

ON THE OLD WORLD SPECIES OF THE GENUS *STETHORUS* WEISE
(COLEOPTERA, COCCINELLIDAE).

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The genus *Stethorus* Weise is of special interest on account of its cosmopolitan distribution and the habit of its species of feeding mainly on mites, some of which are pests of crops, including fruit trees. Its relationship with other members of the tribe SCYMNINI is also of importance, as it was separated by Dobrzansky in 1924 into a distinct tribe called STETHORINI, which, however, was regarded by Korschefsky (1931) as synonymous with SCYMNINI. The material on which the present study is based came mainly from the Old World. Much of it had been submitted to the Commonwealth Institute of Entomology for identification, and I am grateful to Dr. W. J. Hall and Dr. T. H. C. Taylor, of this Institute, for giving me facilities and help. The remainder of the material studied was in the collection of the British Museum. I am indebted to Mr. N. D. Riley for procuring, on my behalf, certain type specimens from abroad for examination.

Geographical Distribution.

There are seven known species from the New World and twenty from the Old World. Of the latter, twelve are described as new in this paper, and eight other known species are described in addition.

A. *New World Species.*

North America

- Stethorus atomus* Casey (Texas)
S. brevis Casey (California)
S. picipes Casey (California)
S. punctum Lec. (Eastern North America, Puerto Rico)
S. utilis Horn (Florida, Cuba)

South America

- S. (Nephopullus) darwini* (Brèthes) (Uruguay)
S. ogloblini Nunenm. (Argentina)

B. *Old World Species.*

Europe and Asia

- Stethorus gilvifrons* (Mulsant)
S. punctillum Weise

Arabia

- S. pauperculus* Weise

Africa

- S. aethiops* Weise
S. jejunus Casey
S. salutaris, sp. n.
S. wollastoni, sp. n.

Madagascar

- S. cruralis* Sicard
S. minutissimus Sicard

Mauritius	<i>S. vinsoni</i> , sp. n.
India, Burma and Ceylon	<i>S. gilvifrons</i> (Mulsant) <i>S. parcepunctatus</i> , sp. n. <i>S. pauperculus</i> Weise <i>S. rani</i> , sp. n. <i>S. rotundulus</i> (Mots.) <i>S. tetranychi</i> , sp. n.
Malaya	<i>S. malayensis</i> , sp. n. <i>truncatus</i> <i>S. siphonulus</i> , sp. n.
China	<i>S. aptus</i> , sp. n.
Philippine Islands	<i>S. pauperculus</i> Weise [?] <i>S. rotundulus</i> (Mots.) [?]
Australia	<i>S. nigripes</i> , sp. n. <i>S. vagans</i> (Blackburn)
New Zealand	<i>S. bifidus</i> , sp. n.
Fiji Islands	<i>S. fijiensis</i> , sp. n.

The species are very small, usually between 1.0 mm. to 1.5 mm. in length. They are mostly black and devoid of any markings on the pronotum and elytra, so that, superficially, they resemble one another very closely. The structure of their male genitalia, however, offers reliable specific characters which it has been possible to correlate with certain external characters such as the punctuation, pubescence, shape of the femoral lines and of the last abdominal sternite in the males. In many species the colour of the clypeus and of the legs seems to be fairly constant, but colour is not as useful a specific character as had been previously supposed. Several distinct species seem to possess similar coloration.

Feeding Habit and its Importance.

The following table shows the food of various species of *Stethorus* as recorded in the literature and as stated on the labels attached to the material under study. Certain species recorded in the literature (especially on economic entomology) as belonging to *Scymnus* have also been included because subsequent examination of the original material in such cases has proved that they belong, in fact, to *Stethorus*.

It will be observed that the majority of the species feed on mites, although in rare instances other kinds of food, such as Aphids and Thrips, have also been reported. Critical examination and feeding experiments in such cases may reveal, however, that mites are the principal food of all species.

There are several instances in which *Stethorus* species are reported to have effectively reduced the population of mites occurring as pests. Uspenskiï (1937) recorded that *S. punctillum* Ws. considerably reduced the infestation of *Tetranychus turkestanii* Ugar. and Nik. on cotton in Uzbekistan, and that in 1935 it completely eliminated this mite on cotton in Samarkand. The same species of *Stethorus* was reported to have rapidly reduced the population of *Tetranychus telarius* L. in Tashkent (Radzievskaya, 1931) and also to have exercised, from time to time, some control of it in vineyards in Europe. In India, *S. pauperculus* Ws. and *S. gilvifrons* (Muls.) (which have sometimes been erroneously recorded as *Scymnus gracilis* Mots.) exercise a valuable check on the population of mites on various crops such as sorghum (*cholan*), castor, beans, apples, etc. In New Zealand, *Stethorus bifidus*, sp. n. (a fuller account of the biology of which was published by Cottier, 1934, who referred to it as *Scymnus* sp., near *minutulus* Broun) is an important predator of *Paratetranychus pilosus* C. & F. In North America, *S. punctum* Lec. was reported to have materially reduced the population of *P. pilosus* on fruit trees (Gilliatt, 1935; Hauser & Cutright, 1941).

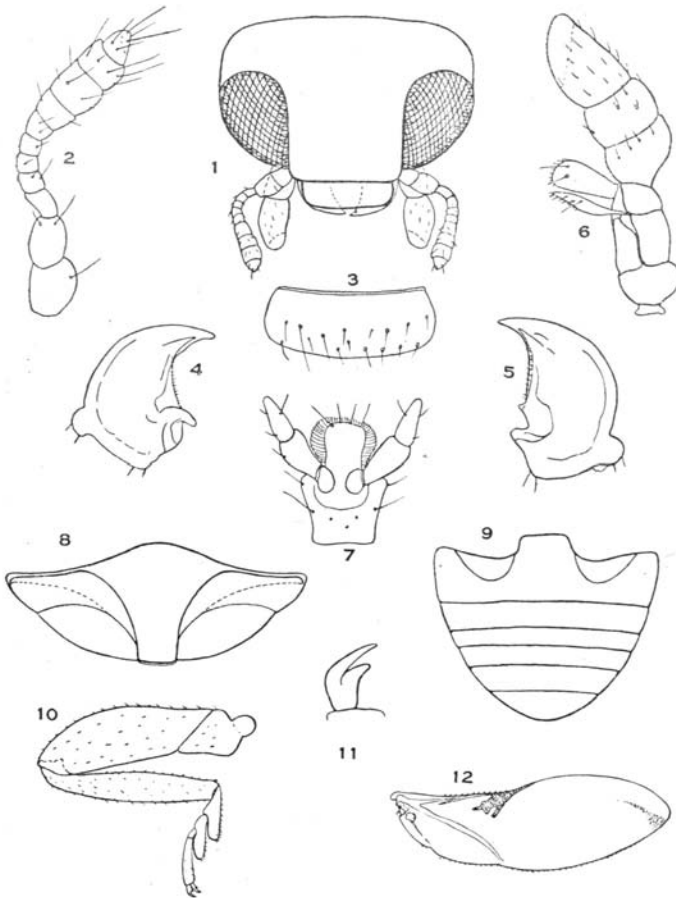
<i>Stethorus</i> species	Host	Plant	Country	Reference
<i>S. punctillum</i> Ws.	Mites			
	<i>Tetranychus telarius</i> L.	Hops ...	Bohemia ...	Blatný & Balaček, 1924
" "	" "	Cotton ? ...	Tashkent, U.S.S.R.	Radzievskaya, 1931
" "	" "	Sugar beet ...	Italy ...	Menozzi, 1934
" "	" "	Grape vines	Holland and Belgium (glasshouse)	Vanwijngaerden, 1934; van der Helm, 1935
" "	" "	Hops, hydrangeas and roses	Britain (glasshouse)	Jary, 1935; Speyer, 1935
" "	" "	Lemon ...	Sicily ...	Martelli, 1937
" "	<i>T. telarius</i> var. <i>russeolus</i> Koch	Castor ...	Italy ...	De Stefani, 1919
" "	<i>T. turkestan</i> Ugar. & Nik.	Cotton ...	Uzbekistan, U.S.S.R.	Uspenskii, 1937
" "	<i>Paratetranychus pilosus</i> C. & F.	Fruit trees ...	Finland ...	Listo, Listo & Kanervo, 1939
" "	Aphid : <i>Phorodon humuli</i> Schr.	Hops ...	Britain ...	Massee, 1940
" "	Thrips ...	<i>Sambucus nigra</i>	Europe ...	Schaufuss, 1916
<i>S. punctum</i> Lec.	Mites :			
	<i>Tetranychus telarius</i> (<i>bimaculatus</i> , Harvey)	Cotton ...	U.S.A. ...	McGregor, 1913 ; McGregor & McDonough, 1917
" "	<i>Paratetranychus pilosus</i>	Fruit trees ...	U.S.A. ...	Garman, 1923 ; Ross & Robinson, 1922 ; Hamilton, 1924
" "	" "	" ...	U.S.A. ...	Hauser & Cutright, 1941
" "	" "	—	Canada ...	Gilliatt, 1935
<i>S. picipes</i> Casey	<i>T. telarius</i> ...	Cotton ...	U.S.A. ...	McGregor & McDonough, 1917
" "	<i>Tetranychus</i> sp. ...	Citrus ...	U.S.A. ...	Quayle, 1913
" "	<i>P. pilosus</i> ...	Citrus ...	U.S.A. ...	Borden, 1922
<i>S. utilis</i> Horn ...	<i>T. telarius</i> (<i>bimaculatus</i>)	Cotton ...	U.S.A. ...	McGregor & McDonough, 1917
" "	<i>T. yothersi</i> McG. ...	Avocado ...	U.S.A. ...	Moznette, 1919 and 1922
<i>Stethorus</i> sp. ...	<i>T. pacificus</i> McG. ...	Apple ...	U.S.A. ...	Webster, 1942
<i>S. vagans</i> (Blackb.)	<i>Tetranychus exsicicator</i> Zhnt.	Sugar-cane ...	Hawaii ...	Swezey, 1923
" "	<i>Bryobia praetiosa</i> Koch	Fruit trees, clover and grasses	Tasmania ...	Evans, 1943
<i>S. bifidus</i> , sp. n.	<i>Paratetranychus pilosus</i>	Apple trees	New Zealand	Cottier, 1934 (see <i>Scymnus</i> sp.)
<i>S. salutaris</i> , sp. n.	Eggs of mites ...	—	West Africa	Hargreaves, 1932 (see <i>Stethorus jejunos</i> Casey)
<i>S. pauperculus</i> Ws.	<i>Paratetranychus indicus</i> Hirst	Sorghum ...	South India	Cherian, 1933 (see <i>Scymnus gracilis</i> Mots.)
" "	Mites ...	Castor, <i>Andropogon</i> and plantain	India ...	In collection
<i>S. gilvifrons</i> (Muls.)	Mites ...	Apple tree and castor	North India	"
<i>S. tetranynchi</i> , sp. n.	<i>Tetranychus</i> sp. ...	Jute ...	Bengal, India	"

DESCRIPTION OF THE GENUS.

Stethorus Weise, 1885 (Type : *Stethorus punctillum* Weise).

Nephopullus Brèthes, 1924 (Type : *Nephopullus darwini* Brèthes). (syn. nov.)

Referable to the tribe SCYMNINI. Small, usually 1.0–1.5 mm. long, oblong-oval to rounded, moderately to strongly convex. Black, except the antennae and mouth-parts and, in certain species, the clypeus and legs also, all of which vary from piceous-red to yellowish-testaceous. Head (fig. 1) transverse, subquadrangular, with large, moderately coarsely faceted eyes; epicranium usually covered by the pronotum; clypeus subparallel laterally, slightly produced forward beyond the anterior margin of the eyes, truncate anteriorly with the antero-lateral angles sub-rounded but not emarginate round the base of the antennae; antennae (fig. 2) rather short, eleven-segmented, clubbed, with the first two segments large and oblong, the third narrower but longer than the next three or four which are nearly as wide as the third, the terminal four wider, together forming the club; labrum (fig. 3) transverse, with the



Figs. 1–12.—*Stethorus punctillum* Weise. (1) front of head $\times 75$; (2) antenna $\times 162$; (3) labrum $\times 162$; (4 & 5) mandibles $\times 162$; (6) maxilla $\times 162$; (7) labium $\times 162$; (8) prosternum $\times 75$; (9) abdominal sternites of the female $\times 34$; (10) leg $\times 75$; (11) claw $\times 162$; (12) wing $\times 18$.

lateral margins sub-rounded ; mandibles (figs. 4 and 5) bifid at the apex, with the inner tooth much smaller than the outer one, the basal tooth bicuspidate and with a grinding surface near its base over which the basal tooth of the opposite mandible operates ; maxilla (fig. 6) moderately developed except for the spatulate galea ; the maxillary palpus with the terminal segment oblong, obliquely truncate and narrower towards the apex ; labium (fig. 7) small with rather long palpi ; the second and third segments of the palpus club-shaped and conical, respectively. Pronotum transverse, nearly twice as broad as long in the middle, with the anterior margin moderately to deeply emarginate, arcuate laterally and much shorter than the basal margin ; the lateral margins moderately rounded, forming acute angles with the anterior margin ; the base weakly emarginate on either side of the truncate median part opposite the scutellum. Both the lateral and the basal margins are narrowly margined. Scutellum usually small and triangular, always with a few fine punctures and short hairs. Elytra with the base nearly as wide as that of pronotum, with the shoulder angles rather acute, the callus slightly prominent, and the elytral epipleurae moderately wide and devoid of any foveae. Membranous wings as shown in figure 12. Prosternum (fig. 8) without any carinae ; convex medially and produced forward in the middle in the form of a broad arch, which only partly covers the mouth-parts. There are six visible abdominal sternites (fig. 9), the first nearly twice as long as any one of the subsequent four and with usually complete and weakly to strongly arched femoral lines ; the last sternite entire in the female but in the male varying from entire to strongly emarginate or truncate posteriorly. Femora (fig. 10) moderately developed, not expanded but slightly channelled to accommodate a part of the base of the slender and compressed tibiae ; claws bifid (fig. 11).

Sclerotised parts of male genitalia similar to those of other Coccinellids ; siphon varying from a short, stout, slightly curved tube (fig. 71) to a long, thin, whip-like (fig. 51) structure, its proximal end, called the siphonal capsule (fig. 14, sc.), differing in shape, in closely related species ; basal plates (fig. 13, bp.) usually fused in the form of a ring through which the siphon passes ; penis (fig. 13, p.), which is in fact a posterior extension of the basal plates, consisting of a rolled piece which may be conical or tubular and varying considerably in shape in different species or groups of species ; paramera (fig. 13, pa.) arising as paired structures from the basal plates, and trab (fig. 13, t.) varying considerably in length but usually thickened at apex. In the female, the receptaculum seminis is not usually sclerotised, and the ninth sternite, which is divided so that it is actually a paired structure, forms a short tube and varies in shape in different groups of species.

Regarding *Nephropullus*, Brèthes (1924), it may be remarked that the genotype, *N. darwini* Brèthes, from Uruguay, as fixed by Korschefsky (1931), which is in the British Museum, belongs to *Stethorus* as it possesses all the important characters of the genus. Recently Nunenmacher (1937) described *Stethorus ogloblini* Nunenm. from Argentina, which shows that *Stethorus* occurs in South America. There appears to be little justification for erecting a separate genus for the South American species.

Taxonomic Position of the Genus.

Stethorus was originally proposed by Weise (1885) as a subgenus of *Scymnus*, but in 1899 both Weise and Casey regarded it as a valid genus. However, in some later works, it has been and is still being regarded as a sub-genus of *Scymnus*. On the other hand, Dobrzhansky (1924, 1926) did not consider it as a member of the tribe SCYMNINI and proposed for it a distinct tribal name, STETHORINI ; this was mainly on account of the peculiar structure of the female genitalia of the (genotype) species, *S. punctillum* Ws., which has only two ovarioles and is devoid of bursa copulatrix, receptaculum seminis and accessory glands. The male genitalia were also reported by him to be different from the form usually found in the family but no details of the differences were given. Korschefsky (1931), in his catalogue, synonymised STETHORINI with

SCYMNINI. With increased knowledge of the structure of the family as a whole, and of the large number of species of the genus, the above-mentioned character of the female genitalia does not appear to be quite so peculiar nor so universal within the genus as to warrant its separation into a distinct tribe. The male genitalia, in my opinion, do not show any peculiarity, and all gradations in the shape of the siphon, from a coiled, whip-like structure to a short and stout tube, are met with in the various species. In the female, the absence of the receptaculum seminis, etc., though very common, is by no means universal. In *Stethorus bifidus*, sp. n., from New Zealand, a well-developed and strongly sclerotised receptaculum seminis is present. Besides, this structure is known to be absent in several other Coccinellids which are not related to one another, and is, therefore, of little significance in so far as the erection of separate tribes is concerned. However, it must be emphasised that there are several other external characters in *Stethorus* which make it difficult to establish its relationship with the other genera of the tribe SCYMNINI, all of which have an exposed antennal base round which the clypeus is emarginate. In *Stethorus* the antennae arise immediately between the eyes and the lateral margins of the clypeus, and although the antennal base is exposed, the clypeus is not emarginate round the base. The other important difference lies in the shape of the prosternum which, in *Stethorus* and in no other genus of the tribe, is convex and produced forward in an arc in the middle. In *Bucolus* Muls. the middle part of the prosternum is produced forwards but it is doubtful whether this genus belongs to SCYMNINI at all, as it has only five abdominal segments, and has the elytral epipleurae deeply foveolate. As regards *Cryptolaemus* Muls., its whole prosternum is greatly enlarged and produced forward to cover the mouth-parts completely; moreover, it has a pair of short prosternal carinae. The characters of *Stethorus* that are also found in other genera of the tribe SCYMNINI are: the pubescent body, the less coarsely faceted eyes, the short and eleven-segmented antennae, the narrow clypeus and six visible abdominal sternites. On account of the biological and structural peculiarities already mentioned, *Stethorus* may be regarded as an aberrant genus of the tribe SCYMNINI.

DESCRIPTION OF THE SPECIES.

Stethorus punctillum Weise (figs. 1-17).

Stethorus punctillum Weise, 1891, p. 781; Casey, 1899, p. 136; Mader, 1924, p. 15; Korschefsky, 1931, p. 112.

Stethorus punctillum var. *investitus* Roubal, 1920, p. 79.

Stethorus investitus (Roubal), Mader, 1924, p. 15; 1927, p. 193.

Coccinella minima Rossi, 1794, p. 89; (preoccupied, *Coccinella minima* Müller, 1776, p. 65); Harold, 1875, p. 118.

Stethorus minimus (Rossi), Weise, 1885, p. 74; 1891, p. 781.

Coccinella pusilla Herbst, 1797, p. 346; (preoccupied, *Coccinella pusilla* Müller, 1776, p. 65).

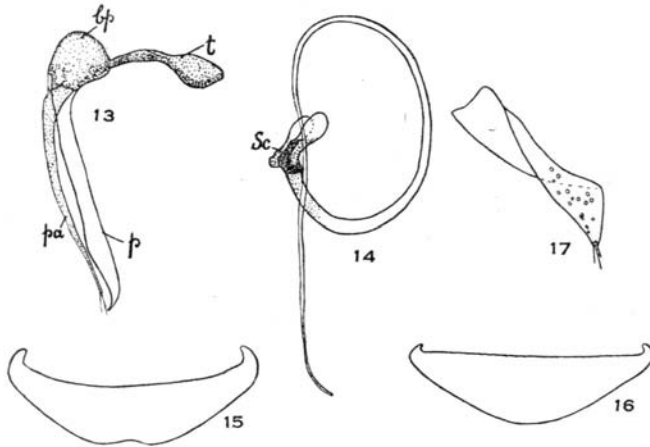
Scymnus? *pusillus* (Herbst), Crotch, 1874, p. 308; Harold, 1875, p. 118.

Coccinella atra Illiger, 1798, p. 413; (preoccupied, *Coccinella atra* Gmelin, 1789, p. 1664); Gyllenhal, 1827, p. 195.

Stethorus ater (Illiger), Korschefsky, 1931, p. 113.

Shortly oval, widest in the middle, moderately convex. Black except the testaceous antennae, mouth-parts, apices of femora, tibiae and tarsi. Dorsal surface with greyish, moderately long, sparse and semi-erect pubescence. Head with fine and sparse punctation; antennae nearly as long as the width of the clypeus and with a fusiform club (fig. 2); pronotum unevenly punctate, the punctures being fine and sparse in the median part and coarse, subrounded, navel-like and close together

towards the lateral margins; elytral punctures fairly coarse, impressed and close. Underside with greyish, short, rather sparse and subdepressed pubescence and with coarse and moderately close punctation except on the prosternum, elytral epipleurae and legs. Femoral lines (fig. 9) in the shape of a wide arch which extends as far as the middle of the first abdominal sternite; the second sternite shorter than the latter and nearly as long as the fifth but slightly longer than the third or fourth which are



Figs. 13-17.—*Stethorus punctillum* Weise. (13) parts of the male genitalia: t, trab; bp, basal plates; p, penis; pa, paramera $\times 75$; (14) siphon, sc, siphonal capsule $\times 75$; (15) sixth abdominal sternite of the male $\times 75$; (16) the same of the female $\times 75$; (17) ninth sternite of female $\times 75$.

subequal; the sixth sternite in the male widely and distinctly emarginate in the middle of the posterior margin. Male genitalia: siphon (fig. 14) with a distinct, strongly sclerotised siphonal capsule which is bifurcate distally; remaining part of siphon long, slender and becoming gradually narrower towards the distal end and forming a broad loop at the proximal end. Penis in the form of an elongate tubular structure with a sharply pointed apex which, in side-view, appears to bend towards the paramera; paramera very narrow, a little shorter than penis, and provided with a couple of short setae at the apex; trab short, nearly half as long as penis and expanded distally. Proximal part of siphonal capsule, paramera, basal plates and trab dark-coloured. Each half of ninth sternite in female subtriangular and bearing a number of short setae at the apex.

Length 1.3-1.5 mm., width 1.0-1.1 mm.

GEOGRAPHICAL DISTRIBUTION:—The distribution given by Korschevsky (1931) is Europe, Asia, Siberia and Japan. The examples examined are from various European countries, including Greece and Hyères island in the Mediterranean.

***Stethorus gilvifrons* (Mulsant) (figs. 18-22).**

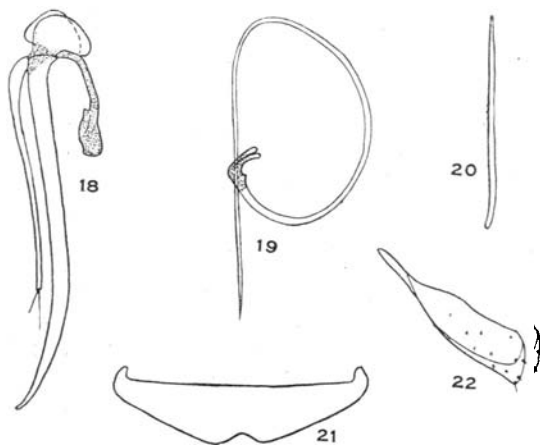
Scymnus (Pullus) gilvifrons Mulsant, 1850, p. 995.

Stethorus gilvifrons (Mulsant) Weise, 1885, p. 74.

Shortly oval, widest in the middle and slightly narrowed at the apex, convex. Head black except the testaceous anterior half to two-thirds of the interocular space, clypeus, antennae and mouth-parts; pronotum, elytra and the underside black, legs testaceous, sometimes the femora of the last pair of legs castaneous or lightly piceous in the middle. Dorsal surface with greyish, moderately long, sparse and semi-erect pubescence. Head finely and sparsely punctate, antennae with fusiform club.

Pronotum unevenly punctate, the punctures fine and rather sparse in the median one-third and much coarser, navel-like and close together towards the lateral margins. Elytra with fine and fairly close punctures which are slightly more impressed in the apical half and are oblique (as if impressed from behind). Underside with greyish, short, sparse and subdepressed pubescence. Metasternum flat in the middle, finely and sparsely punctate, towards the lateral margins with coarse and close punctures; remaining parts of underside with rather fine and moderately close punctures. Femoral lines evenly rounded, wide and not extending beyond two-fifths of the length of the segment. The sixth abdominal sternite (fig. 21) in the male with distinct and wide emargination in the middle of the posterior margin. Male genitalia: siphon (fig. 19) very thin, long and forming a complete loop proximally; siphonal capsule dark, without any outer branch, but with the inner branch elongate, rather narrow and bifurcate at apex; penis (fig. 18) very long, nearly three times the length of trab, narrow and tapering towards the apex and bent towards the paramera in the apical one-third; the spicule (fig. 20) long and thin; paramera very narrow and nearly two-thirds the length of penis, each bearing a pair of short setae at the apex; trab short and expanded distally. Each half of ninth sternite (fig. 22) in female spatulate and provided with three or four short, widely separated setae towards the apex.

Length 1.25–1.4 mm., width 0.9–1.0 mm.



Figs. 18–22.—*Stethorus gilvifrons* (Muls.): (18) parts of male genitalia $\times 75$; (19) siphon $\times 75$; (20) the spicule $\times 75$; (21) sixth abdominal sternite of the male $\times 75$; (22) ninth sternite of the female $\times 75$.

GEOGRAPHICAL DISTRIBUTION AND REMARKS:—The type locality is Derbent, Caucasus. Korschefsky gives the distribution as Asia Minor and South Europe. He also synonymises *S. minimus* Wollaston (not Rossi), from Madeira and the Canary Islands but examination of the material in Wollaston's collection in the British Museum shows that it is quite distinct from *gilvifrons*, and also from *punctillum* (syn. *minimus* Rossi). It is described below as a new species under the name *S. wollastoni*. The similarity in coloration, especially of the testaceous anterior part of the head, between the latter species and *gilvifrons* is misleading. The material examined was as follows:—

MEDITERRANEAN REGION: Sardinia, Cagliari; Cyprus, Limassol, -ii.1934 (*Mavromoustakis*); Hedevea (*sic*), 4.viii.1932; on red spider.

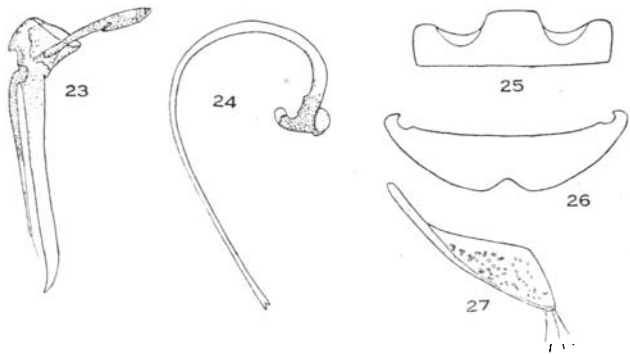
INDIA: Baluchistan, Mastung, 27.vii.1938, predacious on mite on apple tree (*A. P. Kapur*); Punjab, Lyallpur, 23.iii.1935, predacious on mites (*M. Afzal Husain*); Lyallpur, 1.viii.1935, predacious on mites on castor leaves (*A. P. Kapur*).

***Stethorus wollastoni*, sp. n. (figs. 23–27).**

Stethorus minimus Wollaston (not Rossi), 1854, p. 470.

Shortly oval, distinctly narrower than *Stethorus gilvifrons* (Muls.), moderately convex. Coloration as in *gilvifrons*, but the last pair of femora invariably deep brown to piceous. The pubescence on the dorsal surface greyish, fairly long and sparse. Head with rather coarse, impressed and sparse punctures; antennae with fusiform club. Pronotum unevenly punctate, the median one-third with fine and sparse punctures and the lateral parts with coarse, navel-like and moderately close punctures. Elytral punctures moderately coarse, less impressed and sparse. Surface between punctures smooth and shining. Underside with greyish, short and sparse pubescence, and with moderately coarse and sparse punctures except close to the lateral margins of the metasternum. Femoral lines (fig. 25) widely rounded, and extending as far as two-fifths of the length of the first abdominal sternite. In the male, the last abdominal sternite has a distinct emargination in the middle of the posterior margin (fig. 26). Male genitalia: siphon (fig. 24) moderately long, narrow in a regular arch proximally; siphonal capsule mostly dark, with the outer branch short and wide and the inner one longer and narrower; penis (fig. 23) tubular, nearly twice as long as the trapezoid, gradually but slightly narrowing distally with the extreme apex slightly bent towards the paramera, which are slender, about three-fourths the length of penis and each provided with a short seta at the apex. The trapezoid, basal plates and the proximal halves of penis and paramera dark. Each half of ninth sternite (fig. 27) in female subtriangular, with numerous irregularly crowded punctures and with three moderately long setae at the apex.

Length 1.3 mm., width 0.9 mm.



Figs. 23–27.—*Stethorus wollastoni*, sp. n.: (23) parts of male genitalia $\times 75$; (24) siphon $\times 75$; (25) first abdominal sternite $\times 34$; (26) sixth abdominal sternite of the male $\times 75$; (27) ninth sternite of female $\times 75$.

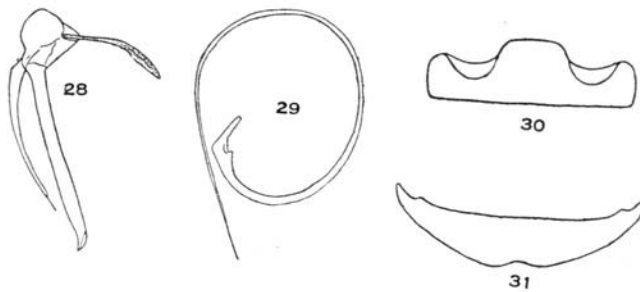
TYPE. One male in the Wollaston collection (British Museum) from MADEIRA.

PARATYPES. Both sexes, in the British Museum; 12 from Madeira and 6 from the Canary Islands, mostly in Wollaston collection.

REMARKS. The species is easily distinguished from *S. punctillum* Ws. by the testaceous coloration of the anterior part of the head, legs, etc., and by the less coarse and distinctly sparse punctation of the elytra. Further, the femoral lines also do not reach the middle of the segment as in *punctillum*. From *gilvifrons*, with which it agrees in the coloration of the head, etc., and in the shape of the femoral lines, it differs in being slightly narrower, in the punctation of the head and elytra, and in the structure of the genitalia.

***Stethorus salutaris*, sp. n. (figs. 8-31).**

Shortly oval, fairly wide in the middle, strongly convex. Black, except the reddish-testaceous anterior part of the clypeus, the femora and the last tarsus of each leg and the testaceous antennae, tibiae and the remaining tarsi. Dorsal surface with greyish, long, moderately stout, semi-erect and sparse pubescence. Head finely and sparsely punctate; pronotum unevenly punctate, punctures on the whole moderately coarse and navel-like but sparse in the middle and closer together towards the lateral margins; elytral punctures coarse, fairly impressed and close; surface between the punctures smooth and shining. Underside with greyish, rather short, sparse and subdepressed pubescence; meso- and metasternum as well as the abdominal sternites coarsely and fairly closely punctate and the rest of the underside finely and sparsely punctate. Femoral lines (fig. 30) wide, evenly arched, and extending to just near the middle of the length of the segment. The sixth abdominal sternite (fig. 31) in



Figs. 28-31.—*Stethorus salutaris*, sp. n.: (28) parts of the male genitalia $\times 75$; (29) siphon $\times 75$; (30) first abdominal sternite $\times 34$; (31) sixth abdominal sternite of male $\times 75$.

the male with a wide and distinct emargination at the apex. Male genitalia: siphon (fig. 29) long, slender and curved proximally to form a loop; siphonal capsule bulbous near the base and with an elongate inner branch; the trapezoid black, narrow, nearly half the length of penis and only moderately expanded distally; penis (fig. 28) like an elongate tube which is sharply pointed at the extreme apex; paramera nearly two-thirds the length of penis, moderately stout near the base and gradually narrowing towards the apex which bears a short seta.

Length 1.4 mm., width 1.05 mm.

TYPE AND ONE PARATYPE. In the British Museum; WEST AFRICA: Sierra Leone, predacious on eggs of mites, 21.viii.1926 (*E. Hargreaves*) (δ genitalia of the paratype dissected).

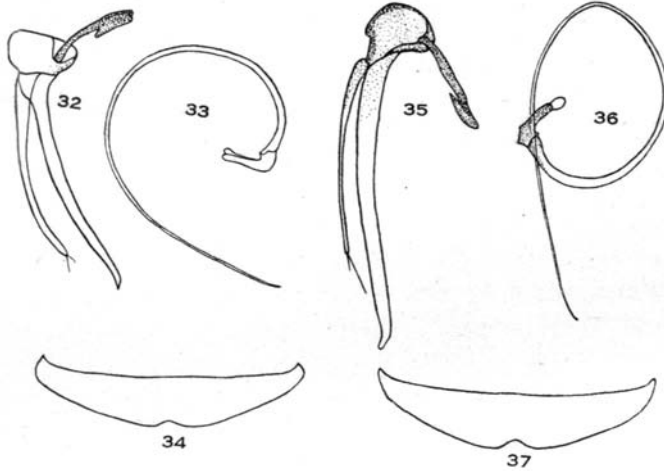
REMARKS. Hargreaves (1932) records this species as feeding upon eggs of mites under the name *Stethorus jejunus* Casey, which is quite different in structure and much smaller in size. *S. wollastoni* is very closely related to it but differs in the pubescence, punctation, and the structure of the male genitalia.

***Stethorus aethiops* Weise (figs. 32-34).**

Stethorus aethiops Weise, 1899, p. 64.

Shortly oval, widest in the middle, moderately convex. Black, except the anterior part of the interocular space, clypeus, antennae, mouth-parts and legs, all of which are usually reddish-testaceous. Femora sometimes rather piceous except at the apices; tibiae and tarsi pale testaceous. Dorsal surface with greyish, long, semi-erect and sparse pubescence. Head very finely and sparsely punctate; pronotum

unevenly punctate, the median part with fine and sparse and the lateral parts with coarse, navel-like and close punctures ; elytral punctures fine, impressed and sparse ; surface between punctures fairly smooth and shining. Underside with greyish, short and sparse pubescence ; punctation on the whole moderately coarse and close except on the prosternum and the median flat part of the metasternum where it is sparser



Figs. 32-34.—*Stethorus aethiops* Weise : (32) parts of male genitalia $\times 75$; (33) siphon $\times 75$; (34) sixth abdominal sternite of male $\times 75$.
 Figs. 35-37.—*Stethorus vinsoni*, sp. n. : (35) parts of male genitalia $\times 75$; (36) siphon $\times 75$; (37) sixth abdominal sternite of male $\times 75$.

and a little finer. Femoral lines comparatively less wide than in *gilvifrons*, semicircular and not quite reaching the middle of the length of the segment ; sixth abdominal sternite (fig. 34) in the male rather weakly emarginate at apex. Male genitalia : siphon (fig. 33) moderately long and narrow, subrounded at the proximal and straight at the distal end ; siphonal capsule without the external branch, the inner branch elongate and bifurcate ; the trab (fig. 32) piceous, short, stout and expanded at the distal end ; penis tubular, gradually narrowing distally and pointed at the extreme apex : paramera about three-fourths as long as penis, very narrow in the apical two-thirds and with a pair of short, delicate setae at the apex.

Length 1.5 mm., width 1.06 mm.

GEOGRAPHICAL DISTRIBUTION :—The type locality is Kwai, Tanganyika. Examples examined from the following localities :—

TANGANYIKA : Mafia Island, predacious on red spider on aster, -vii.1936 (*D. Vesey Fitzgerald*).

CAPE PROVINCE : Simonstown, 12-20.iv.1915 (*M. Cameron*) ; Constantia, -iv.1926 (*R. W. E. Tucker*).

REMARKS. Closely resembling *S. salutaris* in shape, size, coloration, etc., but differs considerably in the punctation and the shape of the male genitalia, etc. Sicard (1909, p. 148) suspected it to be the same as *S. jejunus* Casey, which has apparently similar distribution but is much smaller in size and also differs in coloration, etc.

***Stethorus jejunus* Casey.**

Stethorus jejunus Casey, 1899, p. 136.

Shortly oval, moderately convex. Black except the testaceous antennae, mouth-parts, apices of femora, tibiae and tarsi and the piceous-red remaining parts of the

leg. Dorsal surface with greyish, moderately long, sparse and semi-erect pubescence. Head with very fine and sparse punctures; pronotum unevenly punctate, the punctures being fine, irregularly dispersed and sparse in the median one-third and coarse, navel-like and close towards the lateral margins; elytral punctures moderately coarse, impressed and rather close; surface between punctures being smooth and shining. Underside with greyish, short and sparse pubescence; pro- and mesosternum with fine and sparse punctures; metasternum with coarse punctures which are rather sparse in the median part and very close towards the lateral margins; abdominal sternites coarsely and closely punctate. Femoral lines semicircular in outline and extending as far as two-thirds the length of the first abdominal sternite. Last abdominal sternite in male not emarginate but entire. Male genitalia: siphon short and stout, pointed at the apex and slightly bent near the proximal end; siphonal capsule with only a subtruncate inner branch; penis triangular, moderately wide at the base and nearly twice as long, gradually narrowing towards the apex which is more or less pointed; paramera about two-thirds the length of penis, rather spatulate and provided with a few moderately long setae towards the apex.

Length 1.15 mm., width 0.8 mm.

GEOGRAPHICAL DISTRIBUTION:—The type locality is Cape of Good Hope (Cape Town). Examples examined from Tanganyika, Mafia Island, 3.vii.1936 (*D. Vesey Fitzgerald*).

REMARKS. I have not been able to examine the type of this species, but as far as can be judged from the description, the material from Tanganyika belongs to it. In the structure of the male genitalia it resembles the Indian species, *S. pauperculus* Ws., which also occurs in Arabia. From *S. aethiops* Ws., which has a similar distribution, it is easily distinguished by its smaller size and by differences in coloration, punctation and the structure of the male genitalia.

***Stethorus minutissimus* Sicard.**

Stethorus minutissimus Sicard, 1909, pp. 146, 148.

Shortly oval, fairly wide in the middle, strongly convex. Black, except the reddish-testaceous anterior part of the clypeus, the testaceous antennae, mouth-parts, apices of femora, tibiae and tarsi and the piceous remaining part of the femora. Dorsal surface with greyish, moderately short, dense and semi-erect pubescence. Head minutely and sparsely punctate; pronotum with rather coarse and navel-like punctures which are finer and sparser in the middle than towards the lateral margins; elytral punctures rather coarse but less so than those of the pronotum, shallow and irregular in outline, and only moderately close; surface between punctures smooth and shining. Underside with the pubescence greyish, short, sparse and subdepressed. The prosternum, elytral epipleurae and last four abdominal sternites with fine punctures. On the remaining parts, the punctures rather coarse and sparse. The flat median part of the metasternum has irregular transverse striae. The femoral lines broadly rounded and not extending beyond two-fifths of the segment. Last abdominal sternite in male with a small but distinct emargination at the apex.

Length 1.25 mm., width 1.0 mm.

GEOGRAPHICAL DISTRIBUTION:—Madagascar (Type locality). Type, a male, in the Muséum Nationale d'Histoire naturelle, Paris.

REMARKS. In many important external characters this species resembles *S. vinsoni*, sp. n., from Mauritius, but differs clearly from the latter by the coarser and sparser punctation of the elytra and also in the character of the punctation on the metasternum. The genitalia of the male type, which is unique, could not be dissected for obvious reasons.

***Stethorus cruralis* Sicard.**

Stethorus cruralis Sicard, 1909, pp. 147, 148.

Examples of this species have not been seen and enquiries made regarding its type revealed that this is not present in the Muséum National d'Histoire naturelle, Paris. From the original description it follows that it would be the largest species of the genus, being 1.75 mm. long. The metasternum is also stated to be very convex, which is also quite unusual for the genus.

***Stethorus vinsoni*, sp. n. (figs. 35–37).**

Shortly oval, fairly wide in the middle, convex. Black, excepting the testaceous clypeus, antennae, mouth-parts, apices of femora, tibiae and tarsi and the piceous to reddish-testaceous remaining parts of the legs. Dorsal surface with greyish, short and dense pubescence. Head minutely and sparsely punctate; pronotum with coarse, navel-like punctures which are only a little sparser in the middle than towards the lateral margins; elytral punctures, fine, impressed and close; surface between punctures more or less smooth and partly shining. Underside with the pubescence similar to that on the dorsal side, the punctation uniformly coarse and close except on the elytral epipleurae, the last three abdominal sternites and the legs, where the punctures are finer and sparser. Femoral lines broadly rounded, and not extending beyond two-fifths of length of segment; the last abdominal sternite in the male with a weak emargination at the apex (fig. 37). Male genitalia: siphon (fig. 36) long and thin and forming a loop proximally; siphonal capsule dark, except at the apex of the elongate inner branch, the outer branch absent; penis (fig. 35) long, tubular, slightly narrowing towards the apex, near which it is obtusely bent towards the paramera; traba short and stout, expanded at the distal end, nearly one-third the length of the penis; paramera very narrow, nearly two-thirds the length of the penis and each with a pair of short setae at the apex; the traba, basal plates, proximal one-fourth of penis and paramera dark.

Length 1.3 mm., width 1.05 mm.

TYPE. In the British Museum; MAURITIUS, Palmar, -viii.1934 (*J. Vinson*).

PARATYPES. In the British Museum, in Mr. Vinson's and in my collection; Mauritius, Candros Is., 1946 (*David Madge*).

REMARKS. This species is closely related to *S. minutissimus* Sic. with which it has been compared above.

***Stethorus pauperculus* Weise (figs. 38–41).**

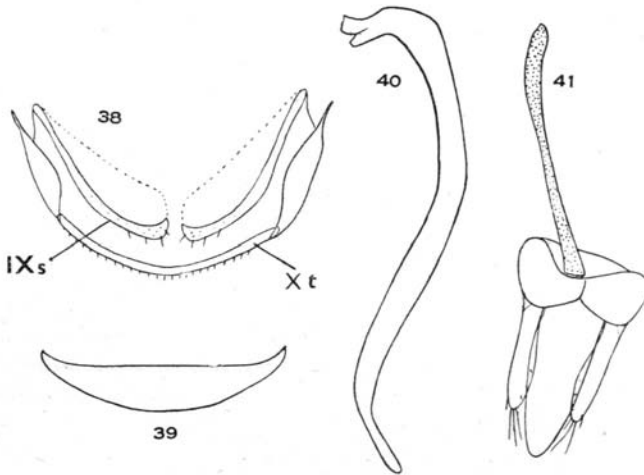
Scymnus (subgenus *Stethorus*) *pauperculus* Weise, 1895, pp. 155–156.

Stethorus pauperculus Weise, 1900, p. 440.

Shortly oval, moderately widening in the middle and narrowing posteriorly; convex. Black, excepting the testaceous antennae, mouth-parts and legs which have sometimes reddish testaceous or piceous femora. Dorsal surface with greyish, moderately long, sparse and semi-erect pubescence. Head finely and sparsely punctate. Pronotum with fine and rather sparse punctures in the middle and coarse, navel-like, and close punctures towards the lateral margins; elytral punctures rather coarse, less impressed, irregular in outline and close; surface between punctures on head and middle of pronotum smooth and shining but rather rugose on elytra. Underside with greyish, short, sparse and subdepressed pubescence and with rather close and coarse punctation, except on the median, rather flat, part of metasternum which has less coarse and sparse punctures and the elytral epipleurae and legs where the punctures are still finer and sparser. Femoral lines semicircular, complete, and

extending a little beyond the middle to nearly two-thirds the length of the first abdominal sternite; the last abdominal sternite in the male (fig. 39) devoid of any emargination. Male genitalia: siphon (fig. 40), short, stout, narrowing gradually towards the apex, moderately curved near the base and obtusely bent in an opposite direction of the apical one-sixth; siphonal capsule, short, less distinctly marked, with the external branch semicircular, and the inner one very short and truncate; trab (fig. 41) long, nearly double the length of penis, dark, and spatulate at the distal end; basal plates wide; penis sub-triangular, with a slightly rounded apex and nearly twice as long as wide at the base; paramera short, nearly two-thirds the length of penis, filiform and with a number of short setae in the apical half. Female genitalia with the ninth sternite and tenth tergite strongly sclerotised only near the margin, each half of the former with four short setae near the apex.

Length 1.0–1.2 mm., width 0.8–0.9 mm.



Figs. 38–41.—*Stethorus pauperculus* Weise: (38) terminal segments of the female $\times 162$; (39) sixth abdominal sternite of male $\times 75$; (40) siphon $\times 162$; (41) parts of male genitalia $\times 162$.

GEOGRAPHICAL DISTRIBUTION:—In the original description, Weise (1895) gives three widely separated localities, namely “Konbir, Barway, Kurseong” in India. Later (1910 p. 232), he also records it from the Philippine Islands; this is probably due to incorrect identification, as superficially many species are very much alike. The true identity of the Philippine examples can be decided when more material from there is available. From my collecting experience and from the examples before me it appears that this is probably the most widely distributed and common species in India. Two examples of it from South Arabia have also been seen. The data are as follows:

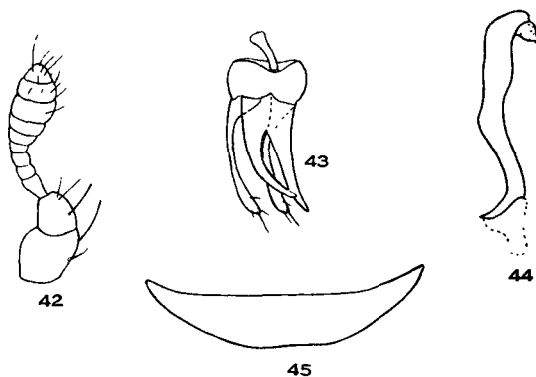
INDIA: Madras Province: Coimbatore, –vii.1910, predacious on mites on sorghum (Y. R. Rao); Coimbatore, –v.1924 (M. C. Cherian). Mysore State: Bangalore, predacious on mites on *Andropogon*. Bombay Province: Nadiad, 3.xii.1914, feeding on mites; Poona, –xi.1914 (C. S. Misra). Bihar Province: Pusa, –iv.1909 (D. P. Singh); Pusa, 20.iv.1909, predacious on red spider on castor (A. Murtaza); Pusa, 13.xi.1909 (H. M. Lefroy); Pusa, 23.i.1914 on plantain (D. P. Singh); Pusa, 26.i.1914, on wing (D. P. Singh); Pusa, 5.vi.1935, on plantain leaf (C. K. Samuel). Delhi, 29.iii.1938, predacious on mites (A. P. Kapur). Punjab Province: Lyallpur, 23.iii.1935, predacious on mites (M. Afzal Husain).

ARABIA: West Aden Port, Al Huseini, near Lahej, 26.xi.1937 (*H. Scott* and *E. B. Britton*); Yemen, Wadi Thabad, 26.xii.1937, beaten from hedge (*H. Scott* and *E. B. Britton*).

REMARKS. Weise (1895, 1900) compares this species in detail with the description of *Stethorus (Pullus) rotundulus* (Motschulsky). From the original brief description given by Motschulsky, one may conclude that at least in coloration and size ($\frac{1}{2}$ line) *rotundulus* resembles *pauperculus*, yet Weise states that *rotundulus* is larger (1.5 mm.) than *pauperculus*. I have not seen examples of this genus from Ceylon and therefore prefer, for the present, to regard the two species as distinct. It may be pointed out here that later (1900, 1910) Weise regarded *rotundulus* as a synonym of *rotundatus* Motschulsky (1859, p. 70) on the assumption that the latter author probably confused the two names. In describing *rotundatus*, Motschulsky makes two important observations: (1) that the femoral lines are triangular and (2) that the larvae feed on *Pseudococcus* on coffee leaves; these observations indicate that *rotundatus* may actually be a *Scymnus*. I am, therefore, inclined to regard Motschulsky's two species as distinct.

***Stethorus tetranychii*, sp. n. (figs. 42-45).**

Shortly oval, anterior margin of pronotum and the apices of elytra less narrow than in most other species, moderately convex. Black, excepting the uniformly pale yellow antennae, mouth-parts and legs. Dorsal surface with greyish, long, semi-erect moderately coarse and dense pubescence. Head minutely and sparsely punctate, club of antenna (fig. 42) rather robust and less tapering towards the apex. Pronotum moderately narrow anteriorly and at the anterior angles not quite so arched round the head as in *S. punctillum* Ws., or *S. pauperculus* Ws., punctation navel-like and not uniform, but fine in the middle, and coarse and close towards the lateral margins; elytral punctures irregular, coarse and usually confused in the basal two-thirds of the elytra and rather fine and distinct in the apical one-third; surface between punctures smooth and shining on head and pronotum, but less so on the elytra. Underside



Figs. 42-45.—*Stethorus tetranychii*, sp. n.: (42) antennae $\times 162$; (43) parts of male genitalia $\times 75$; (44) siphon $\times 75$; (45) sixth abdominal sternite of male $\times 75$.

with greyish, moderately long, sparse and subdepressed pubescence; punctation moderately coarse and close except on the metasternum where the punctures are much coarser. Metasternum flat in the middle and sloping towards the lateral margins. Femoral lines wide, evenly rounded and extending to near the middle of the length of the first abdominal sternite; the sixth abdominal sternite in the male only weakly and broadly emarginate at the apex (fig. 45). Male genitalia: siphon

(fig. 44) short, stout, slightly narrowing towards the apex, obtusely bent between the middle and the apical one-fifth of the length; siphonal capsule small and indistinct; trab very short and club-like, basal plates (fig. 43) wide; penis bifurcated into two sub-triangular tubes, from the apex to two-thirds of its length; paramera slightly longer than penis, narrow in the middle, club-like towards the apex, bearing a few short setae.

Length 1.3 mm., width 1.0 mm.

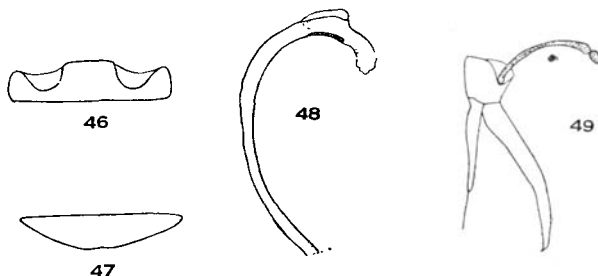
TYPE. In the British Museum; INDIA: Bengal, Dacca. Predacious on red spider (*Tetranychus* sp.) on jute (*G. M. Das*).

PARATYPES. Two in the British Museum, three in the Indian Museum and three in the author's collection, with the same data as the type.

REMARKS. The uniformly pale yellow colour of the antennae, mouth-parts and legs appears to be normal and not due to immaturity. The species is closer to *S. pauperculus* Ws., but can be distinguished by the differences in general shape, pubescence, punctuation of the body, shape of the femoral lines and structure of the male genitalia.

***Stethorus parcepunctatus*, sp. n.** (figs. 46-49).

Sub-hemispherical; strongly convex. Black, excepting the testaceous antennae, mouth-parts, tibiae and tarsi and the reddish testaceous trochanter and femora. Dorsal surface with greyish, long, delicate and sparse pubescence. Head very finely and sparsely punctate; pronotum with coarse and navel-like punctures which are sparse in the median part and close towards the lateral margins of the pronotum; elytra coarsely, shallowly and sparsely punctate with the surface between the punctures smooth and nearly shining. Underside with greyish, short, sparse and subdepressed pubescence, and coarse, impressed and sparse punctuation except on the prosternum and the legs which have finer punctures. Femoral lines (fig. 46) wide, semicircular, and extending a little beyond the middle of the segment; last abdominal sternite (fig. 47) in male slightly emarginate at apex. Male genitalia: siph (fig. 48) moderately



Figs. 46-49.—*Stethorus parcepunctatus*, sp. n.: (46) first abdominal sternite $\times 34$; (47) sixth abdominal sternite of male $\times 75$; (48) proximal part of siph $\times 162$; (49) parts of male genitalia $\times 75$.

long, narrow and curved proximally; siphonal capsule short with a fairly wide and long inner branch, but without an outer branch; trab (fig. 49) black, more than half the length of the penis, narrow, slightly curved, and knobbed at the distal end; basal plates as long as wide; penis elongate, tubular, narrowing from the base towards the pointed apex and slightly bent in the middle towards the paramera which are filiform, nearly half the length of the penis, and each provided with a long seta at the apex.

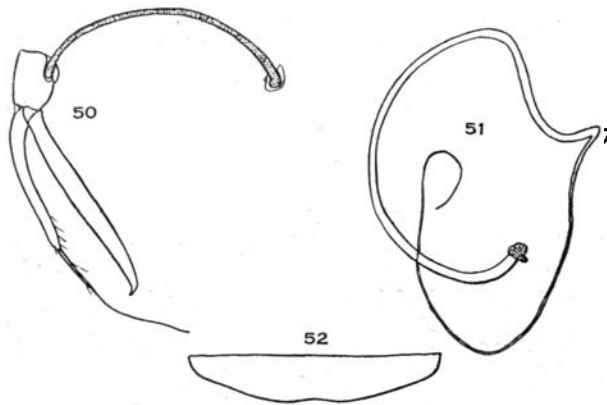
Length 1.0 mm., width 0.76 mm.

TYPE. In the British Museum; locality INDIA, Kanara (Andrewes' bequest). Another example with similar data was dissected and mounted on slides and card.

REMARKS. This species is easily distinguished from *S. pauperculus* Ws. by its sub-hemispherical and strongly convex shape, very sparse and long pubescence and sparse and distinct punctation.

***Stethorus rani*, sp. n.** (figs. 50-52).

Shortly oval, convex. Black, excepting the pale testaceous antennae, mouth-parts, apices of femora, tibiae and tarsi and the piceous to reddish-testaceous remaining parts of the legs. Dorsal surface with greyish, fairly long, semi-erect and sparse pubescence. Head minutely and sparsely punctate; pronotum with almost uniformly fine and close punctures, none of which is navel-like; elytral punctures slightly coarser, closer and much less impressed than those on pronotum. Underside with rather short, sparse and subdepressed pubescence and fine, impressed, and moderately close punctation except in the middle of the metasternum where the punctation is a little sparser. Femoral lines semicircular, complete and extending beyond the middle to nearly two-thirds the length of the segment. Last abdominal



Figs. 50-52.—*Stethorus rani*, sp. n.: (50) parts of male genitalia $\times 75$; (51) siphon $\times 75$; (52) sixth abdominal sternite of male $\times 75$.

siphon in male (fig. 52) very weakly emarginate at apex. Male genitalia: siphon (fig. 51) very long, narrow, tapering towards the apex and irregularly curved; siphonal capsule very small, like a dark knob with irregular outline; trab (fig. 50) black, long, slender and slightly curved; basal plates nearly as long as wide, penis elongate, a little shorter than trab, tubular and tapering at the apex which is slightly bent towards the paramera; the latter two-thirds as long as penis, with four or five short setae at the apical one-third and a very long and stout seta at the extreme apex.

Length 1.4 mm., width 1.1 mm.

TYPE. A male in the British Museum; locality INDIA, Ranikhet, Kumaon Hills, United Provinces (*H. G. Champion*).

PARATYPES. Four, in the British Museum (one dissected, the parts being mounted on a slide) with the same data as the type except one from Bodair, Haldwani, United Provinces (*H. G. Champion*).

REMARKS. This Himalayan species is distinguishable by the punctation of the pronotum and the structure of the male genitalia.

***Stethorus aptus*, sp. n.**

Shortly oval, slightly narrowing posteriorly; moderately convex. Black, except the reddish testaceous anterior part of clypeus, the testaceous antennae, mouth-parts, tibiae, tarsi and apices of the femora and the piceous remaining parts of the legs. Dorsal surface with greyish, moderately long, sparse and semi-erect pubescence. Head finely and sparsely punctate; pronotum with coarse, navel-like punctures which are closer together towards the lateral margins than in the middle; elytral punctures coarse, impressed and fairly close to one another; the surface between the punctures less smooth than on the head and pronotum. Underside with greyish, short, sparse and subdepressed pubescence; punctation on the whole fine and moderately close except on the meso- and metasternum where the punctures are coarse, impressed and close. Femoral lines widely rounded, complete and extending to near the middle of the length of the segment. Genitalia unknown.

Length 1.3–1.4 mm., width 1.0–1.1 mm.

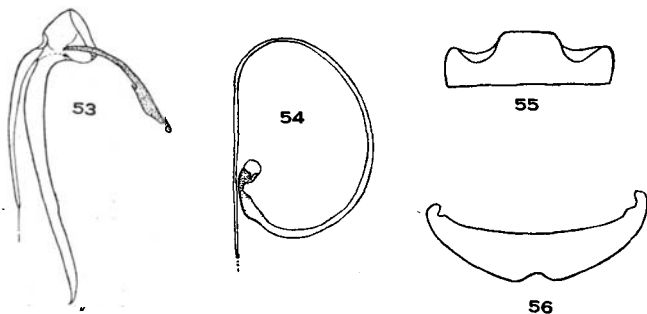
TYPE. In the British Museum; CHINA, Tygosan Island, Chusan Archipelago, (near East Coast) (*Walker*).

PARATYPES. Two, in the British Museum; China, Nimrod (II) (near East Coast) (*Walker*); China (near East Coast) (*Bowring*).

REMARKS. This species has the appearance of *S. punctillum* Ws., from which it differs in its coarser and comparatively sparser punctures on the elytra, and also by the reddish testaceous clypeus. In the latter character it resembles *S. gilvifrons* (Muls.) which, however, has very fine elytral punctures and wider femoral lines which do not reach the middle of the length of the first abdominal sternite.

***Stethorus siphonulus*, sp. n. (figs. 53–56).**

Shortly oval, widest in the middle, slightly narrower posteriorly, convex. Black, except the testaceous clypeus, antennae, mouth-parts, apical half of femora and tarsi and the castaneous basal half of femora. Dorsal surface with greyish, moderately long, sparse and semi-erect pubescence. Head finely and sparsely punctate; pronotum with rather uniformly coarse, navel-like and moderately close punctures; elytral punctures slightly finer, closer but less impressed than those on pronotum, giving a rippled appearance to the entire surface of the elytra. Underside with greyish, short and sparse pubescence; the meso- and metasternum fairly coarsely and closely punctate, the remaining parts less coarsely punctate. Femoral lines evenly curved and extending as far as one-third the length of the segment (fig. 55).



Figs. 53–56.—*Stethorus siphonulus*, sp. n.: (53) parts of male genitalia $\times 75$; (54) siphon $\times 75$; (55) first abdominal sternite $\times 34$; (56) sixth abdominal sternite of male $\times 75$.

Last abdominal sternite in male (fig. 56) distinctly emarginate at apex. Male genitalia : siphon (fig. 54) thin, long and whip-like ; siphonal capsule slightly swollen near the base, constricted in the middle and almost rounded towards the apex which is weakly chitinised and is not as dark as the rest of the capsule ; trab dark (fig. 53), moderately long and thin except at the apical one-fourth which is expanded ; penis tubular, nearly twice the length of the trab, narrowed and curved at the apex ; paramera slender, slightly longer than the trab and each with a short seta at the apex.

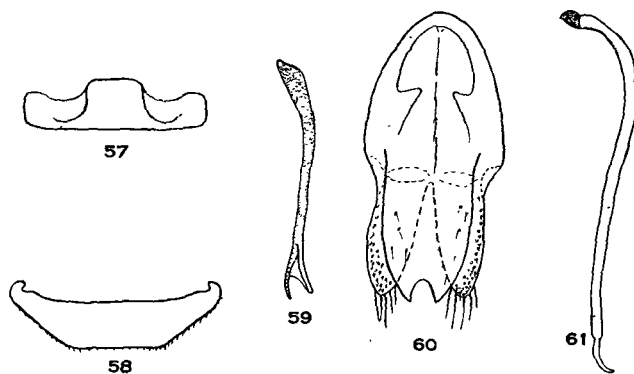
Length 1.2 mm., width 0.9 mm.

TYPE. A male in the British Museum ; MALAYA, Penang (Browning's Bequest).

PARATYPE. A male (dissected) in the British Museum ; Malaya, Kuala Lumpur, 21.vii.1939.

***Stethorus truncatus*, sp. n.** (figs. 57-61).

Shortly oval, strongly convex. Black, except the testaceous antennae, mouth-parts, tibiae and tarsi, and the reddish-testaceous remaining parts of the legs. Dorsal surface with greyish, short, sparse and rather subdepressed pubescence. Head with moderately fine and sparse punctures ; pronotum with fine, impressed and sparse punctures except near the anterior angles where they are closer ; elytral punctures similarly fine and sparse but a little less impressed ; surface between punctures smooth and shining. Underside with a pubescence similar to that on the dorsal surface and with the punctation usually moderately fine and close. Femoral lines (fig. 57) wide, semicircular, but with the external half of each so faint as to appear incomplete ; the lines reaching two-thirds the length of the segment. Last abdominal sternite (fig. 58) in male broadly truncate posteriorly. Male genitalia : siphon (fig. 61) fairly stout and moderately long, curved slightly near the proximal end and straight for



Figs. 57-61.—*Stethorus truncatus*, sp. n. : (57) first abdominal sternite $\times 34$; (58) sixth abdominal sternite of male $\times 75$; (59) the trabs $\times 75$; (60) basal plates, paramera and penis $\times 162$; (61) siphon $\times 75$.

most of its length, but the apical one-eighth narrower and curved slightly in the opposite direction ; siphonal capsule short, knob-like and dark ; trab (fig. 59) dark, elongate, bifurcate at the proximal and slightly expanded at the distal end ; basal plates (fig. 60) conical in outline, very much enlarged, larger than penis ; penis two-thirds as broad as long, evenly curved at the lateral margins and narrower towards the apex which has a deep semicircular emargination ; paramera elongate, as long as penis, rounded at the apices which bear about six long setae and also having many small setae over their outer (upper) surfaces.

Length 1.2 mm., width 0.9 mm.

TYPE. In the British Museum ; MALAYA, Kuala Lumpur, 21.viii.1939. One more example bearing the same data, dissected, the parts being mounted on a slide.

REMARKS. This species may be easily distinguished from *S. siphonulus* from Malaya by its coloration, punctation and pubescence and also by the structure of the male genitalia which is unique in that the basal plates are very well developed ; by this last character and by the truncate last abdominal sternite and the apparently incomplete femoral lines, it is separable from all other species of the genus, forming a group by itself.

***Stethorus vagans* (Blackburn).**

Scymnus vagans Blackburn, 1892, pp. 248, 250 ; Korschefsky, 1931, p. 149.

Stethorus vagans (Blackburn) Weise, 1908, p. 13.

Shortly oval, fairly wide in the middle and moderately convex. Black, excepting the narrow anterior margin of the clypeus, antennae, mouth-parts and legs ; dorsal surface with greyish, long, rather stout, sparse, and semi-erect pubescence. Head closely and finely punctate ; pronotum with the punctures fine and sparse in the middle and coarse, navel-like and close towards the lateral margins ; elytral punctures coarse, less impressed, irregular in outline and moderately close, except towards the apical one-fourth of the elytra where they become a little finer and sparser ; the space between the punctures somewhat shining but not smooth. Underside with greyish, short and sparse pubescence, punctation coarse, impressed and close, except on the prosternum where it is fine and close and on the legs where it is fine and sparse as usual. Femoral lines rather narrow, semicircular, complete and extending to three-fourths the length of the segment, the sixth abdominal sternite in the male with a deep triangular emargination which nearly subdivides the segment.

Length 1.00 mm., width 0.8 mm.

TYPE. A male in the British Museum ; AUSTRALIA, Victoria (*Koebele*).

REMARKS. Very close to the next species (*nigripes*) from which it may be distinguished by the form of the body and the characters of coloration, punctation and pubescence. The fact that Korschefsky treated it as a species of *Scymnus* suggests that he was not aware of Weise's (1908) paper on the Australian species.

***Stethorus nigripes*, sp. n. (figs. 69-70).**

Shortly oval, narrower than the preceding species and a little more convex. Black except the piceous antennae, mouth-parts and tarsi. Dorsal surface with greyish, rather short, sparse and subdepressed pubescence. Head finely and sparsely punctate ; pronotum with uniform, rather fine and sparse punctures, which are impressed but not navel-like as in *S. vagans* ; elytral punctures similar to those on pronotum except at the apex where they are shallower. Underside with the pubescence similar to that on the dorsal surface, punctation on the whole fine and fairly close, except on the middle of the metasternum which is nearly impunctate in the posterior two-thirds, but has oblique furrows (formed as if by the fusion of punctures) on the anterior one-third ; femoral lines (fig. 69) rather narrow, semicircular, extending to two-thirds the length of the segment ; shape of sixth abdominal sternite in male not known, but in the female the segment is entire posteriorly, each half of the ninth sternite sub-triangular (fig. 70).

Length 1.0 mm., width 0.76 mm.

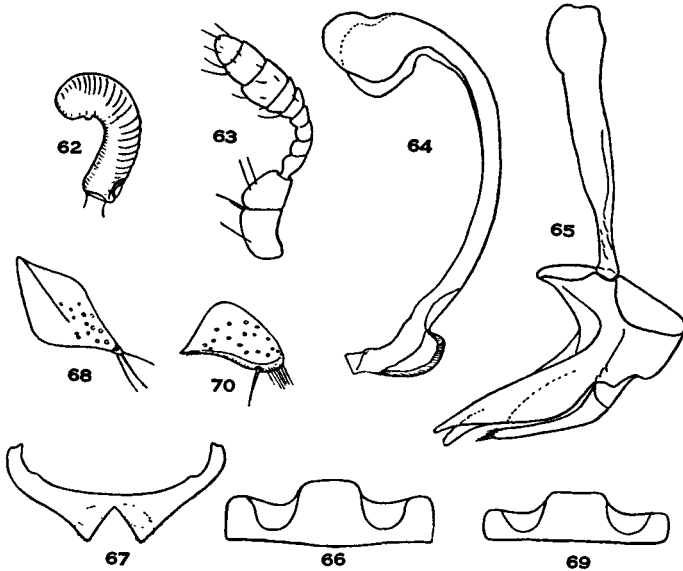
TYPE. A female in the British Museum ; WEST AUSTRALIA, Albany (*C. D. Willis*).

REMARKS. By the comparative narrowness of its body and the difference in coloration, this species appears to be quite distinct from *S. vagans* (Blackb.). The latter occurs in south-east Australia whereas *nigripes* comes from West Australia

but since a sufficient number of examples of either species has not been available for examination, it is probable that several intermediate examples may be discovered in long series from various localities. Owing to the scarcity of material, the male genitalia could not be studied.

***Stethorus bifidus*, sp. n.** (figs. 62–68).

Shortly oval, moderately wide in the middle and fairly convex. Black, excepting the testaceous antennae and first two tarsi of each leg, the piceo-testaceous mouth-parts and the rather piceous tibiae. Dorsal surface with greyish, long, delicate, sparse and sub-erect pubescence. Head with fine and moderately close punctures, antennae with a fusiform club; pronotum with fine, navel-like and sparse punctures except towards the anterior angles where the punctures are closer; elytral punctures coarse, impressed, irregular in outline and fairly close, but in the moderately shining surface between the coarse punctures there are fine and sparse ones which can only be seen



Figs. 62–68.—*Stethorus bifidus*, sp. n.: (62) spermatheca $\times 162$; (63) antenna $\times 162$; (64) siphus $\times 162$; (65) parts of male genitalia $\times 162$; (66) first abdominal sternite $\times 34$; (67) sixth abdominal sternite of male $\times 75$; (68) ninth sternite of female $\times 162$.

Figs. 69–70.—*Stethorus nigripes*, sp. n.: (69) first abdominal sternite $\times 34$; (70) ninth sternite of female $\times 162$.

under very high magnification. Underside with the pubescence rather shorter than, but otherwise similar to, that on the dorsal surface; punctation on the whole coarse, impressed on the thoracic sternites and finer on the elytral epipleurae, abdominal sternites and legs, the punctures sparse on the middle of the metathorax and the first abdominal sternite; femoral lines (fig. 66) moderately wide, semi-circular and extending to two-thirds the length of the segment; sixth sternite in the male with a deep triangular emargination at the apex nearly bisecting the segment (fig. 67). Male genitalia: siphus (fig. 64) short, stout and slightly curved in the middle; the distal end with a membranous swelling and truncate apex; proximal part divided into two oval flaps; trab (fig. 65) stout, long and spatulate; basal plates wide; penis hollow in the middle, gradually narrowing towards the apex which is subdivided

into two narrow lobes; paramera filiform, short, about three-fourths the length of the penis, each with a cluster of short setae at the apex. Female with a well developed and strongly sclerotised spermatheca (fig. 62) which is moderately bent near the middle; each half of ninth sternite (fig. 68) rhomboid in outline and with three stout and moderately long setae at the apex.

Length 1.0–1.15 mm., width 0.8–0.9 mm.

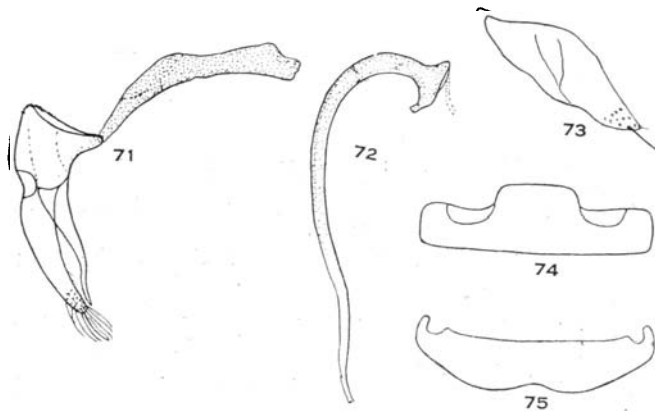
TYPE. A male in the British Museum; NEW ZEALAND, Riwaka, predacious on *Bryobia* eggs (Mites). 18.i.1922 (D. Miller).

PARATYPES. In the British Museum; four of both sexes with the same data as the type; six of both sexes, New Zealand, predacious on red spider, -i.1932, (J. Muggeridge); two females, New Zealand (C. M. Wakefield).

REMARKS. Cottier (1934) gave the biology of *Scymnus* sp. near *Scymnus minutulus* Brown. This is probably the same as *S. bifidus*. It is an important predator on mites and is more closely related to the Australian species than to those from other regions.

***Stethorus fijiensis*, sp. n. (figs. 71–75).**

Shortly oval, rather strongly convex. Black, except the testaceous anterior half of the interocular space, antennae, mouth-parts and legs. Dorsal surface with dark-brown, long, moderately stout, sparse and slightly bent to sub-erect pubescence. Head with a few fine and impressed punctures; pronotum throughout with coarse, impressed, navel-like and sparse punctures; elytral punctures, coarse, impressed, subcircular in outline and moderately close; surface between punctures on the entire dorsal surface smooth and shining. Underside with darkish, rather short and sparse pubescence; mesosternum and anterior middle part of metasternum with coarse and sparse punctures, and the rest of the underside with fine, rather shallow and sparse punctures; femoral lines (fig. 74) broadly curved and not extending to middle of length of segment; last visible abdominal sternite (fig. 75) in the male with a wide but distinct emargination at the apex. Male genitalia: siphon (fig. 72) dark except in the apical one-third, short, widely curved proximally and straight



Figs. 71–75.—*Stethorus fijiensis*, sp. n.: (71) parts of male genitalia $\times 75$; (72) siphon $\times 75$; (73) ninth sternite of female $\times 162$; (74) first abdominal sternite $\times 34$; (75) sixth abdominal sternite of male $\times 75$.

distally, gradually narrowing from the base to the apex; siphonal capsule indistinctly marked from the rest of siphon and with short inner and outer branches; trab (fig. 71) large, very long and moderately broad; penis elongate, sub-triangular, narrow and

pointed towards the apex and appearing sigmoid in side view; paramera stout, as long as penis, filiform and with long and closely set setae in the apical one-fourth. Each half of ninth sternite (fig. 73) in female rather sub-triangular, with two setae and several minute pores at the apex.

Length 1.4 mm., width 1.0 mm.

TYPE. A male in the British Museum; FIJI, Labasa, -viii.1922. (*R. Veitch*).

PARATYPES. In the British Museum; all from Fiji, four from Labasa, -vii.1921 (*R. Veitch*); one from each of the following:—Lautoka, 12.ii.1920 (*W. Greenwood*); Cuvu, -vi.1915 (*R. Veitch*); Suva, 12.vii.1921 (*H. W. Simmonds*); two examples dissected.

REMARKS. By its dark-brown pubescence, this species is easily distinguished from all others of the genus. In the structure of the male genitalia also it is very distinct and forms a group of its own.

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