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A SYNOPSIS OF ASIATIC SIRICOIDEA WITH NOTES ON CERTAIN EXOTIC AND FOSSIL FORMS (HYMENOPTERA SYMPHYTA) (1)

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In the course of close examination of a relatively long series of specimens with the object of monographically revising the scarcely known Chinese Siricoidea, it is soon found that a preliminary revision of the Asiatic forms and a generic revision of the family Xiphydriidae are absolutely essential to such a monograph. The following outline is offered, as it stands at present, in the hope of stimulating criticisms, suggestions and more extensive and intensive collection.

It must be admitted, however, that as many of the known species have been only imperfectly or inadequately described, and the material before the writer is too limited, it is impossible to formulate synoptic keys to his satisfaction upon structural characters, and has to, in certain

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cases, take advantage of descriptions given by previous authors, wherein color is the only comparative character available. The fallibility of such purely "artificial" keys is of course unavoidable.

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Superfamilia SIRICOIDEA **Rohw.**, 1911.

The latest world monograph of the modern forms of this superfamily was given by the late F. W. KONOW (1905), whose work must be considered at present as no more workable and rather out of-date. About one third of the species then known have not been critically re-examined and re-described by that eminent author and were rather inadequately placed in his keys. Catalogues of the Syntexidae by KLIMA (1937) and of Xiphydriidae and Siricidae by HEDICKE (1938, 1938 *a*) were recently appeared.

The phylogeny of this superfamily is yet uncertain, as the fossil records are too scarce, our knowledge about the larval characters, comparative internal anatomy, embryological development, etc. is far from complete and some of the interlocking links have not yet been discovered. Notwithstanding it is impossible to trace the evolutional trends and build up the family-tree upon individual character, but some of the evidences may, however, be mentioned.

Table 1. Generalised and Specialised Characters of Siricoidea.

	Generalised Type	Specialised Type
Antenna	multi-segmented, filiform.	reduction of segmentation, setaceous, clubbed, or dilated and compressed near the middle (18-30 segm. in *Urocerus*, 12-15 in Konowiini, 5 in *Teredon*).
Scape	weakly clavate, not curved nor compressed, subequal in length and in thickness to basal flagellar segments.	strongly clavate, compressed, curved, or longer and thicker than basal flagellar segments.
Pedicel	not shorter than scape or basal flagellar segments; always longer than thick (longer than basal flagellar segments in Syntexidae).	distinctly shorter than scape or basal flagellar segments; transverse.
Flagellar segment 1	not distinctly longer than its following segments, without false annulets.	distinctly lengthened by fusion of primary segments, and with false annulets.
Mandible	long, multi-dentate, symmetrical.	short, reduction of dentation (4-dentate in Xiphydriidae, 2-3 in Siricidae), asymmetrical.
Maxiliary palpus	multi-segmented.	reduction of segmentation (6-segm. in Syntexidae, Derecyrtinae, and Brachyxiphinae; 1 in Siricidae).
Mandible	long, multi-dentate, symmetrical.	short, reduction of dentation (4-dentate in Xiphydriidae, 2-3 in Siricidae, asymmetrical.

	Generalised Type	Specialised Type
Maxillary palpus	multi-segmented.	ruduction of segmentation (7-segm. in Moaxiphiinae; 6 in Syntexidae, Derecyrtinae, and Brachyxiphinae; 1 in Siricidae).
Labial palpus	multi-segmented, without sensory pit.	reduction of segmentation (4-segm. in Moaxiphiinae, 2 in Tremicinae), with sensory pit.
Eye	small, roundish.	large, oblong.
Temple ("Cheek")	broad, laterally ridged (as in most Xiphydriidae and in *Xeris*)	narrow, laterally rounded-off.
Malar space	long, flattened, without groove for receiving antenna.	short, with distinct antennal groove; or anterior margin with a median pit.
Prepisterna ("Neck")	long (as most in Xiphydriidae)	short.
Inter-sclerital sutures on thorax	distinct, complete.	partly or entirely evanescent.
Tegulae	strongly developed.	weakly developed.
Femoral groove on lateral surface of thorax.	weakly developed.	strongly developed.
Longitudinal veins	apically strong, extending to wing margin; not or only weakly zigzaged (as in Hageniidae).	apically faint, not extending to wing margin; strongly zigzaged.
Cross-veins	numerous.	reduction in number.
Vein *Sc* (Fore Wing)	long, independent, apically bifurcate (as in Syntexidae, cf. Tilly. 1927: 310, f. 3).	short, apically simple, bent analward (as in Siricinae); not traceable (as in *Tremex*); or fused with *C*, leaving Sc_2 (as in Xiphydriidae).

	Generalised Type	Specialised Type
Stigma (Fore Wing)	weakly sclerotised, very long, situated near the wing-apex (as in Hageniidae).	strongly sclerotised, lanceolate or acuminate, situated near the midpoint of the wing.
Basal piece of vein *M* (Fore Wing)	long, the apex directed distad.	short, the apex directed proximad.
Vein M_{1+2} (Fore Wing)	apically forked, forming M_1 and M_2, as in Hageniidae.	entirely coalescent to one another not apically forked.
Cell *3r* (Fore Wing)	opened, not appendiculated.	closed, distinctly appendiculated.
Vein *2A* (Fore Wing)	weakly curved, widely separated from $Cu_2 + 1A$, apically extending to the anal margin of the wing.	strongly curved and partly fused with $Cu_2 + 1A$ (as in *Konowia*); or apically evanescent, not meeting the anal margin (as in *Moaxiphiinae*).
Hamuli (Hind Wing)	numerous, hypothetically in 3 series (basal, median and apical).	reduction in number of hooklets and in series (with median and apical series in Syntexidae, basal and apical series in Xiphydriidae and Siricinae, only apical series in *Tremex*).
Tibial spur (leg I)	simple.	combed (as in Syntexidae); strongly curved and dilated (as in *Urocerus*) or with an extra minor spur (as in *Euxiphydria*).
Tibial spur (leg III)	two in number.	one only (as in *Xeris* and Tremicinae).
Tarsal claw	with an extra, oblique, major tooth near the middle (as in *Urocerus xanthus*).	simple (as in Syntexidae and a few Konowiini).

	Generalised Type	Specialised Type
Patella underneath tarsomere	absent (as in Syntexidae).	present.
Basal constriction on tergite I.	absent.	present (as in Xiphydriidae).
Tergite IX (♀).	long, without precornal basin (as in Syntexidae and Xiphydriidae).	short, with distinct precornal basin (as in Siricidae).
Tergite X (♀).	short, rather distinctly separated from IX, tubuliform and slightly protruding caudad (as in Syntexidae and Xiphydriidae).	long, inseparable from the IX, horn-like, strongly protruding caudad (as in Siricidae).
Cornus (in ♀ Siricidae).	long, in dorsal aspect acuminate (as in *Xeris* and *Xoanon*).	short, in dorsal aspect lanceolate (as in *Sirex* and *fantoma*-group), or triangular (as in Tremicinae).
Cercus	present.	absent (as in most Tremicinae).
Intersegmentaltasche (cf. Fr.-Gr. 1939) in ♀.	absent.	present (as in Siricidae except *Xeris* and possibly *Xoanon*).
Sexual dimorphism (in size, color and structure).	weak.	strong or very strong (especially leg III and abdominal apex, as in higher Siricinae and in Tremicinae).

Familia MYRMICIIDAE, nom. nov.

= Pseudosiricidae HANDL., 1908.

Genus MYRMICIUM WESTW., 1854.

(Text-fig. 92).

= *Hagenia* WEYENB., 1869 (Haplotype: *Sphinx schröteri* GERM.)
= *Pseudosirex* WEYENB., 1873 (Haplotype: *Ps. darwini* WEYENB.)
= *Rhipidorhabdus* OPPENH., 1885 (Logotype: *Sphinx schröteri* GERM., by present designation).
= *Flabellovena* OPPENH., 1885 (Logotype: *F. Karschi* OPPENH., by present designation).

Genotype: *M. heeri* WESTW. (haplotype).

Habitat: Mostly in Solnhofen, Bavaria, Germany (horizon: Upper Jurassic), also Durdlestone Bay, England (Lower Purbecks). About 10 valid species.

The first valid species of this family was originally assigned to *Sphinx* LINN., 1758 (Lepid: Sphingidae) by SCHRÖTER in 1784 and was left unnamed but compared by him to *S. convolvuli* LINN. It was later christened as *S. schröteri* by GERMAR (1839) and made the haplotype of *Hagenia* by WEYENBERGH (1869). The second and third species formerly recognized as "Pseudosiricids" were introduced by GERMAR (1036) as *Belostoma elongatum* and *Apiaria antiqua* respectively. The name *Belostoma* LATR., 1807 (= *Belostomum* BURM., 1835, nom. emend.) has already been applied for some aquatic bugs and thus no more available for "Pseudosiricids". On the other hand, *Apiaria* was originally erected solely for the reception of *antiqua* and afterwards merged into *Sirex* by ASSMANN (1877) and into *Pseudosirex* (?) by HANDLIRSCH (1908) (2). GERMAR's original drawings are so poor, that it is impossible to definitely classify his genus to family, altho it clearly represents a true hymenopteron (? bee or sawfly). HEER (1850) referred it to a termite, but this suggestion was refuted by HAGEN in 1862 (not 1856) and others. Anyhow, *Apiaria* has nothing to do with woodwasps and must be excluded from the family "Pseudosiricidae", as its body is very short and thick and its wings are much longer than the body and apically broadly rounded.

2) According to Handlirsch (1908), *Apiaria lapidea* Germ., 1842, *A.* (?) *mesozoica* (Weyenb.), 1869 and *A.* (?) *oppenheimi* Handl., 1908 are coleopterons; *A. veterana* Weyenb., 1869 is possibly a synonym of *Litholblatta lithophila* Germ. (Orthop.: Blattidae); and *A. dubia* Germ., 1849 is near *Osmia* (Megachilidae).

The available generic names next to *Apiaria* in antiquity are *Formicium* (1854), *Myrmicium* (1854), *Hagenia* (1869), and then *Pseudosirex* (1873), the first-mentioned is herein revived as a distinct genus belonging to Anaxyelidae. *Myrmicium* was originally founded upon fragment of a fore wing and was later suppressed as the synonym of *Myrmica* LATR. (Formicidae) and of "*Pseudosirex*" by: GIEBEL (1856) and HANDLIRSCH (1908) respectively. Judging from WESTWOOD's drawing, its venation is quite different from any true ants (Formicidae and allied families are unknown in Jurassic formations (3)) but very similar to that of "*Pseudosirex*" in: (1) the relative acuteness of the costo-apical angle of cell *bm*, (2) the relative length of the vein *M*-stem, (3) the longitudinal corrugation of the wing-surface, which is incongruous to ants, (4) the site of vein *icu*2, which is, in Formicidae, almost always replaced by *icu*1 and distinctly prefurcal, at most slightly postfurcal. Nevertheless, it is slightly divergent from that of "*Pseudosirex*" in TILLYARD's sense by the more elongated cell *1r*, the more breviated vein *mcu*2, the long and opened cell *1m* and the simple vein M_{1+2}. These minor differences seem to be only intrageneric variation, or due to the poor preservation of the fossil or inaccurate drawing by WESTWOOD as in the case of his *Formicium*. Evidently *Myrmicium* is well deserved to be revived for replacing *Pseudosirex*, which must drop as it has on priority over *Myrmicium* or even *Hagenia*.

Hagenia, isogenotypic with *Rhipidorhabdus*, has long been discarded by subsequent authors probably because it is antedated by *Hagenius* SELYS, 1854 (Odonata). But even in such a case, it does not lead to any objections to the International Rules of Zoological Nomenclature. (4)

The venational schemes of "*Pseudosirex*" as given by HANDLIRSCH (1908) and TILLYARD (1927) are rather different. In the former author's figure, veins *R* and *M* are entirely independent from each other, this is doubtless merely due to misinterpretation, as no such

3) *Palaeomyrmex prodromus* Heer, 1865, from Schambelen, Switzerland, Lower Lias, originally placed in Formicidae, was considered by Goss (1879, 1880) and Handlirsch (1908) to be non-hymenopteron, but probably a homopteron.

4) Intern. Rules Zool. Nomen., Art. 36, Recommendations: "It is well to avoid the introduction of new generic names which differ from generic names already in use only in termination or in a slight variation of spelling which might lead to confusion. But when once introduced, such names are not to be rejected on this account. Examples: *Picus*, *Pica*; *Polyodus*, *Polyodon*, *Polyodonta*, *Polyodontas*, *Polyodontus*; .....".

separated veins are known to be exist in any recent or fossil hymenopterons or can be traced from any of other authors' drawings or photographs of "Pseudosiricids". TILLYARD, on the other hand, asserted that the vein M_{1+2} is apically forked, but this statement does not agree with other authors' findings. It may also be noted that in OPPENHEIM's (1885) figure for "*Belostoma*" *elongatum* GERM., the wings appear to be entirely smooth and non-corrugated, although the venation is typical for the genus.

Familia ANAXYELIDAE MART., 1925.

Genus ANAXYELA MART., 1925.

Genotype: *A. gracilis* MART. (Haplotype).

Habitat: Galkino, East Karatau, Turkestan (horizon: Jurassic). 1 species.

Genus FORMICIUM WESTW., 1854.

(Text-fig. 8).

Genotype: *F. brodiei* WESTW., 1854 (Haplotype).

Habitat: Durdlestone Bay, England (horizon: Lower Purbecks). 1 species.

This genus was also originally founded on fragment of a fore wing and was later synonymised by GIEBEL (1856) and HANDLIRSCH (1908) with *Ponera* LATR. (Formicidae) and "*Pseudosirex*" respectively. COCKERELL (1921) has given, from the type specimen, a new figuration of its venational scheme, in which the costo-apical angle of the cell *bm* is very acute, the cells *1r* and *2r* are both closed, the costal margin of cell *1r* is slightly thickened, bearing an appearance of a rudimentary pterostigma, the cell *1m* seems to be opened, and the vien *icu*2 is interstitial. In these respects, it corresponds to that of the recent Siricinae and cannot be mistaken for Ponerinae or other primitive ants.

Familia SYNTEXIDAE BENS., 1936.

= Syntectidae ROSS, 1937.

Represented only by one species, *Syntexis libocedrii* ROHW., 1915, from California.

Familia XIPHYDRIIDAE (LEACH), 1830.

No fossil representatives of this family have heretofore been discovered.

The mouthparts of the various genera of this family have not been critically studied and the descriptions by earlier authors are rather perplexing, thus KONOW (1905: 41) only roughly described the genus *Xiphydria* (s. lat.) as: "Maxillarpalpen ziemlich kurz, dünn, 5-6 gliedrig; Labialpalpen kraftig entwickelt, 4-gliedrig", and BENSON (1943: 358) on the other hand, defined this family as "maxillary palpi 4- and labial palpi 3-segmented". An examination of the material at hand reveals that not only the number of segmentation and the relative size and shape of the segments but also the nature of articulation are by no means uniform among the species generally assigned to *Xiphydria*, s. lat. It thus appears advisable to segregate the species into several subgenera, genera, tribes or even subfamilies according to the structure of mouthparts incorporated with other structural characters, such as the general shape of head, "neck", venation, etc.

In comparing with Siricidae and conferring BENSON's (1943) work, this family should be re-defined as follows: Sexual dimorphism weak: antennae usually setaceous, the pedicel almost always longer than thick, and the first flagellar segment long, usually with false annulet; mandibles 4-dentate (? with exception) maxillary palpi 4-7 segmented; labial palpi 3-4 segmented, the apical segment usually without a sensory cup; clypeus anteriorly with a median tooth (? with exception), and posteriorly not well separated from frons; "neck" long; mesonotum usually with a distinct transverse furrow; abdomen in ♂ usually strongly flattened dorso-ventrally, and laterally sharply margined, in ♀ posteriorly slightly compressed bilaterally; tergite I basally usually slightly constricted and partly fused with metapleuron; tergite IX long; precornal basin and cornus absent; tergite X rather distinctly separated from the IX; cerci always present; "Intersegmentaltasche" in ♀ for housing symbiotic fungi absent (? any exception); tegulae large; vein *Sc* in the fore wing fused with *C*, leaving only Sc_2 traceable; basal piece of vein *M* apically directed anal-apicad instead of anal-basad; vein *icu*1 never present; cell *2sm* subquadrate, not elongate; hind wings each with two series of hamuli, one basal and one apical; tibiae I apically usually with one spur only.

Of this family, 4 genera (*Xiphydria*, *Konowia*, *Brachyxiphus*, *Derecyrta*) were recognised by ASHMEAD (1898) and KONOW (1905), which were assigned by ASHMEAD (lot. cit.) and ROHWER (1911) into 2 subfamilies (Xiphydriinae and Derecyrtinae, the latter was monobasic) by the shape of pronotum and the presence or absence of vein *rm*1 in the fore wing. The genera *Pseudoxiphydria*, *Xiphydriola*, *Euxiphydria* and *Platyxiphydria* were subsequently erected by ENSLIN (1911), SEMENOV (1921), SEMENOV & GUSSAKOVSKIJ (1935) and TAKEUCHI (1938) respectively. In the present paper, an attempt to re-arrange and re-define the genera on the basis of certain new diagnostic characters was undertaken, and 6 subfamilies, 15 genera, together with a few tribes and subgenera, were recognised. The work is by no means a successful one, as a certain number of the "old" species are herein, for convenience, temporarily assigned to genera merely by interpretation on descriptions. It is hoped, with the cooperation of colleague in other countries, all of the known species can each be properly placed in its genus as restricted and with the present synopsis as a stepping stone, a system for the major classification of the family can be gradually modelled. A census for the various genera, including the novelties described in the paper, is given below.

Table 2. Census of Xiphydriidae.

		Palaearctic	Nearctic	Oriental	Australasian	Neotropical	Total no. spp. for each genus
Derecyrtinae	Derecyrta	—	—	—	—	10	10
Brachyxiphinae	Euxiphia	—	—	—	—	1	1
	Brachyxiphus	—	—	—	—	1	1
	Nasoxiphia	1	—	—	—	—	1
Moaxiphiinae	Moaxiphia	—	—	—	7	—	7
Hyperxiphiinae	Paripixiphia	—	—	5	—	—	5
	Hyperxiphia	2	—	7	—	—	9
Xiphydriinae	Xiphydria	20	5	—	—	—	25
	Genaxiphia	2	—	—	—	—	2
	Dryxiphia	—	—	1	—	—	1
	Xiphydriola	2	1	2	—	—	8
	Indoxiphia	—	—	3	—	—	3
	Konowia	3	—	—	—	—	3
	Paraxiphia	—	—	1	—	—	1
Euxiphydriinae	Euxiphydria	1	—	—	—	—	4
Species incertae sedis		—	—	1	—	—	1
Total no. genn. for each Region		7	2	6(1)	1	3	19(1)
Total no. spp. for each Region		31	9	20	7	12	82

Key to subfamilies, tribes, genera and subgenera of the world. (5)

1. Pronotum with a distinct dorsal surface laterally, and in dorsal aspect not deeply emarginated anteriorly; vein *rm2* in the fore wing always absent. Body cylindrical, not compressed at the apex; head strongly swollen up; maxillary palpi 6 segmented; area posterior to the supra-orbital line polished, unsculptured; antennae multi-segmented; prepisterna long; tibiae I apically with an extra minor spur; tarsal claws each with a minor tooth near the middle; terebra short. (Derecyrtinae). . . . . *Derecyrta* F. Sm.

— Pronotun without a distinct dorsal surface laterally, and in dorsal aspect deeply emarginated anteriorly; vein *rm2* in the fore wing always present. 2

2. Maxillary palpi 7 segmented; mesal orbits very strongly convergent caudad; clypeus anteriorly broadly acuminate; temples exceptionally narrow; area posterior to superior orbit in profile only about one-third as long as the shortest axis of eye; vein *2A* in the fore wing apically evanescent, not contacting wing margin. (Moaxiphiinae, subfam. nov.). . . . . *Moaxiphia*, gen. nov.

— Maxillary palpi not more than 6 segmented; mesal orbits at most weakly convergent caudad; temples moderately broad to very broad; area posterior to the superior orbit at least a half as long as the shortest axis of eye; vein *2A* in the fore wing complete, extending to the margin. 3

3. Maxillary palpi 6 segmented; labial palpi always 4 segmented. Palaearctic and Neotropical species. (Brachyxiphinae, subfam. nov.). 4

— Maxillary palpi not more than 5 segmented; labial palpi usually 3 (sometimes 4) segmented. Old World and Nearctic species. 5

4. Head slightly broader than thorax; segment III of the maxillary palpus subequal in length to V+VI together, the V very short; anterior ocellus lying on the supra-orbital line; area posterior to the supra-orbital line polished, practically unsculptured; antennal segment III only slightly longer than the IV; tarsal claws simple; terebra pretty long. . . . . *Eoxiphia*, gen. nov.

— Head not broader than thorax; segment III of the maxillary palpus distinctly shorter than V+VI together, the V subequal in length to VI, and about 2/3 the II or III, not very short; anterior ocellus lying anteriorly to the supra-orbital line; area posterior to the supra-orbital line dim, densely sculptured; antennal segment III almost 3 times as long as the IV, and even longer than I+II together; tarsal claws each with a strong minor tooth near the middle; terebra short. . . . . *Brachyxiphus* Philippi.

5) The present key is mainly constructed upon the structure of mouthparts, so as to group together the various genera and subgenera into subfamilies and tribes. Very unfortunately, the mouthparts of *Dryxiphia*, *Xiphydriola* and *Konowia* are only imperfectly or even entirely unknown to the writer. In these cases, reference should be made to their generic diagnoses.

— Head scarcely broader than thorax (*ca.* 29: 28); segment III of the maxillary palpus distinctly shorter than V+VI together; the V subequal in length to the VI, about 1/3 as long as the II, and only slightly shorter than the III; anterior ocellus lying much anteriorly to the supra-orbital line; area posterior to the supra-orbital line polished, practically unsculptured; antennal segment III almost twice as long as the IV; tarsal claws each with a strong minor tooth near the middle; terebra very long. . . . . *Nasoxiphia*, gen. nov.

5. Prepisterna long (in profile, distinctly much longer than high); vein *im* in the hind wing almost always complete (except *Paraxiphia*); vein *2A* in the fore wing widely separated from *Cu2+1A*. 6

— Prepisterna short (in profile, slightly longer than high); vein *im* in the hind wing almost always absent; vein *2A* in the fore wing usually combined with *Cu2+1A* near the base. (Xiphydriinae: Konowiini, trib. nov.). 12

6. Maxillary palpi 4 segmented; labial palpi 3 segmented, the ultimate segment very strongly dilated, roundish, with a distinct sensory pit; area posterior to the superior orbit in profile much longer than the eye; tarsal claws apically bifurcate; intermediate segments of antennae distinctly dilated and compressed (more strongly so in ♀) (Euxiphydriinae, subfam. nov.). . . . . *Euxiphydria* Sem. & Guss.

— Maxillary palpi 5 segmented; labial palpi 3-4 segmented, the ultimate segment at most weakly clavate, not roundish, and without distinct sensory pit (except *Genaxiphia inornata*, sp. nov. ♀); area posterior to the superior orbit in profile more or less shorter than the eye; intermediate segments of antennae usually not distinctly dilated, if so (in *Hyperxiphia*), they are usually not compressed. 7

7. Labial palpi 4 segmented. (Hyperxiphiinae, subfam. nov.). 8

— Labial palpi 3 segmented. (Xiphydriinae, *s. str.*). 9

8. Tarsal claws apically bifurcate; area posterior to the superior orbit in profile distinctly shorter than the eye (*ca.* 2: 3); ultimate segment of the maxillary palpus very short (except *pyrura*), only about a-half as long as the III or IV; segment II of the labial palpus basally not markedly thinned, and apically with a false annulet, the III only about two-fifths as long as the II, whereas the IV very long, originating preapically on the III. . . . . *Palpixiphia*, gen. nov.

— Tarsal claws (at least those of legs II-III) each with a minor tooth near the middle; area posterior to the superior orbit in profile only slightly shorter than the eye (*ca.* 9: 11); ultimate segment of the maxillary palpus slightly longer than the III-IV together; segment II of the labial palpus basally markedly thinned, and apically without false annulet, the III subequal in length to the II, whereas the IV normal. . . . . *Hyperxiphia*, gen. nov.

9. Terebra short; ultimate segment of the maxillary palpi rudimentary, that of the labial palpus strongly clavate; vein *im* in the hind wing absent; tarsal claws each with a minor tooth near the middle. (Paraxiphiini, trib. nov.) . . . . . *Paraxiphia*, gen. nov.

— Terebra long; ultimate segments of the maxillary and labial palpi normal; vein *im* in the hind wing present. (Xiphydriini, *s. str.*). 10

10. Tarsal claws apically bifurcate; temples anteriorly exceptionally narrow; eyes roundish elliptical: mesal orbits weakly but distinctly divergent caudad; malar spaces very short. . . . . *Genaxiphia*, gen. nov.

— Tarsal claws each with a minor tooth near the middle; temples very broad; eyes elliptical; mesal orbits subparallel to each other; malar spaces very long or moderately so. 11

11. Area posterior to the supra-orbital line dim, evenly, densely punctate; temples without well defined lateral marginal ridges nor submarginal furrow; area posterior to the superior orbit in profile distinctly shorter than the eye; mandibles entirely not overlapped by clypeus, and with the lateral margin weakly but distinctly curved in S-shape. . . . . *Dryxiphia*, gen. nov.

— Area posterior to the supra-orbital line shining, practically impunctate; temples with well developed lateral marginal ridges and submarginal furrows; area posterior to the superior orbit in profile almost as long as the eye; mandibles usually partly overlapped by clypeus, and with the lateral margin not curved in S-shape. . . . . *Xiphydria* Latr.

12. Vein *2A* in the fore wing widely separated from *Cu2 + 1A*. 13

— Vein *2A* in the fore wing combined with *Cu2 + 1A* near the base; area posterior to the supra-orbital line polished, unsculptured or nearly so. (*Konowia* Brauns). 16

13. Area posterior to the supra-orbital line shining, unsculptured or nearly so; tarsal claws simple, or, on legs I, each with a rudimentary tooth near the middle. (*Indoxiphia*, gen. nov.). 14

— Area posterior to the supra-orbital line dim, densely punctate. (*Xiphydriola* Sem.). 15

14. Vein *im* in the hind wing present. . . . . subgen. *Indoxiphia*, s. str.

— Vein *im* in the hind wing absent. . . . . subgen. *Cingalixiphia* nov.

15. Preapical tooth of the tarsal claw rudimentary or absent. . . . . *subgen. Xiphydriola*, s. str.

— Preapical tooth of the tarsal claw well developed, lying near the middle and subperpendicular to the main axis. . . . . subgen. *Platyxiphydria*, (Takeu.) comb. nov.

16. Vein *im2* in the fore wing absent; preapical tooth of the tarsal claw rudimentary or absent. . . . . subgen. *Konowia*, s. str.

— Vein *im2* in the fore wing present. 17

17. Tarsal claws apically bifurcate, the preapical tooth well developed; antennae relative long, the segment V or VI, for instance, about 2.5 or more times as long as thick. . . . . subgen. *Apoxiphia* nov.

— Tarsal claws with the preapical tooth rudimentary or absent; antennae relatively short, the segment V or VI, for instance, at most 1.5 times as long as thick. . . . . subgen. *Pseudoxiphydria*, (Ensl.) comb. nov.

Subfamilia DERECYRTINAE Ashm., 1898.

Genus DERECYRTA F. Sm., 1860.

Genotype: *D. pictipennis* F. Sm. (Haplotype).

Habitat: Neotropical. 10 species.

Subfamilia BRACHYXIPHINAE nov.

Genus Eoxiphia novum.

"Body slender. Head slightly broader than thorax, and in dorsal aspect, somewhat widened behind the eyes. Maxillary palpi 6 segmented, length of the I = II + III, III = V + VI, the V very short. Labial palpi 4 (?) segmented. Clypeus anteriorly with a median tooth. Anterior ocellus lying on the supra-orbital line. Area posterior to supra-orbital line polished, practically unsculptured. Antennae long, moderately setaceous, multi-segmented (*ca.* 23), the III only slightly longer than the IV. Tarsal claws simple. Terebra pretty long." (Konow, 1905). ♂ unknown.

Genotype: *Xiphydria paragaudis* Knw.

Habitat: Neotropical (Peru). 1 species.

Genus BRACHYXIPHUS Philippi, 1871.

Genotype: *B. grandis* Philippi (Orthotype).

Habitat: Neotropical (Chili, Patagonia). 1 species.

Philippi's (1871: 285, 287) description of the maxillary palpus was rather confusing, thus: "Maxillarpalpen . . . . . sechsgliedrig, *die ersten vier* Glieder beinahe gleich lang, *das letzte* etwas kurzer, spindelforming, geringelt, gleichsam in 4 Glieder geteilt." In his illustration (pl. 3, fig 1*b*), it was composed of 5 segments only (presumably, the actual segment I, which is usually very short, was omitted), the segments I-III almost in equal length and thickness, the IV subequal in length to the V, and both of them as well as the III being spindle-shaped.

Genus NASOXIPHIA novum

(Text-figs. 1-7)

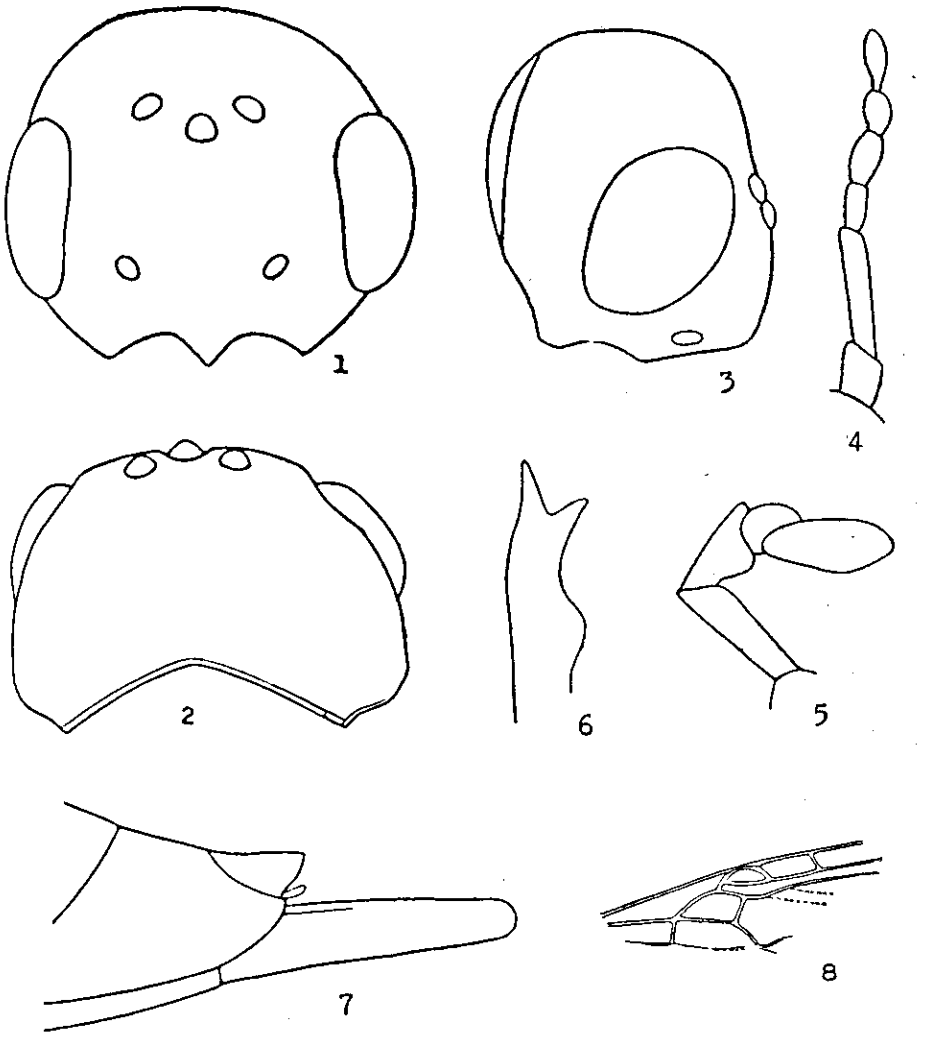
Body slender, moderate-sized. Head scarcely broader than thorax including tegulae (*ca.* 29: 28). Mandibles 4-dentate. Maxillary palpi 6-segmented; the segment II being the longest, the remainings short and almost subequal in length to one another. Labial palpi short, 4-segmented, with the segment III very short; the II and IV distinctly clavate. Supraclypeal region posteriorly strongly raised like a nose. Malar spaces long, deeply, extensively depressed, forming furrows for receiving antennae during rest. Clypeus anteriorly with a median tooth. Mesal orbits very weakly convergent caudad. Eyes roundish elliptical. Posterior ocelli lying much anteriorly to the supra-orbital line. Temples broad, with well-defined marginal ridges. Area posterior to the supra-orbital line moderately long, polished, scarcely sculptured (except post-ocellar area). Antennae setaceous, short, rather thick, about 13-14 segmented; pedicels very long, segment III long, with false annulet. Prepisterna long. Wing venation normal. Tibiae I each with only one apical spur. Tarsal claws each with a minor tooth near the middle. Abdomen laterally sharply edged, and with the intermediate segments slightly thickened; tergite X tubuliform, strongly protruding caudad. Terebra very long, apically scarcely recurved. ♂ unknown.

Genotype: *Xiphydria jakovlevi* Sem. & Guss.

Habitat: Palaearctic. 1 species.

Nasoxiphia jakovlevi (Sem. & Guss.) (Text-figs. 1-7).

♀ — Black. Whitish yellow on supraclypeal region (anteriorly or entirely), anterior halves of mesal orbits and of "cheeks", lateral bands on vertex, short posterior bands on temples (in dorsal aspect), obscure spots near superior orbits, latero-posterior corners of pronotum (in dorsal aspect), tegulae (entirely or anteriorly), basal thirds of tibiae I-II and basal fourth of the III, and lateral flecks on abdominal tergites III-V and VIII (Semenov *et al.* say: VI also). Mandibles rufous. Antennae, notably basally, more or less tinted with red. Wings hyalinous; trans-stigmatical area of the fore wing very weakly stained with brownish, darkest in the cell *2r*; veins brown; stigmata reddish brown. Legs rufous, coxae black, tarsi more or less darkened. Terebra with basal portion yellowish brown; apical portion dull brown, the superior margin reddish.



Text-figs. 1-8. — *Nasoxiphia Jakovlevi* (Sem. & Guss.) ♀, head in cephalic (1), dorsal (2), and lateral (3) aspects, maxillary (4) and labial (5) palpi, tibial spur I (6) and abdominal apex (7). — *Formicium brodiei* Westw., fore wing (8) (redrawn from Cockerell).

Body moderately robust. Hairs brownish. Head in dorsal aspect very slightly narrowed and subparallel to each other behind eyes. Clypeus flattened, confluently punctate, inseparable from frons, anterio-submedially with a deep semi-circular depression (at either side of the median tooth). Paragenae smooth, without transverse ridges. Malar spaces smooth, slightly longer than the pedicel, very deeply roundly depressed, the posterior non-depressed area almost interrupted. Frons shallowly striato-reticulated, discally with a rather deep, roundish depression, surrounded by a horse-shoe ring which is formed by the strongly raised supraclypeal region and post-antennal areas; supraclypeal region coarsely punctate, flattened, forming an oblique plane, and being almost perpendicular to the frons proper in profile; ocellar triangle surrounded by short radiating striae. Eyes about 28 x 21. Inter-antennal distance *vs.* antenno-orbital distance about 15 x 7. OOL: POL about 5: 4. Temples broad, shining; "cheeks" rather coarsely but very scatteredly punctate, and with fine striae near the orbit. Vertex finely, scatteredly punctate, without median furrow; the post-ocellar area (about as long as OOL) being, however, rather coarsely striato-punctate. Antennae comparatively thick, a trifle shorter than twice the breadth of head, 13-14 segmented; scapes clavate, strongly curved near the base, slightly thicker than any of the following segments; pedicels about 2 x 1; relative lengths of segments I-V about 30: 18: 25: 13: 12. Mesonotum coarsely, shallowly reticulated, with weak but distinct median and parapsidal furrows (SEMENOV *et al.* say: "suturis omnino obsoletis"); prescutum subgibbose; scutum with a flattened, impunctate band at each side. Scutellum also shallowly reticulated, but more finely so; the marginal depressed areas smooth, polished; lateral margins weakly divergent caudad, posterior margin excessively broadly rounded. Lateral pronotal slopes superiorly sparsely punctate, medially transversely striated, inferiorly smooth, impunctate. Prepisterna shallowly, densely punctate. Mesepisterna and metapleura shallowly reticulato-punctate. Mesepimera striated. Vein *mcu*$_2$ in the fore wing evenly curved, subequal in length to *mcu*$_1$. Tibiae III scarcely compressed, weakly sulcated along the inferior margin of the exterior surface. Relative lengths of the tibiae, basitarsi and apico-tarsomeres of legs III about 56: 25: 30. Abdominal tergites I-II confluently punctate, the following ones alutaceous. Relative lengths of the basal and apical portions of the terebra (measured along the inferior margin) about 21: 22. Length including terebra about 12-13 mm., excluding terebra 11-12 mm.

Kirin: Chiao-Ho, 14. vii. 1937, 2 ♀♀ (Acad. Sinica). New to China.

This very rare species was heretofore known from the unique type, found near Vladivostok. Besides the relative brevity and thickness of the antennae, it can be readily separated from other Xiphydriids by the structure of palpi, the white ring on tibia, the strongly raised frons and the extraordinarily depressed genae; the last character is rather analogous to the well developed antennal furrow on gena in Siricidae. From *Xiphydria camelus*, which was stated by Semenov *et al* to be very closely allied to the present species, it can be also be immediately distinguished by its long terebra and less extensively sculptured vertex.

Subfamilia MOAXIPHIINAE nov.

Genus MOAXIPHIA novum.

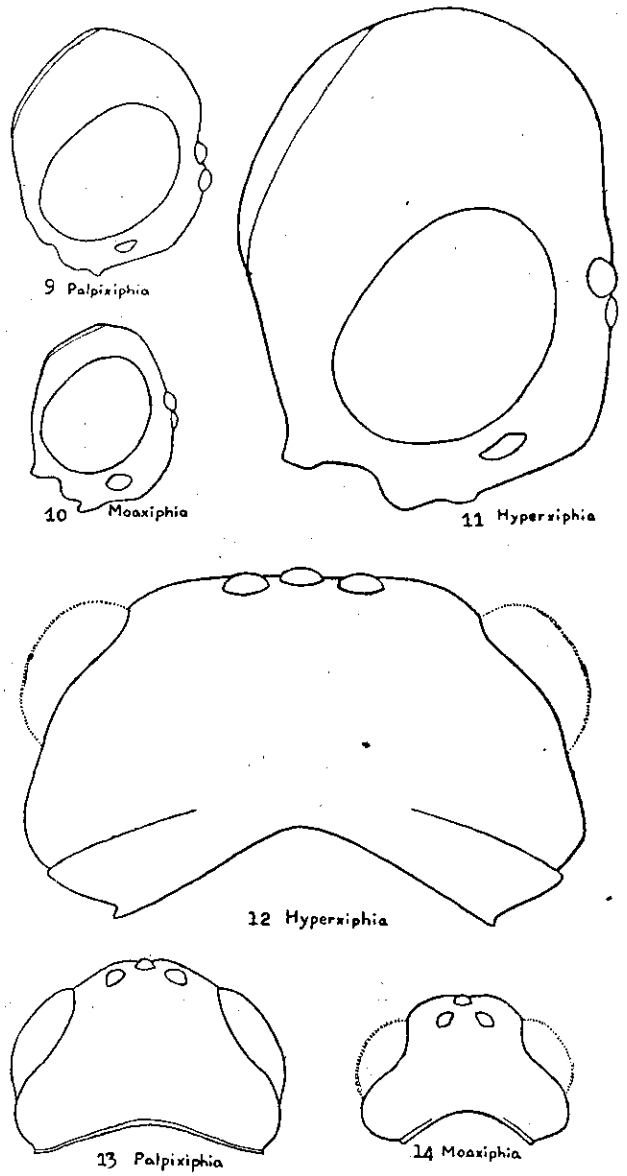
(Text-figs. 10, 14, 16, 25, 30).

Body slender, small-sized. Head slightly narrower than thorax, in dorsal aspect roundly narrowed behind eyes. Mandibles 4-dentate. Maxillary palpi 7-segmented. Labial palpi 4 segmented, thick, short. Malar spaces very short. Clypeus anteriorly broadly acuminate. Mesal orbits strongly convergent caudad. Eyes roundish. Posterior ocelli lying fairly anteriorly to the supra-orbital line. POL subequal to OOL. Temples very narrow, laterally rounded-off, without distinct marginal ridges. Area posterior to the supra-orbital line very short, polished, not sculptured. Antennae thin, long, setaceous; pedicels very long; segment III with false annulet. Prepisterna long. Vein *2A* in the fore wing lying remotely to *Cu*$_2$ + *1A*, apically evanescent. Tibiae I usually each with one apical spur only. Tarsal claws apically bifurcate. ♀ unknown to the writer. (6)

Genotype: *Derecyrta decepta* F. SM.

Habitat: Australasian. 7 species. Besides the genotype, the following ones probably should be transferred from *Xiphydria*, s. lat. to this genus: *duniana* GOURL., *laeviceps* F. SM., *leai* FORS., *obtusiventris* ROHW., *rufipes* F. SM. and *testacea* MOCS.

6) From Tillyard's (1926: Fig. T14) figure of *X. decepta*, ♀, the abdomen is short, with the intermediate segments thickened, and posterior ones attenuated; the tergite X is tubuliform, protruding caudad; the terebra is moderately short.



Text-figs. 9-14. Lateral and dorsal aspects of the head of Moaxiphiinae-genera: *Moaxiphia decepta* (F. Sm.) ♂ (10, 14); *Palpixiphia formosana* (Ensl.) ♂ (9, 13); *Hyperxiphia ungulivaria* sp. nov. ♀ — Holotype (11, 12).

Subfamilia HYPERXIPHIINAE nov.

Genus PALPIXIPHIA novum.

(Text-figs. 9, 13, 17, 26, 27, 32, 38).

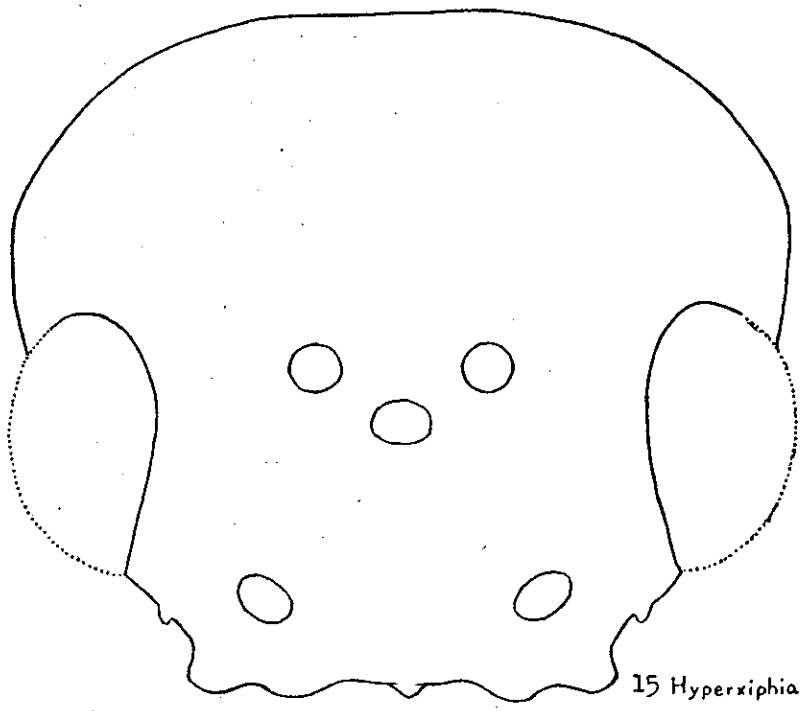
Body slender, small-sized. Head slightly narrower than thorax, in dorsal aspect slightly roundly narrowed behind eyes. Mandibles 4-dentate. Maxillary palpi 5 segmented (see discussion under *P. humeralis*, sp. nov.), the ultimate segment exceptionally short, even less than a-half as long as its preceding one. Labial palpi 4 segmented, the segment II with a false annulet near the apex, the III very short, the IV originating preapically on the III. Malar spaces very short. Clypeus anteriorly with a median tooth. Mesal orbits very weakly convergent caudad. Eyes roundish elliptical. Posterior ocelli lying much anteriorly to the supra-orbital line. Temples narrow, with poorly developed lateral marginal ridges. Area posterior to the supra-orbital line rather short, polished, scarcely sculptured. Antennae thin, long, setaceous; pedicels very long; segment III short, usually without false annulet. Prepisterna long. Wing venation normal. Tibiae I usually each with one apical spur only. Tarsal claws apically bifurcate. ♀ unknown to the writer.

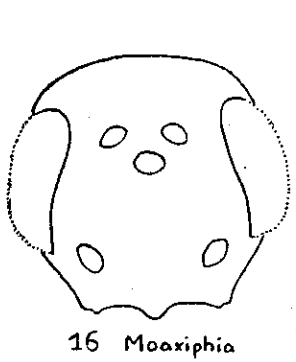
Genotype: *Xiphydria formosana* Ensl.

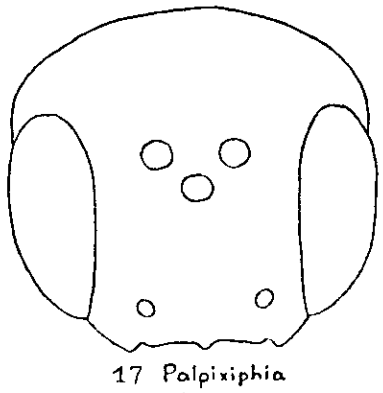
Habitat: Oriental. 5 species.

Key to species.

1. Wings violaceous; body including legs entirely black to dark brownish black, not pale marked, but with apical 2 abdominal segments rufous; ultimate segment of the maxillary palpus somewhat longer than either the III or the IV. ♂ 16 mm. . . . . *pyrura* (Rohw.), 1921.
— Wings clear hyaline or nearly so; body including legs more or less pale marked, apical abdominal segments not rufous; ultimate segment of the maxillary palpus much shorter than the preceding one. 2
2. Venter of thorax and of abdomen (at most except sternites VII-VIII) entirely yellow; legs dominantly or entirely yellow. 4
— Venter of thorax and of abdomen black; legs ferruginous or brownish yellow. 3
3. Antennae brownish black, 11 segmented, rather thick, and evenly so, the segment II subequal in length to the IV and a little longer than a-half of the III, the ultimate segment very small, papilla-formed; abdomen brownish yellow, gradually darkened towards the apex, tergites II, III and IV (and sometimes the VIII also) with pale markings; legs brownish







Text-figs. 15-17. Cephalic aspect of the head of Moaxiphiinae-genera: *Moaxiphia decepta* (F. Sm.) ♂ (16), *Palpixiphia formosana* (Ensl.) ♂ (17), *Hyperxiphia ungulivaria* sp. nov. ♀ — Holotype (15).

yellow, coxae whitish yellow; pronotum almost smooth and polished. ♀ 11 mm. . . . . *funicornis* (Knw.), 1897.

— Antennae in ♀ yellow, basal 2 segments brownish, 15 segmented, slender, tapering from the segment II, which is slightly longer than the IV or V, and two-thirds as long as the III; in ♂ whitish, with the basal 2 segments pale brownish; abdominal tergites I-IV (except median portion of the I and medio-posterior margin of the II-IV) ferruginous, the following ones black, the VII and VIII with yellow markings; legs in both sexes ferruginous, tibiae and tarsi basally whitish; pronotum longitudinally striated on its anterior surface. ♂ 8 mm., ♀ 12 mm. . . . . *flavicornis* (Rohw.), 1921.

4. Abdomen subcylindrical, dorsally uniformly dull brown to black, ventrally uniformly whitish yellow; malar spaces not medially interrupted; humeral angles of pronotum weakly developed, laterally roundly edged; tergite VIII medially not furrowed. ♂ 10 mm. . . . . *formosana* (Ensl.), 1911.

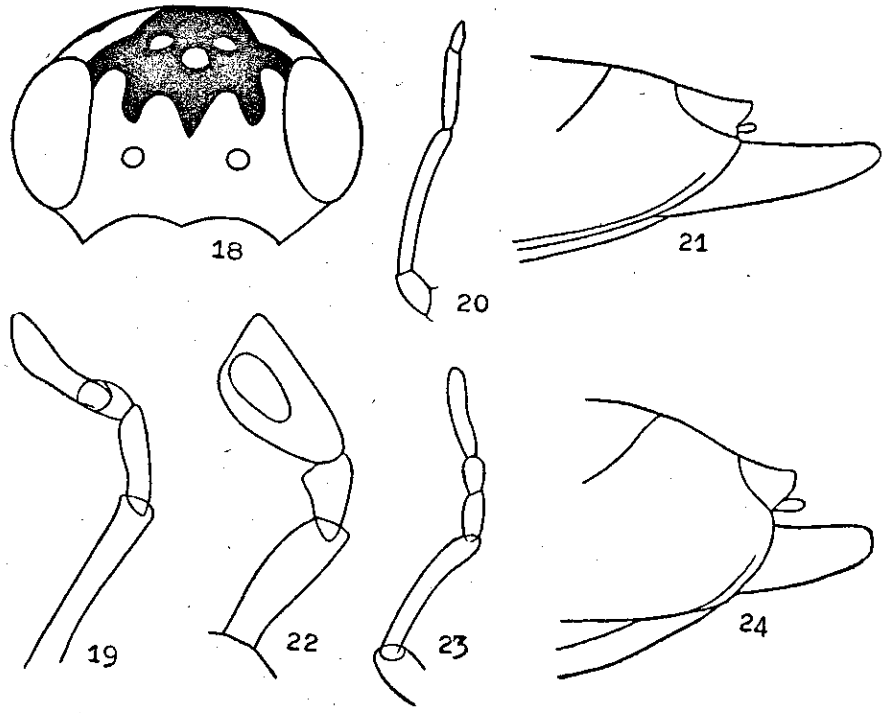
— Abdomen very strongly flattened, basally dominantly (dorsum) or entirely (venter) yellow, apically uniformly black (except tergite IX); malar spaces medially interrupted; humeral angles of pronotum excessively strong, laterally sharply edged; tergite VIII medially sulcated. ♂ 13.5-14 mm. . . . . *humeralis*, sp. nov.

Palpixiphia humeralis, sp. nov. (Text-figs. 18-20).

♂ — Black. Whitish yellow on mandibles (except apical margins), clypeus, paragenae, temples, anterior half of frons (the pale marking posteriorly produced into 4 short lobes), V-shaped markings on anterio-lateral corners of vertex, pronotum, tegulae, posterior lobes of mesonotum, anterio lateral corners of metanotum, thoracic pleura, venter of the whole body (except abdominal sternites VII-VIII), and tergite IX. Reddish yellow on discal area of prescutum and of scutellum, abdominal tergites I-V and anterio-lateral corners of the VI; the I (anterior margin and medial lobes), II-V (anterior and posterior bands) more or less darkened, dull brown to black. Scapes and pedicels dull reddish brown. Wings hyaline, fore wings basally very slightly stained with yellowish and with a very weakly infuscated post-stigmatic fascia (darkest in cell *2m*); hind wings apically evenly, very weakly infuscated; veins and stigmata dull brown to black, but *C+Sc* of all wings, Cu_2+1A and basal two-thirds of *2A* of fore wings, and basal portions of Cu_2 and of *1A* of hind wings yellow. Legs yellow, femora (notably dorsum of those of legs III) distinctly darkened, reddish brown to dull brown; tibiae II-III slightly duller than tarsi.

Body slender. Hairs short, thin, greyish. Face with longitudinal striae, which extend anterior clypeal margin, divergent beyond

antennal insertions and again convergent at the level of posterior ocelli. Clypeus practically inseparable from frons; anterio-median tooth triangular. Paragenae exceedingly finely striated, transversely ridged. Malar spaces also exceedingly finely striated, medially interrupted. Frons weakly convex; median fovea long, rather broad, anteriorly extending to the level of antennal insertions. Eyes very prominent, about 31 x 28. Inter-antennal distance *vs.* antenno-orbital distance about 15:7. OOL: POL about 11: 8. Temples rather broad; "cheeks" finely, longitudinally striated; area posterior to the supra-orbital line, in profile, about two-thirds as long as the eye; the dorsal areas unsculptured. Vertex very finely and scatteredly punctate; anterio-median area transversely striated and with a short median ridge; median furrow not traceable, but tentorial pits each posteriorly with a short, shallow, broad, oblique extension. Antennae 16 segmented, with the total length about twice the breadth of head, rather thick, distinctly attenuated towards the apex; scapes curved near the



Text-figs. 18-20. *Palpixiphia humeralis*, sp. nov. ♂, face markings (18), labial palpus (19) and maxillary palpus (20). — 21 *Xiphydria camelus* Linn. ♀, abdominal apex in lateral aspect. — 22-24. *Genaxiphia inornata*, sp. nov ♀, labial palpus (22), maxillary palpus (23) and abdominal apex in lateral aspect (24).

base, very strongly clavate; pedicels long, about 2×1; ultimate segment about 4×1; relative lengths of segments I-V about 20: 10: 14: 8: 7; relative maximum thickness of segments I-III about 8: 5: 4. Pronotum with humeral angles excessively prominent, transversely striated, laterally sharply edged and overlapping the lateral slope; lateral slopes each subdivided into an oblique, incurved, moderately punctate, superior plane and a vertical, impunctate, inferior plane; prepisterna laterally coarsely, shallowly punctate. Mesonotum coarsely reticulated; median and parapsidal furrows deep, the latters being much broader; scutum with an oblique, depressed, impunctate band on each side; scutellum neatly, shallowly reticulated, posterior third and lateral depressed areas smooth and impunctate, posterior margin broadly rounded; metanotum posteriorly at each side with a very deep, pentagonal, striated pit; mesepisterna and metapleura also finely, shallowly reticulated, the latters weakly convex, not ridged; mesepimera striated. Vein *mcu*2 of the fore wing evenly curved, slightly shorter than *mcu*1. Tibiae I each with a well-developed minor apical spur; tibiae III very weakly compressed and sulcated; relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 72: 42: 29. Abdomen very strongly dorsoventrally compressed; tergite I with lateral lobes shining, impunctate; median lobes finely, sparsely punctate; submedian furrows obliquely striated. Tergites II-III anteriorly very finely, confluently punctate, posteriorly, and also tergites IV-VI, alutaceous; the VII-VIII smooth, shining; the VIII, however, with a few very fine, scattered punctures and medially broadly sulcated. Sternites alutaceous, the VI posteriorly weakly emarginated, and with a series of sparse, rather long and stiff hairs; the VII posterio-medially with a tuft of very long, dense, erect, black hairs. Length about 13.5-14mm.

Fukien: Tou-Shui, nr. Ta-Chu-Lan, *ca.* 1500 m., 21. iv. 1948 (Joseph Fu), 2 ♂ ♂ (Maa coll.).

The color pattern together with the interrupted malar spaces, strongly developed humeral angles, deeply dimpled metanotum and sulcated tergite VIII of this new species are quite different from any other Xiphydriids. The palpial structure of both its holo- and paratypes was found to be constant and different from that of *P. formosana*. But in the case of the latter species, the only available maxillary palpus, after being illustrated, was unfortunately lost and makes reexamination impossible. If the counting of the number of segments be correct and not variable, these two species should not be assigned to the same genus. And if they prove to be congeneric, then

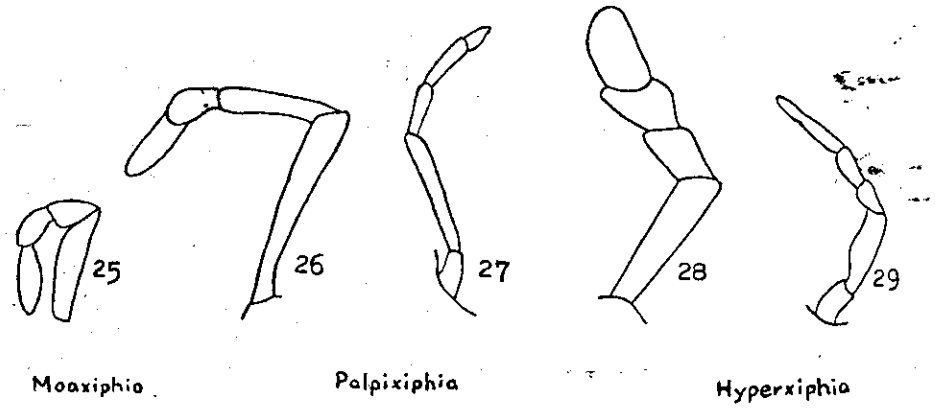
the strongly striated face and rich yellow pattern can probably serve as supplementary recognising marks of this genus.

Palpixiphia formosana (ENSL.), comb. nov.

(Text-figs. 9, 13, 17, 26, 27, 32, 38).

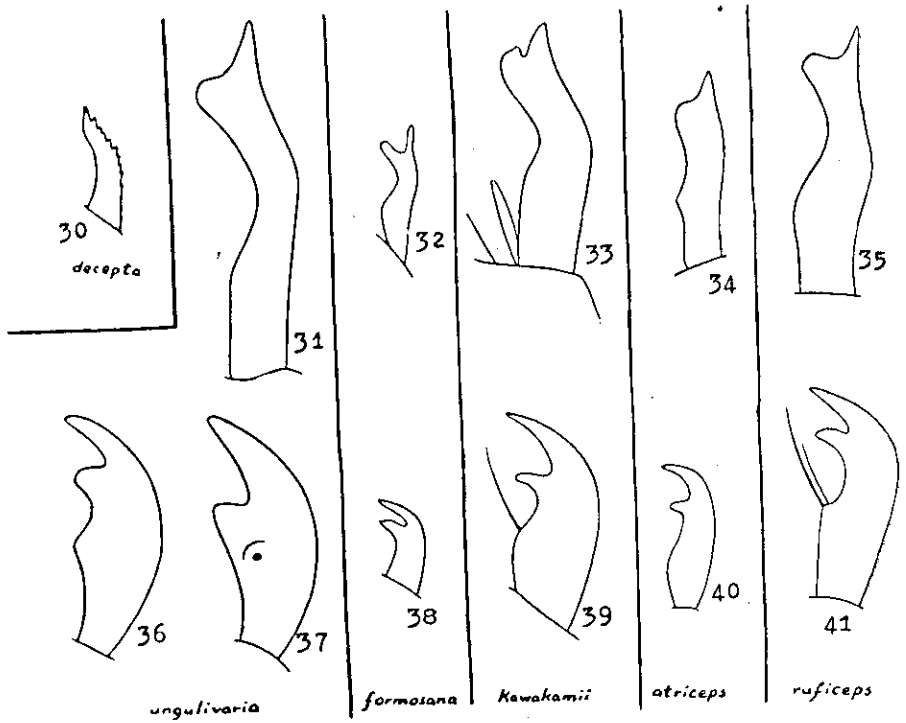
♂ — Yellow. Mandibles brown, apically black. Face with a broad, black, median band, which is anteriorly connected with three brownish longitudinal arms and extending to the level of antennal insertions (anteriorly to the anterior ocellus lying an oblong yellow mark), and posteriorly extending to posterior margins of vertex where it is strongly narrowed. Postocciput black. Antennae dull brown. Longitudinal band posteriorly to each superior orbit, superior halves of prepisterna, pronotum in dorsal aspect (except posterio-lateral margins), median bands of lateral pronotal slopes, anterior half of prescutum, scutum, anterior margins of axillae, metanotum (except median portion), extreme superior margins of mesopleura, and abdominal tergites (except lateral margins and ventral extensions) all dull brown to black. Wings hyaline, very feebly infuscated, cell *1cu* in the fore wing with a brownish apico-anal streak; veins and stigmata brown.

Body slender. Hairs short, silvery. Clypeus finely striated, practically inseparable from frons. Paragenae also striated, anteriorly swollen up, without transverse ridges. Malar spaces impunctate,



Text-figs. 25-29. Right-hand labial (25, 26, 28) and maxillary palpi (27, 29) of Moaxiphiinae-genera: *Moaxiphia decepta* (F. Sm.) ♂ (25), *Palpixiphia formosana* (Ensl.) ♂ (26, 27), *Hyperxiphia ungulivaria* sp. nov. ♀ — Holotype (28, 29).

the minimum length about 1/3 the pedicel. Area around ocellar triangle with fine, radiating striae, which anteriorly extend to anterior clypeal margin. Frons weakly convex, with a faint, roundish, discal impression. Eyes with the longest *vs.* shortest axis about 13: 10. Inter-antennal distance *vs.* antenno-ocular distance about 3: 1. OOL scarcely greater than POL. Temples anteriorly finely, longitudinally striated. Areas posterior to the supra-orbital line in profile less than ½ as long as the eye. Vertex without median furrow, anteriorly distinctly depressed. Antennae 17 segmented, slender, very weakly attenuated towards the apex, about as long as 5 basal abdominal tergites together; scapes evenly, strongly curved, weakly compressed, markedly clavate; pedicels almost twice as long as thick; relative lengths of segments I-V about 11: 6: 19: 6: 6. Lateral slopes of pronotum superiorly rather densely punctate; inferiorly smooth and impunctate.



Text-figs. 30-41. Representative tibial spur (upper column) and tarsal claw (lower column) of leg I of Xiphydriidae-genera (text-fig. 37 is of leg II): *Moaxiphia decepta* (F. Sm.) ♂ (30); *Palpixiphia formosana* (Ensl.) ♂ (32, 38); *Hyperxiphia ungulivaria* sp. nov. ♀ Holotype (31, 36, 37); *Xiphydria Kawakamii* Matsum. ♀ (33, 39); *X. atriceps* (Mau) ♂ (34, 40); *Euxiphydria ruficeps* (Moes.) (35, 41).

Prepisterna finely striato-punctate. Mesonotum with distinct median and parapsidal furrows, transversely striato-punctate; prescutum prominent; scutum at each side medially with a broad, impunctate, depressed band. Scutellum confluently punctate; anteriorly with a weak, median furrow, posteriorly narrowly rounded. Mesepisterna densely covered with moderate-sized punctures and distinct, smooth, inter-punctural spaces. Mesepimera striated. Metapleura finely confluently punctate, obliquely ridged, Vein *im*1 in the fore wing shorter than ½ of *mcu*1, which is distinctly longer than the evenly curved *mcu*2. Tibiae III weakly compressed, exteriorly scarcely sulcated; relative lengths of femora, tibiae, basitarsi and apico-tarsomeres III about 28: 42: 21: 20. Abdominal tergites I-V confluently punctate (puncturation on basal tergites coarser); VI-VII microscopically alutaceous; VIII posteriorly with moderate-sized, setigerous punctures. Abdominal sternite convex, the VII discally with a tuft of very long, dense, erect hairs, relative lengths of sternites VI-VIII about 15: 9: 18. Lenght about 10 mm.

Formosa: Fuhosho, iii. 1909 (T. SHIRAKI), 1 ♂ (det. T. SHIRAKI) (Taiwan Agric. Inst.).

This species is chiefly characterised by paler color pattern, striation on face, hair tuft on sternite VII, and non-depressed sternites. Superficially it stands very near to *Paraxiphia insularis* but can be immediately separated by the shape of their tarsal claws.

In the right-hand antenna (18 segmented) of the unique specimen at hand, the segments XV and XVI are subquadrangular, and distinctly more dilated than their preceding or succeeding segments. In the left-hand antenna, unfortunately not fully developed and enclosed within its pupal skin, they are, however, normal. This perhaps indicates its affinity to *funicornis*.

Genus HYPERXIPHIA novum

(Text-figs. 11, 12, 15, 28, 29, 31, 36, 37, 42, 43).

Body robust, large-sized. Head much narrower than thorax, in dorsal aspect contracted immediately behind eyes. Mandibles 4-dentate. Maxillary palpi 5-segmented, the segment II relatively short, basally strongly attenuated; the V slender, slightly longer than the III-IV together. Labial palpi 4-segmented, weakly clavate, thick, short. Malar spaces moderately long. Clypeus anteriorly with a median tooth. Mesal orbits scarcely convergent caudad. Eyes roundish elliptical. Posterior ocelli lying fairly anteriorly to the supra-orbital line. Temples moderately broad, laterally each with a well defined marginal ridge and submarginal furrow. Area posterior to the supra-orbital line very long, polished, practically unsculptured. Antennae short, distinctly compressed and thickened near the middle (more strongly so in ♀); pedicels moderately long; segment III short, without false annulet. Prepisterna long. Wing venation normal. Tibiae I apically usually each with an extra minute spur. Tarsal claws (at least those of legs II-III) each with a minor tooth near the middle. Abdomen with basal and apical constrictions on each tergite; in ♀: intermediate segments distinctly thickened, and laterally not sharply edged towards the apex; tergite X tubuliform, strongly protruding caudad. Terebra short and apically not recurved.

Genotype: *H. ungulivaria*, sp. nov.

Habitat: Palaearctic, Oriental. 9 species.

Key to species.

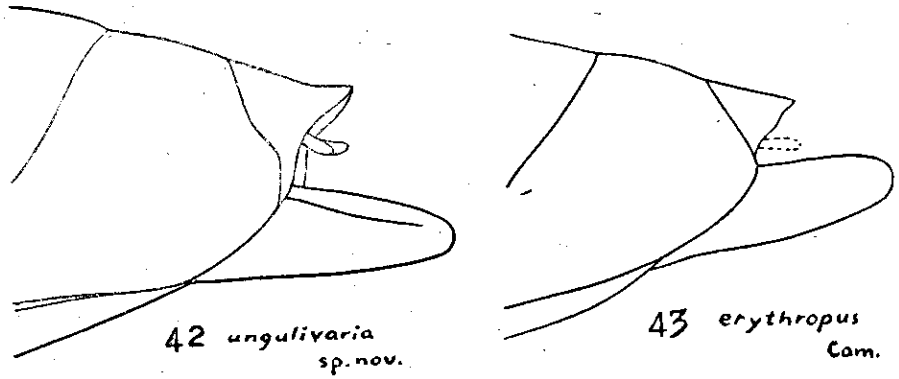
1. Head dominantly or entirely rufous. 2
— Head black or bluish black, not rufous at all. 4

2. Body with bluish metallic iridescence; legs in ♀ dominantly black, tibiae I reddish, tibiae II (extreme bases) and III (basal halves), and basitarsi III yellowish white; in ♂ rufous (excluding coxae and trochanters); abdomen in ♀ pale marked; antennae 17 segmented; POL subequal to OOL. . . 3
— Body without bluish metallic iridescence; legs in ♀ entirely yellowish, tarsomeres apically more or less brownish; abdomen in ♀ entirely black; antennae 12-13 segmented; POL about a-half longer than OOL. ♀ 8 mm. . . . . *leucopoda* (TAKEU.), 1938.

3. Superior margins of mesepisterna smooth and polished; tergites II and IX entirely black. ♀ 15 mm. . . . . *borneensis* (ROHW.), 1921.
— Superior margins of mesepisterna closely punctato-striated; tergites II and IX with whitish lateral spots. ♂ 10-12.5 mm., ♀ 12-20 mm. . . . . *heritierae* (ROHW.), 1921.

4. Body with bluish metallic iridescence. 5
— Body without bluish metallic iridescence. 7

5. Wings violaceous; antennae 14 segmented, the segment III much longer than twice the II. ♂ 13-16 mm., ♀ 16-17 mm. . . . . *erythropus* (CAM.), 1903.
— Wings clear hyaline or nearly so, at most basally or apically tinted with brown. 6



Text-figs. 42-43. Abdominal apex (lateral aspect) of ♀ *Hyperxiphia-species.*

6. Tibiae and tarsi basally paler; antennae 19 segmented, relative lengths of the segments II-IV about 2: 3: 2; pronotum almost entirely smooth and polished; pubescence on abdomen duller than that on thorax. ♀ 10 mm. . . . . *cyanea* (Mocs.), 1891.

— Tibiae and tarsi uniformly brownish black; antennae 13 segmented, relative lengths of the segments II-IV about 6: 15: 8; pronotum except anterior portions of lateral slopes dim, rugose; pubescence entirely silvery. ♀ 14-18 mm. . . . . *ungulivaria*, sp. nov.

7. Tibiae I-III entirely brownish yellow or yellowish white. 8

— Legs black, with trochanters and basal portion of tibiae III and of basitarsi III whitish; abdomen only with tergites VIII-IX whitish flecked. ♀ 12 mm. . . . . *melanaria* (Mocs.), 1904.

8. Head black, lateral and mesal orbits, a streak near each mesal superior orbit and two vertical streaks yellowish white; legs brownish yellow, apico-tarsomeres brown; abdominal tergites I, II, V, VIII and IX whitish marked; sternites I-V brownish yellow; antennae 16 segmented, the segment II a little longer than a-half of the III and subequal to IV. ♀ 9 mm. . . . . *varia* (*Mocs.*), 1904.

— Head black, area anterior to antennal insertions yellowish; legs entirely pale yellow, with the apex of each tarsomeres more or less brownish; abdomen entirely black; antennae 12-13 segmented, the segment III about twice as long as the II. ♀ 8 mm. . . . . *nakanishii* (Takeu.), 1938.

Hyperxiphia ungulivaria, sp. nov.

(Text-figs. 11, 12, 15, 28, 29, 31, 36, 37, 42).

♀ — Unicolor, black, with metallic greenish and bluish iridescence. Wings hyaline, slightly tinted with yellowish brown, basally narrowly infuscated and with greenish iridescence, cell *1cu* in the fore wing apicoanally with a dull brown spot; veins and stigmata dull brown. Legs without metallic lustre, apically more or less dull brown.

Robust. Hairs short, silvery. Clypeus depressed, reticulato-punctate. Paragenae not transversely ridged, anteriorly strongly raised-up, smooth and polished, posteriorly finely striated. Malar spaces finely, confluently punctate; the minimum length about 1/3 the pedicel. Frons anteriorly coarsely reticulated and with a V-shaped tumescence, which is interrupted by a short median furrow; area around ocellar triangle with radiating striae. Eyes with the longest *vs.* shortest axis about 19: 15. Inter-antennal distance *vs.* antenno-ocular distance about 11: 5. POL: OOL about 8: 7. Temples anteriorly reticulato-punctate; posteriorly sparsely punctate, but rather densely so near the supra-orbital line. Vertex gibbose, anteriorly slightly depressed, with a short, shallow, longitudinal furrow lying laterad to each posterior ocellus; area posterior to the supra-orbital line (except the striated, triangular area lying immediately posteriorly to ocellar triangle), smooth, strongly raised, with a faint, median furrow, and fine, scattered punctures. Antennae short, 13 segmented, subequal in length to meso- plus metathorax; scapes basally compressed and weakly curved; pedicels slightly longer than thick; intermediate segments compressed and very strongly dilated; segment III being the thickest of all, basally slightly thinner; IV subquadrate; relative lengths of segments I-V about 19: 6: 15: 8: 8. Prepisterna shining, finely punctate. Mesonotum reticulated, with distinct median and parapsidal furrows; prescutum prominent; scutum at each side medially with a finely punctate impression. Scutellum also reticulated, anteriorly well separated from and distinctly narrower than the posterior margin of mesonotum; posteriorly reticulato-punctate, and rather broadly rounded. Mesepisterna shallowly reticulated. Mesepimera striated. Metapleura finely confluently punctate, the median area broadly keeled, more or less reticulated. Vein *mcu*$_2$ in the fore wing evenly, strongly curved, slightly shorter than *mcu*$_1$. Tibiae III compressed, exteriorly weakly sulcated; relative lengths of femora, tibiae, basitarsi and apico-tarsomeres III about 22: 39: 15: 21. Abdominal tergite I rather coarsely punctate, the following ones finely so, except for the transverse, constricted bands of each tergite, which are densely striato-punctate. Terebra apically (lateral surfaces) obliquely striato-reticulated; the basal portion subequal in length to the apical (*ca.* 27: 26, measured along the inferior margin). Length including terebra about 15-20 mm., excluding terebra 14-18 mm.

Chekiang: W. Tien-Mu-Shan, 25. vii. 1936 (O. Piel), 1 ♀ (Holotype) (Mus. Heude) (antennae mutilated): 8. vii. 1936 (Y. Ouchi), 1 ♀ (Acad. Sinica).

This species is closest to *H. erythropus* (Text-fig. 43) of Borneo, but in the latter species, however, the wings are violaceous, the area immediately posterior to the superior orbit very coarsely punctate, the mesepisterna very rugosely reticulated, the terebra slightly shorter and in profile with curved inferior margin. From literature, it also stands near to *X. jakovlevi* of Siberia, but the body is not pale marked, mesonotal furrows distinct, metapleura not "sat crasse et regulariter plicato-rugosis" and antennal segments differently proportioned.

Subfamilia XIPHYDRIINAE (Ashm.), 1898.

Tribus XIPHYDRIINI, *s. str.*

Genus XIPHYDRIA Latr., 1802.

(Text-figs. 33, 34, 39, 40, 47, 50, 54, 59, 61, 64-70, 72-77).

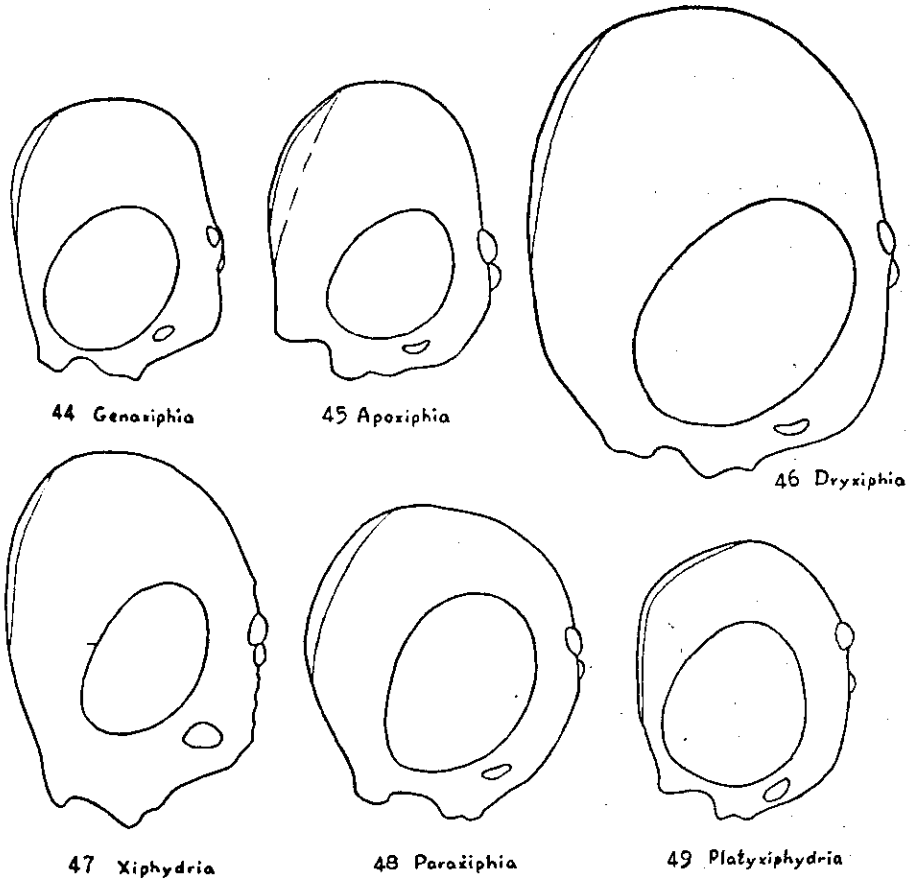
= *Hybonotus* Klg., 1803 (genotype: *Ichneumon camelus* Linn., design. Rohw., 1911).

= *Urocerus* Jur., 1807 (genotype: *Urocerus annulatus* Jur. = *Tenthredo longicollis* Geoffr.) (nom. praeocc.).

= *Xiphiura* Fallen, 1913. (no species included).

= *Xiphydra* Panz., 1806 = *Xiphidria* Lam., 1817 = *Xyphydria* Nort., 1869 (nom. emend.).

Body moderate-sized. Head slightly broader than or as broad as thorax, in dorsal aspect usually slightly widened behind eyes. Mandibles 4-dentate. Maxillary palpi 5 segmented. Labial palpi 3 segmented, almost evenly thick, the segment III long. Malar spaces moderately long. Clypeus anteriorly with a median tooth. Mesal orbits subparallel to each other. Eyes elliptical. Posterior ocelli lying much anteriorly to the supra-orbital line. Temples broad, laterally usually each with a well developed marginal ridge and a submarginal furrow. Area posterior to the supra-orbital line rather long, polished, practically unsculptured. Antennae long, thin, setaceous; pedicels usually rather short; segment III long, with false annulet. Prepisterna long. Wing venation normal. Tibiae I usually each with one apical spur only. Tarsal claws each with a minor tooth near the middle. Abdomen moderately robust, laterally sharply edged; intermediate segments thickened; apical ones attenuated; tergite X posteriorly tubuliform, protruding caudad. Terebra long, apically usually slightly recurved.

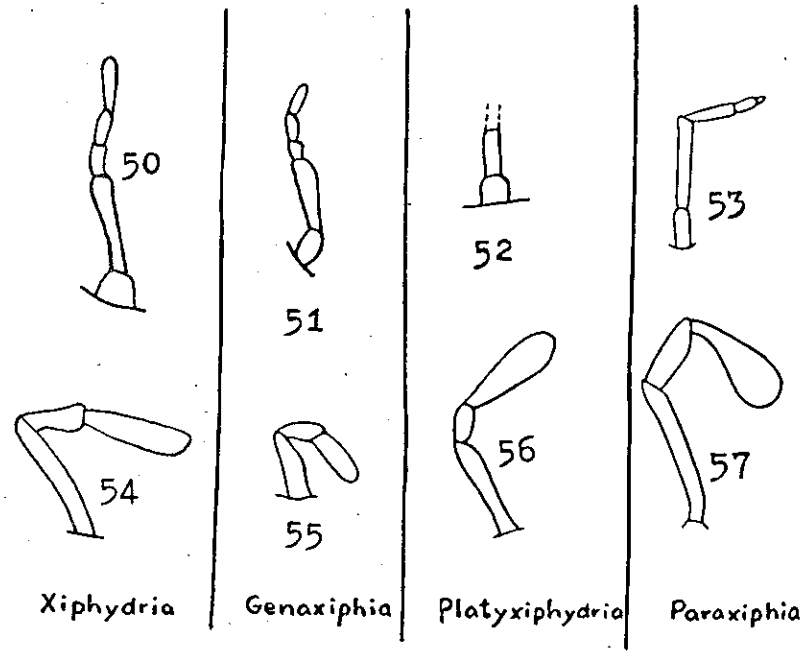


Text-figs. 44-49. — Lateral aspect of the head of Xiphydrinae-genera: *Xiphydria popovi* Sem. & Guss. ♂ (47); *Genaxiphia parallela* sp. nov. ♂ (44); *Dryxiphia punctissima* sp. nov. ♀ (46); *Xiphydriola* (*Platyxiphydria*) *antennata* sp. nov. ♀ (49); *Konowia* (*Apoxiphia*) *bifurcata* sp. nov. ♂ (45); *Paraxiphia insularis* (Rohw.) ♀ (48).

Genotype: *Ichneumon camelus* Linn. (Haplotype). In 1810, the same author, Latreille, re-designated (*Sirex dromedarius* Fabr. =) *Tenthredo prolongata* Geoffr. as the type.

Habitat: Holarctic. 26 species. The following Nearctic species may be assigned to this genus as herein restricted: *abdominalis* Say, *attenuata* Nort., *champlaini* Rohw., *hicoriae* Rohw. and *maculata* Say. According to Dr. H. Townes (in litt.), *attenuata* and *hicoriae* have only 4 segments in the maxillary palpus, and *erythrogaster* is a synonym of *tibialis*. For other Nearctic species, see under genus *Xiphydriola*.

The Nearctic and Palaearctic species of this genus have been tabulated by ROHWER (1918) and GUSSAKOVSKIJ (1935) respectively. Almost all of the Asiatic species can be identified with the help of the latter author's key, which may be slightly modified to include the following 6 species:



Text-figs. 50-57. Left-hand maxillary (upper column) and labial palpi (lower column) of Xiphydriinae-genera: *Xiphydria popovi* SHM. & GUSS. ♂ (50, 54); *Genaxiphia parallela* sp. nov. ♂ (51, 55); *Xiphydriola* (*Platyxiphydria*) *antennata* sp. nov. ♀ (52, 56); *Paraxiphia insularis* (ROHW.) ♀ (53, 57).

X. annulitibia TAKEU., 1938. Runs to couplet 22 (29) in the key.

23*a* (23*b*). Kopf ganz schwarz; Tibien braunlich, weisslich an der Basis. 10 mm. Sachalin. . . . . *X. annulitibia* TAKEU.

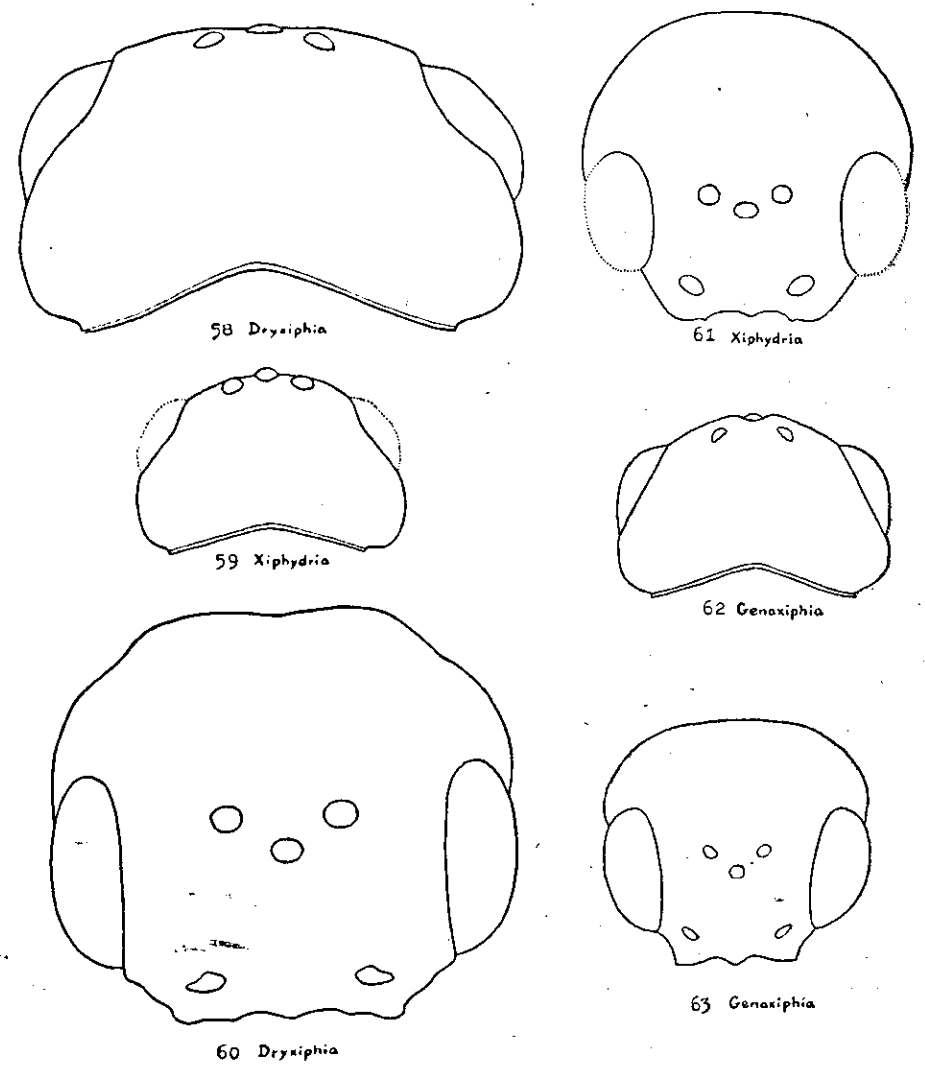
23*b* (23*a*). Kopf gelb oder weisslichgelb gezeichnet; Tibien ganz braun oder rotbraun.

X. limi and *tegulata*, spp. nov. Run to couplet 34 (35) or *X. camelus* in the key.

34 (35). Anteultimate Sternite (wenigsten an der 5.-6. oder 6.-7.) in der Mitte des Hinterrandes mit einem deutlichen Buschel dichter und ziemlich langer, brauner Haare; Clypeus ganz schwarz; Untergesicht selten weiss gezeichnet.

34*a* (34*b*). Flugelschuppen schwarz; Sternite 3.-4. mit deutlichen Buschel dichter und etwas aufrechter Haare; Clypeus und Wangenanhang weisslichgelb; Untergesicht weiss gezeichnet. 11.5 mm. — Ostchina. . . . . *X. limi*, sp. nov.

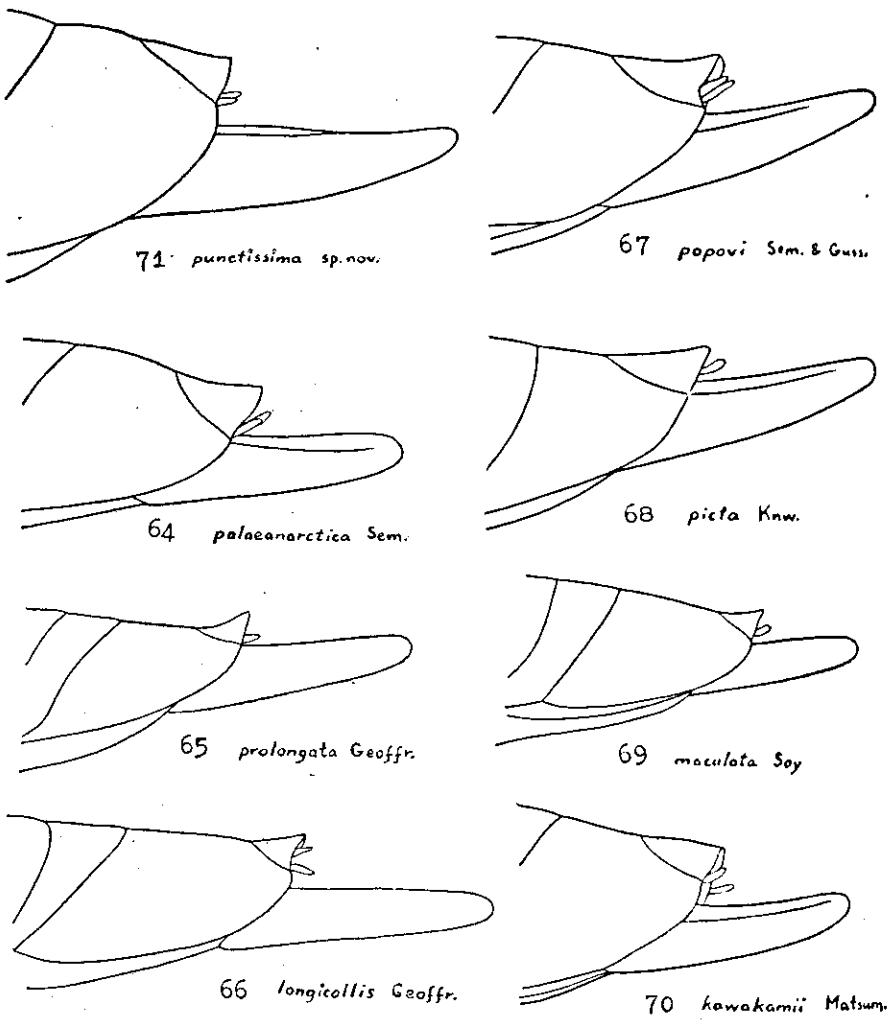
34*b* (34*a*). Flugelschuppen weiss; Sternite 3.-4. ohne deutlichen Buschel dichter und etwas aufrechter Haare; Clypeus und Wangenanhang schwarz; Untergesicht nicht weiss gezeichnet.



Text-figs. 58-63. Dorsal and cephalic aspects of the head of Xiphydriinigenera: *Xiphydria popovi* SHM. & GUS. ♂ (59, 61); *Genaxiphia parallela* sp. nov. ♂ (62, 63); *Dryxiphia punctissima* sp. nov. ♀ (58, 60).

34*c* (34*d*). Flugeln glashell; Schildchen gerunzelt, mit sehr kleinem, ziemlich glanzenden Anhang. 8-15 mm. . . . . *X. camelus* L.

34*d* (34*c*). Flugeln braunlichhyalin; Schildchen gerunzelt, die Hinterdritte wie Anhang glatt und glanzend. 11 mm. — Ostchina. . . . . *X. tegulata*, sp. nov.



Text-figs. 64-71. Abdominal apex (lateral aspect) of ♀ *Xiphydria* (64-70) and *Dryxiphia*-species (71).

X. sulcata, sp. nov. Runs to couplet 35 (34) in the key.

35*a* (35*b*). Sternite 7. gewolbt und mit eine deutliche Querfurche am Hinterrande; Mesonotum gewolbten, die Naht zwischen den beiden Mittellappen fast ganz obsolet, die Nähte zwischen den einzelnen Lappen etwas deutlich; Clypeus, Schildchen und Mesopleuren ganz schwarz. 14mm. — Sachalin. . . . . *X. sulcata*, sp. nov.

35*b* (35*a*). Sternite 7. ohne Querfurche, die Nahte am Mesonotum ganz deutlich oder ganz sehr undeutlich.

X. jozana MATSUM., 1927. Runs to couplets 43 (40) in the key.

43*a* (43*b*). 2. Fuhlerglied mehr kurzer als das 4. (*ca.* 1: 2); mesopleuren hinten nicht weiss gefleckt. 16 mm. — Japan. . . *X. jozana* MATSUM.

43*b* (43*a*). 2. Fuhlerglied wenig kurzer als das 4. (*ca.* 2: 3).

X. atriceps (MAA, 1944). Runs to couplet 45 (44), or *X. kuccharonis*, in the key.

45*a* (45*b*). Korper weiss gezeichnet; Schenkel rotbraun, die mittlere Teile dunkelbraun; antepenultimate Sternite mit Band langer aber nicht dichter und aufrechter Haare. 10-13 mm. . . *X. kuccharonis* MATS.

45*b* (45*a*). Korper ganz schwarz; Schenkel schwarzbraun, die Unterseite der vorderer und mittler rotbraun; Sternite 4.-6. mit deutlichen Buschel langer, dichter und aufrechter Haare. 11 mm. — Ostchina . . . . . *X. atriceps* MAA.

Xiphydria palaeanarctica SEM. (Text-fig. 64).

♀ — Black. Mandibles each with a yellow or brown basal spot. Paragenae reddish. Frons laterally with a yellow spot lying between the antennal insertion and its nearest mesal orbit. Temples each with a short, yellow band. Vertex with two short, submedian yellow streaks. Antennal segment III (or IV) and its followings yellowish, but the ultimate (or, also penultimate) segment brown. Posterior margins of lateral pronotal slopes occasionally yellow. Tegulae brownish or black, sometimes posteriorly yellow. Wings hyaline, very feebly enfumed, cell *1cu* in the fore wing with a brownish, apico-anal patch; veins and stigmata blackish brown, vein $C + Sc$ reddish yellow. Legs reddish brown, gradually turning duller toward both extremities, coxae and trochanters usually black, while tarsi usually dull chesnut brown. Abdominal tergites III-VIII (III usually entirely black) each with two lateral, yellow patches. Terebra with its extreme apex brown.

Body moderately robust. Hairs yellowish. Head in dorsal aspect weakly but distinctly widened behind eyes. Clypeus longitudinally striated, discally impressed; the median tooth strongly raised. Paragenae anteriorly smooth, posteriorly striated, mesally each with a transverse ridge. Malar spaces finely striated, about as long as the pedicel, anteriorly each with a deep, roundish, smooth excavation. Frons reticulato-punctate, anteriorly swollen up and discally with a long, median fovea: extreme lateral areas transversely reticulato-striated. Mesal orbits very slightly convergent caudad. Eyes with the longest *vs.* shortest axis about 27:20. Inter-antennal distance *vs.* antenno orbital distance about 3:2. Posterior ocelli lying much anteriorly to the supraorbital line. OOL: POL about 13: 8. Temples broad, shining, with very scattered punctures. Median vertical furrow scarcely traceable. Antennae moderately thick, 15-19 segmented; scapes evenly curved; pedicels more than twice as long as thick; relative lengths of segments I-IV about 12: 6: 9: 4. Thorax dorsally rugoso-reticulated; median mesonotal furrow usually narrower and weaker than parapsidals. Scutellum posteriorly broadly rounded, lateral margins distinctly divergent cephalad. Inferior areas of lateral pronotal slopes shining, impunctate, Prepisterna finely, but not confluently punctate on lateral surfaces. Mesepisterna and metapleura shallowly reticulato-punctate. Mesepimera striated. Vein mcu_2 in the fore wing curved near the base, shorter than mcu_1. Tibiae III weakly compressed, very feebly sulcated along the median line of exterior surface. Relative lengths of femora, tibiae, basitarsi and apico-tarsomeres III about 20:33:15:19. Abdominal tergites I-II finely, confluently punctate; the following ones microscopically alutaceous. Terebra in lateral aspect apically punctate, broadly rounded or truncated, relative lengths of the basal and apical portion (measured along the inferior margin) about 35: 37. Length including terebra about 12-20 mm., excluding terebra 11-17 mm.

Kirin: Kao-Lin-Tze, 7-16. vi. 1940, 4 ♀ ♀ ; 17. vii. 1940, 1 ♀ (Mus. Heude). New to China.

This species is not a typical member of the *camelus*-complex, and may be distinguished from its allies by its short malar spaces, its site of posterior ocelli, non-striated temples, white antennae, exceptionally long pedicels, and apically broadly rounded (in profile) terebra.

Xiphydria camelus (LINN.). (Text-fig. 21).

♀ — Black. Mandibles, paragenae and 3 or 4 basal antennal segments more or less tinted with rufous. Posterio-lateral corners of temples, short lateral bands of vertex and lateral flecks of abdominal tergites IV-VI whitish yellow. Posterio-lateral corners of pronotum (in dorsal aspect) and posterior halves of tegulae obscurely yellow. Wings hyaline, evenly, very weakly stained with brownish; veins and stigmata dull brown, costa (basal two-thirds) in the fore wing yellowish brown. Legs rufous; coxae, proximo-trochanters and 3 or 4 apical tarsomeres together with claws more or less darkened, usually reddish brown to brownish black.

Body moderately robust. Hairs greyish to yellowish. Head in dorsal aspect distinctly widened behind eyes. Clypeus longitudinally striated, discally impressed, distinctly more depressed than frons; anterio-median tooth very strongly ridged and protruding cephalad. Paragenae anteriorly smooth, posteriorly striated, mesally each with a transverse ridge. Malar spaces striated, excessively long, with the minimum length about twice the pedicel. Frons rugoso-reticulated, discally roundly dimpled, anteriorly and submedially slightly raised; ocelli surrounded by radiating striae. Mesal orbits weakly but distinctly convergent caudad. Eyes about 27×20. Inter-antennal distance *vs.* antenno-orbital distance about 15: 9. Posterior ocelli lying much anteriorly to the supra-orbital line. OOL: POL about 10: 11. Temples broad, shining, with a few fine, scattered punctures; "cheeks" finely, longitudinally striated. Median vertical furrow poorly developed. Antennae thin, 16-19 segmented; scapes clavate, evenly curved, slightly thicker than the segment III; pedicels about 3×2; relative lengths of segments I-IV about 30: 10: 26: 17. Thorax dorsally rugoso-reticulated; median and parapsidal furrows of mesonotum deep; prescutum rather prominent; scutellum posteriorly truncated, lateral margins weakly convergent caudad. Lateral pronotal slopes inferiorly transversely striated, extremely marginal areas smooth and impunctate. Prepisterna laterally striato-punctate; mesepisterna shallowly reticulated; mesepimera striated; metapleura also reticulated, obliquely ridged. Vein mcu_2 in the fore wing weakly curved near than the base, subequal in length to mcu_1. Tibiae III distinctly compressed, exteriorly distinctly sulcated along the median line. Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 59: 25: 40. Abdominal tergites I-II confluently punctate, but the puncturation on the I distinctly coarser than that on II; III and the following tergites

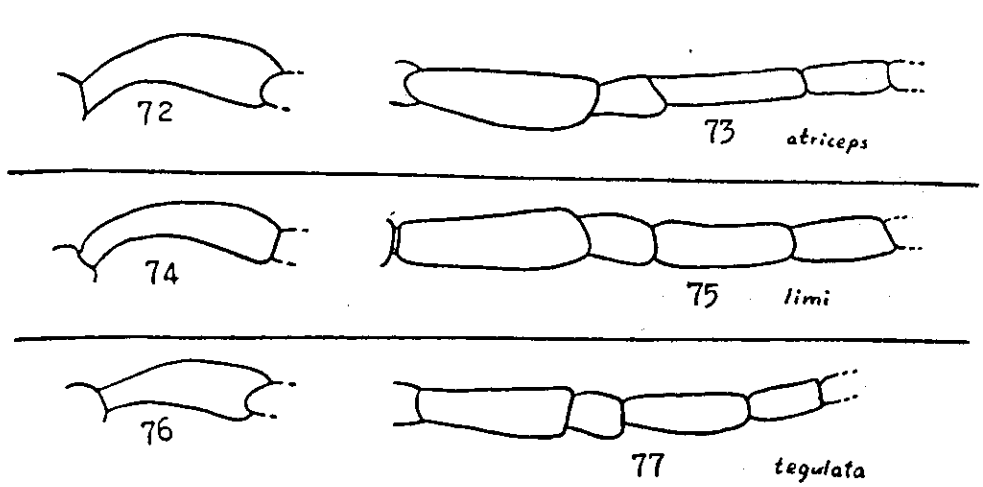
alutaceous, and gradually becoming more shining towards the abdominal apex. Terebra with the apical portion wrinkled (apical third smooth), and one-fifth longer than the basal. Length including terebra about 10-21 mm. ♂ unknown to the writer.

Kirin: Kao-Lin-Tze, 13. vi. 1940, 1 ♀ (Mus. Heude). New to China.

Xiphydria limi, sp. nov. (Text fig. 74, 75).

♂ — Black. Discal spots of mandibles, clypeus, paragenae, malar spaces, anterior halves of mesal orbits, frontal spot posterior to either antennal insertion, broad lateral temporal margins, oblique submedian streaks on vertex, inferior and posterior streaks on lateral pronotal slopes, lateral spots of prepisterna, inferio-anterior streaks and posterio-subdiscal spots of mesepisterna, and lateral spots on abdominal tergites II-VI all yellow. Antennae brownish black, scapes reddish brown. Wings hyalinous, weakly and rather evenly stained with brownish, cell *1cu* in the fore wing apico-anally with a brownish patch: veins and stigmata reddish brown to dull brown. Legs rufous, coxae I-III, trochanters I, and femora II (dorsally) and III brownish black; coxae II-III posteriorly yellow.

Head in dorsal aspect weakly but perceptibly roundly narrowed behind eyes. Clypeus flattened, striato-punctate, medially faintly foveated. Paragenae obliquely striated, weakly, transversely ridged. Malar spaces microscopically alutaceous, the minimum length about a half the pedicel. Frons rugoso-reticulated, anteriorly weakly tumescent; area around the ocellar triangle radiatedly striato-reticulated (the sculpturation extending far beyond the supra-orbital line); median fovea represented by a discal, elongate impression. Inter-antennal distance *vs.* antenno-ocular distance about, 7: 3. OOL: POL about 3: 2. Temples dim, with a few coarse punctures, and numerous short, fine, longitudinal striae; lateral marginal ridge poorly developed; area posterior to the supra-orbital line posteriorly shining, very scatteredly punctate. Area posterior to the superior orbits in profile shorter than the longest axis of eye (*ca.* 4: 5). Longest and shortest axes of eye about 15: 11. Vertex posteriorly smooth, with a few scattered, moderate-sized punctures; median furrow scarcely recognisable. Antennae relatively thick, 14-15 segmented; flagella only slightly thinner than pedicels or scapes. Thorax dorsally transversely striato-reticulated; mesonotum with deep, evenly broad, median and parapsidal furrows; prescutum noticeably tumescent; scutum finely reticulated, at each side



Text-figs. 72-77. Lateral aspect of the scape (left-hand column) and dorsal aspect of four basal flagellar segments (right-hand column) of *Xiphydria atriceps* (Maa), *X. limi* and *tegulata* spp. nov. ♂ ♂. Note the relative curvature, thickness and length of the segments.

the median line broadly depressed and impunctate; mesal margins strongly raised. Scutellum U-shaped, rather strongly convex, without median furrow, with sculpturation similar to that of *X. atriceps*. Inferior halves of lateral pronotal slopes practically impunctate. Mesepisterna and metapleura reticulated; the latters weakly raised along the median line. Vein *mcu*₂ in the fore wing weakly, evenly, curved, subequal in length to *mcu*₁. Tibiae III compressed, and medially sulcated on exterior surfaces. Relative lengths of femora, tibiae, basitarsi and apico-tarsomeres III about 15: 26: 11: 18. Abdominal tergite I densely punctate throughout, the II-VI each anteriorly constricted and densely punctate, and posteriorly weakly emarginated and with a slightly depressed, finely punctate, lunular, median area; these constrictions, depressions, puncturation and emarginations being, however, all gradually turning weaker towards the pygidium. Abdominal sternites V-VI each with a tuft of long, thick, dense and erect hairs near the posterior margin; the III-IV each with such a tuft of shorter, thinner, sparser and slightly recumbent hairs; relative lengths of the V-VIII about 10: 11: 5: 8. Length about 11.5 mm.

Chekiang: W. Tien-Mu-Shan, 20. vii. 1937 (Y. Ouchi), 1 ♂ (Acad. Sinica).

Named after Mr. K. S. LIN (pronounced as "lim" in Amoy dialect) for his assistance in collecting, rearing, drawing, etc. during the last 9 years.

This species appears to be very close to *X. camelus*, but with darker wings, richer pale markings and sternal hair-tufts, and different antennal ratio.

Xiphydria tegulata, sp. nov. (Text-figs. 76, 77).

♂ — Black. Discal spots of mandibles, lateral temporal margins, two minute submedian spots on vertex, inferior spots on lateral pronotal slopes and on prepisterna, tegulae, anterio-mesal margins of mesosterna and lateral spots on abdominal tergites III-V all yellowish. Antennae brownish black, segments I-II reddish brown at their extreme apices. Wing hyalinous, weakly and rather evenly stained with brownish. Legs rufous, coxae II-III and femora II (dorsally) and III brownish black.

Head in dorsal aspect not narrowed behind eyes. Paragenae anteriorly smooth, polished, posteriorly finely punctate. Frons anteriorly rather strongly tumescent. Vertex medially weakly but distinctly foveated. Area posterior to the superior orbit in profile much shorter than the longest axis of eye (*ca.* 7: 12). Antennae as figured, flagellae but slightly thinner than pedicels or scapes. Median furow on mesonotum rather shallow. Scutellum reticulated, weakly convex, without median furrow, posterior third smooth and shining (more extensively so on lateral slopes). Inferior halves of lateral pronotal slopes with obliquely elongate punctures. Relative lengths of femora, tibiae, basitarsi and apico-tarsomeres III about 13: 25: 10: 13. Abdominal tergite I with its submedian lobes smooth, shining, and only with a few elongate punctures lying closely to the oblique furrow. Abdominal sternites V-VI each with a tuft of long, thick, dense, erect hairs. Other characters similar to that of *X. limi* as described. Length about 11 mm.

Fukien: Ta-Chu-Lan, Shaowu Hsien, 10. vi. 1642 (JOSEPH C. S. FU), 1 ♂ (originally paratype of *Eux. atriceps*).

This is a member of the *camelus*-complex, and can be easily distinguished by its antennal ratio, yellow tegulae, scutellar and tergal sculpturation and sternal hair-tufts.

Xiphydria popovi SEM. & GUSS. (Text-figs. 47, 50, 54, 59, 67).

♂ ♀ — Black. Mandibles dull brown to black. Clypeus (sometimes anteriorly or entirely reddish brown or even black), malar spaces, lateral bands on temples (sometimes broadly interrupted), narrow transverse frontal streak (only occasionally present in ♂) lying just posteriorly to median clypeal area, a small spot lying posterior to either antennal insertion, long submedian bands on vertex, discal spots on prepisterna, posterior margins of lateral pronotal slopes, two anterior submedian streaks on pronotum in dorsal aspect (sometimes absent), and lateral spots on abdominal sternites II-VIII (sometimes II and VII entirely black) all yellowish white. Antennal scapes and pedicels reddish to brownish black. Wings hyaline, weakly infuscated, cell *icu* in the fore wing with a brownish apico-anal patch; veins and stigmata brownish to dull brown. Legs bright reddish brown, coxae black, apical tarsomeres more or less dull brown.

Clypeus depressed, finely striato-punctate. Malar spaces striated, distinctly longer than pedicel. Frons rugoso-reticulated, posteriorly longitudinally striato-reticulated, anteriorly with a broadly V-shaped tumescence, discally with a faint, roundish dimplement, laterally with a short, deep, longitudinal furrow situated posterior-laterad to each antennal insertion. Inter-antennal distance *vs.* antenno-ocular distance in ♂ about 2: 1. OOL: POL about 5: 4. Temples finely striated and scatteredly punctate, posteriorly smooth, non-striated. Vertex with scarcely traceable median furrow; anteriorly with a triangular, reticulato-punctate, very slightly depressed area; posteriorly smooth, with a few fine, scattered punctures. Antennae 15-19 segmented; scapes evenly curved; pedicels about 1.5 times as long as thick; relative lengths of segments I-IV about 15: 6: 8: 9. in ♂ and 24: 8: 16: 9 in ♀. Thorax dorsally reticulated; median furrow of mesonotum entirely irrecognisable or nearly so; parapsidal furrows moderately broad, very shallow. Scutellum posteriorly broadly rounded, lateral margins distinctly divergent cephalad. Inferior areas of lateral pronotal slopes punctate. Prepisterna striato-punctate on lateral surfaces. Mesepisterna reticulated. Metapleura striato-reticulated. Vein *mcu* 2 in the fore wing evenly curved, and subequal in length to or a trifle shorter than *mcu* 1. Tibiae III (basal halves) exteriorly sulcated along the median line; relative lengths of the tibiae and basitarsus about 30: 16 in ♂ and 41: 17 in ♀. Abdominal sternite VI-VII in ♂ without prominent tufts of long, dense, erect hairs, and with relative lengths

about 5: 3. Terebra in ♀ with the relative lengths of its basal and apical portions (measured along the inferior margin in profile) about 9: 10. Other characters similar to *X. palaeanarctica* species as redescribed. Length of ♂ about 8-14mm., of ♀ including terebra 11-21mm.

Kirin: Kao-Lin-Tze, 7-20. vi. 1940, 8 ♂ ♂ , 3 ♀ ♀ ; 7-13. vii. 1940, 1 ♂ , 1 ♀ (Mus. Heude). New to China.

This is a member of *camelus*-complex, and is chiefly characterised by long malar spaces, distinct lateral furrows on frons and extensively sculptured prepisterna. In these respects, it is closely allied to the European *X. longicollis* GEOFFR. (Text-fig. 66), but the terebra in the latter species, in profile, is apically not so narrow and recurved and is similar to *X. palaeanarctica*.

Xiphydria kawakamii Matsum. (Text-figs. 33, 39, 70).

♂ ♀ — Similarly colored as and very closely allied to the preceding species, differing in the following points: Head more extensively pale colored. Temples in ♀ each with an extra yellow streak producing caudad from either posterior orbit. Mesepisterna posteriorly each with an obscure, yellow spot. Wing distinctly paler than its allies, almost clear hyaline in ♂ . Coxae, trochanters and femora entirely black; tibiae and tarsi yellowish brown, apico-tarsomeres more or less duller.

Malar spaces much longer than pedicel (*ca.* 3: 2). Supraclypeal area (pale-colored) on frons in ♀ longitudinally striated, not reticulated; V-shaped tumescence comparatively weaker; median fovea longer, deeper. Mesal orbits subparallel. Posterior ocelli lying much anteriorly to the supra-orbital line; distance between antennal insertion and posterior ocellus *vs.* longest axis of eye in ♀ about 12: 13 (in *popovi*, 10: 11). OOL: POL about 7: 5 in ♂ and 4: 3 in ♀ . Vertex with poorly developed but fairly recognisable median furrow; submedian areas discally distinctly raised up. Relative lengths of antennal segments I-V about 20: 6: 14: 8: 9 in ♂ and 25: 7: 18: 8: 9 in ♀ . Inferior areas (pale-colored) of lateral pronotal slopes in ♀ shining, impunctate. Mesonotal furrows deep, distinct, but the median one not so broad as the parapsidals. Scutellum distinctly more finely sculptured than mesonotum; lateral margins weakly divergent cephalad. Mesepisterna transversely striato-reticulated. Vein *mcu* 2 in the fore wing distinctly shorter than *mcu* 1 . Relative lengths of tibiae and basitarsi III about 33: 14 in ♂ and 40: 19 in ♀ . Relative lengths

of abdominal sternites VI-VII in ♂ about 8: 5. Relative lengths of the basal and apical portions of terebra in ♀ about 45: 47. Length of ♂ about 10-18 mm., of ♀ including terebra 12-21 mm.

Yezo: Toikanbetsu, Teshio, 14-15. vii. 1930 (T. SHIRAKI), 1 ♂ , 1 ♀ (Taiwan Agric. Inst.).

CONDE (1935) and TAKEUCHI (1936) sank this species as a synonym of *X. eborata* and *camelus* respectively. Notwithstanding the pale markings on head and on abdomen are intraspecifically very variable in the *camelus*-complex, but they can be easily separated from each other by relative lengths of malar spaces, and of antennal and tarsal segments, relative distinctness of mesonotal furrows, shape of scutellum, etc. The color of their legs seems to be rather constant and may serve as a rough guide for macroscopic differentiation.

This species can be easily recognised by the site of its ocelli, the subparallel mesal orbits, the excessively long malar space, the submedian vertical prominences (♀) and the sculpturation on scutellum and on mesepisterna. The two examples before the writer appear to be in close coincidence to SEMENOV and GUSSAKOVSKIJ's (1935) redescription but not so to GUSSAKOVSKIJ's (1935) key in which the mesonotum was stated to be "mit fast ganz'undeutlichen Nahten zwischen den Lappen."

Xiphydria atriceps (MAA), comb. nov. (Text-figs. 34, 40, 72, 73)

Entirely black, without any yellowish markings. Mandibles apically reddish brown. Antennae brownish black, basal segments reddish brownish. Wings hyalinous, distinctly stained with brownish, basally and costally more strongly so. Legs brownish black, with femora I-II (ventrally), tibiae I-III (extreme bases) and all tarsomeres I-III (apically) reddish brownish.

Head in dorsal-aspect slightly but perceptibly roundly narrowed behind eyes. Clypeus weakly convex, reticulated, without median furrow. Paragenae finely punctate. Frons anteriorly rather strongly tumescent; median furrow long, weak, shallow. Vertex medially weakly but distinctly foveated. Area posterior to the superior orbit in profile much shorter than the longest axis of eye (*ca.* 4: 7). Eyes slightly shorter than typical members of the genus (*ca.* 14×11). Antennae as figured, flagellae distinctly thinner than pedicels or scapes. Median furrow on mesonotum slightly shallower than the parapsidals. Scutum

densely punctate, without the usual impunctate median band at either side; mesal margins slightly raised and weakly reticulato-punctate. Scutellum weakly convex, reticulato-punctate, with a faint, median furrow, posterio-lateral corners and lateral slopes dim, rather sparsely and coarsely punctate. Relative lengths of femora, tibiae, basitarsi and apico-tarsomeres III about 15: 25: 10: 15. Abdominal tergite I with its submedian lobes shining, and with a few fine, sparse punctures mainly near the oblique furrow. Abdominal sternites II-VII each near the posterior margin with a tuft of long, thick, dense, erect hairs, which are more prominent on the IV-VI; relative lengths of the V-VIII about 9: 8: 6: 11. Other characters similar to that of *X. limi* as described. Length about 12 mm.

Redescribed from the holotype in author's collection. Its tibiae I are each with an extra minute apical spur, so that it was originally assigned to the genus *Euxiphydria*. The paratype, on re-examination, is found to be representing a separate species, *tegulata*, sp. nov.

This is a rather isolated species but can be, for convenience, assigned to the *camelus*-complex, and can be readily distinguished from all of its relatives by its sternal hair-tufts. Its dull pattern, shape of the head, relative length and thickness of antennal segments, and sculpturation on scutum and on scutellum are also distinctive.

Xiphydria sulcata, sp. nov.

♂ — Black. Mandibles (except apical margins) reddish brown. Lateral bands on temples (medianly broadly interrupted), two short submedian bands on vertex, lateral bands on pronotum (in dorsal aspect), posterior and inferior streaks on lateral pronotal slopes, posterior areas of tegulae, and lateral spots on abdominal tergite III-V all yellow. Antennae blackish brown, scapes reddish brown; pedicels reddish yellow. Wings hyaline, feebly tinted with yellowish, vein *C+Sc* in the fore wing yellow, cell *lcu* with a brownish, apico-anal patch; veins and stigmata brown. Legs reddish brown, coxae and apical tarsomeres more or less duller.

Clypeus weakly depressed, finely reticulated. Malar spaces reticulated, the minimum length almost equal to antennal segment IV. Frons rugoso-reticulated, anteriorly tumescent, discally with an oval impression. OOL: POL about 7: 5. Antennae 16 segmented; pedicels scarcely longer than thick; relative lengths of segments I-V about 17:

4: 15: 10: 10. Thorax dorsally rugoso-reticulated. Mesonotum with well-defined, parapsidal but very indistinct, median furrows. Prescutum prominent. Scutellum less rugosely sculptured than mesonotum, anterio-medially with a very deep, roundish pit; posterior margin narrowly rounded; lateral margins markedly divergent cephalad. Mesepisterna rather roughly reticulated. Metapleura discally tumescent, rugoso-reticulated. Inter-costal cross-vein in the fore wing anally evanescent (? constantly so); vein mcu_2 in the fore wing almost straight, distinctly shorter than mcu_1; cell *3m* exceptionally short, its costal margin as long as the apical, which is distinctly longer than the anal. Tibiae and basitarsi III exteriorly strongly sulcated along the median line; their relative lengths about 31: 14. Abdominal sternites with only thin, recumbent hairs; the VII about 2/3 as long as the VI, posteriorly slightly raised, and with a distinct, transverse, submarginal groove. Other characters similar to the ♂ of *X. popovi*. Length about 14 mm.

Sachalin: Tomarikishi, Shisuka, 28-30 vii. 1930 (T. SHIRAKI), 1 ♂ (Taiwan Agric. Inst.).

This elegant species is very similar and closely allied to *X. camelus*, *popovi*, *eborata*, *picta*, etc. but can be immediately separated from the latters by its duller pattern on head, excessively short pedicel and cell *3m* (fore wing), poorly developed median mesonotal furrow, peculiarly shaped scutellum, sulcated basitarsi III, absence of sternal hair-tufts, and lastly but most importantly by the presence of a transverse groove on sternite VII.

Of the Manchurian subregion, several *Xiphydria* species are known from the female only, and the present species may perhaps be representing the opposite sex of one of these known species. But the color pattern of head and of legs is dissimilar and does not favour such a supposition.

Genus GENAXIPHIA novum

(Text-figs. 44, 51, 55, 62, 63).

Body slender, small-sized. Head distinctly broader than thorax, in dorsal aspect not narrowed nor widened behind eyes. Mandibles 4-dentate, the two basal teeth on either side rudimentary. Maxillary palpi 5-segmented. Labial palpi 3 segmented, almost evenly thick. Malar spaces very short, almost medially interrupted. Clypeus anteriorly

with a median tooth. Mesal orbits weakly but distinctly divergent caudad. Eyes roundish elliptical. Posterior ocelli lying much anteriorly to the supra-orbital line. Temples anteriorly exceptionally narrow; laterally each with a well developed marginal ridge and a submarginal furrow. Area posterior to the supra-orbital line long, polished, practically unsculptured. Antennae long, thin, setaceous; pedicels moderately long; segment III long, with scarcely recognisable false annulet. Prepisterna long. Wing venation normal. Tibiae I each with one apical spur only. Tarsal claws apically bifurcate. Abdomen moderately robust; in ♂ oblong, apical segment obtuse, not narrowed; in ♀ laterally sharply edged, intermediate segments slightly thickened, tergite X posteriorly tubuliform, protruding caudad. Terebra short, apically slightly recurved.

Genotype: *G. parallela*, sp. nov.

Habitat: Palaearctic (Chekiang, Szechwan). 2 species.

Key to species.

1. Head and thorax richly yellow-marked; antennae reddish brown, segment II only a-half as long as the IV. ♂ 9 mm. . . . *parallela*, sp. nov.
— Head and thorax entirely black, except anterio-mesal orbits each with an obscure yellow spot; antennae black, segment II but slightly shorter than the IV (*ca.* 4: 5). ♀ 12 mm. . . . . *inornata*, sp. nov.

Genaxiphia inornata, sp. nov. (Text-figs. 22-24).

♀ — Black; anterio-mesal orbits each with an obscure, roundish yellow spot lying just posteriorly to the paragena; abdominal tergites IV, V and VIII laterally yellow-flecked. Wings hyaline, apical two-fifths feebly but distinctly infuscated; veins and stigmata dull brown.

Body rather robust. Hairs thin, greyish. Clypeus flattened, moderately punctate, slightly more depressed than frons; anterio-median tooth very strongly ridged and protruding cephalad. Paragenae very finely wrinkled, slightly raised, each with a faint transverse ridge. Malar spaces striated. Frons rugoso-reticulated; supraclypeal region slightly raised; median fovea represented by a rather deep, roundish depression. Ocelli all surrounded by radiating striae. Eyes prominent, about 4×3. Inter-antennal distance *vs.* antenno-orbital distance about 15: 6. OOL: POL about 13: 10. Temples with the breadth at the mid-point of lateral orbit about thrice as the maximum thickness of the scape; "cheeks" longitudinally striated and rather coarsely

punctate; the dorsal areas finely and scatteredly punctate; area posterior to the supra-orbital line, in profile, about 5/8 as long as the eye. Vertex with area posterior to the supra-orbital line shining, practically impunctate; median furrow not recognisable. Antennae 17 segmented; scapes evenly curved, strongly clavate, distinctly thicker than any of the following segments; pedicels almost twice as long as thick; relative lengths of segments I-V about 30: 12: 23: 15: 14. Thorax dorsally rugoso-reticulated. Lateral pronotal slopes inferiorly smooth, impunctate; prepisterna laterally with sparse, moderate-sized punctures. Mesonotum with well developed median and parapsidal furrows; prescutum subgibbose; scutum with an impunctate band on either side; scutellum posteriorly almost truncated, lateral margins anteriorly subparallel to each other, posteriorly distinctly convergent, marginal depressed areas finely sculptured; mesepisterna rugoso-reticulated; mesepimera and metapleura obliquely striated, the latters medially ridged. Vein *mcu*2 in the fore wing weakly curved near the base, and slightly longer than *mcu*1. Tibiae III exteriorly weakly sulcated; relative lengths of the tibia, basitarsus and apico-tarsemeres of legs III about 12: 5: 7. Abdominal tergite I and anterior portion of the II with very dense, moderate-sized punctures; the III and posterior portion of the II alutaceous, with a few fine, scattered punctures; the IV-VII alutaceous; VIII-X shining posteriorly with a few moderate sized punctures. Terebra with apical portion laterally finely wrinkled and slightly longer than the basal. Length including terebra about 12 mm.

Szechwan: Mt. Omei, 1800 m., 6. vii. 1941 (T. T. Chuh), 1 ♀ (Nanking Univ.).

The possessing of strongly clavate labial palpi and distinct palpial sensory pits of this species disproves its close affinities to the genotype. In Gussakovskij's (1935) key for Palaearctic species of the genus *Xiphydria* (sen. lat.), it runs to *X. kuccharonis* Matsum., but the dull pattern and breviated genae make it very easily distinguishable from any other Xiphydriids.

Genaxiphia parallela, sp. nov. (Text-figs. 44, 51, 55, 62, 63).

♂ — Black. Mandibles (except apical margins), paragenae (anterior margins reddish brown), malar spaces, anterior halves of temples, ventral surfaces of prepisterna (anterior halves), inferior halves of lateral pronotal slopes, anterio-inferior margins and subdiscal spots of mesepisterna, and lateral spots on abdominal tergite III-VI all

yellow. Wings hyaline, feebly stained with brownish; cell *1cu* in the fore wing with a brown apico-anal patch; veins and stigmata reddish brown to brownish black. Antennae reddish brown, scapes and pedicels paler. Legs also reddish brown, coxae anteriorly tinted with yellow, posteriorly dull brown.

Body rather robust. Hairs thin, brownish. Clypeus flattened, moderately punctate, and markedly depressed than frons. Paragenae smooth, without transverse ridges, and scarcely more raised than clypeus. Malar spaces very finely punctate. Frons rugoso-reticulated, with a median, roundish prominence at the level of posterior margins of antennal insertions; median fovea represented by a deep, roundish, discal impression. Area around anterior ocellus with radiating striae. Eyes prominent, the longest *vs.* shortest axis about 23: 20. Interantennal distance *vs.* antenno-orbital distance about 5: 2. OOL: POL about 1: 1. Temples anteriorly linear, with the breadth at the mid-point of lateral orbit only comparable with the maximum thickness of scape (*ca.* 10: 13); puncturation only restricted to the vicinities of orbital margin. Area posterior to the supra-orbital line, in profile, distinctly shorter than the eye. Vertex anteriorly finely reticulato-punctate, area posterior to the supra-orbital line shining, practically impunctate; median furrow weakly developed. Antennae 17 segmented, scapes curved near the base, strongly clavate, weakly compressed, distinctly thicker than any of the following segments; pedicels about a-half longer than thick; relative lengths of segmentes I-V about 16: 5: 15: 10: 9. Thorax dorsally rugoso-reticulated. Lateral pronotal slopes (inferior halves) and prepisterna (lateral surfaces) finely punctate. Mesonotum with its median furrow distinct but slightly narrower than the parapsidal; prescutum noticeably tumescent. Scutellum posteriorly narrowly rounded; lateral margin distinctly divergent cephalad; sculpturation as rugose as mesonotum. Mesepisterna reticulated; mesepimera striated; metapleura rugoso-reticulated, each with an oblique ridge along the median line. Vein *mcu* 2 in the fore wing slightly curved near the base, and subequal in length to *mcu* 1. Tibiae III exteriorly weakly sulcated along the median line; relative lengths of femora, tibiae, basitarsi and apico-tarsomeres about 8: 22: 9: 13. Abdominal sternites VI about 8: 5 as long as the VII, posterior margins of V-VI each with a tuft of long, erect, dense hairs. Length about 9 mm.

Chekiang: W. Tien-Mu-Shan, 25. VIII; 1936. (Y. Ouchi), 1 ♂ (Acad. Sinica).

In general appearance, this species is very similar to *X. camelus* and its allies, but its malar spaces and temples are so narrow and eyes so roundish and prominent that it can never be mistaken for any other species of this family.

Genus DRYXIPHIA novum

(Text-figs. 46, 58, 60, 71).

Body robust, large-sized. Head subequal in breadth to thorax, in dorsal aspect not widened nor narrowed behind eyes. Mandibles 4-dentate, powerful, not concealed under clypeus, the lateral margin slightly S-shapedly curved. Maxillary palpi 5 (?) segmented. Labial palpi 3 (?) segmented. Malar spaces moderately long. Clypeus anteriorly with a median tooth. Mesal orbits subparallel to each other. Eyes oblongo-ovoid. Posterior ocelli lying fairly anteriorly to the supra-orbital line. Temples broad, laterally almost rounded-off. Area posterior to the supra-orbital line long, dim, strongly sculptured. Antennae long, moderately thick, distinctly thickened but not compressed near the middle; pedicels and segment III long, the latter without false annulet. Prepisterna long. Wing venation normal. Tibiae I usually each with one apical spur only. Tarsal claws each with a minor tooth near the middle, the apical tooth moderately long. Abdomen thick, slightly thickened near the middle, apically attenuated; tergite X posteriorly tubuliform, slightly protruding caudad. Terebra long, apically slightly recurved. ♂ unknown.

Genotype: *D. punctissima*, sp. nov.

Habitat: Oriental (Formosa). 1 species.

Very unfortunately the palpi of the unique specimen at hand are mutilated, thus it is impossible to definitely place the genus to subfamily or tribe, but from general appearance it is most probably a member of Xiphydriini.

Dryxiphia punctissima, sp. nov. (Text-figs. 46, 58, 60, 71).

♀.—Black. Mandibles (except apical margins), clypeus, obscure discal spots on paragenae, malar spaces, V-shaped marking on anterior margin of frons, two longitudinal facial bands extending from malar spaces and along mesal orbits (sinuated and narrowed near posterior ocelli) to occiput, where they are converging to each other, and two longitudinal bands extending along lateral and

posterior temporal margins and almost meeting the longitudinal bands on vertex, all brownish yellow. Paragenae reddish brown. Antennae dull chestnut brown, scapes apically reddish. Posterior margins of lateral pronotal slopes, discal spots on the lateral surfaces of prepisterna, posterior spots on prescutum, and tegulae all brown. Wings flavo-hyaline, dullest in cells *1r*, *2r*, *1cu* (apex), and *2cu* (base) in the fore wing; veins and stigmata dull brown, vein *C+Sc* in the fore wing reddish brown. Legs dull brown, tibiae and tarsi reddish brown. Abdomen brownish black, with broad, yellow, posterior, transverse bands on tergites IV-VI (medially interrupted) and on VIII; the IX posteriorly brownish yellow; the X posteriorly chestnut brown. Abdominal sternites medially slightly tinted with brown. Terebra (in lateral aspect) brownish yellow along the superior margin.

Body robust. Hairs short, silvery. Clypeus densely punctate, and slightly more depressed than frons. Paragenae transversely ridged and striated, anteriorly raised-up. Malar spaces finely punctate, minimum length about 2/3 the pedicel. Frons finely rugoso-reticulated, with a very poorly-defined, discal dimplement, and one prominent, globular tumescence posterior to each antennal insertion. Eyes with the longest *vs.* shortest axis about 19: 13. Inter-antennal distance about twice the antenno-orbital distance. OOL: POL about 14: 11. Temples finely confluently reticulato-punctate. Area posterior to the superior orbit in profile shorter than the eye (*ca.* 13: 19). Vertex finely, confluently reticulato-punctate and anteriorly slightly more depressed than frons; but posterio-medially bipunctate, with narrow but smooth, inter-punctural spaces; median furrow very weak. Antennae thick, 16 segmented, about as long as the three basal abdominal tergites together; scapes weakly, evenly curved, strongly clavate, not compressed; pedicels about a-half longer than thick; intermediate segments cylindrical, distinctly thickened; segment III thicker than the scape, being thickest near the midpoint, relative lengths of segments I-V about 18: 8: 16: 8: 7. Lateral slopes of pronotum striato-reticulated, inferio-anteriorly finely, confluently punctate. Mesonotum reticulato-punctate, with deep, broad median and parapsidal furrows; prescutum prominent, relatively long; scutum at each side with a broad, impressed, finely, confluently punctate, median band. Scutellum convex, finely reticulato-punctate, medially narrowly, shallowly foveated; anteriorly not well separated from and scarcely narrower than the posterior margin of mesonotum; posteriorly very broadly rounded. Mesepisterna finely reticulato-punctate. Mesepimera strongly striated. Metapleura weakly convex, not keeled, also finely reticulato-punctate. Vein *mcu*$_2$ in the fore wing evenly curved, distinctly shorter than *mcu*$_1$. Tibiae compressed, with the median line on the exterior surface scarcely sulcated; relative lengths of femora, tibiae and tarsomeres of legs III about 24: 42: 17: 5: 4: 2: 9. Abdominal tergites I-VII finely confluently punctate, the VIII and anterior area of IX microscopically alutaceous; the X with a few moderate-sized, setigerous punctures. Terebra finely, confluently punctate on lateral surfaces, superior margins and extreme apex smooth and a little raised; relative lengths of the basal and apical portions (measured along the inferior margin in profile) about 4: 5. Length including terebra about 17 mm.

Formosa: Shinchiku, vii. 1918 (J. SONAN & K. MIYAKE), 1 ♀ (Taiwan Agric. Inst.).

Tribus KONOWIINI nov.

Genus XIPHYDRIOLA SEM., 1921.

= *Xiphidion* PROV., 1875 (genotype: *X. canadense* PROV). (nom. praeocc.) (syn. nov.)

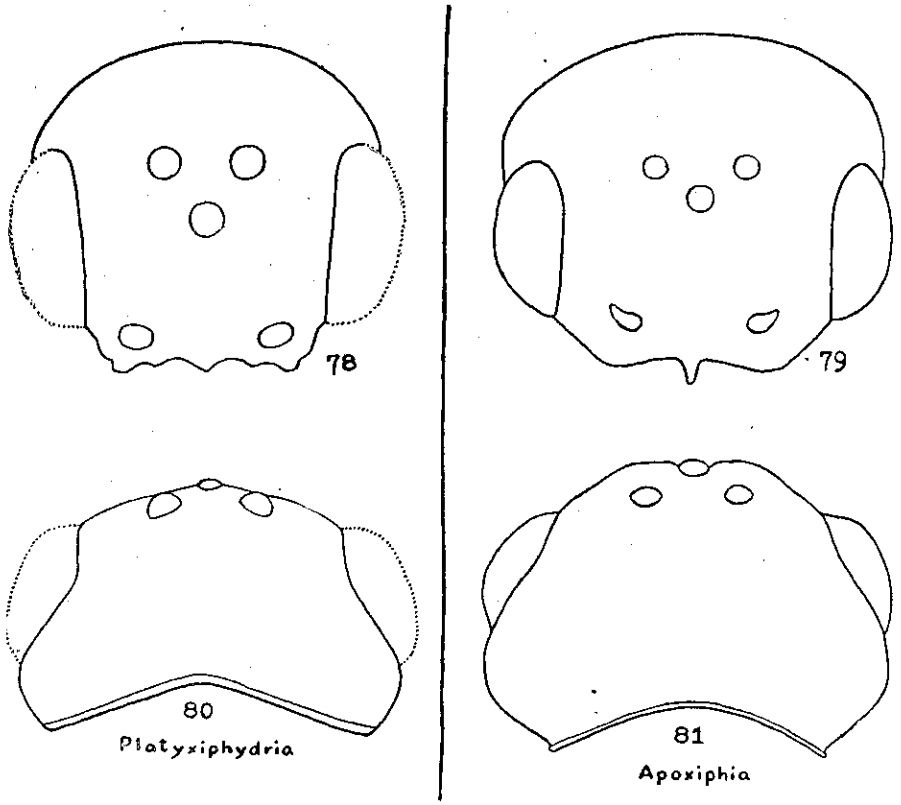
Genotype: *Xiphydriola amurensis* SEM. (Orthotype).

Habitat: Holarctic, Oriental. 11 species.

Subgenus PLATYXIPHYDRIA TAKEU., 1938. (comb. nov.)

(Text-figs. 49, 52, 56, 80, 82).

Body slender, small-sized. Head broader than thorax, in dorsal aspect roundly contracted behind eyes. Mandibles 4-dentate. Maxillary palpi ?-segmented. Labial palpi 3 segmented, the ultimate segment rather thick, weakly clavate. Malar spaces very short, medially almost interrupted. Clypeus anteriorly with a median tooth. Mesal orbits weakly divergent caudad. Eyes roundish. Posterior ocelli lying slightly anteriorly to the supra-orbital line. Temples anteriorly very narrow, laterally each with a poorly developed, marginal ridge and submarginal furrow. Area posterior to the supra-orbital line short, dim, strongly sculptured. Antennae thick, short, subcylindrical, slightly thickened near the middle; pedicels short; segment III long, with false annulet. Prepisterna short. Vein *im* in the hind wing absent. Tibiae I apically usually each with only one spur. Tarsal claws each with a minor tooth near the middle; the apical tooth very long. Abdomen thin, laterally sharply edged, apically attenuated; tergite X posteriorly tubuliform, strongly protruding caudad. Terebra short and apically not recurved. ♂ unknown.



Text-figs. 78-81. — Cephalic and dorsal aspects of the head of Konowiini-genera: *Xiphydriola* (*Platyxiphydria*) *antennata* sp. nov. ♀ (78, 80), *Konowia* (*Apoxiphia*) *bifurcata* sp. nov. ♂ (79-81).

Typus subgeneris: *P. tiphiiformis* TAKEU. (Orthotype).

Habitat: Palaearctic (Manchurian S. R.), Oriental (Indochinese S. R.). 3 species.

Key to species.

1. Antennae 11-12 segmented; legs dull brown or black, tibiae I-III (basally) and basitarsi III (II) (basally or entirely) whitish 2
— Antennae 17-18 segmented; legs black, tibiae and tarsi brownish. ♀ 11-13 mm . . . . . *tiphiiformis* (TAKEU.), 1938.
2. Antennae only 11 segmented, the segment I a little longer than the IV, which is longer than the II and a-half as long as the III; apical portion of terebra not longer than the basal. ♀ 12-14 mm. *orientalis* (WESTW.), 1874

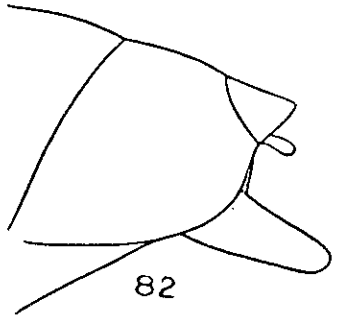
— Antennae 12 segmented, relative lengths of the segments I-IV about 11: 4: 10: 5; apical portion of terebra distinctly shorter than the basal. ♀ 10.5 mm. . . . . *antennata* sp. nov.

Xiphidriola (Platyxiphydria) antennata, sp. nov. (Text-figs. 49, 52, 56, 78, 80, 82).

♀ — Black. Mandibles each with a big, discal, whitish yellow spot, apical margins rufous. Lateral slopes of pronotum posteriorly narrowly brownish yellow. Wing clear hyaline, but apical corner of cell *1cu* and basal corner of cell *2cu* in the fore wing very feebly tinted with yellowish, veins and stigmata dark brown. Legs dull brown, tibiae I-III basally and basitarsi II-III whitish yellow, dorsally more extensively so. Abdominal tergite III on each side with a whitish yellow spot.

Body slender. Hairs silvery, thin, short. Clypeus flattened, very densely punctate, practically inseparable from frons. Paragenae obliquely striated, anteriorly strongly raised in V-shape, thus each forming a rather sharp tooth. Malar spaces with the minimum length about 1/3 the pedicel. Frons very weakly convex, finely striato-punctate, discally with a distinct, roundish dimplement, submedially with a broad, shallow furrow posterior to each antennal insertion. Longest *vs.* shortest axis of eyes about 13:10. Inter-antennal distance *vs.* antenno-ocular distance about 3:1. Temples finely, confluently punctate. Area posterior to the superior orbit in profile much shorter than the longest axis of eye (*ca.* 7: 13). Area around ocellar triangle with radiating striae. Vertex dim, also finely confluently punctate, median furrow very poorly defined POL scarcely longer than OOL. Antennae 12 segmented, thick, slightly shorter than thorax, apically weakly attenuated; intermediate segments slightly thickened, cylindrical; scapes strongly clavate and curved, weakly compressed; pedicels slightly thicker than long; segment V slightly longer than thick; relative lengths of segments I-V about 22: 8: 20: 10: 9. Thorax finely reticulato-punctate. Mesonotum with narrow, rather deep, median and parapsidal furrows; prescutum weakly convex; scutum medially densely punctured, broadly but very shallowly depressed. Scutellum convex, anteriorly with a short, poorly developed, median fovea; posteriorly broadly rounded. Prepisterna shining, with fine, rather sparse puncturation. Mesepisterna transversely striato-punctate. Mesepimera anteriorly striated, posteriorly smooth, unsculptured. Metapleura reticulato-punctate, discally tumescent. Cell *1r* in the fore wing very slightly longer than *2r* (*ca.* 8: 9, measured along the costal margin); vein *M*

originating much beyond inter-costal cross-vein; vein *rm* lying at a point of about apical 1/3 of the stigma; cell *1m* about 4 times as long as the *2m* (measured along the anal margin); vein *mcu* curved, slightly longer than *mcu*. Tibiae III compressed, exterior surfaces inferiorly each with a submarginal suture; relative lengths of femora, tibiae,



Text-fig. 82. Abdominal apex of *Xiphydriola* (*Platyxiphydria*) *antennata* sp. nov. ♀, (the apical portion of terebra is, when in normal condition, being directed caudad instead of ventro-caudad).

basitarsi and apico-tarsomeres about 14: 21: 11: 12. Abdominal tergites I-II finely, confluently punctate; III-VII microscopically alutaceous; VIII posteriorly with a few shallow, moderate-sized punctures and a faint, median carina; X posteriorly distinctly carinated. Terebra with its basal portion distinctly longer than the apical (*ca.* 26; 19, measured along the inferior margin in profile). Length including terebra about 12 mm.

Formosa: Rikiriki, nr. Koshun, 20. iv. 1924 (N. TAKEDA), 1 ♀ (Taiwan Agric. Inst.).

On checking over TAKEUCHI's (1938) description and illustrations of *X. (P.) tiphiiformis*, some discrepancies and non-conformities were found, namely, length of antennae *vs.* head and thorax, of malar space *vs.* pedicel, POL *vs.* OOL, etc. Our Formosan example is different from the latter species as described and figured in inter-antennal distance relatively much longer, cells *2r* and *2m* much shorter, legs distinctly paler, abdominal tergites II and IV not pale marked, etc.

Subgenus XIPHYDRIOLA, *s. str.*

Habitat: Holarctic, Oriental. 5 species. The following Nearctic species should probably be transferred to the present subgenus: *canadensis* PROV., *mellipes* HARR., *tibialis* SAY and *walshi* WESTW., but according to Dr. H. TOWNES (in litt.), they should all be retained in the genus *Xiphydria*, s. str. and *walshi* is a male probably of *mellipes*, but might belong to some other closely related species.

Genus INDOXIPHIA novum

Genotype: *Xiphydriola quadricincta* BENS.

Habitat: Oriental. 3 species.

Subgenus INDOXIPHIA, *s. str.*

Habitat: Oriental (Malaysian S. R.). 2 species.

Besides the genotype, *Xiphydria indonesica* FORS. is also referable to this subgenus. For their differentiating characters, see BENSON (1935: 171).

Subgenus CINGALIXIPHIA novum

Typus subgeneris: *Xiphydria striatifrons* CAM.

Habitat: Oriental (Cinghalese S. R.). 1 species.

Benson (1935) referred the above mentioned 3 Oriental species to *Xiphydriola*, solely because of their simple tarsal claws. Probably he has over looked or under-estimated the importance of "capite toto cum vertice planiusculo temporibusque omnino opaco, fortiter subreticulato-rugoso." The mouthparts of *Xiphydriola quadricincta* were stated to be as in *Xiphydria camelus;* whereas those of *Xiphydriola amurensis* and *Platyxiphydria tiphiiformis* are still unknown. The mesal orbits of *quadricincta* (BENSON 19 5: 169, f. 2) are, as in *Xiphydriola*, weakly divergent caudad, but the posterior ocelli are situated much anteriorly to the supra-orbital line.

Genus KONOWIA BRAUNS, 1884.

Genotype: *K. megalopolitana* BRAUNS (Orthotype).

Habitat: Holarctic. 4 species.

Subgenus APOXIPHIA novum

Text-figs. 45, 79, 81.

Body slender, small-sized. Head subequal in breadth to thorax, in dorsal aspect slightly contracted behind eyes. Mandibles 4-dentate.

Maxillary palpi ?-segmented. Labial palpi ?-segmented. Malar spaces long. Clypeus anteriorly with a median tooth. Mesal orbits subparallel to each other. Eyes roundish elliptical. Posterior ocelli lying much anteriorly to the supra-orbital line. Temples broad, laterally each with a poorly developed, marginal ridge and a submarginal furrow. Area posterior to the supra-orbital line rather long, polished, weakly sculptured. Antennae moderately long, thin, setaccous; pedicels long; segment III long, without false annulet. Prepisterna short. Vein *2A* in the fore wing combining with *Cu* + *1A* near the base Vein *im* in the hind wing absent. Tibiae I usually each with one apical spur only. Tarsal claws apically bifurcate, the preapical tooth exceptionally long and slender. Abdomen weakly flattened, laterally sharply edged. ♀ unknown

Typus subgeneris: *K. (A.) bifurcata*, sp. nov.

Habitat: Palaearctic (Europe). 1 species.

Konowia (Apoxiphia) bifurcata, sp. nov.

(Text-figs. 45, 79, 81).

♂ — Black. Golden yellow on following portions: clypeus, paragenae (anteriorly black), frons anterior to about the level of posterior margins of antennal insertions, malar spaces, anterior halves and posterio-lateral margins of temples, short submedian bands on vertex, big discal spots on prepisterna, superior, inferior and posterior margins of lateral pronotal slopes, tegulae, ante-inferior and post-superior marginal streaks on mesepisterna, and lateral spots on abdominal tergites II-V. Mandibles (apical margins) and antennae dull chestnut brown. Wings clear hyaline, cell *1cu* in the fore wing with a yellowish apico-anal spot; veins and stigmata yellowish brown; vein *C* + *Sc* in the fore wing yellow. Legs yellowish red, apico-tarsomeres brown.

Body moderately robust. Hairs short, thin. Clypeus linear, flattened, depressed, finely striato-punctate, and separated from the supraclypeal region by a faint, transverse furrow; anterio-median denticle long, prominent. Paragenae anteriorly strongly raised, without transverse ridge. Malar spaces very finely transversely striated, minimum length very slightly shorter than the pedicel. Frons neatly reticulated, anteriorly with a somewhat V-shaped tumescence, discally with an elongate, median dimplement. Eyes with the longest *vs.* shortest axis about 10: 9. Inter-antennal *vs.* antenno-ocular distance about 2: 1.

OOL: POL about 5: 4. Temples finely, confluently, irregularly striated, and scatteredly punctate; areas posterior to superior orbits, in profile, subequal in length to the longest axis of eyes. Vertex dim, very finely striato-reticulated, except for the extreme posterior area and areas surrounding the pale submedian bands, where it is polished, finely and scatteredly punctate; anterior area slightly depressed; median furrow very poorly developed. Antennae 15 segmented; scapes clavate, strongly compressed, and curved near the base; pedicels almost a half longer than thick; relative lengths of segments I-V about 11: 5: 11: 8: 7. Lateral pronotal slopes inferiorly shining, impunctate; superiorly and posteriorly strongly ridged along the margin. Prepisterna finely striato-punctate on lateral surfaces; maximum height *vs.* length in profile about 8: 11. Mesonotum strongly rugoso-reticulated; prescutum very prominent; median furrow deep, very distinct, but parapsidal furrows shallow and indistinct. Scutellum almost flattened, transversely striato-reticulated, posteriorly narrowly rounded; lateral slopes very finely punctate. Mesepisterna transversely striato-punctate. Mesepimera striated. Metapleura neatly reticulato-punctate, obliquely keeled along the median line. Cell *2m* in the fore wing short, the apical margin slightly longer than the costal; vein mcu_2 evenly curved, subequal in length to mcu_1; vein Cu_2+*1A* apically forked. (7) Tibiae II each with two apical spurs of quite unequal length and thickness. Tibiae and basitarsi III weakly compressed, exteriorly feebly sulcated along the median line; relative lengths of femora, tibiae and basitarsi III about 16: 24: 11; basitarsi III subequal in length to the three following tarsomeres together. Abdominal tergites I-II with their depressed areas coarsely, confluently punctate; while the raised area in the I polished, practically impunctate; tergite II posteriorly finely punctate; III-VII microscopically alutaceous; VIII very finely and scatteredly punctate; sternites impunctate, relative lengths of the VI-VIII about 8: 5: 7. Length about 11.5 mm.

"Europe", 1 ♂ (Taiwan Agric. Inst.). This unique specimen is derived from T. SHIRAKI's collection and was brought back by him from a European museum. It is rather poorly preserved, with the antennae and legs partly mutilated. It was originally pinned together with a ♀-*Xiphydria*, bearing two common labels "Europe, Col. T. SHIRAKI" and "*Xiphydria camelus* LINN., compared with type, det. T. SHIRAKI". On examining the female specimen concerned, however, it proved to be *X. picta* KNW., intead of *camelus*.

7) In Gussakouskij's figure for *Ps. betulae* (1935: 31, fig. 17), it is not forked.

Subgenus PSEUDOXIPHYDRIA Ensl., 1911. (comb. nov.)

Enslin's original description of this genus is practically a transcript of Konow's (1905) redescription of *Konowia*, from which the present genus is inseparable in all respects except the antennae are still shorter (segments V or VI, for instance, at most 1.5 times so long as thick; in *Konowia*, 2.5 times or more) and vein *rm* in the fore wing present. ♂ unknown.

Typus subgeneris: *Ps. betulae* Ensl. (Orthotype).

Habitat: Palaearctic (Eurasian S. R.). 1 species.

Ross (1937) suppressed *Konowia* and *Pseudoxiphydria* as synonyms of *Xiphydria* on the ground that the approximity of the vein *2A* to *Cu*$_1$ + *1A* and the evanescence of the vein *rm* in the fore wing were variable and thus could not be considered of diagnostic value. Such an assumption cannot be accepted as all genera or still lower categories are each erected upon a combination of characters instead of one single character and are each represented by its type instead of description. Although the representatives of these two monotypic genera are exceedingly rare, but have heretofore been recorded in literature by 7 authors from more than 20 examples, and the combination of the approximity and evanescence of these veins can be safely assumed as constant. Further more, many of the genera of Tenthredinoidea are erected upon the approximity of the vein *2A* to *Cu*$_1$ + *1A* or the shape of the so-called "anal cell." It thus leads to the conclusion that they are deserved of genus or subgenus rank.

Subgenus KONOWIA, s. str.

Habitat: Palaearctic. 1 species.

MacGillivray (1917) assigned *Xiphydria basalis* Say, 1836 to *Konowia*, but according to the interpretation of Ries (*1937*), *basalis* is not a Xiphydriid, but a Cephid, and is synonymous with *Cephus abbreviatus* Say, 1824 (= *Janus abbreviatus*). This synonymy is most probably correct, but it is rather inexplicable why the same species was assigned by the same author to two very different families.

Tribus PARAXIPHIINI nov.

Genus PARAXIPHIA novum

Text-figs. 48, 53, 57, 83-85.

Body slender, small-sized. Head slightly broader than thorax, in dorsal aspect roundly narrowed behind eyes. Mandibles 4-dentate.

Maxillary palpi 5 segmented, the ultimate segment rudimentary. Labial palpi 3 segmented, the ultimate segment distinctly clavate. Malar spaces moderately short. Clypeus anteriorly broadly rounded and with a weak, median tooth which is slightly raised but not projecting cephalad. Mesal orbits slightly but distinctly convergent caudad. Eyes elliptico-ovoid. Posterior ocelli lying much anteriorly to the supra-orbital line. Frons discally weakly convex. Temples broad, laterally rounded-off and practically without marginal ridges. Area posterior to the supra-orbital line short, polished, not sculptured. Antennae moderately long and moderately thick, setaceous; pedicels long; segment III short, without false annulet. Prepisterna long. Vein *im* in the hind wing absent. Tibiae I usually each with an extra, minute, apical spur. Tarsal claws each with a minor tooth near the middle. Abdomen very slightly thickened near the middle; apical tergites laterally not sharply edged; tergite X broadly tubuliform, scarcely protruding caudad. Terebra short, apically not recurved. ♂ unknown to the writer.

Genotype: *Xiphydria insularis* Rohw.

Habitat: Oriental (Formosa). 1 species.

In general appearance, and in the structure of maxillary palpi, this genus is rather similar to *Palpixiphia*, but the labial palpus, temple and tarsal claw are decidedly different.

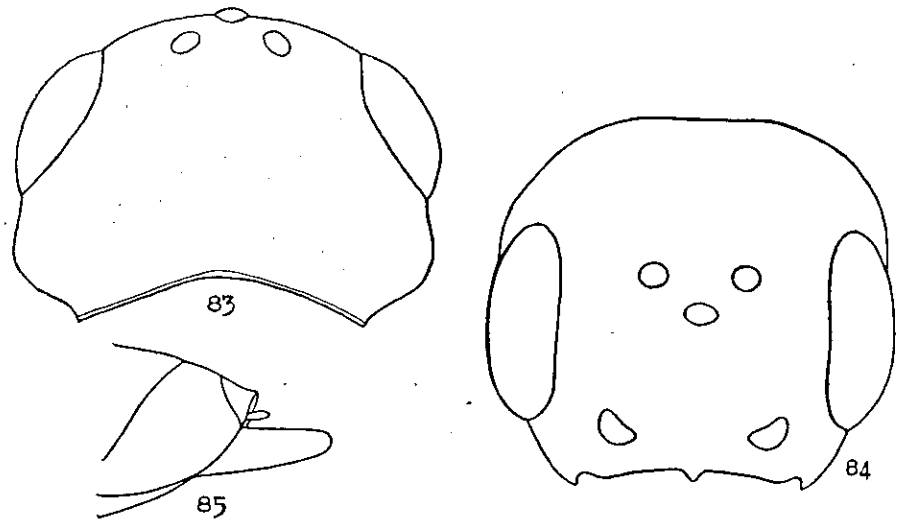
Paraxiphia insularis (Rohw.), comb. nov.

(Text-figs. 48, 53, 57, 83-85).

♀ (Allotype) — Black. Mandibles (discal spots), malar spaces, temples (except the small area posterior to each superior orbit), anterior V-shaped mark and discal triangular spot on frons, longitudinal bands running closely along each mesal orbit to occiput (with branchlets near anterior ocellus and near superior orbit), superior and posterior margins and anterio-inferior areas of lateral pronotal slopes, superior margins of mesepisterna, posterior magin of scutum, mesal and posterior spots of axillae, median and lateral spots of metanotum, legs including coxae, and lateral spots of all abdominal tergites yellow. Antennae, paragenae, tegulae, and abdominal sternites more or less reddish brown. Wings hyaline, feebly stained with brownish, veins and stigmata brown.

Body slender. Hairs yellowish, relatively long. Clypeus striated, practically inseparable from frons; lateral margins strongly

raised, sharply marked off. Paragenae smooth, very finely striated, anteriorly swoolen-up. Malar spaces very finely striated, strongly depressed, minimum length about 2/3 the pedicel. Frons with a faint, discal impression, area around ocellar triangle with radiating striato-reticulation. Eyes with the longest *vs.* shortest axis about 7: 5. Inter-antennal distance *vs.* antenno-ocular distance about 7: 3. Temples



Text-figs. 83-85. Head (dorsal and cephalic aspects) and abdominal apex (lateral aspect) of *Paraxiphia insularis* (Rohw.) ♀.

finely striated and with a few fine punctures. Areas posterior to the supra-orbital line in profile distinctly shorter than the eye (*ca.* 9: 14). Vertex and posterior areas of temples very smooth, with very few, scattered, exceedingly fine punctures; median furrow absent. Antennae 14 segmented, about as long as 4 basal abdominal tergites together, weakly attenuated towards apices: scapes strongly curved, weakly clavate, slightly compressed; pedicels about a-half longer than thick; apical segments each slightly longer than thick; relative lengths of segments I-V about 16: 7: 12: 7: 6. Lateral slopes of pronotum smooth, impunctate; superior margins punctate. Mesonotum finely reticulated; median furrow narrow, shallow; parapsidal ones deep, rather broad; prescutum prominent; scutum at each side with a narrow, impunctate, depressed, median band. Scutellum transversely, striato-reticulated, with a narrow, median carina; posteriorly narrowly rounded. Mesepisterna coarsely but weakly reticulated. Mesepimera and metapleura obliquely striated; the latters each with an oblique median ridge. Cell

2r in the fore wing long; vein rm_2 starting from the apex of stigma; vein im_1 about 2/3 as long as mcu_1; vein mcu_2 evenly curved, slightly longer than mcu_1. Tibiae weakly compressed, exteriorly sulcated; relative lengths of femora, tibiae, basitarsi and apico-tarsomeres III about 16: 22: 12: 11. Abdominal tergites I-II confluently punctate; III-VIII microscopically allutaceous. Terebra apically roundly blunt; relative lengths of the basal and apical portions about 19: 17 (measured along the inferior margin in profile). Length including terebra about 12 mm.

Formosa: Koshun, 25. iv.-25. v. 1918 (J. Sonan, K. Miyake & M. Yoshino), 1 ♀ (det. T. Shiraki) (Allotype) (Taiwan Agric. Inst.).

The ♀ differs from the ♂ as described by Rohwer (1916) in the following points: (1) predominating striae one face (3 longitudinal and 2 oblique) absent; (2) antennae not sharply tapering apically; (3) frons with an anterior, V-shaped and a discal, triangular yellow spot; (4) prepisterna inferiorly not yellow; (5) mesonotum and scutellum with yellow markings; (6) legs (excluding coxae) not rufo-ferrugineous but yellow.

Subfamilia EUXIPHYDRIINAE nov.

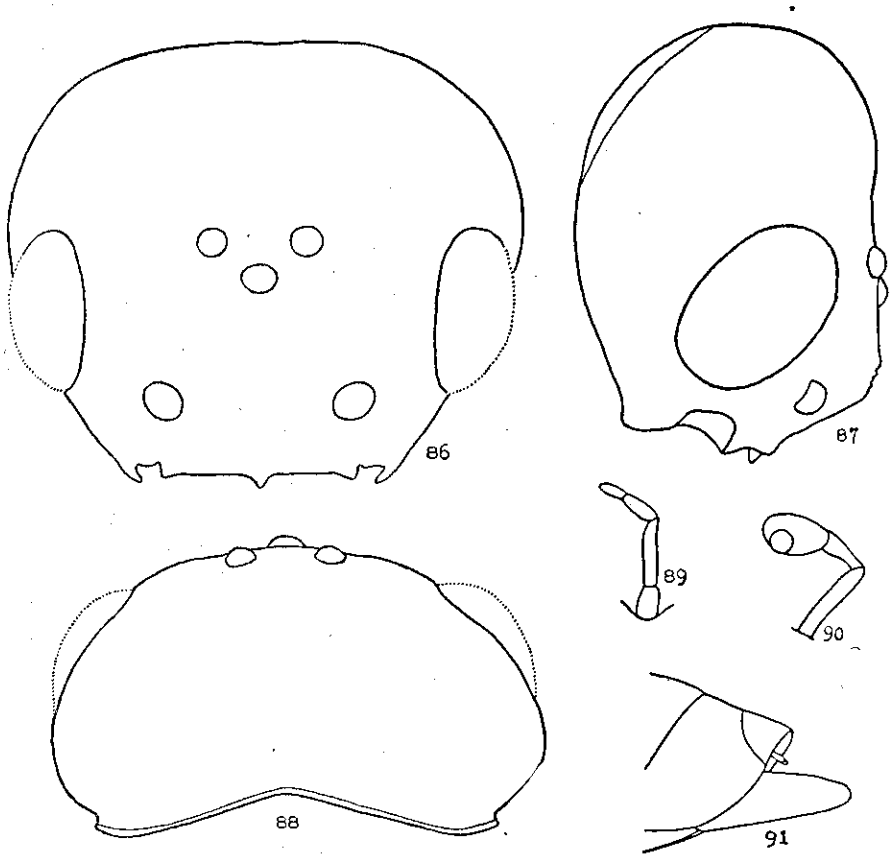
Genus EUXIPHYDRIA Sem. & Guss., 1935.

Text-figs. 35, 41, 86-91.

Body robust, large-sized. Head subequal in breadth to thorax, in dorsal aspect slightly roundly widened behind eyes. Mandibles 4-dentate. Maxillary palpi 4 segmented. Labial palpi 3 segmented, the ultimate segment very strongly dilated, globular, with a distinct sensory pit. Malar spaces moderately long. Clypeus anteriorly with a median tooth. Mesal orbits subparallel to each other. Eyes elliptical. Posterior ocelli lying slightly anteriorly to the supra-orbital line. Temples broad, laterally each with a weakly developed, marginal ridge. Area posterior to the supra-orbital line exceedingly long, polished, unsculptured. Antennae short, thick; intermediate segments distinctly thickened and compressed; pedicels long; segment III short, without false annulet. Prepisterna moderately long. Wing venation normal. Tidiae I each with an extra, minute, apical spur. Tarsal claws apically bifurcate. Abdomen thick, laterally sharply edged (more distinctly so in ♂), intermediate segments distinctly thickened, apically attenuated; tergite X posteriorly tubulifrom, strongly protruding caudad. Terebra short, apically not recurved.

Genotype: *Xiphydria potanini* A. JAK. (Orthotype).

Habitat: Palaearctic (Manchurian S. R.). 3 (1) species.



Text-figs. 86-91. — Head (cephalic, lateral and dorsal aspects) (86-88), right-hand maxillary (89) and labial palpi (90), and abdominal apex (lateral aspect) (91) of *Euxiphydria ruficeps* (MOCS.), ♀.

Key to species.

1. Body (except posterior portion of head) and legs brownish black or black, with bluish metallic lustre; antennal segment I subequal in length to III, which is thinner than the II. ♀ 14-18 mm. . . . *maidli* (ZGBL.), 1937.
— Body (except posterior portion of head) and legs pitchy black or brownish black, without any bluish tints; antennal segment I distinctly longer than III, which is not thinner than the II. 2
2. Size larger; vein *im* 1 in the fore wing distinctly shorter than *im* 2; wings very strongly infuscated 3

— Size smaller; vein *im* 1 in the fore wing slightly longer than *im* 2; wings not very strongly infuscated. ♀ 10 mm. . . . *potanini* (A. JAK.), 1892.
3. Abdominal sternites III-VII in ♂ each medially with a band of dense hairs. ♂ ♀ 12-23 mm. . . . . *ruficeps* (MOCS.), 1909.
— Abdominal sternites V-VII in ♂ each medially with a tuft of dense hairs. ♂ 20-23 mm. . . . . *subtrifida* MAA, 1944

Euxiphydria ruficeps (MOCS.) (Text-figs. 35, 41, 86-91).

Kirin: Kao-Lin-Tze, 13-20. vi. 1940, 6 ♀ ♀; 13. vii. 1940, 1 ♀ (Mus. Heude).

SEMENOV and GUSSAKOVSKIJ (1935) recognised *Eu. potanini* (known only from one unique ♀) as a good species and differentiated it from *Eu. ruficeps* by several characters, all of which appear to be rather inconstant, and the former species is almost certainly nothing but an unusual dwarf individual of *ruficeps*. The discovery of further topotypical *potanini*, especially the male examples, is essential for the settlement of its systematic status. A table for comparison of SEMENOV and GUSSAKOVSKIJ's statement and the writer's own observation is given below:

Characters	*potanini* (vide SEM. & GUSS.)	*ruficeps* (vide SEM. & GUSS.)	*ruficeps* (the writer's observation)
Body length	10 mm.	12-17.5 mm.	12-23 mm.
Antennae	13 segmented	always 14 segmented	13-16 segmented.
Mesopleural sculpturation	dense	less dense	distinctly denser in *smaller* individuals.
Wing color	less infuscated	strongly infuscated	individually variable.
Apex of cell *3r* (fore wing)	narrowly rotundate	more broadly rotundate	asymmetrical, breadth variable (0.144-0.320 mm.); narrower in *smaller* individuals.
Length *vs.* breadth of cell *1cu* (fore wing)	2	1.5	asymmetrical, variable, 1.7-2.0, average 1.77.
Vein *mcu* 3 (fore wing)	interstitial	postfurcal (not so in GUSSAKOVSKIJ's figure (1935 : 33, fig. 19*B*).	asymmetrical, variable, 25% interstitial, 75% postfurcal.

It may be pointed out, however, that from GUSSAKOVSKIJ's figure (1935: 33, fig. 19), the vein *im*$_2$ in *potanini* is slightly shorter than *im*$_1$, whereas in *ruficeps*, it is distinctly longer. This may perhaps serve as a character for the separation of these two forms.

Euxiphydria subtrifida Maa

This species is perhaps inseparable from the preceding one. As the writer has not access of the topotypical ♂ *-ruficeps* to compare with and their distribution ranges are so isolated that it is deemed better to recognise *subtrifida* as a distinct species, at least provisionally.

There were some discrepancies in the original description: the mandibles (8) are 4-dentate instead of 3 and the cheeks are interio-anteriorly transversely (not longitudinally) wrinkled and exterio-anteriorly longitudinally so.

Euxiphydria maidli (ZGBL.), comb. nov.

TAKEUCHI (1938) placed this species as a synonym of *Eu. ruficeps*, but this cannot be approved as not only the color pattern but the structure of antennal segments, and the sculpturation of head and of abdomen also are different. In ZIRNGIEBL's (1937: 342) original description, for "Kieferntaster", it must be read "Labialtaster", and *vice versa*.

Species sedis incertae

"Xiphydria" quadrimaculata CAM.

This species is perhaps representing a new genus and is characterised by its peculiar sculpturation on head, breviated antennae and cells *2r* and *2m* (fore wing) and non-bifurcate tarsal claws.

Familia SIRICIDAE W. KBY., 1837.

This family is comprised of about 97 modern and 2 extinct species. A generic revision of the modern forms was recently given by BENSON (1943), in which 2 subfamilies and 8 genera were recognised. In the present paper, a new subfamily and a new genus are introduced for the reception of the fossil forms. Key to the Nearctic

8) The mandibles are usually partly overlapped by clypeus and can be accurately observed only after dissection.

species were given by BRADLEY (1913), that to the Palaearctic ones by GUSSAKOVSKIJ (1935), and the Japanese ones by TAKEUCHI (1938), while the Europen species of the genera *Sirex* (♀), *Urocerus* (♀), and *Tremex* (♂ ♀) and all the species of the genus *Eriotremex* (♀) were tabulated by BENSON (1943).

Table 3. Census of Siricidae. (9)

	Palaearctic	Nearctic	Ethiopian	Oriental	Australasian	Neotropical	Total no. spp. & subspp. for each genus.	
Megapterites	1	—	—	—	—	—	1	Eocene
Eoxeris	1	—	—	—	—	—	1	Lower Oligocene
Xeris	2	3	—	1	—	—	6	
Xoanon	2	—	—	—	—	—	2	
Urocerus	20	5	—	—	—	—	25	
Urocerites	1	—	—	—	—	—	1	Lower Miocene
Sirex	13(2)	13	—	—	—	—	26(2)	
Siricosoma	—	—	—	1	—	—	1	
Eriotremex	—	—	(1)	4(3)	2	—	6(4)	
Tremex	13	3	—	5(4)	—	—	21(4)	
Teredon	—	—	—	—	—	1	1	
Total no. genn. for each Region.	8	4	1	4	1	1		
Total no. spp. and subspp. for each Region.	53(2)	24	(1)	11(7)	2	1	91(10)	

Subfamilia MEGAPTERITINAE nov.

Genus MEGAPTERITES CKLL., 1920.

(Text-fig. 93a).

Large sized (fore wing about 50 mm.). Pterostigmata of the fore wing lanceolate, weakly but distinctly developed, and situated costad to the cell *2r*. Basal piece of vein *M* subperpendicular to the costal margin and forming an obtuse interior angle with *mcu*$_1$; cells *1r* and *2r* very short, and with a total lentgh about $^3/_4$ of *3r*, which is

9) Species of doubtful status being included in brackets.

about 1 X 8 and apically appendiculate; cell *1r* directly contacting *1sm*; veins M_{1+3} and M_{3+4} originating much beyond the basal extremity of mcu_1 and apically strongly divergent; vein icu_2 interstitial.

Genotype: *M. mirabilis* CKLL. (Haplotype).

Habitat: Bournemouth, England (horizon: Eocene)

Subfamilia SIRICINAE ASHM., 1898.

In addition to the characters given by BENSON (1943: 33), this subfamily can be separated from Tremicinae by (a) vein *Sc* in the fore wing free, weak but distinct; (b) hind wings each with two series of hamuli, one basal (weak developed) and one apical; (c) tibiae III usually with two apical spurs, occasionally one.

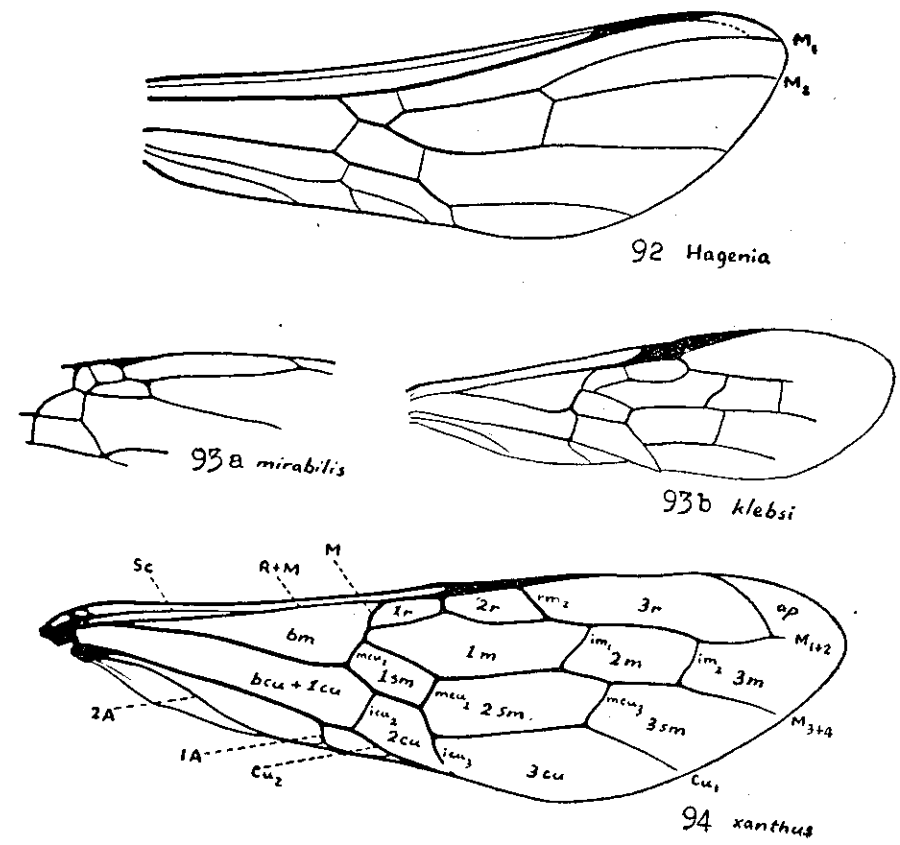
Genus EOXERIS novum

Pedicels of antennae much shorter than thick. Flagellar segments of quite even length. Apical angle of the cell *bm* in the fore wing relatively obtuse, (vein $R+M$ almost subperpendicular to the basal piece of vein M), not so acute as in modern Siricids; cell *2r* relatively short, and basally situated prestigmally, instead of just below the stigma; cell *3r* excessively broad; cell *3m* much longer than *2m*; cell *2cu* very long, and costo-basally very near the furca. Tibiae III apparently not distinctly flattened, each with two apical spurs.

Genotype: *Urocerus klebsi* BRUES.

Eoxeris klebsi (BRUES), comb. nov. (Text-fig. 93b).

This species was originally assigned (1926) to the genus *Urocerus* mainly because of its paired (not single) apical spurs on tibiae III. BRADLEY (1913) has, however, shown in about one tenth of the males of *U. flavicornis* (FABR.) were found that possessed but a single spur. Therefore we must not rely upon such a character to undertake generic separation. From the figure of its fore wing as given by Brues, this unique species is apparently more referable to the genus *Xeris*, rather than *Urocerus*. But the venational scheme is so archaic and incomparable that it doubtless deserves to have a new generic name for its own. The non-flattened tibiae III also indicate its affinity to *Xeris*.



Text-figs. 92-94. — Fore wing of *Hagenia* spec. indet. (redrawn from TILLY., 1927) (92); *Megapterites mirabilis* CKLL. (redrawn from CKLL., 1921) (93a); *Eoxeris klebsi* (BRUES) (redrawn from BRUES, 1936) (93b) and *Urocerus xanthus* (CAM.) (original) (94) with notations (original). Notes the venational terminology used in the present paper (cells in italic) and the relative acuteness of the costo-apical corner of cell *bm*, relative size and shape of cells *1r*, *2r*, *1m*, *1sm*, and relative proximity of vein icu_2 to mcu_1.

Genus XERIS A. COSTA, 1894. (Text-figs. 95-106).

BRADLEY (1913) suggested the name of the genus was derived from Ξερίς, feminine in gender, ([10]) meaning a kind of plant. It appears, however, clearly an anagram of the word "sirex".

10) In this case, Bradley's point of view (*in litt.*) may be mentioned: "When a word is derived from an anagram but nevertheless takes the form of an existing classical word, it should assume the gender of that word, otherwise it should assume the gender the coiner assigned to it, if any, or the gender first assigned to it by usage."

Doubtless the distributional center of the genus is the Pacific States of N. America (from British Columbia to California). All the 3 known species occur in these States of which *tarsalis* is endemic, while *spectrum* and *morrisoni* both form a distinct local race there. The intraspecific variation of the genus appears to be very significant. Many of the structural characters, including sculpturation on face and on mesopleura, shape of cornus, terebra ratios, etc., prove to be much less reliable than in its relatives The mesoprescutum of *Xeris* is rather well defined and appears to be one of the indicative characters for its primitiveness among Siricid genera.

The preliminary revision of the genus given below is based, unless otherwise stated, upon material loaned from the U. S. National Museum, Washington through the courtesy of Dr. H. Townes.([11]) The ♂-specimens at hand are rather inadequate for the separation of subspecies, a long series of fresh material is necessary for such an attempt.

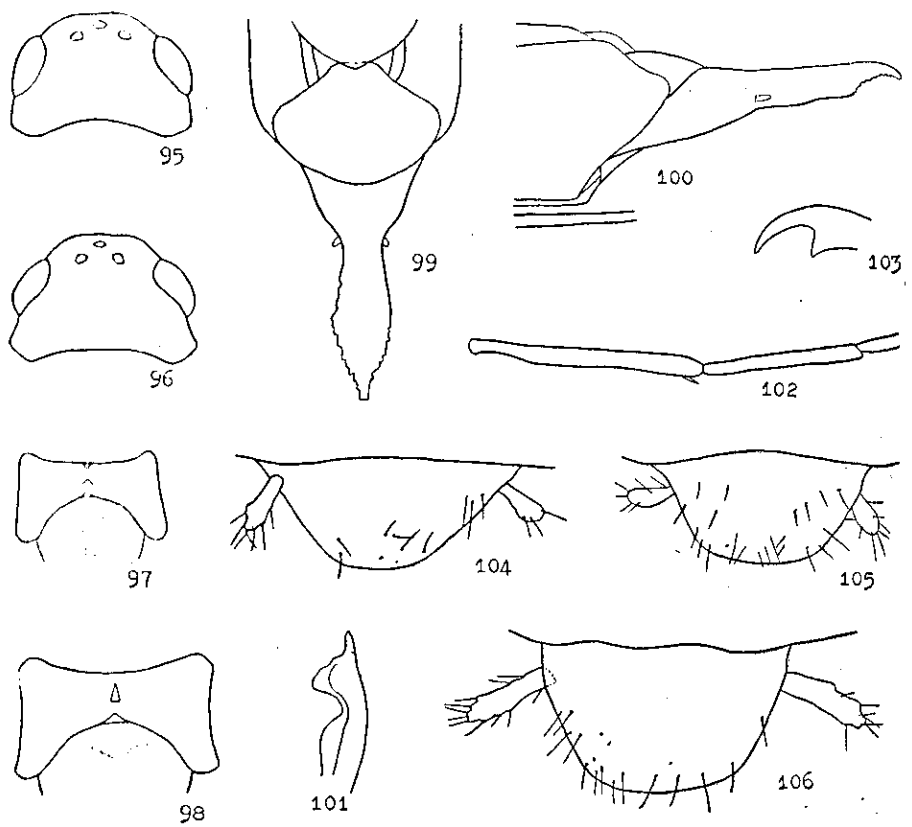
Key to species and subspecies of the World. ([12])

1. Head in dorsal aspect distinctly dilated behind eyes (Text-fig. 96); vertex with 2 smooth, raised, scarcely punctate, submedian areas; terebra much longer than the fore wing (*ca.* 1.00:0.59-0.81); pronotum usually yellow-marked; abdomen entirely black or dominantly red 2
— Head in dorsal aspect scarcely dilated behind eyes (Text-fig. 95); vertex densely and rather evenly punctate, without the practically impunctate submedian areas; terebra scarcely longer than the fore wing (*ca.* 1.00: 0.92-0.95); pronotum always entirely black; abdomen dominantly brick red. (U. S. A.: Pacific States) . . . . . *tarsalis* Cress., 1880.
2. Abdomen except tergites I-II entirely red; ♀ pronotum entirely black; wings extensively smoky 3
— Abdomen entirely black; pronotum in both sexes yellow marked; wings hyaline, at most with apical and prestigmal fasciae a little brownish. . . 4
3. Legs with coxae, trochanters and femora (except knees) shining black, at least distinctly darker than tibiae or tarsi; fore wings with apical halves paler; antennae black, with apical 1/3 or 1/2 reddish brown. (U. S. A.: Colorado). . . . . *morrisoni morrisoni* Cress., 1880.
— Legs uniformly reddish brown, at most with coxae I and or II basally duller; fore wings with prestigmal and apical fasciae; antennae also uniformly reddish brown, at most with the apical ring of the scape black (S. U. A.: Pacific States). . . . . *morrisoni indecisus* McG., 1893.

11) The writer is greatly indebted to Dr. Townes for his generosity in allowing to freely use his unpublished notes.

12) The separation of subspecies are based upon the female only.

4. Pronotum in dorsal aspect at most with a narrow transverse yellow line on the anterior margin of each humeral angle; fore wings each with a distinct brownish prestigmal fascia. (Pacific States: from British Columbia to California) . . . . . *spectrum townesi*, subsp. nov.
— Pronotum in dorsal aspect richly yellow marked, at least with a big spot on each humeral angle, in that case the fore wing being without such a prestigmal fascia 5
5. Fore wings each with a distinct prestigmal brownish fascia; femora III (except knees) black. (Formosa) . . . . . *spectrum malaisei*, subsp. nov.
— Fore wings without such brownish fasciae; femora III uniformly brownish yellow 6



Text-figs. 95-106. — Head (♂) in dorsal aspect (95-96), pronotum and part of mesonotum (♀) (97-98), abdominal apex (♀) in dorsal and lateral aspects (99-100), tibial spur I (♀) 101), left-hand tibia III plus two basal tarsomeres (♀) in exterior aspect (102), tarsal claw III (♀) (103) and abdominal tergite X plus cerci (♂) (104-106) of *Xeris*-species: *tarsalis* Cress. (95, 97, 104), *morrisoni* Cress. (96, 98, 105), *spectrum* Linn. (99-103, 106). The shape of the cornus is individually very variable, Text-figs. 99-100 illustrate the commonest shape and are drawn from a Japanese specimen.

6. Pronotum in dorsal aspect with a broad yellow band along the full length of each lateral margin; vertex smooth, polished, with only a few punctures mostly along the posterior margin of posterior ocelli and median furrow. (Eurasia; N. America except Pacific States). . . . . *spectrum spectrum* LINN., 1758.

— Pronotum only with a big yellow spot on each humeral angle; vertex posterior to ocelli densely punctate, the smooth, polished areas reduced to a spot on each side at summit. (E. Himalayas) . . . . . *spectrum himalayensis* BRADL., 1934.

Xeris tarsalis (GRESS.) (Text-figs. 95, 97, 104, 107, 107a).

=*X. macgillivrayi* BRADL., 1913 (syn. nov.)

♂. (Allotype) — Black, with white flecks on temples. Wings a littler paler than ♀. Apical 3 tarsomeres of legs I and apical 2 tarsomeres of legs II-III and all claws reddish brown, remaining tarsomeres basally slightly tinted with brown. Abdomen except tergite I (basal plates) and posterior ½ of the VIII brick red; lateral surfaces of tergites II-VII and lateral margins of sternites II-VIII and hypopygium brownish black. (Coloration described from the allotype, an "adult" specimen).

Head (dorsal aspect), genal carinae, sculpturation on vertex and on pronotum all similar to the ♀. Basitarsi III longer than the following 3 tarsomeres together (*ca.* 16: 15). Abdominal tergite X apically distinctly narrowed; cerci relatively short (Text-fig. 104). Hypopygium at most only with about is posterior 1/6th distinctly keeled. Genitalia with the mesal lobe of volsella only about 2 times as broad as the lateral one, apically rotundate; mesal margin of the lateral lobe scarcely spinose; penis valves each only with a lateral process near the base (Text-fig. 107). Fore wing about 8.0-12.5 mm.

♀ — The following notes may serve as a supplement to BRADLEY's description: Head in dorsal aspect posteriorly not at all markedly dilated (Text-fig. 95). Genal carinae rather poorly developed. Vertex coarsely, confluently punctate, without the scarcely punctate, submedian areas. Eyes about 1.0 × 0.8. Pronotum discally with a roundish pit surrounded by dense, more or less radiating sculpture. Mesonotum anterio-medially with a T-shaped non-sculptured area. Wings uniformly smoky, with apical margins and cell *2cu* (apical margin, in fore wing) slightly darker. Ovipositor / Forewing ratio 0.92-0.95, average of 2 ex., 0.934; sawsheath/ovipositor ratio 1.47-1.49, average of 2 ex., 1.488. Fore wing about 10.4-13.5 mm.

California: San Jose, ex *Cupressus macrocarpa* HARTW., 19, x. 1917 (F. B. HERBERT) (HOPK. U. S. 15064 *b*), 1 ♀. Palo Alto, ex *C. macrocarpa*, 8. ix. 1932 (H. E. BURKE), 3 ♂ ♂ (including Allotype), 1 ♀.

X. tarsalis was originally described from "Washington Territory" and was, later, sweepingly suppressed by KONOW (1898) as a synonym of *morrisoni*. CRESSON only gave a very brief and incomplete description, but was able to recognise "*vertex* and thorax coarsely rugose" and give the length to tip of cornus (0.65 in.) and that to tip of ovipositor (0.85 in.), which mean the ratio is about 1.31. In the 2 ♀-specimens before the writer, the same ratio is 1.38-1.39, whereas in *morrisoni*, it is 1.61-1.70. Thus *tarsalis* and *morrisoni* are quite unlikely conspecific. The name "*tarsalis*" is most probably in reference to the fulvous tarsi which was misprinted as tibiae fulvous (this supposition is confirmed by an examination of the type, on request, by Dr. V. S. L. PATE).

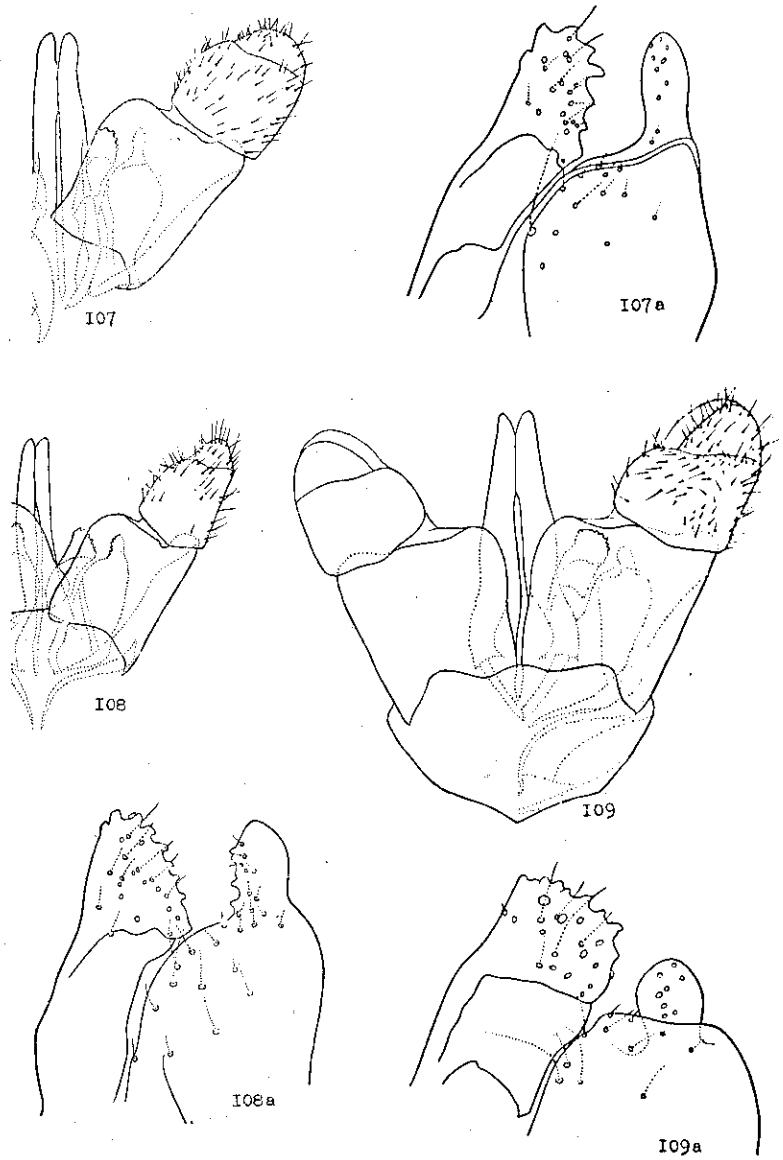
X. macgillivrayi was antedated by *tarsalis*. The type locality of the former species was not mentioned in the original description, but according to a letter from its author, Dr. BRADLEY, it was based upon a ♀ from Olympia, Washington, ex colln. TREVOR KINCAID in Cornell University.

Xeris morrisoni (GRESS.) (Text.figs. 96, 98, 105, 108, 108a).

♂ — Similarly colored as the preceding species. Vertex very rarely with 2 submedian yellow bands. Antennae with apical 1/4 brownish black. Pronotum in dorsal aspect with the yellowish bands occupying from the anterior 1/2 to the full length of the lateral margins. Wings slightly darker, with the apical 1/5th paler than the basal areas. Both extremities of all tibiae and apical extremities of all basal tarsomeres reddish brown. Abdominal tergites II brownish black, distinctly duller than the following ones, the VIII and sternites II-VIII unicolor, not dull marked, hypopygium with apical 1/2 brownish black. (Coloration mainly described from an "adult" specimen).

Head (dorsal aspect), genal carinae, sculpturation on vertex and on pronotum all similar to the ♀. Basitarsi III scarcely longer than the following 3 tarsomeres together (*ca.* 53:51). Abdominal tergite X apically broadly rounded; cerci very short (Text-fig. 105), Hypopygium with its posterior 1/2 or 1/3 distinctly keeled. Genitalia with the mesal lobe of volsella about 3 times as broad as the lateral

one, apically strongly narrowed; mesal margin of the lateral lobe distinctly spinose; penis valves each only with a lateral process near the base (Text-fig. 108). Fore wing about 8.5-12.0 mm.



Text-figs. 107-109. — ♂ genitalia in dorsal aspect of *Xeris*-species: *tarsalis* Cress. (107), *morrisoni* Cress. (108), *spectrum* Linn. (109). — 107a-109a. Left-hand volsella (more enlarged) of the same.

♀ — Similar to the preceding species. Antennae and legs more or less paler. Head in dorsal aspect posteriorly markedly dilated (Text-fig. 96). Eyes comparatively shorter (*ca.* 1.0 × 0.64-0.74). Vertex with 2 well defined, raised, practically impunctate, submedian areas. Pronotum discally with a roundish pit, which produces cephalad into a more or less distinct, depressed, impunctate, longitudinal band or furrow; the posterior margin usually slightly raised at the mid-point. Mesonotum confluently sculptured, without the T-shaped impunctate band. Ovipositor/Forewing ratio 0.66-0.81, average of 7 ex., 0.704; sawsheath/ovipositor ratio 1.20-1.33, average of 7 ex., 1.260. Fore wing about 13-20 mm.

This species is structurally very closely allied to *spectrum*, and divisible into 2 subspecies according to color-pattern of ♀ ♀ (as shown in the above key) and geographical range, as follows:

(a) **X. morrisoni morrisoni** (Cress.)

Colorado: N. Cheyenne Canyon, reared from *Pseudotsuga taxifolia* Britt., 9. vii. 1914, by W. Middleton (A. B. Champlain) (Hopk. U. S. 12663 *a*), 1 ♀. Williams Canon, El Paso Co., ex Douglas fir, 29. vii. 1914 (A. B. Champlain) (Hopk. U. S. 1089), 1 ♂, 1 ♀ (♀ det. S. A. Rohwer). El Paso Co., reared from *Abies concolor* Lindl. & Gord., 3-5. vi. 1914, by H. B. Kirk. (A. B. Champlain) (Hopk. U. S. 12644 *b*), 2 ♂ ♂; reared from *Picea Parryana* Sarg., 1. vi. 1914 (A. B. Champlain) (Hopk. U. S. 11928 *a*), 1 ♂. Further 2 ♀ ♀, without locality labels, reared by H. B. Kirk. (Hopk. U. S. 11911 *c*).

In the original description, the habitat of *morrisoni* was given as Colorado, Utah and Washington Territory, whereas in the Catalogue of Cresson Types (Mem. Amer. ent. Soc. 1:10, 1916), the type selected (♀) is from Colorado.

(b) **X. morrisoni indecisus** (McG.), comb. nov.

Washington: Mt. Adams, W. Klickitat, 3500 ft., 10. vi. 1925 (L. A. Morley), 1 ♀ (Allotype).

Oregon: Pamelia, Mt. Jefferson, ca. 3000 ft., 1. viii. 1907 (J. C. Bridwell), 1 ♂, 1 ♀. Oswego, ex *Abies grandis* Lindl., 29. v. 1935 (R. L. Furniss) (Hopk. U. S. 18893 *e*), 1 ♂. Rock Creek, 17. viii. 1911 (F. C. Craighead), 1 ♀.

California: Fallen Leaf, on *Abies concolor*, 28. vii. 1915 (F. B. HERBERT), (HOPK. U. S.), 1 ♀. Myers, 1. viii. 1916 (F. B. HERBERT) (HOPK. U. S.), 1 ♂. Onion Valley, 21. vii. 1913 (H. E. BURKE) (HOPK. U. S.), 1 ♀.

Utah: Panguitch, ex *Abies lasiocarpa* NUTT. (H. B. BURKE) (HOPK. U. S. 4529 *b*), 1 ♂.

In the original description, MacGillivray failed to mention the yellow markings on temples and on pronotum. On the other hand, the black apex of the last abdominal segment is not true for the specimens at hand. Perhaps he meant the apex of hypopygium.

Xeris spectrum (LINN.) (Text-figs. 99, 103, 106, 109, 109a).

In the ♂ of this species, the abdominal tergite X is apically broadly rounded; cerci very long (Text-fig. 106); genitalia with the mesal lobe of volsella about 3 times as broad as the lateral one, apically almost truncate; the lateral lobe apically bent dorsad, mesally scarcely spinose; penis valves each with a lateral and mesal process near the base (Text-fig. 109).

From the color pattern (♀ ♀) and geographical range, this widely distributed species is divisible into 4 more or less distinct subspecies as follows:

(a) **X. spectrum spectrum** (LINN.)

= *Urocerus caudatus* CRESS., 1865 (syn. nov.)

♀ — Antennae almost always entirely black, at most the apices slightly paler. Pronotum in dorsal aspect with a broad yellow band extending along almost always the full length of each lateral margin. Fore wings without prestigmal fasciae. Legs usually uniformly brownish yellow. Punctures on cheeks relatively finer and more irregularly arranged; those on vertex relatively finer, the raised, practically impunctate areas very extensive.

Colorado: El Paso Co., ex *Picea Parryana* SARG. (A. B. CHAMPLAIN) (HOPK. U. S. 11928), 1 ♀.

Alberta: Banff, 8. viii. 1927 (0. BRYANT), 1 ♀.

"America", 1 ♀ (Taiwan Agric. Inst.).

(?) California: Clover Valley, 5800 ft., 31. vii. 1911 (J. M. MILLER), 1 ♀.

var. α Coxae black to brownish black: pronotum normal.

Germany: Eberswalde (A. KRAUSSE), 1 ♀.

Sinkiang: Tien-Shan, 31. vii. 1945 (C. L. LEE), 1 ♀ (MAA coll.).

Kirin: Kao-Lin-Tze, 13-28. vi. 1940, 2 ♀ ♀ (Mus. Heude).

Honshu: Ise (J. YAMANOUCHI), 1 ♀ (Taiwan Agric. Inst.). Nishigahara, Tokyo, 15. vii. 1929 (K. IWAMOTO), 1 ♀ (Mus. Heude).

var. β. Coxae brownish black; pronotum with the yellow bands only extending over anterior halves of the lateral margins.

Colorado: Florissant, resting on pine tree, 24. vi. 1914, 1 ♀.

♂ — Yellow markings on temples usually at most as long as eyes. Vertex rarely with 2 submedian yellow bands. Fore wings almost always without prestigmal fasciae. Legs variable in color: coxae black or brownich black; trochanters reddish brown, femora also reddish brown, usually the III darker than the I or II, and the I with a blackish spot near apices; all knees, bases of tibiae I-III and of basitarsi II-III, and extreme apices of tibiae I-II and of basitarsi II-III whitish yellow; the remaining portions of all tibiae and of basitarsi III or II-III black or brownish black; the other tarsomeres brownish, with the 2nd tarsomeres of legs III sometimes uniformly brownish, sometimes dominantly black.

Germany: Eberswalde (A. KRAUSSE), 1 ♂.

Pyrénées: Pine Forest-Astazou, Gavarnie, 1 ♂ (Taiwan Agric. Inst.).

Kirin: Kao-Lin-Tze, 13-28. vi. 1940, 3 ♂ ♂ (Mus. Heude).

Saghalien: Karafutozawa, 1. viii. 1924 (T. SHIKANO), 1 ♂ (Taiwan Agric. Inst.).

Ontario: Ottawa, vii. 1914. 1 ♂.

Colorado: El Paso Co., ex *Picea Parryana* (A. B. CHAMPLAIN) (HOPK. U. S. 11928), 1 ♂.

Connecticut: Lyme, 4. vi. 1918 (HOPK. U. S. 11946 *c*), 1 ♂.

New Brunswick: Bathurst, vii. 1910 (J. N. KNULL), 1 ♂.

(?) Washington: Spokane (C. V. PIPER), 1 ♂.

The type (♀) of *Urocerus caudatus* is from Colorado and with pronotum laterally yellow-marked, thus inseparable from typical *spectrum*.

(b) **X. spectrum himalayensis** (BRADL.), comb. nov.

♀ — Antennae entirely black. Pronotum in dorsal aspect with a big yellow spot on each humeral angle. Fore wings without prestigmal fasciae. Legs pale brownish, with coxae black in lateral aspect, and reddish brown to brownish black in ventral aspect; tibiae basally whitish. Punctures on cheeks relatively coarser and more regularly arranged along the genal carinae and lateral orbits; those on vertex relative coarser, and the raised, practically impunctate areas much reduced in extent.

♂ — Yellow markings on temples large, longer than eyes. Fore wings without prestigmal fasciae. Legs brownish black, with femora and 3 apical tarsomeres of all legs reddish brown; knees II-III, and tibiae I (both extremities) and II-III (bases) whitish, apices of the 2 basal tarsomeres of all legs reddish brown. Vertex with the raised, practically impunctate areas reduced.

United Provs.: Bodyar, 8000 ft., Chakrata Div., 27. v. 1922 (M. CAMERON), 1 ♂. Deoban, 9000 ft., Chakrata Div., 17-19. vi. 1923 (C. F. C. BEESON), 1 ♀. Fuga, 8000 ft., Simla Hills, ex *Cedrus Deodara* LOUD., 15-16. iii. 1922 (C. F. C. BEESON R. R. D. 972, B. C. R. 97, Cage 142), 1 ♂, 1 ♀. Kansar, 5500 ft., Chakrata Div., ex *Cedrus Deodara* log, 23. vi. 1923 (C. F. C. BEESON), 1 ♀.

(c) **X. spectrum malaisei,** subsp. nov.

♀ — Antennae with apices (about 1/6th of the total length) reddish brown. Pronotum with the lateral yellow bands posteriorly very poorly defined. Fore wings each with a distinct, brownish prestigmal fascia. Coxae and trochanters brownish black; femora I-II reddish brown, apically paler, the III except the knees brownish black; tibiae and basitarsi reddish yellow, basally whitish; the remaining tarsomeres reddish yellow. Punctures on cheeks and on vertex relatively dense, the raised, practically impunctate areas rather reduced.

Formosa: Taiheizan, 9.-10. v. 1942 (A. MUTUURA), 2 ♀♀ (Taiwan Agric. Inst.).

Named after the world famed specialist in Symphyta, Dr. RENE MALAISE of the Stockholm Museum.

(d) **X. spectrum townesi,** subsp. nov.

♀ — Antennae with apical 1/2 or 1/3 reddish brown. Pronotum with the lateral yellow bands each reduced to a transverse line on the anterior margin of the humeral angle. Fore wings each with a distinct prestigmal fascia. Coxae blackish brown, apical more or less paler. Punctures on cheeks and vertex similar to the typical form.

♂ — Yellow markings on temples as in the typical form. Pronotum with the lateral yellow band posteriorly obscured. Legs almost uniformly brownish black, with the 4 apical tarsomeres of all legs reddish brown. (Coloration described from "greased" specimens).

British Columbia: Vancouver, 1 ♂.

Washington: Easton, 1 ♂ (Allotype). Hoquiam, ex *Picea sitchensis* CARR. (HOPK. U. S. 4047 *a*), 3 ♀♀ (including Holotype). Paradise Valley, ex *Abies lasiocarpa* NUTT. (H. E. BURKE) (HOPK. U. S. 4215 *b*), 1 ♀. Satsop, ex *abies grandis* LINDL., 20. viii. 1904 (Burke) 2 ♂♂. "W. T." (C. V. Riley), 1 ♀.

Oregon: Carlton, ex *Pseudotsuga taxifolia* BRITT., 11. viii. 1936 (R. L. FURNISS) (HOPK. U. S. 31696 *a*), 1 ♀. Pamelia, Mt. Jefferson, *ca.* 3000 ft., 1. viii. 1907 (J. C. Bridwell), 1 ♂. Oswego, ex *Abies grandis*, 16. v. 1935 (R. L. FURNISS) (HOPK. U. S. 18893 *e*), 1 ♀. Portland (R. P. CURRIE), 1 ♂.

Montana: Evaro, ex spruce (*Picea*) 26. v. 1913 (SCHWARZ) (HOPK. U. S. 11828), 1 ♂.

Named after Dr. H. TOWNES, who firstly recognised this subspecies as new.

Genus XOANON SEM., 1921.

Text-figs. 110-120.

Derivation: ξοανον, an image carved of wood; the statue of a god. Masculine.

Key to species.

Antennal segment III subequal in length to, or even slightly longer than the IV; tibia III distinctly longer than the basitarsus (*ca.* 16:10); temples broader; cornus only as long as abdominal tergite VIII and precornal basin together, its superior margin in profile slightly but distinctly curved, the inferior apically strongly excised; terebra only subequal in length to abdomen plus cornus, or thorax plus abdomen proper; cell *2r* in the fore wing longer; coxae, trochanters and femora distinctly duller than tibiae and tarsi, from reddish brown to black; abdominal tergites VII-VIII distinctly paler than their preceding ones, yellow, with distinctly duller posterior margins (from reddish brown to black). ♂ 18-22 mm., ♀ 28-42 mm. . . . . *matsumurae* (ROHW.), 1910.

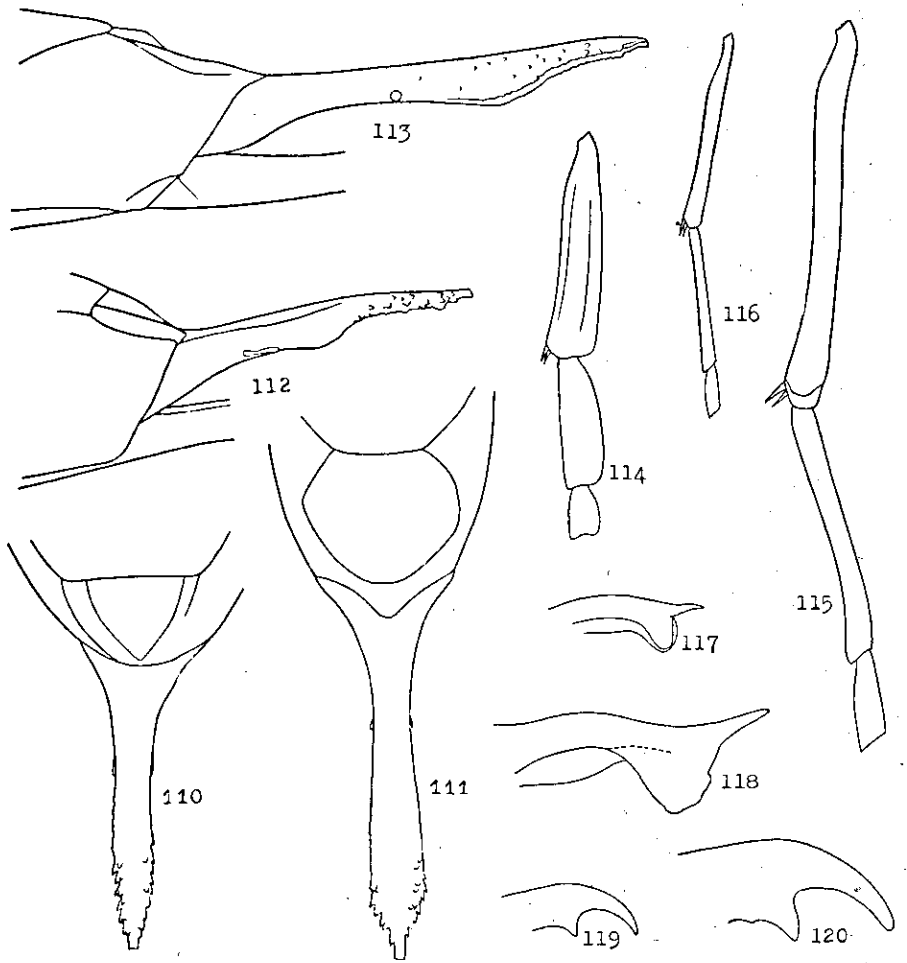
Antennal segment III much shorter than the IV; tibia III slightly longer than the basitarsus (*ca.* 14:10); temples narrower; cornus longer, subequal to tergites VII-VIII and precornal basin together, its superior margin in profile straight, not curved at all, the inferior apically almost obliquely straight, not suddenly excised; terebra longer, subequal to thorax plus abdomen plus cornus; cell *2r* in the fore wing shorter; coxae, trochanters and femora concolorous with tibiae and tarsi, uniformly brownish yellow; abdominal tergites VII-VIII distinctly duller than their preceding ones, reddish brown, with distinctly paler posterior margins (brownish yellow). ♀ 23 mm. . . . . *praelongus* sp. nov.

Xoanon praelongus, sp. nov. (Text-figs. 111, 113, 116).

♀ — Brownish yellow, shining. Mandibles (apices), paragenae (anterior margins), pentagonal patch on frons (with ocellar triangle as its base), prescutum (narrowly along the anterior and lateral margins), scutum (anterio-mesal margins), mesopleura (discal dimpled spots), mesosternum, and metapleura (more or less), anterior margins of coxae, and terebra (protruding portion) all black or brownish black. Abdominal tergites V-VIII except extreme posterior margins all reddish brown. Wings yellowish hyaline, apically very feebly stained with brownish; veins brownish; stigmata and costa yellow. Pubescence moderately long, dense, dull, brown to black.

Clypeus finely, very densely punctate, not more elevated than frons; median area shallowly, broadly depressed; anterio-lateral margins not depressed nor reflexed; anterior margin weakly and rather narrowly excised; lateral corners pointed and situated mesad to the lateral margins of antennal insertions. Frons reticulato-punctate, anteriorly with a weak, triangular, median tumescence; discally with a V-shaped, narrow, deep furrow; areas anterior and lateral to the ocellar triangle roughly reticulated; ocellar triangle strongly raised. Malar spaces distinctly longer than antennal segment III, anteriorly coarsely and rather densely punctate. Temples narrow, breadth at the mid-point or orbit distinctly smaller than the longitudinal axis of eye (*ca.* 2: 3), coarsely, confluently punctate, especially in areas near orbital margins, but not so densely and finely as on vertex. Vertex depressed, long, densely reticulato-punctate, with a long, shallow but very broad, median furrow, posterior area slightly raised and with two poorly defined, submedian furrows. OOL: POL: ocello-occipital line about 6: 5: 18. Antennae 20-segmented, subequal in length to abdomen proper; pedicels as long as thick; intermediate segments cylindrical, the apical ones slightly attenuated, the ultimate one very thin, conical; relative lengths of segments III-V about 15: 19: 18. Pronotum medially finely

reticulato-punctate and slightly depressed, laterally roughly granulato-reticulated and strongly raised along the submedian lines; length along the median line slightly smaller than POL; anterior margin weakly raised and arcuate; anterior lobes pointed, improminent; lateral margins slightly convergent cephalad; lateral marginal areas strongly depressed, forming a slope of about 45°; posterior lobes relatively long, posteriorly not reflexed; lateral slopes anteriorly and superiorly confluently punctate, posterio-inferiorly rather sparsely so. Prescutum



Text-figs. 110-120. — Abdominal apex in dorsal and lateral aspects (♀) (110-113), left-hand tibia III plus two basal tarsomeres, in exterior aspect (♂ ♀) (114-116), tibial spur I (♂ ♀) (117-118) and tarsal claw III (♂ ♀) (119-120) of *Xoanon matsumurae* (Rohw.) (112, 115, 118, 120, ♀; 114, 117, 119, ♂) and *X. praelongus* sp. nov. (111, 113, 116, ♀).

convex, confluently punctate; anterior area a little more sparsely so; posterior area strongly depressed, impunctate; scutum narrow, slightly raised but anterio-mesally depressed. Scutellum convex, confluently reticulato-punctate, anteriorly weakly foveated. Mesopleura except the discal femoral groove densely punctate, interspaces of most of the punctures about one-half the punctural diameter. Cell *2r* in the fore wing relatively short, length along its anal margins only about 5 times its maximum breadth. Tibiae and tarsi weakly compressed. Tibiae I subequal in length to the tarsi. Tibial spurs I very weakly curved, the superior tooth triangular, subperpendicular to the main axis. Relative lengths of the tibia and tarsomeres of legs III about 74: 53: 18: 11: 7: 15. Tarsal claws with the apical tooth excessively long, the preapical perpendicular to the main axis. Abdominal tergites shining, the I medially deeply and rather densely punctate; II-VII microscopically alutaceous, impunctate; the VIII with a few scattered, coarse, very shallow punctures. Precornal basin distinctly keeled, rather deep, slightly longer than broad, oval, posteriorly narrowed; posterio-lateral margins well defined, not rounded-off. Cornus 2.5 times as long as the basin, that is, subequal to tergites VII-VIII and precornal basin together, smooth and shining, apical third of lateral surfaces spinose; lateral margins in dorsal aspect subparallel to each other, preapically slightly dilated; inferior margin in profile basally distinctly excised, apically oblique, almost straight; the superior margin in profile straight. Cerci situated near the midpoint of cornus. Terebra subequal in length to thorax plus abdomen plus cornus; lateral surfaces of the protruding portion basally intercrossedly wrinkled; apically faintly striated; dorso-lateral margins each with about 8 spines, the spinose area subequal in length to cornus. Sternites very finely and exceedingly scatteredly punctate. Ovipositor / Forewing ratio 0.89; sawsheath / ovipositor ratio 1.99. Length about 23 mm.

Chekiang: Lishui Hsien, 22. iv. 1934, found on seasoned lumber of *Cryptomeria japonica* Don. (Pinaceae) (T. Maa), 1 ♀.

Xoanon matsumurae (Rohw.)

(Text-figs. 110, 112, 114, 115, 117-120).

♂ — Reddish brown. Mandibles (apices), frons, malar spaces except the raised anterior margins, thorax (except for lateral areas of pronotum in dorsal aspect and superior halves of lateral slopes), and coxae all black, and with greenish metallic lustre. Median and lateral bands of vertex, legs II-III (except coxae) and abdominal tergite I all

chestnut brown. Abdomen (except tergite I) yellowish brown, extreme anterior margin of each segment more or less duller. Wings hyaline, slightly stained with yellowish, apical margins not distinctly infuscated; veins and stigmata reddish brown, costa brownish yellow. Pubescence dirty brown, rather long and dense.

Clypeus densely covered with moderate-sized punctures; anterio-lateral margins slightly depressed but not reflexed; anterior margin very weakly arcuate, medially narrowly and sharply incised and thus forming two fine denticles; posterior margin almost truncated. Frons finely reticulato-punctate; anterio-median area improminent, densely, minutely punctate; ocellar triangle prominently raised and with a ⌣-shaped fovea lying anteriorly and laterad to the anterior ocellus. Temples dim, evenly, shallowly coarsely reticulate-punctate. Vertex also evenly reticulato-punctate; median furrow long, broad, moderately deep; the submedian ones long, very distinct, anteriorly deep, broad, and posteriorly gradually evanescent, and lying posterio-laterad to each posterior ocellus. OOL: POL: ocello-occipital line about 6: 4: 19. Pronotum roughly granulated, median area finely punctate, length along the median line subequal to POL; anterior lobes improminent; lateral margins subparallel to each other; posterior lobes relatively short; lateral slopes finely reticulato-punctate. Prescutum finely granulato-reticulated; anterior and lateral depressed areas finely punctate, not reticulated; scutum as well as scutellum finely granulato-reticulated also. Mesopleura reticulato-punctate. Legs III strongly dilated; tibiae III exteriorly each with an inferior, submarginal furrow, that on the basitarsi indistinct and replaced by a series of elongate punctures; relative lengths of the tibia, basitarsus and apico-tarsomeres of the legs I and of III about 30: 25: 27 and 67: 39: 35 respectively. Tibial spurs I slightly curved, the superior tooth relatively short, oblong perpendicular to the main axis. Tarsal claws with the preapical tooth relatively short. Abdominal tergites I entirely covered with fine, dense punctures; tergites II-VIII medially with very few poorly recognisable, fine, shallow punctures; sternites weakly keeled, coarsely, shallowly punctate; the VII about a-half as long as the VI, posteriorly with a sharp, triangular median incision, its depth *vs.* the length of sternite VII about 1: 2; hypopygium about 4 times as long as its preceding sternite. Length about 21.5 mm.

♀ — Color pattern very variable. The only specimen before the writer is much larger (length 42 mm.) and distinctly paler than that described by previous authors. Brownish yellow. Mandibles (apically black), paragenae (anteriorly black), frons and malar spaces

reddish brown. Thorax also reddish brown, but mesonotum, scutellum and metanotum (except its lateral areas) all black. Coxae, trochanters, femora, abdominal tergites I and IV-VI, narrow posterior margins of the VII-VIII, all sternites (each with a more or less distinct, transverse, yellow band at the middle), tergite IX (anterior margin in lateral aspect) and basal portion of terebra all reddish brown.

Temples relatively broad, their breadth at the orbital mid-point subequal to the longest axis of eye. Vertex with long, shallow but well developed, submedian forrows starting from posterior ocelli and divergent caudad. Antennae 20 segmented, distinctly shorter than abdomen proper, pedicels shorter than thick; relative lengths of segments III-V about 15: 14: 13. Pronotum medially deeply furrowed. Cell *2r* in the fore wing relatively long, length along its anal margin *vs.* its maximum breadth about 6: 1. Tibiae I slightly longer than the basitarsi (*ca.* 65: 58). Tibial spurs I curved in S-shape. Relative lengths of the tibia and tarsomeres of legs III about 132: 83: 30: 22: 9: 27. Tarsal claws with the apical tooth moderately long. Abdominal tergites scatteredly, rather coarsely. very faintly punctate, the VIII more distinctly so. Cornus subequal in length to tergite VIII plus the basin, with its inferior margin in profile basally weakly excised, apically suddenly strongly attenuated beyond the angulation; the superior margin in profile apically weakly curved ventrad. Terebra subequal in length to thorax plus abdomen proper. Sternites shallowly and rather coarsely punctate. Ovipositor / Forewing ratio 1.00; sawsheath / ovipositor ratio 1.60.

Yezo: Sapporo, 21. v. 1904, 1 ♂, antennae entirely mutilated (det. J. SONAN as *Sirex japonicus* SMITH!) (Taiwan Agric. Inst.). 1 ♀. poorly preserved, collected by T. SHIRAKI in v. 1910, probably from Yezo (det. J. SONAN as *Sirex gigas* LINN.!) (Taiwan Agric. Inst.).

The hairs of the unique ♀—specimen before the writer are, as described by SEMENOV (1921) for *mysta:* "capite dilute fulvo, thorace femoribusque bruneo-pilosis", and thus do not agree with ROHWER's (1910) description for *matsumurae:* "hairs of head and thorax mostly black". Upon this point, BENSON (1943: 34) even suggested that *mysta* might be a species distinct from *matsumurae.* It must be pointed out, however, that MATSUMURA (1911: 84) redescribed under the latter name as: "Kopf hell braunlish behaart....Mesonotum....überall spärlich bräunlich behaart", and that Dr. H. TOWNES, upon the writer's request, very kindly re-examined the type of *matsumurae* in the Washington Museum and found it has the hairs on head and thorax light

brown. Therefore these two names are definitely synonymous, and the non-conformity of ROHWER's and SEMENOV's descriptions are due to ROHWER's mistake.

Genus UROCERUS GEOFFR., 1762.

Key to Palaearctic species (13)

♂ ♂

1. Antennae black, with the intermediate segments whitish yellow: body almost entirely black or brownish black, only temples and lateral spots on abdominal tergites I and VII-VIII pale. 17-24 mm . *antennatus* (MARL.), 1898.
— Antennae usually entirely yellow, occasionally darkened, or basally and apically contrastly colored, never black at both ends and whitish at the middle. 2
2. Body entirely brownish black or black, only the antennae (excluding 2 basal segments), temples and knees (=extreme apices of femora) yellow. 13-19 mm . . . . . *yasushii* (YANO), 1917.
— Body color much paler. 3
3. Antennae basally black, apical halves whitish yellow, sharply contrasted; abdomen except both extremities almost uniformly golden yellow 12-18 mm . . . . . *sicieni*, sp. nov.
— Antennae uniformly pale colored or nearly so, at most gradually darkened toward the base, never sharply contrasted in basal and apical halves. . . 4
4. Body entirely pale brownish yellow, without any dark markings, at most (rarely so) the apex of abdomen very weakly darkened; head dominantly smooth and polished, only face more or less densely and rather rugosely punctate, pretty dim; vertex medially weakly furrowed. 20-30 mm . . . . . *augur augur* (KLG.), 1803.
— Body more or less darker, at least with dull markings on frons, thorax and abdominal apex; head more or less strongly sculptured; vertex usually medially with a pretty deep furrow 5
5. Head posterior to the supra-orbital line entirely yellow except the narrow, median, black band; wings almost uniformly clear hyaline; vertex finely punctate; abdomen brownish yellow, more or less darkened on both extremities. 15-25 mm . . . . . *fantoma* (FABR.), 1781.
— Head posterior to the supra-orbital line extensively black; wings not uniformly clear hyaline, at least with a broad, light brownish, transverse band at the middle or along the apical margin; vertex coarsely punctate; abdomen not so pale colored 6

(13) The males of *U. augur* subsp. *bensoni* nov., *brachyurus*, sp. nov., *gigas* subsp. *orientalis* nov., subsp. *taiganus* Bens. and subsp. *tibetanus* Bens., *koshunus* (Son.), *niger* Bens., *niitakanus* (Ono), *tsutsujiyamanus* (Son.), *tumidus*, sp. nov. and *xanthus* (Cam.), are still unknown.

6. Basal abdominal tergites yellow to yellowish brown, the VI-VIII or VII-VIII brown to brownish black or even black; median furrow on vertex shallow, broad; tibiae III strongly compressed, basally pale-colored, apically brown to black. 20-30 mm. . . . . *japonicus* (F. Sw.), 1874.

— Basal and apical abdominal tergites dull brown to black (usually black), the intermediate ones paler; median furrow of vertex deep, narrow. 7

7. Antennae blackish, only the apex paler, the segment III not shorter than the IV; vertex shining, very scatteredly punctate. 25-40 mm . . . . . *augur sah* (Mocs.), 1905.

— Antennae yellow or brownish yellow, only the scape blackish, the segment III rather shorter than the IV; vertex, especially anteriorly, densely punctate 8

8. Abdominal tergite VIII with greenish metallic lustre; vein M_{1+2} in the fore wing apically very weak and indistinct, cell *3r* incompletely closed. 15-30 mm . . . . . *gigas gigas* (Linn.), 1758.

— Abdominal tergite VIII without greenish metallic lustre 9

9. Vein M_{1+2} in the fore wing apically very weak and indistinct, cell *3r* incompletely closed; both abdominal tergites VII and VIII black. 20-30mm. . . . . *gigas flavicornis* (Fabr.), 1781.

— Vein M_{1+2} in the fore wing apically well developed, cell *3r* completely closed; abdominal tergite VIII at most slightly blackish; the VII reddish yellow. 22-27 mm . . . . . *argonautarum* (Sem.), 1921.

♀ ♀

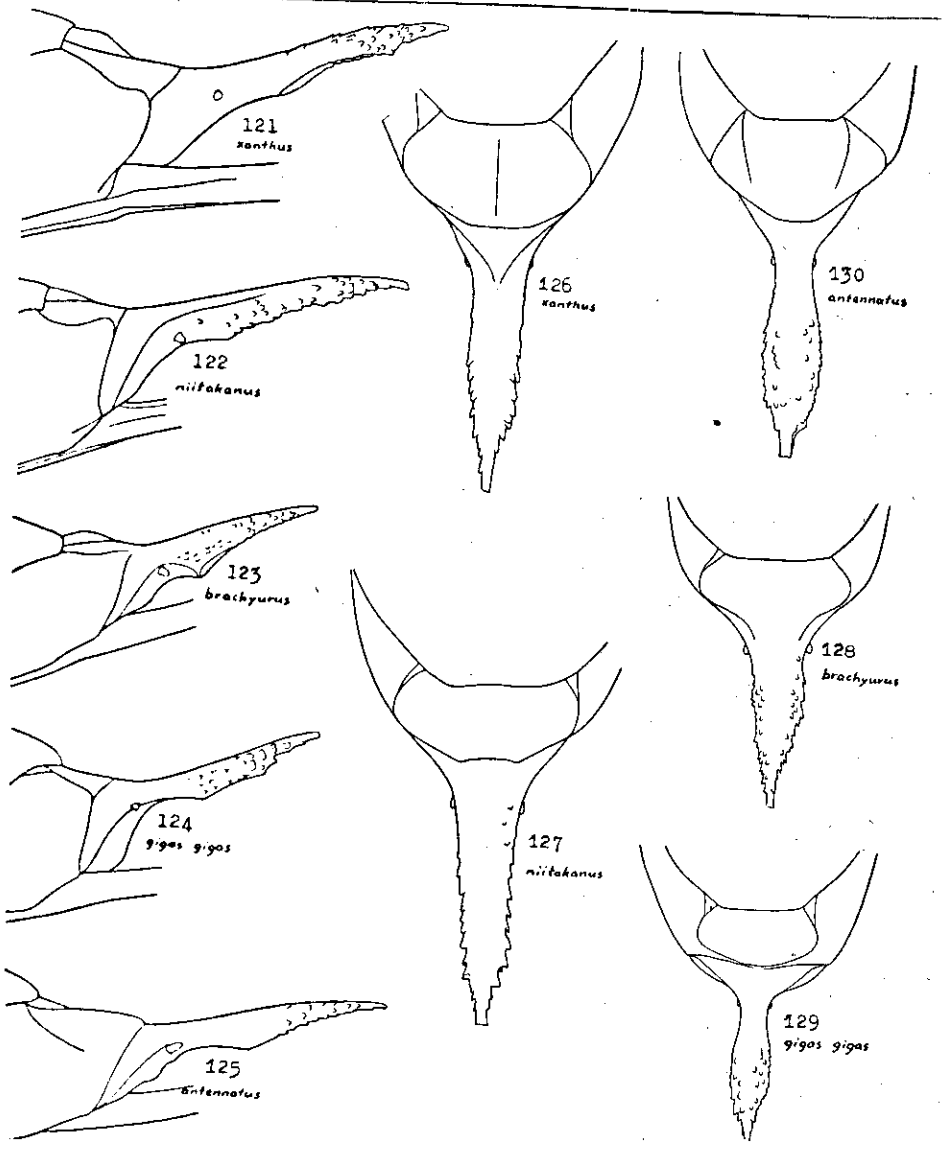
1. Cornus relatively slenderer and longer (the post-cercal length at least thrice as long as the maximum breadth), acuminate or slenderly lanceolate, the lateral margins in dorsal aspect at most only slightly dilated preapically (Text-figs. 126-130, 139-140); dorso-lateral margins of terebra apically with a series of strong spines 2

— Cornus relatively broader and shorter (the post-cercal length much less than thrice as long as the maximum breadth), robustly lanceolate, the lateral margins in dorsal aspect markedly dilated preapically (Text-figs. 149-152); dorso-lateral margins of terebra (except for *sicieni*, sp. nov.) non-spinose. 18

2. Antennae black or brownish black at both extremities, with the intermediate segments (about IX-XVI in *antennatus* and III-XIV in *niger*) whitish yellow; body almost entirely black or brownish black 3

— Antennae almost uniformly yellowish red, at most the scape and pedicel black, never whitish at the middle and black or brownish black at both extremities 4

3. Eyes of usual size, with the longitudinal axis about 2/3 or 3/4 as long as the oculo-occipital line; median black band on vertex much broader than an eye: abdominal tergites I and VII-VIII laterally pale-marked (tergite I entirely black in the var. *immaculatus* Zgbl., 1937). 17-24 mm. . . . . *antennatus* (Marl.), 1898.



Text-figs. 121-130. — Abdominal apex (lateral and dorsal aspects) of ♀ *Urocerus*-species (*gigas*-group).

— Eyes excessively small, and with its longitudinal axis only about a-half as long as the oculo-occipital line; median black band on vertex only as wide as an eye; abdomen entirely black. Fore wing 29.5 mm . *niger* Bens., 1943.

4. Body entirely black or brownish black, only pale on temples, antennae (except scapes and pedicels), tibiae and tarsi. 27-30 mm . . . . . *yasushii* (Yano), 1917.

— Body much paler, more richly pale-marked 5

5. Abdomen uniformly brownish yellow (except ventral extensions of tergites I-VIII, and anterior margin of the IX); preapical tooth of the tarsal claw lying obliquely to the main axis, excessively long; vein *1A* in the hind wing absent . . . . . *xanthus* (Cam.), 1876.

— Abdomen more or less more richly dull marked; preapical tooth of the tarsal claw subperpendicular to the main axis, moderately long; vein *1A* in the hind wing well developed 6

6. Vertex entirely black, or medially with a very broad, transversely rectangular or trapezoidal, black band, of which the median breadth at least as broad as POL + POL; median vertical furrow never deep and distinct; abdominal tergites I-II and VII-VIII (excluding anterior margin of the I and sometimes also posterior margin of the II or of the VIII) uniformly yellow, while the III-VI uniformly black 7

— Vertex entirely yellow, at most medially with a narrow, linear or T-shaped black band, of which the median breadth at most as broad as POL; median vertical furrow usually deep and distinct; abdominal tergites I-VIII (except *augur* and its subspecies, which may be distinguished by the shining, flattened, coarsely and very scatteredly punctate vertex) otherwise colored . 12

7. Hairs on head and thorax exceptionally long, for instance, those lying between antennal insertions are even longer than the scape; abdominal tergite II posteriorly mostly black, the VIII entirely yellow, the IX mostly yellow, at least the precornal basin entirely so; terebra black or piceous, and shorter than the fore wing (*ca.* 10:13) . . *gigas tibetanus* Bens., 1943.

— Hairs on head and thorax of usual length, those lying between antennal insertions, for instance, are scarcely longer than a-half the scape; abdominal tergite II entirely yellow. 8

8. Terebra black or piceous, distinctly shorter than the fore wing (*ca.* 1.14-1.37); abdominal tergite IX (excluding cornus) entirely black or nearly so, at least with the precornal basin entirely black, at most yellowish brown on anterio-lateral areas in dorsal aspect and discal areas in lateral aspect; the VIII usually posteriorly black; wings almost clear hyaline, basally and costally not rich amber in color 9

— Terebra brownish or yellowish, subequal in length to the fore wing or nearly so (*ca.* 0.98-1.17); abdominal tergite IX dominantly yellow, at least with the precornal basin entirely yellow, and at most, black only on the anterior margin; the VIII entirely yellow; wings basally and costally rather rich amber in color 11

9. Abdominal tergite VIII dorsally entirely yellow; the IX in lateral aspect discally broadly yellow . . . . . *gigas taiganus* Bens., 1943.

— Abdominal tergite VIII posteriorly more or less darkened, the IX in lateral aspect almost entirely black 10

10. Abdominal tergite VIII posteriorly broadly and extensively black; exterior surface of the tibia III uniformly yellow. (N. America; occasionally introduced into Britain). 20-40 mm . . *gigas flavicornis* (Fabr.), 1781.

— Abdominal tergite VIII posteriorly only narrowly black on the median portion; exterior surface of the tibia III with the apical fourth distinctly darkened. 13-27 mm . . . . . *gigas orientalis*, subsp. nov.

11. Terebra distinctly shorter than the fore wing (*ca.* 1.06: 1.17); cornus in profile weakly but distinctly dentate at a point of about basal one-fourth of the inferior margin; tibiae uniformly yellow. 12 40mm . . . . . *gigas gigas* (Linn.), 1758.

— Terebra subequal in length to the fore wing (*ca.* 0.98-1.02); cornus in profile with the inferior margin evenly incised at basal three-fourth. 19-36mm. . . . . *argonautarum* (Sem.), 1921.

12. Femora, tibiae and tarsi uniformly brownish yellow; abdominal tergites each anteriorly with a broad, yellow band, the I shallowly, coarsely punctate; median furrow of vertex relatively narrow, shallow. 13

— Femora (at least the II-III) reddish brown to brownish black, in contrast to the uniformly yellow tibiae and tarsi; abdominal tergites otherwise colored, the I deeply punctate; median furrow of vertex usually broad, deep. . . 14

13. Vertex in cephalic aspect medially not distinctly tumescent; antennal segment III subequal in length to the IV; prescutum posterio-laterally not distinctly depressed; cornus in dorsal aspect weakly but distinctly dilated preapically, and in lateral aspect unidentate on the inferior margin; fore wing slightly longer than the terebra, (*ca.* 1.24), sawsheath / ovipositor ratio 1.68.-26mm. . . . . *tsutsujiyamanus* (Son.), 1938.

— Vertex in cephalic aspect medially distinctly tumescent; antennal segment III distinctly shorter than the IV; prescutum posterio-laterally evenly depressed into the parapsidal furrow; cornus in dorsal aspect preapically not dilated at all, and in lateral aspect bidentate on the inferior margin; fore wing slightly shorter than the terebra, (*ca.* 0.93), sawsheath / ovipositor ratio 1.58.-21mm. . . . . *tumidus*, sp. nov.

14. Cornus relatively short, and in profile apically not curved ventrad, but sharply pointed; abdominal tergites III-VIII each anteriorly with a more or less broad, yellow band; median fifth of the anterior pronotal margin weakly but distinctly protruding cephalad. 23mm. . . . . *brachyurus*, sp. nov.

— Cornus relatively long, in profile apically more or less curved ventrad, and not sharply pointed; abdominal tergites except the III-VII entirely black, at most yellow on the extreme anterio-lateral area; anterior pronotal margin medially not or at most very weakly curved cephalad. 15

15. Vertex posteriorly finely, evenly punctate; laterally rather prominent, never flattened; puncturation on tergite I more extensive, anterio-medially coarsely, confluently punctate; inferior margin of cornus in profile with only one angulation. 29-31mm. . . . . *niitakanus* (Son.), 1935.

— Vertex posteriorly (except median furrow) practically impunctate, laterally distinctly flattened; tergite I anterio-medially finely punctate, remaining areas impunctate; inferior margin of cornus in profile with two angulations. . 16

16. Abdominal tergites VII entirely and IX ventrally black; wings rich amber in color and with clearly defined, infuscate, apical margin. 25-40mm . . . . . *augur sah* (Mocs.), 1881.

— Abdominal tergites VII laterally and IX ventrally dominantly pale colored; wings without clearly defined, infuscate, apical margins. 17

17. Wings yellowish hyaline; terebra at most as long as the fore wing (*ca.* 1.00-1.14, average 1.03). 18-40mm. . . . . *augur augur* (KLG.), 1803.

— Wings rich amber in color; terebra distinctly longer than the fore wing (*ca.* 0.92). 36mm. . . . . *augur bensoni*, subsp. nov.

18. Basitarsi I distinctly longer than the tibiae; antennae entirely black, and with their intermediate segments markedly compressed and slightly dilated, the apical ones strongly attenuated; preapical tooth of the tarsal claw exceptionally long. 23mm. . . . . *sicieni*, sp. nov.

— Basitarsi I distinctly shorter than or subequal in length to the tibiae; antennae entirely yellow or reddish yellow, at most slightly darkened at the extreme base, the intermediate segments at most slightly compressed, usually cylindrical, the apical ones slightly attenuated; preapical tooth of the tarsal claw normal or excessively short. 19

19. Legs (at most except coxae and trochanters) and antennae uniformly yellow; vertex more or less convex, dim, moderately punctate. 20

— Coxae, trochanters, femora (excluding "knees" of the I-II) and basal third of antennae black or brownish black; vertex strongly flattened, shining, coarsely punctate. 20-24mm. . . . . *japonicus* (F. SM.), 1874.

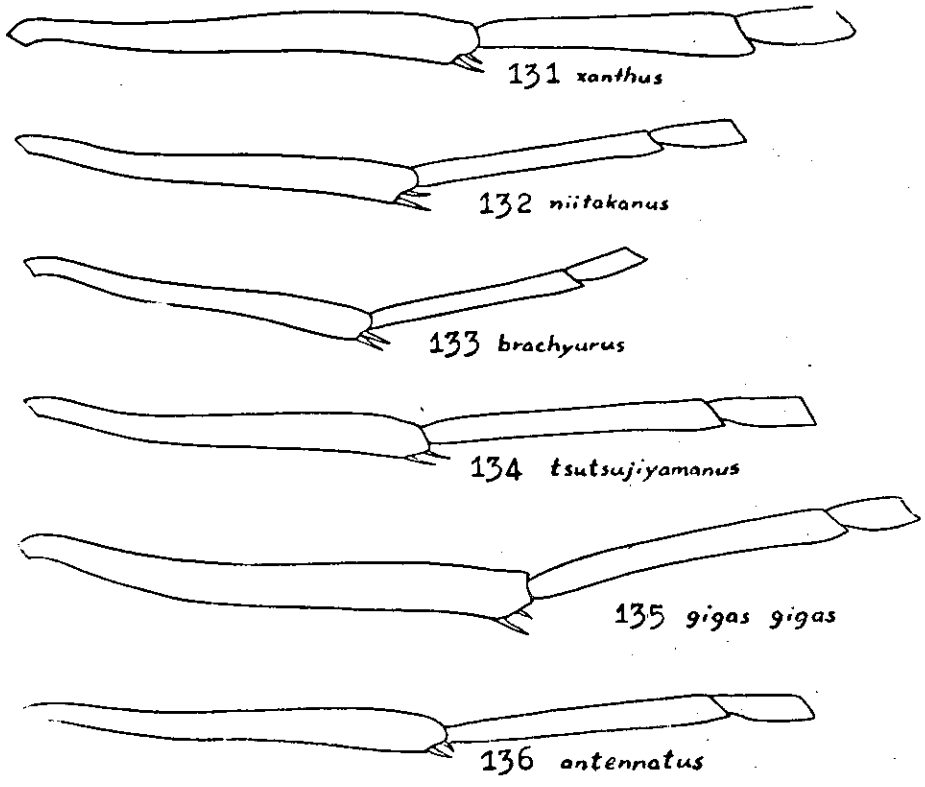
20. Preapical tooth of the tarsal claw in legs II-III rudimentary; abdomen except posterior margin of the tergites VI-VII entirely yellow; inferior margin of cornus in profile with only one angulation; terebra as long as or slightly shorter than the abdomen proper. 15-30mm. . . *fantoma* (FABR.), 1781.

— Preapical tooth of the tarsal claw all well developed; abdominal segments posteriorly each with a more or less broad, brown fascia, not entirely yellow; inferior margin of cornus in profile with two angulations; terebra slightly longer than the abdomen proper. 24mm. . . . *koshunus* (SON.), 1938.

Urocerus xanthus (CAM.) (Text-figs. 94, 121, 126, 131).

♀ — Brownish yellow. Mandibles apically black. Frons discally with a triangular black patch producing through ocellar triangle to the posterior margin of vertex into a broad, median band. Median line of pronotum, marginal areas of prescutum, mesosternum, metanotum and anterior margins of metapleura all black. Wings flavo-hyaline, apical margins slightly stained with brownish; veins and stigmata brownish black, costa yellowish brown. Discal spots of mesopleura, ventral extensions of abdominal tergites II-VIII and anterior margins of tergite IX (except precornal basin) brownish black. Basal portion of precornal basin and terebra brown. Pubescence short, sparse, black.

Clypeus transverse, elliptical, reticulato-punctate, distinctly more raised than its neighboring regions; anterio-lateral margins slightly depressed but not reflexed. Frons also reticulato-punctate; ocellar triangle strongly elevated. Temples smooth, exceedingly finely and sparsely punctate. Vertex deeply, flattenedly depressed especially in area near to the posterior tentorial pit; median area coarsely reticulato-punctate; lateral areas rather sparsely punctate, and practically impunctate in posterio-lateral areas; median furrow very deep, long; the submedian ones anteriorly shallow, broad, posteriorly evanescent, lying posteriorly to OOL. OOL: POL: ocello-occipital line about 8: 7: 20. Antennae 21 segmented, subequal in length to abdomen proper, pedicels as long as thick; intermediate segments cylindrical; apical ones slightly attenuated; relative lengths of segments III-V about 12: 12: 11. Pronotum roughly granulated, length along the median line about a half of POL; anterior lobes rather prominent; lateral margins slightly convergent cephalad; posterior lobes short; lateral slopes coarsely punctate.



Text-figs. 131-136. — Left-hand tibia III plus two basal tarsomeres (exterior aspect) of ♀ *Urocerus*-species (*gigas*-group).

Prescutum coarsely granulato-punctate, posteriorly with a faint, median furrow, lateral depressed areas finely, sparsely punctate. Scutellum granulated. Mesepisterna densely bipunctate, interspaces of most of the major punctures much smaller than the punctural diameter, and puncturation on superior areas slightly sparser; mesepimera sparsely punctate. Vein *1A* in the hind wing absent. Tibiae and tarsi weakly compressed. Tibial spurs I almost straight, the superior tooth apically broadly rounded, subperpendicular to the main axis. Tibiae I slightly longer than the basitarsi *(ca.* 13: 12). Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 97: 62: 66. Tarsal claws with the apical tooth weakly curved, the preapical relatively long and lying obliquely to the main axis. Abdominal tergite I evenly, sparsely and very finely punctate, medially with faint, transverse striae; the II-VI impunctate; VII-VIII posteriorly with a few exceedingly fine punctures. Precornal basin flattened, very deep, with fine, longitudinal striae. Cornus smooth, about twice as long as the basin, lateral margins in dorsal aspect subparallel to each other; lateral surfaces apically spinose; inferior margin in profile with two angulations. Terebra subequal in length to thorax plus abdomen proper, lateral surfaces of the protruding portion very weakly striato-punctate, dorso-lateral margins each bearing about 7-8 spines, the spinose area about as long as the precornal basin. Ovipositor / Forewing ratio 1.04, sawsheath / ovipositor ratio 1.49. Length about 28 mm.

Tibet S.: Nathu La Road, 10,000 ft., 23. viii. 1925 (CHAS. INGLIS), 1 ♀. New to China.

This is probably one of the most archaic species of this genus, as the apical angle of cell *bm* in the fore wing is relatively obtuse, the vein *1A* in hind wing is entirely absent, and the preapical tooth of the tarsal claw is oblique to the main axis.

Urocerus niitakanus (SON.) (Text-figs. 122, 127, 132).

♀ —Black, with obscure, greenish, metallic lustre on thorax. Reddish brown on mandibles (except apices) clypeus, raised anterior margins of malar spaces, lateral areas of pronotum (sometimes pronotum uniformly brownish black), tarsal claws and terebra. Yellow on antennae (apically gradually turning reddish), temples, vertex (except anterior area and rather broad, median line), extreme apices of femora, tibiae, tarsi, anterio-lateral spots of abdominal tergites III-VI, anterior bands of the VII-VIII, posterior fourth of the IX, precornal basin (except anterior margin), and cornus. Wings yellowish hyaline,

extreme apical margins slightly stained with brownish; veins brown, costa brownish, stigmata brownish black. Pubescence short, rather dense and black.

Clypeus reticulato-punctate and radiatedly wrinkled, anterio-lateral areas slightly depressed, and weakly reflexed, anterior and posterior margins almost truncated. Frons also reticulato-punctate. Temples smooth, minutely and very sparsely punctate, and with a few deep, medium-sized punctures chiefly distributing along the anterior and orbital margins. Vertex medially and anteriorly reticulato-punctate, posterio-laterally rather sparsely punctate and slightly raised; median furrow short, narrow, very deep; the submedian ones anteriorly distinct, lying posteriorly to each posterior ocellus. OOL: POL: ocello-occipital line about 7: 6: 21. Antennae 23 segmented, slightly longer than abdomen proper; pedicels transverse; intermediate segments cylindrical; apical ones slightly attenuated; length of segment III = IV = V. Pronotum granulated, length along the median line subequal to POL; median area sometimes depressed; anterior lobes improminent; lateral margins slightly convergent cephalad; posterior lobes rather short; lateral slopes coarsely punctate. Prescutum very unevenly sculptured; depressed areas finely, rather sparsely punctate; scutum finely but very rugosely reticulato-punctate. Scutellum granulated. Mesepisterna reticulato-punctate; mesepimera sparsely punctate. Tibiae weakly compressed. Tibiae I slightly longer than the basitarsi (*ca.* 45: 42). Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 93: 61: 58. Tibial spurs I and tarsal claws as in *Xoanon matsumurae*. Abdominal tergite I anteriorly and medially rather densely, deeply and coarsely punctate; the II-VIII impunctate. Precornal basin rather deep, smooth, flattened, sometimes weakly keeled. Cornus similar to that of *U. xanthus*, lateral surfaces apically spinose; inferior margin in profile angulated at a point about basal fourth. Terebra also similar to *U. xanthus*. Ovipositor / Forewing ratio 1.08, sawsheath / ovipositor ratio 1.72. Length about 29-31mm.

Formosa: Summit of Mt. Morrison, 11,000 ft., 16. ix. 1924 (T. SHIRAKI & J. SONAN), 1 ♀ (Holotype). Hassenzan, 6. x. 1929 (S. ISSIKI), 1 ♀ (both in Taiwan Agric. Inst.).

Urocerus brachyurus, sp. nov. (Text-figs. 123, 128, 133).

♀ —Similarly colored as and closely allied to *U. niitakanus*, paler. Femora I yellow, basally slightly reddish; the II-III reddish brown, extreme apices yellow. Abdominal tergites III-VII each with a complete and more or less broad, anterior, yellow band; sternites reddish brown; terebra yellowish brown.

Clypeus shallowly punctate, not radiatedly wrinkled, anterio-lateral margins scarcely depressed; posteriorly weakly emarginated. Median furrow of vertex shallow, broad. Antennae 23 segmented; relative lengths of segments III-V about 8: 9: 9. Pronotum with the median fifth of its anterior margin slightly but distinctly protruding cephalad. Rugosity on prescutum distinctly weaker, with distinct, smooth, flattened, punctural interspaces. Tibiae I slightly shorter than the basitarsi (*ca.* 12: 13). Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 72: 47: 45. Cornus as figured. Ovipositor / Forewing ratio 1.07, sawsheath / ovipositor ratio 1.67. Length about 23mm.

Formosa: Daisuikutsu, 14. ix. 1924 (T. Shiraki & J. Sonan), 1 ♀ (originally labelled as *Sirex niitakana* Sonan, Paratype) (Taiwan Agric. Inst.).

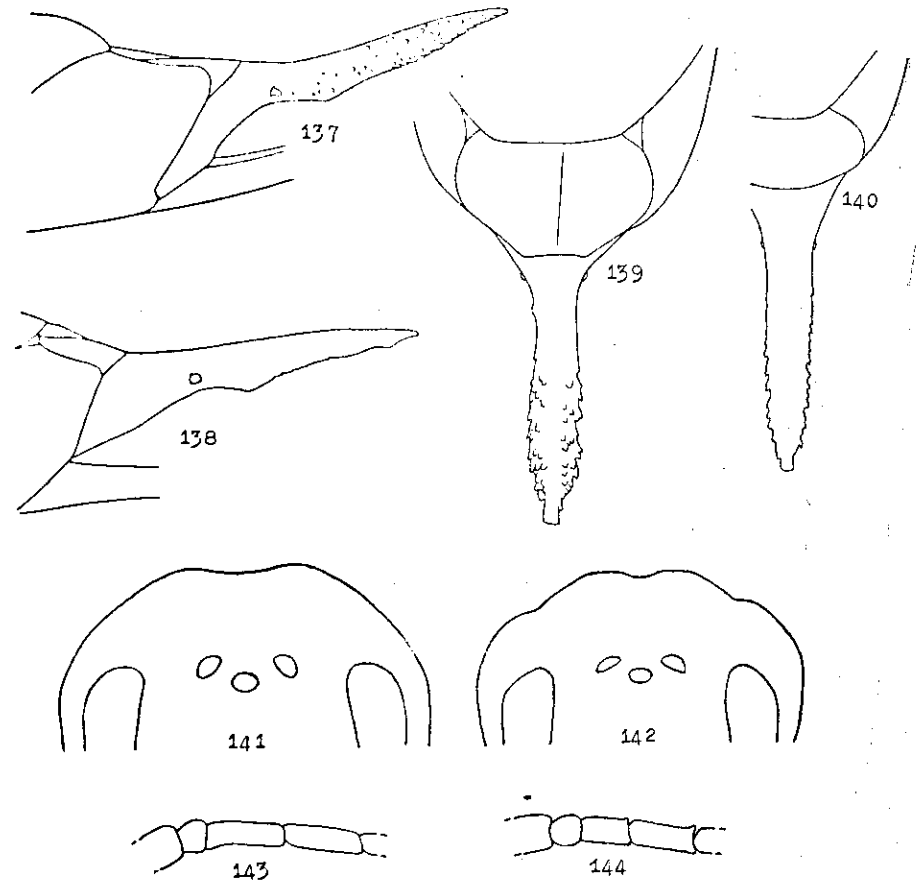
The specific validity of this form has puzzled the writer a good deal. It may very possibly not be specifically distinct from *U. niitakanus* and may eventually prove nothing but an unusual pale form of the latter. The writer's faith in *brachyurus* as a good species almost solely based on the shape of pronotum and of cornus and on the relative length of the tibiae *vs.* basitarsi and terebra *vs.* fore wing. It is deemed better to keep it distinct from *niitakanus*, at least provisionally, before any more material be available.

Urocerus tsutsujiyamanus (Son.)
(Text-figs. 134, 137, 139, 141, 143).

= *multifasciatus* Takeu. (syn. nov.).

♀ — Similarly colored as and closely allied to *U. niitakanus*, paler. Head almost entirely reddish brown, except for the black apices of mandibles and for the face from the level of antennal insertions to that of posterior orbits, where it is entirely black, at most with one transverse, elliptical, yellow spot anterior to and a longitudinal one posterior to the anterior ocellus, and a roundish one posterio-lateral to each antennal insertion; vertex with a very narrow, black or brown, median band; prescutum except anterior and lateral margins and scutellum except anterior margin both brown. Mesepisterna sometimes each with an obscure, superior brownish patch; coxae and trochanters more or less yellow-marked; femora entirely yellow; abdominal tergites yellow, each with a narrow, dull brown, posterior band; the IX posteriorly more extensively yellow. Wings a little duller.

Clypeus not radiatedly wrinkled, median area broadly, shallowly depressed. Malar spaces not striated. Median furrow of vertex shallow and narrow. Antennae 21-23 segmented. Prescutum evenly, finely, shallowly, confluently punctate, not rugose. Scutellum faintly reticulato-punctate. Mesepisterna not very densely punctate, with distinct, smooth, punctural interspaces. Relative lengths of the tibia and basitarsus I about 39: 40; that of the tibia, basitarsus and apico-tarsomeres III about 80: 59: 53. Puncturation on abdominal tergite I very shallow. Cornus as figured. Terebra slightly shorter than the fore wing (1: 1.24), and subequal in length to abdomen proper, or a little shorter. Length about 25-31mm.



Text-figs. 137-144. — Abdominal apex (lateral and dorsal aspects), head (in cephalic aspect) and basal antennal segments (lateral aspect) of *Urocerus tsutsujiyamanus* (Son.) (137, 139, 141, 143) and *U. tumidus* sp. nov. (138, 140, 142, 144). ♀ ♀.

Formosa: Tsutsujiyama, Mt. Morrison, 10,000 ft., 3 ix. 1933 (S. UENO), 1 ♀ (Holotype) (Taiwan Agric. Inst.).

This is a good species and can be easily separated from *niitakanus* by the sparser and weaker sculpturation on prescutum and on abdominal tergite I, by the yellow femora and relative lengths of tibiae and basitarsi. The holotype bears a label "*Sirex tsutsujiyamana* SONAN, Holotype", but in the original description, it was treated as a variety of the latter species.

SONAN's (1938) description "basal bands of 2nd-7th tergites, hind margin of 8th tergite" should be read "basal bands of 1st-8th tergites, hind margin of the 9th (in dorsal aspect)". TAKEUCHI's (1938) description and illustration (of cornus) of *multifasciatus* from Arisan, Formosa well agrees in all details with the holotype of S. *tsutsujiyamana* before the writer except meso- and metathorax entirely black, which is by no means a good character. The accuracy of his measurements is very doubtful (BENSON, 1943). He gave: "Postocellar line: ocellocular line: ocelloccipital line = 24: 20: 66. Antennae..... slightly longer than abdomen excluding cornus. Pronotum.....median length shorter than ocellocular line.....Ovipositor about as long as the length of body and extending a little less than twice the length of cornus beyond tip of the latter." But the POL of Siricids is usually, if not constantly, not distinctly smaller than OOL, and the terebra is distinctly much shorter than the body (except the genus *Xeris*). And if we accept his views and examine his illustration, we can immediately find that the median length of the pronotum is subequal to a-half of interocular distance (in dorsal aspect), and the terebra if his species, (even if the cornus is not counted as part of the body), would be rooted immediately beneath tergite III and extending beyond the cornus about thrice the length of the latter. Thus it is sure that *multifasciatus* must be suppressed as an absolute synonym of *tsutsujiyamanus*.

Regarding TAKEUCHI's (1938) synoptic key, we must point out that *tsutsujiyamanus* was unfortunately not included in and thus his couplet 2 should be slightly modified, otherwise it is rather misleading.

2. Vertex with a rather broad median black band, as least as broad as POL. . 3
— Median black band on vertex absent or scarcely recognisable, and when present, at most as broad as an ocellus. 5

Urocerus tumidus, sp. nov. (Text-figs. 138, 140, 142, 144).

In superficial appearance, this species is scarcely separable from the preceding one and at the first moment, they were thought to be conspecific. The differential characters are given in the key and text-figures. The ovipositor ratios of the present species are approximately the same as that recorded by BENSON (1943), under *multifasciatus*, from N. Burma.

Formosa: Hassenzan, 6. VI. 1942 (A. MUTUURA), 1 ♀ (Taiwan Agric. Inst.).

Urocerus gigas (LINN.), subsp. **orientalis** nov.

Sachalin: Tomorikishi, Shisuka, 28 30. VII. 1930 (T. SHIRAKI), 1 ♀ (Holotype) (Taiwan Agric. Inst.) — Siberia E.: Tschita été 192 (V. J. TOLMACHOV), 1 ♀ (Mus. Heude).

The cornus of this specimen in profile is rather similar to but slightly longer than that of *U. brachyurus*, with only one angulation on the inferior margin. The color pattern of abdomen well coincides with MATSUMURA's (1912, 1930) descriptions which may be freely translated from Japanese as follow: "segments I, II, VII, VIII and cornus yellow; I (basal portion), III-VI, posterior margin of the VIII in the middle, IX (lateral margins yellow) and terebra black; basal portion of terebra slightly tinted with yellow." Tibiae III yellow and with the apical fourth brown both on exterior and interior surfaces. Relative length of the terebra similar to the subspp. *flavicornis* and *taiganus*. In BENSON's (1943) key, this form runs to *flavicornis* rather than to *taiganus*. BENSON (*loc. cit.*) described *taiganus* from Finland, N. Russia and S. W. Siberia, and interpreted its occurrence in Japan by comparing with Mutsumura's (*loc. cit.*) figure. Most probably he has not then seen actual specimens from Japan or E. Siberia, nor he has compared with MATSUMURA's descriptions.

It is ASHMEAD (1902: 252) who first recorded *flavicornis* from E. Siberia based upon a female from "Kluchavski, Kamchatcha, 1897, L. STEJNEGER." Upon request, Dr. TOWNES re-examined the specimen involved, in the Washington Museum, and pointed out that "it bears a determination label "*Sirex flavicornis* FABR." in ASHMEAD's handwriting, and is definitely *gigas*, but shows a tendency towards the color of *flavicornis*. Its tergite VIII is dorsally entirely yellow except for a brown area on the posterior portion of its median prolongation. The tergite IX is mostly blackish, being yellow at the base of cornus and in

a pair of lateral areas. Occasional specimens of *flavicornis* have yellow lateral areas on the tergite IX, but smaller." Thus from these two cases, it is evident that the E. Asiatic form can not be referred to *taiganus* and not as what interpreted by BENSON. To avoiding further confusion, a new subspecific name is thus suggested.

Besides the types, there are 2 additional ♀ ♀ in the Musée Heude collection. One is from Tschita, collected by TOLMACHOV, probably newly emerged, of which the median black band on its vertex is posteriorly exceptionally narrowed, the tergite IX is laterally broadly yellow, the precornal basin is posterio-laterally brownish and the terebra is dull reddish brown. The another is from Tsingtao, Shangtung (? wrongly labelled), also collected by TOLMACHOV, of which the tergite VIII is uniformly yellow and the tergite IX is laterally rather extensively yellow. In the latter case, it should be referred to *taiganus* rather than *orientalis*.

It must also be mentioned that YANO's (1932: 471, fig. 923) figure and description seems, however, to be a typical *gigas*.

Urocerus antennatus (MARL.)

(Text-figs. 125, 130, 136, 157, 215-216).

♂ — Similar to the ♀ as redescribed below, paler. Antennae with the basal half black, apical half whitish yellow, extreme apex slightly darkened. Tibiae and tarsi I-II brown, with basal halves of the tibiae and of basitarsi yellow; legs III entirely black, except the extreme bases of tibiae and sometimes 1 or 2 apical tarsomeres which are yellow; tarsal claws entirely yellow. Abdominal tergites I-VII laterally yellow-flecked.

OOL: POL: ocello-occipital line about 10: 8: 25. Mesonotum granulato-punctate, with anterio-median area of prescutum and mesal areas of scutum rather densely punctate. Tibial spurs I as figured. Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 95: 55: 63. Abdominal tergites VI-VIII with a few fine, very scattered, setigerous punctures; sternites not keeled, with coarse, sparse and unevenly distributed punctures, apical area of hypopygium very densely punctate; relative lengths of the VI, VII and hypopygium about 7: 5: 13; breadth of the VII *vs.* the depth of its posterior emargination about 13: 2. Length about 15-24 mm.

♀ — Black. Temples, intermediate antennal segments (about IX-XVI), basal halves of tibiae and of basitarsi, and lateral spots on abdominal tergites I (entirely black in var. *immaculatus* ZGBL.) and on VII-VIII all whitish yellow. Antennae apically brownish black to pitchy black. Wings hyaline, very faintly brownish, slightly darker in apical areas, veins and stigmata brownish black. Apico-tarsomeres of legs I-II brownish black. Tarsal claws brown. Pubescence black, rather long and dense.

Clypeus reticulato-punctate, with radiating striae; anterio-lateral margins shallowly depressed and slightly reflexed; anterior and posterior margins almost truncated. Frons rather roughly reticulato-punctate, ocellar triangle very slightly raised. Temples smooth, only with a few medium-sized punctures along the orbit. Vertex anterio-medially reticulato-punctate, laterally and posteriorly sparsely punctate, and practically impunctate in extremely posterio-lateral areas; median furrow short, shallow, indistinct; the lateral ones very broad and shallow, and lying posteriorly to OOL. OOL: POL: ocello-occipital line about 6: 5: 50. Antennae 20-24 segmented, subequal in length to abdomen proper; pedicel slightly longer than thick; intermediate segments weakly compressed and sulcated; apical ones slightly attenuated; relative lengths of segments III-V about 10: 11: 11. Pronotum roughly granulated, medially slightly depressed and finely reticulato-punctate, length along the median line slightly smaller than POL; anterior lobes prominent; lateral margins weakly convergent cephalad; posterior lobes short; lateral slopes superiorly finely reticulato-punctate, inferiorly coarsely and not densely punctate. Prescutum deeply, densely punctate, the submedian areas as well as scutum (lateral portions) and scutellum granulato-punctate. Mesepisterna reticulato-punctate; mesepimera sparsely punctate. Tibiae and tarsi compressed. Tibiae I slightly longer than the basitarsi (*ca.* 11: 10). Tibial spurs I almost straight, the superior tooth oblong, perpendicular to the main axis. Exterior surfaces of tibiae III inferiorly each with a short submarginal furrow. Relative lengths of the tibia, basitarsus and apico-tarsomeres III about 18: 12: 11. Tarsal claws similar to that of *U. sicieni*. Abdominal tergite I medially shallowly, coarsely punctate; the II-VIII impunctate. Precornal basin deep, smooth, convex. Cornus almost twice as long as the basin, weakly lanceolate, smooth; lateral surfaces apically spinose; inferior margin in profile angulated at a point of about basal 2/5. Terebra slightly longer than the fore wing (*ca.* 1: 0.95), or, subequal in length to abdomen plus cornus; lateral surfaces of the protruding portion longitudinally striated, basal third transversely wrinkled; dorso-

lateral margins each with 4-6 spines, the spinose area subequal in length to the precornal basin. Length about 16-32 mm.

Kirin: Kao-Lin-Tze, 13. VI-13. VII. 1940, 2 ♂♂, 2 ♀♀; 7. VII. 1940, 1 ♀ (both in Mus. Heude). 1 ♀, without collecting data (det. J. SONAN) (Taiwan Agric. Inst.).

CONDE (1935: 68) suggested that this form was probably only a color variety of the Nearctic species *U. albicornis* (FABR.). But as far as the female structure is concerned, the latter form can be differentiated, in addition to the terebra rations as pointed out by BENSON (1943), by the following points: (1) antennal segment III slightly longer than the IV or V, with a ratio *ca.* 19: 18: 17; (2) vertex more densely punctate, its raised submedian areas rather improminent; (3) length of pronotum along the median line distinctly greater than POL; (4) precornal basin flattened, instead of convex or convexo-carinated; (5) cornus relatively narrower, maximum breadth *vs.* length (measured from cercal insertions to cornal apex) *ca.* 10: 45 (in *antennatus*, *ca.* 13: 43), the postanal area on the venter apically spinose instead of entirely smooth and depressed, the inferior margin in profile bearing two angulations instead of one only; thus it appears that *antennatus* is a good species although a comparative study of the males of these two closely related and similarly colored forms is more definitely conclusive.

Urocerus argonautarum (SEM.), comb. nov.

The writer has not seen any representative of this species. BENSON (1943) placed it as a subspecies of *U. gigas* mainly on the basis of the similarity of color pattern. In the original description of the ♂, SEMENOV (1921) simply stated "structura genitalium diversa", without describing nor figuring of such difference. The terebra of the ♀ is much longer than *gigas* and its subspecies, the cornus in profile much longer and slenderer and can be immediately separated from the latter species by the inferior margin uni- instead of bidentate. Thus doubtless *argonautarum* should be revived as a distinct species.

Urocerus augur (KLG.), subsp. **bensoni** nov.

♀ — Differing from Konow's (1905) redescription of *Sirex augur* KLG. as follow: Face brownish black. Temples and area posterior to the supra-orbital line dirty brown. Wings rich amber in color, without clearly defined, infuscated, apical margin, practically

not stained with any brownish tints except the extreme apical margin; the anal field of hind wing, however, with its apical two-thirds distinctly infuscated, strongly contrasted. Coxae and trochanters deep black. Femora I-II basally black, gradually turning reddish brown toward the apex; femora III deep black. Tibiae II (apical one-third) and III (apical two-thirds) dull brown. Abdominal tergites III-VI entirely black, the VII anterio-laterally yellowish brown; the VIII posteriorly black; the IX anteriorly (both in dorsal and ventral aspects) black, and in ventral aspect, the lateral and posterior margin (excluding the depressed area) reddish brown, not yellow. Scutellum rather finely rugoso-punctate. Mesepisterna dim, reticulato-punctate, without shining, inter-punctural spaces. Terebra almost as long as abdomen plus cornus, and distinctly longer than the fore wing. Sawsheath slightly shorter than abdomen, about subequal to the total length of tergites I-VIII plus a-half of the IX. Body (excluding cornus) 36 mm., fore wing 30.5 mm., terebra 32.5 mm., sawsheath 32.5 mm.

"Europe", 1 ♀ (det. T. SHIRAKI as *Sirex gigas* LINN.) (Taiwan Agric. Inst.).

Named in honour of Mr. ROBERT B. BENSON of the British Museum (Natural History). In GUSSAKOVSKIJ's key, this form runs to *S. cedrorum*, which is placed as a synonym by BENSON (1943), while in the latter author's key, it lies rather intermediate between *augur augur* and *augur sah.* The sawsheath / ovipositor ratio (1.64) is approximately the same as the latters (1.60-1.68), but the ovipositor / forewing ratio (0.92) is significantly lower (1.00-1.14).

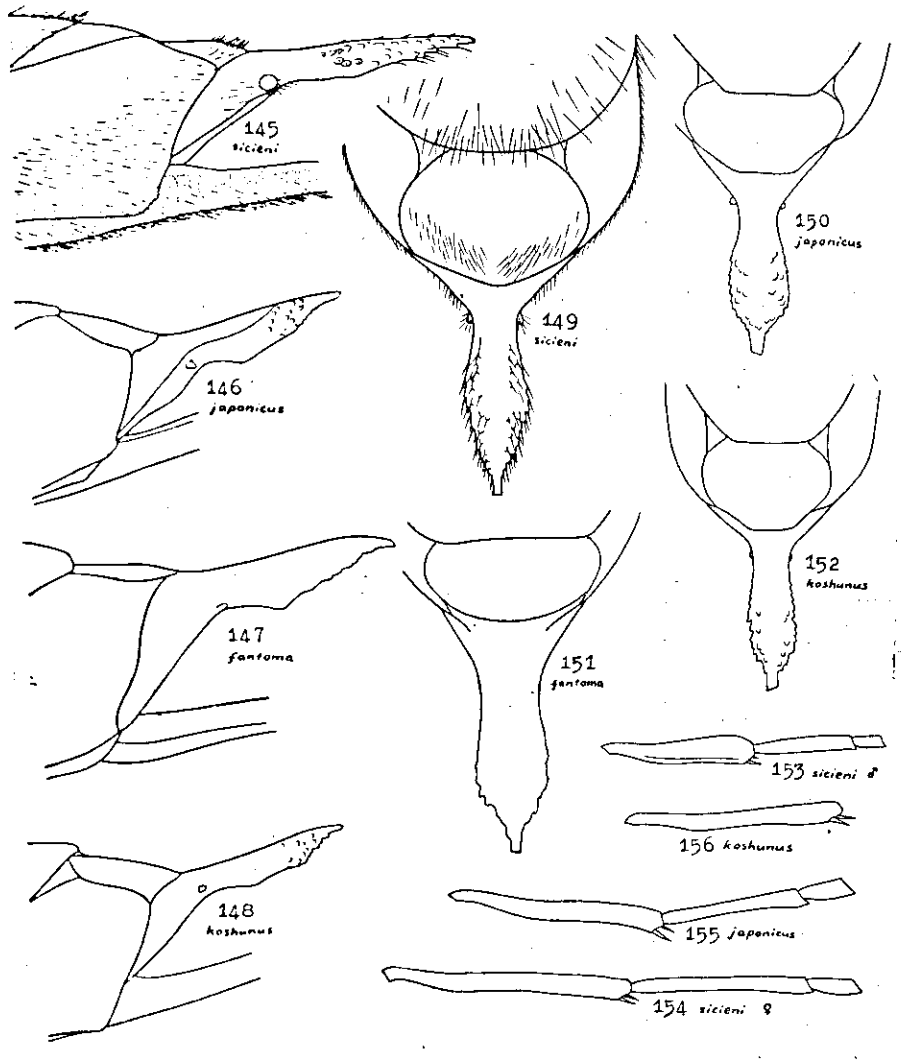
It may also be mentioned that in BENSON's key, couplet 3, "Hind tibia with basal 2/3rds black" should be read "Hind tibia with *apical* 2/3rds black *or* brownish black".

Urocerus sicieni, sp. nov. (Text-figs. 145, 149, 153, 154, 158, 161.)

♂ — Black. Mandibles occasionally each with a basal yellow spot. Frons occasionally with one yellow spot lying laterad to each antennal insertion. Temples golden yellow. Antennae with the apical third to apical three-fifths whitish yellow. Pronotum with its anterior lobes sometimes yellowish brown. Wings hyaline, very weakly tinted with greyish, apical areas slightly infuscated; veins brown; stigmata and costa yellowish brown. Legs I-II yellow; coxae, trochanters and femora more or less brown- or black-marked. Legs III with the coxae, trochanters and femora usually black and always duller than the

succeeding segments which are reddish brown to brownish black; extreme bases of the tibiae and of basitarsi yellow. Abdominal tergite I brown, posteriorly narrowly yellow; the II-VII bright yellow, each with a narrow, dull brown, posterior band and often also with a more or less interrupted brownish median band; the VII on certain occasions dominantly or entirely brownish black; the VIII brownish black. Abdominal sternites reddish brown, gradually turning darker towards the apex. Pubescence short, very sparse, sooty brown to black.

Slender. Clypeus coarsely punctate and with faint, radiating striae; anterio-lateral margins reflexed and submarginally slightly depressed; anterior and posterior margins almost truncated. Frons reticulato-punctate. Eyes but slightly longer than broad (*ca.* 13: 11). Temples exceptionally narrow, the breath at the midpoint of lateral orbital margin distinctly smaller than the transverse axis of eye (*ca.* 7: 11), smooth, and with only a few medium-sized punctures along the orbit. Vertex sparsely punctate, anterio-median area reticulato-punctate; lateral areas scatteredly punctate; median furrow short, broad, shallow; the submedian ones narrow, shallow, lying posterio-laterad to the posterior ocellus. OOL: POL: ocello-occipital line about 3: 4: 12. Antennae 21-25 segmented, usually much longer than abdomen: pedicels slightly longer than thick; intermediate segments subcylindrical and exteriorly weakly sulcated; apical segments weakly attenuated; relative lengths of segments III-V about 13: 12: 12. Pronotum granulated, length along the median line distinctly smaller than POL; anterior lobes improminent; lateral margins weakly divergent cephalad; median area somewhat depressed: posterior lobes moderately long; lateral slopes rather well marked-off from the dorsum, superiorly finely reticulato-punctate and inferiorly rather densely, coarsely punctate. Prescutum with evenly distributed, medium-sized, rather dense punctuation. Scutellum anteriorly finely reticulato-punctate, posteriorly granulato-punctate. Mesopleura reticulato-punctate. Tibiae and basitarsi I very weakly compressed, their relative lengths about 29: 31. Legs III slender, tibiae compressed, very slightly dilated, and a little curved in S-shape; exterior surfaces each inferiorly with a submarginal furrow; relative lengths of the tibia, basitarsus and apico-tarsomeres about 58: 35: 34. Tibial spurs I and tarsal claws similar to those of ♀. Abdominal tergite I anterio-medially densely and rather finely punctate, posteriorly very spasely so; tergites II-VI impunctate; VII-VIII with fine, scattered punctures; sternites weakly keeled, the I-V with scattered, rather fine and shallow punctures: the VI-VII posteriorly with deeper and very coarse punctures; VII slightly shorter than the VI and posteriorly with a rather sharp, triangular incision, its depth *vs.* the breadth of sternite VII about 3: 16. Hypopygium about a-half longer than its preceding sternite. Length about 12-18 mm.



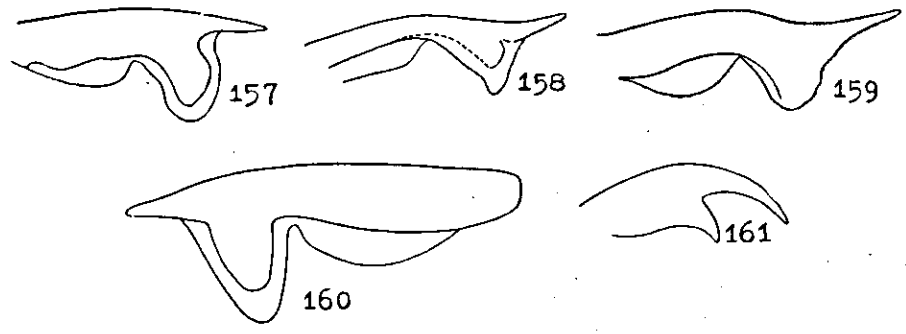
Text-figs. 145-156. — Abdominal apex in lateral and dorsal aspects (♀), and left-hand tibia III plus two basal tarsomeres in exterior aspects (♀ ♂) of *Urocerus*-species (*fantoma*-group).

♀ — Black, with a little greenish metallic lustre. Longitudinal bands on temples which extend posteriorly to postocciput and mesally to the posterio-lateral areas of vertex, pronotum except the median line and lateral slopes, scutellum except the anterior and lateral margins, mesopleura (narrowly along the superior margins), trochanters I (apico interiorly), femora I, femora II (both extremities), tibiae I-II, tibiae III (apical fourth brownish black), basitarsi (apical half brownish black), abdominal tergite I, anterio-lateral spots on the II, anterior bands of the VI (medially interrupted) and of VII-VIII all yellow. Antennae apically slightly tinted with brownish. Wings flavo-hyaline, apically slightly infuscated; veins dull brown; stigmata yellow. Femora II (except both extremities) and III reddish brown, tarsal claws brown. Apico-tarsomeres, abdominal tergites except their yellow bands, sternites, pygidium and terebra all brownish black. Cornus brownish black, dorso-discally with an oblong yellow patch. Valvae terebrae basally stained with yellow. Pubescence short, rather dense, black or brownish black.

Clypeus reticulato-punctate, with radiating striae; anterio-lateral areas slightly depressed and prominently reflexed; anterior margin almost truncated, the posterior sharply emarginated. Frons reticulato-punctate, areas anterior to posterior ocelli slightly tumescent. Temples smooth, only with a few medium-sized punctures along the orbit. Vertex anteriorly and medially reticulato-punctate; lateral areas with fine and very scattered puncturation; median furrows deep, short, narrow; the lateral ones broad, poorly developed. OOL: POL: ocello-occipital line about 1: 1: 3. Antennae 24 segmented, slightly shorter than abdomen plus cornus; pedicels as long as thick; intermediate segments strongly compressed, slightly dilated, and sulcated on the exterior surface; the apical ones strongly attenuated; length of segment III=IV=V. Pronotum finely granulato-punctate, median area slightly depressed, length along the median line distinctly smaller than POL; anterior lobes prominent; lateral margins subparallel to each other; posterior lobes relatively long; lateral slopes inferiorly rather coarsely reticulato-punctate, superiorly finely so. Prescutum densely, very finely punctate. Scutellum shallowly, coarsely granulato-reticulated. Mesepisterna reticulato-punctate; mesepimera a little more sparsely so. Tibiae and tarsi compressed. Tibial spurs I curved in S-shape, the superior tooth triangular, subperpendicular to the main axis; the inferior much slenderer, slightly longer and lying obliquely to the main axis. Tibiae I much shorter than the basitarsi (*ca.* 3: 4). Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about

16: 11: 9. Preapical teeth of tarsal claws moderately long. Abdominal tergite I medially finely and shallowly punctate; the II-VI impunctate; VII-VIII posteriorly with very few scattered, fine punctures. Precornal basin smooth, very deep, very weakly convex; posterior margin finely, deeply punctate. Cornus lanceolate, about one-half longer than the basin, smooth, dorsally weakly keeled; apical two-thirds of lateral surfaces spinose; inferior margin in profile with only one angulation near the mid-point. Terebra subequal in length to abdomen proper and half of the cornus together; lateral surfaces of the protruding portion longitudinally wrinkled, extreme bases transversely so; dorso-lateral margins each with about 5-6 spines, the spinose area shorter than the precornal basin. Ovipositor / Forewing ratio 1.23, sawsheath / ovipositor ratio 1.78. Length about 23 mm.

Chekiang: W. Tien-Mu-Shan, 10. vii. 1936 (Y. Ouchi), 1 ♀ (Holotype) (Acad. Sinica); 8-23. vii. 1936 (Y. Ouchi), ♂ ♂ (1 ♂ selected as Allotype) (Acad. Sinica); 22. vii. 1936 (O. Piel), 7 ♂ ♂ (Mus. Heude); 13. vii. 1937 (Y. Ouchi), 2 ♂ ♂ (Acad. Sinica). E. Tien-Mu-Shan, 18. vii. 1937 (Y. Ouchi), 1 ♂ (Acad. Sinica).



Text-figs. 157-161. — Tibial spur I (157-160) and tarsal claw III (161) of ♀ *Urocerus*-species: *antennatus* Marl. (157), *sicieni* sp. nov. (158, 161), *japonicus* F. Sm. (159), *fantoma* Fabr. (160).

Named after Dr. Sicien H. Chen of the Institute of Zoology, Academia Sinica.

In both sexes, the present species is rather closely related to *U. japonicus*, but the color pattern is fairly different especially in the ♂-antennae and ♀-abdomen. The excessively long and strongly compressed tarsi and the V-shaped epistomal suture in the ♀ are also note worthy.

Urocerus japonicus (F. Sm.) (Text-figs. 146, 150, 155, 159).

Although this is a common species in Japan, but the structure of its female is very little known. The following notes may be supplemented to the descriptions given by F. Smith and Konow. Clypeus strongly punctate and with faint radiating striae; anterio-lateral margins depressed and reflexed; anterior and posterior margins almost truncated. Frons roughly reticulato-punctate, anterio-median area rather prominent; immediately anterior to the ocellar triangle with a short, transverse ridge, which is preceded by a broad, shallow, transverse depression. Temples smooth, practically impunctate. Vertex with its submedian areas distinctly, flattenedly raised, and very coarsely and deeply punctate, the puncturation on anterior portion being very dense and posteriorly much sparser, and with smooth punctural interspaces; lateral areas flattenedly depressed, shining, sparsely punctate and practically impunctate on the posterio-lateral area; median furrow short, deep; the submedian ones indistinct. OOL: POL: ocello-occipital line about 5: 4: 16. Antennae 23-25 segmented, slightly shorter than abdomen proper; pedicels thicker than long; intermediate segments cylindrical; the apical ones very slightly attenuated; relative lengths of segments III-V about 17: 16: 16. Pronotum granulated, length along the median line subequal to OOL; anterior lobes poorly developed; lateral margins rather strongly convergent cephalad; posterior lobes relatively short; lateral slopes superiorly reticulato-punctate, inferiorly sparsely punctate. Prescutum finely, densely punctate; discally rugosely so. Scutellum granulated. Mesepisterna strongly reticulato-punctate; mesepimera unevenly, sparsely punctate. Tibiae and tarsi weakly compressed. Relative lengths of the tibia and basitarsus I about 20: 17; that of the tibia, basitarsus and apico-tarsomeres III about 74: 49: 52. Tibial spurs I slightly curved in S-shape, the superior tooth subquadrate or triangular, the inferior parallel to the main axis. Tarsal claws similar to that of *U. koshunus*. Abdominal tergite I anterio-medially finely reticulato-punctate, posteriorly sparsely punctate; the II-VII impunctate; VIII with very few poorly recognisable punctures. Precornal basin smooth, shallow, conver. Cornus short, lanceolate, smooth, lateral surfaces apically spinose; inferior margin in profile with only one angulation, basally distinctly excised. Terebra subequal in length to abdomen plus cornus, lateral surfaces of the protruding portion longitudinally wrinkled; spines on dorso-lateral margin very poorly developed. Ovipositor / Forewing ratio 1.05, sawsheath / ovipositor ratio 1.68. Length about 20-40 mm.

As mentioned by F. Smith (1874), this species (♀) is very similar and closely allied to the Nearctic *U. gigas flavicornis* (Fabr.), but antennae basally distinctly darkened and the segment III slightly longer than the IV, precornal basin convex, instead of flattened, cornus shorter and terebra relatively longer. The sculpturation of its vertex is note worthy and presumably serves as exceptional key-character for its recognition.

The wings of this species are usually flavo-hyaline, with the apical margins more or less stained with brown. In smaller-sized individuals, however, the wings especially the apical margins are much paler, and this phenomenon is also true for other species. Matsumura (1912) differentiated his new species *sinuatus* by its much smaller size and paler wings. He described thus: "Wings pale yellowish brown, without any shade of dark brown on the apex; pterostigma dark brown." But in his illustration (pl. 43 f. 2) accompanying the original description, the wings are distinctly dull brown and not separable from what he illustrated for *japonicus* (pl. 42 f. 22).

The extent of yellow tints on vertex and on abdominal tergites of this species in ♀ is also very variable: the vertex may be entirely yellow, or black along the median furrow, or even extensively black as in *gigas*; the abdominal tergite II is almost always yellow, while the I and III-IV range from entirely yellow to entirely black. In formulating their synoptic keys, Konow (1905), Gussakovskij (1935) and Takeuchi (1938) unfortunately selected the color pattern of vertex, of wings and of abdomen as a character for separating *japonicus* and its allies, and thus in certain cases this species may run to *gigas* (Linn.), *augur* (Klg.) and even to *niitakanus* (Son.), which can be immediately separated by a comparison of the sculpturation on vertex (except *augur*), the shape of cornus (dorsal aspect), and the spinoseness of terebra. Benson (1943: 47) even suggested that *niitakanus* and *tsutsujiyamana* might be forms of *japonicus*, this interpretation is, however, not acceptable.

Urocerus fantoma (Fabr.) (Text-figs. 147, 151, 160).

♀ — Clypeus anterio-medially broadly furrowed. Both transverse ridge and depression anterior to ocellar triangle indistinct. Vertex not coarsely punctate; the median furrow long, deep; the submedian ones weak but distinct. Mesepisterna rather finely reticulato-punctate. Mesepimera rather evenly but sparsely punctate. Relative length of tibiae III (?). Tarsal claws II-III with the preapical tooth

rudimentary. Precornal basin flattened. Terebra short. Otherwise structurally similar to *U. japonicus* as redescribed above.

This species is rather comparable to *U. japonicus*, but the color pattern, vertical sculpturation, tarsal claw and relatively length of terebra are quite different. The weakly armed terebra is in common with the latter species (BENSON, 1943, stated this character is unique for *japonicus* in all known Siricid-species).

SEMENOV (1921) erected the genus *Xanthosirex* for the reception of this species solely based upon the rudimentary preapical tooth of tarsal claw and the weakly sclerotised wing-veins. The first character is, although constant for species, but very variable inter-specifically within the genus, for instance, in *U. xanthus* and *antennatus*, these teeth are exceptionally strongly developed. The veins of the unique specimen at hand are found to be not noticeably weaker than those of its cogeners. As the writer is unable to disclose any other characters of diagnostic importance, it is quite naturally that SEMENOV's name must be dropped off (BENSON, 1943), or as most placed for convenience under *Urocerus* as a subgenus, characterised by the short, robustly lanceolate cornus, and is lying rather-intermediate between *Urocerus* (s. str.) and *Sirex*.

Urocerus koshunus (SON.) (Text-figs. 148, 152, 156).

♀ — Bright reddish yellow. Mandibles apically black. Ocellar triangle, mesonotum, mesosternum and posterior margins of abdominal tergites IV-VIII dull brown to brownish black. Frons, lateral slopes of pronotum (inferior halves), scutellum, metanotum, thoracic pleura, pr- and metasterna, coxae, trochanters, tarsal claws, abdominal tergite I, posterior margins of the II-III, lateral surfaces of the IX, and basal half of terebra all reddish brown. Wings flavo-hyaline, apical fifth very feebly stained with brownish, veins and stigmata brownish yellow. Pubescence short, sparse, brownish.

Clypeus finely reticulato-punctate; anterio-lateral margins depressed and very slightly reflexed; anterior and posterior margins almost truncated. Frons finely reticulato-punctate. Temples smooth, with a few medium-sized punctures along the orbit. Vertex reticulato-punctate, laterally and posteriorly rather sparsely punctate; median furrow short, deep; the lateral ones broad, shallow, rather long, starting from ocello-ocular interspaces. OOL: POL: ocello-occipital line about 11: 10: 35. Antennae 23 segmented, shorter than abdomen proper; pedicels slightly thicker than long; intermediate segments cylindrical;

the apical ones slightly attenuated; relative lengths of segments III-V about 8: 9: 8. Pronotum granulato-punctate; median line furrowed, and slightly shorter than POL; anterior lobes improminent; lateral margins slightly convergent cephalad; posterior lobes relatively short; lateral slopes with the superior third finely reticulato-punctate, inferiorly rather sparsely punctate. Prescutum evenly finely reticulato-punctate, discally rugosely so. Scutellum granulated. Mesepisterna reticulato-punctate, mesepimera sparsely punctate. Tibiae weakly compressed, relative lengths of tibia I: basitarsus I: tibia III about 4: 3: 7. Tibia spurs I as in *U. sicieni*. Tarsal claws with the preapical tooth very short and the apical one excessively long. Abdominal tergites I medially with a few fine, shallow punctures; the II-VIII impunctate. Precornal basin smooth, shallow, weakly convex. Cornus lanceolate, smooth, apical two-thirds of lateral surfaces spinose; inferior margin in profile with two angulations. Terebra slightly longer than abdomen proper; lateral surfaces of the protruding portion longitudinally wrinkled and with fine, very scattered puncturation; dorso-lateral margins without any prominent spines. Ovipositor/Forewing ratio 1.13, sawsheath/ovipositor ratio 1.88. Length about 24 mm.

Formosa: Kuraru, Koshun, 1. viii. 1931 (T. SHIRAKI), 1 ♀ (Holotype), tarsi III mutilated, abdomen partly distorted, with segments IV-V glued together with the I-III (Taiwan Agric. Inst.).

Genus UROCERITES HEER, 1867.

= *Neuropachys* Heer, 1858 (nom. nud.) (**syn. nov.**)

Genotype: *U. spectabilis* HEER (Haplotype).

Habitat: Radoboj, Crotia (horizon: Lower Miocene).

The name *Neuropachys* was introduced by HEER (1858) in his outline of the insect-fauna of Radoboj, but no description, illustration, nor any named species was included therein.(14) It is thus a purely manuscript name, and has no true status in nomenclature. Nine years elapsed, when he fully described and figured *Urocerites spectabilis* gen. et sp. nov., basing upon a unique ♂ also from Radoboj, which is obviously the same specimen previously nominated by himself as *Neuropachys* sp. The original description of this new genus was chiefly

14) It was only mentioned that: "die Holzwespen sich Gänge in das Innere der Bäume bohrten. Es lebte eine grosse Art in Radoboj, welche aber von *Sirex* so sehr abweicht, dass sie zur besonderen Gattung erhoben werden musste (*Neuropachys*)."

founded on the venation of the fore wing and the shape of the hind tarsi. In 1898, it was merged into *Paururus* KNW. by KONOW, without re-examining the type.

HEER's figure 1 represents the natural size and orginal impressions of the insect, which was magnified 2 x in figure 2, and restored in figure 3. The relative size and shape of the cells, veins, tibiae and tarsomeres in these figures, however, do not well correspond to one another. The cell *bm* (= "area externo media" of HEER) was asserted to be possessing an extra, small, triangular cell formed by a weakly sclerotized oblique vein. This supposed "kleine Querader" is certainly no more than a fold or crease. If this vein does actually exist, it should be termed *M*-stem, and the fore wing be with 4 radial cells (all the radio-median cross-veins in the figures are subperpendicular to the costal margin, so that none of them can be interpreted as *Rs* or M_1). But the *M*-stem of Hymenoptera is always as thick as, if not thicker than, any other mains veins, and the number of the radial cells of the same Order are not known to exceed 3. As far as we can judge from HEER's figures, this problematical genus may be compared with *Sirex* LINN. (=*Paururus* KNW.) by the following tabulation:

Urocerites HEER	*Sirex* LINN.
Vein Sc_2 present, strongly sclerotized (as in Xiphydriidae)	Sc_2 absent.
Pterostigma indistinct	Pterostigma distinct.
Cells *1r* and *2r* subequal in length	*1r* much shorter than *2r* (*ca.* 2: 3).
Vein M_{3+4} more widely separated from M_{1+2} than from Cu_1 (as in *Eoxeris*)	M_{3+4} more widely separated from Cu_1 than from M_{1+2}.
Cell *1cu* much longer than wide and as long as *2cu*	*1cu* much shorter than wide or than *2cu*.

Genus SIREX LINN., 1761.

Key to Asiatic species [15])

♂ ♂

1. Body including legs and antennae entirely bluish green. (Assam). . . . . *imperialis* W. F. KBY., 1882.
— Body more or less pale-marked, not entirely bluish black. 2

15) The males of *S. mongolorum* (SEM. & GUSS.) and *vates* MOCS. and the female of *S. sinicus* sp. nov. are unknown, whereas *S. cyaneus* FABR. has been erroneously listed from "Asia".

2. Apical abdominal tergites, at least the VIII, entirely bluish black; antennae entirely black; tibiae III variably shaped. 3
— Apical abdominal tergites and also sternites entirely red, at most with the hypopygium more or less black; antennae variably colored; tibiae III basally widely dilated on the inferior margin. 4

3. Abdominal tergites I-III and VII-VIII and all femora entirely bluish black; legs III entirely black, tibiae III basally widely dilated on the inferior margin. 11 mm. . . . . *ermak* (SEM.), 1921.
— Abdominal tergites only with I-II and bases of the III and of the VIII bluish black; femora I-III and bases of tibiae III red; tibiae III basally not markedly dilated on the inferior margin. 18-30 mm. . . *noctilio* FABR., 1793.

4. Basal halves of antennae red or yellowish brown; tibiae and tarsi II entirely or dominantly red. 5
— Antennae uniformly black; tibiae and tarsi II dominantly black. . . . 7

5. Vertex very sparsely punctate. 12-28 mm. . . . *juvencus* (LINN.), 1758.
— Vertex rather densely punctate. 6

6. Abdominal sternites II-VIII entirely reddish brown, the I greenish black. 23 mm. . . . . *sinicus* sp. nov.
— Abdominal sternites I and VII-VIII entirely greenish black, only the II-VI reddish brown. 23-27 mm. . . . . *nitobei* MATSUM., 1912.

7. Vertex except the median furrow finely and very sparsely punctate; anterior lobes of pronotum rather blunt, weakly protruded out. 24 mm. . . . . *dux* (SEM.), 1921.
— Vertex except the median furrow deeply, rather coarsely and not very sparsely punctate; anterior lobes of pronotum sharp and strongly protruded out. 20-22 mm. . . . . *tianshanicus* (SEM.), 1921.

♀ ♀

1. Legs red, with coxae and trochanters (sometimes also basal portion of femora) black and with bluish metallic lustre. 2
— Legs entirely black and with bluish metallic lustre, at most only with femora I-III (extreme apices), tibiae and tarsi I-II brownish. 5

2. Terebra subequal in length to abdomen proper; posterior margin of abdominal tergite VIII distinctly roundly constricted; precornal basin distinctly transverse; cornus rather short. 3
— Terebra subequal in length to abdomen plus cornus; posterior margin of abdominal tergite VIII gradually convergent, not distinctly roundly constricted; precornal basin not broader than long, carinated; cornus long, triangular. 4

3. Antennae entirely black; mesopleura dim, entirely reticulato-punctate. 16-30 mm. . . . . *noctilio* FABR., 1793.

— Antennae basally red; mesopleura at least in the superior portion not reticulato-punctate, with distinct, polished, inter-punctural spaces. 14-30 mm . . . . . *juvencus* (LINN.), 1758,

4. Precornal basin sharply keeled along its whole length; cornus massively long, apical half of dorsal surface entirely spinose; sawsheath / ovipositor ratio 2.00. 17.5-25.5 mm. . . . . *tianshanicus* (SEM.), 1921.

— Precornal basin only keeled on the posterior half; cornus very long, and in dorsal aspect only the apico-lateral marginal areas spinose; sawsheath / ovipositor ratio 1.85. 25-30 mm. . . . . *dux* (SEM.), 1921.

5. Terebra as long as abdomen plus cornus, or, even slightly longer. . . . 6

— Terebra at most as long as abdomen proper. 7

6. Legs entirely black; pronotum with the median portion of anterior marginal area strongly depressed, forming a slope of about 45°; precornal basin only weakly carinated at the extreme apex; sawsheath / ovipositor ratio 2.10; ovipositor / forewing ratio 1.29. 25-30 mm. . *imperialis*, W. F. KBY., 1882.

— Femora and tibiae apically yellowish; pronotum with the median portion of anterior margin sharply marked-off, not strongly depressed and sloped; precornal basin (excluding the extreme apex) distinctly carinated; sawsheath / ovipositor ratio 2.00; ovipositor / forewing ratio 1.18. 11.5-15.5 mm. . . . . *ermak* (SEM.), 1921.

7. Fore wings each with a brown, prestigmal fascia; cornus triangular in dorsal aspect, lateral margins never angulated preapically; legs black, only tibiae I and tarsi I reddish brown. 25-35 mm. . . . . *vates* MOCS., 1881.

— Fore wings without prestigmal fascia; cornus in dorsal aspect distinctly angulated preapically. 8

8. Legs black, all femora (apices) and tibiae (both extremities) yellowish brown. 28 mm. . . . . *nitobei* MATSUM., 1912.

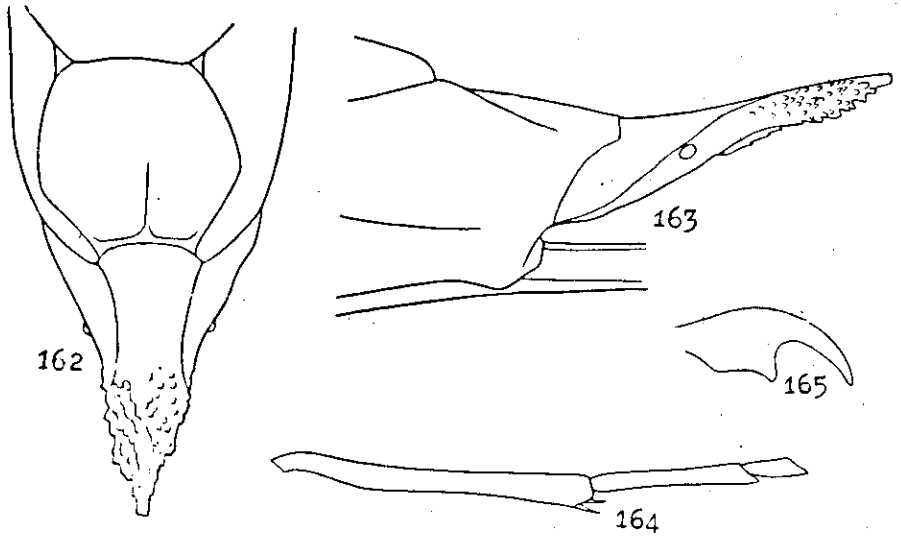
— Legs black, all tibiae and tarsi yellowish brown, except for tibiae III which are dominantly black. 19 mm. . . . *mongolorum* (SEM. & GUSS.), 1935.

Sirex imperialis W. F. KBY. (Text-figs. 162-165).

♀ — Black, with greenish metallic lustre, abdomen slightly paler (more or less dull brown), with bronze-green or purplish lustre. Wing hyaline, apical halves slightly stained with brownish, darkest at cell *1r* in the fore wing; veins dull brown; stigmata reddish brown, with the costal and anal margins dull brown. Apico-tarsomeres I reddish brown. Terebra basally reddish brown. Pubescence sooty-brown to black, long, dense.

Clypeus weakly convex, with radiating striae, indistinct punctuation and a median furrow; anterior margin relatively strongly arcuate, with a shallow, narrow, median notch and two minute, submedian pro-

minences; anterio-median area smooth. Frons reticulato-punctate, anterio-medially with a rectangular tumescence which is medially weakly foveated; median fovea broadly transverse, rather deep, and each side with an indistinct, transversely arcuate ridge; ocellar triangle, slightly raised. Temples coarsely, rather evenly and rather densely punctate, interspaces of most of the punctures subequal to or slightly greater than punctural diameter. Vertex coarsely, rather densely punctate, anteriorly with two broad, indistinct, submedian furrows; posteriorly with a wide, shallow, granulato-punctate and rather long, median furrow and with two shining, sparsely punctate, weakly swollen, submedian areas;



Text-figs. 162-165. — Abdominal apex (dorsal and lateral aspects), left-hand tibia III plus two basal tarsomeres (exterior aspect) and tarsal claw III of *Sirex imperialis* W. F. KBY. ♀,

posterior tentorial pits very deep. OOL: POL: ocello-occipital line about 16: 13: 44. Antennae 22-segmented, similarly shaped as in *S. juvencus*, relative lengths of segments III-V about 19: 17: 17. Pronotum medially reticulated, lateral areas (in dorsal aspect) much more roughly granulato-reticulated, and strongly raised; length along the median line subequal to POL; median portion of anterior margin weakly curved cephalad, very strongly depressed, thus forming a slope at about 45°; anterior lobes triangular, sharp, prominent; lateral margins subparallel to each other; posterior margin shallowly incised, medially with a sharp incision; posterior lobes posteriorly slightly reflexed and mesally slightly depressed; lateral slopes depressed, rather finely reti-

culato-punctate, the inferior marginal area shining, sparsely punctate. Prescutum and scutellum convex, finely granulato-reticulated, marginal areas shining, strongly depressed, with exceedingly fine and sparse puncturation. Mesepisterna evenly, very coarsely and densely punctate, interspaces of most of the punctures about 1/3 the punctural diameter. Cells *2r* and *1m* in the fore wing relatively short; vein *icu*$_1$ incomplete. Tibiae and tarsi weakly compressed. Tibiae I distinctly longer than the basitarsi (*ca* 35: 26). Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 77: 40: 35. Tarsal claws with the preapical tooth moderately long, subperpendicular to the main axis. Abdominal tergite I anteriorly densely, deeply punctate, posteriorly coarsely, sparsely, shallowly so; tergite II-III (anteriorly) and VIII (submedially) also coarsely, shallowly, very sparsely punctate. Precornal basin shallow, hexagonal, slightly longer than wide, with the lateral, posterio-lateral and posterior margins almost straight; posterio-lateral margins very weakly edged, not rounded off; median area slightly raised and apically weakly carinated. Cornus much longer than precornal basin; dorsum basally smooth, polished, apical two-fifths coarsely granulato-punctate and weakly carinated; lateral margins in dorsal aspect basally slightly raised; lateral surfaces basally (except extreme bases) shallowly, coarsely, confluently punctate, apically spinose; cerci situated slightly basad to the midpoint of the inferior cornal margin. Terebra subequal in length to abdomen plus cornus, lateral surface of the protruding portion with the basal half strongly wrinkled, apical half (except extreme apex) rather weakly sulcated, smooth; dorso-lateral margins each bearing about 10 spines, the spinose area subequal in length to precornal basin. Ovipositor/Forewing ratio 1.29, sawsheath/ovipositor ratio 2.10 Length about 27-30 mm.

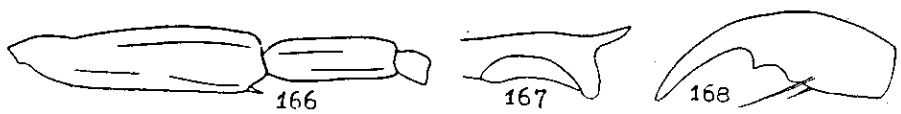
"India", 1 ♀ (Taiwan Agric. Inst.).

Near *S. ermak* (SEM.), but characterised by its reticulation on dorsum of thorax and its peculiarly shaped pronotum and precornal basin.

Sirex sinicus, sp. nov. (Text-figs. 166-168).

♂ — Black, with greenish metallic lustre. Antennae basally more or less reddish brown. Trochanters I-II (more or less), femora, tibiae I-II, tarsi I-II, ultimate and penultimate tarsomeres of legs III, abdominal tergites III-VIII, and sternites II-VIII all reddish brown (legs II usually with some irregular, dull markings). Wings flavo-hyaline, veins and stigmata yellowish brown. Pubescence sooty-brown to black, dense, rather long.

Clypeus with radiating striae and inconspicuous puncturation, anterior margin almost truncated. Frons reticulato-punctate, anteriorly with a median, trapezoidal tumescence, and discally with a deep, transverse furrow, which extends laterally into two faint, transverse depressions posterior to antennal insertions. Temples unevenly, rather finely punctate, the puncturation being coarser and denser along the anterior and orbital margins. Vertex dim, coarsely, rather sparsely punctate; median furrow shallow, wide, rather long; lateral furrows poorly recognisable; anterior area strongly depressed in contrast with the raised ocellar triangle. OOL: POL: ocello-occipital line about 4: 3: 10. Antennae 19 segmented, subequal in length to abdominal tergites I-VII together, pedicels transverse, intermediate segments subcylindrical and weakly sulcated exteriorly; the apical ones weakly attenuated; relative lengths of segments III-V about 9: 7: 6. Pronotum roughly granulated, lateral areas slightly raised, length along the median line subequal to OOL; anterior margin strongly incised, very sharply marked off; anterior lobes sharp, prominent; lateral margins slightly convergent caudad; posterior margin deeply incised; posterior lobes posteriorly scarcely reflexed; lateral slopes strongly depressed, finely granulated. Prescutum granulato-punctate; marginal areas depressed, sparsely punctate; median area finely punctate. Scutellum also granulato-punctate, anteriorly depressed. Mesopleura transversely wrinkled, shallowly punctate; the depressed femoral grooves sparsely punctate. Cells *2r* and *1m* in the fore wing relatively short. Tibial spurs I slightly curved, the superior tooth triangular, apically broadly rounded, subperpendicular to the main axis. Tibiae I much longer than the basitarsi (*ca.* 19: 11). Tibiae and tarsi III very thick, compressed, the exterior surface each with a raised, median line and two weak, submarginal



Text-figs. 166-168. — Left-hand tibia III plus two basal tarsomeres (exterior aspect), tibial spur I and tarsal claw III of *Sirex sinicus* sp. nov. ♂.

furrows; the superior margin of tibia with a notch at a point of about basal fifth. Relative lengths of the tibia, basitarsus and apico-tarsomeres of legs III about 70: 33: 27; their relative maximum breadths about 36: 23: 15. Tarsal claws with the apical tooth excessively long, strongly curved; the preapical short, triangular and perpendicular to the main axis. Abdomen gradually dilated towards the apex; tergites

I-II evenly, finely, rather densely punctate, II relatively sparsely so; III-VIII evenly, shallowly, sparsely punctate and medially more or less depressed; sternites II-VI medially and posteriorly very scatteredly, shallowly punctate; sternite VII shorter than the VI (*ca.* 21: 16), posteriorly deeply and rather coarsely punctate and with a narrow, triangular emargination, of which the depth about 3/8 the length of the sternite; the VIII slightly longer than the VI-VII taken together (*ca.* 7: 6), very scatteredly punctate, densely so at extreme apex, latero-posterior margins weakly arcuate. Length about 23 mm.

Hopei: Peiping, received from the Fan Memorial Institute of Biology (Field No. 5574), 1 ♂ (MAA coll.).

Differs from *S. juvencus* by denser puncturation on vertex and temples, and from *S. nitobei* by darkened abdominal apex. Unfortunately MATSUMURA's (1912: 18) description of the latter species is very incomplete, and there is no authentical specimens at hand, so that the true status of this Chinese form is rather problematical. TAKEUCHI (1938: 191) has, however, pointed out the density of cephalic puncturation of these two species to be different, and it appears better to place this unique male as a distinct species, rather than a subspecies of *nitobei*, until further material or information is available.

Genus SIRICOSOMA FORS., 1934.

Represented by its monotype, *S. tremecoides* FORS., 1934, (♀) from Malay Penin., which is unknown to the writer.

HEDICKE (1938) placed this genus between *Xoanon* and *Xeris*, and near to Tremicinae probably because of its possessing of only one apical spur on tibiae III and of opened anal cell in the hind wing, which characters are in common with *Xeris*. It appears, however, that there are no true affinities with the latter genus, as *Xeris* is a very primitive one and is certainly derived from Oligocenous *Eoxeris*. *Siricosoma* is close to Tremicinae in certain respects especially the site of antennal insertions and of contraction of anal cell in the fore wing, notwithstanding FORSIUS (1934) put forward that it nullified the separating characters of Siricinae and Tremicinae, it is not advisable to erect a separate subfamily for its reception.

Subfamilia TREMICINAE (ASHM.), 1898.

In addition to the characters given by Benson (1943: 33-34), this subfamily can be separated from Siricinae by (a) fore wings in ♀ usually without distinct vein *Sc*; (b) hind wings each with only one series of hamuli (apical); (c) tibiae III always each with only one apical spur; (d) cornus always triangular in dorsal aspect; (e) temples laterally never ridged; (f) mesoprescutum entirely fused up with scutum, never separated from the latter.

Genus ERIOTREMEX BENS., 1943.

Of this newly established genus, BENSON (1943) has tabulated the females of all species, while the male sex is, however, only definitely known from *E. malayanus*.

Following the suppression of *konowi*, and for the placing of the 2 new species described below, the couplets 4-6 of BENSON's synoptic key may be revised as follows:

4. Pronotum with unevenly distributed puncturation, and on either side of dorsal surface with a large, shining, scarcely punctate area; abdominal tergites V-IX dorsally smooth, shining, almost impunctate and but sparsely pubescent; wings uniformly smoky. 5

— Pronotum dim, evenly covered with coarse warts and rugae, and on either side of dorsal surface sometimes even also with rather dense minor punctures; sculpture on abdominal tergites and wing color variable. 6

5. Abdomen with some of the basal tergites whitish marked; sawsheath / ovipositor ratio 2.90-2.92; sawsheath about 3.6 times as long as the cornus. Aru; New Guinea. (= *konowi* LANGE). . . . . *insignis* F. SM., 1859.

— Abdomen without any pale markings. Malacca; N. Borneo. . . . . *purpureipennis* WESTW., 1874.

6. Wings uniformly smoky; apical abdominal tergites dorsally shining, sparsely punctate; sawsheath / ovipositor ratio 3.20 or 3.40. 7

— Wings at least with the hind pair largely hyaline; abdomen dorsally dim all over, with fine punctures and microsculpture; sawsheath / ovipositor ratio 2.70. "E. Indies". . . . . *smithi* CAM., 1876.

7. Precornal basin alutaceous, practically impunctate, scarcely pubescent, the anterio-lateral marginal area not foveated at all; pronotum evenly covered with coarse granulations and micro-reticulation; sawsheath about 3.2 times as long as cornus; antennae only 13 segmented, and only 1.74 times as long as the breadth of head. Philippine Is. (Negros). . . *brevicornis*, sp. nov.

— Precornal basin coarsely punctate, rather densely pubescent, with anterio-lateral marginal area very deeply and abruptly foveated; pronotum evenly covered with coarse granulations, laterally also with minor punctures, but without micro-reticulation at all; sawsheath about 2.4 times as long as cornus; antennae 19-22 segmented, about 2.1 times as long as the breadth of head. Philippine Is. (Negros; Samar). . . . . *foveopygus*, sp. nov.

Eriotremex insignis (F. Sm.) (Text-figs. 169-170).

= *Tremex konowi* Lange, syn. nov.

The following notes may serve as a supplement to Soldanski's (1914) redescription of *konowi*.

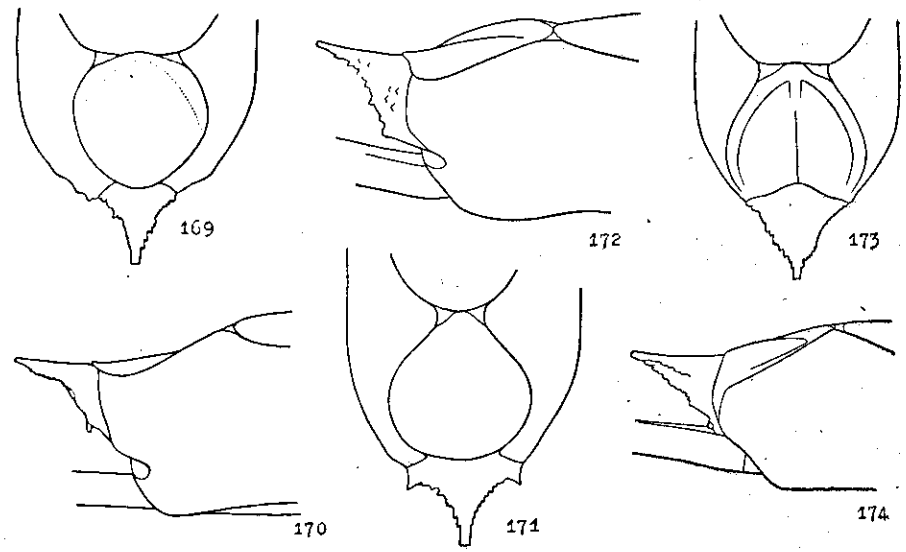
♀ — Metanotum with 2 brown, submedian spots. Wings uniformly smoky, with the costal areas slightly darker, basally with greenish golden iridescence, apically coppery purple. Trochanters I-II apically each with a yellow ring. Abdominal tergites I (anterior slope) with 2 brownish yellow, lateral spots; ventral surface of abdomen more or less yellowish brown.

Clypeus with a faint median carina, the anterior margin almost truncated. Supraclypeal region poorly defined, transversely rectangular, posteriorly deeply emarginated; interspaces between this region and antennal sockets longitudinally depressed. Puncturation on posterior half of frons unevenly distributed and distinctly sparser than that on clypeus. Temples and vertex coarsely, sparsely punctate, the submedian furrows of the latter (excluding posterior 1/3) practically impunctate, broad, slightly depressed. OOL: POL: ocello-occipital line about 13: 21: 43. Antennae 15-17 segmented; about 2.1 times as long as the breadth of head, strongly compressed, broadest at about segment IX; relative lengths of segments I-V about 26: 12: 17: 21: 16; relative maximum breadths of segments III and VI about 8: 15. Pronotum with the length along its median line obout a-half greater than POL; median portion of the anterior margin almost rounded off; posterior lobes posteriorly reflexed and narrowly rounded. Mesonotum medially shining, practically impunctate. Cell *2r* in the fore wing about 8: 19 as long as $3r + ap$ (measured along vein M_{1+2}). Relative lengths of the basitarsus and apico-tarsomeres of legs III about 19: 28. Abdominal tergites I-IV dim; V-VIII shining, with fine, shallow, scattered, setigerous punctures; sternites finely, deeply, scatteredly punctate. Precornal basin slightly longer than broad, confluently granulato-punctate, sparsely covered with short hairs, scarcely convex, with a faint median carina; the anterior and lateral marginal area

weakly depressed, very finely, confluently punctate. Cornus triangular, spino-granulated; the dorso-median line impunctate, very slightly raised. Saw-sheath about 3.6 times as long as the dorso-median line of cornus, lateral surfaces apically smooth; dorso-lateral margins each bearing about 9 spines, the spinose area shorter than the cornus. Ovipositor / Forewing ratio 1.30, saw-sheath / ovipositor ratio 2.92. Length about 22-26 mm., fore wing 16.5-21 mm.

British New Guinea; Moroka, 3500 ft., x. 1895 (Anthony), 2 ♀ ♀ (U. S. Natl. Mus.).

Both Lange (1909) and Soldanski (1914) noted the white markings on tergites IV-VI of *konowi* but these are not observable in the Moroka specimens. Benson (1943) suggested that *konowi* Lange and *purpureipennis* Westw. (both known to him only from literature) might prove to be no more than colour forms of *insignis* F. Sm. As the ovipositor ratios of these New Guinean examples are practically the same as those of the unique type of *insignis* from Aru, the abdominal markings are not always reliable, and Aru is connected with New Guinea by a 100-fathom contour line, it seems to be safe to sink *konowi* as a synonym of *insignis*.



Text-figs. 169-174. — Abdominal apex (♀) in dorsal (169, 171, 173) and lateral (170, 172, 174) aspects of *Eriotremex*-species: *insignis* F. Sm. (169-170), *brevicornis* sp. nov. (171-172), *foveopygus* sp. nov. (173-174).

Eriotremex brevicornis, sp. nov. (Text-figs. 171-172).

♀ — Black, with vivid bluish and purple iridescence; antennae without metallic lustre. Wings uniformly smoky, with purplish iridescence, apically coppery; costal areas slightly darker. Tibiae and basitarsi basally more or less reddish brown. Abdominal tergite II anteriorly with a broad, medially interrupted, yellow band; III-VIII anterio-laterally obscurely brown; the VIII dull reddish brown, with 2 small, yellow, anterio-lateral spots; sternites brown, medially broadly yellow; terebra reddish. Hairs short, sparse, as in typical *Tremex*-species, those on face greyish.

Head coarsely punctate. Clypeus reticulato-punctate, flattened, anteriorly truncated. Frons unevenly, rather sparsely punctate, medially distinctly depressed (slightly so in the supraclypeal region); interspace of either antennal socket and anterior ocellus with a practically impunctate, conspicuous prominence: supraclypeal region represented by 2 poorly defined roundish prominences, which are separated by the median furrow; interspaces of this region and antennal sockets roundly, shallowly dimpled. Temples mesally densely punctate, laterally sparsely so. Vertex densely punctate, with rather distinct median and submedian furrows. OOL: POL: ocello-occipital line about 4: 8: 13. Antennae 13 segmented, exceptionally short, only about 1.74 times as long as the breadth of head; segments I-IV shining and sparsely punctate; segment IV anteriorly with an oblong, flattened, alutaceous patch; flagella thick, only weakly compressed, broadest at about segment VII; relative lengths of segments I-IV about 12: 7: 12: 15; relative maximum breadth of segments III and VI about 7: 12. Pronotum evenly covered with rugoso-granulations, and with radiating micro-reticulations around each granulation; median length about 1.5 times as the POL; median portion of anterior margin sharply edged; posterior lobes posteriorly scarcely reflexed; lateral slopes densely, coarsely punctate. Mesonotum and scutellum micro-reticulated. Metanotum moderately reticulato-punctate. Mesepisterna with moderate-sized punctures, interspaces of most of the punctures about 1.5-2.0 times the punctural diameter; mesepimera and metapleura reticulato-punctate. Cell *2r* in the fore wing about 31: 59 as long as *3r* + *ap* (measured along vein M_{1+2}). Basitarsi III about 19: 12 as long as the apico-tarsomeres. Tarsal claws as in *E. formosanus*. Abdominal tergites I-V dim, microscopically alutaceous; VI similar, but medially rather smooth and shining; VII similar to VI, but medio-posteriorly with a few fine, scattered punctures; VIII with anterior 1/3rd alutaceous, the posterior 2/3rds shining and with very few fine, scattered punctures; IX dorsally shining, impunctate, laterally coarsely, densely punctate; sternites very finely and sparsely punctate, the posterio-lateral corners, however, coarsely and rather densely so. Precornal basin deep, alutaceous, longer than broad (ca. 9: 8), only with very few coarse punctures and long hair near the lateral margin; the median line except for its anterior 1/4th strongly raised. Cornus triangular, spino-granulated, the dorso-median line broadly impunctate, not raised; ventral posterio-lateral corners well produced, and overlapping the cerci. Sawsheath about 3.15 times (in *E. formosanus*, 4 times) as long as the dorso-median line of cornus; lateral surfaces apically smooth; dorso-lateral margins each bearing about 4-5 spines, the spinose area slightly longer than the cornus. Ovipositor / Forewing ratio 1.33, sawsheath / ovipositor ratio 3.20. Length about 17 mm., fore wing 14 mm.

Philippine Is.: Cuernos Mts., Negros (Baker), 1 ♀ (U. S. Natl. Mus.).

This wonderful species can be immediately distinguished from its cogeners by the following combination of characters: Dull pattern, short and thin pubescence, sculpturation on thorax and abdomen, short antennae, long terebra, bitumescent frons, and alutaceous precornal basin. It runs in Benson's key to *E. smithi* CAM., but can be easily separated from the latter by its scarce pubescence on abdominal apex, dull wings and sawsheath / ovipositor ratio. For the inclusion of this species, certain points in BENSON's original description of the genus as well as his generic key of Siricidae should be slightly modified.

Eriotremex foveopygus, sp. nov. (Text-figs. 173-174).

♀ — Black, with bluish and greenish metallic lustre, antennae pitchy black. Wings uniformly smoky, with bluish purple iridescence; apical areas coppery. Trochanters I-II basally each with a yellow ring; tarsal claws reddish brown. Terebra dominantly brownish, with the baso-lateral areas of the sawsheath black. Hairs black, short, those on face greyish, on abdominal apex sooty brown, rather dense but not velvety.

Head coarsely punctate. Clypeus reticulato-punctate, discally depressed, anterio-medially incised. Supraclypeal region also reticulato-punctate, well defined, trapezoid, raised, medially shallowly furrowed, interspaces of this region and antennal sockets flattenedly depressed; remaining areas of frons rather sparsely punctate, medially

broadly, rather deeply furrowed. Temples sparsely punctate; vertex densely so, submedian furrows broad, very shallow, median furrow absent. OOL: POL: ocello-occipital line about 13: 17: 41. Antennae 19-22 segmented, about 2.1 times as long as the breadth of head, segment I-III and basal third of the IV shining, sparsely punctate; flagella strongly compressed, broadest at about segment VI; relative lengths of segments I-IV about 27: 11: 14 18; relative maximum breadth of segments III and VI about 9: 15. Pronotum evenly covered with rugoso-granulations, the lateral areas, however, also with fine punctures; median length about 2 times as long as the POL; median portion of anterior margin rather sharply edged; posterior lobes weakly reflexed; lateral slopes largely reticulato-punctate. Mesonotum, scutellum and metanotum reticulato-punctate. Mesepisterna with moderate-sized punctures, interspaces of most of the punctures about 1-2 times the punctural diameter, those on the discal areas very scattered; mesepimera more coarsely and densely punctate; metapleura densely punctate. Cell *2r* in the fore wing about 97: 168 as long as $3r + ap$ (measured along vein M_{1+2}). Basitarsi III about 67: 45 as long as the apico-tarsomeres. Tarsal claws each with a rather well-developed basal tooth. Abdominal tergites I-V microscopically alutaceous, impunctate; VI shining, with a few fine, scattered punctures, anteriorly alutaceous; VII-VIII similar, but more shining and more coarsely, densely punctate, interspaces of most of the punctures on the VIII about 3-4 times the punctural diameter; IX laterally coarsely, unevenly, rather sparsely punctate; sternites finely, scatteredly punctate, laterally and posteriorly much more coarsely and densely so. Precornal basin shorter than broad (ca. 6: 7), slightly convex; the median line anteriorly broadly, deeply foveated, and posteriorly strongly keeled; the puncturation coarse, uneven, rather sparse, interspaces of most of the punctures about 1.5-2.0 times the punctural diameter; the anterio-lateral marginal area exceedingly deeply and abruptly foveated. Cornus triangular, spino-granulated; the dorsal surface evenly convex, anterior 1/3rd smooth, shining. Sawsheath about 2.4 times as long as the dorso-median line of cornus, lateral surfaces apically coarsely punctate; dorso-lateral margins each bearing about 8 spines, the spinose area a little shorter than the cornus. Ovipositor / Forewing ratio 1.59, sawsheath / ovipositor ratio 3.40. Length about 21-27 mm., fore wing 15-20 mm.

Philippine Is.: Cuernos Mts., Negros (BAKER), 2 ♀ ♀ (including Holotype) (U. S. Natl. Mus.). Island Samar (BAKER), 1 ♀ (U. S. Natl. Mus.).

The name of this species is given in allusion to the unique structure of its precornal basin. In BENSON's key, it also runs to *smithi*, but the wing-color is quite different. The shape of its supraclypeal region, the puncturation on its pronotum and abdomen and the sawsheath ratios are also note worthy. The holotype was determined by S. A. ROHWER as "*Tremex rugicollis* WESTW. ?" while one of the paratypes bears a label "*Tremex* sp. n. or ♀ *rugicollis* uniform dark color separates from WESTWOOD's species.....". But in both cases, the handwriting seems to be not of ROHWER himself, nor ASHMEAD, but somebody else. *T. rugicollis* is the only Siricid so far described from the Philippines, and nothing is known since the publication of its original description. Because of its long, setiferous antennae and two-spurred mid-tibiae as given in WESTWOOD's figure, BENSON interpreted that it does not belong to Tremicinae at all. Even if we accept *rugicollis* as an *Eriotremex*, it is scarsely in any probability in being conspecific with *foveopygus*, since the puncturation as well as the wing color are quite different.

Eriotremex formosanus (MATSUM.). (Text-figs. 217-221).

♀ — Black, with bluish-purple metallic lustre. Ultimate antennal segment reddish brown. Brownish yellow on pronotum, sublateral areas of metanotum (SONAN says: "two spots of first tergite"), anterior bands of abdominal tergites II, III, VII and VIII, lateral spots or flecks of tergites IV-VI, basal two-thirds of tibiae I-II and of basitarsi III, basal halves of tibiae III and of basitarsi I-II. Wings flavohyaline; discal areas pale yellow; apical areas of all wings and basoanal areas of hind wings lightly infuscated; apical two-thirds of cell *1r* and basal third of *2r* rather strongly so; veins reddish brown, apically dull brown; stigmata also dull brown. Terebra reddish brown near both extremities. Pubescence on head, thorax (excluding pronotum) and abdominal tergite VIII and venter of the IX very long, thick, velvety, yellow; that on lateral surfaces of tergite IX and cornus brownish black to black, much shorter; precornal basin with very thick, moderately long, brown-tipped black pubescence.

Head with coarse puncturation. Clypeus reticulato-punctate, medially broadly depressed; anterior margin medially deeply incised. Frons moderately densely punctate, discally with a small roundish, impunctate depression; supraclypeal region reticulato-punctate. Temples rather sparsely and unevenly punctate. Vertex (except anterio-median area) reticulato-punctate; median line weakly furrowed, the

submedian furrows scarcely recognisable. OOL: POL: ocello-occipital line about 10: 16: 49. Antennae 20 segmented, strongly compressed, broadest at segment VIII, which is distinctly broader than long; ultimate segment subconical, longer than thick; relative lengths of segments I-V about 24: 7: 15: 18: 12 (SONAN says: "third joint as long as the fourth"); relative maximum breadths of segments III and VI about 9: 13. Pronotum granulated, length along the median line about a-half longer than POL; median portion of anterior margin rather abruptly marked-off; anterior lobes not very prominent; posterior lobes posteriorly reflexed; lateral slopes reticulato-punctate. Mesonotum and scutellum granulato-punctate. Metanotum rather shallowly reticulato-punctate. Mesepisterna coarsely, densely punctate, with interspaces of most of the punctures subequal to or a little smaller than the punctural diameter; puncturation on mesepimera slightly finer and denser. Cell *2r* in the fore wing about a half as long as *3r* + *ap* (*ca.* 85: 178, measured along vein M_{1+2}). Tibiae I longer than the basitarsi (*ca.* 41: 36). Relative lengths of the basitarsus and apico-tarsomeres of legs III about 25: 18. Tarsal claws each with a weak but distinct basal lobe. Abdominal tergites I-V microscopically alutaceous (the V posteriorly with a few scattered punctures), and posteriorly weakly emarginated; the VI posteriorly sparsely and relatively finely punctate; the VII coarsely, densely so; the VIII and lateral surfaces of the IX reticulato-punctate. Sternites coarsely, deeply and rather densely punctate. Precornal basin slightly longer than broad, convex, granulato-punctate; the anterior and lateral marginal areas very deep. Cornus triangular, spino-granulated. Terebra with the protruding portion laterally rugoso-wrinkled, apical fourth smooth, dorso-lateral margins each bearing about 13 spines, the spinose area slightly longer than the cornus. Ovipositor / Forewing ratio 1.19, sawsheath / ovipositor ratio 2.66. Length about 25 mm., fore wing 19 mm.

Tonkin: Mt. Bavi, 800-1000 m., vii. 1941 (A. DE COOMAN), 1 ♀ (Mus. Heude).

The sawsheath / ovipositor ratio as given by BENSON (1943) is 2.80. SONAN's (1938) measurement of the fore wing from the holotype as 12 mm. is beyond doubt a misprint for 21 mm. The relative lengths of tarsomeres of legs III in the illustration of the latter author are also inaccurate.

Genus TREMEX JUR., 1807.

Key to species of the Old World (16).

♂ ♂

1. Legs I uniformly black, at most with pale markings at extreme bases of tibiae or along the exterior margin of dorsal surface of basitarsi. 2
— Legs I dominantly or uniformly whitish, brown or red. 9
2. Legs I (excluding tarsal claws) uniformly black. 3
— Legs I with the tibiae and basitarsi slightly pale marked, at least paler at the extreme base of tibia, not uniformly black. 7
3. Vertex shining; all abdominal tergites densely punctate; tibiae and tarsi III compressed; wings basally yellowish, apical half brownish. 27 mm. . . . . *pandora* WESTW., 1874.
— Vertex more or less dim and punctate; abdominal tergites (except the I) almost impunctate, at most but sparsely punctate. 4
4. Vertex not densely punctate, except along the median line; median vertical furrow distinct and deep; abdominal tergites practically impunctate or shallowly, rather coarsely punctate, not granulated. 5
— Vertex coarsely and rather densely punctate, and with its median furrow only weakly developed on the posterior area; abdominal tergites sparsely, finely granulato-punctate; cell *2r* in the fore wing short. 18-22 mm. . . . . *satanas* SEM., 1921.
5. Abdominal tergites (except the I) practically impunctate; wings entirely or apically smoky brownish; antennae apically usually brownish, sometimes whitish. 6
— Abdominal tergites shallowly, rather coarsely punctate; wings yellowish brown, (cell *2r* in the fore wing yellow), basally yellowish hyaline, apically very weakly stained with brownish; antennae entirely black. 17-27 mm. . . . . *niger* SON. 1938.

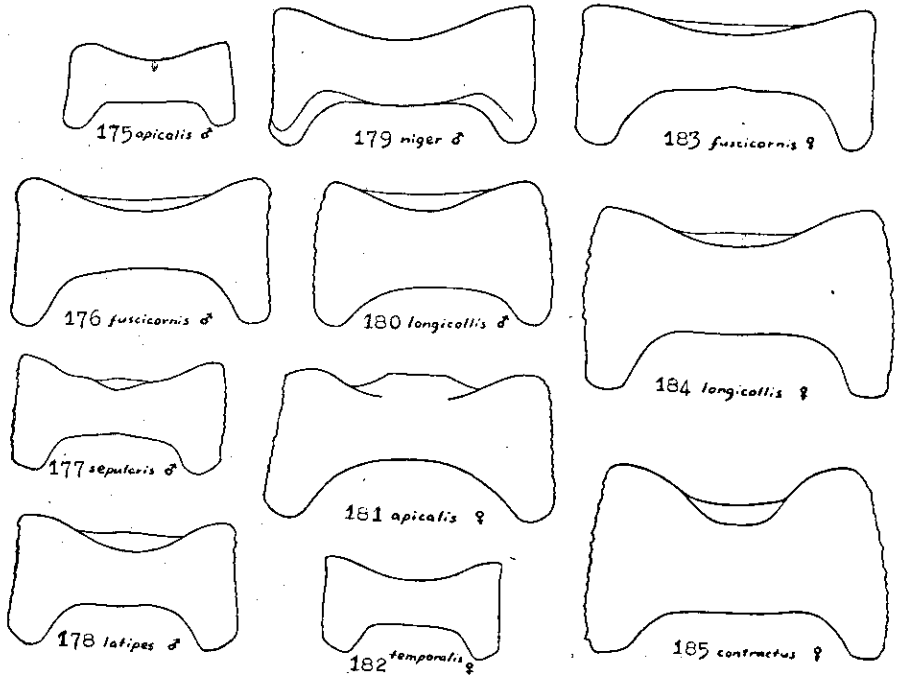
16) The males of *T. atratus* MOCS., *chujoi* SON., *contractus*, sp. nov., *flavicollis* CAM., *insularis* F. SM., *jakovlevi* SEM., *temporalis*, sp. nov. *violaceus*, sp. nov. and *viridiceps* CAM. and the *females* of *latipes*, sp. nov. *niger* SON., *pandora* WESTW., *rugicollis* WESTW., *satanas* SEM., and *sepulcris*, *simplicissimus*, sp. nov. are all still undescribed or not yet definitely associated with the opposite sex.

T. flavicollis CAM., ♀ and *viridiceps* CAM., ♂ ♀ perhaps should be assigned to the preceding genus. The status of *T. rugicollis* WESTW., ♀, is very doubtful. *T. hyalinatus* MOCS., ♀ (Ethiopian) is not a member of this genus and is not included in the key.

T. columba (LINN.) is the only species known to the New World, for its distinguishing characters, see under *T. fuscicornis*.

6. Wings entirely dark brown; abdominal tergites with pale, lateral markings; preapical tooth of the tarsal claw rudimentary, much shorter than its basal breadth. (Hungary). 15 mm. . . . . *alchymista* (Mocs.), 1886.

— Wings only apically dark brown; abdominal tergites entirely black; preapical tooth of the tarsal claw well developed, longer than its basal breadth. (C. and S. Europe, S. Russia, Crimea, (?) Siberia). 18-21 mm. . . . . *magus* (Fabr.), 1787.



Text-figs. 175-185. — Pronotum of *Tremex*-species.

7. Basitarsi I uniformly black; vertex with its anterio-lateral areas very sparsely punctate, the posterio-lateral areas not markedly swollen-up; basitarsi III longer, at least 46 × 14. 8

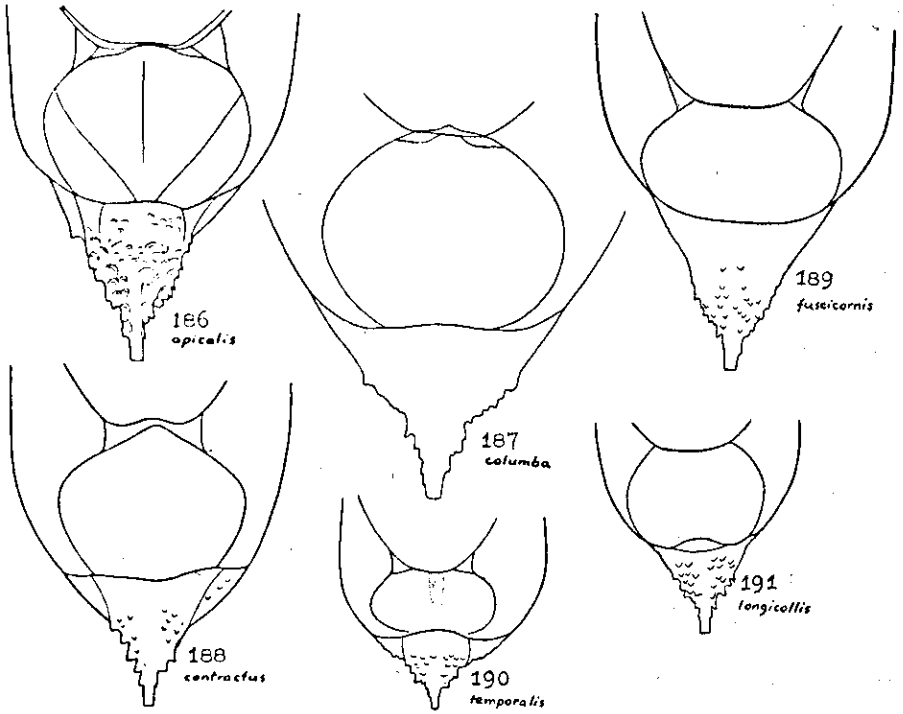
— Basitarsi I with their dorsal surfaces yellow along the exterior margin; vertex evenly, densely punctate, the anterio-lateral area not distinctly more sparsely so, posterio-lateral areas markedly swollen-up; basitarsi III excessively short, about 35 × 13; cell *2r* in the fore wing long. 16 mm. . . . . *apicalis* Matsum., 1912.

8. Cell *2r* in the fore wing short, its length along vein M_{1+2} distinctly shorter than *3r* + *ap* (*ca.* 10: 16); abdominal tergite II with two lateral yellow spots; tibiae and basitarsi III not strongly dilated, length of the latter *vs.* its breadth about 43: 10. 23 mm. . . . . *sepulcris*, sp. nov.

— Cell *2r* in the fore wing long, its length along vein $M_{1\ 2}$ but slightly shorter than *3r* + *ap* (*ca.* 10: 13); all abdominal tergites entirely bluish black, without any pale markings; tibiae and basitarsi III very strongly dilated, length of the latter *vs.* its breadth about 46: 14. 19-23 mm. . . . . *latipes*, sp. nov.

9. Antennae 20 segmented, long, setaceous; tibiae II apically each with 2 spurs; abdomen black, with the tergites II-VI laterally yellow-flecked; wings brown, with steel-bluish lustre. 17 mm. . . . . *rugicollis* Westw., 1874.

— Antennae 12-15 segmented, short, not setaceous; tibiae II apically each with only 1 spur; abdomen and wings otherwise colored. 10



Text-figs. 186-191. — Abdominal apex of ♀ *Tremex*-species in dorsal aspect.

10. Abdominal segments (except the I and hypopygium) brownish yellow, only each anteriorly with a narrow, black band; temples bright yellowish brown, distinctly paler than the face. 25 mm. . . . . *longicollis* Knw., 1896.

— Abdomen uniformly black; temples also black, at most dull reddish brown, never distinctly paler than the face. 11

11. Tibiae and tarsi II uniformly yellowish brown, similarly colored as the I; fore wings richly stained with yellowish, darkest in cell *2r*, veins reddish brown; temples densely, coarsely and rather evenly punctate; frons discally scarcely tumescent. 12

— Tibiae and tarsi II (excluding the ultimate tarsomere and claw) black, distinctly duller than the I; fore wings scarcely stained with yellowish, darkest in the apical third, veins (except costa) brownish black; temples sparsely, rather finely and very unevenly punctate; frons discally distinctly tumescent. 18 mm. . . . . *simplicissimus*, sp. nov.

12. Mesopleura densely punctate; vertex without, or at most with a poorly developed, median furrow. 17-27 mm. . . . . *fuscicornis* (Fabr.), 1787.

— Mesopleura not densely punctate, with punctural interspaces polished, broader than the punctural diameter; vertex posteriorly with a distinct, median furrow. 18 mm. . . . . *simulacrum* Sem., 1921.

♀ ♀

1. Antennae with their basal halves black, apical halves whitish or yellow, sharply contrasted. 2

— Antennae usually uniformly reddish brown to brownish black, and with the extreme base and apex usually slightly paler, the apical half never sharply contrastedly colored to the basal half. 5

2. Tibiae uniformly yellow, tarsi uniformly brownish yellow; wings almost clear hyaline, costally brownish; abdomen black, with transverse yellow band on each tergite, except the last one which is laterally yellow. 17 mm. . . . . *insularis* F. Sm., 1853.

— Tibiae whitish yellow, apically more or less darkened; tarsi usually not uniformly colored. 3

3. Wings entirely dark brown; abdomen black, only the intermediate sternites each with a white, median fleck; terebra distinctly shorter than the abdomen proper plus cornus; preapical tooth of the tarsal claw rudimentary, much shorter than its basal breadth. (Hungary). 20 mm. . . . . *alchymista* (Mocs.), 1886.

— Wings only apically dark brown, basally clear hyaline or nearly so; abdominal tergites and sternites richly white-marked; terebra as long as abdomen proper plus cornus; preapical tooth of the tarsal claw well developed, distinctly longer than its basal breadth. 4

4. Pronotum with its anterior margin in dorsal aspect only weakly excised; some of the abdominal tergites II-VIII often without lateral white flecks, those on the II, III and VIII usually larger and observable in dorsal aspect; terebra sub-basally more or less broadly brownish yellow. (C. and S. Europe, S. Russia, Crimea, (?) Siberia). 15-35 mm. . . . *magus* (Fabr.), 1787.

— Pronotum with its anterior margin in dorsal aspect rather deeply excised; abdominal tergites II-III almost entirely yellowish white, only medially interrupted by a narrow, black band, the IV with a large lateral fleck on either side; the V-VII all with lateral flecks, the VIII also with a large lateral one on either side, observable in dorsal aspect; terebra dull brown at base, gradually turning black toward the apex, without sub-basal brownish yellow band. 21-34 mm. . . . . *apicalis* Matsum., 1912.

5. Tibiae and basitarsi III uniformly colored. 6

— Tibiae and basitarsi III not uniformly colored. 7

6. Pronotum (excluding the large, triangular, yellow mark on either side) and scutellum greenish black; abdominal tergite I pale yellow, only narrowly black in the middle; the following ones greenish black, the II-IV each with a broad, pale yellow band on the side; wings hyaline, with the radial cells and apical margin smoky; head closely, strongly punctate; femora all black; tibiae and tarsi dark testaceous, the III more dark-colored than the I-II. 11 mm. . . . . *viridiceps* Cam., 1908.

— Pronotum and scutellum yellow; abdominal tergites black, the II and broad, anterior bands on the III-VIII yellow; wings flavo-hyaline, radial cells distinctly infuscated; clypeus and frons (?) "impunctate" and opaque; femora (except the II), tibiae and tarsi all reddish. 25 mm. . . . . *chujoi* Son., 1938 (? = *niger* Son., 1938.

7. Tibiae and basitarsi III basally distinctly paler, and with the superior and inferior portions concolor. 8

— Tibiae and basitarsi III basally and apically concolor, the superior portions distinctly duller than the inferior; pronotum as long (measured along its median line) as the ocello-occipital line. . . . . *longicollis* Knw., 1896.

8. Anterior portion of temples (cheeks) and scutellum smooth and polished; frons discally with a short, blunt, triangular tooth; abdominal tergites black, with only the anterior bands of the II-III and of V yellow; antennae 18 segmented, apically distinctly attenuated. 27 mm. . *flavicollis* Cam., 1899.

— Anterior portion of temples and scutellum more or less punctate or granulated; clypeus and frons reticulato-punctate and opaque, the latter discally at most weakly convex, never toothed; abdominal tergites paler, at least with the II-VII yellow banded or flecked. 9

9. Wings blackish brown, more or less with violet iridescence. 10

— Wings paler, at most apically or costally stained with brownish, and without any violet iridescence. 11

10. Temples each with a short, reddish yellow band; costa and stigmata reddish yellow; abdominal tergite IX with a reddish brown line at either side; upper (posterior) portion of head sparsely punctate. 26 mm. . . . . *atratus* Mocs., 1904.

— Temples, costa, stigmata and tergite IX entirely black; upper portion of head densely punctate. 22 mm. . . . . *violaceus*, sp. nov.

11. Pronotum as long (measured along its median line) as the ocello-occipital line; fore wings costally broadly darkened, in contrast to the clear hyaline cell *1m*; temples (at mid-point) only as broad as the eye; abdominal tergite VIII excessively long; abdominal tergites II-III almost uniformly yellow. 25 mm. . . . . *contractus*, sp. nov.

— Pronotum much shorter than the ocello-occipital line; fore wings costally never broadly darkened or colored contrastly to the cell *1m*; temples about a half broader than the eye; abdominal tergite VIII of normal length. . 12

12, Head and thorax (excluding temples and lateral streaks on scutellum) entirely black; vertex evenly reticulato-punctate; pronotnm (measured along the median line) about two-thirds of the ocello-occipital line. 15 mm. . . . . *temporalis*, sp. nov.

— Head and thorax much paler, temples and pronotum entirely yellowish brown; vertex unevenly punctate, the anterio-lateral areas always distinctly more sparsely so than other areas; pronotum at most about a-half as long as the ocello-occipital line. 13

13. Vertex posteriorly with a distinct, deep, median furrow; mesopleura not densely punctate, interspaces of most of the punctures much greater than the punctural diameter; ground color of body reddish yellow. 17-30 mm. . . . . *simulacrum* SEM., 1921.

— Vertex entirely without, or only with indistinct, median furrow; mesopleura, especially inferiorly, very densely punctate, interspaces of most of the punctures (even those on the superior portion) not greater than the punctural diameter. . . . . 14.

14. Vertex submedially each with a rather deep, smooth furrow starting from the posterior ocellus; antennal segment IV distinctly longer than the III or V, and apically only slightly dilated. 31 mm. . . . *jakovlevi* SEM., 1921.

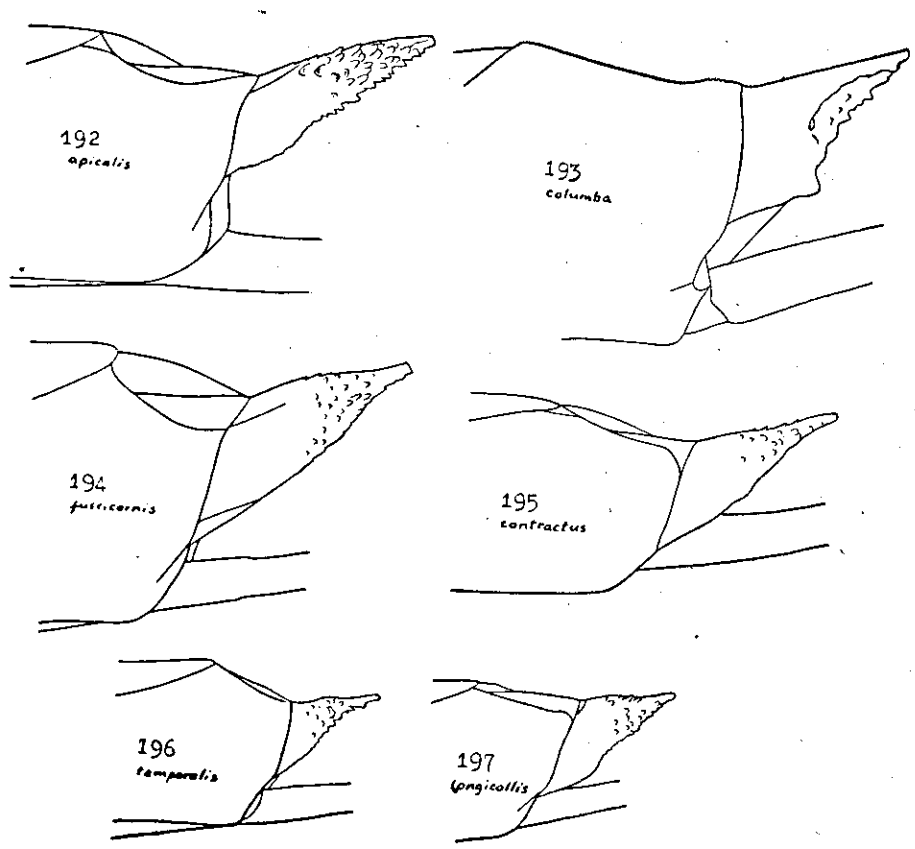
— Vertex almost entirely densely punctate, without smooth, submedian band; antennal segment IV shorter, and apically strongly dilated. 15-40 mm. . . . . *fuscicornis* (FABR.), 1787.

Tremex apicalis MATSUM.

(Text-figs. 175, 181, 186, 192, 198, 205).

♂ — Black, with bluish metallic lustre, thorax with greenish lustre. Wings hyaline, slightly stained with yellowish, apical halves slightly enfumed, darkest in cells *1r*, *2r* and *2cu* in the fore wing, with a little bronzy iridescence; veins and stigmata dull brown. Tibiae I (both ends), basitarsi I (exterior margins), tarsal claws and median line of abdominal sternites brown. Pubescence short, black and rather sparse.

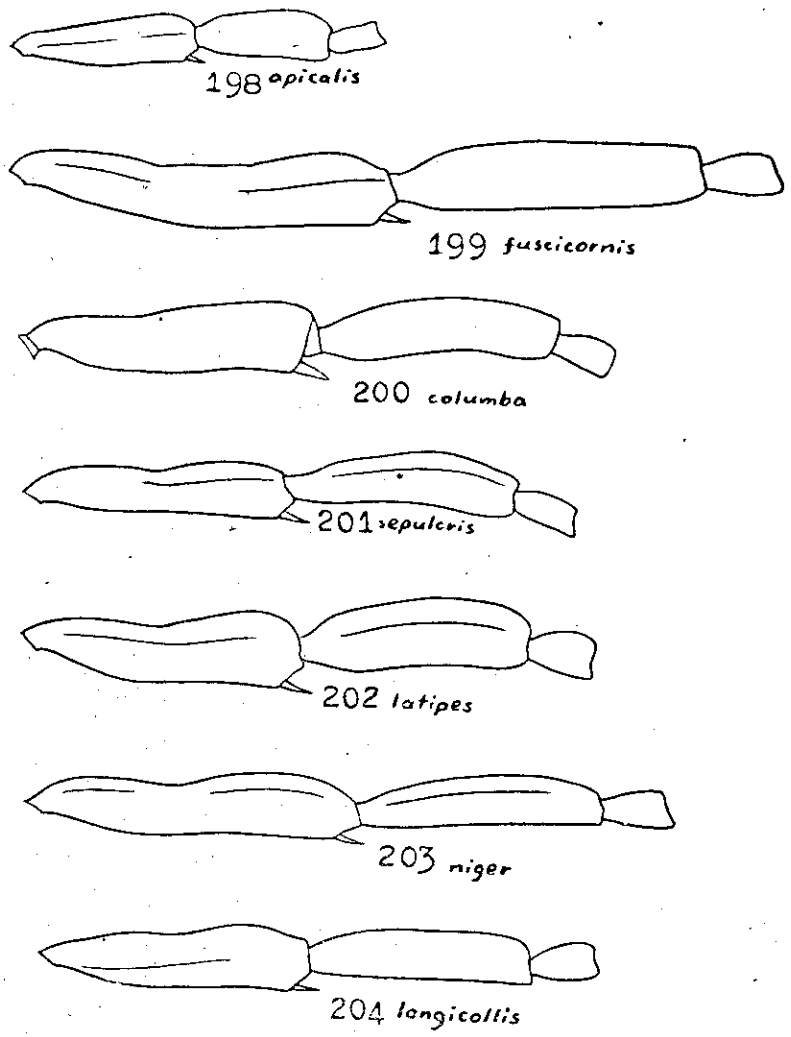
Clypeus reticulato-punctate, anteriorly very shallowly emarginated. Frons reticulato-punctate, discally with a deep, roundish pit. Temples with sparse, unevenly distributed, moderate-sized puncturation; extreme anterior area granulato-punctate. Vertex densely punctate, anteriorly weakly depressed, posterio-laterally raised and rather shining; median furrow short, broad, shallow. OOL: POL: ocello-occipital line about 1: 1: 3. Antennae 15 segmented, compressed, slightly longer than head and thorax together, apical segments very slightly attenuated; relative lengths of segments I-V about 9: 3: 6: 8:



Text-figs. 192-197. — Abdominal apex of ♀ *Tremex*-species in lateral aspect.

6; relative thickness of segments III and VI about 5: 6. Pronotum entirely roughly granulated; length along the median line slightly smaller than ocello-occipital line (*ca.* 5: 6); median portion of anterior margin depressed, rounded off; posterior lobes short; lateral slopes finely granulated. Prescutum and scutellum finely granulated, marginal areas smooth, sparsely punctate. Mesepisterna with evenly distributed, moderate-sized, rather dense puncturation, interspaces of most of the punctures subequal to punctural diameter; mesepimera reticulato-punctate. Cell *2r* in the fore wing much shorter than $3r + ap$ (*ca.* 38: 49, measured along vein $M_{1\,2}$). Tibiae I strongly dilated, slightly longer and broader than the basitarsi (*ca.* 21×7: 20×8). Exterior surfaces of basitarsi I-II broadly depressed along the median line. Tarsal claws with their preapical teeth very short, fine, and perpendicular to the main axis; the apical strongly curved. Abdominal

tergites practically impunctate, the VII-VIII shining; sternites with coarse, unevenly distributed punctures, anteriorly each (except the VIII) with a very sparsely and finely punctate, triangular area; posterior margin of sternite VI entire, not incised; VII posteriorly with a very shallow, narow emargination; posterio-lateral margins of the VIII slightly incised; relative lengths of sternites VI-VIII and depth of the emargination on sternite VII about 18: 14: 38: 2. Length about 16 mm.



Text-figs. 198-204. — Left-hand tibia III plus two basal tarsomeres (exterior aspect) of ♂ *Tremex*-species in exterior aspect.

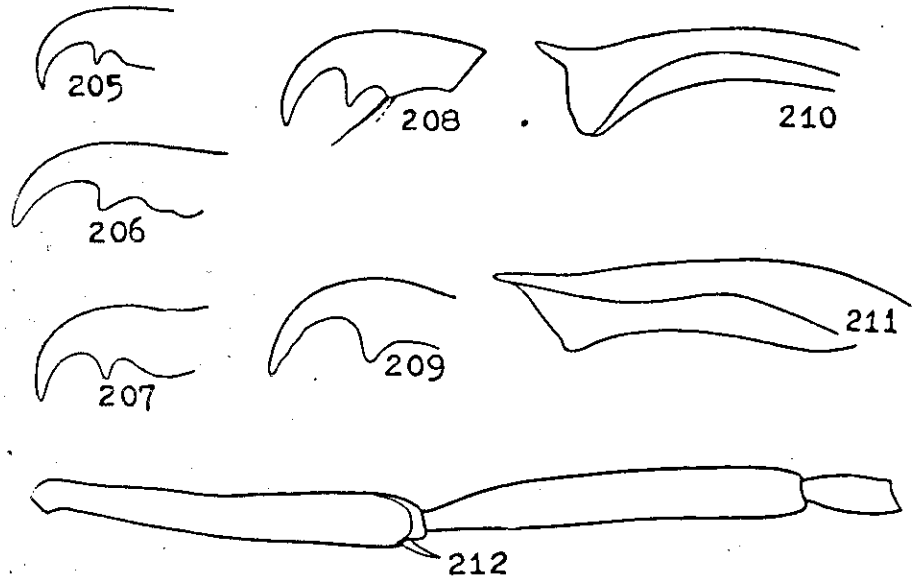
♀ — Black, with greenish metallic lustre. Whitish yellow on apical halves of antennae, basal two thirds of tibiae I-II, basal halves of tibiae III, and all tarsi. Brownish yellow on tarsal claws, abdominal tergites II-III (except the broad, median and narrow, posterior, black band), lateral spots of tergites IV-VIII, abdominal sternites I-VI (except baso-lateral, black spots). Apical thirds of tibiae I brown to black. Intermediate tarsomeres sometimes brown. Wings flavo-hyaline, darkest in cells *bm*, *1r* and *2r* in the fore wing; apical margins infuscated; veins brown, stigmata dull brown; costal margin of the fore wing with a short longitudinal, yellow band distal to the stigma. Terebra with its basal third and extreme apex reddish brown. Pubescence short, rather sparse and black; that on face, vertex and dorsum of thorax dull brown.

Clypeus reticulato-punctate, anterior margin medially almost truncated. Frons roughly reticulato-punctate, discally with a broad, oval depression. Temples with scattered, rather coarse punctures, anterior margin reticulato-punctate. Vertex coarsely punctate, the median line anteriorly weakly carinated, posteriorly deeply, broadly furrowed; median area densely punctate; lateral areas scatteredly so, broadly depressed. OOL: POL: ocello-occipital line about 13: 15: 44. Antennae 16 segmented, weakly compressed, subequal in length to head and thorax together, relative lengths of segments I-V about 23: 8: 17: 18: 15; relative thickness of segments III and VI about 5: 6. Pronotum granulated; length along the median line subequal to POL; median portion of anterior margin depressed and rounded-off; lateral slopes reticulato-punctate. Prescutum granulated, lateral marginal areas rather sparsely and unevenly punctate, slightly depressed. Scutellum granulated. Mesepisterna densely, evenly punctate, interspaces of most of the punctures smaller than the punctural diameter; mesepimera more coarsely and more sparsely punctate. Cell *2r* in the fore wing distinctly shorter than $3r + ap$ (*ca.* 56: 78, measured along vein M_{1+2}). Tibiae I slightly longer than the basitarsi (*ca.* 38: 35). Abdominal tergites II-VI practically impunctate, posteriorly with a few scattered, poorly recognisable punctures; VII-VIII with more conspicuous puncturation; the VIII with a faint keel. Precornal basin slightly broader than long, with a faint, median carina or fovea, latero-posterior margins granulated. Cornus long, triangular, dorsal surface basally dim, depressed, finely granulated, apically shining, spinose; lateral surfaces basally finely granulated, each with a transverse, smooth band near the middle, apical halves spinose. Terebra subequal in length to abdomen proper plus cornus; lateral surfaces of the protruding portion basally rugoso-

wrinkled, apically striato-wrinkled; dorso-lateral margins each with about 6 spines, the spinose areas about two-thirds as long as the cornus. Ovipositor / Forewing ratio 1.28, sawsheath / ovipositor ratio 2.13. Length about 21-34 mm.

Szechwan: Chengtu, 19. v. 1939, 2 ♀ ♀ (Nanking Univ.).

Chekiang: W. Tien-Mu-Shan, 10. v. 1937 (O. PIEL), 3 ♀ ♀ (Mus. Heude), Yao-Wen, Hangchow, infesting a living tree, *Populus* sp. (? *pyramidalis* BORKH.) (Salicaceae), 2. v. 1934 (T. MAA), 1 ♀.



Text-figs. 205-212. — Tarsal claw III (205-209), tarsal spur I (210-211) and left-hand tibia III plus two basal tarsomeres (exterior aspect) (212) of *Tremex*-species: *apicalis* **Matsum.** (205, ♂), *fuscicornis* **Fabr.** (206, ♂; 208, 210, ♀), *longicollis* **Knw.** (207, ♂; 209, 211, 212, ♀).

Kiangsu: Zikawei, Shanghai, 23. v. 1918 (O. PIEL), 1 ♀ (Mus. Heude). Shanghai, reared (O. PIEL), 3 ♂♂, 1 ♀ (1 ♂ det. K. TAKEUCHI) (Mus. Heude).

Hopei: Eastern Tomb, received from Fan Mem. Inst. Biol. (Field No. 4645), 1 ♀.

Tremex violaceus, sp. nov. (Text-figs. 222-227).

♀ — Black, with greenish metallic lustre. Wings brownish black, with vivid violaceous iridescence, dullest along the costal margin of fore wings, and palest on discal areas of hind wings; veins and stigmata black. Tibiae dull yellow, apical halves of the I-II and apical third of the III brownish black; extreme bases of all basitarsi slightly paler. Abdominal tergites II and VIII each with a broad, golden, anterior band, the III-VII laterally yellow-flecked; cornus reddish brown, sternites marked with dirty yellow; terebra with the protruding portion reddish brown at both extremities. Pubescence thin, rather long, brownish black; that on face greyish.

Head coarsely punctate. Face reticulato-punctate and medially weakly depressed; anterior clypeal margin very broadly rounded, discal frontal area dimpled. Temples rather sparsely and unevenly bipunctate. Vertex reticulato-punctate except the raised areas laterad to the median furrow, where it is relatively more sparsely punctate; median furrow short, broad and shallow; the submedian ones irrecognisable except immediately posterior to tentorial pits. OOL: POL: ocello-occipital line about 9: 15: 36. Antennae 14 segmented, moderately compressed, and with a total length almost twice the breadth of head; ultimate segment subconical, longer than thick; the penultimate slightly thicker than long; relative lengths of segments III-V about 15: 21: 15; relative maximum thickness of segments III and VI about 7: 10. Pronotum granulated, the median area more finely so; length along the median line much greater than POL (*ca.* 5: 3); median portion of anterior margin evenly rounded off; anterior lobes prominent; posterior lobes posteriorly reflexed; lateral slopes reticulato-punctate and marginally recurved. Metanotum reticulato-punctate. Mesepisterna coarsely, unevenly, rather sparsely punctate, with interspaces of most of the punctures greater than punctural diameter. Mesepimera with a little finer, reticulated punctures. Cell *2r* in the fore wing distinctly shorter than *3r* + *ap* (*ca.* 17: 24, measured along vein M_{1+2}). Tibiae I about 15/13 as long as the basitarsi. Relative lengths of the basitarsus and apico-tarsomeres of legs III about 19: 15. Tarsal claws each with a well developed minor tooth near the middle and a prominent basal lobe. Abdominal tergites I-VII microscopically alutaceous, the VIII anteriorly with very fine and sparse puncturation, which is gradually becoming coarser and denser towards the apex; the IX dorsally alutaceous, laterally very coarsely reticulato-punctate. Precornal basin transverse, deep, flattened, very finely and densely punctate, discal

area slightly convex. Cornus with dorsum smooth and shining, anteriorly with a transverse, elliptical, alutaceous depression, posterio-laterally spinose and coarsely punctate; lateral surfaces alutaceous, spinose. Sternites finely and sparsely punctate. Terebra with the protruding portion laterally rugoso-wrinkled, apically sparsely punctate, dorso-lateral margins each bearing about 8 spines, the spinose area scarcely longer than the cornus. Ovipositor / Forewing ratio 1.23, sawsheath / ovipositor ratio 2.60. Length about 22 mm., fore wing 16 mm.

Fukien: Ta-Chu-Lan, Shaowu Hsien, *ca.* 1500 m., 26. vii. 1948 (JOSEPH FU), 1 ♀ (MAA coll.).

Very near *T. alchymista* MOCS. of Hungary and *atratus* MOCS. of Montes Mauson, Tonkin. Besides the characters given in the synoptic key, this new species can be distinguished from the latter by the antennae beyond segment III is not strongly compressed, the scape is not ventrally reddish and the cornus is dorsally smooth.

Tremex fuscicornis (FABR.)

(Text-figs. 176, 183, 189, 194, 199, 206, 208, 210, 213).

♂ — Black, with a little greenish metallic lustre. Three basal segments of antennae sometimes reddish brown. Wings flavo-hyaline, darkest in cells *1r* and *2r* in the fore-wing, apical margins very weakly stained with brownish; veins reddish brown, stigmata duller. Extreme apices of femora I-II and ventral surfaces of the I more or less brownish. Tibiae I-II, tarsi I-II and the three apical tarsomeres of legs III all yellowish brown. Pubescence on face, vertex, pronotum, mesonotum, tibiae and tarsi II-III brown, long, rather dense; that on the remaining portions of the body black, rather sparse and short.

Clypeus finely granulato-punctate, anterior margin (median third) shallowly incised. Frons reticulato-punctate, median fovea scarcely recognisable. Temples coarsely and rather densely punctate, extremely anteriorly reticulato-punctate. Vertex entirely reticulato-punctate; the median furrow short, shallow, broad. OOL: POL: ocello-occipital line about 4: 9: 20. Antennae 12-14 segmented, thick, short, weakly compressed, subequal in length to thorax; apical segments not distinctly attenuated; relative lengths of segments I-V about 24: 6: 19: 19: 16; relative thickness of segments III and VI about 7: 10. Pronotum granulated, lateral areas slightly more roughly so; length along the median line greater than POL (*ca.* 11: 9); median portion of

anterior margin poorly marked-off; lateral slopes granulato-punctate. Prescutum and scutellum finely granulated; anterior margins of scutum and scutellum depressed, impunctate, polished. Mesopleura with dense, moderate-sized puncturation, interspaces of most of the punctures smaller than the punctural diameter, but those on discal areas of mesepisterna slightly greater than the diameter. Cell *2r* in the fore wing slightly shorter than *3r* + *ap* (*ca.* 59: 72, measured along vein M_{1+2}). Tibiae I dilated, slightly longer and distinctly broader than the basitarsi (*ca.* 11×3: 10×2). Tarsal claws normal. Abdominal tergites with evenly distributed, moderate-sized, rather dense, shallow punctures; sternites coarsely, densely punctate; the I-VI medially carinated, V-VI posteriorly shallowly emarginated, the VII deeply so; the VIII short, apex not very sharply pointed, posterio-lateral margins slightly incised; relative lengths of the sternites VI-VIII and depth of the emargination on sternite VII about 23: 20: 42: 7. Length about 11-27 mm.

♀ — Head and pronotum reddish brown; mandibles black; posterior band of frons (across the ocellar triangle), and anterior and submedian (anterior halves) bands of vertex black, sometimes clypeus, paragenae and frons entirely black; antennae (except 4 or 5 basal and the terminal segments), especially on the ventral surface, dark brown to black. Prescutum black, occasionally with two submendian brown bands; scutum usually reddish brown. Scutellum, thoracic pleura and sterna black, with greenish metallic lustre; metepisterna sometimes each with a brown patch near the superior margin. Wings flavo-hyaline, darkest at cells *1r* and *2r* in the fore wing, apical margins slightly stained with brownish; hind wings, especially basal areas and anal lobes, infuscated; veins and stigmata yellowish brown. Legs I reddish brown; coxae, trochanters and femora more or less marked with black; tibiae basally yellowish brown. Coxae, trochanters and femora II-III greenish black (femora II ventrally reddish brown); tibiae II-III and basitarsi III yellowish at the basal half and brown to black at the apical half, remaining tarsomeres including claws reddish brown. Abdominal tergite I black, baso-laterally sometimes each side with a brown spot; tergite II-VIII golden yellow, III-VIII each with a very broad, apical, black band (the III sometimes basally broadly golden yellow); the IX including precornal basin reddish brown, in lateral aspect, basally broadly greenish black, apical margin dull brown to black; cornus yellowish brown, apically duller; sternites yellow, laterally black; terebra and adjacent sclerites reddish brown. Pubescence on head dirty yellow to brown, long, very dense.

Clypeus reticulato-punctate, medially broadly depressed; anterior margin truncated or weakly arcuate. Frons also reticulato-punctate; the medio-anterior area weakly raised; discally with a narrow, shallow pit. Temples coarsely, evenly and densely punctate. Vertex also coarsely, evenly and densely punctate; the median furrow short, usually shallow and indistinct; anterior margin depressed. OOL: POL: ocello-occipital line about 5: 9: 21. Antennae 12-14 (usually 13 or 14) segmented, weakly compressed; relative lengths of segments I-V about 24: 6: 16: 20: 15; relative thickness of segments III and VI about 4: 5. Pronotum granulated; length along the median line greater than POL (*ca.* 4: 3); median portion of anterior margin poorly marked-off from the anterior slope; lateral slopes reticulato-punctate. Prescutum and scutellum finely granulated. Mesepisterna densely, evenly and rather coarsely punctate; interspaces of most of the punctures usually destinctly smaller than the punctural diameter; mesepimera relatively more coarsely and sparsely so. Cell *2r* in the fore wing slightly shorter than *3r* + *ap* (*ca.* 59: 70, measured along vein M_{1+2}). Tibiae spurs I rather strongly S-shapedly curved. Tibiae I subequal in length to the basitarsi. Abdominal tergites II-VII impunctate; the VIII with a few poorly defined punctures. Precornal basin transverse, smooth, usually medially carinated; posterior margin finely granulated. Cornus slightly longer than the basin; the dorsal surface smooth, extremely apically spinose; lateral surfaces basally sparsely and very finely granulated. Terebra usually slightly shorter than abdomen proper plus cornus; lateral surfaces of the protruding portion transversely wrinkled, the apical third finely punctate; dorso-lateral margins each with about 12-15 spines, the spinose area slightly shorter than the cornus. Ovipositor / Forewing ratio 1.21, sawsheath / ovipositor ratio 2.36. Length about 16-40 mm.

Chekiang: Chuki Hsien, on pear-tree, 28. x. 1925 (T. Maa), 2 ♀♀. Hangchow, 10. xi. 1921, 1 ♀; v. 1934 (T. Maa), 1 ♀. Chusan (C. Prurot), 1 ♀ (Mus. Heude).

Fukien: Shui-Pei-Chieh, Shaowu Hsien, 15. x. 1943 (K. S. Lin), 1 ♀.

Kiangsu: Shanghai, reared from *Pterocarya stenoptera* D. C. (Juglandaceae), vi-xii. 1932 (O. Piel), 59 ♂♂, 40 ♀♀ (1 ♂, 1 ♀ det. K. Takeuchi as *T. simulacrum* Sem.!); 22. vi. 1935 (O. Piel), 1 ♀ (all Mus. Heude); 27. vi. 1935 (Y. Ouchi), 1 ♀ (Acad. Sinica). Zikawei, Shanghai, 19. v. 1920 (O. Piel), 2 ♂♂ (det. O. Piel as *T. pandora* Westw.!); 20. vii. 1922 (O. Piel), 1 ♀ (all Mus. Heude).

Chinkiang, 19.21. x. 1917 (O. Piel), 2 ♀♀ (det. O. Piel). Nanking, 26. x. 1923, 1 ♀. Haichow, 11. vii. 1926 (O. Piel), 1 ♀ (Mus. Heude).

Shensi: Tuong-Yuan-Fang, 1 ♀ (Mus. Heude).

Hopei: Peiping, ovipositing in a fallen log of *Robinia pseudoacacia* Linn. (Leguminosae), 12. ix. 1946 (Y. C. Chao), 1 ♀. Sien Hsien, vi. 1941 6 ♂♂, 2 ♀♀ (Mus. Heude).

Liaoning: Dairen été 192 (V. J. Kolmachov), 1 ♀ (Mus. Heude). Chen été 192 (V. J. Kolmachov), 1 ♂ (Mus. Heude).

Kirin: Erhtsentientse, 4. ix. 1923, 1 ♀ (Maa coll.).

It may be noticed that among the extensive series reared indoors by the late Rev. O. Piel, the individuals emerged from June to July (2 ♂♂, 9 ♀♀) are distinctly larger than those emerged from October to December (56 ♂♂, 31 ♀♀) (♂ 25-27 mm., ♀ 27-36 *vs.* ♂ 11-18, ♀ 16-25). This phenomenon is probably due to the amount of available moisture during the immature stage. The males are exceptionally scarce in early season, this was also experienced by Prof. C. F. Chao in Fukien (1 ♂ *vs.* 20 ♀♀) for *T. longicollis* Knw.

T. simulacrum Sem. was originally described (1921) from a poorly preserved unique female from "China septentrionalis", and was redescribed for both sexes by Gussakovskij (1935) from Tientsin. Its specific validity was mainly founded on the paler pattern of its antennae and of its terebra, the relative shortness of its antennal segment IV and of its precornal basin, the distinctiveness of its median furrow on vertex as well as the relatively sparser puncturation of its mesopleura.

A careful comparative study on a long series of specimens of both sexes from Europe, Manchuria and China Proper does not suffice to prove them as being differentiating characters because of intraspecific variations and numerous intergradations. Therefore Semenov's species may eventually be merged into *fuscicornis*, and even does not deserve well to subspecific-rank. A portion of the representative data is given below.

	relative lengths of antennal segments III & IV	maximum thickness *vs.* length of antennal segment III	mesopleural puncturation	posterior black band on tergite II
Europe (1 ♀)	1.19	2.67	dense	almost irrecognisable
Manchuria (1 ♀)	1.36	1.57	,,	very narrow
Kiangsu *A* (31 ♀♀)	1.20-1.29	1.89-2.86	,,	narrow to broad
Kiangsu *B* (1 ♀)	1.14	2.00	sparse	narrow
Chekiang (4 ♀♀)	1.19-1.28	1.73-2.57	dense	broad
Fukien (1 ♀)	1.22	2.57	,,	very broad
Average	1.24	2.21		

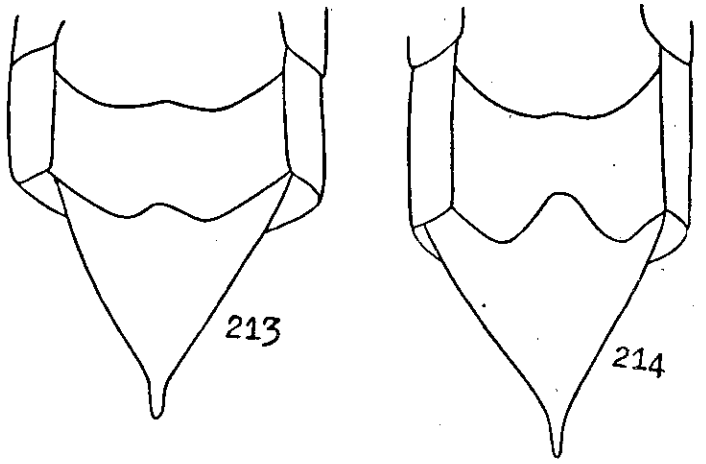
Tremex columba (Linn.) (Text-figs. 187, 193, 200, 214).

Benson (1943: 41) pointed out the female of this species can be structurally separated from its "very closely related" *T. fuscicornis* by the relative lengths of POL and OOL (2: 3 *vs.* 1: 2). In addition, the writer found some further differentiating characters:

Antennal segment III subequal to the IV; eyes exceptionally narrow (*ca.* 29×13); legs relatively more dilated; precornal basin slightly shorter than broad; cornus in lateral aspect with a sharp, sub-basal angulation on the inferior margin. Nearctic. . . . . *columba* (Linn.), 1763.

Antennal segment III distinctly shorter than the IV; eyes normal, not exceptionally narrow (*ca.* 26×13); legs relatively less dilated; precornal basin much shorter than broad; cornus in lateral aspect without any trace of sub-basal angulation on the inferior margin. Palaearctic. . . . . *fuscicornis* (Fabr.), 1787.

So far as the male is concerned, these two species appear to be not closely related at all. The color patterns are quite different *(fuscicornis* is markedly duller than *columba)*; the legs III and sternite VII are differently shaped (*cf.* Text-figs. 199-200, 213-214); the punctuation is much deeper, denser and coarser on sternites of *fuscicornis*, and much coarser, deeper, but a littly sparser on vertex and mesopleura of *columba;* the vertical furrows of *columba* are narrower and deeper, especially the median one; the cell *2sm* in the fore wing is much longer in *columba* (*ca.* 2×5) than in *fuscicornis* (*ca.* 2×3); etc. A comparative study in the male genitalia fails to disclose any definite separating character.



Text-figs. 213-214. — Abdominal apex of ♂ *Tremex*-species in ventral aspect: *fuscicornis* Fabr. (213), *columba* Linn. (214).

Tremex temporalis, sp. nov. (Text-figs. 182, 190, 196).

♀ — Black. Mandibles and paragenae each with an obscure, brown spot. Clypeus obscurely brown. Temples laterally yellow. Antennae reddish brown in both extremities. Scutellum with two lateral, yellow streaks. Wings hyaline, infuscated in apical portion of cell *bm*, basal portions of cell *1m* and apex of the fore wing and in entire hing wing; cell *2r* in the fore wing tinted with brownish; cell *1r* and stigmata yellow; veins dull brown. Femora I and II reddish; tibiae and tarsi I-II exteriorly reddish brown (basal halves yellow), and paler interiorly; femora III chestnut brown; tibiae and tarsi III reddish brown, bases of the tibia and of basitarsus more or less paler. Abdominal tergites II and VIII basally broadly yellow, the III-VII narrowly so, the VIII subapically with a narrow, transverse, yellow band crossing the precornal basin. Cornus yellow, apex brownish. Terebra yellow. Pubescence greyish, short, sparse.

Clypeus reticulato-punctate, the anterior margin weakly arcuate. Frons also reticulato-punctate, discally weakly impressed. Temples rather densely punctate, laterally more sparsely so. Vertex evenly reticulato-punctate; the median furrow very short, broad and almost irrecognisable; anterior margin depressed. OOL: POL: ocello-occipital line about 3: 5: 11. Antennae 13 segmented, weakly compressed, subequal in length to thorax and abdominal tergite I together; relative

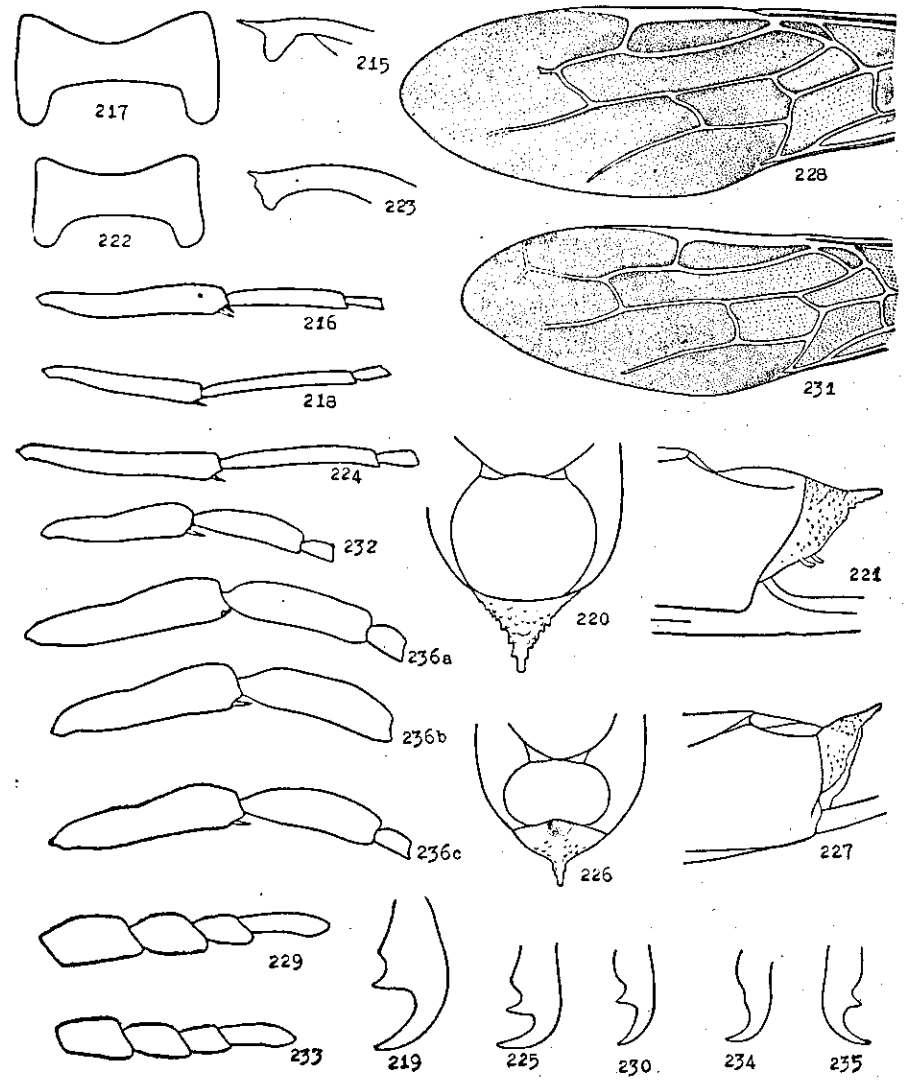
lengths of segments I-V about 17: 5: 9: 13: 10; relative thickness of segments III and VI about 2: 3. Pronotum granulated; length along the median line about two-thirds of the ocello-occipital line; lateral slopes finely granulated. Prescutum granulated, lateral marginal areas sparsely punctate, weakly depressed. Scutellum also granulated. Mesepisterna evenly, densely punctate, interspaces of most of the punctures about a-half the punctural diameter. Mesepimera anteriorly sparsely punctate, posteriorly reticulato-punctate. Cell *2r* in the fore wing slightly shorter than *3r* + *ap* (*ca.* 32: 39, measured along vein M_{1+2}). Tibiae I subequal in length to the basitarsi. Abdominal tergites II-VII impunctate, the VIII posteriorly with a few poorly defined punctures. Precornal basin transverse, flattened, dim, basally with a faint median fovea; the posterior margin finely granulated; posterio-lateral margins rather well defined. Cornus subequal in length to the basin; the dorsal and lateral surfaces basally smooth, apically finely spinose. Terebra subequal in length to abdomen proper; lateral surface of the protruding portion feebly, obliquely striated, apical third smooth; dorso-lateral margins each with about 8 spines, the spinose area slightly longer than the cornus. Ovipositor / Forewing ratio 1.27, sawsheath / ovipositor ratio 2.59. Length about 15 mm.

Chekiang: W. Tien-Mu-Shan, 24. vii. 1936 (O. PIEL), 1 ♀ (Mus. Heude).

This species can be distinguished by the dull-pattern of its head and thorax, by the relative lengths of its antennal segments, of legs III and of terebra, by the shape of its pronotum and of precornal basin and by the sculpturation of its vertex. Both in GUSSAKOVSKIJ's (1935) and TAKEUCHI's (1938) keys, it runs to *T. fuscicornis*, but the antennal segment III in the latter species (♀) is only slightly shorter than the IV and longer than V, and the pronotum only about a-half as long as the ocello-occipital line.

Tremex sepulcris, sp. nov. (Text-figs. 177, 201, 228-230).

♂ — Black, with bronzy bluish metallic lustre, thorax with greenish lustre. Wings hyaline, with very weak, bronzy iridescence, fore wings each with a broad, interrupted, pale brownish, trans-stigmatic fascia, darkest in cells *1r*, *2r* and *2cu*; apical margin of the hind wing very weakly infuscated; veins blackish brown, costa and stigmata reddish brown. Tibiae I yellow at extreme bases, tarsal claws brown. Abdominal tergite II with two lateral yellow spots. Pubescence black, short and rather sparse.



Text-figs. 215-236. — *Urocerus antennatus* (Marl.) ♂, tibial spur I (215) and tibia III plus two basal tarsomeres (216). — *Eriotremex formosanus* (Matsum.) ♀, pronotum in dorsal aspect (217), tibia III plus two basal tarsomeres (218), tarsal claw (219), and abdominal apex in dorsal (220) and lateral (221) aspects. — *Tremex violaceus*, sp. nov. ♀, pronotum in dorsal aspect (222), tibial spur I (223), tibia III plus two basal tarsomeres (224), tarsal claw (225), and abdominal apex in dorsal (226) and lateral (227) aspects. — *Tremex sepulcris*, sp. nov. ♂, apical portion of fore wing (228), apico-tarsomeres of leg III (229), and exterior tarsal claw of leg III (230). — *Tremex simplicissimus*, sp. nov. ♂, apical portion of fore wing (231), tibia III plus two basal tarsomeres (232), apico-tarsomeres of leg III (233), and exterior (234) and interior (235) tarsal claws of leg III. — *Tremex latipes*, sp. nov. ♂, variation (236a-c) of the shape of tibia III plus two basal tarsomeres (cf. Text. fig. 202).

Clypeus reticulato-punctate, slightly more raised than anterior frontal margin; anterio-medially with a narrow, weak keel; the anterior margin very weakly emarginated, almost truncated. Frons also reticulato-punctate, discally with an oval impression; median line depressed. Temples smooth, with very scattered, moderately fine punctures; the anterior margin rugoso-punctate. Vertex coarsely reticulato-punctate, but anteriorly a little more coarsely and sparsely so, and the depressed, shining, anterio-lateral areas being scatteredly so; median fovea short, broad, deep. OOL: POL: ocello-occipital line about 11: 12: 34. Antennae 15 segmented, compressed but not markedly dilated, and slightly shorter than head and thorax taken together; apical segments scarcely attenuated; relative lengths of segments I-V about 24: 7: 16: 20: 16, relative thickness of segments III and VI about 1: 1. Pronotum granulated, more roughly so in lateral areas; length along the median line almost twice the POL; median portion of anterior margin depressed, rounded off; lateral slopes rather finely reticulato-punctate, the superior fourth granulated, the anterio-inferior areas rather sparsely punctate. Prescutum finely granulated, lateral and posterior marginal areas smooth and practically impunctate, posterio-medially weakly sulcated; scutum and scutellum also finely granulated. Mesepisterna with moderate-sized punctures, interspaces of most of the punctures much greater than the punctural diameter. Mesepimera coarsely and rather densely punctate. Cell *2r* in the fore wing much shorter than $3r + ap$ (*ca.* 39: 62. measured along vein M_{1+2}). Tibiae I strongly dilated, subequal in length and distinctly broader than the basitarsi (*ca.* 31×9: 30×7). Tarsal claws of legs III each with a well developed minor tooth. Abdominal tergite I anteriorly very finely and sparsely granulated; the following tergites posteriorly each with a few fine, scattered, setigerous punctures, the apical tergites being more extensively punctate and more shining, for instance, the VII-VIII (except the median line) are entirely cover with sparse, evenly distributed punctures and very shining; sternites weakly keeled, very coarsely, rather evenly and densely punctate, but the anterior third of each sternite much more sparsely so; sternite VI posteriorly very weakly emarginated, the VII much more deeply, narrowly so; posterio-lateral margins of the VIII very weakly emarginated, almost straight; relative lengths of sternites VI-VIII and depth of the emargination on sternite VII about 22: 20: 40: 3. Length about 23 mm.

Hopei: Eastern Tomb, received from Fan Mem. Inst. Biol. (Field No. 4645), 1 ♂, tarsi mostly mutilated.

Very closely allied to *T. satanas* SEM., but tibiae I and abdominal tergite II pale marked, wings paler, without greenish lustre, and antennal segments differently proportional in length. The unique specimen before the writer is in rather poor condition, and the wing color as stated above may eventually prove to be individual abnormality.

Tremex simplicissimus, sp. nov. (Text-figs. 231-235).

♂ —Similarly colored as and closely allied to *sepulcris* sp. nov. as described above, differing in the following points: Fore wings with the apical third slightly but distinctly infuscated, and a little duller than cell *2r*. Tibiae and tarsi I dominantly reddish brown, distinctly paler than the II or III (extreme base of the tibia I yellow, as in *sepulcris*); ultimate tarsomeres of legs II-III also reddish brown. Abdominal tergite II entirely black, without yellow markings.

Clypeus not more raised than anterior frontal margin, anteriorly relatively more distinctly emarginated. Frons with 2 distinct submedian tumescences lying between ante-ocellar pit and antennal insertions, and separated from each other by a very shallow longitudinal furrow. Temples with moderate-sized punctures arranged into irregular columns, interspaces of adjacent punctures of the same column as great as or even a little smaller than the punctural diameter (the anterior margin rugoso-punctate, as in *sepulcris*). Vertex with the median line anteriorly more strongly ridged and posteriorly more shallowly furrowed. Cells *1m* and *1sm* in the fore wing relatively much longer and narrower; tibiae and tarsi differently shaped (*cf.* Text-figs. 228-233). Tarsal claws each with a poorly developed minor tooth; those on legs III, the exterior claw almost simple, but the interior one with a rather well developed minor tooth. Hypopygium with the posterio-lateral margins slightly angulated preapically. Length about 18 mm.

Chahar: Yangkiaping, 3. vii. 1937 (O. PIEL), 1 ♂ (Mus. Heude).

Tremex latipes, sp. nov. (Text-figs. 178, 202, 236).

♂ — Black, with a little bluish metallic lustre, abdomen with greenish lustre. Wings hyaline, basally slightly stained with yellowish brown, apically infuscated and with a little coppery iridescence, darkest in cells *1r* and *2r* in the fore wing; veins and stigmata blackish brown. Extreme bases of tibiae I yellowish brown. Tarsal claws brown. Pubescence black, short and rather sparse.

Clypeus reticulato-punctate; the median line anteriorly weakly keeled; anterior margin truncated. Frons also reticulato-punctate, anteriorly very slightly raised, discally shallowly dimpled. Temples anteriorly coarsely, rather densely and evenly punctate, posteriorly scatteredly, unevenly (both in size and density) so. Vertex densely, coarsely punctate; anterio-lateral areas depressed, sparsely punctate and each with a faint, short furrow starting from the posterior ocellus; median furrow short, rather narrow and deep. OOL: POL: ocello-occipital line about 12: 13: 40. Antennae 16 segmented, subequal in length to head and thorax taken together, compressed, not markedly dilated; apical segments attenuated; relative lengths of segments I-V about 22: 7: 17: 20: 15; relative thickness of segments III and VI about 4: 5. Pronotum granulated, more roughly so on lateral areas, length along the median line about twice the POL; median portion of anterior margin rounded-off; lateral slopes anteriorly rather sparsely punctate, posteriorly extremely densely so. Prescutum finely granulated; the lateral marginal areas very sparsely punctate, and distinctly more raised than posterior pronotal lobes. Scutellum also finely granulated, with a shallow, narrow, median fovea. Mesepisterna with moderate-sized puncturation, interspaces of most of the punctures about a-half of the punctural diameter; mesepimera coarsely, densely punctate. Cell *2r* in the fore wing slightly shorter than *3r* + *ap* (*ca.* 51: 66, measured along vein M_{1+2}). Legs III strongly dilated, the tibia slightly longer but markedly broader than the basitarsus (*ca.* 35 × 9: 31 × 7). Abdominal tergites with shallow, fine, sparse and evenly distributed punctures; sternites weakly keeled, with very coarse, uneven, and rather sparse punctures; posterior emargination on sternite VI very shallow; that on the VII much deeper; posterio-lateral margins of the VIII straight; relative lengths of sternites VI-VIII and depth of the emargination on sternite VII about 5: 5: 10: 1. Length about 19-23 mm.

Chekiang: Siao-Hu-Shan, Hangchow, 21. v. 1936 (T. MAA), 1 ♂ (Holotype).

Kiangsu: Nanking, 6. v. 1918, 1 ♂ (Mus. Heude). Zi-Ka-Wei, 19-24. v. 1920, 2 ♂♂ (Mus. Heude) (1 ♂ det. O. PIEL as *T. pandora* WESTW.).

The wood-wasps which most nearly approach our new species are *T. satanas* and *sepulcris*, but their stigmata are yellow, instead of black; cell *2r* in the fore wing exceptionally short, tibiae III not apically dilated, and scutellum not medially foveated. *T. contractus* came from almost the same locality, but the shape of pronotum and the wing color are so different that the writer hesitates to consider *latipes* as the opposite sex of *contractus*.

The legs III of this species appears to be rather variable in shape (compare Text-figs. 202 with 236).

Tremex niger SON. (nom. emend.) (Text-figs. 179, 203).

♂ —Black, with a little greenish metallic lustre. Mandibles and clypeus sometimes almost entirely yellow. Wings hyaline, yellowish brown; cells *bm*, *bcu*, *1sm* and *2cu* in the fore wing slightly paler, extreme bases of all wings and cell *1r* in the fore wing fuscous, cell *2r* yellow; in hind wings, basal and apical areas and anal lobes slightly infuscated; veins dull brown to black; stigmata reddish brown. Tarsal claws brown. Pubescence black, short and rather sparse.

Clypeus shallowly, confluently punctate; anterior margin almost truncated. Frons reticulato-puuctate, discally slightly dimpled, anterio-medially weakly raised; area posterior to each antennal insertion with a ∧ shaped, wide, shallow depression. Temples with their extremely anter-ior portions reticulato-punctate; mesal portions coarsely, unevenly and sparsely punctate; lateral portions very finely, evenly and sparsely so. Vertex finely, sparsely punctate, anterio-medially with a raised, coarsely reticulato-punctate, triangular area; median furrow deep, narrow, rather long; the submedian ones broad, shallow, rather long, situated just posterior to posterior ocelli. OOL: POL: ocello-occipital line about 10: 13: 42. Antennae 12-14 segmented, slightly longer than thorax; intermediate segments weakly compressed; apical ones scarcely attenuated; relative lengths of segments I-V about 28: 6: 18: 23: 15; relative thickness of segments III and VI about 15: 18. Pronotum medially finely granulated, larerally very roughly so; length along the median line twice the POL; median portion of anterior margin weakly depressed and rather sharply marked off; lateral slopes rather finely, densely punctate. Prescutum with its anterior third rather finely, densely punctate, posterior two thirds as well as entire scutellum granlulated. Mesepisterna evenly and rather sparsely punctate, interspaces of most of the punctures greater than punctural diameter. Mesepimera densely, unevenly punctate. Cell *2r* in the fore wing slightly shorter than *3r* + *ap* (*ca.* 67: 75, measured along vein M_{1+2}). Tibiae I strongly dilated, longer and broader than the basitarsi (*ca.* 36 × 10: 33 × 6). Tarsal claws with their preapical teeth only slightly shorter

than the apical, which is strongly curved. Abdominal tergites with shallow, fine, sparse, evenly distributed punctures; sternite very coarsely, rather densely, evenly punctate; the V-VI posteriorly very shallowly emarginated, the VII very deeply so; posterio-lateral margins of the VIII distinctly curved; relative lengths of sternites VI-VIII and depth of the emargination on sternite VII about 25: 23: 47: 7. Length about 17-27 mm.

Formosa: Rantaizan, 1 ♂ (Holotype). Shinchiku, 1 ♂ (Paratype). Musha, 16. vii. 1947 (T. MAA, C. W. CHEN, C. L. LEE & C. T. LIN), 1 ♂. Ritozan, 1. viii. 1928 (S. ISSIKI), 4 ♂♂ (all in Taiwan Agric. Inst.).

Variation: In one of the males from Ritozan, the wings are unusually darker, cell *2r* in the fore wing not flavous, but rather strongly infuscated except the extreme apical margins.

Tremex chujoi SON.

This species is unknown to the writer and almost certainly representing the opposite sex of *niger* SON. (BENSON, 1943: 47). If this is the case, the latter name has priority. Upon request, Dr. YASUMATSU kindly re-examined the holotype and gave some further informations which are incorporated with the original description in the following table:

	chujoi SON.	*longicollis* KNW.
clypeus and frons	"impunctate" and opaque.	densely punctate and opaque.
temples	neither polished nor shining.	polished and shining.
antennae	13 segmented; segment III = IV, nearly thrice as long as thick.	14-16 segmented; segment III distinctly shorter than the IV, and about twice as long as thick.
scutellum	yellow, sparsely punctate.	black, rugoso-punctate.
cell *3r* (fore wing)	distinctly infuscated.	not infuscated.
femora	I and III reddish.	I and II reddish on the interior surface.

Tremex longicollis KNW.

(Text-figs. 180, 184, 191, 197, 204, 207, 209, 211, 212).

♂ — Black, with very little greenish metallic lustre. Temples yellowish brown. Wings flavo-hyaline, darkest in cell *2r* in the fore wing; apical margins and anal lobes (hind wings) very feebly stained with brownish; veins yellowish brown, those on hind wings apically dull brown; stigmata reddish brown. Legs I (except coxae and trochanters) yellowish brown, but exterior surfaces of tibiae and two basal tarsomeres each with a broad, black, longitudinal band which is interrupted at both ends. Ultimate tarsomeres of legs II-III including claws brown. Abdominal tergites II-VII yellowish brown, each basally with a black, triangular patch and apically with a black, narrow band; tergite VIII entirely yellowish brown; sternites I-VII yellowish brown, basally narrowly black; hypopygium entirely black, extreme apex including cornus brownish. Pubescence long, dense, brownish.

Clypeus granulato-punctate, anterior margin truncated, medially slightly depressed. Frons granulato-punctate, discally shallowly dimpled. Temples smooth, with a few rather dense punctures narrowly along the anterior and mesal margins, remaining areas with a few scattered, moderate-sized punctures. Vertex coarsely, very densely punctate except for its anterio-lateral areas, which are a little more sparsely so; median and submedian furrows short, broad, shallow. OOL: POL: ocello-occipital line about 1: 2: 5. Antennae 14 segmented, compressed, slightly longer than thorax; apical segments attenuated; relative lengths of segments I-V about 21: 6: 15: 20: 15; relative thickness of segments III and VI about 3: 4. Pronotum granulated, length along the median line about twice the POL; median portion of anterior margin depressed, rounded-off; median line very faintly foveated; lateral slopes finely reticulato-punctate. Prescutum granulated, lateral marginal areas densely punctate. Scutellum granulated. Mesepisterna with evenly distributed, moderate-sized, rather sparse punctures, interspaces of most of the punctures slightly greater than the punctural diameter; mesepimera more coarsely and densely punctate. Cell *2r* in the fore wing distinctly shorter than $3r + ap$ (*ca.* 25: 36, measured along vein M_{1+2}). Tibiae I strongly dilated, subequal in length to but broader than the basitarsi (*ca.* 15×4: 15×3). Tarsal claws with the preapical tooth moderately long, the apical weakly curved. Abdominal tergites posteriorly each with fine, shallow and very sparse punctures; sternites coarsely, evenly and densely punctate, and poster-

iorly very weakly emarginated, but exceptionally deeply so on the VII; the VIII with very unevenly distributed, coarse punctures, and with its posterio-lateral margins curved; relative lengths of sternites VI-VIII and depth of the emargination on sternite VII about 23: 18: 40: 6. Length about 25 mm.

♀ — Yellowish to reddish brown. Mandibles and paragenae black; antennal segment V (sometimes IV) and the following ones black or brownish black, the ultimate segment more or less brown. Prothorax usually reddish-brown, sometimes brownish black or yellowish brown. Mesonotum, scutellum, metanotum (lateral areas usually more or less reddish brown), meso- and metapleura and sterna (mesepimera sometimes paler on the superior margin) black, with a little greenish metallic lustre. Fore wings flavo-hyaline, apical fifth very slightly stained with brownish, darkest at cell *1r* in the fore wing; veins and stigmata yellowish brown; hind wings, especially the basal third and anal lobe, darker, distinctly infuscated, veins dull brown. Coxae I laterally duller; trochanters I more or less marked with black; femora I each with a big, dull spot near the middle of interior surfaces; coxae II-III, trochanters II (except extreme apices) and III black; femora II each with a broad, greenish black band along the exterior margin; femora III (except extreme apices) greenish black; tibiae and basitarsi (except extreme apices) III each with a broad, dull band along the superior half of exterior surface. Abdominal tergite I black; the II sometimes with a black, median band; III-VII each with a broad, apical, black, transverse band (in Japanese specimens, extreme apical margin usually with an extra, very narnow, reddish brown band), VIII with a broad, irregularly-shaped, transverse, black band at middle; the IX basally black; cornus apically brownish black; sternites latero-basally more or less black. Pubescence brownish, thick and long.

Clypeus reticulato-punctate; anterior margin very broadly truncated; median line slightly depressed. Frons reticulato-punctate, anterio-medially slightly raised, discally with an oval, shallow dimplement. Temples coarsely, rather sparsely, unevenly punctate, only as broad as the eye. Vertex densely, coarsely punctate, with two faint, submedian furrows starting from the posterior ocelli; median furrow broad, short, rather deep. OOL: POL: ocello-occipital line about 5: 9: 20. Antennae 14-16 segmented, compressed; relative lengths of segments I-V about 26: 7: 18: 23: 17; relative thickness of segments III and VI about 7: 12. Pronotum finely granulated; length along the median line subequal to ocello-occipital line; median portion of anterior margin rounded off, slightly depressed; lateral slopes finely granulato-punctate. Prescutum and scutellum rather roughly granulato-punctate. Mesepisterna densely, evenly punctate, interspaces of most of the punctures slightly smaller than the punctural diameter; mesepimera unevenly and more coarsely and sparsely punctate. Cell *2r* in the fore wing distinctly shorter than *3r* + *ap* (*ca.* 67: 100, measured along vein M_{1+2}). Tibial spurs I rather strongly, S-shapedly curved. Tibiae I slightly shorter than the basitarsi (*ca.* 14: 15). Abdominal tergites II-VII impunctate; the VIII evenly covered with shallow, rather dense punctures. Precornal basin slightly broader than long, flattened, with a few minute punctures; latero-posterior margins very finely granulated, rounded-off. Cornus distinctly shorter than the basin; the dorsal surface finely granulated, basal third smooth; lateral surfaces basally granulated, apically spinose, intermediate areas smooth, impunctate. Terebra subequal in length to abdomen proper plus cornus, lateral surfaces of the protruding portion basally transversely reticulato-wrinkled, apically obliquely wrinkled, extreme apices finely punctate; dorso-lateral margins each with about 10-13 spines (in two rows), the spinose area about 1.5 times as the cornus. Ovipositor / Forewing ratio 1.24, sawsheath / ovipositor ratio 2.70. Length about 22-40 mm.

Honshu: Ise, nr. Tokyo, 1926 (J. YAMANOUCHI), 2 ♀♀ (det. J. SONAN). "Japan", 1 ♀ (det. T. SHIRAKI) (all in Taiwan Agric. Inst.).

Fukien: Bohea Hills, Chungan Hsien, 16. x. 1939 (T. MAA), 1 ♀. East Gate, Shaowu Hsien, x-xi. 1945, reared from a dead branch of a living tree, *Celtis sinensis* PERS. (Ulmaceae) (S. F. CHAO), 1 ♂, 20 ♀♀.

Formosa: Shirin, 3. xi. 1938 (K. ENDO), 1 ♀ (Taiwan Prov. Coll. Agric.). New to China.

Tremex contractus, sp. nov. (Text-figs. 185, 188, 195).

♀ — Reddish brown. Mandibles, paragenae and anterior clypeal margin black. Lateral and ventral surfaces of thorax, prescutum, metanotum (except two submedian, brown tubercles), coxae II (lateral surfaces) and III, trochanters II-III and femora III all black, with greenish metallic lustre. Fore wings hyaline, apical fourth slightly infuscated, cells *bm*, *1r*, *2r*, *3r* (basal half), *bcu* (costal half), and *cu* (costal two-thirds) reddish brown; hind wings pale fusco-hyaline; veins and stigmata reddish brown. Basal halves of tibiae and of basitarsi whitish yellow. Abdominal tergites I brown; II-III golden yellow,

anteriorly narrowly brownish; the IV-VII posteriorly each with a very broad, black fascia; the IX anteriorly basally black. Cornus apically dull brown. Pubescence brownish, short and rather sparse.

Clypeus finely granulato-punctate, medially slightly depressed; anterior margin truncated. Frons reticulato-punctate, discally with an oval dimplement. Temples exceptionally narrow, slightly narrower than the eye (*ca.* 9: 10), evenly, rather densely punctate (more densely so along orbits); the anterior and lateral margins (anterior halves) roughly granulated. Eyes exceptionally long and narrow (ca. 21 × 10), strongly convergent caudad. Vertex densely punctate; median and submedian furrows broad, shallow, short; the latters impunctate, shining. OOL: POL: ocello-occipital line about 3: 7: 15. Antennae 16 segmented, thick, slightly compressed, subequal in length to thorax and abdominal tergite I together; relative lengths of segments I-V about 10: 6: 14: 19: 14; relative thickness of segments III and VI about 3: 4. Pronotum as long (measured along the median line) as the ocello-occipital line granulated; median portion of anterior margin depressed, rounded off; lateral slopes densely punctate, longitudinally depressed. Prescutum also granulated, lateral marginal areas densely punctate. Scutellum also granulated. Mesepisterna with evenly-distributed, moderate-sized punctures, interspaces of most of the punctures subequal to the punctural diameter. Mesepimera more coarsely, unevenly punctate. Fore wing exceptionally narrow (*ca.* 4.5 × 19 mm.); cell *2r* slightly shorter than *3r* + *ap* (*ca.* 55: 71, measured along vein M_{1+2}), cell *1m* exceptionally narrow and long (*ca.* 7 × 97, measured at the mid-point). Tibiae I longer than the basitarsi (*ca.* 8: 7). Abdominal tergites II-VII impunctate; the VIII exceptionally long (*ca.* 23 × 16), posteriorly with a few shallow, scattered, very fine punctures. Precornal basin much broader than long, medio-anterior margin angulated, latero-posterior margins smooth, rounded-off. Cornus short, dorsal surface basally smooth, apically sparsely, finely granulated; lateral surfaces very weakly granulato-punctate, apical third spinose. Terebra subequal in length to abdomen proper; dorso-lateral margins apically each with about 10-12 short spines, the spinose area about a-half longer than the cornus; lateral surfaces of the protruding portion basally obliquely wrinkled, and subapically obliquely striated, apically smooth. Ovipositor / Fore-wing ratio 1.19, sawsheath / ovipositor ratio 2.67. Length about 25 mm.

Chekiang: Hangchow, 4. iv. 1932 (T. MAA), 1 ♀.

This very remarkable species is chiefly characterised by its narrow and costally darkened fore wings, narrow and strongly convergent eyes, narrow cheeks, short OOL, peculiarly-shaped pronotum, long tergite VIII and almost non-sculptured cornus. It appears without any really closely related species and probably represents a special group of this genus.

Tremex pandora WESTW.

KONOW (1898), FORSIUS (1927) and TAKEUCHI (1938) suggested it might be synonymous with *Eriotremex insignis* (probably referring to *Tremex purpureipennis*) (♂ unknown!), *T. satanas* and *apicalis* respectively. But all these seggestions seem to be untenable as their vertical and tergal punctures are decidedly different. The exact type locality and distributional range of this litte known species are very doubtful.

Genus TEREDON NORT., 1869.

Genotype: *Tremex cubensis* CRESS. (Orthotype).

Habitat: Neotropical (Cuba). 1 species.

Species incertae sedis

"Sirex" reflexus VILL., 1789.

1789 Villers, C. Linnaei Ent. 3: 133 pl. 7 fig. 23 ♀.

1894 Dalla Torre, Cat. Hym. 1: 391.

This species was described as "Aculeo serrato genus hoc a sequentibus [*Ichneumon*] praecipue separatur: abdomine sessili mucronato differt adhuc.....". From the figure, it is definitely not a Siricid, but most probably an Ichneumonoid wasp.

"Tremex" hyalinatus MOCS., 1891.

Possibly representing a new genus (BENSON, 1943).

"Tremex" rugicollis WESTW., 1874.

Known only its original description, status very doubtful.

CATALOGUS XIPHYDRIIDARUM ET SIRICIDARUM ASIAE

This catalogue is primarily a supplement of HEDICKE's (1938, 1938 *a*). The type localities are indicated by an asterisk. Species of doubtful generic status are each prefixed by the symbol "+". For the type locations, the following abbreviations are used.

AM = Antun Museum.
AS = Institute of Zoology, Academia Sinica, Shanghai.
ASR = Institut Zoologique de Academie des Sciences de l'URSS, Leningrad.
BM = British Museum (Natural History), London.
BZ = Zoologischen Museum, Berlin.
CN = Cornell University, Ithaca, N. Y.
CP = Universitetets Zoologiske Museum, Copenhagen.
DEI = Deutsches Entomologisches Institut, Berlin-Dahlem.
FT = Sachsen. Forstakademie, Tharandt.
HM = Magyar Nemzeti Museum, Budapest.
HUI = Entomological Institute, Hokkaido University, Sapporo.
KU = Kyushu University, Fukuoka.
MC = TSING-CHAO MAA's collection, Taipeh.
MHS = Musée Heude, Shanghai.
NL = Nawa Entomological Laboratory, Gifu.
NU = Nanking University, Nanking.
OU = Hope Department, Oxford University, Oxford.
TL = Takeuchi Entomological Laboratory, Tokyo.
TWI = Taiwan Agricultural Research Institute, Taipeh.
USM = United States National Museum, Washington, D. C.
UU = Uppsala University.
WM = Naturhistorischen Museum, Vienna.

Familia **Xiphydriidae** (Leach)

Subfamilia **Brachyxiphinae** nov.

Genus **Nasoxiphia** nov.

jakovlevi (SEM. & GUSS.), 1935. ♀. (*Xiphydria*). . . . . ASR
Siberia (Ussuria*); China (Kirin).

Subfamilia **Hyperxiphiinae** nov.

Genus **Palpixiphia** nov.

flavicornis (ROHW.), 1921. ♂ ♀. (*Xiph.*). . . . . USM
Borneo*.

+**formosana** (ENSL.), 1911. ♂. (*Xiph.*). . . . . DEI (?)
= *Xiph. sauteri* MOCS., 1912.
1923 TAKEU.: 40 (*Xiph.*). — 1938 TAKEU.: 180, 182 ♂ (*Xiph.*).
China (Formosa*).

funicornis (KNW.), 1897. ♀. (*Xiph.*). . . . . DEI
Burma*.

humeralis, sp. nov. ♂. . . . . MC
China (Fukien*).

pyrura (ROHW.), 1921. ♂. (*Xiph.*). . . . . USM
Philippine Is. (Luzon*).

Genus **Hyperxiphia** nov.

borneensis (ROHW.), 1921. ♀ (*Xiph. heritierae* subsp.). . . . . USM
Borneo*.

cyanea (MOCS.), 1891. ♀ (*Xiph.*). . . . . HM
Java*; (?) Borneo (vide Fors., 1933).

erythropus (CAM.), 1903. ♂ ♀. (*Xiph.*). . . . . BM
= *Xiph. melanopus* CAM., 1903.
Borneo*; Malay Penin. (Selangor).

heritierae (ROHW.), 1921. ♂ ♀. (*Xiph.*). . . . . USM
India (Bengal*).

leucopoda (TAKEU.), 1938. ♀. (*Euxiph.*). . . . . TL
1938 TAKEU.: 183 f. 2 ♀ (*Euxiph.*).

melanaria (MOCS.), 1904. ♀. (*Xiph.*). . . . . HM
Tonkin*.

nakanishii (TAKEU.), 1938. ♀. (*Euxiph. leucopoda* var.). . . . . TL
1938 TAKEU.: 185 ♀ (*Euxiph. leucopoda* var.).
Japan (Honshu*).

ungulivaria, sp. nov. ♀. . . . . MHS
China (Chekiang*).

varia (MOCS.), 1904. ♀. (*Xiph.*). . . . . HM
Tonkin*.

Subfamilia **Xiphydriinae** (ASHM.), *s. str.*

Tribus **Xiphydriini** *s. str.*

Genus **Xiphydria** LATR.

alnivora MATSUM., 1927. ♂ ♀ . . . . . HUI

1938 TAKEU.: 180, 181 ♀ ♂. — 1939 KONO et al: 109 (food-plant).

Japan (Yezo*).

annulitibia TAKEU., 1936. ♀ . . . . . TL

1938 TAKEU.: 180, 182 ♀ (Honshu.)

Siberia (Sachalin*); Japan (Honshu).

atriceps (MAA.), 1944. ♀. (*Euxiph.*). . . . . MC

1944 MAA.: 35, 37 ♂ (*Euxiph.*).

China (Fukien*).

buyssoni (KNW.), 1903. ♀ . . . . . DEI

1921 SEM.: 83 footnote. — 1931 MATSUM.: 80 f. 432 ♀. — 1938 TAKEU.: 180 ♀.

Japan (Honshu*, Kyushu).

camelus (LINN.), 1758. ♂ ♀. (*Ichneumon*). . . . . UU

1921 SEM.: 83 footnote (? = *buyssoni* MATSUM. nec KNW.) — 1936 TAKEU.: 54 (= *eborata* = *kawakamii* = *kuccharonis* = *jozana*) (Sachalin). — 1938 TAKEU.: 180, 181 ♀ ♂ (Yezo). — 1938 *a* TAKEU.: 62 (Shikoku). — 1947 BERLAND: 66 ff. 68, 70.

Siberia (Kamchatka, Sachalin); China (Kirin); (?) Japan (Yezo, Shikoku) (vide TAKEU., 1936, 1938 *a*); all over Europe (Sweden*, etc.).

caucasica SEM. & GUSS., 1935. ♀ . . . . . ASR

Transcaucasia; Caucasus*.

eborata KNW., 1899. ♂ ♀ . . . . . DEI

1921 SEM.: 83 footnote. — 1932 YANO: 475 ♀ ♂ f. 930 (♀) (Yezo).

Siberia (Ussuria); Japan (Yezo, Honshu*).

Treated as syn. of *camelus* by TAKEU., 1936.

jozana MATSUM., 1927. ♂ . . . . . HUI

Japan (Yezo*).

Treated as syn. of *camelus* by TAKEU., 1936.

kawakamii MATSUM., 1927. ♂ ♀ . . . . . HUI

= *buyssoni* MATSUM., 1911 nec KNW., 1903.

1917 YANO: 116 (*buyssoni*). — 1921 SEM.: 83 footnote (*buyssoni* MATSUM. nec KNW.) (? = *camelus*). — 1931 MATSUM.: 80 f. 434 ♀. — 1932 MATSUM.: 36 pl. 9. f. 15 ♀.

Siberia (Sachalin, Ussuria); Japan (Yezo*).

Treated as syn. of *camelus* by TAKEU., 1936.

kuccharonis MATSUM., 1927. ♂ ♀ . . . . . HUI

Siberia (Ussuria); Japan (Yezo*).

Treated as syn. of *eborata* by CONDE, 1935, and of *camelus* by TAKEU., 1936.

jimi, sp. nov. ♂ . . . . . AS

China (Chekiang*).

ogasawarai MATSUM., 1927. ♀ . . . . . HUI

1938 Takeu.: 180, 181 ♀.

Japan (Honshu*). MATSUMURA's (1927) statement was very confusing, on p. 203, the habitat was given as Honshu and in the key on the same page, only female was included; in the description on pp. 205-206, also only female was described, whereas under "Length" (p. 206), it was given ♂ 10 mm., ♀ 13 mm. and under "Hab." (p. 206), it was stated "Honshu, Hokkaido; one female specimen was collected..... at Iwate." Most probably the words "♂ 10 mm." and "Hokkaido" should be deleted.

palaeanarctica SEM., 1921. ♀ . . . . . ASR

= *eborata* MATSUM., 1912 nec KNW., 1899 = *jezoensis* MATSUM., 1927.

1912 MATSUM.: 24 ♀ ♂ pl. 43 f. 8 (♀) (*eborata*). — 1917 YANO: 116 (*eborata*). — 1930 MATSUM.: 62 ♀ ♂ pl. 6 f. 8 (♀) (*jezoensis*). — 1931 MATSUM: 80 f. 433 ♀ (*jezoensis*). — 1938 TAKEU.: 180, 181 ♀ ♂ (Chosen). — 1939 YASUM.: 329 f. 577 (1) ♀.

Siberia (Sachalin, Ussuria*); China (Kirin); Japan (Yezo); (?) Honshu (vide MATSUM., 1912).

picta KNW., 1897. ♂ ♀ . . . . . DEI

1947 BERLAND: 66, 67 ff. 71, 72 (France).

(?) Siberia (Ussuria) (vide CONDE, 1935); France; Switzerland*; Finland; Russia; Caucasus.

popovi SEM. & GUSS., 1935. ♂ ♀ . . . . . ASR

Siberia* (Transbaikalia, Amurland, Ussuria); China (Kirin).

prolongata (GEOFFR.), 1785. ♂ ♀. (*Tenthredo*). . . . . AM

1947 BERLAND: 65, 68.

= *Sirex dromedarius* FABR., 1787 = *Xyphidria fasciata* LEPEL., 1823 = *Xiph. camelus* LEPEL. & SERV., 1828 nec LINN., 1758.

S. W. Siberia; Heptapotamia; almost all over Europe. (France*, etc.).

scutellata KNW., 1897. ♂ ♀ . . . . . DEI

Transcaspia*; S. W. Turkmenia; N. Iran.

sulcata, sp. nov. ♂ . . . . . TWI
Siberia (Sachalin*).

tegulata, sp. nov. ♂ . . . . . MC
China (Fukien*).

Genus **Genaxiphia** nov.

inornata, sp. nov. ♀ . . . . . NU
China (Szechwan*).

parallela, sp. nov. ♂ . . . . . AS
China (Chekiang*).

Genus **Dryxiphia** nov.

punctissima, sp. nov. ♀ . . . . . TWI
China (Formosa*).

Tribus **Konowiini** nov.

Genus **Xiphydriola** Sem.

Subgenus **Platyxiphydria** (Takeu.), comb. nov.

1938 Takeu.: 185 ♀ (as genus).

antennata, sp. nov. ♀ . . . . . TWI
China (Formosa*).

orientalis (Westw.), 1824. ♀ (*Xiphydria*) . . . . . BM (?)
1938 Takeu.: 185 (*Platyxiph.*?)
Burma*; E. Himalayas.

tiphiiformis (Takeu.), 1938. ♀ . . . . . TL
1938 Takeu.: 185 f. 3 ♀ (*Platyxiph. tiphiif.*).
Japan (Shikoku*).

Subgenus **Xiphydriola**, *s. str.*

amurensis Sem., 1921. ♀ . . . . . ASR
Siberia (Amurland*, Ussuria).

Genus **Indoxiphia** nov.

Subgenus **Indoxiphia**, *s. str.*

indonesica (Fors.), 1933. ♀. (*Xiphydria*) . . . . . BM
Malay Penin. (Malacca*).

quadricincta Bens., 1935. ♀ (*Xiphydriola*) . . . . . BM
Java*.

Subgenus **Cingalixiphia** nov.

striatifrons (Cam.), 1905. ♀ (*Xiphydria*). . . . . BM
Ceylon*.

Genus **Konowia** Brauns

Subgenus **Pseudoxiphydria** (Ensl.), comb. nov.

betulae (Ensl.), 1911. ♀ (*Pseudoxiph. bet.*) . . . . . FT
W. Siberia (Tomsk); Germany*.

Tibus **Paraxiphiini** nov.

Genus **Paraxiphia** nov.

insularis (Rohw.), 1916. ♂ ♀. (*Xiphydria*). . . . . DEI
1923 Takeu.: 40 (*Xiph.*). — 1938 Takeu.: 180, 182 ♂ (*Xiph.*).
China (Formosa*).

Subfamilia **Euxiphydriinae** nov.

Genus **Euxiphydria** Sem. & Guss.

maidli (Zgbl.), 1937. ♀ (*Xiphydria*) . . . . . WM
E. Siberia*; Japan (Yezo).
Treated as syn. of *ruficeps* by Takeu., 1938.

potanini (A. Jak.), 1892. ♀. (*Xiph.*). . . . . ASR
= *Xiph. potaninii* D. T. 1894 (nom. emend.).
1941 Wu: 35 (*Xiph. potaninii*). — 1944 Maa: 37.
China (Kansu*).

ruficeps (Mocs.), 1909. ♂ ♀. (*Xiph.*). . . . . HM
= *Xiph. ruficeps* Matsum., 1912 (homonym) = *Xiph. akazui* Matsum., 1932 = *Xiph. potanini* Takeu., 1936, 1937, nec A. Jak., 1892.
1901 Sem.: 186 (*Xiph.* sp. pro *potanini*). — 1909 Mocs.: 39 ♀ (*Xiph.*). — 1912 Matsum.: 210 pl. 54 f. 22 ♀ (*Xiph.*, sp. nov.!). — 1917 Yano: 116 (*Xiph.*). — 1921 Sem.: 83 footnote (*Xiph.*) (= *potanini*). — 1927 Matsum.: 202, 203 ♀. — 1930 Matsum.: 178 (English summ.: 73) pl. 17 f. 22 ♀ (*Xiph.*) (Honshu.). — 1931 Matsum.: 80 f. 435 ♀ (*Xiph.*). — 1932 Matsum.: 31 pl. 8 f. 9 ♀ (*Xiph. akazui*) (= *ruficeps* Matsum. nec Mocs.). — 1936 Takeu.: 54 ♀ (*Xiph. potanini*) (= *Xiph. akazui*) (Sachalin). — 1937 Takeu.: 30 ♀ (*Xiph. potanini*

= *ruficeps* Mocs. = *ruficeps* Matsum. = *akazui*) (Kaiba Isl.). — 1938 Takeu.: 183 ♀ ♂ (= *Xiph. maidli*). — 1938*a* Takeu.: 62 (*Xiph. potanini*) (Shikoku). — 1944 Maa: 37.

Siberia (Amurland, Sachalin, Ussuria*); China (Kirin); Japan (Yezo, Honshu).

Treated by Sem., 1921 as syn. of *potanini*.

subtrifida Maa, 1944. ♂ . . . . . MC

1944 Maa: 33, 37 ♂.

China (Fukien*).

Species incertae sedis.

quadrimaculata Cam., 1899. ♀. (*Xiph.*). . . . . BM

India (Assam*).

Familia **Siricidae** W. Kby.

Subfamilia **Siricinae** Ashm.

Genus **Xeris** A. Costa.

spectrum spectrum (Linn.), 1758. ♂ ♀. (*Ichneumon*). . . . . UU

= *Sirex nanus* O. F. Muller, 1776 = *Sir. emarginatus* Fabr., 1793 = *Urocerus caudatus* Cress., 1865 = *Sir. melancholicus* Westw., 1874.

1932 Yano: 474 ♀ ♂ f. 929 (♀) (Yezo, Honshu). — 1936 Takeu.: 59 (Sachalin). — 1938 Takeu.: 194, excl. Formosan record. — 1939 Yasum.: 329 ♀ ♂ f. 577 (2) (♀). — 1939 Fr.-Gr.: 647-690 f. 4 (symbiotic fungi). — 1939 Kono et al: 109 (food-plant). — 1943 Bens.: 30, 31, 32, 38 f. 8 ♀. — 1947 Berland: 73 f. 74.

Heptapotamia; all over Siberia including Sachalin; China (Sinkiang, Kirin); Japan (Yezo, Honshu); almost all over Europe (Sweden*, etc.); Algeria; Alaska; Canada (except British Columbia); U. S. A. (except Pacific States).

spectrum himalayensis (Bladl.), 1934. ♂ ♀. . . . . CN

1943 Bens.: 30, 31, 32, 47 ♀ (*X. him.*) (Kashmir).

India (Kashmir, United Provs.*).

spectrum malaisei, subsp. nov. ♀. . . . . TWI

= *spectrum* Takeu., 1938: 195 ex parte.

China (Formosa*).

Genus **Xoanon** Sem.

matsumurae (Rohw.), 1910. ♂ ♀. (*Sirex*). . . . . USM

= *mysta* Sem., 1921 = *Sir. matsumurai* Matsum., 1911 (nom. emend.).

1911 Matsum.: 84 pl. 2 f. 1 ♀ (*Sir. matsumurai*) (Sachalin). — 1912 Matsum: 15 ♀ ♂ pl. 42 f. 21 (♀) (*Sir.*). — 1917 Yano: 117 (*Sir.*). — 1930 Matsum.: 55 ♀ ♂ pl. 5 f. 21 (♀) (*Sir.*). — 1931 Matsum.: 78 ♀ ♂ f. 425 (♀), col. pl. 1 f. 7 (♀) (*Sir.*). — 1932 Matsum.: 30 pl. 8 f. 1 ♀ (*Sir.*). — 1938 Takeu.: 191. — 1938 Hed.: 22 (*matsumurai*). — 1939 Kono et al: 109 (*matsumurai*) (food-plant). — 1943 Bens.: 30, 31, 32, 34 f. 7 ♀ (*mysta*) (different from *matsumurae* ?).

Siberia (Sachalin, Ussuria); Japan (Yezo*).

praelongus, sp. nov. ♀. . . . . MC

China (Chekiang*).

Genus **Urocerus** Geoffr.

antennatus (Marl.), 1898. ♂ ♀. (*Sirex*). . . . . USM

= *Sir. ogumae* Matsum., 1911 = *Sir. antennalis* Matsum., 1912 (err. typ.).

1902 Nakag.: 9 (*Sir. antennata*). — 1911 Matsum.: 85 ♀ ♂ (*Sir. ogumae*). — 1917 Yano: 119 (*Sir.*). — Ibid.: 120 (*Paur. ogumae*). — 1930 Matsum.: 57 pl. 5 f. 24 ♀ (*Sir. antennalis*). — Ibid.: 61 pl. 6 f. 6 ♀ (*Sir. ogumae*). — 1931 Matsum.: 78 f. 421 ♀ (*Sir. antennalis*). — Ibid.: 79 f. 427 ♀ (*Sir. ogumae*). — 1932 Yano: 472 ♀ ♂ f. 924 (♀) (*Sir.*). — 1932 Matsum.: 31 pl. 8 f. 10 ♀ (*Sir. antennalis*). — 1938 Takeu.: 187, 188 ♀ ♂. — 1941 Muray.: 194 pl. 47 f. 3 (2) ♀ (*Urocerus*) (Kirin). — 1943 Bens.: 30, 31, 32, 40 ♀.

Siberia (Sachalin, Ussuria); China (Kirin); Japan (Yezo, Chishima, Honshu*).

antennatus var. **immaculatus** (Zgbl.), 1937. ♀. (*Sir.*). . . . . WM

Japan (Etorofu Isl.*).

argonautarum (Sem.). 1921. ♂ ♀ (*Sir.*). . . . . ASR

1943 Bens.: 30, 31, 32, 39, 40 f. 2*a* ♀ (*gigas* subsp.)

Asia Minor; Transcaucasia; Caucasus*.

Treated as subsp. of *gigas* by Bens., 1943.

augur augur (Klg.), 1803. ♂ ♀. (*Sir.*). . . . . BZ

= *Sir. gigas* Panz., 1798 nec Linn., 1758 = *Sir. cedrorum* F. Sm., 1860.

1938 Bens.: 255 (*cedrorum*) (= *sah*) (Britian). — 1939 Fr.-Gr.: 647-680 ff. 8-12 (*Sir.*) (symbiotic fungi; oviposition). — 1943 Bens.: 30, 31, 32, 40, 41 f. 6 ♀. — 1947 Berland: 76, 77 ff. 80, 82, 83.

Asia Minor (Libanon); (?) W. Transcaucasia (vide Sem. & Guss., 1935; C. & S. Europe (Germany*, etc.), occasionally introduced into England.

augur sah (Mocs.), 1881. ♂ ♀. (*Sir. sah*). . . . . HM

1943 Bens.: 39, 41 ♀ (Algeria).

Asia Minor (Turkmenia); N. Iran*; Transcaspia; Atlas Mts.; Algeria.

brachyurus, sp. nov. ♀ . . . . . TWI

China (Formosa*).

fantoma (FABR.), 1781. ♂ ♀. (*Sir.*). . . . . CP (?)

= *Sir. phantoma* KNW., 1896 (nom. emend.) = *Sir. tardigradus* CEDERJ., 1798 = *Xanthosirex phantasma* SEM., 1921.

1943 BENS.: 30, 31, 32, 39, 40, 41 ♀ (= *tardigradus*). — 1947 BERLAND: 76, 79 ff. 81, 84 (*phantoma*) (= *cedrorum*).

E. Siberia (Transbaikalia; Ussuria); C. & E. Europe (Germany*, etc.).

gigas orientalis, subsp. nov. ♂ ♀ . . . . . TWI

= *Sir. flavicornis* ASHM., 1902 (ex parte) = *Sir. gigas* MATSUM., 1911 nec LINN., 1758, *s. str.*

1902 ASHM.: 252 ex parte (*Sir. flavicornis*) (Kamchatka). — 1911 MATSUM.: 2, 84 (*Sir. gigas*) (Sachalin). — 1912 MATSUM.: 16 ♀ ♂ pl. 42 f. 23 (♀) (*Sir. gigas*). — 1917 YANO: 117 (*Sir. gigas*) (Yezo). — 1930 MATSUM.: 57 ♀ ♂ pl. 5 f. 23 (♀) (*Sir. gigas*). — 1931 MATSUM.: 78 ♀ ♂ f. 422 (♀) (*Sir. gigas*). — (?) 1932 YANO: 471 ♀ ♂ f. 923 (♀) (*Sir.*) (Chosen, Sachalin). — 1936 TAKEU.: 56 ♀ (*Sir. gigas*). — 1938 TAKEU.: 187, 188 ♀ ♂ ex parte (*gigas*). — 1939 KONO et al: 109 (*gigas*) (food plants).

Siberia (Tschita*, Kamchatka, Sachalin*); Chosen; (?) Japan (vide YANO, 1932); (?) China (Shantung).

gigas taiganus BENS., 1943. ♀ . . . . . BM

1943 BENS.: 30, 31, 39, 40, 45 f. 4. ♀.

S. W. Siberia; Finland*; N. Russia.

gigas tibetanus BENS., 1943. ♀ . . . . . BM

1943 BENS.: 30, 31, 39, 47 f. 3 ♀.

China (S. E. Tibet*).

japonicus (F. SM.), 1874. ♂ ♀. (*Sir.*). . . . . BM

= *Sir. sinuatus* MATSUM., 1912.

1899 NAKAG.: 203 (*Sir.*). — 1902 NAKAG.: 9, 94, pl. 1 f. 34 ♀ (*Sir.*). — 1912 MATSUM.: 15 ♀ ♂ pl. 42 f. 22 (♀) (*Sir. japonica*). — Ibid.: 18 pl. 43 f. 2 ♀ (*Sir. sinuatus*). — 1917 YANO: 118 (*Sir.*) (= *sinuatus*). — 1925 UCH.: 337, 369 (*Sir. japonica*) (Chosen). — 1930 MATSUM.: 56 ♀ ♂ pl. 5 f. 22 (♀) (*Sir. japonica*) (Kyushu). — Ibid.: 58 (English summ.: 9) pl. 6 f. 2 ♀ (*Sir. sinuatus*). — 1931 MATSUM.: 78 ♀ ♂ f. 423 (♀) (*Sir. japonica*), — Ibid.: 79 f. 428 ♀ (*Sir. sinuatus*). — 1932 MATSUM.: 35 pl. 9 f. 8 ♀ (*Sir. japonica*). — 1932 YANO: 417 ♀ ♂ f. 922 (♀) (*Sir.*). — 1938 TAKEU.: 187, 189 ♀. — 1938 *a* TAKEU.: 62 (*Sir. japonica*) (Shikoku, Yakushima). — 1939 YASUM.: 330 f. 579 ♀ ♂ (Sir.). (biology). — 1943 BENS.: 30, 31, 32, 41 ♀.

Chosen; Japan (Yezo, Honshu*, Shikoku, Kyushu, Yakushima).

koshunus (SON.), 1938. ♀ (*Sir.*). . . . . TWI

1938 SON.: 89 f. 2 ♀ (*Sir. koshuna*). — 1938 TAKEU.: 187, 189 ♀. — 1943 BENS.: 47 (*koshuna*).

China (Formosa*).

niger BENS., 1943. ♀ . . . . . BM

1943 BENS.: 30, 31, 32, 48 ♀.

China (S. E. Tibet*),

niitakanus (SON.), 1938. ♀. (*Sir.*). . . . . TWI

1938 SON.: 89, 90 f. 1 ♀ (*Sir. niitakana*). — 1938 TAKEU.: 187, 188 ♀. — 1943 BENS.: 47 (*niitakana*) (? = *japonicus* var.)

China (Formosa*).

sicieni, sp. nov. ♂ ♀ . . . . . AS

China (Chekiang*).

tsutsujiyamanus (SON.), 1938. ♀. (*Sir. niitakana*) var.) . . . . . TWI

= *multifasciatus* TAKEU., 1938 (syn. nov.)

1938 SON.: 89, 90 ♀ (*Sir. niitakana* var.). — 1938 TAKEU.: 188 ♀ (*niitakanus* var.). — Ibid.: 187, 189 f. 4 ♀ (*multifasciatus*). — 1943 BENS.: 47 (*niitakana* var. *tsutsujiyamana*) (? = *japonicus* var.).

China (Formosa*).

tumidus, sp. nov. ♀ . . . . . TWI

? = *multifasciatus* BENS., 1943: 30, 31, 32, 47 nec TAKEU., 1938.

China (Formosa*); (?) Burma (vide BENS., 1943).

xanthus (CAM.), 1876. ♀ (*Sir.*). . . . . BM

1921 CKLL.: 23 f. 27 ♀ (*Sir.*) (abnormality of venation). — 1943 BENS.: 30, 31, 32, 40, 47 ♀ (Kashmir, Punjab).

China (S. Tibet); N. India* (Kashmir, Punjab).

yasushii (YANO), 1917. ♂ ♀. (*Sir.*). . . . . NL

= *Sir. umbra* SEM., 1921 = *Uroc. sachalinensis* CONDE, 1935 = *Uroc. vasushii* CONDE, 1935 (err. typ.).

1912 YANO: 177 f. 7 ♀ (*Sir. Yasushii*). — 1937 TAKEU.: 22 (Chosen) (= *umbra* = *sachalinensis*). — 1938 TAKEU.: 187, 188. — 1943 BENS.: 30, 31, 48 (*umbra*).

Siberia (Amurland, Ussuria); Chosen; (?) Japan (Honshu*) (vide YANO, 1917).

Genus **Sirex** LINN.

cyaneus FABR., 1781. ♂ ♀ . . . . . CP (?)

= *torvus* M. HARR., 1782 = *nigricornis* NEWM., 1833 nec FABR., 1781 = *juvencus* W. KBY., 1837 nec LINN., 1758 = *duplex* SHUCK., 1837 = *nitidus* HARR., 1841 = *hirsutus* W. F. KBY., 1882.

1943 BENS.: 30, 31, 32, 36, 38 f. 1c ♀.

(?) Asia (vide Bens., 1943); Europe; Canada; Newfoundland; U. S. A.*

Treated as subsp. of *juvencus* by BRADL., 1913, etc.

dux (SEM.), 1921. ♂ ♀. (*Paururus*). . . . . ASR

1943 BENS.: 30, 31, 32, 36, 38 ♀.

E. Transcaucasia*.

ermak (SEM.), 1921. ♂ ♀. (*Paur.*). . . . . ASR

1936 TAKEU.: 59 (*Paur.*). — 1938 TAKEU.: 191, 192 ♀ ♂. — 1943. BENS.: 30, 31, 32, 37, 48 ♀ (wrongly given Szechwan as its distribution).

E. Siberia (Transbaikalia, Amurland*, Sachalin).

imperialis W. F. KBY., 1882. ♂ ♀. . . . . BM

1943 BENS.: 30, 31, 32, 48 ♀ (Punjab).

N. India* (Assam, Punjab).

juvencus (LINN.), 1758. ♂ ♀. (*Ichneumon*). . . . . UU

= *nigricornis* ACERBI, 1802 nec FABR., 1781 = *coerulescens* LATR., 1819 = *dubia* W. F. KBY., 1882 (nom. nov. pro *nigricornis* ACERBI nec FABR.) = *australis* W. F. KBY., 1882 = *leseleuci* TOURN., 1890 (exclus. ♀) = (?) *succineiceps* KOORNN., 1935.

1911 MATSUM.: 2, 84 (Sachalin). — 1912 MATSUM.: 22 pl. 43 f. 5 ♀. — 1917 YANO: 120 (*Paur.*). — 1930 MATSUM.: 61 pl. 6 f. 5 ♀. — 1931 MATSUM.: 78 f. 424 ♀. — 1934 MAL.: 474 (*Paur.*) (Punjab). — 1936 TAKEU.: 58 (*Paur.*). — 1938 TAKEU.: 191, 192 ♀ ♂. — 1939 FR.-GR.: 647-680 ff. 1, 3, 5, 13-14 (*Paur.*) (symbiotic fungi). — 1939 KONO et al: 108 (food-plant). — 1943 BENS.: 30, 31, 32, 36, 37, 46 ff. 1b, 15 ♀ (? = *succineiceps*). — 1947 BERLAND: 74 f. 77.

India (Punjab); all over Siberia; Japan (vide GUSS., 1935); all over Europe (Sweden*, etc.); Algeria; Labrador; Newfoundland; occasionally introduced into Australia and Phillipine Is.

mongolorum (SEM. & GUSS.), 1935. ♀ (*Paur.*) . . . . . ASR

N. Mongolia*.

nitobei MATSUM., 1912. ♂ ♀. . . . . HUI

1912 MATSUM.: 17 ♀ ♂ pl. 43 f. 1 (♀). — 1917 YANO: 119 (*Paur.*) (Kyushu). — 1930 MATSUM.: 58 (English summ.: 8) ♀ ♂ pl. 6 f. 1 (♀). — 1931 MATSUM: 78 ♀ ♂ f. 426 (♀). — 1932 YANO: 472 ♀ ♂ f. 925 (♀) (*Paur.*). — 1935 GUSS.: 63 footnote (? = *juvencus* or *ermak*). — 1938 TAKEU.: 191. 192 ♀ ♂ (Chosen).

Chosen; Japan (Honshu*, Kyushu).

noctilio FABR., 1793. ♂ ♀. . . . . CP (?)

= *nigricornis* LUDW., 1799 nec FABR., 1781 = *juvencus* KLG., 1803 nec LINN., 1758 = *Urocerus feisthameli* BRULLE, 1832 = *Uroc. melanocerus* THOMS., 1871 = *Sir. leseleuci* TOURN., 1890 (excl. ♂) = (?) *atlantidis* GHIGI, 1909.

1939 FR.-GR.: 647-680 (*Paur.*) (symbiotic fungi). — 1943 BENS.: 30, 31, 32, 36, 37 f. 1a ♀ (? = *atlantidis*). — 1947 BERLAND: 74, 75.

All over Siberia; N. Mongolia: N. & C. Europe (Germany*, etc.); Canada; introduced into New Zealand.

Treated as syn. of *juvencus* by PANZ., 1806, as *juvencus* var. by LATR., 1805, etc.

sinicus, sp. nov. ♂. . . . . MC

China (Hopei*).

tianshanicus (SEM.). 1921. ♂ ♀. (*Paur.*). . . . . ASR

1943 BENS.: 30, 31, 32, 37 ♀.

Heptapotamia*.

vates (MOCS.), 1881. ♀. (*Paur.*). . . . . HM

1941 WU: 35 (*Paur.*). — 1943 BENS.: 48.

China (Szechwan*).

Genus **Siricosoma** FORS.

tremecoides FORS., 1934. ♀. . . . . BM

1943 BENS.: 30, 31, 32, 34 f. 12 ♀.

Malay Penin. (Selangor*).

Subfamilia **Tremicinae** (ASHM.)

Genus **Eriotremex** BENS.

1943 Bens.: 35, 42 ♀ ♂.

brevicornis, sp. nov. ♀. . . . . USM

Philippine Is. (Negros*).

flavicollis (CAM.), 1899. ♀ (*Tremex*). See also under *Tremex*. . . lost (?)

1943 BENS.: 41, 42, 43 ♀.

N. India (Assam*).

formosanus (MATSUM.), 1912. ♀ (*Trem.*). . . . . HUI

1917 YANO: 121 (*Trem.*?, *Paur.*?). — 1923 TAKEU.: 40 (*Trem.*) (generic status). — 1930 MATSUM.: 60 (English summ.: 9) pl. 6 f. 4 ♀ (*Trem.*). — 1931 MATSUM.: 79 f. 430 ♀ (*Trem.*). — 1938 SON.: 91, 93 f. 3 ♀ (*Trem.*). — 1938 TAKEU.: 193, 194 ♀ (*Trem.*). — 1943 BENS.: 30, 31, 32, 42, 43, 44 ♀ (Indochina).

China (Formosa*); Indochina (Haut Mekong, Tonkin).

foveopygus sp. nov. ♀ . . . . . USM

Philippine Is. (Negros*, Samar).

malayanus Bens., 1943. ♂ . . . . . BM

= *Trem. insularis* Fors., 1933 ♂ (err. typ.) nec F. Sm., 1858.

1934 Fors.: 172 ♂ (*Trem. insularis*, excl. ♀) (err. typ.). — 1943 Bens.: 42, 43, 44 ♂.

Malaya (Kedah*).

purpureipennis (Westw.), 1874. ♀ (*Trem.*) . . . . . lost (?)

= *Trem. insignis* Fors., 1934 nec F. Sm., 1859.

1943 Bens.: 44 ♀.

Malaya (Malacca*); N. Borneo.

smithi (Cam.), 1876. ♀ (*Trem.*) . . . . . BM

= *Trem. smithii* W. F. Kby., 1882 (nom. emend.).

1943 Bens.: 30, 31, 32, 43 ff. 10, 17 ♀.

"E. Indies*".

+ **viridiceps** (Cam.), 1908. ♂ ♀ (*Trem.*). See also under *Tremex* . . BM

1943 Bens.: 42, 43 ♂ (*Eriotrem.*?)

Borneo*.

Genus **Tremex** Jur.

apicalis Matsum., 1912. ♂ ♀ . . . . . HUI

= *propheta* Sem., 1921.

1912 Matsum.: 23 ♀ ♂ pl. 43 f. 7 (♀). — 1917 Yano: 121 (Yezo, Honshu). — 1930 Matsum.: 62 (English summ.: 10) ♀ ♂ pl. 6 f. 7 (♀). — 1931 Matsum.: 79 f. 429 ♀. — 1932 Yano: 474 ♀ ♂ f. 928 (♀). — 1932 Matsum.: 35 pl. 9 f. 12 ♀. — 1938 Takeu.: 193 ♀. — 1939 Kono et al: 109 (food-plant). — 1938 *b* Takeu.: 85 (? = *pandora*) (Kiangsu). — 1941 Wu: 35. — Ibid.: 36 (*propheta*). — 1943 Bens.: 30, 31, 41 ♀.

China (Szechwan, Hopei, Kiangsu, Chekiang); (?) Chosen; Japan (Yezo*, Honshu).

atratus Mocs., 1904. ♀ . . . . . HM

1943 Bens.: 41

Tonkin.*

chujoi Son., 1938. ♀ . . . . . KU

? = *niger* Son., 1938.

1938 Son.: 91, 92 f. 5 ♀. — 1938 Takeu.: 193, 194 ♀. — 1943 Bens.: 41, 47. (? = *nigra*).

China (Formosa*).

contractus, sp. nov. ♀ . . . . . MC

China (Chekiang*).

+ flavicollis Cam., 1899. ♀. see under *Eriotremex.*

fuscicornis (Fabr.), 1787. ♂ ♀. (*Sir.*). . . . . CP (?)

= *Sir. strutiocamelus* Vill., 1789 = *Sir. camelogigas* Christ., 1791 = *Trem. similacrum* Takeu., 1938 *b* nec Sem., 1921 (syn. nov.).

1932 Yano: 473 ♀ ♂ f. 926 (♀) (Honshu, Chosen). — 1938 Kato: 141 (Chosen). — 1938 Takeu.: 193 ♀. — 1938 *b* Takeu.: 85 (*simulacrum*) (Kiangsu). — 1939 Fr.-Gr.: 647-680 ff. 7, 15-18 (symbiotic fungi). — 1939 Kono et al: 109 (food plants in Yezo). — 1943 Bens.: 30, 31, 32, 41, 42, ff. 5, 9, 15, 16 ♂ ♀. — 1947 Berland: 71 f. 73. — 1947 Takeu.: 57 (Shansi).

All over Siberia & Europe (Germany*, etc.); China (Kirin, Liaoning, Shansi, Hopei, Kiangsu, Chekiang, Fukien); Chosen; Japan (Yezo, Honshu).

insularis F. Sm., 1858. ♀ . . . . . OU

1943 Bens.: 41 ♀.

Borneo*; Malay Penin. (Malacca).

jakovlevi Sem., 1921. ♀ . . . . . ASR

1943 Bens.: 30, 31, 41 ♀.

Transcaucasia.*

latipes, sp. nov. ♂ . . . . . MC

China (Kiangsu*, Chekiang*).

longicollis Knw., 1896. ♂ ♀ . . . . . DEI

= *similis* Marl., 1898 = *longicolis* Yano, 1917 (err. typ.).

1902 Nakag.: 9 (*similis*). — 1917 Yano: 120 (*longicolis*) (= *similis*). — 1930 Matsum.: 59 pl. 6 f. 3 ♀ (*similis*). — 1931 Matsum.: 79 f. 431 ♀ (*similis*). — 1932 Yano: 473 ♀ ♂ f. 927 (♀). — 1937 Yasum.: 33-43, 1 f., pls. 4-5 (parasite). — 1938 Takeu.: 93 ♀. — 1938 Yasum.: 71-76 (parasite). — 1938*a* Yasum.: 109 (oviposition). — 1939 Yasum.: 330 ♀ ♂ f. 578 (♀) (Kyushu) (biology). — 1943 Yasum.: 89-92 ff. 1-5 (parasite). — 1943 Bens.: 30, 31, 42, 41 ♀.

China (Fukien, Formosa); Japan (Honshu*, Kyushu).

magus (Fabr.), 1787. ♂ ♀. (*Sir.*). . . . . CP (?)

= *Sir. nigrita* Fabr., 1787 = *magnus* Cam., 1890 (err. typ.).

1943 Bens.: 30, 31, 32, 41, 42 ♂ ♀.

(?) Siberia (vide Mocs., 1878); C. & S. Europe (Germany*, etc.); S. Russia; Crimea.

niger Son., 1938. ♂ . . . . . TWI

? = *chujoi* Son., 1938 = *nigra* Son., 1938 (err. gramm.).

1938 Son.: 91 f. 4 ♂ (*nigra*). — 1938 Takeu.: 194 (*nigra*). — 1943 Bens.: 41, 47 (*nigra*) (? = *chujoi*).

China (Formosa*).

pandora WESTW., 1874. ♂ . . . . . BM
1941 Wu: 36. — 1943 BENS.: 41.
"E. Indies"; (?) China (Shanghai) (vide W. F. KBY., 1882).

satanas SEM., 1921. ♂ . . . . . ASR
1943 BENS.: 41.
Siberia (Transbaikalia*, Ussuria).

sepulcris, sp. nov. ♂ . . . . . MC
China (Hopei*).

simplicissimus, sp. nov. ♂ . . . . . MHS
China (Chahar*).

simulacrum SEM., 1921. ♂ ♀ . . . . . ASR
1941 Wu: 36. — 1943 BENS.: 30, 31 ♀.
N. China* (Hopei).

temporalis, sp. nov. ♀ . . . . . MC
China (Chekiang*).

violaceus, sp. nov. ♀ . . . . . MC
China (Fukien*).

+ **viridiceps** CAM., 1908. ♂ ♀. see under *Eriotremex*.

Species incertae sedis

+ **rugicollis** WESTW., 1874. ♂. (*Trem.*). . . . . lost (?)
1943 BENS.: 42 ♂ (not Tremicinae ?).
Philippine Is.*.

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(Synonyms in italics)

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