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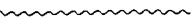
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ON THE PLATYPODIDAE OF FORMOSA.

By

Jozo Murayama

(With Plates XII–XV)



Introduction

This collection was made during my stay in Formosa in the Imperial Japanese Government's service and my main intention was to study the *Platypodidae* from the standpoint of the forest protection of Formosa. Though this thesis should have been finished during my stay in Formosa, the lack of literature and the insufficiency of specimens obliged me to postpone its completion till I was able to make further studies in the Hokkaido Imperial University, Sapporo. My material was gathered principally in the districts of Koshun and Rengeti in Formosa. The collections kept by the Agricultural Department of the Central Experiment Institute, Government of Formosa, and those of the Hokkaido Imperial University also provided me with the further necessary material for this work.

The rich collections of literature and specimens owned by Prof. Nijima, which were kindly placed in my hands, have enabled me to identify the species. The new species were determined by me with the aid of Prof. Nijima.

I wish here to express my heartiest thanks to Prof. Nijima for his kind advice and help, so freely given during the course of the present investigation, and also to express my gratitude to Prof. Matsumura of the Hokkaido Imperial University, Sapporo, Dr. R. Kanehira, and Dr. T. Shiraki of the Central Experiment Institute, Government of Formosa, and many other friends, from whom I received much help during the preparation of this paper.

I. Historic

Publications on the *Platypodidae* of the Island of Formosa are very few and recent. This family seems to have been neglected a long time by both entomologists and collectors. In his celebrated "Monographie des Platypides" (1865), Chapuis described a very great number of species of these wood-borers, including many specimens obtained from the Indo-Malay an region. In spite of the fact that Formosa bears a great similarity to this region I was unable to find any description, or even a mention, in his works, of the Formosan forms. The same is the case with Schoenfeld's "Catalog der Coleoptera von Japan" (1887). Blandford's "Rhynchoporous Coleoptera of Japan" (1894) contains the subfamily *Platypini*, including 5 species of *Platypus*, 3 of *Crossotarsus*, and 1 of *Diapus*. They are all new species and were obtained exclusively from Japan proper. In his numerous essays on the *Scolytidae*, Nijima makes no mention of specimens from Formosa.

Strohmeyer's investigation on the Insects of Formosa, collected by Hans Sauter, shows 5 species:—

1. *Crossotarsus externe-dentatus* Fairm.
2. *Crossotarsus flavomaculatus* Strohm.
3. *Crossotarsus formosanus* Strohm.
4. *Crossotarsus sauteri* Strohm.
5. *Platypus solidus* Walk.

The identified specimens in the Agricultural Department of the Central Experiment Institute, Government of Formosa, are as follows:—

1. *Crossotarsus wallacei* Thom.
2. *Crossotarsus piceus* Chap.
3. *Crossotarsus niponicus* Blandfd.
4. *Platypus lewisi* Blandfd.
5. *Platypus solidus* Walk.
6. *Platypus severini* Blandfd.
7. *Diapus quinquespinatus* Chap.

Besides the above there exists one unknown species, belonging to *Crossotarsus*.

My Formosan specimens were collected during the years 1921 to 1923 and include particularly the forms found in the region between Taihoku and Koshun. These species are very few in number, but among them there are 3 new ones and a new subspecies. They are, 7 in all, i. e.

1. *Crossotarsus externe-dentatus* Fairm.

2. *Crossotarsus formosanus* Strohm.
3. *Crossotarsus rengetensis* Nij. et Muray. sp. n.
4. *Platypus lepidus* Chap.
5. *Platypus lepidus* Chap. *formosanus* Nij. et Muray. subsp. n.
6. *Platypus formosanus* Nij. et Muray. sp. n.
7. *Diapus formosanus* Nij. et Muray. sp. n.

Therefore the *Platypodidae* in Formosa comprise a total of 15 species and 1 subspecies (8 species of *Crossotarsus*, 5 of *Platypus*, 1 subsp. of the latter and 2 of *Diapus*).

Of course, there may be many unknown *Platypodidae* borers in Formosa, and we must expect to find new species similar to those from the Palaearctic and Oriental regions. According to Strohmeyer the Palaearctic region possesses the 3 genera already mentioned above, and the Oriental region has 1 more i. e. *Spathidicerus*. It is very interesting to note that Stebbing's investigation on the "Indian Forest Insects" (1914), and Schulze's Catalogue of Philippine Coleoptera (1915) does not contain the genus *Spathidicerus*.

II. Characters of the Family

The insects of this family have several obvious characters, i. e. the elongated shape with parallel sides, the large exserted head and the long legs with slender five-jointed tarsi, among which the first is of the same length as, or, longer than the total length of the remaining four. They are wood-borers and all tunnel in the wood, at first boring directly toward the pith and then branching aside. In the slender branchlets, they generally live together with other insects, especially of the *Ipidae*.

The *Platypodidae* has clearly been separated from the *Scolytidae* by Hagedorn (in Genera Insectorum).

The original diagnosis by Chapuis is as follows:—

"Caput exsertum, liberum. Antennae capitis lateribus, inter mandibularum basin et oculos insertae, clavatae, sex-articulatae; articulo primo magno, funiculi articulis quatuor brevibus; clava solida, valde compressa, ovali vel subquadrata.

Prothorax subcylindricus, lateraliter pro pedum receptione impressus vel emarginatus.

Pedes validi, elongati; coxae magnae, femora compressa, robustiora; tibiae breves, compressae, extus transversim porcatae vel tuberculosae, imprimis anticae; tarsi quinque articulati, longissimi, filiformes, tenuous, articulo primo longissimo, secundo et tertio aequalibus, quarto moniliformi, quinto sat longo, unguibus validis armato."

A more simple and concrete diagnosis has been given by Strohmeyer as follows:—

“Die Platypodiden sind 2 bis 12 mm lange deutlich pentamere Rhynchophoren von gestreckt walzenförmiger Gestalt, mit vorgestrecktem breitem Kopfe, sehr kurzem Rüssel, geknieten Fühlern mit stets massiver Keule, einem Pedicellus und dreigliederiger Geißel, runden, ovalen oder nierenförmigen Augen, zwei freien oder verwachsenen Maxillarläden, seitlich mehr oder weniger eingedrücktem Prothorax, breiten abgeplatteten Schenkeln und Schienen sowie derart verlängertem erstem Tarsalglied, dass dieses den vereinigten übrigen an Länge ungefähr gleichkommt.”

The shape of the tunneled hole is quite different from that of the *Ipidae*. Most of the insects do not go around in the cambium but enter the wood, there making branchings which tend towards the center of the stem or branch. Sometimes two or three species of this family live together in one hole and they have been found inhabiting the same hole as *Ipidae*. According to Strohmeyer their food consists of the fungus growing in the bored hole and they are therefore known as a kind of “ambrosia beetles”. I obtained the same sort of beetles in various seasons and also imagines and larvae of the same species at the same time.

The trees infested by them are chiefly broad-leaved. They are found especially on *Cinnamomum Camphora* Nees. et Èbe. and its variety *nomi-nale* Hay.. But I have also collected some species from Coniferous trees such as *Cryptomeria japonica* Don.. It is natural that cut trees are chiefly attacked, but it is not uncommon for them to invade living trees, too, as in the case of the campho tree.r So the difficult problem is to discern whether their attack is the cause of the tree’s death or not. One can not overlook the fact that mistreated and weaker trees are much more susceptible to attack than healthy ones.

III. Systematic

The borers of this family are not only very similar as to form, but their proventriculi also somewhat resemble each other. Therefore the differences between the genera and species are limited, causing great difficulties when their exact classification is attempted. The *Platypodidae* comprised only two genera, *Platypus* and *Tesserocerus*, when first treated by Chapuis. Prior to this investigator as there had been no sound basis of classification, it was natural that certain species were found sometimes under one and sometimes under another genus.

Chapuis treated many species in his monograph and classified them in 9 genera and 202 species. The standards of classification which he used

for the separation of the genera are:—

1. Shape of maxillary palpi.
2. Shape of mentum of male (correctly, the female) and the state of the pygidium (pseudopygidium, properly).
3. Relative situation of the front coxae.
4. Shape of oculi.
5. Shape of prothorax.

In opposition to this, Storohmeyer persisted, from his anatomical point of view, in separating them into two subfamilies, *Platypodarinae* and *Tesserocarinae*, according to whether the two maxillary lobes are separated or coherent. He classified the former again into two tribes, *Platypodariae* and *Crossotarsariae*, according to the chitinized grade of the basal margin of the 8th abdominal segment. Then he took the shape of the rostrum, the labium, etc.. This method is, of course, a more advanced one than that of Chapuis's, but the classification by mere anatomical (outer) differences is not radical, it is too artificial.

If we should treat it properly, as Nüsslin proposed, we must take into consideration the inner anatomy, especially of the digestive and genital organs. This latter method requires a great number of fresh specimens, and necessitates tremendous trouble. I have some doubts as to the classifying standard based upon the chitinized grade of the 8th abdominal segment. I doubt that there exists an intermediate type between the two grades, but this question can only be solved after accurate observation of a great number of fresh specimens. For this reason, I am inclined to choose a temporary system for classifying the genera of the Formosan *Platypodidae*.

- | | |
|------------------------------------|---|
| I. Maxillary lobes coherent..... | I. subfam. <i>Platypodarinae</i> . |
| Mentum of female { | with base coarctated . I. gen. <i>Crossotarsus</i> . |
| | with base dilated II. gen. <i>Platypus</i> . |
| II. Maxillary lobes separated..... | II. subfam. <i>Tesserocarinae</i> . |
| Front coxae { | touch together III. gen. <i>Spathidicerus</i> . |
| | far apart IV. gen. <i>Diapus</i> . |

Among these the genus *Spathidicerus* has not been discovered in Formosa, although it has been obtained from Java, Sumatra, New Guinea, and India. This distribution shows the possibility of its existence in Formosa.

The insect which belongs to the other genus, *Diapus*, is very scarce and at present I have only one species. The largest number of our *Platypodidae* belongs to *Crossotarsus*.

(I). **Crossotarsus** Chap.

Original diagnosis—Chapuis, Monogr. d. Platyp. pp. 23, 44 (1865).

“Labrum vix conspicuum, transversum, ciliatum. Palpi maxillares membranacei, depressi, longe ciliati. Maxillarum mala oblique truncata, ciliata, vix palpos superans. Mentum maris pyriforme, obtusum, integrum, basin versus coarctatum, faeminae subquadratum. Palpi labiales uni vel bi-articulati. Oculi breviter ovales, prominuli. Antennarum articulus 1 variabilis, interdum apud mas permagnus, funiculi insertationem superans, vel semicircularis vel fusiformis; semper apud faeminam brevis; funiculi articuli parvi, clava magna, obtusa.

Prothorax lateraliter pro pedum receptione emarginatus.

Elytra in plurimis, apud faeminas apice spinulosa, apud mares simplicia.

Abdomen faeminae truncatum, planatum, formis insignibus objectum; maris transverse subconvexum; in utroque sexu pygidio pro maxima parte aperto.

Pedes varidiores; tarsorum posticorum articulus primus compressus, lamiatu, singula serie ciliorum ornatus; coxae faeminarum posticae validae.”

The insects which belong to this genus are distributed over the Palearctic, Aethiopean, Australian, (New Zealand), and Polynesian regions.

In Formosa they number eight in all.

N. B. The sexes are reverted in Chapuis's and Blandford's diagnoses.

1). **Crossotarsus piceus** Chap.

Original diagnosis—Chapuis, Monogr. d. Platyp. p. 56 (1865).

“Piceus vel fuscus, elytris interdum brunneis.

♂ Carina interoculari medio profunde et anguste emarginata, scapi antennarum processu quintam articuli longitudinem aequante, oblongo-ovali. — Long. 9 mill.

♀ Abdominis segmento ultimo spinula compressa brevi armato, elytris leviter striatis, striis fortiter, interstitiis minus profunde punctatis. — Long. 8 mill.”

Specimen—Agr. Dep. Centr. Exper. Inst., Taihoku.

Habitat—Koshun.

Date—August, 1910?

Trees attacked—Unknown.

Distribution—Molukkas and Arrou Isles (by Chapuis), Sunda Isles (by Strohmeier), Formosa.

The specimens I saw in the Agricultural Department of the Central Experiment Institute, Taihoku, had greater length than those described above.

2). **Crossotarsus wallacei** Thom.

Syn. *Platypus Wallacei* Thom., Arch. Ent. Vol. I, p. 343 (1858).

Diagnosis by Chapuis—Chapuis,⁽¹⁾ Monogr. d. Platyp. p. 53 (1865).

(1) As I could not find Thomson's original diagnosis, I have cited here the description given by Chapuis.

"Fuscus, elytris plaga discoidali flavo-rubescente.

♂ Carina interoculari medio profunde et anguste emarginata, scapi antennarum processu tertiam articuli longitutinem aequante, sublineari, obtuso.—Long. 12 mill.

♀ Abdominis segmento ultimo spinula tereti simplici armato; elytris leviter striatis, striis et interstitiis aequae fortiter punctatis.—Long. 11 mill."

Specimen—Agr. Dep. Centr. Exper. Inst., Taihoku.

Habitat—Koshun.

Date—August, 1910?

Trees attacked—Unknown.

Distribution—Malacca, Sarawak in Borneo, Sumatra, Formosa.

This specimen also differs a little in its length from the description.

Its damage to the forests is not distinct.

3). **Crossotarsus externe-dentatus** Fairm. (Pl. XIII, fig. 9-12).

Syn. *Platypes externe-dentatus* Fairmire, Revue et Mag. d. Zool. p. 51 (1850).

Diagnosis by Chapuis—Chapuis,⁽¹⁾ Monogr. d. Platyp. pp. 81-82 (1865).

"Obscure brunneus, subtus cum antennis pedibusque flavescens.

♂ Fronte plana, punctata, medio striga carinulaque brevibus; prothorace suboblongo, dense tenuiter punctulato; elytris subtilissime punctato-striatis, basi striis brevibus nonnullis impressis, interstitio 3 basi parce granulato; depressione postica transversa, rugosa.—Long. 4 mill.

♀ Fronte plana, fortiter punctata, medio carinula interrupta; prothorace suboblongo, dense tenuiter punctulato; elytris subtilissime punctato-striatis, striis brevibus basi impressis, apicem versus late sulcatis, interstitiis carinatis, hirtis; angulo laterali-postico acuto.—Long. 4 mill.

Specimen—My collection.

Habitat—Koshun and its surrounding districts.

Another species, very closely resembling this one is *C. saundersi* Chap. The differences between them consist, according to Chapuis, in the denser punctuation on the prothorax and the greater distinctness of the punctures on the elytra of the latter. Besides these points there may be other minute differences between them.

Comparing this description with my own specimens, I found that they completely coincided in these characters.

The anatomical characters of these insects show that the metaphragma closely resembles that of the genus *Platypus* and that the 8th sternit (ventral segment) is similar to that of *Crossotarsus* (fig. 10). Furthermore the appearance of the labium and the proventriculus is quite *Crossotarsus* in

(1) As I could not find Fairmair's original diagnosis, I have cited here the description given by Chapuis.

type (fig. 9-12). We are therefore obliged to place them among *Crosotarsus*. But on the other hand, we can understand Fairmaire's reason for placing them among the *Platypus*. Besides, there exists a further character in the form of the maxillary palpi (fig. 11).

My collection of this species was made in the southern part of the Island, where the insect seems very common. I collected them from several species of trees from Koshun to Kusukusu as shown in the following table:—

Trees attacked	Place	Date	Number of Samples	Remarks
<i>Cryptomeria japonica</i> Don.	Kusukusu	Dec. 18. 1922.	♂♂♀ 1(unknown)	With <i>Platypus lepidus</i>
<i>Cinnamomum Camphora</i> N. et E.	Kuraru	Dec. 14. 1922.	♂	In the same weak branch with groups of <i>Xyleborus</i>
<i>Cinnamomum Camphora</i> N. et E. var. <i>nominale</i> Hay.	Kuraru	Dec. 14. 1922.	♂♀♀♀	With <i>Curculionidae</i> , <i>Bostrichidae</i> , <i>Cerambycidae</i> , and <i>Ipidae</i>
"	Kankau	Dec. 17. 1922.	♂♂	With <i>Xyleborus</i>
"	Manritoku	Dec. 17. 1922.	♂♀	"
<i>Leucaena glauca</i> Benth.	Kuraru	Dec. 15. 1922.	♂	"
<i>Carica papaya</i> L.	Kuraru	Dec. 14. 1922.	♂	This species only.

This species occurs not only in Formosa but seems also to have a wide distribution in other lands. Chapuis wrote that he found them among specimens obtained from the Islands of Tahiti and Fiji. Sharp noted that he found this insect in the hard trunk of *Acacia koa* in the Islands of Hawaii. To these Strohmeier added Japan and Formosa.

This shows that this insect is distributed in the Palaearctic, Indo-Malayan, and Polynesian regions.

The hole they tunnel in the wood goes straight towards the pith and sometimes has a few asymmetrical horizontal branches.

The fact that these borers live sometimes alone and at other times with other insects, especially with groups of *Xyleborus*, leads us very naturally to the conclusion, that this insect attacks healthy trees principally and is then gradually followed by other families. It cannot be easily decided, whether the attack is the first or the second cause of the tree's weakening and dying. How much harm to forestry, especially to tropical or subtropical sylviculture, is done, cannot be clearly estimated. But we cannot help recognizing the fact that the technical injuries (preventing the utilization of the wood) done by them is great.

4). **Crossotarsus flavomaculatus** Strohm.

Original diagnosis-Strohmeyer, Ent. Mitteil. Berlin, Bd. I. pp. 40-41 (1912).

♂. Kopf dunkelbraun, Halsschild rötlichbraun mit dunklerem Querstreifen in der Nähe des Vorderrandes, Flügeldecken blassgelb, auf dem Absturze dunkelbraun, Beine gelbbraun, die Schenkel mit Ausnahme der Spitze etwas heller. Stirn fast eben, matt, mit gröberen und feineren Punkten bedeckt, Mittellinie kurz und vertieft. Halsschild länger als breit, rechteckig mit stark abgerundeten Hinter- und abgestumpften Vorderecken; auf äusserst fein chagriniertem Grunde spärlich und sehr fein punktiert; die vertiefte Mittellinie erreicht den Hinterrand nicht. Flügeldecken verhältnismässig lang, an der Basis etwas schmaler als beim Beginne des Absturzes, letzterer von der Seite gesehen schwach gewölbt, am Hinterrande etwas flach abgestutzt, die Seitenecken in eine nach hinten gerichtete Spitze ausgezogen; in Streifen fein punktiert, jedoch nur der erste Punktstreifen neben der Naht und der letzte seitliche auf der Scheibe vertieft, alle übrigen nur auf dem oberen grösseren Teile des Absturzes merklich verbreitert und vertieft; Zwischenräume flach, nur auf dem Absturze fein punktiert und mit gelben Borstenreihen besetzt; Basis des dritten Zwischenraumes mit wenigen Körnchen besetzt. Erstes Abdominalsegment mit sehr langem schmalem, nach hinten gerichtetem Dorne. ♀. Stirn konkav, sehr fein und dicht runzlig punktiert, mit sehr kurzem schwarzem Längsstrich in der Mitte und gelber Behaarung. Halsschild geformt wie beim Männchen, die Punktur ein wenig gröber, zu beiden Seiten der vorderen Hälfte der Mittellinie je ein etwas erhabener Flecken, welcher im oberen Teile aus sehr grossen, im unteren aus äusserst feinen Punkten besteht, beide zusammen die Figur eines Herzens bildend. Flügeldecken wie beim ♂, jedoch am Absturze etwas mehr gewölbt, hinten stärker abgerundet etwas abgestutzt und am Innenwinkel eingedrückt, Suturalecken nicht verlängert, sondern stark abgerundet; Basis des dritten Zwischenraumes stärker, die des vierten und fünften spärlich gekörnt.

	♂	♀
Länge	3.95 mm	4.53 mm
Länge des Halsschildes	1.02 "	1.24 "
Breite des Halsschildes	0.83 "	1.02 "
Länge der Flügeldecken	2.48 "	2.57 "
Breite der Flügeldecken (vorn).....	0.91 "	1.10 "
" " " (hinten, vor dem Absturze)	0.99 "	1.21 "
Fundorte: 1. Hoozan (<i>Formosa</i>), Sauter leg. ♂ ♀ (Typen) in der Sammlung des Deutschen Entomologischen Museums.		
2. Philippinen, E. D. Merrill leg. ein ♀ in der Entmol. Sammlung des Bureau of Science in Manila."		

The above specimens were obtained from the Hoozan district in the southern part of *Formosa*. I also made a journey there in search of specimens, but without success. So the date of the collection and the trees attacked are unknown. (None are found in the Agr. Dep. Centr. Exper. Inst., Taihoku).

N.B. I found two individuals, closely resembling this species in the Prof.

Niijima's collection from Kyushiu (in *Quercus glauca* Thunb.). They seem to be a couple, but the male is a little too large and the female too small, to compare favourably with the corresponding measurements of *flavomaculatus*. In the male, the punctures on the elytra are a little deeper than in Strohmeier's description, but other characters are in agreement. The female is quite different, the punctures are very fine and uniform on the prothorax, and the apical emargination seems bisinuous. So I doubt whether this species is the same as Strohmeier's. It can not be determined without many more specimens.

5). *Crossotarsus formosanus* Strohm.

Original diagnosis—Strohmeier, Ent. Mitteil. Berlin, Bd. I. pp. 41-42 (1912).

♂. Kastanienbraun, Kopf und Flügeldeckenabsturz dunkler, Fühler, Tarsen und Schenkel heller, gelblich. Stirn fast eben, sehr grob runzelig punktiert mit kurzer erhabener Mittellinie, dünn gelb behaart. Halsschild äusserst fein und spärlich punktiert, hinten mit kurzer vertiefter Mittellinie. Flügeldecken an der Basis etwas schmaler als dicht vor dem schwach gewölbten Absturze, an letzterem etwas verschmälert, Hinterrand ziemlich gerade abgestutzt und mit mondsichelförmiger Vertiefung, welche mit einzelnen Körnchen besetzt ist; Seitenecken nach hinten ziemlich stark verlängert und zugespitzt; auf der Scheibe in Streifen weitläufig und fein punktiert, nur der erste Punktstreifen neben der Naht und der vierte deutlich vertieft, auf dem Absturze hingegen sämtliche Punktstreifen stark verbreitert und furchenartig eingedrückt; die Zwischenräume auf der Scheibe äusserst fein einreihig, an den Seiten unregelmässig punktiert, auf dem Absturze sehr verschmälert, gekörnt und einreihig gelb behaart. Erstes Abdominalsegment ohne Dorn. ♀. Gefärbt wie das Männchen, der Absturz aber weniger dunkel. Stirn fast eben, grob runzelig punktiert, mit sehr kurzer erhabener Mittellinie, gelb behaart. Halsschild ungefähr wie beim Männchen. Flügeldecken in Reihen punktiert, die Punktstreifen auf der Scheibe nicht, auf dem Absturze wenig vertieft; die flachen Zwischenräume nur hier und da mit einzelnen Punkten und wenigen Körnchen auf dem Absturze, letzterer nach hinten wenig verschmälert, breit abgestutzt und nach dem Saume hin nur abgefacht, nicht konkav und ohne vorstehende Körnchen. Seitenecken nur wenig vorgezogen, Suturalecken abgerundet.

	♂	♀
Länge	4.42 mm	4.80 mm
Länge des Halsschildes	1.21 „	2.21 „
Breite des Halsschildes	1.13 „	1.30 „
Länge der Flügeldecken	2.57 „	2.68 „
Breite der Flügeldecken (vorn)	1.20 „	1.30 „
„ „ „ (hinten, vor dem Absturze)	2.21 „	1.46 „

Fundort: Kosempo (Formosa), Sauter leg."

It is almost certain that the breadth given for the elytra before the declivity for the male is a misprint and that this measure as well as the

length of the prothorax in the female ought be 1.21 mm.

I obtained two specimens (♂♂) of this species from *Casuarina equisetifolia* Forst. in Kuraru and two (♂♀) from *Cinnamomum Camphora* Nees et Ebe. var. *nominale* Hay. in Kusukusu. It seems that this species is limited in distribution to the southern Formosa, and that the damage caused by it is not great. The borings in the wood are very simple and straight and directly towards the pith.

6). *Crossotarsus niponicus* Blandfd.

Original diagnosis—Blandford, Trans. Ent. Soc. Lond. pp. 130–131 (1894).

“Ferrugineus, elytris in medio paullo dilutioribus, postice infuscatis; prothrace subquadrato, irregulariter punctato, punctis ad basim haud profundioribus; elytris lineato-punctatis, stria suturali per totum, ceteris modo ad basim apicemque impressis, apice convexe declivi, angulis externis productis, depressione angusta; abdominis segmento primo spinula obliqua armato.

Mas. Interstitiis elytrorum in declivitate non elevatis, ad basim granulatis, angulis externis brevius productis, abdominis spinula brevi. Long. 6–6.5 mm.

Fem. Interstitiis in declivitate subelevatis, striis subsulcatis, spinula abdominis longa, segmento 5^o subconcavo. Long. 5.7–6.2 mm.”

Specimen—Agr. Dep. Centr. Exper. Inst., Taihoku.

Habitat—Arisan.

Date—Aug. 1910.

Distribution—Generally distributed over Japan; numerous specimens collected from the Sapporo and Hakodate districts in Hokkaido, from Miyanoshita, Yuyama, etc., and in Kyushiu (collected by Lewis), Okuse in Akita, Mikawa and Tomakomai in Hokkaido (collected by Nijjima), and Formosa.

Trees attacked—Unknown in Formosa.

Fagus Sieboldi Endl. at Hakodate (collected by Hirose),
Acer palmatum Thunb. at Nopporo in Ishikari (collected by Nijjima),
Fraxinus mandshurica Rupr. at Mikawa (collected by Nijjima).

7). *Crossotarsus sauteri* Strohm., Ent. Blätt. p. 164 (1913).

Unfortunately I do not possess the original diagnosis of this species, which is recorded exclusively from Formosa, but I can approximately estimate its characters from the figures in the “Genera Insectorum” by the author. I was unsuccessful in obtaining specimens of this species, too, in

Formosa. Its relation to forestry is entirely unknown.

8). *Crossotarsus rengetensis* Nijima et Murayama, sp. n.

(Plate XII, figs. 1-2, Plate XIII, figs. 13-20.)

♂. Subelongate, piceous, shining; underside and legs brown.

Front subquadrate, mostly concave, with median carina, rugosely punctured, with aureous ciliation; vertex with three short longitudinal vittae, separated by finely punctured spaces, the median vitta being provided with a longitudinal depressed line in the middle. Prothorax oblong, posterior emargination rather strong and the angle prominent, median sulcus fine, irregularly punctured, punctures very fine, densely covering the surface, rather larger punctures congregated before the sulcus and several large pore-like punctures sprinkled irregularly all along the margins; short argenteus hair before the posterior margin and between sulcus and lateral emargination. Scutellum small but distinguishable. Elytra elongate, with sides narrowed and slightly constricted at apex; striate, striae with a single row of punctures, parallel, deep in anterior half only, irregular, and gradually obliterated in posterior half, the 1st and 2nd, 3rd and 4th conjoined at bases, interstices smooth, elevated, with a few fine scattered punctures, 3rd and 5th dilated at bases, 6th the narrowest, 7th extremely dilated at base and forming a large triangle; posterior part gently rounded and fringed with aureous pubescence; posterior impression narrow, sublinearly shallow concave, each external angle shortly elongated with one more blunt serration. Underside scantily pubescent; abdomen concave, with almost invisible scanty punctures or hair on ventral segment, the 7th segment with a large transverse oval depression. Anterior tibia with 2-8 carinae, and rugose punctures at base inclining to make some other carinae; intermediate tibia with a single carina on the anterior surface; posterior tibia dilated at apex, with outer border concave, ciliated with yellowish hair, posterior coxa of a sharp axe-shape, with free margins of inner and apical borders.

♀. More elongated than the male, being a little darker.

Front more elongated than in the male, with rather tapered rostrum, concave with eminently elevated median carina, more sparsely punctured and ciliated than in the male; vertex with a short median depression, followed by narrow shining edges, simple dense punctures on the remaining surface. Prothorax quadrate, surrounded by almost straight simple lines, posterior angle of emargination very much weaker than in the male, punctures simple, fine, without the larger and pore-like punctures, poor cilia-

tion along the margins, sulcus fine, a little longer and situated more to the front than in the male. Scutellum indistinguishably fine. Elytra longer than in the male with simple straight sides; striate, striae shallow throughout entire length, more regularly situated and almost invisible, conjunction of the 1st and 2nd striae at bases loose, 3rd and 4th tight and deep; interstices flat and smooth, the 3rd and 5th dilated, almost in the same grade with each other, 7th long and widened behind. Posterior part more gently rounded than in the male, posteriorl ateral margins slightly rounded without external angles; pseudopygidium more prolonged than that of the male. Under-side poorly pubescent; ventral abdominal segments convex, each segment regularly arranged, punctuation almost invisible; anterior tibia generally with 2 or 3 carinae (in a total of 13 individuals, 6 of 2 carinae, 6 of 3, 1 of 4), intermediate tibia with 1 carina, posterior tibia nearly the same as in the male, being more slender, posterior coxa small, posterior femur entirely bare, shiny.

	♂	♀
Length.....	7.0 mm	8.5 mm
Length of prothorax.....	2.2 "	2.1 "
Breadth of prothorax.....	2.0 "	2.1 "
Length of elytra.....	4.1 "	5.5 "
Breadth of elytra (near the base)	2.1 "	2.2 "
" " " (just before the declivity)...	2.2 "	2.5 "

Specimen—My collection.

Habitat—Rengeti, Taichu Prov., Formosa.

Date—Jan. 1923.

Trees attacked—*Gordonia axillaris* Szysz.

Cinnamomum micranthum Hay.

Machilus longipaniculata Hay.

Melia azedarach L.

Tetradenia Konishii Hay.

Taonabo japonica Szysz.

Cryptocarya chinensis Hemsl.

Cinnamomum Camphora Nees et Ebe.

Pasania cuspidata Oerst.

Distribution—Formosa.

There is no group in Chapuis's description which exactly coincides with my specimens. The nearest to this is *C. concinus* Blandfd., Blandford observed only one female specimen (of a conventional meaning) of it from Higo, and it seems that his description may contain some individual varia-

tions. I happily was able to obtain numerous specimens of both sexes from Formosa. Testing all of the specimens as to whether the details coincide with his description or not, I found that there are several points of differences between Blandford's specimen and mine.

The principal points of differences are:—

- a. Smaller size (1 mm smaller than Blandford's), not so elongate, rather stumpy.
- b. An elevated carina in the middle of the front of many individuals (19 in 28 individuals).
- c. Uniform distribution of fine punctures of prothorax, and absence of the smooth cordate area around the sulcus.
- d. Conjunction of the 1st and 2nd, and 3rd and 4th striae at bases; interstices elevated, the 1st, 3rd, and 7th dilated at bases.
- e. Absence of fringe of hair in front of the ventral abdominal segment.

I also found that minute characters which were mentioned by Blandford are scarcely constant. For example, in 28 males of my collection, three shining vittae on the vertex are visible clearly in 22 individuals, but in the other 6 these are only indistinct or of irregular form, or the outer two being lacked. The carinae of the anterior tibia are 2 in 1 indiv. 3 in 8, 4 in 10, 5 in 5, 6 in 3, and 8 in 1.

By means of these differences we propose to determine a new species, making allowance, however, for much variation of type.

I obtained many specimens from several kinds of trees in the forest of Rengeti. On the exact discussion of their relation to forestry, I intend to report in another separate paper together with my investigation on their modes of tunneling.

(II). *Platypus* Herb.

Original diagnosis—Herbst, *Natursyst. Ins.* Vol. 5, pp. 128–129 (1793).

“Die Gestalt ist völlig cylindrisch. Die Fühlhörner, welche unter den Auge stehen, bestehen nur aus zwei Gliedern; das unterste ist ziemlich breit, das zweite ist gross, platt, rund, und kolbenförmig. Die Füsse sind sonderbar; das vorderste Fusspaar ist viel grösser als die übrigen, und der Käfer trägt die Füsse fast wie die Maulwurfsgrillen; die Hüfte ist sehr breit, inwendig hat sie eine stumpfe Spitze, und sie ruhet auf einem grossen, unten zweispitzigen Einlenkungsgliede; die Schienbeine sind kurz und breit, an den Seiten mit steifen Borsten besetzt, am Ende laufen sie in eine Spitze aus. Die Fussblätter haben erst ein sehr langes Glied, alsdann zwei ganz kleine Glieder, und das Klauenglied ist wieder sehr lang gezogen. Das zweite Fusspaar ist kürzer und schmaler, das dritte wieder etwas breiter, und am besten aus der Abbildung zu erkennen.”

This description was of course given by the author when this genus was first separated from *Bostrichus* and, naturally, it must be understood, shows the characters of the whole family, because it was made before the separation of *Crossotarsus* and the other genera of this family. It is also an incomplete description as regard to the number of segments of the antenna, the tarsus, etc.. At any rate, it is impossible to separate this genus from *Crossotarsus* according to the general shape, or the maxillary palpi, or the pseudopygidium, or the basal characters of the 8th abdominal segment. Chapuis asserted "Ils ne diffèrent pas seulement entr'eux par la forme du menton, ce qui pourrait être considéré comme un caractère artificiel, mais par toute leur organisation, la tête, le corselet, les élytres, les pattes, tout est différent; un autre fait domine chez les *Crossotarsus*, c'est la grande variabilité des segments de l'abdomen, tandis que chez les *Platypus*, l'uniformité de cette partie du corps admet à peine quelques rares exceptions." Compiling all the characters of this genus, we get the following description:—

Head has no rostrum; maxillary palpi 3 articles on a distinct, large palpus-stand, each article compressed, truncated obliquely, the last one the smallest; labium coherent, covered partially by submentum, the visible part of it widened towards the base or of equal breadth throughout, nevertheless gradually narrowing, always larger in the female; labial palpi cylindrical, biarticular, never coalescent in one palpus-stand. Often has pseudoglossa on submentum. Metaphragma has narrow elongated lateral parts and one simple roundly produced middle part towards posterior, never notched as in the case of *Crossotarsus*. Abdomen short, 7 segments regularly settled, stronger and narrower towards posterior in the male; 8th segment almost invisible, with chitinized base and of a quadratic shape. Proventriculus short, cylindrical, with long grinding brushes which change gradually into some rows of bristles.

The insects of this genus are distributed indiscriminately in every zoological region excepting the Macronesian. *Formosa* has 5 species and 1 subspecies, of which 4 species are known, 1 species and 1 subspecies being new.

9). *Platypus lewisi* Blandfd.

Original diagnosis—Blandford, Trans. Ent. Soc. Lond. pp. 134-135 (1894).

"Ferrugineo-piceus, prothorace oblongo, elytris sulcatis, interstitiis convexis, glabris, nitidis. Long. 5.5 mm.

Mas. Fronte plana, opaca, prothoracis sulco congerie punctorum magna, cordiformi, circumdato, elytrorum interstitiis subsimilibus, ad apicem, 3^o et 5^o etiam ad basim granulatis, depressione postica parva, subtriangulari, granulata.

Fem. Fronte antice subconca, opaca, prothoracis sulco congerie punctorum minore ovali circumdato, interstitiis 1^o et 2^o in summa declivitate in spinam communem magnam, 3^o, 5^o, 7^o in spinulas parvas productis, declivitate utrinque tuberculata, angulis externis in lobos subquadratos productis, abdominis segmento 4^o bispinato."

Specimen—Agr. Dep. Centr. Exper. Inst., Taihoku.

Habitat and trees attacked—Unknown.

Distribution—Japan, (Miyanoshita, Kiga, and Yuyama), Formosa.

I saw this specimen in the Agr. Dept. Centr. Exper. Inst., Taihoku, and recognized it as the male of this species on account of the long sharply produced external angles of the elytra. Its relation to forestry is unknown.

10). *Platypus severini* Bland^{fd}.

Original diagnosis—Blandford, Trans. Ent. Soc. Lond. p. 136 (1894).

"Fem. Piceo-ferruginea, elytris postice infuscatis; fronte subconca, rugosa; prothorace paullo longiore quam latiore, utrinque ad medium vitta obliqua subelevata, antice rarius irregulariter, postice crebrius punctato; elytris ad apicem subdeclivibus et in processu divaricatos attenuatis, striato-punctatis, striis impressis, interstitiis subconvexis ad apicem pilosis, duobus primis per totum, ceteris ad basim subtiliter punctulatis, processibus desuper aspectis bidentatis. Long. 5.—5.3 mm.

Specimen—Agr. Dept. Centr. Exper. Inst., Taihoku.

Habitat—Taipin.

Date—May 1910?

Trees attacked—Unknown in Formosa.

Fagus Sieboldi Endl. (Japan, Lewis and Nijima), *Tilia japonica* Simk. (Hokkaido, collected by Tomimoto), *Alnus hirsuta* Turcz. (Tamakomai, collected by Nijima), *Aesculus turbinata* Bl. (Japan, collected by Nijima).

Distribution—Japan (Nikko, Towada, Okuse; Hakodate, Yuni, Mikawa in Hokkaido), Formosa.

This species is widely distributed over Japan from Hokkaido to Formosa. Its damage to forestry is also extensive. It is very important to know what kinds of trees are attacked by it. In spite of diligent search for this species in Koshun and Rengeti, I was absolutely unable to obtain any;— in the latter place I used a special method to gather as many kinds of beetles as possible. From this fact, I conclude that this species must be limited to the northern districts of Formosa.

11). Platypus solidus Walk.

Walker, Annal. Mag. Nat. Hist. (3) Vol. 2, p. 286 (1859).

Diagnosis by Chapuis⁽¹⁾—Chapuis, Monogr. d. Platyp. p. 267 (1865).

“♀. *Picea vel rufa*, antennis pedibusque pallidioribus. Fronte rugoso-reticulata; prothorace subquadrato, punctato; elytris striato-punctatis, interstitiis serie punctorum subregulari ornatis, in declivitate distinctis, longitudinaliter sulcatis setulosisque; processu terminali longiori attenuato, bispinato. —Long. 4 mill.”

Specimen—Agr. Dep. Centr. Exper. Inst., Taihoku.

Habitat—Koshun.

Date—Aug. 1910?

Trees attacked—Unknown in Formosa.

Anogeissus latifolia Wall. (India).

Distribution—Ceylon, India, Indian Archipelago, Philippines, Sunda Isles, Formosa.

This species is not found in Japan proper. It seems to be quite a southern inhabitant. In Formosa it is found only in the southern part. In Chapuis's work this species has many varieties differing chiefly as to the apical part of the elytra. In India its relation to forestry has been studied carefully by Stebbing; in Formosa the extent and the kind of damage it causes are unknown.

12). Platypus lepidus Chap.

Original diagnosis—Chapuis, Monogr. d. Platyp. p. 282 (1865).

“♂. Prothoracis congeriebus punctorum angustis, semi-ovalibus; elytris subtiliter punctato-striatis, interstitiis subtilissime punctatis; depressione postica oblique transversa, rugoso-punctata, foveola in utroque elytro impressa. —Long. 3 2/3 mill.

♀. Prothorace punctato, punctorum congeriebus duabus minutis ornato; elytrorum interstitiis parce punctatis; depressione postica circulari, anguste emarginata, emarginationis margine dente obtuso armato. —Long. 3 1/4 mill.”

Specimen—My collection.

Habitat—Kusukusu (near Koshun).

Date—Dec. 18. 1922.

Trees attacked—*Cryptomeria japonica* Don.

Distribution—Celebes, Philippines, Sunda Isles, Molukkas, Java, Formosa.

Chapuis recognized the fact that this species had some variations in its form (caused by locality) and that the two small groups of punctures along the median sulcus of the prothorax are sometimes lacking in the female (truly, male) individuals, and the form is a little more slender in

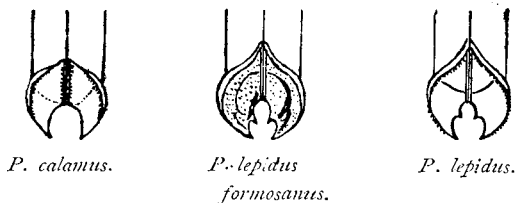
(1) As I could not find Walker's original diagnosis, I have cited here the description given by Chapuis.

the specimens from the Philippines. The Formosan specimens seem closely to resemble those of the Philippines. I obtained a few specimens from the trunk of a *Cryptomeria japonica* Don. which was also inhabited by *Crossotarsus externe-dentatus* Faim.. The injuries to forestry are not great.

I found some closely resembling specimens of this species in the four kinds of trees in Rengeti, as given below.

13). *Platypus lepidus* Chap. *formosanus* Nijima et Murayama, subsp. n. (Plate XII, figs. 3-4, Plate XIV, figs. 21-28.)

This specimen closely resembles *lepidus* in its general shape, except that the posterior declivity of the elytra alone is a little different. In this subspecies, the upper margin of the apical impression is elevated in the male (but that elevation is not so high and everted as that of *P. calamus* Blandfd.) and the outer border is smooth, not serrate; the impressed surface is convex, with rugose irregular punctures and elevations.—These characters are not mentioned in Chapuis's description, but by his figure, we know that *lepidus* has a serrated edge and a smooth surface, and the elevation of the margin is slighter. The punctures on the striae are more distinct than those of *lepidus* in the female.



This variation is not large enough to form a new species. Therefore we propose to treat it as a subspecies of *lepidus*, though the special locality and the trees infested differ somewhat from those infested by *lepidus*.

Specimen—My collection.

Habitat—Rengeti, Taichu Prov., Formosa.

Date—Jan. 1923.

Trees attacked—*Cinnamomum Camphora* Nees et Ebe.

Cinnamomum micranthum Hay.

Diplospora viridiflora DC.

Lagerstroemia subcostata Koehne.

Distribution—Formosa.

I found most of these specimens on the trees attacked by *Crossotarsus*

rengetensis Nij. et Muray.. Its damage to forestry is not very extensive.

14). *Platypus formosanus* Nijima et Murayama, sp. n. (Plate XII, figs. 5-6, Plate XIV, figs. 29-34.)

♂. Rather robust, deep reddish brown with the head and the apex of elytra darker.

Front very slightly concave, with a shallow longitudinal median depression and an irregular rugose reticulation, with poor ciliation; vertex with three parallel longitudinal vittae, of which the lateral two diverge towards the front, the remaining surface is covered with irregular large punctures. Prothorax a little longer than breadth, median sulcus with very narrow group (one or two irregular rows) of punctures on either side, the remainder of surface with punctures constituted from mixture of larger and finer ones and denser frontwards, sparsely pubescent. Elytra subcylindrical, much wider at declivity, not narrowed towards posterior; strongly sulcate, the sulci finely tuberculated throughout, wider and deeper towards the apex; interstices convex, sparsely punctured, less convex and wider towards the bases, where many irregular punctures are found, pointed at declivity, the 4th and 6th a little shorter, 8th conjoined with the elevation of the lateral margin at declivity, forming together a small tooth behind; apex abruptly declivous (producing right angles), declivity flat, hexagonal, with serrate edges ciliated with aureous hair, with elevated carinae on the upper part, sutural margins elevated and each producing a short tooth, a large tooth on lateral posterior corner. Abdominal segments subconvex, with large punctures.

♀. Colour a little paler than in the male, elytra yellowish brown on the anterior two thirds.

Front more weakly sculptured and densely ciliated than in the male; vertex with three distinct parallel longitudinal vittae. Prothorax with weaker punctures than in the male, with long elliptical groups of punctures (4 irregular rows on each side) along the median sulcus. Elytra cylindrical with parallel sides; weakly sulcate, sulci with a row of scattered punctures, deeper towards posterior; interstices flat, mat, with irregular fine punctures and with aureous hair in the posterior third, the 3rd dilated at base with transversely arched carinae, which extend to the sutural line and cover the bases of the 5 interstices; declivity very slight in the first two thirds with gently narrowed sides and gradually pointed interstices, and abruptly vertical in the apical third, this apical plane covered with dense regular punctures and hair, with round upper margin and straight lower one with traces of teeth situated on the same place as in the male.

Underside browaish yellow, sparsely pubescent. Abdominal segment subconcave with fewer punctures than in the male.

	♂	♀
Length.....	3.7 mm	3.9 mm
Length of prothorax.....	1.2 mm	1.2 mm
Breadth of prothorax.....	1.0 "	1.0 "
Length of elytra.....	2.0 "	2.3 "
Breadth of elytra (at the bases).....	1.1 "	1.1 "
Breadth of elytra (before the declivity).....	1.5 "	1.2 "

Specimen—My collection.

Habitat—Rengeti, Taichu Prov., Formosa.

Date—Jan. 1923.

Trees attacked—*Styrax formosanum* Mats.

Sapium discolor Muell-Arg.

Distribution—Formosa.

This species belongs to the Group *Platypis sulcati* Chap.. I found no species resembling this one in Chapuis's monograph. The nearest was *P. obtusus* Chap., but the structure of the antenna is quite different and it has no groups of punctures along the sulcus on the prothorax.

Neither did Blandford describe any form resembling this one in his reports from Japan nor the Philippines. We can not trace any in India.

Therefore we assume this to be a new species.

This species shows the special characters of an oriental form, and its declivity reminds us of *P. pulchellus* Chap. from Mexico. The grinding brushes of the proventriculus are especially slender (fig. 29). I obtained these specimens from the forest of Rengeti, six (♂♂ ♀♀♀♀) from *Styrax formosanum* Mats. and three (♂♀♀) from *Sapium discolor* Muell-Arg..

From the peculiar scarcity of the specimens, I deduce that its injury to forestry is but small.

(III). *Diapus* Chap.

Original diagnosis—Chapuis, Monogr. d. *Platypis*. p. 329 (1865).

"Caput subrostratum. Labrum inconspicuum, ciliatum. Palpi maxillares cylindrici, coriacei. Maxillarum mala palpis longitudine subaequalis, ciliata. Palpi labiales parvi, biarticulati. Oculi rotundati, prominuli. Antennarum articulus primus pyriformis, funiculi articuli minuti, clava obtusa. Pronotum lateraliter pro pedum receptione late emarginatum et angustatum; prosternum latum, coxae anticae disjunctae. Elytra apud mares simplicia, juxta marginem posticum sulcata, apud faeminas acute spinata. Tarsi longissimi, cylindrici, tenues; tarsorum posticorum articulus primus laminatus, longissime ciliatus."

Besides these, Chapuis mentioned many other characters in his explanations, i. e. prothorax a little narrowed towards anterior, a little elongated on the mesothorax, posterior border thick; 5 abdominal segments, in which the first 4 transversely convex in both sexes; anterior tarsus cylindrical, filiform, longer than in any other species of this family, being as long as femur and tibia altogether; vertex with special embossment, carinae running longitudinally in 5 directions from the base; elytra with special regular form, etc.. Strohmeier added to these two other characters, i. e. the separated maxillary lobes and the simplicity of wing-veins.

The insects of this genus are rarely obtained in Japan,—there is one species from Kyushiu described already by Blandford, another species from Formosa among the specimens of the Agr. Dep. Centr. Exper. Inst., Taihoku, and the third is a new one in my own collection.

15). *Diapus quinque-spinatus* Chap.

Original diagnosis—Chapuis, *Monogr. d. Platyp. pp.* 334–335 (1865).

“Fuscus, elytris interdum brunneis, prothoracis margine postico, antennis pedibusque ferrugineis.

♂. Fronte subplana, medio carina interrupta; mandibulis appendice margini externo affixa, antennis breviori arcuataque insignibus; prothorace oblongo, nitido, parcissime punctato; elytris punctato striatis, versus apicem torulosus, sulco marginali impressis. Long.—2½ mill.

♀. Fronte subplana, medio carina interrupta; prothorace subquadrato, margine postico punctato; elytris punctato-striatis, interstitiis 3, 5, 7, 9 spinulis productis; depressione postica, transversa, obliqua, spinula ornata. Long.—2½ mill.

Specimen—Agr. Dep. Centr. Exper. Inst., Taihoku.

Habitat—Kotosho.

Date and trees attacked—Unknown in Formosa.

Shorea robusta Gärtn. f. (India).

Distribution—Celebes, Borneo, Morty Isles, New Guinea, India, Formosa.

16). *Diapus formosanus* Nijima et Murayama sp. n. (Plate XII, figs. 7–

8. Plate XV, figs. 35–47).

♂. Head dark reddish brown, prothorax reddish brown, elytra yellowish brown in anterior half and dark reddish brown in posterior half. Front flat, round, sparsely but uniformly punctured and ciliated; vertex with 5 shining carinae, the median carina being the strongest and the rest weaker; the remaining surface with scattered pore-like punctures. Prothorax subquadrate, strongly emarginated at the middle of the side,

the basal margin bisinuous, median sulcus fine, with very fine dense ground-work of punctures over all the surface, margins with a few larger pore-like punctures, long aureous hair along the anterior border, short hair along the lateral sides. Elytra rather short with straight sides and conical declivity; striate, striae of regularly parallel appearance, each stria with a row of strong punctures which are deeper in the declivity; interstices regularly parallel, each has a row of fine punctures, gradually narrowed towards the apex; declivity with sides narrowed, pointing straight downwards and forming a normal truncated cone, here striae deep and each interstice with several rows of small yellowish scales and bristles which change into fringe of long bristles before the apex; apex covered with bristles.

Underside reddish brown, metasternum sprinkled with large pore-like punctures and aureous hair; abdomen short, (convex) densely punctured and hirsuted. Anterior coxae armed densely with aureous bristles; anterior tibiae with several transverse carinae and each terminating in a curved hook; anterior tarsi long, their first joints as long as tibiae.

♀. Head and prothorax the same colour as in the male, elytra yellow ochre, translucent in anterior half and dark yellowish brown in posterior half and margins.

Front oval, subconcave, finely and irregularly punctured, anterior half with long aureous hair in a circular boundary and 3 holes along upper margin of that circle, no appendage on mandible; vertex with a shining median carina and on each side with two flat shining carinae towards the anterior external corner, remaining surface densely covered with fine punctures. Prothorax subquadrate, margins and hairs corresponding to those of the male, on the middle of anterior border with a transverse black line; median sulcus short but deep, extends into a slight carina towards posterior and into separated lateral curved lines towards anterior, beneath each line a large round depression and group of obliquely narrow elliptical punctures, which, according to the angle of observation, appear round. Elytra longer than that of the male, with parallel sides and gently rounded declivity; striate, each stria uniform with a row of distinct punctures; interstices slightly elevated, the 3rd and 5th well developed, convex, 2nd and 5th larger towards the anterior border, all these conjoined at bases, where they are covered with rugose punctures; declivity very gently rounded and a little narrowed, with deep large punctured striae, interstices punctured with a single row of long aureous hair. Underside yellow ochre, more sparsely punctured and pubescent than in the male; abdomen short, convex, sparsely ciliated.

	♂	♀
Length.....	3.7 mm	4.5-4.2 mm
Length of prothorax.....	1.1 ,,	1.3-1.2 ,,
Breadth of prothorax.....	1.0 ,,	1.1 ,,
Length of elytra.....	2.2 ,,	2.7-2.5 ,,
Breadth of elytra (at the bases).....	1.3 ,,	1.4 ,,
Breadth of elytra (before the declivity).....	1.5 ,,	1.5 ,,

Specimen—My collection. (4♂, 4♀).

Habitat—Rengeti, Taichu Prov., Formosa.

Date—Jan. 1923.

Trees attacked—*Lithocarpus Konishii* Hay.

Distribution—Formosa.

This species has many anatomical peculiarities, compared with the general characters of this genus. The differences between the sexes are very marked. The male has no separated maxillary lobes as in the case of *Platypus*, but they are found in the female. The female has depressed truncated maxillary palpi as in the case of *Platypus*, not cylindrical, but in the male it is exactly opposite (figs. 38 and 40). The anterior coxae are not separated so widely as in other species. The first joint of the anterior tarsus is not as long as the femur and tibia altogether (fig. 42). Notwithstanding these peculiarities, the general shape, the front, the labial palpi, the embossment of vertex, the punctures on prothorax, the striae and interstices of elytra, the declivity, and the posterior wings, show that this specimen belongs to *Diapus*. The nearest species to this one is *D. impressus* Janson. But the conical declivity of the male and the special punctures on the prothorax of the female separate it distinctly from *impressus*.

I obtained these specimens from the forest of Rengeti by the same method as in the case of *Crossotarsus rengetensis*. These insects attack only one kind of tree in one locality. Therefore I suppose that they are very rare and their distribution limited; their injuries to forestry are not extensive.

IV. Remarks and suggestions concerning the protection of the forests against these beetles

In this chapter, I intend to consider two special items in connection with this Family, i. e. (a) the effects caused by these insects at the present time in Formosa and (b) observations concerning their distribution, by which precautionary measures against the importation of exotic trees and

timber are suggested.

(A). As already mentioned after the description of each species, there are still some few species whose relation to forestry in Formosa is yet unknown. A knowledge of the relation of these borers to forestry is of the utmost necessity to foresters. In this respect we have several points to consider, i. e. the species and conditions of the trees attacked, their locality, the season, the grade of the injuries, etc..

Even though the same damage be done, its importance to forestry differs according to the trees injured. These trees may sometimes be, (1) the principal object of forestry, or (2) only possess a subordinate value in as much as they are useful as a protection against the invasion of grasses and the loss of soil by showers, or (3) at other times these insects also attack plants harmful to forestry. In the last case, the insect damage is profitable to forestry, whereas it is most harmful in the first case whether the harm be physiological or technical.

The extent of the damage differs according to whether the damaged trees are living, felled, or are weakened. Concerning the season in which they attack the trees in Formosa there is not much to be considered, because the resting stages of plant and insect life are extremely short. There is a continual struggle between the trees and the insects throughout the year.

The following table may be helpful in clarifying these relations concerning the 7 species of my own collection.

Trees		Insects		Crossotarsus			Platypus			Diapus
				externe- dentatus	formosanus	rengetensis	lepidus	lepidus formosanus	formosanus	formosanus
Attacked species	State	Place								
<i>Cryptomeria japonica</i> Don.	standing	in the planted forest	4 little			2 little				
<i>Casuarina equisetifolia</i> Forst.	"	"		2 little						
<i>Pasania cuspidata</i> Oerst.	newly felled	in the natural forest boundary			I little					
<i>Lithocarpus Konishii</i> Hay.	"	"							8 little	
<i>Cinnamomum Camphoru</i> Nees et Ebe.	standing	open space in the natural forest and in the planted forest.	I considerable		I much		I little			
" " var. <i>nominale</i> Hay.	newly felled	"	8 much	2 much						
<i>C. micranthum</i> Hay.	"	"			70 much		8 little			
<i>Machilus longipaniculata</i> Hay.	"	neighbourhood of the natural forest			.15 much					
<i>Tetradenia Konishii</i> Hay.	"	"			2 little					
<i>Cryptocarya chinensis</i> Hemsl.	"	"			I little					
<i>Leucaena glauca</i> Benth.	"	in the planted forest	I little							
<i>Melia azedarach</i> L.	"	in the natural forest			5 little					
<i>Sapium discolor</i> Muell-Arg.	"	"						3 little		
<i>Gordonia axillaris</i> Szysz.	"	in the natural forest boundary			21 much					
<i>Taonabo japonica</i> Szysz.	"	"			84 much					
<i>Lagerstroemia subcostata</i> Koehne.	"	"					I little			
<i>Styrax formosanum</i> Mats.	"	in the natural forest						6 little		
<i>Diplospora viridiflora</i> DC.	"	in the natural forest boundary					I little			
<i>Carica papaya</i> L.	"	in the planted forest	I little							
Total			15	4	200	2	11	9	8	

N. B. The figures refer to the number of the insects collected. Their noxiousness also is approximately indicated.

From this table we know that the trees most easily attacked belong to the *Lauraceae*; especially newly felled and piled up timber in forest localities becomes a welcome object for the harmful action of the insects. It is natural that their damage is rather technical than physiological. We know also that the most harmful species are *C. externe-dentatus* and *C. rengetensis*. These two species are not only found in great numbers, but are also omnivorous. Therefore their injuries are extremely extensive. They threaten great danger, especially to the plantations of camphor trees in southern Formosa, where these plantations will become the necessary source of camphor. The trees belonging to the *Lauraceae* and *Fagaceae* are very important as producers of timber. The technical value of the wood is greatly diminished by large complicated holes caused by *C. rengetensis*. The only protective method, is to study and apply the most efficient means of forest protection.

In the Koshun district I obtained almost all of my specimens from the densely planted and mistreated forests. To keep the forests clean and healthy it is very necessary to avoid the propagation of these borers.

The same also applies to the natural forest of Rengeti. Here, almost all specimens of my collection were obtained from newly felled and piled up timber in the neighbourhood of or in the forest. Therefore it is a point of the greatest importance to avoid unnecessary fellings and to transport the logs as quickly as possible.

Another method of combating this forest pest is to avoid planting easily infested trees and to use as much as possible kinds from different families for the purpose of reforestation.

Besides the above precautions, we must take every care against invasion from other lands through importing plants and timber. In this respect a wide knowledge of the distribution of each species is necessary.

(B). Some species of *Flatypodidae* have narrow boundaries of distribution, while many are broadly propagated. It is very necessary to study the distribution of the Formosan species in the neighbouring districts. The following table makes these relations clear.

Species	Habitat	Distribution
<i>Crossotarsus piceus</i> .	Koshun	Molukkas, Arrou, Sunda, Formosa.
<i>C. wallacei</i> .	Koshun	Malacca, Borneo, Sumatra, Formosa.
<i>C. externe-dentatus</i> .	Koshun etc.	Tahiti, Fiji, Hawaii, Japan, Formosa.
<i>C. flavomaculatus</i> .	Hoozan	Philippines, Japan (?), Formosa.

Species	Habitat	Distribution
<i>Crossotarsus formosanus</i> .	Koshun etc.	Formosa.
<i>C. niponicus</i> .	Kosempo Arisan	Japan, Formosa.
<i>C. sauteri</i> .	Kosempo	Formosa.
<i>C. rengetensis</i> .	Rengeti	Formosa.
<i>Platypus lewisii</i>	Japan, Formosa.
<i>P. severini</i> .	Taipin	Japan, Formosa.
<i>P. solidus</i> .	Koshun Huhosho	Ceylon, India, Indian Archipelago, Sunda, Philippines, Formosa.
<i>P. lepidus</i> .	Kusukusu	Java, Sumatra, Molukkas, Sunda, Celebes, Philippines, Formosa.
<i>P. lepidus formosanus</i> .	Rengeti	Formosa.
<i>P. formosanus</i> .	Rengeti	Formosa.
<i>Diapus quinque-spinatus</i> .	Kotosho	India, Java, Borneo, Celebes, Morty Isles, New Guinea, Formosa.
<i>D. formosanus</i> .	Rengeti	Formosa.

(?) See pp. 205—206.

Classifying them into 5 localities, we obtain the following distribution table:—

Localities	I Number of formosan spp.	II % (I/16 × 100)	III Total number of spp. of each local.	IV % (I/III × 100)
India	2	12.5	20 (1)	10.0
Malay and its eastern Islands (excepting Philippines)	6	37.5	58 (2)	10.3
Philippines	3	18.8	9 (3)	33.3
Formosa (exclusively)	6	37.5	16 (4)	37.5
Japan (excepting Formosa)	5	31.3	15 (5)	33.3

N.B. The total number of species of each locality is estimated as follows:—
by Stebbing, (1); by Strohmeier, (2); by Schulze (3); by Blandford, Nijima and the
author (4) and (5).

From this table we see that the Formosan *Platypodidae* stand in the closest relationship to the Philippines and their southern Islands, then to Japan. The Indian influence is very small. So we can deduce that this family in Formosa is much more influenced by the Oriental region (especially the Indo-Malayan region of Strohmeier), than by the Palaeartic region. Concerning the latter I found that the borers of this family in Kyushiu are closely allied to those of Formosa. So I conclude that the boundary which contains Kyushiu, Formosa, Philippines, Sumatra, Java, New-Guinea, Hawaii, and the islands between, forms a special circle for the distribution of the *Platypodidae*.

This relationship shows the past and future possibility of importing insects contained in plants and timber from within this boundary. The fact that the samples of infested trees which I brought from Formosa contained live insects for half a year, and that I also found *Platypodidae* and *Bostrychidae* in the samples of wood mentioned below, and which are preserved in the Forestry Department of the Experiment Institute, Taihoku, (observed since August, 1921), proves the seriousness of the possibility of importing borers.

Japanese Name	Scientific Name	Distribution
Ooba-awa-sendan	<i>Evodia Roxburgiana</i> Benth. <i>Phellodendron Wilsonii</i> Hay. et Kanehira	(Tropical Asia) (Formosa)
Sangoshito	<i>Erythrina corallodendron</i> L. × <i>E. Fordii</i> *	(West India)
Kuroyona	<i>Pongamia glabra</i> Vent.	(India, Malay, North Australia)
Maruba-chisha-no-ki	<i>Ehretia macrophylla</i> Wall.	(India, China, Riukiu)
Taiwan-chisha-no-ki	<i>E. formosana</i> Hemsl.	(Formosa)
Koto-nikuduku	<i>Myristica heterophylla</i> Warb. *	(Philippine Islands)
Gyūshō	<i>Cinnamomum Kanehirai</i> Hay.	(Formosa)
Shina-kusu-modoki	<i>Cryptocarya chinensis</i> Hemsl.	(Kwangtong, Hongkong, Formosa)
Konishi-kusu-modoki	<i>C. Konishii</i> Hay.	(Formosa)
Nankin-haze	<i>Sapium sebiferum</i> Roxb.	(China, India, Japan)
Akō	<i>Ficus Wightiana</i> Wall.	(Formosa, Riukiu)
Ruran-inubiwa	<i>F. Harlandi</i> Benth.*	(China)
Gajumaru	<i>F. retusa</i> L.	(India, Malay, Riukiu)

(In this table the asterisk * shows the imported timber and × exotic plants)

We often notice that timber from the Philippines and the islands situated to the south of them shows so-called "pin holes". It is necessary to take precautions when we import this timber because the "pin holes" are caused by these insects. Of course they are not limited to the attacks of borers of the *Platypodidae* family. So the discussion of the *Platypodidae* must be closely allied to that of the *Ipidae*, *Bostrychidae*, *Cerambycidae*, *Curculionidae*, and *Lymexylonidae*.

The prohibition of the free import of exotic trees is necessary for the safety of the Formosan forestry.

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- Fig. 1. *Crossotarsus rengetensis* Nij. et Muray. sp. n. ♂.
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- Fig. 4. Do. ♀.
4 a. Punctuation on the sides of median sulcus of prothorax.
- Fig. 5. *Platypus formosanus* Nij. et Muray. sp. n. ♂.
5 a. Punctuation on the sides of median sulcus of prothorax.
- Fig. 6. Do. ♀.
6 a. Punctuation on the sides of median sulcus of prothorax.
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♀. × 50.
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- Fig. 22. Metaphragma of *P. lepidus* Chap. *formosanus* Nij. et Muray. subsp. n. ♀. × 50.
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- Fig. 35. Proventriculus of *Diapus formosanus* Nij. et Muray. sp. n. ♀. × 100.
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Supplement

Through the kindness of Prof. S. Matsumura I have been able to read the original diagnosis of the *Crossotarsus sauteri* Strohm. in the Entomologische Blätter recently added to his Library. As the former part of my paper has been already printed, I will here give the original diagnosis of Strohmeyer as a supplement.

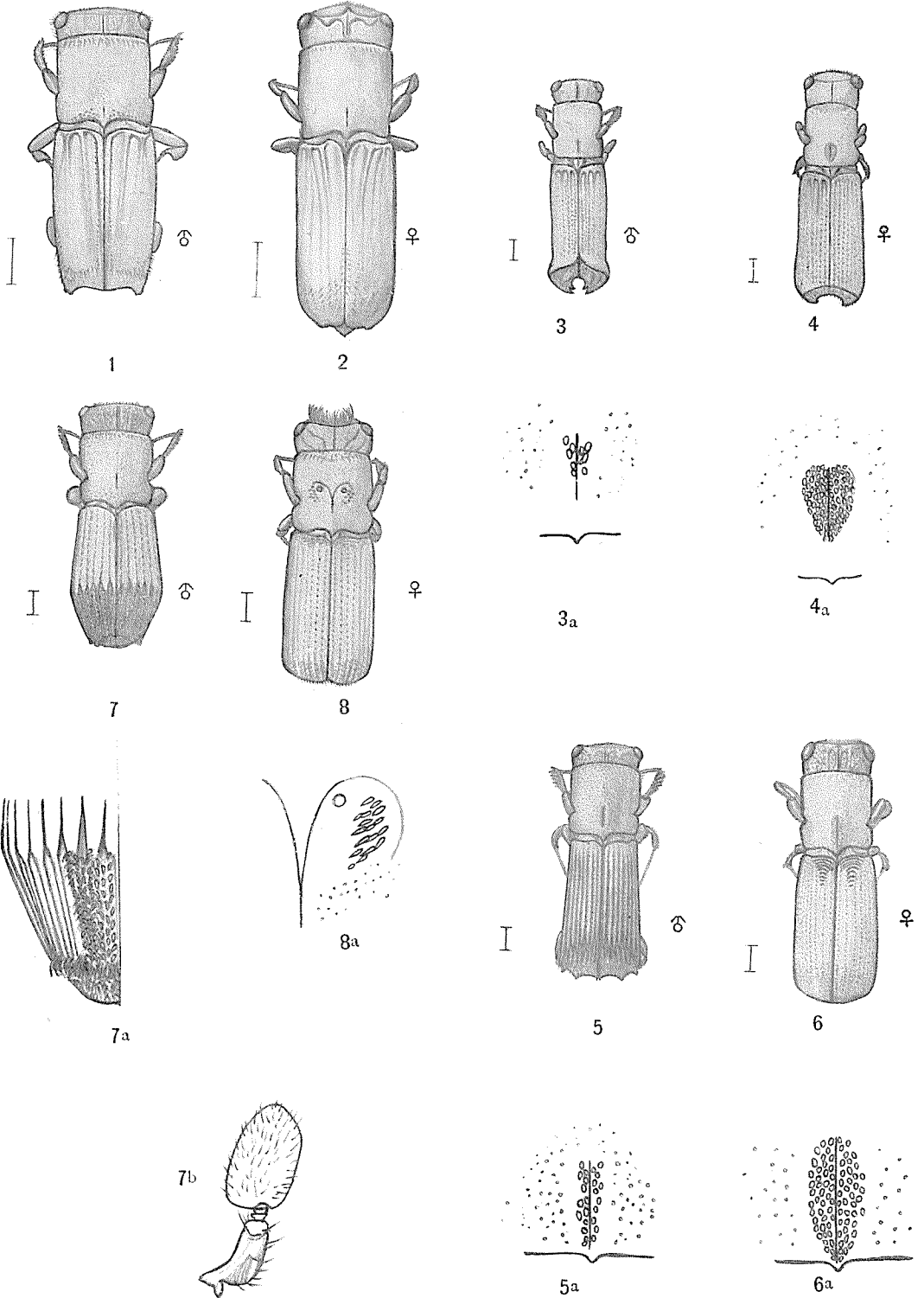
7). *Crossotarsus sauteri* Strohm.

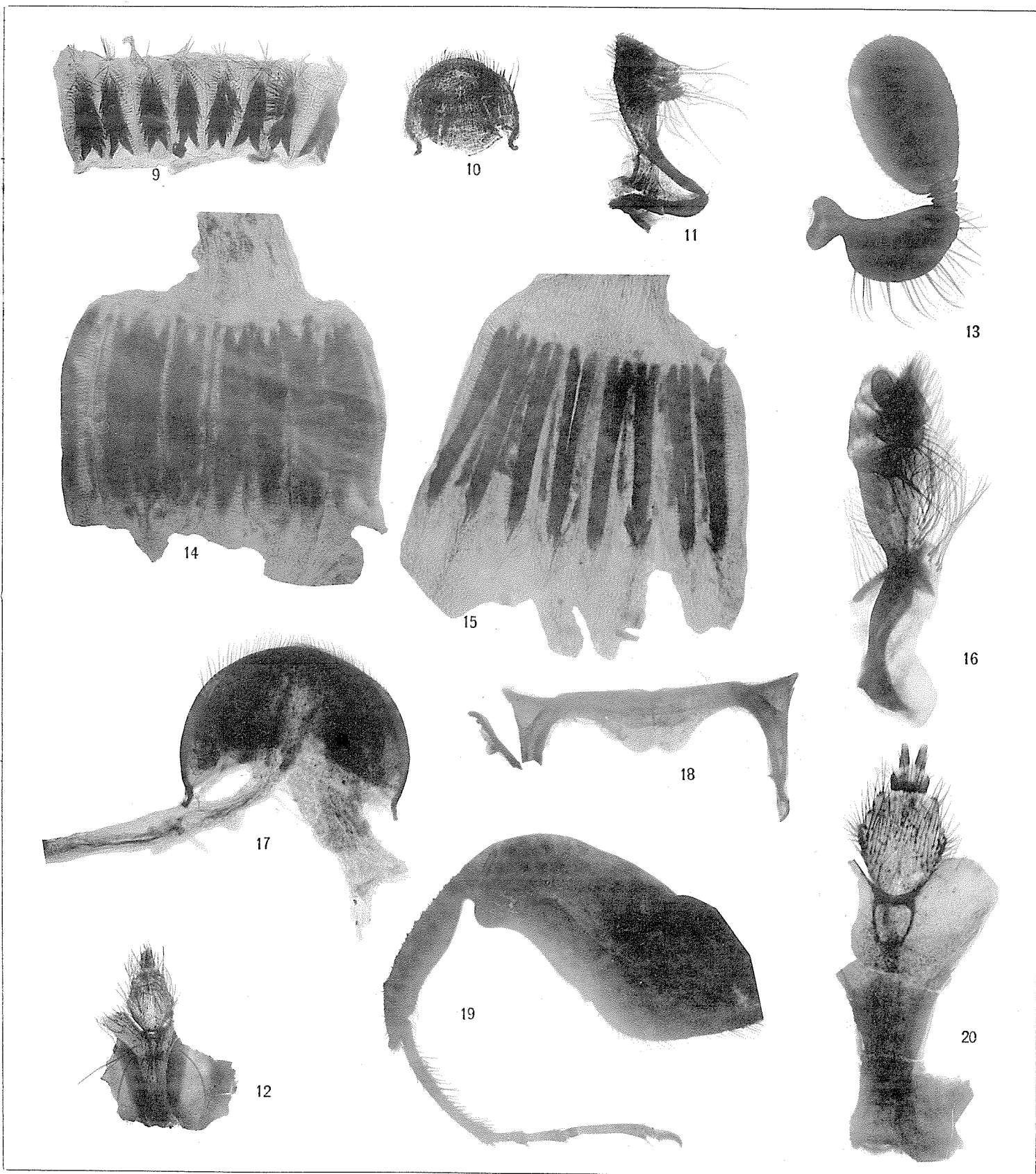
Original diagnosis — Strohmeyer, Ent. Blätt. 9. Jahrg. 3. 164 (1913).

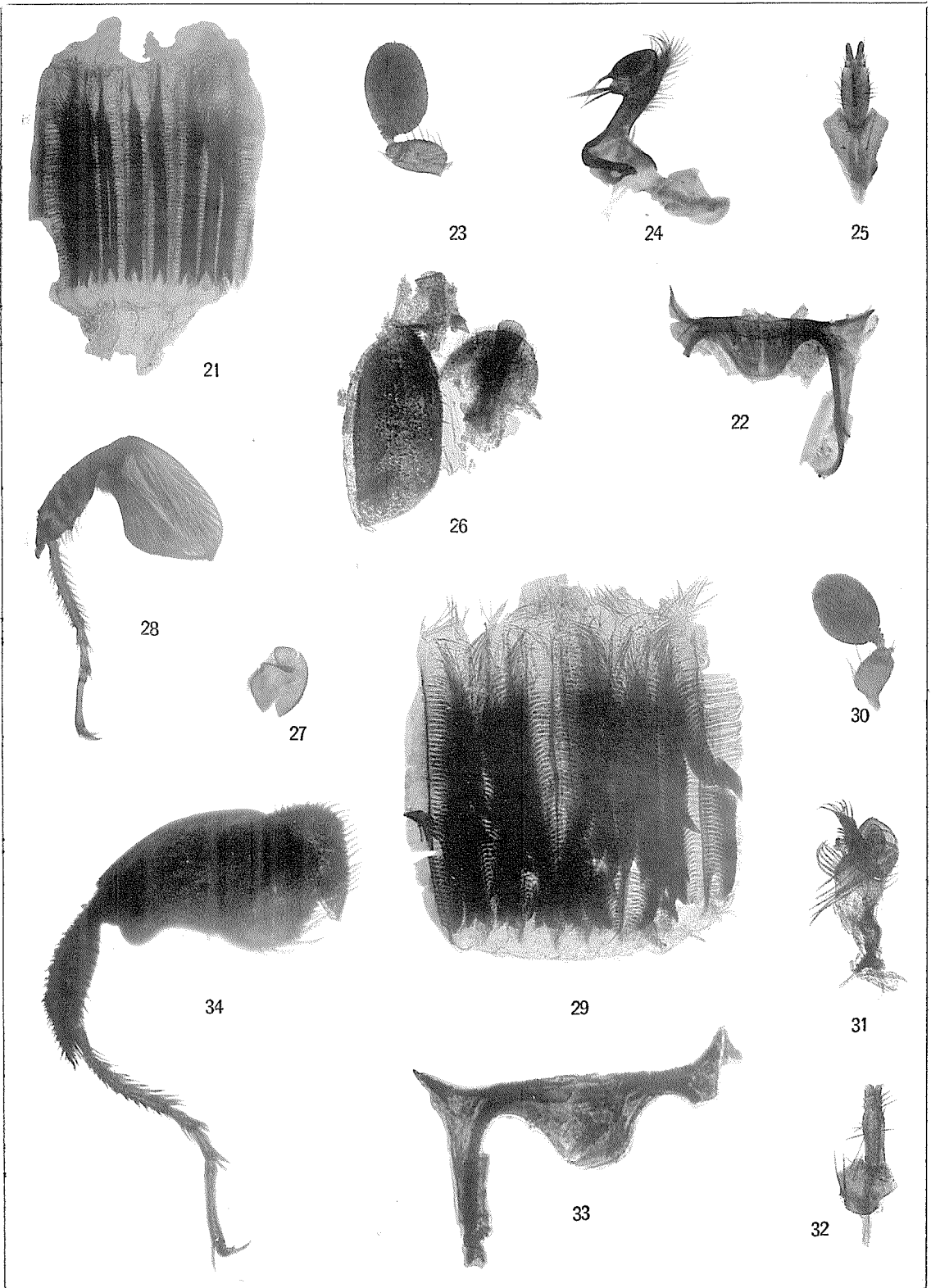
„ ♂. Stirn flach, dicht und grob punktiert, mit langem Mittelkiel. Halsschild etwa so lang wie breit, matt durch äusserst feine dichte Punktierung. Flügeldecken glänzend, in Reihen fein punktiert, letztere nur an der Basis etwas furchenartig vertieft, nach hinten mehr und mehr verlöschend. Absturz gleichmässig gewölbt, hintere Seitenecken der Flügeldecken etwas spitz vorgezogen. Länge: 7.2 mm.

♀. Körperform viel länger als beim Männchen. Stirn schwach konkav, oben grob, unten in der Mitte feiner punktiert und dort mit sehr kleinem, glänzendem Längsstrich. Halsschild etwas länger als breit, fein punktiert, in der Mitte oben jederseits mit flachem Eindruck, neben der Mittellinie jederseits ein grosser Punktflcken. Flügeldecken mit schwach vertieften Punktstreifen und gewölbten glatten Zwischenräumen, von denen nur die seitlichen Reihenpunkte tragen. Absturz erst schwach niedergebogen, dann plötzlich und kurz vertikal abgestutzt und etwas eingedrückt. Die schmale Absturzfläche dicht punktiert, in jedem Suturalwinkel mit einem glänzenden Grübchen, ihr oberer Rand von einem dichten Streifen rötlichgelber Haare begrenzt. Länge: 9 mm.

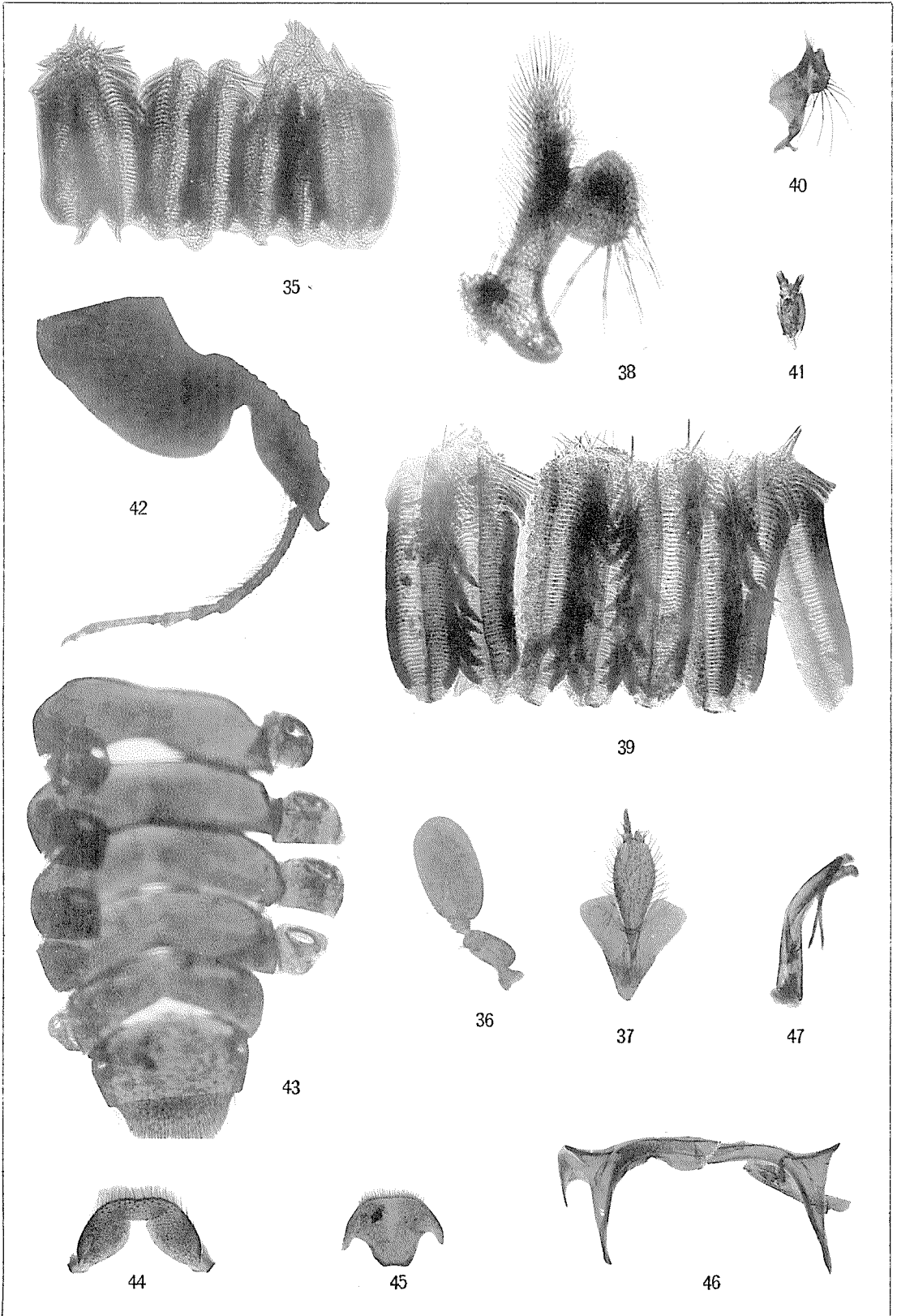
Fuudort: Kosempo, Formosa (M. Sauter leg.)”







J. MURAYAMA phot.



ERRATA

Page	Line	
197	19-20	Niiima read Nijima
198	7	Malay an read Malayan
199	16	does read do
200	24	campho tree.r read camphor tree
201	9 & 26	<i>Platypodarinae</i> read <i>Platypodinae</i>
„	10 & 29	<i>Tesserocarinae</i> read <i>Tesserocerinae</i>
202	15	singura read singula
204	1	fig. 9-12 read figs 9, 12
„	21	Sharp read Perkins
209	8	posteriorl ateral read posterior latera
„	37	<i>concinus</i> read <i>concinus</i>
210	3-4	differ ences read differences
212	40	belimited read be limited
213	33	after Java add Sumatra
217	29	before Celebes add Java,
223	13	New Guinca read New Guinea
218	13	3. read p.
235	11, 18, 31 & 33	Niij. et. Muray. read Nij. et Muray.