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**Some records of Indo-Australian Scoliidae (Hym.),  
with notes on a case of character release  
in a *Campsomeria* species.**

By

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The present paper is based mainly on an examination of the material collected during the Noona Dan Expedition to the Philippines and the Bismarck and Solomon Islands (Petersen, 1966), as well as on a study of a material collected on Rennell Island, Solomons, by Torben Wolff, during the Danish Rennell Expedition, 1965 (Wolff, 1968). A smaller but valuable material from the Solomon Islands, mainly collected by M. McQuillan in 1964—65 during the Royal Society of London Expedition, and including collections made by J. D. Bradley in Rennell in 1953, and belonging to the British Museum (Nat. Hist.) (BMNH) is also included, as well as a few specimens belonging to other museums, viz. the Zoological Museum (Berlin), the Museum of Natural History (Paris) and the Zoological Museum (Copenhagen).

The Scoliid fauna of the Philippines certainly needs revision, and only a few problems could be elucidated on the basis of the present limited material from the southern islands only. The expedition added two species and three new subspecies to the Philippine faunal list. The investigations show that the two island bridges connecting the larger Philippine islands with Borneo contain a very interesting fauna, often with clear dissimilarities between the Palawan-Balabac chain and the chain formed by the Sulu Islands.

The fauna of the Bismarck and Solomon Islands has recently been treated by Krombein (1963, 1968), and is rather well-known with regard to the larger islands, especially New Britain and New Ireland.

Krombein recorded a total of 17 native species from the Bismarcks and 13 species from the Solomons. All of these species except two (*Campsomeris fordi* Krombein and *Diliacos quadriceps manus* Krombein, both only known from single specimens) are found in the present material, and in addition two species, *Trisciloa saussurei* Gribodo and *Campsomeris microspatulata* Tuijn, are recorded for the first time from the Bismarcks and Solomons, respectively. We may not expect to find many more species in the area, but along with the accumulation of more material of rare species and material from the more remote islands, we may certainly recognize several new subspecies. Four new subspecies are recognized in the present material alone, and two previously known subspecies are recorded from the Bismarck Islands, while with regard to the Solomon Islands the small material indicates that in the case of four species, further divisions on the subgeneric level may occur.

Rennell Island in the Solomon group seems to be inhabited by only three species of Scoliidae. These were recorded previously by Krombein (1962, 1963) and all are refound in the much greater material treated here. One of the species, *Campsomeris inopinata* Krombein, is a rather remarkable endemic.

The main purpose of the Noona Dan Expedition was to visit more remote islands because such islands often possess interesting fauna elements worth investigating. With regard to the Scoliidae this programme was not set up in vain. Especially the smallest islands visited proved to contain very interesting forms. In minute Ursula Island off the coast of Palawan a distinct and in comparison with its relatives remarkable form of *Campsomeris* (*Campsomeriella*) *collaris* (F.) was collected. Dyaul Island close to the coast of New Ireland was found to be inhabited by *Austroscolia pulchripennis franclemonti* (Krombein) which is rather surprising as the nearby New Ireland is populated by another subspecies, *pulchripennis* (Cameron). The small islands Luf and Manon of the Hermit Islands, both only a few square kilometres in size, proved to contain a rarely recorded case of "character release" (MacArthur and Wilson, 1967). The islands have a rich population of a new subspecies of the polytypic *Campsomeris* (*Radumeris*) *extranea* (Kirby) and in contrast to other subspecies the specimens of this population vary exceedingly with regard to the colour pattern. This is probably due to a situation of relaxed selection pres-

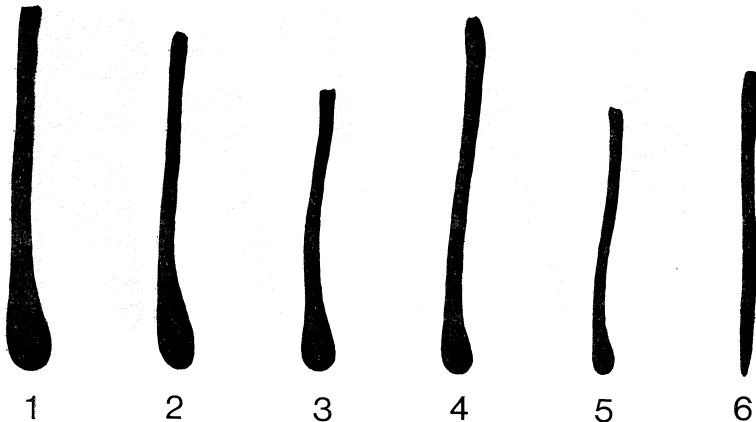
sure through absence of a normal number of interacting species.

**Campsomeris (Laevicampsomeris) brandti** Krombein, 1963

Bismarck Isls., NEW IRELAND: Lemkamin, 900 m, 2 ♀, 9 ♂, 7—23 April, 1962.

In order to investigate the relationship of *brandti* and the more common species of the same group, I have compared the present females with a small material of *laglaizei* Betrem, *bonguensis* Betrem and *nigerrima* Smith, including the holotypes of *laglaizei* (Museum d'Histoire naturelle, Paris) and *nigerrima* (University Museum, Oxford).

In agreement with Krombein (1963), I find it very difficult to reach an opinion on the relationship of the species of this complex, as they are mainly distinguished only by small differences in the punctuation of the vertex and the dorsum of the thorax. However, in contrary to Krombein (1963:570), I find that *brandti* is not more similar to *laglaizei* than to the other species such as defined by Krombein, e.g., with a punctate area along the inner margins of the parapsidal furrows. (Such a punctuation is not present in the holotypes of *nigerrima* and *bonguensis* and is apparently a variable and unreliable character). It is true that *brandti* and *laglaizei* have the presence of punctures on scutellum



Figs. 1—6. Longer spur of hind tibia in females of some *Campsomeris* (*Laevicampsomeris*) species. (1) *laglaizei* Betrem, holotype, (2) *bonguensis* Betrem, (3) *nigerrima* (Smith), holotype, from New Guinea, (4) *nigerrima* (Smith), specimen from New Britain, (5) *brandti* Krombein, and (6) *solomonis* Krombein.

and metanotum in common, but with regard to the degree of punctation *brandti* takes an intermediate position between *laglaizei* and *bonguensis/nigerrima*. Also with regard to the punctation on the vertex, *brandti* is an intermediate between *laglaizei* and *bonguensis*, both with punctures only posteriorly, and *nigerrima* with a richly punctate vertex.

The shape and size of the longer spur of the hind tibiae is a feature in which *brandti* differs clearly from *laglaizei*. *Laglaizei* has a very long and broad spur (Fig. 1) compared with the condition in *brandti* (Fig. 5). As appears from Table 1 the spur of *laglaizei* is only 7—8 times as long as broad at the spatulate tip, whereas in *brandti* the spur is about 11.5 times as long as broad. It is also seen that the spur of *laglaizei* is long, as basitarsus is only about 1.20 times longer than the spur, which is clearly different from the condition in *brandti* where basitarsus is about 1.50 times longer than the spur.

Measurements on other species show that differences occur, but as long as we do not know anything about the amount of variability of the longer hind spur, it is impossible to state that the differences are significant. However, if further measurements

**Table 1.** Dimensions and relative length of the longer spur of hind tibiae in some *Laevicampsomeris* females. (Means of measurements in both hind legs; basitarsus measured at midline).

	Tibial spur			Basi-tarsus	Basitar-sus/spur
	length	width	l./w.		
<i>C.(L.) brandti:</i>					
1) Lemkamin, 19.iv.	78	6.6	11.8	113	1.45
2) Lemkamin, 22.iv.	74	6.5	11.4	114	1.54
<i>C.(L.) laglaizei:</i>					
3) holotype, Moluccas	100	13.0	7.7	120	1.20
4) Sorong, N.Guinea	100	12.2	8.2	115	1.15
5) Sorong, N.Guinea	98	14.0	7.0	120	1.22
<i>C.(L.) nigerrima:</i>					
6) Mt.Senewit, N.Britain	107	9.0	11.9	127	1.19
7) holotype, N.Guinea	79	9.5	8.3	104	1.32
8) Misool	90	9.0	10.0	121	1.34
<i>C.(L.) bonguensis:</i>					
9) Mt.Lamington, NE Papua	92	10.1	9.1	120	1.30

follow the scheme found in Table 1, the conditions of the spur will be a valuable aid for the identification of the species. The present results indicate that we have to do with three more or less distinct groups: (1) *laglaizei* with a long and stout spur, (2) *brandti* with a short and narrowly spatulate spur, and (3) *nigerrima* and *bonguensis* with the spur of an intermediate build (Figs. 2, 3), and in addition to these must be mentioned *C. (L.) solomonis* Krombein from the Solomons with a non-spatulate spur (Fig. 6).

Table 1 shows that rather large differences occur among the *nigerrima* specimens measured; in particular the specimen from New Britain shows deviations. It has a narrowly spatulate spur (Fig. 4), as in *brandti*, but the spur is very long, as in *laglaizei*. This might indicate that the *nigerrima* population occurring in New Britain is different from the population of New Guinea and the Moluccas and perhaps ought to be regarded as a distinct taxon, be it species or subspecies.

The males of the present series vary a good deal in size, and this variation is followed by variations in punctuation and size of propodeal tubercle (see below under *nigerrima*), and also the shape of tergum 1 is substantially different in small and large specimens. The measurements presented in Table 2 show that the

**Table 2.** Dimensions of posterior swollen part of tergum 1 compared to size of specimen in *Campsomeris (L.) brandti* and *C. (L.) nigerrima* (from New Britain).

	Tergum 1		Thorax	
	length	width	w./l.	width at tegulae
<i>C. (L.) brandti</i> :				
1)	28	30	1.07	50
2)	30	34	1.13	57
3)	29	34	1.17	58
4)	30	35	1.17	58
5)	30	35	1.17	59
6)	32	39	1.22	66
7)	34	42	1.24	68
8)	33	42	1.28	68
9)	33	44	1.33	69
<i>C. (L.) nigerrima</i> :				
10)	37	55	1.49	78
11)	37	61	1.63	84

posterior swollen part of tergum 1 increases in relative width along with the increase in size of the specimens. These results may be a warning against the use of the dimensions of tergum 1 as a taxonomic character in species in which its variability is unknown.

**Campsomeris (Laevicampsomeris) nigerrima** Smith, 1861

Bismarck Isls., NEW BRITAIN: Yalom, 1000 m, 2 ♂, 12 and 13 May 1962.

The present males are very similar to the males of *brandti* from New Ireland, with which they share the dark colouration, as they are quite black except for small yellow lateral face marks. They do not have yellow spots dorsally on fore distitarsus as occurring in some of the *brandti* males.

Certain characters of the males of this group seem to be highly size dependent. It was already mentioned above that the dimension of the posterior part of tergum 1 varies with the size of the specimen (see Table 2). Also the size of the propodeal tubercle varies with the size of the specimen. Both males from New Britain have a rather distinct tubercle, and in the series of *brandti* males from New Ireland, which are all smaller than the New Britain males, only the biggest examples have a discernable tubercle, while it is absent in the smaller specimens. In the series of males of *brandti* and *nigerrima* it is also seen that an increase in size of the specimens is followed by an increase in the distinctness and density of the punctation of the dorsum of thorax, especially on the dorsal surface of propodeum.

The present males are placed under the name of *nigerrima* only because *nigerrima* females are previously recorded from New Britain (Krombein, 1963, 1968). True males of *nigerrima* from New Guinea (type locality) are unknown, or more likely, not discernable from males of *bonguensis* known from New Guinea in great numbers. If, in fact, true *nigerrima* males are like those of *bonguensis*, the *nigerrima* population on New Britain may be regarded as a separate subspecies which in the male sex is distinguished from the nominate form by colour differences, the most important of which is the absence of yellow lateral stripes on clypeus in the males from New Britain. Also, as mentioned above, the condition of the hind tibial spur (Fig. 4) may indicate that females of *nigerrima* from New Britain are different from those occurring in New Guinea.

**Campsomeris (Laevicampsomeris) solomonis** Krombein, 1963

Solomon Isls., SANTA ISABEL: Buala, 1 ♀, 22 Dec. 1964, M. McQuillan (BMNH). — GUADALCANAL: Sutakiki R., 1 ♂, 28 June 1956, E. S. Brown (BMNH). — TULAGI: 1 ♂, 24 Sept. 1953, J. D. Bradley (BMNH). — SAN CHRISTOBAL: Warahito R., 1 ♀, 21 Sept. 1955, E. S. Brown (BMNH).

The non-spatulate tip of the longer spur of the hind tibiae (Fig. 6) clearly shows that the female from San Christobal belongs to *solomonis*, both with regard to the punctation it deviates considerably from *solomonis* as described by Krombein (1963: 570). Front between ocellar triangle and inner eye margin is not as densely punctate as in *laglaizei* as there are only 4 larger and about 8 smaller punctures present in a small area near the eye margin. Vertex is less densely punctate than in *nigerrima*, as the vertexal punctures in the present female are almost as found in *brandti*. Scutellum and metanotum are quite impunctate and there is only one row of punctures along the inner margin of the parapsidal furrows on the mesoscutum; the punctation of the dorsum of thorax is thus very similar to that of *bonguensis* but differs clearly from that of *laglaizei*, which according to Krombein should be similar to *solomonis* in this character.

The female from San Christobal thus deviates from previously known material of *solomonis*, and from the present female from Santa Isabel, by being considerably less punctate on head and thorax. Krombein (1968: 3) records a female from San Christobal without mentioning any departure from normal punctation. This seems to exclude the presence of a distinct subspecies in this island.

The integument of the present females is quite black as in the paratypes of *solomonis* and not partly brownish as in the holotype.

The male recorded from Tulagi is rather deeply and distinctly punctate, especially on propodeum and terga, as is said to be normal in *solomonis*, but it differs by having abundant greyish hairs on head, propodeum, tergum 1 and legs. The male from Guadalcanal is hardly separable from males of *brandti* from New Ireland.

**Campsomeris (Laevicampsomeris) formosa** (Guérin, 1835)

Bismarck Isls., NEW IRELAND: Lemkamin, 900 m, 1 ♂, 23 April 1962.

Solomon Isls., SANTA ISABEL: Moriage Lgn., 1 ♀, 8 Feb. 1955, E. S. Brown (BMNH).

The present male represents an extreme variation. It has not only a yellow spot on the sides of propodeum, which is rarely found in *formosa* males (Krombein, 1963: 574), but yellow spots are present also on propleura and mesepisternum, which are conditions never met before in this species.

Betrem (1928: 86) notes that the type of *formosa* is probably lost. Fortunately this is not true, as I saw it in the collection of the Museum of Natural History, Paris. It is labeled "Port Praslin Dumont d'Urv. 1841 1 B 32 Scolia formosa Guér. Voy. coquille R. a. Port Praslin (Camptomeris)." Further it is labelled "Type" in red print. The specimen is in accordance with the present interpretation of the species, e.g. Krombein, 1963: 571.

**Campsomeris (subg.?) oresbios** Tuijn, 1961, subsp.?

Solomon Isls., GUADALCANAL: Jonapau, 1 ♂, 29 June 1956, E. S. Brown (BMNH).

This male is quite similar to the subspecies *gressitti* Krombein, 1968: 589, except that the abdomen is quite black without any yellow integumental marks as found in *gressitti*. It is thus very close to *yalomensis* n. subsp. described below but it differs by having yellow spots anteriorly on pronotum and by slightly larger yellow markings on the head. The erect hair is lighter coloured than in both *gressitti* and *yalomensis*, also the dorsum of propodeum and the first four abdominal segments are whitish.

The subspecies *gressitti* is only known from Bougainville. More material from the Solomon Islands may show that these islands contain further subspecies of *oresbios*, as indicated by the present male.

**Campsomeris (subg.?) oresbios yalomensis** n. subsp.

The species *C. oresbios* Tuijn, 1961 was recorded from the Bismarck Archipelago (New Britain) for the first time by Krombein (1968:10). Only a single male was at hand, and Krombein listed it as belonging to the nominate subspecies occurring in New Guinea, but as the New Britain male differed from New Guinea males he suggested that a distinct subspecies might inhabit the Bismarck Islands. The present material, including a female, supports this view.

T y p e s : Bismarck Isls., NEW BRITAIN: Yalom, 1000 m, ♂



holotype, 19 May, and 1 ♀, 15 ♂ paratypes, 9—23 May 1962. In the Zoological Museum, Copenhagen.

**Description:** ♂ holotype. Length 21.5 mm, fore wing 15.5 mm. Black, except the following which are yellow: lateral fourths of clypeus, narrow line along inner eye margin into lower part of ocular sinus, and a very narrow line along posterior orbit of eye. Dark ferruginous are mid part of mandibles, fore margin of clypeus, distal spots on tegulae, fore distitarsus and apices of other tarsal joints. Erect hairs on dorsum of head, thorax and abdomen and on sterna 4—6 are black or almost so, whereas hairs of the underside and legs are whitish except on tibiae and tarsi of mid and hind legs. Tomentum of thorax dull silvery. Wings strongly infumated, with dull coppery reflections. Genitalia as in *oresbios gressitti* Krombein (1963, Fig. 23) with parameres densely haired ventrally.

♂ paratypes. Length from 18 to 22 mm, fore wing length from 14 to 16 mm. The yellow mark on scrobi is very weak or absent in half of the material, but there is always a rudiment left at the entrance to ocular sinuses. Tegulae are totally black in two specimens, and in two specimens the fore tibiae are dark brownish rather than black. In some specimens even the hairs of sternum 3 are black; in others the hairs of the posterior part of propodeum and first tergum are whitish rather than black as in the holotype.

♀. Length 20 mm, length of fore wing 26 mm. Apparently not deviating significantly from the nominate form as described by Tuijn (1961: 231) and Krombein (1963: 588) except in the colour of the wings, which in the present female is very slightly infumated and clear yellowish, as seen in *C. formosa* females, rather than moderately infuscated and not yellowish as in *o. oresbios*. Spurs of hind tibiae are not at all spatulate.

**Remarks:** This new subspecies fills the gap between *oresbios oresbios* Tuijn from New Guinea and *oresbios gressitti* Krombein from the Solomon Islands (Bougainville). In the male sex *yalomensis* is differentiated from the other subspecies by its reduced yellow colouring on head and especially by the absence of yellow markings on abdomen (yellow spots on terga sometimes lacking in New Guinea males). The males of the new subspecies are closest to *gressitti*; both have the parameres densely haired ventrally, infumated wings, and more black hairs on head and body. In the female sex *yalomensis* is discriminated from *o. ores-*

*bios* by the light wing colour and probably by the non-spatulate spur of the hind tibiae. The female of *o. gressitti* is unknown.

Judging from the female sex this species might be placed in the subgenus *Laevicampsomeris*, but I hesitate to do so because the males deviate clearly from males of that subgenus, whereas they are very close to males of *C. microspatulata* Tuijn due to the characteristic shape of the first abdominal segment. *Oresbios* and *microspatulata* (including *fordi* Krombein as a subspecies, see below) may constitute a subgenus of their own.

#### **Campsomeris (subg.?) microspatulata** Tuijn, 1961

Solomon Isls., GUDALCANAL: Jonapau, 1 ♂, 29 June 1956, E. S. Brown (BMNH).

*C. microspatulata* is previously only known from New Guinea (Krombein, 1963:591, 1968:10).

The present male from Guadalcanal is somewhat larger than the known New Guinea males, e.g. total length: 18.5 mm., length of fore wing: 17 mm, against 14—16 mm and 13—14 mm, respectively, in New Guinean males according to Krombein, but otherwise it agrees closely with New Guinean males, the only differences are as follows: tarsi largely black, fore distitarsus with a tiny yellow spot dorsally, yellow band of sternum 2 covers about 1/4 to almost 1/3 of the surface and is only very slightly emarginate anteriorly in middle, yellow band on sternum 3 is not interrupted on midline, and the erect hair on vertex, scutum, scutellum, metanotum, and abdominal segment 5 is not black but grey.

*C. fordii* Krombein, 1963:591 from New Britain is very closely related to *microspatulata*. It differs practically only in colour, and judging from the male sex (females of *fordii* are unknown) *fordii* may better be regarded as a subspecies of *microspatulata* than as a separate species.

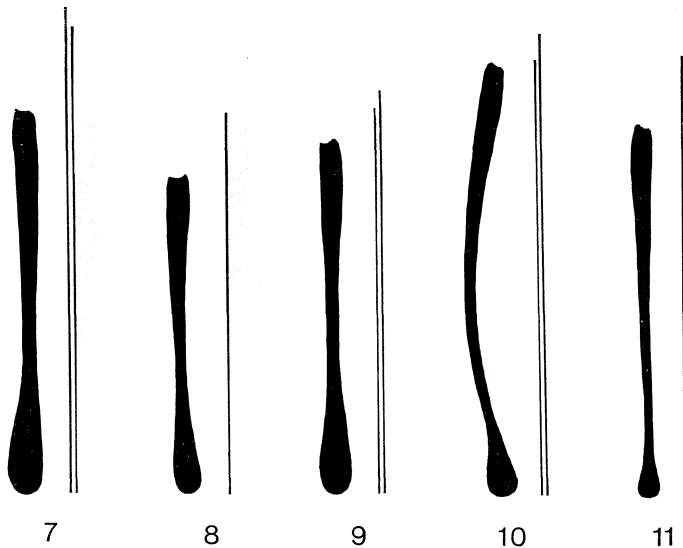
Subspecies of **Campsomeris (Radumeris) extranea** (Kirby, 1884)

In the following a number of new subspecies of this polytypic species is described. Previously no less than five subspecies were recognized by Krombein (1963: *extranea* (Kirby) from the Admiralty Islands, *toxopeusi* Betrem from Buru Is., Moluccas, *moluccensis* Betrem from Amboina, West New Guinea, New Britain and southern parts of New Ireland, *leverii* Krombein from some of the Solomons, and 1968: *shanahani* Krombein from the New Georgia group, Solomons).

The different subspecies are mainly distinguished by the extent of the yellow-orange integumental markings and by the colour of the vestiture. In other features such as punctuation, form of genitalia etc., and in characters presented here for the first time (posterior margin of the scapulae (Fig. 24) the dimensions of the hind femora (Figs. 28, 31), the shape of the longer spur of the hind tibiae (Fig. 7) and the density of the fringes of the terga (Fig. 36), all subspecies are very similar. Descriptions of these characters in common are therefore normally omitted below.

Table 3 contains a review of the occurrence of yellow maculations in the subspecies known from the Bismarck and Solomon Islands. Only the more noticeable and variable maculations are tabulated. The review may replace to some degree a rather lengthy discussion of subspecific differences in connection with the descriptions of the new subspecies.

The full scheme of yellow markings occurs in the light coloured specimens of *liberata* n. subsp. with abundant yellow spots and areas in contrast to the very dark *shanahani* at the other end of



Figs. 7—11. Longer spur of hind tibia in females of (7) *Campsomeris (Radumeris) extranea liberata* n. subsp., (8) *C. (R.) novocaledonica* Turner, (9) *C. (R.) radula* (Saussure), 10 *C. (R.) tasmaniensis* (Saussure), and 11 *Campsomeris (subg.?) inopinata* Krombein, holotype. The vertical lines show the median length of basitarsus.

**Table 3.** Occurrence of yellow integumental markings in subspecies of *Campsomeris (Radumeris) extranea* (Kirby).

	FEMALES							MALES							
	<i>liberata</i> , light	<i>liberata</i> , dark	<i>intermedia</i>	<i>moluccensis</i>	<i>extranea</i>	<i>leverii</i>	<i>shanahani</i>	<i>liberata</i> , light	<i>liberata</i> , dark	<i>intermedia</i>	<i>moluccensis</i>	<i>extranea</i>	<i>leverii</i>	<i>musauensis</i>	<i>shanahani</i>
Mandibles	●	●	—	—	—	—	—	●	●	●	+	+	+	+	+
Clypeus	●	●	+	+	+	—	—	●	●	+	+	—	—	+	—
Scrobes	●	●	—	—	—	—	—	●	+	●	+	+	+	+	+
Lamina frontales	●	●	—	—	—	—	—	always absent							
Ocular sinuses	●	—	—	—	—	—	—	always absent							
Antennal scapes	●	—	—	—	—	—	—	●	+	+	—	—	—	—	—
Vertex	●	+	+	+	+	+	+	●	+	+	+	+	+	+	+
Genae and temples	●	+	+	+	+	+	—	●	●	●	●	+	+	+	—
Pronotum, dorsum	●	●	●	●	+	—	—	●	+	+	+	+	+	+	—
— laterally	●	—	+	—	—	—	—	●	+	+	+	+	+	+	—
Mesoscut., centrally	always absent							●	—	—	—	—	—	—	
— posterolat.	●	●	●	—	—	—	—	●	+	+	+	+	×	—	—
Scutellum	●	—	●	—	—	—	—	●	●	●	●	●	●	+	+
Metanotum	●	—	+	—	—	—	—	●	●	●	●	●	+	+	—
Propodeum	always absent							●	+	+	—	—	×	—	—
Mesepisternum	always absent							●	+	+	—	—	—	—	—
Metepisternum	●	—	—	—	—	—	—	●	—	—	—	—	—	—	—
Tergum 1	●	●	●	●	●	+	—	●	+	+	+	+	+	+	+
— 2	●	●	●	●	+	+	—	●	+	+	+	+	+	+	+
— 3	●	●	●	●	+	+	—	●	+	+	+	+	+	+	—
— 4	●	+	+	+	+	—	—	●	●	●	●	—	●	—	—
— 5	●	—	+	—	—	—	—	+	—	+	×	—	—	—	—
— 6	always absent							+	—	●	—	—	—	—	—
Sternum 2	●	●	—	●	●	—	—	●	+	+	+	—	—	—	—
— 3	●	+	+	+	+	—	—	●	+	●	+	+	+	+	+
— 4	●	+	+	—	—	—	—	+	—	●	+	+	+	+	+
— 5	always absent							—	—	●	—	—	—	—	—
Fore femora	●	+	—	—	—	—	—	●	+	+	+	+	×	+	—
— tibia	●	+	—	—	—	—	—	●	+	●	+	+	+	+	+
— tarsus	●	+	+	—	—	—	—	●	●	●	+	+	+	+	+

Explanations. With two exceptions the signs (●), (+) and (—) indicate a gradual decrease in size of the markings from largest extension (●) to absent (—). In the case of the clypeus and sternum 2 the yellow marking is never absent and the signs have the following meanings; clypeus: (●) totally yellow, (+) yellow with a central spot, and (—) almost black; sternum 2: (●) almost totally yellow, (+) anterior rhomboidal spot and posterior band, and (—) posterior band alone.

(×) indicates that the marking is present in a few cases.

the scale. See also the Figs. 12—23 showing the colour pattern in some of the subspecies.

*Extranea* has a rather close relative in *tasmaniensis* (Saussure, 1854) from New Guinea and Australia, as only slight differences in punctuation and male genitalia separate the species (see Krombein, 1963). However, the females of the species are easily distinguished by the shape of the longer spur of the hind tibiae. *Tasmaniensis* has a slender spur as long as the basitarsus and with a short spatulate tip (Fig. 10), whereas the spur of *extranea* is stouter, shorter than basitarsus and the spatulate apical part is long (Fig. 7). In this respect *extranea* is thus closer to *radula* (Saussure) from Australia (Fig. 9) and another relative *novocaledonica* Turner from New Caledonia, New Hebrides and the Loyalty Islands (Fig. 8).

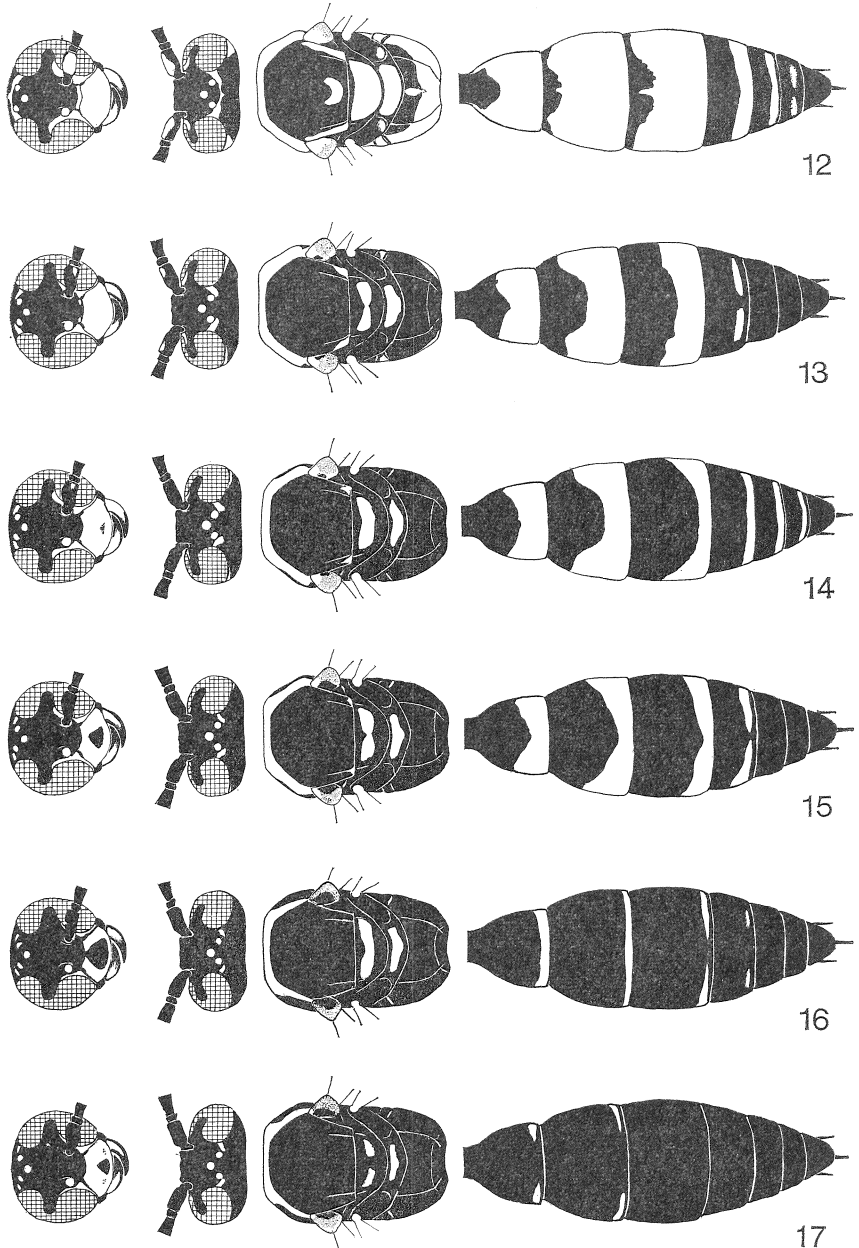
**Campsomeris (Radumeris) extranea liberata** n. sp.

(Figs. 7, 12, 13, 18—22)

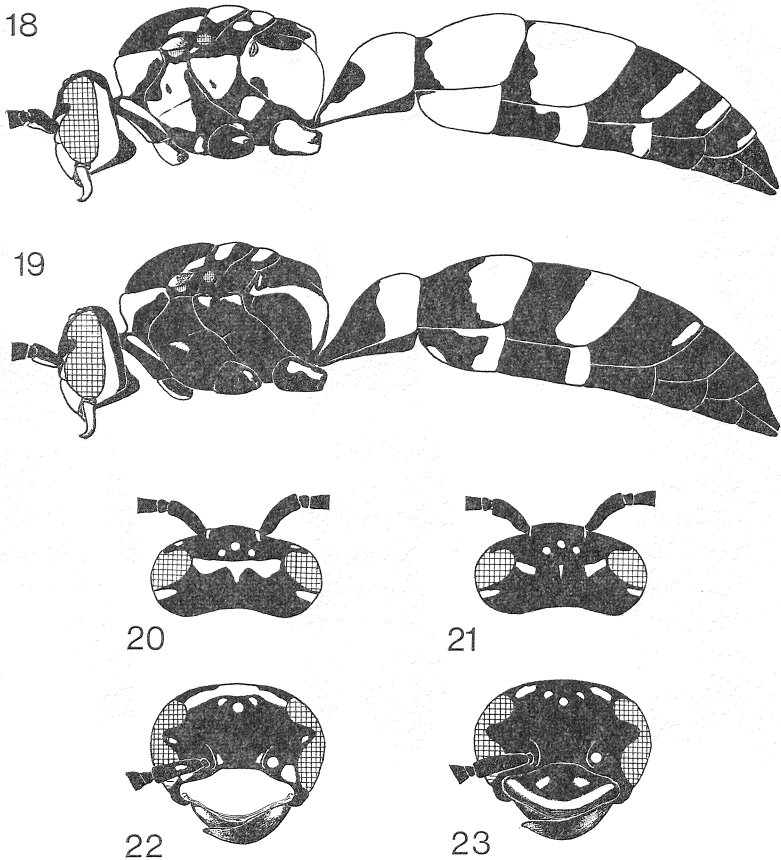
**Type s.** Bismarck Isls., HERMIT ISLS.: Luf Is. and Manon Is., ♂ holotype, 26 June 1962, ♀ allotype, 4 ♀, 9 ♂ paratypes, same date, in coconut plantings and in vegetation on the beach. In the Zoological Museum, Copenhagen.

**Description.** A remarkable variation of the yellow integumental maculations occurs. The specimens with the greatest extension of the yellow colour are chosen as holotype and allotype.

♂ holotype. Black, with pale yellow maculations as follows. Head: mandibles except reddish tips, clypeus, scrobi and a narrow line reaching halfway into the ocular sinus, scapus below, mark on vertex consisting of two lateral spots narrowly connected with a median triangular spot, genae broad below as well as behind eyes. Thorax: pronotum except irregular black spots on lateral surface, spot on propleuron, lateral stripes on mesoscutum from opposite of hind corners of pronotum to posterolateral corners, median halfmoon shaped spot posteriorly on mesoscutum, scutellum, median part and small spots on lateral parts of metanotum, a small median spot on horizontal part and almost all of posterior and lateral parts of propodeum, large area in upper half and spot below on mesepisternum, upper plate and spot below on lower plate of metepisternum, tegulae at base. Legs: yellow all over except black on large parts of mid coxae, spots on hind coxae, narrow stripes dorsally on basal half of fore and mid femora,



Figs. 12—17. Colour pattern in males of some subspecies of *Campsomeris (Radumeris) extranea* (Kirby), dorsal view. (12, 13) *liberata* n. subsp., light and dark specimen, respectively, (14) *intermedia* n. subsp., (15) *moluccensis* Betrem, (16) *leveri* Krombein, and (17) *mussauensis* n. subsp.



Figs. 18—19. Colour pattern in males of *Campsomeris (Radumeris) extranea liberata* n. subsp., light and dark specimen, respectively, lateral view. — Figs. 20—22. Head of females of *C.(R.) extranea liberata* n. subsp., (20, 21) light and dark specimen, respectively, dorsal view, (22) light specimen, frontal view. — Fig. 23. Head of female of *C.(R.) extranea intermedia* n. subsp., frontal view.

broader stripe dorsally in full length of hind femora, stripe ventrally on hind tibiae, under side of hind tarsus as well as basally on joints 2—5. Abdomen: dorsal surface and lateral parts of tergum 1, terga 2 and 3 except narrow irregular bands anteriorly, posterior bands on terga 4—6 progressively narrower, that of tergum 4 covering about posterior one third of the surface, that of tergum 6 narrower, indistinctly limited and darker coloured, whole surface of sternum 2, apical band on sternum 3, and posterolateral triangles on sternum 4.

Hairs white, in places with a slight orange hue, except black on abdominal segments 5—6; in segment 4 some black hairs mixed with the white ones. Adpressed pubescence of thorax silvery.

♂ paratypes. The male paratypes may be divided into three groups according to the extent of yellow maculations; (1) two specimens coloured almost as the holotype (Figs. 12, 18), (2) two specimens of an intermediate position, but both with a considerable reduction of the yellow markings, and (3) five specimens which are the darkest representatives (Figs. 13, 19).

(1) One male of this group is exactly as the holotype. The other one almost so, but the bands of terga 5 and 6 are only indicated and the yellow area of the posterior surface of the propodeum is somewhat reduced.

In (2) and (3) the yellow maculations are considerably reduced. Most impressive is the reduction of the yellow areas of terga 1—3 into posterior bands and the large yellow areas of the sides of thorax into small spots. Some small but distinctive spots are lacking or clearly modified, viz. the band on vertex reduced to the usual lateral spots, spot in middle of mesoscutum lacking (in one specimen represented by two tiny spots), lateral mesoscutal stripe restricted to the posterolateral corners, spot on median horizontal part of propodeum lacking, and tergum 6 and hind tarsus are totally black.

In addition the darkest males (3) are lacking the following maculations or the maculations are modified: spot on propleuron and spots on mes- and metepisternum are lacking, spots on posterior part of propodeum are absent and the yellow area of the lateral parts is restricted to the hind corners, apical band of tergum 5 lacking, yellow area of sternum 2 divided into an anterior spot and an apical band, band of sternum 3 interrupted in the middle, yellow triangles of sternum 4 are absent, bands of terga 1—3 reduced to cover only posterior half to two thirds of the surface often with a rather deep emargination anteriorly in the middle, in the legs the yellow areas are reduced by black colour in dorsal stripes on all femora, ventral stripes on all tibiae, underside of mid tarsus and all of hind tarsus.

The intermediate paratypes (2) have retained reduced maculations as follows: spot on propleuron, small spot in middle of mesepisternum, spot above on metepisternum, two large spots on posterior surface of propodeum, narrow band on tergum 5, and



the anterior spot on sternum 2 is not fully out of connection with the posterior band.

♀ allotype. Black, with yellow maculations as follows. Head: (Figs. 20, 22) mandibles at base, clypeus except the reddish fore margin, spot on scrobi, minute spot on inner rim of antennal sockets, minute spot in ocular sinus, spot on antennal scapus, band on vertex consisting of two lateral spots broadly connected with a median triangular spot, small spots on genae below, and stripe along upper part of outer eye margins. Thorax: dorsum of pronotum and small spot on lateral surface of pronotum, posterolateral corners of mesoscutum, two large spots on scutellum, band on metanotum, spots above on upper plate of metepisternum, minute spot at base of reddish tegulae, line below distally on fore femora, stripe dorsally on fore and mid tibiae, spots on all joints of fore tarsus. Abdomen: terga 1—4 except extreme anterior margin and anterolateral corners, posterior one half of tergum 5, posterolateral triangles on sterna 2—4, largest on sternum 3 where the triangles almost meet medially.

Hairs fulvous on vertex, dorsum of thorax, terga except tergum 1 anteriorly, and sterna 5 and 6; in other parts whitish.

♀ paratypes. Two specimens agree almost exactly with the allotype, but both have the band of metanotum narrowly interrupted in the middle, and in one specimen only the posterior three fourths of tergum 4 is yellow. In the remaining two paratypes the maculations are considerably more reduced.

The darkest one lacks the following spots or these are modified: spot in ocular sinus, spot on antennal scapus and spot on lower genae are lacking, band on vertex is reduced to two lateral spots with a rudiment of a triangular spot in the middle (Fig. 21), spot on lateral surface of pronotum and the spots on scutellum and metanotum are lacking, in fore legs the maculations on femora and tibiae are reduced to small spots and only distitarsus is clear yellow, the other tarsal joints black and reddish, stripe on mid tibiae lacking, in abdomen only posterior half of tergum 4 is yellow and tergum 5 and sternum 4 are black.

The remaining paratype is an intermediate. It lacks only the spot on genae below, and the spots on scutellum; on vertex the lateral spots are still in connection with the median triangle, but the connection is narrow; on metanotum two spots are present although very small.

Length of fore wing 12—15 mm in male, 14—17 mm in female.

**Remarks.** This subspecies is immediately distinguished from other subspecies by the great extension of yellow colour as occurring in the lightest specimens, both in males and females. With regard to the darkest specimens these are distinguishable from other subspecies by the totally yellow clypeus, but in some other respects dark *liberata* may resemble *intermedia* subsp. nov. and *moluccensis* Betrem very much (Table 3, Figs. 13—15). Between *intermedia* and dark *liberata* an virtual overlapping takes place in the yellow ornamentation. Most noticeable is the presence of yellow spots on scutellum and metanotum in the female of *intermedia* and the presence of yellow bands on terga 5 and 6 and sternum 5 in males of *intermedia*, while these markings are absent in *liberata*.

**Character Release.** The great variation in the material of *liberata* is in strong contrast to the uniformity in colour found in the other subspecies of *extranea* as far as can be deduced from published material. Only in two subspecies, viz. *moluccensis* and *leveri*, is a reasonable material known. According to Krombein (1963:587) some variation occurs in *leveri* but the degree is inferior to the remarkable variance in *liberata*, and no doubt a certain uniformity is the normal condition in *extranea* populations as well as in populations of Scoliids in general. The great individual variation in *liberata* is a most unusual situation. Probably we have to do with a continuous variation, but it is not quite unlikely that a kind of polymorphism is involved, as at least the males seem to fall into rather distinct groups.

Another unusual condition of the *liberata* population on Luf and Manon is the abundance of individuals in the islands compared to the relative rareness of other subspecies. The collectors inform me that *liberata* was very common and they could have collected many specimens if they had concentrated on it. However, 15 specimens were collected within a few hours, which is an enormously high number compared to the results in other islands where the same kind of collecting by the same collectors was done for days or weeks: one specimen only in each of the islands of Mussau, Lavongai, New Ireland, Duke of York and New Britain.

A third interesting characteristic of the *liberata* population is the fact that a fair proportion of its individuals is much more

brightly coloured than any other *extranea* subspecies known to-day. It is therefore likely that this part of the population is also more brightly coloured than the probable founders. Of course we do not know where the founders came from, but possibly New Guinea was the original source region, and even if the founders came from the Admiralty Islands or from regions further away from the Hermit Islands, they have probably been rather dark, viz., much like *moluccensis* Betrem, known from New Guinea and New Britain. If this is true the colour pattern of the *liberata* population is released only in one direction, mowing from a rather dark pattern to a vivid yellow pattern, at least in a part of the population, whereas other parts are apparently still unchanged.

The above-mentioned peculiar conditions call for an explanation, even though we have only a very limited knowledge about the case. Both the great variation in the colour pattern and the abundance of specimens indicate immediately that some kind of release is involved. The strong forces of selection, which in other areas keep the *extranea* populations precise and distinct, may be presumed to have been, and probably still are, weaker in the islands now inhabited by the flourishing population of *liberata*. We may have to do with the phenomenon termed "character release" by MacArthur and Wilson (1967:165,186), which is an increase in variance of one or more phenotypic characters due to an enlargement of the niche by absence of competitors or other species whose presence would be restricting.

Both Luf and Manon are very small islands, only a few square kilometres each. They are isolated, lying about 260 km from New Guinea and about 170 km from Manus, the largest island in the Admiralties. Manon is covered by a coconut plantation, whereas Luf, in addition to coconut areas, has some remains of an original forest in the centre, which reaches a height of about 250 m and is of volcanic origin. Such conditions indicate that the fauna of the islands is poor and it can hardly be doubted that the founders of the *liberata* population encountered fewer interacting species than in the source region, and the exposure to a relaxed selection pressure, probably in combination with the effect of a small population size, resulted in this case in a considerable increase in the variation of the colour of the integument. This ecological release through the absence of a normal number of interacting species (other Scoliids as competitors, parasites, predators etc.)

may also give a fair explanation for the high population density found in the islands.

As mentioned above, the integumental colour pattern departs only in one direction out from the conditions presumed to have occurred in the founders. This may indicate that the character is not quite free from a selection pressure, or that the possibilities for a change in the character are not equal in either direction from the original conditions in the founders, or both. We do not know what forces really created the one-sided change in the character in *liberata*. To regard a selection pressure as the force would be in contradiction to the rather convincing theories set forth above on character release, unless we happen to have taken a sample of the population in a moment of very rapid evolution and in a very unstable state, which admittedly could be the case. On the other hand it is not unrealistic, and perhaps true, that what has happened is a return to a primitive state of the character, not an evolution. It is likely that the founders in the source region were controlled by a selection force preventing them from being brightly coloured, but released from this pressure after the invasion of the small islands in question, and bearing a limited tendency towards a light colour pattern, nothing prevented the appearance and survival of light coloured individuals in their offspring and a new balance could be established with allowance for a wide variation in the character.

Cases of character release are very seldomly recorded. Some more or less obvious cases are mentioned by van Valen (1965) when he reported on his investigations on some birds and discussed the connection between morphological variation and width of ecological niche. None of the examples seems to be exactly like the case mentioned here, and further investigations on the *liberata* population would certainly be rewarding.

**Campsomeris (Radumeris) extranea intermedia** n. subsp.

(Figs. 14, 23, 24, 28, 31, 36)

**T y p e s.** Bismarck Isls., LAVONGAI: Banatam, holotype ♀, 17 March 1962, allotype ♂, same data except 19 March. — NEW IRELAND: Nago Island near Kavieng, paratype ♂, 13 Jan. 1962. In the Zoological Museum, Copenhagen.

**D e s c r i p t i o n.** ♀, holotype. Mandibles at base, fore margin of clypeus, antennae below, outer parts of tegulae, fore tarsus and distal ends of mid and hind tarsal joints reddish, otherwise

black with the following yellow maculations: Head (Fig. 23): two small spots on disk and a line anteriorly on clypeus, two large spots on vertex, line on genae along upper part of eyes. Thorax: dorsum and minute spot laterally on pronotum, posterolateral corners of mesoscutum, two spots on scutellum, two smaller spots on metanotum, tegulae at base, minute spots on fore distitarsus, horizontal part of tergum 1, terga 2 and 3 except narrow band anteriorly and anterolateral corners, posterior half of tergum 4, and tiny spots on posterolateral corners of sterna 3 and 4.

Hairs on top of head, dorsum of thorax, all terga except tergum 1 anteriorly, and sterna 5 and 6, orange; other parts mainly white-haired.

♂. Black except yellow maculations as follows (Fig. 14). Head: mandibles except tips, clypeus except minute black spot in the middle, scrobi and a line into ocular sinus, minute spot distally on antennal scapus, two spots on vertex adjacent to eyes, stripe on genae broad below, attenuating above. Thorax: dorsum and stripe laterally on pronotum, posterolateral corners of mesoscutum, band on scutellum and metanotum, small spot laterally on hind corners of propodeum, minute spot in middle of mesepisternum, tegulae at base, fore coxae, small spots on mid and hind coxae, all femora below, all tibiae above, fore tarsus above, mid basitarsus and mid distitarsus (in paratype from Nago Island in addition a spot on joint 2 of mid tarsus). Abdomen: band on terga 1—6 progressively decreasing in width, in terga 1 and 2 approximately covering posterior one half, in tergum 6 covering only about one fourth of the surface and the band is illdefined, in sterna 2—5 progressively narrower posterior bands, in sternum 2 in addition a rhomboidal spot anteriorly.

Hairs in general whitish in allotype with exception of brownish to black hairs on terga 5—7; in paratype from Nago Island the hairs on dorsum of thorax and on terga 1—4 has a light reddish hue.

**Remarks.** This subspecies takes an intermediate position among the subspecies of *extranea* known from the Bismarck Islands (Table 3, Figs. 12—15, 17). It is rather clearly lighter than *moluccensis* from New Britain and the southern parts of New Ireland and much lighter than *extranea* from the Admiralty Islands. Compared to *liberata*, described above, *intermedia* is much darker than the lightest coloured *liberata*, but in several respects it is

lighter than the darkest representatives of this subspecies, e.g. the female with spots on scutellum and metanotum and the male with yellow markings on abdominal terga 5—6 and sterna 4—5. With regard to yellow markings on abdominal segment 6 male *intermedia* is richer coloured than even the lightest specimens of *liberata*.

**Campsomeris (Radumeris) extranea moluccensis** Betrem, 1928  
(Fig. 15)

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♂, 8 July 1962. — DUKE OF YORK: Manuan, 1 ♂, 19 July 1962.

Both specimens agree well with the description given by Krombein (1963:584). None of them are yellow on abdominal tergum 5 (Fig. 15). The male from New Britain is not yellow on mid basitarsus above. The male from Duke of York has a small anterior spot on sternum 2 in addition to the posterior band.

**Campsomeris (Radumeris) extranea ? n. subsp.**

Solomon Isls., STEWART ISLANDS: Sikaiana I. (about 110 miles E. of Malaita), 1 ♂, 4 Oct. 1963, M. McQuillan (BMNH).

This male has reduced yellow markings on legs and lower part of genae as in *leverii* Krombein, but it differs from this subspecies by the presence of yellow bands on terga 1—5 and indication of one on tergum 6. It is in this respects much alike the subspecies *moluccensis* and *intermedia* from the Bismarck Islands.

Krombein (1963:584) recorded two similar males from Bougainville under the name of *moluccensis*, but it may be found that all three specimens represent a distinct subspecies with a discontinuous range.

**Campsomeris (Radumeris) extranea leverii** Krombein, 1963  
(Figs. 16, 25)

Solomon Isls., GUADALCANAL: Marau, 1 ♀, 1 Oct. 1928, on ♂-flowers of coconut, R. W. Paine (BMNH); Rua Vatu, 1 ♂, 19 Nov. 1954, E. S. Brown (BMNH).

The present female deviates in a few structural characters from other *extranea* females mentioned in this paper, and although the differences are very small they may indicate a slight departure in morphology from other *extranea* subspecies. The scapulae are somewhat less furrowed and the more or less impunctate posterior margin of the pronotum is narrower and not as well set off (Fig.

25) as in other *extranea* females, and with regard to the longer spur of hind tibiae this is rather clearly more slender in the present female and with the spatulate distal part narrower, as the spur is slightly more than 13 times longer than wide rather than only about 11—12 times longer than wide.

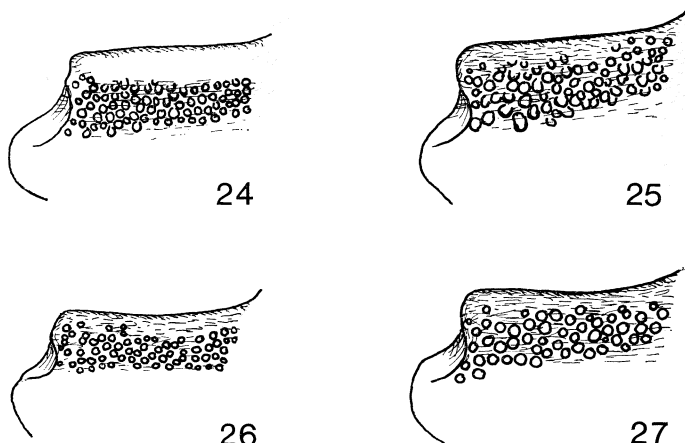
***Campsomeris (radumeris) extranea mussauensis* n. subsp.**

(Fig. 17)

**Types.** Bismarck Isls., MUSSAU: Talumalaus, 1 ♂, holotype, 19. Jan. 1962. In the Zoological Museum, Copenhagen.

**Description.** ♂. Black, yellow maculations as follows: mandible at base (reddish at apex), clypeus apart from a small black spot in the middle, narrow line along inner eye margins to ocular sinus, a pair of spots on vertex adjacent to eyes, narrow line along outer eye margins, dorsum of pronotum, streak on lateral surface of pronotum, two spots on scutellum and a band on metanotum, tegulae at base, fore coxae beneath, stripes ventrally on fore femora and dorsally on fore tibiae and basitarsi, two stripes on both sides of mid femora, a narrow stripe dorsally on basal half of mid tibiae, stripe below on hind femora, and small posterolateral triangles on tergum 1 and sterna 2 and 3.

Vestiture greyish-brown to black on head and thorax above,



Figs. 24—27. The sculpture near the dorsal margin on the right corner of pronotum in females of (24) *Campsomeris (Radumeris) extranea intermedia* n. subsp., (25) *C.(R.) extranea leveri* Krombein, (26) *C.(R.) novocaledonica* Turner, and (27) *Campsomeris (subg.?) inopinata* Krombein, holotype.

more whitish below and basally on the legs; hairs of abdomen black, but mixed with some brownish hairs on segment 1 and in the posterior fringes of sterna 2 and 3. Adpressed pubescence of thorax silvery. Punctations, genitalia etc. as in other subspecies of *extranea*.

Length 15 mm, fore wing 12 mm.

Female **unknown**.

**Remarks.** This is the darkest subspecies so far recorded from the Bismarck Islands. Especially impressive are the reductions which have taken place in the yellow markings on the abdomen (Fig. 17). It is clearly less yellow ornamented than *leveri* Krombein (Fig. 16) from some of the Solomon Islands, but *shannahani* Krombein, 1968, also from the Solomons, is very similar although slightly darker: metanotum without spots, fore femora without spots and clypeus black in large areas not just with a median triangular spot (Table 3).

**Campsomeris (Radumeris) novocaledonica** Turner, 1918

(Figs. 8, 26, 29, 32, 35)

Loyalty Isls., UVÉA: 1 ♀, 1 ♂, 3 and 30 June 1934, "Monsunen".  
— LIFU: Shépénéhé, 1 ♂, 27 June 1934, "Monsunen". All in the Zoological Museum, Copenhagen.

The male from Balade (Mus. Dom. Guérin, Mus. d'Hist. nat. Paris) which was misidentified as the male of *Campsomeris formosa* Guérin by Saussure and Sichel (1864: 207, 301) has also been examined. It belongs to *novocaledonica* as already suggested by Turner (1918: 237) on the basis of the description.

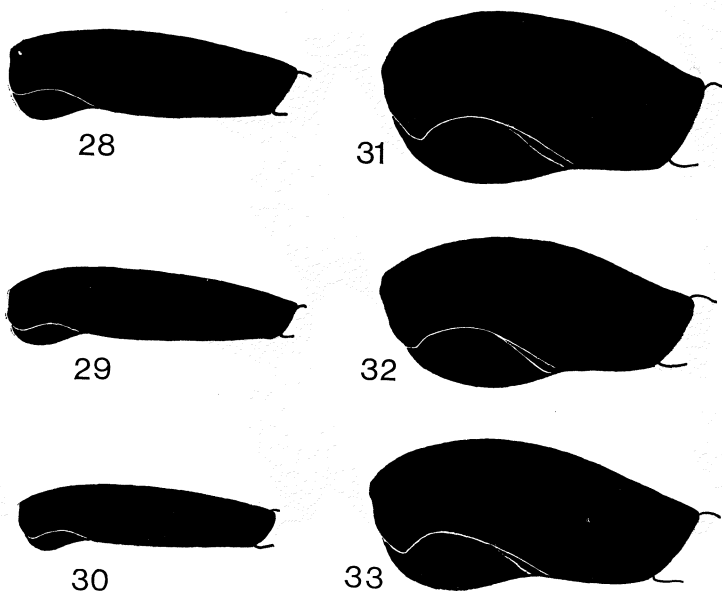
The present female agrees with the redescription given by Betrem (1928: 90) while the males deviate to some extent from Betrem's writings. The following orange-yellow maculations deviate from or are additions to those mentioned by Betrem: mandibles at base, clypeus yellow all over without a black spot in the centre, narrow line along outer orbits, stripe laterally on pronotum, fore coxae, fore tibiae dorsally, and posterior band of sternum 2 fully connected with the anterior rhomboidal spot. However, with regard to the conditions of clypeus and sternum 2 these agree with the characters used in Betrem's key, couplet 10b (1928: 76). Further investigations may show that we have to do with several subspecies in the area of New Caledonia, the Loyalty Islands and the New Hebrides.



*Novocaledonica* belongs no doubt to the subgenus *Radumeris* and among the species of this group it is very similar to *extranea* Kirby, but small differences occur and *novocaledonica* is apparently a distinct species.

The females of the two species are very alike, e.g. is the longer spur of the hind tibiae of the same shape (Figs. 7, 8), but in the present female of *novocaledonica* the scapulae are almost evenly rounded rather than with a shallow furrow as in *extranea* and the posterior impunctate margin of pronotum is narrower and less sharply limited (Fig. 26) than in *extranea* (Fig. 24) perhaps with the exception of specimens of *leveri* Krombein (Fig. 25). Further the shape of the hind femora is more slender than in *extranea* (compare Figs. 31 and 32), and the hair fringes of the posterior margins of the terga less dense, e.g. with only about 13 hairs in one millimeter of fringe on tergum 2 compared to 16—20 hairs in *extranea* (Figs. 35, 36), seven specimens examined.

Also the males of the two species are very similar in their morphology, but measurements of the hind femora show a differ-



Figs. 28—33. Hind femora of males (left) and females (right) of (28, 31) *Campsomeris (Radumeris) extranea intermedia* n. subsp., (29, 32) *C.(R.) novocaledonica* Turner, and (30, 33) *Campsomeris (subg.?) inopinata* Krombein, holotype.

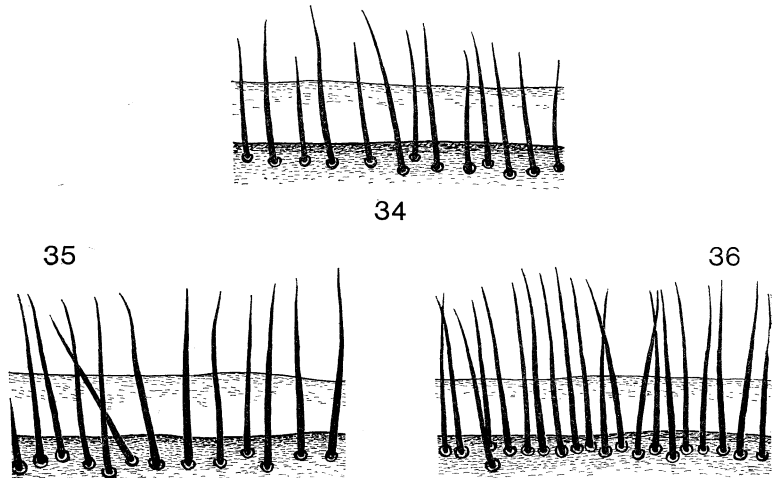
ence that may be significant (Figs. 28, 29). It was found that the ratio of length and height is 4.1 in two males and 4.6 (abnormal?) in one male of *novocaledonica* but not greater than 3.8 in 15 males of *extranea*, with a variation down to 3.4. With regard to the colour pattern the males of *novocaledonica* also fall somewhat outside the scheme found in *extranea*, as they have yellow markings even on tergum 7 and an extensive red colour of tibiae and tarsi. The latter attribute is less pronounced in the females, which on the other hand have an outstanding fulvous colour of the hair, even on the underside.

***Campsomeris* (subg.?) *inopinata* Krombein, 1962**

(Figs. 11, 27, 30, 33, 34, 37)

Solomon Isls., RENNELL: Niupani, 1 ♂, 22 Aug. 1962; Hutuna, 2 ♂, 26 and 27 March 1965, T. Wolff leg.

Although it is often difficult to associate separately collected males and females it seems likely that the present males belong to *inopinata* Krombein, an endemic from Rennell previously only known from the female sex. They agree closely with the female in the black colour and as the fauna of Rennell is rather limited the chance that the males belong to another species previously unknown from Rennell is very restricted.



Figs. 34—36. One millimeter of the median part of the hair fringe of tergum 2 in females of (34) *Campsomeris* (subg.?) *inopinata* Krombein, holotype, (35) *Campsomeris* (*Radumeris*) *novocaledonica* Turner, and (36) *C.(R.) extranea intermedia* n. subsp.

**Description.** ♂. Integument black except mandibles, lower edge of clypeus, tegulae in distal half and the very tips of fore femora, tibiae and tarsal joints brownish. Abdomen with rather strong, thorax with much weaker bluish and purple reflections. Erect vestiture mainly white to light grey except for some dark hairs intermixed on vertex, brownish-black hairs on mesoscutum, scutellum, terga 3 and 4 and quite black hairs on terga 5—7 and sterna 6—7. Adpressed pubescence of thorax silvery, rather long and not very dense. Wings dark smoky. Punctuation not characteristic; clypeus punctate laterally and above; area frontalis and spatium frontalis densely punctate, each puncture deep and distinct, but punctures close together almost meeting; front before ocelli and into the ocular sinuses impunctate, only in one specimen are there two small punctures before front ocellus; mesoscutum moderately punctate, in the middle posteriorly almost impunctate in a small area; disk of scutellum with 35—44 punctures; median part of metanotum with 32—40 punctures; median horizontal part of propodeum with distinct punctures at a distance from each other as long as the diameters; lateral horizontal areas of propodeum densely punctate all over.

Wings with second recurrent vein present; antennae long and slender, flagellar joint 3 slightly more than two times longer than wide, joint 10 about 2.4 times as long as wide; vertex not immediately declivous behind the ocelli; sternum 1 almost flat with only a poorly indicated longitudinal elevation posteriorly, median length about 1.3 the apical width; legs comparatively slender, e.g. hind femora 4.05—4.19 times as long as high (Fig. 30); genitalia without special characteristics (Fig. 37).

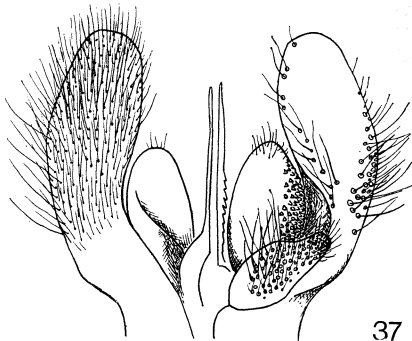


Fig. 37. Male genitalia of *Campsomeris* (subg.?) *inopinata* Krombein.

**R e m a r k s.** The combination of the black integumental colour and the presence of the second recurrent vein immediately distinguishes the present males from other species of the area. If the colour is disregarded they are superficially strikingly similar to *extranea* males, but small differences appear, viz. *extranea* has a somewhat shorter antenna with joint 3 of flagellum less than twice as long as wide and joint 10 of flagellum only about 2.1 times as long as wide; the hind femora of *extranea* are stronger, 3.4—3.8 times as long as high (Fig. 28), and the adpressed pubescence of thorax, especially easily seen on sides of propodeum and metepisternum, is shorter and denser than in *inopinata*. With regard to the dimension of the hind femora *inopinata* males are very similar to *caledonica* Turner (Fig. 29).

Our knowledge of the males does not throw much light on the subgeneric assignment of *inopinata*. As suggested by Krombein (1962, 1963) on the basis of the female alone, *inopinata* may belong to a separate subgenus which is expected to be erected in due course by Dr. J. G. Betrem. I have had the opportunity to examine the holotype through the courtesy of Dr. Paul H. Arnaud, California Academy of Sciences, but I am not able to add much of importance to the description offered by Krombein. However, it may be noted that *inopinata* agrees closely with species assigned to the subspecies *Radumeris*, viz. *radula*, *tasmaniensis*, *extranea* and *novocaledonica* in characters hitherto regarded as of subgeneric value except for the shiny rather than mat surface of the terga and the rather evenly rounded scapulae with only a trace of a low furrow.

With regard to the shape of the scapulae, *novocaledonica* may be rather similar to *inopinata* (Figs. 26, 27). Also with regard to the density of the hair fringes of the terga the two species are rather similar, having greater space between the hairs of the fringes than found in other species of *Radumeris* known to me, see Figs. 34—36; in the holotype of *inopinata* and in the single female seen of *novocaledonica* there are 13 setae in 1 mm of fringe in the middle of tergum 2, whereas I have counted in *extranea liberata*, *e. intermedia* and *e. leverii* 16 to 20 (7 specimens), in *tasmaniensis* 17 to 21 (5 specimens) and in *radula* 19 setae (2 specimens).

As mentioned above, the shape of the hind femora in the males is also similar in *inopinata* and *novocaledonica* males and it may

be added that the same is the case with regard to the females (Figs. 28—33). Such characters of the legs, however, will normally not be of any subgeneric value.

In *inopinata* the shape of the longer spur of the hind tibiae is clearly different from *novocaledonica* and *extranea* but almost the same as in *tasmaniensis*, although comparatively shorter, viz. far from as long as basitarsus, see Figs. 7—11.

Future studies of more material may show if any of the characters mentioned above (scapulae, hair fringes, tibial spurs) are of subgeneric value. If not, it seems as if only the condition of the surface of the terga is of importance and practically the only character separating *inopinata* from members of *Radumeris*. However, it is not unlikely that shiny rather than mat terga may appear by parallelism in different, not closer related groups, and therefore this character must not be overestimated.

Krombein (1962:103; 1963:548, 592) thinks that species like *palauensis* (Turner) from the Palaus and *ovalauensis* (Saussure) from Fiji is close to *inopinata* and mentions some of their affinities, including the rounded scapulae and the shininess of the terga. I have been able to study a series of *ovalauensis* (8♀, 5♂ in the collections of BMNH) and it is correct that *ovalauensis* and *inopinata* are similar in many respects, but in others they do not agree and *inopinata* may not at all be closer to *ovalauensis* (and the related *palauensis*, which I have not seen) than to members of *Radumeris*, especially *novocaledonica*.

Females of *ovalauensis* differ in the following more or less important characters: (1) with a transverse band of rather close punctures through the ocellar triangle, (2) hind corners of pronotum near the tegulae without a rather clearly limited, impunctate area, (3) median ridge of mesepisternum not very sharp, somewhat curved, directed towards a point behind the pronotal corners, (4) the upper part of mesepisternum is rather bulging near the pronotal corners, (5) the longer spur of the hind tibiae is practically non-spatulate and very short, scarcely more than half as long as basitarsus, and (6) the setae of epipygium are almost scale-like, rather spread and adpressed the surface. The males of the two species are rather similar and only minor differences may be detected, e.g. in punctuation and genitalia. Both females and males disagree widely in colour, and they are lacking the second recurrent vein of the fore wing.

**Campsomeris (Campsomeriella) collaris mcgregori**

Cockerell, 1927

Philippines, BALABAC: Dalawan Bay, 1 ♀, 8 Oct. 1961. — TAWI TAWI: Tarawakan, 1 ♀, 16 Nov. 1961.

This Philippine subspecies differs only very slightly from *collaris quadrifasciata* (F.) known from the greater Sunda Islands. It is white haired only on head except occiput, propleura and forecoxae, whereas *quadrifasciata* in general has more white hair on venter of thorax and fore and mid femora, sometimes with a weak reddish tinge. In the present specimens the thick setae of the epipygium are longer and more densely placed than in other *collaris* specimens examined.

**Campsomeris (Campsomeriella) collaris injubata** n. subsp.

**T y p e s :** Philippines, URSULA I. (8°20'N, 117°31'E): ♀ holotype, 2 ♀ paratypes, 2 Oct. 1961. In the Zoological Museum, Copenhagen.

**D e s c r i p t i o n .** ♀. Structure, colour of integument, punctuation etc. as normally present in subspecies of *collaris*. Punctures on median horizontal area of propodeum, however, largest and somewhat more concentrated in the middle than generally found in *collaris* and the number of punctures is relatively high, varying from 53 to 64. In *c. mcgregori* and *c. quadrifasciata* normally less than 50, in some cases not more than 30 punctures are present. On scutellum and metanotum the number of punctures varies from 50 to 60 and from 29 to 37, respectively. Density and length of hairs as in *collaris* except on pronotum where the density of the hairs is only about half of the density in *collaris* and the hairs do not form the usual conspicuous ruff. Hairs are black except as follows: very dark brown or black with brownish apices on underside and legs, reddish brown on mandibles, dusky or sooty white on front of head, antennal scapes, occiput, pronotum and anteriorly on mesoscutum, on pronotum the hairs are gradually more fuscous basally. Fore wings brownish apically and in radial, first cubital and anterior and apical part of second cubital cells, basally less infumated and evenly coloured as are the hind wings.

Length 15—17 mm, length of fore wing 11—12 mm.

Male unknown.

**R e m a r k s .** This subspecies is distinguished from its neighbour relatives, *c. mcgregori* and *c. quadrifasciata*, by its dusky white rather than fulvous and white hair, respectively, on prono-

tum and head except occiput, and by its dark brown to black rather than white hair on propleura, forecoxae etc. The low density of the hair on pronotum also clearly differs from the condition in other subspecies of *collaris*.

In its general features this subspecies also closely resembles taxa of an easterly distribution, from Celebes via New Guinea to the Solomon Islands, e.g. the subspecies of *hirticollis* F. and *manokwariensis* Cam., but the relative dense punctation on the dorsum of the thorax clearly excludes *injubata* subsp. nov. from this group ranked as a section, *Hirtimeris*, by Betrem (1967). In eight specimens of *hirticollis* examined, the number of punctures on scutellum, metanotum and median horizontal area of propodeum varies from 10—36, 8—16 and 16—28, respectively. The hair colour and especially the thin vestiture of pronotum also distinguish *injubata* from these eastern taxa. The thick setae of the epipygium are placed rather far apart in *injubata* and their density agrees better to the conditions in *hirticollis* (only 4 females seen, including the holotype) than in *collaris*.

The condition of the hair on pronotum is remarkable and unusual in the genus and the state of this character may indicate that the specimens from Ursula belong to a distinct species. (I ignore the possibility that the specimens could be extreme variants of *c. mcgregori*). At the moment, however, I prefer to place them on the subspecies level with other subspecies of *collaris*, but someone may doubt that the conditions (ecology, isolation, small population etc.) of the island could have produced a distinct race. This is on the other hand not unlikely when the conditions of the island are taken into account. Ursula I. is less than 0.5 km<sup>2</sup>, situated at about 18 km from nearest larger islands, Palawan and Bugsuk. Probably it is at least not older than late Pleistocene, in glacial periods it was connected with other islands of the Palawan chain, in interglacials it was probably submerged. The vegetation consists of fair remains of primary forest. There is no human population.

**Campsomeris (Campsomeriella) manokwariensis manokwariensis** Cameron, 1906

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♀, 8 July 1962; Raubaul, 1 ♂, 25 July 1962.

This species is very closely related to *hirticollis* (F.), and since practically only colour differences occur it might be taxonomically

more correct to join together *hirticollis* and *manokwariensis* and their various races in one and the same polytypic species, *hirticollis* (F.) (= section *Hirtimeris* of Betrem, 1967) which would be a natural Papuan counterpart, eastwards from Celebes, to the more westerly Indomalayan *collaris* (F.).

**Campsomeris (Campsomeriella) manokwariensis manni**

Krombein, 1963

Solomon Isls., SAVO: 1 ♂, 7 Oct. 1956, E. S. Brown (BMNH).

This male is registered under the name of *manni* Krombein, 1963: 606, known from other islands of the Solomon group, although it differs from males of *manni* (which according to Krombein are similar to typical *manokwariensis*, see the description by Krombein, 1963:604) in the following characters: it has (1) no spot on lateral declivous surface of pronotum, (2) no narrow apical line on scapulae adjacent to tegulae (occasionally absent in *m. manokwariensis*), (3) no apical yellow band on tergum 4, (4) yellow bands of terga 1—3 narrower, and (5) no posterolateral spots on sterna (occasionally absent in *m. manokwariensis*).

**Campsomeris (Megacampsomeris) prismatica** (Smith, 1855)

Philippines, PALAWAN: Pinigisan, 600 m, 3 ♂, 4—11 Sept. 1961; Tagabung, 1050 m, 2 ♀, 16 and 19 Sept. 1961. — JOLO: 1 ♀ without data, Coll. E. André, Mus. d'Hist. nat., Paris.

This is the first precise record of this species from the Philippines, as Betrem (1947:415) only briefly and without documentation included the Philippines in its range of distribution.

The colour of the hair and the abdominal bands of the males are somewhat orange rather than yellow and in the female the hind margins of the terga 2—4 are red-brown rather than black.

Both deviations, especially the conditions in the males, points in the direction of *C. (M.) limbata* (Saussure and Sichel, 1864) known mainly from high mountains of Malaya, Java and Borneo (Betrem, 1941:77). However, the colour of the hair and the abdominal bands may vary rather much and *limbata* may not be retainable as a distinct species.

The present males deviate slightly from the description given by Betrem (1928:151, described as the male of *lindenii* Lep., and 1941:79). All five specimens have a stripe on genae along lower eye margin, a small spot on the posterolateral corners of meso-scutum, two small lateral spots on scutellum, and forecoxae



beneath yellow-orange. These deviations may not indicate a distinct race, as I have seen males from Java with the same additional markings.

**Campsomeris (Phalerimeris) aurulenta aurulenta** (Smith, 1855)

Philippines, MINDANAO: Sapamoro, 1 ♀, 17 Dec. 1961 — TAWI TAWI: Tarawakan, 1 ♂, 1 Nov. 1961.

The female from Mindanao is a true representative of the subspecies *aurulenta* Smith, as emphasised by Betrem (1928:98) and Bradley and Betrem (1967:298), as its antennae and tibiae are black and the vestiture of the very base of the abdomen and of femora 3, partly, is white.

Probably the male from Tawi Tawi also belongs to *a. aurulenta*, but it is a small and not very typical specimen with a rather whitish vestiture and clear yellow, not orange yellowish, markings. The antennae are black and all tarsi and tibia 3 reddish brown.

**Campsomeris (Phalerimeris) aurulenta defectiva** Betrem, 1928

Moluccas, AMBOINA: 3 ♀, 5 ♂, February 1922, Th. Mortensen. — BANDA: 1 ♂, June 1922, Th. Mortensen. In the Zoological Museum, Copenhagen.

Betrem (1928:99) described this taxon on the basis of males alone and regarded it as a separate species. Betrem's material came from various islands of the Moluccas, e.g. Ceram, Ternate, Batjan and Amboina.

The present males agree well with the description, only the colour of the vestiture deviates. Betrem says briefly that the hairs of the underside of thorax are white, but in the specimens before me also the sides of thorax bear white hairs and whitish hairs dominate the occiput and genae, all coxae and femora, tergum 1 anteriorly, sternum 1, and sternum 2 anteriorly. The orange bands of the terga are broad, in terga 1—3 covering about  $\frac{2}{3}$  of the dorsal surfaces.

The females, previously undescribed, resemble the males closely in the distribution of white hairs, and are thus the same as described above, but in addition the tibiae of the females bear white hairs. The ground colour is black as usual in *aurulenta*, but the following parts are reddish-brown: the mandibles, the tip of clypeus, the posterior halves of the tegulae, all tarsi, the thorns of the tibiae, the apical bands on terga 1—4, and the lateral hind corners of the sterna 2—4, narrowly. The bands of the terga are

broad, covering almost the whole dorsal surface of tergum 1, almost posterior  $\frac{2}{3}$  of the terga 2 and 3, and posterior  $\frac{1}{4}$  of tergum 4.

The females from the Moluccas listed by Betrem (1928: 98) under *aurulenta* belong apparently to the subspecies *defectiva*, at least those from Batjan. Those from Buru might be *aenigmatica* Betrem if this taxon holds. The identity of the males from the Moluccas (Ceram and Batjan) mentioned by Betrem under *aurulenta* is uncertain. If the information about the localities is correct, it is obvious that males of the Moluccan subspecies of *aurulenta* are strongly variable. Betrem mentions that the apical tergal bands of his Moluccan females are broader than in *aurulenta* and that the hairs of the underside of the thorax are white.

**Campsomeris (Phalerimeris) aurulenta dalawana** n. subsp. <sup>m</sup>

**Types:** Philippines, BALABAC: Dalawan Bay, 1 ♂ holotype, 13 Oct. 1962, 2 ♂, 1 ♀, paratypes, 7 and 13 Oct. — PALAWAN: Pinigisan, 600 m, 1 ♂, 1 ♀, paratypes, 1 and 9 Sept. 1962. In the Zoological Museum, Copenhagen.

**Description:** This species differs from other subspecies of *aurulenta* only in colour.

♂. Black, but with the following exceptions. Reddish brown are antennae except scapes, hind tibiae and tarsi, and epipygium. Orange yellow in various shades are mandibles at base, clypeus, area frontalis, scrobi, ocular sinuses below, genae below, scapes, pronotum dorsally and a spot laterally, propleuron, tegulae, posterolateral corners of mesonotum, two large spots on scutellum, small spot on metanotum, fore coxae, tips of middle and hind coxae, fore and middle trochanters, femora ventrally, fore and middle tibiae and tarsi, and apical bands on terga 1—6 and sterna 2—5 (also sternum 6 in one paratype). The tergal bands cover  $\frac{1}{3}$  to  $\frac{1}{2}$  of the dorsal surfaces in terga 1—3, and about  $\frac{1}{3}$  of the dorsal surfaces in terga 4—5; the band on tergum 6 is interrupted in the middle in one of the paratypes. The vestiture is orange, but rather whitish posteriorly and ventrally on head, sides and underside of thorax, propodeum, anteriorly on tergum 1, on sternum 1 and on coxae and femora.

♀. Black, with the following exceptions. Reddish-brown are antennae, all tibiae and tarsi. In the female from Pinigisan the hind margins of sterna 2—4 are also brownish rather than black. Dark orange are the apical bands of terga 1—4; the bands are

comparatively narrow as in *a. aurulenta*, mainly situated posterior to the submarginal hair-band; in the middle they are wider but never covering more than  $\frac{1}{3}$  of the dorsal surfaces.

**Remarks:** The present material represents in my opinion an easily distinguished race, and accordingly I have described it formally, but I am well aware that *a. aurulenta* Smith as well as *a. tondanensis* Betrem, 1928 have been recorded from Palawan, and if the old locality labels give true records, no less than three subspecies of the same species occur in Palawan, which is an unlikely situation. However, I have taken the liberty to doubt the old material mentioned by Betrem (1928:98—99) and have regarded the present new material as more valuable when discussing the subspeciation of *aurulenta*. Betrem's material belonged to the Zoological Museum of Hamburg but was unfortunately destroyed during World War 2.

The females of the new subspecies differ from *a. aurulenta* and *a. defectiva* by red-brown antennae and tibiae, and furthermore, *defectiva* females have much wider tergal bands. Female *dalawana* resembles the subspecies *tondanensis* Betrem in the red-brown colour of the antennae, but *tondanensis* has black tibiae and narrower tergal bands of which that of tergum 4 may be absent. Furthermore, females of the new subspecies differ from all the other subspecies mentioned by their totally dark orange vestiture.

In the male sex *dalawana* is distinguished from all other *aurulenta* subspecies by the combination of red-brown antennae and orange band on tergum 6. *Tondanensis* has red-brown antennae, but no band on sixth tergum, and the situation is the opposite in case of *iridescens* from Aru Island (Betrem, 1928:100).

A female from the island of JOLO in the Sulu Sea (Museum of Natural History, Paris, Coll. J. Pérez 1915) is close to *dalawana*, but is not included in the type material because it deviates somewhat from the Palawan and Balabac paratypes by having very wide tergal bands, covering roughly posterior half of the dorsal surfaces of terga 1—4, almost as in *defectiva*, and red-brownish apices of the femora.

**Campsomeris (Phalerimeris) loriae loriae** (Mantero, 1899)

Bismarck Isls., — NEW BRITAIN: Yalom, 1000 m, 1 ♀, 23 May 1962. — NEW IRELAND: Danu, Kalili Bay, 1 ♀, 29 April 1962.

These two females are very close to females from New Guinea as described by Krombein (1963: 593) and regarded as a separate

subspecies, *loriae loriae* (Mant.), whereas they differ clearly from females of the subspecies occurring in parts of the Solomon Islands, *loriae millironi* Krombein (1963:596). Their tibiae are thus ferruginous rather than black, the apical fringes on terga are broad and dense covering the horizontal surface of tergum 1 rather than only half of the surface and a little less than the apical third of the exposed parts of terga 2—5 rather than only one sixth, and the fringe of tergum 5 and the pygidial setae are dark orange rather than dark brown. I am therefore recording the two females under the nominate subspecies name.

However, it is likely that a distinct subspecies occurs in the Bismarck Islands with females very close to *l. loriae* from New Guinea and males like those of *l. millironi* from the Solomons. Such a male has already been recorded from New Britain by Krombein (1963:598).

**Campsomeris (Phalerimeris) loriae millironi** Krombein, 1963

Solomon Isls., GUADALCANAL: Rua Vatu, 1 ♂, 20 Nov. 1954, E. S. Brown (BMNH); Nalimbili R., 1 ♂, 12 Sept. 1963, McQuillan (BMNH).

**Campsomeris (Phalerimeris) ferrugineipes pembedtoni**  
Krombein, 1963

Bismarck Isls., NEW BRITAIN: Valoka, 2 ♂, 5 and 13 July 1962, Vaisisi, 6 ♂, 9 July 1962; Puktas, Baining Mts., 1 ♂, 22 Nov. 1957, J. Smart (BMNH). — NEW IRELAND: Danu, Kalili Bay, 1 ♀, 2 ♂, 29 April 1962. — LAVONGAI: Banatam, 1 ♀, 14 ♂, 16—25 March 1962.

This is the first record of this species from Lavongai. The material does not deviate from that of New Ireland and New Britain in the case of the males. The single female from Lavongai is exactly similar to the female from New Ireland (both have the venter of the abdomen black as in the paratype from New Ireland (Krombein, 1963: 600)), but they are both different from the allotype and the paratype from New Britain which have legs and venter of abdomen castaneous according to Krombein. Both females recorded here have very dark castaneous, almost black legs and they are thus very close to the nominate subspecies from New Guinea.

**Campsomeris (Micromeris) marginella modesta** (Smith, 1855)

Philippines, PALAWAN: Uring Uring, 1 ♀, 9 Sept. 1962. — URSULA I.: 1 ♂, 2 Oct. 1962.

Previously known from several of the Philippine islands, including Palawan.

According to the note by Betrem (1928:137) some variation of the colour markings occurs in the males. The present male has an almost totally yellow clypeus, scrobi are yellow and a stripe on pronotum laterally and on hind tibia dorsally is also yellow, whereas dorsum of pronotum is almost black only with yellow spots in the middle and at the hind corners; bands on sterna are all interrupted in the middle.

**Campsomeris (Tristimeris) javana** (Lepeletier, 1845)

Philippines, PALAWAN: Uring Uring 2 ♂, 22 and 28 July 1962.

These Philippine males belong together with the darkest specimens of *javana* males (Betrem, 1928:109; 1937:93). They lack the yellow band on tergum 4, and sternum 4 is totally black, the yellow band on scutellum is narrow and almost interrupted in the middle, the spot on metanotum is small and the yellow spots of the scrobi are of minimum size.

The males may represent a distinct Philippine subspecies. However, more material is needed before this question can be solved. This is the first record of the species from the Philippines.

**Trisciloa saussurei** Gribodo, 1893

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♀, 5 ♂, 6—10 July 1962.

This is the first record of this large and beautiful Scoliid from the Bismarck Islands. Previously it was known only from New Guinea and the Moluccas.

The six specimens are not quite in agreement with the descriptions by Betrem (1928:62) and Krombein (1963:607) which themselves deviate on several points. The deviations mainly concern the integumental colour. However, it is obvious that some misprints occur in Krombein's paper, viz. an interchanging of black and red in case of the legs and the abdomen, and Krombein apparently failed to mention the colour of the antennae which probably are redbrown in his material, not black as might be understood from the description. But even if these errors are taken into account, the present material deviates from Krombein's description.

In the female the following parts are black or almost black rather than red: clypeus, spatium frontale, tergum 1 and sternum 1, whereas the scrobi and the femora are red rather than black.

Additionally the present female has two small black bare spots laterally on tergum 2, and terga 3 and 4 bear two elliptical bare spots each rather than one large spot.

The males are in better agreement with Krombein's description. They deviate as follows: scrobi red rather than black, terga 2 and 3 with a posterior blackish band, although faintly expressed in tergum 2, and sterna 2—4 are partly infuscated, sternum 2 has an anterior median spot in connection with a posterior broad band, sternum 3 has a narrower posterior band, and sternum 4 bears an unsharply limited anterior spot.

Betrem's description based on Moluccan material suits the present specimens much better, especially the males. The female deviates by the almost red clypeus, spatium frontale, and tegulae.

Future investigations may demonstrate that a distinct subspecies occurs in the Bismarck Islands.

***Liacos analis palawana* Micha, 1927**

*Liacos palawana* Micha, 1927 : 63 (♀, not ♂, Nord-Palawan).

*Liacos philippinensis* Micha, 1927: 65 (♂, Mindanao); *syn. nov.*

*Scolia (Liacos) semperi* Betrem, 1928: 172, new name for *philippinensis* preocc., ♂♀, Cebu, Luzon); *syn. nov.*

Philippines, PALAWAN: Uring Uring, 1 ♀, 1 ♂, 4 and 14 Sept. 1961; Pinigisan, 600 m, 5 ♂, 3—11 Sept. 1961. — MINDANAO: Sapamoro, 2 ♀, 4 ♂, 2—22 Dec. 1961. — BALABAC: Dalawan Bay, 1 ♂ tentatively referred to this subspecies, 10 Oct. 1961.

Micha (1927:63, 65) described two Philippine subspecies of *analis* F., viz, *palawana* from Palawan (1 ♀, holotype, and 2 ♂) and Balabac (1 ♂), and *philippinensis* from Mindanao (1 ♂). Also Betrem (1928:167) kept the two taxa separate, listing *palawana* as a subspecies of *dimidiata* Guérin, 1838 (now regarded as a synonym of *analis* F.) and *philippinensis* as a distinct species under the new name *semperi*. (The name *philippinensis* was preoccupied in the genus *Scolia* to which it was transferred by Betrem).

The examination of the fair number of specimens of *analis* collected in Palawan and Mindanao by the Noona Dan Expedition showed that only one subspecies was involved and indicated that *palawana* and *philippinensis* were synonyms, as Palawan and Mindanao are type localities. The females could be referred to *palawana* and the males to *philippinensis*. The description of male paratypes of *palawana* presented by Micha did not fit the present males from Palawan.

The type series of Micha's subspecies belong to the Zoological Museum, Berlin. A comparison of the holotypes selected by Micha confirms the view that *palawana* and *philippinensis* are synonyms (syn. nov.); *palawana* has page priority and is chosen as the valid name because *philippinensis* cannot be revived. I have kept the status of *palawana* on the subspecies level as Micha did, in contrary to Betrem (1928).

*Palawana* is normally easily distinguished from other subspecies of *analis* by the colour of abdomen. In both sexes terga 1—4 are black and tergum 5 black anteriorly with at least the posterior half orange as are the remaining terga. (Micha described the tergum 5 in the holotype of *palawana* as being yellow-red all over, but this is an error; in fact the anterior one third is black). The colour of the sterna corresponds to the colour of the terga, except that the black colour extends a little further backward; sternum 5 is thus mainly black with orange hairs only on the posterior margin and sometimes only on the posterolateral corners.

The identity of the three males from Palawan and Balabac referred to *palawana* by Micha is uncertain as they do not fit the colour scheme mentioned above. They all have more or less of tergum 4 covered by orange hairs. One of the specimens from Palawan has as much as the posterior one half orange, the other Palawan specimen has about posterior one fifth orange, and in the male from Balabac only the posterior margin of the tergum bears a few orange hairs.

If the labelling of Micha's specimens from Palawan is correct it is clear that *palawana* is variable to some extent. However, old labels without definite origin are always doubtful with regard to the locality statements, and as the two males from "Nord-Palawan" treated by Micha are very similar to males of a new subspecies found in Tawi Tawi, I think that the labelling cannot be trusted fully in this case.

The locality of the male from Balabac is probably correct. At least the Noona Dan Expedition collected a similar male in that island. The population may be found to be distinct with regard to colour, taking an intermediate position between *palawana* and the new subspecies from Tawi Tawi described below.

The subspecies *palawana* is apparently distributed over large parts of the Philippines (Palawan, Mindanao, Negros Occidental, Cebu, Luzon) as listed by Balthazar (1966).

**Liacos analis tawiensis** n. subsp.

**T y p e s.** Philippines, TAWI TAWI: Tarawakan, 1 ♂, holotype, 6 Nov. 1961, 7 ♀, 8 ♂, paratypes, 22 Oct.—16 Nov. 1961. In the Zoological Museum, Copenhagen.

This subspecies is mainly distinguished from other subspecies of *analis* by the coloration of the abdomen.

**D e s c r i p t i o n.** ♂. Black except integument and hairs orange as follows: tergum 4 in about posterior one half of the surface, terga 5—7 totally, sternum 4 in posteriolateral corners, sternum 5 in larger parts of posteriolateral corners, the areas meeting in the middle, and sterna 6—7.

One paratype (Oct. 24) deviates from this colour scheme as tergum 4 is black all over except for a few orange hairs at the hind margin and tergum 5 is black anteriorly in the middle. With regard to colour this specimens is thus close to males from Balabac mentioned above under the subspecies *palawana*.

♀. Coloration almost as in the male. The orange area of tergum 4 is rather narrow in the middle, but the black colour anteriorly never reaches the hind margin. In sternum 4 the extension of the orange colour on the posteriolateral corners varies rather much and in one specimen (Oct. 26) the orange areas meet in the middle and no black hairs are therefore present at the hind margin of the sclerite. Also sternum 5 is normally orange in a larger area than in the male, especially medially; in the specimen just mentioned (26 Oct) the visible part of sternum 5 is orange all over.

**R e m a r k s.** This new subspecies is different from *palawana*, the other Philippine subspecies, by having the terga 1—3 rather than 1—4 black, and it is different from other subspecies of *analis* by having larger parts of the abdomen black, viz. all of the terga 1—3 rather than only tergum 1 or 1+2. *Amboinae* Micha known from Amboina and North-Celebes according to Betrem (1928:167) appears rather close to *tawiensis*, as this subspecies has an almost black tergum 3 with only the hind margin orange.

**Diliacos ribbei hurdi** (Krombein, 1963)

Solomon Isls., SANTA ISABEL: Nagolau, 1 ♂, 7 March 1964, M. McQuillan. — GUADALCANAL: Tapananje, 3 ♀, 2 ♂, 10—23 Dec. 1953, J. D. Bradley; Aruligo, 1 ♀, 1 ♂, 8 March 1963, P. Greenslade; Kukum, 1 ♂, 4 Jan. 1964, M. McQuillan. All BMNH.



***Diliacos ribbei ribbei*** (Betrem, 1928)

Bismarck Isls., NEW BRITAIN: Ralum, 5 ♂, F. Dahl; Kiningunang, 1 ♂, C. Ribbe (all Zoological Museum, Berlin). — NEW IRELAND: Lemkamin, 900 m, 1 ♀, 15 April 1962.

The female is the first one collected in New Ireland. It is fully in accordance with the short descriptive notes recently presented by Krombein (1968:14).

***Diliacos ribbei stueberi*** (Krombein, 1963)

Bismarck Isls., MUSSAU: Boliu, 1 ♂, 15 Febr. 1962.

The identification of the males of the closely related species *ribbei* (Betrem, 1928) and *quadriceps* (Smith, 1859) and their various subspecies is very difficult and the present naming of a single male from Mussau may certainly be queried. However, I am fairly certain that it belongs to *ribbei stueberi*, known from New Guinea, rather than to the subspecies *ribbei*, known from New Britain and New Ireland. As to the punctuation the present male falls in the middle of the range of variation as given by Krombein (1963:617), e. g. with 28 punctures on disc of scutellum and 19 on median part of metanotum, and the mesepisternal punctures are large, deep and subcontiguous. I have had the opportunity to compare the specimen directly with a paratype of *ribbei* as well as with the males mentioned above.

The present male has two recurrent veins in the fore wing, which points in the direction of *Diliacos quadriceps* and leads to the subspecies *larradiformis* (Smith, 1864) from New Guinea when the punctuation is taken into account. However, as there is some variation in the development of the second recurrent vein closing the third discoidal cell, both in *quadriceps manus* (Krombein, 1963:615) and *ribbei stueberi* (Krombein, 1963:616) this character cannot be of decisive taxonomic value.

***Diliacos glabrata praslini*** (Bradley, 1957)

Bismarck Isls., NEW BRITAIN: Valoka, 2 ♂, 7 and 10 July 1962. — DYAUL: Sumuna 2 ♀, 2 ♂, 6—8 March 1962. — MUSSAU: Talumalaus, 5 ♂, 19 Jan. 1962; Boliu, 1 ♂, 15 Feb. 1962.

Solomon Isls., RENNELL: Kagaba, 1 ♂, 5 April 1965, T. Wolff; Hutuna, 1 ♂, 31 March 1965, T. Wolff; Hutuna, 1 ♀, 4 Nov. 1933, J. D. Bradley (BMNH). — GUADALCANAL: Honiara, 1 ♂, 26 Sept. 1953, J. D. Bradley; Poha River, 1 ♀, 25 July 1954, E. S. Brown; Tapananje, 12 ♂, 2 ♀, 10—23 Dec. 1953, J. D. Bradley;

Mt. Austen, 1 ♂, 5 Sept. 1962, M. McQuillan. — MALAITA: Araki, 1 ♂, 24 Sept. 1963, M. McQuillan. — SANTA ISABEL: Holokama, 1 ♀, 4 March 1964, M. McQuillan; Tatamba, 2 ♀, 28 Sept. and 6 Oct. 1965 (Roy.Soc.Exp.). All BMNH.

In the males from Mussau the punctuation, especially on mesoscutum, is less strongly impressed and the number of punctures is lower than in typical *praslini* specimens such as found in Dyaul and New Britain and as described by Krombein (1963:621). Thus, specimens are present with only 25 punctures on disc of scutellum and 22 punctures on metanotum. Just as the female from New Britain mentioned by Krombein (*l.c.*), one of the females from Dyaul is somewhat transitional to *glabrata glabrata* (Micha), as there is only one puncture in the ocellar triangle.

The material from Rennell is placed here with some doubt because the punctuation of the specimens points clearly in the direction of the nominate subspecies known from New Guinea. Both males are small, fore wing length 9.5 and 10.0 mm, and they have only 21—22 and 12—14 punctures on scutellum and metanotum, respectively, rather than 30—35 and 25—33 punctures as described by Krombein in *praslini*. The female has 20 punctures on scutellum and 13 punctures on metanotum, which is clearly lower than in *praslini* (25—45 and 20—35, respectively). Krombein recorded 3 females from Rennell without mentioning any departure from normal *praslini*.

The specimens from Guadalcanal agree with Krombein's description except that some males have up to 54 punctures on scutellum rather than only up to 35 as found by Krombein in his *praslini* males.

***Microscolia macrocephala*** (Gribodo, 1893)

= *bella* (Rohwer, 1921)

Philippines, PALAWAN: Uring Uring, 1 ♂, 25 Aug. 1961; Pini-gisan, 600 m, 2 ♂, 3 Sept. 1961. — BALABAC: Dalawan Bay, 1 ♂, 1 ♀, 9 and 13 Oct. 1961. — TAWI TAWI: Tarawakan, 10 ♂, 3 ♀, 23 Oct.—10 Nov. 1961.

There are no major differences to be observed between the males from the three different localities except that the specimen from Balabac has a very faint bronzy shade over the violaceous colour of the wings, but the colour is far from typically bronzy as found in *Microscolia bellina* (Rohwer, 1921). More or less white hairs are rather abundant in all specimens on the head and the under-

side of the thorax. The degree of punctation may be illustrated by the number of punctures on disc of scutellum (28—42) and metanotum (21—30). Fore wing length varies from 8 to 12 mm.

The female from Balabac differs considerably from those collected in Tawi Tawi. It is more sparsely punctate on vertex, in fact almost impunctate, the impunctate stripes on mesoscutum are larger, and the terga, especially tergum 2, are somewhat less punctate. The description of *bella* Rohwer (1921:78) fits this female very nicely and it seems also very likely that it is very close to *macrocephala* Gribodo (1893:169) according to the original description and to the recent notes given on the holotype by Bradley (1958:101). It is a large specimen with a fore wing length of 15 mm.

The three females from Tawi Tawi are smaller (fore wing lengths 9.5—11.5 mm) and, as already mentioned, more richly punctured, especially on vertex, and were it not for the deep violaceous rather than bronzy wings they might be identical with *bellina* Rohwer (1921:80) "Frons convex and together with vertex and occiput with rather small, well-separated punctures". As far as can be judged from the short description given by Betrem (1928:205) they probably agree with his interpretation of *macrocephala* (= *bella*), "Vertex tief, fein weitläufig punktiert", and no doubt they are the same as called *m. macrocephala* Gribodo by Micha (1927:89). This appears from Micha's description but also from a direct comparison with the specimens handled by Micha (2 ♀, Panaon, Coll. Böttcher, in the Zoological Museum, Berlin).

I suppose, that all females of the present material are conspecific although substantial differences are present. Differences of the same kind occur also among the females mentioned under various species names applied to other known Philippine material. The differences in punctation may in my opinion be explained by differences in size of the specimens, the degree of punctation decreasing along with an increase in size. Such cases are not unusual, but naturally more material is needed to prove or disprove the theory. If I am wrong the Balabac female (and the Balabac male?) is probably the true *macrocephala* (incl. *bella* as a synonym) whereas the Tawi Tawi females and the accompanying males, perhaps also those from Palawan, stand without a name so far, or, if the colour of the wings should prove not to be a decisive taxonomical character, the material would hardly be separable from *bellina* Rohwer.

Betrem (1928:205) regarded *bella* (Rohwer) as a synonym of *macrocephala* (Gribodo), but this synonymization was later set aside by Bradley (1958:102) after a study of the holotype of *macrocephala*. Bradley furnished his paper with an addition to Betrem's key to females of *Microscolia* (1928) in order to separate *macrocephala* from *bella*. Bradley's few notes are not convincing because the diagnostic characters of importance in the key extension (4c) are all to be found in *bella* according to the description of this species by Rohwer, e.g. compare the descriptions of the vertex: Rohwer says "Vertex and posterior orbits practically impunctate" while Bradley uses "Vertex very sparsely punctate, almost smooth" which is another wording but the meaning is hardly different. *Bella* (Rohwer) is therefore still to be regarded as a synonym of *macrocephala* (Gribodo).

#### ***Microscolia papuana* (Micha, 1927)**

Bismarck Isls., NEW BRITAIN: Valoka, 12 ♂, 11 July 1962; Ralum, 1 ♂, 1896—97, Dahl (Zoological Museum, Berlin). — DYAUL: Sumuna, 1 ♂, 6 March 1962.

The present lot of males agrees well with the description given by Krombein (1963:625). The following variation in the sculpture was observed: 17—27 punctures on scutellum and 12—15 punctures on median third of metanotum, and these conditions sustain the view that *papuana* from the Bismarck Islands is a taxon clearly different from the New Guinean *maindroni* Betrem, 1928 (Betrem, 1933:252; Krombein, 1963:633) with 32—35 punctures on scutellum and 19—30 punctures on metanotum, but as the difference is merely a matter of degree of punctation it might be advisable to regard *papuana* and *maindroni* as subspecies of one and the same species. This species may turn out to be distributed also outside of New Guinea and the Bismarck Islands. Thus the Philippine males of *macrocephala* (Gribodo), mentioned above, may hardly be distinguishable from *maindroni*.

#### The identity of ***Scolia pygmaea* Saussure, 1858**

Betrem (1928:207) synonymized *papuana* Micha with *Scolia* (*Lacosi*) *pygmaea* Saussure (1858:217) on the basis of an examination of a male belonging to the Saussure collection in Geneva. Betrem admitted that the male did not fit the description well, but nevertheless he regarded the specimen as the type (lectotype) of *pygmaea* and thereby established the synonymy.

Betrem's view was not followed by Krombein (1963:625) expressly on advice from Dr. Bradley "who studied the type of *papuana* some years ago and considers that it is not the same as *pygmaea*". However, Bradley's information to Krombein is not in accordance with the notes published by Bradley himself as late as 1958:103, "The holotype of *papuana* (Micha) is correctly placed by Betrem (1928:207), as a synonym of *pygmaea* Saussure."

In order to straighten out this case I have searched for relevant material. I have been able to find six males of interest in this connection, viz. three males from the Saussure collection in Geneva, two males from the Drewsen collection in Copenhagen, and one male perhaps with some connection with the Sichel collection in Paris. The material from Saussure's own collection and from the Drewsen collection is of the greatest interest, because it is stated in Saussure and Sichel (1864:127) that material of *pygmaea* is found in "Mus. Saussurianum et Domini Drewsen". The origin of the type material is not mentioned in the original description, but Drewsen is mentioned as a general source of material in the Introduction (Saussure, 1858:194). The type locality is said to be "La Nouvelle-Hollande (Swan River)".

The above material consists of no less than four different species. The high number involved is not surprising as it appears from the original description as well as from Saussure and Sichel (*l.c.*) that Saussure must have had a heterogenous material at hand. Unfortunately none of the specimens studied here are labelled in such a way that they must be regarded unambiguously as syntypes.

1) Only one of the specimens is labelled "Swan River", the type locality. It is a male found in the collections of the Museum of Natural History, Paris, with the following information on old handwritten labels: "S. pygmaea: Sauss. S.S.: C.132" and on younger labels, partly printed: "Museum Paris/Swan River/Collection Léon Fairmaire/Nouv. Holl. 1906". It is a male of *Campomeris (Australelis) anthracina* (Burmeister).

Although this specimen bear labels showing some connection with old material of *pygmaea*, perhaps originating from the Sichel collection, it must be disregarded as a syntype right away.

2) The male mentioned by Betrem (1928) and Bradley (1958) and which belongs to the Saussure collection in the Museum of Natural History, Geneva, is labelled "N. Holl." and "Mus. Godefr."

and bears holotype and lectotype designations by Betrem and Bradley, respectively. It is a male of *Microscolia papuana* Micha, as could be expected. It was designated as lectotype by Betrem (1928:207).

This specimen has no doubt never been a part of the type series. It cannot be a syntype for two reasons: (1) the labelling does not unambiguously prove it, on the contrary the mention of Mus. Godeffroy disproves it, and (2) the specimen does not fit the description. It is black-haired all over rather than covered with grey hair, and it has three cubital cells rather than two which must be the condition in *pygmaea* as it was placed in the subgenus *Lacosi* by Saussure. It is unlikely that Saussure made a mistake about the number of cubital cells and in my view, which is sustained by Dr. Betrem and Prof. Bradley, the specimen cannot be a true syntype.

Accordingly the designation of it as a lectotype by Betrem is invalid (the Code Art. 74a), and thereby it also follows that *papuana* Micha is not a junior synonym of *pygmaea* Saussure as set forth by Betrem (1928).

3) From the Saussure collection in the Museum of Natural History, Geneva, I have examined two conspecific males besides the male mentioned above standing under the name *pygmaea*. One of these males is labelled "N. Holl.", the other is unlabelled. The one with the label is deprived of its genitalia, but the genitalia of the unlabelled specimen shows that it belongs to *Scolia* (*Scolia*) (see Betrem and Bradley, 1964) as it has dense brushes of setae covering the base of the volsellae. According to Dr. Betrem, who kindly examined one of the specimens, both males belong to the African *Scolia* (*Scolia*) *hottentotta* (Saussure, 1858). (This species is erroneously placed in *Scolia* (*Discolia*) by Betrem and Bradley, 1964:95).

Both males agree fairly well with the description of *pygmaea*, being small, forewing length less than 10 mm, and white-haired to a large extent, but as they both have some red colourings on the head (clypeus partly, ocular sinus, and narrow line on outer orbits) it is evident that they belong to the variant described by Saussure ("Bouche et orbite rousses"). Thereby follows that neither of these two males is a syntype (the Code Art. 72b) and unfortunately neither of them can be designated as a lectotype.

Dr. Betrem informs me that males of *hottentotta* vary in the red

integumental colour of the head and some *hottentotta* males are quite black. Such males suit the description of *pygmaea* excellently and it is likely that Saussure actually based the description on African material of *hottentotta*.

4) Two males in the collection of the Zoological Museum, Copenhagen are labelled "Nov. Holl./Drewsen/pygmaea Sauss". and have no doubt been examined by Saussure. Just as the males mentioned above (3), they are non-Australian, as they both belong to *Scolia quadripustulata* var C (= *coerulans* Betrem, 1928 nec Lepeletier, 1845) as defined by Betrem (1941:158), see also Betrem (1928:316).

These males do not quite agree with the description as they cannot be said to be covered by white hairs, but they agree well with the description of the variant of *pygmaea* ("Poils passant tantôt au gris, tantôt noir. Ailes souvent peu obscures postérieurement"). As Saussure refers to these specimens as variants they are not syntypes according to the Code, Art. 72(b), and not available for a lectotype selection.

Unfortunately the result of the above-mentioned investigations 1—4 is that so far no true syntypes are available for selection as a lectotype in order to fix the identity of *pygmaea* Saussure. However, as mentioned above (3), there is good evidence for the statement that *pygmaea* was based on the male sex of *Scolia* (*Scolia*) *hottentotta* Saussure, 1858, and I propose *pygmaea* be regarded as a junior synonym of that species (*syn. nov.*). I have found it premature, and unnecessary, to formally fix this synonymization by designation of a neotype.

#### ***Austroscolia pulchripennis pulchripennis* (Cameron, 1901)**

Bismarck Isls., NEW BRITAIN: Valoka, 6 ♂, 7—11 July 1962; Yalom, 1000 m, 1 ♀, 5 ♂, 9—15 May 1962. — NEW IRELAND: Lemkamin, 900 m, 2 ♂, 17—18 April 1962. — MUSSAU: Talumalaus, 11 ♂, 19 Jan. — 9 Feb. 1962; Boliu, 8 ♂, 13—15 Feb. 1962; Malakata, 1 ♂, 15 Feb. and 1 ♀, 1 ♂, 9 June 1962.

Previously known from New Britain, New Ireland (Krombein, 1963:638; 1968:16) and Lihir, NE of New Ireland (Tuijn, 1961:243) in the Bismarck group. Further the subspecies is recorded from Malaita in the Solomons (Krombein, 1968) and recently its presence in New Guinea was ascertained by Krombein (1968:16), but here it is apparently extremely rare in comparison with the

conditions in other parts of its striking discontinuous range of distribution.

***Austroscolia pulchripennis franclemonti*** (Krombein, 1963)

Bismarck Isls., DYAUL: Sumuna, 1 ♂, 8 March 1962. — MANUS: Lorengau, 3 ♂, 17 and 20 June 1962.

Solomon Isls., NEW GEORGIA: Wana Wana I., 16 Aug. 1963, P. Greenslade. (BMNH).

The present material agrees fairly well with the description by Krombein (1963:636), but a few minor deviations are observed. Thus mesoscutum is punctate all over rather than with a small median space posteriorly impunctate, and there are no tawny hairs at base of costal and subcostal veins of the fore wing. Further the colour of the wings does not agree with the description, which reads: "... with greenish to golden reflections ...", but it appears as stated in Krombein's key (entrance 65): "with dark green to purple reflections" and this is probably the true colour. This view is sustained by entrance 64 of Krombein's key: "Wing colour varied, but never with brilliant golden-green reflections".

As the nominate subspecies *p. franclemonti* is polytopic. Its main range is the Solomon Islands with exception of Malaita, one of the easternmost islands of the Solomons, but far from that region it is found in Manus, the Admiralty Islands (also Krombein, 1963:638), Umboi I. (Rook I.) between New Guinea and New Britain (Krombein, 1968:16) and Dyaul I. (present record). The larger islands in the Bismarck group are occupied by *p. pulchripennis*.

The occurrence in the islands Umboi and Dyaul is of great interest because these localities are very close to the main distributional range of *p. pulchripennis*. In case of Dyaul it is almost a fact that this locality lies inside the range of the latter, as only a narrow sound (about 14 km wide) separates Dyaul from New Ireland. It is seldom seen that distinct subspecies of insects are able to evolve and keep separate within so short distances from the presumed source populations as in this case. Apparently the means of isolation have been strong enough to prevent a mixture of the populations. In the case of Dyaul, *franclemonti* has had enough time to develop as it is presumed with confidence by Salomonsen (1964) that this island has probably been separated from New Ireland for a comparatively long time (100,000—200,000 years) and Salomonsen reports on the presence of comparatively many endemics among birds in the island. In Umboi



only a few weak subspecies of birds have developed (Salomonsen, 1964:24) and the explanation is that Umboi, as an isolated island, is probably much younger than Dyaul.

***Austroscolia betremianus*** (Krombein, 1963)

Bismarck Isls., NEW BRITAIN: Yalom, 1000 m, 1 ♀, 38 ♂, 9—22 May 1962; Komgi, 1000 m, 1 ♂, 14 May 1962. — NEW IRELAND: Lemkamin, 900 m, 10 ♂, 6—23 April 1962.

The present record as well as previous ones (Krombein, 1963: 639; 1968:16) seem to show that *betremianus* is a species confined to mountainous areas. It has never been collected in true lowland and it is rather unlikely that such a common species should have been overlooked.

***Austroscolia nitida varifrons*** (Cameron, 1905)

Bismarck Isls., NEW BRITAIN: Valoka, 1 ♂, 7 July 1962; Yalom, 1000 m, 4 ♂, 9—18 May 1962; Bitu Paka, 1 ♂, 10 July 1962; Ralum, 2 ♀, 4 ♂, 1896—97, E. Dahl leg. (Zool. Mus., Berlin). — VITU ISLS.: Frenchinsel, Unea, 1 ♂, Preuss S.G. (Zool. Mus., Berlin). — NEW IRELAND: Lemkamin, 900 m, 5 ♂, 6—23 April 1962; Danu, Kalili Bay, 1 ♂, 30 April 1962. — DYAUL: Sumuna, 1 ♀, 1 ♂, 7—8 May 1962. — LAVONGAI: Banatam, 1 ♀, 1 ♂, 24—25 March 1962. — MANUS: Lorengau, 1 ♂, 17 June 1962.

In addition to the Bismarck Islands this subspecies has also been recorded from New Guinea, often from islands surrounding New Guinea, but also from the New Guinea highland where it thus occurs sympatrically with *nitida nitida* (Smith, 1858), see Krombein, 1963: 644 and 1968: 18. In New Guinea the two subspecies have been taken together in the same locality, on the same day and by the same collector in three different cases. The same happened once in New Ireland (at Konibiu, west coast, on the rocky seashore, Krombein, 1963). This situation may lead to a closer study of the relationship of the two taxa.

***Austroscolia nitida punctatissima*** (Kirby, 1889)

Solomon Isls., RENNELL: Niupani, 1 ♀, 4 ♂, 18—25 Aug. 1962; Hutuna, 1 ♀, 13 ♂, 15—30 March 1965, T. Wolff, 3 ♀, 21 ♂, 14 Oct. — 13 Nov. 1953, J. D. Bradley (BMNH); Tigoa 6 ♂, 22 March 1965, T. Wolff. — GUADALCANAL: Honiara, 1 ♀, 4 Aug. 1962. Further 7 ♀ and 26 ♂ from localities in KOLOMBANGARA, SANTA ISABEL, GUADALCANAL, and SAN CHRISTOBAL; all BMNH, Roy. Soc. Exp., M. McQuillan and P. Greenslade.

This subspecies is very common in all parts of the Solomons; also previously recorded from the remote island of Rennell (Krombein, 1963:651) where it is the most abundant Scoliid. Native name: *Kanokano siba*.

***Scolia (Discolia) sp.?***

Philippines, PALAWAN: Tagabung, 1050 m, 4 ♂, 16 and 20 Sept. 1961.

These four males probably belong to a new species, but it is not described here as I am unable to differentiate it with confidence from near related species due to a restricted knowledge of such species and paucity of available material for comparison. Dr. J. G. Betrem who kindly examined one of the specimens would place the specimens in the genus *Microscolia* and thus not even the generic identity is quite certain. The males are totally black with black hairs except on mes- and metepisternum below and on mid and hind coxae. Thorax and abdomen are bluish iridescent. The punctation has a general character and as also the genitalia are build over a common last found in several known species (however, not as in most *Microscolia*) the identity of the specimens will be uncertain until more material becomes available.

***Megascolia (Megascolia) scutellaris* (Gribodo, 1893)**

Philippines, MINDANAO: Sapamoro, 1 ♂, 21 Dec. 1961.

Previously known from several Philippine islands, including Mindanao.

***Megascolia (Megascolia) procer bimaculata* (Gribodo, 1893)**

Philippines, PALAWAN: Pinigisan, 600 m, 1 ♂, 21 Sept. 1962.

This subspecies has so far not been found outside of Palawan. The present record is the first of the male sex.

As in the female a reduction of the yellow integumental areas also occurs in the male in comparison with other subspecies (*procer* (Illiger, 1802), from Sumatra; *javanensis* Betrem and Bradley, 1964, from Java; and *nigriventris* (Mantero, 1903), from Nias; see Betrem and Bradley, 1964).

**Description.** ♂. As other *procer* males, but distinguished by the following colour characters: clypeus black with lateral parts yellow, yellow spots on scrobi small and present only below, ocular sinus not fully yellow, yellow area on spatium frontale and frons and along upper inner margins of eyes rather narrow, leaving a comparatively large black quadrate spot around the ocellar

triangle, no yellow stripe behind ocelli and eyes, thorax is black except from a small circular spot on scapulae, and abdomen is also black except for yellow spots on tergum 3.

Males of *bimaculata* are separable from males of other known subspecies by (1) clypeus black except laterally rather than totally yellow, (2) scapulae with a small yellow spot rather than whole dorsal surface yellow, and (3) the absence of yellow on scutellum, metanotum, and tergum 1.

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### Summary

A number of species and subspecies are recorded, viz. 13 from the Philippines (incl. 3 new subspecies: *Campsomeris (Campsomeriella) collaris injubata*, *C. (Phalerimeris) aurulenta palawana* and *Liacos analis tawiensis*), 1 from the Moluccas, 1 from the Loyalty Islands, 21 from the Bismarck Islands (incl. 4 new subspecies: *Campsomeris (subg.?) oresbios yalomensis*, *C. (Radumeris) extranea liberata*, *e. intermedia* and *e. mussauensis*) and 12 from the Solomon Islands. *Liacos philippinensis* Micha and *Scolia (Liacos) semperi* Betrem are new synonyms of *Liacos analis palawana* Micha. *Microscolia papuana* is not a synonym of *Scolia (Lacos) pygmaea* Saussure; the latter species described from Australia probably being a synonym of the African *Scolia (Scolia) hottentotta* (Saussure). A previous lectotype designation in case of *pygmaea* Saussure is declared invalid.

In the rich population of *Campsomeris (Radumeris) extranea liberata* subsp. nov. on two small islands of the remote Hermit group an extremely high individual variation of the colour pattern is recorded, and is probably a case of "character release" (MacArthur and Wilson, 1967).

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