THE WESTERN AUSTRALIAN
NATURALIST

Vol. 4 JUNE 30, 1953 No. 1

TWO NEW SPECIES OF THE GENUS *CYRTOPELTIS* (HEMIPTERA) ASSOCIATED WITH SUNDEWS IN WESTERN AUSTRALIA

By W. E. CHINA, M.A., Sc.D., F.R.E.S., British Museum (Nat. Hist.), London.

Thanks to the courtesy of Mr. L. Glauert, Curator of the Western Australian Museum, Perth, I have been permitted to study a series of capsid bugs found living on various species of sundew *(Drosera)* at Lesmurdie and Kalamunda. The interesting point about these bugs is that they appear to be able to move freely over the sticky glandular hairs of the leaves without being entangled. Following this paper is a contribution by Mr. M. C. Russell, in which he gives an account of the habits of these bugs.

In 1951 China and Carvalho *(Ann. Mag. Nat. Hist.* (12), 4, p. 221) described a new ant-like Dicyphinid, *Setocornis bybliphilus,* living on the insectivorous plant *Byblis gigantea* at Cannington near Perth in Western Australia, which had been submitted to me by Prof. Francis E. Lloyd in 1937. In his book, "The Carnivorous Plants", 1942, Prof. Lloyd not only records and figures (Plate 13, fig. 1) the capsid on *Byblis* but refers to others on *Drosera* which are presumably the species dealt with in the present paper. He writes:

> "While small insects in general are caught by the mucilage secreted by the stalked glands, this capsid moves about freely without difficulty, just as do similar insects, also capsids, over the surface of Drosera leaves in Australia. . . . How the insect manages this is a bit puzzling. It is noticeable that it prefers to walk on the upper leaf surface where there are very few and usually smaller glands but when alarmed it progresses rapidly in any direction without becoming entangled with the mucilage. Full sized insects (adults) are perhaps too big to be readily encumbered, but the smaller ones move about just as freely. Their food consists of freshly captured flies, the juices of which they suck."

The bugs associated with *Drosera* comprise two new species belonging to the cosmopolitan and composite genus *Cyrtopeltis* Fieber, but these two species are not restricted to any one species

of sundew and each one occurs on both *Drosera pallida* and *Drosera erythrorrhiza*. Mr. Russell in his notes records specimens from *Drosera stolonifera* but none from this plant was sent to London and it is probable that both species of bug occur on this plant also.

The taxonomy of the genus *Cyrtopeltis* is so complicated that China and Carvalho in 1952 (*Ann. Mag. Nat. Hist.* (12), 5, p. 158) decided to lump a number of closely related genera, from all parts of the world, together as subgenera of *Cyrtopeltis*, the so-called *Cyrtopeltis* complex, rather than to keep them as distinct genera. The present two sundew species appear to belong to the typical subgenus of this complex which is Palaearctic in distribution. Before going on to describe them a few words about the habits of the tribe Dicyphini will help to show how the ability to live on an insectivorous plant has been acquired.

Although probably the majority of capsid bugs (Miridae) are phytophagous many are known to be carnivorous and probably some are both phytophagous and carnivorous. In the evolution of these bugs it would be easy to pass from piercing plant tissue and sucking sap to piercing smaller insects such as Aphides and sucking the plant sap ingested by the prey. In this way the primitive phytophagous bugs must have become carnivorous. Some capsid bugs feed on the eggs of both insects and mites and in this way are highly beneficial to the farmer. It is probable that the Dicyphini* are all carnivorous. It is certain that they mostly live on plants with densely pubescent leaves or with leaves bearing sticky glandular hairs. In Europe *Dicyphus epilobii* lives on the hairy willow-herb (*Epilobium hirsutum*) and *D. pallidicornis* on the hairy underside of the leaves of the fox-glove (*Digitalis*). The widely distributed *Cyrtopeltis (Engytatus) tenuis* is associated with tobacco plants while in Brazil, *Cyrtopeltis (Tupiocoris) nigroculatus* lives on *Cassia cathartica* which possesses glandular, sticky hairs. The final step from life on a hairy leaf where delicate insects are only occasionally entangled in the hairs to life on a really sticky insectivorous plant such as *Drosera* or *Byblis* has been taken by *Setocoris bybliphilus* and the new species described below. As mentioned by both Lloyd and Russell the insects avoid the glandular hairs as much as possible. If accidentally caught they may lose a leg as suggested by Russell or they may rapidly pull themselves free and clean themselves of the mucilage. They appear to be aware of the danger of becoming entangled. All the species are covered with strong bristles which may be an adaptation to prevent the body of the insects from coming into contact with the secretion. The bristles would be readily broken off if they became stuck to the plant.

The eggs will be almost certainly inserted into the tissue of the underside of the leaves and stems and it is possible that the tiny newly hatched nymphs may be vegetarian in the early stages.

* Formerly regarded by Van Duzee and Knight as a subfamily of the Miridae but more recently regarded by Carvalho (1952, *Ann. Acad. Brasileira de Ciencias*, 24, p. 33) as a tribe of the subfamily Phylinae.

Genus *CYRTOPELTIS* Fieber

Fieber, 1860, Europ. Hemipt., pp. 76 and 323. China and Carvalho, 1952, Ann. Mag. Nat. Hist. (12), 5, p. 159.

The two species described below run down in the key published by China and Carvalho *(loc. cit.)* to the typical subgenus *Cyrtopeltis* which has hitherto comprised only the two Palaearctic species *C. geniculatus* Fieber (Europe) and *C. canariensis* Lindberg (Canary Islands). They agree with this subgenus in the structure of the pygophor in which the ventral margin is without a distinct process and in which the dorsal margin possesses a distinct prominence a little to the left of the middle line. In the Palaearctic species this dorsal projection is in the form of a spatulate rounded lobe but in the Australian species the process is acuminate or only slightly rounded apically. These species also agree with the typical subgenus in the large anal segment and in the type of theca which embraces only one side of the penis and projects outwards through the mouth of the pygophor so that its apex is visible without dissection. In addition the Australian species agree with the Palaearctic species in the absence of the short vein which normally divides the membranal cell into two, so that there is only one membranal cell as in the Bryocorinae. In spite of some hesitation, therefore, in view of the discontinuous distribution and the very strong bristle armature, the Australian species have been referred to the typical subgenus. All the members of the subgeneric complex can be distinguished by the structure of the pygophor and if a new subgenus was erected for the Western Australian species it could not be so differentiated.

Cyrtopeltis (Cyrtopeltis) droserae sp. nov.

Colour, ♂ and ♀. Bright yellow with white, black and red markings and a regular arrangement of black bristles.

Head above black with four white, elongated, triangular spots margined with bright red, one in middle of apex of vertex, one in middle of base of head and one on each side at inner margin of eye, extending backwards towards base of head; underside of head white with a red stripe down each side of the middle line; rostrum with basal segment white with base red on each side, second and third segments dirty yellow, apical segment black; clypeus and labrum black; antenna with basal segment shining black, second segment white at base and pale yellow in middle with a broad black annulation immediately above basal white region and another at the apex; third and fourth segments fulvous with base and apex of third infuscate. Pronotum bright yellow, apical collar and basal area black, the latter split into two apically by an elongate rhomboidal white spot. Mesonotum greenish yellow. Scutellum with centre and apex shining white and with the basal angles broadly black. Hemielytra bright yellow with the basal margin and apex of clavus infuscate and a broad black band across base of cuneus; an elongate spot in middle and at inner angle of corium and apex of corium, broadly, above black base of cuneus and apical half of cuneus all shining white; membrane pale

infuscate with end of cell vein at cuneus, black. Underside bright yellow with a black spot at base of each coxa covering apex of acetabula, some infuscate markings on the front and middle coxae —including spots at base of paired coxal bristles; left hand genital clasper and a spot on opposite side of pygophor black. Mesosternum in female, brown, ovipositor sheath white. Hairs of abdomen fine and pallid, slightly infuscate towards apex of abdomen. Femora white densely mottled with bright red and with large black round spots at base of black bristles and a sub-apical red annulation spotted with black; tibiae white with evenly spaced black rings and some red markings; tarsi fulvous with the apical segment

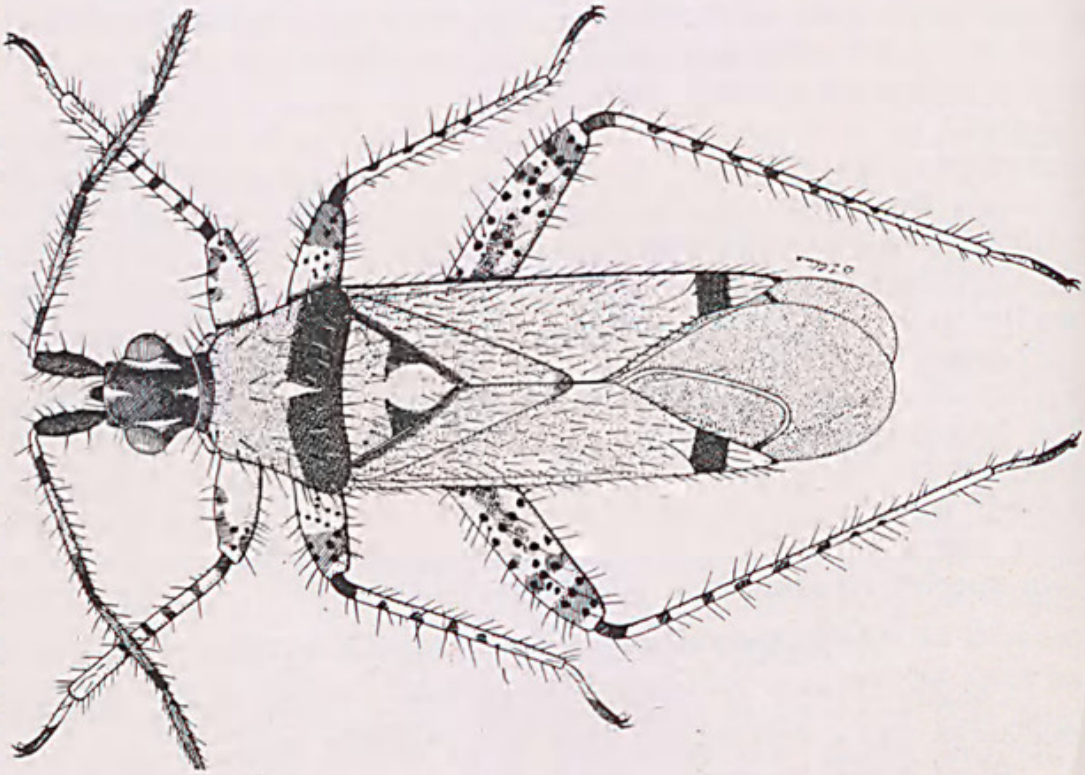

Fig. 1.—*Cyrtopeltis (Cyrtopeltis) droserae* sp. nov. A predatory species associated with Sundew *(Drosera* spp.) and living on the insects caught by the Sundew leaves.

and claws black. The colour is somewhat variable especially as regards the red markings which in some specimens are much more extensive. The yellow colour is sometimes replaced by white in such specimens and there is infuscation of the anterior lobe of the pronotum except for a middle white line, while the black of the head may be largely replaced by red.

Structure, ♂ Head from above, excluding clypeus, slightly shorter than width including eyes (38:44); distance between eyes more than twice width of an eye seen from above (22: 10); a pair of bristles widely spaced between antennal tubercles, another pair close together on each side of head near anterior margin of eye and a row of six bristles across base of head (neck) just below posterior margins of eyes; first antennal segment rather swollen and nodular at bases of the rather short, stout bristles, without fine hairs, remaining segments with dense fine hairs as well as long bristles except basal third of second; relative length of seg-

ments:—30: 66: 50: 35; rostrum extending a little beyond apices of middle coxae, armed with short bristles, relative length of segments 30: 30: 30: 15; clypeus and labium with short bristles. Pronotum about one and a half times as wide across the humeral angles as long in middle (78: 50); anterior collar six times wider than deep (30: 5); anterior lobe slightly more convex than posterior lobe with a shallow depression between the two lobes; humeral angles broadly rounded; collar with six bristles and posterior margin of pronotum with a regular row of 16 bristles; lateral margins and posterior lobe with bristles. Mesonotum with the oblique carina from each basal angle well defined, with six or seven bristles. Scutellum strongly convex with 3 pairs of bristles in middle and others at sides. Hemielytra extending just beyond apex of abdomen, the veins obsolete; membrane with only one basal cell; surface regularly covered with long semi-erect bristles. Legs relatively long, covered with stout bristles. Abdomen with fairly dense pale decumbent pubescence.

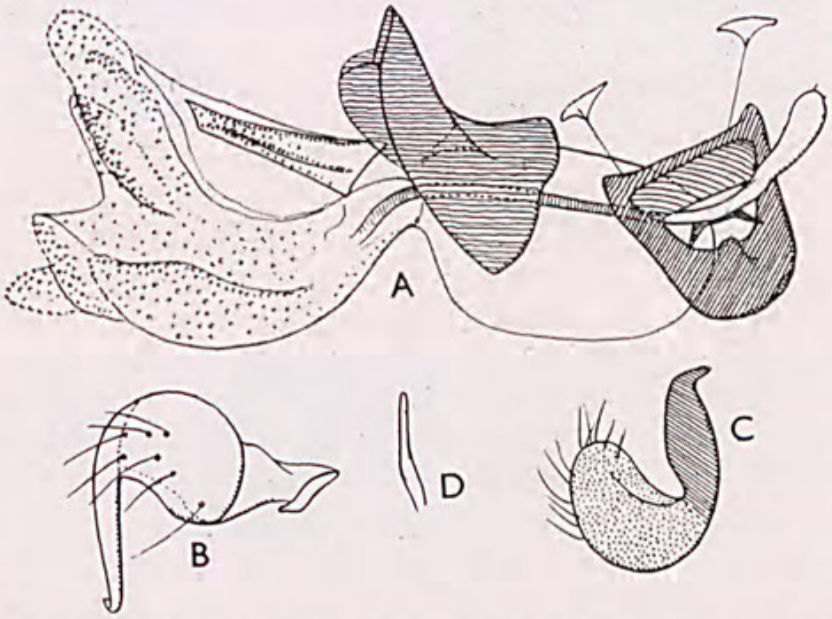

Fig. 2.—*Cyrtopeltis (Cyrtopeltis) droserae* sp. nov. ♂ genitalia. A—aedeagus showing tuberculate vesica, sclerotised theca and basal plates. B—terminal view of left-hand clasper (upside down). C—right-hand view of same. D—right-hand clasper.

Male genitalia figured. Base of left clasper very broad, its apical half blade-like with tip bent. Aedeagus with vesica separated into five tuberculate lobes. Pygophor with dorsal process short and rounded at apex.

Total length: ♂ 3.8 mm., ♀ 3.7 mm. Width across humeral angles; ♂ 1.2 mm., ♀ 1.1 mm. Female slightly smaller than male measuring to tip of membrane but in females the hemielytra are shorter and in fresh specimens barely reach the apex of the abdomen.

Habitat: Western Australia, Lesmurdie, Sept. 1952, 1 male holotype, 5 male paratypes (including one slide), 2 female paratypes and 1 female paratype and 8 nymphs in spirit; all on

Drosera pallida (M. C. Russell Coll.). Lesmurdie, Sept. 1952, 1 female paratype and 1 male paratype, 1 female paratype and 3 nymphs in spirit, on *Drosera erythrorrhiza* (M. C. Russell Coll.). Kalamunda, Sept. 1952, 1 male paratype, on *Drosera pallida* (A. M. Douglas Coll.).

Type and paratypes in British Museum (Nat. Hist.), London; paratypes in Western Australian Museum, Perth.

Cyrtopeltis (Cyrtopeltis) russelli sp. nov.

Colour, ♂ and ♀. Bright yellow with brown, black, red and white markings and a regular arrangement of black bristles.

Head above white with a red, tinted fuscous, V-shaped mark in middle, the arms of the V extending to bases of antennae: a broad red stripe behind each eye extending from eye to extreme base of head; antenniferous tubercles black; extreme base of head yellow with a fuscous spot at base of V-mark; underside of head white without markings; rostrum white with apex black and commissure and labrum infuscate especially at base; clypeus white,

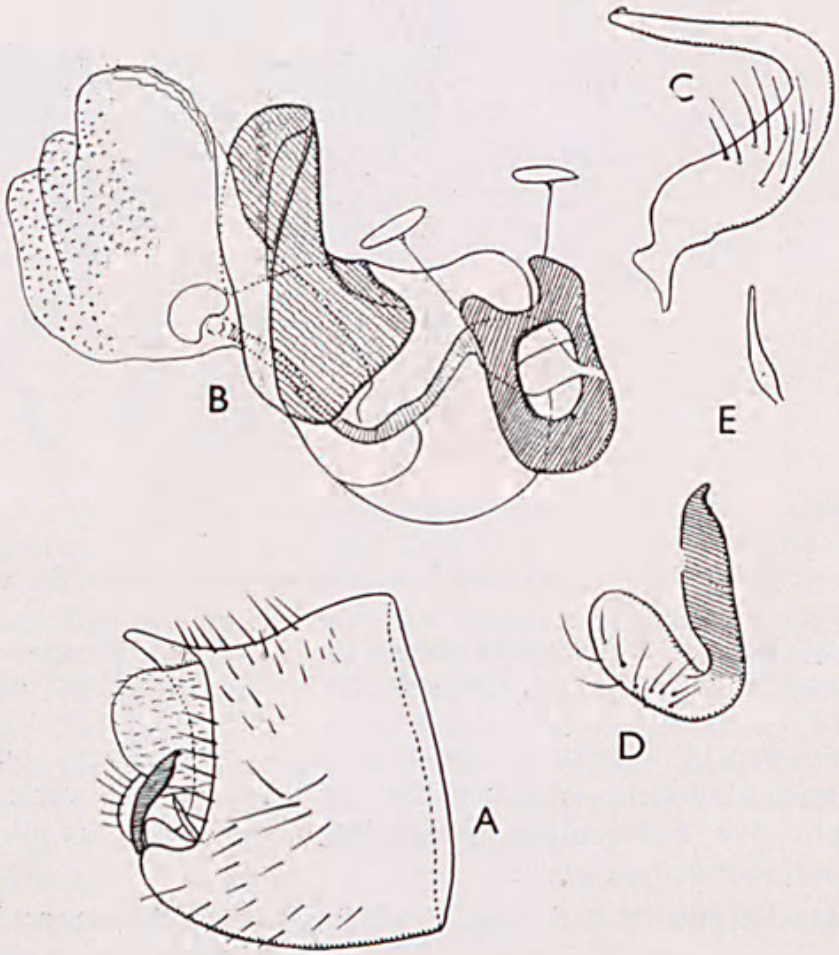

Fig. 3.—*Cyrtopeltis (Cyrtopeltis) russelli* sp. nov. ♂ genitalia.

A—right-hand view of pygophor (9th. abdominal segment) showing dorsal process, large anal segment, right-hand view of left clasper and right clasper. B—aedeagus, showing tuberculate vesica, sclerotised theca and basal plates. C—terminal view of left-hand clasper. D—right-hand view of same. E—right-hand clasper.

with a red band down middle; antennae with basal segment white with base and apex infuscate and some red mottling on the white middle area, the black bristles with small black spots at bases; second segment fulvous with a glabrous white ring at base followed by a narrower ring of dark red, bristles with black spots at bases; second and third segments dark fulvous, the third with minute white base. Pronotum bright yellow with the apical margin of the collar, narrowly, a spot at each side anteriorily, behind eye, the posterior margin rather broadly and a small obscure mark on each side near lateral margin and slightly anterior to middle transverse impression all dark brown (fuscous). Mesonotum pale yellow at sides but somewhat infuscate in middle. Scutellum bright yellow with basal angles broadly infuscate. Hemielytron bright yellow with inner margin of clavus along scutellum broadly, apex of clavus minutely, a large transverse, crescent-shaped, spot on each side of corium, slightly below level of apex of clavus, all fuscous (brown); base of cuneus with a black transverse band; apical third of cuneus white; membrane infuscate with dark brown cell vein. Underside bright yellow with a black spot at base of each coxa covering apex of acetabula, an irregular brown spot at middle of each of front and middle coxae and another on anterior margin of basal third of hind coxa; left hand genital clasper pale yellow at base with apex reddish brown. Female with a large brown spot on each side of the mesosternum and a smaller transverse one in middle of posterior margin of propleuron. Hairs of abdomen fine and pallid. Femora white mottled with bright red with small black spots at base of black bristles, and without the subapical red annulation of *C. droserae;* tibiae white with base and apex and five intermediate narrow annulations bright red, the black bristles arising from small blackish spots; tarsi infuscate with apical segment and claws black.

The colour is quite variable. In some specimens (females) the claval suture is infuscate and the brown coloration extends basally on to the clavus and apically on to the corium. In others the red colour is replaced by yellow or is entirely absent in which case the fuscous tinting of the red marks remain.

Structure, ♂ and ♀. Head from above, excluding clypeus, about as long as wide including eyes (36: 37); distance between the eyes more than twice width of an eye seen from above (20: 9); a pair of bristles between antennal tubercles, another pair, one on each side of head, towards apical fourth of eye and a row of six bristles across base of head (neck) just below posterior of eyes; first antennal segment less thickened than in *C. droserae* and without the nodular swelling at base of bristles, without fine hairs but the remaining segments with dense fine hairs as well as bristles; relative lengths of segments:—27: 70: 68: 44; clypeus and labium with short bristles. Pronotum about one and a half times as wide across humeral angles as long in the middle (70; 47); anterior collar nearly seven times wider than deep (27; 4); anterior lobe less convex than in *C. droserae;* anterior angles broadly rounded; collar with a row of six bristles and posterior margin

of pronotum with a regular row of 16 bristles (sometimes broken off); lateral margins and posterior lobe with bristles. Mesonotum with a distinct oblique carina from each basal angle to scutellum, also with six or seven bristles. Scutellum strongly convex, with a few bristles in middle and others at the sides. Hemielytra extending just beyond apex of abdomen the veins obsolete; membrane with only one basal cell; surface regularly covered with long semi-erect bristles. Legs relatively long covered with stout bristles and a few pale hairs. Abdomen with a fairly dense pale decumbent pubescence.

Male genitalia figured. Base of left clasper much narrower than in *C. droserae* but its apex similarly bladed with the tip bent at a more acute angle. Aedeagus with vesica showing three tuberculate lobes. Pygophor with dorsal process much longer and more acute (Fig. 3a) than in *C. droserae*.

Total length: ♂ 3.3 mm., ♀ 4.1-4.6 mm. Width across humeral angles: ♂ 1.0 mm., ♀1.2 mm.

Habitat: Western Australia, Lesmurdie, Sept. 1952, type male, paratype male, 3 paratype females and 2 nymphs on *Drosera pallida;* 2 females (in spirit) on *Drosera pallida* (M. C. Russell Coll.). Kalamunda, Sept. 1952, 4 paratype females on *Drosera erythrorrhiza,* 2 paratype males and 2 paratype females on *Drosera pallida* (A. M. Douglas Coll.).

Type and paratypes in British Museum (Nat. Hist.), London, paratypes in Western Australian Museum, Perth.

These two species appear to be very variable but usually *C. russelli* can be readily distinguished from *C. droserae* by the narrow, posterior marginal, brown band on pronotum, the brown crescent-shaped mark in middle corium, the more slender first antennal segment with black markings reduced to base and apex, the V-mark on pale head, the left genital clasper in male with base narrow and pallid in colour and the longer more pointed process on dorsal margin of mouth of pygophor.

A NEW SPECIES OF *EPITRIX* (COLEOPTERA HALTICINAE) FROM WESTERN AUSTRALIA

By G. E. BRYANT, Commonwealth Institute of Entomology, London.

Epitrix australis sp. nov.

Oblong-ovate, black, the basal segments of the antennae and tibiae fulvous, the prothorax feebly and not closely punctured, the elytra irregularly punctate-striate, underside with very fine short pubescence. Length, 3 mm.

♂ and ♀ head shining black impunctate, a feeble transverse impression between the eyes, the mandibles fulvous, antennae extending nearly to the middle of the elytra, the six basal segments tinged with fulvous, the five apical fuscous and more pubescent, the first segment the longest, and more dilated, the five