

A TAXONOMIC STUDY ON THE CHRYSEMELIDAE (INSECTA-COLEOPTERA) FROM FORMOSA

PART IV SUBFAMILY ZEUGOPHORINAE

By

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Subfamily ZEUGOPHORINAE nov.

General characters (Figs. 1~10): Body rather small in size, oblong or oblong-oval or oval in general shape, entirely covered with fine pubescence. Head (Figs. 3 & 4) rather wide but short, distinctly constricted somewhat behind the eyes; clypeus strongly transverse, more or less convex, distinctly separated from frons by a deep transverse impression. Mouth-parts: labrum transverse rectangular, with front corners rounded, front margin straight or rounded or emarginate and very finely pubescent; mandibles (Figs. 3, 4 & 5) robust, incurved, bidentate at the apex, with one or more teeth on the upper and lower sides of the terminal area of inner face, of the basal area very thickly pubescent or ciliate; maxillary palpi (Figs. 3, 4 & 6) rather slender, with 1st segment very small, 2nd clubate, usually much longer than the 3rd and in many cases rather longer than the 4th, 3rd strongly thickened terminally, 4th subconical or elongate-ovate or subobate and bluntly pointed at the apex; labium (Figs. 4 & 7) with ligula semimembranous, rounded at the front corners, only slightly emarginate and very finely pubescent at the front margin; labial palpi rather slender, with 1st segment minute, 2nd clubate, 3rd nearly conical or ovate or spindle-shaped and bluntly pointed at the apex. Eyes (Figs. 1, 3 & 4) reniform or oblong, strongly convex, deeply notched at the inner margin. Antennae (Fig. 1) filiform, about half as long as the body, with 1st segment thickened terminally and somewhat curved, the remainders variable in shape and size. Pronotum (Fig. 1) rather wider than long or the reverse, without lateral margins; lateral areas widened or subtuberculate or near, the middle; dorsum transversely convex, confusedly pubescent-punctulate; with an ante-basal transverse impression, which is frequently obliterated at the middle, in the Genus *Pedrillia* WESTWOOD. Scutellum (Fig. 1) small, obtriangular or obtrapezoidal, with dorsum very finely pubescent-punctulate. Elytra (Fig. 1) elongate-subquadrate, distinctly wider at the base than pronotum, in many cases more or less widened posteriorly, but in some cases parallel-sided, rounded at the apex; dorsum convex, with median area generally flat, in many cases lightly depressed just before the middle, entirely confusedly pubescent-punctate.

Underside (Fig. 2): prosternum wide but very short; prosternal process very narrow as like as a keel, with apex somewhat widened and touched to the apices of pro-epimera, the

latters also widely touched to each other at their apices, and, therefore, acetabulae closed behind; abdomen with 1st sternite somewhat longer and wider than any one of the three followings, the latters (2nd to 4th sternites) rather constricted medially and the constriction more noticeable in male than in female, 5th sternite distinctly longer but narrower than any one of the three precedings. Legs: fore-coxae conical or conico-cylindrical, strongly prominent, contiguous to each other; middle-coxae globular, rather distinctly separated from one another; hind-coxae strongly transverse, distinctly separated from each other; femora, especially the hind-pair, rather strongly incrassate; tibiae gently thickened terminally, fore-tibiae armed with a single spur at the apex of lower side, middle- and hind-tibiae armed with a pair of spur at the apex of lower side; tarsi (Fig. 8) wide, with 3rd segment gently emarginate at the apical margin, claw-segment clubate and somewhat curved; claws distinctly appendiculate.

Wing (Figs. 9 & 10): Cu2 isolated in any case, forked into Cu2a and Cu2b in the Genus *Zeugophora* KUNZE, but simple in the Genus *Pedrillia* WESTWOOD; 2A short, connecting just or a little beyond the middle of 1A and ending at the point.

Male genitalia (Fig. 11): Median-lobe dorso-ventrally flattened, somewhat arched, strongly chitinized, with middle portion membranous or semimembranous; median-struts very long, rod-like form and widely separated from each other at their bases. Tegmen fused at the base and the two arms widely distant to each other, with well developed distal lobe and the apex of it rounded. Internal sac large, with extremely long ejaculatory duct.

Range: Europe, Africa, Madagascar, Asia and N. & C. America.

This new subfamily is proposed for the genus *Zeugophora* KUNZE (1818). This genus was formerly pertained in the subfamilies *Criocerinae* or *Sagrinae* or *Megalopodinae* by the several senior entomologists, but up to the present time the interpretation and disposition having been accepted for all entomologists since H. CLAVAREAU (1913) appertained it in the Subfamily *Orsodacninae* together with the genera *Orsodacne* LATREILLE (1802), *Syneta* LACORDAIRE (1845) and a Madagascanian genus *Hemydacne* JACOBY (1897).

By my detailed examination, however, the present genus having a very distinct structural differences from the other two genera, namely *Orsodacne* and *Syneta* (Unfortunately, I can not yet obtain any example of the genus *Hemydacne*, but I consider from the original descriptions on the genus and type-species this will be a member belonging to the quite another Division), and the differences, I believe, having a distinct subfamilic characters described as follows:

Zeugophora

(Figs. 1-11)

1. *Median-lobe* of male genitalia with lateral and apical areas strongly chitinized, but the median area membranous or semimembranous.
2. *Tegmen* of male genitalia not bilobed at the apex.
3. *Head* distinctly constricted behind the eyes.
4. *Ligula* of labium with front margin slightly

Orsodacne

(Figs. 12 - 19)

- Median-lobe* of male genitalia uniformly chitinized.
- Tegmen* of male genitalia distinctly bilobed at the apex.
- Head* not constricted behind the eyes.
- Ligula* of labium deeply bilobed.

htly emarginate and not bilobed.

5. *Mandibles* with many teeth on the inner side.
6. Last segment of *maxillary palpi* elongate-ovate or subovate and bluntly pointed at the apex.
7. Last segment of *labial palpi* nearly conical or ovate or spindle-shaped and bluntly pointed at the apex.
8. *Eyes* more or less notched at the inner margin.
9. *Prosternum* very short.
10. *Fore-tibiae* armed with a single spur, *middle-* and *hind-tibiae* armed with a pair of spur.
11. 3rd segment of *tarsi* with apical margin only slightly emarginate.
12. Claws appendiculate.
13. Wing: Cu2 simple or forked into Cu2a and Cu2b, 2A connecting at its apex to the middle of 1A.

Mandibles without distinct tooth on the inner side.

Last segment of *maxillary palpi* obtriangular, secuiiform, oval, oblong, etc.

Last segment of *labial palpi* oval or oblong or oblong-oval and frequently truncated at the apex.

Eyes entire, without incision at the inner margin.

Prosternum long.

All the *tibiae* armed with a pair of spur.

3rd segment of *tarsi* with apical margin deeply emarginate.

Claws bifidate.

Wing: Cu2 simple, not forked in any case, 2A extending to near the hind margin of the present wing, but connecting on the way to 1A beyond the middle of the latter.

In the next, *Syneta* LACORDAIRE is allied to *Orsodacne* LATREILLE in the structures of maxillae and legs (especially of the tarsi and claws), but may be clearly distinguished from the latter genus in having the pro-epimera widely separated from each other, prosternal process very short and much distant from the apex of pro-epimera, thence acetabula distinctly open behind, fore-coxae completely contiguous, lateral margins of pronotum bordered though it is very obtuse, elytra strongly and regularly striate-punctate and tegmen of the male genitalia without distal-lobe, and these characters are, at the same time, assume a very distinct difference between the genera *Syneta* and *Zeugophora*. The subfamilies *Orsodacninae* or *Zeugophorinae* will not be able to accept the genus *Syneta* as a member of them.

Now that, *Zeugophora* is most nearly related to the members of the subfamily *Megalopodinae* in the general structures and completely agreeable in the structures of the male genitalia, but distinguished from the latter as in the preceding synopsis.

And, in the male genitalia of all the Chrysomelid-subfamilies, there are only five ones (*Orsodacninae*, *Sagrinae*, *Donaciinae*, *Megalopodinae* and *Zeugophorinae*) which having the distal-lobe in the tegmen, and in all these there are only two subfamilies, namely- *Megalopodinae* and *Zeugophorinae*, which having the middle portion of the median-lobe not so strongly chitinized as in the lateral and apical portions of the same lobe. In the other three subfamilies the median-lobe uniformly chitinized.

Genus *Zeugophora* KUNZE

Zeugophora KUNZE, Neue Schrift. Naturf. Ges. Halle, II, 4, p. 71 (1818). - STEPHENS, Illustr. British Ent., Mandib. IV, pp. 282-283 (1831). - LACORDAIRE, Monogr. Phytoph. I (Mém. Soc. Roy. Sci. Liège, III), pp. 226 & 233-236 (1845). - REDTENBACHER, Fauna Austriaca, ed. 2, p. 885 (1858). - C. G. THOMSON, Skandinaviens Col., VIII, p. 133 (1866). - FAIRMAIRE, in JACQUERIN DU VAL, Gen. Col. d'Europe, IV, p. 209 (1868). - CHAPUIS, in LACORDAIRE, Hist. Nat. Ins.: Gen. Col., X, p. 69 (1874). - WEISE, Naturg. Ins. Deutschlands, VI, p. 55 (1882). - FOWLER, Col. British Isls., IV, p. 280 (1890). - WEISE, Deutsche Ent. Zeitschr., 2, p. 447 (1900). - EVERTS, Col. Neerlandica, II, pp. 391 & 405 (1903). - JACOBY, in WYTSMAN, Gen. Ins., XIV, Col.-Phytoph.: *Sagridae*, p. 10 (1903); Fauna Brit. India, incl. Ceylon and Burma: Col. II, Chrysom. 1, pp. 12 & 14 (1908). - REITTER, Fauna Germanica, IV, p. 82 (1912). - KÜHN, Illustr. Best.-Tab. Käf. Deutschlands, pp. 802 & 816 (1913). - SCHAUFUSS, in CALWER, Käferbuch, ed. 6, II, pp. 899 & 900-901, 1907-1916 (1913). - SCHEERPELTS et WINKLER, in BROHMER, etc., Tierwelt Mitteleuropas, V, ii, 2, p. XII-221 (1930). - JOY, Pract. Handb. British Beetles, I, pp. 389 & 392 (1932). - CHUJO, Trans. Nat. Hist. Soc. Formosa, XXXI, 219, pp. 465-467 (1941). - BRYANT, Ann. Mag. Nat. Hist., (11), X, pp. 245-248 (1934). - GRESSITT, Lingnan Journ. Sci., XXI, 1-4, pp. 135-137 (1945).

Aucheria THUNBERG, Nov. Act. Upsala, V, p. 116 (1789) (pars).

Lema FABRICIUS, Suppl. Ent. Syst., p. 93 (1798) (pars).

Crioceris FABRICIUS, Syst. Eleuth., I, p. 461 (1801) (pars).

Taraxis J. LECONTE, in AGASSIZ, Lake Super., p. 237 (1850).

Pedrillia WESTWOOD, Trans. Ent. Soc. London, (3), II, 3, p. 280 (1864). - CHAPUIS, in LACORDAIRE, Hist. Nat. Ins.: Gen. Col., X, p. 94 (1874). - KRAATZ, Deutsche Ent. Zeitschr., XXIII, 1, p. 119 (1879). - WEISE, Deutsche Ent. Zeitschr., 2, p. 447 (1900). - JACOBY et CLAVAREAU, in WYTSMAN, Gen. Ins., XXXIII, Col.-Phytoph.: *Megalopidae*, pp. 2 & 16 (1905). - JACOBY, Fauna Brit. India, incl. Ceylon and Burma: Col. II, Chrysom. 1, pp. 12-13 (1908). - CHUJO, Trans. Nat. Hist. Soc. Formosa, XXII, 122, pp. 337 & 338 (1932); 1. c., XXVII, 165, pp. 150-151 (1937).

Macrozeugophora ACHARD, Bull. Soc. Ent. France, LXXXIII, p. 288 (1914). - GRESSITT, Lingnan Journ. Sci., XXI, 1-4, p. 137 (1945).

Genotype: *Zeugophora subspinosa* (FABRICIUS), Spec. Ins., I, p. 55 (*Crioceris*) (1781), from Europe [Designated by M. JACOBY, Fauna Brit. India, incl. Ceylon and Burma: Col. II, Chrysom. 1, p. 14 (1908)].

Range: Palaearctic, Oriental, Ethiopian and Nearctic Regions.

General characters: Body ovate or elongate-ovate or oblong, entirely thickly and confusedly pubescent-punctulate throughout, and the punctures on the dorsum larger and deeper than those on the underside. Head well exposed, large, wide, strongly constricted behind the eyes; vertex and frons commonly convex, in some cases narrowly sulcated along the inner margin of eyes; clypeus transverse, more or less convex on the surface, distinctly delimited from frons by a transverse curved groove. Mouth-parts: labrum transverse, with front corners rounded,

front margin also rounded in some cases, but in other cases straight or gently emarginate at the middle; and finely pubescent in any case; mandibles robust, rather short, terminal portion inwardly curved, sharply pointed at the apex, with one or more distinct teeth at a little behind the apex, sharply edged at the inner margin; maxillary palpi with last (4th) segment elongate-ovate or nearly so, more or less pointed at the apex and nearly equal in length to the 2nd in some cases, but in other cases longer than the latter or the reverse; labium with ligula straight or gently rounded or emarginate and finely pubescent at the front margin; labial palpi with last (3rd) segment conical or oval, rather pointed at the apex and shorter or slightly longer than the penultimate segment. Eyes large, strongly convex, reniform or oblong, distinctly emarginate at the inner margin. Antennae filiform, about half or rather more than half as long as the body-length, finely and thickly pubescent; 1st segment distinctly thickened terminally and somewhat curved, 2nd to 5th in some cases nearly equal in length to each other and uniformly elongate-obconical, but in other cases 3rd and 4th slenderer than the 2nd or 5th, 6th to 10th much thicker but shorter than the 3rd or 4th, 11th nearly equal in thickness to the preceding one, ovate or nearly so and rather pointed at the apex. Pronotum subquadrate, longer than wide or the reverse; front margin nearly straight, in many cases narrowly bordered, but in some cases indistinctly or not bordered; all the corners rather obtuse and furnished with a few setae; lateral margins not bordered, gently narrowed anteriorly from just before the middle but very strongly narrowed posteriorly from the latter portion with its posterior portion parallel-sided or gently rounded in some distance, rarely the present margins evenly gently rounded with a tooth at just before the middle; basal margin nearly straight or gently sinuate and distinctly bordered; dorsum convex from one side to the another, sometimes sharply grooved on each side just behind the front corner and transversely grooved along the basal margin, but the latter groove often interrupted at the middle. Scutellum small, obtrigonal or obtrapezoidal. Elytra distinctly elongate, much wider at the base than of pronotum, humeral corners somewhat produced forwardly, nearly entirely parallel-sided or the basal one-third parallel-sided and then gently widened posteriorly, rounded at the apex; dorsum convex, with sutural area flat, in many cases lightly depressed before the middle, sutural margin distinctly costate, humeri rather raised and free from the distinct punctures as those on the disc, elytral epipleurae distinct from the base to apex or rather indistinct at the apical portion. Underside: prosternum wide but very short, prosternal process very narrow as like as a linear wall and extending to the apices of pro-epimera, the latter distinctly touched to each other, thence acetabulae closed behind; mesosternum rather narrow between the middle-coxae, with apex obtuse or pointed or rounded or truncated or emarginate; metasternum wide, but rather short; abdomen with 1st sternite longer than any one of the three succeeding and last sternite narrower but longer than any one of the three preceding. Legs rather robust; fore-coxae conical or conico-cylindrical, prominent, contiguous to each other; middle-coxae globular, distinctly distanced from each other; hind-coxae strongly transverse, separated from one another; femora markedly thickened, with hind-pair much thicker than any one of the two anterior-pairs; tibiae robust, fore-tibiae straight and armed with a single spur at the apex of lower side, middle- and hind-tibiae somewhat arched and armed

with a pair of spur at the apex of lower side; tarsi gradually widened from the base of 1st segment to the apex of 3rd segment, with 1st segment elongate-trigonal, 2nd short, triangular or trapezoidal, 3rd subquadrate or subrectangular with apical corners rounded and apical margin more or less emarginate, claw-segment thickened terminally and a little curved, claws distinctly appendiculate, curved and sharply pointed at the apex.

Genus *Pedrillia* WESTWOOD (1864) was treated as a distinct genus by many entomologists until recent years, but was synonymized to the genus *Zeugophora* by G. E. BRYANT in 1943 (loc. cit.).

Genus *Macrozeugophora* ACHARD (1914) was also synonymized to the genus *Zeugophora* by J. L. GRESSITT in 1945 (loc. cit.).

Key to the Species

1. Pronotum not grooved along the basal margin (2)
- 1'. Pronotum with a groove along the basal margin, but the groove often interrupted at the middle in various degrees (3)
2. Elytra and legs uniformly pale yellowish brown, without any spot..... *gracilis* (CHUJO)
- 2'. Elytra and legs pale yellowish brown in general colour, with three spots on each elytron (the one on the base and the others on the apical area) blackish brown, basal half of the lateral margin of each elytron black and apices of hind-femora piceous *maculata* CHUJO
3. Elytra maculated (4)
- 3'. Elytra immaculated (5)
4. Elytra reddish brown; each elytron with two large yellowish markings, the first one being situated near the middle, the second one behind the former and each one of them broadly margined with black tinge *decorata* (CHUJO)
- 4'. Elytra black, with a broad yellowish brown band near the middle which is developing downwardly along the sutural margin and extending to the apical yellowish brown area *formosana* GRESSITT
5. Head and pronotum black, simply lustrous *nitida* (CHUJO)
- 5'. Head blackish brown to black and pronotum reddish brown to blackish brown with a faint iridescent shimmer *ruficollis* (CHUJO)

1. *Zeugophora gracilis* (CHUJO)

Pedrillia gracilis CHUJO, Trans. Nat. Hist. Soc. Formosa, XXVII, 165, pp. 149-150 & 151, f. 4 (1937) (Formosa).

Zeugophora gracilis CHUJO, Trans. Nat. Hist. Soc. Formosa, XXXI, 219, p. 466 (1941) (Formosa). - GRESSITT, Lingnan Sci. Journ., XXI, 1-4, p. 140 (1945) (Formosa).

Body narrowly elongate, gently widened posteriorly, thickly covered with yellowish white pubescence on the whole surface. General colour pale yellowish brown, with apices of mandibles and lateral marginal areas of pronotum rather dark brown.

Head very large and wide, strongly constricted behind the eyes, entirely rather sparsely punctate and interspaces of these punctures very finely shagreened; vertex and frons convex,

with a short sulcus on each side along the eye and a triangular depression on the middle of frons; clypeus transverse, distinctly limited from frons, strongly convex, punctured on the sides, impunctate and smooth on the middle. Eyes large, widely ovate, with a distinct incision on each inner margin, strongly convex and prominent. Antennae filiform, rather shorter than half the length of body; 1st segment longest, clubate and somewhat curved, 2nd shortest, 3rd and 4th nearly equal in shape and size to each other and each one of them distinctly narrower than the others but longer than any one of the seven followings, 5th to 11th strongly thickened, 5th to 10th nearly equal in shape and size to one another, 11th rather longer than the 10th and bluntly pointed at the apex. Pronotum rather narrower than head, longer than wide; front margin nearly straight and narrowly bordered, front angles obtuse, lateral margins not bordered, widest at just before the middle and gently narrowed anteriorly but strongly constricted behind the widest portion, basal angles obtuse and furnished with some long pale setae together with the front angles, basal margin distinctly bordered and the median area slightly rounded posteriorly; dorsum lightly convex from one side to the another, strongly and thickly punctured throughout, interspaces of these punctures extremely finely shagreened, slightly depressed along the middle of base. Scutellum small, narrowed posteriorly, truncated at the apex, thickly punctulate on the dorsum. Elytra elongate, very narrow, but much wider at the base than pronotum, a little produced forwardly at the front corners, basal one-third subparallel-sided, but then gently widened posteriorly, separately rounded at the apex; dorsum convex, with a V-shaped faint depression before the middle, very thickly and strongly punctured throughout, interspaces of these punctures extremely finely shagreened, sutural margins distinctly ridged, humeri somewhat raised, elytral epipleurae narrow and mostly distinct but rather indistinct at the apical portion.

Underside and legs rather thickly and finely punctulate.

Length: 3 $\frac{2}{3}$ mm.

Loc. Distr. - Arisan (after M. CHUJO, 1937).

Gen. Distr. - Formosa.

2. *Zeugopnora maculata* (CHUJO)

Zeugophora maculata CHUJO, Trans. Nat. Hist. Soc. Formosa, XXXI, 219, pp. 463-464 & 499 (1941) (Formosa).

Body elongate, somewhat widened posteriorly, extremely finely shagreened and thickly pale yellowish or whitish pubescent on the whole surface. General colour yellowish brown, rather lustrous; apices of mandibles and central portion of frons piceous, terminal segments of antennae paler, lateral areas of pronotum black, lateral areas of elytra black on each basal half, three small spots on each elytron (the one being situated near the scutellum and the other two on the apical area transversely) blackish brown, and apices of hind-femora piceous.

Head convex, strongly constricted behind the eyes, rather thickly punctured on the lateral areas but sparsely so on the middle; clypeus transverse, distinctly delimited from frons by a transverse groove, convex from the base to front margin, punctured on the lateral areas. Eyes large, reniform, moderately convex, with inner margin distinctly notched. Antennae

short, about half as long as the body, filiform; 1st segment longest, thickened terminally and curved, 2nd about half as long as the 1st, 3rd and 4th most slender, nearly equal to one another and each one of them longer than the 2nd but shorter than the 1st, the seven followings strongly thickened, 5th subtrigonal, from 6th to 10th subquadrate, 11th ovate and pointed at the apex. Pronotum subquadrate, front and basal margins nearly straight and narrowly ridged, all the corners furnished with a few long pale setae, lateral margins not ridged and widened from the front corner to a little behind the middle but then strongly constricted at behind; dorsum transversely and almost evenly convex from the one side to another, with an indistinct transverse impression along the middle of base, thickly and strongly punctured on the whole surface. Scutellum very small, narrowed posteriorly, truncated at the apex, thickly punctured on the dorsum. Elytra narrowly elongate, distinctly wider at the base than pronotum, somewhat produced forwardly at the front corners, nearly parallel-sided at the basal one-third, but then gently widened posteriorly, separately rounded at the apex; dorsum convex, with sutural area mostly flat, slightly obliquely depressed on each side of the suture before the middle, strongly and thickly punctured throughout, sutural margins distinctly ridged, humeri not distinctly raised, elytral epipleurae distinct from the base to apex. Underside and legs rather thickly and finely punctulate.

Length: 3.75 mm.

Loc. Distr. - Mt. Sōzan (after M. CHUJO, 1941).

Gen. Distr. - Formosa.

3. *Zeugophora decorata* (CHUJO)

Pedrillia decorata CHUJO, Trans. Nat. Hist. Soc. Formosa, XXVII, 165, pp. 146-147 & 151, f. 1 (1937) (Formosa).

Zeugophora decorata GRESSITT, Lingnan Sci. Journ., XXI, 1-4, p. 140 (1945) (Formosa).

Body rather elongate ovate, extremely finely shagreened and thickly yellowish white or yellowish grey pubescent. General colour reddish brown; antennae black, with two basal segments reddish brown; apices of mandibles piceous to black; each elytron decorated with two large yellowish markings, the first one of which being situated near the middle and the second one behind the former, each of them broadly margined with black, the black tinge touches to the sutural, lateral and apical margins; tibiae, tarsi and apical portions of hind-femora stained with blackish brown to black.

Head strongly constricted behind the eyes; vertex and frons evenly gently convex, sparsely punctured with the exception of the median area of frons which is impunctate; posterior area of each antennal socket lightly raised, impunctate; clypeus transverse, distinctly limited from frons, lightly convex on the surface, with a transverse row of some punctures nearly along the front margin, sparsely and irregularly punctured on the lateral areas; maxillary palpi with last segment conical and only a little shorter than the 2nd segment. Eyes large, nearly ovate, strongly convex with a distinct incision at each inner margin. Antennae filiform, about half as long as the body; 1st segment strongly thickened and elongate, somewhat curved, 2nd shortest, 3rd and 4th very slender, 3rd only a little shorter than the 1st, 4th rather longer than the 1st, 5th to 11th strongly thickened, 5th rather longer than the 6th but shorter than

the 3rd, 6th to 10th nearly equal in shape and size, 11th nearly equal in length to the 5th and pointed at the apex. Pronotum distinctly wider than long, front margin straight and distinctly bordered on each side but not so at the middle, front angles obtuse and furnished with some long setae, lateral margins not bordered, with a narrow groove near the anterior and basal ends and strongly rounded between these two grooves, basal angles very obtuse and furnished with some long setae, basal margin distinctly bordered and gently sinuate; dorsum gently convex from one side to the another, with a slight longitudinal depression on the middle, thickly punctured throughout, the anterior and basal grooves on each side somewhat developed inwardly, but each right one distinctly distant from the left one. Scutellum small, narrowed posteriorly, truncated at the apex, thickly punctured on the dorsum. Elytra widely elongate, distinctly wider at the base than of pronotum, produced forwardly at the front corners, gently widened posteriorly, separately rounded at the apex; dorsum convex, slightly depressed just behind the scutellum, strongly and thickly punctured throughout, sutural margins distinctly bordered, humeri somewhat raised, elytral epipleurae distinct from the base to apex. Underside and legs finely and thickly punctulate, last abdominal sternite with apical margin nearly straight.

Length: 4.0 mm.

Loc. Distr. - Kwarenkô (after M. CHUJO, 1937).

Gen. Distr. - Formosa.

4. *Zeugophora formosana* GRESSITT

Pedrillia ornata CHUJO, Trans. Nat. Hist. Soc. Formosa, XXVII, 165, pp. 148-149 & 151, f. 3 (1937) (Formosa) (nec J. ACHARD, 1914).

Zeugophora formosana GRESSITT, Lingnan Sci. Journ., XXI, 1-4, p. 140 (1945) (Formosa) (nom. nov.).

Body strongly elongate ovate, extremely finely shagreened and thickly pale yellowish or yellowish white pubescent. General colour yellowish brown; antennae blackish brown, with four basal segments dark yellowish brown; elytra black, with apical marginal area and a transverse band near the middle yellowish brown, the median band distant from the lateral margin but reached to the sutural margin and connected to the apical yellowish brown area along the sutural margin, mesosternum and middle-coxae blackish brown; metasternum and hind-coxae black, middle- and hind-femora stained with blackish brown at the apical areas, tarsi and tibiae of middle- and hind-legs dark yellowish brown.

Head strongly constricted behind the eyes; vertex and frons faintly convex, rather strongly and thickly punctured with the exception of the middle of frons; posterior area of each antennal socket rather strongly elevated; clypeus transverse, distinctly separated from frons, with front margin gently emarginate, lightly convex on the surface, punctured in a transverse row along the front and basal margins; maxillary palpi with last segment conical and nearly equal in length to the 2nd segment. Eyes large, widely ovate, strongly convex, with a distinct emargination at each inner margin. Antennae filiform, nearly half as long as the body; 1st segment longest, clubate and somewhat curved, 2nd shortest, 3rd and 4th very slender, 4th rather shorter than the 1st but rather longer than the 3rd, 5th to 11th strongly thickened and

gradually diminishing their length terminally, 5th rather longer than the 3rd but shorter than the 4th, 11th elongate-oblong and nearly equal in length to the 3rd. Pronotum nearly equal in width to the length, front margin nearly straight and narrowly bordered, front angles nearly 90° in angulation but not sharply pointed at the apex and furnished with some long setae, lateral margins immarginated, strongly arched outwardly from a little behind the front end to only a little behind the middle, constricted behind the former arched area, but the constricted margin gently rounded and furnished with a very long and robust seta at the middle, basal angles obtuse, basal margin distinctly bordered and gently sinuate; dorsum gently convex from one side to the another, with a light depression nearly along the middle of basal margin and a transverse groove on each side of the former depression, strongly and thickly punctured throughout. Scutellum small, narrowed posteriorly, truncated at the apex, thickly punctured on the dorsum. Elytra widely elongate, front corners produced anteriorly, basal one-third subparallel-sided, but then gently arched outwardly, separately rounded at the apex; dorsum convex, with a narrow longitudinal depression behind the scutellum, strongly and thickly punctured throughout, sutural margins distinctly bordered, hemeri lightly elevated, elytral epipleurae distinct from the base to apex. Underside and legs finely and thickly punctulate throughout, apical margins of last abdominal sternite and tergite (pygidium) distinctly notched.

Length: $3\frac{2}{3}$ mm.

Loc. Distr. - Musha (after M. CHUJO, 1937).

Gen. Distr. - Formosa.

The name *ornata* was available in the Genus *Pedrillia* WESTWOOD, but lately became unavailable as the result of the *Pedrillia* was synonymized to the Genus *Zeugophora* KUNZE. In the *Zeugophora* the name *ornata* having been preoccupied for another species by J. ACHARD in 1914.

5. *Zeugophora nitida* (CHUJO)

Pedrillia nitida CHUJO, Trans. Nat. Hist. Soc. Formosa, XXII, 122, pp. 339 & 340-342, f. 1 (1932) (Formosa); 1. c., XXVII, 165, p. 151 (1937) (Formosa).

Zeugophora nitida GRESSITT, Lingnan Sci. Journ., XXI, 1-4, p. 140 (1945) (Formosa).

Body rather elongate oval, extremely finely shagreened and thickly pale yellowish brown pubescent on the whole surface. General colour deep reddish brown, strongly lustrous; head and pronotum (excepted the basal marginal area) black, mouth-parts dark reddish brown, lateral areas of the underside of prothorax black, femora and tibiae of fore- and middle-legs more or less stained with dark brown or blackish brown.

Head strongly constricted behind the eyes; vertex and frons strongly convex, sparsely punctured on each side; posterior area of each antennal socket lightly raised; clypeus transverse, distinctly separated from frons, lightly convex on the surface, sparsely punctured on each side; maxillary palpi with last segment nearly conical and only a little shorter than the 2nd segment. Eyes very large, nearly ovate, strongly convex, with inner margin distinctly notched. Antennae filiform, very slender, rather longer than half the length of body; 1st segment clubate and somewhat arched, 2nd shortest, 3rd and 4th most slender, 4th rather longer than

the 3rd nearly equal in length to the 1st, 5th to 11th somewhat thickened, loosely articulated to each other, nearly equal in shape and size to one another and each one of them shorter than the 3rd, with apex of the 11th bluntly pointed. Pronotum wider than long, front margin nearly straight and narrowly bordered, front angles obtuse and furnished with some long setae, lateral margins not bordered and strongly widened posteriorly from a little behind the anterior end to just behind the middle but then strongly constricted, basal angles obtuse and furnished some long setae, basal margin distinctly bordered and gently sinuate; dorsum gently and evenly convex, sparsely punctured throughout, with a deep groove on a little behind the front margin and also another one near the basal margin, but these grooves obliterated at the middle. Scutellum small, narrowed posteriorly, truncated at the apex, sparsely punctured on the dorsum. Elytra widely elongate, distinctly wider at the base than of pronotum, produced forwardly at the front corners, rather strongly widened posteriorly, separately rounded at the apex; dorsum convex, lightly depressed just before the middle, strongly and rather thickly punctured throughout, sutural margins distinctly bordered, humeri lightly raised, elytral epipleurae distinct and gradually narrowed from the base to apex. Underside and legs thickly punctulate, last abdominal sternite with apical margin nearly straight.

Length: 4.5 mm

Loc. Distr. - Kwarenkó (after M. CHUJO, 1932) .

Gen. Distr. - Formosa.

6. *Zeugophora ruficollis* (CHUJO)

Pedrillia ruficollis CHUJO, Trans. Nat. Hist. Soc. Formosa, XXII, 122, pp. 339 & 342-344, f. 2 (1932) (Formosa); 1. c., XXVII, 165, p. 151 (1937) (Formosa).

Zeugophora ruficollis GRESSITT, Lingnan Sci. Journ., XXI, 1-4, p. 140 (1945) (Formosa).

Pedrillia grandis CHUJO, Trans. Nat. Hist. Soc. Formosa, XXVII, 165, pp. 147-148 & 151, f. 2 (1937) (Formosa).

Zeugophora grandis GRESSITT, Lingnan Sci. Journ., XXI, 1-4, p. 140 (1945) (Formosa).

Body large, robust, nearly ovate, thickly covered with yellowish brown pubescence on the whole surface. General colour yellowish brown to reddish brown, with a faint iridescent shimmer on the head and pronotum; head and antennae mostly blackish brown to black; prothorax rather variable in coloration as follows: 1. entirely reddish brown, 2. dorsum blackish brown and underside reddish brown, 3. blackish brown, with median area of underside reddish brown, 4. entirely blackish brown (in this case the fore-coxae also blackish brown); fore- and middle-tibiae partly (on their anterior surfaces) or mostly stained with blackish brown to black.

Head strongly constricted behind the eyes; vertex and frons distinctly convex, rather sparsely punctured on each side; posterior area of each antennal socket distinctly raised; clypeus transverse, distinctly separated from frons, lightly convex on the surface, rather thickly punctured on each side; maxillary palpi with last segment nearly conical and only a little longer than the 2nd. Eyes large, widely suboblong, strongly convex, with a distinct incision at each inner margin. Antennae filiform, about half, or more than half, as long as the body, the comparative length of each segment variable by the individuals, but generally the 1st

segment strongly clubate and somewhat curved, 2nd shortest, 3rd and 4th most slender and 4th distinctly longer than the 3rd, 5th to 11th rather strongly thickened and nearly equal in size and shape to each other, with apex of the 11th bluntly pointed. Pronotum wider than long, front margin nearly straight and narrowly bordered, front angles obtuse and furnished with some long setae, lateral margins immarginated and strongly widened from a little behind the anterior end to just behind the middle, but then strongly constricted, basal angles obtuse and furnished with a few long setae, basal margin distinctly bordered and gently sinuate; dorsum with median disc moderately convex, sharply grooved on each side just behind the front margin, with a distinct ante-basal transverse impression which is obliterated at the middle, sparsely punctured on the whole surface. Scutellum small, somewhat narrowed posteriorly, truncated at the apex, sparsely or thickly punctulate on the surface. Elytra widely elongate, distinctly wider at the base than of pronotum, somewhat produced forwardly at the front corners, subparallel-sided at the basal half, but then gently widened posteriorly, separately rounded at the apex; dorsum convex, with basal half of the sutural area almost flat and shallowly depressed just before the middle, strongly and thickly punctured on the whole surface, sutural margins distinctly bordered, humeri lightly elevated, elytral epipleurae narrowed posteriorly but distinct from the base to apex. Underside and legs thickly punctulate, last abdominal sternite with apical margin nearly straight.

♂: Body smaller than female, antennae rather longer than half the length of body, elytra more strongly convex than in female.

♀: Body larger than male, antennae about half as long as the body, premedian shallow depression of the elytra stronger than in male.

Length: 5.0 - 6.0 mm

Loc. Distr. - Isiyama, Kizan-Gun, Takao-Syû (1♂, 14. VIII. 1933, S. ISSIKI leg.); Kuaru, Kôsyun-Gun, Takao-Syû (1♀, 5. IV. 1940, R. MATUDA leg.).

Ari-san (after M. CHUJO, 1932); Rara-san (after M. CHUJO, 1937).

Gen. Distr. - Formosa.

摘 要

臺灣産金花蟲科の形態分類学的研究

第IV報 胸廣金花蟲亞科

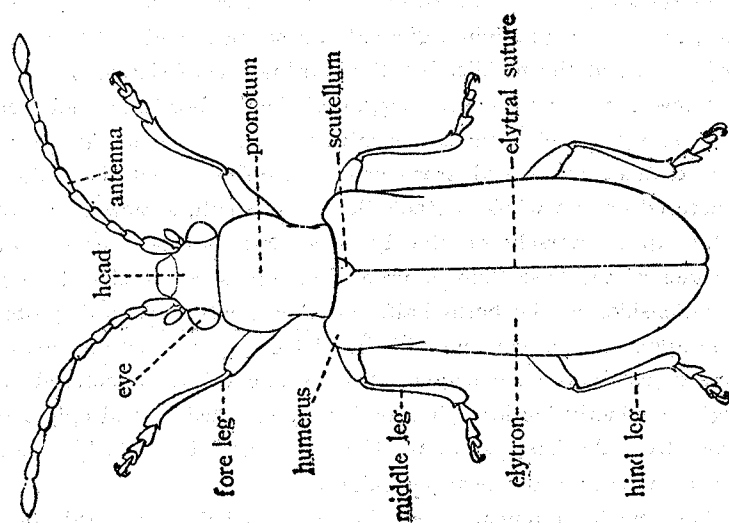
中 條 道 夫

(昆蟲学教室)

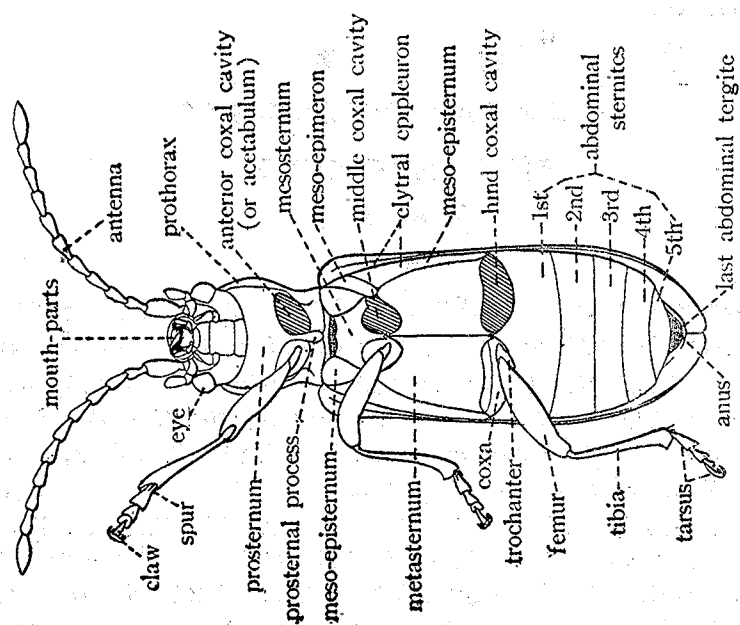
台湾産金花蟲科の形態分類学的研究の第IV報として、胸廣金花蟲亞科に関する研究結果を報告した。

此の亞科の基本をなす *Zeugophora* 属は、従来 *Orsodacninae* 亞科に屬せしめられて居たが、之等兩者の間には、本論文中に比較論述した如く、体の諸部分の形態に著しい差異があり、夫等は亞科を異にすべき性格を示すに充分なものと考へられたので、此処に1新亞科 *Zeugophorinae* を創設した。

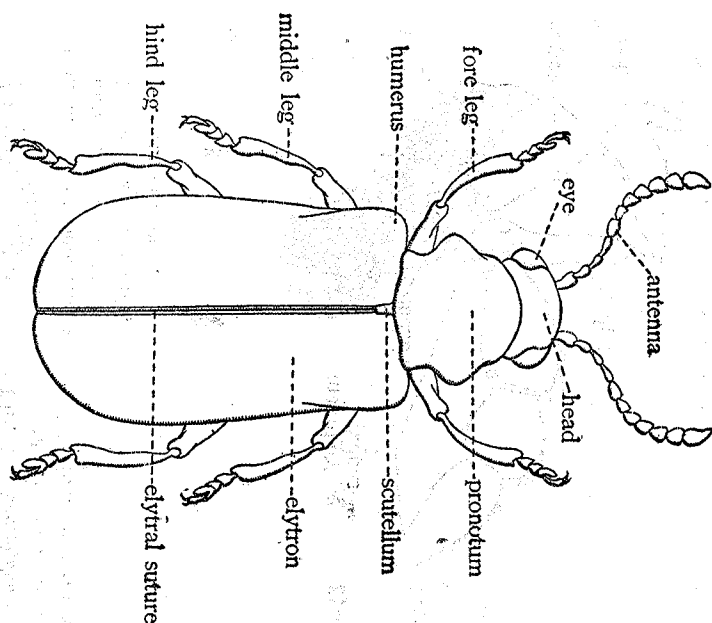
猶又従来 *Zeugophora* 属と共に *Orsodacninae* 亞科に編入されて居た *Syneta* 属は、之の形態を詳細に解剖研究した結果、*Orsodacne* 属や *Zeugophora* 属とは非常に距つた著しい特徴を有するものである事が判明した。其の結果、夫れが如何なる属に最も近い類縁關係を有し、且は何亞科に屬せしめられる可きであるからと言う様な点に就いては、元来此の属が現在迄の処では台湾の Fauna に關係の無いものなので他日別に1論文を草して報告する事とし、此処には *Syneta* 属は之々の特徴を有するが故に *Orsodacninae* 亞科や *Zeugophorinae* 亞科に屬せしむ可きものではない、と言う事を論述するに止めた。本研究に参照した文献類公表の処置は第I—III報の夫れに倣うものである。



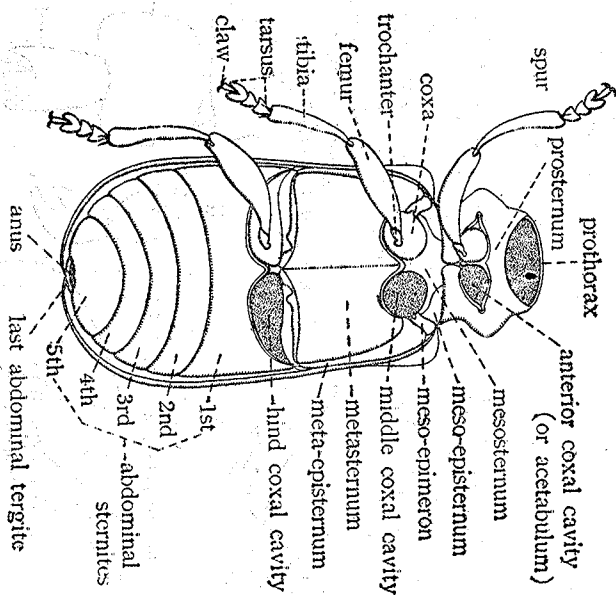
† Fig. 12. *Orsodacne cerasi* (LINNÉ), from Germany: dorsal aspect.



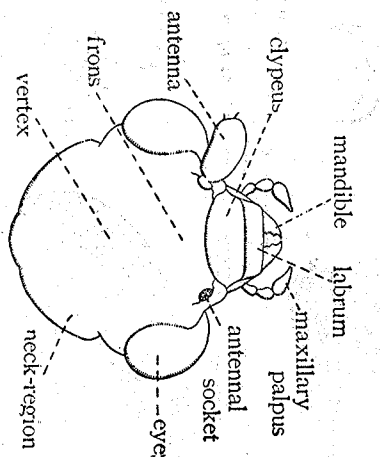
† Fig. 13. *Orsodacne cerasi* (LINNÉ), from Germany: ventral aspect, left legs removed.



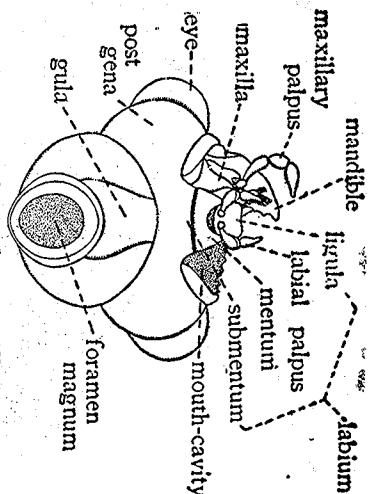
↑ Fig. 1. *Zeugophora scutellaris* SUFFRIAN,
from France: dorsal aspect.



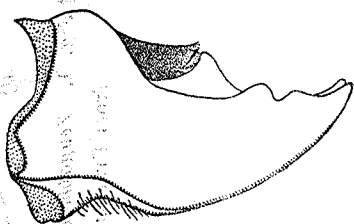
↑ Fig. 2. *Zeugophora scutellaris*
SUFFRIAN, from France:
ventral aspect, head and
left legs removed.



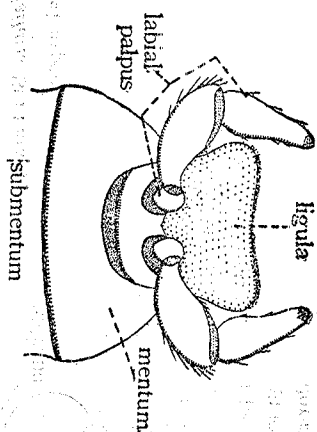
↑ Fig. 3. *Zeugophora scutellaris*
SUFFRIAN, from France: head,
dorsal aspect, antennae removed.



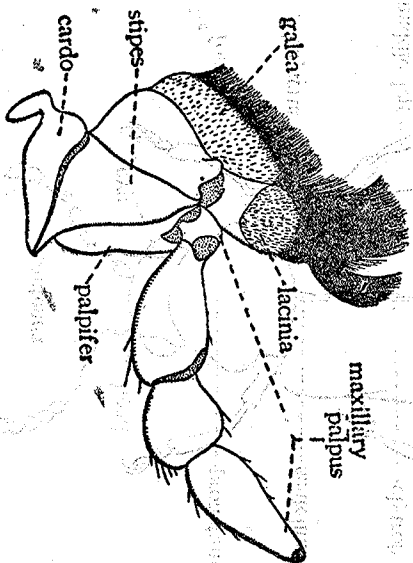
↑ Fig. 4. *Zeugophora scutellaris*
SUFFRIAN, from France: head,
ventral aspect, left mandible
and left maxilla removed.



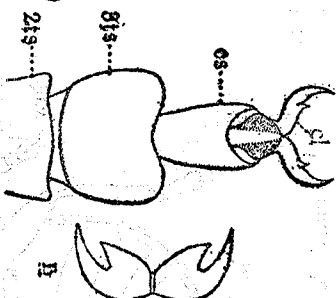
† Fig. 5. *Zeugophora scutellaris* SUFFRIAN, from France: left mandible, ventral aspect.



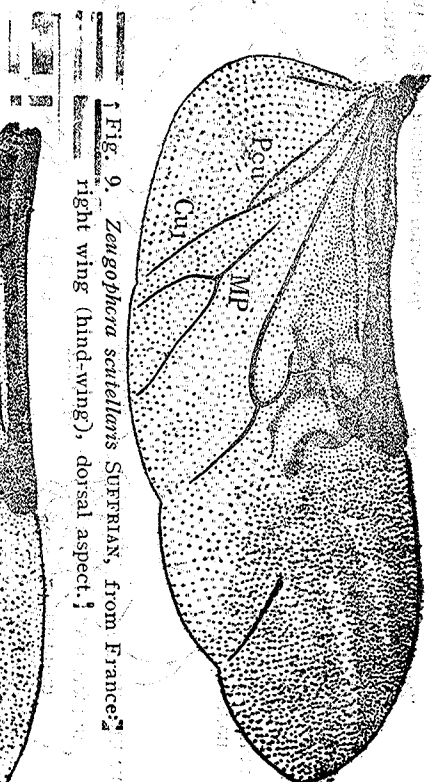
† Fig. 7. *Zeugophora scutellaris* SUFFRIAN, from France: labium, ventral aspect.



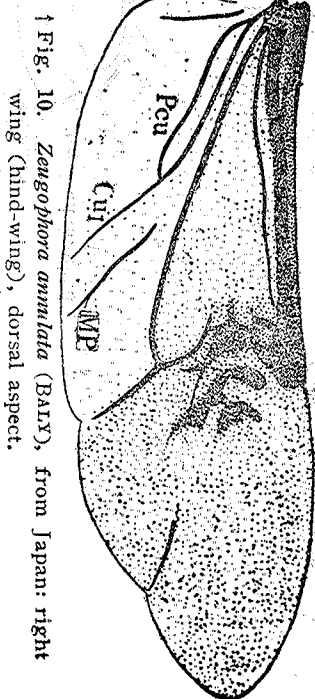
† Fig. 6. *Zeugophora scutellaris* SUFFRIAN, from France: left maxilla, ventral aspect.



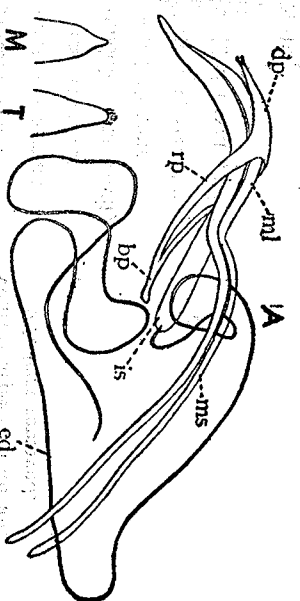
† Fig. 8. *Zeugophora scutellaris* SUFFRIAN, from France: A...apical part of tarsus, ventral aspect; cl...claw, cs...claw-segment, 3ts...3rd segment, 2ts...2nd segment, B...claws (appendiculate-type), front aspect.



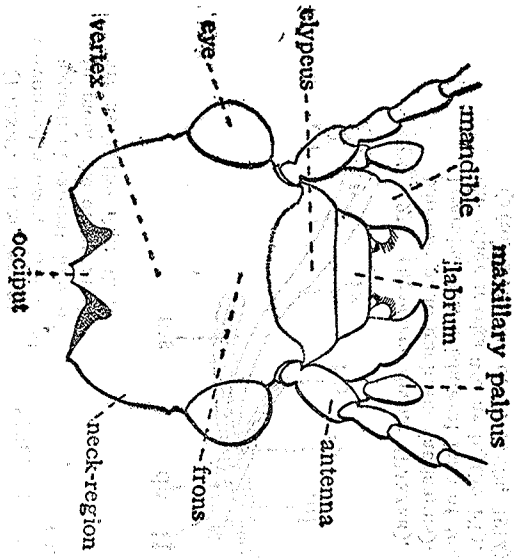
† Fig. 9. *Zeugophora scutellaris* SUFFRIAN, from France: right wing (hind-wing), dorsal aspect.



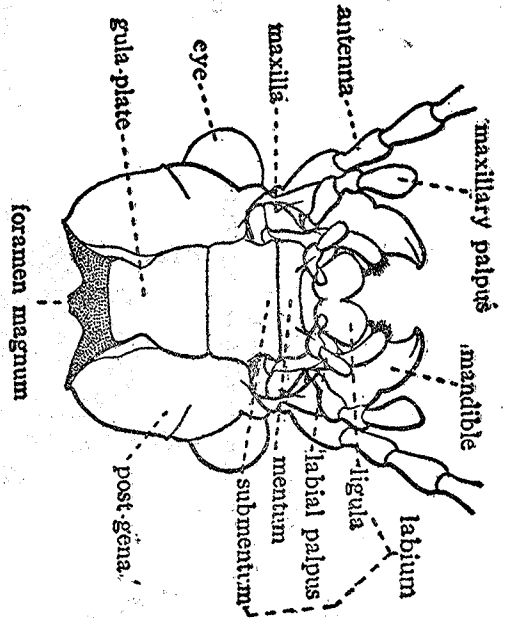
† Fig. 10. *Zeugophora annulata* (BALY), from Japan: right wing (hind-wing), dorsal aspect.



† Fig. 11. *Zeugophora scutellaris* SUFFRIAN, from France: A...lateral aspect of the whole: bp - basal piece of tegmen, dp - distal piece of tegmen, ed - ejaculatory duct, is - internal sac, ml - median lobe, ms - median strut, rp - ring piece of tegmen, B...apical part of tegmen, dorsal aspect.

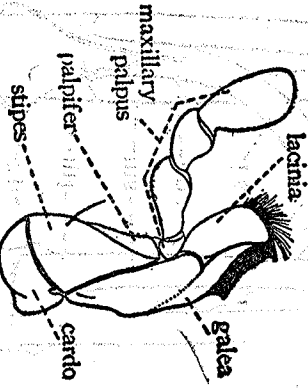


† Fig. 14. *Orsodacne cerasi* (LINNE), from Germany, head, dorsal aspect.

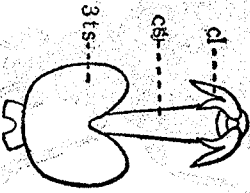


† Fig. 15. *Orsodacne cerasi* (LINNE), from Germany: head, ventral aspect.

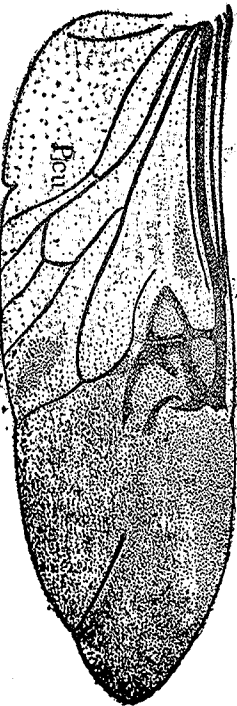
† Fig. 16. *Orsodacne cerasi* (LINNE), from Germany: left mandible, ventral aspect.



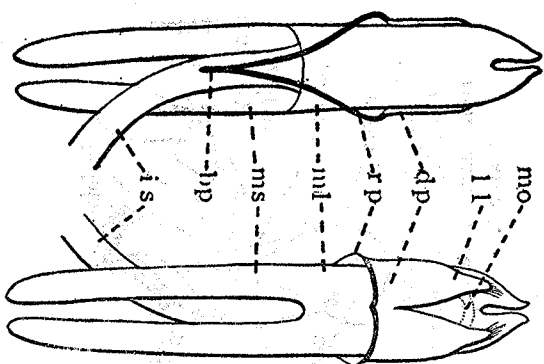
† Fig. 17. *Orsodacne cerasi* (LINNE), from Germany: right maxilla, ventral aspect.



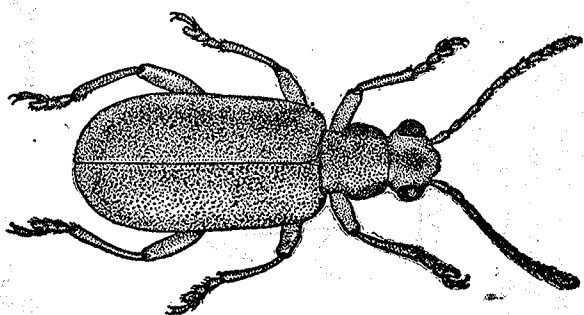
† Fig. 18. *Orsodacne cerasi* (LINNE), from Germany: apical part of tarsus, ventral aspect: cl...claw (bifidate-type), cs...claw-segment, 3s...3rd-segment.



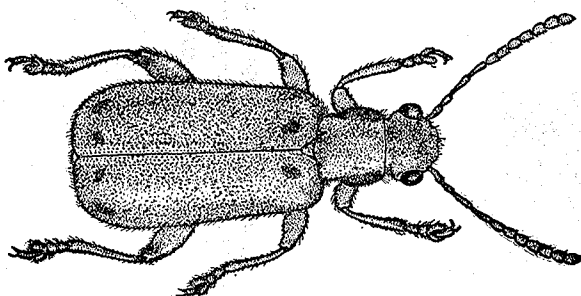
† Fig. 19. *Orsodacne cerasi* (LINNE), from Germany: right wing, dorsal aspect.



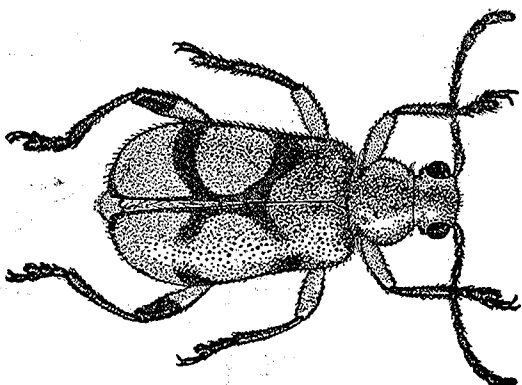
† Fig. 20. *Orsodacne cerasi* (LINNE), from Germany: A..ventral aspect, B...dorsal aspect: 11-lateral lobe of tegmen, the other marks are as in the Fig. 11.



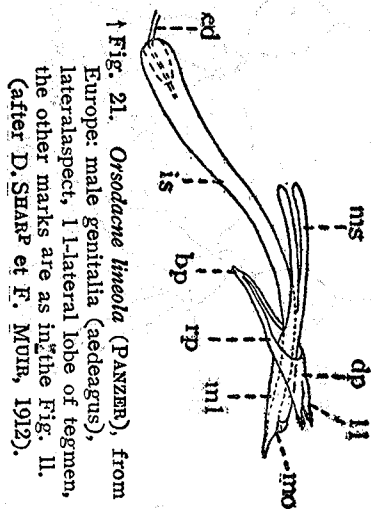
† Fig. 22. *Zeugophora gracilis* (CHUJO)



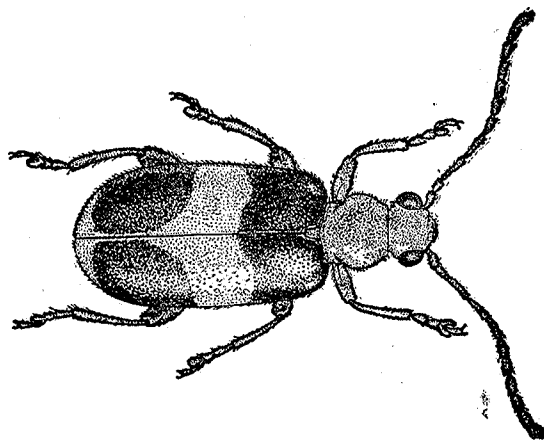
† Fig. 23. *Zeugophora maculata* (CHUJO)



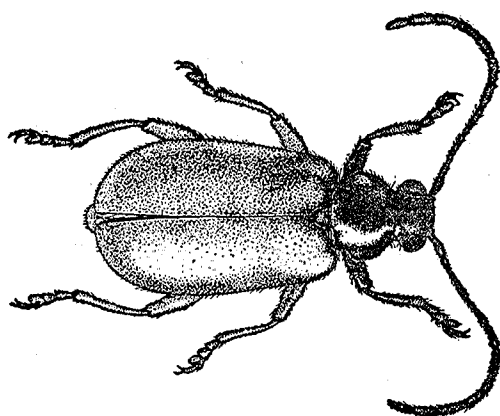
† Fig. 24. *Zeugophora decorata* (CHUJO)



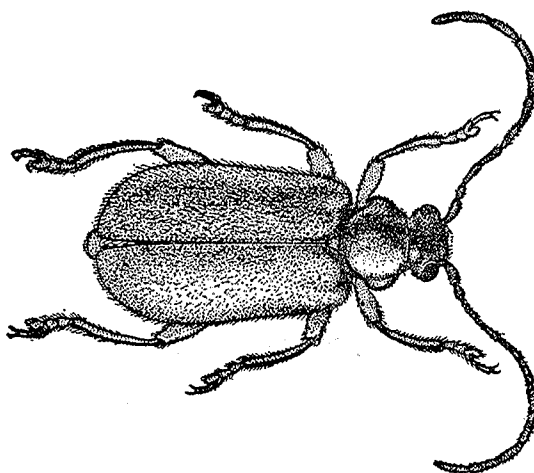
† Fig. 21. *Orsodacne lineola* (PANZER), from Europe: male genitalia (aedeagus), lateral aspect, 11-lateral lobe of tegmen, the other marks are as in the Fig. 11. (after D. SHARP et F. MUIR, 1912).



† Fig. 25. *Zeugophora formosana*
GREVILLE



† Fig. 26. *Zeugophora nitida* (CHURCH)



† Fig. 27. *Zeugophora ruficollis* (CHURCH)