4th. Surface of scutellum and pronotum plainly convex, not uniformly arched, lateral margins of pronotum hardly explanate, concolorous, dark. Posterior pronotal margin nearly straight, only finely trisinuate, lateral margins roundedly narrowed, anterolateral angle of pronotum reaching approximately to 1/4 eye length. Scutellum small, pronotal posterior margin 2.5 times as broad as the width of anterior part of scutellum.

Head, pronotum and scutellum with very rough sculpture, head and pronotum strongly and deeply alveolate and with short dispersed adpressed hairs arising from deep pits of puncturation.

Outer emboliar flare inconspicuous, rounded. Tarsal formula 3—3—3; segment 1 of fore tarsus always well developed, without dorsal edge, ventrally bare; segment 2 and 3 dorsally distinct and articulating, ventrally immovably fused and without sulcus, their ventral surfaces with a few trichoid hairs only; apex of segment 3 without specialized sensilla, fore pretarsus with two claws and an arolium. Segment 1 on middle tarsus well developed, on hind tarsus reduced in only ventrally situated, extremely short, but well individualized ring.

Abdominal ventrites of male symmetrical except for the medioposterior excavation of ventrite 5 and the parts of laterotergites 7 embracing the pygophore; parameres asymmetrical. Fifth abdominal ventrite in female simple, without depression.

Type-species: *Tamopocoris asiaticus* gen. and sp. n.

Comparative note on the new genus and allied taxa are given in Key to the genera of Potamocorinae and Aphelocheirinae and in notes following the specific description.

Tamopocoris asiaticus sp. n.

Macropterous. Male. Length 3.64—3.72 mm, width 1.9 mm. Head: length 0.62 mm, width 0.92 mm, synthlipsis 0.42 mm. Antennae: length of segment I, 0.1 mm, II., 0.1 mm, III., 0.15 mm, IV., 0.28 mm. Pronotum: length 0.5 mm, width 1.53 mm. Scutellum: length 0.64 mm, width 1.0 mm.

Rather small species, body elongate oval, posteriorly slightly widened, 1.9 times as long as broad, lateral margins slightly roundish.

Head 1.5 times as broad as long, anteclypeus extending greatly beyond the anterior margin of eyes; part of the head beyond the anterior margin of eyes 0.66 times as long as the length of eyes, roundish convergent, and anteriorly broadly regularly rounded. Disc of head anteriorly regularly moderately convex, posteriorly between eyes rather depressed, posterior margin of head narrowly callose, widened and only flatly inserted into anterior margin of pronotum. Surface of head strongly, deeply and densely rather irregularly alveolate, in general appearance rugose. Dorsal inner adocular grooves developed along proximal half of eyes only. Eyes distinctly arched, large, 1.4 times as long as broad, dorsally moderately elongate without hyperoche angle, forming a slight convexity above the level of depressed interocular portion of head. Surface of eyes coarsely faceted, anterior margin of eyes roundish and forming with anterior part of head an obtuse angle. Antennae long and slender, projecting and visible from above, antennal insertion posterior to postero-interior angle of eyes.

First three antennal segments apically slightly widened, fourth segment longest, narrowed posteriorly. Relative lengths of antennal segments 4:4:6:11. Labrum subpentagonal with rounded tip. Labium reaching $^1/_3$—$^1/_2$ of mesosternum, its apex distant from middle coxae, 3rd segment about 2.5 times as long as 4th. Head below smooth, eyes in lower part occupying the same area as in upper part of head, inner margins of eyes below parallel.

Pronotum 3.1 times as broad as long, its lateral margins regularly roundish, converging anteriorly, the anterior angles slightly projecting, subacute, close to the posterior margin of eyes. Posterior pronotal margin 1.6 times broader than the anterior margin, posterior margin only flatly trisinuate, posterior angles rounded. Lateral margins of pronotum hardly explanate, concolorous, dark. Disc of pronotum moderately regularly convex, only on sides more declivous, pronotal disc close to the interocular margin of head with a triangular area delimited by distinct impressed lines. Surface of pronotum coarsely irregularly alveolate, near to lateral and posterior margin rather shallowly; anterior triangular delimited area transversally rastrate. Surface of pronotum with short adpressed hairs arising from pits. Scutellum in general triangular, 1.6—1.7 times as broad as long, lateral margins sinuately concave, apex subacute. Disc of scutellum finely convex, coarsely alveolate as on pronotum and with similar hairs. Anterior margin of scutellum sharply delimited from disc into a narrow nearly smooth area, sinuate along the posterior margin of pronotum and laterally slightly widened.

Prosternum with fine punctured sculpture, rather dull; mesosternum transversally rastrate, shining, posterior margin wavy sinuate, in the middle protruding in a distinct spine-like xyphus (rather more shining).

Hemelytra sligthly surpassing the apex of abdomen, emboliar margin only slightly roundish, posteriorly narrowing. "Embolium" well-defined only anteriorly, outer emboliar flare inconspicuos. Claval commissure 0.65 times as long as the length of scutellum, corium and clavus coriaceous, coarsely puncturate, the puncturation more dense than that on pronotum and scutellum. Membrane slightly shorter than the length of corium, hyaline, shiny, finely corrugated.

Legs — relative lengths:

Anterior leg — femur : tibia : tarsus (1) : tarsus 2 : tarsus 3 : :
32 : 36 : (1:5) : 4 : 6

Middle leg — femur : tibia : tarsus 1 : tarsus 2 : tarsus 3 : :
32 : 24 : 3 : 6 : 10

Posterior leg — femur : tibia : tarsus 1 : tarsus 2 : tarsus 3 : :
40 : 37 : 2 : 25 : 15.

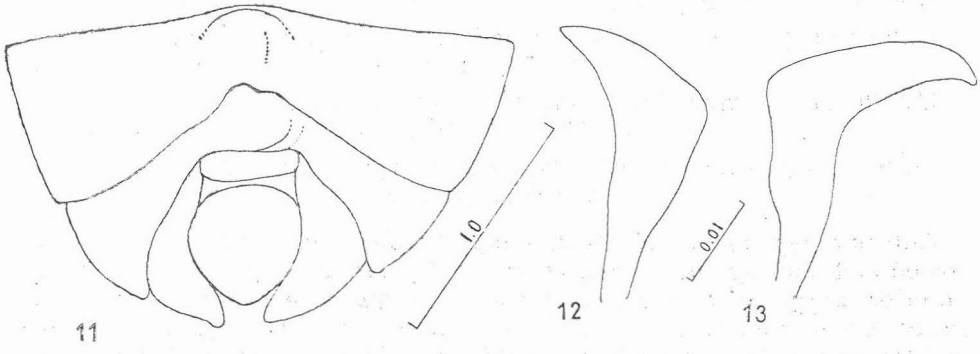
Anterior legs short and stout, femur basally very broad, strongly narrowed and slightly curved posteriorly, 2.3 times as long as its base broad; anterior margin of femur with dense short suberected hairs, tibiae posteriorly curved, inner margin with sparse short hairs, tarsus apically narrowed and terminated by two slightly curved claws. Middle legs short, femur only on extreme apex narrowed and slightly curved, inner margin of femur

with short dense hairs and with four or five long bristles. Posterior femur slightly sinuate, without conspicuous hairs or spines, tibiae straight, apically widened; hind tibiae with short and sparse swimming hairs.

Abdominal venter with dispersed pucturation and transverse rastration, in the middle and mainly in anterior part of each segment smooth and shining; with sparse adpressed hairs. Male ventrite 5 (fig. 11) very moderately asymmetrical: its medioposterior excision slightly shifted sinistrad and more steeply excavated dextrally. Male ventrite 6 and the medial, externally visible parts of ventrites 7 and 8 symmetrical. External margins of the individual connexival segments straight, not produced, those of segment 7 lobately expanded, apically narrowed and slightly surpassing the apex of pygophore. The parts of male ventral laterotergites 8 embracing the proximolateral parts of pygophore asymmetrical: on the right side extensive, vaulted and not sharply delimited, on the left side flat, with a narrowly triangular, sharply demarcated raised part adjoining the pygophore. Posterior margins of ventrites sulcate, otherwise without specialized structure except of conspicuous, large, elongate oval, silvery statexta on sides of ventrite 2. Spiracles of the usual Aphelocheirine type.

Male ninth abdominal segment ovate, 1.5 times as long as broad, apically narrowly rounded. Parameres asymmetrical, very small. Left paramere (fig. 12) slightly curved, widest in the middle, inner part regularly curved, outer margin angularly widened apex slightly bent. Surface with short fine bristles. Right paramere (fig. 13) angularly curved, the exterior margin forming nearly a right angle and here broadest, apex slightly bent. Surface with sparse short bristles. Penis very simple, of Aphelocheirine type.

Colour in general grayish brown, shining; eyes, posterolateral angles of pronotum, middle longitudinal obsolete line and lateral margins of scutellum darker brownish; clavus and membrane distinctly paler than the corium, basal angle and posterior outer angle of corium slightly paler. Antennae, labium and legs pale brownish, apices of femora and proximal parts of tibiae slightly darkened. Body beneath brownish, shining, posterior margins of ventral segments as well as lobes of 8th abdominal segment paler. Pubescence pale.



Figs. 11–13: *Tamopocoris asiaticus* sp. n. 11: venter of male; 12: left paramere; 13: right paramere.

Female: length 3.78—3.89 mm, width 1.96—2.04 mm. Head: length 0.62 mm, width 0.98 mm, synthlipsis 0.50 mm. Pronotum: length 0.53 mm, width 1.62 mm. Scutellum: length 0.66 mm, width 1.12 mm.

Female similar to male. Fifth ventral segment simple. Subgenital plate triangular with straight sides and subacute apex.

1 ♂ (holotype — Vietnam, Lao-cai, 300 m, secondary tropical forest, 21. IX. 1963 at light trap, collected by P. Pócs. (Deposited in the collection of the Hungarian National Museum, Budapest).

2 ♂♂ and 5 ♀♀ (paratypes) — same data as the holotype. (Deposited in the collections of the Hungarian National Museum, Budapest; Department of Systematic Zoology, Charles University, Praha; Department of Entomology, National Museum (Nat. Hist.), Praha).

Aphelocheirus subgen. Micraphelocheirus subgen. n.

As *Aphelocheirus* s. str. but first segment of fore tarsus ventrally bare (figs. 8, 9); unguitractor of fore tarsus with two setose parampodia (fig. 8); apex of labium reaching $^3/_4$ of mesosternum and not extending between middle coxae, 3rd labial segment about 2.5 times as long as 4th. Eyes dorsally moderately elongate, without hyperoche angle; antennal insertion posterior to inner posterior ventral ocular angle. Macropterous and of very small size (4 mm).

Type species: *Aphelocheirus pygmaeus* LA RIVERS, 1971; monobasic.

For differential remarks see the Key and Notes. The only known species *A. (M.) pygmaeus* La Rivers was described from E. India: Assam: Kohara: Kaziranga. LA RIVERS' (1971b) original discription is accurate, but his total illustration has been drawn with artistic licence. The actual shapes of fore and middle tarsi and "embolium" are different, and the illustration of head does not show two conspicuous adocular grooves situated mesally of the inner margins of eyes. We illustrate the fore tarsus (figs. 8, 9) and "embolium" (fig. 2) in this paper; th eshape of middle leg is as usual in *Aphelocheirus* s. str. LA RIVERS (1971b) described the abdominal spiracles of *A. (M.) pygmaeus* as forming "a short series of transversely-arranged dots" each; these dots are simply parts of cuticle devoid of plastron-holding microtrichia (see LARSÉN, 1955) situated posteriorly and mesally of true spiracles which are incompletely closed by "rosettes" as usual in all Aphelocheirinae.

NOTES

1) Proposed generic classification of Aphelocheirinae

In most characters there exists a distinct anagenetic sequence *Aphelocheirus* s. str. — *Micraphelocheirus* — *Tamopocoris*. However, because of the clear-cut difference in structure of the fore tarsus and pretarsus between *Aphelocheirus* s. str. and *Micraphelocheirus* on one hand and *Tamopocoris* on the other, we have preferred the classification of *Micraphelocheirus* as a mere subgenus of *Aphelocheirus*, and separation of *Tamopocoris* as a distinct genus. In most characters (at best exhibited by structure of fore tarsus and pretarsus) *Tamopocoris* is more apomorphic than *Aphelocheirus*

(and *Micrapnelocheirus* more apomorphic than *Aphelocheirus* s. str.); the reverse is true when length of labium is considered. The small development of swimming hairs on metatibiae in *Tamopocoris* is a character of small phylogenetic significance, since the reduction of swimming hairs must be obviously correlated with the diminution in size. Thus *Tamopocoris* represents probably a sister genus of *Aphelocheirus*, and *Micraphelocheirus* a sister subgenus of *Aphelocheirus* s. str. The small size shared by *Tamopocoris* and *Micraphelocheirus* is probably a convergent character.

In addition to the characters quoted in the Key *Tamopocoris asiaticus* may be distinguished from *Aphelocheirus (Micraphelocheirus) pygmaeus* by numerous further characters; some of them are reviewed below (those of *A. pygmaeus* given in parentheses), as follows:

Head strongly, deeply and densely alveolate (alveolae shallow, sparse, cuticle between them smooth);

dorsal inner adocular grooves developed along proximal half of eyes only (developed along the whole inner ocular margin);

anterolateral angle of pronotum reaching approximately to $^1/_4$ eye length (to approximately $^2/_5$ of eye length);

antenna inserted sligthly posterolaterally to the ventral inner posterior ocular angle (directly behind this angle);

surface of pronotum plainly convex, lateral margin hardly explanate, concolorous, dark (distinctly uneven, lateral margin broadly explanate, pale and together with the pale posterior part of pronotum constrasting with its dark anterior part);

outer angle of emboliar flare inconspicuous, rounded (angular and prominent).

2) Flight in Aphelocheirinae

It is generally assumed that Aphelocheirinae have lost the ability to fly. LARSEN (1950) found that some macropterous individuals of *Aphelocheirus aestivalis* are anatomically incapable of flight, and he has not found any record of an observation of flight in this species. PARSONS (1969 a) suggests that the ability to fly has been lost in the whole genus. However, KIRITSHENKO (1925, 1933) reported that the holotype ♀ of *Aphelocheirus kolenatii* Kirit. was collected at light; the same was recorded by LINNAVUORI (1975) for the holotype ♀ of *A. kumbanus* Linnavuori and it applies also to a new material of *A. plumipes* (Oshanin) collected recently in Afghanistan. Also all our material of *Tamopocoris asiaticus* (3 ♂♂, 5 ♀♀) was attracted to light. These cases represent a clear evidence of retention of the flying ability in at least some species of the subfamily.

3) Forewing in Aphelocheirinae

The costal and medial fractures of the forewing in Naucoridae exhibit a distinct tendency to be directed against each other and eventually to meet, and, consequently, to delimit a corial region called "embolium". In this region there always appears also a usually rather vaguely delimited groove or depression — the emboliar groove, the origin of which is associated with the evolution of the ventrally reflected hypocostal lamina. The detailed mutual configuration of medial and costal fractures and emboliar

groove may be different in various Naucorid taxa; it is illustrated here for all the Aphelocheirine genera and subgenera (figs. 1–3) and also for *Potamocoris* (fig. 4).

It has been always assumed (e. g. CHINA and MILLER, 1959; POPOV, 1971) that all the Naucoridae have lost the venation of the forewing membrane. While it is true for all the Naucorid genera seen (including also *Potamocoris, Tamopocoris,* and *Aphelocheirus* subg. *Micraphelocheirus*), the membrane venation is retained in macropterous *Aphelocheirus plumipes* (Oshanin), and probably also in other macropterous phena of *Aphelocheirus* s. str. The membrane (fig. 5) is irregularly finely corrugated, but, if separated from adhering wings and observed under strongly diagonal light, a distinct system of more prominent folds appears. These folds form a short basal cell, three prominent longitudinal veins showing traces of sclerotization and pigmentation (particularly conspicuous and much pigmented is the anterior thick vein which, however, may as well represent a descle-rotized remnant of the elongation of corial apex), medial network of medium-sized irregular cells and many distal and marginal anastomoses which are, however, not reliably distinguishable from corrugations. There is no doubt that these folds represent traces of the original membrane venation which has been lost in other Naucorids.

4) Tarsus and pretarsus in Aphelocheirinae

There exists confusion in the data on the number of tarsal segments in Aphelocheirinae provided by various authors. The situation is as follows:

Tarsi of al Aphelocheirinae possess on all legs a minute basal (first) segment which, however, by virtue of its minute size and eventual loss of its dorsal edge is often difficult to see unless it is cleared and then examined under high magnification; this segment on middle and hind legs is also externally covered by the apicitibial armature. Segment 1 is well developed on fore tarsus in *Aphelocheirus* [dorsal side developed; ventral side pilose in *Aphelocheirus* s. str. (fig. 6), bare in *Micraphelocheirus* (fig. 8)], but in *Tamopocoris* (fig. 10) it is recuded to a minute triangular ventral piece, mostly invaginated into tibia, bare and without dorsal edge. Segment 1 is always well developed on middle tarsus; on the hind one it is well developed in *Aphelocheirus,* but reduced to an only ventrally situated, extremely short, but well individualized ring in *Tamopocoris.*

Important differences exist in the structure of 2nd and 3rd segments on the fore leg. These segments are well individualized, freely movable, ventrally covered with abundant and dense cover of trichoid hairs in *Aphelocheirus* (figs. 6, 8); in *Tamopocoris* (fig. 10) the dorsal articulation between these segments is retained, but laterally they are subdivided merely by a superficailly impressed line — ventrally they are completely fused and provided by a few scattered trichoid hairs only. The apex of last fore tarsal segments bears in *Aphelocheirus* two specialized leaf-like sensilla on its inner (anterior) edge; these sensilla are missing in *Tamopocoris.* Also the fore pretarus is different at the generic level: a long thick, ridged arolium is present in all members of the subfamily, but the unguitractor is provided with two parempodia in *Aphelocheirus* [leaf-like in *Aphelocheirus* s. str.

(fig. 7-p), settiform in subg. *Microphelocheirus* (fig. 9-p)] and is devoid of appendages in *Tamopocoris.*

The middle and hind tarsus has always well developed and individualized 2nd and 3rd segments; structure of the pretarsus was not examined. Consequently, the tarsal formula of Aphelocheirinae is alweys 3–3–3, but 2nd and 3rd segments of the fore tarsus can be completely fused ventrally.

REVIEW OF THE HIGHER CLASSIFICATION OF THE NAUCORIDAE

There are two main competing concepts of the higher classification of the Naucoridae: one based on the revisional study by USINGER (1941), accepted also by CHINA and MILLER (1959), and supplemented by LA RIVERS (1971); another suggested by Popov (1970) and later amplified by the same author (POPOV, 1971) to include also the fossil forms. These classifications are compared below (Table 1), and the present generic contents of the smallest recognized suprageneric taxa are surveyed. Some taxonomic and nomenclatural problems are further commented on.

GENERIC CONTENTS

a) *Aphelocheirus* Westwood, 1840 (= *Aphelochirus* auct. = *Aphelochira* Fieber, 1851 = *Saturgana* Oshanin, 1909) (subgenn.: *Aphelocheirus; Micraphelocheirus* subgen. n.; *Tomapocoris* gen. n.

b) *Potamocoris* Hungerford, 1941.

c) *Coleopterocoris* Hungerford, 1942.

d) *Cryphocricos* Signoret, 1850 (= *Cryphocricus* Stål, 1876).

e) *Cataractocoris* Usinger, 1941.

f) *Ambrysus* Stål, 1862 (subgenn.: *Ambrysus; Acyttarus* La Rivers, 1965; *Picrops* La Rivers, 1952; *Syncollus* La Rivers, 1965); *Carvalhoiella* DeCarlo, 1963; *Melloiella* DeCarlo, 1935.

g) † *Heleonaucoris* Popov, 1971; *Ilyocoris* Stål, 1861 (= ? † *Discostoma* Scudder, 1890); *Macrocoris* Signoret, 1861 (= *Pseudoambrysus* Montandon, 1897); *Naucoris* Geoffroy, 1762 (= *Thurselinus* Distant, 1904); † *Nectodes* Popov, 1968; † *Nectonaucoris* Popov, 1968; *Neomacrocoris* Montandon, 1913; *Pelocoris* Stål, 1876 (subgenn.: *Pelocoris; Dyocyttarus* La Rivers, 1969); *Placomerus* La Rivers, 1956.

h) *Limnocoris* Stål, 1860 (= *Borborocoris* Stål, 1861); *Sattleriella* DeCarlo, 1966; *Usingerina* La Rivers, 1950.

l) *Aneurocoris* Montandon, 1897 (subgenn.: *Aneurocoris; Aneurocorisella* Poisson, 1960); *Ctenipocoris* Montandon, 1897; *Decarloa* La Rivers, 1969; *Diaphorocoris* Montandon, 1897; *Heleocoris* Stål. 1876 (subgenn.: *Heleocoris; Interocoris* La Rivers, 1974);*) *Laccocoris* Stål, 1856; *Temnocoris* Montandon, 1897.

j) *Cheirochela* Hope, 1841; *Coptocatus* Montandon, 1909; *Gestroiella* Montandon, 1897.

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*) The sugbeneric name *Heleocoris* subgen. *Brevocoris* La Rivers, 1974 (Occ. Pap. Biol. Soc. Nevada, 38:11) is not available since no type species has been originally designated or indicated.

k) *Idiocarus* Montandon, 1897; *Nesocricos* La Rivers, 1971; *Tanycricos* La Rivers, 1971.

l) *Aptinocoris* Montadon, 1897; *Asthenocoris* Usinger, 1938; *Cavocoris* La Rivers, 1971; *Quadricoris* La Rivers, 1971; *Sagocoris* Montandon, 1911 (subgenn.: *Sagocoris; Trancocoris* La Rivers, 1971); *Stalocoris* La Rivers, 1969; *Warisia* La Rivers, 1971.**)

m) † *Liadonaucoris* Popov, 1971.

n) † *Aidium* Popov, 1971.

o) † *Angaronecta* Popov, 1971.

p) † *Sphaerodemopsis* Handlirsch, 1906.

The genera † *Nepidium* Westwood, 1840 and † *Palaeoheteroptera* Meunier, 1900, both described originally in the Naucoridae, belong to Notonectidae and Blattodea respectively (fide POPOV, 1971).

Table 1. Major schemes of the higher classification of Naucoridae.

Letters indicate paragraphs in which the lists of genera are given in chapter "Generic contents". (Aphelocheirinae and Potamocorinae are considered distinct families by some authors – see Comments 3. A junior subjective synonym to Limnocorini (h) is Usingerinini La Rivers, 1950.)

Popov (1970, 1971)	Usinger (1941, China and Miller (1959), La Rivers (1971)
Aphelocheirinae Douglas et Scott, 1865 (1861) – a	Aphelocheirinae – a
Potamocorinae Usinger, 1941	Potamocorinae – b + c
Potamocorini Usinger, 1941 – b	
Coleopterocorini Popov, 1971 – c	
Cryphocricinae Montandon, 1897	Cryphocricinae – d
Cryphocricini Montandon, 1897 – d	
Cataractocorini Popov, 1970 – e,	Ambrysinae – e + f
Naucorinae Leach, 1815	
Ambrysini Usinger, 1941 – f	
Naucorini Leach, 1815 – g	Naucorinae – g
Limnocorini Stål 1876 – h	Limnocorinae – h
Laccocorini Stål, 1876 – i	Laccocorinae – i
Cheirochelini Montandon, 1897 – j + k + l	Cheirochelinae
	Cheirochelini – j
	Tanycricini La Rivers, 1971 – k
	Sagocorini La Rivers, 1971 – l
† Liadonaucorini Popov, 1971 – m	
† Aidiini Popov, 1971 – n	
† Angaronectini Popov, 1971 – o	
† Sphaerodemopsinae Popov, 1971 – p	

**) LA RIVERS (1971, Mem. Biol. Soc. Nevada, 2:31–33) subdivided his Sagocorini into two "supergenera" *Margallus* La Rivers, 1971 ("typified" by *Sagocoris*) and *Margodes* La Rivers, 1971 ("typified" by *Cavocoris*). The hierarchical level used is identical with that of a subtribe; however, the category of supergenus is not recognized by the present Code, and. hence because of unorthodox nomenclatural procedure the above La Rivers' names are not available.

COMMENTS

1) The authorship of Naucorinae and Naucorini

The authorship of the nominate subdivisions of the family name Naucoridae is sometimes erroneously ascribed to STÅL, 1876(Enum. Hem., 5:142). The oldest family-group name derived from Naucoris is Naucorides Fallén, 1814 (Spec. Nov. Disp. Meth., pp. 3, 15); however, since it was based on *Naucoris* F., 1775 (Syst. Ent. p. 693), a junior homonym of *Naucoris* Geoffroy, 1762 (Hist. abrég. Ins. Paris, 1:473–475), it has been dropped in favour of Naucorida [LEACH, 1815] (Brewster's Edinburgh Encycl., 3:123) by Opinion 681 (1963). Consequently [LEACH, 1815], is the nomenclaturally correct author of Naucoridae, Naucorinae and Naucorini.

2) The authorship and spelling of Aphelocheirinae

Aphelocheirus Westwood, 1840 (Mod. Clasif. Ins., 2, Syn. gen. p. 119 = = *Aphelochirus* auct.; variant spelling) is a senior objective synonym of *Aphelochira* Fieber, 1851 (Gen. Hydr., p. 15, pl. 1 D; unjustified emendation). The first family-group name derived from these generic names are Aphelochirae Fieber, 1861 (Eur. Hem., p. 23; derived from *Aphelochira*), Aphelochiridae Douglas et Scott, 1865 (Brit. Hem., 1:44; derived from *Aphelocheirus,* but *—e—* dropped), and Aphelocheiraria Stål, 1876 (Enum. Hem., 5:143; derived from *Aphelocheirus*). The usage varies, though the spelling Aphelocheirinae, incorrectly ascribed to Fieber, 1861 (often quoted as from 1860), seems to be prevalent and has been adopted also by China & Miller (1959). According to Article 40 of the Code, Example 1, and the recommendation 40 A, the correct spelling, authorship and proper form of quotation seems to be Aphelocheirinae Douglas et Scott, 1865 (1861).

3) Position of Aphelocheirinae in classification and their cladistic affinity.

We do not want to comment on the two major schemes of classification of the Naucoridae reviewed above; we also refrain from discussion of the proposal by DE CARLO (1971) to divide this family into three separate ones, the Aphelocheiridae (with *Aphelocheirus*), Naucoridae (other Eastern Hemisphera genera) and Pelocoridae (New World genera). NIESER (1975) correctly noticed, that De Carlo's proposition is premature: it is based only on characters of the male genitalia and an insufficient number of Old World genera has been examined in this respects; moreover, De Carlo's nomenclatural procedure is incorrect. Our discussion concerns only the subfamily Aphelocheirinae.

Aphelocheirinae are regarded either as a subfamily of Naucoridae or as a distinct family. The former view is taken e. g. by USINGER (1941), CHINA (1955), CHINA and MILLER (1959), PARSONS (earlier papers; 1966 a, b, 1969 a) nad POPOV (1970, 1971), the latter e. g. by LA RIVERS (1971 a, b, 1974) and PARSONS (later papers: 1969 b, c). MIYAMOTO (1961) included Aphelocheirinae in Naucoridae but stressed that their structure of salivary glands and ileum is different from the rest of the family. COBBEN (1968) emphasized the unique position of Potamocorinae (ocular trichobothria, phallus, abdominal scent apparatus, etc.), remarked that some

of the Naucorid subfamilies probably deserve family rank, and stressed this particularly for the Aphelocheirinae.

Aphelocheirinae are usually regarded — particularly because of their plastronic respiration and associated modifications, prevailing microptery and a very long labium — as most highly evolved Naucoridae (e. g. CHINA, 1955). Also Parsons (e. g. 1966 a, 1969 b, c) found the structure of their head, labium and food pump considerably different from other Naucoridae and more apomorphis. Only COBBEN (1968) writes that Aphelocheirinae "should be placed low in phylogeny" and finds a considerable number of plesiomorphic characters in this subfamily and in the Potamocorinae.

We agree with Cobben's opinion. Actually many characters of Aphelocheirinae are more plesiomorphic than in other Naucoridae. The fore tarsus is mostly three-segmented and the fore leg is not fully raptorial, the tarsus not being fused to the tibia, the claws being normally developed, and also the presence of large arolium is probably a plesiomorphic feature; a part of these characters is shared with the Potamocorinae. The antennae of Aphelocheirinae (as well as those of Potamocorinae) are much longer than in other aquatic bugs, and resemble those of littoral Nepomorpha (Ochteridae, Gelastocoridae). The moderate lingth of antennae in these groups may be interpreted as the retention of the most plesiomorphic condition among Heteroptera, a condition derivable direct from a presumed Heteropteran ancestor with multisegmented filiform antennae by loss of distal antennal segments. The trend in the terrestrial, pleustonic and most littoral Heteroptera was towards secondary lengthening of antennae (the universal occurence of short scape and pedicel in Dipsocoromorpha and plesiomorphic genera of Tingidae may be regorded as plesiomorphic retention of the originally short scape and pedicel); the trend in Nepomorpha was towards secondary shortening of antennae, but their plesiomorphic groups retained the original moderate length of the antenna. In this connection we may note MIYAMOTO'S (1961) observation that structure of the principal salivary gland in the Aphelocheirinae is intermediate between the littoral Nepomorpha and the Naucoridae. The same situation obtains for the membrane venation which has been retained in the littoral Ochteridae and some Aphelocheirinae, but has been lost in all other Naucoridae (and more highly evolved members of the Naucoroid evolutionary line, the Corixoidea and Notonectoidea).

The plastron respiration in Aphelocheirinae is usually considered the most advanced type of aquatic respiration in Heteroptera, and it seems to be tacitly assumed that in must have been derived from the air bubble respiration of a nektonic ancestor. However, the evolution of a very specialized plastron respiration for which is required the presence of many specialized structures from equally highly specialized air bubble respiration requiring also a number of structural adaptations seems less probable than the evolution of plastron respiration direct from rather unspecialized conditions obtaining in a littoral ancestor. Moreover, plastron respiration is usually associated with at least temporary terrestrial existence of a species; it is now known that the plastron evolved mainly in groups living in well oxygenated aquatic environments which are alternately dry and flooded, and also in many principally terrestrail insects which cannot

avoid temporary flooding (see HINTON, 1968). Furthermore, *Aphelocheirus* spcies mainly crawl at the bottom of streams and mountain lakes among pebbles and under stones (though well capable of swimming) and their adaptations for swimming are less advanced than those of the other Naucoridae; such predominant type of locomotion is surely closer to that of a littoral ancestor than active swimming of most other Naucoridae. All this seems to indicate that the ancestors of the Aphelocheirinae turned to benthic life and plastron respiration more or less direct from the littoral life and not via the nektonic life and air bubble respiration. (We do not want to apply these considerations also to a few other benthic genera of Naucoridae with plastron respiration, since their cladistic affinities and bionomy are too little known.)

Consequently, it seems possible to characterize Aphelocheirinae as a basically strongly plesiomorphic group, sharing some characters with the littoral Nepomorpha and having evolved probably direct from a littoral ancestor. Aphelocheirinae seem to represent a very isolated group of Naucoridae which derived from the common stock in the earliest stages of its adaptation towards aquatic life, and which due to a long isolated life in benthic environment accumulated many autapomorphic characters associated mainly with plastron respiration and probably predominantly mussel feeding behaviour, but involving also the apomorphic modifications of male genitalia and pregenital segments.

It should be pointed out that Aphelocheirinae share many symplesiomorphies with the Potamocorinae (namely the long antennae, unspecialized fore tarsus, presence of arolia, etc.), but practically no synapomorphies. The shared elongate head occurs also in other Naucoridae and its detailed construction is different in both subfamilies. The moderately long labium of Potamocorinae, similar to that of the Cretaceous Naucorine *Angaronecta,* is probably plesiomorphic and differs more from the apomorphic elongate labium of Aphelocheirinae than the abbreviated labium of other Naucoridae. In the majority of characters Potamocorinae are quite different from Aphelocheirinae (see the long and incomplete list of differences in the key) and this subfamily represents another isolated plesiomorphic stock of Naucoridae, entirely unrelated to the Aphelocheirinae.

If one takes a splitter's point of view, it is certainly justifiable to elevate Aphelocheirinae and Potamocorinae to family rank by virtue of their autapomorphic and autplesiomorphic characters. Both are isolated groups without any distinct relatives among both modern and fossil Naucoridae. But both conform to the present conception of Naucoridae, show typical Naucorid features in the modifications of their fore legs, structure of head, basic construction of forewings and general facies. Until the cladistic affinities of the Naucoridae are better known, we believe that it is better to leave both subfamilies within the limits of the Naucoridae.

4) Tribal subdivision of Potamocorinae

Potamocorinae have been subdivided into two monotypic tribes, Potamocorini and Colepoterocorini, by POPOV (1970: Bull. Ac. Pol., Cl. 2, 18:97) without any substantiation, definition or indication, and even the na-

mes of the type genera not been mentioned. Both tribes have been quoted as new, but this time properly described by POPOV, 1971 (Trudy paleontol. Inst. A. N. SSSR, 129:158–158). Consequently, Coleopterocorini Popov, 1970 is nomen nudum and the authorship of this tribe should be ascribed to Popov, 1971. So much for the nomenclature; however, we are convinced that the tribal subdivisions of Potamocorinae are superfluous.

Coleopterocoris differs from *Potamocoris* mainly by its coleopteroid modification of forewings, some correlated characters (as shape of pronotum and size of eyes) and some minor characters surely of generic value only. *Potamocoris*, in contrast to the statement by POPOV (1971) and HUNGERFORD'S (1941: fig. 5) illustration, has hind tarsi provided with dense swimming hairs like *Coleopterocoris* (according to examination of paratypes of *Potamocoris parvus*), only its metatibial swimming hairs are very sparse. The coleopteroid modification of forewings appears occasionally in various heteropteran families (see SCHMITZ and ŠTYS, 1973 for review) and is in itself not a reason for erection of a suprageneric taxon. *Coleopterocoris* is simply a more apomorphic and more southernly distributed sister genus of *Potamocoris*. Consequently, we regard Coleopterocorini Popov, 1971 as synonymous with Potamocorinae.

WORLD LIST OF APHELOCHEIRINAE AND POTAMOCORINAE

Aphelocheirinae Douglas et Scott, 1865 (1861)

Aphelochirae Fieber, 1861, Eur. Hem.: 23 (derived from *Aphelochira*)

Aphelochiridae Douglas et Scott, 1865, Brit. Hem., 1:44 (derived from *Aphelocheirus;* emend. by Stål, 1876, Enum. Hem., 5:143 into Aphelocheiraria).

1) APHELOCHEIRUS Westwood, 1840

Aphelocheirus Westwood, 1840, Mod. Classif. Ins., 2, Syn. gen. p. 119 (type species *Naucoris aestivalis* F., 1803; monobasic)

= *Aphelochirus* auct. (variant spelling)

= *Aphelochira* Fieber, 1851, Gen. Hydr., p. 15, pl. 1 D (isogenotypic; unjustified emendation)

= *Saturgana* Oshanin, 1909, Ann. Mus. St.-Pétersbourg, 14:6 (type species *Saturgana plumipes* Oshanin, 1909; monobasic).

a) subgenus APHELOCHEIRUS s. str.

1. *aestivalis* (Fabricius, 1803) Syst. Rhyng., p. 111 (as *Naucoris*) ..... Europe, Turkey, Egypt
   = *annosus* Stichel, 1955, Ill. Best. Wanz., II:1:90 (as form)
   = *cinereoniger* Stichel, 1955, Ill. Best Wanz., II:1:90 (as form)
   = *kervillei* Kuhlgatz, 1898, Wiss. Meeresuntersuchungen, 3:144
   = ? *montandoni* Horváth, 1899, Természz. Füz., 22:258 (a subspecies of British Isles and Ireland?)
   = ? *nigritus* Horváth, 1899, Természz. Füz., 22:257 (spec. propr. from Yugoslavia and Finland?)
2. *amurensis* Kiritshenko, 1925, Russ. Gidrobiol. Zh., 4:35 ..... East Siberia
3. *australicus* Usinger, 1937, Austr. Zool., 8:341 ..... N. Queensland
4. *bianchii* Kiritshenko, 1933, Trudy bajkal. limnol. st., 4:101 ..... Kazakhstan
5. *breviceps* Horváth, 1895, Rev. Ent., 14:160 ..... Georgia
6. *carinatus* Royer, 1920, Bull. Mus. Paris, 1920:59 ..... Vietnam

7. *corbeti* Poisson, 1955, Ann. Mus. Stor. nat. Genova, 68:165 ..... Uganda
8. *debilis* Kiritshenko, 1925, Russ. Gidrobiol. Zh., 4:39 .....Kenya, Madagascar (?)
9. *denticeps* Montandon, 1910, Bull. Soc. Bucaresc., 19:438 ..... C. China
10. *gularis* Horváth, 1918, Ann. Mus. Hung., 16:141 ..... Vietnam
11. *improcerus* Kiritshenko, 1929, Dokl. A. N. SSR, 1929:12.....
..... China (Heilungkiang), East Siberia
12. *inops* Horváth, 1918, Ann. Mus. Hung., ... Vietnam
13. *kawamurai* Matsumura, 1915, Ent. Mag. Kyoto, 1:104 ..... Japan
14. *kolenatii* Kiritshenko, 1925, Russ. Gidrobiol. Zh., 4:38 ... Transcaucasia, Caucasus
15. *kumbanus* Linnavuori, 1975, Not. Ent., 55:91 ..... Cameroons
16. *lugubris* Horváth, 1899, Term. Füzet., 22:266 ..... Madagascar
17. *nathani* La Rivers, 1971, Bull. So. Calif. Ac. Sci., 70:70) ..... India (Madras)
18. *nawae* Matsumura, 1905, J. Sapporo Agric. Coll., 22:56 .....Japan
19. *pallens* Horváth, 1899, Term. Füzet., 22:258 ..... New Guinea
20. *philippinensis* Usinger, 1938, Philipp. J. Sci., 64:307..... Philippine Is.
21. *plumipes* (Oshanin, 1909), Ann. Mus. St.-Pétersbourg, 14:9 (as *Saturgana)* .....
..... Kazakhstan, Afghanistan
= *turanicus* Montandon, 1911, Bull. Soc. Bucaresc., 20:83
22. *routroi* Bergevin, 1925, Bull. Soc. Hist. nat. Afr. N., 16:80 ..... Morocco
23. *schoutedeni* Montandon, 1914, Rev. zool. afr., 4:117 ..... Zaire
24. *sinensis* Montandon, 1892, Rev. ent., 11:73 ..... C. China
25. *takeuchii* Esaki, 1934, Mushi, 7:26 ..... Japan
26. *tuleari* Poisson, 1963, Bull. I. F. A., (A), 25:1191 ..... Madagascar
27. *uichancoi* Usinger, 1938, Philipp. J. Sci., 64:305..... Philippine Is.
28. *ussuriensis* Kiritshenko, 1929, Dokl. A. N. SSSR, 1929:13..... East Siberia
29. *variegatus* Kiritshenko, 1925, Russ. Gidrobiol. Zh., 4:40..... South Siberia
30. *vittatus* Matsumura, 1905, J. Sapporo Agric. Coll., 2:57 ..... Japan
= *shirakii* Matsumura, 1905, J. Sapporo Agric. Coll., 2:58

b) MICRAPHELOCHEIRUS subgen. n.

Type species *Aphelocheirus pygmaeus* La Rivers, 1971

31. *pygmaeus* La Rivers, 1971, Bull. So. Calif. Ac. Sci., 70:69 ..... India (Assam)

2. TAMOPOCORIS gen. n.

Type species *Tamopocoris asiaticus* sp. n.

1. *asiaticus* sp. n. ..... Vietnam

Potamocorinae Usinger, 1941

Potamocorinae Usinger, 1941, Ann. Ent. Soc. Amer., 34:8,9

Potamocorini: Popov, 1971, Trudy paleontol. inst. A. N. SSSR, 129:158

Coleopterocorini Popov, 1971, Trudy paleontol. inst. A. N. SSSR, 129:158, 159. Syn. n. (Coleopterocorini Popov, 1970, Bull. Acad. Pol. Sci., Sér. Sci. biol., Cl. 2, 18:97 = = nomen nudum).

1. COLEOPTEROCORIS Hungerford, 1942

Coleopterocoris Hungerford, 1942, Ann. Ent. Soc. Amer., 35:136 (type species *Coleopterocoris kleerekoperi* Hungerford, 1942; mnobasic).

1. *hungerfordi* DeCarlo, 1968, Physis, 28:194 ..... Brasil
2. *kleerekoperi* Hungerford, 1942, Ann. Ent. Soc. Amer., 35:138 ..... Brasil
3. *plaumanni* DeCarlo, 1968, Physis, 28:193 ..... Brasil
4. *usingeri* DeCarlo, 1968, Physis, 28:196 ..... Brasil

8. POTAMOCORIS Hungerford, 1941

Potamocoris Hungerford, 1941, Ann. Ent. Soc. Amer., 34:1 (type species *Potamocoris parvus* Hungerford, 1941; monobasic).

1. *beckeri* La Rivers, 1950, Proc. Ent. Soc., Wash., 52:301 ..... Honduras, Guatemala
2. *parvus* Hungerford, 1941, Ann. Ent. Soc. Amer., 34:1..... Paraguay
3. *robustus* La Rivers, 1969, Occ. Pap. Biol. Soc. Nevada, 20:10 ..... Peru

REFERENCES

CHINA, W. E. (1955): The evolution of Water Bugs. Bull. Symp. organic evolution, Nat. Inst. Sci. India, **7**, 91—103, figs. 1—3.

CHINA, W. E. and MILLER, N. C. E. (1959): Check-list and keys to the families and subfamilies of the Hemiptera-Heteroptera. Bull. Brit. Mus. (Nas. Hist.), Entomology, **8** (1), 1—45, Fig. 1.

COBBEN, R. H. (1968): Evolutionary trends in Heteroptera. Part. I. Eggs, architecture of the shell, gross embryology and eclosion, pp. 1—475, figs.. 1— 316, Centre for Agric. Publishing and Documentation, Wageningen.

DE CARLO, J. A. (1971): Valor sistematico del estudio del aparto genital macho en los Hemipteros acuatos y semicuaticos. Division de la familia Naucoridae en dos familias. Caracteristica externa de la capsula genital. Revista de la Sociedad Entomologica Argentina, **33**, 159—166, figs 1—46.

HINTON, H. E. (1968): Some structures of insects as seen with the scanning electrone microscope. Micron, **1**, 84—108, pls. I—VI.

HUNGERFORD, H. B. (1941): A remarkable new Naucorid water bug (Hemiptera) Annals of the Entomological Society of America, **34**, 1—4, pl. I.

HUNGERFORD, H. B. (1942): Coleopterocoris, an interesting new genus of the subfamily Potamocorinae (Naucoridae: Heteroptera). Annals of the Entomological Society of America, **35**, 135—139, pl. I.

KIRITSHENKO, A. N. (1925): Novie vidy roda Aphelochirus Westw. (Hemiptera, Naucoridae). Russische Hydrobiologische Zeitschrift, **4**, 35—41, Fig. 1.

KIRITSHENKO, A. N. (1929): Beitrag zur Kenntnis der Gattung Aphelochirus Westw. (Hemiptera, Naucoridae). Comptes Rendus de l'Académie des Sciences de l'URSS, **1929**, 11—14, figs 1—3.

KIRITSHENKO, A. N. (1933): Novye nachoždenia vidov sem. Aphelochiridae. Travaux de la Station limnologique du lac Bajkal, **4**, 99—103, figs 1—3.

LA RIVERS, I. (1971 a): Studies of Naucoridae (Hemiptera, Memoires Biological Society of Nevada, **II**, I—III, 1—99, figs 1—20.

LA RIVERS, I. (1971 b): Descriptions and notes concerning some oriental Aphelocheirus (Hemiptera: Aphelocheiridae). Bulletin So. Calif. Academy of Sciences, **70**, 69—72, figs 1—3.

LA RIVERS, I. (1974): Catalogue of Taxa Described in the Family Naucoridae (Hemiptera) Supplement No. 1: Corrections, Emendations and Additions, with Descriptions of New Species. Occasional Papers, Biological Society of Nevada, No. **38**, 1—17.

LARSEN, O. (1955): Spezifische Mechanorezeptoren bei Aphelocheirus aestivalis Fabr. nebst Bemerkungen über die Respiration dieser Wanze. Lund Universitets Arsskrift. N. F. Avd. 2, **51**, 1—59, Abb. 1—12.

LARSEN, O. (1950): Die Veränderungen im Bau der Heteropteren bei Reduktion des Flugapparates. Opuscula entomologica **15**, 17—51, figs 1—10.

LINNAVUORI, R. (1975): On the genus Aphelochirus (Heteroptera, Naucoridae) of tropical Africa. Notulae Entomologicae, **55**, 89—91, figs 1—3.

MIYAMOTO, S. (1961): Comparative morphology of alimentary organs of Heteroptera, with the phylogenetic consideration. Sieboldia, **2**, 197—259, pls 1—49.

NIESER, N. (1975): The water bugs (Heteroptera: Nepomorpha) of the Guyana Region. Studies on the fauna of Suriname and other Guyanas: No. **59**, 1—310, figs 1—337, pls I—XXIV.

OPINION 681 (1963): Naucoris Geoffroy, 1762 (Insecta, Hemiptera); validated under the Plenary Powers. Bull. zool. Nom., **20**, 411—413.

PARSONS, M. C. (1968a): Labila skeleton and musculature of the Hydrocorisae. Canad. J. Zool., **44**, 1051—1084, figs 1—31.
PARSONS, M. C. (1966b): Studies on the cephalic anatomy of Naurocoridae (Heteroptera). Trans. R. ent. Soc. Lond., **118**, 119—151, figs 1—24.
PARSONS, M.C. (1969a): Skeletomusculature of the pterothorax and first adbdominal segment in micropterous Aphelocheirus aestivalis F. (Heteroptera: Naucoridae). Trans R. ent. Soc. Lond., **121**, 1—39, figs 1—22.
PARSONS, M. C. (1969b): The labium of Aphelocheirus aestivalis F. as compared with that of typical Naucoridae (Heteroptera). Canad. J. Zool., **47**, 295—306, figs 1—13.
PARSONS, M. C. (1969c): The Food Pump of Aphelocheirus aestivalis F. as compared with that of Typical Naucoridae (Heteroptera). J. Morphol., **129**, 17—30, figs 1—10.
POPOV, Y. A. (1970): Notes on the Classification of the Recent Naucoridae (Heteroptera, Nepomorpha). Bulletin de l'Academie Pol. des Sciences, Sér. sc. biol., Cl. II, **16**, 93—98, figs 1—15.
POPOV, Y. A. (1971): Istoričesekoe razvitie polužestkokrylych infraotrajada Nepomorpha (Heteroptera). Trudy paleontologičeskogo inst. A. N. SSSR, **129**, 1—230, figs 1—121, tab. I—IX.
SCHMITZ, G. and ŠTYS, P. (1973): Howefulvius elytratus gen. n., sp. n. (Heteroptera, Miriade, Fulviinae) from Lord Howe Island in the Tasman Sea. Acta entomologica bohemoslovaca, **70**, 400—407, figs 1—8.
USINGER, R. L. (1941): Key to the subfamilies of Naucoridae with a generic synopsis of the new subfamily Ambrysinae (Hemiptera). Annals of the Entomological Society of America, **34**, 5—16, figs 1—3.

LUDVÍK HOBERLANDT A PAVEL ŠTYS

TAMOPOCORIS ASIATICUS GEN. ET SP. N. — NOVÝ ROD A DRUH PODČELEDI APHELOCHEIRINAE Z VIETNAMU A DALŠÍ STUDIE O ČELEDI NAUCORIDAE (HETEROPTERA)

V roce 1963 byl ve Vietnamu nasbírán materiál pozoruhodně malého druhu z podčeledi Aphelocheirinae (Naucoridae, Heteroptera), který svým vzhledem velmi připomíná druhy neotropické podčeledi Potamocorinae. Tento druh svou velikostí připomíná také nedávno popsaný *Aphelocheirus pygmaeus* La Rivers, 1971 z Východní Indie.

Podrobné studium obou uvedených druhů prokázalo, že druh, který popsal La Rivers z Indie patří skutečně do rodu *Aphelocheirus* Westwood, avšak tvoří zde zvláštní dobře charakterizovaný nový podrod; vietnamské exempláře jsou rodově odlišné a tvoří nový rod.

Pro *Aphelocheirus pygmaeus* La Rivers je v této práci stanoven nový podrod *Micraphelocheirus* Hoberlandt and Štys, subgen. n., pro exempláře z Vietnamu nový rod *Tamopocoris* Hoberlandt and Štys, gen. n. s typickým druhem *Tamopocoris asiaticus* Hoberlandt and Štys, sp. n.

Kromě popisů nových taxonů je v práci podán určovací klíč na rody podčeledi Potamocarinae a Aphelocheirinae. V práci jsou také shrnuty hlavní rozlišovací znaky obou podčeledí a je také připojen přehled vyšší klasifikace čeledi Naucoridae a seznam druhů podčeledi Aphelocheirinae a Potamocorinae.

Dokladový materiál je uložen ve sbírkách Národního přírodovědeckého muzea v Budapešti, ve sbírkách ústavu systematické zoologie Karlovy univerzity v Praze a v entomologickém oddělení Národního muzea v Praze.