

**The Genus *Stigmus* Panzer of Europe and Asia  
with Descriptions of Eight New Species  
(Hymenoptera, Sphecidae)**

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# The Genus *Stigmus* Panzer of Europe and Asia (Hymenoptera, Sphecidae)\*

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Almost no special attention has been paid to the genus *Stigmus* Panzer occurring in the Eurasian regions. Many species have been left undescribed and as regards those hitherto known the descriptions remain quite incomplete. Recently, while the writer was investigating the specimens of this genus from Eastern Asia (including South China) and Europe, he was greatly surprised to find that much disorder and confusion prevail as to the classification as well as nomenclature among the members of this genus. In the present paper, therefore, it was attempted, on the one hand, to give detailed descriptions not only for the species new to science but also for those which had long been known, as far as the specimens were available to him. On the other hand, it was also ventured to arrange in a monographic form all the species so far described from the regions forming the subject of this paper. It was to be regretted, however, that the nomenclature adopted in the present treatise could not always expect to ensure the final correctness, since it was impossible to him to examine not only the type specimens, but sometimes also even the probable specimens of certain species. But the present contribution will be of some use for at least the future study which should be done upon the basis of the type specimens.

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### Genus *Stigmus* Panzer, 1804

Type: *Stigmus pendulus* Panzer, 1804.

Generic characters : Small wasps with petiolated abdomen. Labrum large, lobiform, sometimes slightly produced, but usually concealed beneath clypeus. Mandibles tridentate in female, bidentate in male, mesonotum with three short longitudinal furrows anteriorly, the medial one usually shallow and sometimes represented merely by striation, mesopleuron provided with three crenate furrows forming a triangle, propodeum coarsely reticulate or rugose, apical abdominal tergite with pygidial area in female, without in male. Forewing with well-developed very large stigma, with one radial and two cubital cells, 1st cubital cell approximately twice as large as 2nd cubital cell, the former receiving single recurrent nervure near the middle. Legs slender, simple, sometimes with feeble sparse spines on hind tibiae. Length 3.5—7.5 mm.

All the members of this genus are hunters of aphids. They burrow in dead twigs or rotten branches of certain shrubs and arrange several brood-chambers in lineal order. Sometimes the wasps utilize ready-made holes as their nests, such as found in abandoned tunnels of some boring beetle larvae or in reed-canals and grass-halms.

**Some special terms and abbreviations.** **Upper front** : the area in front of the anterior ocellus and facing upwards. **Lower front** : the area above the sockets of the antennae and facing anteriorly (the face of some authors). **OOD** : oculocellar distance, namely the distance between the eye and the outer margin of one of the postocelli<sup>1)</sup>. **POD** : postocellar distance, namely the distance between the inner margins of the postocelli. **OCD** : ocelloccipital distance, the distance between the posterior margin of the postocelli and the occipital carina, seen from above. **Opaque area** : a small opaque area (due to microscopic sculpture) located on the oculocellar space

1) This is the same as OOL of some authors. But the term OOL is often used by some other Hymenopterologists as representing the distance here defined plus the diameter of one of the postocelli, namely the distance between the eye and the inner margin of the nearer postocellus. Similarly POL is sometimes used to designate the distance between the outer margins of postocelli. In order to avoid the confusion, the different terms were adopted.

and close to the eye, in subgenus *Carinostigmus* it is frequently disintegrated. **Anterior trisulci of mesonotum** : the three short longitudinal furrows on the anterior portion of the mesonotum, usually the medial one being shallow and indistinct, sometimes it is represented only by a bundle of fine striae. **Triangular area** : the enclosed triangular space on the mesopleuron. **Pygidial area** : a small area on the apical tergite of the abdomen which is completely or incompletely enclosed by the carinae.

#### Key to the subgenera

- 1 Lower front provided with a median carina which is produced at above the sockets of antennae into a spine or a T-shaped hook; eyes and sides of mesonotum marginated distinctly with crenate groove and edging carina; petiole of abdomen and legs long, the former distinctly more than as long as the first tergite of abdomen; stigma of forewing approximately thrice as long as its greatest breadth; clypeus not densely covered with silvery hairs in both sexes

***Carinostigmus*** subgen. nov.

(Type : *Stigmus congruus* Walker, 1860)

- Lower front unarmed, margins of eyes and sides of mesonotum simple or nearly; petiole and legs comparatively short, the former approximately as long as the first tergite of abdomen; stigma of forewing nearly twice as long as its greatest breadth; clypeus, at least in male, densely covered with appressed silvery hairs

***Stigmus*** (*s. str.*) Panzer, 1804

(Type ; *Stigmus pendulus* Panzer, 1804)

#### Key to the species

♀ ♀

- 1 Species belonging to the subgenus *Carinostigmus* ..... 2
- Species belonging to the subgenus *Stigmus* ..... 9
- 2 Mandibles and legs black. (Propodeum with apical slope minutely punctured). India (Coonoor) .....  
*aterrimus* Turner, 1917 (p.10)
- Mandibles and legs broadly testaceous ..... 3
- 3 Pronotum very long, about half as long as broad, clypeus carinated in middle. (Head much narrowed behind eyes, OOD=OCD,

- propodeum on posterior slope reticulate). Natal (Durban)  
*gueinzius* Turner, 1912 (p.15)
- Pronotum at most one third as long as broad, clypeus medianly not carinated ..... 4
- 4 Anterior margin of clypeus widely arched, not dentate, nor porrect, legs testaceous. India (Ceylon, sikhim and Tenasserim)
- congruus* Walker, 1860 (p.7)
- Anterior margin of clypeus subporrect, dentate or truncate, legs partly blackish ..... 5
- 5 Clypeus tridentate at apex in middle, pronotum short, less than a quarter as long in middle as wide between its lateral spines, with upper surface rather closely longitudinally carinate, posterior slope of propodeum without distinct longitudinal furrow. Japan
- filippovi* Gussakovskij, 1934 (p.12)
- Clypeus not tridentate at apex in middle, pronotum long, approximately one third as long in middle as wide between its antero-lateral spines, with upper surface not closely carinate, posterior slope of propodeum longitudinally furrowed in middle ... 6
- 6 Clypeus fairly deeply incised at apex in middle, propodeum without a large smooth space on each side of medial furrow of posterior slope ..... 7
- Clypeus truncate or very feebly emarginate at apex in middle, propodeum with a large smooth space on each side of medial furrow of posterior slope ..... 8
- 7 Apical teeth of clypeus rather broadly rounded, petiole of abdomen with a fine medial carina on upper surface. Sumatra
- major* Maidl, 1925 (p.11)
- Apical teeth of clypeus rather angulated, petiole without a medial carina on upper surface, (Pronotum without longitudinal carinae except few short weak ones, but with a broad elevation in middle). Formosa
- formosanus* sp. nov. (p.19)
- 8 Posterior slope of propodeum coarsely reticulate, legs with all trochanters black. India
- niger* Motschulsky, 1863, *sens.* Bingham (*s. str.*) (p.10)

- Posterior slope of propodeum obliquely striate, legs with all trochanters testaceous. South China (Hongkong, Hainan Island)  
*iwatai* sp. nov. (p. 15)
- 9 Clypeus subtriangular, slightly produced. (Humeral angles black, antennae wholly testaceous, length 3 — 5 mm). India  
*cuculus* Nurse, 1903 (p. 29)
- Clypeus otherwise ..... 10
- 10 Head from above markedly convergent posteriorly. Head wholly smooth and polished, mesonotum and scutellum with bronzy reflection in certain light, humeral angles white, mesopleuron except for triangular furrows smooth and shining). Japan (Honsu and Hokkaido)  
*convergens* sp. nov. (p. 33)
- Head from above subquadrate, wider than long ..... 11
- 11 Head from above with anterior ocellus located approximately in the middle of its length, upper front not well developed, gradually roundly inclined towards lower front (seen in profile the border not well-defined); pygidial area (Fig. 59) strongly narrowed and somewhat gutterwise hollowed apically, with apex obtusely pointed. (Humeral angles black; clypeus: Fig. 56, inner orbits of eyes feebly margined with carina, sides of prothorax without striae, posterior margin of mesonotum not crenulate, mesopleuron above, just below base of wing very finely closely longitudinally rugulose, remaining portions except triangular furrows smooth and polished, petiole of abdomen short, subequal in length to hind coxa and trochanter combined). Japan (Hokkaido)  
*munakatai* sp. nov. (p. 32)
- Head from above with anterior ocellus located distinctly in front of the middle of its length, upper front developed, at least tolerably well distinguished from lower front (seen in profile the border between the two areas roundly angulated), pygidial area not particularly narrowed apically ..... 12
- 12 Upper front with median furrow broad and deep, areas on both sides of the furrow roundly, fairly markedly elevated (Figs. 22 & 35), humeral angles black, posterior margin of mesonotum longitudinally striate. (Vertex outside postocelli rather broadly depressed, clypeus: Fig. 24, pro- and mesonotums: Fig. 23,

mesopleuron just below base of wing irregularly feebly wrinkled, petiole of abdomen shorter than hind femur, rather stout, posteriorly gradually thickened, trochanters of all legs broadly blackish in middle). Europe

*pendulus* Panzer, 1805 (p. 21)

- Upper front not or not remarkably elevated on both sides of median furrow, the latter not deep, humeral angles whitish, posterior margin of mesonotum not completely crenate ..... 13
  - 13 Clypeus not dentate at apex, with sides of medial produced portion emarginated ..... 14
  - Clypeus bidentate at apex, sides of medial produced portion not particularly emarginated ..... 15
  - 14 Clypeus covered with appressed silvery hairs. (Mesopleuron with triangular area and the area above it wholly moderately largely reticulate, upper front and greater part of vertex and of mesonotum microscopically finely striate and mat, clypeus : Figs. 37 & 38, mesonotum : Fig. 39, propodeum and abdominal petiole : Fig. 40, pygidial area : Fig. 41). Europe
- verhoeffi* sp. nov. (p. 26)
- Clypeus not covered with appressed silvery hairs. Europe
- solskyi* A. Morawitz, 1864 (p. 24)
- 15 Clypeus : Fig. 31, mesopleuron above including upper portion of triangular area rather coarsely reticulate. (Posterior margin of mesonotum only laterally crenately striate, propodeum strongly reticulate, with surface shining, abdominal petiole : Fig. 32, front and mid trochanters broadly darkened in middle, sometimes vertex and mesonotum microscopically finely striate). Europe
- europaeus* sp. nov. (p. 25)
- Clypeus : Fig. 48, mesopleuron above, just below base of forewing finely closely longitudinally striate, triangular area smooth and polished. (Posterior margin of mesonotum without sculpture or nearly, propodeum less strongly reticulate, front and mid trochanters testaceous brown and semitranslucent). Japan (Honshu and Hokkaido)
- japonicus* sp. nov. (p. 29)

Table 1. Relative length of the distance between the eyes and of the scape of the antenna (the same scale)

Species		Shortest Distance between Eyes	Length of Scape	Ratio
<i>formosanus</i>	♀	18	12	1.50
<i>formosanus</i>	♂	15	12	1.25
<i>iwatai</i>	♀	15	10.5	1.43
<i>iwatai</i>	♂	11	10	1.10
<i>filippovi</i>	♀	18	13	1.38
<i>filippovi</i>	♂	12	9	1.33
<i>pendulus</i>	♀	18	11	1.64
<i>pendulus</i>	♂	12*	8	1.50
<i>europaeus</i>	♀	15	9	1.67
<i>verhoeffi</i>	♀	12	8	1.50
<i>verhoeffi</i>	♂	8	5.5	1.46
<i>japonicus</i>	♀	17	9.5	1.79
<i>japonicus</i>	♂	13.5	9.0	1.50
<i>munakatai</i>	♀	12	8	1.50
<i>convergens</i>	♀	11.5	9	1.28

\* measured across the middle of the lower front (usually measured at the base of the clypeus).

### 1. *Stigmus* (*Carinostigmus*) *congruus* Walker, 1860

*Stigmus congruus* Walker, Ann. Mag. Nat. Hist., Ser. 3, V, p. 304, 1860.

*Stigmus congruus* Bingham, Faun. Brit. Ind., Hym., Vol. I, p. 266, 1897.

*Original description*: Faem. Niger, elongatus, glaber, nitens, clypeo linea interrupta fulva, ore flavo, antennis piceis, scapo subtus flavescente, metathorace rude punctato, pedibus flavescentibus, femoribus tibiisque posticis nigris, femoribus anterioribus nigro fasciatis, alis vitreis.

Female. Black, elongate, smooth, shining. Head much broader than the thorax, impressed longitudinally, and with a slight keel between the eyes; clypeus with an interrupted tawny line in front; mouth yellow. Antennae piceous, slender; scapus dull yellowish beneath. Metathorax roughly punctured, with a longitudinal impressed line. Petiole long, slender. Legs yellowish; hind femora and hind tibiae black; anterior femora with a black band. Wings quite viterous; veins and stigma black. Length of body 3 1/2 lines; of the wings 4 lines.

*According to Bingham*: ♀. Vertex of the head, pronotum, mesonotum anteriorly, scutellum, postscutellum, and abdomen smooth, polished and shining; clypeus subtri-



angular, slightly convex, surface minutely aciculate, anterior margin widely arched; front slightly hollowed, with very fine divergent striae, the orbits marked off by a deep furrow consisting of a series of very close punctures; the posterior margin of the mesonotum with coarse longitudinal and rather deeply marked striae; median segment coarsely reticulate, with a short deep groove on its posterior slope. Black, the mandibles except at apex, the scape, and basal three joints of the flagellum of the antennae beneath, the nervures and tegulae of the wings, and the legs testaceous; the tubercles white; wings hyaline. Length 7.5; exp. 12 mm.

*Habitat* : India (Sikhim, Tenasserim and Ceylon).

*Remarks.* F. F. Kohl (1890, p. 63) joined the following *S. niger* Mots. to the present species and Dalla Torre (1897, p. 361) followed his opinion. However, Bingham (1897) separated the two species on the basis of *the specimens he had seen*. Afterward in 1917, R. E. Turner published the opinion that he looked on *S. niger* Mots. as a synonym of *congruus* Walker. But as he did not seem to pay any particular attention to the above mentioned relationship, and beside, Bingham seemed to have examined the type specimen of *congruus* Walker at least, the writer followed his opinion.

## 2. *Stigmus* (*Carinostigmus*) *niger* Motschulsky, 1863

*Stigmus niger* Motschulsky, Bull. Soc. Nat. Moscou, XXVI, p. 23, 1863.

*Stigmus congruus* Kohl, Ann. naturh. Hofmus. Wien, Bd. V, Ht. I, p. 63, 1890 (nec Waker) (?)

*Stigmus niger* Bingham, Faun. Brit. Ind., Hymen., Vol. I, p. 267, 1897. (?)

*Stigmus niger* Green, Spolia Zeylan, I, p. 70, 1903 (Biology)

*After Kohl* : Länge 6 Mm. ♀. Schwarz. Vorder- und Mittelschienen und die Tarsen lehmgelb. Oberkiefer und Schulterbeulen gelb. Aftersegment dunkel. Fühler grösstentheils lehmgelb. Kopf hinter den Augen stark verlängert, erscheint jedoch nicht wie etwa bei *pendulus* kubisch, da er nach hinten sich auffallend verschmälert. Gesicht in der Region der Fühlerschäfte stark vertieft. Zwischen beiden Fühlern zeigt sich ein deutlicher Kiel. Kopfschildmittelteil vorgestreckt, am Ende abgestutzt und etwas ausgeschnitten. Die Augen werden von einer Kerbrinne eingefasst. Der Hinterhaupttrand erscheint in seinem ganzen Verlaufe scharf, weil ein wenig aufgestülpt, die Aufstülpung bildet eine Art Kerblinie. Schläfen zur Hälfte nadelrissig gestrikt. Collare verhältnissmässig sehr lang, ich möchte fast sagen, es ist kaum mehr als doppelt so breit wie lang; seine vorderen Seitenecken sind in eine scharfe Spitze ausgezogen. In der Mitte sitzt auf dem Collare ein längshöcker. Unmittelbar vor dem Schildchen zeigen sich 8 - 10 nach vorne ein klein wenig divergierende Kerbstreifen, Mesopleuren wie bei *pendulus* mit zwei von der Episternalnaht abgehenden Kerbfurchen, welche einen dreieckigen glatten Raum einschliessen; die obere Kerbfurche ist schwächer, *Mittelsegment* grob ge-

*runzelt*, hinter dem Hinterschildchen mit einer derben Kerbfurche, Hinterleibsstiel sehr lang, etwa von der Länge der Hinterschienen. Kopf, Thorax und Hinterleib im Uebri- gen glatt und glänzend. Das Männchen ist noch unbekannt.

*Bingham's description* : ♀. Closely allied to and resembling *S. congruus* Walk., but the clypeus is markedly subporrect, projecting at the apex, with a blunt tooth at each side, and smooth, polished, and shining, not aciculate; the median segment is somewhat shorter and more steeply sloped; the base strongly coarsely striate, with a triangular space enclosed by convergent furrows continued from the apex of the enclosure to the apex of the segment as a deep medial furrow; *the sides are coarsely reticulated*; with a large oval smooth space in the middle. Black and shining, the mandibles in the middle, the scape of the antennae, and the tibiae and tarsi of the anterior and intermediate legs only testaceous. Length 6; exp. 11 mm.

*Habitat* : India (Ceylon).

*Remarks.* 1) As given in the synonymic list, Kohl considered *S. niger* Mots. as a synonym of *congruus* Walker. On the other hand, Bingham separated the two species upon the basis of the specimens he examined. According to his description, doubtless the two species are quite distinct from each other. While in 1917 again, Turner published that he looked on *S. niger* as a synonym of *congruus*, apparently without giving any attention to Bingham's discussion. Strictly speaking, it may be a sound conclusion that the synonymic relationship between the two species in question can not finally be settled until the type specimens are actually compared. In the present paper, however, in order to eliminate the nomenclatorial confusion as far as possible, Bingham's view has been adopted and *niger sensu* Bingham is dealt with as different from *congruus* Walker (nec Kohl).

2) There is a question as to whether *niger* Bingham (*s. str.*) is truly a synonym of *congruus* Kohl or a different species. According to Bingham, "... the base (of the propodeum) strongly coarsely striate, with a triangular space enclosed by convergent furrows...". If this is true in the literal sense, it becomes that not only the species must be distinct from *congruus* Kohl, but also it must be exceptional for the members of *Stigmus*. According to the writer's view, however, this description seems to be a matter of expression. In all the allied species examined or known through descriptions, the area is broadly depressed, and *bordered and marked by the curved carina (not the furrow)* which is interrupted in the middle by the longitudinal furrow. This depression appears, sometimes, to be a broad furrow, but in such a case, excluding it, no triangular space remains there.

With the above stated qualification in mind, *S. congruus* Kohl seems to be very close to *niger* Bingham. But yet, judging from the slight difference

of the descriptions by the two authors, *e. g.* those on the sculpture of the propodeum, it seems uncertain whether they belong truly the identical species or not. Because, as discussed later in connection with *S. iwatai* and *formosanus*, apparently insignificant variational differences may be linked together with other important distinctions which are not expressed in the descriptions. Until the actual examination of the specimens is made, final determination concerning the identity of the species in question must be left in abeyance.

### 3. *Stigmus* (*Carinostigmus*) *aterrimus* Turner, 1917

*Stigmus aterrimus* Turner, Mem. Dept. Agric. Ind., Entom. Ser., Vol. V, p. 174. 1917

*Original description* : ♀. Nigra; callis humeralibus albidis; tegulis apice fuscis; alis hyalinis, iridescentibus, venis nigris. Long. 6 mm.

♀. Front broad, concave, with a longitudinal carina reaching to the base of the clypeus; eyes very slightly divergent towards the vertex, separated at the base of the clypeus by a distance about half as great again as the length of the scape. Front subopaque, vertex smooth and shining; eyes separated from the posterior margin of the head by a distance about equal to their own breadth; ocelli in an almost equilateral triangle, the posterior pair more than twice as far from the eyes as from each other and about the same distance from the posterior margin of the head. Antennae very slender, inserted nearer to the eyes than to each other. Pronotum transverse, smooth and shining, the margins raised, the anterior angles pointed; mesnotum and scutellum smooth and shining, a transverse crenulate groove at the base of the scutellum. Propleurae irregularly striated; mesopleurae shining, with a few scattered punctures. Median segment coarsely longitudinally striated on the basal third; beyond the striated basal portion is an enclosed triangular space reaching to the apex of the dorsal surface, the enclosed portion transversely striated with a median longitudinal carina; the sides of the segment obliquely striated; the apical slope minutely punctured, with a distinct median groove, petiole as long as the hind femur and trochanter combined. Abdomen shining, sparsely and minutely punctured. Hind tibiae smooth. Second cubital cell twice as long on the cubitus as on the radius; stigma nearly three times as long as its greatest breadth; recurrent nervure received just beyond the middle of the first cubital cell.

*Hab.* Coonoor, Nilgiri Hills, 5,000 ft., (G. R. Dutt). April.

This is very distinct from *cuculus* Nurse in the form of the stigma, the sculpture of the median segment, the longer petiole, the smooth hind tibiae and the much greater size, also in the colour of the legs, mandibles and antennae; from *congruus* Walk. in the same points of colour, and in the sculpture of the median segment, and the greater breadth of the front. I

look on *S. niger* Motsch. as a synonym of *congruus*. The head of *congruus* is shorter and more narrowed behind the eyes than in the present species.

*Remarks from the present writer* : This species, without doubt, belongs to subgenus *Carinostigmus*. The blackish mandibles, antennal scape and legs and the punctured posterior slope of the propodeum seem to be characteristic of this species. It is to be regretted, however, that the form of the clypeus is not given in the description.

#### 4. *Stigmus* (*Carinostigmus*) *major* Maidl, 1925

*Stigmus major* Maidl, Entom. Mitt., Bd. 14, S. 77, 1925.

*Original description*: (Latin description is omitted, since it includes no special account) ♀ : Gesicht wie in Fig. (not reproduced). Der Kopfschild ist der Quere nach gewölbt und am Eude mitten derart vorgezogen und ausgeschnitten, dass er stumpf zwei zählig erscheint. Die Stirne ist ausgehöhlt, grösstenteils fein quengerunzelt und mit einem von vorderen Stirnauge bis zum Kopfschild deutlichen Mittelkiel, einem Kleinen dornartigen, an der Spitze etwas erweiterten Vorsprung zwischen den Fühlereinlenkungen und zwei seitlichen, den inneren Augenrändern entlang verlaufenden gekerbten Furchen versehen, die sich auf den Schläfen entlang der äusseren Augenränder fortsetzen. Die Schläfen sind mässig grob mit gegen unten hin zunehmender Deutlichkeit längsgerieft. Das 2. Fühlergeisselglied ist etwas kürzer als das 3. Der Vorderbruststückrücken ist oben mitten emporgewölbt, seitlich davon grubig vertieft und in diesen Gruben sowie seitlich von ihnen mässig grob längsgerunzelt. Zwischen Oberseite und Seitenwänden entwickelte Kanten treten nach vorne zu kurz dornartig vor. Der Mittelbruststück zeigt eine Mittelfurche, welche sich sowohl gegen den Vorder- als auch gegen den Hinterrand zu vertieft, zwei innere seitliche Furchen, die sich nach vorn zu vertiefen und zwei äussere seitliche Furchen, die sich nach hinten zu vertiefen. Alle diese Furchen sind glatt oder wenigstens nur sehr undeutlich gekerbt. Schliesslich befinden sich noch zwei gekerbte Furchen an den Seitenrändern des Mittelbruststückens und eine Anzahl kurzer, grober Längsrippen am Hinterrande desselben. Am Vorderrande des Schildchens befinden sich zwei kleine, quere, nur durch eine schmale Leiete voneinander getrennte, mit einigen kurzen Rippen in der Tiefe versehene Gruben. Zwischen Schildchen und Hinterschildchen befindet sich eine schmale gekerbte Furche. Das Hinterchildchen ist in seiner ganzen Ausdehnung mässig grob längsgerippt. Der Stutz (Mittelsegment) ist oben grob netzartig gerunzelt, ohne dass ein Mittelfeld (herzförmiger Raum) am Grunde deutlich abgegrenzt wäre. Unten am Ende des Stutzes sind zu beiden Seiten der Einlenkung des Hinterleibes, bei Betrachtung des Tieres von oben her, zwei kleine Dornhöcker wahrnehmbar. Der Hinterleibsstiel ist vierkantig und ausserdem oben mit einem feinen Mittelkiel versehen. Körperlänge 7 mm.

Der grösste Teil des Körpers ist pechschwarz, nur die Fühlerschäfte, die Grundhälften der Fühlergeisseln, der grösste Teil der Mundteile, alle Schenkelringe, die Vor-

der- und Mittelschienen und -füsse, der Grund der Hinterschienen und die Flügel-schuppen sind  $\pm$  hell braun, der Grund der Oberkiefer gelblich weiss und die Schulter-beulen rein weiss. Die Flügel sind glashell, von gelblicher Farbe mit schwarzbraunen Adern.

$\delta$  : Das  $\delta$  ist dem  $\varphi$  sehr ähnlich, nur ist der Kokfschild am Ende mitten wenig-er tief ausgeschnitten und daher nicht deutlich zweizählig, die das hinterhaupt be-grenzende Furche breiter, tiefer und deutlicher grob gekerbt, die Fühlergeisseln unten an ihrer Grundhälfte mit einer Reihe langer gekrümmter Haarev ersehen, die vom Vorder-rande des Mittelbruststückrückens ausgehenden Furchen am Grunde nicht glatt sondern deutlich gekerbt, die Eindrücke am Vorderrande des Schildchens umfangreicher und am Stutz ein Mittelfeld am Grunde durch besondere grobe Runzeln deutlich ab-gegrenzt, während die Runzeln innerhalb des Feldes zum Teil  $\pm$  schwach entwickelt oder auch ganz geschwunden erscheinen.

*Remarks from the present writer* : Judging from the descriptions, this species seems to be very similar to *S. niger sensu* Bingham. However, despite its long descreption, comparatively little information is given as to the speci-fic characters. But, in the light of the charactcristics of the form of the clypeus shown in the figure and of the petiole of the abdomen, this species may be separable from that species.

##### 5. *stigmus (carinostigmus) filippovi* Gussakovskij, 1934

*Stigmus filippovi* Gussakovskij, Mushi, Vol. VII, No. 2, p. 83, 1934.

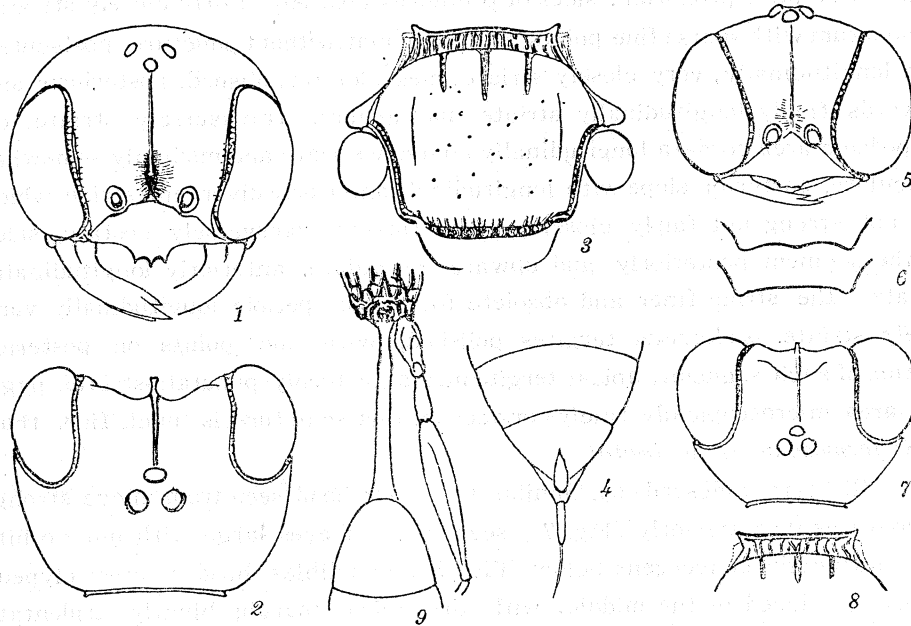
*Stigmus filippovi* Iwata, Ibid., Vol. XI, No. 1, p. 30, 1938. (Biology)

*Stigmus filippovi* Yasumatsu, Hymen. in Ins. Jap. III. Icon. etc., p. 376, fig. 955 (2), 1939.

*Stigmus filippovi* Yasumatsu, Hymen. in Icon. Ins. Jap., Ed. II, p. 1478, fig. 4286, 1951.

$\varphi$ . Length 5.7 - 7.4 mm. Black and shining. Mandibles anteriorly except apex, scape of antennae in front and humeral angles wax white; mandibles apically (sometime wholly) except extreme apex, palpi, rest of scape and basal 4 or 5 joints of flagellum, wingtegulae, apex of all coxae, all trochanters and tarsi, base and apex of front and mid femora, front tibia wholly, mid tibia except the inner margin and base of hind tibia broad-ly ambur yellow or ambur brown; apex of abdomen, antennae apically, rest of legs and wingveins and stigma brownish black, veins of hind wings much paler. Head from above : Fig. 2, ocellar region slightly elevated, OOD : POD approximately 4 : 1, POD less than the diameter of postocellus, OOD slightly less than as long as OCD, frontal median carina distinct up to anterior ocellus, head in front : Fig. 1, frontal spine simple or somewnat thick-

ened apically, orbital distance shown in Table I, clypeus convex, medianly



Figs. 1-9. *Stigmus (Carinostigmus) filippovi* Gussakovskij, 1934.

(1-4 ..... ♀. 5-9 ..... ♂)

produced anteriorly and stoutly tridentate at apex in middle, the lateral teeth slightly reflected, antennae filiform, gently incrassate towards apex, joint 1 (scape) slightly less than as long as three following joints combined, joints 2-5 subequal in length, 4 slightly more than thrice as long as wide at apex, from 6 apically a little shorter than each preceding joint, antedistal joint twice as long as wide, distal joint slightly longer than 4; head in profile with eye less than as wide as temple, occipital carina completely encircling occiput; pro and mesonotum: Fig. 3, on mesonotum anteriorly sides of lateral furrows of trisulci gently swollen, also on both sides of parapsidal furrows, posterior margin with about 20 short longitudinal striae crenulately arranged, sometimes slightly long (but not strong) and divergent; on mesopleuron upper longitudinal furrow obsolete or lacking, two other V-shaped furrows distinct, on propodeum area cordata enclosed by carinae (similar to Fig. 20) which continued to posterior slope, marginating the shallow medial furrow; petiole as long as hind femur, pygidial area: Fig. 4.

Vertex impunctate and polished, upper front microscopically finely and densely, somewhat spirally striate, lower front very finely coriaceous, cly-

peus polished and scattered with a few fine punctures, temples below rather coarsely striate, pronotum, sides of prothorax coarsely, fairly closely striate, mesonotum with sparse fine points, scutellum mat, without puncture, postscutellum longitudinally, very closely striate, mesopleuron polished, posteriorly and upwards finely longitudinally striate, metapleuron transversely striate, on propodeum area cordata longitudinally coarsely striate and medianly somewhat reticulate, posterior slope with longitudinal, anteriorly divergent striae which are not strong but fairly close, median furrow transversely costate, sides of the segment posteriorly and upward reticulate, anteriorly longitudinally striate, the striae finer and obsolete forwards; petiole longitudinally very finely striate, abdominal tergites polished, with fine points on posterior portion of each segment, apical tergite medianly feebly punctate-striate, pygidial area microscopically finely coriaceous, this sculpture is much finer than in *S. formosanus* or in *iwatai*.

♂ (Hitherto undescribed). Similar to ♀, but head seen from above strongly convergent posteriorly (Fig. 7), seen in front eyes large with inner orbits more strikingly convergent below (Fig. 5), mandibles bifid at apex, clypeus (Fig. 6) produced in the middle, with the apical margin bluntly tridentate or subtruncate, in the latter case the lateral angles slightly prominent, the surface longitudinally roundly elevated, not covered with appressed silvery hairs, antennae filiform, slenderer and somewhat longer than in ♀, with under side fringed with short erect hairs; head in profile with eye distinctly broader than temple, pronotum and anterior portion of mesonotum: Fig. 8, abdominal petiole slightly longer than hind femur (Fig. 9), caudal segment without pygidial area, but with a spine at apex. Legs similar in coloration to those of ♀, generally, however, somewhat paler; in some specimens abdomen broadly adorned with brownish.

*Allotype*: 1 ♂, Mt. Hino, Fukui Pref. (M. Japan), 21. IV. 1953, K. Tsuneki leg.

*Specimens examined*: 12 ♀♀ 22 ♂♂, Hokkaido (3 ♀♀, Sapporo and Jozankei, 4. VI. - 27. VII, K. Tsuneki leg.; 9 ♀♀ 22 ♂♂, Hakodate and Akanuma, 19. IV. - 20. VII, M. Munakata leg.); 8 ♀♀ 24 ♂♂, Honshu (3 ♀♀ 1 ♂, Kyoto, 19. IV. - 16. V, K. Takeuchi leg., 1 ♀ 1 ♂, Sasayama, 1 - 13. V, K. Iwata leg., 1 ♀ 3 ♂♂, 16. V, Ishikawa Pref., I. Togashi leg., 2 ♀♀ 19 ♂♂, Mt. Hino, Fukui Pref., 26. IV, 1 ♀, 2. VIII, Mt. Haku, K. Tsuneki leg.); 1 ♂, Shikoku (Kuma-machi, 3. V. 1951, T. Yano leg.)

*Habitat*: Japan (Honshu, Kyushu, Hokkaido and Shikoku)

*Biology*: K. Iwata (1938).

6. *Stigmus* (*Carinostigmus*) *gueinzii* Turner, 1912

*Stigmus gueinzii* Turner, Ann. Mag. Nat. Hist., 9, p. 411, 1912.

*Original description* : ♀. Clypeus with a strong longitudinal carina, which is continued between the antennae and thence more finely almost to the anterior ocellus. Eyes converging a little towards the clypeus, the inner margin marked by a well defined carina. Front concave, opaque, aciculate; vertex smooth and shining. Head much narrowed behind the eyes, the posterior ocelli very close together and far from the posterior margin of the head as from the eyes. Antennae inserted low down on the sides of the clypeus, very near the eyes, more than twice as far from each other as from the eyes, the flagellum very slender at the base, a little thickened to the apex, three times as long as the scape, the whole antenna longer than the head and pronotum combined, the second joint of the flagellum a little longer than the third and more than half as long again as the first. Pronotum small, the anterior angles prominent, rather indistinctly longitudinally striated, about twice as broad as long. Mesonotum strongly arched, sparsely punctured, with two longitudinal furrows on each side, the inner one reaching from the anterior margin to the middle, the outer one very short and not reaching the margin, the space between the inner furrows marked with two obscure longitudinal carinae. Scutellum with a transverse, longitudinally striated depression at the base, otherwise smooth and shining; postscutellum very delicately and obscurely longitudinally striated. Median segment reticulate; a depressed longitudinally striated space at the base, very short and broadly rounded posteriorly, a small triangular, transversely striated space enclosed by low carina reaching from the apex of the depression more than halfway to the apex of the segment. Abdomen smooth and shining, the petiole as long as the thorax without the median segment. The recurrent nervure is received at the middle of the first cubital cell. Black; the mandibles and the posterior angles of the pronotum whitish; scape beneath, the five basal joints of the flagellum, tegulae and legs, except the coxae, testaceous brown, darkest on the femora. Wings hyaline, nervures dark testaceous. Length 4—5 mm.

Habitat : Durban, Natal.

*Remarks of the present writer* : This species seems to be characteristic in having the very long pronotum and the medianlycarinated clypeus. There is no doubt that the present species belongs to subgenus *Carinostigmus*. It may also represent the smallest species of all the members of the subgenus so far known to occur in the Eurasian region.

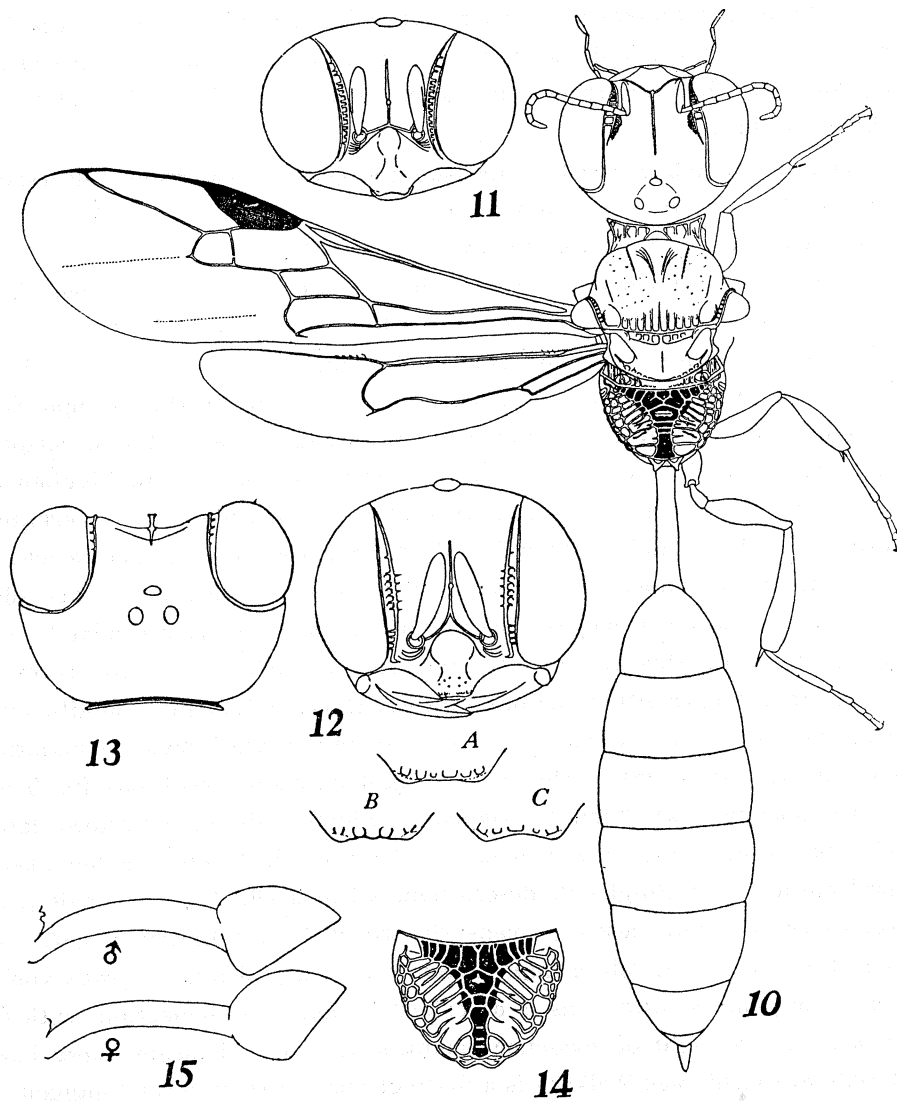
7. *Stigmus* (*Carinostigmus*) *iwatai* sp. nov.

♀. Length 5.7—6.0 mm. Black. Mandibles except apex, scape and basal 3 - 5 joints of flagellum of antennae (sometimes flagellum beneath wholly), trochanters and tarsi of all legs, front tibia, mid tibia except inner face,



base of hind tibia testaceous yellow; rest of antennae dark brown, hind tarsi slightly brownish and palpi more yellowish; humeral angles yellowish white, apex of abdomen and rest of legs brownish black; wings hyaline, nervures and stigma dark brown. Body very sparsely covered with short silky white pubescence, on caudal segment slightly long, and on clypeus and mandibles longer and brownish. Head seen from above: Fig. 13, OOD: POD approximately 2:1, frontal furrow in front of anterior ocellus broad and distinct, the sides gently convex, frontal carina sometimes feebly defined up to the ocellus, sometimes not reach there, frontal spine not long, slightly divaricate at apex, marginal furrow of eyes distinctly crenate and strongly carinate on both sides, but simple and weaker upwards, orb. dist. in Table 1, clypeus medianly anteriorly produced and truncate at apex, with sides of truncated portion slightly reflected, appearing in some aspect, slightly emarginated in the middle (*vide* remarks), occipital carina completely encircles occiput, antennae filiform, slightly thickened apically, 1st joint subequal in length to the three following joints united, joints 2-5 subequal in length (3 slightly shorter), 4 approximately 2.5 times as long as wide at apex (in the broadest view), from 6 apically each joint slightly shorter than just preceding joint, terminal joint subequal to 4, head seen in front: Fig 12, head seen in profile with eye nearly as wide as temple, with vertex and upper front gently convex; pronotum from above with anterior margin feebly bisinuate and strongly pointed at the sides (similar to Fig. 10), with length in middle only slightly less than one third as long as the distance between the antero-lateral spines, the surface in middle semicircularly elevated, with slight depression posteriorly, mesonotum anteriorly trisulcate, lateral furrows deeper and crenate, the areas between the furrows roundly elevated, the sulci equal in length, attaining two fifths of the length of mesonotum, posterior margin coarsely crenate or rather striate, the striae longer toward middle (Fig. 10), mesopleuron with upper longitudinal furrow feeble, other two furrows coarsely crenate, propodeum and petiole as shown in Figs. 10 & 14, pygidial area as in Fig. 21. Body smooth and polished, vertex and upper front glittering, without puncture, anterior front finely coriaceous, clypeus smooth and shining with scattered aciculate punctures anteriorly, punctures close to the anterior margin much larger. temples below rather coarsely striate, pronotum laterally with 2 or 3 short, less strong carinae, sides of prothorax coarsely striate, mesonotum with sparse middle-sized (sometimes fine) punctures, the punctures shallow, indistinctly outlined, variable in size, scutellum with feeble median longitudinal furrow, polished, laterally with

sparse minute punctures, postscutellum longitudinally closely striate. mesopleuron polished, posteriorly longitudinally rather coarsely striate, with the area above the longitudinal furrow longitudinally very finely closely and feebly striate, sometimes the striae obsolete upwards, metapleuron transversely finely, sides of propodeum longitudinally coarsely striate, propodeum sculptured as shown in Fig. 14, with a nearly smoothed small area on each



Figs. 10-15. *Stigmus (Carinostigmus) iwatai* sp. nov.  
 (10, 11 ..... ♂. 12-14 ..... ♀)

side of medial furrow; petiole longitudinally very finely striate, abdomen impunctate and polished, apical tergite with rather close, somewhat large elongate points, pygidial area finely coriaceous.

♂ : Fig. 10. Very similar to ♀, but much smaller (4.7 mm), with head more strongly convergent posteriorly, clypeus with anterior margin distinctly emarginate in the middle (Figs. 10 & 11), not covered with silvery hairs, antennae as in ♀, but the joints apically much shorter (except terminal joint). Three furrows on the anterior portion of mesonotum longer, reaching approximately to the middle of its length, petiole of abdomen, in the lateral view, somewhat different from ♀ in the connecting fashion with 1st tergite of abdomen (Fig. 15).

*Holotype* : ♀, Hainan Island (Tonfan-sun, the upper stream region of Tiansian 昌江), South China; 23. III. 1944, K. Iwata leg.

*Allotype* : ♂, The same place and date.

*Paratypes* : 1 ♀, the same place and time; 1 ♀, Hongkong, South China, 20. X. 19?? (Coll. Hokkaido Univ.). (Types in the writer's collection)

*Habitat* : South China (Hongkong and Hainan Island)

*Remarks.* 1) The specimens listed above, particularly the example from Hongkong, seem to agree tolerably well in characters with the description of *S. congruus* Kohl (nec Walker), *i. e. niger* Motschulsky *sensu* Bingham (*s. latr.*), if the expression on the sculpture of the propodeum, "grob gerunzelt" is read as "grob runzlich gestreift". Therefore, the present species may be a synonym of the above-mentioned species. On the other hand, according to Bingham, the posterior slope of the propodeum is "coarsely reticulate" in his *niger* (*s. str.*). In this respect *iwatai* seems to differ distinctly from his *niger* (*s. str.*). Such a difference of sculpture, though slight and insignificant it may appear, can not always be ascribed simply to the individual variation. The following fact seems to throw some light on such a relationship. There are two specimens at hand (*formosanus* which will be described later) which approximate not only in point of the propodeal sculpture but also in general characters to Bingham's description, when a slight variation is taken into consideration. But these specimens (the probable *niger* Bingham, *s. str.*) are quite distinct in specific relationships from *iwatai* (the probable *congruus* Kohl *i. e. niger* Bingham *s. latr.*), as is described in detail in connection with *formosanus*. In the light of evidences mentioned above, it seems very likely that *congruus* Kohl (nec Walker) is a distinct species from *niger* Bingham (*s. str.*). While *niger* Motschulsky remains uncertain.

In short, the synonymic relationships between the species, *niger* Mots.,

*congruus* Kohl (nec walker), *niger* Bingham (s. str.), *iwatai* m., and *formosanus* m. can not finally be settled until the type specimens of the respective species are actually compared, except for the relationship between the last described two species. (Vide also the remarks on *congruus* Walker and *niger* Motschulsky) In the present treatise, however, in order to avoid the probable confusion as far as possible, *iwatai* and *formosanus* have been dealt with respectively as distinct from *niger sens.* Bingham (s. latr.).

The specimen from Hongkong Island seems to indicate certain tendencies towards the geographic race (in phylogenetic, the relation will be reverse). In this, the clypeus is gently emarginate at the apex in the middle (Fig 12, C); while in one of the female specimens collected in Hainan Island, the anterior margin truncate, with a very feeble reflection at each side (Fig. 12, A), in the other specimen the portion appears minutely and feebly tridentate (Fig. 12, B). The last mentioned state seems to be due to the two large punctures located near the middle of the apical border. Moreover in the Hongkong specimen the surface of the clypeus is nearly smooth, the frontal median carna is definable up to the anterior ocellus and the smooth spaces on the posterior slope of the propodeum are large and remarkable. In the specimens from Hainan Island the clypeal surface is aciculate, though not closely, punctured on its anterior half; the frontal carina is very obsolete on the upper front and the smooth spaces on the propodeum are developed in a lesser degree.

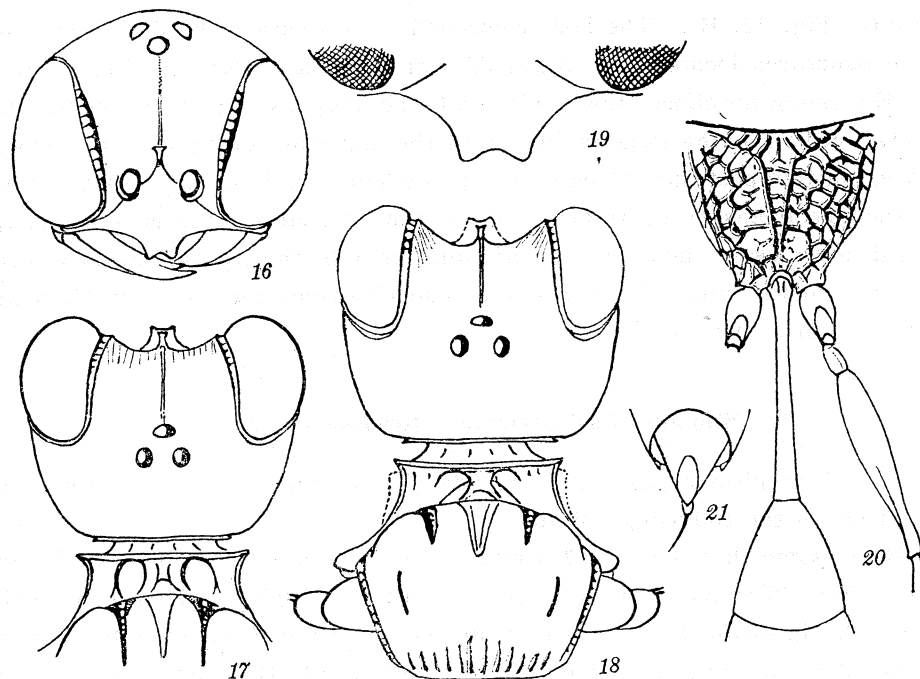
#### 8. *Stigmus* (*Carinostigmus*) *formosanus* sp. nov.

♀. Very closely resembles *S. iwatai* Tsuneki, but can be separable therefrom in the following points :

Body somewhat larger (7.0 mm) and more stoutly built, head from above (Fig. 18) more cubic in form, with ratio of width to length in middle = 39 : 27 (in *iwatai* 35 : 22), frontal medial furrow in front of anterior ocellus broader, the area as a whole inclining towards the median line, hence upper front appears less convex than in the compared species, the surface longitudinally, somewhat obliquely striate, OOD : POD = 2 : 1, opaque area defined close to eye as a fine pit, the portion somewhat produced; frontal median carina more distinct, reaching to anterior ocellus; orb. dist. in Table 1, clypeus with anterior margin deeply incised in middle (Fig. 19). Pronotum medianly broadly elevated, but lacking longitudinal carinae on all the area except few short indistinct ones, mesonotum on anterior portion with three

furrows as usual, the lateral ones shorter than the medial (Fig. 18), posterior face of propodeum (Fig. 20) wholly reticulated, not laterally obliquely striate, without non-carinate areas on both sides of the medial furrow, though the corresponding spaces somewhat weakly sculptured; petiole of abdomen without striae, nearly smooth, coloration as in *iwatai*, but generally much darker. Striae on temples below, carinae on propodeum and punctures on mesonotum generally stronger.

♂. Length 6.8 mm. Differing from ♀ in having eyes much larger, head more strongly narrowed backward (Fig. 17) and inner orbits more remarkably convergent below. On mesonotum, of the three anterior sulci lateral ones longer, on propodeum reticulation less strong and general pattern rather similar to that of *iwatai*. Clypeus not covered with silvery hairs.



Figs. 16-21. *Stigmus (Carinostigmus) formosanus* sp. nov.

(16, 17 ..... ♂. 18-21 ..... ♀)

*Holotype* : ♀, Formosa (Raisha), 30. VIII. 1927, J. Sonan & K. Shibata leg.

*Allotype* : ♂, Formosa (Arisan), 10. X. 1912, I. Nitobe leg. (Types in Coll. Hokkaido Univ.)

*Habitat* : Formosa.

*Remarks*. This species may be a synonym or a subspecies of *S. niger*

Bingham (*sens. str.*). In order to avoid the future confusion, however, it has been treated as a new species. The reason for this has been given in connecton with *S. niger* and *S. iwatai*.

### 9. *Stigmus* (*Stigmus*) *pendulus* Panzer, 1804

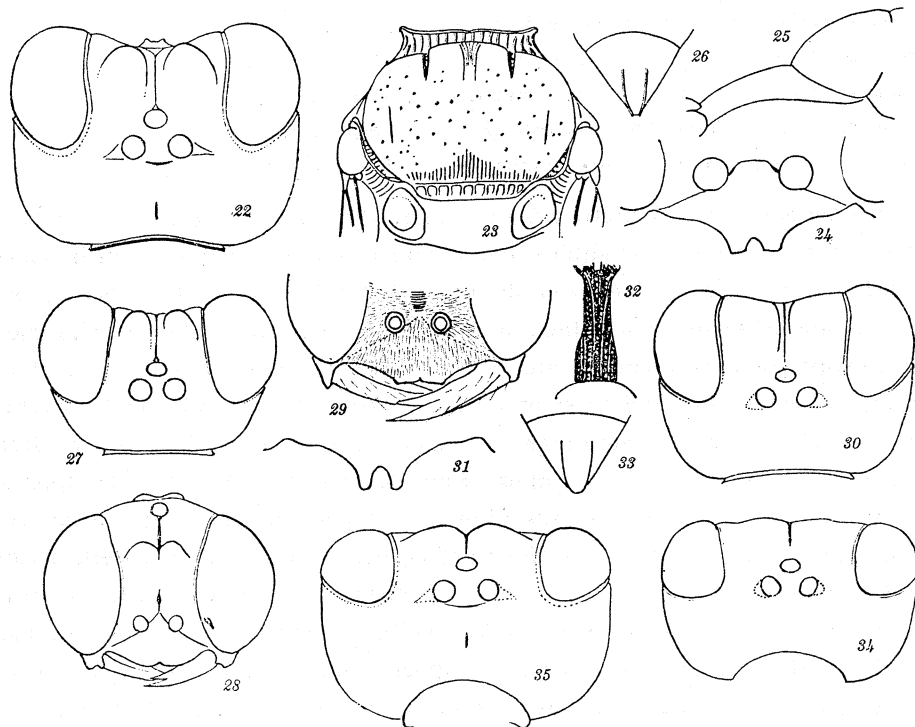
#### Selected literature :

- Stigmus pendulus* Panzer, Faun. Ins. German., VIII, Heft 86, Bl. 7, 1804.  
*Stigmus pendulus* Thomson, Opusc. entom., p. 283, 1870.  
*Stigmus pendulus* Ed. André, Spec. Hymén. Eur., III, P. 30, p. 189, 1888.  
*Stigmus pendulus* Dalla Torre, Cat. Hymen. etc., VIII, p. 362, 1897.  
*Stigmus pendulus* Berland, Faun. France, Hymén. Vespif., I, p. 147, 1925.  
*Stigmus pendulus* Schmiedeknecht, Hymen. N.-M.-Eur., II Ed., p. 667, 1930.

*Observation* : ♀. Length 4.0 - 6.2 mm. Body almost glabrous, sides of lower front, clypeus, mandibles and apical abdominal segment with sparse brownish pubescence. Black and shining. Mandibles except the apex, palpi, scape of antennae in front, flagella beneath, wingtegulae, apex of abdomen, base and apex of all trochanters and femora, front tibia, mid tibia except inner surface, base of tibia and tarsi of all legs testaceous ; palpi much brighter and yellowish, rest of antennae and sometimes rest of legs black. Head from above : Fig. 22, with temples well developed,<sup>1)</sup> OOD : POD approximately 2 : 1, POD subequal to the diameter of postocellus, opaque area well-defined, nearly as large as anterior ocellus, vertex outside postocelli rather broadly hollowed, with a feeble groove conneting archwise the posterior margins of postocelli, on posterior portion medianly a short feeble furrow defined, sometimes the furrow indistinct, on upper front medial furrow broad and comparatively deep, with the sides distinctly swollen (Fig. 22, this elevation is especially well-defined seen somewhat from behind ... Fig. 35), lower front fairly deeply excavated, orbital distance in Table 1, clypeus : Fig. 24, nearly flattened above, with apical teeth somewhat reflected ; antennae with joint 1 subequal in length to the 3 following joints combined, joints 2, 4 and 5 subequal in length to one other, joint 3 somewhat longer and slightly more than twice as long as wide at apex (in the narrowest view ; in the broadest view 1.7 times as long as wide), head in profile with eye less than as wide as temple. Pro and mesonotum : Fig. 23, of the anterior trisulci on mesonotum the medial furrow indistinct, vaguely outlined and

1) In some small specimens the developmental degree of temples are somewhat less, gradually roundly narrowed backward from immediately behind the eyes.

very finely striate, the lateral furrows deep, short, crenulate, posterior margin crenulate or striate, the striae sometimes longer sometimes indistinct towards the middle, usually slightly divergent anteriorly, scutellum with or without medial short groove on posterior portion, on mesopleuron the furrows forming a triangle distinct, coarsely crenate, propodeum with area cordata not well outlined, but always with a large flattened area at base on upper portion, posterior slope with shallow median furrow. petiole of abdomen short,



Figs. 22-29, 35. *Stigmus (Stigmus) pendulus* Panzer, 1804.  
(22-26, 35 ..... ♀. 27-29 ..... ♂)

Figs. 30-34. *Stigmus (Stigmus) europaeus* sp. nov. ♀.

shorter than hind coxa and trochanter taken together, ratio of length to width at apex somewhat variable, usually approaching 2 : 1, lateral view : Fig. 25, pygidial area (Fig. 26) large, anteriorly open and posteriorly bordered on both sides by carinae which are higher posteriorly and slightly produced from apex, hence the apical margin appears narrowly bidentate, hind tibia provided with 2 or 3 short spines.

Vertex, upper front and temples impunctate, sometimes very delicately, microscopically finely striate, lower front very finely coriaceous, clypeus

scattered with very minute points from which hairs project, anterior vertical surface of pronotum and mesonotum anteriorly opaque, disc of mesonotum scattered with fine punctures, postscutellum finely coriaceous, mesopleuron smooth and polished, with upper portion just below the base of wing finely rugulose or reticulate, propodeum strongly coarsely reticulate, petiole longitudinally carinate and very finely rugulose, pygidial area half-mat.

♂. Similar to ♀, but slightly smaller. Head from above eyes large, with temples remarkably convergent backward (Fig. 27), upper front as in ♀, in most specimens the top of the elevation subtuberculate; head seen in front: Fig. 28, inner margins of eyes divergent both upwards and downwards, the shortest distance lies near the middle of lower front, far above the base of clypeus; clypeus in most examples as shown in Fig. 29, with apical margin truncate and minutely incised in middle, its sides bluntly angulate, in some examples, however, the anterior margin broadly rounded as a whole, with a minute incision in the middle, without defined angles between anterior and lateral margins as shown in Fig. 28, the surface flattened (front margin only slightly raised) and covered densely with appressed silvery hairs, lower front also laterally covered with similar hairs. On mesopleuron the base of wing finely, not strongly rugulose-reticulate, sometimes the reticulation fairly strong and coarse. propodeum not so remarkably swollen out laterally as in *verhoeffi*, petiole comparatively long (ratio of length to width at apex nearly 2.5 : 1), gradually thickened posteriorly, feebly longitudinally carinate and finely rugulose. Coloration paler in general than in ♀, testaceous portions of ♀ turn yellowish. Length 4.0 - 5.5 mm.

*Specimens examined*: 6 ♀♀, Holland (5 ♀♀, Beers a/d Maas, 27. V. 1949; 1 ♀, Ulvenhaut, 16. IX. 1953, J. P. van Lith leg.); 1 ♀, Belgium (Jupille), 3. VI. 1950, J. Leclercq leg.; 1 ♂, Helvetia (Vaud, Planchamp s. Clarens), 19. VII. 1946, P. M. F. Verhoeff leg.; 3 ♂♂, Holland (Ulvenhaut, 29. V. 1949, 23. VI. 1952. J. P. van Lith leg.)

*Habitat*: Europe.

*Remarks*. The well-developed temples and the remarkable elevation on both sides of the medial furrow of the upper front are characteristic of this species. Also the form of the clypeus and the sculpture on the mesopleuron are of some use in distinguishing the present species from the allied relatives. But the colour of the humeral angles of the pronotum and the general pattern of the maculation of the legs and antennae become almost insignificant when the Asiatic species are taken into consideration. Judging by the distributional state of the allied members in Eastern Asia, it seems probable



that another species having blackish tubercles may occur in Europe and have been confused with the present species

*Biology* : J. Giraud (1866), C. verhoeff (1891)

#### 10. *Stigmus (stigmus) solskyi* A. Morawitz, 1864

*Stigmus solskyi* A. Morawitz, Bull. acad. Sc. St. Petersb., VII, p. 462, 1864.

*Stigmus solskyi* Thomson, Opusc. Entom., P. II, p. 239, 1870.

*Stigmus solskyi* Ed. André, Spec. Hymén. Europ., III, P. 30, p. 189, 1888.

*Thomson's description* : Niger, callo humerali albido, antennis, mandibulis tibiis tarsisque pallide flavis, clypeo utrinque medio lobato-inciso. Praecedenti (= *S. pendulus* Pz.) similimus, callo humerali albido, clypeo utrinque medio leniter inciso, mesopleuris superne magis rugosis, linea impressa superiore vix discreta distinctus.

*André's description* : Calus huméraux blancs. Tête noir, presque lisse, luisante; épistome légèrement échancré de chaque côté de son milieu; mandibules et antennes testacées. — Thorax noir, luisant; calus huméraux blancs; mésopleures regueuses; métathorax transversalement strié en dessus; écailles brun clair. Pattes noires avec les tibias et les tarse testacés. Ailes hyalines; stigma grand, noir; nervures noires. Abdomen noir en entier, glabre, brillant (♀). Le mâle a l'orbite interne des yeux et l'épistome garnis de duvet argenté. Long 4 à 5 mm. Env. 6 à 7 mm.

*Habitat* : Europe.

*Remarks.* It seems that every example having the whitish humeral angles has so far been identified with *S. solskyi*. Close examination of some European specimens, however, has revealed that more than two distinct species at least are included within the forms having such a character. Therefore, it becomes impossible to determine which of them represents true *solskyi* until the type specimen is examined, because the original description is very incomplete. Such an attempt, however, is impossible for the writer at least at present. Therefore, one of the species that had come under the homonymic relationships has been selected according to the seemingly authentic literature and determined provisionally as *solskyi*. According to the knowledge obtained up to now, such characters as the colour of the humeral angles, mandibles, legs, etc. and the sculpture of the mesopleuron do not always merit the specific distinction, while the character of the clypeus seems to be of more use in separating species, though it is also not always conclusive. Hence the descriptions referring to the clypeal distinction among others has been selected, as reproduced above.

*S. solskyi* thus provisionally determined is characteristic in having the clypeus medianly produced and gently emarginated at each side. Moreover, it seems to be covered with silvery hairs in the male only. Besides it has the

characters also in coloration (particularly in the colour of the tubercles) and sculpture, of which descriptions are consistently given in the literature. Among other species in Europe having whitish humeral angles are included *S. verhoeffi* and *europaeus*, both of which will be described as new. in the following pages.

*S. solskyi* Ed. Saunders (1893) may be a synonym of *S. europaeus*. Unfortunately not a single specimen having the characters of *solskyi* as given above has been accessible to the present writer.

#### 11. *Stigmus* (*Stigmus*) *europaeus* sp. nov.

? *Stigmus pendulus* E. Saunders, Trans. Entom. Soc. Lond., p. 254, 1880.

? *Stigmus solskyi* E. Saunders, Hymen. Acul. Brit. Isl., P. 3, p. 90, 1893.

♀. Length 4.7 - 5.0 mm. Very closely allied to and resembles *S. pendulus* Pz., in both the structural and colorific distinctions, but can easily be distinguished from it in the following points :

Humeral angles whitish and mandibles largely yellowish. Head from above with temples less developed (Fig. 30), opaque area generally smaller, vertex outside postocelli not so deeply and broadly hollowed, transverse curved groove connecting the posterior margin of postocelli not definable, upper front not particularly elevated on both sides of the medial furrow, hence the furrow shallower, but with a fine groove in the middle (Figs. 30 & 34). Clypeus similarly formed, but the apical teeth narrower, with interval more deeply incised (Fig. 31). Antennae thicker and shorter, relative length between each joint similar, but the joint itself shorter, the 4th joint approximately 1.5 times as long as wide at apex, the 11th as long as wide, orb. dist. in Table 1 (p.7). Head in profile with temples only slightly more than as wide as eye. On mesonotum medio-anterior area corresponding to the medial furrow of the usual trisulci marginated with fine feeble carinae (instead of the feeble furrows in *pendulus*), with an additional carina in the middle, the state of notching on posterior margin similar, on mesopleuron above, just below the base of wing moderately largely reticulate, the sculpture extends, downwards covering more than half of the triangular area, and making the upper longitudinal furrow completely indistinct. Propodeum similarly formed and sculptured, with the sides obliquely and somewhat divergenly striate, petiole of abdomen slightly longer, nearly as long as hind coxa and trochanter united, with ratio of length to width at apex nearly 2.5 : 1, from middle posteriorly rather suddenly incrassate (Fig. 32), pygidial

area (Fig. 33) similar.

♂. Not accessible to the writer.

*Holotype* : ♀, Finland (Vanaja), date unknown, 1953, F. Valkeille leg.

*Paratype* : 1 ♀, Portugal (Av. Det de Chaves), 28. VI. 1947, N. F. de Andrade leg. (Types are in the writer's collection)

*Habitat* : Europe.

*Remarks*. Because of the available keys being too simple, this species seems to have long been confused with *S. solskyi* A. Morawitz which has similarly white-colored humeral angles of the pronotum, but which has, according to Thomson (1870) and André (1888), the clypeus quite otherwise formed. Judging from the knowledge obtained from the Japanese forms, it seems possible that in Europe further distinct species occur and have been confused either with *pendulus* or with *solskyi*.

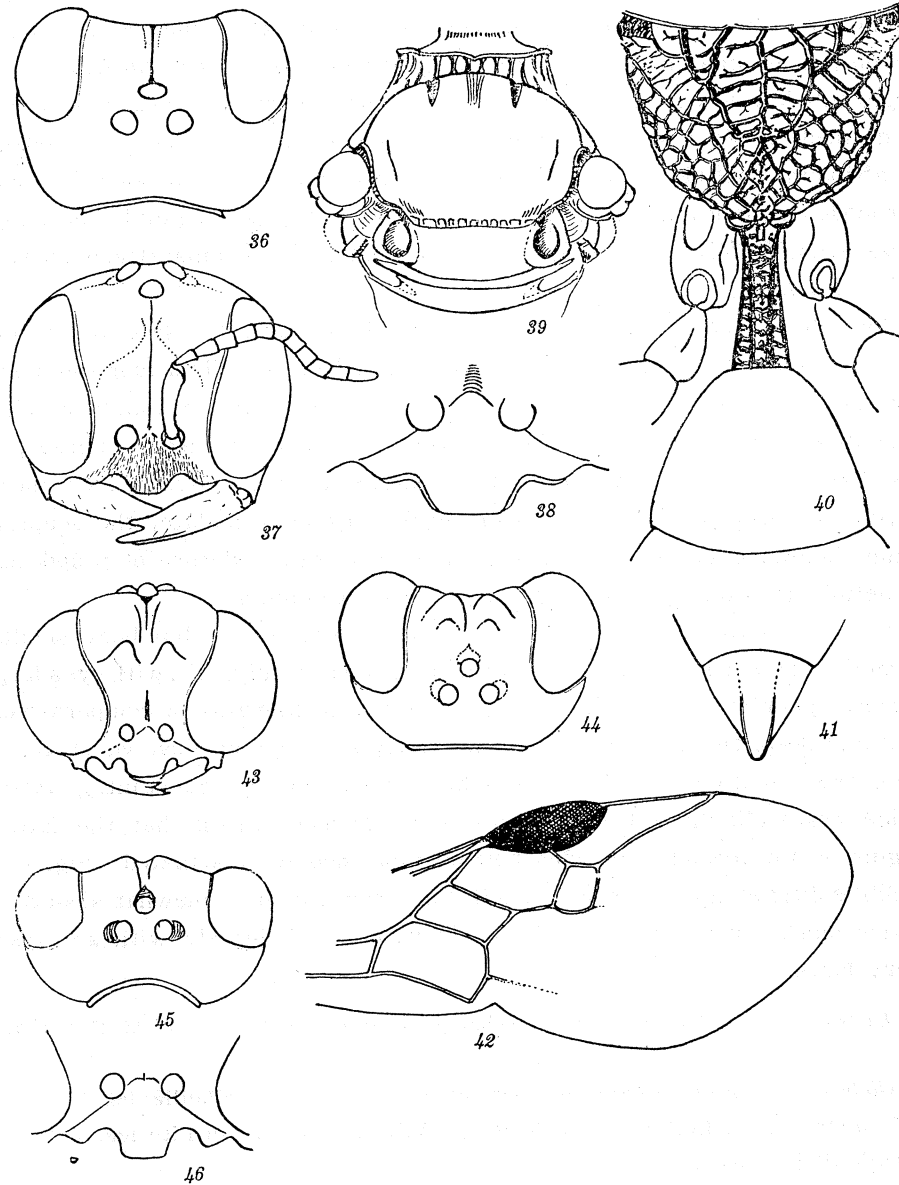
*Stigmus solskyi* Ed. Saunders (1893) (= *S. pendulus* Ed. Saunders, 1880) seems to represent the present species. So far as the descriptions go, it seems to differ slightly from this species only in the colour of the humeral angles. In the paratype, the upper front and the mesonotum largely are microscopically finely striated and the surface becomes half opaque. This state may show a variation and it agrees well with the description of E. Saunders (1893).

## 12. *Stigmus (Stigmus) verhoeffi* sp. nov.

♀. Length 4.2 mm. Black. Mandibles except apex and palpi yellowish; scape of antennae in front, greater part of flagellum, base and apex of all trochanters and of front femora, apex of mid and hind femora, front and mid tibiae, base of hind tibiae and tarsi of all legs testaceous yellow. Each flagellar joint at base above darkened and apical two joints dark brownish; humeral angles yellowish white, anteriorly dark brown, end tergite of abdomen apically brownish. Wings hyaline, veins light brown, stigma dark brownish. Body almost glabrous, lower front and mandibles with sparse short brownish pubescence, clypeus densely covered with appressed silvery hairs. apical abdominal tergite on both sides of pygidial area provided with somewhat long whitish pubescence.

Head from above (Fig. 36) with temples slightly convergent posteriorly, OOD : POD approximately 4 : 3, POD subequal to the diameter of postocellus, OOD : OCD = 1 : 1.7, opaque area only hardly defined, rounded, smaller than anterior ocellus, hollows outside postocelli narrow, frontal medial furrow in front of unpaired ocellus distinct but not deep, the sides only gently swollen;

head seen in front with lower front moderately deeply excavated, inner orbits of eyes slightly convergent below and margined with very fine groove (Fig. 37), orbital distance in Table I. Clypeus : Fig. 38, with the surface flattened, its anterior ridge roundly inflected, mandibles ordinarily tridentate



Figs. 36-46. *Stigmus (Stigmus) verhoeffi* sp. nov.

(36-42 ..... ♀. 43-46 ..... ♂)

at apex. Head in profile with eye slightly less than as wide as temple, occipital carina completely encircles occiput as in *pendulus*; antennae thicker and shorter than in *pendulus*, similar to those of *europaeus*, joint 4 nearly 1.5 times as long as wide and subequal to 2, 3 and 5 respectively, from 6 apically each joint slightly shorter than the preceding joint, 11 as long as wide. Pro and mesonotum : Fig. 39, on pronotum medial excavation somewhat wider than in *pendulus*, on mesonotum the structure of anterior portion as in *europaeus*, posterior margin only laterally feebly crenulate, on mesopleuron upper longitudinal furrow not defined, lower V-shaped furrows definable, coarsely crenate, propodeum and abdominal petiole : Fig. 40, median longitudinal furrow on posterior slope of propodeum shallow and indistinct, legs as in *pendulus*, pygidial area : Fig. 41, venation of forewing : Fig. 42, the 1st cubital cell comparatively shorter than in *pendulus*.

Smooth and polished. Vertex transversely, upper front, lateral portions of lower front, greater part of mesonotum and of scutellum longitudinally, microscopically finely striate, ocellar region, lower front medianly broadly, postscutellum wholly and metapleuron, very minutely coriaceous. These portions half-mat. Pronotum, sides of prothorax coarsely striate; on mesopleuron, the area just below the wingtegula largely reticulate, the sculpture extends below, covering the whole triangular space; sculpture of propodeum and petiole as shown in Fig. 40. pygidial area shining.

♂. In general coloration and sculpture similar to ♀, but body smaller (3.0 mm), with head strikingly convergent backward (Fig. 44), with eyes large and convergent below (Fig. 43); on upper front, median furrow comparatively broad and deep, the areas on both sides fairly remarkably elevated (Figs. 44 & 45), the elevation provided with a blunt point on top (constant?), vertex outside postocelli more broadly excavated, clypeus similar but the lateral margins of the medial protruded portion more deeply emarginated (Fig. 46), mandibles bifid at apex, antennae similar in structure but somewhat slenderer. Clypeus and lateral portions of lower front covered densely with appressed silvery hairs.

*Holotype* : ♀, Helvetia (Vaud, Planchamps. Clarens), 3. V. 1946, P. M. F. Verhoeff leg.

*Allotype* : ♂, Finland (Vanaja), date unknown, 1953, E. Valkeille leg.

*Paratype* : 1 ♂, Holland (Ulvenhout), 1. VII. 1950, J. P. van Lith leg.

*Habitat* : Europe.

*Remarks*. This species seems to be close to *S. solskyi sens.* Thomson and André, and to have been partly misidentified with that species. But it can

easily be distinguished from the compared species in having the clypeus densely covered with appressed silvery hairs in both sexes. This species was named in honour of Mr. P. M. F. Verhoeff, Den Dolder.

### 13. *Stigmus* (*Stigmus*) *cuculus* Nurse, 1903

*Stigmus cuculus* Nurse, Jour. Bombay Nat. Hist. Soc., XV, No. 1, p. 12. 1903.

*Stigmus cuculus* Turner, Mem. Dept. Agric. Ind, Entom. Ser., Vol. V, p. 174. 1917.

*Original description* : ♀. Differs from *S. congruus* (Walk) in being less than half the size, in the whole of the antennae being testaceous, clypeus subtriangular and slightly produced; tubercles not white. Long. 3 - 5 mm. Habitat : Holta, Kangra Valley.

Turner in his remarks on *S. aterrimus*, 1917, comparing his species with the present species described as follows : "This (= *aterrimus*) is very distinct from *cuculus* Nurse in the form of the stigma, the sculpture of the median segment, the longer petiole, the smooth hind tibiae and much greater size...".

*Habitat* : India (Holta)

*Remarks of the present writer*. Judging by the above-cited descriptions on the size of the body, the form of the stigma and of the petiole of the abdomen, this species is supposed to belong to subgenus *Stigmus*.

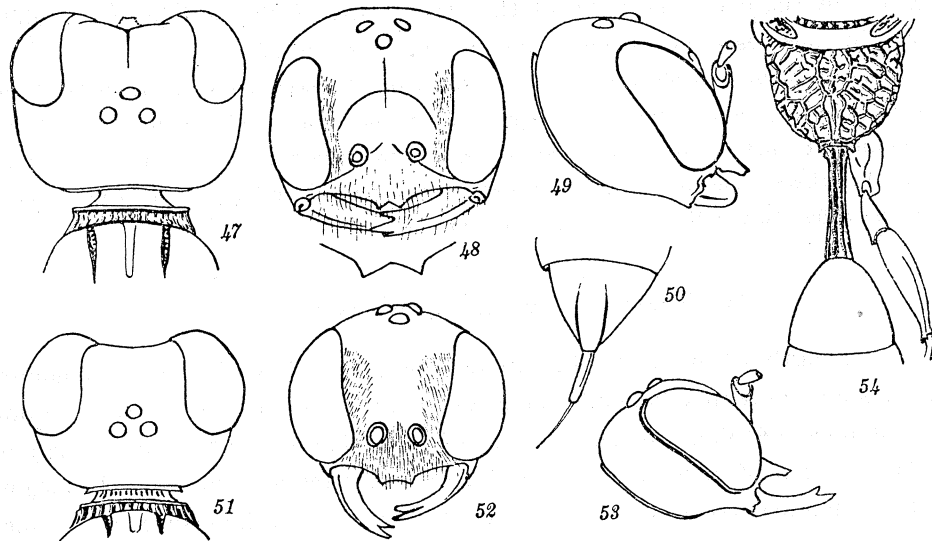
*Biology* : Nurse described as follows : "This small insect nests in the holes bored in soft pine by a minute species of beetle. It stores its nest with aphidae, and lives in colonies of thirty or forty together. My specimens were procured from a table in my verandah, where I had many opportunities of watching their habits. It is much smaller than the other two Indian species of the genus" (1903).

### 14. *Stigmus* (*Stigmus*) *japonicus* sp. nov.

♀. Length 4.8 mm. Black. Humeral angles yellowish white; mandibles except apex, antennae beneath, apex of coxae, front trochanters, base and apex of mid and hind trochanters and of all tibiae and tarsi, apical half of caudal segment of abdomen and tegulae of wings testaceous. Apical margins of the abdominal tergites 3, 4 and 5 semitransparent, yellowish brown; inner margin of front tibiae, distal half of hind tibiae except the extreme apex dark brown. Antennae above chestnut brown with basal four joints above much brighter and testaceous, with apical six joints beneath partly brownish. Wings hyaline, veins dark brown, stigma brownish black. Clypeus and mandibles sparsely pubescent, pubescence brownish yellow in colour, rather long, forming a sort of fringe on the anterior margin of clypeus; lower front along the inner margins of eyes adorned with short rather close whitish

pubescence, apical segment of abdomen moderately closely provided with comparatively long brownish hairs. Remaining portions almost glabrous.

Head from above (Fig. 47) subquadrate, with temples well developed (nearly as in *S. pendulus*), ocelli in a nearly isosceles triangle,  $OOD : POD = 3 : 2$ ,  $OOD : OCD = 2 : 3$ ,  $POD$  nearly 1.5 times as long as the diameter of postocellus, opaque area well-defined, slightly elongate, larger than postocellus, the hollows outside the postocelli very slight in both depth and space, upper front well developed, forming a rounded edge against lower front, frontal median furrow in front of anterior ocellus very shallow and provided with a fine groove in the middle, the area on both sides of the furrow not noticeably elevated. Head in front (Fig. 48) with inner orbits of eyes subparallel, marginated with very fine feeble (almost indistinct,) groove, lower front fairly concave, orbital distance in Table 1, clypeus produced in the middle, with apical margin bidentate, the teeth triangular, broad and slightly reflected, the sinus between them angulated (Fig. 48); head in profile (Fig. 49) with temple broader than eye. Antennae comparatively thick and



Figs. 47-54. *Stigmns (Stigmus) japonicus* sp. nov.

(47-50 ..... ♀. 51-54 ..... ♂)

short, joint 1 subequal in length to the three following joints combined, joint 3 as long as 2, twice as long as wide at apex (in the narrowest view; in the broadest view only 1.3 times as long as wide), and longer than 4 (ratio nearly 4 : 3), 4 and 5 subequal, 6 - 11 shorter than 5, subequal to each other and

slightly more than as long as wide, the terminal joint a little longer than 3. Pronotum with anterior margins sharply carinated, the carina not interrupted by the medial furrow, without lateral spines (Fig. 47), mesonotum medio-anteriorly with a slight longitudinal impression, its lateral margins finely grooved, on each side of this impression a short deep crenate furrow excavated, the space between the furrow and the medial impression not incrassate, posterior margin only laterally obsolete and sparsely crenulate, scutellum medianly feebly grooved on the disc, on mesopleuron crenate furrows forming a triangle well defined, propodeum with upper surface somewhat flattened and enclosed rather indistinctly by the carinae. Petiole of abdomen apically thickened, 2.3 times as long as wide at apex and as long as hind coxa and trochanter united, but shorter than hind femur or 1st abdominal tergite (ratio approximately 3 : 2), in the lateral view suddenly narrowed toward base, pygidial area similar in form to that of *pendulus*, with lateral carinae definable up to the middle of the area, with the apex subtruncate (Fig. 50), legs as in *pendulus*. In fore wing radial nervure slightly curved inward.

Head impunctate and polished, pronotum above longitudinally not strongly and rather sparsely striate, mesonotum anteriorly mat, on the disc smooth and shining, and scattered with a few fine punctures, sides of prothorax with two strong longitudinal carinae, meso and metapleuron above, just below wing tegula longitudinally, very finely and closely, somewhat rugosely striate, triangular area on mesopleuron polished, postscutellum very finely granulate, mat; propodeum comparatively finely reticulate, the sides anteriorly finely irregularly sculptured and mat.

♂. Length 4.2 - 4.5 mm. Black. Mandibles and humeral angles yellowish white, the former apically brownish; antennae above yellowish brown, wing-tegulae and all legs orange yellow; wings hyaline, veins yellow to yellowish brown, stigma dark brown. Clypeus and lateral portions of lower front covered with appressed silvery hairs. Head from above : Fig. 51, convex, upper front gently inclined anteriorly, without particular elevation on both sides of medial furrow which is very feeble, hollows outside postocelli narrow; head in front : Fig. 52, lower front broadly concave, orbital distance in Table 1, clypeus with anterior margin roundly emarginate, mandibles bifid at apex, antennae slender, comparatively long, joint 1 as long as three following joints combined, the latter subequal in length to each other, joint 3 nearly 2.5 times as long as wide at apex; head in profile : Fig. 53, pronotum (Fig. 51) with antero-lateral angles not spinose, mesonotum trisulcate anteriorly, lateral furrows feebly crenate and median groove distinctly excavated in front,



posterior margin not crenate, scutellum medianly shortly grooved on the disc, on mesopleuron triangle furrows distinct, propodeum and petiole : Fig. 54, petiole longer than 1st abdominal tergite or hind coxa and trochanter united, but as long as hind femur. Punctuation and sculpture generally similar to ♀, but temples scattered with sparse fine points, pronotum and sides of prothorax longitudinally more distinctly striate, mesopleuron with triangular area anteriorly coarsely striate, posteriorly finely irregularly sculptured (upper portion just below the base of wing sculptured as in ♀). Mesopleuron moderately closely covered with hoary white pubescence.

*Holotype* : ♀, Japan (Kyogoku-mura, near Kucchian, Hokkaido), 7. VII. 1952, M. Munakata leg. (Writer's Coll.)

*Allotype* : ♂, Japan (Jozankei, Hokkaido), 25. VI. 1952, K. Tsuneki leg. (Writer's Coll.)

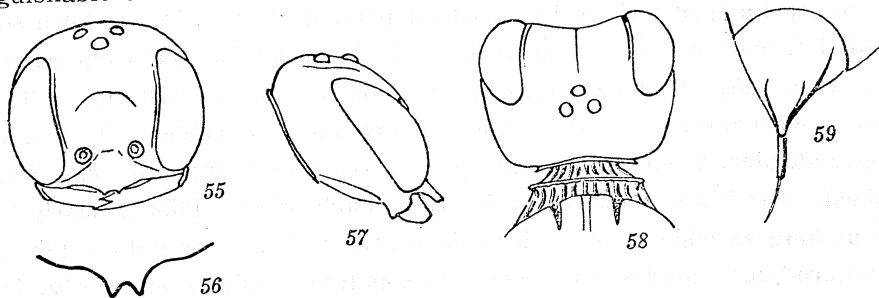
*Paratype* : 1 ♂, Japan (Iwate Pref., Honshu), date unknown, Ogasawara leg. (Coll. Hokkaido Univ.).

*Habitat* : Japan (Hokkaido and the northern part of Honshu)

*Remarks*. The present species is similar to *S. pendulus* in the form of the head, but can easily be distinguished from it by the differences in the colour of the humeral angles, in the structure of the upper front, clypeus, vertex and in the sculpture of the mesopleuron. Moreover, both the species differ somewhat from each other in the relative length to width of the abdominal petiole and the curvature of the radial nervure of the forewing. This species can be separable also from all the other known species by the form of the head and clypeus, and by the sculpture of the mesopleuron.

#### 15. *Stigmus (Stigmus) munakatai* sp. nov.

♀. Length 4.1 mm. Very similar in structural as well as colorific characters to *S. japonicus* Tsuneki, described in the foregoing pages, but is distinguishable therefrom in the following points :



Figs. 55-59. *Stigmus (Stigmus) munakatai* sp. nov. ♀.

1) Upper front not well developed, roundly inclined anteriorly, gradually shifting into the lower frontal area, with the result that the upper front appears much longer than in the compared species and the median ocellus comes to locate at the center of the head seen from above. (Fig. 57 and Fig. 58). opaque area smaller.

2) Clypeus deeply incised at apex in middle, forming bidentate margin, the teeth comparatively longer and produced anteriorly, showing a distinct rounded angle between the side of the tooth and the lateral margin of the clypeus (Fig. 56).

3) Head seen in front with inner orbits of eyes marginated with comparatively broader, well-defined furrow (Fig. 55), orb. dist. in Table 1.

4) Humeral angles black in colour.

5) The short longitudinal trisulci on anterior portion of mesonotum (Fig. 58) seem to be shallower and less strong, median furrow hardly excavated in front.

6) Scutellum without median longitudinal furrow on the disc.

7) Pygidial area apically distinctly narrowed as shown in Fig. 59.

8) Greater part of trochanters of all legs blackish.

The sculpture of mesopleuron and the form of abdominal petiole in the lateral view similar to those of *japonicus*.

*Holotype* : ♀, Japan (Kyogoku-mura, near Kucchian, Hokkaido), 13. VII. 1952, M. Munakata leg. (Writer's Coll.)

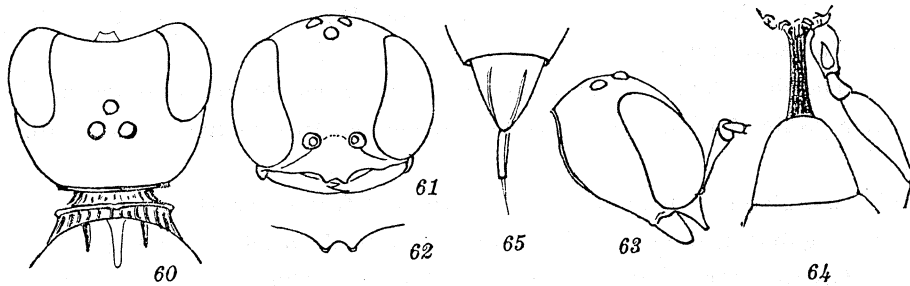
*Habitat* : Japan (Hokkaido)

#### 16. *Stigmus (Stigmus) convergens* sp. nov.

♀. Length 4.0 - 4.5 mm. Black and shining, mesonotum with bronzy reflection in certain light. Mandibles except apex and palpi whitish yellow; humeral angles whitish. Scape of antennae wholly and flagellum beneath, wingtegulae, apical half of caudal segment of abdomen, apex of coxae, trochanters wholly, base and apex of femora of all legs, front tibia, mid tibia except inner surface, base of hind tibia broadly and all tarsi testaceous. Wings hyaline, iridescent, veins and stigma dark brown. Sides of lower front, clypeus, mandibles, mesopleuron in part and apical abdominal segment with sparse short pubescence, hairs on anterior margin of clypeus longer.

Head from above : Fig. 60, convex, OOD : POD approximately 2 : 1, POD slightly shorter than the diameter of postocellus, temples not well developed, remarkably convergent backward, without particular elevation on upper front, the latter roundly inclined anteriorly into lower front, with the

border not well defined, frontal median groove in front of unpaired ocellus very feeble; on vertex hollows outside postocelli very small. Head from front (Fig. 61) with inner orbits of eyes roundly convergent below, lower front roundly concave, orb. dist. in Table 1, clypeus with the surface slightly convex, anteriorly produced in middle and bidentate at apex (Fig. 62), the dents reflected at apex, sinus obtusely angulated. Antennae comparatively long, joint 1 (scape) approximately as long as 3 following joints taken together, joints 2 and 3 subequal, the latter about twice as long as wide at apex (in the narrowest view; in the broadest view, 1.5 times as long as broad), 4 shorter than 3 (ratio 4 : 3), from 4 apically each joint slightly shorter than



Figs. 60-64. *Stigmus (Stigmus) convergens* sp. nov.

the preceding joint, end joint a little longer than 3. Head in profile: Fig. 63, pronotum with anterior margin feebly bisinuate, not spinose at sides and not interrupted in middle by the furrow; on mesonotum, of the anterior trisulci medial furrow marked off only by the feeble groove, lateral furrows deep, but not crenate, posterior margin of the segment very feebly crenulate, mesopleuron with the furrows enclosing the triangular space distinct, not broad and finely crenate, petiole gradually thickened posteriorly, comparatively long, with ratio of length to width at apex nearly 2.7 - 3.0 : 1, approximately as long as hind coxa and trochanter united and slightly less than as long as hind femur, in the lateral view, gradually narrowed anteriorly. pygidial area: Fig. 65.

Vertex and temples polished, practically impunctate, opaque area on oculocellar line oval in form, as large as postocellus, lower front feebly coriaceous, nearly smooth, clypeus somewhat distinctly but very minutely sparsely punctured. Pronotum coarsely striate, mesonotum anteriorly half-mat, disc scattered with somewhat large shallow indistinctly-outlined punctures, scutellum polished, mesopleuron wholly smooth and shining, sometimes the upper area in part very finely sculptured, propodeum carinate-reticulate as in *japonicus* (Fig. 54), but sometimes the carinae partly disappear, resulting in large meshes particularly on posterior slope, in general, reticulation not

strong. Petiole longitudinally sparsely carinate with intervals irregularly rugulose, pygidial area very minutely rugulose, half-mat.

♂. Unknown.

*Holotype* : ♀, Japan (Akagawa, near Kucchian, Hokkaido), 18. VII. 1952, M. Munakata leg.

*Paratypes* : 1 ♀, Japan (Kyogoku-mura, near Kucchian, Hokkaido). 8. VII. 1952, M. Munakata leg.; 1 ♀, Japan (Nikko, Honshu), 6. IX. 1953, E. Tanaka leg. (Types in the writer's Coll.)

*Habitat* : Japan (Hokkaido and Honshu).

*Remarks*. This species is very distinct in the form of the head, and in the sculpture of mesopleuron. By these characters, together with those of the form of the clypeus, of the colour of the humeral angles, of the surface condition on the vertex, upper front and pygidial area, the present species can easily be distinguished from any of the species hitherto described.

#### 17. *Stigmus* (*Stigmus*) *flavicornis* sp. nov.

This species is rather similar in general characters to *S. convergens* and may be the male of that species. However, as some difference can be admitted in some important structural distinctions and, moreover, there is no definite evidence at present in the distributional conditions, the specimens have provisionally been dealt with as representing a different species.

♂. Length 3.5 - 3.7 mm. Coloration as in *S. convergens*, excepting antennae wholly testaceous (extreme apex only brownish); humeral angles sometimes broadly brownish with the posterior margin only dirty white. Head seen from above more transverse than in *convergens* (ratio of width to length 28:16), eyes larger, temples more roundly convergent backward, ocellar location as in the compared species, but the inner margin of each ocellus very obsoletely outlined, opaque area represented by five or six striae, smaller, half as wide as anterior ocellus, in form oval; upper front gradually inclined to lower front; head seen in front similar to Fig. 61, but inner orbital lines more strongly convergent below and on lower two-thirds of lower front subparallel, orb. dist. 11 : 6.5 (ratio 1.85), clypeus with the surface flattened, on anterior margin of the median produced portion shallowly, triangularly incised, antero-lateral angles distinct; antennal flagella provided with dense erect hairs, half the width of the carrying joint in length, joint 2 as long as 3 and slightly shorter than 4; head in profile with eye wider than temple, the latter becoming broader below, with occipital carina very distinct and

anteriorly crenulate. Pronotum shorter and more closely and more finely striated, its anterior surface, seen in front, more strongly convex, mesonotum highly polished, with less bronzy reflection, anterior trisulci similar, crenulae on posterior margin present, propodeum coarsely, but not strongly reticulate; mesopleuron with triangular furrows well-defined, the area just above the horizontal furrow longitudinally, finely and closely striate, the striae somewhat weaker anteriorly. Petiole of abdomen as long as the subsequent segment, broader backward, in sculpture as in *convergens*, its sides longitudinally rather closely striate.

*Holotype* : ♂, Japan (Jodoji-mura, near Katsuyama, Fukui Pref.), 28. V. 1954, K. Tsuneki leg.

*Paratype* : 1 ♂, the same place, 4. VI. 1954, K. Tsuneki leg. (Types in the writer's coll.)

*Habitat* : Japan.

#### Addendum

##### Provisional key to the species in males (*Stigmus* s. str.)

- 1 Humeral angles wholly black or possibly black ..... 2
- Humeral angles at least on posterior portion whitish or possibly whitish ..... 3
- 2 Unknown ..... *cuculus* Nurse, *munakatai* Tsuneki
- Clypeus : Fig. 28 or 29, the distance between eyes shortest at about the middle of lower front, frontal furrow remarkably deep, the sides roundly elevated and subtuberculate on top, pronotum with antero-lateral corners angulate, the area above the longitudinal furrow on mesopleuron rugulose-reticulate. Europe  
*pendulus* Panzer
- 3 Unknown or unknown to the writer  
*solskyi* Morawitz, *europaeus* Tsuneki, *convergens* Tsuneki
- Known species ..... 4
- 4 Clypeus : Fig. 46, the distance between eyes shortest at base of clypeus (Upper front similar in structure to that of *pendulus*, but less remarkable, antero-lateral corners of pronotum not angulate, upper portion of mesopleuron including triangular area irregularly reticulate). Europe  
*verhoeffi* Tsuneki

- Clypeus otherwise conformed ..... 5
- 5 Triangular area on mesopleuron finely sculptured and mat (Clypeus :  
Fig. 52, the distance between eyes shortest at base of clypeus,  
mesonotum not crenate on posterior margin, sculpture on  
propodeum strong). Japan (Hokkaido and Honshu)  
*japonicus* Tsuneki
- Triangular area smooth and polished (Clypeus more deeply incised  
in the middle, with the sides roundly produced, the distance  
between eyes appears shortest at above the sockets of antennae,  
inner orbital lines subparallel in the vicinity, sculpture on pro-  
podeum feeble). Japan (Honshu)  
*flavicornis* Tsuneki

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