

SOUTH PACIFIC SYMPHYPLEONA (Collembola)

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Abstract: Two new species, *Afrosminthurus bufo* and *Pararrhopalites popei* are described for genera previously unknown outside Africa and Mexico respectively. Three further species, *Sphyrotheca dawydoffi*, *S. santiagoi* and *Temeritas womersleyi*, previously known from only 6 specimens are redescribed from abundant material collected by the Bishop Museum, Noona Dan and Royal Society Expeditions and by Dr and Mrs P. J. M. Green-slade. Some discussion on the relationships and distribution of these species is included.

Afrosminthurus bufo Lawrence, new species Fig. 1-3.

Length: ♂♂ 0.65-0.8 mm. ♀♀ 0.8-1.15 mm.

Color: Most commonly uniformly dense purple but showing variation: head dark purple with median and lateral rows of elliptical, more diffusely pigmented areas. Body dark purple anteriorly and on dorsal saddle, paler elsewhere. Appendages of head and thorax especially dark at their segmental bases and with furcal segments progressively darker. Body often more uniformly dark anterodorsally with anogenital segment unpigmented.

Cuticle: Moderate granulations cover head and dorsum while anogenital segment and appendages are smoother.

Chaetotaxy: Vertex with 10 stout, roughened spines arranged in 3 irregular rows of 4, 3, 3. Spines of dorsal row usually largest and those ventrally decrease in size as do the papillae from which they arise. Anterolaterally on the body is a strong spine as large as and straighter than vertex spines. Ratio of length of this spine to that of the 3 somewhat forward placed bothriotricha is 5:7:3:11. Dorsal setae of body mostly only about 1/2 length of lateral spine and stout, often weakly capitate and anteriorly curved. Among the common body setae are numerous elongated balloon-shaped setae, less than 1/2 their length. Anogenital segment with setae of anterior row blunter and seta a0 (see Yosii & Lee, 1963, *Cont. Biol. Lab. Kyoto Univ.* 15: 22) longer and more upturned than remaining short fine setae.

Laterally in both sexes there is a minute papilla in a shallow oval pit sometimes apparent, beside the bothriotrichum ♂ anogenital segment ventrally with an additional papilla. ♀ anal appendage longer than any anogenital seta, 4/5 length of mucro. Trochanters and femora each provided with 2 setae variously modified as hooks or capitate spines. Clavate tenent hairs absent but some of setae of inner tibiotarsal row rounded at tip or moderately clavate. Tenaculum with up to 4 apical setae. Dens without anterior setae, with about 14 posterior setae, some of which are long and fine, while others have thickened bases. Mucro without seta.

1. Combined results of Royal Society Expedition, Noona Dan Expedition and Bishop Museum collections (latter funded by National Science Foundation and National Institutes of Health).

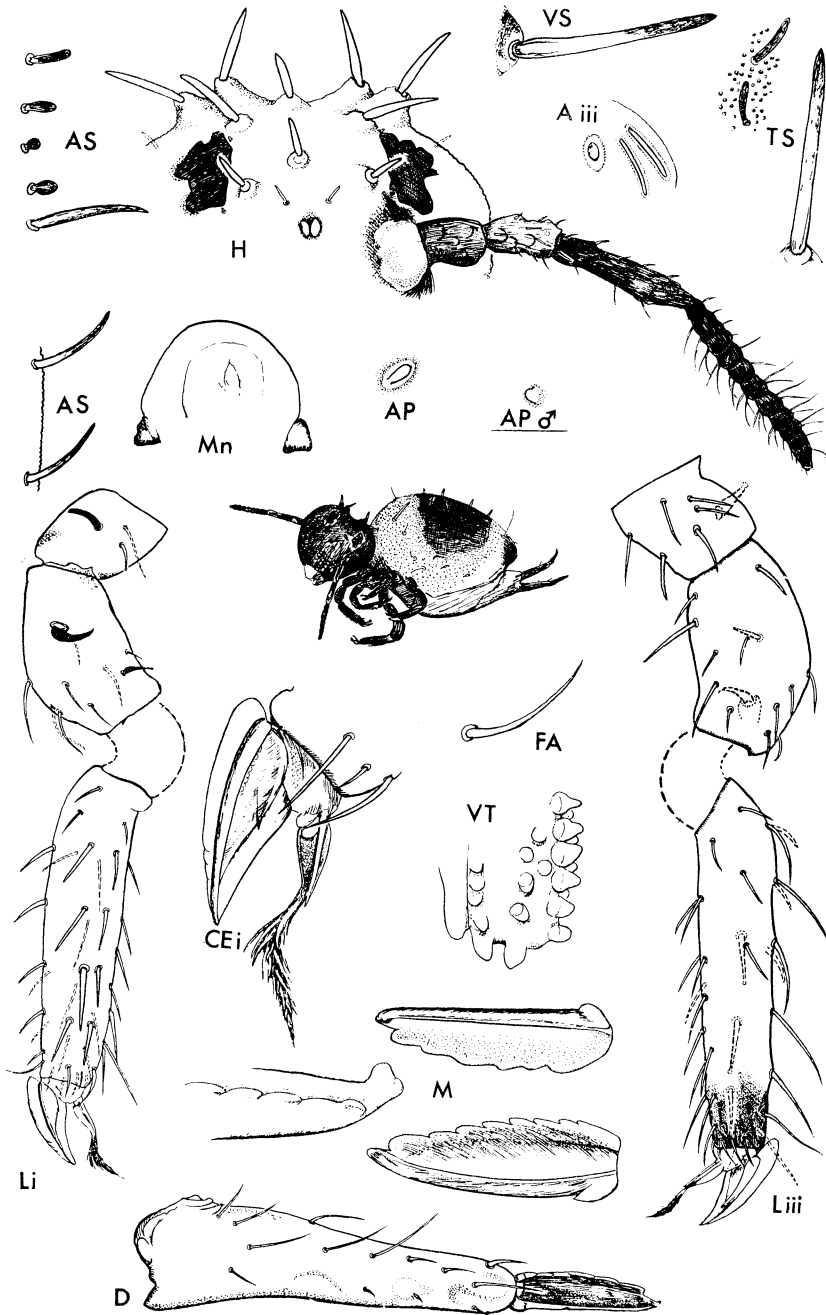


Fig. 1. *Afrosminthurus bufo* sp. n.

Eyes 8+8 approximately similar size. Antenna arising from a well developed tubercle about 1/2 length of antenna I. Antennae I-II papillate. Antenna III sense organ with a pair of slender rods in narrow separate pits and an oval sensilla set in an adjacent depression. Antenna IV with about 12 subsegments which may be difficultly distinguished from annulations. Mandibles heavy, asymmetric with 4-5 small, compact, apical teeth. Maxilla with 2 distinct heavy apical teeth, a more sharply-pointed tooth often obscured by these and an outer bract-like tooth. Maxillary lamellae often hidden by apical teeth, with coarse, relatively short fringes. Claws of all feet, short and internally toothless, each with a well-developed, distally directed tunica and at least a short pair of serrated pseudonychia, closely associated with lateral margin. Unguiculus toothless, apex brush-like. Ventral tube with conical or pear-shaped warts. Rami of tenaculum tridentate. Manubrium basally with a pair of ventrolateral papillae. Mucro heavy and stout with 5-8 internal teeth, smooth outer margin and an apex which is often markedly upturned.

The only previously known member of the genus *Afrosminthurus* is *gladiator* described by Delamare Deboutteville & Massoud from Angola and represented by 7 specimens. Thanks to the kindness of these authors I have been able to examine one of these syntypes, and agree with Dr Massoud, who has seen the material of *bufo*, that it is congeneric with *gladiator*. The new species can easily be separated from *gladiator* by its more granulate cuticle, multibranching unguiculus and smoother female anal appendage. Although the prothoracic femur of *gladiator* is mentioned as having only 1 spine, the female syntype which I examined, shows in addition to the hooked spine, a clavate seta on 1 side, similar to that of *bufo*. On the other side of the *gladiator* syntype this seta is only weakly differentiated. In addition to the similarities pointed out by the authors of *Afrosminthurus* between this genus, *Sminthurus*, *Sphyrotheca*, *Vesicephalus* and *Papirinus*, *bufo* exhibits characteristics of *Parasphyrotheca* which Yosii synonymises with *Lipothrix*. In Yosii's redescription of *Parasphyrotheca magnificata* from Burma he illustrates an antenna III sense organ, spatulate unguiculus, dens, anogenital chaetotaxy and upturned mucro similar to that of *A. bufo*. In his original description of *magnificata*, the type species of *Parasphyrotheca*, Salmon describes 2 stout simple papillae on the ventral side of the abdomen between tenaculum and furcula. In *bufo* these papillae are part of the base of the furcula. Unlike *magnificata*, *bufo* lacks the unusual feature of 2 wavy ciliated hairs, presumably on each side of the furcal segment. It is evident that some species at present placed in *Afrosminthurus*, *Lipothrix* and *Parasphyrotheca* by different workers are closely related and may eventually be placed in the same genus. Until more material of tropical species of these

Key to Figures

A	Antenna.	M	Mucro.
AP	Anogenital papilla.	Md	Mandible.
AS	Abdominal seta.	Mn	Manubrium.
C	Coxa.	S	Setae of body.
CE	Claw and empodial appendage.	T	Tibiotarsus.
D	Dens.	TS	Thoracic seta.
F	Femur.	Tn	Tenaculum.
FA	Female anal appendage.	Tr.	Trochanter.
GP	Genital papilla.	TrS	Trochanteral spine.
GS	Genital seta.	V	Vertex of head.
H	Head.	VS	Vertex seta.
HS	Head seta.	VT	Ventral tube.
Li-iii	Legs i-iii.		



Fig. 2. *Afrosminthurus bufo* sp. n.



Fig. 3. *Afrosminthurus bufo* sp. n.

groups can be collected and compared I feel justified in placing *bufo* in the genus which holds the most closely related species which I have examined. The fact that this is from Africa indicates that no zoogeographical conclusions about the distribution of Collembolan genera can be made before a more natural classification is put forward.

MATERIAL EXAMINED: SOLOMON IS.: Vella Lavella, Pusicoma, 29. IX. 1963; Choiseul, Malangona, sea level and 100 m, 4. III. 1964; Kitipi River, 80 m, 20. III. 1964, P. Shanahan (BISHOP). Malaita, Dala, 30 m, 14. VI. 1964, J. Sedlacek (BISHOP); Guadalcanal, Mount Austen, 1964-1966; Bermahat, 1500 m, 20. VI. 1965; Choiseul, Mlaaita, Gizo, Rennell; Shortlands, Vella Lavella, 1965-1966, P. J. M. Greenslade; Guadalcanal, Monitor Greek, 8. VII. 1965, Berleses nos. 87-100; Umasani River, Hidden Valley, Mount Austen, VII-VIII. 1965, Kolombangara, Ugi, San Cristobal, 100-300 ft., 1965, Royal Society Expedition, P. N. Lawrence. BISMARCK IS.: Lavongai, Banatam, 19-24. III. 1962, Berleses nos., 12-16, 19, 24; Mussau, Bolin, 4. VI. 1962, Berlese no. 52; Manus, Lorengau, 22. VI. 1962, Berleses nos, 63-64 (Noona Dan Expedition) (Zool. Mus. Copenhagen).

Holotype ♀, paratypes from Guadalcanal, Monitor Creek, 8. VII. 1965. (Royal Society Expedition) in British Museum (Nat. Hist.). Additional Paratypes in Bishop Museum and Zoological Museum, Copenhagen.

Pararrhopalites popei Lawrence, new species Fig. 4.

Length: ♂ 0.65 mm; ♀ 0.65-1.0 mm.

Color pinkish with diffuse rust-red pigment spots. Dorsum sometimes with diamond-shaped areas made up of dark-bordered, red-spotted hexagons. Eye patches always purple.

Cuticle finely granulate dorsally with smooth areas below bases of larger head setae and at bothriotrichal bases.

Chaetotaxy of head with 9 strong, minutely serrate spearhead-shaped spines, and sometimes 6-8 inter-antennal blade-like setae, poorly differentiated. Antenna I with 4-5 curved setae, antenna II with 13-14 setae of which the outer, posterior 3-4 are shorter and stouter than the inner, anterior 3-4. Antenna III with about 19 setae, including 1 or 2 in basal 1/3 which are stouter and 2 longer, finer setae at apical 1/3. Antenna IV with about 14 whorls of setae, each with up to 8 fine, outstanding setae with 1-2 finer hairs lying closer to segment. Anterior part of dorsum with about 20 plump, basally narrowed weakly serrate, setae in 4-5 rows. Posterior part of dorsum with about 35 fine, smooth setae. Three bothriotricha, in a triangle on each side of the abdomen, are shorter than the one on each side of the anogenital segment.

Setae a1-a3 sword-shaped with narrowed bases above stout spatulate, curved finely serrate, ♀ anal appendage.

Hind trochanter with 5 setae and a strong spine which is absent on other legs. Hind tibiotarsus with 2 outer setae longer, thicker and tapering mainly in apical 1/2. Dens with 28-29 setae of which the inner row of 7 are variously modified as spines. In outer row distal seta shorter and more spinose than proximal 3. A pair of small, spine-like papillae present beyond these setae.

Eyes 1+1 extremely convex, almost hemispherical. Claws of all feet with inner tooth. Lateral teeth sometimes apparent and possibly indicate the presence of much reduced pseudonychia. Unguiculus usually untoothed although sometimes a minute tooth is present on unguiculus I. Vesicles of ventral tube with sparse, low warts. Tenaculum with tridentate rami and two apical setae. Manubrium with a pair of basal papillae. Mucro with 19-24 rounded, inner teeth and 12-17 thinner, lower, outer teeth.

MATERIAL EXAMINED: BISMARCK IS.: Lavongai, Banatam, 20. III. 1962, Berlese no. 15. SOLOMON IS.: Guadalcanal, Honiara, 4.VIII.1962, Berlese no. 96 (Noona Dan Expedition), Zoological Museum, Copenhagen. Choiseul, 80-100m; Malangona, Kitipi River, 4-20. III. 1964, P. Shanahan (BISHOP). Choiseul, Wagina, 25. V. 1966; Ngela, Soso, Vatilau, 2.XII.1965; Guadalcanal, Mt. Austen, 1963-1966, P. J. M. Greenslade. Mt. Austen, 24. VIII. 1965. Umurangi River and Monitor Creek, 1-8. VII. 1965. San Cristobal, Warahito - Pagato Confluence, 1. VIII. 1965; Kolombangara, N. of Kuzi, 150m, 6. IX. 1965, Roy. Soc. Exped., P. N. Lawrence.

Holotype ♀, paratypes from Guadalcanal, Mt. Austen, 24. VIII. 1965 (Roy. Soc. Exped) in British Museum (N. H.). Additional paratypes in Bishop Museum and Zoological Museum, Copenhagen.

Pararrhopalites popei is the 3rd species in the genus which was previously known only from 2 Mexican species. Of these *anops* has no eyes and 6-8 vertex spines while *oculatus*

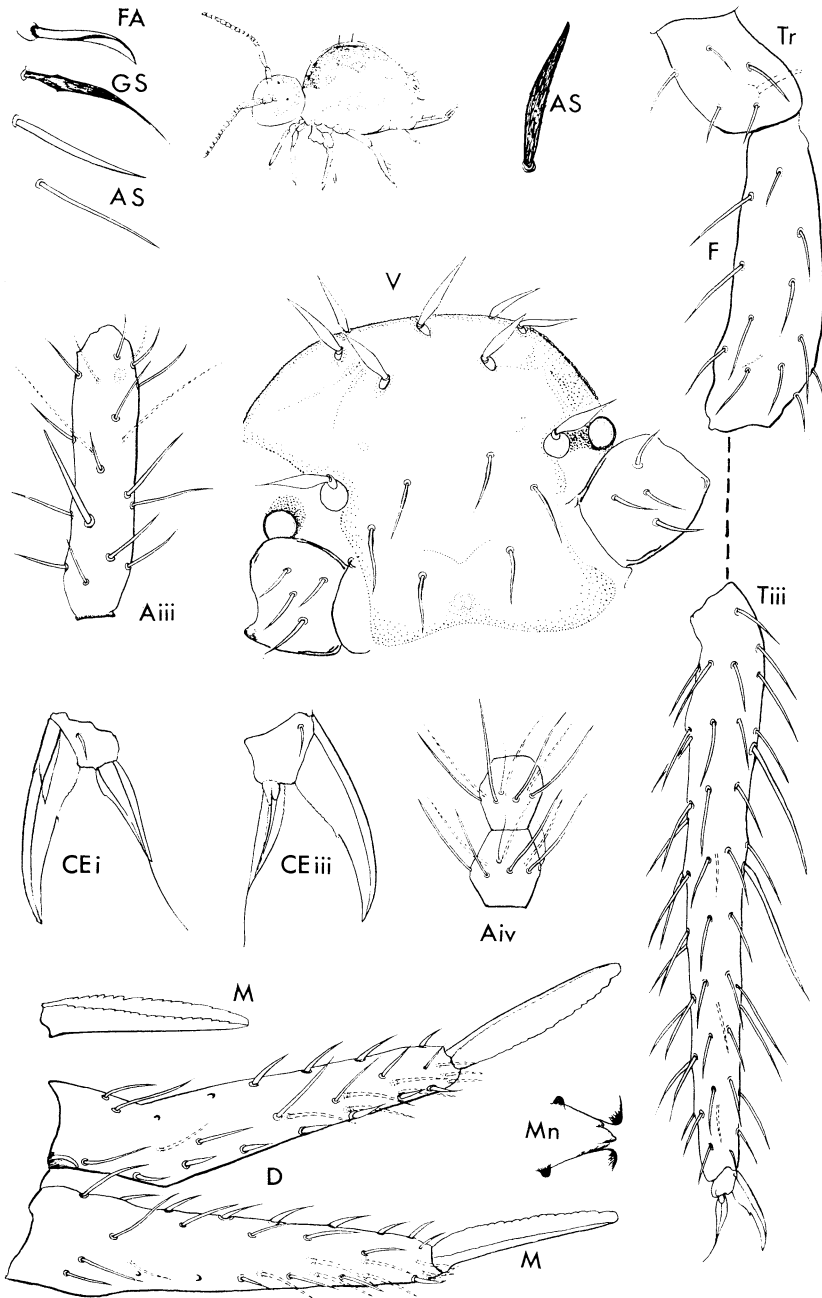


Fig. 4. *Pararrhopalites popei* sp. n.

has 2+2 eyes and 12-14 vertex spines. With 1+1 eyes and 9 vertex spines *popei* can be separated from these 2 species. In addition, neither of these species possess the dental papillae of *popei* a character also shared by *Neosphyrotheca fasciata*.

Bonet places *Pararrhopalites* in the tribe Sminthurini, although Salmon regards the genus as belonging to the Arrhopalitini. Certainly *popei* exhibits pigmentation, granulation and dental spination more closely resembling *Arrhopalites* than *Sminthurus*. On the other hand *popei* does have tuberculate vesicles of the ventral tube and trochanteral spines common in *Sminthurus* but not described for any *Arrhopalites*. Until the significance of these characters can be properly evaluated *Pararrhopalites* and perhaps the closely related *Neosphyrotheca* might be regarded as forming a link between the tribes Sminthurini and Arrhopalitini.

Sphyrotheca dawydoffi (Denis, 1948) Fig. 5-6.

Sminthurus dawydoffi Denis, 1948 : 303

Parasphyrotheca dawydoffi : Salmon 1964 : 609.

Length : ♂ 0.5-0.85 mm, ♀ 0.75-0.95 mm.

Color : Head with dark, downward pointing, roughly Y-shaped area between eyes. Below this is a lighter area, across which runs a dark, transverse line of 4 amalgamated patches. Below antennal bases with head diffusely violet with divergent lines of small clear spots. Antenna I pale, antenna II dark, antenna III dark only in the apical 2/3. Basal part of 1st subsegment of antenna IV and intersubsegmental areas pale, while remainder of segment dark violet. Great abdomen with irregular, transverse bands and a broken dorsal line. Anogenital segment, dark dorsally with lateral, lighter areas. Coxae, dark violet. Trochanters, diffusely pigmented. Tibiotarsi banded with unpigmented basal thirds, dark, middle portions and lightly pigmented apices. Dens and mucro violet.

Cuticle : Moderately strongly granulate dorsally on head and body.

Chaetotaxy : Dorsally comprising stout, serrate, strongly curved, blunt-ended setae. Front of head with these setae narrowed basally with serrations visible only at maximum resolution. Longest head seta only about 1/2 length of mucro. Antenna IV with 12 whorls of fine setae. Antenna III with longest setae apically, shorter than those of antenna IV. Elsewhere on antenna III are some stronger, more curved setae. Antenna II-I with progressively shorter, curved setae. Coxa III with strong, straight or slightly curved clavate seta. Femur I with broad-based, hooked spine, not clearly differentiated on other legs. Tibiotarsi with smooth, fine, pointed setae, the longest as long as claw and placed internally near apices. Female anal appendage with racket or spoon-shaped apex, bearing 15-25 coarse teeth. Dens anteriorly within basal 1/3, ears a small spinose seta followed by three apical setae. Two specimens have an additional anterior seta behind apical row.

Claw at the most with only an extremely narrow tunica and pseudonychia. More commonly, no trace of these structures can be seen. Inner tooth always present and especially prominent on claw I. Empodial appendages I-III each with corner tooth, lamella and apical needle. Empodial appendage III with broadest lamella and shortest apical needle. Ventral tube densely covered with hemispherical warts towards apex. Rami of tenaculum tridentate with unusually high, quadrisetose corpus. Manubrium with a pair of pointed basal papillae. Mucro anteriorly with minutely toothed base. Outer mucronal edge smooth, inner edge often almost smooth,

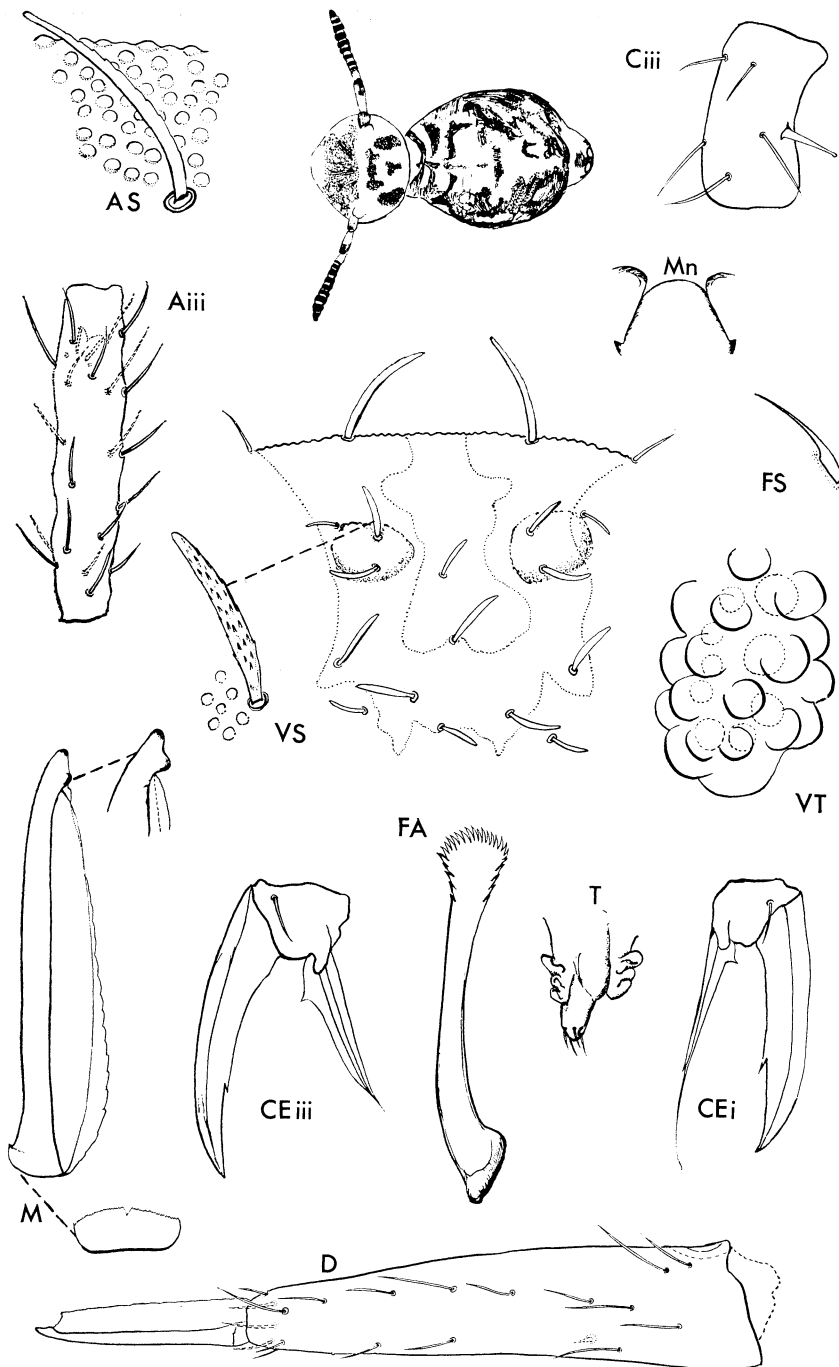


Fig. 5. *Sphyrotheca dawydoffi* (Denis, 1948)

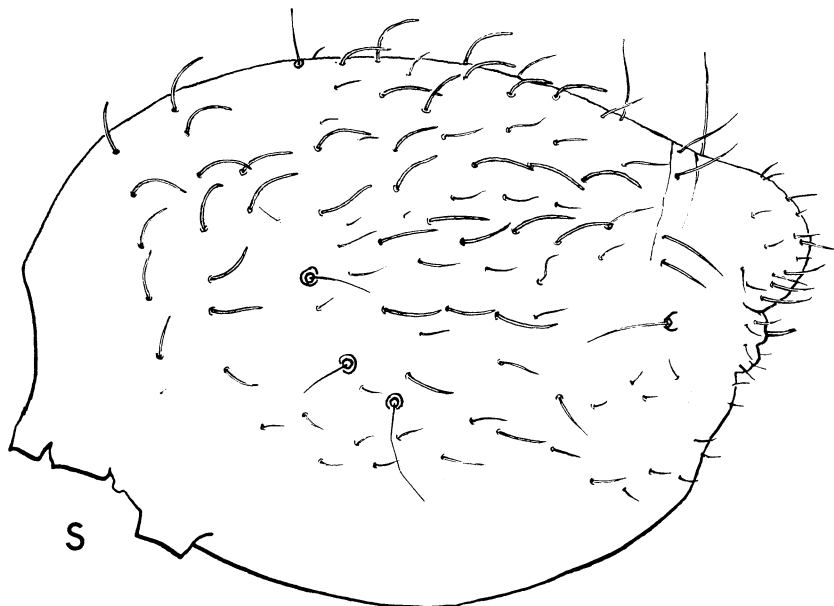


Fig. 6. *Sphyrotheca dawydoffi* (Denis, 1948)

although on some specimens up to 25 low teeth can be resolved. ♂ sometimes exhibits a pair of minute papillae on lower valves of anogenital segment.

MATERIAL EXAMINED: BISMARCK IS.: Lavongai, Banatam, 19.III.1962, Berlese no. 14; New Britain, Valoka, 13. VII. 1962, Berleses no. 73, 79, Noona Dan Exped., (Zool. Mus., Copenhagen). SOLOMON IS.: Guadalcanal, Mt. Austen 1963-1966; Popamanasiu, 1800 m, on tree trunk, 21. X. 1965, 20050, P. J. M. Greenslade. Guadalcanal, Mount Gallego, 900 m, 12. VII. 1965, Mt. Austen, VIII. XI. 1965. Kolombangara, N. of Kuzi, 450 m, 4.IX.1965, Roy. Soc. Exped., P. N. Lawrence.

***Sphyrotheca santiagoi* Yosii, 1959** Fig. 7-9.

Sphyrotheca santiagoi Yosii, 1959: 58.

Length: ♂ 1.0-1.05 mm, ♀ 1.05-1.4 mm.

Color pattern extremely variable, with range from a single locality including nearly all the individuals from elsewhere. Most commonly with head purple dorsally and below eye patches. Body darkest laterally with a median white area.

A dark, dorsal spot sometimes extended into a forward-branching Y-shaped area. Appendages and antennae may be dark or unpigmented.

Cuticle uniformly, relatively smooth apart from papillae on vertex and fore part of body.

Chaetotaxy of head with about 14 spear-head shaped spines, the strongest arising from broad papillae. Small spine sometimes visible situated on papillae at internal apex of patch. An additional small spine sometimes located below this point and is reminiscent of postantennal organ is *Sminthurus*. Body clothed largely with stout, erect, weakly serrate setae with

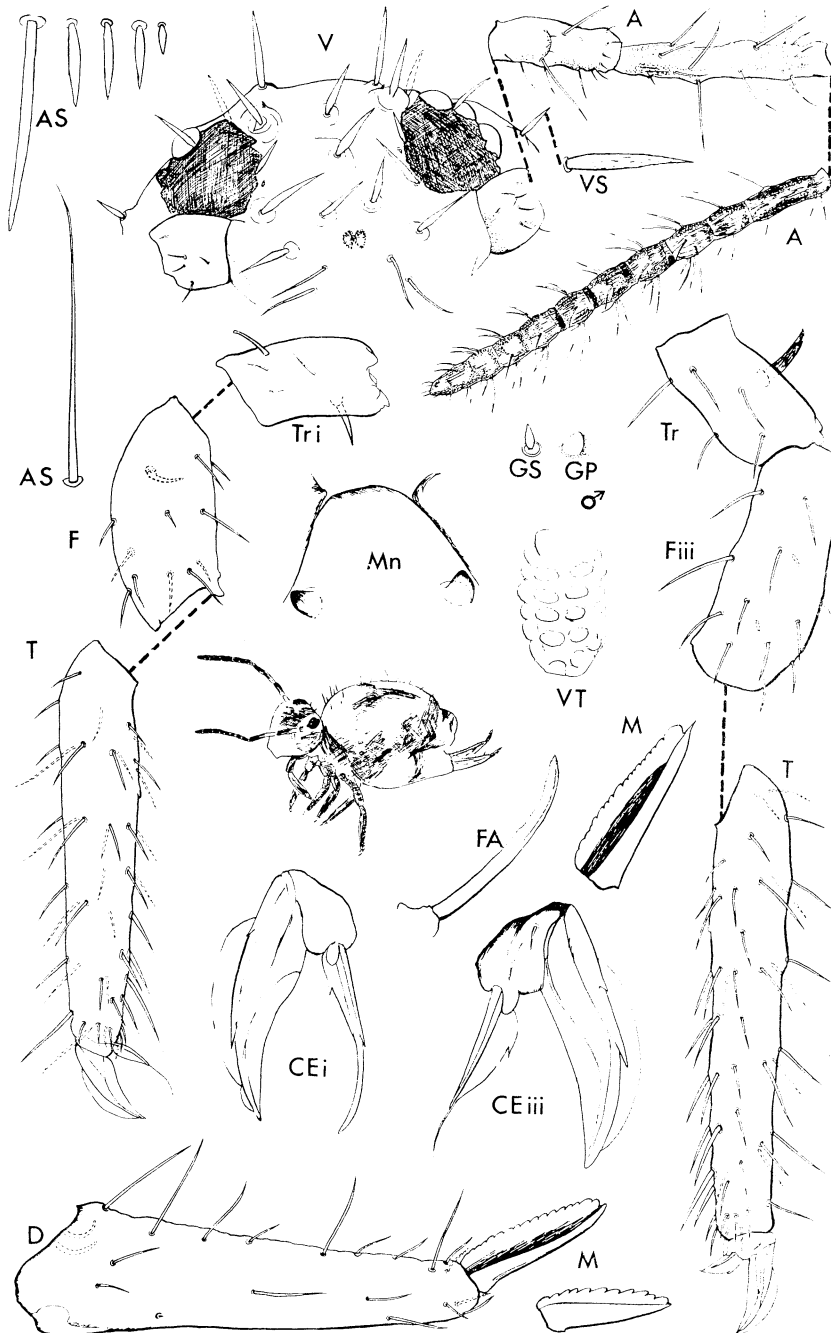


Fig. 7. *Sphyrotheca santiagoi* Yosii, 1959

blunt or incised apices. Longer, finer, more curving setae commoner posteriorly. A few, short, spear-head-shaped spines appear laterally below 3 abdominal bothriotracha and a pair of such spines sometimes occur anteriodorsally to anogenital segment. Antenna III with longest setae in basal 1/2, more than $2\times$ length of shortest in apical whorl. Antenna IV with about 10 whorls of outstanding setae and a few finer setae parallel to segment. In front of anogenital segment on each side, is a bothriotrachum, 2 fine long setae, and a minute setula of similar size to a pair of further setulae nearby. ♀ anal appendage weakly curved, finely, abundantly serrate in abruptly-terminating, apical 1/2. Trochanter I with a strong spine and clavate hair which are poorly differentiated on trochanter II but well developed on trochanter III. Femur I with a pair of variously developed hook-like spines, hardly distinguishable from common setae on femur II and reduced to short hooks on femur III. Tibiotarsus I-III with finely pointed setae, stouter internally. Dens with only 3-4 anterior setae, the most proximal of which is often reduced to a small spine. The 14-15 posterior dental setae slender and finely pointed.

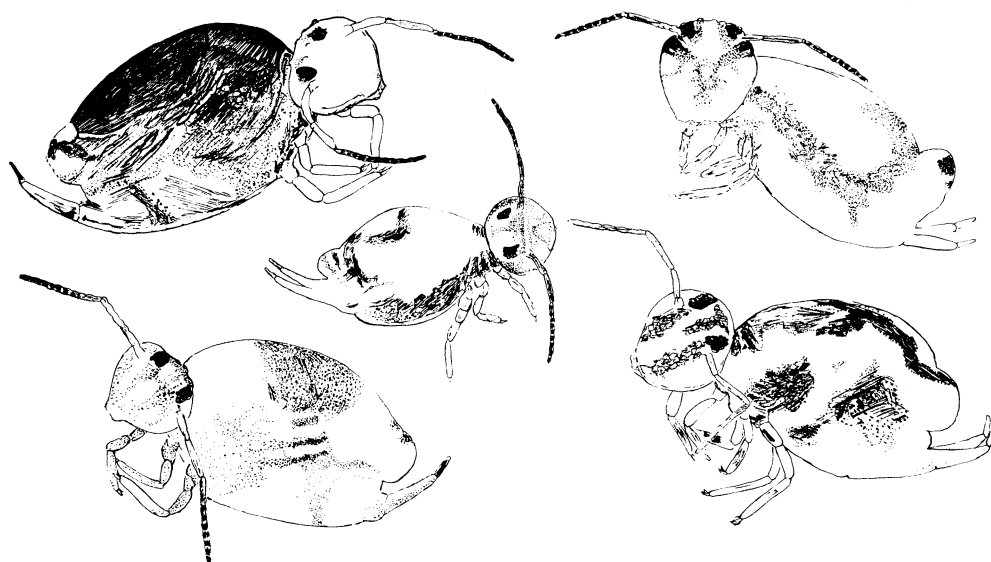


Fig. 8. *Sphyrotheca santiagoi* Yosii, 1959

Claws I-III with weakly curved inner edge rarely with a minute tooth. Narrow pseudonychia present besides 2 pairs of lateral teeth and an inflated tunica. Empodial appendage I with a single tooth in narrow lamella and a thick apical needle. Empodial appendages II-III with progressively broader lamellae and finer apical needles. Ventral tube with numerous elliptical vesicles. Rami of tenaculum tridentate. Manubrium with a pair of basal papillae. Mucro with 11-19 internal teeth, mean (45 sp. from range of distribution) 14 teeth. Smooth outer mucronal edge sometimes modified as a fine spine, extending beyond otherwise blunt or incised apex. ♂ with a pair of ventrolateral papillae on anogenital segment.

Through the kindness of Prof. Yosii I have been able to re-examine the holotype of *santiagoi* which he collected from Bukit Timah, Singapore, 9. IV. 1958. As far as can be seen from this specimen in its present condition it appears to come within the range of variation described above. *Sphyrotheca santiagoi* is now recorded from 13 islands.



Fig. 9. *Sphyrotheca santiagoi* Yosii, 1959

MATERIAL EXAMINED: BISMARCK IS.: Dyaul, Sumuna, 7. III. 1962, Berlese no. 5; Lavongai, Banatam, 26. III. 1962, Berlese no. 27, Noona Dan Exped. (Zool. Mus., Copenhagen). SOLOMON IS.: Guadalcanal, Mt. Austen, 1963-1966 also Ilu, Kukum, Popamansiu; Vella Lavella, Ngela, Choiseul, Shortlands, Malaita, P. J. M. Greenslade. Choiseul, Vella Lavella, Malaita (BISHOP). Guadalcanal, Mt. Austen, Umasani River, Mnt. Gallego, Popamansiu. Kolombangara, Ugi, Santa Ysabel, San Jorge, San Cristobal, Roy. Soc. Exped., P. N. Lawrence. The species is one of the most frequently recorded Symphypleona in forest litter and has been found in beach debris, native gardens, *Casuarina* litter, moss forest, bog mosses and up *Areca macrocalyx* palms. *S. santiagoi* occurs from sea level to 2100 m but is most common up to 300 m.

Temeritas womersleyi (Denis, 1948) Fig. 10.

Sminthurus womersleyi, 1948: 294.

Sminthurus (Temeritas) womersleyi: Yosii, 1966: 394.

Length: ♂♂ 1.1-1.35 mm, ♀♀ 1.4-1.7 mm.

Color: Pale pink head bordered by anterolateral bands made up of elliptical purple areas. Bands united around mouth but are separate dorsally where there is a single purple patch. Front of head a little below antennal bases with a pair of fused purple ellipses. Antenna I diffuse purple, antenna II purple only in basal 2/3-3/4. Antenna III banded with dark base, light apex and intermediate light and dark sections. Antenna IV dark basally, lightening apically. Body pinkish with 3 irregular, meandering, branching bands of polygonal patches of purple pigment.

Cuticle: Uniformly dorsally, minutely granulate, smoother ventrally.

Chaetotaxy: Head with pair of interocular, weakly serrate spine-like setae long, smooth, fine setae and a few lateral, curved, thorn-like setae. Body with sparse clothing of long, fine setae becoming longer and more numerous posteriorly. Posterior ventral of 3 bothriotricha more

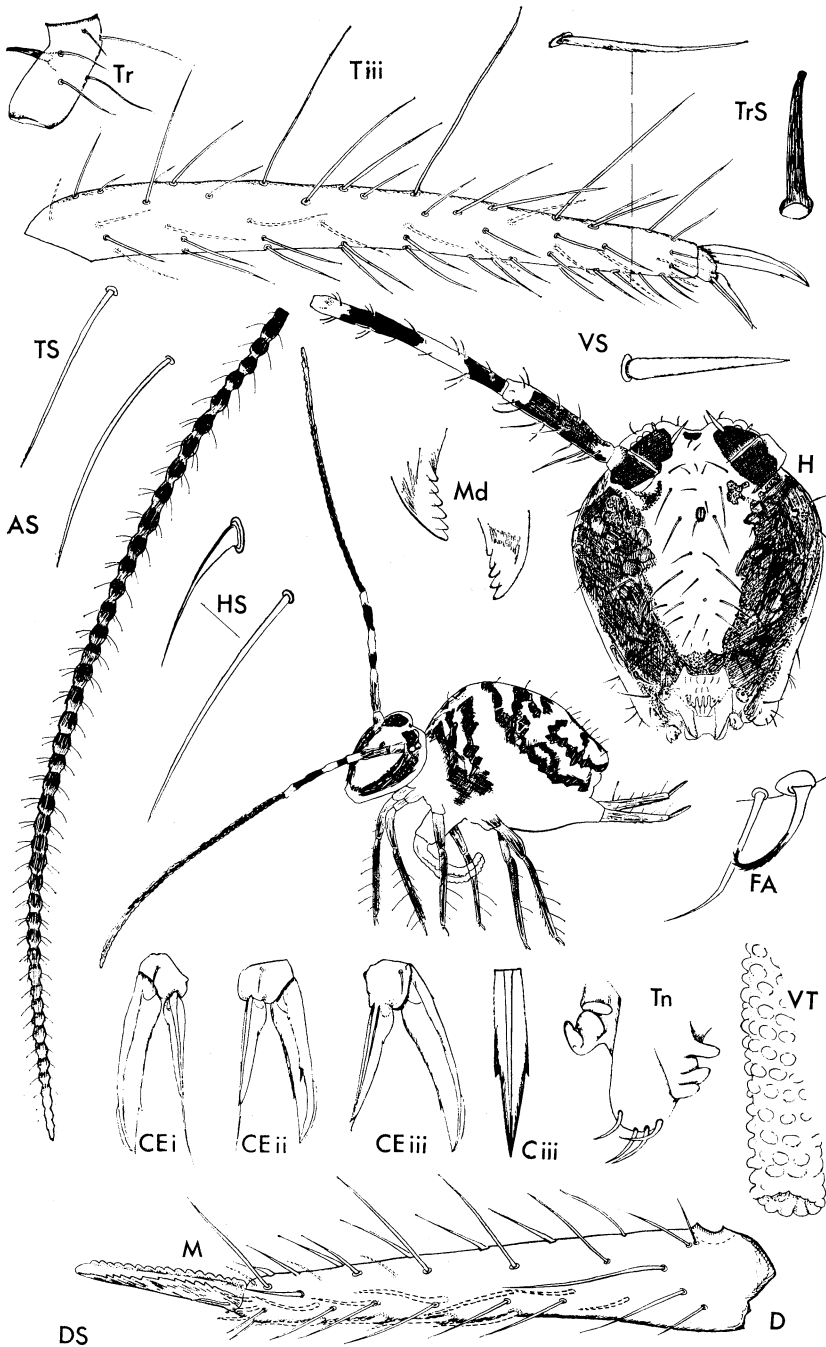


Fig. 10. *Temeritas womersleyi* (Denis, 1948)

than $4\times$ length of longest abdominal seta. Tibiotarsi with long, fine setae on outer edge and shorter, stouter, minutely serrate setae on inner edge. Trochanter III with strong spinose seta rounded or weakly clavate apically. Tenaculum with up to 4 setae. Dens with up to 42 setae but commonly only 37 comprising 8 external, 7 median, 9 internal on posterior face and 13 anterior setae. Extra setae occur anterior to internal row. Internal row with some setae more spinose and serrate than others. Anterior setae about $2\times$ as stout as external setae. Mucro with external seta. Anogenital segment with pair of papillae with 3 setae each, one of which is a bothriotrichum of similar length to longest of 3 on great abdomen. ♀ anogenital segment with anterior row of pairs of long, fine setae M^1M_2 . Setae N, a0-a3 on upper valve and a0-a4 on lower valves similarly fine setae. On the lower valves sa 3 considerably thicker and more curved than sa 1-2 and although always smooth, resembles female anal appendage. Appendage often recurved apically and serrations vary from almost indistinguishable to strong and coarse.

Antenna IV with about 44 subsegments indicated by whorls of setae. Precise number of subsegments is a matter of interpretation as subsegmental boundaries are not clearly marked at ends of segment. Mandibles asymmetric with $5+6$ apical teeth. Labrum with finely divided apex and 4 elongate, narrowly and deeply separated papillae, the longest setae on which are more than $10\times$ length of shortest.

Claws of all feet with around 4 inner teeth of which only the median tooth is sufficiently well developed to be always clearly visible. A short narrow tunica usually present but may not be apparent on some individuals or from one or more claws on others. A pair of lateral teeth often clearly stand out from the claw and 5 or more smaller teeth representing the margin of closely fused pseudonychia can sometimes be resolved. Ventral tube with hemispherical warts. Tenaculum with tridentate rami. Mucro with 9-15 angular outer teeth and 12-21 rounded inner teeth.

The Solomon Is. specimens differ from the description of the female holotype on which *womersleyi* was based and from Yosii's description of the species based on 3 ♀♀ from Bombay. Although at first sight it appears that 3 or more species may be present, the variation in Solomon Is. specimens from a single site suggests that only 1 species is involved. The re-examination of the holotype of *womersleyi* kindly lent by Dr Z. Massoud confirms this suggestion as some characters, not mentioned in the original description, are present on this specimen. These include thorn-like lateral setae on the head, antenna IV with about 44 whorls of setae and a finely serrate ♀ anal appendage. The second pair of thick setae on the interorbital tubercle figured by Yosii but not mentioned by Denis, is not clearly discernible on the holotype although its absence cannot be assumed.

This pair of setae is variously developed on the Solomon Is. specimens and is stronger on the larger individuals. There remains no difference between these widely separated populations of *womersleyi* which is inconsistent with that known in more commonly collected species of Collembola with an extensive distribution. It seems probably that *womersleyi* also occurs in areas between Vietnam, Bombay and the Solomons. The genus *Temeritas* is known from 5 other species represented by a total of only 16 specimens. Among these *T. surinamensis* Del. Deb. & Massoud, 1964 from Surinam and *T. summelongicornis* (Uchida 1965) n. comb. from Iriomote Is., China Sea are based on only 5 damaged specimens which closely resemble *womersleyi*.

T. surinamensis differs from *womersleyi* in having coarsely serrate tibio-tarsal and dental setae, stout blunt ended setae apically on antenna III and a similar blunt ♀ anal appendage.

Temeritas summelongicornis differs from *womersleyi* in being uniformly dark purple, having completely smooth tibio-tarsal and dental setae and sparser shorter setae on antenna III. The extraordinary long trichobothria on the anal segment of *summelongicornis* which Uchida cites as an additional difference from *womersleyi* have become detached and lost from Denis's holotype although their sockets can clearly be resolved. These bothriotracha are present among the Solomons specimens. Denis gives the mucro-dens length ratios in his paper, "1:4.7 env." and "1:4 env." Re-examination of the holotype of *womersleyi* shows this ratio to be nearer 1:3.7 than 1:4.7 and it is probable that 4.7 was printed in error for 3.7. The fact that in Denis's figure of the furca, the mucro is much more than 10/47th the length of the dens, tends to substantiate this theory. Further supporting evidence is provided by the Solomons specimens, where the mucro is around the same relative length as that of the holotype of *womersleyi*. This error has misled Uchida into listing "Mu: De=1:4.7" for *womersleyi* as a difference from *summelongicornis* whereas no such differences exists. Yosii gives this ratio for the Bombay *womersleyi* as 1:3.3 which is within the range of variation shown in the Solomons specimens.

Although *womersleyi*, *surinamensis* and *summelongicornis* are doubtless closely related, there is insufficient evidence at present to conclude that they are synonymous. Further collections of topotypes of these species and of examples of *Temeritas* from intermediate areas are needed before their status can be usefully reassessed.

MATERIAL EXAMINED: SOLOMON IS.: Choiseul, Malangona, 0-100 m, 4. III. 1964, P. Shanahan (BISHOP); Malaita, Dala, 30 m, 14. VI. 1964, J. Sedlacek (BISHOP). Mt. Austen, 1963-1966, New Georgia; Ganongga, Munda, Rendova, XII. 1965-V. 1966; Ngela, Soso, Vatila, P. J. M. Greenslade. Guadalcanal, Umasani River, Hidden Valley, Mt. Austen, 1965; Kolombangara, N. of Kuzi, 0-150 m, IX. 1965; Santa Ysabel, 1,000 Ships Bay, IX. 1965, Roy. Soc. Exped. P. N. Lawrence.

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