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STUDIES ON THE FORMOSAN SPIECIDAE (VII)
THE SUBFAMILY PHILANTHINAE
(HYMENOPTERA)

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STUDIES ON THE FORMOSAN SPHECIDAE (VII)
THE SUBFAMILY PHILANTHINAE
(HYMENOPTERA)*

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No wasp of the tribe Philanthini has been known from Formosa and the fauna of the subfamily here treated is confined to the tribe Cercerini. The first record on the genus *Cerceris* was made by S. A. Rohwer (1911). He described *C. fukaii* from the Island basing on a small collection of H. Fukai together with some other Hymenopterous insects. In 1913 E. Strand reported 7 species of the genus, namely, *C. hexadonta* Strd., *formosana* Strd., *navitatis* Sm., *novarae formosicola* Strd., *sinensis* Sm., *trichobunda* Strd. and *fukaii* Rohwer, in one of his series of papers dealing with the collection of the Formosan Hymenoptera made by H. Sauter. The same material was later revised by J. Giner Mari and the result of his study was published in 1943. He discovered an undescribed species in the material (*C. strandi* Giner), arranged all the known species of the Island in a key and attempted explanation of each species with the figures on some important characters that were utterly neglected by E. Strand. On the other hand, in 1936 K. Yasumatsu described the male of *C. formosana* that had remained unknown up to that time. The description, however, escaped the Giner's attention when he arranged the Formosan species. Later the species of the genus from the Island were fragmentarily touched by H. A. Scullen (1960) who synonymised *C. fukaii* with *C. luzonensis* Crawford, by J. Van der Vecht (1964) who combined *C. formosicola* as a subspecies with *C. pictiventris* Dahlbom and by myself (1967, 68). I confirmed the occurrence of *C. sinensis* Sm., *pictiventris formosicola* Strd. and *variaesimilis* Maidl on the Island, the last of which had been known as *C. spinicollis* Giner and was a new addition to the Formosan fauna.

The material used in the present investigation was collected by myself in 1966 (with the aid of Mr. T. Tano) and 1968. It included about 340 specimens consisted of 10 species. I could not, however, rediscover *C. hexadonta* Strd. and *C. trichobunda* Strd., but I could find *C. varia* Maidl, ♂, *coelicola* Giner, ♀ and *kwangthehiana* Giner, ♂, all of which were new to Formosa and the related sexes of the last two were new to science.

In the present paper I reduced some species raised by Giner to the original form (*superflua* Strd. sensu Giner to a variation of *luzonensis fukaii* Rohwer, *navigatrix* Strd. sensu Giner to a subspecies of *albofasciata* Rossi) and emended *C. klapperichi formosana*: Giner to *C. formosana klapperichi* Giner. In connection with the real examination of the specimens of *C. strandi* Giner I raised on this occasion *C. strandi koulingensis* Tsuneki (1968) to a valid species.

Before going further I acknowledge my indebtedness to Dr. F. J. Suárez and to Dr. J. P. van Lith for their kind help regarding some of the literature.

KEY TO THE FORMOSAN SPECIES OF *CERCERIS*

J. Giner Mari already in 1943 published the key to the Formosan species of this genus based on the reexamination of the collection of H. Sauter which was first investigated by E. Strand in 1913. The scientific names of some of the species dealt with by him, however, must be altered

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and, further, some species new to Formosa must be added as a result of the present investigation. Still further, his paper was in Spanish and published in the Journal not easily accessible to the East-Asiatic entomologists. So I attempted to make newly a key to the species of Formosa, although it was still incomplete as to a sex of some of the species and, moreover, it was presumed that several species now remained unknown will be discovered in future.

In the following key lack of the specimens of the two known species, namely, *C. hexadonta* and *C. trichobunda*, the descriptions of which can not supply us with the knowledge necessary for the modern classification compelled me to follow the old type. But I tried to give to each species an abstract of all the possible important characters, since among them there are species that have several closely resembling relatives in and around the Island.

F e m a l e

(Antennae 12-jointed, with 6 visible abdominal segments)

- 1 Sternite 2 of abdomen with a raised area (platform) at base, sometimes the area only encircled with punctures, not markedly raised 2
- Sternite 2 without the platform or the distinctly enclosed area 9
- 2 Clypeus without the lamina (produced appendage on the median lobe) (Pygidial area elongate oval, sternite 6 lacking the outer pair of the apical processes, hind coxa with a sharp carina on inner margin) 3
- Clypeus with the lamina 4
- 3 Supraclypeal area highly raised, higher than the interantennal ridge (Fig. 2), clypeus with apex truncate (Fig. 1), scape of antenna yellow and abdominal tergite 2 with basal maculae. (Colour cream yellow, temple, mesopleuron and propodeum maculated, wings somewhat infuscated, only apex distinctly darkened, antennal joint 3 from above 1.5 times, from the side 1.2 times as long as wide at apex, area dorsalis on propodeum finely transversely, somewhat arcuately striate, sometimes the striae very weak and fairly glittering). Length 8-10 mm, typical and the geographical races widely spread over S. E. Asia till Solomon Islands *pictiventris formosicola* Strand, 1913
- Supraclypeal area not particularly raised (in a line with the ridge of interantennal carina, Fig. 8), clypeus with apex bluntly triundulate (Fig. 7), scape of antenna and tergite 2 wholly black. (Colour orange yellow, temple, mesopleuron and propodeum without maculae, wings markedly infuscated, anterior margin from radial cell outwards especially strongly so, antennal joint 3 from above twice, from the side 1.5 times as long as wide at apex, area dorsalis coarsely transversely striate, sometimes the striae very weak and fairly strongly shining). Length 10-14 mm. Formosa and S. E. China. *formosana* Strand, 1913
- 4 Lamina raised from the base of clypeus, semicylindric, produced obliquely forwards (Figs. 56 and 57), temple below near the base of mandible with a marked process. (Maculae orange yellow, tergites 2 and 5 at apex and 3 nearly wholly yellow, area dorsalis on propodeum finely punctured and obliquely finely striate on the sides, tergite 1 trapeziform, as wide as long, pygidial area semielliptic, narrowed at base and widened and truncate at apex, punctures comparatively fine and dense). Length 10 mm, Formosa (Suisharyo) *trichobunda* Strand, 1913
- Lamina not broadly raised from the base of median lobe, without denticular process on temple below 5
- 5 Thorax and abdomen broadly ferruginous red, with yellow maculae, median lobe of clypeus with a denticular process medianly toward middle and with anterior margin 5-

dentate (Fig. 23). (Head and thorax fairly richly yellow maculated, tergites 3, 4 and 5 each at apical margin yellow banded, area dorsalis glittering, without medial furrow, finely punctured, lateral furrows coarsely crenate, pygidial area elongated oval, with the broader end at the apex). Length 12 mm. Formosa (Anping) **hexadonta Strand, 1913**

- Thorax and abdomen black, yellow maculated, sometimes narrowly ferruginous red on abdomen, clypeal astructure otherwise 6
- 6 Lamina of clypeus comparatively broad, at apex as wide as antennal joints 3 and 4 taken together, slightly convergent forwards and broadly emarginate at apex (Fig. 51), abdominal segment 1 and part of 2 ferruginous red. (Temple narrower than eye, antennal joint 3 about 1.6 times as long as wide at apex, area dorsalis with crenate median furrow, anteriorly obliquely, posteriorly transversely coarsely striate, intervals finely punctured, tergite 1 nearly as long as wide, pygidial area elongate trapeziform, sternite 6 with 2 pairs of apical processes, hind coxa without the carina on inner side). Length 8-9 mm, S. E. Asia, S. China, Formosa and Japan (Okinawa and Kyushu)
variaesimilis Maidl, 1926 (= spinicollis Giner 1942)
- Lamina of clypeus with apical width less than as great as the length of antennal joints 3 and 4 taken together, abdomen without ferruginous coloration 7
- 7 Pronotum black, tergite 2 without the latero-posterior maculae, the distance between the basal line of clypeus and the apical margin of the lamina subequal to the distance between the tentorial pits, abdominal segment 1 somewhat broader than long. (Clypeus black, with a marking on lamina, lamina: Figs. 24 and 25, antennal joint 3 about 1.7 times as long as broad at apex, joint 10 slightly longer than wide, temple narrower than eye, area dorsalis with median and lateral furrows very strongly and coarsely crenate, almost no remaining area, tergite 1 slightly wider than long, pygidial area elongate oviform, sternite 6 with 2 pairs of apical projections, hind coxa with a sharp carina on inner margin). Length 9-12 mm. Formosa (typical race in Philippines)
luzonensis fukaii Rohwer, 1911
- Pronotum yellow or yellow maculated, tergite 2 with postero-lateral maculae, the distance between the basal line of clypeus and the apical margin of lamina less than as great as the distance between tentorial pits, tergite 1 longer than wide 8
- 8 Hind coxa with a sharp carina on inner margin, pygidial area suboval, widely opened at base (Fig. 44), maculae on front side of head separated by black intervals (Fig. 41), collar with 2 lateral maculae, lamina triangularly incised at apex, antennal joint 10 wider than long. (Scutellum, mesopleuron, propodeum and tergite 4 without marking, apical margin of clypeus proper not 5-dentate, petiole slightly longer than wide, sternite 6 with only medial pair of the apical projections, area dorsalis mostly occupied by the extension of the crenation of the medial and lateral furrows). Length about 7 mm. Formosa and S. E. China
coelicola Giner Mari, 1942
- Hind coxa without the carina on inner margin, pygidial area inverted oviform, completely closed at base (Fig. 29), maculae on front side of head not separated by black intervals (Fig. 26), collar wholly yellow, lamina with apex truncate, antennal joint 10 slightly longer than wide. (Scutellum, mesopleuron, propodeum and tergite 4 yellow maculated, apical margin of clypeus proper 5-dentate, petiole distinctly longer than wide, sternite 6 without the lateral pair of the apical projections, area dorsalis with medial furrow indistinct, the surface sparsely scattered with fine punctures). Length 8-9 mm. S. E. China and Formosa
sinensis F. Smith, 1856

- 9 Hind coxae without longitudinal carina on the inner margin, wings strongly clouded...10
 - Hind coxae distinctly carinated on inner margin, wings not strongly clouded11
- 10 Clypeus without lamina, wholly black, antennal joint 3 about twice as long as wide at apex, abdominal segment 1 distinctly broader than long and not ferruginous in colour, area dorsalis smooth and polished, tergites 2-5 with regular band sometimes interrupted in middle. (Clypeal surface flattened, slightly raised apically, the apex with 2 pairs of rounded projections (Fig. 13), antennal joint 10 slightly longer than wide, sternite 6 with 2 pairs of apical projections, lateral pair very short, pygidial area inverted oviform, at base almost completely closed and at apex broadly subtruncate, face with 2 lateral maculae, pronotum, tegulae and tergite 1 maculated). Length 9-13 mm. Typical race widely distributed over the Palaearctic region ***albofasciata navigatrix* Strand, 1913**
 - Clypeus with a primitive lamina (Fig. 16), wholly yellow except apex, antennal joint 3 about thrice as long as wide at apex, abdominal segment 1 only slightly wider than long and ferruginous, area dorsalis finely obliquely striate, tergites 3, 4 and 5 irregularly maculated. (antennal joint 10 longer than wide, pygidial area tongue-shaped, somewhat narrowed towards base, maculae on fore side of head: Fig. 16, collar, tegulae, postscutellum and propodeum yellow maculated). Length 13-14 mm. China and Formosa
***kwangtsehiana* Giner Mari, 1942**
- 11 Clypeus with a pair of short stick-like processes below middle of its surface (Fig. 35), collar wholly yellow. (Head in front: Fig. 35, abdomen: Fig. 37, antennal joint 3 in dorsal view nearly twice as long as wide at apex, 10 nearly as long as wide, area dorsalis with medial furrow very feeble and indistinct, finely punctured and faintly transversely striated, pygidial area: Fig. 38, sternite 6 without lateral pair of the apical projections, mesonotum duplipunctate). Length 7.5 mm. Formosa ***strandii* Giner Mari, 1943**
 - Clypeus with the usual lamina near apex of the median lode, collar with two maculae widely separated with black interval12
- 12 Lamina wider than the upper margin of the medial lode, broadly emarginate at apex and medianly narrowly interrupted. (Fig. 48), temples, scutellum with maculae, abdominal segment 1 wholly and 2, 4 and 5 in part brownish red. (Clypeus wholly yellow, thorax and abdomen comparatively richly yellow maculated, area dorsalis at base longitudinally coarsely and at apical portion transversely striate, abdominal segment 1 slightly longer than wide, tergite 2 uniformly, sparsely and shallowly punctured). Length 10 mm. Widely distributed over S. E. Asia till Formosa ***varia* Maidl, 1926**
 - Lamina about as wide as the upper margin of the medial lobe, broadly triangularly incised at apex, temple, scutellum and propodeum without maculae, abdomen without reddish coloration. (Head seen in front: Fig. 41, in profile: Fig. 42, abdominal tergite 1-3: Fig. 43, pygidial area: Fig. 44). Length about 7 mm. S. E. China and Formosa
***coelicola* Giner Mari, 1942**

Male*

(Antennae 13-jointed, with 7 visible abdominal segments)

- 1 Hind coxae provided with a longitudinal carina on inner margin 2
 - Hind coxae without the longitudinal carina on inner margin 7
 2 Sternite 2 of abdomen without the distinctly raised area (platform), tergites 2 and 4 on apical half ferruginous red, femora of legs at least in part ferruginous. (Median lobe of

* *Cerceris hexadonta* Strd. and *C. trichobunda* Strd. remain undiscovered.

- clypeus tridentate at apex — Fig. 49 —, temples, mesopleuron, scutellum and propodeum yellow maculated, abdominal segments 1 and 7 also reddish, antennal joint 10 nearly as long as wide, area dorsalis with very coarsely crenate median and lateral furrows, disc on both sides of the medial furrow with one or two longitudinal impressions and minutely punctured). Length 8–11 mm. Thailand, Sumatra, Java and Formosa *varia* **Maidl, 1926**
- Sternite 2 with the platform, sometimes sharply margined, sometimes marginated with only a row of punctures, the said portions of abdomen not ferruginous 3
- 3 Margin of the platform sharply edged 4
- Margin of the platform not sharply edged, sometimes represented by a row of punctures 6
- 4 Antennal flagellum wholly ferruginous, abdominal segments 1, 2 and 7 at least in part ferruginous red; lateral lobes of clypeus and antero-lateral corners of median lode broadly black — Fig. 54 — and the areas densely covered with golden or silvery hairs. (Area cordata with medial furrow, lateral furrows strongly coarsely crenate, the ridges of crenation extended on to the sides of the disc, disc finely sparsely punctured, tergite 1 slightly longer than wide, antennal joint 10 about as long as wide, tergites 2, 3, 5 and 6 yellow maculated). Length 7–8 mm. Widely distributed over S. E. Asia including Formosa
- variaesimilis* **Maidl, 1926** (= *spinicollis* Giner Mari, 1942)
- Antennal flagellum at least on upper side black, abdomen without ferruginous maculae, clypeus except apical margin yellow and without the special pilosity 5
- 5 Maculae orange yellow, tergite 2 without basal marking, 3 wholly orange yellow, supra-clypeal area in profile level with interantennal carina (Fig. 11), antennal joint 10 longer than wide, wings strongly darkened. (Area dorsalis similar to that of *viriaesimilis*, but the transverse ridges clearer). Length 8–10 mm. Formosa *formosana* **Strand, 1913**
- Maculae cream yellow, tergite 2 with basal marking, yellow of tergite 3 broadly roundly emerginate in front, in profile supra-clypeal area raised above the level of interantennal carina (Fig. 5), antennal joint 10 as long as wide, wings weakly clouded, with anterior margin apically somewhat strongly so. (Area dorsalis enclosed with strongly crenated furrows, median furrow also crenate or punctured, disc finely punctulate, sometimes fairly strongly shining). Length 7–8 mm, Formosa *pictiventris formosicola*, **Strand, 1913**
- 6 Maculae on clypeus and lower frons along the inner orbits broadly separated by the black intervals, tergite 2 lacking the postero-lateral maculae, pygidial area yellow, antennal joint 10 slightly longer than wide. (Area dorsalis anteriorly longitudinally and posteriorly transversely arcuately and very coarsely striate, sometimes the striae less strong, tergite 2 nearly semicircular, wings fairly markedly brownish, lateral lobes of clypeus black, fore and middle femora more than half black). Length 8–9 mm. Formosa (typical race in Philippines) *luzonensis fukaii* **Rohwer, 1911**
- Maculae on clypeus and lower frons not broadly separated by the black intervals (Fig. 46), tergite 2 with the postero-lateral maculae, pygidial area not maculated, antennal joint 10 slightly shorter than wide. (Area dorsalis with broad, very coarsely and strongly crenated median and lateral furrows, with narrowed intervals polished, tergite 2 subtriangular, only postero-laterally rounded, wings weakly fuscous, only on apical margin darkened, fore and middle femora more than half yellow). Length 8–9 mm, S. E. China and Formosa *coelicola* **Giner Mari, 1942**
- 7 Tergite 2 at base with a raised area, though not distinctly outlined and the elevation not always strong, ultimate antennal joint conically attenuate apically, tergite 1 distinctly

- longer than wide, wings not strongly darkened, band on collar not separated in two, mesopleuron, scutellum and propodeum maculated. (Area dorsalis sparsely punctured). 8-9 mm 8
- Tergite 2 without the raised area (sometimes medianly longitudinally weakly raised), ultimate joint of antennae obliquely truncate at apex, tergite 1 wider than long, at least as long as wide, wings strongly darkened, maculae on collar separated from each other, mesopleuron, scutellum and propodeum without maculae. 10-12 mm 9
- 8 Supraclypeal mark isoleted (Fig. 39), tergite 2 without latero-apical maculae, tergite 4 without yellow band, fore and middle femora more than half black, median lobe of clypeus as long as wide (Fig. 39), the supposed line connecting the lower margins of the tentorial pits lies across middle of the median lobe, mesonotum duplipunctate, the larger punctures partly longitudinally confluent and the micropoints very abundant. Length 7-8 mm, Formosa ***strandi* Giner Mari, 1943**
- Yellow of supraclypeal area connected with that of clypeus and lateral marks of face (Fig. 32), tergite 2 with latero-apical maculae, tergite 4 with a band, fore and middle femora more than half yellow, median lobe of clypeus somewhat longer than wide (Fig. 32), the supposed line connecting the lower margins of tentorial pits lies slightly above middle of the median lobe, mesonotum sparsely punctured, punctures distinctly separated from each other and micropoints between them much few in number. Length 7-9 mm, S. E. China and Formosa ***sinensis* F. Smith, 1856**
- 9 Abdominal segment 1 markedly wider than long, with two small lateral yellow spots, antennal joint 3 about 1.3 times as long as wide at apex, pygidial area semielliptic, widely truncate at apex and roundly attenuate toward base (Fig. 15), area dorsata smooth and polished. (Maculae on collar broadly separated from each other, scutellum without maculae, tergites 2-6 uniformly banded or maculated, mid and hind femora more than half yellow). Length 9-10 mm. Widely spread over the Palaearctic region till Japan, Formosa is the only record from the Oriental region ***albofasciata navigatrix* Strand, 1913**
- Abdominal segment 1 slightly wider than long, at least as long as wide, wholly ferruginous red, antennal joint 3 about 2.3 times as long as wide at apex, pygidial area (Fig. 21), almost rectangular, somewhat narrowed toward apex, apex truncate, area dorsalis longitudinally finely and closely striate. (Orange-yellow band on collar narrowly interrupted in middle, scutellum with a medianly emarginated large macula, mid and hind femora more than half black). Length 10 mm. S. E. China and Formosa ***kwangtsehiana* Giner Mari, 1942**

DESCRIPTIONS AND RECORDS OF THE SPECIES

1. *Cerceris pictiventris formosicola* Strand, 1913

Cerceris novarac var. *formosicola* Strand, Arch. Naturg., Abt. A, 78 (7): 161, 1913 (♀♂, Formosa).

Cerceris (*Apiratryx*!) *formosicola*: Giner Mari, Arb. morphol. taxon. Ent. Berlin-Dahlem, 10 (2-3): 170, 1943 (♀♂, Formosa).

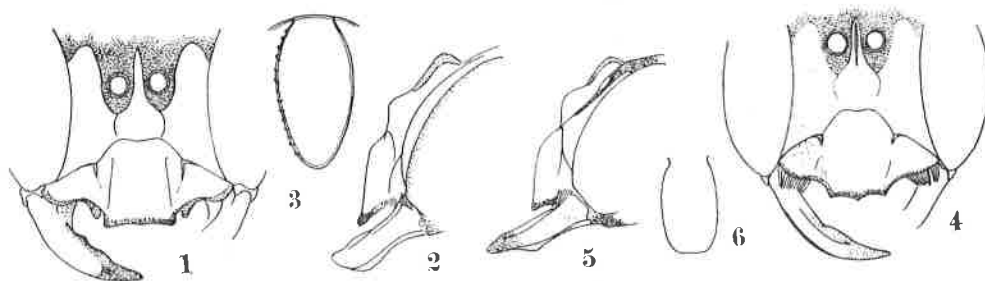
Cerceris pictiventris formosicola: Van der Vecht, Zool. Meded., 39: 354, 1964.

Cerceris pictiventris formosicola: Tsuneki, Etizenia, 29: 6 (China), 21 (Formosa), 1968.

♀. Length 8-10 mm. Black, yellow are: Lower 2/3 of fore side of head, except apical margin of clypeus, mandibles on basal half, antennal joint 1, a spot on upper temples behind eyes, two maculae on pronotum, tegulae, postscutellum, a spot on lower portion of mesopleuron,

an elongate mark on each side of dorsal aspect of propodeum, a large macula at base of tergite 2, tergites 3 and 5, both emarginated or incised medianly in front, large lateral marks on sternites 2 and 5, a band on 3 and 4, front and middle legs except the greater part of coxae, hind legs except the marks on femora and tibiae. Antennae dark brown, beneath ferruginous. Wings slightly clouded and fairly markedly so on anterior margin, especially on apical portion.

Head in front: Fig. 1, anterior margin of median lobe of clypeus black, lateral teeth brown, lateral lobe at apex pale yellow and semitransparent. Clypeus seen in profile: Fig. 2, supraclypeal area highly raised, interantennal carina steeply inclined posteriorly, temple narrower than eye. Antennal joint 3 in the narrowest view 1.5 times, in the broadest view 1.3 times as long as wide at apex, joint 10 about as long as wide. Pronotum without the antero-lateral teeth and not impressed medianly, mesopleuron with scrobal furrow deep and comparatively broad, coarsely crenate, upper border of the furrow distinctly edged, the areas above and below the furrow not roundly swollen; area dorsalis with median and lateral furrows broad and coarsely crenate, the remaining narrow areas finely and sparsely punctured, sometimes with feeble transverse striae; abdominal segment 1 slightly broader than wide, tergite 2 semicircular, pygidial area: Fig. 3. Basal platform of sternite 2 sharply marginated, semicircular in form, reaching amply middle of the incrassate area of the segment, sternite 5 markedly incrassate on each side, roundly swollen, but not toothed, hypopygium without the lateral teeth. Punctures comparatively coarse and dense.



Figs. 1-6. *Cerceris pictiventris formosicola* Strand, 1913.
1-3, ♀; 4-6, ♂. 1 and 4, head in front. 2 and 5, face in profile. 3 and 6, pygidial area.

Measurements: WH 78, IOD 39, OOD : POD = 13 : 10, OAD : WAS : IAD = 10 : 6 : 6, OTD : ITD = 10 : 22, LC : ACD : AOD = 23 : 12 : 18. (As to abbreviation see Etizenia 28)

♂. Length 7-8 mm. Coloration similar to ♀, but mesopleuron without yellow marking, tergite 6 also yellow band, sternites 2-5 on each side with a macula, sometimes those on 5 lacking; fore and middle femora with a blackish mark at base, hind femora largely black. Head seen in front: Fig. 4, seen in profile: Fig. 5, supraclypeal area distinctly raised; antennal joint 3 in the narrowest view 1.6 times, in the widest view 1.3 times as long as wide at apex, joint 10 distinctly wider than long. Area dorsalis as in ♀, pygidial area: Fig. 6. Punctuation coarse and very close.

Measurements: WH 72, IOD 36, OOD : POD = 12 : 9, OAD : WAS : IAD = 9 : 6 : 5, OTD : ITD = 9 : 20, LC : ACD : AOD = 25 : 14 : 17.

Specimens collected: 31 ♀♀ 88 ♂♂ (18 ♀♀ 57 ♂♂, K. Tsuneki leg.; 13 ♀♀ 29 ♂♂, T. Tano leg.; 2 ♂♂, B. S. Chang leg.): 1 ♀ 1 ♂, Taipei Pref. (Kueishanlou, 6. VII. 1966); 10 ♂♂, Ilan Pref. (3 ♂♂, Tsukeng, 19. VIII. 1966; 7 ♂♂, Erhsieh, 18. VI. 1968); 15 ♀♀ 19 ♂♂, Hualien Pref. (15 ♀♀ 17 ♂♂, Liyuchih, 16. VIII. 1966; 2 ♂♂, Tienhsiang, 17. VII. 1966); 3 ♀♀ 8 ♂♂, Taitung Pref. (3 ♀♀ 2 ♂♂, Taitung, 11, 15. VIII. 1966; 5 ♂♂, Chipenchi,

13. VIII. 1966; 1 ♂, Taoyeh, 14. VIII. 1966; 3 ♀♀ 20 ♂♂, Pingtung Pref. (1 ♀ 6 ♂♂, Hengchun, 2. VIII. 1966, 11. VII. 1968; 1 ♀ 4 ♂♂, Manchou, 14. VII. 1968; 1 ♀ 3 ♂♂, Paoli, 19. VII. 1968; 2 ♂♂, Checheng, 15. VII. 1968; 5 ♂♂, Kentin Park, 9. VIII. 1966, 13. VII. 1968); 2 ♀♀ 9 ♂♂, Chiayi Pref. (Chuchi, 21. VII. 1966, 24, 25, VII. 1968); 3 ♂♂, Tainan Pref. (Kuantsuling, 19. VII. 1966, 23. VII. 1968); 6 ♀♀ 15 ♂♂, Nantou Pref. (5 ♀♀ 9 ♂♂, Lihyuehtan, 24. VIII. 1966; 1 ♀ 5 ♂♂, Puli, 12. VIII. 1968; 1 ♂, Wushe, 24. VIII. 1968); 1 ♀ 2 ♂♂, Taoyuan Pref. (Kuanyin, 28. VII. 1966, 14. VI. 1968).

Remarks. Except for 3 male specimens captured at the roadside of Wushe (1200 m) and Tien-hsiang (800 m) all the specimens were collected in the lowland areas, less than 600 m in height. This is one of the common and fairly abundant species of *Cerceris* in Formosa.

2. *Cerceris formosana* Strand, 1913

Cerceris formosana Strand, Arch. Naturg., Abt. A, 79 (7): 169, 1913 (♀, Formosa: 1 ♀, Sokotsu, Ban-shoryo District; 2 ♀♀, Taihorin).

Cerceris formosana: Yasumatsu, Festschr. E. Strand, I: 495, 1936 (Kanzangóc-Pass, Taitung Pref., Tien-hsiang, Hualien Pref.).

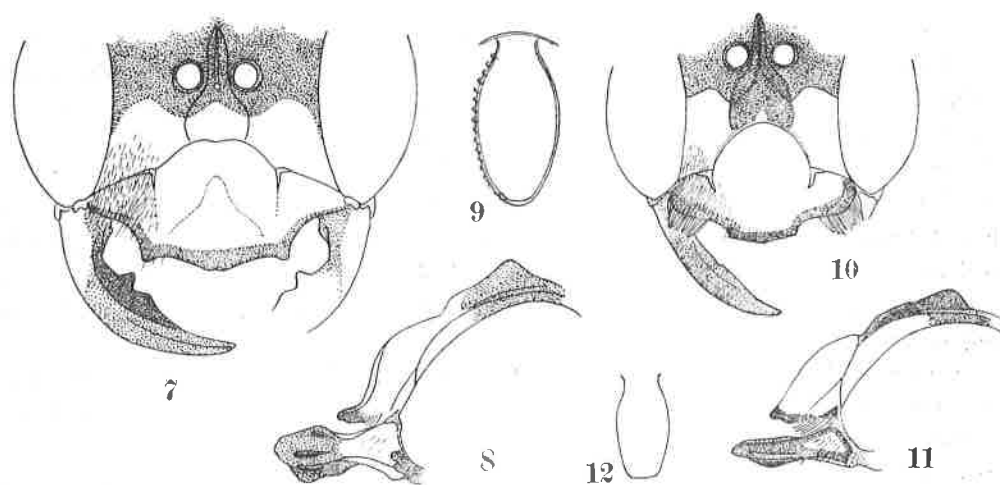
Cerceris klapperich formosana: Giner Mari, Arb. morphol. taxon. Ent. Berlin-Dahlem, 10 (2-3): 172, 1943 (the same material as used by Strand).

♀. Length 10-14 mm. Black with the following portions orange yellow: Lower half of the fore side of head except the apical margin of clypeus (Fig. 7), basal third of the outside of mandibles, 2 spots on pronotum, tegulae, postscutellum, apical margin of tergite 1 narrowly, tergite 3 wholly, apical band on tergite 5, medianly broadly emarginated band on sternite 3, front and middle legs largely, basal half largely of hind legs. Wings fairly strongly darkened, especially so on apical half of the anterior margin.

Median lobe of clypeus on basal half markedly raised and strongly depressed on anterior half, the depression narrowly extended upward into the middle of the basal elevation (Fig. 7 and 8), temple in profile as wide as eye. Antennal joint 3 in the narrowest view 1.6 times, in the widest view 1.3 times as long as wide at apex, joint 10 distinctly longer than wide. Pronotum with antero-lateral corners not toothed and medianly not impressed, mesopleuron with a broad scrobal furrow, the furrow not edged on both margins and the epimeral and episternal areas on both sides markedly roundly swollen, episternum without the tooth, area dorsalis on propodeum with strongly crenated medial and lateral furrows, the ridges of the crenation extended on to the disc and the surface appears coarsely, transversely and arcuately striated, but the striae sometimes very weak and indistinct, intervals between the striae finely sparsely punctured. Tergite 1 slightly broader than long, 2 nearly semicircular, pygidial area: Fig. 9, the marginal curved hairs not long, sparse, platform on sternite 2 acutely edged on posterior margin, reaching 2/5 of the incrassate area of the segment, sternite 5 with the sides markedly roundly swollen, but not toothed, hypopygium without the lateral pair of teeth, the areas only bluntly angulated. Punctures everywhere coarse and dense, on upper frons somewhat finer and longitudinally subrugose, on scutellum and posterior portion of abdomen above with a more or less interspace, sternites medianly sparsely, laterally closely punctured, on the 5th medial area also coarsely and closely, but not strongly punctured.

Measurements: WH 105, IOD 54, OOD : POD = 18 : 11, OAD : WAS : IAD = 16 : 7 : 8, OTD : ITD = 15 : 33, LC : ACD : AOD = 33 : 14 : 22.

♂. Length 8-10 mm. Coloration and sculpture similar to ♀, but abdominal tergites 4 and 5 with an intermittent apical narrow band, tergite 6 with a broad band, fore and middle femora largely black, hind femora except the apex and hind tibiae except apical macula black, hind tarsi



Figs. 7-12. *Cerceris formosana* Strand, 1913. 7-9, ♀; 10-12, ♂.
7 and 10, head in front. 8 and 11, head in profile. 9 and 12, pygidial area.

also brownish black. Head in front: Fig. 10, in profile: Fig. 11, with temple as wide as eye, antennal joint 3 in the narrowest view nearly twice, in the widest view 1.5 times as long as wide at apex, joint 10 longer than wide, structure of mesopleuron as in ♀, area dorsalis also similar, usually the transverse striae weak and the surface finely sparsely punctured. Abdominal tergite 1 wider than long, 2 nearly semicircular, but the sides of anterior portion somewhat straight, pygidial area: Fig. 12. Platform of sternite 2 reaching middle of the incrassate area of the segment. Punctuation generally as in ♀.

Measurements: WH 82, IOD 40, OOD : POD = 15 : 9, OAD : WAS : IAD = 10 : 6 : 6, OTD : ITD = 10 : 24, LC : ACD : AOD = 30 : 14 : 19,

Specimens collected: 7 ♀♀ 5 ♂♂, Nantou Pref. (3 ♀♀ 1 ♂, Chienching - Wushe (1600 m), 13. VIII. 1968; 4 ♀♀ 2 ♂♂, Wushe (1200 m), 16-20. VIII. 1968; 2 ♂♂, Nanshanchi (900 m), 9. VIII. 1968); 1 ♀, Chiayi Pref. (Fenchihu, 1400 m), 4. VII. 1968, K. Tsuneki leg.

Remarks. J. Giner Mari dealt with this species as a subspecies of *C. klapperichi* which was published by him in 1942. This is quite strange and it should be reversed as *C. formosana klapperichi*.

This species is the high land inhabitant in sharp contrast with the preceding species and is not common in Formosa.

3. *Cerceris albofasciata navigatrix* Strand, 1913

Cerceris navitatis Smith, Trans. Ent. Soc. Lond., 1873, p. 195, 1873. (Japan).

Cerceris navitatis: Strand (or *navigatrix* Strand), Arch. Naturg. 1913, Abt. A, 7: 160, 1913 (1 ♀, Taihorin, 7. VI., 1 ♂, Taihorin, 7. VIII.).

Cerceris navitatis navigatrix: Giner Mari, Arb. morphol. taxon. Ent. Berlin-Dahlem, 10 (4): 221, 1943 (Formosa).

Cerceris albofasciata: Tsuneki, Mem. Fac. Lib. Arts, Fukui Univ., II, 11 (1): 26, 1961 (Japan, Korea, N. China and Inner Mongolia)

Length ♀ 9-13 mm, ♂ 8-10 mm. Black, yellow are two lateral maculae on face, a spot on upper temple behind eye, two small spots on pronotum, a spot on tegulae, (postscutellum in ♂), two spots on abdominal tergite 1 (sometimes absent, in ♂ always absent), medianly narrowly interrupted band on apical margin of tergites 2-5 (in ♂ on 6 also); wings strongly clouded. This species is characteristic in the maculation of the abdomen, the polished area

dorsalis, the broad petiole, the flattened second sternite and in the not thoroughly (only at base) carinated hind coxa. In the female, further, the structure of the clypeus (Fig. 13) and the pygidial area (Fig. 14) are also characteristic and in the male the obliquely truncated ultimate antennal joint and the pygidial area (Fig. 15) are of use to separate the species.

Measurements: ♀. WH 90, IOD 49, OOD:POD=15:10, OAD:WAS:IAD=13:7:7, OTD:ITD=14:24, LC:ACD:AOD=29:13:19, antennal joint 3 from every side 1.7 times, 10 about 1.2 times as long as wide at apex. ♂. WH 80, IOD 40, OOD:POD=12:12, OAD:WAS:IAD=10:7:5.5, OTD:ITD=10:22, LC:ACD:AOD=28:15:17, antennal joint 3 from above 1.5 times, from the side 1.2 times as long as wide at apex, joint 10 about 1.2 times as long as wide (each joint somewhat swollen in middle).

Specimens collected: 3 ♀♀ 12 ♂♂: 2 ♀♀ 11 ♂♂, Ilan Pref. (Tsukeng, 19. VIII. 1966, 15. VI. 1968; Erhchieh, 18. VI. 1968); 1 ♂, Chiayi Pref. (Chuchi, 25. VII. 1968); 1 ♀, Nantou Pref. (Puli, 20. VIII. 1968).

Remarks. The Formosan race differs from the typical race occurring in the Palaearctic region from Europe till Japan mainly in the colour of the legs. In the latter the fore and middle legs from the apex of coxae and the hind legs from the base of femora wholly ferruginous red (♀) or yellow mixed with ferruginous (♂), while in the former all the legs till near apex of femora black (♀) or all coxae and fore trochanters black and all the femora with black maculae (♂, in fore and middle femora black area broader than the yellow and in hind femora somewhat narrower). The wings are more markedly black (♀♂) and the anterior margin of clypeus broadly black (♂).

This subspecies is apparently widely distributed over the Island, but it is not common.

4. *Cerceris kwangtsehiana* Giner Mari, 1942

Cerceris kwangtsehiana Giner Mari, Eos, 18: 143, 1942, (♀), (China: Kwangtseh)

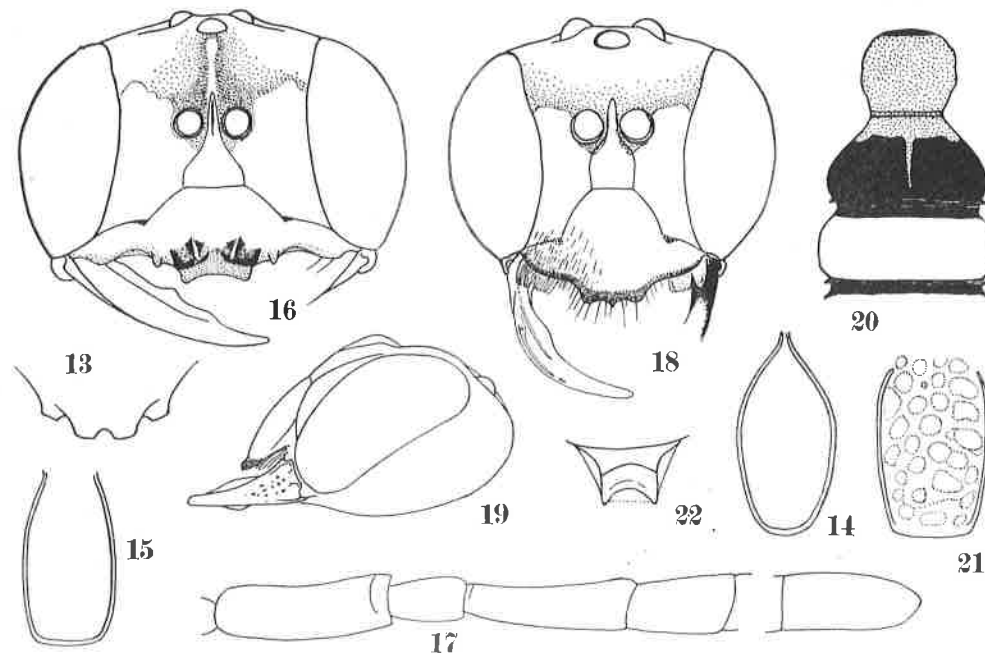
Cerceris kwangtsehiana: Tsuneki, Etizenia, 29: 6, 1968 (♀), (China: Wangshan)

♀. Length about 13 mm. Black with orange yellow maculae: Lower half of head in front (Fig. 16), basal 2/3 of mandibles, a spot on upper temple, antennal scape except above, collar of pronotum, humeral angles on posterior margin (somewhat reddish), a spot on tegulae, post-scutellum, a pair of small maculae on propodeum, a broad band on tergites 3 and 5, narrow one on 4, fore legs except coxae, a part of femora and a streak on tibiae, middle and hind legs similar but trochanter more or less yellow. Antennae beneath and at base and at apex of flagellum brownish. Abdominal tergite 1 wholly and apex of 2 in middle brownish red. Wings fairly strongly clouded.

Structure of clypeus: Fig. 16, on the median lobe below a pair of lamellate processes observable, bearing a thick carina on each surface near the medial line, apical margin of clypeus proper medianly broadly produced and laterally slightly apart from the protuberance a short tooth is produced; head in profile with temple as broad as eye. Antennal joints 1-4 and 12: Fig. 17. Pronotum without median impression and antero-lateral teeth, area dorsalis finely obliquely rugoso-striate; petiole slightly wider than long, medio-apical rounded impression on tergites 1-4 present. Hind coxae without longitudinal carina. Punctuation strong and dense. measurements were already given in my previous paper (1968). (The description was made with a specimen from China).

♂ (hitherto unknown). Length about 10 mm. Black with the following portions orange yellow: Anterior side of head from about middle below except apex of clypeus (Fig. 18), medianly narrowly interrupted band on collar, humeral angles on posterior margin (somewhat reddish),

tegulae of wings, scutellum (medianly in front broadly roundly emarginate), postscutellum, abdominal tergite 3 wholly, ante-apical narrow band on 5, medio-apical two spots on 6, front legs from apical portion of femora apically, mid legs on apex of femora, whole tibiae and greater part of metatarsi and hind legs on apex of coxae, trochanters above, apex of femora, basal portion and inside of tibiae and articulations of all legs. Reddish ferruginous: Antennae beneath from apex of joint 1 to 5 and ultimate joint, abdominal tergite 1 wholly and base of 2 (medianly narrowly extended till near apex - Fig. 20). Mandibles pitchy black, medianly and apically slightly reddish; palpi and mid tarsi except metatarsi and hind tibiae on apical portion except beneath dark brown. Wings rather fusco-hyaline, slightly darker on anterior half and especially so on its apical portion.



Figs. 13-22. Figs. 13-15. *Cerceris albofasciata navigatrix* Strand, 1913.
Figs. 16-22. *Cerceris kwangtschiana* Giner Mari, 1942. 16-17, ♀; 18-22, ♂.
13, apical margin of median lobe of clypeus (♀), 14, pygidial area (♀), 15, ditto (♂). 16 and 18, head in front. 17, antenna. 19, head in profile. 20, basal three segments of abdomen. 21, pygidial area. 22, hypopygium.

Head above with OOD : POD = 14 : 9, postocellus relatively 4.5 in diameter. Head seen in front: Fig. 18, face comparatively narrow, ratio of IOD : WH = 39 : 85, supraclypeal area markedly bordered on both sides with the suture line, in width only slightly less than as great as the lateral part of clypeus (ratio 12 : 13), median lobe of clypeus distinctly longer than wide and very gently convex (Fig. 19, lateral view), median tooth of apical margin acuter than the lateral; mandibles beneath with a rather weak triangular projection. Antennal joint 2 slightly longer than wide, joint 3 slightly more than twice as long as 2 and approximately 2.7 times as long as wide at apex (seen from every direction), joint 10 distinctly longer than wide, relative length of joints 3, 4 and 5 approximately 14, 10.5 and 10, thence the joints progressively wider till joint 11, ultimate joint slightly longer than penultimate joint and with the obliquely truncate apex. Head seen in profile: Fig. 19, with eye wider than temple (ratio approximately 4 : 3), collar of pronotum with sides rounded, not carinated in front, with antero-lateral carinae turned

downwards far before reaching the rounded angles, area dorsalis triangular, wider than long, with lateral crenate furrows somewhat roundly curved, with apex reaching about middle of the segment, disc convex, longitudinally finely and closely striate, median groove not strong and becomes obsolete on the apical portion. Abdominal segment 1 wider than long, 2 nearly semi-circular (Fig. 20), pygidial area: Fig. 21, base of sternite 2 with 3 short longitudinal carinae, one in middle and the others on both sides near the lateral margin, lateral swelling of the following sternites not strong, sternite 6 densely covered with short pubescence on apical margin, but not provided with tufts of hairs on any joint. Sternite 8: Fig. 22

Punctures on vertex mediocre, subreticulate, outside each ocellus narrowly impunctate, on upper frons somewhat rugoso-reticulate, on median lobe of clypeus and supra-clypeal area slightly sparse, with more or less intervals and indistinct in outline. Mesonotum longitudinally rugoso-punctate, punctures slightly smaller than on vertex, mesopleuron on hypoepimeral area comparatively finely, below scrobal furrow more grossly and more or less rugosely irregularly reticulate, propodeum reticulate, the reticulate punctures larger than on mesonotum, on lateral and posterior areas more or less transversely confluent; abdominal tergites punctate-reticulate, punctures as large as those on propodeum and posteriorly somewhat sparse, with micropoints on intervals, the interval always narrower than punctures, pygidial area coarsely, rather sparsely punctured, intervals minutely coriaceous.

Measurements: AOD : WAS : IAD = 10 : 7 : 6.5, OTD : ITD = 8 : 16, LC : ACD : AOD = 32 : 13 : 21.

Specimens collected: 1 ♂, Nantou-Pref. (Meichi, 12. VII. 1966, K. Tsuneki leg.).

Remarks. Even taking the secondary sexual characters out of consideration the Formosan specimen seems to differ considerably from the female specimen from China in respect of coloration, length relation between the antennal joints and somewhat in the pattern of sculpture. Possibly the Formosan population may represent a geographical race.

This species appears very rare in Formosa. In my second visit I paid a special attention to collect further specimens, particularly the females, to confirm the subspecific relation. But all the efforts ended in vain.

5. *Cerceris hexadonta* Strand, 1913

Cerceris hexadonta Strand, Arch. Naturg., 79, Abt. A, 7: 158, 1913 (♀, China).

Cerceris hexadonta: Giner Mari, Arb. morphol. taxon. Ent. Berlin-Dahlem, 10 (4): 219, 1943.

♀. Length 12 mm. Black with the following portions ferruginous red: Apex of mandibles, anterior margin of clypeus, antennae beneath, pronotum, humeral angles, tegulae, scutellum, postscutellum, abdominal tergite 1 at apex, 2 on apical 2/3, 3, 4 and 5 except the extreme base, whole of 6, apical border of sternite 5, front coxae in part, nearly whole of front and mid legs, apex of femora and base of tibiae of hind legs. Yellow: Mandibles except apex, clypeus except apical margin, large lateral maculae on face along inner orbits, supra-clypeal area and interantennal carina, scape of antennae in front, a spot on upper temple behind eyes, 2 short line on posterior margin of collar, a mark on mesopleuron below insertion of wings, 2 spots on scutellum and 2 marks on posterior aspect of propodeum, postero-lateral maculae on tergite 2, a narrow apical band on 3, 4 and 5, an apical spot on sternite 1, latero-posterior short lines on 2, a narrow apical band on 3 and 4 and comparatively broad maculae on legs. Wings yellowish, stigma more strongly so.

Head as wide as thorax, slightly narrowed behind eyes, inner orbits somewhat divergent towards clypeus, temple a little narrower than eye seen in profile, clypeus: Fig. 23, with a small

flattened tubercle a short distance from the apical margin, the latter quinque-dentate, antennae with joint 3 twice as long as 2 and longer than 4; collar of pronotum short, without medial impression and without antero-lateral teeth, area dorsalis glittering, no medial furrow, finely punctured, laterally more coarsely and abundantly punctured and the lateral furrows crenate. Tergite 1 longer than wide, 2 subtriangular, pygidial area elongated oval, broader apically and about twice as long as wide, truncate at apex, sternite 2 with basal elevation, but without the aspect in the group of the so-called *Apiraptryx*. Front coxa with a finely punctured conical process, hypopygium with strong lateral pencils of hairs. Punctuation well developed and distinct, but not robust, on median lobe of clypeus smaller and sparse, on sternites of abdomen sparser and finer at base, on mesopleuron gross and fairly deep at the centre and smaller sideways. Pilosity fairly abundant on propodeum and abdominal tergites. (After the descriptions of Strand and Giner Mari).

Remarks. The single female specimen was captured in Anping.



Fig. 23. *Cerceris hexadonta* Strand.
Clypeus (♀).

6. *Cerceris luzonensis fukaii* Rohwer, 1911

Cerceris luzonensis Crawford, Proc. U. S. Nat. Mus., 38: 120, 1910 (♂, Philippines).

Cerceris fukaii Rohwer, Ibid., 39: 484, 1911 (Formosa).

Cerceris fukaii: Strand, Arch. Natur., Abt. A, 79 (7): 163, 1913 (7 ♀♀ 14 ♂♂ from Taihorin, Koshun, Tainan from IV to VIII, including var. *superflua*).

Cerceris spiniger Rohwer, Bull. Exp. Sta. Hawaii. Sug. Pl. Ass. Ent. Ser., 14 (2): 148, 1919 (in Williams' Philippine wasp studies).

Cerceris (s. str.) *fukaii*: Giner Mari, Arb. morphol. taxon. Ent. Berlin-Dalhem, 10 (4): 209, 1943.

Cerceris (s. str.) *superflua*: Giner Mari, Ibid., p. 211, 1943.

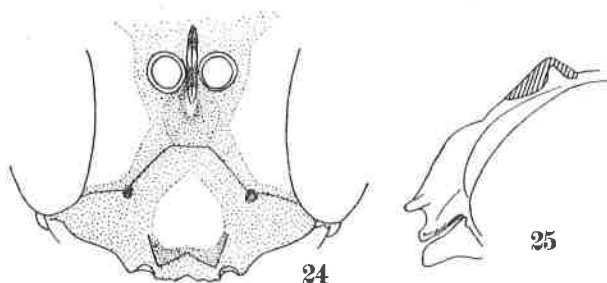
Cerceris luzonensis: Scullen, Pan Pacif. Ent., 36: 80, 1960 (synonym).

Cerceris luzonensis: Baltazar, Pacif. Ins. Mongr., 8: 351, 1960 (listed).

Cerceris luzonensis fukaii: Tsuneki, Etizenia, 29: 21, 1968

♀. Length 9-12 mm. Black, yellow are: A mark on lamina, a spot on supraclypeal area and in interantennal carina, large lateral marks on lower frons along inner orbits, base of mandibles, scapes of antennae in front, tegulae, postscutellum, basal mark on tergite 2, tergite 3 except broad basal area, apical half of tergite 5, a band on sternite 3, knees, tibiae and tarsi of fore and middle legs, greater part of tibiae and metatarsi of hind legs. Antennal flagellum beneath dark brown to brown, wings fairly broadly clouded and strongly darkened on radial cell and its outer area till wing apex.

Lamina of clypeus raised at the apical margin only (Figs. 24 and 25), rather acutely convergent apically, and triangularly incised at apex, the surface flattened (Fig. 25), the anterior margin of the clypeus proper: Fig. 24, not as usual 4- or 5-dentate; antennal joint 3 about 1.7 times as long as broad at apex (in the narrowest view), joint 10 slightly longer than wide (ditto); in profile temple slightly less than as broad as eye. Pronotum transversely weakly carinated across middle, antero-lateral corners appear toothed seen from above, but they are in reality the lateral vertical carinae and not the true teeth, in middle without impression; mesopleuron not provided with the tooth, its scrobal longitudinal furrow distinctly outlined, areas divided by the furrow not roundly swollen. Area dorsalis on propodeum with broad lateral and medial furrows, all strongly and very coarsely crenate, leaving almost no space between them. Abdominal tergite 1 slightly wider than long, with sides rounded, tergite 2 semicircular, pygidial area elongated oviform, with apex broadly truncate; platform on sternite 2 margined with a line of punc-



Figs. 24-25. *Cerckeris luzonensis fukaii* Rohwer, ♀.
24, face in front. 25, face in profile.

tures, not sharply edged, not reaching the half of the incrassate area of the segment, latero-posterior areas of sternite 5 with posterior margin sharply truncate, but not toothed, sternite 6 with 2 pairs of apical projections, the outer pair much retreated, short and pointed. Hind coxae acutely carinated on inner margin.

Punctuation generally strong, comparatively coarse and dense, on lower frons and clypeus duplipunctate. Sculpture of area dorsalis always very coarse, sometimes anteriorly longitudinally, posteriorly transversely ridged, sometimes anteriorly only or posteriorly only striate, intervals of ridges minutely uneven, not formally punctured. Pygidial area at base strongly coarsely punctured, on central area weakly rugose and on apical portion and sides without sculpture, but not shining.

Measurements: WH 78, IOD 38, OOD : POD = 12 : 10, OAD : WAS : IAD = 11 : 6 : 5, OTD : ITD = 10 : 23, LC : ACD : AOD = 22 : 11 : 18.

♂. Length 8-9 mm. Coloration very similar to that of ♀, but tergite 6 instead of 5 yellow banded. Structure and sculpture also similar, Clypeus without lamina, gently roundly raised on median lobe, with apex tridentate, each tooth broad triangular, similar in form and size. Pygidial area rectangular, with sides rounded. Antennal joint 3 about 1.3 times as long as wide at apex, joint 10 nearly as long as wide, terminal joint subconically attenuate apically.

Measurements: WH 67, IOD 32, OOD : POD = 12 : 10, OAD : WAS : IAD = 8 : 6 : 3, OTD : ITD = 8 : 19, LC : ACD : AOD = 23 : 11 : 16.

Specimens collected: 3 ♀♀ 15 ♂♂: 2 ♀♀ 4 ♂♂, Pingtung Pref. (2 ♀♀ 1 ♂, Kentin Park, 7. VIII. 1966, 12. VII. 1968; 3 ♂♂, Manchou, 4. VII. 1966, 14. VII. 1968); 1 ♂, Chiayi Pref. (Chuchi, 25. VII. 1966); 1 ♂, Taitung Pref. (Chihpenchi, 13. VIII. 1966); 1 ♀ 3 ♂♂, Nantou Pref. (1 ♂, Puli, 12. VIII. 1968, 1 ♂, Penpuchi, 30. VIII. 1966, 1 ♂, Meichi, 12. VII. 1966, 1 ♀, Chenching, 9. VII. 1966); 1 ♂, Hualien Pref. (Tienhsiang, 17. VII. 1966); 5 ♂♂, Ilan Pref. (4 ♂♂, Tsukeng, 19. VIII. 1966, 1 ♂, Lihyuchih, 16. VIII. 1966.).

Remarks. The coloration of this species (♀♂) is considerably varied and the form of the type specimen described by Rohwer is a rather exceptionally melanic one. Most of the specimens (♀♂) bear a yellow macula on the median lobe of the clypeus which is varied in development, sometimes occupies the greater part of the area, sometimes almost or completely lacking, but most usually in a medium to small spot (of the 15 ♂-specimens in only one the area was wholly black, of the 3 ♀-specimens in only one nearly wholly black, bearing a very minute spot). Supra-clypeal area is also with a spot at the base of the interantennal carina (only one above mentioned has not the macula), the carina itself is always mculated at the upper part. While the maculae on pronotum are not usually observed, only in 1 ♀ 6 ♂♂ they are present and in one male 2 pairs are seen in two rows. A yellow spot or a transverse band on scutellum in 2 ♀♀ 7 ♂♂, 2 spots on area dorsalis in 2 ♂♂ (in one of them further 4 spots on lateral and posterior parts); a transverse yellow line, sometimes once or twice interrupted, near the apex of tergite 2 in 1 ♀ 4 ♂♂, in 1 ♀ 1 ♂ of which further 2 postero-laseral spots are present, 2 marks on tergite 5 in 4 ♂♂, yellow mark, sometimes fairly large, at the base of the pygidial area in 11 ♂♂. Still further a short transverse yellow line on the apex of tergite 1 in 4 ♂♂

and in a considerable number the area more or less yellowish brown. On the other hand, the mark at the base of tergite 2 sometimes becomes very small and rarely separated in two. In structure the apparent antero-lateral protuberances — in reality the vertical carina seen from above — of the collar of the pronotum varies considerably in development.

Thus, *Cerceris superflua* has no systematic significance at all.

As to the variation in maculation of the Philippine population I already described (1968).

7. *Cerceris sinensis* F. Smith, 1856

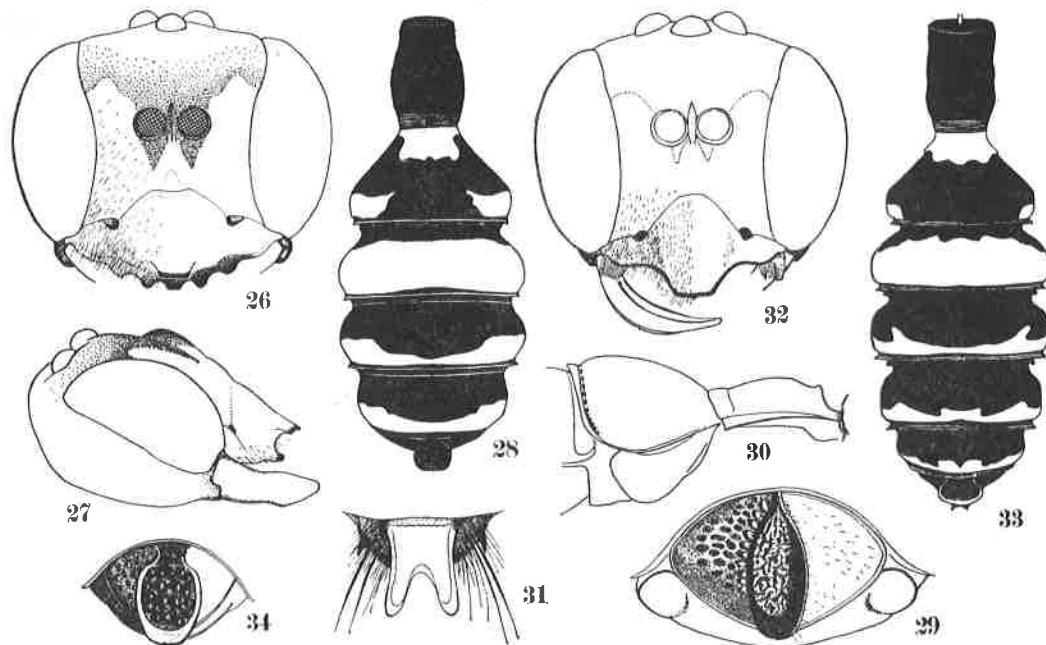
Cerceris sinensis F. Smith, Cat. Hym. Ins. Coll. Brit. Mus., IV: 456, 1856 (♀, North China).

Cerceris sinensis: Strand, Arch. Naturg., Abt. A, 79 (7): 161, 1913 (5 ♀♀ 5 ♂♂, Koshun, Tainan, taihorin).

Cerceris sinensis: Giner Mari, Arb. morphol. Taxon. Ent. Berlin-Dahlem, 10 (4): 212, 1943 (the same material as used by Strand, of which 1 ♀ 1 ♂ was separated by him as *C. strandi*).

Cerceris sinensis: Tsuneki, Kontyu, 35 (4): 385, 1967 (Nantou Pref.: Chienching).

♀. Length 8–12 mm. Black with the following portions yellow: Basal half of mandibles, head in front broadly (Fig. 2), scape of antennae except above, nape region, collar wholly, humeral angles, a mark of epimeron, scutellum, postscutellum, two large markings on propodeum, abdominal maculae as given in Fig. 28, of which lateral maculae on tergite 2 sometimes extended medially and turned into varied pattern, 2 large lateral maculae on sternites 2 and 4, fore and middle legs except base of coxae and large basal mark of femora and hind legs on inner apical area of femora and inside of tibiae. Mandibles at apex, apical margin of lamina and flagellum beneath of antennae ferruginous red. Wings broadly, not strongly clouded, apical margin somewhat strongly darkened. Clypeus: Fig. 26, temple less than as wide as eye (Fig. 27), apical margin of clypeus proper 5-dentate, collar of pronotum with sides rounded, no medial impressed



Figs. 26–34. *Cerceris sinensis* F. Smith, 1856. 26–31, ♀; 32–34, ♂.

26 and 32, head seen in front. 27, head seen in profile. 28 and 33, abdomen. 29 and 34, pygidial area. 30, the first and second abdominal segments in the lateral view. 31, hypopygium.

line, no antero-lateral teeth, mesopleuron with upper and lower parts of the scrobal furrow roundly swollen, area dorsalis with median impressed line defined only on anterior portion, very fine, lateral furrows broad and shallow, coarsely crenate. Abdominal tergite 1 about 1.5 times as long as wide (Fig. 28), tergite 2 subtriangular, with postero-lateral portions rounded (ditto), pygidial area broad elliptic, at base the lateral lines closely approached to each other and at apex broadly rounded (Fig. 29); platform on sternite 2 slightly raised (Fig. 30), but not acutely bordered, posteriorly marginated only by a row of punctures, sternite 5 without lateroapical teeth, sternite 6 with two pairs of apical processes (Fig. 31), the outer pair short and pointed. Hind coxae without the longitudinal carina.

Punctures generally sparser than usual and medium-sized, on lower frons rather close, on clypeus much sparser, with intervals micropunctate, on vertex intervals not acutely ridged, shining, on mesonotum punctures sparse and duplicate, on propodeum not so close as to be called reticulate, on abdomen also sparse, sternites finely, sparsely punctured, only on lateral areas somewhat closely and markedly grossly punctured.

Measurements: WH 65, IOD 30, OOD:POD=11:8, OAD:WAS:IAD=8:5.5:4, OTD:ITD=7:20, LC:ACD:AOD=15:11:16. antennal joint 3 approximately 2.3 times as long as wide at apex (dorsal view), joint 10 distinctly longer than wide.

♂. Length 7-9 mm. Similar to ♀, except mainly sexual characters. Head seen in front: Fig. 32, clypeus relatively longer than in ♀, length relation between antennal joints generally similar to ♀, Abdomen: Fig. 33, pygidial area: Fig. 34. Base of sternite 2 inclined toward sternite 1, the area subquadrate and the surface flattened, the apical margin somewhat raised and on the median line runs a weak carina as in ♀, in the lateral view the elevation of the area slightly more marked than in ♀. The yellow band on pronotum sometimes interrupted in middle, similarly so the band on scutellum; abdominal sternite 1 sometimes with a macula, those on 2 and 3 usually larger, sometimes turning into a broad band, on 4 and 5 usually represented by two lateral spots, those on 5 smaller and rarely lacking.

Measurements: WH 59, IOD 28, OOD:POD=11:8, OAD:WAS:IAD=8:5:4, OTD:ITD=6:18, LC:ACD:AOD=22:11:16.

Specimens collected and examined: 28 ♀♀ 63 ♂♂: 28 ♀♀ 58 ♂♂, Nantou pref. (1 ♀, penpuchi, 29. IV. 1965, T. Shirozu leg.; 4 ♂♂, Wushe-Chienching, 3. V. 1965, T. Shirozu leg.; 11 ♂♂, the same place, 9. VII. 1966, K. Tsuneki leg.; 1 ♂, ditto, T. Tano leg.; 16 ♀♀ 31 ♂♂, the same place, 24. VIII. 1968, K. Tsuneki leg.; 11 ♀♀ 25 ♂♂, Puli, 12. VIII. 1968, K. Tsuneki leg.); 1 ♀, Taitung Pref. (Chihpenchi), 6. VII. 1968, K. Tsuneki leg.).

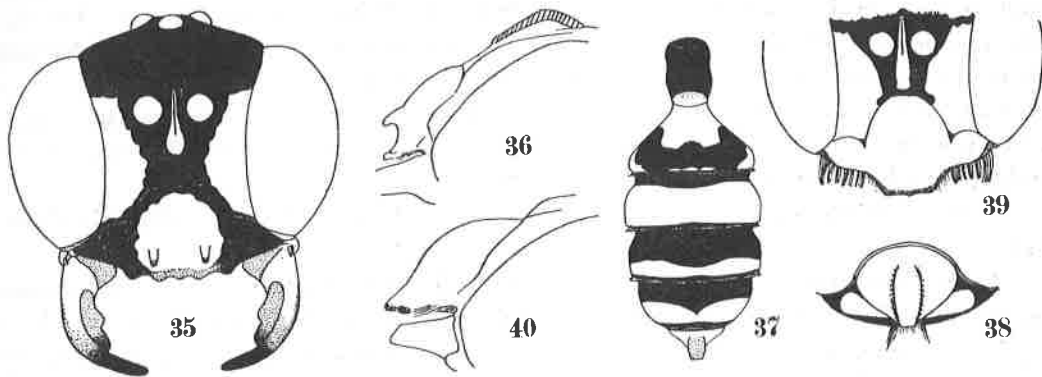
Remarks. This species is collected mainly on the flowers of *Ampelopsis heterophylla* and *Achyranthes bidentata* growing at the road side.

Maculae on the second tergite of the abdomen are considerably varied with the individual in both sexes.

8. *Cerceris strandi* Giner Mari, 1943

Cerceris strandi Giner Mari, Arb. morphol. taxon. Ent. Berlin-Dahlem, 10 (4): 215, 1943 (1 ♀ 1 ♂, Koshun).

♀. Length about 8 mm. Black, yellow are: Maculae on head in front and on abdomen as given in Figs. 35 and 36, scape of antennae except apex, nape area and collar of pronotum, a mark on lateral surface of pronotum, tegulae, scutellum, postscutellum, 2 large maculae on propodeum, abdominal sternites 1 and 2 largely, 3 before apex, 4 and 5 on both sides, fore and middle legs except greater part of coxae and a large mark on femora and hind legs on apex of



Figs. 35-40. *Cerceris strandi* Giner Mari, 1943. 35-38, ♀; 39 and 40, ♂.
35 and 39, head in front. 36 and 40, face in profile. 37, abdomen. 38, pygidial area.

coxae, whole trochanters, apical part of femora and a front side of tibiae. Wings slightly fuscous, apical margin, especially radial cell and its outer portion, strongly so.

Structure of clypeus: Figs. 35 and 36, temple about 2/3 the width of eye, antennal joint 3 in dorsal view nearly twice as long as wide at apex, 10 nearly as long as wide. Collar without medial impression and without antero-lateral teeth, mesopleuron simple, scrobal furrow deep, with epimeral and episternal areas on both its sides roundly swollen, area dorsalis on propodeum with medial furrow very feeble and indistinct, finely, somewhat sparsely punctured, mixed with a few of very faint trace of transverse striae. Abdomen seen from above: Fig. 37, the form of tergite 2 characteristic, pygidial area: Fig. 38; sternite 6 without lateral spines, the part somewhat bluntly angulated. Punctures on vertex medium-sized, dense, reticulate, on clypeus fine and close, mixed with a few medium-sized punctures, mesonotum duplipunctate, larger punctures somewhat longitudinally confluent, scutellum almost lacking micropoints, mesopleuron reticulate, propodeum rather sparsely punctured, on antero-lateral areas subreticulate, abdominal tergites 1-3 moderately grossly, rather sparsely punctured, on 4 and 5 punctures finer and sparser.

Measurements: WH 61, IOD 26, OOD:POD=10:7, OAD:WAS:IAD=7:4.5:4, OTD:ITD=5:18, LC:ACD:AOD=18:10:16.

♂. generally similar to ♀, except the sexual characters. In colour clypeus wholly yellow, nape black, maculae on the sides of pronotum lacking, while the epimeral area below the base of wings wholly yellow, coxae of front and middle legs largely yellow, on abdomen tergites 4 and 6 without maculae, on ventral side sternite 3 only yellow banded and 5 with lateral maculae. But the maculation of the abdomen may be considerably variable, at least the specimen examined here is more brightly maculated than that dealt with by Giner Mari. Head seen in front: Fig. 39, median lobe of clypeus shorter than in *C. sinensis* ♂ which is similar to the present species, the curvature of the median lobe seems slightly stronger than in that (Fig. 40) and further the pubescence less abundant and the surface more clearly visible than in *sinensis*. The structure and the punctuation similar to those of ♀.

Measurements: WH 52, IOD 26, OOD:POD=10:6, OAD:WAS:IAD=7:5:4, OTD:ITD=5:16, LC:ACD:AOD=18:9:15. Antennal joint 3 in the narrowest view 1.5 times, in the widest view 1.3 times as long as wide at apex, joint 10 slightly longer than wide.

Specimens collected: 1 ♀ 1 ♂, Nantou Pref. (Wushe, 1200 m, 16. VIII. 1968), K. Tsuneki leg.

Remarks. Judging from the direct observation of the specimens of this species collected in

Formosa it was made clear that *C. strandi koulingensis* Tsuneki (Etizenia, 29 : 18, 1968) belonged to another species. The teeth of the clypeus were too nearly located with each other and the axes of the teeth are distinctly divergent towards the apex. This is essentially different in pattern from that of *C. strandi*. Moreover, the measurements of parts of the head are considerably different from each other and also the markings of the thorax and the abdomen. Hence *koulingensis* should be raised to the specific rank:

Cerceris koulingensis Tsuneki (type in coll. Cornell University originated from Kou-Ling, China).

On the other hand, a species having the similarly bidentate clypeus is known from Celebes and Sumatra, *C. bidentata* Maidl, 1926. In this species, however, the teeth in question lie closer together, the inner orbits of eyes not broader at the vertex than at the clypeus, the first segment of the abdomen slightly wider than long and the punctures closer and the markings also somewhat different.

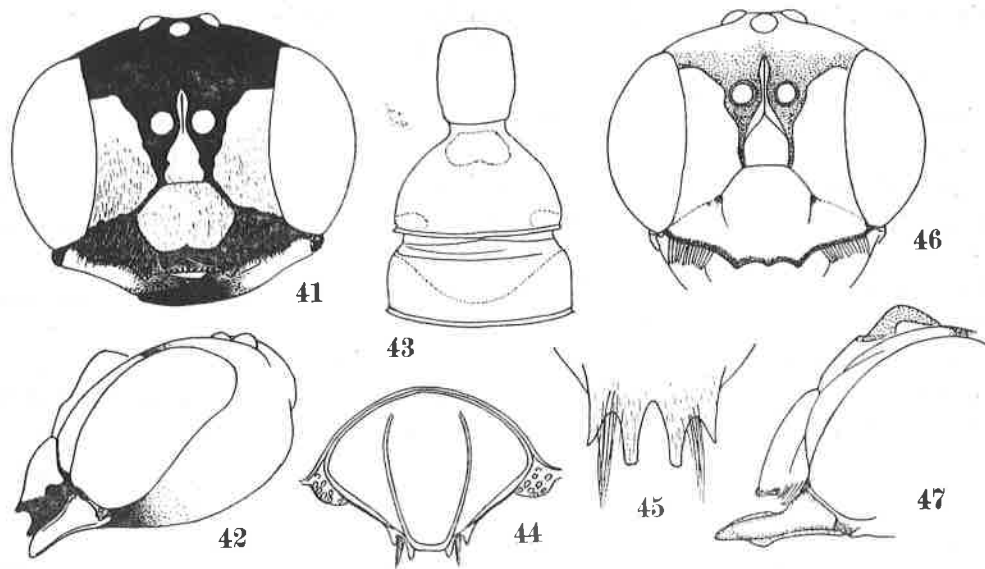
9. *Cerceris coelicola* Giner Mari, 1942

Cerceris (*Apiratrix*!) *coelicola* Giner Mari, Eos, 18 : 116, 1942 (6 ♂♂, China: Shaowu and Kwangtseh)

Specimens collected: 1 ♀ 9 ♂♂. 6 ♂♂, Taitung Pref. (3 ♂♂, Chihpenchi, 13. VIII. 1966; 3 ♂♂, Taoyeh, 14. VIII. 1966); 3 ♂♂, Hualien Pref. (2 ♂♂, Liyuchih, 16. VIII. 1966; 1 ♂, Kuangfu, 24. VI. 1968; 1 ♀, Liyuchih, 22. VI. 1968.).

♀. Hinterto unknown. Length about 7 mm. Black with the following portions yellow: Mandibles on basal half, a large macula on median lobe of clypeus, supraclypeal area and a spot on upper portion of interantennal carina, two large lateral marks on face (Fig. 41), antennal joint I except apex, two transverse maculae on collar of pronotum, greater part of tegulae, post-scutellum, medio-basal mark and postero-lateral maculae on tergite 2, a medianly broadly emarginated band on tergites 3 and 5 (Fig. 43), two lateral marks on sternite 3, fore and middle legs from apical half (third on upper side) of femora till end of tarsi and hind legs on apex of coxae, trochanters wholly, a spot on outside of femora near apex, basal half of tibiae. Mouth part ferruginous yellow, palpi dark brown, paler apically; antennal flagella beneath and terminal joint ferruginous red; middle tibiae with a brownish patch on inside; wings hyaline, apical portion, especially outside of radial cell fairly strongly fuscous, stigma and veins dark brown.

Head seen from above slightly more than twice as wide as long, behind eyes roundly convergent posteriorly, OOD : POD = 12 : 8. Head seen in front markedly broader than high (Fig. 41, ratio 61 : 45). Clypeus with a lamina on median lobe, free from the ground part only at apex (Fig. 42), distinctly triangularly incised in front (Fig. 41), distance between its lateral angles only slightly greater than the upper margin of the median lobe, clypeus as a whole markedly shorter than in *C. sinensis* or *luzonensis*, anterior margin of clypeus proper subtruncate in middle, apparently minutely serrate due to a series of punctures, but distinctly bordered on both side by a blunt tooth (Fig. 41); head in profile (Fig. 42) with temple slightly less than as wide as eye, upper portion of median lobe gently roundly raised. Antennal joints comparatively short, joint 3 about 1.7 times as long as wide at apex, joint 8 about as long as wide, succeeding joints till penultimate joint slightly less than as long as wide. Collar anteriorly carinate except the median area, seen from above appears shortly spined at the antero-lateral corners, but they are the vertical carinae, without the medial impression. Mesonotum, mesopleuron and propodeum normal, area dorsalis in form nearly equilateral triangle, distinctly margined by fine carina and the accompanying shallow groove, with distinct median furrow which is also crenate. Abdominal segment 1 slightly longer than wide, with sides subparallel (gently roundly curved), tergite 2



Figs. 41-47. *Cerckeris coelicola* Giner Mari, 1942. 41-45, ♀; 46 and 47, ♂.
41 and 46, head in front. 42 and 47, head in profile. 43, basal three segments of abdomen. 44, pygidial area. 45, hypopygium.

nearly semicircular (Fig. 43), pygidial area: Fig. 44. Sternite 2 with an enclosed area at base in middle, the area not raised as the platform, but only enclosed with a row of punctures. Sternite 5 without the latero-apical tooth-like projections, sternite 6 with two pairs of apical processes (Fig. 45). Front metatarsi only slightly less than as long as the following tarsal joints taken together, with 6-7 spines on the outer margin; Hind coxae on inner margin acutely carinated.

Punctures on head gross and close, on median lobe of clypeus similarly gross but somewhat sparse, on lateral lobes much sparser and scattered on upper portions alone, on thorax similar to those on head, reticulate. Area dorsalis largely occupied by the extension of the crenate ridges of the lateral furrows, the remaining small area along the median line scattered with a few minute punctures and the surface uneven, not polished. Punctures on abdomen somewhat sparse, intervals not acutely ridged. Pygidial area at base in middle fairly coarsely, closely but somewhat weakly punctured, on the sides and apical area the punctuation weaker and obsolete. Sternite 2 somewhat sparsely covered with irregular-sized but mostly gross punctures, on basal enclosed area only a few smaller punctures scattered only near apical margin; remaining sternites laterally densely, medianly along the posterior margin sparsely punctured with comparatively coarse punctures.

Measurements: WH 61, IOD 33, OOD:POD=12:8, OAD:WAS:IAD=9.5:5:4, OTD:ITD=8:18, LC:ACD:AOD=15:9:15.

♂. Length 6-8 mm. Maculation as in ♀, but head in front more broadly yellow (Fig. 46), bands of abdominal tergites on 4 and 5 lacking and on 6 present, legs more broadly yellow maculated, fore and middle trochanters nearly wholly yellow and femora with apical half yellow. Head in front: Fig. 46, in profile: Fig. 47. Punctures coarse and close, subreticulate, generally with punctures half as large in diameter as ocellus, with more or less interspaces (less than punctures in width), area dorsalis always with a medial furrow, disc very coarsely irregularly punctured or striate, sometimes crenation of lateral furrows only shortly extended on to the disc and the latter comparatively broadly finely punctured. Basal platform of 2nd sternite not dis-

tinctly outlined, but the elevation of the area well defined in the lateral view.

Measurements: WH 58, IOD 29, OOD:POD=10:8, OAD:WAS:IAD=7.5:6:4, OTD:ITD=8:15, LC:ACD:AOD=18:10:14.

Remarks. The male specimens collected in Formosa differ somewhat from the description of the species by Giner Mari:

Antennal joint 3 slightly more than 1.5 times as long as joint 2 (about 1.8 times), inner orbits gently roundly divergent in both directions, appearing subparallel. Colour more broadly yellow: Antennal scape usually wholly yellow, except dorso-lateral (sometimes also dorso-basal) dark brown spot, rarely with a narrow black streak dorsally; tegulae nearly wholly yellow, tergite 2 sometimes with a yellow band medio-apically; mid and hind legs with a part of coxae, trochanters wholly yellow, front trochanters yellow, but dorsally brown, front and mid legs from distal half of femora apically yellow, with tarsi apically somewhat brownish, basal half of hind tibiae and metatarsi at base yellow, rest of tibiae and tarsi of hind legs black.

10. *Cerceris varia* Maidl, 1926

Cerceris varia Maidl, Zool. Meded., 9: 222, 1926 (♀, Java)

Cerceris obtusedentata Maidl, Ibid., p. 235 (♂, Java)

Cerceris maculiceps Tsuneki, Etizenia, 4: 30, 1963 (♂, Thailand) SYN. NOV.

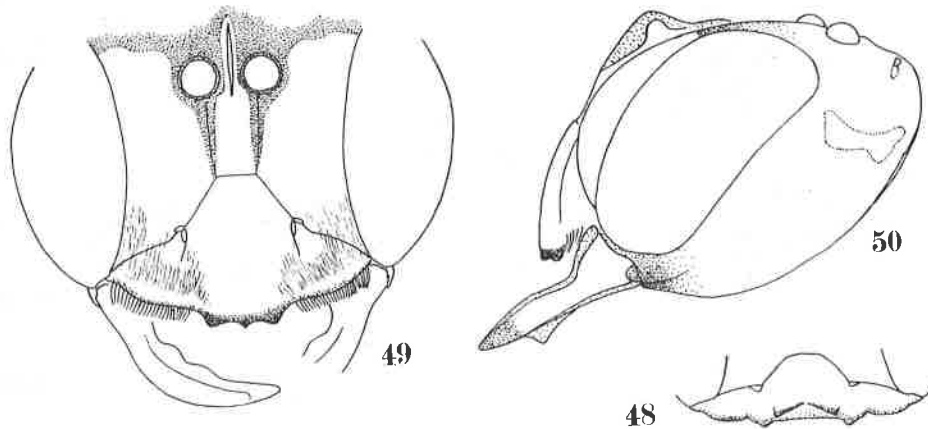
Cerceris varia: Van der Vecht, Zool. Meded., 39: 350, 352, 356, 1964.

Specimens collected: 1 ♂, Ilan Pref. (Liyuchih, 16. VIII. 1968, K. Tsuneki leg.); 2 ♂♂, Taitung Pref. (Taoyeh, 14. VIII. 1966, K. Tsuneki et T. Tano leg.).

♀. Length about 10 mm. Black with the following yellow: Clypeus, supraclypeal area, lateral marks on face, a line on vertex behind postocelli, a spot on upper temple, underside of antennal scape, two maculae on pronotum, two spots on tegulae, scutellum, postscutellum, two maculae on propodeum, basal mark on tergite 2, a band on 3 (broad) and 4 (narrow), fore and middle tarsi, and trochanters and end of femora of hind legs. Reddish yellow: Scape of antennae above, flagellum beneath, greater part of wing tegulae, end of coxae, trochanters, femora and tibiae of fore and middle legs and end of femora and tibiae at base of hind legs. Red: Abdominal segment 1 wholly, apical broad band on 2, a narrow one on 4 and basal half of 5 and whole segment 6, sternite 2 and bands on 4 and 5. Wings brownish, apical margin strongly clouded.

Clypeus: Fig. 48, area dorsalis at base longitudinally coarsely striate, the striae connected here and there by short branches with the adjacent ones, on the posterior portion transversely striate. Abdominal segment 1 by about 1/4 longer than wide, Punctures medium sized, scutellum sparsely, coarsely and propodeum densely but shallowly punctured; on tergite 1-4 punctures uniform and somewhat sparse and shallow.

♂. Length 8-11 mm. Black variegated with yellow and ferruginous red. Yellow: Lower 2/3 of head in front except apical margin of clypeus and two longitudinal streaks including antennal sockets, an intermittent line behind postocelli, a longitudinally elongated line on upper temple, antennal scape except apex, medianly narrowed band on pronotum, tegulae, scutellum and postscutellum, a large mark on epimeron below base of wings, two very large maculae on posterior aspect of propodeum, basal macula on abdominal tergite 2, tergite 3 except medio-basal excavation, tergites 5 and 6 on apical half, fore and middle legs except ferruginous marks at base of femora, and coxae, trochanters, a streak on femora and basal half and inside of tibiae of hind legs. Ferruginous red: Apex of mandibles, antennal flagellum, beneath paler, abdominal segment 1 wholly, apical bands on tergites 2 and 4 and hind legs except the yellow markings. Head in front: Fig. 49, seen in profile: Fig. 50. Pronotum without antero-lateral spines and



Figs. 48-50. *Cerceris varia* Maidl, 1926. 48, ♀; 49-50, ♂.
48, clypeus. (after J. Van der Vecht, 1964). 49, head in front. 50, head in profile.

medial impression, mesopleuron on both side of the scrobal furrow not roundly swollen, area dorsalis with very broad, irregularly outlined and coarsely crenated medial and lateral furrows, the portion of disc very narrow which is impressed at base with coarse rugae, the bottom of the intervals of crenation and rugae irregularly uneven. Petiole slightly longer than wide, tergite 2 subtriangular, pygidial area nearly rectangular, a little longer than wide and slightly wider towards base and at base lateral carinae roundly curved inwards. Punctuation coarse and close.

Measurements: WH 72, IOD 38, OOD : POD = 14 : 10, OAD : WAS : IAD = 11 : 6 : 4, OTD : ITD = 11 : 18, LC : ACD : AOD = 25 : 14 : 16. Antennal joint 3 about 1.8 times as long as wide at apex (narrowest view, in widest view 1.5 times so), joint 10 very slightly longer than wide.

Remarks. In a male specimen from Thailand the transverse macula on the vertex behind the ocellar area and the hook-shaped macula on the upper portion of the temple were well developed (*maculiceps* Tsuneki). Of the specimens above listed from Formosa one has the fairly well developed maculae, one has very weak and small ones and the remaining one completely immaculated on the vertex. The legs are more broadly yellow in general. Other coloration and structure are as given in the original description and key and figure by Van der Vecht (1964), except that the second tergite that has a broad red mark in the middle.

11. *Cerceris variaesimilis* Maidl, 1926

Cerceris variaesimilis Maidl, Zool. Meded., 9: 223, 1926 (♀, Java).

Cerceris spinicollis Giner Mari, Eos, 38: 126, 1942 (♀♂, S. E. China).

Cerceris fukaii basiferruginea Tsuneki, Etizenia, 4: 27, 1963 (Thailand).

Cerceris variaesimilis: Van der Vecht, Zool. Meded., 39: 350 (♀), 352 (♂), 358, 1964 (Java, Malaya).

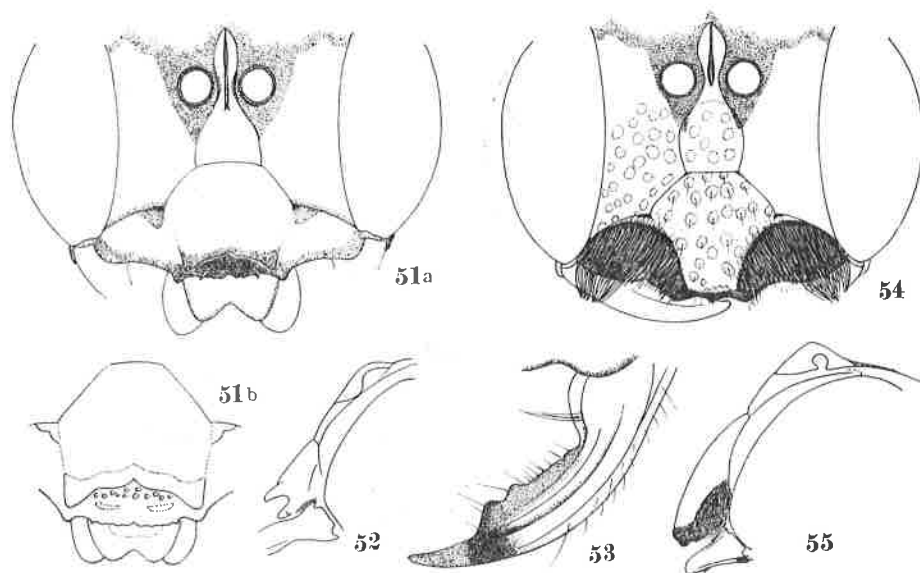
Cerceris spinicollis: Tsuneki, Trans. Shikoku Ent. Soc., 9 (4): 107, 1968 (Okinawa).

Cerceris variaesimilis: Tsuneki, Etizenia, 29: 21, 1968 (S. E. China, Formosa and Philippines).

Cerceris variaesimilis: Tsuneki, Life Study, 14 (1): 14, 1970.

Specimens collected: 8 ♀♀ 51 ♂♂. 1 ♀ 4 ♂♂, Ilan Pref. (1 ♀ 2 ♂♂, Liyuchih, 16. VIII. 1966; 2 ♀♀, Erhchieh, 17. VI. 1968); 7 ♀♀ 47 ♂♂, Pingtung Pref. (3 ♀♀ 11 ♂♂, Henchung, 1, 2. VIII. 1966; 2 ♀♀ 9 ♂♂, 11. VII. 1968; 1 ♂, Ssuchungchi, 6. VIII. 1966; 3 ♀♀ 27 ♂♂, Paoli, 19. VII. 1968; 1 ♀ 9 ♂♂, Checheng, 15. VII. 1968).

♀. Length 8-9 mm. Black, yellow are mandibles on basal 2/3, lamina except apex, lateral lobes of clypeus on inner-upper corners, supraclypeal area and a spot in interantennal carina,



Figs. 51-55. *Cerckeris variaesimilis* Maidl, 1926. 51-53, ♀; 54 and 55, ♂.
51a and 54, head seen in front. 51b, median lobe of clypeus (obliquely from beneath). 52 and 55, face seen in profile. 53, mandible.

broad lateral marks on face along inner orbits, scape of antennae except apex, two large lateral marks on collar of pronotum, tegulae, postscutellum, medio-basal macula on tergite 2 (sometimes with variably scattered small maculae on apical portion), tergite 3 (medianly in front notched), nearly whole of tergite 5, broad lateral maculae on sternite 3 (sometimes connected together), nearly whole of fore and middle legs and more restricted parts of hind legs. Ferruginous red: Antennal flagellum, tergite 1 and 2 at least in part, caudal segment more or less and some minute patches of hind legs. Wings hyaline, slightly clouded, apical margin markedly fuscous.

Clypeus: Figs. 51 and 52, mandible: Fig. 53. Head in profile with temple less than as wide as eye, antennal joint 3 approximately 1.6 times as long as wide at apex, 7 nearly as long as wide, 8-11 slightly less than as long as wide; pronotum comparatively broad, rounded at the sides and without medial impression, mesopleural tooth absent; area dorsalis with crenate medial furrow, anteriorly obliquely or arcuately, posteriorly transversely coarsely striate, intervals irregularly finely punctured. Tergite 1 of abdomen approximately as long as wide, tergite 2 with lateral margins on anterior half straight and on posterior half rounded, pygidial area elongated trapeziform, at base wider, less than twice as long as wide at base, sometimes suboval, with apex truncate; platform at base of sternite 2 distinctly raised at apical margin and sharply edged, reaching half of the incrassate area of the segment, sternite 5 without latero-posterior teeth, 6 with two pairs of apical processes, the lateral pair short and pointed at apex. Hind coxae with acute longitudinal carina on inner side.

Punctures medium-sized and dense, on lower frons and clypeus sparse, with abundant micropoints on intervals, on abdominal tergites intervals not edged, with more or less space.

Measurements: WH 65, IOD 34, OOD : POD = 11 : 10, OAD : WAS : IAD = 10 : 5.5 : 5, OTD : ITD = 9 : 19, LC : ACD : AOD = 16 : 9 : 15.

♂. Length 7-8 mm. Similar to ♀. Head in front with clypeus characteristic in maculation and pilosity (Fig. 54), seen in profile: Fig. 55. Abdomen as in ♀ maculated, but tergite 6 also with yellow band. Antennal joint 3 about 1.3 times as long as wide at apex, joint 10 approx-

imately as long as wide, ultimate joint 1.3 times as long as penultimate joint and normally attenuate towards apex.

Measurements: WH 63, IOD 32, OOD:POD = 11:10, AOD:WAS:IAD = 9:5.5:4.5, OTD:ITD = 8.5:18, LC:ACD:AOD = 19:11:13.

12. *Cerceris trichobunda* Strand, 1913

Cerceris trichobunda Strand, Arch. Naturg., Abt. A, 79 (7): 163, 1913 (♀, Suisharyo, X. 1911).

Cerceris trichobunda: Giner Mari, Arb. morphol. taxon. Ent. Berlin-Dahlem, 10 (4): 217, 1943.

♀. Length 10 mm. Black, orange yellow: Lamina of clypeus except apical margin and a mark on the lateral lobes, interantennal carina, 2 lateral marks on face along inner orbits, scape of antennae except above, collar of pronotum, tegulae, a spot on mesopleuron below base of wings, scutellum and postscutellum, tergite 1 at apex, medianly broadened band on posterior margin of tergite 2, almost whole of tergite 3, a band on 5, fore and middle legs except the brownish tibiae and tarsi and hind legs on trochanters, apices of femora, a basal third of anterior margin of tibiae. Antennal flagellum beneath ferruginous, on apical portion paler. Wings darkened, especially so on radial cell and its outside area.

Inner orbits a little divergent anteriorly, temple seen in profile nearly as broad as eye, with a rounded process below near the base of mandible, not so marked as to be called tooth. Collar of pronotum without medial impressed line and antero-lateral teeth, mesopleuron unarmed, area dorsalis medianly furrowed, finely punctured and obliquely finely striate on the sides; tergite 1 trapiziformed, nearly as wide as long, tergite 2 roughly triangular, pygidial area oval in form, with narrowed end at base, apex truncate; platform on sternite 2 at base distinctly margined. Punctures comparatively fine and dense, the surface mat, on mesopleuron, propodeum and abdomen stronger.

♂. Unknown.

Remarks. This species (♀) is characteristic in having a very conspicuous lamina which was from the base of the clypeus raised and obliquely produced anteriorly (Fig. 56 and 57).



Figs. 56 and 57. *Cerceris trichobunda* Strand, 1913, ♀, clypeus.
56, seen in front. 57, seen in profile.

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