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A Forth Contribution to the Knowledge of Sphecidae (Hymenoptera) of Manchuria, with Remarks on Some Species of the Adjacent Regions

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Synopsis Twenty-eight species of Sphecidae are recorded from Manchuria, of which 18 are new to locality including 3 new taxa: *Ammophila arnaudi, Lestica spinicollis* and *Ectemnius konowii arnaudi.* Further, *Ectemnius spinipes sculpturatus* ssp. nov. is connectively described from Japan.

The study of the Machurian fauna remains still quite insufficient, despite its importance in analysing the origin of the Japanese fauna. As to the fossorial wasps only 72 species have been recorded from the region. The present paper contributes considerably in this regard by elevating the number of the known species up to 100.

The material used in this study belongs to the collection of the California Academy of Sciences and is kindly sent to me for investigation by Dr. P. H. ARNAUD Jr. through Dr. T. J. ZAVORTINK. To both of the colleagues I express my deepest thanks.

All the specimens except one were collected by V. N. ALIN, the same person whose collection formed the bases of my previous reports, on and along the Chinese Eastern Railway Line during the summer of 1941.

In the following list the species with an asterisk are new to Manchuria, two species without number are those from China proper sent together and the references to each species are confined, as a rule, to those relating to East Asian Continent.

Annotated List of the Species

*1. *Sphex (Isodontia) nigellus* F. SMITH, 1856

Sphex (Isodontia) nigellus: YASUMATSU, 1938 a, p. 99; 1942 b, p. 106 (Peking); TSUNEKI, 1967, p. 4; 1971, p. 2 (Peking).

Specimen examined. 1 ♀, Cheng, 31 km E of Harbin, 13. VII.

Remarks. The specimen is exceptionally small in body size, measuring only 14 mm in length, otherwise, however, as in the Japanese specimens.

2. *Ammophila (Ammophila) sabulosa nipponica* TSUNEKI, 1967

? *Ammophila infesta*: YASUMATSU, 1939 a, p. 12 (S. Manchuria); 1940, p. 92 (Kalgan); 1942 b,

p. 103 (Peking); GUSSAKOVSKIJ, 1932, p. 4; 1938, p. 3 (Kiangsu).
Ammophila sabulosa infesta f. B. TSUNEKI, 1967 a, p. 2 (Manchuria).
Ammophila sabulosa nipponica TSUNEKI, 1967 b, p. 23 (Japan and Korea); 1968 a, p. 2, 8; 1968 c, p. 50 (S. Korea); 1971 b, p. 2 (Peking); 1974, p. 360 (N. Korea).

Specimens examined. 1 ♀, Cheng, 31 km E of Harbin, 13. VII; 4 ♂, Maoershan, 100 km E of Harbin, 15, 17. VIII; 3 ♂, Kaolingtze, midpoint btw. Harbin and Pogranichnaya Station, 14, 17. VII.

Distribution. Widely distributed over eastern part of China proper, Manchuria, Amur and Ussuri regions, Korea and Japan excluding the Ryukyus.

Remarks. The specimens are practically identical in characters with those of the Japanese typical race.

*3. *Ammophila* (*Miscus*) *pubescens* CURTIS, 1829

Ammophila (*Miscus*) *pubescens*: TSUNEKI, 1971, p. 163 (Outer Mongolia).

Specimen examined. 1 ♀, Kaolingtze, 14. VII.

Distribution. Known from Europe and Outer Mongolia. This is the easternmost record of distribution.

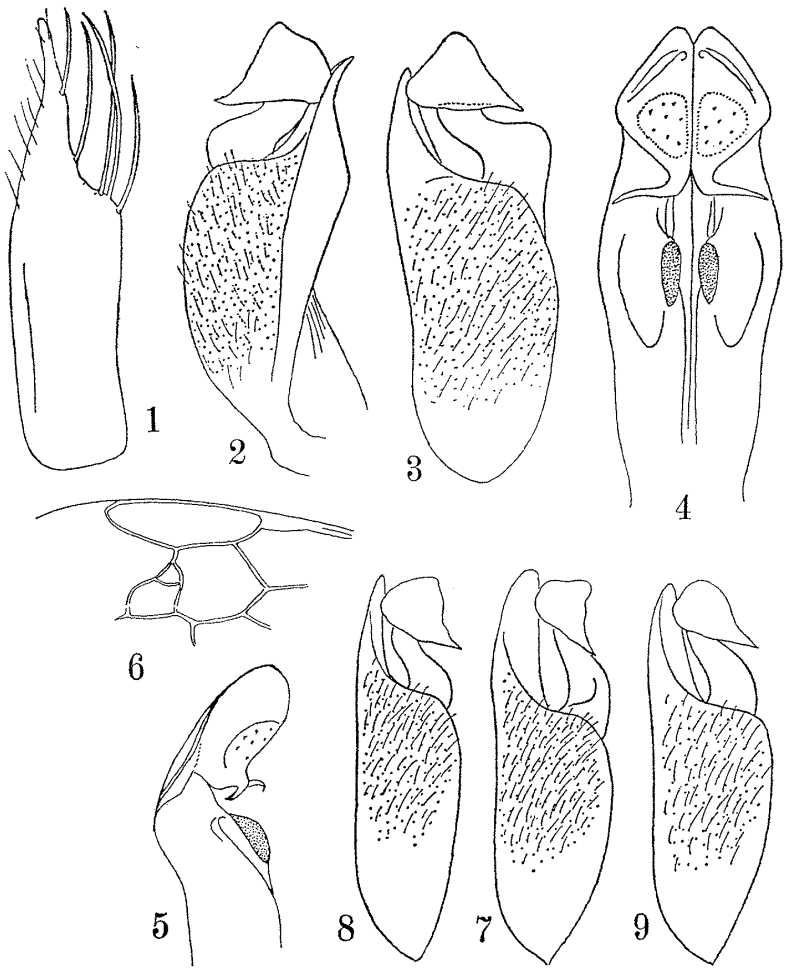
Remarks. SICKMANN (1895) and YASUMATSU (1930) recorded *A. campestris* LATREILLE from North China and GUSSAKOVSKIJ (1934, 1938) from Kiangsu. In those days, however, so-called *campestris* was a species-complex, including *pubescens* also (e.g. KOHL, 1906) and reexamination of the specimens is necessary.

*4. ***Ammophila* (*Miscus*) *arnaudi*** sp. nov.

The present species (♂) is similar in general characters including the colouration, sculpture of the thorax-complex and general structure of genitalia to *A. pubescens*, but it has the abdominal petiole lacking the pubescence beneath (not due to loss), the pronotum thicker and more roundly swollen and the digital stalk of genitalial volsella slightly more strongly and more broadly swollen out on the inner margin. It is also closely allied to *A. campestris*, differing from this, however, in the colouration of the abdomen, in the sculpture of the propodeum and in the form of the digital stalk of the genitalia. Amongst the Asiatic congeners the new species resembles most closely *A. mongolensis* m. including the genitalial volsella, but is differing therefrom in the sculpture of mesoscutum and in the structure of the paramere of the genitalia.

♂. Length 15 mm, fore wing 8.5 mm. Black, lateral spots at apex of abdominal petiole 1, petiole 2 except basal half beneath and dorsal side wholly (with a faint reddish band toward middle), tergite 2 except a broad streak above and sternite 2 wholly yellowish red. Appressed hairs on face and clypeus silvery white, mixed with some long, erect, dark brown hairs, thick and long hairs on vertex, occiput and temples dark brown, hairs on prosternum similar in colour, but shorter and thinner, those on other parts of thorax-complex sparse, moderately long and silky white; silvery tomentum on mesopleuron as in *campestris*, large, but not distinctly outlined.

Measurements (relative values): head width (HW) 50, OOD: POD=9: 5, upper facial width (UFW)[1], lower facial width (LFW)[2], length of face (FL)[3], length of clypeus (CL) respectively 28, 15, 42 and 17 (see remarks). Under the same scale the length of antennal joints 3, 4, 5 respectively 14, 10 and 9, joint 3 appr. 5 times (exactly 4.7 times) as long as broad at apex, tyloidea on joints 4–13 distinct, acute. The brim of antennal socket not markedly raised at the inner margin to prolong upwards into a subtriangular plate-like elevation, as observed in *A. infesta*, *A. sabulosa nipponica* or *A.* (*Miscus*) *deserticola*. Collar of pronotum roundly swollen, without median furrow, with relative width at medio-anterior margin of mesoscutum and length in middle 29 : 12, mesoscutum with a very narrow and



Figs. 1–9. 1–6. *Ammophila* (*Miscus*) *arnaudi* sp. nov., ♂. —— 7–9. *Ammophila* (*Miscus*) *campestris*, ♂. —— 1–4, 5, 6–9. Genitalia. —— 6. Fore wing venation. —— 1. Paramere. —— 2. Right volsella from inside. —— 3, 7, 9. Left volsella from beneath. —— 4. Penis valve from beneath. —— 5. Apical part of penis valve from left side.

1) Interocular distance at anterior margin of median ocellus. 2) Do. at basal sides of clypeus (minimum). 3) Distance between median ocellus and medio-anterior margin of clypeus.

convergent median furrow, reaching posteriorly about middle of the scutum, the furrow separated by the medial carina into two fine impressed lines; propodeum without median carina. Relative length of 1st and 2nd abdominal petiole 48: 42. Of the genitalia paramere: Fig. 1, left volsella seen from beneath: Fig. 3, right volsella obliquely from beneath and inside: Fig. 2 (dorsal swelling of cuspis well observed), digital stalk strongly swollen out on inner margin, penis valve in ventral view: Fig. 4, in lateral view: Fig. 5, glans without teeth line beneath at the side, but with a suboval area scattered very sparsely with short teeth beneath (in Fig. 4) as in most of the species of the subgenus *Miscus*. Fore wing with cubital cell 2 petiolate, in the left wing it is abnormally crossed by an extra nervulus (Fig. 6).

Pronotum above finely sparsely punctured, on the lateral surface obliquely finely and closely striate, mesoscutum transversely finely closely striate, both with the surface not shining, scutellum longitudinally coarsely striate, propodeum finely granulate and obliquely closely, very weakly striate, just as in *A. pubescens*.

Holotype: ♂, Manchuria, Estsentientze, 62 km east of Harbin, on Chinese Eastern Railway, 22. VI. 1941, V. N. ALIN leg.

Remarks. Comparative measurements in a specimen of *A. campestris* from Holland below commented, under the scale of head width 50, on OOD, POD, UFW, LFW, FL and CL are respectively 10, 7, 30, 16, 39 and 16; while in *A. pubescens* they are 10, 6.5, 28, 15, 41 and 16. The results show that in these respects, too, the new species is more closely allied to *A. pubescens* than to *A. campestris*. But it has not the pubescence on the underside of the abdominal petiole.

Some questions on *Ammophila* (*Miscus*) *campestris* LATREILLE

This species has been recorded in East Asia from China proper. There are two male specimens of this species at my hand, one from Laren, N. Holland (det. P. M. F. VERHOEFF) and the other from Pow Wroclaw, Poland (det. W. J. PULAWSKI). The two specimens are similar in general external characters to each other and the measurements regarding the head are also similar, except that the clypeus is slightly shorter in the latter. Measurements under the scale of head width 50 in the former are as given above and in the latter they are 10, 7, 29, 16, 39 and 14. But they differ distinctly from each other in the structure of pro- and mesonotum. In the former the pronotal collar is roundly swollen, with relative width to length 28: 13 and without medial furrow, while in the latter the collar is distinctly shorter, relative width to length 26: 9 and with a deep furrow in middle. Mesoscutum in the former broadly furrowed medio-anteriorly, the furrow reaching posteriorly about 3/4 of the scutum and with a raised line in middle, while in the latter it is without the medial furrow, only with two fine, posteriorly converging weak carinae. In the two specimens, moreover, the form of the digital stalk of the volsella is considerably different. In the former seen from beneath: Fig. 7, seen slightly from outside: Fig. 8; in the latter seen from beneath: Fig. 9 and almost unchanged seen

somewhat from outside. Judging from the form of the digitus (the strict form is varied in the dried specimens) Figs. 8 and 9 are seen relatively in the same direction. Whether these different features of the notums and the digital stalk are ascribable to mere variation or not I cannot say, because the specimens available are too scanty. A further detailed study is needed.

*5. *Ammophila* (*Podalonia*) *affinis* KIRBY, 1798

Ammophila (*Psammophila*) *affinis*: KOHL, 1906, p. 292 (incl. E. Siberia); GUSSAKOVSKIJ, 1934, p. 5 (Kiangsu).

Ammophila (*Podalonia*) *affinis*: TSUNEKI, 1962, p. 24 (Korea); 1967 b, p. 9; 1971 a, p. 155 (Outer Mongolia); 1971 b, p. 3 (Inner Mongolia).

Specimen examined. 1 ♀, Ertsentientze, 62 km E of Harbin, 29. VI.

Distribution. Widely distributed over the Palaearctic Region from Europe to Korea, but has not been known from Manchuria.

*6. *Sceliphron* (*Sceliphron*) *deforme* (F. SMITH, 1856)

Pelopoeus deformis F. SMITH, 1856, p. 231 (N. China).

Sceliphron (*Sceliphron*) *deforme*: TSUNEKI, 1971 b, p. 6 (with ref.); 1972 a, p. 1 and 20.

Specimens examined. 23 ♀ 2 ♂, Maoershan, 100 km E of Harbin, 12, 15, 17. VIII; 1 ♀ 1 ♂, Kaolingtze, midpoint btw. Harbin and Pogranichnaya Station, 30. V.

Distribution. E. Kazakhistan (Semipalatinsk), Amur region, N. and M. China, Korea, Japan, Formosa, widely spread over the Oriental Region.

Remarks. Developmental degrees of yellow marks on thorax-complex and legs are given in Table 1. In the Manchurian specimens the percentage of appearance of the yellow maculae on tegula, propodeum and legs is slightly smaller than in the Korean population (=ssp. *koreanus* UCHIDA), slightly larger than in the Japanese population (=ssp. *nipponicum* m.), except for the apical spot on fore and mid femora, and far smaller than in the N. Chinese population (=typical race). Apart from the percentage, speaking of the developmental degree, that is to say, the size

Table 1. Variation in maculation on selected parts of body and legs in *Sceliphron deforme* SMITH (♀) occurring in East Asia (showing the presence by actual number and percentage within parenthesis).

Mark	N. China (4)	C. Korea (6)	Manchuria (24)	Japan (23)
Basi-lateral marks on pronotum	4 (100)	5 (83)	19 (79)	3 (13)
Posterior mark on area dorsalis	2 (50)	0 (0)	0 (0)	0 (0)
Mark on tegula of fore wing	3 (75)	5 (83)	18 (75)	17 (74)
Apical spots on femora 1 and 2	4 (100)	4 (67)	11 (46)	23 (100)
Apical spot on femur 3	4 (100)	3 (50)	9 (39)	1 (4)
Reddish part of hind femur beneath short[1)]	1 (25)	1 (17)	10 (42)	1 (4)
Ditto mediocre[2)]	2 (50)	5 (83)	12 (50)	9 (39)
Ditto long[3)]	1 (25)	0 (0)	2 (8)	13 (57)

Numeral annected to each region is the number of specimens examined.

1) About a basal third. 2) About 1/2–2/3. 3) More than 2/3.

of the marks appeared, the specimens from N. Manchuria are distinctly better than in the Korean population and closer to the typical race, though certainly worse than in this. In this respect the Japanese population is the worst, for instance, the apical spots on the femora are quite vestigial, though large in percentage of appearance. Judging from the facts mentioned it can be concluded that the yellow marks of *S. deforme* diminish both in size and in percentage of appearance as the localities go northwards on the Continent, and markedly so in size when turn to the Peninsula and the Islands.

As to the southern populations, besides the increase of size and number, the development of reddish parts of the abdomen and the legs is very marked.

*7. *Sceliphron* (*Chalybion*) *inflexum* SICKMANN, 1895

Sceliphron inflexum SICKMANN, 1895, p. 220 (Tientsin); GUSSAKOVSKIJ, 1934, p. 4 (Shansi); 1938, p. 4 (Kiangsu); YASUMATSU, 1942, p. 107 (Peking).

Sceliphron (*Chalybion*) *inflexum*: KOHL, 1918, p. 62; TSUNEKI, 1971 b, p. 7 (Peking).

Specimen examined. 1 ♀, Maoershan, 100 km E of Harbin, 12. VIII.

Distribution. North China, Korea, Japan, Formosa, South China, Assam. This is the northernmost record of distribution of this species.

Remarks. The specimen is markedly mellanic in colour, almost wholly black except the dark brown tarsi, the glittering blue shine being only feebly observed on the clypeus and the sides of the face.

*8. *Cerceris hokkanzana* TSUNEKI, 1961

Cerceris hokkanzana TSUNEKI, 1961, p. 42 (C. Korea); 1974, p. 372 (N. Korea).

Specimen examined. 1 ♀, Harbin, 25. VII.

Distribution. Hitherto known from Korea only.

Remarks. The specimen is more poorly maculated than in the typical specimens from Korea: Abdominal tergite 1 with a small transverse spot on each side, band on 2 broadly interrupted into two lateral marks, bands on 3 and 4 narrowly interrupted in middle and 5 without mark.

*9. *Cerceris ruficornis* (FABRICIUS, 1793)

Cerceris ruficornis: TSUNEKI, 1961, p. 44 (N. Korea); 1967 b, p. 3 (Saghalien, ssp. *saghaliensis* m.)

Specimen examined. 1 ♂, Kaolingtze, midpoint btw. Harbin and Pogranichnaya, 14. VII.

Distribution. Europe, Turkestan, N. China (Kansu), N. Korea and Saghalien. This is the first definite record of this species from Manchuria.

10. *Cerceris verhoeffii* TSUNEKI, 1961

Cerceris verhoeffi TSUNEKI, 1961, p. 55 (Manchuria: Harbin).

Specimens examined. 1 ♀ 2 ♂, Cheng, 31 km E of Harbin, 13. VII.

11. *Cerceris albofasciata* (ROSSI, 1790)

Cerceris navitatis F. SMITH, 1873, and the Japanese authors (Japan, S. Manchuria).

Cerceris luctuosa: SICKMANN, 1895, p. 204 (Tientsin); YASUMATSU, 1942 b, p. 108 (Inner Mongolia).
Cerceris albofasciata: TSUNEKI, 1961, p. 26 (Japan, Korea, N. China, E. Mongolia); 1971 a, p. 433 (W. Mongolia); 1971 b, p. 17 (N. China, Mongolia).

Specimens examined. 1 ♂, Harbin, 25. VII; 1 ♂, Maoershan, 100 km E of Harbin, 20. VIII.

Distribution. Widely spread over the Palaearctic Region.

Cerceris hortivaga KOHL, 1880

Cerceris hortivaga KOHL, 1880, p. 223 (Hungary and Korea); SICKMANN, 1895, p. 204 (N. China); TSUNEKI, 1961, p. 28, 36, 46; 1968 b, p. 3; 1971 b, p. 16.
Cerceris harmandi PÉREZ, 1905, p. 152 (Japan) et Jap. auctt.

Specimen examined. 1 ♂, China (W. Hupei: Suisapa, 1000 m, Lichuan District), 20. VIII. GRESSITT & DJOU leg.

Distribution. Europe, China proper, Korea and Japan.

Remarks. The yellow maculae of the specimen are generally similar to those of the Japanese representatives, but somewhat better developed on the abdomen (thorax wholly black except a patch on tegula): Ante-apical bands on tergites 1–6, on 1, 2 and 4 fine and faint, on 5 fairly distinct, on 3 and 6 broad and medianly triangularly (in the former broadly) excavated in front, all but on 3 not reaching the sides, tergite 2, further, carriers a mark at base in middle, consisting of two rounded patches fused together; a small transverse spot on each side at apex of sternite 3. Legs somewhat more broadly yellow maculated.

On *Cerceris hortivaga* and *Cerceris formosana*

On page 5 of my 1968 (b) paper I synonymized *C. formosana* STRAND, 1913, with *C. hortivaga* KOHL, basing on the descriptions of the previous authors and in my succeeding paper (1970) on the Formosan Philanthinae I dealt with *formosana* as distinct without giving any comment on the alteration. On this occasion of dealing with *hortivaga* I will give the differences between the two species which are very clear upon the actual specimens.

Colouration. In *hortivaga* (♀♂) yellow is cream yellow, abdominal tergite 2 with or without the medio-basal mark, band on 3 broadly triangularly excavated in front, band on 5 or 6 sometimes present and sometimes absent, femora of legs largely or wholly black, tibiae black and yellow, maculae always distinctly outlined; wings clear hyaline except anterior and apical clouding. In *formosana* (♀♂) yellow is orange yellow, abdominal tergite 2 always immaculated, 3 wholly yellow, without anterior excavation, band on 5 or 6 always present, not occupying whole the breadth, femora of legs black and ferruginous, black gradually faded into ferruginous, tibiae almost wholly orange or ferruginous; wings wholly strongly darkened, antero-distal part more strongly so.

Structure. (1) Clypeus. In *hortivaga* ♀ the medial lobe with apical margin comparatively narrow, subequal in length to the distance between its lateral angle and eye (17 : 18), elevation at the upper part less strong, hence the inclination at

the lower excavation less steep, the excavation in frontal view nearly semicircular, with the lower lateral margins subparallel; in ♂ the medial lobe nearly regular octagonal, as long as wide (20 : 19), with sides subparallel, with basal and apical margins nearly straight, length ratio of apical margin to the distance between its lateral angle and eye smaller (10 : 16). In *formosana* ♀ apical margin of the medial lobe distinctly greater in length than the distance between its lateral angle and eye (24 : 15), upper elevation stronger, inclination of the lower excavation steeper, excavation roundly, distinctly divergent downwards; in ♂ the medial lobe suboval, slightly longer than wide (20 : 17), with upper margin roundly curved upwards, with anterior margin produced into a low isosceles triangle, with the disc slightly more strongly elevated, length ratio of anterior margin to the distance between its lateral angle and eye larger (12 : 5). (2) Pygidial area. In *hortivaga* ♀ sublinguiform, ratio of length to maximum width 25 : 15, maximum width distinctly before middle, apical margin truncate, about half the maximum width, sides gently curved, apically more straightly and basally more roundly convergent, base broadly open, much broader than apical margin; in ♂ subrectangular, with sides gently rounded, maximum width towards middle, length to width 14 : 10, apical margin truncate, lateral margins at the extreme base abruptly and strongly curved inwards. In *formosana* ♀ elongate oval, almost without apical truncated part, length to maximum width similar to *hortivaga* ♀, larteal carinae certainly open at base, but the raised disc roundly ended there, giving appearance that the carinae are completely closed; in ♂ generally as in *hortivaga* ♂, but the maximum width slightly before middle and very much strongly and roundly convergent towards the base.

12. *Bembix niponica picticollis* F. MORAWITZ, 1889

Bembex picticollis F. MORAWITZ, 1889, p. 144 (Mongolia); HANDLIRSCH, 1893, p. 767 (N. China); *Bembix picticollis*, PARKER, 1929, p. 114 (M. China); YASUMATSU, 1935 a, p. 72 (S. Manchuria); 1942 b, p. 109 (N. China, Inner Mongolia).

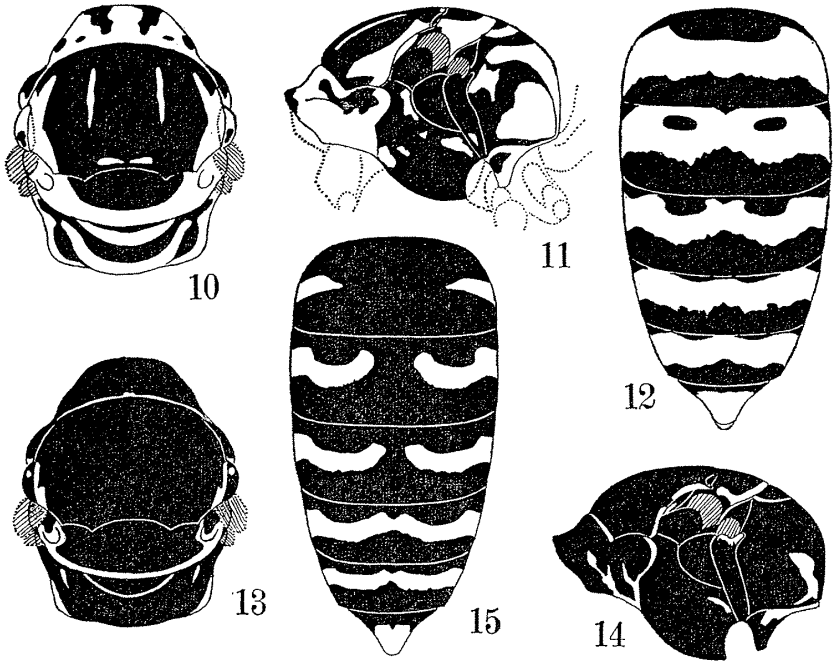
Bembex niphonica: MAEDE-WALDO, 1915, p. 335.

Bembix niponica picticollis: TSUNEKI, 1965 a, p. 27 (Korea); 1969 a, p. 1; 1971 a, p. 207 (W. Mongolia); 1971 b, p. 8 (N. China, E. Mongolia).

Specimens examined. 1 ♀, Harbin, 26. VII; 3 ♂, Cheng, 31 km E of Harbin, 13. VII; 1 ♀, Weisohn, 1. IX. 1923, E. C. VAN DYKE leg.

Distribution. Widely distributed over China proper (Szechwan, Hopei), Manchuria, Korea, Inner and Outer Mongolia.

Remarks. The Continental race of this species has a strong orange tint in the colour of the body and appendages and it is more broadly variable in maculation than in the typical race occurring in Japan. The specimens at the two extremities appear to belong to different species (cf. Figs. 10 : 13, 11 : 14 and 12 : 15, in the specimens from the E. Mongolian population; in the typical race the disc of mesoscutum always immaculated). In addition to the maculation the form of the fore metatarsus is also varied more or less, but in this case between the popula-



Figs. 10–15. *Bembix niponica picticollis*, variation in maculation. —— 10–12. Bright-coloured specimen. —— 13–15. Dark-coloured specimen. —— 10, 13. Thorax. —— 11, 14. Do., lateral view. —— 12, 15. Abdomen.

tions. In so far as my examinations go in the specimens from the northern population the metatarsus is somewhat narrower than in the southern.

The Manchurian specimens examined are orange in the hue of the maculae, all are not provided with the discal marks on the mesoscutum, they lack also the black spotted broad band on tergite 2. In the female the yellow maculae are rather poorly developed and in one of the males the band on tergite 1 is separated into two lateral patches. In another male the labrum is marked with a longitudinal blackish stripe, quite exceptional to *B. niponica* s. l. In general, they have the legs broadly yellow and narrowly maculated with black (the developmental degree of yellow parts of the legs is not always parallel to that of the body).

PARKER (1929) separated *B. picticollis* from *B. niponica* in the male (he did not treat the female) by the different structure of the three apical segments of the antenna. But this is incorrect. There is no difference at all in the structure of the antenna. His *miserabilis* is no doubt a synonym of *B. niponica*.

*13. *Stizus pulcherrimus* (F. SMITH, 1856)

Larra pulcherrima F. SMITH, 1856, p. 248 (Shanghai).

Stizus pulcherrimus: HANDLIRSCH, 1892, p. 148 (172); YASUMATSU, 1942 b, p. 110 (N. China, Inner Mongolia); 1950, p. 1471; 1965, p. 301; TSUNEKI, 1965 a, p. 27; 1971 b, p. 8 (N. China, Korea, E. Mongolia).

Specimen examined. 1 ♂, Cheng, 31 km E of Harbin, 13. VII.

Distribution. Eastern coast of China proper, Korea, Japan excluding Hokkaido and the Ryukyus, Manchuria and E. Mongolia.

Remarks. In the original description the maculae of the body are "pale yellow", but in the fresh specimens they are always pure white. In the specimen examined the lateral marks on abdominal tergite 1 large (as large as in most of the E. Mongolian specimens and larger than in most of the specimens from other regions—in these sometimes lacking) and the bands on tergites 5 and 6 broad and not interrupted, though on 5 twice roundly incised from behind. Tegulae of fore wings and the parategular areas of mesoscutum are dirty white, but the humeral tubercles are wholly black (in others sometimes white). Otherwise as in the specimens from other regions. Generally speaking, the white maculae of the abdomen of the Manchurian specimen are best developed among them.

*14. *Argogorytes mystaceus grandis* GUSSAKOVSKIJ, 1932

Gorytes grandis GUSSAKOVSKIJ, 1932, p. 28 (Ussuri region); YASUMATSU, 1938 b, p. 372; 1950, p. 1470.

Argogorytes mystaceus grandis: TSUNEKI, 1963, p. 6; 1965 a, p. 29; YASUMATSU, 1965, p. 301.

Specimens examined. 2 ♀, Ertsentientze, 62 km E of Harbin, 15. VI.

Distribution. Hitherto known from the Ussuri region and Japan, new to Manchuria.

Remarks. One of the specimens is 13 mm and the other only 10 mm in body length, and in both the posterior aspect of the propodeum is longitudinally, coarsely and somewhat rugosely striate, the striae are not forming a network as in some of the Japanese specimens.

*15. *Trypoxylon pennsylvanicum japonense* TSUNEKI, 1956

Trypoxylon pennsylvanicum japonense TSUNEKI, 1956, p. 29 (Japan and Korea); 1973, p. 33, 37.

Specimens examined. 1 ♀ 1 ♂, Maoershan, 100 km E of Harbin, 8. V.

Distribution. Known from Japan and Korea only, new to Manchuria.

Remarks. The female specimen is 7 mm and the male 5.5 mm in length, rather small in this species.

*16. *Pison insigne* SICKMANN, 1895

Pison insigne SICKMANN, 1895, 210 (N. China); GUSSAKOVSKIJ, 1932, p. 10 (Ussuri); 1937, p. 625; 1938, p. 5 (Kiangsu); YASUMATSU, 1935 b, p. 228; 1939, p. 81 (Korea); 1942 b, p. 113 (Peking); TSUNEKI, 1971 b, p. 12 (N. China).

Specimen examined. 1 ♂, Maoershan, 100 km E of Harbin, 17. VIII.

Distribution. Eastern coast of C. and N. China, Korea, Manchuria and the Ussuri region.

Remarks. The specimen well agrees with the good original description. Some supplementary notes: Mesopleural tubercle before mesocoxa very large and robust, forming with that of the other side the posterior half of the lateral walls of the deep broad mesosternal hollow, the anterior half of the wall being

formed of the antero-ventral swelling of episternum of both sides. Propodeum with the median furrow, the furrow at base medianly with a short keel and posteriorly on the dorsal side enlarged into a broad, deep, oviform impression which is transversely finely striate and on both sides of which the surface is highly raised into large gibbous tubercles, posterior aspect truncate and at the upper margin bordered by a strong carina angularly bent, the surface transversely, more or less coarsely rugoso-striate.

17. *Psen* (*Psen*) *ater* (FABRICIUS, 1794)

Psen ater: YASUMATSU and NARISADA, 1935 a, p. 73 (S. Manchuria).
Psen (*Psen*) *ater*: TSUNEKI, 1959 b, p. 62; 1967 a, p. 9 (Manchuria: Harbin).

Specimen examined. 1 ♂, Kaolingtze, midpoint btw. Harbin and Pogranichnaya Station, 14. VII.

Distribution. Europe, Siberia (Ussuri included), Mongolia, Manchuria, Korea and Japan.

18. *Pemphredon* (*Cemonus*) *lethifer* (SHUCKARD, 1837)

Pemphredon (*Dineurus*) *unicolor*: GUSSAKOVSKIJ, 1934, p. 88 (Ussuri).
Pemphredon (*Dineurus*) *lethifer fabricii*: TSUNEKI, 1951, p. 198 (Japan, Korea, Saghalien)
Pemphredon (s. s.) *lethifer*: BEAUMONT, 1963, p. 295; 1964, p. 103.
Pemphredon (*Cemonus*) *lethifer*: TSUNEKI, 1964, p. 28, 29; 1967 a, p. 10 (Manchuria); 1972 b, p. 187 (W. Mongolia); 1974, p. 367 (N. Korea).

Specimen examined. 1 ♀, Cheng, 31 km E of Harbin, 13. VII.

Distribution. Widely spread over the Palaearctic Region, from Europe through Mongolia, Turkestan, Manchuria, Ussuri region, Korea, Saghalien to Japan.

Remarks. As to my continuous use of the subgeneric rank, *Cemonus*, though it is denied by DE BEAUMONT, I have already published my opinion in 1971. Simply speaking, because it is a fairly well integrated group and in the natural classification it is an inevitable fact that every group has a more or less overlapping at its periphery.

19. *Pemphredon* (*Cemonus*) *shuckardi* (A. MORAWITZ, 1864)

Pemphredon (*Dineurus*) *shuckardi*: GUSSAKOVSKIJ, 1932, p. 9 (Ussuri); 1934, p. 88 (do.); TSUNEKI, 1951, p. 190 (Japan, Korea, Manchuria, Saghalien).
Pemphredon (*Cemonus*) *shuckardi*: TSUNEKI, 1964, p. 28, 29; 1967 a, p. 10 (Manchuria); 1972 b, p. 186 (W. Mongolia); 1974, p. 368 (N. Korea).

Specimen examined. 1 ♀, Ertsentientze, 62 km E of Harbin, 15. VII.

Remarks. *Pemphredon shuckardi* is to be synonymized by BOHART and MENKE (in press) with *P. inornatus* SAY, 1824.

20. *Ectemnius* (*Metacrabro*) *konowii* (KOHL, 1905)

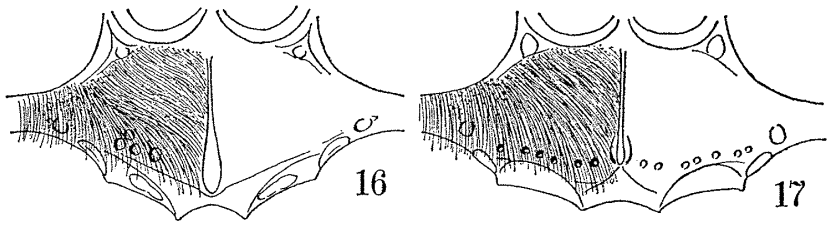
Crabro Konowii KOHL, 1905, p. 218 (Tokio).
Crabro rubropictus MATSUMURA, 1911 a, p. 101 (♀, in reality ♂, Saghalien).
Crabro sapporensis MATSUMURA, 1911 b (nec 1914), p. 114; 1930, p. 16.

Crabro (*Crabro*) *konowii*: KOHL, 1915, p. 41 (Kofou=? Kôfu, Sapporo); GUSSAKOVSKIJ, 1932, p. 15 (Ussuri, Transbaikal region); IWATA, 1933, p. 7; 1938, p. 81 (Kurile, Korea); YASUMATSU, 1942 a, p. 88 (S. Manchuria); TSUNEKI, 1943, p. 63 (N. Korea); 1947 a, p. 282; 1947 b, p. 398.
Ectemnius (*Metacrabro*) *konowii*: LECLERCQ, 1954, p. 289; TSUNEKI, 1957, p. 77; 1957 b, p. 59; 1958 b, p. 15; 1969, Tab. 1.

Distribution. Japan, Kuriles, Saghalien, Korea and Manchuria.

*Subspecies ***manchurianus*** ssp. nov.

In the Manchurian specimen observed, together with the specimens of N. Korea below listed, the sculpture of the propodeum is much finer, closer and weaker than in those of the typical race in Japan, though a fairly marked variation is observed among the latter, and there is no reticulated sculpture outside the area dorsalis; the posterior aspect of propodeum smoothly inclined from the dorsal aspect, without the bordering carina and never raised and enclosed into a platform; further, the form of the anterior margin of the clypeus in the female is slightly different from that of the typical race (Fig. 16, cf. Fig. 17 in the Japanese specimen).



Figs. 16–17. Clypeus. —— 16. *Ectemnius konowii manchurianus* ssp. nov., ♀. —— 17. *Ectemnius konowii* s. str., ♀.

Area dorsalis very indistinctly outlined by a very shallow impressed line, nearly semicircular and with the exterior parts smoothly roundly elevated, medial furrow broad, but shallow, sparsely crenate, the surface of the disc longitudinally, finely and closely striate, with interspaces microreticulate, not shining, exterior parts at base obliquely, on apical portions transversely, finely, weakly and closely (varied in density among the paratypes) striate.

Holotype: ♀, Manchuria (Maoershan, 100 km E of Harbin, on Chinese Eastern Railway), 12. VIII. 1941, V. N. ALIN leg.

Paratypes: 5♀ 22♂, North Korea (2♀ 13♂, Mt. Hakuto, 3. VIII. 1942; 2♀ 7♂, Mt. Nansetsu-rei, 23. VII. 1943; 1♀ 2♂, Daitaku-Hills, 20, 21. VIII. 1943), all leg. K. TSUNEKI (1♀ in Coll. Calif. Acad. Sci., others in Coll. TSUNEKI)

Remarks. Although a fairly marked variation is observed among the Japanese specimens in regard to the sculpture of the propodeum, it is constant that the longitudinal striae of the area dorsalis are much coarser than in the continental subspecies and the outside parts of the area dorsalis are irregularly, usually coarsely, reticulate. But the strength and density of the striae on the disc of area dorsalis and the form and size of the meshes of the lateral reticulation are con-

siderably variable. Posterior aspect is medianly furrowed, with the surface usually flattened and variably sculptured; in a considerable number of specimens the place is enclosed by an irregularly zigzagged carina into a raised disc. There is a tendency that the sculpture is somewhat finer and weaker in the Hokkaido specimens (116 ♀ 176 ♂) than in the Honshu ones (38 ♀ 91 ♂).

*21. *Ectemnius* (*Metacrabro*) *spinipes* (A. MORAWITZ, 1866)

Crabro (*Solenius*) *spinipes* A. MORAWITZ, 1866, p. 265 (Amur and S. Russia)

Crabro (*Anothyreus*) *jozankeanus* MATSUMURA, 1912, p. 170; 1930, p. 153; Yano, 1932, p. 273 (subgenus omitted).

Crabro (*Crabro*) *spinipes*: KOHL, 1915, p. 47 (N.E. Europe, Caucasus, Amur, Japan); Iwata, 1933, p. 8 (subgenus omitted); 1938, p. 82 (Saghalien); TSUNEKI, 1945, p. 163 (N. Korea); 1947 a, p. 282 (Korea); 1947 b, p. 399.

Ectemnius (*Metacrabro*) *spinipes*: LECLERCQ, 1954, p. 288; TSUNEKI, 1955 a, p. 66; 1957 a, p. 77; 1957 b, p. 59; 1958 b, p. 15; 1969, tab. 1.

Specimen examined. 1 ♀, Kaolingtze, midpoint btw. Harbin and Pogranichnaya Station, Chinese Eastern Railway, 17. VII.

Distribution. Widely spread over the Palaearctic Region, but rather rare in Europe, new to Manchuria.

Remarks. In the specimen the thorax, propodeum and abdominal sternites are completely black and the legs without yellow marking; abdominal tergites 2 (large), 3 and 4 (small) bear lateral yellow marks and 5 a basal band. The sculpture of propodeum fine, close and weak (dorsal aspect at base closely striate, with interspaces weakly irregularly microreticulate, but the sides of the segment almost without striae, mat, only on anterior portion weak trace of striae can be observed) and there is no bordering carina between the dorsal aspect and the sides and no enclosed platform on the posterior aspect. Except for the immaculated pronotum and the very obsolete sculpture of the propodeal sides the characters of the Manchurian specimen well agree with the description (including variation) of KOHL (1915).

In connection with the characters of the Manchurian specimen above mentioned it seems convenient to compare the Japanese and Korean representatives of the species with the present specimen.

As to the melanic colouration of the Japanese specimen (♀) KOHL (1915) already called attention. In my cabinets are preserved 118 ♀ 234 ♂ specimens collected in Japan, of which 92 ♀ 183 ♂ are from Hokkaido. In all of them thorax and abdominal sternites are completely black, legs without yellow maculae and the abdominal tergites more poorly maculated than in the typical race. The commonest maculation: Two large transverse marks on tergite 2 (♀♂) and a narrow band on 5 (♀♂). Sometimes the marks on tergite 2 turn into a medianly narrowly interrupted band, but in none of the specimens they turn into a complete band and the band on tergite 5 sometimes medianly interrupted and in a considerable number

it is completely vanished.[1] Sometimes in the male a short band or two contiguous patches appear on tergite 6. Only rarely a minute spot on each side of tergite 3 (♀♂) and more rarely on 3 and 4 (♀♂) is observed. The sculpture of propodeum strong and coarse, lateral areas of dorsal aspect always coarsely and irregularly reticulate and the outermost rugae of the reticulation turn into a longitudinal rugate carina, bordering the dorsal aspect; posterior inclination is enclosed by carinae into a subquadrate, more or less (sometimes very strongly) raised platform,[2] the surface of which is radiately, finely, closely and fairly strongly (♀) or strongly and coarsely (♂) striate.

The difference in maculation and sculpture of the Japanese specimens from the Manchurian or the typical one of the species is considered sufficient enough to separate the former as a distinct subspecies:

Ectemnius (Metacrabro) spinipes sculpturatus ssp. nov.

Holotype: ♀, Towada, Japan, 30. VII. 1954, K. TSUNEKI leg.

Paratypes: 5♂ 5♀, Honshu (Towada, Nikko, Mt. Haku), VIII. 1955–1964; 5♂ 5♀, Hokkaido (Sounkyo, Jozankei), VIII. 1944–1958, K. TSUNEKI leg.

On the Korean specimens. I have 2♀ 7♂ specimens captured in N. Korea (Mt. Hakuto). They are similar in colouration to the Manchurian specimen above mentioned except that in one female the marks on tergite 2 turn into a complete band, in one male the band on tergite 5 broadly interrupted into lateral marks and in all other males tergite 6 is also yellow banded at base. The sculpture on the propodeum is generally similar to the typical one on the Continent, but somewhat showing a tendency towards the Japanese subspecies: Dorsal aspect at the sides sometimes subreticulated or reticulated, with the outermost carinae more or less thickened into a bordering carina on each side and between the dorsal and posterior aspects an incomplete raised line is sometimes observed. Contrary to these characters, however, the medial produced part of the clypeus in the males is distinctly broader than in the Japanese representatives. In the strict sense, therefore, the Korean population is not always consistent with the typical race, but rather intermediate between this and the Japanese race and generally speaking, they are, as a whole, closer to the Continental race than to the Japanese.

22. *Ectemnius (Clytochrysus) lapidarius* (PANZER, 1804)

Crabro (Clytochrysus) chrysostomus: GUSSAKOVSKIJ, 1932, p. 15 (Ussuri).

Ectemnius (Clytochrysus) lapidarius: TSUNEKI, 1957 b, p. 59 (Korea); 1967 a, p. 12 (Manchuria); 1972 b, p. 147 (Mongolia); 1974, p. 374 (N. Korea).

Specimens examined. 2♂, Maoershan, 100 km E of Harbin, 15, 17. VIII.

Distribution. Widely distributed over the Palaearctic Region.

Remarks. In the specimens the maculation of the body and legs is as in the typical race, except that abdominal segment 1 without maculae. In the Japanese

1) In one female specimen captured in Sapporo the body is completely immaculated.

2) In some male specimens from Hokkaido the lateral carinae of the posterior aspect are very weak or lacking.

specimens the marks above mentioned are in about a half of them present, but the femora of legs are more broadly black than in the Continental specimens.

*23. *Ectemnius* (*Hypocrabro*) *continuus* (FABRICIUS, 1804)

Crabro (*Solenius*) *vagus*: GUSSAKOVSKIJ, 1932, p. 15 (Ussuri); TSUNEKI, 1943, p. 163 (Korea).
Crabro (*Solenius*) *continuus*: TSUNEKI, 1947 a, p. 283 (Korea).
Ectemnius (*Hypocrabro*) *continuus*: TSUNEKI, 1957 b, p. 60 (Korea); 1972 b, p. 147 (W.Mongolia); 1974, p. 372 (N. Korea).

Specimens examined. 3 ♂, Maoershan, 100 km E of Harbin, 15. VIII.

Distribution. Broadly spread over the Holoarctic Region, but this is the first definite record of the species from Manchuria. It has been known from the Chishimas, Saghalien and Kamtschatka.

Remarks. Colouration of the specimens: Black, with the following portions yellow: mandible on basal half in front, antennal scape except a lengthened mark on inner margin, two large marks on collar (as broad as interspace), two transverse marks on tergites 2, 4 and 5 (on 2 and 4 broader than the interspace and on 5 medianly contiguous or fused together), fore femur broadly beneath, a large mark on outer side of mid femur, covering apical half, broad streaks on outer side of all tarsi, fore and hind metatarsi largely, sometimes 2nd joint of fore tarsus; rest of fore femur except a line at dorso-posterior edge and anterior and inner sides of fore tibia ferruginous. This colouration is intermediate between the typical and the Japanese populations and somewhat closer to the former.

In the male of the Japanese representatives mandible very frequently wholly black, yellow on antennal scape narrow, sometimes restricted to outer side alone, marks on collar small in general and often completely vanished, fore femur beneath always yellow, though varied in breadth, mid femur very rarely carrying a small yellow spot near apex on outer side, but all the tibiae yellow on outer side, though varying in development, but generally narrow and frequently short, fore metatarsus very rarely partly yellow; fore femur on apical portion in front and fore tibia largely in front ferruginous red. In the female mandible and antennal scape yellow as in the brightest coloured male, but on thorax yellow is confined to the two marks on collar only, lateral marks on abdominal tergites 2 and 4 always broadly separated from each other and on 5 sometimes closely approaching together, but never fused into a band. Femora of legs usually wholly black, only very rarely mid femur carries a small yellowish spot on outer side near apex, tibiae yellow on outer side, usually narrowly so.

KOHL (1915) gives detailed account of the colour variations of the Palaearctic representatives. According to this the mandible and scape of antenna more or less yellow (in ♀ sometimes mandible wholly black—this is considered in the Japanese specimens), on thorax most usually collar wholly and tubercle and postscutellum broadly yellow, in the bright-coloured specimens scape wholly yellow and yellow extended further till the middle of joint 3 and on thorax tegula and scutellum broadly yellow maculated; abdominal maculae are also well developed, tergites 2,

4 and 5 often broadly yellow banded and sometimes tergites 1 and 3 carrying a yellow spot on each side and in the male sometimes tergite 6, rarely even 7, bears the basal band; femora of legs sometimes wholly black, but more often more or less yellow and tibiae more richly, often wholly yellow and tarsi partly or wholly yellow, very rarely wholly black (in his material the Japanese specimens are included).

The specimens from Manchuria examined are thus close in the maculation of the thorax to the Japanese population, but in that of the abdomen and legs rather nearer to the European typical race.

From the accounts above given it is clear that the Japanese population forms a certain melanic race, but as to its subspecific name there is a problem. F. SMITH in his 1869 paper described *Crabro vagatus* from Japan which is about 8 mm in length and, according to his remarks, very closely related to (so-called) *Crabro vagus* L. (=*continuus* F.), differing from this only in the sculpture of the head and metathorax (=propodeum), namely, head longitudinally rugoso-striate, the striae curving on the vertex laterally and running down the cheeks; propodeum transversely striate and with a central channel, the semicircular space at its base (=area dorsalis) not distinctly defined, but obliquely striated.

KOHL (1915) in his explanation of *Crabro vagus* particularly remarked about SMITH's species and concluded that it was by no means a separate species, but was included within the category of *C. vagus*, and characterized it not by the sculpture, but mainly by the averaged dark legs: legs in the female wholly black or brownish black except the yellow striped tibiae, but in the male the yellow marks slightly more developed, e.g. on fore tibiae and on fore femora in front etc. (he also mentioned about the character of mid metatarsus).

GUSSAKOVSKIJ (1932), in connection with the male specimens from the Ussuri region and Kamtschatka having strongly darkened legs, cited the Japanese representative as a separate race (by following KOHL's opinion), *C. vagus vagatus* SMITH, that had the legs markedly darkened.

According to my study with hundreds of specimens it is certain that KOHL's explanation about the colouration of the Japanese specimens is true and it is accepted to erect a separate race upon the basis of such a difference. But to me it seems questionable to apply to it uncritically SMITH's name, because there is no proof that *C. vagatus* is identical with so-called *C. vagus* (=*continuus*), since there are two other similar coloured species in Japan. SMITH clearly pointed out the difference of characters between the two as above cited, but KOHL, simply ignoring it as variation, separated the Japanese population of *C. vagus* by quite another character—colour of the legs. Is *C. vagatus* SMITH truly a simple variation of *C. vagus*?

I have examined ample material of Japanese "*vagus*" with respect to the sculpture of the head described by SMITH and found that to none of the specimens is it applicable with certainty. With high probability it can be said that *C. vagatus* is

not a variation of *C. vagus*. The same is also true with *Ectemnius schlettereri*, one of the similarly maculated species. Finally upon the last of the similar-coloured species, *E. rubicola* DUFOUR et PERRIS (formerly known as *Crabro larvatus* WESMAELI) I could confirm that it well agreed with SMITH's description including the length of the body. Very probably *Crabro vagatus* SMITH, 1869, is a junior synonym of *Ectemnius* (*Hypocrabro*) *rubicola* (DUFOUR et PERRIS, 1840).

If it is proved that the presumption above mentioned is correct the Japanese race of *E. continuus* is to be given a new subspecific name and the available subspecific name of *E. rubicola*, namely, *nipponica* TSUNEKI, that is named on the basis of different punctuation of the abdomen must be replaced with *vagatus* SMITH. The confirmation of the type of *Crabro vagatus* SMITH is desired.

24. *Ectemnius* (*Hypocrabro*) *schlettereri* (KOHL, 1888)

Crabro (*Crabro Solenius*) *schlettereri*: KOHL, 1915, p. 7 (Europe, Siberia—Irkytsk—, N. China—Tientsin, Ketan, Hsikou—, Kashmir and Japan).

Crabro vagus: YANO (nec auctt.)=*Crabro continuus*: Yano (nec FABR.), 1950, p. 1480.

Crabro (*Solenius*) *schlettereri*: GUSSAKOVSKIJ, 1932, p. 16 (Ussuri, Siberia); 1938, p. 7 (Kiangsu, Manchuria, N. China); YASUMATSU, 1942, p. 114 (Peking); TSUNEKI, 1947 a, p. 284 (Korea).

Ectemnius (*Hypocrabro*) *schlettereri*: TSUNEKI, 1955 a, p. 67; 1957 b, p. 60 (Korea); 1971 b, p. 34 (N. China); 1974, p. 372 (N. Korea).

Specimens examined. 2 ♂, Ertsentientze, 62 km E of Harbin, 13. VII; 2 ♀ 1 ♂, Cheng, 31 km E of Harbin, 13. VII; 1 ♂, Maoershan, 100 km E of Harbin, 15. VII.

Distribution. Europe, Siberia till Ussuri, Manchuria, N. and C. China proper, Korea and Japan (a different race in the Ryukyus and Formosa).

*25. *Lestica* (*Clypeocrabro*) *camelus* (EVERSMANN, 1849)

Crabro (*Thyreus*) *sapporensis* MATSUMURA, 1912 (nec 1911 b), p. 175 (Hokkaido).

Crabro (*Ceratocolus Thyreus*) *camelus*: KOHL, 1915, p. 119 (Ural, Turkey, M. and E. Siberia—Minusinsk and Transbaikal).

Crabro camelus: YANO, 1932, p. 224; *Thyreus camelus*: IWATA, 1933, p. 11.

Crabro (*Thyreus*) *camelus*: IWATA, 1938, p. 84; TSUNEKI, 1943, p. 163 (N. Korea).

Crabro (*Ceratocolus*) *camelus*: GUSSAKOVSKIJ, 1932, p. 17 (Siberia—Orenburg—, Ussuri).

Crabro (*Clypeocrabro*) *camelus*: TSUNEKI, 1947 a, p. 285 (N. Korea).

Lestica (*Clypeocrabro*) *camelus*: TSUNEKI, 1957 a, p. 77 (N. Korea); 1957 b, p. 60 (N. Korea); 1974, p. 377 (N. Korea).

Specimens examined. 1 ♂, Ertsentientze, 62 km E of Harbin, 15. VI; 1 ♀, Kaolingtze, midpoint btw. Harbin and Pogranichnaya Station, 17. VII.

Distribution. Ural, Turkey, Siberia, Korea, Japan (Hokkaido), Saghalien, new to Manchuria.

Remarks. In the male specimen above listed, abdominal tergites 1–3 with two lateral marks that are medianly closed toegther and on 4–6 each with a band. Of the four N. Korean male specimens at hand two have a similar pattern of maculation on the abdomen except that marks on tergites 2 and 3 more broadly separated, while in two others the band on tergite 4 medianly narrowly interrupted

and in one of them those on 5 and 6 also interrupted, more broadly so than on 4, especially on 6. Of the Japanese (Hokkaido) specimens (24 ♂) about a half of them are maculated as in the Manchurian specimen and in the remainder the band on 4 is medianly interrupted. As to the maculation of the antenna and legs no noteworthy difference is observed among the specimens of the three regions, except that the yellow on the hind legs is much more reduced in the Japanese specimens.

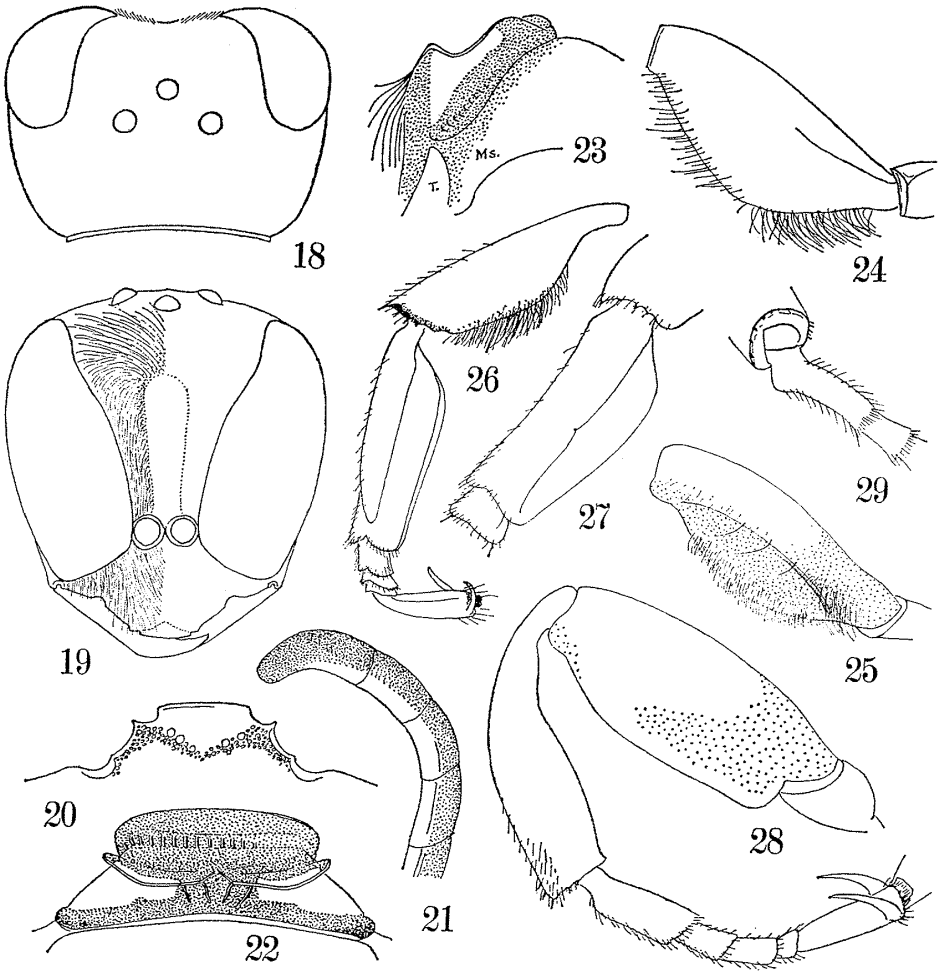
In the male specimen of Manchuria the anterior ocellus is markedly smaller than the posterior pair. But the relative size between them is considerably variable among the Korean, as well as the Japanese specimens, hence it is not a specific character. Punctuation is also similar to each other. In the female specimen the maculae are generally similar in pattern to those of N. Korea and Hokkaido, except that the mid tibiae are somewhat more broadly dark than in the compared specimens.

*26. ***Lestica (Ceratocolus) spinicollis*** sp. nov.

The present species (♂) is closely related to *L.* (*C.*) *eurypus* (KOHL, 1898), but is separable therefrom by the difference in the relative length of the antennal joints, in the structure of the pronotal collar and in the sculpture of the mesopleuron. Further, in the form of the fore and mid legs it slightly differs from the species compared.

♂. Length 9.5 mm. Black; yellowish white: a spot on each antero-lateral corner of pronotal collar, humeral tubercle, anterior part of wing tegula, a line across middle of postscutellum (in paratype lacking), a mark on each side of abdominal tergites 1–4, on 1 very small, only a spot, on others transverse and posterior ones gradually broader, a band on 5 and a minute medial mark on 6. Lemon yellow: antennal joints 1 and 2, all femora largely except basal portion, all tibiae except inside, fore tarsus except apical portion and greater part of metatarsi of mid and hind legs. Ferruginous yellow to ferruginous: rest of antenna (gradually turning to dark brown apically above), rest of femora, inside of tibiae, tibial spurs and rest of tarsi. Wings hyaline, slightly yellowish, veins and stigma pale chestnut brown. Hairs on upper frons, vertex and occiput moderately long, half decumbent forwards, not close, pale brown, on lower frons, clypeus and temples close, decumbent and silvery white, on thorax-complex short, sparse, grayish white, but metapleuron and sides of propodeum glabrous; fore femur on basal part of dorso-posterior edge sparsely fringed with whitish pubescence (Figs. 24 and 25) and on broad medial part of ventral edge covered with yellowish pubescence (Fig. 25).

Head from above: Fig. 18, somewhat similar to that of *L. eurypus* (cf. KOHL, 1915, fig. 17), but slightly broader and shorter, OOD: POD=5 : 7, head seen in front: Fig. 19, anterior margin of clypeus: Fig. 20, mandible bifid at apex; head seen in profile with temple as broad as eye, oculo-mandibular space very short, less than the length of antennal joint 2, occipital carina reaching below hypostomal carina; antenna slender and long, joint 1 amply twice as long as the minimum



Figs. 18–29. *Lestica* (*Ceratocolus*) *spinicollis* sp. nov., ♂. —— 18–19. Head. —— 20. Clypeus. —— 21. Antenna. —— 22. Pronotum. —— 23. Do. obliquely from the side. —— 24. Fore femur from above. —— 25. Fore femur from behind. —— 26. Fore tibia and tarsus from behind. —— 27. Fore metatarsus vertical view. —— 28. Mid leg. —— 29. Mid metatarsus.

interocular distance, joint 3 slightly longer than joint 4, seen from the narrowest side appr. 2.5 times, from the broadest side appr. 1.7 times as long as broad at apex, joint 7 from above also 1.7 times so, ultimate joint (Fig. 21) longer than joint 3, curved, laterally compressed, with apex in lateral view rounded, from joint 4 apically each joint longitudinally impressed, posterior margin of the impression acutely edged, that is to say, having the combined feature of rhynaria and tyloidea. Pronotum seen from above: Fig. 22, collar on anterior margin carinated, the carina broadly roundly emarginate and at each lateral corner produced and reflected into a broad triangular tooth (Fig. 23, seen from the side, somewhat from above and behind); mesoscutum with median scutal furrow reaching posteriorly the middle of the scutum and marginated on each side by a carina; on mesopleuron

epicnemial carina acturely raised, anterior oblique furrow distinct and strongly, coarsely crenate; on propodeum area dorsalis indistinct, with a medial broad crenate furrow, the furrow replaced posteriorly by coarse reticulation. Abdomen not constricted between segments, tergite 1 as long as wide, end tergite medianly somewhat flattened, but not specialized into the pygidial area, opaque areas on sternite 2 large and distinct. Fore leg more or less modified, femur seen from above: Fig. 24, seen from outside (or behind): Fig. 25, with a flattened lobiform area on outer side which is margined on basal half by a carina; tibia and tarsus: Fig. 26 (from outside), metatarsus thinly expanded posteriorly, seen vertically: Fig. 27. Mid leg from behind: Fig. 28, without tibial spur, metatarsus from outside: Fig. 29; hind leg normal, with broad tibial spurs.

Vertex, occiput and temples comparatively finely, closely punctate, subreticulate, punctures on temples somewhat sparser, on occiput finer and on ocellar area larger, upper frons more grossly, subrugosely punctate, scapal hollow elongate, smooth and polished; thorax coarsely subreticulate-punctate, punctures irregular in form, on mesopleuron prepectus more coarsely, more irregularly reticulate, hypoepimeral area coarsely longitudinally punctate-striate, the striae on ventro-posterior portion finer and closer, rest of episternum coarsely, closely punctured, with more or less interspaces posteriorly, precoxal area triangular, flattened, polished, with medium-sized punctures sparsely scattered and upwards bordered by a strong carina at the lower margin of the striated part. Propodeum on dorsal aspect very coarsely irregularly reticulate, on posterior aspect transversely coarsely striate, on the side, together with metapleuron, longitudinally, strongly and coarsely striate. Abdominal tergites closely covered with medium-sized punctures, punctures on basal impressed area somewhat large and sparse, on caudal tergite slightly coarser and subreticulate, on the remaining segments posteriorly by degrees smaller, with interspaces everywhere less than the width of a puncture; on each sternite punctures at base large and sparse and on apical portion fine and close except smooth apical margin.

♀, unknown.

Holotype: ♂, Maoershan, 100 km E of Harbin, 15. VII. 1941, V. N. ALIN leg.

Paratype: 1 ♂, ditto.

Crabro (*Crabro*) *scutellatus* (SCHEVEN, 1791)

Crabro (*Thyreopus*) *scutellatus*: KOHL, 1915, p. 174.

Crabro (*Crabro*) *scutellatus*: LECLERCQ, 1954, p. 251.

Specimen examined. 1 ♂, China, Shanghai, V. 1906, J. C. THOMPSON leg. (Coll. Calif. Acad. Sci.).

Distribution. Europe, Ural region, C. Siberia (Irkutsk), new to the fauna of China proper.

27. *Entomognathus* (*Entomognathus*) *brevis* (VAN DER LINDEN, 1829)

Crabro (*Entomognathus*) *brevis*: KOHL, 1915, p. 316 (incl. Mongolia); YASUMATSU, 1939 a, p. 14

(S. Manchuria); TSUNEKI, 1947 b, p. 428 (Japan—Hokkaido).

Entomognathus (*Entomognathus*) *brevis*: LECLERCQ, 1954, p. 200; TSUNEKI, 1958 a, p. 10; 1969, tab. 2; 1970, p. 5 (Japan—Niigata); HANEDA, 1968, p. 57 (Japan—Nagano); TANO, 1973, p. 50 (Japan—Fukui).

Specimens examined. 4 ♂, Cheng, 31 km E of Harbin, 13. VII.

Remarks. The specimens are usual in colouration, having the yellow humeral tubercles.

*28. *Oxybelus quattuordecimnotatus* JURINE, 1807

Oxybelus quattuordecimnotatus: GUSSAKOVSKIJ, 1932, p. 28 (Ussuri); YASUMATSU, 1942, p. 114 (Peking); TSUNEKI, 1972, p. 164 (W. Mongolia).

Specimens examined. 1 ♀ 1 ♂, Harbin, 25. VII.

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