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IV. *The Rhynchoporous Coleoptera of Japan.* Part III.
 Scolytidæ. By WALTER F. H. BLANDFORD, M.A.,
 F.Z.S.

[Read Dec. 6th, 1893.]

The Rhynchophora collected by Mr. George Lewis in the Japanese Archipelago during the years 1880 and 1881 have been described in part by Dr. Sharp in the 'Transactions' of this Society for 1889 and 1891. In this paper I deal with the *Scolytidæ* of that collection, four species of which I have already described in my paper on the *Scolyto-platypini*.

To the present time our knowledge of Japanese Scolytids rests upon the materials brought together by Mr. Lewis up to 1872, before which date but one species, *Genyocerus adustipennis*, Motsch., was known as Japanese. Nothing resembling that insect exists in this collection, and I have nothing to say about it. The species of the earlier collection were submitted, the *Tomicini* to Eichhoff, the remainder to Chapuis, and the results are given in the 'Annales de la Société entomologique de Belgique,' 1874, pp. 195—203, in a paper entitled "Scolytides recueillis au Japon par M. G. Lewis." They distinguished 18 species, of which one occurred also in Europe; the rest were new. In 1878 Eichhoff in his "Ratio Tomicinorum" added six species (one European), and fully described those he had previously diagnosed.

Nothing else has been written on the subject, and I have not found it necessary to redescribe the species of Chapuis and Eichhoff, and have merely indicated localities, etc., and some points of distinction between them and new species. The original descriptions, and in the case of *Tomicini* the later ones of Eichhoff, are sufficient to identify them by.

The number of species known to exist in Japan before my examination of this collection was 25; I raise it to 104 by the addition of 79 species, of which 71 are new.

Provided that I have correctly identified all the five new species described by Eichhoff in 1878, this collection contains all known Japanese species except *Hylastes attenuatus*, *Xyleborus badius*, and *Genyocerus adustipennis*, and all types peculiar to Japan except of that insect and the five referred to.

The number of species, 104,* is perhaps a little above the mark, because I have been obliged to describe under separate names three male *Xylebori* which cannot be referred to their respective females. In a few cases I may have subdivided a species into two, but it is likely that these are counterbalanced by others where I have included distinct species as varieties. Students of the European forms know that species closely resembling each other in appearance may differ in habits, food-plants, and the form of their galleries. In dealing with an exotic collection one has to do without the assistance of such facts.

They are divided into 25 genera, of which three are new, *Hyorrhynchus*, *Sphærotrypes* and *Acanthotomicus*. The two first are quite distinct; *Sphærotrypes* is also found in India. *Acanthotomicus* is a separation from *Tomicus*, Latr. (1807). I have restored *Taphrorychus apatoides*, Eichh., to *Dryocætes*, and do not include any Japanese species in the former genus.

So complete a collection testifies both to the ability of Mr. Lewis as a collector and to the richness of Japan in this family, for, though it is probably surpassed in this respect by many tropical countries, its 104 species compare very favourably with the 130 or so described from Europe and the rather larger number from North America. There must be many others to discover. Not a few species are unique, others have occurred here and there as single specimens, and 7 out of the 18 first described have not reappeared. The total number existing in the islands may be expected to exceed 150.

The best represented genera are *Hylesinus* (6 species), *Phlæosinus* (7 species), *Scolytus* (6 species), *Dryocætes* (8 species), and *Xyleborus* (29 species exclusive of males).

* The number varies from that given in the 'Proc. Ent. Soc.,' 1893, p. xxxix, as I have received, since then, additional specimens from Mr. Lewis's unmounted Coleoptera, and a small number from Colonel von Schönfeldt.

Cryphalus and *Pityophthorus* with one species each, and *Tomicus* with two, are poorly represented, and are likely to be augmented by future collectors. The *Platypini* consist of nine species in three genera.

In origin the Japanese *Scolytidæ* are partly Palæarctic and partly Oriental. From the former region come *Hylastes attenuatus* and *glabratus*, *Myelophilus piniperda* and *minor*, *Crypturgus pusillus*, *Tomicus cembrae*, *Dryocætes autographus*, and *Trypedendron quercus*; *Xyleborus adumbratus*, m., and *sobrinus*, Eichh., are little more than varieties of *X. pfeili* and *saxeseni* respectively. Little is known of N. Asiatic *Scolytidæ* and further identifications cannot be made. The only Oriental species I have recognised are *X. obliquecauda*, Motsch., which occurs in Ceylon, and *X. badius*, Eichh.; but in many other *Xylebori*, and in the genera *Sphærotrypes*, *Cosmoderes*, *Crossotarsus*, and *Diapus*, we have characteristically Oriental forms. There are no American species among them, though in one or two genera, as *Scolytus*, I have not sufficient material from America to institute a comparison; and none of the few Hawaiian species described by Dr. Sharp are to be found.

Though our knowledge of Asiatic *Scolytidæ* is so imperfect as to render such conjectures hazardous, I am inclined to think that Oriental forms predominate. There is no tendency of the Palæarctic species to be confined to the northern islands of the Archipelago.

In describing these small insects it is important to obtain all measurements exactly, whether of the total length or of the relative dimensions. Estimation with the eye of the comparative width and length of a prothorax leads to error, as do rough measurements of length.

Chapuis gives the length of *Phlæosinus perlatus* as 2 mm., whereas the type measures 3 mm., that is, 50 per cent. longer. Such an error in the measurement of a species an inch long would be gross, and it is hardly less so when made about a small insect. Except in a few genera, as *Scolytus*, the range of size does not exceed one fourth of the average length, and may be much smaller.

I have taken all measurements with a micrometer eyepiece, and a mechanical microscope stage fitted with a scale reading to 1-10th mm. This method is quite exact, and speedy in practice.

Hylastes plumbeus, n. n.*H. obscurus*, Chap., Scol. Jap., p. 197.

Common; taken with *H. parallelus*, also at Nikko, Kobe, &c.

Somewhat variable, in colour from black to obscure brown, in the width of the rostrum and prothorax, and in the depth of the elytral striæ. I have changed the name, owing to the priority of *Hylastes* (*Hylastinus*) *obscurus*, Marsh. (*trifolii*, Müll.)

Hylastes ambiguus, sp. n.

Oblongus, subnitidus, piceo-brunneus, capite granulato, fronte haud carinata, punctata; prothorace transverso, antice constricto, fortiter punctato, linea media elevata lævi; elytris basi singulis subtiliter rotundatis, prothorace latioribus et duplo longioribus, striato-punctatis, striis aequaliter impressis, interstitiis rugosis versus apicem tuberculatis, squamulis brevibus vestitis et uniseriatim setosis; tarsorum articulo 3o antecedentibus haud latiore. Long. 2.7 mm.

Fujisan, one specimen, in bad condition, apparently dead when taken.

Suggesting in appearance the species of the sub-genus *Hylurgops*, Lec., but without the prominent mesosternum and evidently bilobed 3rd tarsal joint. Reddish-brown, somewhat shining. Head black, finely granulate on vertex with a shining central line, rostrum wide, not carinate, front strongly punctured; antennal club with first joint large, equal to the two succeeding joints. Prothorax transverse, constricted towards apex above and at sides, strongly and closely punctured, inconspicuously pubescent, with a fine central raised line from base to anterior constriction. Elytra wider than prothorax at base, and exactly twice as long, basal angles prominent rounded, sides slightly rounded to near apex, thence somewhat oblique and feebly sinuate, apex rather obtuse in middle; above brown, lighter behind, striato-punctate, striæ not deep, their punctures strong, interstices rugose at base, with a single row of fine tubercles from middle to apex, covered with short scale-like hairs and a single series of scattered setæ. Underside brown, punctured; middle coxæ rather widely separated.

Very like *H. opacus*, Er., but quite distinct in the shape of the thorax.

Hylastes interstitialis, Chap.

Chap., Scol. Jap., p. 196.

A few more examples taken at Subashiri, Kiga, and Nagasaki.

Hylastes glabratus, Zett.

Nikko ; two specimens.

This European species is very similar to *H. interstitialis*, but the finer uniform punctuation of the prothorax is quite different from the much coarser and variolose punctuation of *interstitialis*, in which the coarse punctures are mixed with finer ones. *H. pinifex*, Fitch, which I consider distinct from *H. glabratus*, has the thoracic punctures of two sizes, but not variolose or confluent.

MYELOPHILUS, Eichh.

Hylurgus, Latr. . . . *Blastophagus*, Eichh.

Both the European species are found in Japan.

Myelophilus piniperda, Fabr.

Already recorded by Chapuis (Scol. Jap., p. 197).

Taken at Nagasaki and Oyayama, both in Kiushiu. Some specimens measure as much as 5.4 mm.

Myelophilus minor, Hart.

This species has been hitherto inserted in the Japanese list by error ; Chapuis mentioned it (Scol. Jap., p. 198) as a species likely to occur, and stated that it was brought from China by Mr. Lewis, who has since then taken one specimen near Nagasaki.

HYORRHYNCHUS, nov. gen.

Caput rostratum, rostello lateraliter marginato. Oculi bipartiti. Antennæ sub carina rostrali inter partes oculorum inferiores et mandibulas insertæ, scapo recto, funiculo 7-articulato, articulo 1o magno, 2o obconico, ceteris transversis latitudine crescentibus, clava magna oblonga subcompressa, 3-articulata,

suturis rectis notata, pilosa. Prothorax subdepressus, lateribus determinatis, non tamen marginatis, basi immarginata. Elytra ad basim singulatim convexa, thoracem superantia. Coxæ anticæ magnæ globosæ, a processu prosterni angusto separatæ. Pedes longi, tibiis subcompressis, leviter dilatatis, ad apicem oblique truncatis, margine exteriori inermi. Tarsi articulo 1o brevi, 2o paullo longiore incrassato, 3o brevi, subtus producto et profunde emarginato, 4o minimo, 5o magno ceteris conjunctim aequali.

Head shortly rostrate, the sides of the rostrum carinate, differing according to sex in the single species. Eyes divided, their segments distant, placed above and below the base of the rostrum. Antennæ inserted below the rostral carina between the lower half of the eye and the base of the mandible, short, the club nearly equal in length to scape and funiculus together. Maxillæ with outer border rounded, inner edge convex and narrowly produced at tip, set with straight flat spines. Submentum produced into an angle at either side and broadly emarginate between, with a second emargination in middle at base of mentum, which is nearly twice as long as broad, narrow at base and becoming dilated to middle with sides, thence parallel; labial palpi long, with joint 1 as long as broad, 2 transverse, 3 longer than broad. Prothorax flattened above, its sides strongly inflexed to anterior coxæ, forming an angle with pronotum which is not sharp or margined. Anterior coxæ not situated near front border of prosternum, very large, prominent and globose, separated by a narrow process; mesosternum not strongly depressed, middle and posterior coxæ prominent, remote; metasternum rather short with wide parallel episterna. First two abdominal segments little longer than two following, which are together equal to fifth. Legs long, tibiæ quite simple, flattened, slightly curved, obliquely excised at apex, with inner angle shortly spinose; fourth tarsal joint inserted near base of third, which is produced underneath into a long split lobe, but not laterally widened.

The one species of this genus has, at least in the male, more the appearance of a Curculionid or an Anthribid, than a Scolytid, owing to the prominent rostrum, the general shape of its body, the vestiture, and the unarmed tibiæ. It is, however, a true Scolytid, and either one of the *Hylesini*, or not remote from them. I know, however, of no described genus with which it is closely allied.

Hyorrhynchus lewisi, sp. n.

Oblongo-ovatus, opacus, niger, pube sericea fusco-cinerea dense vestitus, antennis tarsisque ferrugineis; prothorace transverso, basi bisinuata, lateribus postice parcius, antice fortius rotundatis, supra post apicem longitudinaliter impresso, dense granulato; elytris post medium dilatatis, supra tenuiter striatis, fuliginosis, vitta transversa angulata et apice cinereis, interstitiis leniter convexis ad basim granulatis. Long. 3·5—5·3 mm.

MAS. Capite fortiter longitudinaliter sulcato, rostro longiore ad apicem in angulos prominentes lateraliter producto.

FEM. Capite subconvexo, rostro brevior; prothoracis lateribus antice muricatis.

Several examples taken at Sapporo, in 1883, by a native collector.

Head in the male produced obliquely forward into a flattened rostrum, the carinate sides of which form a sharp prominent and backwardly directed angle; upper divisions of the eyes rounded triangular, situated on either side of front, which is deeply furrowed between them, and finely carinate on the inner margin of each eye-segment; lower divisions of the eyes hidden from above by the lateral carina. Head in the female with a very short rostrum, narrowly carinate and not produced at sides, impressed over mouth and with a short median carina; in both sexes black, rugosely punctured with short close-lying hairs. Antennæ ferruginous. Prothorax narrowed in front, widest at base, with sides rounded; surface black, pilose, with short cinereous hairs, closely granulate and muricate at sides in the female, with a weak impression on either side towards the base. Scutellum rounded, pubescent. Elytra wider than prothorax, and more than twice as long, dilated behind middle, separately rounded at base, and overlapping thorax, inflexed below humeral angles to afford room for middle femora, sides nearly straight to behind middle, thence strongly rounded; surface covered with fine close-lying hairs, smoky-black except on humeral angles, apex, and an oblique angulated vitta, where they are cinereous, with fine incised striæ meeting at apex, as in *Hylesinus*, interstices subconvex, granulate at base. Underside black with fine close punctuation, pubescent. Legs piceous with tarsi lighter.

The sexual differences in the rostrum are not found in any other Scolytid known to me, and suggest those of the *Brenthidæ*, with which this insect has no affinity.

SPHÆROTRYPES, nov. gen.

Caput oblongum, in rostellum haud productum. Oculi bipartiti. Antennæ lateraliter inter mandibulas et partem inferiorem oculorum insertæ, breves, funiculo 7-articulato, articulis latitudine crescentibus, clava ovata, rotundata, compressa, 3-articulata, vittis setarum transversis annulata, suturis transversis. Prothorax lateraliter marginatus. Mesosternum brevissimum, inflexum; metasternum breve. Coxæ anticæ et mediæ late distantes. Tibiæ anticæ ad apicem spinula unica extus producta armatæ, posteriores spinosæ. Tarsorum articuli 1-3 æquales, 3o bilobo.

Head flattened, oblong but not rostrate; eyes bipartite, the divisions flat, subtriangular, granulate and widely separated, united posteriorly by a fine carina. Antennæ inserted at upper angle of lower division of eye, short, their scape curved, slightly clubbed; funiculus with 1st joint large, globose, 2nd obconical, 3-7 transverse, increasing in width; club rounded oval, flat, with transverse sutures, 1st two joints transverse, together equal in length to 3rd, with transverse bands of short hairs, three on 1st joint, two on each succeeding joint, which give the club the appearance of being multi-articulate; apex of 3rd joint spongy, covered with short thick serrate hairs. Mandibles stout, prominent, not toothed. Maxillæ very hairy externally, inner margin convex, set with short flat spines; maxillary palpi short with joints equal in length, hairy. Submentum inconspicuous, produced into a short pointed process on either side of mentum, which is oblong, slightly narrowed at base and in middle of sides, with apex truncate; ligula small, ovate acuminate, inserted near apex of mentum; labial palpi short, joints 1 and 3 as long as broad, 2 transverse, densely hairy. Prothorax bordered at sides, excised in front to anterior coxæ, which are widely separated by a transverse prosternal process. Mesosternum very short, inflexed so that anterior and middle coxæ meet when the thorax is depressed. Metasternum barely larger than 1st abdominal segment, its episterna moderately wide, dilated anteriorly. Posterior coxæ separated by a broad rounded process of 1st abdominal segment, which is slightly longer than the 2nd, 3rd and 4th successively shorter, 5th about equal to 1st. Anterior tibiæ slightly dilated towards apex, outer margin almost simple except for a strong outwardly directed spine at apex and a smaller spine at inner angle; hinder tibiæ slightly curved, spined externally. Tarsi with 3rd joint bilobed, its processes long and narrow.

In spite of the divided eyes, I think this very distinct

genus may be placed at present in the *Hylesini*, near *Dendrosinus*, which resembles it in shape, and in the structure of the antennal club. The peculiarities of the underside are due to its globose form, and consequent compression. The elytra are separately curved at base, but are not elevated above the base of the prothorax.

Sphærotrypes pila, sp. n.

Brevissime ovatus, fere globosus, niger, elytris piceis, antennis tarsisque ferrugineis; capite supra os transverse impresso, reticulato punctato, fronte pilosa; prothorace valde transverso, anterius fortiter angustato, basi postice obtuse producta, subtilissime marginata, supra post apicem transverse impresso, dense punctato, subnitido, parcius squamoso, linea media elevata laevi: elytris striato-punctatis, punctis obsolete, interstitiis planis, squamatis, squamis pro maxima parte fuscis, interdum praecipue versus apicem cinereis. Long. 2.4—3 mm.

Hitoyoshi, several examples; it has occurred in the thin bark of a camellia.

Very short oval, exceedingly convex. Head with front flat in female, impressed in male, punctured, and thinly hairy, the hairs ascending on to middle of vertex, which is smooth at the sides, finely reticulate and scantily punctured. Prothorax nearly double as wide as long, its base bordered and produced backwards to form an obtuse angle, and slightly concave on either side, basal angles acute, sides rounded and strongly narrowed from base to apex; dorsum separated throughout from flanks by a fine ridge, convex, transversely impressed behind apex, with close rugose punctuation and a narrow elevated line from base to middle, somewhat shining with a scanty covering of scales, chiefly at apex and on sides, its anterior border fringed with short hairs. Scutellum oblong, rugose. Elytra rather wider than prothorax and less than twice as long, conjointly emarginate at base, basal borders slightly rounded, crenate, not overlapping base of thorax, basal angles very broadly rounded, sides rounded from base to apex; above dull brown covered with fuscous scales and with a dusty appearance, due to scattered cinereous scales; striate, the striae rather deep, with obsolete and scattered punctures, interstices quite flat, rugose, more strongly at base. Underside black, punctured, thinly covered with scales. Legs blackish with tarsi lighter.

[The following species, though not from Japan, is so closely allied that it may well be described here:

Sphærotrypes globulus, sp. n.

Brevissime ovatus, niger, elytris piceis, antennis et tarsis rufescentibus; capite reticulato, punctato, fronte squamulosa, subtuberculata, obsolete carinata; prothorace transverso, anterius fortiter angustato, basi postice acutius producta, marginata, post apicem constricto, dense et rugose punctato, linea media elevata obsolescente, opaco, densius squamoso; elytris striato-punctatis, interstitiis planis, rugosis, squamis fuscis passim obscure dilutioribus obtectis. Long. 2.4—3 mm.

INDIA, Belgaum; taken by Mr. H. F. Andrewes.

Differs from the preceding as follows:—

Front of head tuberculate, more strongly covered with short scales with a few longer ones at sides, and usually distinctly carinate over the mouth, sometimes throughout less impressed in the male. The carina is variable, and a trace of it exists in *S. pila*. Prothorax more strongly angulate behind, its central line nearly obsolete, the surface quite dull with closer punctures and more scales. Scales of the elytra brown, occasionally a little lighter, but not evidently pale and cinereous, as in *S. pila*, except a few at the apex of the suture.]

HYLESINUS, Fabr.

The six Japanese species are all new. They may be thus distinguished:—

1. Prothorax not closely covered with scales 2
and elytra closely covered with chequered scales
scutulatus.
2. Alternate interstices of elytra elevated towards apex . . . 3
Interstices similar towards apex 4
3. Elytra glabrous, size under 4 mm. *costatus*.
hairy at apex, size 6 mm. *nobilis*.
4. Elytra unicolorous black 5
with a transverse vitta of light scales . . . *cingulatus*.
5. Form broadly ovate, elytra less convex longitudinally than
abdomen *laticollis*.
oblong ovate, elytra not less convex than abdomen *tristis*.

Hylesinus costatus, sp. n.

Oblongus, subnitidus, fere glaber, niger, elytris picinis, antennis tarsisque ferrugineis; prothorace transverso, basi vix producta, lateribus rotundatis, granulato-punctato, linea media obsolete

elevata, lateraliter versus apicem muricato; elytris prothorace plus quam duplo longioribus, subcylindricis, striato-punctatis, interstitiis usque ad declivitatem transverse rugosis, 10, 30, 50, 70 in declivitate elevatis, seriatim tuberculatis, ceteris punctatis. Long. 3.4 mm.

Junsai; one specimen.

Oblong, black, with elytra obscurely piceous. Head with labrum pitchy, separated by a transverse depression from front, which is flattened, shining, strongly punctured and glabrous; vertex finely reticulate. Antennæ ferruginous, club small, pointed, sutures transverse. Prothorax transverse, base biconcave, depressed, scarcely produced in middle, sides strongly rounded; surface convex, finely reticulate and with strong asperate punctation somewhat weaker at base, with traces of a central elevation; sides tuberculate before apex. Scutellum small, punctured. Elytra wider than prothorax and two and a half times as long, their bases convex, overlapping thorax, sides parallel to middle, then rounded to apex, surface convex cylindrical, strongly declivous behind, with strong punctured striæ, the punctures round and distinct; all interstices transversely rugose and punctured to middle, 1, 3, 5, 7 and 9 after middle with a series of transverse asperities which become strongly tuberculate on the apical declivity, where the interstices are elevated; alternate interstices not asperate behind middle, multipunctate. Underside black, punctured, shortly pubescent, metasternum with a deep longitudinal impression, its episterna not very narrow; abdomen scarcely convex longitudinally, its terminal segment rugose. Tibiæ spined externally.

In the flatness of the abdomen this species differs from the majority of the genus, except the sub-genus *Pteleobius*, Bedel, to which it is not related.

Hylesinus nobilis, sp. n.

Oblongo-ovalis, obscurus, niger, antennis tarsisque piceis; prothorace transverso, basi producta, lateribus versus apicem subangustatis, aequaliter granulato-exasperato, brevissime piloso; elytris prothorace plusquam duplo longioribus, ad basim angustatis, lateribus anterieus subtiliter, posterius fortiter rotundatis, apice emarginato, profunde striato-punctatis, interstitiis rugulose tuberculatis versus apicem breviter pilosis, 10, 30, 50 subelevatis. Long. 6.2 mm.

Sapporo; one specimen.

Oblong-oval, black, dull. Head finely aciculate with scattered punctures, front flattened, shortly pubescent, antennæ pitchy-brown with club blackish, longer than funiculus, bluntly pointed, its sutures oblique. Prothorax transverse, base strongly produced behind and biconcave, sides strongly rounded behind, contracted in front and sinuate, apex nearly straight in middle; surface slightly impressed in middle behind apex, not distinctly impressed before base, uniformly and densely granulate, with short pubescence. Elytra wider than prothorax in middle and more than twice as long, humeral angles very obtuse, sides rounded at base, becoming wider, thence nearly straight, gradually and strongly rounded towards apices which are separately rounded; surface convex, more strongly towards apex, with deep indistinctly punctured striæ; interstices in front strongly tuberculate, with a few scattered hairs, posteriorly with rugosities weaker, hidden by short fuscous hairlike scales, and with a single row of erect setæ; 1st, 3rd and 5th elevated at apical declivity, the two latter conjoined. Underside punctured and finely pubescent, abdominal segments not very convex. Legs black, with tarsi lighter, anterior tibiæ distinctly spined on outer side of apex.

The largest species in the genus.

Hylesinus laticollis, sp. n.

Ovalis, convexus, obscurus, breviter pilosus, niger, antennis ferrugineis, prothorace fere duplo latiore quam longiore, basi valde producta, lateraliter fortiter rotundato, supra rugose exasperato, lateribus antice muricatis, linea media obsoleta laevi, ante basim utrinque oblique impresso; elytris prothorace plus quam duplo longioribus, versus apicem oblique declivibus, striatis, striis ad medium uniseriatim punctatis, postice laevibus; interstitiis similibus, antice tuberculatis, postice squamulis brevibus fuscis vestitis, margine laterali breviter setoso; abdomine valde convexo ad apicem setoso. Long. 4—4.2 mm; lat. 2.2—2.3 mm.

Three examples, taken by a native collector at Sapporo in 1883.

Broad oval, convex, black. Head strongly punctured, front flattened, shortly hairy; in two specimens, probably males, impressed over mouth with a fine central carina, and with stronger pubescence; in the other, probably a female, with impression and carina obsolete and hairs scantier; epistoma shortly produced over mandibles, vertex reticulate. Antennæ ferruginous, club long,

stout, with transverse sutures. Prothorax very transverse, narrowed from base to apex, with sides rounded, base strongly produced in middle, surface asperately punctured, with short bristles, closer at sides, with an indistinct smooth central line, and an oblique impression on either side before and parallel to base; sides muricate towards apex. Scutellum rounded, rugose. Elytra wider than prothorax and two and a half times longer, widest in middle, base of each strongly rounded and crenate; sides slightly rounded to middle, gradually more strongly towards apex, which is obtuse; surface obliquely and not strongly declivous to apex, with deep rather wide striæ, obsolete punctured to middle, thence smooth, interstices coarsely tuberculate at base, the tubercles becoming finer, and being replaced behind the middle by short fuscous scales, which give the elytra a brownish tinge; the two outer interstices and lateral margin with a close covering of short bristles. Underneath coarsely punctured, shortly hairy; abdomen more convex longitudinally than elytra, first two segments much longer than last three, fourth and fifth bristly. Spines of anterior tibiæ nearly obsolete.

Hylesinus tristis, sp. n.

Oblongo-ovalis, obscurus, niger, antennis tarsisque ferrugineis; prothorace transverso, basi brevius producta, lateribus rotundatis, versus apicem muricatis, supra asperate punctato, utrinque ante basim impresso; elytris prothorace sesqui amplius longioribus, lateribus ad medium subrectis, postice rotundatis, apice subtiliter emarginato, striatis, striis ad basim modo obsolete punctatis, interstitiis transverse asperatis, postice squamulis cinereis inconspicuis vestitis, margine laterali in versura solum distincte setoso. Long. 3—3.5 mm.; lat. 1.5—1.9 mm.

MAS. Fronte impressa, interstitiis post medium seriatim tuberculatis.

Several specimens taken at Ichiuchi, May 1st, 1881, and a few at Junsai.

Similar in sculpture and appearance to *H. laticollis*, but smaller, more oblong-oval, less strongly convex, the elytra more declivous behind, as convex as ventral surface. Front in male broadly impressed between eyes with a short central carina, pubescent; in female, narrowly impressed over mouth, flat between eyes, with pubescence thin. Prothorax less transverse than in *H. laticollis*, with sides less narrowed to apex, and base less strongly produced in middle, its sculpture similar. Elytra narrower, subparallel to middle, less obtuse at apex, interstices less coarsely tuberculate at base, alternate interstices behind middle with an indistinct row

of stronger tubercles in the male ; lateral setæ shorter throughout, inconspicuous before middle of elytra. Anterior tibiæ distinctly spinose on outer margin.

Hylesinus cingulatus, sp. n.

Oblongo-ovalis, obscurus, niger, antennis tarsisque rufescentibus, sat dense et breviter pilosus ; prothorace transverso, basi bisinuata, haud producta, lateribus aequaliter rotundatis, antice tuberculatis, supra dense granulato-exasperato ; elytris ad medium lateribus subparallelis, at subsinuatis, postice rotundatis, supra striato-punctatis, squamosis, vitta fusco-cinerea transversa lateraliter versus apicem curvata notatis, interstitiis ad basin tuberculatis, postice subrugosis. Long. 2.3—2.8 mm.

Lake Junsai ; five specimens.

About the size and shape of small examples of *H. fraxini*. Black, dull. Head closely granulate, front hairy, impressed in male, subconvex in female. Antennæ ferruginous, club rather broad, obtusely pointed, with dark pubescence. Prothorax with base bisinuate, not produced as in the two last species, sides rounded at base, thence narrower and straighter to apex ; above uniformly convex, thinly hairy, without scales, granulate, the asperities stronger towards the sides, which are distinctly tuberculate in front. Elytra as wide as prothorax, and two and a half times longer, separately rounded at base, overlapping thorax, sides subparallel, feebly sinuate to behind middle, thence rounded ; surface convex, obliquely declivous behind, striate, the striæ punctured to behind middle, interstices tuberculate at base, then rugose, covered with short hairs and scales, blackish except on middle of elytra, where they form a transverse cinereous-brown vitta, curved backwards at sides so as to cover the apices of the 5th to the marginal interstices, and continued narrowly along apical margin, forming an irregular oval. Underside punctured, with rather dense cinereous pubescence ; abdomen not strongly convex. Legs ferruginous or pitchy, with tarsi lighter, front tibiæ hairy, spined externally.

Hylesinus scutulatus, sp. n.

Oblongus, niger, squamulis cinereis fuscisque tessellatus, antennis pedibusque nigrescentibus ; prothorace vix latiore quam longiore, basi bisinuata, lateribus rotundatis versus apicem tuberculatis ; elytris prothorace latioribus et illo duplo longioribus, cylindricis, striato-punctatis, interstitiis ad basim subtuberculatis, per totum uniseriatim setosis. Long. 2.7 mm.

One or two examples taken at Kiga, Subashiri, Nagasaki, Omori, and Oyama.

Oblong, cylindrical, black, tessellated with close-lying grey and brownish scales. Head granulate with front flattened, hairy, impressed and more densely hairy in the male. Antennæ black, club rather short, acuminate oval, its basal joint large. Prothorax rather broader than long, its base bisinuate, not produced, sides uniformly rounded, tuberculate in front, surface regularly convex, front and sides with short erect bristles. Elytra cylindrical, wider at base than thorax, and a little more than twice as long, base crenate, sides subparallel to behind middle, apex strongly declivous and convex; with rather fine punctured striæ, interstices flat with a single row of setæ throughout, and with one or two tubercles at base. Underside strongly punctured with short scale-like hairs, metathoracic episterna narrow, abdomen not convex longitudinally. Legs black, with tarsi lighter.

Two specimens are larger and broader than the rest, the scales are pale ashy-grey and yellowish, whereas in the others they are light and dark brown. I believe the two former to be females and not specifically distinct. This species may be referred to Bedel's sub-genus *Pteleobius*, and is nearest to *H. vittatus*, Fabr., of the European fauna, but is larger, more elongate, with the striæ deeper and less clearly punctured, and the interstices more convex and distinctly setose.

PHLÆOSINUS, Chap.

In the generic diagnosis given by Chapuis (Syn. Scol., p. 93), the third tarsal joint is stated to be simple. This is correct for the European *P. aubei*, Perr., and *P. thuyæ*, Perr., but in the Japanese species it is bilobed, though M. Chapuis has made no mention of this point in the descriptions of *P. lewisi* and *perlatus*. It is also bilobed in the American species, according to Leconte, except in his *Chætophlæus hystrix*, which can hardly be separated from the genus upon the characters given, and in which the 3rd tarsal joint "is emarginate rather than bilobed." This difference in structure is not here of generic value, and the genus is sufficiently recognisable by the structure of the antennæ.

There are seven Japanese species, of which five are new.

TABLE OF SPECIES.

- | | |
|--|--------------------|
| 1. Head with a median carina immediately over mouth | 2 |
| not carinate over mouth | 5 |
| 2. Elytra closely covered with scales, interstices alternately lighter
and darker | 3 |
| thinly covered with hairs or scales, unicolorous | 4 |
| 3. Prothorax abruptly contracted in front, reddish-brown | |
| <i>pulchellus.</i> | |
| gradually contracted in front, black | <i>dubius.</i> |
| 4. Elytra black, interstices similar, size small | <i>minutus.</i> |
| red-brown, 2nd interstice depressed and narrowed at apex
<i>perlatus, Ch.</i> | |
| 5. Interstices without seriate bristles, 1st and 3rd tuberculate
towards apex | <i>rudis.</i> |
| uniformly granulate, with seriate bristles | 6 |
| 6. Bristles on 2nd interstice ceasing before apex, front subcarinate
between eyes | <i>seriatus.</i> |
| on interstices, similar throughout | <i>lewisi, Ch.</i> |

Phlæosinus pulchellus, sp. n.

Ovalis, rufo-testaceus, antennis pedibusque ferrugineis; capite nigro, punctulato, breviter piloso, vix rostrato, supra os fortiter carinato; prothorace transverso, antice abrupte contracto, supra convexo, linea media subelevata, rugose punctato et squamis adpressis haud dense vestito; elytris post medium subdilatis, fortiter striato-punctatis, interstitiis planis, 2o, 4o, 6o muticis, squamis brunneis, ceteris versus apicem subtuberculatis, squamis flavo-testaceis vestitis. Long. 2.5 mm.

One specimen, Wada Toge.

Oval, convex, red-brown, elytra closely squamose with alternate lighter and darker stripes. Head impressed over mouth (probably a male character) with a strong frontal carina, punctured, and shortly hairy. Prothorax nearly one-half broader than long, strongly narrowed in front, sides behind nearly straight, then very convex at contraction, becoming straighter in front; base narrowly impressed, surface convex, slightly depressed at apex, and obscurely elevated in middle from base to apical depression, densely punctured and sprinkled with close-lying yellow scales. Elytra wider than prothorax and twice as long; basal margin crenate, everted at sides, humeral prominences obliterated sides subsinuate to beyond

middle, thence rounded ; surface slightly dilated at posterior third, then strongly convex to apex, closely squamose, the scales cinnamon-brown on the 2nd, 4th and 6th interstices, yellow on the rest of the elytra ; striate, the striæ rather wide, with distinct punctures, interstices flat, granulate at base, 2nd widened at base and on summit of declivity, 1st, 3rd and outer interstices inconspicuously tuberculate towards apex. Underside ferruginous, scantily pubescent, strongly punctuate on metathorax and two first abdominal segments. Legs ferruginous, anterior tibiæ with strong outwardly directed spines at outer apical angle.

Phlæosinus dubius, sp. n.

Ovalis, niger, subopacus, antennis tarsisque ferrugineis ; capite punctato-granulato, brevissime piloso, haud rostrato, fronte supra os deplanata, in medio carinata ; prothorace transverso, antice gradatim contracto, supra convexo, linea media passim elevata, rugose punctato, parce squamoso ; elytris subcylindricis, lateribus post medium subrectis, striatis, striis obsolete punctatis, interstitiis squamosis, squamis fuscis, in interstitiis 1o, 3o, 5o nonnihil dilutioribus, his versus apicem tuberculatis. Long. 2.2 mm.

One specimen, Kurigahara.

Very similar to *P. pulchellus*, with the appearance of being a colour variety, but differing in certain other points. Entirely black with only the antennæ and tarsi reddish ; head less strongly impressed over mouth, and frontal carina less acute. Prothorax narrower, flatter throughout with the sides more gradually sloped towards the apex, and not strongly rounded in the middle, so that the apical constriction is less marked ; punctuation less strong and interstices covered with fine reticulation, not evident in *P. pulchellus*. Elytra more oblique at base, with borders straighter, not evidently dilated behind the middle, the sides consequently not subsinuate, but straight to near the apex ; humeral elevations small, distinct, black, covered behind the middle (the base is probably rubbed in the single specimen), with fuscous scales, which are obscurely lighter on the alternate interstices, as in *P. pulchellus*. Striæ finer, not evidently punctured, the 2nd interstice narrower and straighter throughout. Apical spines of the anterior tibiæ longer, curved backwards, and connate for the greater part of their length.

The two preceding species resemble small species of *Hylesinus* rather than *Phlæosinus*, owing to the thickness of their scaly covering ; but they present no characters to separate them from the latter genus.

Phlæosinus minutus, sp. n.

Ovalis, niger, subnitidus, antennis pedibusque infuscatis ; capite granulato, fronte subconcava, pilis flavis circumdata, supra os carinata ; prothorace transverso, antice contracto, lateribus in medio fortiter rotundatis, supra subtilissime reticulato et disperse punctato, punctis asperatis, elytris cylindrico-convexis, striato-punctatis, interstitiis planis subrugosis, uniseriatim subtiliter tuberculatis et squamulis erectis vestitis, 10, 30, 50 in margine apicali spinula unica armatis. Long. 1.5 mm.

One example, Ichiuchi.

Black ; head not rostrate, closely granulate, front impressed, concave, strongly punctured round margin, with a few longish hairs, carinate above mouth. Prothorax transverse, strongly contracted towards apex, base bisinuate, its angles broadly rounded, sides slightly rounded, more strongly at contraction, surface convex without median elevation ; scantily pubescent, closely reticulate and asperately punctured, the punctures strongest towards apex, sparser over sides behind middle. Scutellum piceous, shining, punctiform. Elytra scarcely wider than prothorax and less than twice as long ; basal margins conjointly nearly straight, crenate at sides only ; sides straight to middle, thence uniformly rounded ; above shortly cylindrical and very strongly rounded at apex, pitchy-black with punctured striæ, the punctures not close, interstices flat, shining, subrugose, with irregular rows of erect scales and minute tubercles, 1st, 3rd, 5th and 7th with one or two stronger tubercles towards apex and a sharp pointed spine just above lower border of elytra. Legs piceous with tarsi lighter. Third joint scarcely bilobed.

The smallest species as yet in the genus, with a deceptive resemblance to *Phlæophthorus rhododactylus*, Marsh. (*spartii*, auct.), but separable by the point of attachment of the antennæ, the broader and anteriorly contracted thorax, which is finely reticulate as well as punctured, and the apical spines of the elytral interstices.

Phlæosinus perlatus, Chap.

Chap., Scol. Jap., p. 198.

Originally from Hiogo ; one or two fresh specimens are without indication of locality. The only sexual character

is that the front is impressed and concave in the males, flat in the females. The length, inaccurately given by Chapuis, is 2.5—3 mm.

Phlæosinus seriatus, sp. n.

Oblongo-ovalis, subopacus, breviter pilosus, niger, elytris rufo-brunneis vel nigris, antennis tarsisque ferrugineis; capite subrostrato, fortiter punctato, fere glabro, supra os impresso; prothorace antice constricto subtransverso, supra convexo dense ac fortiter punctato, linea media abbreviata laevi nitida; elytris pube brevissima vestitis, striato-punctatis, punctis rotundis sat frequentibus, interstitiis passim convexis, rugosis, serie unica setarum ornatis, 10, 30 versus apicem tuberculatis, setosis, 20, 40 muticis, in declivitate haud setosis, margine laterali per totum spinulis minutis armato. Long. 2.4 mm.

MAS. Fronte media impressa, et linea elevata laevi inter oculos ornata.

FEM. Fronte deplanata, linea media laevi haud elevata.

A pair, Higo.

Oblong-oval, black, or with elytra reddish-brown; head subrostrate, strongly punctured, with an arcuate impression above mouth and a second smooth impression above that in male, at which ends the short frontal median shining line, which is elevate though scarcely carinate in the male, flat in the female; antennæ ferruginous. Prothorax transverse, its basal angles rounded, sides strongly contracted towards apex, in the male almost angulated, above convex without central elevation, but with a median smooth line, which does not reach either border, covered with short close hairs, densely and strongly punctured and not asperate. Elytra with basal borders rounded, scarcely everted at sides, sides straight in front, rounded posteriorly and slightly sinuate at apex of 4th interstice when seen from above; surface subdilated behind middle, thence convexly declivous, covered with short hairs, striæ weak with large round close punctures; interstices with traces of tuberculation throughout, evident at base and on alternate interstices towards apex, where the 2nd interstice is depressed as in *P. perlatus*, more strongly in the male than in the female, and a single series of bristles, absent on alternate interstices, towards the apex; marginal interstice with a row of short spines throughout, stronger towards apex. Legs pitchy with knees and tarsi reddish. Underside black, punctured and covered with squamous hairs.

Very similar to *P. perlatus*, Chap., from which it may be distinguished by its smaller size, the absence of a carina on the epistoma, the frontal median elevation not reaching to the mouth, by the absence of a longitudinal elevation from base to apex of the thorax, by the shallower and evidently punctured elytral striæ and the distinct rows of bristles on the interstices, which are alternate towards the apex; a similar row of scale-like bristles occurring in *P. perlatus* cannot be distinguished from the general covering with a lens. The alternation of these bristles will also differentiate it from *P. lewisi*.

Phlæosinus lewisi, Chap.

Chap., Scol. Jap., p. 198.

Numerous specimens, Kashiwagi, Chiuzenji, Kobe and Nowata.

Varies in size from 1·8 to 2·3 mm.

Phlæosinus rudis, sp. n.

Ovatus, subnitidus, niger, elytrorum apice nonnunquam dilutiore antennis tarsisque ferrugineis; capite vix rostrato, oculis exacte planis, vix emarginatis; prothorace transverso, basi in medio producta, lateribus rotundatis, versus apicem leviter sinuatis, supra convexo, dense et fortiter punctato, parcius piloso; elytris oblique declivibus supra breviter pilosis, striato-punctatis, interstitiis planis granulatis, versus apicem uniseriatim tuberculatis. Long. 2·7—3 mm.

MAS. Interstitiis 1o, 3o in declivitate tuberculis magnis, discretis ornatis, 2, 4 inermibus.

FEM. Interstitiis 1o, 3o in declivitate subtilius tuberculatis, 2o subtilissime.

Kashiwage and Kobe.

Black, oval; head strongly punctured, front flattened in female, impressed in male, almost glabrous, except for a few hairs over mouth and a few on vertex in female, eyes perfectly flat. Prothorax transverse, its base produced in middle towards scutellum, slightly contracted towards apex with sides rounded from base; convex, somewhat shining, strongly and closely punctured without asperation, usually with a median shining longitudinal line.

Scutellum round, dull, punctured. Elytra scarcely wider than prothorax and rather less than twice as long, their basal borders rounded, crenate, slightly everted, sides straight at base, rounded from middle to apex; above gradually declivous almost from base, black, with apex sometimes piceous, with short scanty pubescence, without scales or setose hairs, striæ rather fine, indistinctly punctured at base, nearly smooth towards apex, interstices granulate to middle, then 2nd and 4th in male smooth, multi-punctate, with one or two tubercles before apex, in the female with a few fine tubercles throughout; 1st in male with about 5, 3rd with about 7 strong spinous tubercles, which do not unite to form a crest, in female with smaller tubercles: outer interstices towards apex with rows of tubercles in both sexes. Underside black, punctured, pubescent; metasternum rather prominent. Legs black with tarsi lighter.

The largest Japanese species and the only one allied to the European species in appearance and sexual characters.

POLYGRAPHUS, Er.

Of all the genera of the family, this one, considering its small extent, is the most difficult to deal with. Till recently it included but two species, *P. poligraphus*, Lin., and *rufipennis*, Kirby, but Thomson has added three others found in Europe, of which I have seen but one, *P. grandiclava*, or rather an insect forwarded to me by Herr Reitter as *P. poligraphus*, var. *grandiclava*. I have also had before me an Indian species, and there are apparently three distinct forms from Japan. Well-marked differences are wanting amongst all these insects, which are almost identical in structure and sculpture; and the difference of appearance which can be seen in comparison of examples vanishes in the most elusive way when an attempt is made to define and embody it in a description.

It is possible that the structure of the male organs will be of assistance here, as Lindeman has shown that they are often distinct in closely-allied Scolytids. But for satisfactory examination of these, series of a certain length are required, and have not been forthcoming. I can therefore but echo the words of Leconte who, in treating of the almost equally difficult genus *Dendroctonus*, wrote: "If I have failed to indicate more strongly the differences

between these species it is because they are not distinguished by any prominent or definite characters; and the student, who may have difficulty in identifying the species as here defined, would have almost equal difficulty if the specimens in my collection were before him."

Polygraphus oblongus, sp. n.

Oblongus, subnitidus, niger, elytris apice rufescentibus, squamis flavo-cinereis vestitus; clypeo emarginato, oculis subconvexis, antennarum clava oblonga infuscata acuminata; prothorace antice fortiter constricto, linea media subelevata, punctis subaciculatis sat densis notato; elytris versus apicem subdilatatis, tenuissime striatis, ad basim granulatis. Long. 3.2 mm.

MAS. Fronte subconvexa, breviter pilosa.

FEM. Fronte convexa, bituberculata, brevissime pubescente.

Four examples, Chiuzenji and Subashiri.

Oblong, black, with elytra becoming gradually reddish towards apex. Head with front slightly convex in male, rugosely punctured and rather dull, pubescence short, in female convex, shining, very shortly pubescent, with two distinct tubercles in middle, below them with slight impression, clypeus emarginate in middle, eyes feebly convex, more distinctly in female, antennal club rather large, infusate and evidently acuminate at inner side of apex, more strongly in male than in female. Prothorax nearly half as broad again as long, strongly constricted towards apex with sides more convex behind constriction than at base; surface rather shining, with close subaciculate punctuation and thin squamous covering; median line slightly elevated, variable in length and distinctness. Elytra more than half as long again as prothorax, one-third longer than wide, slightly but discernibly dilated towards apex, dull, scales close, cinereous with a yellow tinge, striæ faint but distinguishable throughout, weaker at apex in female than in male. Legs dark, ferruginous, with tarsi lighter; all tibiæ spined at apex.

When compared with *P. poligraphus*, this species differs in its larger size, infusate elytral club, thinner frontal pubescence, shorter and more constricted prothorax. The elytral apex is lighter in colour, and this does not appear to be due to immaturity. The punctuation of the head in the female is more distinct.

Polygraphus proximus, sp. n.

Antecedenti omnibus simillimus, sed brevior, elytris ad apicem

distinctius rufescentibus, non dilatatis, striis minus perspicuendis. Long. vix 3 mm.

Two examples, Sapporo.

The two specimens I have included under this title differ principally in shape from the preceding species. They are distinctly shorter, particularly in the elytra, which are not more than one-fourth longer than wide, and are not dilated towards the apex, which is slightly flattened. The head is similar, the antennal club less deeply infusate. Prothorax transverse and strongly constricted, the median line well-marked and elevated at the base, more so than in the specimens of *P. oblongus*, where it is nearly obsolete, rather more shining and less closely punctured, the punctures subaciculate. Elytra more abruptly and distinctly reddish towards apex, their striæ less distinct. Posterior tibiæ feebly spined.

One example is rubbed bare, and its appearance is materially altered, the pubescence on the other is not intact, but appears to be a little less close than in *P. oblongus*. Both are females.

Polygraphus miser, sp. n.

P. oblongo similis sed minor, angustior, antennarum clava vix acuminata, prothorace anterior minus angustato, post apicem haud constricto; elytris ad basim magis infuscatis, tenuiter striatis, squamis subtilioribus; pedibus ferrugineis. Long. 2.4 mm.

Four specimens, Nikko.

Hardly to be distinguished from *P. oblongus* except by its smaller size, which is quite noticeable when the specimens from each locality are compared side by side.

In shape narrower, with the prothorax less transverse and constricted in front, and the elytra proportionately shorter. Antennæ entirely testaceous, with the club not acuminate; prothorax more shining, less squamous and more sparingly punctured, the punctures but feebly aciculate; one example shows a median raised line, the other three not. Elytra with basal half darker and more abruptly contrasted with the shorter and lighter apical half, with rather thinner squamous covering, and more distinct striæ. Head in the female duller, more punctured and less convex, front bituberculate; in the male narrower.

SCOLYTUS, Geoff.

One species has been described by Chapuis. I add five more, and there is possibly one other. They present the uniformity in appearance characteristic of this widely distributed genus. The species were principally obtained from birch.

TABLE OF SPECIES.

- | | |
|--|------------------------|
| 1. Second abdominal segment unarmed | 2 |
| with a median process . . . <i>claviger</i> . | |
| 2. Abdomen concave, its 3rd and 4th segments with a tubercle
on apical margin | <i>esuriens</i> . |
| not concave, 3rd and 4th segments simple | 3 |
| 3. Apex of elytra finely serrate near suture (size 4½ mm.) . <i>agnatus</i> . | |
| simple | 4 |
| 4. Alternate interstices of elytra with an irregular double row
of punctures | <i>frontalis</i> . |
| All interstices with a single row of punctures | 5 |
| 5. Elytra brown, strongly punctured in rows | <i>aratus</i> . |
| black, finely punctured, with oblique aciculate
scratches | <i>japonicus</i> , Ch. |

Scolytus esuriens, sp. n.

Nitidus, niger, elytrorum lateribus et apice nonnunquam rufescentibus, antennis pedibusque ferrugineo-piceis; prothorace longitudine vix latiore, punctato, linea media lævi; elytris lateribus subrotundatis posterius vix angustatis, apice conjunctim subtruncatis, fortiter striato-punctatis, striis impressis, interstitiis planis subtiliter uniseriatim, 3o saltem biseriatim, punctatis; abdomine concavo, segmento 1o margine prominulo, 3o et 4o in margine medio tuberculo parvo ornatis. Long. 3·8—5·5 mm.

MAS. Fronte deplanata breviter pilosa.

FEM. Fronte subconvexa parcissime pilosa, vertice subnitido, discrete punctato. Long. 3·8—5·5 mm.

Several specimens taken at Junsai, and single examples at Miyanoshita and Chiuzenji.

Nearly allied to *S. geoffroyi*, Goetze.

Black with sides and apex of elytra more or less reddish. Front of head flattened in male and not impressed, with short pubescence, subconvex in female, impressed over mouth, and thinly hairy; vertex in female convex, with a median impressed line shining and diffusely punctured. Prothorax with a shallow impression on either side, more strongly punctured than in

S. geoffroyi, the central impunctate line sometimes obsolete. Elytra not evidently narrowed behind, their apices conjointly rounded, nearly truncate, with striæ deeper than in *S. geoffroyi* and more strongly punctured, interstices somewhat less flat, finely punctured in rows, the 3rd and in larger specimens the 5th or 7th with irregular double rows; punctuation of outer interstices strong at base. Abdomen with apical margin of 1st segment prominent, thickened in middle and shining, 2nd segment concave, 3rd and 4th with a small median tubercle on margin, 5th with a longitudinal impression near apex. Metasternum shining, diffusely punctured.

Variable in size, in the width and number of punctures of interstices, which are sometimes partly striate.

One example from Junsai is smaller, with the elytra longer and narrower, and separately rounded at apex, the 3rd interstice has a double row of punctures at the base only, and the outer interstices are strigose with indistinct punctures. The underside does not differ, though the tubercles are inconspicuous. It appears to be an ill-developed example.

Scolytus agnatus, sp. n.

Nitidus, niger, elytris apice rufescentibus, antennis pedibusque piceo-ferrugineis; prothorace latitudine et longitudine fere æquali in disco subtiliter, in lateribus fortius punctato; elytris lateraliter subrotundatis, postice angustatis, in apice singulatim rotundatis, margine apicali subtiliter serrato, punctato-striatis, striis non impressis, interstitiis angustis subrugosis, singulariter seriatim quam striis vix subtilius punctatis; abdomine deplanato, segmentis 3o et 4o muticis. Long. 4.6 mm.

FEM. Fronte subconvexa, glabra, vertice obscuro, dense ac rugose punctato.

Two specimens taken at Junsai in company with the last species.

Very like *S. esuriens*, and readily confounded with it.

Black, with apex of elytra reddish. Head in the female (I have not seen the male) quite glabrous, its vertex dull, rugosely and closely punctured. Prothorax similar, but without lateral impressions. Elytra larger, more evidently narrowed towards the apices, which are separately slightly rounded, the whole posterior margin finely toothed. Punctures of the elytral striæ stronger, somewhat irregular and not distinctly impressed, interstices narrow, punc-

tured nearly as strongly as the striæ in irregular series, which are not double, except at base; somewhat rugose, and with slight longitudinal impressions. Punctures of the sides of the elytra much stronger than in *S. esuriens*. Abdomen not concave, margin of the 1st segment not prominent but sloped upwards, 3rd and 4th unarmed, the 5th transversely impressed. Metasternum closely and rugosely punctured.

Scolytus frontalis, sp. n.

Oblongus, nitidus, niger, elytris rufo-brunneis, antennis pedibusque ferrugineis; capite (in maribus saltem) oblongo, fronte impressa, strigose aciculata, pilis longis crispatis circumdata; prothorace haud transverso sat fortiter punctato, linea media laevi, punctis in disco paullo subtilioribus, magis discretis; elytris prothorace fere dimidio longioribus, lateribus subrotundatis, postice angustatis, subtiliter punctato-striatis, striis non impressis, interstitiis irregulariter vix subtilius seriato-punctatis, 1o, 3o, 5o biserialim, subrugosis; abdomine subconvexo, margine segmenti 1mi haud prominulo, cum ceteris mutico. Long. 3.6—4.3 mm.

Three examples taken at Fukushima.

Resembling *S. pruni*, Ratz., in appearance, but with the prothorax more strongly punctured, and the elytral striæ much less regular. Black with anterior margin of thorax and elytra red-brown. Head (in the male, to which sex the specimens belong) oblong, produced in front, and impressed, with long aciculate scratches from mouth to vertex, margined with long curled yellow hairs, median line finely carinate, epistoma subcircularly emarginate. Prothorax about as long as broad with moderately strong oval punctures, closer and deeper at sides. Elytra as wide in middle as prothorax, and nearly one-half longer, narrowed behind, rather abruptly rounded at apex and feebly emarginate at suture; surface little depressed round scutellum, with fine irregular rows of punctures, interstices narrow and flat, with slight transverse or oblique wrinkles, their punctures little finer than and not readily distinguishable from those of striæ, forming an irregular double row on 1st, 3rd and 5th interstices, and a single row on remainder, except at base where they are irregular. Underside piceous, lighter at sides, thinly pubescent; abdominal segments simple, margin of 1st not prominent.

Scolytus aratus, sp. n.

Nitidus, niger, elytris piceo-brunneis, basi cum pedibus rufescente; capite convexo, subtiliter aciculato, parcissime piloso; prothorace non

transverso, fortiter punctato, punctis ovatis in medio disco magis discretis, subtilioribus; elytris prothorace dimidio longioribus, lateribus subrotundatis, postice angustatis, margine apicali subtruncato, fortiter lineato-punctatis et substriatis, interstitiis angustis uniseriatim punctatis, punctis vix subtilioribus, seriebus nonnunquam irregulariter impressis; abdomine convexo, mutico, piloso. Long. 3 mm.

MAS. (?). Abdominis segmento 5o pilis longis ornato.

FEM. (?). Abdominis segmento 5o breviter piloso.

Junsai, two specimens.

Allied to *S. carpini*, Ratz., but with stronger thoracic punctuation; and elytral striæ more impressed with coarser punctures. Black with elytra pitchy-brown. Head convex, finely aciculate and glabrous, without sexual differences; vertex dull, closely punctured. Prothorax as long as broad, with strong oval punctures, scattered on disc, closer, deeper and rugose at sides and apex. Elytra as wide as thorax and one-half longer, with lateral margins slightly rounded to behind middle, then narrowed; apical margin nearly truncate, feebly excised at suture, and slightly irregular, but not serrate as in *S. agnatus*; surface with regular rows of strong punctures, deeper and closer at base, slightly impressed throughout, interstices narrow, with a single series of punctures rather weaker than those of striæ, and sometimes impressed, first and second with a few oblique wrinkles. Abdomen convex, covered with short hairs; last segment in male (?) emarginate at apex and impressed, with a fringe of long hairs.

Smaller than any other Japanese species except *S. japonicus*, which is readily distinguished by its black colour, and the absence of striate impressions on the elytra, the punctures of which are fine and obscured by oblique wrinkles.

Scolytus japonicus, Chap.

Chap., Scol. Jap., p. 199.

A single further specimen of this species, the representative of the European *S. rugulosus*, taken at Junsai. It attacks the plum-tree.

Scolytus claviger, sp. n.

Subelongatus, depressus, niger, elytris piceis, antennis pedibusque rufescentibus; prothoracis disco parce punctato, punctis versus basim subtilioribus; elytris regulariter striato-punctatis,

striis vix impressis, interstitiis paullo subtilius uniseriatim vel irregulariter biseriatim punctatis, depressione apicali ad latera serie tuberculorum intus marginata. Long. 3.7 mm.

MAS. Fronte impressa, longius pilosa; abdominis segmento 2o processu oblongo deplanato versus apicem incrassato et recurvato armato.

FEM. Fronte subconvexa, parce pilosa; abdominis segmento 2o tuberculo brevi conico armato.

A pair taken at Kiga.

Elongate and depressed, black with elytra piceous. Head with front strongly impressed in male and margined with long curled hairs, in female subconvex and strigose with scanty pubescence; vertex strongly punctured in both sexes. Prothorax as long as broad, with sides nearly parallel behind middle, not strongly contracted in front, its punctuation rather strong, not close, weak over base only. Elytra as wide as prothorax and one-half longer, very slightly rounded at sides and narrowed behind, apex serrate and feebly emarginate; surface with regular impressed rows of punctures, interstices narrow with subimpressed rows of rather weaker punctures, tending to become double on alternate interstices. Apical impression extending along sides of elytra and bordered within, above outer angles, by six or seven small tubercles. Underside black, abdomen reddish at sides, its first ventral segment prominently bordered, second in male with an oblong process, flattened vertically, its tip thickened and recurved upwards; in female with a short pointed tubercle, and rather dense pubescence.

Allied to *S. multistriatus*, but differing in the structure of the abdomen, and the stronger punctuation, the thoracic punctures being more scanty. The apical segments of the abdomen, nearly horizontal in the male example, are unfortunately missing in the female, which prevents comparison with another specimen from Nishi, which appears distinct, but cannot be separated by any definite characters; it is rather larger, more convex, the thorax is more evidently narrowed in front, with the sides rounded behind; the elytra are darker and broader; the abdomen is nearly vertical, armed as in the female type. This insect does not show any differences in sculpture that are of specific value, though the thorax is more finely punctured behind the middle. It must be separated, if at all, on further examples of both sexes.

TOMICINI.

CRYPTURGUS, Er.

C. pusillus, Gyll, has already been recorded from Japan by Eichhoff (Rat. Tom., p. 74), who examined specimens taken by Hiller in Nipon, and could discover no difference between them and European examples. Mr. Lewis has taken a series on Fujisan and at Subashiri in which the pubescence on the elytra is scanty, fine and less distinguishable than in European specimens, but which have no other well-marked distinguishing features. The prothorax is rather strongly narrowed behind, but its shape is variable in European examples.

CRYPHALUS, Er.

At present the Japanese *Cryphali* are represented by a single specimen only in Mr. Lewis's collection. As the genus is very common in the Oriental region, and there are some ten European species, it is probably much more numerous in Japan than it appears to be at present.

Cryphalus exiguus, sp. n.

Oblongo-ovalis, convexus, opacus, niger, squamosus ; prothorace semi-orbiculato, margine antico bituberculato, anterius tuberculis discretis in plaga postice producta exasperato, posterius rugose punctato ; elytris latitudine longioribus, lineato-punctatis, interstitiis squamosis setis erectis raris ornatis. Long. 1.3 mm.

One example, Fukushima.

One of the smallest species in the genus.

Oblong-oval, convex, dull black with a covering of grey scales. Head with front subconvex, reticulate, punctured at sides, impressed over mouth and with an obtuse median elevation separated above from vertex by a sharp transverse shining carina ; eyes oblong-oval, anteriorly emarginate ; antennæ testaceous with club deeply infusate, roundish oval, its basal joint shining, with superior apical border rounded, fringed, remaining joints pilose with border less strongly rounded. Prothorax narrowed towards apex, rather broader than long, its base bisinuate with narrowly elevated margin, basal angles rounded when seen from above, sides and apex rounded throughout, the latter more strongly, its

margin with two prominent tubercles in middle; surface uniformly convex, not gibbous, anteriorly with scattered asperate elevations, forming a patch angulately produced behind but not reaching very near base, interstices and remainder of surface finely reticulate and rugosely punctured, with thin covering of scales and hairs. Scutellum very small, triangular. Elytra as wide as prothorax, and not quite half as long again, slightly and separately rounded at base, humeral angles rather obtuse, but not rounded, shoulders finely elevated, sides nearly straight and subparallel to posterior third, then broadly rounded to apex; surface transversely convex, subcylindrical to behind middle, then obliquely declivous and convex to apex, with distinct rows of punctures, the outer ones obsolete towards apex, interstices narrow, finely multipunctate and squamous, with a single series of scattered erect setæ. Legs fuscous with tarsi testaceous.

This species can be distinguished from other described *Cryphali*, in which the eyes are emarginate and the elytra not rounded from base to apex, by the two tubercles on the anterior margin of the prothorax. Among the European species it is most like *C. abietis*, Ratz, but is much smaller, with the elytral striæ not impressed, and the antennal club and legs darker. The transverse carina which borders the vertex of the head in front occurs in some Ceylonese species in my hands, and is probably a sexual character. As with other Oriental *Cryphali*, the joints of the antennal club have a rounded margin on their superior surface, which is less evident below. In this respect they approach Thomson's subgenus *Ernoporus*, which can be characterised by the non-emarginate eyes alone.

HYPOTHENEMUS, Westw.

I take this genus, as has been done by Leconte and others, to be inclusive of Eichhoff's genus *Stephanoderes*, which it is not possible to separate by means of the number of articulations in the antennal funiculus. But it is not to be supposed, as Leconte has suggested, that the variations of this structure are of no generic value in *Scolytidæ*. In the majority of genera which can be separated by them, there are other structural features, or at least a difference of *facies*, which tend to show that they are a reliable guide. In the *Hypothenemi*,

however, the smallest insects of the family, it would appear that reduction in size leads to a reduction in the number of joints, without involving other structural features. But we really require to study its structure in more species of this difficult and little-known genus.

I add two more species to the one already described from Japan.

Hypothenemus tristis, Eichh.

Stephanoderes tristis, Eichh. Scol. Jap., p. 200; Rat. Tom., p. 150. No further examples have been taken, unless the following insect be a variety of this species.

Hypothenemus peritus, sp. n.

Oblongus, subnitidus, fusco-piceus, prothorace in medio dilutiore, semi-ovato, antrorsum angustato, margine antico tuberculis 4, duobus mediis majoribus, ornato, anterieus tuberculis magnis discretis notato, postice rugulose punctato; elytris ad apicem subacuminatim rotundatis, subtiliter lineato-punctatis et setosis, interstitiis uniseriatim squamulatis. Long. 1.8 mm.

One specimen, Nagasaki.

Oblong, rather shining, deep fuscous, with surface of prothorax lighter in middle. Head finely reticulate, front subconvex, punctured in middle. Antennæ sordid testaceous, funiculus 5-jointed, suture of club distinctly fringed. Prothorax very slightly broader than long, base subsinuate, basal angles obtusely rounded, sides slightly dilated before base and rounded, contracted towards apex and obscurely sinuate, apical margin with four tubercles in the middle, the two centre ones more prominent; surface obtusely gibbous in middle, with thin covering of hairs and scales, anteriorly with a roundish patch of large scattered tubercles, becoming closer and smaller behind, interstices and base finely reticulate with scattered punctures, except over a narrow smooth line from base to middle. Elytra rather more than half as long again as prothorax, separately rounded at base, humeral angles rounded, sides parallel to posterior third, thence obliquely rounded to apex; surface subcylindrical, obliquely declivous and convex at apex, with fine lines of punctures bearing minute hairs, the lines appearing impressed in certain light, interstices transversely rugose, with a single row of cinereous scales along middle and a few hairs on either side. Legs infusate with anterior femora and tarsi lighter.

Quite like *H. tristis*, Eichh., but differing from the type

in the fewer and stronger tubercles of the prothorax, the more scattered punctuation of its base, which presents a smooth central line, and the finer elytral striæ, which in *H. tristis* are strong and well-marked. It is also rather more elongate.

Hypothenemus expers, sp. n.

Oblongus, subnitidus, piceo-niger, prothorace medio dilutiore, subrotundato, ante basim dilatato, margine antico bituberculato, dorso anterieus tuberculis discretis in plaga rotundata compositis notato, posterius granulato; elytris lineato-punctatis, pilosis, interstitiis setis haud squamatis seriatis ornatis. Long. vix 2 mm.

Two examples, Kumamoto and Nagasaki.

Closely allied to *H. peritus*, but exhibiting the following differences:—

Rather larger and more robust, darker in colour, being black with a pitchy tinge, the thorax pitchy-red in middle, and not obscurely testaceous. Front of head more convex, very finely reticulate and not punctured except over mouth, where it is transversely impressed. Antennæ bright testaceous, basal joint of club deeply infusate, funiculus 5-jointed. Prothorax more strongly dilated before base, which is truncate, sides more strongly rounded, its tuberculation similar, but marginal tubercles less prominent, the two outer ones nearly obsolete, basal half closely reticulate and covered with small asperate elevations, closer than the non-elevated punctures in *H. peritus*. Elytra narrower than greatest width of prothorax, truncate at base, obliquely rounded at apex, striation as in *H. peritus*; interstices without evident scales, but with a single row of erect hairs, which are stronger towards apex, a few finer hairs are found between the rows. Legs clear testaceous.

The absence of the conspicuous erect hispid scales on the elytra, which are replaced by hairs, will at once distinguish this species from either of the two former.

COSMODERES, Eichh.

This genus was founded by Eichhoff, Rat. Tom., p. 495, for *C. monilicollis*, a single species from India, which differs from *Hypothenemus* (*Stephanoderes*, Eichh.) in possessing a very short two-articulate antennal funiculus and dilated tibiæ with their outer borders serrate, the serration being absent in *Hypothenemus*; the typical species is also more elongate than a *Hypothenemus*, and

differs in colour, and the sculpture of the elytra, which have large dilated punctures and subcostate interstices, so that they appear reticulate. There is in Mr. Lewis's Ceylon collection a specimen which corresponds in every respect to Eichhoff's description of *C. monilicollis*, and is almost certainly that insect. In the Japanese collection is a specimen which agrees with it in generic characters, but is much more closely allied in appearance to *Hypothenemus*, showing the near relationship between the genera, which are, however, sufficiently distinct.

Cosmoderes consobrinus, sp. n.

Oblongus, subcylindricus, opacus, niger, elytris nigro-piceis, antennarum scapo tarsisque testaceis; prothorace aequae longo quam lato versus apicem subangustato, apice rotundato, bituberculato, disco gibboso, anterieus exasperato, posterius scabrose granulato; elytris prothorace duplo longioribus, seriatim pilosis et striatis, striis leniter impressis, vix perspicue punctatis, interstitiis alutaceis uniseriatim squamosis. Long. 2 mm.

One example, without locality.

Oblong, rather elongate, cylindrical, black, with elytra obscurely piceous. Head finely reticulate, front convex, finely and sparingly punctured, and very shortly pubescent, eyes oval emarginate; antennae testaceous with club infusate, short oval, pubescent with a smooth patch at base, without evident sutures. Prothorax as broad as long, contracted at sides towards apex, base truncate not margined, basal angles obtuse, sides slightly rounded behind, subsinuate and more rounded anteriorly, apical margin strongly rounded with two prominent median tubercles; surface convex and gibbous in middle, obliquely impressed on either side behind median elevation, in front strongly declivous and rather finely asperate, base and interstices dull, covered with fine scabrous projections, pubescence very short. Scutellum distinct, triangular. Elytra a little wider than base of prothorax and double as long, base truncate, humeral angles rounded rectangular, shoulders rather prominently elevated, sides subparallel, obliquely rounded at apex; surface subcylindrical, very obliquely declivous towards apex, its texture coriaceous, with shallow impressed striae, with barely distinguishable punctures and rows of minute hairs, interstices alutaceous, subconvex, with a single series of erect narrow

scales. Legs fusco-piceous with tarsi lighter, outer border of middle tibiæ distinctly serrate.

This insect is very like *Hypothenemus tristis* and *peritus*, but is more elongate; the base of the thorax and the elytra are differently sculptured, and the structure of the antennæ and legs will at once separate it without comparison.

PITYOPHTHORUS, Eichh.

But one species has yet been found in Japan. It is likely that there are others as, in addition to the European species, there are several from both N. and S. America.

Pityophthorus jucundus, sp. n.

Elongatus, oblongus, nitidus, fere glaber, niger vel fusco-testaceus; prothorace antice subconstricto, post medium utrinque impresso, anterie exasperato, posterius fortiter punctato, linea media subelevata laevi; elytris cylindricis, haud acuminatis, regulariter punctato-striatis, striis non impressis, interstitiis fere planis hic illinc subrugosis, apice impresso-retuso, striis obsoletis, lateribus elevatis et sutura versus apicem tuberculis setigeris raris ornatis. Long. 1.6 mm.

FEM. Fronte media villosa.

Four specimens, near Nagasaki.

Head black, finely reticulate, front strongly punctured, with a circular patch of villous pubescence in female. Antennæ fusco-testaceous, their club ovate, tri-articulate with slightly curved sutures. Prothorax with base finely margined, truncate, basal angles obtuse, sides behind nearly straight, rounded in front and sinuate before apex, which is somewhat obtusely rounded, and feebly crenate, the apical constriction much slighter than in *P. lichtensteini*, Ratz; surface depressed on either side of a median smooth elevated line, reaching to the middle of the prothorax, with very short pubescence at sides and apex, its anterior half asperate, posterior half with rather strong subrugose punctures becoming weaker on sides. Elytra rather narrower at base than prothorax, and nearly twice as long, sides straight to middle then feebly rounded, apex obtusely rounded, not acuminate but with suture slightly prominent; glabrous except at apex, with regular lines of strong punctures, not impressed, interstices impunctate and flat, feebly rugose here and there, apex nearly vertically declivous,

impressed on either side of suture, the impression shining, impunctate, its outer margins more strongly elevated than suture, with two or three weak setigerous tubercles; suture very slightly elevated, with traces of tuberculation near apex; underside black, thinly pubescent. Legs fuscous.

A slender narrow species, readily distinguished by the strong punctures of the thorax, with its elevated median smooth line, by the distinct and regular rows of punctures on the elytra, which are nearly glabrous and not acuminate.

EIDOPHELUS, Eichh.

I add one more species provisionally to this genus.

Eidophelus imitans, Eichh.

Eichh., Scol. Jap., p. 200; Rat. Tom., p. 203.

One example, very small, has occurred since, without recorded locality.

Eidophelus minutus, sp. n.

Oblongus, nitidus, piceo-niger, fere glaber; prothorace latitudine vix longiore, lateribus ad medium subrectis, inde cum apice subcirculare rotundatis, supra convexo, antice lineis tuberculorum concentricis exasperato, postice punctis discretis fortibus, in medio subtilioribus notato; elytris ad apicem oblique declivibus, non impressis, lineato-punctatis, punctis post medium obsoletis, interstitiis subrugosis absque punctis. Long. 1.2 mm.

One example, Chiuzenji.

Oblong, piceous-black, with a few hairs on elytra and sides of thorax. Head reticulate, front strongly punctured, scantily hairy; eyes oval, scarcely visibly emarginate; antennæ testaceous, funiculus 4-jointed, club orbicular oval with weak curved sutures, pubescent at apex. Prothorax little longer than broad, base truncate, finely margined, basal angles obtuse but distinct, margined, sides straight, slightly narrowed towards middle, then subcircularly rounded, apex slightly flatter; its anterior half with about six concentric rows of fused tubercles, forming a series of raised lines somewhat as in *Cryphalus tiliæ*, the anterior row occupying the apical margin when seen from above, posterior half with very scattered punctures, strong at sides, smaller and somewhat asperate on middle. Scutellum triangular, shining. Elytra rather

narrower than prothorax, and half as long again; base truncate, its angles obtuse, sides weakly rounded to middle and subdilated, thence more strongly rounded to apex; surface with rows of rather small punctures, separately impressed and not striate, becoming weaker from base and nearly obsolete on declivity; interstices slightly rugose, with one or two punctures at base; apex obliquely declivous, convex and not impressed, with traces of one or two asymmetrical tubercles near suture. Underside piceous, scantily pubescent. Legs infusate.

This insect agrees with *E. imitans* in its antennal structure, but is separable by the absence of distinct pubescence and the sparseness of the punctures on the hinder half of the thorax. The entire absence of any thoracic constriction and the antennal structure will distinguish it from the *Pityophthori*.

TOMICUS, Latr. (1807).

The Japanese fauna appears to be poor in this genus; perhaps other species remain to be discovered.

Tomicus cembrae, Heer.

Bostrichus cembrae, Heer, Obs. Ent. 1836, p. 28.

A series taken from larch on Fujisan.

The specimens show no essential difference from European examples. Like the Japanese *Myelophilus piniperda*, they run very large, averaging 5.5 mm. The interstitial punctures of the elytra are very weak, but traceable. *T. cembrae* is recorded from Siberia and Amurland and no doubt occurs over the whole of N. Asia; in Europe it is confined to *Pinus cembra*, which is found in Japan, at least, as the variety *pumilus*. I cannot find any Japanese specimens which correspond with Motschulsky's *T. subelongatus*.

Tomicus angulatus, Eichh.

Eichh., Scol. Jap., p. 200; Rat. Tom., p. 258.

Taken commonly in several localities from fir (*Pinus massomana*); Nagasaki, Fujisan, Nikko.

ACANTHOTOMICUS, nov. gen.

Antennarum funiculus 5-articulatus, articulis 2—5 latitudine crescentibus, clava ovalis, compressa, suturis fere obsolete fortiter

curvatis articulo 1o ovali, ceteris lunatis. Prosternum processu nullo. Episterna metathoracica linearia. Tibiæ anticæ ad apicem dilatatæ, spinosæ. Corpus cylindricum, elytris ad apicem retusis, ambitu retusionis fortiter multi-spinato, stria suturali vix impressa.

Closely allied to *Tomicus* but differing in the much stronger elytral armature, which in *Tomicus* exhibits a uniformly progressive diminution, as the species grow smaller, down to the genus or subgenus *Pityogenes*, Bedel. The antennal club is oval, its sutures are quite superficial and only marked by a pubescent border, the first joint is longitudinally oval and embraced at the sides by the succeeding joint, as in *Xylocleptes*, Ferrari, with which the elytral structure has no affinity. The mouth parts do not differ from these of *Tomicus*, the maxilla is simply sinuate internally, and not produced into a rounded angle, but this angle is wanting in *Pityogenes* and is not a generic character.

Acanthotomicus spinosus, sp. n.

Oblongus, cylindricus, nitidus, ferrugineo-testaceus, elytris ad apicem infuscatis, pilis longis parce adpersus; prothorace antice constricto, ad medium subgibboso et utrinque impresso, anterieus exasperato, posterius subtiliter punctulato; elytris prothorace dimidio longioribus, punctato-striatis, punctis ad basin subtilibus, versus apicem dilatatis, ad apicem abrupte declivibus, utrinque 8-spinatis, spinula 3a maxima, elongata, 5a—7a minimis, 8a prope angulum suturalem magna, intus curvata. Long. 2.5 mm.

Two specimens taken at Oyayama and Nikko.

Oblong, cylindrical, reddish-testaceous, with apex of elytra infusate. Head with front subconvex, punctured, with a median raised line, thinly pubescent; eyes broad oval, slightly emarginate. Prothorax longer than broad, its base truncate, basal angles obtuse, sides almost parallel to middle, then constricted and strongly rounded to apex, which is somewhat more obtuse, with a crenate margin; disc gibbous in middle and impressed on either side, asperate anteriorly behind with fine scattered punctures without a median impunctate or elevated line. Scutellum small, rounded, elytra half as long again as prothorax, their base truncate, sides subparallel, with lines of punctures, fine at base, becoming stronger, dilated and transversely rugose towards apex, the striae appearing impressed towards apex in a certain light only, interstices

slightly convex, very finely and sparingly punctured in rows; apex nearly vertically declivous, margined with 16 spines at the apex of the 2nd and succeeding interstices, the 1st two short, 3rd very long, curved, 4th and 5th rather shorter, 6th and 7th small, 8th pair situated close to apex of suture, curved inwards and as long as fourth. Impressed surface rather dull, irregular, strongly punctured, with suture elevated. Underside testaceous, glabrous. Antennæ and legs testaceous.

The following specimen is probably the female of the preceding insect, but I cannot be positive.

Acanthotomicus spinosus, ? femina.

Antecedenti differt fronte plana utrinque densissime aureo-villosa, prothorace paullo longiore, minus constricto, margine antico fortius rotundato, haud crenato, dense villosa; elytris proportionem elongatis, prothorace duplo fere longioribus, punctis striarum paullo fortioribus et magis confertis, ad apicem singulatim breviter 6-spinosis, infra prope angulum suturalem in lobum brevem 4-tuberculatum productis; fundo retusionis punctis minoribus, confertis, et spinula intra spinam tertiam marginalem posita utrinque ornato. Long. 3 mm.

One example taken at Kashiwagi.

In the dense villosity of the head and prothorax, and the reduction in size of the apical spines of the elytra, its characters may be considered as simply sexual. But the greater length of the elytra and the closer and stronger punctuation of the striæ, the sutural stria being impressed at the apex, together with the presence of a spine on the apical declivity internal to the 3rd marginal spine, prevent my identifying it positively as the female. The apical spines are all short, the 3rd and 5th being the most prominent; the lower border is produced on either side just outside the suture, into a short transverse lobe, which is evidently 4-tuberculate and represents the three inferior spines fused.

DRYOCETES, Eichh.

This genus, in which I include Eichhoff's *Taphrorychus apatoides* and two allied species, is represented by eight species, of which six are new.

TABLE OF SPECIES.

1. Prothorax gradually and uniformly rounded from base to apex	2
cylindrical at base with apex obliquely declivous	
(<i>Taphrorychus</i> , Eichh.)	6
2. Apex of elytra retuse, impressed or flattened (size 2·5—4 mm)	3
convex (size under 2·5 mm.)	5
3. Front of head not carinate	4
with a sharp longitudinal carina	<i>affinis.</i>
4. Striæ of elytra finely and uniformly punctured, <i>autographus</i> , Ratz.	
coarsely punctured, punctures dilated behind	
base	<i>pilosus.</i>
5. Elytra with strongly punctured striæ	<i>luteus.</i>
rows of feeble punctures	<i>nubilus.</i>
6. Prothorax rounded at apex	<i>moestus.</i>
subquadrate, the apex obtuse, forming an angle	
with sides	7
7. Interstices of elytra not elevated towards apex	<i>dinoderoides.</i>
sub-costate towards apex, <i>apatoides</i> , Eichh.	

Dryocætes autographus, Ratz.

Ratz., Forst. Ins., i., p. 160.

Eichh., Berl. Ent. Zeit., 1864, p. 39 ; Rat. Tom., p. 28 f.

Two examples, Chiuzenji.

The elytra are almost hairless in these specimens and very evidently retuse at apex, with the interstitial punctures almost obsolete ; but they are quite like German specimens in my collection. The species, which extends throughout N. Asia and the colder parts of N. America, is of variable form.

Dryocætes pilosus, sp. n.

Oblongus, subnitidus, longe pilosus, piceo-niger, antennis pedibusque ferrugineis, fronte plana haud carinata ; prothorace dense granulato exasperato ; elytris prothorace dimidio longioribus, transverse rugosis, fortiter punctato-striatis, punctis postice subtilioribus, stria suturali subimpressa, interstitiis subtiliter uniseriatim punctatis, apice retuso impresso, striis fere obsoletis, pilis longis circumdato. Long. 3 mm.

One example, Nikko.

Oblong, pitchy-black, head with front flat, dull, finely punctured, and with a faint transverse impression at sides, with long scattered hairs, mouth fringed. Prothorax a trifle broader than long, base

truncate, humeral angles obtusely rounded, sides and apex rounded in a broad ellipse; surface very convex, with uniform scattered granulations, their interspaces shining, fringed at margins with long scanty hairs. Scutellum small, rounded, convex, shining. Elytra narrower than greatest width of thorax, and half as long again; base truncate, humeral angles obtusely rounded, shoulders narrowly raised, sides subsinuate, slightly dilated behind and strongly rounded at apex; surface subcylindrical, depressed before middle, dilated posteriorly and strongly declivous at apex, with rows of strong punctures, the punctures dilated on middle third and then becoming finer, sutural stria slightly impressed, interstices subconvex, transversely rugose, with a single series of fine setigerous punctures; apical declivity convex, impressed on either side of suture, shining, with striæ obsolescent; elytra set with long hairs, close at sides and at margins of apical declivity, hairs of declivity itself shorter. Underside piceous, punctured; abdomen with long pubescence. Legs ferruginous.

Readily distinguished by the long pubescence, the absence of a frontal carina, the strong punctuation of the elytral striæ, and the punctured interstices.

Dryocætes affinis, sp. n.

Oblongus, niger, subnitidus, pilosus; fronte carinata; prothorace vix longiore quam latiore, granulate exasperato, postice paullo subtilius; elytris prothorace minus quam sesqui longioribus, cylindricis, apice oblique declivi subretuso, subtiliter lineato-punctatis, stria suturali impressa, interstitiis subrugosis seriatim pilosis. Long. 3 mm.

A single example, Oyayama.

Black, elytra with a piceous tinge. Head with front impressed and longitudinally carinate, coarsely punctured and thinly hairy, ciliate over middle of mouth. Prothorax a little longer than broad, truncate at base with angles obtuse, sides feebly rounded behind and very slightly dilated to posterior third, strongly and uniformly rounded in front to apex, the margin of which is tuberculate; surface uniformly convex, asperate, rather more finely at base, with scattered hairs. Scutellum small, rounded, shining, finely bordered. Elytra rather wider than base of prothorax and about one-fourth longer, truncate at base with shoulders narrowly elevated, humeral angles rounded rectangular, sides rounded and somewhat narrowed at posterior fourth, then rather abruptly flexed, and nearly straight at apex, which is not conjointly

rounded; surface subcylindrical, obliquely declivous behind, with rows of shallow punctures, their interspaces rugose, sutural striae alone slightly impressed, interstices rather narrow with series of setigerous tubercles; apex flattened, shining, impressed on either side of suture with the striae continued on it; first interstice widened. Underside piceous-black, nearly glabrous, first abdominal segment impunctate in middle, succeeding segments with a few very coarse punctures. Legs piceous, anterior tibiae rounded, with six or seven outwardly directed spines on outer margin, and a curved one at inner angle of apex; middle tibiae with a close series of six forwardly directed spines at apex.

In sculpture this insect is exactly like the one I have identified as *Coccotrypes graniceps*, Eichh. (*q.v.*), but may be distinguished by its cylindrical shape and the structure of the tibiae.

Dryocætes luteus, sp. n.

Oblongus, subnitidus, flavo-testaceus, parce et breviter pilosus; prothorace oblongo, lateribus postice subparallelis, antice fortiter rotundatis, anterie subtiliter exasperato, posterius dense punctato; elytris profunde striato-punctatis, stria suturali impressa, interstitiis subtiliter uniseriatim punctatis in declivitate tuberculatis. Long. 2 mm.

FEM. Fronte densius pilosa.

Nine specimens, without locality indicated.

Bright yellow-testaceous, with short scanty pubescence on sides of thorax and apex only of elytra. Head strongly punctured, with front convex, scantily hairy in male, and ciliate over mouth; in female* with a circular tuft of yellow pubescence. Eyes broad oval, coarsely granulate, and emarginate anteriorly. Antennae testaceous with sutures slightly curved. Prothorax longer than broad, with base truncate, its angles obtuse, sides nearly parallel to middle, thence strongly rounded to apex; above moderately convex, not gibbous, with close punctures, simple at base, and asperate over anterior two-thirds. Scutellum rounded, shining. Elytra as wide as prothorax and one-half longer, base truncate, humeral angles rectangular, sides parallel to apex, then abruptly flexed, their apical margin being almost transverse when seen from above;

* It would appear that in the *Tomici* the possession of a villous front is a mark of the female sex, see Eichh., *Eur. Bork.*, p. 203. It is not so in the genus *Scolytus*, and others.

surface cylindrical, nearly vertically declivous at apex, but convex, with regular impressed rows of strong punctures dilated after the base, sutural stria more deeply impressed and widened behind, interstices flat with a single row of fine punctures, replaced by small setigerous tubercles on declivity. Underside and legs testaceous, the former scantily punctured and pubescent.

Similar to immature examples of *D. villosus*, Fabr., but twice as small, with the prothorax not asperate behind, with scantier pubescence, and the elytral interstices more distinctly defined.

Dryocætes nubilus, sp. n.

Oblongus, subnitidus, parce longius pilosus, piceo-niger, antennis pedibusque testaceis; prothorace oblongo-ovali anterieus rugulis transversis exasperato, posterius subnitido, rugulose punctato; elytris ad apicem oblique declivibus, subtiliter lineato-punctatis, stria suturali non aut vix impressa, interstitiis post medium uniseriatim pilosis. Long. 1.7—2.2 mm.

Ten specimens, Kiga, Suyama.

Oblong, lighter, or darker piceous-brown. Front of head scantily punctured, weakly impressed at sides, and with a median subelevated longitudinal line, its pubescence long and thin, mouth ciliate; antennæ testaceous, with sutures of club straight. Prothorax a little longer than broad, its base truncate, basal angles obtusely rounded, sides rounded, slightly behind, more strongly towards apex; surface somewhat depressed, asperate in front with concentric lines of transverse tubercles, becoming weaker behind and replaced at base by rugose punctures, except over an indistinct median smooth line; sides and apex with long scanty hairs. Scutellum rather large, rounded, shining. Elytra rather wider than prothorax at base, and one half longer, truncate at base, with shoulders nearly rectangular, sides parallel to near apex, then gradually rounded; apex not obtuse; surface cylindrical, obliquely and convexly declivous for posterior third, with rows of fine punctures, the sutural stria alone with a trace of impression in some specimens; interstices subrugose, with a single row of finer setigerous punctures, the setæ becoming longer and more conspicuous towards apex. Underside testaceous-brown, nearly glabrous and impunctate. Legs reddish testaceous.

Distinguishable from *D. alni*, Georg., by its smaller size, the weaker punctuation of the base of the thorax and elytra, and the absence of the lateral impressions and

elevated suture of the apical declivity. I can see no sexual characters, but one example is more elongate, with the thorax more distinctly narrowed behind, and the median line subelevated. No specimens measure less than 2 mm., except one, which is very small (1.7 mm.), with the head finely punctured, and without long pubescence. It may be distinct, but I can find no characters by which it may be separated.

The three following species differ somewhat in *facies* from *Dryocætes* proper, but it is not possible to construct a new genus for them without dissection, for which more material is required. They can be distinguished by the shape of the prothorax, which is not uniformly curved from base to apex, but is cylindrical at base and declivous anteriorly, so as to form an obtuse median elevation. Its anterior half is markedly scabrous, while the hinder part is smooth; but a uniform sculpture of the prothorax does not occur in all the species of *Dryocætes*. Eichhoff described one originally as a *Dryocætes*, but afterwards included it, doubtfully, in the genus *Taphro-rychus*. I cannot, however, see adequate grounds for this, and prefer to keep it at present in *Dryocætes*, with which the other two species form a connecting link.

Dryocætes mæstus, sp. n.

Oblongus, cylindricus, subnitidus, pilosus, niger, antennis pedibusque testaceis; prothorace aequè lato quam longo, apice rotundato, tuberculato, supra transverse subgibboso, antice exasperato, postice rugose punctato, linea media obsolete elevata; elytris lineato-punctatis, stria suturali subimpressa, interstitiis uniseriatim subtiliter punctatis et pilosis, ad apicem fortiter declivibus, declivitate deplanata, nitida, ad suturam utrinque impressa. Long. 2.6 mm.

A single specimen, Nikko.

Black, cylindrical; head with front convex, thinly pubescent, punctured, with an indistinct elevated longitudinal line; antennæ testaceous, club with sutures curved, pilose, basal joint shining, equal in length to succeeding joints, apical joint sensitive, pubescent. Prothorax with length and breadth equal, base truncate, basal angles nearly rectangular, sides feebly rounded to near apex, then abruptly and broadly rounded, apical margin tuberculate; surface cylindrical at base, declivous at apex, with an indistinct

transverse elevation in middle and an impression behind it on either side of a median longitudinal raised line, somewhat shining in middle of base only, anteriorly with transverse rugosities, strong near apex, and gradually replaced over base by rugose punctures; pubescence short, rather close. Scutellum triangular, shining. Elytra as wide as prothorax and less than twice as long, base truncate, humeral angles rounded, sides subparallel to near apex, which is rather abruptly and obtusely rounded; surface moderately shining, with rows of shallow punctures which appear impressed in certain lights only, sutural stria rather more strongly impressed, interstices somewhat convex, subrugose, with a single row of fine setigerous punctures, the setæ longer and conspicuous towards apex, which is strongly but not abruptly declivous, more shining and flattened, with an impression on either side of the suture, its striæ nearly obliterated, interstices finely tuberculate. Underside black, nearly impunctate, with thin pubescence. Legs reddish testaceous, anterior tibiæ straight, dilated and obliquely rounded at apex, with five or six spines, besides a longer spine at inner angle; middle and posterior tibiæ with outer border curved and serrate.

Dryocætes dinoderoides, sp. n.

Oblongus, cylindricus, subnitidus, pilosus, niger, antennis pedibusque testaceis; prothorace quadrato, apice fere truncato, supra elevato subgibboso, antice exasperato, postice rugose punctato, linea media laevi; elytris lineato-punctatis, stria suturali quam minime impresso, interstitiis uniseriatim subtiliter punctatis et pilosis, apice convexe declivi, haud impresso. Long. 2.5 mm.

One specimen, Ichiuchi.

Very like the last species and probably the male; but I cannot unite them without further evidence. It differs in the prothorax, which is very obtusely convex at apex, so as to present an evident angle between the sides and anterior margin, as in the next species; the anterior border is not crenate, the tubercles are less numerous and stronger before the median elevation, and the base less closely punctured. The elytral striæ do not appear impressed in any light, with the exception of the first, the apex is not flattened or impressed along the suture, and the pubescence is finer though equally dense. The head, antennæ, and legs are similar.

These two preceding species are easily distinguished from *D. apatoides* by the interstices not being costate towards the apex of the elytra.

Dryocætes apatoides, Eichh.

Dryocætes (?) *apatoides*, Eichh., Scol. Jap., p. 201.

Taphrorychus (?) *apatoides*, Eichh., Rat. Tom., p. 209.

No further example has occurred.

The legs of this insect are piceous-black, not ferruginous as described by Eichhoff. They are rather more slender than in the two last insects, and, therefore, more like those of a *Taphrorychus*, but there is no real difference in their structure. If the two last species are sexes of the same, the form of the prothorax in this insect is probably sexual.

COCCOTRYPES, Eichh.

The species of this genus are closely allied to *Dryocætes*, Eichh., and though differing in the maxillary armature and in habits, are not always easily separable. The prosternal characters seem to me to be of little value, and the basal border of the prothorax, which is absent in *Dryocætes*, is not always readily distinguishable in this genus. They can be differentiated without dissection by their shape, which (in the Japanese species) is shorter and more ovate, and by the tibiæ, which are distinctly truncate, and not grooved for the tarsi; whereas in *Dryocætes*, the anterior tibiæ at least have the outer margin rounded to the inner angle of the apex, without abrupt change of direction, and are recessed.

I add two species.

Coccotrypes graniceps, Eichh.

Eichh., Rat. Tom., p. 314.

Dryocætes graniceps, Lewis, Cat. Jap. Col.

One example, Nagasaki; also at Hiogo (*von Schönfeldt*).

I have not seen the type, which is not in Mr. Lewis's collection, but the specimen corresponds absolutely to Eichhoff's description, except that the whole surface is uniform pitchy-brown. Legs ferruginous, the anterior tibiæ with border simple for basal half, then with two outwardly directed spines, apex with two forwardly directed spines, besides spine at inner angle; intermediate tibiæ with three forwardly directed spines at apex. Punctuation of abdomen finer than in *Dryocætes affinis*.

Coccotrypes perditor, sp. n.

Ovalis, subnitidus, ferrugineus, pilosus; prothorace haud transverso, ad apicem subangustato, margine antico tuberculato, anterius tuberculis concentricis vix transversis, posterius longitudinalibus ornato; elytris lineato-punctatis, punctis setis adpressis, interstitiis setis longioribus erectis ornatis. Long. 1.5 mm.

Five specimens, in the neighbourhood of Nagasaki.

Oval, convex, lighter or darker ferruginous-brown; head punctured, with rather long pubescence at sides and over mouth; front elevated at sides and impressed in middle, with a fine median raised line. Prothorax scarcely broader than long, semi-elliptical, narrowed towards apex, and not evidently contracted at base, which is truncate, with the posterior angles nearly rectangular, sides feebly rounded to middle, thence gradually more strongly and subsinuate to apex, the margin of which is crenate, with a series of fine tubercles; surface rather strongly and uniformly convex, moderately shining, with scattered small asperations forming indistinct concentric lines in front and longitudinal elevations over the base. Scutellum small, punctiform, piceous. Elytra a little wider than base of prothorax and one-fourth longer, truncate at base with humeral angles rectangular, sides subparallel and straight for basal third, then gradually rounded to apex; above convex, and rounded from base to apex with rows of shallow setigerous punctures, their setæ short, interstices narrow and flat, with a single series of less frequent fine aciculations bearing long erect setæ. Legs ferruginous or testaceous.

Easily distinguished from *C. graniceps* by its much smaller size, and the absence of an apical impression on the elytra. Allied to *C. pygmaeus*, Eichh., and, therefore, to *C. integer*, Eichh., from Siam, which latter I have not seen. Shorter and more ovate than *C. pygmaeus*; the thorax rounder at the sides, and more convex, more shining, with far fewer asperities. Elytra less than one-sixth longer than broad (in *C. pygmaeus* they are at least one-third longer, and appear comparatively cylindrical); their striae more distinctly and sparsely punctured, and wider apart, the interspaces with fewer and smaller setigerous tubercles; striae continued on to the apex and not obliterated, as in *C. integer*.

Coccotrypes advena, sp. n.

Oblongo-ovalis, nitidus, pilosus, piceo-ferrugineus, antennis pedibusque dilutioribus ; prothorace antice contracto, angulis posticis obtusis, lateribus rotundatis, apice nonnihil deplanato, mutico, supra minus convexo, punctis haud frequentibus aciculatis notato ; elytris fortius lineato-punctatis, punctis haud setigeris, interstitiis uniseriatim setosis. Long. 1.6 mm.

One example near Nagasaki.

Oblong oval, ferruginous-brown, with long pubescence. Front coarsely punctured, flattened and impressed over mouth. Prothorax contracted in front, as long as broad, basal angles obtusely rounded and not applied to humeral angles of elytra, sides and apex separately and not strongly rounded ; surface only feebly convex, shining, with long hairs, arising from scattered aciculate punctures, which are weaker on the disc around an indistinct median impunctate line. Scutellum rounded, piceous, shining. Elytra wider than base of prothorax, and more than one-third longer, humeral angles subrectangular, sides parallel to middle, thence obliquely rounded to apex ; surface subcylindrical for basal third, then dilated and convexly declivous, with rows of punctures, strong and dilated at base, weak and shallow, but not obsolete, towards apex, without seriate hairs, interstices with a single row of fine aciculations bearing erect setæ. Legs ferruginous.

Readily confounded with *C. perditor*, but more elongate ; the prothorax much less convex, with the apex and sides not conjointly rounded, and the posterior angles obtuse and not applied to the elytra, not tuberculate, the punctures being scattered and only slightly elevated ; punctures of the elytral striæ much stronger at base and without setæ. The shape of the prothorax, which is hardly more convex than that of most *Dryocætes*, and its sculpture will distinguish it from other species of *Coccotrypes*. I have not been able to dissect it, but the generic characters, as far as observable, agree with this genus.

XYLEBORUS, Eichh.

This genus is very well represented in Japan by 29 species, exclusive of three males, which I have described

8. Declivity very oblique, beginning abruptly before middle of elytra,
 opaque and squamous *concisus*.
 not abrupt, nor squamous 9
9. Interstices with irregular double rows of punctures . *apicalis*.
 with a single row of punctures 10
10. Basal half of prothorax strongly punctured, covered with
 short erect hairs . *atratus*, Eichh.
 not strongly punctured, nor uni-
 formly hairy 11
11. Base of prothorax with a patch of hair before scutellum,
 species short, small 12
 glabrous, species larger, elongate 13
12. Hairs at apex of elytra arising from interstices only, *germanus*.
 from both striæ and inter-
 stices . . *compactus*, Eichh.
13. First interstice of elytra tuberculate at apex 14
 not tuberculate at apex,
obliquecauda, Motsch.
14. Elytral striæ not impressed at apex, tuberculation of
 interstices weak *prævius*.
 impressed, tuberculation of interstices strong 15
15. Prothorax narrowed towards apex *validus*, Eichh.
 uniformly rounded at sides, not narrowed, *aquilus*.
16. Apical border of elytra rounded, declivity not excavate . . 17
 truncate or emarginate, declivity
 sulcate or concave. 25
17. Declivity of elytra sharply carinate below 18
 obtusely margined, not carinate 20
18. Prothorax scarcely broader than long, elevated in middle
 of surface, distinctly punctured at base, *festivus*, Eichh.
 Prothorax at least one-half broader than long, elevated
 before middle, base feebly punctured 19
19. Entirely piceous black, apex of elytra abruptly declivous,
glabratus, Eichh.
 Prothorax ferruginous, elytra infusate, gradually declivous
 at apex *bicolor*.
20. Body narrowed behind from front of prothorax,
attenuatus and *sobrinus*, Eichh.
 cylindrical 21
21. All interstices with traces of tuberculation on apical declivity 22
 First and third interstices tuberculate on declivity, second
 unarmed 23

- All interstices tuberculate above declivity, which is impressed and unarmed (length less than 2 mm.), *minutus*.
22. Prothorax as broad as long, elytra with alternate series of longer and shorter hairs *seriatus*.
 longer than broad, hairs of elytra uniform, *muticus*.
23. Piceous with thorax sometimes lighter. *adumbratus*.
 Ferruginous or testaceous 24
24. Elytra rather strongly striato-punctate *badius*, Eichh.
 finely punctured in rows *vicarius*, Eichh.
25. Declivity with a narrow sulcate impression along suture, each lateral margin with four or five small tubercles *schaufussi*.
 widely impressed, each lateral margin with two strong spines 26
26. Ferruginous brown, apical depression nearly vertical, feebly emarginate below *defensus*.
 Black, apical depression very oblique, strongly emarginate below *exesus*.

Xyleborus mutilatus, sp. n.

FEM. Curta, subnitida, fusco-pilosa, nigra, antennis pedibusque ferrugineis; prothorace magno globoso, lateribus leniter, apice fortiter rotundato et tuberculis duobus ornato, supra in medio transverse elevato et postice utrinque impresso, anterius exasperato, posterius dense punctato, supra scutellum hirto; elytris prothorace brevioribus, a basi fere oblique et abrupte declivibus, supra irregulariter punctatis, declivitate striata, interstitiis granulatis, lateribus et apice infra marginatis. Long. 3.5 mm.

One example, without locality.

Black, with the base of the elytra alone shining, covered with fine erect fuscous hairs. Head large, prominent, finely reticulate, front convex, punctured, and hairy; mouth ciliate with yellow pubescence; eyes small, flat, finely emarginate; antennæ ferruginous, club round, basal joint large, shining, reaching nearly to apex of club. Prothorax a little longer than broad, its base bisinuate, produced behind, basal angles nearly rectangular, sides straight and subparallel behind, becoming more rounded in front with apex broadly convex, apical margin bisinuate, slightly produced in middle and armed with two prominent tubercles; surface very convex, cylindrical at base, with an obtuse transverse elevation in middle, in front of which it is declivous to apex, anteriorly separate and pilose, posteriorly densely punctured except over

two shining lateral impressions, with thin pubescence at sides and a dense patch before scutellum, which is large, shining, and rounded. Elytra as wide but not as long as prothorax, basal borders feebly convex, shoulders narrowly elevated; at first cylindrical, then obliquely declivous from basal fourth to apex, shining and irregularly punctured, the punctures rugose and confluent along basal margin; apical declivity rounded oval with a sharp raised margin to sides and lower border, its surface subconvex, pilose, with impunctate striæ, interstices closely granulate; lateral border of elytra declivous, parallel throughout to margin of apical declivity. Underside black, thinly pubescent, anterior coxæ separated by a narrow prosternal process. Legs ferruginous, tibiæ strongly dilated and obsolete spined; tarsi short, their first three joints compressed, and pilose beneath.

The most extreme type of the truncate *Xylebori* I have seen, and a remarkable instance of the diversity of form which the genus presents.

Xyleborus brevis, Eichh.

Eichh., Rat. Tom., p. 319.

Four examples, Nikko; originally taken at Hagi by Hiller. Identified by the description.

Xyleborus lewisi, sp. n.

FEM. Oblonga, cylindrico-convexa, pilosa, rubra elytris infuscatis; prothorace subgloboso, apice tamen deplanato, supra subaequaliter convexo, opaco, antice fortiter postice paullo subtilius asperato; elytris subnitidis, striato-punctatis, interstitiis subtiliter biseriatis punctatis in declivitate tuberculatis, apice oblique declivi ad suturam impresso. Long. 4.5 mm.

Nikko, Hakono, Miyanoshita, nine specimens.

Oblong, convex, and cylindrical, pilose with long hairs, red with elytra infusate. Head coarsely and rugosely punctured, with an indistinct elevated median line, thinly hairy and ciliate over mouth. Prothorax transverse, nearly globose, but with sides and apex separately rounded and antero-lateral angles more strongly rounded, base subsinuate with obtusely rounded angles; above gibbous and convex, but without median elevation, dull and entirely scabrous, the asperities a little weaker posteriorly. Scutellum rounded, shining, infusate, anteriorly impressed. Elytra as wide as base of prothorax and more than one-half longer, truncate at base,

with humeral angles rounded-rectangular, sides straight but sub-divergent to apex, which is rather abruptly and broadly rounded and inconspicuously carinate below; surface very convex with scarcely impressed irregular striæ of large shallow punctures and long coarse pubescence, especially at apex, interstices finely punctured in irregular double rows, declivity very convex, with first interstice widened, impressed and finely tuberculate, the second very strongly, the rest less strongly tuberculate.

The largest Japanese species of the genus; very like *X. rubricollis*, Eichh., in colour and in the completely asperate prothorax, but very much larger, and with the elytral interstices punctured in double instead of single rows. The prothorax is flattened in front, a feature not found in other species with a short subglobose prothorax.

Xyleborus rubricollis, Eichh.

Eichh., Scol. Jap., p. 202; Rat. Tom., p. 330.

No further examples taken.

Xyleborus apicalis, sp. n.

FEM. Oblonga, subnitida, longius pilosa, piceo-nigra, antennis pedibusque ferrugineo-testaceis; prothorace orbiculato, transverso, margine antico tuberculato, disco transverse elevato, postice subtiliter punctato, margine basali hirto; elytris prothorace, sesqui longioribus, lineato-punctatis, interstitiis irregulariter punctatis, setosis, ad apicem convexe declivibus, praeter suturam impressis, interstitio 2o in summa declivitate obtuse spinato, 3o elevato, tuberculato. Long. 3 mm.

One specimen, without locality.

Oblong, pitchy black with antennæ and legs reddish testaceous. Head finely reticulate, front with scattered strong punctures, thinly hairy, mouth ciliate. Prothorax transverse, truncate at base, basal angles obtusely rounded, sides and apex rounded, the latter more strongly and tuberculate; surface with a median transverse elevation, anteriorly exasperate, posteriorly with fine scattered aciculate punctures, with long pubescence scattered at sides and apex, denser along basal margin. Scutellum triangular, piceous. Elytra rather narrower at base than greatest width of prothorax, and one-half longer, humeral angles obtuse, sides rounded from middle to apex, which is somewhat obtuse; surface cylindrical at base, with rows of punctures, very fine at base becoming strong

about middle, interstices with an irregular series, usually double, of finer setigerous punctures, apical declivity convex, strong but not abrupt, not acutely carinate below, impressed on either side of suture and margined by the elevated and finely tuberculate 3rd interstice, 2nd interstice with a short obtuse spine at upper angle of declivity, hairs long, especially towards apex.

Not unlike *X. atratus*, Eichh., but distinguished by the prothorax being finely punctured behind, the elytral interstices being biserially punctured, and the tubercle on the third. Separable by the structure of the prothorax from *Dryocætes pilosus* and *affinis*.

Xyleborus atratus, Eichh.

Eichh., Scol. Jap., p. 201 ; Rat. Tom., p. 324.

A few more specimens taken at Kiga and Nagasaki.

Xyleborus germanus, sp. n.

FEM. Breviter cylindrica, nitida, picea, antennis pedibusque testaceis ; prothorace subgloboso, convexo, indistincte transverse elevato, anterieus exasperato, posterius subtiliter punctulato, margine basali medio piloso ; elytris prothorace sesqui fere longioribus, ad apicem oblique declivibus et infra carinatis, subtiliter striato-punctatis, interstitiis rarius uniseriatim punctatis in declivitate seriatim pilosis. Long. 2—2·3 mm.

Apparently common ; sixteen specimens altogether have been taken at various places, two or three at most from each.

Oyayama, Nikko, Subashiri, Kiga, Miyanoshita.

Short, cylindrical, piceous, shining. Head finely reticulate, with front convex, scantily punctured, mouth ciliate ; eyes flat, oblong, deeply emarginate. Prothorax as long as broad, base truncate, basal angles rounded, sides scarcely rounded behind, broadly in front ; surface convex with an obtuse median transverse elevation, anteriorly with concentric rows of exasperations, strong over apex, posteriorly shining with scattered fine punctures, pubescence short and sparse, except at apex and in middle of basal margin. Scutellum large, subtriangular, shining. Elytra as wide as thorax, and nearly twice as long ; humeral angles obtusely rounded, sides subparallel to apex, which is abruptly and broadly rounded and carinate below ; surface convex, somewhat rounded from base to middle, then obliquely but not abruptly declivous, piceous-brown,

with fine rows of punctures which appear impressed in certain lights, interstices rather wide, flattish, each with a row of very fine punctures, and behind middle with erect setæ arising from slight tubercles. Underside brown, punctured, pubescent. Legs testaceous.

Closely allied to *X. compactus*, Eichh., but twice as large, with distinct though feebly impressed elytral striæ and regular rows of hairs on the apical declivity, which are confined to the interstices.

Xyleborus compactus, Eichh.

Eichh., Scol. Jap., p. 201 ; Rat. Tom., p. 328.

No further examples taken. The hairs are shorter and more depressed at the apex of the elytra than in the last species, and arise from the striæ as well as from the interstices.

Xyleborus semi-opacus, Eichh.

Eichh., Rat. Tom., p. 330.

Five specimens, Konose, Kyoto, Chiuzenji ; also at Hong-Kong in China (*J. J. Walker*).

The type is not in Mr. Lewis's collection, but the species is unmistakable. In certain lights rows of punctures can be seen on the elytra, but they are not at all clear, and cannot be confounded with the distinct lines occurring in most of the genus.

Xyleborus concisus, sp. n.

Oblongus, nitidus, ferrugineus, prothorace et elytris ad apices infuscatis, breviter ac parce pilosus ; prothorace transverso lateribus leniter, apice fortius rotundato et crenato, supra in medio obtuse transverse elevato, postice discrete punctato ; elytris latitudine a basi crescentibus, lateribus rectis, apice rotundato, striato-punctatis, interstitiis subtilius uniseriatim punctatis, declivitate valde obliqua, ante medium incipiente, subconvexa, squamis oblecta, striata. Long. 2.4 mm.

One example, without locality.

Oblong, ferruginous, with apex of prothorax and elytra slightly infuscate. Head piceous, finely reticulate, front subconvex, sparsely and strongly punctured towards sides and scantily pubescent, with a transverse impression over mouth, above which is a somewhat

tuberculate elevation. Antennæ testaceous. Prothorax transverse, not narrowed towards apex; base truncate, posterior angles rounded, sides and apex rounded, the former very feebly, the latter more strongly, with margin crenate; surface with an obtuse transverse elevation in middle, rather finely asperate anteriorly, posteriorly with distinct scattered punctuation. Scutellum triangular, shining. Elytra rather less than twice as long as prothorax, and as wide at base, which is truncate, with the humeral angles nearly rectangular, sides straight but divergent to apex, which is circularly rounded and narrowly emarginate at suture; surface at base cylindrical and longitudinally convex, striato-punctate, interstices flat, with a single row of very fine punctures, apical declivity sharply marked, very oblique, beginning before middle of elytra, dull and clothed with cinereous scales, subconvex, impressed along inferior margin which is acute, striate, the interstices flat. Underside testaceous, thinly pubescent. Legs testaceous, the anterior tibiæ obliquely truncate and uncinatè at apex, middle and posterior tibiæ rounded.

This species corresponds closely to Eichhoff's description of *X. sordicauda*, Motsch., from which it differs in no important respect except in size. *X. sordicauda* is said to be twice as large as *X. semi-opacus*, Eichh., whereas this specimen is rather smaller.

Minor points of difference from the description of *X. sordicauda* are found in the prothorax, which is not contracted anteriorly, and in the elytra being dilated posteriorly, with the apical margin more strongly rounded. I conclude that it is distinct, and that we have an instance of what is common in the genus, a well-marked form represented by more than one species. It may easily be separated from *X. semi-opacus* by the punctured striæ of the elytra.

Xyleborus validus, Eichh.

Eichh., Scol. Jap., p. 202; Rat. Tom., p. 358.

Taken in greater numbers than any other species; extending from Sapporo and Junsai in Yezo, to Nagasaki and Oyayama in Kiushiu, also at Nikko, Miyanoshita, etc. As there is a closely allied and hardly distinguishable species from Ceylon, it represents an Oriental rather than a Palæartic type. It is found in firs.

Xyleborus obliquecauda, Motsch.

Phlæotrogus obliquecauda, Motsch., Bull. Mosc., 1863, i., p. 513.

Xyleborus carinipennis, Eichh., Berl. Zeit. 1868, p. 152.

X. obliquecauda, Eichh., Rat. Tom., p. 351.

One specimen, near Yokohama, Oct. 7th, 1881. It appears to me identical with examples taken by Mr. Lewis in Ceylon, and corresponding to Eichhoff's description of *X. obliquecauda*. The prothorax is a trifle more depressed, and the elytral striæ more regular and not at all impressed; but there is no more variation than might be expected between specimens from distant localities.

Xyleborus aquilus, sp. n.

FEM. Oblonga elongata, nitida, breviter pilosa, ferrugineo-picea, antennis pedibusque ferrugineis; prothorace subquadrato, lateribus et apice singulatim leniter rotundatis, in medio transverse gibboso, postice subtiliter disperse punctato; elytris ad apicem oblique declivibus, infra subtiliter carinatis, leniter striato-punctatis, striis in declivitate impressis, interstitiis planis uniserialiter setosis, in declivitate convexis, tuberculatis. Long. 3.2—3.5 mm.

Six examples taken at Oyayama and Hitoyoshi in Kiushiu, one near Kashiwagi.

Somewhat similar to *X. eurygraphus*, Ratz, but narrower and less convex, with the prothorax shorter and less evidently quadrate, the elytral striæ much finer, and the interstices convex at apex, more finely and evenly tuberculate. Ferruginous-brown or piceous; head dull, front punctured, thinly pubescent, with an obsolete median raised line. Prothorax a little longer than broad, truncate at base, with posterior angles obtusely rounded, sides and apex separately slightly rounded, antero-lateral angles more strongly; surface gibbous in middle, the elevation transverse but short, its anterior half rather finely asperate, the posterior half shining, scantily and finely punctured. Scutellum small, triangular, shining. Elytra slightly narrower than prothorax at its widest part and about one-half longer, humeral angles rounded rectangular, sides parallel to apex then subcircularly rounded and margined; surface slightly convex from base to declivity, which is oblique, with fine punctured striæ, little or not at all impressed before apex, where they are dilated, with a slight outward curve, interstices with a single row of setæ, flat anteriorly, convex at

apex and finely tuberculate, the first having traces of tubercles from the middle. Underside ferruginous, thinly hairy.

There are two forms of this species, one slightly shorter with the elytral striæ not impressed at all on the declivity, which is impressed transversely, somewhat dull, and sub-acuminate at apex; the tubercles are finer than in the other form, in which the striæ are impressed, and the apex is shining and subconvex. One specimen, however, appears to be intermediate, and therefore I do not separate them, though at first sight they appear specifically distinct.

Xyleborus praeivius, sp. n.

FEM. Elongata, subcylindrica, nitida, parce pilosa, picea, antennis pedibusque testaceis; prothorace paullo longiore quam latiore, lateribus leniter, apice fortiter rotundato et crenato, disco umbonato, postice sparsim distincte punctato; elytris prothorace plus quam sesqui longioribus, ad apicem oblique declivibus et infra carinatis, declivitate utrinque subimpressa, supra subtiliter lineato-punctatis, interstitiis rarius uniseriatim punctatis, postice obsolete tuberculatis. Long. 3 mm.

One example, without locality.

Similar to *X. aquilus*, but smaller, more slender and with the interstices flat on the apical declivity.

Head dull with front flattened, coarsely punctured at sides, with a smooth elevated area in middle, pubescence short except over mouth, eyes wide, not deeply emarginate, antennæ testaceous. Prothorax a little longer than broad, its base truncate, basal angles obtuse, sides scarcely rounded behind, becoming gradually more strongly rounded to apex, which is crenate, surface elevated in middle, the elevation not evidently transverse, anterior half with rather scattered transverse asperities, becoming very fine over median elevation, posterior half shining, with irregular scattered but distinct punctures. Scutellum small, obtuse triangular, shining. Elytra as wide as base of thorax, and more than half as long again, humeral angles obtusely rounded, sides not quite parallel, slightly dilated in middle, subcircularly rounded and carinate at apex, surface slightly convex from base to apex, thence somewhat obliquely declivous, with rows of shallow punctures, which are not impressed, interspaces between punctures transversely rugose, interstices with a single row of setæ, arising from fine tubercles on the whole of the first two, and the apice

of the remaining interstices. Apical declivity with a shallow impression on either side of the suture. Underside ferruginous, with abdomen darker, very scantily punctured and pubescent. Legs reddish testaceous.

Xyleborus seriatus, sp. n.

FEM. Oblonga, cylindrica, subnitida, pilosa, fusco-picea elytris dilutioribus, antennis pedibusque rufescentibus; prothorace longitudine et latitudine aequali, apice fortiter, lateribus paullo rotundatis, supra transverse subelevato, postice subtiliter reticulato et fortiter punctato, linea media laevi; elytris ad apicem oblique declivibus, declivitate subimpressa subtus haud acute carinata, setis alterne longioribus et brevioribus seriatis, lineato-punctatis, interstitiis uniseriatim punctatis versus apicem tuberculatis. Long. 2.5 mm.

Two examples taken at Nikko and Miyanoshita.

Oblong, cylindrical, dull piceous with elytra lighter. Head finely reticulate, front nearly flat, scantily punctured and pubescent, with an indistinct median longitudinal elevation, mouth ciliate, eyes deeply emarginate, antennæ testaceous. Prothorax as broad as long, truncate at base with posterior angles obtuse, sides slightly rounded, in front strongly rounded to apex; above with an obtuse transverse elevation in middle, anterior half asperate, posterior half finely reticulate and strongly punctured, the punctures becoming asperate at sides, with a smooth median line, pubescence short and scanty. Scutellum small, rounded, piceous. Elytra as wide as prothorax, and more than half as long again, truncate at base with humeral angles rounded rectangular, sides parallel to middle, then obliquely and gradually rounded to apex; surface cylindrical to middle, obliquely declivous behind, the declivity impressed weakly at sides of suture, with inferior margin inflexed but not carinate, with scarcely impressed rows of strong close setigerous punctures, the setæ very short and fine, interstices with a single row of punctures, a little finer and less numerous, bearing longer setæ, and very finely tuberculate for apical half. Legs ferruginous.

This species resembles *X. dryographus*, Ratz., but the prothorax is shorter and more strongly punctured behind. The elytral punctuation is much stronger, and the rows of shorter and longer setæ are quite distinctive. It is allied to Eichhoff's section + + +, in which the prothorax is defined as being cylindrical and oblong; but in this species the prothorax is so short, that it will not serve to separate it from the insects of section +.

Xyleborus pelliculosus, Eichh.

Eichh., Rat. Tom., p. 336.

Two examples, Kiga.

I have not seen the type of this insect, and am less certain, than with other unseen species, that I have here the true *X. pelliculosus*. But the description fits it, and my doubt is rather owing to the fact that there exist other at present undescribed species of similar *facies* in the Oriental region. It is quite easily distinguished by the rather dense and almost downy pubescence, and the confusedly and finely punctured elytra, which bear only the feeblest traces of striæ. One example is black, the other sordid testaceous. The shape of the prothorax would lead me to put it in Eichhoff's group + + + rather than +, but it is a distinct form, and not very closely related to any other described species. I have placed it in the neighbourhood of *X. muticus*, which is of similar build, without evident elevation of the prothorax, but that species has the elytra plainly lineato-punctate.

Xyleborus muticus, sp. n.

FEM. Elongata, cylindrica, subnitida, pilosa, rufo-picea, antennis pedibusque ferrugineis; prothorace oblongo, antice fortiter rotundato, supra parum gibboso, post medium punctis subaciculatis subtilibus notato; elytris lineato-punctatis, interstitiis subtilissime uniseriatim punctatis et pilosis, apice fortiter declivi, ad suturam subimpresso, striis impressis, interstitiis vix perspicue tuberculatis. Long. 3 mm.

Two examples, near Kashiwagi.

Ferruginous-pitchy, with rather long soft pubescence. Head ferruginous, dull, front convex, punctured at sides with a median impunctate slightly raised line, pubescence scanty and short except over mouth; antennæ ferruginous. Prothorax oblong, base truncate, basal angles obtusely rounded, sides straight, slightly divergent from base towards apex, which is strongly rounded; surface with only the slightest trace of a transverse elevation, thinly pubescent especially at sides and apex, its anterior third with rather close transverse asperities which become weaker, but are continued back to posterior third, which is very finely reticulate, dull and subaciculately punctuate, the punctures rather close at the sides. Scutellum rounded, piceous, shining. Elytra slightly

wider than prothorax at base and about half as long again, humeral angles subrectangular, shoulders narrowly callose, sides parallel to behind middle, thence rounded to apex, which is not carinate below; surface cylindrical with slightly impressed rows of oblong punctures, interstices narrow with a single row of very fine setigerous punctures, about as numerous as those of striæ, the hairs stronger towards apex, which is strongly but obliquely declivous, slightly flattened, and impressed along the suture with the punctures of the striæ larger, rounded, and shallow; interstices flat with microscopic traces of tuberculation, rather more evident on the third interstice. Underside and legs ferruginous, the former shining, punctured, and pubescent.

In the feeble development of any apical armature to the elytra, this species differs from any described by Eichhoff. Other examples of the same type occur in the Oriental and Polynesian regions, *e.g.*, *X. obliquus*, Sharp, from Hawaii.

Xyleborus festivus, Eichh.

Eichh., Scol. Jap., p. 202; Rat. Tom., p. 366.

No further examples have been taken.

Xyleborus glabratus, Eichh.

Eichh., Rat. Tom., p. 381.

Yokohama, Higo; a few specimens.

Xyleborus bicolor, sp. n.

FEM. Elongata, cylindrica, nitida, subglabra, capite et prothorace ferrugineo-testaceis, elytris fusco-piceis, antennis pedibusque testaceis; prothorace oblongo, antice fortiter rotundato, in medio subgibboso, postice sparse punctato, linea media obsolete elevata laevi; elytris ad apicem oblique declivibus et infra carinatis, subtiliter lineato-punctatis, interstitiis 1o et 3o ad apicem tuberculatis. Long. vix 2 mm.

Four examples, Nagasaki, Feb. 21st, 1881; one at Inasa on *Kashinoki* (*Ilex* sp.).

Reddish testaceous with the elytra piceous brown. Head finely reticulate, front flattened, impressed on either side with a group of punctures, pubescence very scanty, mouth ciliate. Eyes oval with a deep angulate emargination. Antennæ testaceous. Prothorax oblong, base truncate, basal angles obtusely rounded, sides

nearly straight, slightly divergent from base to near apex, which is strongly rounded, surface somewhat depressed, declivous for anterior third, its junction with the posterior cylindrical part marked by a fine elevation at the apex of an indistinct raised line reaching nearly to base ; finely asperate in concentric lines before elevation, with sparse short hairs, basal half shining, feebly punctured, with a row of more distinct punctures on either side of central line. Scutellum rounded, piceous, shining. Elytra as wide as base of prothorax and half as long again, basal angles rounded rectangular, humeral callosities distinct, sides subparallel, apex circularly rounded and acutely margined below by the 7th interstice ; surface subdepressed, very obliquely declivous at apex, punctured in rows, interstices flat with a single row of very fine sparse punctures ; declivity with 1st and 3rd interstices elevated, finely tuberculate and setose. Underside and legs testaceous, the former punctured at sides and at apex of abdomen.

Readily distinguished by its small size, narrow form, fine sculpture and colour.

Xyleborus attenuatus, sp. n.

FEM. Elongata cylindrica, a prothorace medio posterius subangustata, subnitida, pilis erectis brevibus pubescens, picea ; prothorace oblongo, in medio transverse elevato, postice sublaevi, punctis minutis notato ; elytris ad amussim punctato-striatis, interstitiis uniseriatim punctatis, apice subopaco, oblique rotundato, sutura elevata, interstitiis 1o, 3o, et 4o tuberculatis, 2o inermi. Long. 2.6. mm.

One example, Nikko.

Very closely allied to *X. saxeseni*, Ratz., like the following species, but in my opinion distinct from either. From *X. saxeseni* it differs as follows :

The body is more elongate and evidently narrowed, especially towards the apex of the elytra, and is furnished throughout, including the posterior half of the prothorax, with short upstanding hairs ; thoracic tubercle more elevated, the surface behind less shining, more evidently and closely punctured ; elytral punctures stronger and rather closer, 2nd interstice more deeply impressed at apex, and the tuberculation stronger ; third stria also somewhat impressed. From *X. sobrinus* it can be distinguished by its larger size, the distinct and regular rows of punctures on the elytra,

and the wider space between the two inner rows of tubercles on the apex, which is distinctly punctured in the line of the two first striæ.

Xyleborus sobrinus, Eichh.

Eichh., Scol. Jap., p. 202; Rat. Tom., p. 363.

Four specimens added from Chiuzenji.

Somewhat variable in the sculpture of the elytra and the development of the elytral tubercles, which are usually much stronger than in any specimens of *X. saxeseni*. The tubercles of the 1st interstice begin about the middle of the elytra, whereas in the single example of *X. attenuatus* they are confined to the declivity.

A specimen from Hiogo in Colonel von Schönfeldt's collection is not separable from *saxeseni* by any characters. As it is quite possible that there may be two or three species allied to *saxeseni* in Japan, I allow this and the preceding species to stand as a help for further investigations.

Xyleborus adumbratus, sp. n.

FEM. Oblonga, cylindrica, nitida, pilis erectis adspersa, nigra vel picea, prothorace nonnunquam rufescente, antennis pedibusque testaceis, his infuscatis; prothorace oblongiusculo, apice fortiter rotundato, in medio transverse elevato, postice sparse subtiliter punctulato; elytris punctato-striatis, interstiis subrugosis, uniseriatim subtiliter punctatis et pilosis, duobus primis a basi tuberculatis, apice declivi deplanato, sutura ad apicem solum callose elevata, interstitiis 1o et 3o tuberculis acutis ornatis. Long. 3 mm.

Eight examples taken at Nagasaki, Hitoyoshi, Oyama, and Subashiri.

Closely allied to *X. pfeili*, Ratz., of which it is perhaps a mere geographical variety.

It varies in colour from black to piceous brown, with the thorax sometimes lighter than the elytra. Head as in *X. pfeili*, with the front strongly punctured, with a more or less evident longitudinal carina. Prothorax as in *X. pfeili*, but with the hairs longer, and the central elevation more prominent and transverse; its basal half very shining, diffusely punctured except behind elevation, where the punctures are closer. Elytra one half longer than prothorax, a little shorter and more convex than in

X. pfeili; sides parallel at base, slightly narrowed and rounded behind middle, apex feebly produced in middle, sinuate on either side; their sculpture similar to that of *X. pfeili*, but with the punctuation a little stronger and the points of insertion of the hairs on the two first interstices more or less evidently elevated and tuberculate. Apical declivity with suture not elevated except at apex, where it is callose, the tubercles more prominent, and surface less wrinkled and more clearly punctured. Underside piceous, or testaceous, with abdomen darker.

Xyleborus badius, Eichh.

Eichh., Berl. Ent. Zeit., 1868, p. 280; Rat. Tom., p. 379.

Hiogo, one example (*von Schönfeldt*).

I can see no difference whatever between this insect and a typical example from Madagascar.

Xyleborus vicarius, Eichh.

Eichh., Scol. Jap., p. 203; Rat. Tom., p. 376.

No further examples taken.

The apical declivity of the typical specimens is decidedly dull, as in *X. affinis*, Eichh., and not shining as described by Eichhoff.

Xyleborus minutus, sp. n.

FEM. Oblonga, nitida, pilis brevibus erectis ornata, ferrugineo-testacea; prothorace latitudine paullo longiore, lateribus leniter, apice fortiter rotundato, supra in medio elevato-nodoso, postice discrete subtiliter punctulato; elytris lineato-punctatis, interstitiis vix perspicue uniseriatim punctatis, ad apicem oblique declivibus, declivitate deplanata, subimpressa, interstitiis omnibus subtilissime post medium tuberculatis, versus apicem muticis. Long. 1.5—1.7 mm.

Three examples, Inasa.

At present the smallest species in the genus, shorter though more robust than *X. bicolor*.

Oblong, subcylindrical, testaceous-brown, a little darker at the extremities. Head finely reticulate, testaceous with epistoma darker, front subconvex, punctured at sides and shortly pubescent, with a median longitudinal elevation towards vertex, carinate in one example, mouth shortly ciliate, eyes oval, flat, emarginate,

antennæ testaceous. Prothorax a little longer than broad, slightly rounded at base, basal angles obtuse, sides gently rounded to near apex, which is strongly rounded; surface with a slight nodose elevation in middle, scantily pubescent at sides and apex, its anterior half with concentric asperations, the posterior half shining, finely punctured with a groundwork of very fine parallel scratches. Scutellum rounded, shining, infusate. Elytra as wide as base of prothorax and rather less than half as long again, base truncate, humeral angles subrectangular rounded, sides very feebly rounded, nearly parallel, apex strongly rounded, with the lateral margin inflexed below for a very short distance, but scarcely carinate; surface shining, convex from base to posterior third, thence obliquely declivous, the declivity flattened and more or less impressed, with rows of punctures which appear large, rounded, and dark when strongly illuminated, interstices somewhat irregular, with single rows of very fine sparse punctuation and short erect hairs, behind middle with fine tuberculation, obliterated on the impressed apical area on which the striæ are slightly impressed, and curved inwards at the tip. Underside and legs testaceous.

Xyleborus schaufussi, sp. n.

Elongatus, cylindricus, nitidus, ferrugineo-brunneus vel piceus, pilosus; prothorace oblongo, apice rotundato supra vix gibboso, postice subtiliter punctulato; elytra subtiliter lineato-punctatis, striis haud impressis, interstitiis discretius uniseriatim punctatis, apice retuso, laevi, ad suturam profunde impresso, lateraliter utrinque elevato, tuberculis 4 aut 5 ornato.

MAS. Minor, angustior.

Long. MAS.—2.7 mm.; FEM.—3 mm.

Several examples taken at Lake Junsai and Nikko.

Varying in colour from ferruginous-brown to piceous. Head dull, front convex strongly punctured at sides, smooth in middle with a slight longitudinal elevation over mouth; pubescence grey, rather long, mouth ciliate with yellow hairs, eyes not deeply emarginate, antennæ testaceous-brown. Prothorax oblong, narrower in male than in female, base truncate, basal angles rounded, sides parallel, apex strongly rounded; surface with only a trace of a central elevation, with very short scanty pubescence, longer at sides and apex, its anterior third with rather fine imbricate asperities, basal part shining, finely punctured with an indistinct smooth central line. Scutellum very small, triangular, depressed. Elytra barely as wide as prothorax and rather more than half as

long again, separately, but slightly rounded at base, humeral angles rectangular, shoulders scarcely prominent, sides parallel to behind middle, thence gently rounded, apices nearly truncate, or separately rounded with slight median emargination; surface shining, finely punctured in rows, interstices with a single row of punctures, as strong but not so frequent as those of striæ, and with a series of fine hairs which are longer posteriorly; behind convex, strongly and nearly vertically declivous, deeply impressed along suture for posterior third of elytra, the depression smooth, shining, with elevated callose sides, bearing four or five tubercles on the third, and finer ones on the succeeding interstices, first and second interstices with two or three fine tubercles before apical impression. Underside testaceous-brown, punctured at sides and very scantily pubescent. Legs testaceous with knees infusate. Male similar in sculpture to female, but smaller and more slender.

The impression of the elytral apex is much deeper than in *X. confusus*, Eichh., and resembles that of certain *Pityophthori*.

Xyleborus defensus, sp. n.

FEM. Elongata, cylindrica, ferrugineo-brunnea, breviter pilosa; prothorace oblongo, apice rotundato, supra leniter gibboso, postice distincte sparsim punctato; elytris lineato-punctatis, interstitiis uniseriatim punctatis, apice subcirculatim excavato retuso, infra emarginato, in retusionis margine dentibus duobus acutis utrinque armato. Long. 3 mm.

One specimen, Sapporo.

Similar to the last species, but with the following distinctive features:

Body stouter and more convex; prothorax slightly narrowed towards the apex and not regularly rounded, median elevation evident, though small, punctuation of the basal half stronger and rather irregular. Punctures of the elytra stronger and less numerous, interstices somewhat rugose; apex widely impressed, with the elevated callose margin subcircular, but not reaching the suture below, so that the lower border has a shallow emargination, impressed surface shining and impunctate; there are, on each side, two minute tubercles before it close to the suture, and two spines just within the lateral margin, one near the upper extremity, the other about the middle. Antennæ, legs and underside ferruginous.

I have not seen *X. fallax*, Eichh., to which this species is allied in the structure of the elytra; but the former differs according to the description in several points. It is more elongate, with the posterior half of the prothorax very finely punctured, the apical emargination of the elytra deep, and the impressed surface rugosely punctured.

Xyleborus exesus, sp. n.

FEM. Elongata, cylindrica, nitida, parce pubescens, piceo-nigra, antennis pedibusque ferrugineis; prothorace oblongo, parum gibboso, postice distincte ac discrete punctato, linea media laevi; elytris lineato-punctatis, interstitiis subtilius uniseriatim punctatis subrugulosis, apice oblique declivi, fortiter excavato-retuso, margine elevato utrinque bispinato, infra subcirculatim emarginato. Long. 3.6 mm.

Two examples, Miyanoshita.

Cylindrical, pitchy-black. Head dull, convex, with long thin pubescence, mouth ciliate, front punctured at sides, with an elevated smooth space widened behind and impressed in middle, eyes broad oval, anteriorly emarginate, antennæ ferruginous. Prothorax about one-half longer than broad, base slightly rounded, basal angles obtusely rounded, sides subparallel behind becoming rounded gradually and more strongly towards apex; surface cylindrical behind, declivous in front, but without median elevation, its pubescence thin, rather long at apex and sides, absent over basal area, anterior half with fine imbricate asperities, posterior half shining, distinctly punctured, with a smooth central line, the punctures stronger and more scattered towards the base. Scutellum small, rounded, not depressed. Elytra as wide as prothorax, and rather more than half as long again, base truncate, shoulders subrectangular rounded, sides parallel to behind middle, thence gently rounded to apical border, which is strongly and almost abruptly rounded, with the median third subcircularly emarginate; surface shining, gently convex from base to apex, with a few hairs, distinctly punctured in rows, first stria with punctures stronger towards base, but not impressed; interstices rugose, with a row of fine scattered punctures, the first widened posteriorly with two or three fine tubercles before declivity, which is very oblique, beginning at the base of the posterior third of the elytra, and excavate; the excavation smooth, impunctate, and shining, with the suture narrowly elevated, its lateral margins sharply

raised, crenate, fringed with a few long hairs, and armed with two spines, one small, near the suture, at the apex of the 2nd interstice, the other about the middle, at the apex of the 5th interstice, longer and directed backwards. Underside deep ferruginous. Legs ferruginous with knees infusate.

Readily distinguished from *X. defensus* by its larger size, colour, and the obliquity of the apex, the impressed surface of which is not circular but elongate; the apical emargination is much deeper and more abrupt. It is allied to *X. emarginatus*, Eichh., but as the apical impression in that species is described as being subrugose and somewhat closely punctured, it is obviously distinct. This type of *Xyleborus*, with an impressed, emarginate, and spined apex to the elytra, appears to be rather common in the Oriental region. I have other undescribed species in my collection, which can easily be separated by comparison, though they run very close in structural features. They are, in spite of their shape, true *Xylebori*, and show no generic differences upon dissection.

It is a peculiarity of this genus that the descriptions and differentiations of the species it contains are based almost entirely on the characters of the females. The males are so rarely taken, that but very few have ever been described among exotic species. As they are subapterous, and incapable of flight, they are not to be obtained except by a special search in the burrows they inhabit, a task usually too tedious to be attempted by a collector who is devoting his attention to one or more Orders in a foreign country. A further acquaintance with them would be of material assistance towards grouping the species of the genus, as, though small and ill-developed in comparison with the females, they present some well-marked differences of structure. In form they are of two types, one, short and subglobose, as *X. dispar* ♂, the other, cylindrical and similar to the female, but shorter, often more convex and less robust, as *X. saxeseni* ♂, and *X. schaufussi* ♂. For the insects whose males are of the former type, Ferrari has proposed the genus or subgenus *Anisandrus*, which is at present of no use, as one cannot yet say with certainty what characters of the female are connoted with that particular type of male, which probably merges into the

other by intermediate forms. Other differences, besides those of form, are found in the prothorax, which is frequently impressed in front, and furnished with a structure on its apical margin, varying from a minute tubercle, as in *X. dryographus* ♂, to a spine; in some species, as in *X. coronatus*, Eichh., from Venezuela and Brazil, and others from Madagascar, this median spine is strongly developed and bifid, and there are two lateral processes. In the present collection the males of but two species are associated with their females, *X. vicarius*, Eichh., and *X. schaufussi*, m.; there are, moreover, the males of three species which I cannot assign with certainty to any female forms, and am compelled to describe under separate provisional names. The dates and localities of capture have proved of no assistance towards identifying them. In one species, *X. cucullatus*, the anterior margin of the prothorax presents a new modification, being produced obliquely forwards and downwards into a flat plate, which completely conceals the head, in a second, *X. orbatus*, there is no process of the prothorax, and the general type is that of *X. dispar* ♂, while the remaining species, *X. galeatus*, has a deep anterior prothoracic impression with a strong apical spinous process which conceals the head, and is of the type of *X. eurygraphus* ♂, Ratz.

Xyleborus cucullatus, sp. n.

MAS. Breviter oblongus, subnitidus, pilosus, piceo-niger, antennis pedibusque ferrugineis, prothorace longitudine et latitudine subaequali, a basi fere oblique declivi, deplanato, et in lobum transversum marginatum supra caput producto, dense punctato, punctis versus apicem exasperatis; elytris lineato-punctatis, interstitiis multipunctatis, ad apicem fortiter declivibus, subtruncatis, declivitate subconvexa, immarginata, striata, granulata. Long. 2—2.6 mm.

Four examples, Kurigahara, and Konose in Higo.

Short, oblong, slightly shining, lighter or darker piceous, with rather long pubescence. Head completely hidden from above and in front, ferruginous, smooth and indistinctly punctured, pubescence almost absent, eyes very small, quite flat with few facets antennæ ferruginous, of the usual structure, the sensitive surface

of club very oblique. Prothorax rather broader than long (its apparent length varying according to the angle at which it is viewed), base truncate, basal angles obtusely rounded, sides rounded, above obliquely declivous and flattened anteriorly, the declivity prolonged backwards in the middle line to basal third, anterior border produced in a line with the declivous surface into a transverse lobe, covering head, its margin rounded and elevated; surface obtusely elevated behind apical lobe and at sides of declivity, closely punctured, and with a more or less evident smooth median line from base to middle, the punctures finely asperate anteriorly for a variable distance, interspaces finely reticulate. Scutellum small, rounded triangular. Elytra narrower than prothorax, an about one third longer, base truncate, basal angles rounded, humeral elevations scarcely traceable, sides parallel to behind middle, thence rounded to apex; surface convex, subcylindrical at basal half, with indistinct rows of punctures, interstices multipunctate, apex very strongly but obliquely declivous, the declivity subconvex, circular in outline, not acutely margined, granulately punctured and indistinctly striate. Legs rather long, apices of anterior tibiæ subtruncate, outer margin of middle and posterior tibiæ broadly rounded serrate.

The specimens vary in colour, gloss, and the closeness and degree of asperity of the thoracic sculpture. One example from Higo is at first sight very different. It is smaller, darker, more truncate, with the prothorax shorter and the anterior lobe more declivous. It may quite possibly be the male of a different species, but presents no essential differences of structure or sculpture. *X. cucullatus* is perhaps the male of *X. brevis*, Eichh., and is certainly allied to it; but the Higo example alone appears small enough to stand as the male of that species, and in all the rows of punctures on the elytra are more evident than in *X. brevis*. The specimen from Kurigahara has been placed, by Mr. Lewis, on the same card with the next described species, as the corresponding sex. But I do not see my way to accepting this. If it be so, *X. cucullatus* must be the female, and in all characteristics it is a male; the generative organs, as far as I have been able to examine them, agree with those of *X. dispar* ♂, the elytra appear to be soldered, and the wings are either completely absent or very minute.

Xyleborus orbatus, sp. n.

MAS. Brevis, subglobosus, subnitidus, ferrugineus, longius pilosus, prothorace transverso, aequae rotundato convexo, anterius exasperato, posterius rugoso; elytris a basi usque ad apicem rotundatis, lineato-punctatis, interstitiis subrugosis uniseriatim punctatis. Long. 1.5 mm.

One example taken with the last species at Kurigahara.

Of the type of *Xyleborus dispar*, ♂. Very short and subglobose, somewhat depressed, ferruginous with very long scattered pubescence. Head with front nearly flat, reticulated, sparingly punctured and pubescent, eyes small, antennae testaceous. Prothorax one-third broader than long, base truncate, basal angles very broadly rounded, sides and apex strongly rounded, surface uniformly but not strongly convex from base to apex, which is not produced in front, asperate anteriorly, the asperities becoming more scattered and punctiform towards base, interstices finely reticulate except at extreme base. Scutellum triangular. Elytra as wide as prothorax and half as long again, with humeral angles rounded, sides rounded from base to apex, rather more strongly behind middle, surface uniformly convex with indistinct rows of shallow punctures, interstices with a single series of punctures bearing long hairs. Legs long, slender, testaceous; tibiae feebly dilated and spined.

This insect may be the male of *X. germanus*, M., or *semi-opacus*, Eichh. I have described it for the sake of completeness, and not because I think that any useful purpose is served by describing these isolated males unless they exhibit some salient features.

Xyleborus galeatus, sp. n.

MAS. Oblongus, cylindricus, subnitidus, parce longius pilosus, ferrugineo-piceus; prothorace oblongo, versus apicem fortiter excavato sulcato, margine apicali in corniculum validum producto, supra anterius exasperato, posterius disperse punctato; elytris ad apicem oblique et convexe declivibus, declivitate infra marginata, supra lineato-punctatis, interstitiis rarius uniseriatim punctatis, 10 et 30 in declivitate tuberculatis. Long. 3.5 mm.

One specimen near Nagasaki.

Oblong, cylindrical, shining, deep ferruginous-brown, pubescence thin and long. Head completely hidden in front and below by

prothorax, antennæ ferruginous. Prothorax longer than broad, subtruncate at base with posterior angles rounded, sides slightly rounded, apical angles strongly rounded, apex transverse but produced in middle into a strong triangular spine directed forwards and upwards, anterior opening of prothorax horizontal, slightly produced downwards below spine; surface convex, with a median obtusely pointed elevation, in front of which is a deep triangular impression reaching apical spine, its anterior half very finely asperate, its posterior half with distinct scattered punctuation. Scutellum very small, triangular. Elytra narrower than prothorax and one-third longer, separately convex at base with margin elevated, humeral prominences obsolete, sides subparallel to apex, which is broadly rounded; surface nearly cylindrical, declivous and convex at apex, the declivity finely carinate below for a short distance, with rows of fine punctures; interstices flat, subrugose, with a single row of remote piliferous punctures, on declivity more distinctly and transversely rugose, 1st and 3rd with four or five fine tubercles, 2nd with traces of two tubercles on summit only. Legs ferruginous, tibiæ strongly dilated and serrate.

This insect is the male of a species in Eichhoff's section + + to which *Xyleborus obliquecauda*, Mots., *X. aquilus*, M., and *X. validus*, Eichh., belong. It is most like the last species, but does not resemble it very closely, and may be the male of a species of which Mr. Lewis has not taken the female.

TRYPODENDRON, Steph.

There are at present two Japanese species, one of which is merely a geographical variety of the European *Trypodendron quercus*, Eichh.

Trypodendron quercus, Eichh., var. *niponicum*.

Majus, prothorace pro maxima parte nigro, plaga basali testacea, elytrorum lateribus ad versuram apicalem angulatis, subproductis, apice utrinque distincte sinuato. Long. 3.6—4 mm.

A dozen examples taken at Miyanoshita, and one at Oyayama.

The black patches on the thorax and the elytral vittæ are of the same shape as in the type, but better marked, the thorax being suffused as a rule with black except at the base, and the elytral vittæ reaching the base in all mature specimens. The most distinct character is the prominence of the angle of junction between the sides of

the elytra, and the apical margin which is thereby sinuate at the sides. This feature, though not usual in European examples, is distinctly traceable in a less degree in one specimen of my series from the Ardennes, and is therefore not specific. I do not think that the identification of this species with Fabricius' *Apate signata* is proved.

Trypodendron pubipenne, sp. n.

Oblongum, subnitidum, pilis longis adpersum, fusco-nigrum, elytris testaceis, sutura et apice infuscatis, antennis pedibusque testaceis; clava antennarum ovali, haud acuminata; prothorace obscuro, anterius exasperato, posterius in medio subtilissime aciculato-punctato, lateribus muticis; elytris apice obtuso, vix perspicue lineato-punctatis, interstitiis subrugulosis, multipunctatis.

MAS. Capite angusto, fronte depressa, supra inter partes oculorum superiores carinula transversa nitida ornata; prothorace anterius fortiter angustato.

FEM. Capite lato, fronte subconvexa; prothorace minus angustato. Long. 3 mm.

Four specimens taken at Sapporo, Kiga, Miyanoshita, and Ichiuchi.

Oblong, fuscous-black with elytra dull testaceous, darker along suture and at apex, moderately shining, with long downy pubescence. Head in male narrow with front flattened, longitudinally impressed, dull, sparsely punctured and pubescent, upper divisions of eyes with a narrow raised glossy margin continued as a transverse grooved ridge across vertex; in female broader, subconvex, transversely rugose, scantily punctured and hairy. Antennæ with club oval, not acuminate, completely pubescent. Prothorax transverse, strongly constricted in front in male, less so in female, its sides rounded, apical margin bituberculate, acuminate in male, the whole surface dull with very fine granulations, gibbous in female, depressed in male, with scattered hairs, absent over sides of base, in front with asperate tubercles, becoming finer and produced in middle nearly to base, which is without aciculations at sides. Scutellum piceous, triangular, pubescent. Elytra less than twice as long as prothorax and narrower than its greatest width, sides subparallel, apex obtusely rounded, surface with long pubescence chiefly at sides and apex, finely punctured in rows, interstices multi-punctate, subrugose, the punctures as in the allied species not readily distinguishable from those of the striæ. Underside fuscous-black, almost impunctate, pubescent.

In the weakness of the elytral striæ and the length of the pubescence this species is allied to *Trypodendron politum*, Say (*unicolor*, Eichh.), from N. America, which I have not seen. It has no trace of a suture on the antennal club, nor is it especially narrow, both points being characteristic of *T. politum* (Lec. *Rhync. N. Am.*, pp. 357, 358). It differs from Eichhoff's description of *T. unicolor*, in being not elongate, in the absence of a transverse elevated line on the prothorax, which is constricted in front, and in the elytra being not unicolorous.

SCOLYTO-PLATYPINI.

SCOLYTO-PLATYPUS, Schauf.

<i>Scolyto-platypus tycon</i> , m.
„ „ <i>daimio</i> , m.
„ „ <i>siomio</i> , m.
„ „ <i>mikado</i> , m.

I have nothing to add to my account of these insects (Trans. Ent. Soc. Lond., 1893, pp. 425—442).

The following species is new, and should be placed after *S. tycon*.

Scolyto-platypus shogun, sp. n.

Oblongo-cylindricus, fere glaber, niger vel piceus, antennis pedibusque ferrugineo-piceis; prothorace transverso, subopaco, parce et subtiliter punctulato; elytris ante declivitatem haud striatis irregulariter punctatis, declivitate striata, interstitiis convexis seriatim tuberculatis. Long. 3.5 mm.

MAS. Fronte excavata, opaca, pilis fulvis ciliatis circumdata, antennarum scapo fortiter clavato, funiculo brevi, flexili, clava elongata acuminata, ad apicem ciliata.

Several examples, probably taken at Higo.

Intermediate between *S. tycon* and *daimio*, and closely resembling dark specimens of the former in shape and size, but the elytra show no trace of striæ and are not pubescent at the apex. Male with head deeply excavate, dull with a thick marginal fringe of coarse hairs, antennæ

constructed as in *S. daimio* ♂, but with the club elongate and pointed. Female with antennal club a little more elongate than in *S. tycon* ♀. Elytra with the sutural stria alone faintly expressed in the male, declivity with 1st and 3rd interstices tuberculate throughout, the remainder more finely at the upper angle. Prothoracic foveæ of male distinct. Anterior tarsal joints trigonate.

The male has the prosternum prominent in the middle, the prominence corresponding to a wide deep anterior "pocket"; the anterior margin of the prosternum is constructed similarly to that of *S. mikado* ♂, but the two hooks are replaced by a transverse chitinous plate, the anterior angles of which are acute and prominent.

PLATYPINI.

One of the most admirable features of Chapuis' "Monographie des Platypides," upon which our knowledge of this sub-family is almost entirely based, is the ability, almost to be called intuition, with which he has grouped forms, often widely different in appearance, as the respective sexes of the species which he described; and an examination of his own collection, or of any other containing species named by him, affords proof that his judgment was in the main correct, which is remarkable, if it be remembered that he had to reduce to order a vast and heterogeneous mass of material from all parts of the world. For he raised the number of species from 15 (excluding a few unrecognized forms) to 202; and entomologists have been so far content to accept his work as final, that since the publication of his "Monographie" they have added but six species to those therein described. But, identification of two forms as the respective sexes of a single species is obviously quite compatible with error as regards the reference of them to their proper sexes, and it is a matter of common opinion among entomologists that he has, throughout the work, reversed the sexes and called the male the female and *vice-versa*. This was first suggested to me by the late Mr. Janson; it has not been, to my knowledge, explicitly stated in print, but Eichhoff has indicated a

doubt as to the correct interpretation of the sexes by Chapuis ("Die eur. Borkenk.," p. 306, note). M. Bedel ("Coléop. du bassin de la Seine," vi., p. 40!) inverts the sexes of *P. cylindrus*, as given by Chapuis, though without comment; he has kindly informed me that he was led by Eichhoff's expression of doubt to dissect dried examples of *P. cylindrus*, which led him to the conclusion that Chapuis was wrong. Now Chapuis was probably guided by the generalisation of Perris, since disproved for the *Tomicini* by Lindeman and Eichhoff, that in the *Scolytidæ* a greater development of the elytral armature was a female characteristic, and by the sexual features of certain species of *Crossotarsus*, in which the antennæ have the scape remarkably developed in the sex that he indicates as the male. This antennal development, together with the deeply excavate and fringed front in the same sex of some species, and the more developed legs of the opposite sex (in *Crossotarsus*), which agree with the sexual features of the *Scolyto-platypini*, are not easily reconciled with the usual sexual characters, if the sexes are reversed; but the opposite may be said of the constantly stronger elytral armature of the females (Chap.), and their occasional possession of abdominal armature (*Crossotarsi genuini*, *Platypus blanchardi*) or of a concave and short abdomen (*Crossotarsi*). It is obvious that external sexual characters are not constant among the *Scolytidæ*, and that little dependence can be placed on them. The question can only be decided by direct examination of the generative organs. Like M. Bedel, I have examined them in dried specimens of *P. cylindrus*, and also of *Crossotarsus wallacei*. This examination has given results which leave me little doubt in the matter; but it is so difficult, in these cases, to correctly interpret the structures exhibited in dried specimens, that I do not feel justified at present in publishing my conclusions. I can, however, say that the sexes of those two species, as given by Chapuis, correspond, and there is no evidence of his having indicated them rightly in some genera and erroneously in others. He is entirely right or entirely wrong. For the present, therefore, I prefer to describe the sexes in accordance with Chapuis, as a matter of convenience solely, and without implying acquiescence in his views.

This will cause no confusion, and the same cannot be said of a readjustment of the sexual characters which should eventually be proved to be itself erroneous.

The question can be settled beyond dispute by the dissection of fresh examples; and if I can obtain them I hope to solve it in that way.

CROSSOTARSUS, Chap.

This Oriental genus is represented by three species.

Crossotarsus chapuisi, sp. n.

FEM. Sub-elongata, picea, nitidissima; capite dense ac rugose punctato; prothorace irregulariter punctato, punctis ante sulcum et versus basim crebrioribus; elytris striato-punctatis, interstitio 3o ad basim dilatato, laevi, ad apicem subangustatis, leniter declivibus, apice pilis aureis ciliato, supra depressionem posticam angustam sublinearem producto, angulo externo vix perspicue elongato; abdominis segmento apicali fortiter excavato-impresso; tibiis posticis dilatatis ad apicem in lobos productis. Long. 8 mm.

One specimen, Higo.

More elongate than the majority of the genus, shining piceous, smooth and regularly cylindrical. Head with front subquadrate, very closely and rugosely punctured, the punctures longitudinal, with an indistinct median depression, vertex with three shining longitudinal vittæ separated by punctured spaces, eyes rather large and prominent, subcircular, antennæ with scape enlarged towards the base or inner side, but not produced, funiculus inserted at apex of scape. Prothorax oblong, not strongly emarginate, posterior angles of emargination rather prominent, median sulcus fine, surrounded by a smooth cordate area; punctures longitudinally oval, sparse over apical half, closer at base and over a patch in front of sulcus, lateral margin with two or three deep asymmetrical pore-like punctures behind middle. Scutellum indistinguishable. Elytra double as long as prothorax, with sides narrowed and slightly constricted at apex; striate, the striæ with an irregular single row of punctures grouped in pairs, 3rd and 4th conjoined at base, interstices smooth, flat, with very fine irregular punctures, 3rd dilated at base with a few stronger punctures; gently depressed towards apex, with the striæ at first deeper and then obliterated before posterior margin, interstitial punctuation

stronger, suture longitudinally impressed before apex; posterior margin gently rounded and fringed with aureous pubescence which conceals the very shortly produced apical angles; posterior impression narrow, sublinear, concave, hidden by apical margin. Underside ferruginous, with scanty pubescence, abdomen concave, not strongly punctured, sides of 2nd and 4th segments scarcely produced, last segment with a large deep transversely oval impression, bordered in front by a fringe of aureous hairs, and reaching the prominent apical margin. Anterior tibiæ with five carinæ, and indistinct traces of others at base; intermediate tibiæ with a single carina on anterior surface; posterior tibiæ dilated, with outer border convex, and apex produced into two serrate lobes on either side of tarsal articulation, densely ciliate, with yellowish hairs. Posterior coxæ with a prominent free margin to inner and apical borders, which with the posterior margin of the trochanter is sharply serrate.

I cannot refer this fine and distinct species to any of Chapuis' groups. I therefore propose for it a distinct group, *Crossotarsi mutici*, characterized in the female by the gently declivous elytra, without elevated interstices or conspicuously produced apical angles, and with a narrow deep posterior impression, in which it approaches *C. minax*, Walk. The structure of the posterior tibiæ, and the abdomen, together with the absence of a distinct scutellum, are also characteristic features. The specimen is undoubtedly a female—in the conventional sense.

Crossotarsus niponicus, sp. n.

Ferrugineus, elytris in medio paullo dilutioribus, postice infuscatis; prothorace 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 5o subconcavo. Long. 5.7—6.2 mm.

Generally distributed; numerous specimens taken at Sapporo and Hakodate in Yezo, also at Miyanoshita, Yuyama, etc., and in Kiushiu.

Lighter or darker ferruginous-brown, with head and apical third of elytra infusate; the elytra sometimes evidently lighter in the middle, particularly in the males. Head with front flattened, dull, with longitudinal strigose punctures which are stronger in the female, and with a longitudinal impressed line, nearly obsolete in the male, vertex with three shining vittæ; antennæ with scape simple, slightly dilated internally at base. Prothorax subquadrate, its central furrow shallow; in the female with the sides of the furrow slightly elevated, with irregular punctures, the punctures closer and rather deeper towards sides behind emargination, internal to which there is a shallow depression; in the female without sides of sulcus elevated, with fine irregular punctures, usually rather closer on two slight impressions on either side of anterior extremity of sulcus, one or two impressions along lateral margin are usually present but not constant. Elytra longer in the male than in the female, in both sexes with rows of fine punctures, first stria impressed throughout, more strongly at base, the rest impressed at base and on declivity, 3rd and 4th conjoined at base; interstices with a very fine groundwork of punctures, and one or two larger punctures, 3rd finely granulate at base in male; apex gently declivous with external angles produced more strongly in female, striæ of male impressed but not dilated, interstices flat, pubescent, striæ dilated in female, subsulcate, interstices pubescent, convex; marginal impression narrow, shining, tuberculate at extremities of 3rd and 4th interstices. Underside ferruginous, 1st abdominal segment with an oblique spine, long in female, tuberculiform in male, apical segment strongly punctured in female and concave. Legs ferruginous.

This species belongs to the *Crossotarsi subdepressi*, and is closely allied to *C. fairmairei*, Chap., from which it can be separated by the absence of the close variolose punctures at the base of the prothorax, and by the second interstice of the elytra not being impressed in the middle. The produced angles of the elytra are longer, and extend more obliquely backwards than in *C. fairmairei*.

Crossotarsus contaminatus, sp. n.

FEM. Picea, fronte subconcava, opaca, disperse punctata; prothorace oblongiusculo, in medio utrinque impresso, irregulariter

punctato, ante sulcum congerie punctorum confluentium notato; elytris subtiliter striato-punctatis, striis ad basim impressis, interstitiis laevibus, rarius subtiliter punctulatis, ad apicem subdeclivibus, angulis externis subtus productis, interstitiis variolose punctatis, pilosis, depressione postice angusta, lunata; abdominis segmentis inermibus, 5o subconcavo. Long. 5.3 mm.

One example, Higo; three without locality.

Piceous; head with front subconcave, shortly pubescent, dull with scattered punctuation, more strongly over mouth, the punctures elongate towards vertex, and with a median impressed line, vertex with a median shining line and two indistinct lateral lines, antennæ with scape simple, linear. Prothorax longer than broad, its lateral emargination very feeble, slightly impressed on either side at middle of surface, sulcus very fine, not reaching base, and terminated in front by an irregular patch of coalesced shallow punctures, punctuation of rest of surface scattered, irregular, stronger in front and on either side of a median smooth line running from central patch to apex. Elytra shining, finely striato-punctate, the striæ wider and deeper at base, 3rd and 4th not conjoined, sutural stria impressed throughout, interstices scarcely convex, with a few fine scattered punctures, rather closer at base, without reticulate or punctured ground; apical extremity rounded and declivous, with interstices coarsely and rugosely punctured and pilose, not carinate, the punctuation of the 1st not extending farther forwards than that of succeeding interstices, external angles produced downwards in the plane of the terminal depression, which is narrow, lunate and subconcave, forming a marked angle with the surface of the elytra. Underside deep ferruginous, with metasternum and abdomen piceous, middle of former and latter strongly punctured; abdominal segments unarmed, 2nd and 4th narrowly produced at sides, 5th concave. Legs piceous. Posterior coxæ with a spine at internal angle; posterior femora not crenate below.

This species must, I think, be placed with the *Crossotarsi subdepressi*, though the interstices are not carinate at the apex of the elytra, and the marginal impression is more sharply separated from the surface than is usual in that group. It can be distinguished from *C. niponicus* by the absence of a spine on the first abdominal segment, and by the 3rd and 4th elytral striæ not meeting at base, so as to shorten the 4th interstice.

MALE, with front of head rather deeply concave, its surface closely granulate, slightly shining in parts, with a fine central impressed line and a circular fovea on either side; vertex convex, with a shining central and two indistinct lateral vittæ. Prothorax subquadrate, median sulcus with a narrow patch of punctures on either side, the front half of each patch formed of the usual close small punctures, except for the two anterior punctures, which are larger and almost porelike, and those of the posterior half, which are larger, shallow, and less numerous; remainder of surface rather regularly punctured and thinly pubescent. Elytra sulcate, the sulci punctured throughout, becoming a little wider towards apex, interstices convex, shining, very finely punctured and pubescent, 3rd and 5th closely granulate at base, 2nd and 4th abbreviated at base with a few small granules; apical extremity convex, the sulci shallower, interstices granulate, more thickly pilose, posterior impression small and not well marked, subtriangular, irregularly granulate.

FEMALE, with front very slightly concave, quite dull, very finely punctured above, with short median impressed line, vertex with median vitta alone shining. Prothorax subquadrate with an impression on either side about middle, nearly uniformly punctured, the punctures rather closer at sides of sulcus. Elytra with surface sculptured as in male, but with the sulci wider behind middle and their punctures coalesced; all interstices granulate for a short distance at base; apical extremity convex, the striæ ceasing before posterior margin, interstices dull, granulate and pilose, apex of 3rd marked by a small pointed tubercle.

Underside and legs testaceous or ferruginous, abdomen more convex in the male.

One pair is rather darker, and the surface of the thorax and elytra are hairless before the apex. This is, however, due to the specimens being more mature and having been rubbed. The species belongs to the *Platypis sulcati*, and is not unlike *P. jansoni*, Chap., but the prothorax is shorter and the elytral interstices are less elevated, and are not spined at the margin of the apical declivity.

Platypus lewisi, sp. n.

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, 3o et 5o etiam ad basim granulatis, depressione postica parva, subtriangulari, granulata.

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

Five specimens, Miyanoshita, Kiga, and Yuyama.

Elongate, ferruginous, or inclining to pitchy.

MALE with front of head flat, dull with very fine cross reticulation, punctures rather fine, longitudinally strigose towards mouth. Prothorax oblong, diffusely punctured, rather closer at extreme sides, with a porelike puncture within anterior angle of emargination and a broad cordate group of small uniform punctures round median sulcus. Elytra sulcate, the sulci with irregular confluent punctures, not widened behind and obliterated before apical impression; interstices convex, shining, with fine scattered oblong punctures, 1st narrow throughout, bases of 2nd and 4th abbreviated, impressed and more strongly punctured, the latter with two or three longitudinal asperities, bases of 3rd and 5th elevated with transverse granulations; apical extremity with interstices dull, granulate, and pilose, terminal impression subtriangular, closely granulate, with erect hairs, suture shining. Underside reddish testaceous, abdomen unarmed.

FEMALE with head similar to male in sculpture, front impressed over mouth and subconvex behind. Prothorax oblong, slightly impressed in middle of either side, sulcus surrounded with an oval patch of punctuation narrower than in male, rest of punctures scattered and rather fine, except along lateral border. Elytra sulcate, the sulci wider behind with punctures confluent, interstices convex, shining, with fine scattered oblong punctures, the 1st narrow throughout, base of 3rd enlarged, more closely punctured, bases of 2nd and 4th impressed, punctured, and asperate as in male, two first with a large common spine, 3rd, 5th, and 7th with small spines at summit of apical declivity, the rest unarmed; declivity convex with the sulci continued on it, and the interstices finely asperate, the third terminating at a stout tubercle, external angles produced backwards into a vertical subquadrate lobe, with its posterior edge concave, so as to form two blunt teeth at angles. Fourth abdominal segment armed with two spines, the fifth flattened.

This species is allied in its main features to the *Platypis sulcati*, with which I must associate it. It differs from the other described species in the strongly produced external apical angles of the elytra, which are not triquetrous as in the *P. trispinati*. The female shares with *P. quadridentatus*, Ol. (*blanchardi*, Chap.), the peculiarity of possessing two spines on the fourth abdominal segment, but is much larger and easily distinguished by the group of punctures on the thorax. The male is separable from that of *P. modestus* by its larger size, flat forehead, and oblong thorax; the elytra are quite glabrous before the apical extremity.

Platypus severini, sp. n.

FEM. Piceo-ferruginea, elytris postice infuscatis; fronte subconcaua, rugosa; prothorace paullo longiore quam latiore, utrinque ad medium vitta obliqua subelevata, antice rarius irregulariter, postice crebrius punctato; elytris ad apicem subdeclivibus et in processus 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.

Numerous examples of one sex only, taken from beech at Nikko, Chiuzenji, and Hakodate.

Deep ferruginous brown, with elytra darker towards apex. Head with front subconcave, covered with close shallow rugose punctuation, rather smoother towards mouth, vertex rather abruptly separate from front, with three smooth vittæ, interspaces coarsely punctured. Prothorax a little longer than broad, median sulcus fine but sharply marked, surface with very fine reticulation, and an indistinct oblique elevation at either side of anterior extremity of sulcus, punctures of anterior half scattered, and absent over middle line, of posterior half closer, shallow, and longitudinally oval. Elytra declivous towards apex and produced into two divergent processes, with subsulcate striæ, which are wider and shallower towards apex, with the punctures fused; interstices convex, finely reticulate and punctured at base, the first and second with a single row of punctures along inner border, all interstices flatter towards apex, inconspicuously tuberculate, and with serrate hairs; apical processes declivous in the plane of the posterior termination, produced outwards to form an obtuse oval emargination at apex,

their upper border curved and continuous with second interstice, extremity two-spined when seen from above, inner spine longer and truncate. Last abdominal segment subconvex, rugosely punctured.

The species belongs to the *Platypi oxyuri*, and may be distinguished from the Pyrenean *P. oxyurus*, Dup., by the thoracic sculpture, and by the processes of the elytra being two-spined when seen from above instead of from the side, as in the latter species. From *P. solidus*, Walk., the divergence of these processes will at once separate it, as will its larger size, and the convex interstices which, except the first two, are impunctate after the base.

Platypus calamus, sp. n.

FEM. Elongata, angusta, ferrugineo-testacea, elytris apice infuscatis; fronte concava, linea media impressa; prothorace sesqui longiore quam latiore, in utroque sulci latere plaga punctorum angusta; elytris lineato-punctatis postice haud declivibus, interstitiis planis, vix perspicue punctatis, apice oblique excavato-impresso, ovali, inferne emarginato, angulis externis oblique productis, margine externo elevato sinuato, ad suturam supra valde obliquo, depressione nitida, ante angulos extremos impressa. Long. 3.7 mm.

Sixteen examples of one sex only, taken at various places, Miyanoshita, Oshima, Kiushiu (Higo, Yuyama, etc.).

Slender, reddish testaceous, elytra with apex darker. Head with front concave, anteriorly dull, with a deep longitudinal impressed line in middle, above it, with rather strong scattered punctures, upper part forming an obtuse angle with vertex, which has only the median elevated line present, narrow and infusate. Prothorax one half longer than broad, the sulcus fine, with a narrow group of punctures on either side, closer anteriorly, remainder of surface irregularly punctured, the punctures more evident towards the base, anterior and posterior borders with fine transverse reticulation. Elytra finely punctured in lines, sutural stria impressed throughout, remainder at base only; interstices with a few fine punctures, 1st, 3rd, and 5th elevated at base, the former impressed with a fine line beginning behind base, 2nd and 4th with base evidently punctured. Apex of elytra with an oblique terminal impressed surface, its margin elevated and slightly everted, curving

away from suture so as to form an angle with its fellow above the terminal impression, and then sinuate at sides; external angles produced in a curve downwards and backwards, their outer border serrate; impressed surface very shining, elevated at suture, and concave above external angles, its outline an incomplete oval, emarginate below, the emargination deeper than wide, but shorter than the terminal surface measured along the suture, its sides nearly straight, not toothed, and apex rounded. Last abdominal segment concave.

This species is one of the *Platypi cupulati*, and can be separated from all described species except the following, by the fact that in them the suture is notched or narrowly emarginate above the terminal impression, and the sutural border forms a sharp and distinct angle with the upper margin of the impression, whereas in these species the sutural margin is gradually rounded into that of the impression without trace of any angle, so as to form a wide emargination. It can also be separated from most by the absence of any trace of a tooth on the lower apical emargination.

Platypus hamatus, sp. n.

FEM. Elongata, ferrugineo-testacea, elytris apice paullo obscurioribus; fronte impressa, in medio foveolata; prothorace oblongo, punctis magnis et parvis irregulariter notato, parte antica sulci utrinque punctis paucis circumdata; elytris lineato-punctatis, interstitiis planis, parcissime punctatis, apice excavato-impresso, lunato, inferne late emarginato, angulis extremis longe productis, margine supra depressionem intus ad suturam curvato, convexo. Long. 4.2 mm.

Two examples at Yuyama and Miyanoshita.

Elongate, reddish testaceous, with elytra darker at apex. Head with front subconcave, foveolate in middle, finely reticulate, and rather coarsely punctate above, vertex strongly punctured with a fine median elevated infusate line. Prothorax more elongate than in *P. calamus*, sulcus deeper at extremities than in middle, with about a dozen punctures on either side of anterior extremity, remainder of surface with irregular punctures of two sizes, a slight impression on either side, about middle more closely punctured, anterior and posterior borders finely reticulate. Elytra with sculpture of surface similar to that of *P. calamus*, terminating in a vertical impressed surface, which is lunate and widely

emarginate below, lateral borders meeting obliquely at suture above impression, and curved out as in *P. calamus*, and then sinuate, external angles produced downwards and backwards, longer and more curved than in the latter species; terminal impression emarginate almost to middle, the emargination broader than long, with inferior sutural angles very slightly produced, its surface shining, foveolate on either side, with suture elevated and tuberculate. Last abdominal segment concave.

This species, also one of the *Platypi cupulati*, is best separated from *P. calamus* by the structure of the apical impression, the length of which measured along the suture is about equal to the depth of the emargination, whereas in *P. calamus* it is about double its depth. The tubercles along the suture, the minutely produced sutural angles at the fundus of the interior emargination, and a fine serration of the superior border, where it curves away from the suture, are peculiar to this species. *P. hamatus* is evidently closely allied to *P. forficula*, Chap., of which I have been unable to see a typical specimen. I have, however, an unnamed *Platypus*, taken by Mr. Wallace in Gilolo, which agrees with the description of *P. forficula*, and is probably to be referred to that species, as Chapuis appears to have seen all Wallace's *Platypini*. It most closely resembles *P. hamatus*, but the sutural border of the elytra makes a sharp angle with the upper margin of the terminal impression, which is much narrower than in the latter species, being not half as deep as the inferior emargination.

DIAPUS, Chap.

An Oriental genus, represented in Japan by one species.

Diapus aculeatus, sp. n.

FEM. Picea, margine prothoracis postico et elytris ad basim dilutioribus; fronte deplanata, in medio breviter carinata; prothoracis disco nitidissimo, basi fortiter punctata; elytrorum interstitiis 1o, 2o, 3o elevatis, 3o, 5o ad apicem in spinulas validas productis; 7o breviter spinoso, extus cum 8o et 9o serratis conjuncto, angulo externo in spinulam obliquam angustissimam producto, depressione postica breviter bispinata. Long. 2.8 mm.

Two examples, Higo.

Rather slender and very shining, head and prothorax deep piceous, the latter with basal border narrowly fusco-testaceous, elytra fusco-testaceous at base, becoming pitchy towards apex. Head with front nearly flat, impressed slightly over mouth, dull, with rather distinct and strigose punctuation below, the punctures less apparent towards vertex, in the middle with a short median elevated keel, which is not perceptible towards vertex; elevated lines of the latter very evident and shining. Prothorax very shining, rather deeply emarginate at sides, apex with a row of piliferous punctures, rest of surface quite impunctate, except at base which is closely and strongly punctured. Elytra with first two striæ and marginal stria impressed throughout, third and fourth at base only, outer striæ indicated by lines of irregular punctures, which coalesce towards apex, interspaces almost impunctate; 1st interstice with a minute spine at apex, 3rd and 5th with two long spines, 7th with a shorter spine, the outer border of which is conjoined with two serrations formed by the extremities of the succeeding interstices, external angle with a very slender spine directed obliquely downwards, apex fringed with a few long ciliate hairs, apical impression oblique, subconvex, with two spines shorter than the three long spines of the interstices. Underside testaceous, metasternum and abdomen piceous, last segment of the latter nearly flat, dull, fringed with long curled cilia.

This species is closely allied to *D. quinque-spinatus*, Chap., of which it may be the Japanese form. It presents the following distinctive features: the colour is deeper and the surface more shining, the frontal carina is shorter, nearer the mouth, and not traceable towards the vertex as in *D. quinque-spinatus*, in which it appears to be longer and interrupted; the prothorax is quite impunctate except at the apex and base, and the basal punctures are more numerous; the interstices of the elytra are scarcely punctured, the spine of the 7th interstice is shorter and that of the 9th only represented by a small tooth, the spine at the external apical angle is peculiar to this species, as is the terminal fringe of hairs; the spines of the posterior depression are also shorter.

(*Genus incertæ sedis.*)

GENYOCERUS, Motsch.

Etud. ent. vii., p. 68.

G. adustipennis, Motsch., *l.c.* ix., p. 19.

Whatever this insect may be, it cannot be a *Scolyto-*
platypus, as it is described in these terms: *Figura*
Platypi cylindri, sed glabrior, etc.