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Mr. G. NEWPORT's Prize Essay upon *Athalia centifolia*, or the Black Caterpillar of the Turnip. With one plate. Price 1s.

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Page 29, Mr. F. Smith's article on *Hylæus* is illustrated in Plate III.

Fig. 1, represents *H. dilatatus*, Kirby; 1 *a*, face; 1 *b*, lateral view of the head, showing the concavity of the basal joint of the antennæ.

Fig. 2, *H. plantaris*, Smith; 2 *a*, face; 2 *b*, underside of abdomen, showing the patch of rufous hairs; 2 *c*, intermediate leg.

Fig. 3, *H. cornutus*, Kirby, MS.; 3 *a*, face.

Fig. 4, section of bramble twig; A, B, C, provisioned cells, with an egg in each; D, E, empty cells; F, serpentine passage to the nest.

120, *Platymiris ducalis* was stated by mistake to be in the British Museum Collection.

188 et seq., *Panorpa nebulosa* and *debilis*, and *Bittacus pilicornis*, have not been found among the other type-specimens contained in the Collection, formerly in Mr. Newman's possession, presented to the British Museum.

243, line 5, omit the reference to Plate XVII. fig. 7.

117, Proceedings, October 1844. The new Indian *Æstrus* here mentioned proves to be a yellow winged *Asilus*.

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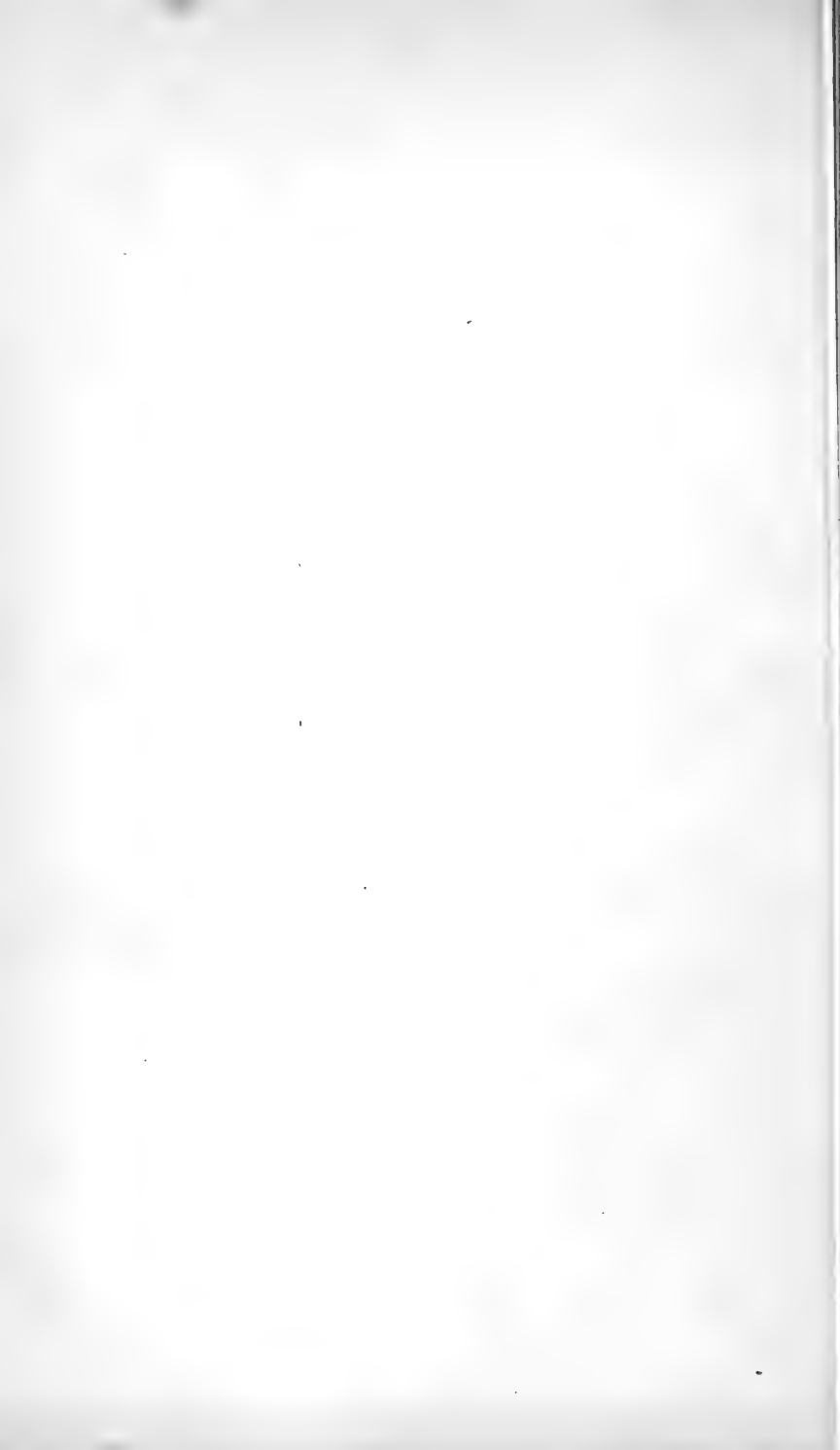
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- Rev. F. W. Hope .. Portrait of Bonelli.
Ditto Two Glazed Book Cases.
Ditto A Large Rolling Map of the World, fixed in the Meeting Room of the Society.
Ditto A Glazed and Framed Portrait of Linnæus, placed over the President's Chair in the Meeting Room. (Presented on the 5th May, 1845, whereupon it was resolved that an especial vote of thanks should be given to the Donor for the numerous and valuable presents made by him to the Society.)

ADDITIONS TO THE COLLECTIONS

FROM THE 1ST JANUARY, 1844, TO THE 31ST DECEMBER, 1846.

A large Box of British <i>Crustacea</i>	Rev. F. W. Hope.
Various <i>Crustacea</i> from New Zealand and Swan River.....	Ditto.
Fifty-four Bottles containing Insects and Larvæ in Spirits	Ditto.
A Box of Insects from Naples	Ditto.
A series of Specimens and Casts of <i>Trilobites</i>	Ditto.
A number of Insects in Spirits from Florence and Pisa	W. C. Trevelyan, Esq.
A Specimen of Honey-comb, with a Queen Bee's Cell, constructed out of a Neuter Cell	Rob. Golding, Esq.
A Box of <i>Coleoptera</i> from Cape Palmas, presented through the Rev. F. W. Hope.....	Rev. T. Savage.
Specimens of <i>Crustacea</i> , from the Pacific Ocean.....	Rev. F. W. Hope.
A Specimen of <i>Pseudopsis sulcatus</i>	A. H. Haliday, Esq.
Specimens of <i>Arpedium subpubescens</i>	Ditto.
Specimens of <i>Pelophila Borealis</i> and of various minute Diptera and Hymenoptera.....	Ditto.



TRANSACTIONS
OF THE
ENTOMOLOGICAL SOCIETY
OF
LONDON.

I. *On the Habits of Megachile centuncularis.* By GEORGE NEWPORT, F.R.C.S. &c. President of the Entomological Society.

[Read 5 September, 1842.]

SO much attention has been paid by naturalists to the habits and economy of the *Hymenoptera*, that it has now become difficult for any one to detail the results of his observations on the well known families of this order, without subjecting himself to the chance of being regarded by the superficial hypercritic as only re-stating what does not require further investigation. But so varied are the circumstances that influence the habits of every species, that almost every one is enabled to add something, even to the best established facts.

Every carefully pursued investigation, therefore, is of value, although its principal facts may be well known, since it is only by the most attentive and repeated observations that we can hope to become fully acquainted with the habits of any one species, and be enabled to arrive at some conclusion in regard to the cause of the variations which are constantly taking place in the proceedings of these interesting "little miniatures of creation."

With this feeling I am induced to lay before the Society some

observations made by myself on a curious deviation from its usual habits by the common leaf-cutter-bee—

Megachile centuncularis.

On the morning of the 19th June, 1829, I observed one of these busy little creatures conveying alternately portions of rose-leaves, and of some other material, which, at first, I could not identify, to a hole in a brick wall in our garden, where she was constructing her nest. The whitened and singular appearance of this new material induced me to watch her proceedings, to ascertain its nature. The quantity conveyed by her was fully equal to that of the rose-leaves, and it seemed to be regarded by her with quite as much attention. On examining her proceedings very closely, which I had an opportunity of doing, as the nest was advanced towards the entrance of the hole, I was much amused at the precision with which she seemed to adjust her materials. On one occasion, after being for some time engaged in the hole, she came to the entrance for a few seconds, and seemed as if surveying the interior, and then again proceeded to the bottom of the cell. After she had remained there for some time, she suddenly brought out a piece of the white material and dropped it on the outside of the nest as if unfitted for her purpose, and then flew away, and in a few moments afterwards returned with a portion of rose-leaf. On examining the material rejected by her, I was surprised to find that it was a little piece of *cotton cloth, very finely carded, or picked to pieces*, and which I at first supposed had been substituted for some other material usually employed by her. In the early part of the following day she had made good progress with her labour; I saw her at work very soon after four o'clock in the morning, when she was bringing in rose-leaves, and *also cotton*, as on the previous day, with great assiduity; and she continued to do so until about ten o'clock, after which I missed her for nearly two hours. At that time I suspect she was engaged in the business of oviposition. The interior of the nest seemed then to have been nearly completed, and the hole was partially lined with cotton at its entrance. Soon after twelve o'clock I again saw her; she was then heavily laden with pollen. At one o'clock her activity was increased, and *rose-leaves alone* were then conveyed to the hole with great rapidity, and continued to be so until the nest was completed. At this stage of her labours I carefully noted the length of time that elapsed from the moment of her leaving the nest to her return to it laden with rose-leaf, and was astonished to find that it *never exceeded forty-five seconds*,

and very frequently not more than *thirty seconds*; although, as I afterwards discovered the rose-bush from which, from the direction of her flight, she seemed to have cut the leaves, she must have flown at least a quarter of a furlong and back again, besides having to cut her material of its proper shape. Now if we allow only one-third of the whole time to have been employed in cutting the leaf, which certainly is less than that usually occupied in this labour, her velocity of flight could never have been less than at the rate of a mile in six or seven minutes, and often in less than three minutes and fifty seconds.

At three o'clock in the afternoon her labour was completed. She had then closed the entrance to the nest, and had also filled up part of the hole with rose-leaves. After taking a survey of the spot she flew away, but in a few seconds returned, as if to press down the leaves a little closer, and then deliberately left the place, and proceeded in search of another hole in the same wall for a repetition of her labours. I then secured this interesting little creature as an acceptable specimen for my cabinet.

On the 17th of July, twenty-seven days from the completion of the nest, I removed the bricks from the wall for the purpose of examining it. On separating two bricks, between which the nest was built, I found that the hole extended in a horizontal direction about five inches, and that it contained four centuncules, each of which was occupied by a full grown larva, that was spinning a cocoon of brown silk, preparatory to changing to a nymph. But what now excited my admiration was the instinct exhibited by the parent in the construction of her nest. The base of the hole being full of cavities, and altogether uneven, the little architect had remedied these defects by *filling them with the cotton* she had been so actively conveying to the spot, until the interior of the hole presented an even surface, around which she then placed the rose-leaves, the materials usually employed by her. I could not help feeling that this was one of those admirable variations of instinct which ought to make us hesitate when we are told that insects, and the higher orders of invertebrated animals, *are not* endowed with faculties which approach somewhat closely to that of reason.

II. *On the Entomology of China, with Descriptions of the new Species sent to England by Dr. Cantor from Chusan and Canton.* By the Rev. F. W. HOPE, F.R.S. &c.

[Read 7 March, 1842.]

VERY little is known of the Entomology of China. Our countryman Donovan, in the year 1798, published a quarto volume containing descriptions of twenty-five *Coleoptera*, besides various insects of other Orders. It is, I believe, the only work exclusively devoted to Chinese insects. The descriptions of the species, according to the taste of that day, are decidedly too laconic, so much so that without the accompanying plates it would be difficult in several instances to recognize the insects intended. The plates, however, are well worthy of Donovan, and exhibit a richness of colouring which has rarely, if ever, been surpassed. In the continental works of Entomologists some Chinese insects occasionally will be found described, but the number is but small. I believe that in the catalogue of the Baron De Jean scarcely 100 species are noticed as occurring there; now, allowing another century of species to be included in the writings of other authors, we shall then have the paltry amount of 200 *Coleoptera*, which are all that can be mentioned as inhabiting one of the most considerable of eastern empires. It should here be mentioned that a large proportion of East Indian insects are common to China, and therefore the number of known species might be greatly increased. That the Chinese Fauna will eventually prove to be rich cannot be doubted. As to the number of species and abundance of individuals no paucity will ever be discovered. It may then fairly be deduced from the foregoing remarks, that we know scarcely anything of China entomologically. The acquisition therefore of fifty new *Coleoptera* is certainly an important addition to that Fauna. Sorry am I to add that the bulk of these were collected by Dr. Cantor just after a recovery from the Chusan fever, with which he was severely attacked. "They are," as he states in his letters, "chiefly from two localities, Chusan and Canton, and I could wish that they were more numerous and valuable. No one can form an idea what I suffered in collecting them, and, when collected, the difficulty of keeping them from mould and accident was no trifling matter. Pray let them be described, if it is only to convince others that zeal for science and assiduity on my part have not been wanting." In accordance with Dr. Cantor's wish I have described fifty new *Coleoptera*. Dr. Horsfield has kindly under-

taken the *Lepidoptera*, and it is hoped that the remaining Orders, containing but few species, will not be neglected by those members of this Society who are capable of describing them. In concluding these brief remarks I have only to add, that since a renewal of our acquaintance with Chinese forms has commenced, it will be well not to neglect them; there are several naturalists able and willing to collect for us, and it is but just that their exertions and labours should be recorded in describing for them what they have amassed.

To what more valuable Entomological region can we look than China: let us speak of the unknown regions between the Bay of Bengal on one side, and the Chinese sea on the other, and, next, the territories between Peking on the north and Singapore on the south, we shall there find a sufficiency of climate, soil, mountain, forest, jungle, lake, and land; in short, all that the most fastidious can desire. It is in those extended limits of the east that much, very much, may be expected, and I would here designate them as holding out a Sofala or an Eldorado to the Entomologist. It is reported that the discovery of silk was first made in those regions. There the manufacture of it has flourished for centuries, and still it flourishes in perfection. It is there we may obtain raw silk sufficient to glut the European markets. There also we shall find the Cochineal and Lac insects, abundance of honey and wax, and why may not galls of commerce and other insectal products be confidently expected? such indeed as may tend to the promotion of arts and sciences; in a word, few countries of the world are so immensely rich in the treasures of nature as China, and as the arts have derived much benefit from thence, let us see if science, and particularly the science of Entomology, cannot equally be benefited.

*Descriptions of the New Coleoptera sent from Chusan
by Dr. Cantor.*

LUCANUS.

Sp. 1. *Lucanus Confucius*, Hope.

♂ Niger, nitidus, mandibulis capite thoraceque fere æqualibus.
Long. lin. 28, lat. lin. 7.

Caput depressum, clypeo in medio producto, flavo-ciliato.
Thorax transverse oblongus, angulis posticis oblique trun-

catis, granulatus. Elytra nigra, nitida, fere glabra, marginibus externis elevatis. Corpus infra concolor, punctatum, prosterno inter pedes anticos hastato et acuto. Pedes femoribus anticis parum robustis. Tibiæ anteriores multidentatæ, quatuor posticis in medio unispinosis.

♀ Fœmina nigra, nitida, differt mandibulis brevibus, intus unidentatis, apicibus acutis; capite subvariolofo, thoraceque punctulato.

The female is generally brighter than the male, and resembles jet; and yet, when examined under a lens, it is more punctured than is the case with the male.

Sp. 2. *Copris Sinicus*, Hope.

Niger, exscutellatus, thorace prominentia duplici, cornu capitis erecto, intus ad basin 2-denticulato.

♂ Long. lin. 10, lat. lin. $5\frac{1}{4}$.

Clypeus rotundatus et emarginatus, cornu erecto, apice acuto, ad basin scabro et 2-denticulato. Thorax ater, nitidus, sub lente tenuissime punctatus, in medio prominentia duplici, lineaque longitudinali fortiter impressa insignitus. Elytra 8-striato-punctata, punctis striarum valde impressis. Corpus infra nigrum et nitidum, femoribus subcompressis et punctatis.

The above species is somewhat allied to *Copris Sabæus*, Fab.; it is, however, evidently distinct, and appears to be undescribed.

Sp. 3. *Copris Sinensis*, Hope.

Niger, exscutellatus, clypeo emarginato, capite tuberculo lato armato.

Long. lin. 9, lat. lin. $4\frac{1}{2}$.

Mus adhuc latet.

Thorax punctulatus, linea longitudinali punctata e medio dorsii ad suturam vergente, angulis anticis rotundatis. Elytra striato-punctata, pedibus valde compressis, sparsimque punctatis.

The above insect is apparently the female of a Chinese species, with the male of which we are unacquainted.

Sp. 4. *Onthophagus Sinicus*, Hope.

Niger, antennis luteis, clypeo integro, capite cornu tauriformi.

Long. lin. $4\frac{1}{2}$, lat. lin. $2\frac{1}{4}$.

Thorax punctulatus. Elytra striato-punctata, interstitiis disci

punctatis. Podex semicircularis, margine elevato. Corpus infra nigrum et nitidum, pedibus atro-piceis.

Fœmina differt capite inermi, thorace prominentia lata insignito, lateribus subtuberculatis, angulis anticis subacutis.

It is with a doubt that I give the latter as the other sex of *Sinicus*. The sculpture of the elytra and thorax of both male and female accord tolerably well.

XYLOTRUPIDÆ, Hope.

DIPELICUS, Hope.

Corpus oblongo-ovatum, convexum. *Caput* parvum, vertice cornu erecto brevi armatum. *Mandibulæ* subtriangulares, depressæ, inermes. *Maxillæ* intus tridentatæ, dente basali lato tridenticulato, apice lato rotundato subbifido. *Palpi* maxillares formæ ordinariæ. *Mentum* subparallelum, apice rotundato et parum angustiori. *Palpi* labiales valde securiformes. *Antennæ* 10-articulatæ, articulis 6 et 7 præcedentibus latoribus, ultimis tribus clavam formantibus. *Pedes* breves robusti, posticis 4 metatarsis dilatatis, calcariis pedum 2 posticorum latis. *Prothorax* inermis.

Sp. 5. *Dipelicus Cantori*, Hope. (Plate I. fig. 1.)

Piceus, capite antice trigono, postice cornu elevato triangulari.

Long. lin. 19, lat. lin. $8\frac{3}{4}$.

Thorax convexus, varioloso-punctatus, marginibus undique elevatis. Elytra atro-picea, lineato-punctata, sutura lata insignita. Corpus infra rubro-piceum, femoribus rufis capillis obsitis. Pectus hirsutum. Segmentis abdominis punctatis et rufo-ciliatis.

[Plate I. fig. 1, the insect of the natural size; 1 *b*, mandible; 1 *c*, maxilla; 1 *d*, mentum and labial palpi; 1 *e*, antennæ.]

The above insect is named in honour of Dr. Cantor, who has enriched the Entomological Society's Cabinet with a series of duplicates from Chusan.

Sp. 6. *Mimela Downsi*, Hope.

Affinis *Mimelæ glabræ*, Hope, at minor.

Long. lin. 6, lat. lin. 3.

Totum corpus supra viride et glabrum, antennis atro-virescentibus, infra aurato-viride. Mesosternum abrupte truncatum. Pectus et segmenta abdominis capillis flavescensibus obsita, pedibus aureo-virescentibus tarsisque nigris.

This is the smallest species known.

Sp. 7. *Popillia Maclellandi*, Hope.

Castanea, capite punctulato, thorace glabro cupreo, elytris castaneis, podice atro, maculis duabus flavis, e pilis brevibus formatis.

Long. lin. 7, lat. lin. $3\frac{1}{4}$.

Corpus infra cupreum, flavescens capillis dense obsitum. Pedes femoribus tibiisque cupreo-æneis, tarsis antennisque piceis.

The above insect is the largest Asiatic *Popillia* that is known; it is named in honour of Dr. Maclelland.

Sp. 8. *Popillia castanoptera*, Hope.

Castanea, clypeo integro punctato, parum reflexo, viridi.

Long. lin. 5, lat. lin. $2\frac{1}{2}$.

Thorax concolor, crebrissime punctulatus, fossula utrinque impressa. Scutellum punctatum. Elytra pallide castanea, striato-punctata, striis et punctis haud fortiter insculptis. Corpus infra viride, pectore segmentisque abdominis utrinque albidis capillis obsitis. Pedes femoribus tibiisque viridibus, tarsisque piceis.

Popillia is very rich in species; more than double the number already described have fallen under my notice.

HOLOTRICHA, Kirby.

Sp. 9. *Holotricha Sinensis*, Hope.

Picea, clypeo emarginato, thorace convexo pruinoso, fossula utrinque impressa, marginibusque externis subserratis.

Long. lin. 10, lat. lin. $4\frac{1}{2}$.

Elytra rubro-picea, punctatissima. Corpus infra concolor, pectore flavis capillis obsito, abdomine valde convexo, tumido, punctato et nitido. Pedes picci, tarsis pallidioribus.

Sp. 10. *Holotricha plumbea*, Hope.

Totum corpus supra et infra pruinoso colore tectum.

Long. lin. $10\frac{3}{4}$, lat. lin. $4\frac{1}{4}$.

Caput clypeo fere integro. Thorax convexus, punctulatus, lateribus sub lente parum subserratis. Elytra plumbeo-picea, punctata, quibusdam lineis insignita. Corpus infra

concolor, abdomine valde deflexo, tumido; pedibus piceis, tarsis pallidioribus.

The species of *Holotricha* of Kirby abound in the East Indies. I possess about twenty species from the British Presidencies, and know of at least the same number in our metropolitan collections.

Sp. 11. *Serica Sinica*, Hope.

Atro-plumbea, clypeo integro, antice punctulato, postice glabro. Long. lin. 4, lat. lin. $2\frac{1}{4}$.

Thorax marginibus parum elevatis. Elytra plumbea, seu atro-pruinosa, lineolata, lineis haud distinctis. Corpus infra atro-piceum, femoribus pallidioribus et compressis, tibiis tarsisque piceis.

The metropolis of *Serica* is the East Indies; the numerous species from those parts of the world which are undescribed are considerable; more than twenty, from different localities, in my collection, are yet undescribed.

ELATERIDÆ.

AGRYPNUS, Eschscholtz.

Sp. 12. *Agrypnus orientalis*, Hope.

Affinis *A. cœnoso* Hope, at major.

Long. lin. 9, lat. lin. 3.

Fuscus, flavisque capillis aspersus. Clypeus integer, auricomus.

Thorax angulis anticis obtusis, disco in medio 2-tuberculato.

Elytra striata, flavisque minutis capillis irrorata. Corpus infra concolor, antennis aurantiis pedibusque rubro-piceis.

LUDIUS, Latreille.

Sp. 13. *Ludius crocopus*, Hope.

Fuscus, antennis concoloribus.

Long. lin. 7, lat. lin. 2.

Thorax angulis posticis valde acutis, tomentosus. Elytra striata, striis sub lente parum punctatis. Corpus infra fuscum, pedibus croceis.

Sp. 14. *Ludius luteipes*, Hope.

Affinis *L. umbracolæ* Eschscholtz, at minor.

Long. lin. $5\frac{1}{4}$, lat. lin. $1\frac{1}{2}$.

Niger, antennis flavescens. Thorax albo-tomentosus. Elytra striato-punctata, nigricantia. Corpus infra concolor, pedibus flavo-testaceis.

Sp. 15. *Ludius 4-lineatus*, Hope.

Castaneus, thorace nigro, elytris quatuor lineis nigris insignitis.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{4}$.

Antennæ nigræ, capite concolori. Thorax ater, capillis flavis aspersus. Elytra castanea, interne et externe linea lata nigra insignita. Corpus infra piceum, pedibus flavescentibus.

Of the three species of *Ludius* described, two only strictly belong to that genus; as it may be considered at present as a magazine genus, I do not attempt its subdivisions, to one of which the last species belongs.

LAMPYRIDÆ.

COLOPHOTIA.

Sp. 16. *Colophotia flavida*, Hope.

Affinis *C. præustæ* Eschscholtz.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Flava, capite atro, oculis magnis. Thorax convexus, concolor, angulis posticis subacutis, medio disci linea fortiter impressa insignito. Elytra flavescentia, apicibus subfuscis. Corpus infra flavum, femoribus concoloribus, tibiis tarsisque nigris.

Sp. 17. *Lycus Cantori*, Hope.

Aurantius, antennis fusco-nigris.

Long. lin. $3\frac{1}{4}$, lat. lin. 1.

Thorax flavidus, cruce nigricanti insignitus. Elytra tota aurantia, substriata, marginibus elevatis. Corpus infra nigrum, femoribus antice testaceis, postice fuscis, tibiis tarsisque nigricantibus.

Sp. 18. *Nacerdes Chinensis*, Hope.

Flava, capite nigro, antennis duobus primis articulis fuscis, reliquis flavescentibus.

Long. lin. $5\frac{1}{2}$, lat. lin. $1\frac{1}{4}$.

Thorax cum elytris concolor, horum apicibus nigris. Corpus infra flavum, tibiis tarsisque nigricantibus.

Sp. 19. *Lagria nigricollis*, Hope.

Flava; antennis, capite, thoraceque nigris; elytris pallidè castaneis, villosis. Corpus infra piceum, pedibus concoloribus. Long. lin. 3, lat. lin. $1\frac{1}{4}$.

LONGICORNES.

Sp. 20. *Hamaticherus Cantori*, Hope.

Affinis *Hamatich. Paridi*, Wiedemann. Magnus, fusco-brunneus, sericeus, elytrisque corpore longioribus.

Long. lin. 26, lat. lin. $6\frac{1}{2}$.

Caput porrectum, fronte foveolata. Thorax fortiter rugosus, utrinque armatus, lineâ mediâ longitudinali valde incisâ insignitus. Elytra fusco-sericea, aureola pubescentia tecta, apicibus subtruncatis, suturaque acuminata. Corpus infra concolor.

The above insect, in magnitude, is one of the largest species known, and, like other *Hamaticheri*, it is subject to vary greatly in size; it is named in honour of Dr. Cantor, to whom the Entomological Society is much indebted for a series of insects from the locality of Chusan.

TRIRACHYS, Hope.

Genus novum *Hamatichero* affine.

Caput porrectum, fronte rugosa. Antennæ 11-articulatæ, articulo 1mo crasso, valde rugoso; 2do minimo; 3tio, 4to, et 5to spinis armatis; quinque sequentibus gradatim longioribus et inermibus, extimo longissimo ternis præcedentibus haud æquali. Thorax utrinque armatus rugisque transversis impressus. Elytra apicibus 2-spinosis, marginibus elevatis. Pedes femoribus tibiisque compressis. Tarsi articulis cordiformibus, duobus primis simplicibus, ultimo subbilobato auricomato.

Sp. 21. *Trirachys orientalis*.

Magnus, brunneus et aurato-sericeus.

Long. lin. 21, lat. lin. $6\frac{1}{4}$.

Antennæ piceæ. Thorax utrinque armatus et rugosus, dorso binis sulcis longitudinaliter impressis. Elytra late sericea, apicibus 2-spinosis. Corpus infra piceum, sericeisque capillis obsitum. Pedes femoribus tibiisque piceis, tarsisque auricomatis.

I have thought fit to constitute the above insect the type of a

new genus, as it does not accord with *Paris* of Wiedemann, and any of its congeners. The peculiarity of the above genus is having three joints of its antennæ armed, which in the other sex is wanting. The oriental *Hamaticheri* require subdivision, the characters of which may be derived chiefly from the antennæ as well as from the presence or absence of armature. In our Metropolitan Cabinets three or four other species will be found.

Sp. 22. *Monohammus alternatus*, Hope.

Affinis *M. dentatori* Fab. at minor.

Long. lin. 10, lat. lin. $1\frac{1}{4}$.

Griseo-brunneus, thorace spinoso, elytris cinereo, brunneo, glaucoque nebulosis. Corpus infra concolor.

Sp. 23. *Oplophora Horsfieldii*. (Plate I. fig. 2.)

Nigra, flavo-variegata, antennis albo-cingulatis.

Long. lin. 20, lat. lin. 8.

Thorax utrinque spinosus ater, lineis binis flavis longitudinalibus insignitus. Elytra duodecim maculis flavis notatis. Corpus infra atrum, nitidum, pectore flavido, segmentisque abdominis utrinque flavo-maculatis. Pedes nigri, tibiis in medio atro-pilosis.

Sp. 24. *Cassida piperata*, Hope.

Flava, antennis concoloribus, quatuor ultimis articulis nigricantibus.

Long. lin. $2\frac{1}{2}$, lat. lin. 13.

Thorax fere hyalinus, flavus, maculâ minutâ nigrâ in medio disci positâ. Elytra flava, disco nigro-piperato. Corpus infra nigrum, nitidum, pedibus flavescentibus.

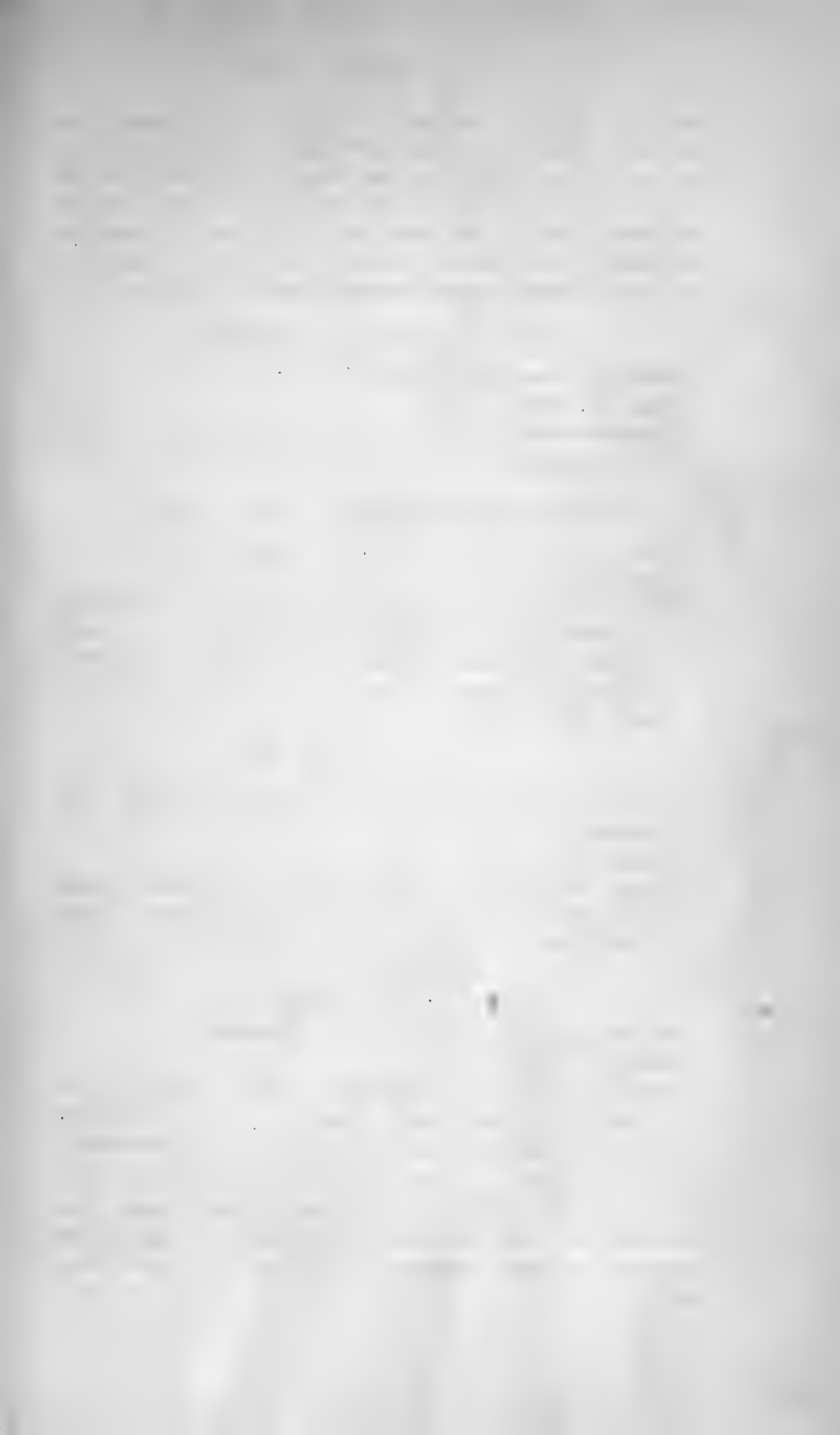
Sp. 25. *Clythra nigrifrons*.

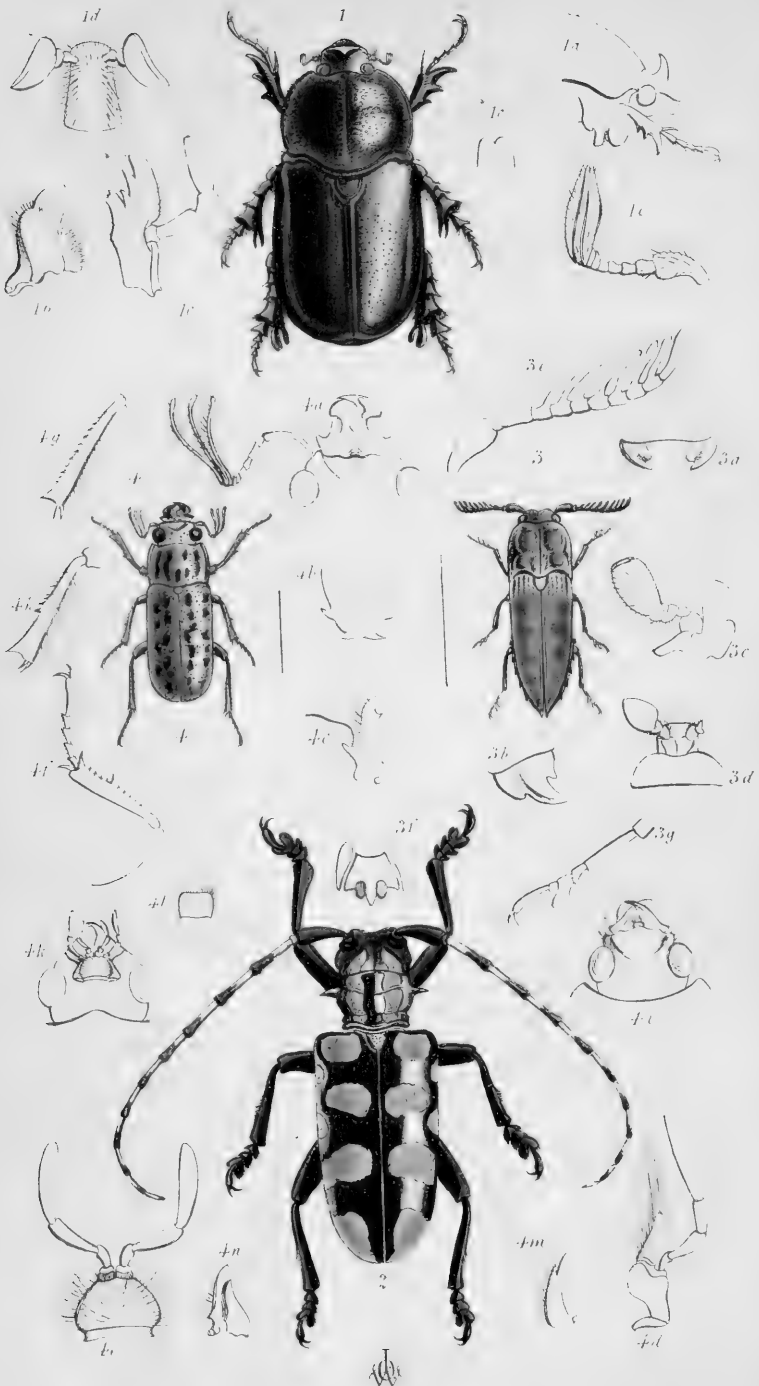
Aurantia, capite nigro, thorace flavo immaculato.

Long. lin. 3, lat. lin. $1\frac{1}{2}$.

Elytra rubro-flava, humeris atro-maculatis, fasciâque nigro-violaceâ ante apicem positâ. Corpus infra pectore flavescenti, abdomine nigro, argenteisque capillis obsito, pedibus atris.

The above insect is subject to vary considerably; some specimens are nearly all yellow, with a small humeral spot, others again have no fascia near the apex of the elytra, and occasionally the fascia is subdivided into small black lines and irregular black spots.





Sp. 26. *Coccinella 18-spilota*.

Flava, binis maculis irregularibus nigris notata, elytris 18-spilotis, maculâ scutellari communi. Corpus flavum, pectore nigricanti, pedibusque flavescentibus.

Long. lin. $3\frac{1}{4}$, lat. lin. $2\frac{1}{4}$.

The above species is also subject to great variation; in some specimens the thorax is entirely black.

Sp. 27. *Coccinella succinea*.

Succineo-flava, thorace pallidiori, maculis quatuor in medio disci nigris.

Long. lin. 3, lat. lin. 2.

Elytra immaculata. Corpus infra flavum, pedibus concoloribus.

Sp. 28. *Coccinella tetraspilota*.

Flava, thorace antice flavo, postice nigro.

Long. lin. $2\frac{1}{4}$, lat. lin. $1\frac{1}{4}$.

Elytra pallide flava, sutura nigricanti, macula rotundata nigra ad humeros posita, secunda formâ irregulari, fere ad medium disci locata. Corpus infra flavum, pectore medioque abdominis nigro-piceis, pedibusque testaceis.

Descriptions of the New Coleoptera from Canton, sent to England by Dr. Cantor.

Sp. 1. *Melolontha Chinensis*.

Affinis *Mel. Nepalensi*, Hope. Castanea, thorace colore saturatori inquinato albisque capillis irrorata.

Long. lin. 18, lat. lin. $8\frac{1}{4}$.

Elytra testacea, lateribus externe sulcatis et atro-marginatis. Podex fere trigonus, apice submarginato. Corpus infra piceum capillisque griseis obsitum. Mesosternum cuspidate robusto armatum.

The above insect, along with *Melolontha Indica*, *Nepalensis*, and others, form a peculiar section. At first sight the present species appears to belong to *Ancylonicha* of De Jean, and the species named by the baron is certainly much like it; the absence of a spear to the mesosternum plainly marks the species.

Sp. 2. *Anomala controversa*, Hope.

Castanea, capite piceo, margine anteriori parum elevato, antennæ testaceæ.

Long. lin. $6\frac{1}{2}$, lat. lin. 3.

Thorax flavo-castaneus, punctatus, maculis magnis binis nigris insignitis, alteraque minori utrinque in marginibus locata. Elytra striato-punctata, quibusdam lineis elevatis flavis conspicua, discus flavo piceoque colore variegatus. Podex flavescens. Corpus infra concolor, femoribus luteis, posticis binis incrassatis, tibiis tarsisque rufescentibus.

The above insect has been regarded as similar to the *Anomala Hopfneri*, which pertains to the new world, and is, I believe, not uncommon in Mexico. The present insect is an East Indian species, and, although according in colour and marking, is evidently distinct; its form at once is sufficient to distinguish it.

Sp. 3. *Galba Chrysocoma*, Hope. (Plate I. fig. 3.)

Flava, capite nigro, antennis pectinatis atris.

Long. lin. 8, lat. lin. $2\frac{1}{2}$.

Thorax antice rotundatus, angulis posticis acutis, disco 4-tuberculato, tuberculis auratis capillis tectis. Elytra aureo-tomentosa, fusca, apicibus acuminatis. Corpus infra nigrum, aureo-tomentosum, pedibusque concoloribus.

[Plate I. fig. 3, the insect magnified; 3 a, the front of the head and mandibles; 3 b, mandible; 3 c, maxilla; 3 d, mentum, &c.; 3 e, antenna; 3 f, prosternum; 3 g, tarsus.]

Sp. 4. *Harpalus Sinicus*.

Niger, capite antice rubro-piceo, postice atro nitido, antennis rufo-fuscis pilosis.

Long. lin. 7, lat. lin. 2.

Thorax lateribus rufo-marginatis, posticeque parum punctulatus. Elytra striata. Corpus infra concolor, pedibus flavescens.

Sp. 5. *Amara orientalis*.

Nigra, antennis rufis, thorace rufo-marginato, elytris striato-punctatis, pedibusque rufo-testaceis.

Long. lin. 3, lat. lin. 1.

The present insect appears to be mediate between true *Harpalus* and *Amara*.

Sp. 6. *Harpalus cyanescens*, Hope.

Niger, capite concolori, antennis duobus articulis primis testaceis, reliquis fusco-nigris.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{4}$.

Thorax ater, margine omni flavo. Elytra striato-punctata, medio disci cyaneo, sutura flaveola, ternis lateralibus striis flavis. Corpus infra piceum, pedibus luteis.

Sp. 7. *Harpalus difficilis*, Hope.

Atro-ænea, antennis fuscis.

Long. lin. 3, lat. lin. $\frac{3}{4}$.

Thorax flavo-marginatus, elytris striatis, atro-æneis, apicibus testaceis. Corpus infra piceum, pedibus flavescentibus.

Sp. 8. *Harpalus trechoides*, Hope.

Fusco-flavus, antennis binis primis articulis testaceis, reliquis atris.

Long. lin. $2\frac{1}{2}$, lat. lin. $\frac{3}{4}$.

Thorax brunneus, margine omne flavo. Scutellum concolor. Elytra fusco-brunnea, suturâ maginibusque externis flavescentibus. Corpus infra luteum, pedibus concoloribus.

The above three species are nearly allied to *Selenophorus*; but as it is doubtful if the genus is not described by foreign writers, I leave them at present under the name of *Harpalus*.

Sp. 9. *Coptodera 2-cincta*, Hope.

Flava, capite rufo, antennisque rubris.

Long. lin. 2, lat. lin. $\frac{1}{2}$.

Thorax niger. Elytra nigra, binis fasciis flavis insignita, una ad humeros alteraque ad apicem posita. Corpus infra testaceum, pedibus concoloribus.

Sp. 10. *Haliphus Sinensis*.

Flava, capite rufo, thorace luteo, binisque maculis punctis insignito.

Long. lin. $1\frac{3}{4}$, lat. lin. 1.

Elytra pallide flava, striato-punctata, punctis nigris, maculisque quatuor majoribus in medio disci positis, sutura nigricanti. Corpus infra testaceum, pedibus luteis.

Sp. 11. *Volvulus*, N. S.

Evidently a new species; but it is in too mutilated a state to describe.

Sp. 12. *Hydrobius neglectus*.

Fulvus, capite rufo, thorace pallidiore.

Long. lin. 2, lat. lin. 1.

Elytra fusco-flava, striata. Corpus infra nigrum, pedibus flavo-piceis.

Sp. 13. *Upis Sinensis*, Hope.

Niger, opacus, thorace punctulato, angulis anticis lateribusque parum rotundatis.

Long. lin. 8, lat. lin. $2\frac{3}{4}$.

Elytra variolosa punctata, punctis fortiter insculptis. Pedes femoribus clavatis, tibiis quatuor anticis subincurvis, posticis fere rectis.

Sp. 14. *Amarygmus carbonarius*.

Niger, capitis fronte foveolata.

Long. lin. $8\frac{1}{2}$, lat. lin. $3\frac{1}{2}$.

Thorax convexus, lateribus elevatis. Elytra striato-punctata nigra. Corpus infra concolor, femoribus parum incurvis, tibiisque rectis atris.

Sp. 15. *Epilampus pulcher*.

Cupreo-æneus, antennis nigris.

Long. lin. $4\frac{1}{2}$, lat. lin. 2.

Thorax atro-æneus, cupreoque colore tinctus. Scutellum atrum. Elytra striata, aurato-viridia puniceoque colore inquinata. Corpus infra piceum, pedibus concoloribus.

Sp. 16. *Epilampus Chrysostictus*.

Nigro-æneus, capite supra fortiter impresso.

Long. lin. $5\frac{1}{2}$, lat. lin. 2.

Thorax ater, marginatus, macula media aurata, lateribus aureola falcata lanâ utrinque insignitis. Corpus infra piceum, pedibus concoloribus.

Sp. 17. *Apate rejecta*, Hope.

Nigra, thorace convexo, disco utrinque minutis dentibus scabro.

Long. lin. $2\frac{1}{2}$, lat. lin. 1.

Elytra rugoso-punctata, ante apicem 2-dentata. Corpus infra nigrum, pedibus atro-piceis.

Sp. 18. *Apate rufa*.

Totum corpus supra et infra rufum, thorace convexo punctulato.

Long. lin. $1\frac{1}{2}$, lat. lin. $\frac{1}{4}$.

Elytra fortissime punctata, apicibus rotundatis et integris. Pedes concolores.

Sp. 19. *Promeces Sinensis*.

Obscure viridis, capite cyaneo, antennisque atris.

Long. lin. 13, lat. lin. $2\frac{1}{2}$.

Thorax utrinque armatus, niger, ternisque lineis viridi-auratis insignitus. Elytra elongata, nigro-viridia, sutura pallidiori. Corpus infra viride, beryllino-sericeum. Pedes femoribus violaceis, tibiis nigricantibus, tarsisque infra flavo-comatis.

Sp. 20. *Eumolpus ignicollis*.

Violaceus, capite antice nigro, postice aurato, medioque viride.

Long. lin. $3\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Thorax cupreo-igneus, marginatus, sub lente punctulatus. Elytra violacea, lineato-punctata, marginibus purpurascentibus. Corpus infra concolor, pedibus atro-violaceis.

Sp. 21. *Galleruca atripennis*.

Nigra, antennis luteis, thorace flavo, elytrisque atris et nitidis, sub lente punctulatis. Corpus infra luteum, pedibus concoloribus.

Long. lin. $3\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

The above species is probably an *Aulacophora*.

Sp. 22. *Galleruca erosa*.

Lutea, antennis fuscis, primo articulo rubro.

Long. lin. $2\frac{1}{4}$, lat. lin. $1\frac{3}{4}$.

Thorax utrinque lateribus subspinosis. Elytra pallide lutea, erosa. Corpus infra concolor.

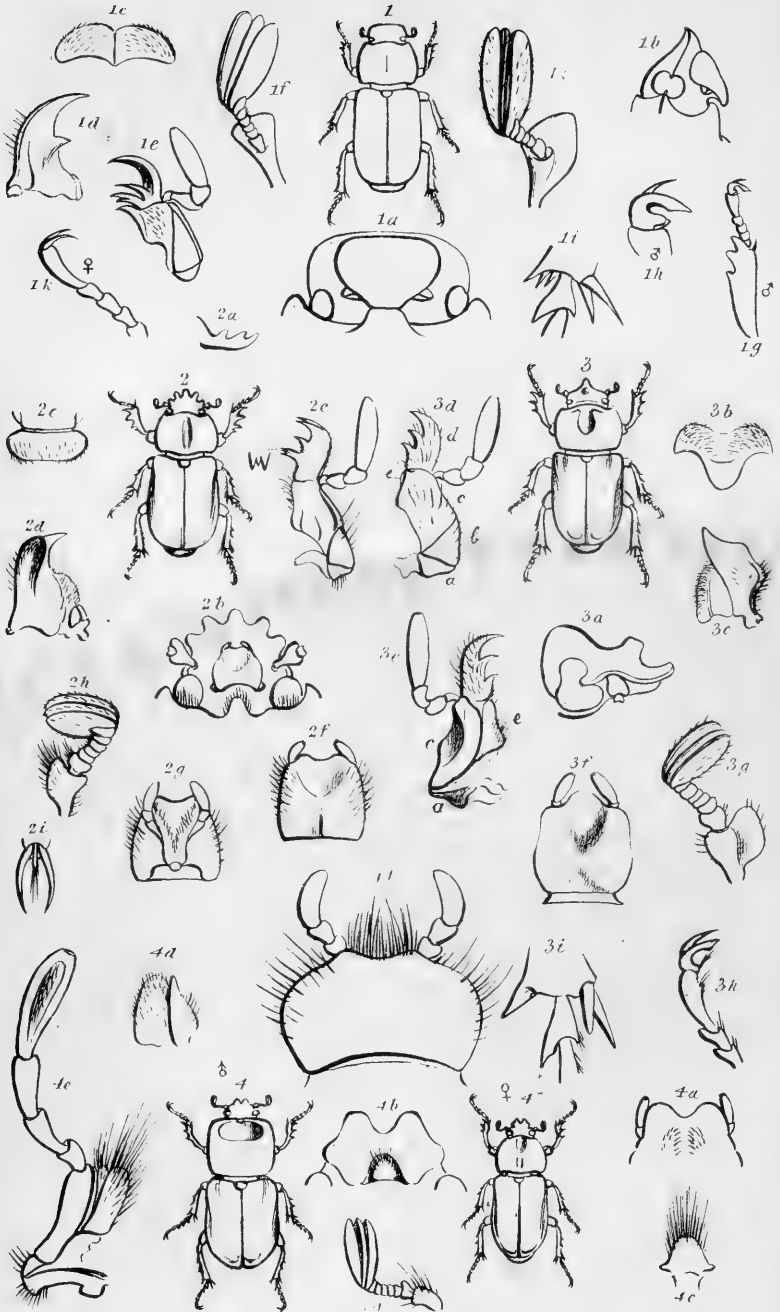
In addition to the above species two remain undescribed; the one apparently is allied to *Cercus*, and the other is probably an *Hydrobius*; both, however, are in too bad a state to describe, as they are imperfect.

III. *On the Pulvilli of Flies.* By WILLIAM SPENCE, Esq.
F.R.S., &c.

[Read 6th March, 1843.]

IN a note at p. 261, vol. ii. of the new edition of our "Introduction to Entomology," on the pulvilli of the common house-fly, I have detailed the observations which led me to the conclusion, that if the hypothesis of Mr. Blackwall, which refers the power possessed by this insect of walking up polished vertical surfaces or horizontal ones with its back downwards, to the exudation of a glutinous secretion from the ends of the hairs of its pulvilli, be proved to be correct, it will probably be found that the process of rubbing its tarsi together, which it constantly exhibits, is not, as has been formerly supposed, one of mere general cleanliness, but a very important operation of its economy, destined to keep the ends of the hairs of its pulvilli free from every particle of dust or moisture which might impede their adhesive action. My attention, since leaving England for Italy, has been frequently directed to this subject; and all my observations confirm the probability of this supposition being well founded, not merely in the case of the house-fly, but of Dipterous and Hymenopterous insects generally, and of many Coleopterous species, a large proportion of which I have seen employ similar manœuvres, apparently for a similar purpose. It would be tedious, as the results are so uniform, to give any detailed account of these observations, but I may mention one of them, which struck me more forcibly than the rest. I have repeatedly seen flies, after rubbing together their two fore tarsi and pulvilli, put down on the surface on which they were standing, first one of the pulvilli, and then the other, and pull at each, as if trying if they would adhere properly: apparently finding from the trial that they would not, again briskly have recourse to the former curry-combing process, repeating these alternate brushings and trials five or six times, and for the space of full two minutes, until having seemingly ascertained that the pulvilli were completely cleaned, and in a fit state to act, they walked or flew away. I do not give this fact as in itself of much weight; but taken in combination with those I had before observed and recorded in the note above referred to, it tends to confirm the supposition there started, as the mere cleansing of the tarsi themselves from dust could scarcely have required so long a process, and interrupted by so many apparent trials of its effect on the pulvilli. My main reason, however, for bringing it

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under the notice of the Society, is in the hope of drawing the attention of some of the members to a curious subject, which seems to require further investigation, and especially with a microscope of high powers; the first points evidently being to ascertain, beyond all doubt, both by observations on the polished surfaces over which flies and other insects have passed, and on the extremities of the hairs lining the pulvilli, that these hairs do actually excrete a viscid material, as Mr. Blackwall supposes.

IV. *Observations on the Lamellicorn Genus Cryptodus, and its Allies.* By J. O. WESTWOOD, F.L.S., &c.

[Read 5th July, 1841.]

THE genus *Cryptodus* has been well described by Mr. Mac Leay (by whom it was proposed) as the most singular of all the *Petalocera*, in an entomological point of view. Originally placed next *Mæchidius*, in the family *Trogidæ*, its talented proposer has, in his memoir on the *Cetoniidæ*, published in Dr. Smith's African Researches, suggested that its more legitimate situation is the family *Cetoniidæ*, adjoining to *Cremastocheilus*, a group also possessing dentate maxillæ, an immense mentum covering the other parts of the mouth, and a triangularly dilated basal joint to the antennæ; from this group, however, it is distinguished by its corneous dentate mandibles; but as horny mandibles occur in other Cetoniideous insects, Mr. Mac Leay states his conviction that *Cryptodus* belongs to the *Cetoniidæ*, in the following words: "It is now long since that, by reflecting on the concealed labrum of *Cryptodus*, the dilated triangular shape of its antennæ, the horny mandibles and maxillæ, similar in form to those of *Macroma* and *Oplostomus*, the large mentum closing up the mouth, and concealing the palpi, with its naked podex, so different from that of the *Trogidæ*, its depressed body, and peculiar structure, I became convinced that I ought to have assigned this most curious insect to the family of *Cetoniidæ*, and that it ought to have been placed in the immediate vicinity of *Cremastocheilus*."—*Illustr. Annul. So. Afr.* p. 17. On the other hand, Dr. Burmeister having, in his *Genera Insectorum*, (sub fam. *Xylophila*,) incidentally introduced the genus *Cryptodus* under the family *Dynastidæ*, I have been induced to enter into a revision of the characters of this genus in comparison with those of the several

groups to which it has been assigned. The characters from which Mr. Mac Leay associates *Cryptodus* with *Cremastocheilus*, are the dentate maxillæ, without any bristles on the outside of the upper lobe; depressed elongated form of the body; underside of the mentum with a process; large triangular and broad first joint of the antennæ; the reflexed margin of the clypeus, and the epimeron not prominently distinct between the thorax and shoulders of the elytra. The majority of these characters, it is true, are found in both genera, but they differ from each other in other, and, it appears to me, far more important respects. The whole habit of the insects disagree; the mandibles of *Cremastocheilus* are strictly Cetoniideous in form, whilst in *Cryptodus* they are horny, curved, and toothed within; the epimera of the mesothorax are quite visible from above, in front of the humeral angles of the elytra in *Cremastocheilus*, and especially in *Genuchus*, but they are quite concealed in *Cryptodus*; the toothings of the hind tibiæ of *Cryptodus* agrees neither with the *Cetoniidæ* nor *Cremastocheilus*, whereas it accords with the *Dynastidæ*, a tooth being in the middle, and a smaller one nearer the base; the basal joint of the hind tarsi in *Cremastocheilus* is short, as in all *Cetoniidæ*, whereas it is very large and toothed in *Cryptodus*, as in many *Dynastidæ*; the metasternum of *Cremastocheilus* is developed in front, as in the *Cetoniidæ*, causing the middle feet to approach nearer the fore ones* than in *Cryptodus*, which agrees in this respect with *Dynastes*; and the wings of *Cryptodus* are short and broad, as in *Dynastes*, but long in *Cremastocheilus*, as in *Cetonia*.†

As to the characters by which Mr. Mac Leay unites *Cryptodus* with the *Cetoniidæ*, the concealed labrum, horny mandibles, toothed maxillæ, and naked podex, are the characters of the *Dynastidæ*, whilst the dilated triangular scape of the antennæ, and large mentum, are two characters which exist in several Dynastideous insects, of which I add the descriptions to this memoir.

There is still another character of *Cryptodus*, as described by Mr. Mac Leay, which merits notice: referring the genus to the *Cetoniidæ*, he nevertheless observes, "that the insect well merits the title of *Paradoxus*, since it is as unlike *Cetonia aurata*, or any of the usual types of the family, as well may be; and besides, it

* And also of course thrusting the mesothoracic epimera prominently upwards as in *Cetonia*.

† Dr. Burmeister has also detected another character in *Cryptodus* which agrees with many of the *Dynastidæ*, but is not found in any *Cetoniidæ*, namely, the dissimilarity in the shape of the ungues of the fore feet of the males of *Cryptodus*, one of them being strongly bent, and armed with a tooth beneath, whilst in the female they are both alike, and simple.

is the only known insect among the *Cetoniidæ* that has not ten joints to the antennæ." This is indeed a singular character, and is as much at variance with the characters of the *Dynastidæ* as with the *Cetoniidæ*; but its singularity is greatly increased when it is mentioned, that it is only a specific one, since in a new species in my collection the antennæ are certainly 10-jointed.

Referring, then, this singular genus to the *Dynastidæ*, I will shortly notice its characters as contrasted with those of that family. It was introduced by Mr. Mac Leay into the family *Trogedæ* on account of its possessing 9-jointed antennæ, sharp arched horny mandibles, and maxillæ terminated by sharp horny hooks, "quamvis mento labroque omnino differt." We now find the 9-jointed antennæ no longer a generical character; and my own and Dr. Burmeister's dissections (published in Mr. Hope's *Coleopterist's Manual*, and in the *Genera Insectorum*), have shown that the horny mandibles and maxillæ of the *Dynastidæ* vary in a very great degree in the form and position of their teeth; the concealed labrum is the character of the *Dynastidæ*, and the large mentum exists in the several Dynastideous genera described below. In the majority of the *Dynastidæ*, however, we find only the upper lobe of the maxillæ dentate, whilst the lower one is terminated by one tooth in *Cryptodus*; but there are other *Dynastidæ* which have also this character. The want of occipital and thoracic horns, and the broad recurved clypeus, are peculiarities of *Cryptodus*, but they are not confined to it, but are found in many *Dynastidæ*, whilst the elongated depressed form of the body occurs in *Phileurus*, and other allied genera; on these accounts I consider that *Cryptodus* belongs to the family *Dynastidæ*, and that its relationship with *Cremastocheilus* is only one of analogy.

The following are the characters of the second* species of the genus mentioned above.

Cryptodus Tasmannianus, West.

Niger, nitidus, oblongus, punctatus; antennis 10-articulatis; mento basi truncato, prosterno anticè producto, margine antico fere recto.

Long. corp. lin. $9\frac{1}{2}$, lat. elytr. lin. $4\frac{1}{2}$.

Habitat in Terra Van Diemenni.

In Mus. nostr. &c.

* Mr. Mac Leay states that he possesses two species from New Holland, so that it is probable a third species exists. It is greatly to be hoped that Mr. Mac Leay will now furnish us with some details respecting the habits of this and other equally singular Australian insects.

Caput latius, angulis anticis clypei rotundatis marginatis, punctatissimum, impressione verticali anticè tuberculis duobus minutis terminata. Mentum basi truncatum. Antennæ distinctè 10-articulatæ. Prothorax transversus, niger, nitidus, punctatus, punctis in parte postica majoribus, et magis distantibus, medio lineâ longitudinali impressâ. Prosternum anticè porrectum, margine antico fere recto. Elytra nigra, nitida, punctis magnis irregularibus, suturâ striisque 4 in singulo elytro parum elevatis et lævibus.

This species is named *C. paradoxus* in most cabinets, but is at once distinguished by the shape of the mentum and basal joint of the antennæ. *Cryptodus paradoxus* differs from the above in its smaller size, being scarcely nine lines long; in being of a more pitchy brown hue; in being less depressed; in having the head squarer, and not so broad; in the two vertical tubercles being more prominent; in the mentum being deeply emarginate at its base, to receive the rounded front of the prosternum; in the 9-jointed antennæ, with the basal joint much more dilated; in having the prothorax not so transverse, and much more closely punctured; in the elytra being scarcely dilated behind, and shorter; and in being covered with exceedingly minute punctures, in addition to the irregular larger ones,—which, however, are neither so large nor so distinct as in my species.

Note.—The insect which I have here regarded as the true *C. paradoxus* agrees with Mac Leay's figures in the form of its mentum and basal joint of the antennæ, and number of joints in the latter organs. It is true that Mac Leay describes the colour of his species as being "ater," which ill accords with any of the specimens I have seen in the Collections of the British Museum and Mr. Hope; beyond this it is impossible, from Mr. Mac Leay's description, to determine the species. Indeed Dr. Burmeister informs me that there is a large black species (16 lines long) in the Berlin Museum, which also accords with Mac Leay's description, and he has accordingly given the name of *Variolosus* to the species which I have regarded as the true *Paradoxus*. In the British Museum Collection my new species is labelled *Paradoxus*, (which it certainly is not,) and the species I have supposed to be that insect is named *Variolosus*.

I now proceed to the descriptions of several insects, which appear to me to prove that *Cryptodus* is referable to the family *Dynastidæ*, to which they belong.

RHIZOPLATYS, West. (Plate II., fig. 3, and details.)

Subgenus novum, e genere *Phileuri*.

Corpus oblongum, subconvexum. *Caput* subtriangulare, clypeo antice acuminato, posticeque tuberculo truncato armatum. *Antennæ* breves, 10 articulatae, articulo basali latissimo depresso. *Labrum* corneum, ciliatum, pilosum, in medio marginis antici emarginatum, angulis anticis rotundatis. *Mandibulae* mediocres corneae, apice acutae, margine externo bisinuatae, in utroque latere clypei porrectae. *Maxillae* lobo apicali acutissimo, dentibus duobus acutis internè armatae, lobo interno inermit. *Mentum* magnum heptagonum, labium et articulos duos basales palporum labialium obtegens, pone medium elevatum. Pronotum *Phileuri*, at magis convexum, sulco profundo medio in parte antica, marginibus ejus lateralibus in tuberculum elevatis. *Elytra* brevia, subconvexa, irregulariter punctata. *Pedes* sat breves; ungues pedum anticorum inaequales; onychiis longis, apicè setulosis; tibiis pedum quatuor posticorum ut in *Phileuris* armatis; tarsorum articulo basali magno, apice supero in spinam acutam producto.

This insect possesses most of the characters of *Phileurus*, differing from it, however, chiefly in the more convex and irregularly punctate habit of the species, the simple inner tooth of the maxillae, the shape of the mentum, the greatly dilated basal joint of the antennae, and the unequal-sized ungues of the fore legs. It will be found to agree with *Cryptodus* in the general structure of the mouth, namely, the concealed sub-bilobed labrum, the horny acute mandibles, the horny dentate maxillae, the large mentum concealing the labrum, and base of the labial palpi; the dissimilar form of the fore ungues, the dilated basal joint of the antennae, and of the four posterior tarsi: and differing from it in the form of the clypeus, the want of a tooth on the inside of the mandibles, and on the inner lobe of the maxillae; in the different shape of the mentum, and the more convex body. Dependant upon the form of the clypeus, and the comparatively smaller mentum, and large size of the mandibles, is the more exposed position of the latter at the sides of the mouth, whereas we find them in *Cryptodus* completely concealed by the large clypeus and mentum.

Rhizoplatys cribrarius.

Piceo-niger, capite antennarumque articulo basali punctis

minutis, tuberculo obtuso frontali, prothorace rude punctato, excavatione profunda in parte media antica utrinque tuberculis duobus elevatis armato, elytris magis piceis, punctis minutis numerosis et irregularibus notatis, femoribus subtus magis castaneis, tibiis anticis tridentatis.

Long. corp. lin. 10.

Syn. *Cryptodon cribrarius*, Dupont MSS.

Habitat in Senegallia?

In Mus. Dom. Hope.

ACTINOBOLUS, West. (Plate II., fig. 2, and details.)

Subgenus novum, e genere *Phileuri*.

Corpus oblongo-ovatum, convexum.

Caput subsemicirculare, margine antico elevato, et in lobos 5 rotundatos diviso. *Antennæ* breves, 10-articulatæ, articulo 1mo lato, 2ndo sequentibus majori. *Os* inferum mento magno obtectum. *Labrum* crustaceum, transversum, setosum, lateribus rotundatis. *Mandibulæ* mediocres, corneæ, apice acutæ curvatæ, margine externo eminulo, et mento haud oblecto, intus inermes. *Maxillæ* lobo apicali 6-dentatæ, dentibus tribus infimis in serie transversa positis, lobo interno inermi. *Mentum* magnum, subquadratum, margine antico emarginato, parte anticâ declivi; labium et palpos labiales (articulo apicali excepto) obtegens; labium internum e lobis duobus membranaceis ciliatis constans. *Palpi labiales* breves, 3-articulati, articulis duobus basalibus internis, ultimo longiori, apice detecto. *Prothorax* transversus, convexus, lateribus rotundatis. *Elytra* convexa, striato-punctata. *Pedes Phileuri*, tarsorum quatuor posticorum articulo basali majori, apice supero in spinam producto. *Onychiæ* pedum anticorum breves, haud setigeræ, quatuor posticorum longæ, tenues, apice setigero.

The type of this subgenus recedes still further from *Phileurus* than the preceding; the large 5-lobed clypeus concealing all the mouth, which is placed in the middle of the under-surface of the head, the form of the labrum, which is transverse, instead of being deeply bilobed, and the more arched mandibles, are sufficient at once to distinguish it from the type of *Phileurus*.

With *Cryptodus* we find it to agree in the dilated clypeus, concealing the mouth, which is placed on the underside of the head, the general structure of the different parts of the mouth, the dilated basal joint of the antennæ, and the form of the basal joint

of the posterior tarsi; whilst it differs from that genus chiefly in the 5-lobed clypeus, transverse labrum, internally toothless mandibles and inner lobe of the maxillæ, comparatively smaller mentum and more convex body.

Actinobolus radians.

Piceo-rufus, antennis tarsisque nigricantibus, nitidus, capitis parte postica et pronoto anticè varioloso-punctatis, hujus parte postica lineâ longitudinali mediâ impressâ et punctatâ, elytris striato-punctatis, in singulo striis 10, tibiis anticis extus 4-dentatis, dente infero minuto.

Long. corp. lin. 9.

Habitat in Brasilia.

In Mus. Dom. Hope.

Trionychus, of Dejean's Catalogue, is another African genus closely allied to *Cryptodus*, agreeing with it in its depressed form, broad head, and large mentum; but in this genus we find the mandibles exposed at the sides of the clypeus, as in *Phileurus*. Dr. Burmeister has also separated another group from *Phileurus*, under the name of *Trioplus*, containing the *Ph. cylindricus* of Mannerheim, and the *Ph. sinodendrius* of Perty; these have the mandibles 3-dentate, and the anterior ungues dissimilar in the sexes, one of them being furnished in the middle with a tooth in the males, thus agreeing with *Cryptodus*. As Dr. Burmeister has proposed to illustrate these groups, I shall content myself with this short notice of them, which will be sufficient to prove their relationship with *Cryptodus*.

Directing our attention next to *Phileurus* itself, we find several differences in the form of the mandibles, dependent, as it appears to me, on the form of the clypeus. In most species they terminate in an acute exposed point, as does also the clypeus, thus forming three points in front of the head. The exposed external upper margin is elevated (as Latreille expressed it, "latere externo eminulo"—Gen. Crust. ii. 103); and this elevated part, where its extremity joins the body of the mandible, forms a more and more deeply incised notch, thus by degrees forms a separate tooth. In the New Holland type of *Phileurus*,* (*Ph. subcostatus*, Laporte, Hist. Nat. Col. 2, p. 116; *Ph. depressus*, Hope, MSS., which, by the way, has greatly the habit of *Cryptodus*,) we find the front of the head

* In Mr. Kirby's Collection, presented to the Entomological Society, is a specimen of a *Phileurus* marked as from New Holland, and, as received from Mr. Mac Leay, with the pin stuck through the thorax very low, which appears to me to differ in no respect from *Ph. valgus*.

broad, and the mandibles exposed, but much broader than in the South American type; the extremity being, as it were, truncate, whilst in the East Indian type of *Phileurus*, (of which I have seen three species in the Collection of Mr. Hope, viz. *Ph. Lambertii*, Hope, Bengal; *Ph. intermedius*, Burm. Poonah; *Ph. planatus*, Wied. Dawar,*) the anterior unguis of the fore legs is very broad, and with a small acute tooth on its upper edge; the onychiæ in the fore legs are also long, and bisetose at the tip; the innermost tooth of the maxillæ is 3-dentate, and the middle one bidentate; and the mentum is rather narrow, and emarginate at the tip. Besides the species of *Phileurus* mentioned above, I am only acquainted with one other species which inhabits the old world, namely, the *Ph. Senegalensis* of Laporte, which Mr. Hope has also received from Gambia.

On reviewing the characters of the various groups described or indicated in the preceding observations, it appears to me that they constitute a group in the great family *Dynastidæ*, distinguished at once from all the rest by a character noticed by no previous writer, namely, the complete retraction, towards the internal base of the dilated mentum, of the labium and the basal joints of the labial palpi, a character found also in the *Lucanidæ*; the large size of the basal joint of the posterior tarsi is also very characteristic, although we find it (but not so large) in other *Dynastidæ*.

I shall complete these observations by adding the description of another new genus, which, although having much of the general appearance of the two subgenera above described, possesses a structure of the organs of the mouth quite unlike that of every other Dynastideous group. It has been named *Cryptodon* by Latreille, in his manuscripts communicated to Dejean, by whom it is placed next to *Phileurus*. The peculiarity which led Latreille to propose for it this name, induced me to examine its structure, when I found the relation between it and *Cryptodus* (founded alone upon the large size of the mentum, concealing the other parts of the mouth) to be much slighter than between the last-named genus and the other *Phileuri*. As Latreille's name is too similar to *Cryptodus* to be retained in the same family, I shall describe it under that of

LEPTOGNATHUS, West. (Pl. II. fig. 4, and details.)

Corpus oblongo-ovatum, convexum. *Caput* mediocre, clypeo in lobos duos rotundatos elevatos producto. *Antennæ* breves,

* Two species are also described by Faldermann, from the North of China.

10-articulatæ, articulo 2do sequentibus majori, clava 3-phylla. *Os* inferum mento magno clausum. *Labrum* parvum, subovatum, basi latius, valde setosum, in cavitate oblonga faciei inferæ clypei receptum. *Mandibulæ* minutæ, bipartitæ; parte externa cornea, apice acuto, parte interna magis coriacea, fere ovata, e præcedenti incisione profunda divisa. *Maxillæ* minutæ, lobo interno magnitudinis ordinariæ, apice rotundato longe ciliato, lobo externo minutissimo, haud ultra apicem præcedentis extenso et inter illum et basin palporum maxillarium inserto; palpi maxillares 4-articulati, articulis longitudine crescentibus. *Mentum* maximum, latum, lateribus rotundatis, margine antico emarginato, valde setoso. *Labium* internum; palpi labiales sat breves, 3-articulati, articulo basali in maribus retracto, in fœmina articulis omnibus detectis. *Prothorax* subconvexus, longitudine latitudinem fere æquans, in maribus major, et magis subquadratus, impressione magna transversa in parte antica; in fœmina antice angustior, lateribus rotundatis, impressione parva antica ovata. *Elytra* obovata, antice truncata, pone medium parum latiora, striato-punctata. *Prosternum* ante pedes anticos deflexo-porrectum. *Femora* antica magna, margine antico in lobum magnum planum pro receptione tibiæ producto; tibiæ anticæ angustæ, in medio subangulato-curvatae, in maribus magis angulatae, in utroque sexu extus 3-dentatae, dentibus duobus superis magis approximatis, ungues antici in utroque sexu simplices; femora postica mediis crassiora, tibiæ 4 posticæ sub-graciles, tarsi graciles articulo basali in pedibus posticis simplici; onychiis pedum omnium brevibus, æqualibus, longè bise-tigeris.

Leptognathus Latrellianus, West.

Piceo-niger, nitidus, capite tenue punctatissimo, thorace rude punctato, punctis in parte postica magis distantibus, sulcoque ovato longitudinali parum impresso in parte postica; elytris rude punctato-striatis, singulo striis 11 punctorum magnorum subconfluentium, alterisque minutissimis irregularibus inter strias; striis ante apicem elytrorum inter se confluentibus; corpore subtus et podice fulvo-pilosis.

Long. corp. lin. 8—10.

Habitat in Senegallia.

Mus. DD. Hope et Melly.

Syn. *Cryptodon truncatum*, Latreille, MSS.

— *Cryptodon Senegalense*, Dej. Cat.

Another species is indicated in Dejean's Catalogue, also from Senegal, whence the impropriety of Dejean's manuscript specific name for the insect above described, which I have accordingly dedicated to Latreille.

Another interesting genus, closely agreeing with the above in the structure of the mouth, has been observed by Dr. Burmeister in the Collection of Mr. Melly. It is of much larger size, and has much of the habit of a broad *Oryctes*. It is from Brazil, and has been named *Pantodinus* by Dr. Burmeister.

DESCRIPTION OF PLATE II.

Fig. 1. *Cryptodus Tasmannianus*, and details.

1 *a*, underside of the head; 1 *b*, head seen sideways; 1 *c*, labrum; 1 *d*, mandible; 1 *e*, maxilla; 1 *f*, antenna; 1 *g*, fore tibiæ and tarsus ♂; 1 *h*, anterior unguis ♂; 1 *i*, basal part of posterior tarsi; 1 *k*, anterior tarsus ♀. The antenna to the right of the insect is that of *Crypt. paradoxus*.

Fig. 2. *Actinobolus radians*, and details.

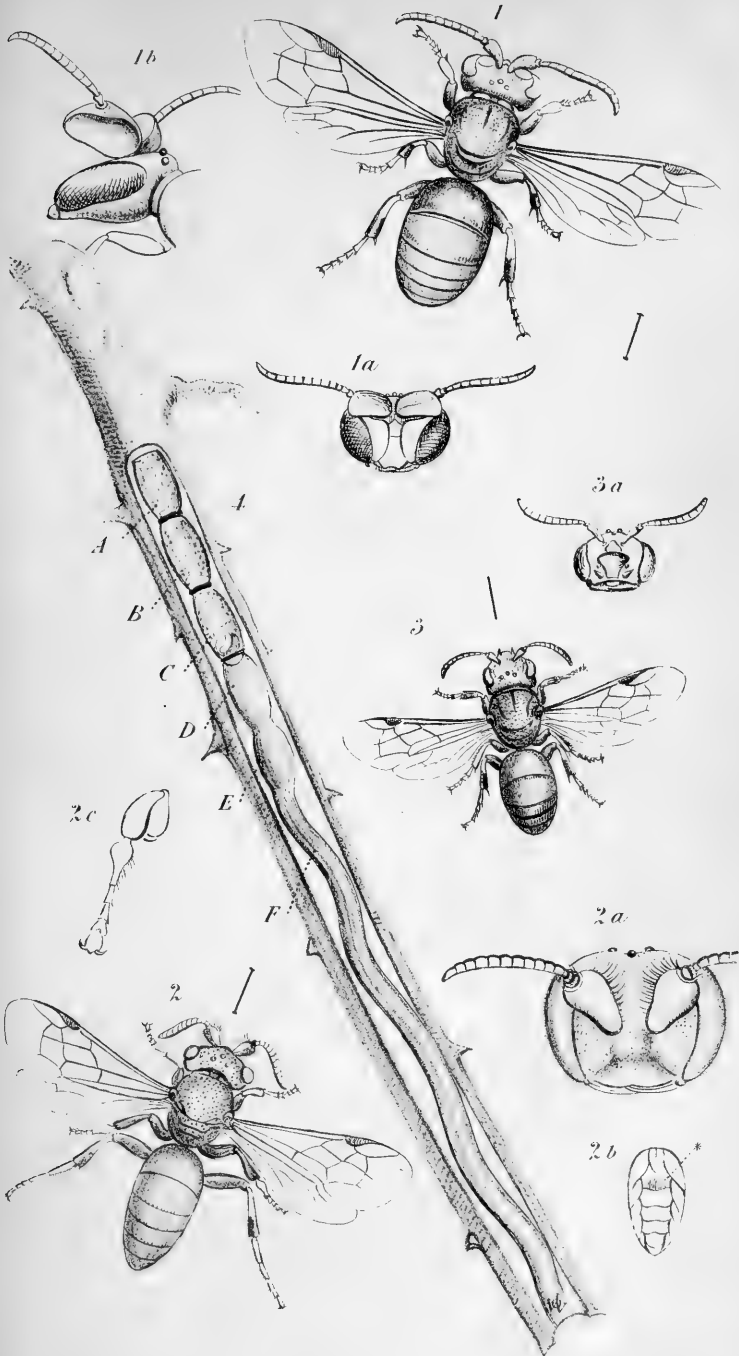
2 *a*, head seen sideways; 2 *b*, underside of head; 2 *c*, labrum; 2 *d*, mandible; 2 *e*, maxilla; 2 *f* and 2 *g*, mentum, &c. seen externally and internally; 2 *h*, antenna; 2 *i*, unguis.

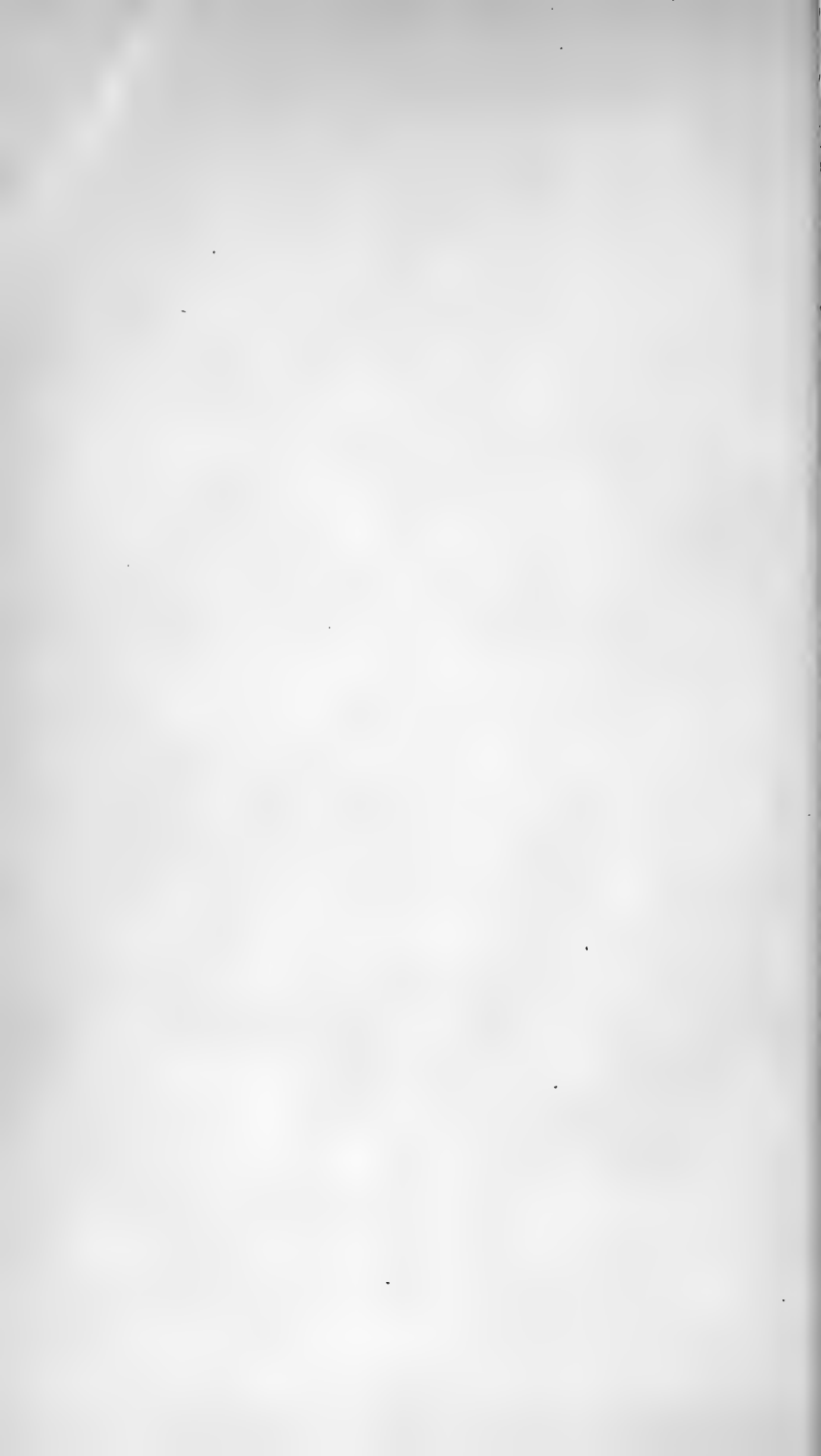
Fig. 3. *Rhizoplatys cribrarius*, and details.

3 *a*, side view of the head; 3 *b*, labrum; 3 *c*, mandible; 3 *d* and 3 *e*, inner and outer view of the maxilla; [*a*, cardo; *b*, stipes; *c*, squama palpi-fera; *d*, galea or outer lobe; *e*, mando;] 3 *f*, mentum and labial palpi; 3 *g*, antenna; 3 *h*, terminal joints of anterior tarsus; 3 *i*, base of posterior tarsus.

Fig. 4. *Leptognathus Latrellianus*, and details.

4 *a*, front of head above; 4 *b*, same beneath; 4 *c*, labrum; 4 *d*, mandible; 4 *e*, maxilla; 4 *f*, antenna.





V. *Descriptions of nine British Species of the Genus Hylæus, Latr.; together with some Notes on the Economy of Osmia leucomelana and Epeolus variegatus. By F. SMITH, Esq.*

[Read 7th March, 1842.]

BEFORE I enter on the description of the British species of the genus *Hylæus*, I would make a few observations which have occurred to me upon the habits of these insects. I have never had the good fortune to discover their nidi, but have always considered them parasitical, having observed them in some numbers frequenting a bank where *Andrena Afzeliella*, Kirby, nidificates in abundance. Late in the evening I have found (as also on a dull day) as many as three or four inclosed within the petals of the dandelion; these were generally males. I have a pair of the *Hylæus annulatus*, which I took in copula; proving Kirby's species to be correctly assimilated. This genus is remarkable for the singularities of form exhibited in different organs of some of the individuals of which it is composed, as described under the respective species.*

Genus HYLÆUS, Latr.

Head orbicular; eyes lateral, long, extending to the base of the mandibles, distant at the vertex; stemmata placed in a triangle. Antennæ 12-jointed in the female, 13-jointed in the male; scape long in some species, in others considerably dilated; in some males it is fringed with hair. Thorax globose, punctured, as well as the head and abdomen. Abdomen ovate; in some males oblong.

Sp. 1. *Hylæus annulatus*.

Aculeate; black, face generally with pale yellow stripes close to the eyes. Antennæ black. Thorax with a pale spot on the tegulæ and tubercles, sometimes on the collar; anterior and intermediate

(a) The following is a list of the species described:—

1. *Hylæus annulatus*, Kirby's Monograph.
2. ——— *annularis*, Do.
3. ——— *signatus*, Do.
4. ——— *dilatatus*, Do.
5. ——— *pallidens*, Kirby's MSS. No. 113.
6. ——— *cornutus*, Do. No. 118.
7. ——— *plantaris*, New species.
8. ——— *punctulatissimus*, Do.
9. ——— *hyalinatus*, Do.

legs with silvery hair at the base and apex of the tibiæ at the joints; posterior tibiæ annulated with yellow; all the tarsi black.

Male.—Face yellow, with a black line running from the base of the mandibles to the base of the antennæ, and a transverse one near the top of the angle formed. Antennæ black, slightly fulvous beneath. Thorax black; anterior tibiæ with a rufous line in front; posterior legs annulated with pale yellow; all the tarsi are pale at their base. Sometimes a pale spot on the tubercles and tegulæ.

Length, 3 lin. to $3\frac{1}{3}$.

Sp. 2. *Hylæus annularis*.

Aculeate; black; head nearly round; a fulvous spot below the base of the antennæ, sometimes obsolete. Antennæ slightly fulvous beneath. Thorax, with the tubercles, a spot on the tegulæ, sometimes on the collar, yellow; base of all the tibiæ yellow. Wings slightly coloured. Abdomen with a few whitish hairs on each side of the first segment, all the margins piceous.

Male.—Face yellow. Antennæ fulvous beneath, rather obscurely so; a yellow spot on the collar; all the tarsi pale at their base; anterior tibiæ with a rufous stain in front, intermediate and posterior pairs annulated with pale yellow.

Length, 2 to 3 lines.

Sp. 3. *Hylæus signatus*.

Aculeate; black. Antennæ fulvous beneath; scape black; face with an obscure fulvous line close to the eyes. Thorax with a white spot on the tegulæ and tubercles. Wings hyaline; anterior tibiæ with a rufous line in front; all the tibiæ fulvous at their extreme base. Abdomen very finely punctured; a fringe of white hair on the lateral margins of the first segment; the ventral also covered with white hairs, which are thinly scattered along the margins of all the segments.

Male.—Face pale yellow or white. Antennæ fulvous beneath. Thorax, anterior legs, with their tibiæ, rufous in front; the posterior plantæ white at their base. Abdomen covered with a fine silvery pile.

Length, 3 to $3\frac{1}{2}$ lines.

N.B.—The males of this species I have frequently found to be larger than the females.

Sp. 4. *Hylæus dilatatus*. (Pl. III. fig. 1, and details.)

Black; face pale yellow; mandibles black at the base, then yellow, with their apex rufescent. Antennæ black above, fulvous beneath, the apical segment totally so; the scape remarkably dilated, subquadrate, convexo-concave; the upper half black, beneath yellow. Thorax, a yellow spot on the tegulæ, one on each side of the collar, also on the tubercles; tibiæ yellow, anterior and intermediate, with a black stain behind; posterior tibiæ annulated with black; the wings fuscous. The abdomen covered with a fine silvery pubescence, particularly the margins of the segments.

Length, 3 lin.

This species is an astonishing instance of what almost appears disproportionate enlargement. The scape of its antennæ, says Mr. Kirby, resembles a "patella," or deep dish; but if viewed on its concave side, it certainly bears a striking resemblance to an ear; and although I would not boldly declare, with a learned professor, "these are its ears," still I consider them admirably adapted for collecting the vibrations of sound. Immediately behind the concavity of the scape, on the face of the insect, is a longitudinal smooth depression, extending to its outer margin, so that a passage for the vibrations of sound (should such a mechanical apparatus be the intention as I have described) is here admirably executed. I have examined the concavity under a Codrington lens, and find it perfectly smooth; not the slightest indication of any aperture or communication either with the joints of the antennæ, or where the scape inosculates with the head. I have drawn a figure of the insects, as well as an outline of the face, and concave side of the scape. This species appears to be rare. I am indebted to Mr. Samuel Stevens for my specimen, captured in Sussex.

Sp. 5. *Hylæus pallidens*, Kirby's MSS.

Male.—Black; scape of the antennæ with a yellow line in front; face white; the mandibles yellow. Thorax more pubescent than in the other species, particularly beneath; anterior tibiæ yellow, with a brown stain behind; the femora with a yellow line in front; intermediate and posterior tibiæ yellow at their base; all the plantæ yellow; remaining joints of the tarsi pale; claws rufous; wings fuscous. Abdomen piceous, with a fringe of white hair on each side of the first segment.

Length, 3 lin.

Sp. 6. *Hylæus cornutus*, Kirby's MSS. (Pl. III. fig. 3.)

Aculeate; black; clypeus bidentate; a singular prominence below the scape of the antennæ, which is black; antennæ fulvous beneath. Thorax finely punctured; a white spot on the tegulæ; the base of the anterior and intermediate tibiæ pale; posterior tibiæ annulated with pale yellow. Wings fuscous, paler at their tips. Abdomen very finely punctured.

Length, 3 lines.

The remarkable horns which arm the clypeus have doubtless their uses, and probably indicate some difference in the habit or economy of this species.

This species is rare; I only know of one specimen in Mr. Kirby's Collection in the Entomological Society's Cabinet, and one in my own, which was captured on Cove Common, Hants.

Sp. 7. *Hylæus plantaris*, (New species.)

Male.—Black face, with scattered hairs. Antennæ much shorter and thicker than in the other males; entirely yellow, slightly stained with fulvous above; scape considerably dilated, with a black streak above, fringed with long hairs, particularly on the approximating margins; a smooth shining depression on the face, into which the scapulæ fall. Thorax with a yellow spot on each side of the collar; a white spot on the tegulæ; base of the wings yellow, remainder fuscous; anterior tibiæ with a yellow stain in front, the intermediate yellow at their base, posterior annulated with yellow; all the tarsi yellow; the intermediate plantæ dilated at the base in front. Abdomen elongate, with longish pale hairs at the extreme lateral margins of the segments, particularly the apical ones; on the underside a patch of fulvous hair, in the centre of the second segment.

Length, 3 lin.

Of this species I took two specimens on Cove Common, Hants.

This I believe to be a new species, and in one respect a remarkable insect—viz. the dilatations of the plantæ of the intermediate legs at their base; the antennæ are much shorter than in the other males of the genus, they are also proportionably thicker; the scape is considerably dilated, and fringed with long stiffish hairs on the margins, which approximate; there is also a difference in the form of the joints of the tarsi; and on the underside of the abdomen, on the second segment, is an angular patch of short fulvous hairs, somewhat similar to the ♂ of *Chelostoma*;

these patches of hair will be observed to form a guard or cushion to the ventral segment of the bodies of the males of several species of bees which repose in flowers, in which they are found curled up.

Sp. 8. *Hylæus punctulatissimus*.

Aculeate; black, with a cream-coloured stripe close to the eyes, crescent-shaped. Antennæ black. Thorax coarsely punctured; the collar on each side, tubercles, and a spot on the tegulæ, pale yellow; wings coloured; anterior and intermediate tibiæ pale at their base; posterior tibiæ with a narrow pale ring at their base. The abdomen with a fringe of white hair on each side of the first segment, and the abdomen laterally clothed with a fine silvery pile.

Male.—Face yellow; scape of antennæ with a yellow line in front. Antennæ piceous beneath. Thorax coarsely punctured; a yellow spot on the tegulæ; the legs piceous; anterior tibiæ fulvous in front, the intermediate yellow at the base, the posterior annulated with yellow; the intermediate and posterior plantæ yellow; all the tarsi piceous.

Length, 3 lines.

N.B. Var. γ of Kirby's *annularis*, on comparison I find is the δ of my *punctulatissimus*.

I have little hesitation in placing these, as sexes, together. I took them in company at Coomb, in flowers, and met with no other species.

Sp. 9. *Hylæus hyalinatus*.

Aculeate; head black; very minutely punctured, with deep scattered punctures intermixed. Antennæ black, slightly piceous beneath. Thorax, like the head, is finely punctured, with large deep punctures intermixed; wings hyaline, nervures black; all the legs black; posterior pair annulated with pale yellow. Abdomen black, with silvery hairs on the ventral segment.

Male.—Black; face yellow. Antennæ with the scape black, the remaining joints fulvous beneath; the face is very coarsely punctured; the thorax has a scattered silvery pubescence, particularly beneath; a yellow spot on the tegulæ and tubercles; wings hyaline; anterior femora yellow, with a brown stain behind; intermediate and posterior tibiæ annulated with yellow; all the plantæ and following joint yellow, the rest rufescent.

Length, 2 lines.

I received this species from Mr. Thwaites ; it is very distinct from any of the foregoing, and is a smaller species.

Five years ago I captured a single specimen of *Osmia leucomelana*, which I saw enter an excavated bramble stick. From the cocoons contained in it, I confidently expected to breed the *Osmia*, but to my great surprise, in the month of June in the following season, a new species of *Epipone* was developed. I visited the locality, in which I found the bee, the four following summers, and although I occasionally found a specimen,—in one instance a male and female in the same stick,—still I could not discover one containing the nest of the bee. This season, on the 19th of July, I again visited Cove Common, Hants, and after a careful search I succeeded in finding some excavated sticks. My plan is, if possible, to cut the sticks in the evening, first carefully stopping up the entrance, as the probability is that the female bees will then be in them ; by this means I took three females and five of *Epipone levipes*.

The burrow formed by the *Osmia* is different to that of *Epipone*, which clears out all the pith previous to forming her cells. The *Osmia* excavates to the depth of about four inches, her course through the pith being somewhat serpentine ; having arrived at the necessary depth, she commences alternately to widen and contract her burrow equally, each alternation occupying three-eighths of an inch ; this she repeats five times—(see Pl. III. fig. 4) ; these spaces form the receptacles of the pollen and honey ; having stored up a sufficient quantity in the furthest cell, she next deposits an egg against the mass, one end of which is pushed into it, and by that means retains its position ; she then forms a division between the stored and next empty cell, this division is about the thickness of a common address card, and is composed of small pieces of leaf, mixed with some gummy substance, and so compactly is it finished, that I fancied it was circular pieces of leaf stuck together, until I immersed one in hot water, when the gum or wax dissolved. In one of the sticks in which I found a female *Osmia*, the third cell was just completed, or stored, and an egg deposited. The egg is about one line long, tapering a little at each end, and is in fact about the size and form of a small caraway seed, only that the surface is so exceedingly smooth, that, under a high magnifying power, I could not detect the slightest puncture or reticulation. Supposing the egg in question to have been deposited on the day that I discovered the nest, the larvæ appeared on the tenth.

Chancing to meet with a bank in which was a large colony of *Colletes succincta*, I pulled down a portion of it, and found large quantities of their cocoons, some empty, some containing the bee fully developed, others the stores of pollen and honey recently collected. I filled a few boxes with the cocoons containing insects, and on examining them at home, in two of them I found a specimen of *Epeolus variegatus*. This little bee has long been considered a parasite, but I believe this is the first instance of its being found in the nest of another bee. More than two-thirds of the cocoons were empty which I found in the bank, or I might probably have discovered more of *Epeolus*. This is an instance of great disparity of resemblance between the bee and its parasite; and I think it will be found, that close resemblance is only to be met with, and is only apparently necessary, among the social bees, for there can be no want of opportunity for a parasite to deposit unobserved her egg in the nest of a solitary bee; whereas in the social species they would be sure of detection; and, consequently, a very close resemblance is frequently met with, apparently to aid them in fulfilling the purposes assigned to them: as in the instance of the different species of *Apathus* parasitic upon *Bombus*, and also in the *Diptera* frequenting their nests.

VI. *Descriptions of some new Coleopterous Insects from the Philippine Islands, collected by H. CUMING, Esq. By G. R. WATERHOUSE, Esq.*

[Read 5th April, 1841.]

Section LAMELLICORNES.

Sub-section *Melitophili*, Latreille.

Genus MYCTERISTES, Laporte. (Insectes, ii. p. 162.)

Mycteristes Cumingii.

Myct. viridis, nitore resplendente; elytris, pedibus, et corpore subtùs flavescente lavatis: corpore subtùs paulo pubescente; capite cornu erectum exhibente, (hòc caput quoad longitudinem æquante,) ad apicem latum et paulò emarginatum, posticè concavum, anticè tuberculo uno obsitum: thorace convexo, posticè angustiore quàm ad mediam, marginibus lateralibus pone mediam ferè rectis, anticè constricto, margine posteriore in medio paulo producto, anticè porrecto in cornu validum ad apicem bifidum, super caput impendente: scutello mediocri, triangulari, elytris longioribus quàm latioribus, posticè attenuatis, disco plano, apice sub-truncato: pedibus validis, tibiis scopulâ pilorum subtùs instructis et externè haud denticulatis, tarsis quàm tibiæ paulò brevioribus; unguibus permagnis.

Long. corp. $1\frac{1}{2}$ lin.

Fœmina differt corpore minore, capite, thoraceque haud cornutis; pedibus mediocribus; tibiis anticis externè tridentatis; reliquis denticulo externo parvo, infra medium instructis; unguibus mediocribus.

Long. corp. $9\frac{1}{2}$ lin.

Elytra in fœminâ quasi flavescencia aureo-viridi lavata apparent, suturis, et lineâ longitudinali prope marginem intensè viridibus.

♂ ♀ in Mus. Brit.

The present insect, in my opinion, is allied to the genus *Macronota*, and approaches most nearly to the *Macronota rhinophyllus* of MM. Gory and Percheron's Monograph, — a species which was originally described by Wiedemann (*Zoologisches Magazin*, Band ii. part 1, for 1833, p. 82) under the name *Goliathus rhinophyllus*. On the same insect M. Laporte finds his genus *Mycteristes*, and Mr. Mac Leay his subgenus *Philistena*. The last-mentioned author agrees with MM. Gory and Percheron, and with myself, as

regards its affinities. Beyond the differences pointed out between the *Goliathus rhinophyllus* and the true species of *Goliathus* by Mr. Mac Leay, I may observe that, in all the species of *Goliathus* I have been able to examine, I have found the process of the metasternum remarkably broad, and, in some, extended almost to the base of the anterior pair of legs, whilst in *Philistina*, or *Mycteristes*, this process is narrow, and but slightly prominent.

Though, however, the *Mycteristes Cumingii* approaches most nearly to the *G. rhinophyllus*, there are several points of distinction worthy of notice, and which perhaps might be regarded as sub-generic,—in which case I should propose that the name *Phædimus** be applied,—the horn on the head and that on the thorax in *M. Cumingii* are much stouter; that on the head is shorter, and has a protuberance in front, and that on the thorax is distinctly forked at the extremity, and is perfected with a flattened projecting process beneath: the legs are stouter—(I am comparing the males together)—and the anterior tibiæ are not notched externally; the tarsi are shorter, and the claws are much longer, and there are no brushes of stiff hairs on the under side of the tibiæ,—these velvet-like pads are found on all the tibiæ (of the male only), and extend from the tip rather more than half-way towards the base.

The colouring of this insect is remarkably brilliant, and changeable according to the light; in one position it presents a splendid golden-green tint, in another it presents a yellow cast, and appears, as it were, washed with golden green: this yellow hue however is not observable on the head and thorax, whilst on the other hand it is most conspicuous on the thighs and tarsi. In these latter I find all the joints tipped with blackish, and with a spot of the same colour on each side; the tibiæ of the female are deep green, excepting at the tip, where a yellowish hue is observable; the tarsi are also deep green, but the terminal joint of those of the hind legs has the apical half yellow. The thorax and scutellum are smooth, the elytra are covered with minute confluent punctures; the body beneath is thickly punctured, and covered nearly throughout with minute, decumbent, yellow hairs.

The head is thickly punctured in the female, and the clypeus is distinctly emarginated; the thorax is also distinctly punctured; on the disc, however, there are but few of these impressions; an impressed line runs parallel with, and close to, the lateral margins, and near this line are a few indistinct reddish spots; some scattered hairs are observable on the margins of the thorax, and there are a few on the upper surface, and likewise on the elytra.

* φαίδιμος, bright, handsome.

Genus LOMAPTERA, Gory and Perch.

Sp. 1. *Lomaptera cupripes*.

Lom. viridis; elytrorum marginibus, pedibusque cupreis.

Long. corp. 14—15 lin.; lat. 6—7 lin.

Hab. apud Insulas Philippinenses.

In Coll. Waterh., Mus. Brit. &c.

This appears to approach very nearly the *Lomaptera valida* (Chevrolat) of MM. Gory and Percheron's Monograph, but the club of the antennæ is black, and not yellow, as in that species. The general colour of the insect is deep green; the anterior external angle of the elytra, as well as the outer margins and the legs, are of a copper colour; the body beneath, the clypeus, and the basal joint of the antennæ, are sometimes of the same tint; the remaining joints of the antennæ and the palpi are black.

The clypeus is deeply cleft, and thickly punctured, excepting in the middle. Thorax attenuated in front, slightly produced in the middle of the lateral margins, but broadest behind; the anterior margin is also slightly produced in the middle, and the anterior angles are obtuse; the posterior angles are acute; the produced posterior portion of the thorax, which nearly hides the scutellum, is nearly in the form of an equilateral triangle, but with the apex slightly rounded; the sides of the thorax are thickly punctured, but the disc is smooth: the apical portion of the elytra is thickly covered with exceedingly minute waved rugæ,—like scratches made by a sharply pointed instrument,—and so are the terminal segments of the abdomen: the sternum is rather coarsely, but not thickly, punctured, and there are numerous distinct punctures on the abdominal segments, some of which form a transverse line.

Sp. 2. *Lomaptera nigro-ænea*.

Lom. nigro-ænea; corpore subtus, antennis pedibusque nigris.

Long. corp. unc. 1; lat. $5\frac{3}{4}$ lin.

Hab. apud Insulas Philippinenses.

In Coll. Waterh., Mus. Brit. &c.

Like the *L. cupripes* in form, but of a smaller size, and æneous-black colour; the clypeus is rather less deeply notched, but punctured in the same way, and so are the sides of the thorax, and on the apical portion of the elytra, and terminal segment of the abdomen, there are similar minute rugæ, and two short striæ running from the tip of the elytra parallel with the suture. The abdominal segments are impunctate in one of the specimens before me,* but in the other there are punctures on these parts, but they

* The same specimen has the abdomen of a pitchy colour.

are not so numerous as in *P. cupripes*; the sternum is less distinctly punctured.

I have examined numerous specimens of this and the preceding species, and have always found the difference of size and colouring combined.

Genus *MACRONOTA*, Wiedemann.

Sp. 1. *Macronota Philippinensis*.*

Macr. nigra; antennis, palpis, tibiis, tarsisque piceo-rubris; capite lineis duabus, thorace lineis tribus, scutello nec non, elytris maculis quinque lineisque duabus, auratis.

Long. corp. $8\frac{1}{3}$ lin.

Hab. ad Insulas Philippinarum. In Mus. Brit. &c.

This species is larger, and proportionably broader, than the *Macronota regia* of MM. Gory and Percheron. Its general colour is dull black. In the specimen before me the prominent parts of the thorax and elytra are glossy, but this is probably produced by rubbing. The upper surface of the head and clypeus is thickly punctured, and presents two longitudinal golden yellow lines; the space between these lines is slightly elevated, especially on the hinder part of the head. The thorax is but slightly broader behind than in front; the anterior and lateral margins are rounded, and the posterior margin is sinuated on either side; the disc is longitudinally depressed; the depression is deep behind; the upper surface is thickly punctured, and covered with minute black hairs, excepting in the parts which are coloured yellow, these consist of a broadish central mark, and a narrow line running parallel with and close to the lateral and anterior margin of the thorax. The elytra are somewhat suddenly contracted behind the shoulders, and slightly attenuated behind; they are dull black, thickly but finely punctured, depressed in the region of the scutellum, and have the disc nearly flat, and the shoulders prominent. The scutellum is yellow, and there is a transverse narrow mark of the same colour on the base of each elytron, this mark touching the scutellum; on a line with the tip of the scutellum, and but little removed from the suture, are two reddish patches; besides these, the elytra present five golden yellow spots,—a transverse spot on the suture, about midway between the base and apex of the elytra, and four lateral spots, two on each side and not very far removed from the central one,—and behind these are two lines running parallel with and close to the

* This is certainly the *Macronota auro-guttata*, described, since this paper was read, by Burmeister, in the third volume of his Handbuch, p. 323.

suture; these lines do not quite extend to the apex of the elytra, but near this part they suddenly diverge: on the sides of the abdomen above are four yellow spots, and on the terminal segment there is one largish round spot of the same colour. There is, moreover, a patch of yellow on each side of the prothorax beneath, and the remaining parts of the body beneath present six largish transverse spots on each side. The femora are black, excepting at the apex, and on the upper surface of the apical half, where they are of the same reddish colour as the tibiæ and tarsi, and, I may add, the tip of the clypeus, the antennæ and palpi.

Sp. 2. *Macronota nigro-cærulea*.

Macr. nigra, nitida, indistinctè cæruleo-tincta.

Long. corp. 1 unc. 1 lin.; lat. 6 lin.

Hab. ad Insulas Philippinenses.

In Coll. Waterh., Mus. Brit. &c.

This species is remarkable for its uniform bluish black colour; it is rather larger than the *Macronota Diardii* of MM. Gory and Percheron's Monograph, the head is rather shorter and the clypeus is wider—broadest in front, where it is not very deeply emarginated; the upper surface is thickly punctured: the thorax is narrower than in *M. Diardii*, the lateral margins are nearly parallel, it being but slightly broader behind than in the middle, and on the fore part it becomes somewhat suddenly contracted; the posterior angles are acute, and the hinder margin is produced in the middle in about the same degree as in *M. Diardii*; the central portion is but slightly depressed, and, unless with a powerful lens, no punctures are visible; on the lateral margins, however, there are distinct confluent punctures: the elytra are broader than in *M. Diardii*, less attenuated posteriorly, and suddenly contracted behind the shoulders, as in that species; the shoulders are very prominent, and in the region of the scutellum the elytra are much depressed; towards the outer margins are some faint punctures and rugæ, and the other parts are smooth—at least, but few very minute punctures are visible: the scutellum is much larger than in *M. Diardii*, and concave in front: the body beneath is smooth; the anterior tibiæ are broader than in the species just mentioned, and are tridentate externally.

GENUS XYLOTRUPES, Hope.

Xylotrupes pubescens.

Xyl. nigrescenti-fuscus; et suprâ et infrâ pilis decumbentibus vestitus; capite cornu ad apicem bifido, paulò recurvo;

thorace anticè in cornu robusto et elongato antrorsum ducto, ad apicem bifido-armatis.

Hab. ad Insulas Philippinenses.

In Coll. Waterh., Mus. Brit. &c.

This species is closely allied to the *Sc. Oromedon*; but is remarkable for being covered with a silky pubescence.

Genus EUCHEIRUS, Kirby.

Eucheirus quadrilineatus.*

Euch. obscurè nigro-æneus; thorace punctulato; elytris lævibus, lineis quatuor fusco-flavescentibus ornatis; corpore subtùs pilis fuscis instructo.

Long. corp. (♀), 2 unc. 5 lin.; lat. 1 unc. 2½ lin.

Hab. ad Insulas Philippinenses. In Mus. Brit.

Description.—Head of a dull bronze colour above, subquadrate, but rather broader behind than before; clypeus somewhat concave above, the anterior margin presenting a slightly waved, but nearly straight, line; upper surface minutely punctured; antennæ black, the club pitchy. Thorax also of a dull bronze colour above, rather narrower than the elytra; 11½ lines broad, 7 lines long; the sides rounded, the broadest part rather behind the middle, and the fore part contracted; upper surface very finely punctured; a considerable space on the hinder half of the thorax in the middle is nearly destitute of punctures, and slightly glossy; on the disc are two joint depressions, and at some little distance from the lateral line, and situated on the hinder half of the thorax, are two slightly marked longitudinal depressions; the hinder margin is slightly produced in the region of the scutellum, and the hinder angles are obtuse. The scutellum is of moderate size. The elytra are blackish-green, or deep bronze colour, slightly glossy, without striæ or punctures; 1 inch 7½ lines long, and but little dilated in the middle: a broad yellowish brown band runs from the base of each elytron nearly parallel with the suture, and extends almost to the apex, where it is joined by a second mark of the same colour, which runs parallel with, and near, the outer margin, but is not continued quite to the base of the elytron. The under parts of the thorax, and the sternum, are densely covered with brown hairs; the abdominal segments are of a bronze colour, and slightly pubescent at the sides. The thighs are very

* Since this paper was read the male of the present species has been described by Dr. Burmeister in Germar's Zeitschrift (iii. p. 227), under the name *Euchirus Dupontianus*. A beautiful figure of the same insect has likewise been executed for Burmeister's "Genera Insectorum," but it has not yet been published.

stout—especially the posterior pair—black, with an obscure bronze tint; the tibiæ and tarsi are black: the anterior tibiæ are broad, 8 lines long, strongly quadridentate externally, and with two small dentations near the base; the tibiæ of the middle and posterior legs are beset with numerous stout and sharply pointed spines—these are chiefly confined to the upper and outer surface; the posterior tibiæ are much dilated at the distal extremity, where there are four stout spines: the tarsi are about equal in length to the tibiæ from which they spring: the claws each present a double hook. The terminal segment of the abdomen is furnished with two conspicuous tufts of reddish hairs.

The specimen from which the above description is taken is a female, and, as might be expected, does not present the peculiar character from which the *Scarabæus longimanus* received its name; its anterior tibiæ and femora are, in fact, not more elongated than most other species of the section. In general appearance (the colouring excepted) the present insect so resembles the *S. longimanus*, that Mr. Melly, to whom it was shown, at once pronounced it the female of one of that group, and, upon a careful examination, I have found his opinion correct. The structure of the middle and posterior pairs of legs is the same, and it moreover possesses the doubly hooked claw (or it may be described as having a hooked spine on the under side of the claw), which is one of the characters upon which M. Laporte founds his genus *Parropus*, the type of which is the *Scarabæus longimanus*.

Section LONGICORNES.

Family SAPERDIDÆ.

Genus DOLIOPS,* Nov. Gen.

Caput quàm thorax angustius, paulè productum et posticè cylindraceum: *oculi* reniformes: *palpi* mediocres, articulis terminalibus oblongo-ovatis, et subtruncatis: *antennæ* 11-articulatæ, breves et graciles; articulo basali elongato; secundo brevi; tertio perlongo, et ad apicem dilatato; articulis reliquis mediocribus.

Thorax subglobosus, postice constrictus.

Elytra perbrevia, valdè convexa, humeris prominulis.

Pedes paulo grandes, femoribus in medio crassescens, tibiis latis, compressis; tarsis brevibus, latis.

Doliops curculionoides.

Dol. obscurè viridi-ænea, indistinctè cærulescente relucens;

* Δολιός, deceitful, and Ωψ, the face, aspect, &c.; from the circumstance of its having the face or aspect of a group to which it does not belong.

palpis nigris; antennis articulis tertio et sequentibus griseiscentibus, ad apicem nigris; capite lineâ albâ longitudinaliter notato; elytris quatuor-decim guttis flavescenti-albis adspersis; maculis eodem colore corpus subtus ornantibus; tarsis cinereis, articulo terminali nigro.

Long. corp. $5\frac{1}{2}$ lin.; lat. $2\frac{1}{2}$ lin.

Hab. ad Insulas Philippinenses. In Mus. Brit.

This insect has more nearly the aspect of some of the *Curculionidæ* than of any of the species of its own group; its resemblance in size, form and colouring to a certain species of *Pachyrhynchus*, which Mr. Cuming found in the same locality, is remarkable.

The head is vertical, rather small and narrow; the labrum is rather broader than long, and slightly emarginated in front; the palpi are moderately large and long; the middle joint of the maxillary palpi is rather shorter than the other two, and the terminal joint of both maxillary and labial palpi is the largest; this joint is slightly swollen in the middle, and truncated at the apex. The antennæ are somewhat approximated at the base, very slender, and, when bent backwards, do not quite extend to the apex of the elytra; the basal joint exceeds either of the other joints in length, excepting the third joint, and is but slightly stouter; the second joint is very short; the third is very long, being about equal to the three following joints taken together, and very nearly twice as long as the first joint, it is slender at the base, but compressed and considerably dilated at the opposite extremity; the fourth joint is shorter than the first, but longer than either of the following joints, which are nearly equal to each other, but diminish slightly in length towards the apex of the antenna. The eyes are very deeply emarginated internally, and encircle the base of the antennæ. The thorax is broader than the head, but scarcely more than half the width of the elytra; its length and width are about equal, and its form is nearly globose; close to the anterior margin is a transverse groove, and the hinder part is distinctly constructed and cylindrical, and presents a slight transverse groove close to the hinder margin, and a second, deeper, transverse groove in front of this. The elytra are nearly ovate, very convex, about one-fourth longer than broad, slightly rounded at the apex, and have the humeral angles somewhat prominent. The legs are long and stout; the femora are distinctly incrassated near the middle; the tibiæ are compressed, and there is a faint denticulation on the outer side of the middle pair, as we observe in *Dorcadion*, *Colobothea*, &c.: the tarsi are broad.

The general colour is brassy-green: on the upper surface of the head is a longitudinal yellowish-white stripe; the thorax has two small dots of the same colour situated in front and towards the sides, and, on either side, just above the base of the femur, is a large round spot: on the elytra are fourteen nearly equidistant round spots; two of these are situated near the scutellum (which is of moderate size and somewhat rounded behind), four on the disc of the elytra, two towards the apex, and three on each side near the outer margin: a spot is observable on each side of the meso- and meta-thoracic segments beneath, and of the abdominal segments; the first abdominal segment has two additional quadrate spots—all these spots are formed of yellowish-white scales, which have a faint metallic lustre. The first and second joints of the antennæ are brassy-green; the third is black, but with a greyish pubescence beneath; the fourth is greyish, tipped with black, and the following joints are brownish. The thorax is nearly smooth above, but under a strong lens exhibits numerous very minute punctures; on the sides are some distinct punctures, and these parts are clothed with minute decumbent hairs—perhaps the upper surface may have been covered with similar hairs, which in the specimen before me have been rubbed off. The elytra are punctured, and the punctures are most deep and most abundant on the fore part.

The short ovate body of this insect would at first lead one to suppose it allied to the *Dorcadions*; but in the form of the head, the slenderness of the antennæ, and structure of the legs, it appears to me to approach more nearly to certain *Saperdæ*, and especially to the genus *Colobothæa*, where the antennæ are approximated at the base.

Doliops geometrica.*

Dol. splendide viridi-ænea; capite lineis tribus, harum unâ interoculari, unâ utrinque suboculari; thorace lineis marginalibus, et suprâ lineis tribus (unâ abbreviatâ), notato; elytris lineis duabus transversis mediam versus, ad basin areâ transversâ irregulari, ad apicem areâ triangulari, lineis pallidis circumdatis: omnibus lineis squamis albis effectis: antennis articulis tertio et sequentibus ad basin rufescentibus.

Long. corp. $6\frac{1}{3}$ lin.

In Mus. Brit.

This species presents all the essential characters of the type of

* This genus is characterized in the Proceedings of the Entomological Society of London for April, 1841, p. 27.

the genus *Doliops* (*D. curculionides*), and greatly resembles that insect in size and form; but the thorax has marks, or lines, instead of spots. Its colouring is more brilliant.

VII. *On the Linnæan Species of Staphylinus, a Genus of Coleopterous Insects.* By J. O. WESTWOOD, F.L.S. &c.

[Read 5 Oct. 1840; 1 March, 1841.]

MY attention having been directed by Dr. Erichson of Berlin (the author of a very valuable work upon the family *Staphylinidæ*) to several of the species of that family described by Linnæus, and preserved in the Linnæan Cabinet of Insects, with the view of clearing up the synonymy of such species, I have extended my examination to the whole of the twenty-six species described by the great Swede, including several species in addition to those of which Dr. Erichson requested my opinion.

Sp. 1. *Staphylinus hirtus* is the *Emus hirtus* of Leach; *Staphylinus hirtus* of most continental authors.

Sp. 2. *Staph. murinus* is a species of *Staphylinus* (subgenus *Trichoderma*, Steph.) The Linnæan specimen is nearly $\frac{3}{4}$ of an inch long ("Insectum inter majores, non maximos," Linn.) It is the *St. murinus* of Olivier, 3, 15, pl. 6, fig. 51, 6, and Panzer, pl. 66, fig. 16. By Fabricius, and all other English and foreign authors, it is given under the name of *Staph. nebulosus*, Fabr. The *Staph. murinus* of Fabricius, Marsham, Stephens, Erichson, &c., is a smaller species. De Geer has confounded both under his first species of *Staphylinus*, but has figured the true *St. murinus*.

Sp. 3. *Staph. maxillosus*. Under this name Linnæus confounded two distinct species, namely, the *Creophilus maxillosus* of Kirby, and the *Goerius olens* of Leach. From the short specific character given in the F. Su. and the Syst. N. it would appear that Linnæus intended the former insect as the type of the species; but the description given in the former work, "Hic maximos inter nostros est.—Elytra atra in quibusdam cineritie lævi nebulosa," as well as the figure of Geoffroy and description of Ray, referred to by

Linnæus, show that *G. olens* was the insect he had chiefly in view. In the *Systema Naturæ*, however, he endeavoured to get over the difficulty by stating, "*Junior undique tomentosus per elytra et abdomen cum fascia cinerea elytrorum et abdominis. Provector glaber et totus ater evadit.*" Hence Gravenhorst supposed that Linnæus could not have known the species figured by Geoffroy (*G. olens*), which appears to be rare in Sweden; but that the individual which he considered as *Provector* was an abraded *C. maxillosus*. This opinion, which Mr. Shuckard has recently reiterated, (*El. Brit. Ent.* p. 116,) and which seems supported by the Linnæan character, "*glaber et totus ater,*" a character which far better agrees with an abraded *maxillosus* than an ordinary *olens*, is nevertheless incorrect, there being no abraded specimen of *maxillosus* in the Linnæan Cabinet; whilst an ordinary specimen of *maxillosus*, and one of *olens*, are both stuck through the Linnæan label,* the latter placed first.

Sp. 4. *Staph. erythropterus*. This species has been regarded by Fabricius and most subsequent authors as composed of those large specimens of *Staphylinus*, with red elytra and legs, which have the hind margin of the prothorax golden coloured, and the scutellum black. The expression of Linnæus, "*Est inter majores, non maximos numerandus,*" is in favour of this opinion, these individuals being larger than any of the allied species. The antennæ of these insects are however red at the base and brown at the apex, whereas Linnæus says, "*Antennæ nigræ basi et apice rufescentes;*" which character, in conjunction with an entirely black prothorax and golden scutellum, is found in the *St. castanopterus* of Gravenhorst and Gyllenhal. Dr. Erichson accordingly gives the latter species as the true Linnæan *St. erythropterus*, and the *St. erythropterus* of Fabricius and most other authors under the name of *St. cæsareus* of Cederheim. The typical Linnæan specimen however, being that which is stuck through the ticket in the handwriting of Linnæus, is of the largest size, with a golden posterior margin to the thorax. The antennæ are brown, with the base alone red. There are two specimens agreeing in these characters placed side by side, and a third specimen is added, which, however, has the prothorax entirely black, and the scutellum golden coloured, or the *St. castanopterus*.

* Another insect is also stuck through the Linnæan label agreeing with the typical specimen in size, but having the disc of the thorax destitute of the two rows of impressed punctures.

Sp. 5. *Staph. politus*. Under this name Linnæus confounded several distinct species of the genus *Philonthus* of Leach, regarding them as varieties of the same species. On referring however to the Linnæan Cabinet we find that the only individual which agrees with his observation, "Differentia specifica essentialis consistit in thorace decem punctis excavatis, sed vix absque lente conspiciendis," is the specimen, the pin of which is stuck through the specific label, and which appears to me to be identical with the *Staph. æneus* of Gravenhorst, Gyllenhal and Erichson. It is nearly five lines long. The head is large and square, with the sides deeply punctured behind the eyes; the anterior margin of the head has a large central impression, with a much smaller one on each side half way between it and the eyes; the inner and anterior angle of the eyes having one deep and several smaller impressions. The disc of the thorax has two posteriorly diverging rows of five punctures on the anterior part of the disc, the two anterior ones being close together on the anterior margin of the thorax; the first of these two being placed nearer to the lateral angles, and not strictly forming one of the longitudinal series of punctures. The insect thus agrees with the Linnæan character quoted above, whilst at the same time it must be referred to Gyllenhal's 3rd subdivision of the genus, "thoracis seriebus dorsalibus 4-punctatis;" although, were not this explanation given, it would appear to belong to his 4th subdivision, "thoracis seriebus dorsalibus 5-punctatis." The antennæ are entirely black, as are also the legs. This description will be seen to accord with Gyllenhal and Erichson's description of *St. æneus*, except that they do not mention the large impressed puncture in the middle of the front of the face.

The *Staph. politus* of the Swedes and Germans is quite distinct, having an oval head with the basal joint of the antennæ red beneath. Mr. Stephens, in his catalogue, gives the *Staph. politus*, "*Mus. Linné*," under the name of *St. puncticollis*, Kirby,* as identical with the *æneus* of Gravenhorst, and *similis* of Marsham; but in his Illustrations he describes it as having the head broad and orbiculate, which will not agree with the Linnæan specimen. He moreover describes another species, placed next to the *puncticollis*, under the Linnæan name of *politus*, but having the head ovate and narrower than the thorax. He adds, indeed, that the head is

* Mr. Kirby has rejected the name of *politus* for the species retained in "*Mus. Linné*," as well as that of *æneus*, given to it by Gravenhorst, the latter name having been previously used by De Geer for a species of this genus closely allied to, if not a variety of, the *St. laminatus* of Creutzer.

smaller in one sex: but surely as the form of the head in this genus constitutes one of the chief specific characters, he would have recorded the square form of the head in some of the specimens of his two species did they possess such a character, which is indeed so strongly conspicuous in the Linnæan specimen. He also describes the antennæ of his *St. politus* as having black antennæ. In this character it therefore differs from the *politus* of the Germans and the Swedes, although they, as well as Stephens, give the same references to Linnæus, Marsham and Olivier.

The *Staph. politus* of De Geer is given by Erichson as identical with *Ocytus fuscatus*. The *Staph. politus* of Panzer (27, fig. 7) belongs to Gyllenhal's sixth section of *Staphylinus*, or *Philonthus*, "Thoracis seriebus dorsalibus multipunctatis." It is identical with the *Staph. punctus* of Gravenhorst, Gyllenhal and Erichson—*multipunctatus*, Mannerheim. The *Staph. politus* of Paykull is a still different species.

Sp. 6. *Staph. rufus* is the *Oxyporus rufus* of Fabricius, and all other subsequent authors.

Sp. 7. *Staph. lunulatus* is a species of Leach's genus *Bolitobius*, and has been considered by Gravenhorst, Gyllenhal, Erichson, Stephens, &c. to be the species which has the entire base of the elytra, as well as the scutellum, of a pale rufo-testaceous colour; the allied individuals with a blue-black scutellum, and a basal lunule on the elytra, being considered as a distinct species, under the name of *B. atricapillus*, by Fabricius and most subsequent authors. By Panzer, however, (F. I. G. 22, fig. 15,) and Zetterstedt, (Faun. Lapp. 1, 65, 10, and Ins. Lapp. 58, 11,) the latter individuals are figured and described as the true *St. lunulatus*, whilst the *lunulatus* of Gravenhorst, &c. is given as the *atricapillus*, Fab.; Zetterstedt observing of the former (*S. lunulatus*, Pz.) "Nomen triviale notis magis conveniens nec non frequentia individuorum (saltem in Suecia media et meridionali) affirmare videntur hunc esse illam ipsam speciem quam spectat Ill. à Linné, licet ejus descriptio brevis et manca sequenti seu *Tach. atricapillo* nostro [*lunulato*, Fab.] etiam adaptari possit: sed hic in Suecia perrarus forsitan a Linnæo non cognitus." In support of this observation the Linnæan specimen belongs, as indeed the specific name itself sufficiently indicates, to the species with the pale lunule at the base of the elytra.

Sp. 8. *Staph. riparius* is the *Pæderus riparius* of Fabricius and all other authors.

Sp. 9. *Staph. obtusus* is a species of *Tachyporus*, as indicated by Gravenhorst, Stephens and Erichson; the last of whom gives it as synonymous with *Oxyporus analis*, Fab. Stephens also gives the latter as a variety of it. In the Linnæan specimen the head and abdomen are yellow, and the black base of the elytra does not extend more than two-fifths of the length of those organs.

Sp. 10. *Staph. lignorum* appears to have been overlooked by all subsequent authors, except Mr. Hope, who considers it to be a species of *Tachyporus* (Coleopt. Man. 3, p. 57). The Linnæan specimen is however a species of *Tachinus*, of the size of *T. subterraneus*, being $2\frac{1}{2}$ lines long, with the head black; the antennæ fuscous; the thorax castaneous, with two small discoidal dark spots wide apart beyond the middle of the disc, and the lateral margins paler; the elytra luteous, with the suture darker; the abdomen brown, the margins of the segments, and the large terminal segment, paler luteous-brown, except the latter, which is darker towards the base; the feet are luteo-fulvous.

It is difficult to conceive that this description can agree with that given in the Fauna Suecica, in which we read "Corpus totum lineare longiusculum;" but the further character, "Thorax versus elytra duobus punctis excavatis notatus," as well as the colours of the elytra, evidently and satisfactorily prove that the specimen still preserved in the Linnæan Cabinet, and from which the above description is drawn, is the true Linnæan species.

Sp. 11. *Staph. Silphoides* is also a species of *Tachinus*, synonymous with the *T. suturalis* of Gravenhorst and Panzer (18, fig. 20). The Linnæan specimen has the discoidal mark on each of the elytra of a reverse pear-shape, the major part of the elytra being fulvous.

Sp. 12. *Staph. subterraneus* is also a species of *Tachinus*, as correctly indicated by Gravenhorst, Stephens and Erichson. The specimen preserved in the Linnæan Cabinet is $2\frac{1}{2}$ lines long. It exactly accords with the Linnæan description, although the specific ticket is in the handwriting of the younger Linnæus.

Sp. 13. *Staph. flavescens* is a species which all recent Entomologists have failed in recognizing. Fabricius gives it as identical with his *Staph. flavescens*, which, according to Gyllenhal and Erichson, is a species of *Philonthus*, namely, *Ph. discoideus*. The former of these authors observes upon the last named species,

“*St. flavescens* cl. Fabricii certe huc pertinere videtur, sed cl. Linnæi ejusdem nominis minime idem” (Ins. Suec. 2, 332); and Gravenhorst says of the Linnæan insect, “*similis Staph. subterraneo*,” evidently borrowed from the Linnæan expression “*priori [subterraneo] similis* ;” but Linnæus adds, “*sed quadruplo minor—abdomen fere subulatum*.” Its size must have been very minute, for it is described as “*inter omnes nostros minimus utpote qui pulicem non excedit*.”

There is no specimen of the insect in the Linnæan Cabinet, so that it is now impossible to determine it with any degree of certainty.

Sp. 14. *Staph. elongatus* is a species of *Lathrobium*: in which genus there are three closely allied species, *St. elongatus*, L., *S. fulvipennis*, Grav., and *L. rufipenne*, Gyll., in all which the elytra are of a red colour, with the base black. These three species differ chiefly from each other in the form of the head and thorax, and in the under side of the penultimate segment of the abdomen of the males. The Linnæan specimen is a female, and appears to be identical with the *Lathr. elongatum* of Erichson, and probably of Stephens, being 4 lines long. The last named author, it is however to be observed, in describing *L. elongatum*, adopts the description given by Gyllenhal of his *L. elongatum*; but Dr. Erichson has shown that Gyllenhal's description does not apply to his insect, Gyllenhal's *L. elongatum* being one-quarter or even one-half of the size of *L. brunripes*, which is also 4 lines long, according to Erichson as well as Stephens; neither does the form of the penultimate segment of the abdomen of the males accord.

Sp. 15. *Staph. biguttatus*. This species is a *Stenus*, but the Linnæan character is so short that it will equally suit any one of the species which have a pale fulvous spot on the elytra. The hind legs (which are entirely black) and the abdomen are all that remain of the Linnæan specimen. The abdomen is the same size as that of *St. bipustulatus*. Gyllenhal doubtfully gives *St. biguttatus* of Linnæus as identical with *Dianous cærulescens*, and immediately after gives the *bipustulatus* of Linnæus and Marsham under the name of *biguttatus* of Fabricius, Grav., Pz., and Oliv. Erichson, on the contrary, gives the *biguttatus* of these last mentioned authors as identical with the *biguttatus* of Linnæus, omitting the *bipustulatus*. Stephens, however, omits the reference of *bigut-*

tatus of Linnæus, but gives the *biguttatus* of Gravenhorst, and the *bipustulatus* of Linnæus, as distinct species.

Sp. 16. *Staph. bipustulatus*. No specimen of this insect is unfortunately to be found in the Linnæan Cabinet. The Linnæan description however, although very short, seems sufficiently to prove that it is a species of *Stenus*, "corpus valde oblongum, magnitudine minoris pediculi, antennæ clavatæ," as well as the circumstance of Linnæus bringing that and the preceding into juxtaposition in his latest work. In the uncertainty necessarily resulting from the loss of the Linnæan specimen, it would be useless to attempt to decide upon the precise species of spotted *Stenus* to which the description was intended to apply. By Marsham, followed by Curtis and Stephens, it is given as a distinct species of *Stenus*. By Gyllenhal and Zetterstedt it (as well as the *S. bipustulatus* of Ljungh) is referred to the *St. biguttatus*, Fab., (*Juno b.* of Paykull,) which our English authors give as distinct. Fabricius describes a very different insect to this under the same name, *S. bipustulatus*, which belongs to the genus *Philonthus*, and which is figured by Panzer (27, 10). I mention this because Mr. Stephens has accidentally referred to this figure under the *Stenus bipustulatus*.

Sp. 17. *Staph. Cantharellus*. This insect is also wanting in the Linnæan Collection. It appears to have been entirely overlooked by subsequent authors, except Mr. Hope, who says of it, "probably a *Stenus*, or a genus closely allied to it." The words of Linnæus, however,—"*simillimus Cantharidi biguttatæ. Elytra abdomine dimidio breviora, mollia, fusco-glaucescencia, apice puncto flavo. Abdomen molle, glaucum*,"—evidently prove that this insect does not belong to the *Brachelytra*, but rather to the genus *Malthinus*. Its size is said to be "pediculo $\frac{1}{2}$ minus."

Sp. 18. *Staph. littoreus* is a species of the genus *Conurus* Steph., and identical with *Oxyp. cellaris*, Fab., Grav., Gyll., as correctly indicated by Erichson, who has collected numerous other synonyms in his later work. It is proper, however, to observe that Mr. Stephens had first suggested the identity of the two species in his catalogue, and that Mr. Curtis has subsequently published a beautiful figure of the insect, with its Linnæan name, in his *British Entomology*, pl. 762.

Sp. 19. *Staph. sanguineus*. By Fabricius, and almost all suc-

ceeding authors, this insect is regarded as one of the *Pselaphidæ*, belonging to Leach's genus *Bryaxis*, whilst Gyllenhal's (Ins. Suec. 4, 232) description and reference assign it to the *Tyrus mucronatus* of Aubé; and to add to the confusion, Panzer figures a red species of *Euplectus* with a black head, with the same name and reference, although Linnæus expressly says, "totus ater glaber, exceptis elytris sanguineis." The Linnæan specimen, however, belongs to the sub-family *Aleocharides* and genus *Aleochara*, being closely allied to *A. fuscipes*. Mr. Kirby, in his manuscripts upon this family, communicated to Mr. Stephens and incorporated by him in his catalogue and illustrations, had noticed this circumstance, and restored the specific name to the species, under which it is described by Mr. Stephens (Ill. Mand. 5, p. 160). It appears to be identical with the small specimens of *Al. mitis*, Grav., mentioned by Erichson, (Gen. et Sp. Staph. i. 163,) as probably identical with the *Al. crassicornis* of Boisduval and Lacordaire, or with the *Al. rufipennis* of Erichson (Er. cit. p. 162, which is however distinct from the *rufipennis* of Kirby and Stephens). I possess a specimen of this insect from Mr. Haworth's Cabinet, which had been compared by Mr. Kirby himself with the Linnæan specimen of *Sp. sanguineus*, and to which is also attached the name *Al. lugens*, G., as a synonym. Mr. Stephens has also given that species as belonging to the same group of *Aleochara* as the *Al. fuscipes* and *sanguinea*. Dr. Erichson, having introduced *Al. lugens* into his genus *Myrmedonia*, evidently considers that Stephens and Kirby have erred in this respect; the maxillæ of my specimen of *sanguinea*, as I find on dissection, agree however with those of *Al. fuscipes*, whereas the maxillæ of *Myrmedonia* are very differently formed (Erich. pl. 3, fig. 21).

Sp. 20. *Staph. caraboides*, Linn., belongs to the genus *Lesteva*, Latr., and subgenus *Anthophagus* (as restricted by Dr. Erichson). There are two closely allied species which have been confused in their synonymes, namely, *A. caraboides* and *A. testaceus*. By Gravenhorst the species with a subcordate thorax is regarded as the *St. caraboides*, whilst that with a quadrate head is named *A. testaceus*. Messrs. Boisduval and Lacordaire, in the Faune Entomologique de Paris, have transposed these names; but Dr. Erichson has restored them, and with propriety, the thorax of the Linnæan specimen being evidently subcordate. The head can, however, scarcely be termed piceous, although considerably darker coloured than the thorax, which is bright testaceous; the elytra are paler, and the basal joint of the antennæ is paler than the following joints.

Sp. 21. *Staph. chrysomelinus* is a species of *Tachyporus*, closely allied to *Staph. obtusus*, Linn., respecting the specific identity of which there appears to be no diversity of opinion, although the label in the Linnæan Cabinet is in the handwriting of the younger Linnæus. The *Oxyporus melanocephalus* of Fabricius, and *Staph. merdarius* of Marsham, are to be considered as varieties of it.

Sp. 22. *Staph. flavipes* appears to have been lost sight of, or doubtfully treated by, subsequent Entomologists. Fabricius indeed gave this name and reference to a species which is identical with the *Omalium planum* of Gravenhorst, according to Dr. Erichson, who has carefully examined the Fabrician Collections (who observes on this synonym, "In Fabricius Sammlung befindet sich dieser Kafer als *Staph. flavipes*: ob der Linneische wirklich derselbe sei, geht aus Linne's Beschreibung nicht hervor, wenn dieselbe auch nichts enthalt was dem entgegen ware," Col. March, p. 637); whilst Mr. Kirby in his manuscripts gave it doubtfully as a species of *Falagria* of Leach, (which reference Mr. Stephens—Catal. p. 260—and Mr. Hope—Col. Man. 3, 20—have also adopted). The Linnæan specimen (ticketed by the younger Linnæus) is however a species of *Tachyporus*, identical with the *T. hypnorum*, Fabr. (of which *T. marginatus* and *nitidulus* are evidently varieties). It is a line and a half long. The lateral and posterior margins of the thorax are pale, the pale colour being dilated at the posterior angles. The Linnæan description is silent as to these pale margins of the thorax.

Sp. 23. *Staph. fuscipes* is another species which, from the insufficient description given of it by Linnæus, has been hitherto overlooked or doubtfully treated by subsequent authors. By Fabricius a species of *Aleochara* was described under that name, reference being also made by that author (Syst. Eleuth. 2, p. 598) to Panzer's F. I. G. 27, fig. 12. The latter figure however represents a species of *Tachyporus* (*T. fimetarius*, Grav.). Hence the Fabrician species was also rendered doubtful; but Dr. Erichson has satisfactorily proved that the latter is that species of *Aleochara* known under that name. The Linnæan insect is however quite distinct from either of the above, upon which Erichson observes, "*Staph. fuscipes*, Linn., species dubia quidem est, at certe distincta a nostra. Thorace, capite et maxillis insignibus forte ad *Oxytelum* vel potius *Platystethum* quendam spectans." The Linnæan specimen, however, belongs to the genus *Gyrohypnus*, Kirby, (*Xantholinus*, Dahl.); and although Linnæus describes it as "pediculo fere

major," his specimen is 3 lines long without the head, which is wanting. The thorax is long and black, slightly narrowed behind, with two discoidal rows of impressed dots (seven in each row), the lateral rows being sparingly punctured; the elytra are testaceous-luteous (*fusca*, Linn.), and the legs and coxæ entirely testaceous ("tibiæ flavescens, non vero femora," Linn.) It appears to me to be identical with the *G. lentus*, Gravenhorst and Gyllenhal.

Sp. 24. *Staph. rufipes* is a species of the genus *Tachinus*, but the specific name has been applied to various allied species by Gravenhorst, De Geer, Olivier, Gyllenhal, Fabricius, and Stephens. The Linnæan insect is $2\frac{1}{2}$ lines long, and is identical with the *T. pullus* of Gravenhorst, being, however, a variety of that species, with the entire anterior, lateral and posterior margins of the thorax, and the sides and apex of the elytra, pitchy red. Dr. Erichson has also ascertained that the *Oxyp. rufipes* of the Fabrician Cabinet is identical with *Tach. pullus*, Grav. The *T. rufipes* of Gravenhorst, Gyllenhal and Stephens is at once distinguished by the black base of the antennæ (which is red in the Linnæan specimen), and is the true *Oxyporus flavipes* of the Fabrician Cabinet according to Dr. Erichson (*Kafer M. Brand.* 1, 398).

Sp. 25. *Staph. piceus* belongs to the genus *Oxytelus*, as indeed all subsequent authors have determined, although there is much confusion in their works as to the precise species which is entitled to the specific name. The Linnæan specimen is a female 2 lines long, with the head considerably smaller than the thorax, and separated from it by a short neck. The sides of the thorax are entire and rounded, being slightly narrower behind than before the middle. Gyllenhal has very correctly described the peculiar sculpture of the thorax. I believe the *Oxyp. piceus* of the English Collections is a distinct species.

Sp. 26. *Staph. boliti* is a very minute species of *Gyrophæna*, being only half a line long according to Dr. Erichson, but is placed by Mannerheim in his genus *Bolitochara*. The former author has described two closely allied species under the names of *Gyr. boliti* and *minima*, but from the description of the antennæ he appears to have transposed the names; the third joint of the antennæ of the Linnæan specimens being the most minute, the fourth being rather smaller than the fifth.

VIII. *Description of a new Genus of Lucanidæ from New Zealand.* By FREDERICK PARRY, Esq.

[Read 3 October, 1842.]

LAMELLICORNES.

Fam. LUCANIDÆ, *Leach.*N. G. MITOPHYLLUS,* *mihi.*

Pl. I. fig. 4.

Characteres generici.

Forma Platyceri caraboides, at magis cylindricus, apice elytrorum rotundato.

Antennæ 10-articulatæ, parum geniculatæ; articulo 1mo longo incurvo, 2do minuto, quinque proximis gracilibus, 3tio 2do plus duplo-longiori, 4-7 longitudine gradatim decrescentibus, tribus ultimis, in masculo, singulatim elongato-filiformibus, et pilosis.

Caput magnum, inerme, fronte inter antennis impressum. ♀ minus.

Labrum parvum, quadratum, angulis anticis rotundatis, margine antico longe piloso.

Mandibulæ ♂ crassæ porrectæ, capitis longitudine, apice curvatæ et in dentem erectum supra productæ, basi externe angulato; ♀ minores elongato-triangulares, apice acutæ, denteque supero ante apicem armatæ.

Maxillæ parvæ, lobo externo laciniiformi longe setoso, lobo interno obsoleto.

Palpi maxillares 4-articulati, elongati, subfiliformes, articulo ultimo cæteris longiori, fere recto.

Mentum magnitudine mediocri, lateribus rotundatis, antice angustius.

Palpi labiales longi, 3 articulati, articulo ultimo longiori parum curvato.

Prothorax transverso-quadratus, lateribus parum rotundatis, fere latitudini elytrorum equalis.

Prosternum et mesosternum simplicia, haud producta.

Elytra elongata parallela, convexa, apice rotundata, punctata, setulosa.

* *Mitophyllus*: from *μῖτος*, filum, and *φύλλον*, a leaf, the terminal joints of the antennæ being like slender thread leaves.

Pedes longitudine mediocres, femoribus parum dilatatis, tibiis anticis externe subserratis et unispinosis, anticis et intermediis vix serratis, sed unispinosis.

Tarsi articulis subtus setosis, pseud-onychiiis distinctis.

Observations.—The principal features of this new genus (which is closely allied to *Platycerus* of Lat.) consist in the remarkable structure of the antennæ and mandibles. The female differs considerably from the male, being of a more rotundate form, whilst the head and eyes are much smaller, and the mandibles scarcely visible; the laminæ of the antennæ, although consisting of the same number of joints, are not larger than ordinary in insects of this family. It seems probable that *Mitophyllus* in New Zealand takes the place of *Platycerus*. The above insect was captured by my friend Captain Best of the 80th regiment, at present in command of the troops at Port Nicholson, and to whom I am much indebted for several new and interesting species collected in New Zealand.

♂ *Mitophyllus irroratus*, Parry.

Rubro-piceus, maculis obscuris atris per totum corpus aspersis; mandibulis porrectis recurvis, antice acutis posticeque denticulatis. Antennæ foliis tribus ultimis singulatim elongatofiliformibus et pilosis. Thorax quadratus, immarginatus. Elytra thorace fere triplo-longiora, fusco-picea, rubescentia, punctata, maculis obscure atris per discum aspersis. Femora incrassata. Tibiis unispinosis, externe serratis. Corpus infra prosterno mesosternoque simplicibus haud productis.

Long. lin. $4\frac{1}{2}$, lat. $1\frac{1}{2}$.

Habitat in Nova Zelandia, apud Portum Nicholsoni.

Differt fœmina. Antennæ tribus ultimis foliis magnitudine mediocri; mandibulis parvis, non multo porrectis, ad basin unidentatis. Corpus et thorax magis rotundatus.

DESCRIPTION OF PLATE I.

Fig. 4, the male insect magnified; 4a, the front of the head of the male; 4b, the mandibles seen from the front; 4c, one of the mandibles seen sideways; 4d, the maxilla; 4e, the mentum and labial palpi; 4f, the fore foot; 4g, the middle tibia; 4h, the posterior tibia; 4i, the head of the female from above; 4k, the same from beneath; 4m, and 4n, the female mandibles in different positions.

IX. *On the means by which the Honey Bee finds its way back to the Hive.* By GEORGE NEWPORT, F.R.C.S. &c.
President of the Entomological Society.

[Read 6 February, 1843.]

GREAT difference of opinion has existed amongst naturalists as to the means by which the honey bee finds its way back to the hive it has left, and distinguishes its own residence from that of others. Some, most naturally, have believed that it is simply by the sense of vision; others, that it is by means of that of hearing, or of smell. Those who contend for the latter opinion have fancied that the bee is conducted by the odour of the flowers she has visited in her outward course:

“The varied scents that charmed her as she flew.”

But this opinion is at once invalidated by the circumstance, remarked by Dr. Bevan, that when a bee is returning to its hive, its flight is usually in a direct line. Indeed every observer must have remarked that the bee, like the carrier pigeon, after it has taken its first circuitous flight of recognition, is led by an almost unerring instinct directly to its home. Yet it is much to be questioned, whether it is simply by what we term instinct,—a term which we cannot sufficiently explain or fully comprehend,—that these animals are directed in their course; or whether it does not chiefly depend on the perfection of one or more of their senses? One variety of the common dog will discover his master or his home by the sense of smell, but another, as the greyhound, simply by that of sight. All naturalists are aware that the sense of vision exists in the greatest perfection in vertebrated animals, in birds of flight, and such is the case in volant insects amongst the invertebrated. It is by means of this sense, the most perfectly developed of all the senses of insects, that the honey bee, as I am disposed to think, finds its way back to the hive, notwithstanding that some observations of naturalists seem to lead to a different conclusion. In order to put this opinion to the test of experiment, on the 11th of March, 1836, I removed one of my straw hives from the closed bee-house in which it had stood through the winter, to a stool in the open air, within sight of, but at a distance of about ten or fifteen yards from the bee-house. On the following day, the 12th, scarcely a bee went abroad, either from the bee-house or the removed hive; or from another straw hive which stood very near to it; the weather being exceedingly wet and boisterous. The 13th was a remarkably fine day, and

many bees went abroad, both from the bee-house and from one of the straw hives, and returned loaded with pollen; but I did not observe even a single bee return to the straw hive that had been removed, and very rarely any depart from it. But although not a single bee returned to that hive, I frequently observed a few bees descending towards and alighting at the entrance hole in the bee-house from whence that hive had been removed. This entrance hole had been closed since the removal of the hive, and the bees collected around it made many attempts to enter, and were quickly in a state of great excitement. On opening the hole and allowing them to enter, they ran around the place on which the hive had stood in great agitation, vibrating their half-closed wings most rapidly, and touching each other repeatedly with their antennæ, as if in a state of frenzy. Two or three bees then issued from the entrance hole, and after taking a circling flight twice or thrice in the air, at some distance from the bee-house, as if to reconnoitre the spot, alighted again at the hole, and ran about within in the same state of consternation as before. After continuing in this state for some time they flew to the entrance hole of the hive which remained in the bee-house, but were very badly received. The bees of that hive resisted and maltreated them, and several fights ensued, in which the intruders were killed. It was thus evident that these bees belonged to the hive that had been removed, which, perhaps, they had left but a short time before, without reconnoitring the new locality of their residence,—which a bee seldom or ever appears to do when its hive has remained undisturbed on the same spot for any great length of time,—and, consequently, having never distinguished their home but by the exterior of the bee-house, they now returned directly to the spot where they had been accustomed to enter. This experiment seems to show that the bee is not conducted by the sense of smell, either of the honey or of the inhabitants of the hive, or it could hardly have been attracted to a spot from whence these were removed. Neither can we suppose that it was directed by the sense of hearing, or it could hardly have failed to recognize the sounds in its own hive, which stood at so short a distance; while the circumstance of its flying directly to the spot where it had formerly entered, and that of its leaving the entrance hole on finding the hive removed, and then flying around in the air as if to reconnoitre the bee-house, and alighting a second time at the same hole, seem to prove that the great faculty exercised by it in discovering its home is that of sight. This experiment seems also to explain why so few bees left the removed hive, those

which had gone out not having returned, as Huber believes, to apprise the population that remained of the quantity of honey abroad, or of the favourableness of the atmosphere for collecting it.

One great anatomical fact which tends to support the opinion I am now advocating, that the bee usually finds its way back to the hive chiefly by the sense of sight, is the great extent to which the organ of vision is developed, and the peculiar fitness which the telescopic structure of the multitude of eyes of which the organ is composed possesses for viewing distant objects. Every one of the many thousands of lenses on the surface of the organ has been proved, by the researches of Müller, Straus-Durckheim, and others, to be the inlet to a distinct eye lined with its proper choroid and retina, or nervous expansion, to which the impression of the images of distant objects received by the lenslike cornea are conveyed. The distance at which objects are clearly distinguished by the insect is dependant chiefly on two circumstances:—the relative diameter and convexity of the cornea to that of the whole eye; and the length of the chamber from the cornea to the retina, or expansion of the nerve. Now these conditions vary in different insects, and seem to have much reference to their habits. In those species in which the cornea is of great breadth, and the length of the chamber, or distance from the cornea to the retina, is very short, as in some of the *Diptera*, the distance at which objects are distinctly observed is necessarily restricted; but in those in which the corneæ are numerous and small, and each forms on the surface a large segment of a circle, and the length of the chamber several times exceeds that of the breadth of the cornea, as in the bee, the distance of vision is greater in proportion to the length of the chamber, and the acuteness of the angle at which the rays of light impinge on the retina at its base. This, perhaps, may explain the reason why some of the corneæ on the inferior portion of the mass of eyes are of greater diameter, and have the chambers shorter than those of the upper and exterior surface; so that some of these corneæ have a greater sphere of vision, but a shorter focal distance; and thus are adapted for viewing near, as the others are more distant objects.

This structure of the organ of vision in the bee is entirely in accordance with the usual mode of proceeding of this insect, and illustrates the fact of the bees leaving the bee-house and flying around in the air as if to reconnoitre the spot; and also another fact, which has in part been observed by others, and which I have frequently witnessed, namely, that for the first few days after a swarm has been hived the bees seldom fly far, and each bee, on

first leaving the new hive, usually makes several circuits around it in the air, at greater and greater distances, with its head constantly directed towards the hive, as if to reconnoitre the spot prior to its taking a distant flight.

These considerations lead me to the conclusion that it is chiefly by means of vision that bees and other insects find their way back to their homes.

P. S.—Since this paper was read to the Society it has been referred to the judgment of Dr. Bevan, the most accurate and philosophic of our practical English apiarians; and it gives me great pleasure to learn that the views which it contains are in entire accordance with those entertained by that distinguished naturalist. Dr. Bevan states, that most of the facts now adduced in support of the opinion, that the bee depends upon its visual organs to guide its unerring flight, he can confirm by repeated observations of his own; and he adds that, in conformity with this opinion, “it is my practice, if any occasion occur to induce me, to change the site of a family of bees in my garden, or to any other place within the usual range of their flight, to prevent their egress for a time, longer or shorter, according to the season. This has the effect of rendering them circumspect, and makes them look about them prior to their taking flight from their new locality. Acting also on the same opinion, I am in the habit of marking all the entrances to my bee-boxes with different colours, to secure their occupants against committing mistakes, though I have some doubt as to the necessity of this measure.”—(Dr. Bevan in lit.)

To these observations I may add some further remarks. It is by the sense of vision that the drone of the hive discovers his royal partner in the air, during his short excursive flights; and celebrates there his connubial duties, as believed by Huber;*

* I have no doubt that this opinion of Huber's is correct. I once found, about noon, on a very fine calm day, in the beginning of May, a drone hive bee, which I saw fall to the ground enfeebled and mutilated in the particular way described by Huber. This happened at a distance of from two to three hundred yards from some cottages where bees were kept. Every one also must have noticed the pairing of butterflies in the air. This is the constant habit of the diurnal *Lepidoptera*, and I have reason to believe that these species will not pair in confinement. During the past summer I have reared more than one hundred specimens of *Vanessa urtica*, and also nearly as many of *Vanessa Io*; and although the sexes of each were confined together in the same breeding cage, and the bodies of the females became fully distended by the development of the ova, not a single act of connubial intercourse took place, but the whole died, both males and females, at the end of a few weeks, the females without depositing even a single egg.

and, as if watching for her departure, I have repeatedly seen him, at midday, wheeling his heavy oscillatory flight in front of the beehouse, with his head constantly directed towards the entrance of the hive. Every one must have remarked the acuteness of sight in the dragon-fly, and with what instantaneousness it avoids the approach of danger, even at a considerable distance,—darting upwards, sideways, and in every direction, when chased by the swallow on the stream,—and when danger is passed that it constantly returns to the same spot. It captures its prey by sight, with the rapidity of thought, while hovering continually over the same water-plant; and, after an extensive flight around the pool, by the hedge-row, or in the air, hawking in quest of food, it returns again and again with its captures, and alights to devour them on the selfsame leaf.

The whole family of butterflies also are in the habit of returning to the same spot within a very short period. The cabbage butterflies repeatedly visit the same plants. The nettle butterfly usually revisits the same group of nettles after less than an hour's absence; and I have often observed the gay autumnal species, *Vanessa Atalanta*, at the end of September, when but few flowers are in bloom, return frequently to the selfsame group of blossoms of an *Arbutus*, although the shrub was secluded and almost hidden by larger plants. This occurred not merely on the same day, but on the fine mornings of succeeding days.

Who can doubt that these, the gayest of nature's children, are directed in their movements by that sense with which nature has provided them to a greater extent than any other of her magnificent productions? or that to this endowment she has added a recollection of locality and of objects once recognized, observed by means of that perfected sense? This is proved to be the fact by the proceedings of the little solitary bee *Megachile centuncularis*, which I have detailed on a former page of this volume. By the sense of vision this insect was led to select that material, the *carded cotton cloth*, which it was impossible for her to have found in a state of nature in this country, and yet which was the best adapted for her object in departing from her usual habit; while on two succeeding days she remembered the locality in which it was to be obtained, and returned again and again to the same spot to procure that which she regarded as best fitted for her purpose.

X. *Description of a new Genus of Diptera allied to Stratiomys.* By S. S. SAUNDERS, Esq.

Genus ALLIOCERA (*αλλιος*, diversus, *κερας*, cornu).

Corpus latum, depressum, subquadratum. Thorax convexus, in medio lator, lateribus rotundatis. Caput transversum, thorace vix latius. Antennæ triarticulatæ, quarum articulus primus elongatus, secundus brevis, tertius sex sectiones habens, basi productus, apice valdè dilatatus, cui pars intus obliquè conjuncta.

Sp. *A. Græca.* (Pl. IV. fig. 1.)

Niger, flavo-maculatus, antennis nigris, fœminæ vertice nigro punctoque flavo.

Long. corp. lin. 5—6.

Habitat in Epiro.

In Mus. Ent. Soc. Lond. et Dom. Saunders.

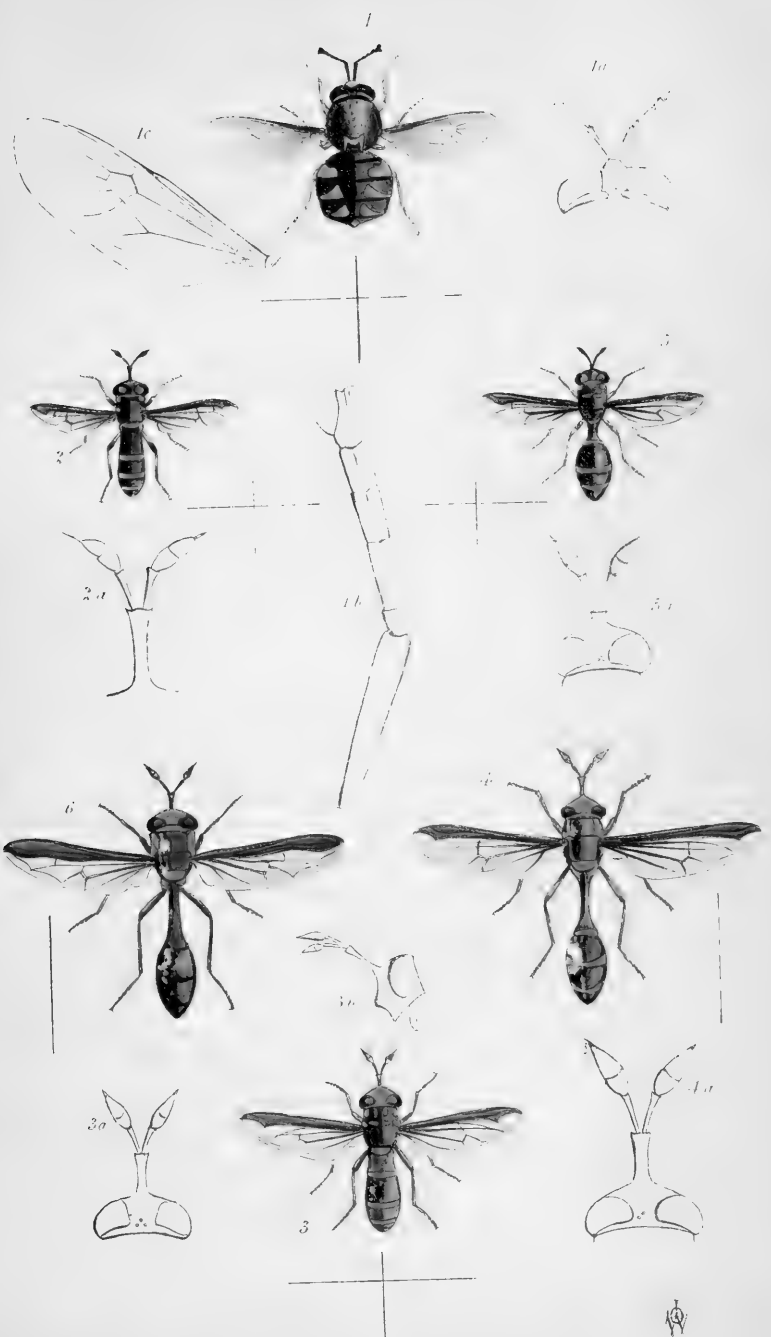
Male.—Head black, with a square patch of cinereous hairs below the insertion of the antennæ. Scutellum black, with the points yellow, and sometimes a slight connecting line between them, and two dots of the same colour. Base of femora and apex of tibiæ black.

Female.—Head transverse, with a yellow band behind the eyes, and a broad band of same colour down the front with a black line. Antennæ black. Thorax black, covered with cinereous hairs above and below. Scutellum yellow, armed with two points, and a black marking at the base. Second, third, and fourth segments of abdomen having on each side a somewhat triangular yellow mark, and central one of the same nature at the apex of abdomen. Body beneath yellow, banded with black. Legs yellow. Wings slightly tinged with ochraceous.

Found on umbelliferous plants in April and May on the shores round the Gulf of Ambracia. The antennæ present a very remarkable conformation, the apical portion having somewhat the appearance of a cloven foot; and in some specimens this portion of the antennæ is much more dilated than in others.

DESCRIPTION OF PLATE IV.

Fig. 1, the insect slightly magnified; 1 a, the head from above; 1 b, the antenna highly magnified; 1 c, the wing.





XI. On the *Species of the Genus Ceria*, Fab. By
W. W. SAUNDERS, Esq. F.L.S. &c.

[Read 4 June, 1843.]

THE genus *Ceria* was established by Fabricius for the reception of the *Musca conopsoides* of Lin., the specific name of which he changed to *C. clavicornis*. This species then, which has the abdomen cylindrical and slightly subclavate, I take to be the typical form of the genus, while those with the abdomen decidedly clavate, the first joint being slender, I shall treat as subtypical. Of the typical species three are described, all inhabiting Europe: —the *C. conopsoides*, *subsessilis*, and *vespiformis*; to this I propose adding two more species, the *C. intricata*, from the same quarter of the world, and *C. ornata*, from the north coast of New Holland. Of the subtypical species two are described, the *C. Javana*, Wied., from Java, and *C. Eumenioides*, W. W. Saund., from northern India; to which I have to add, as new species, the *C. Gambiana* from Gambia, and *C. breviscapa* from Port Philip, New Holland. A tenth species is described by Wiedemann, in his “Aussereuropaische Zweifflugelige Insecten,” under the name of *C. afra*, but no remark being made on the shape of the abdomen I do not know into which division to place it; the absence of any remark, however, leads me to suppose the species to range among the typical ones. The species at present known will therefore stand thus:

1st Division. Abdomen cylindrical subclavate.

- Ceria conopsoides*, Lin. Europe.
 — *subsessilis*, Illig. Do.
 — *vespiformis*, Lat. Do.
 — *intricata*, W. W. Saund. Southern Europe.
 — *ornata*, W. W. Saund. North Coast of New Holland.
 — *afra*, Wied. Cape of Good Hope.

2nd Division. Abdomen decidedly clavate.

- Ceria Javana*, Wied. Java.
 — *Eumenioides*, W. W. Saund. N. India.
 — *Gambiana*, W. W. Saund. Gambia.
 — *breviscapa*, W. W. Saund. New Holland.

Thus it appears that the genus *Ceria* is only known at present to inhabit the Old World and New Holland; four species being from Europe, all typical, two Asiatic, two African, and two from New Holland.

Sp. 1. *Ceria intricata*, W. W. Saund.

(Pl. IV. fig. 2 ; 2 a, frontal pedicle and antennæ.)

Head yellow, with the vertex and a line down the face black. Eyes black. Pedicle of the antennæ black, tip, base, and under part rufous. Antennæ black. Thorax black, with a round spot just behind each eye on the anterior margin, and a broadish band extending from the base of the wings downwards yellow. Halteres yellow. Scutellum yellow. Wings somewhat tawny, with a broad dusky band along the anterior margin, and the interno-medial nerve bordered with the same colour. Abdomen black, minutely punctured, the first joint almost as broad as the second and third, with two yellow basal spots and the posterior margin yellow; the remaining joints margined with yellow posteriorly. Legs yellow; the two anterior pairs, with the femora and tibiæ banded with black; the posterior, with the apices of the femora and tibiæ of the same colour. Tarsi yellow, the hinder dark brown above.

Length 4-tenths inch, expansion 7-tenths inch.

Habitat Albania, where it was taken abundantly by Mr. S. S. Saunders.

In my own and other Cabinets.

A variety occurs with the pedicle of the antennæ entirely rufous-brown.

This species is somewhat less than, but very nearly allied to, *Ceria vespiformis*, Lat., from which however the black and yellow legs easily distinguish it. From *C. subsessilis*, Illig., it is distinguished by the length and colour of the pedicle of the antennæ.

Sp. 2. *Ceria ornata*, W. W. Saund.

(Pl. IV. fig. 3 ; 3 a, 3b, the head in different positions.)

Head yellow, with a longitudinal line down the face, and parts of the mouth dusky brown. Eyes black. Pedicle of antennæ rufous brown. Antennæ rufous, with the first joint black brown. Thorax black, with four yellow spots on the anterior margin above, and four others in a transverse line joining the bases of the wings, also a yellow band extending downwards from the bases of the wings. Scutellum yellow. Abdomen with the first joint almost as broad as the second and third, rufous, margined with yellow posteriorly, and stained with dusky on the upper basal side; second joint black, margined with yellow posteriorly; third and fourth rufous, the former with a yellow posterior margin.

Legs rufous, with the bases of the femora pale corneous. Wings with a rufous tinge, and with a broad rufous brown streak along the anterior margin.

Length 5-tenths inch, expansion 1 inch and 1-tenth.

From the north-west coast of New Holland.

In the Cabinets of the British Museum and the Rev. F. W. Hope.

This very beautiful species is of the typical form of *Ceria*, and differs widely in colour from any species yet described.

Sp. 3. *Ceria Gambiana*, W. W. Saund.

(Pl. IV. fig. 4; 4 a, the head.)

Head yellow, with the vertex, and two lines down the face, meeting above and below, dusky brown. Eyes black. Pedicle of antennæ and antennæ rufous brown. Thorax chesnut brown, with two streaks on the upper part extending from the bases of the wings to the anterior margin, and two broad streaks extending downwards from the same points, yellow. Scutellum yellow. Wings tinged with rufous brown, and with a broad band along the anterior margin growing darker towards the tip, and the externo-medial nerve bordered with dark brown. Abdomen with the first joint lengthened and attenuated, chesnut brown, margined posteriorly with yellow, and two yellow spots, one on each side of the base; second and third joints black brown, the hinder margins yellow; apical joint pitchy brown, with a black line down the centre above. Legs rufous brown, with the hinder femora banded with yellow. Tarsi rufous brown.

Length 7-tenths inch, expansion 1 inch and 3-tenths.

From the river Gambia.

In my own Cabinet.

This fine species very much approaches in form the *Ceria Eumenioides*, which I have described in a previous paper read before this Society, (vol. iii. Pl. V. fig. 6.)

Sp. 4. *Ceria breviscapa*, W. W. Saund.

(Pl. IV. fig. 5; 5 a, the head.)

Head black; the face yellow, with a black cross, the transverse band of the cross near to the pedicle of the antennæ. Pedicle of antennæ very short, rufous brown. Antennæ pitchy brown. Thorax black, with three yellow round spots above on the anterior margin, and two narrow transverse just before and in a line with

the bases of the wings. Scutellum dark brown. Wings dusky, with a broad blackish band along the anterior margin, and the externo-medial nerve bordered with dusky brown. Abdomen black, the first joint short, attenuated, the remaining joints forming a club as broad as the head; the first, second and third margined with yellow posteriorly. Legs dark rufous brown, with the bases of the femora and apices of the tibiæ black. Tarsi dusky.

Length 7-twentieths inch, expansion 15-twentieths inch.

From Port Philip, South Australia.

In my own Cabinet.

For this interesting species, very remarkable for the shortness of the scape of the antennæ, I am indebted to Mr. Thwaites of Bristol. The specimen had been preserved in spirit, the colours are therefore probably somewhat faded, or perhaps altered from their original hue.

P. S.—M. Macquart has also published the following description of a new species of this genus, nearly allied to *C. conopsoides*, from Algeria.

Ceria scutellata, Macq. Dipt. Exot. Nouv. tom. ii. part 2, p. 10, pl. 1, fig. 1.

Petiolo antennarum elongato, pedibus rufis, femoribus annulo fusco, scutello flavo.

Long $3\frac{1}{4}$ lin. ♂.

“Semblable à la *C. conopsoides*, excepté une petite bande transversale noire à la base des antennes au lieu des deux petites bandes obliques qui descendent de cette base vers les côtés. Front; point de ligne noire qui de la base des antennes s'étend jusqu'à la partie linéaire du front. Pétiole des antennes brunâtre en dessus, fauve en dessous. Thorax; point de petite tache jaune en avant de la base des ailes au-dessus de la bande jaune des flancs, écusson entièrement jaune.”—D'Alger, Museum du Jardin des Plantes, Paris.

Note.—This is the only exotic species known to M. Macquart, except Wiedemann's two species, which he does not appear to have ever seen in nature.

XII. *Description of an additional Species of Ceria.*

By W. W. SAUNDERS, Esq., F.L.S., &c.

[Read 7th August, 1843.]

At a recent meeting I laid before this Society descriptions of several new species of the interesting Dipterous genus *Ceria*. To the paper which was then read I beg now to add another fine species which I have detected in the rich entomological collection of the Rev. F. W. Hope, after whom I take the liberty of naming it. This species will range in the division with the first joint of the abdomen much attenuated, and next to *Ceria Gambiana*, W. W. S., adding one more species to the African group of this genus.

Ceria Hopei, W. W. Saund. (Plate IV. fig. 6.)

Head yellow with the vertex, a broad line down the centre of the face, and two lateral patches just beneath the eyes, dark chesnut. Antennæ and pedicle of the same colour. Eyes black-brown. Thorax dark chesnut, with a broad longitudinal yellow band on each side, extending from the base of each wing to the anterior margin, and another broad band of the same colour reaching downwards from a little before the base of each wing. Scutellum yellow. Abdomen with the first joint much attenuated, long, of a dark chesnut, becoming nearly black towards the base, on each side of which there are two yellow lobes; second, third and fourth joints black-brown, with an ashy tint. Wings sandy, with a broad rufous brown band along the anterior margin, growing blackish towards the apex. Legs dark chesnut, with the tarsi somewhat darker.

Length seven-tenths inch, expan. 1 inch and 3-tenths.

Inhabits Sierra Leone.

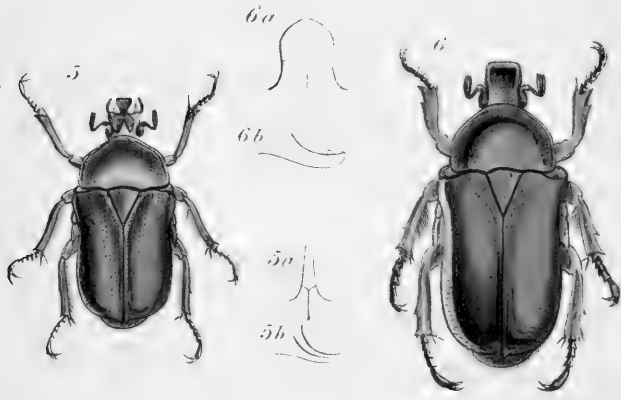
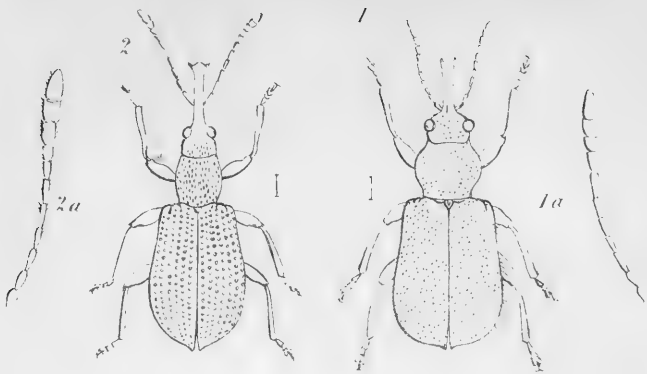
In the Cabinet of the Rev. F. W. Hope.

This species is nearly allied to *C. Gambiana*, but a marked difference exists in the three terminal joints of the abdomen being concolorous.

XIII. *Notice of a Gynandromorphous Specimen of Smerinthus Populi.* By G. A. THRUPP, Esq.

[Read 4 September, 1843.]

I HAVE great pleasure in submitting to the notice of the Society an interesting specimen of gynandromorphism in *Smerinthus Populi*, captured in July this year (1843). In the size of the thorax and abdomen, the characters of this specimen are decidedly *female*. The right antenna and the right wings, both in shape and in the colour of their upper surface, represent those of the *male*—the left antenna that of the *female*. The left anterior wing is very singularly modified. The anterior third of its upper surface is pale in colour, and the markings are similar to those of the *female*, with the contour towards the apex more angular than that of the corresponding wing on the opposite side; yet the remaining two-thirds of the wing are *male* in the markings and characters, as are also those on the left posterior wing. The right tibia of the first pair of legs is densely clothed with long hairs, as is usual in the *male*, whilst the left is scantily furnished, as in the *female*. The under surface of both pairs of wings is characteristic of the *male*, with the exception of a small portion of the left anterior wing, which is nearly destitute of the dingy white apical spot observable in the *male* sex, while the colours of the right wings are paler than those of the left. The costal half of the left-hand wing, the side on which the antenna is *female*, is however darker coloured than the inner half. I may remark, as regards the internal parts of the body, that in the *males* of *S. populi* I have found two small white bladders close to the apex, both of which structures were apparent also in this instance; added to which the abdomen was full and even distended with eggs. I would further direct attention to the absence in this specimen of bilateral symmetry in the distribution of the sexual characters, so strongly marked in other specimens of this singular kind of gynandromorphism which have been described.



XIV. *Descriptions of two new Genera of Curculionidæ.*

By G. R. WATERHOUSE, Esq.

[Read 6 December, 1841.]

ΜΕΤΟΠΟΝ.* Nov. Gen.

Rostrum elongatum, ad apicem sub-dilatatum.*Antennæ* tenues, ad basin rostri insertæ, 11-articulatæ, articulis 3us basalibus subæqualibus, tribus ultimis clavam subsolidam formantibus.*Caput* latum, pone oculos paulò elongatum; oculi laterales, rotundati, prominuli.*Thorax* transversus, basi apiceque truncatus.*Elytra* oblongo-ovata; humeris subrectangulatis.*Metopon suturalis*, Waterh. (Pl. V. fig. 1 and 1 a, antenna.)

Met. testaceus; capite, thorace, elytrisque punctatis; scutello nigro; elytris ad suturam nigrescentibus.

Long. corp. (rostr. inclu.) lin. 1½.

Hab. Van Diemen's Land.

This insect, I think, should be placed near the following (*Minurus*), and the two, it appears to me, might most conveniently be arranged between *Rhinomacer* and *Rhynchites*. In having the abdomen entirely hidden by the elytra, they agree with the former of these two genera, whilst in general form they are intermediate.

The genus *Metopon* may be distinguished by the antennæ being placed at the base of the rostrum. They are more slender than in *Rhynchites*, and in this respect resemble the same organs in *Minurus*, but they are shorter than in that genus, and the joints of the club are much less distinctly separated.

ΜΙΝΟΥΡΟΣ.† Nov. Gen.

Rostrum elongatum, ad apicem dilatatum.*Antennæ* elongatæ, tenues, versus medium rostri insertæ, 11-ar-

* ΜΕΤΟΠΟΝ, the forehead, the front, the face, in allusion to the great comparative breadth of the head between the eyes.

† Μινυγος, little, slender, tiny, &c., in allusion to its small size and more slender form, as compared with the allied genus *Rhynchites*.

ticulatae, articulis basalibus subaequalibus, tribus ultimis remotis, clavam formantibus.

Caput elongatum; collo crasso.

Thorax subcylindricus, basi apiceque truncatus. Elytra oblonga, abdomen tegentia.

Minurus testaceus, Waterh. (Pl. V. fig. 2 and 2a, antenna.)

Min. testaceus, oculis nigris; capite thoraceque punctatis; elytris profundè punctato-striatis.

Long. corp. (rostr. incl.) lin. $1\frac{1}{6}$.

Hab. Chiloe.

The above are the principal characters of a minute Coleopterous insect belonging to the *Curculionidæ*, and closely allied to the genus *Rhynchites*, but differing from that genus in being of a more elongate form, in having the elytra extended beyond the abdomen, and the antennæ proportionately much longer and more slender than in the species of that genus. The three joints forming the club are less dilated and longer.

XV. *Observations upon the structural Character of the Death Watch (Atropos pulsatoria), with Description of a new British Genus in the Family to which it belongs.*
By J. O. Westwood, Esq., F.L.S., &c.

[Read February, 1840.]

HAVING had occasion to remark in my Introduction to the Modern Classification of Insects, that the species of the family *Psocidæ* require a more minute investigation than had previously been given to them, and having been compelled, from an examination of my own collection, to establish a new genus, and at the same time to remark that the genus *Cæcilius* of Curtis appeared to be founded upon a sexual character, I consider myself fortunate in being able to lay before the Society a notice of some other interesting modifications of structure occurring in the family. Mr. Curtis and myself have observed that the antennæ in this family consist of about thirteen joints. Dr. Burmeister, in the new part of his *Handbuch*, however, describes the antennæ of *Atropos* (which name he changes to *Troctes*) as having only ten joints, and that of *Psocus* and his new genus *Thyrsophorus*, as possessing only eight joints, observing of the former of these genera, "J. Curtis giebt 13 gleider an, ich sah nie mehr als 8," (p. 775, note). The careful examination which I made of numerous individuals of the genus *Psocus* convinces me that there are thirteen joints in the antennæ, whilst the antennæ of the *Atropos pulsatoria* are 15-jointed, as I have ascertained by a careful examination of many living specimens of various sizes, in which also the labial as well as the maxillary palpi are exerted, although Burmeister says "die Lippentaster fehlen." It is therefore important to ascertain with precision the *Atropos pulsatoria*, and its very common occurrence in neglected boxes of insects enables us at any time to examine it in a living state. Its principal characteristics consist in having the prothorax very short, the meso- and meta-thorax united into a square plate, the hind femora greatly incrassated, the tarsi 3-jointed, and the antennæ 15-jointed. I have represented it in my vol. 2, p. 18, fig. 59, 19. Now Burmeister's generic description agrees herewith, except in the number of joints of the antennæ. De Geer has also given a figure of this species, vol. 7, t. 4, f. 2, representing the quadrate meso- and meta-thorax and the thickened femora of the hind legs. Burmeister, however, does not quote these figures, but refers *A. pulsatoria* to De Geer's

third figure of this plate, which represents a totally different insect, belonging to a different genus, having four rudimental wings, slender legs, and uniform segments of the thorax, and which is, I apprehend, the pupa of a male *Psocus*, such as I have figured in my Introduction, fig. 59, 10. Burmeister in his generic character of *Troctes* (or *Atropos*) refers however to another figure of De Geer, (namely, tab. 4, fig. 1,) which represents an apterous specimen with uniform segments, with simple hind legs, and with long antennæ, which he describes as 18-jointed. This, however, is clearly distinct, both specifically and generically, from *Atropos*. Again, Burmeister refers to Latreille's figure of *Psocus pulsatorius*, given in Coquebert's *Illustratio Iconographica*, tab. 2, f. 14, but that figure is either inaccurate (representing the thoracic segments as very short and equal, and the hind legs simple) or the reference to it by Burmeister is incorrect.

But the more immediate object of this communication is to mention the discovery of a species possessing as many as twenty-seven joints in the antennæ, and as this species is a domestic one, I trust that the discovery will be deemed to possess an additional interest on that account. I have found it amongst books, crawling in fact over the pages of one of the volumes of Mr. Stephens's *Illustrations*, a circumstance I mention as in some degree showing it to be a native species, for had I found it on a newly received foreign work I might have doubted this. It is three times the size of *Atropos pulsatoria*. I have named it, after one of the Fates, *Clotho*, having used the name of *Lachesis*, or rather a diminutive thereof, for *Psocus fatidicus*, and the name of the third Fate, *Atropos*, having been given to *Psocus pulsatorius*.

CLOTHILLA.

Corpus parvum, apterum; capite subtriangulare (haud oblongo-quadrato); thorace capite vix latiori, abdomine ovato, subconvexo.

Antennæ longæ, gracillimæ, articulis circiter 27, duobus basalibus crassis. *Prothorax* segmentis aliis thoracis brevior. *Pedes* simplices, tarsis 3-articulatis.

Clothilla studiosa, Westw.

Luteo-albida, oculis brunneis, antennis fuscis, labro albido, incisuris abdominis brunneis; pedibusque albidis.

Long. corp. lin. 1.

Habitat in domu meâ, super libros cursitans.

XVI. *Descriptions of new Species of Coleoptera, from the Kasyah Hills, near the boundary of Assam, in the East Indies, lately received from Dr. Cantor.* By the Rev. F. W. HOPE, F.R.S., &c.

[Read 7th November, 1842.]

Family LUCANIDÆ.

Sp. 1. *Lucanus Cantori*, Hope ♂.

Affinis *Luc. villosus*, Hope, at major. Piceo-brunneus aurataque pubescentia tectus; mandibulis exsertis, in medio dente majori armatis, apicibus subfurcatis; clypeo deflexo trigono, aurantiis capillis obsito. Thorax fere ut in *Lucan. lunifero*, Hope. Corpus subtus flavo-pubescentis, femoribus rubro-corallinis tibiisque tarsisque nigris. Fœmina differt capite thorace multo minori, mandibulis autem longitudine fere æquali.

Long. lin. 31, lat. lin. 9; ♀ long. lin. 18, lat. lin. 9.

In Mus. Dom. Hope.

Sp. 2. *Lucanus Mearsii*, Parry.

Affinis præcedenti. Niger, mandibulis exsertis in medio unidentatis, apicibus late furcatis, dente parvo fere ad basin posito; elytris nigro-æneis, nitidis, et sub lente subtilissime punctulatis, capillisque flavis aspersis. Corpus infra nigro-æneum, capillisque luteis ornatum; femoribus tarsisque nigris, tibiisque rubro-piceis. (Mas.)

Long. corp. mandibulis inclusis, lin. 28, lat. lin. 8.

Habitat circa Silhet.

This beautiful species has been sent to me by Captain Parry for description; it is closely allied to the *Lucanus lunifer* of Hope, and is remarkable for having metallic elytra. Between the middle of its mandibles and the forked apex another denticle will be found in different specimens. I find that there are others which vary in size. It is named in honour of Captain Mears; the other sex is unknown to me.

Sp. 3. *Lucanus Platycephalus*, Hope.

Niger, mandibulis thorace parum longioribus, apicibus furcato-dentatis. Corpus antice latum, ultra oculos porrectum, depressum. Thorax transverso-quadratus, angulis posticis sub-

obliquis, fossulâ impressâ utrinque, ad posteriorem partem disci posita. Elytra nigra nitida, fere glabra, sub lente subtilissime punctulata. Corpus infra concolor, tarsis infra auricomatis. Fœmina adhuc latet.

Long. lin. 10, lat. lin. 5.

The above insect I received lately from the Kasyah Hills; the female, if I am not mistaken, is in the cabinet of Captain Parry.

Sp. 4. *Lucanus Maclellandi*, Hope.

Rubro-piceus, mandibulis capite thoraceque minoribus, interne multidentatis, apicibus acutis. Caput antice fossulâ supra oculos impressa, sparsimque subvariolosum. Thorax angulis anticis acutis, posticis obliquis. Elytra subtilissime punctulata, rubro-picea. Corpus infra concolor, tibiis anticis externe subdenticulatis, quatuor reliquis inermibus, tarsis supra nigro-piceis infraque auricomatis.

Long. lin. 8, lat. lin. 2½.

This elegantly-formed species is named after the celebrated editor of the Calcutta Journal, to whom the naturalists of the East are much indebted for his zeal in promoting science.

DORCUS, Mac Leay.

Sp. 5. *Dorcus Antæus*, Hope.

Niger, nitidus et glabratus, sub lente tenuissime granulatus; latissimus, valde depressus; elytris lævibus, clypeo lato, mandibulis deplanatis, intus dente forti armatis, apicibus acutis. Corpus infra concolor, tibiis anticis externe denticulatis, quatuor posticis unidentatis.

Long. lin. 31, lat. lin. 11.

This gigantic insect I lately received from the indefatigable Dr. Cantor; it is allied to *Titan* of Boisduval, to *Bilunatus* of De Haan, and *Bucephalus* of Westwood.

Sp. 6. *Dorcus Tityus*, Hope.

Niger, mandibulis capite thoraceque æqualibus, interne denticulatis, dente forti fere ad basin posito, reliquis minutis, apicibus subfurcatis. Caput clypeo subbifido, transverse quadratum depressum, thorace latius. Thorax semilunaris, lateribus in medio dilatatis, angulis anticis subacutis, posticisque obliquis. Elytra thorace minora, ad apicem gradatim atte-

nuata. Pedes tibiis anticis multidentatis, quatuor posticis unidentatis.

Long. lin. $29\frac{1}{2}$, lat. lin. $9\frac{1}{2}$.

Habitat circa Silhet.

The above fine insect is described from the cabinet of Captain Parry: it appears to be unique.

Sp. 7. *Dorcus Reichei*, Hope.

Niger, mandibulis capite thoraceque æqualibus, ad basin inermibus, ante apicem dente forti subbifido armato, apicibusque subfurcatis. Elytra thorace parum minora atroque castanea. Corpus infra nigrum nitidum. Pedes sicut in *D. Tityo*.

Long. lin. 24, lat. lin. 7.

I have received this insect from the Kasyah Hills, and find that Captain Parry has one from Silhet, which differs slightly in the sculpture; it is named in honour of Monsieur Reich, a Parisian Entomologist.

Sp. 8. *Dorcus punctilabris*, Hope.

Niger, mandibulis exsertis, capite thoraceque minoribus, interne bidentatis, dentibus minutis apicibusque acutis. Thorax subtilissime punctatus. Elytra lineato-punctata, punctis per totum discum aspersis. Corpus infra nigrum, pectore capillis flavis obsito. Pedes antici tibiis multidentatis, quatuor posticis unidentatis tarsisque infra auricomatis.

Long. lin. $17\frac{1}{2}$, lat. lin. 6.

Sp. 9. *Dorcus Blanchardi*, Hope.

Affinis præcedenti. Niger, mandibulis exsertis, capite thoraceque minoribus, subvariolo-punctatis, dente robusto ad medium posito, secundo minuto, apicibusque acutis. Elytra creberrime punctulata, sub lente quasi cinerea. Corpus infra nigrum, mandibulis infraque subvariolo-punctatis. Pedes sicut in specie præcedente.

Long. lin. 16, lat. lin. $5\frac{1}{2}$.

The above insect was received from the Kasyah Hills, and is named after Monsieur Blanchard, a Parisian Entomologist.

Sp. 10. *Dorcus cognatus*, Hope ♂.

Affinis præcedenti. Niger, mandibulis impunctatis, dente forti fere in medio posito, secundo valde minuto, vix distincto.

Elytra glabra nitida, sub lente punctulata, lateribus extrorsum lineato-punctatis. Pedes sicut in *Dorco Blanchardi*.

Long. lin. 17, lat. lin. 5.

Habitat in agris Himalayanis, e Museo Dom. Parry descriptus.

Sp. 11. *Dorcus Chevrolatii*, Hope.

Affinis *L. Saigæ*, Fab. Niger, mandibulis exsertis arcuatis, capiteque longioribus, in medio intus lato dente armatus, apicibus subfurcatis. Caput thoraxque elytris latiora depressiuscula. Elytra piceo-castanea, fere glabra, ad apicem gradatim decrescentia. Corpus infra nigro-piceum, pedibus concoloribus, femoribus tibiisque aurantiis capillis obsitis.

Long. lin. 26, lat. lin. 8½.

The above insect was received from Dr. Cantor from the Kas-yah Hills; it is named in honour of Monsieur Chevrolat, the author of a work on the Mexican *Coleoptera*. There are several species confounded with *L. Saiga* of Fabricius.

Family DYNASTIDÆ, Mac Leay.

DYNASTES, Mac Leay.

Sp. 12. *Dynastes Cantori* ♂.

Atro-piceus, cornu capitis recurvo robusto, thorace antice bicorne; elytris obscure piceis, marginibus externe pallide castaneis. Corpus infra rubro-piceum, femoribus concoloribus, tibiis tarsisque nigricantibus. Fœmina differt capite inermi thorace angulis anticis utrinque parum productis.

♂ Long. lin. 26, lat. lin. 12. ♀ Long. lin. 24, lat. lin. 12.

The above magnificent species I have much pleasure in dedicating to Dr. Cantor, who, amidst the laborious services of the medical profession, still encourages others to collect for the benefit of English Entomologists, although unable individually to undertake such matters. There is little doubt that the insects allied to *Dynastes Hardwickii* form a peculiar subgenus, differing from *Chalcosoma*.

Family LAMIADÆ.

Sp. 13. *Lamia Downesii*, Hope.

Affinis *Lamiæ Roylii*, Hope, at minor. Nigra, antennis corpore longioribus, elytris apicibus interne et externe mucronatis, ad basin scabris, maculis decem flavis notatis, maculis octo ma-

loribus, duabus aliis minutis. Corpus infra fusco-nigrum, lateribus utrinque flavo-vittatis.

Long. lin. 27, lat. lin. 9.

The present insect is closely allied to *Lamia Roylii*, described by me in the Zoological Transactions, &c. vol. i. p. 103. It differs in having its antennæ less scabrous. It is scarcely so long as *L. Roylii*, but is broader and more robust. In the former insect the spines at the apex are merely sutural, whilst in the present species they are more strongly marked internally, as well as laterally. In some specimens the two smaller yellow spots are wanting. The above insect is dedicated in honour of Ezra Downes, Esq., one of the most zealous collectors of Oriental Entomology. Some valuable communications may shortly be expected from him, particularly in relation to the East Indian *Chalcididæ*.

Sp. 14. *Lamia Parryi*, Hope.

Griseo-nigra, antennis corpore longioribus, articulis scabris; elytris ad basin mamillato-scabris, maculis albis octo notatis. Corpus infra fusco-griseum, lateribus utrinque albivittatis.

Long. lin. $17\frac{1}{2}$, lat. lin. 6.

Habitat circa Silhet.

This insect I received from Silhet from Captain Parry's collection, and I have also received it from the Kasyah Hills by means of Dr. Cantor.

XVII. *On the Genus Mæchidius of Mac Leay.* By J. O. WESTWOOD, F.L.S., &c.

[Read September, 1841.]

MÆCHIDIUS is one of those singular forms which disturb the pre-conceived arrangements of professed systematists, and of which New Holland affords such numberless examples. Mr. Kirby, who first described the insect, which served as the type of the genus, observed respecting it, that he could not clearly ascertain whether it belonged to *Trox* or *Melolontha*. He accordingly described it under the name of *Trox spurius* (Linn. Trans. xii. p. 462). Mr. W. S. Mac Leay subsequently proposed for it the generic name of *Mæchidius*, considering it rather as nearer to *Trox*, and giving a detailed description of its oral structure, accompanied by outline figures of the essential parts from the pencil of Mr. Curtis (Horæ Ent. i. p. 140, tab. 2, fig. 15). Since the publication of that work no addition has been made to our knowledge of the genus, and from the rarity of the insect, which does not appear to exist in any of the continental collections, but few Entomologists are acquainted with it, no figure of the entire insect having yet been published.

Two species of this genus, recently added by the Rev. F. W. Hope to his collection, and a fourth in my own collection, have rendered necessary a more precise specific description of the typical species, whilst at the same time the opportunity of figuring so interesting a genus will, I am sure, be appreciated by the student.

The parts of the mouth present several peculiarities of structure, which require a more detailed description than has been given of them. The clypeus has the lateral and anterior margins reflexed, the front being emarginate; beneath we perceive the part which Mr. Mac Leay terms the labrum, but which is certainly not articulated to the clypeus, although there is transverse impression, which seems to indicate that the clypeus and labrum are confluent. This supposed labrum is emarginate at its extremity, and meets the anterior margin of the mentum in order to close the mouth. The mandibles are horny, short, trigonate, the outer margin rounded, and the apex entire. On the side next the labrum the mandibles are smooth and highly polished, but beneath they are furnished with two strong elevated ridges, forming an oblique canal, which causes them to appear furnished with two

short teeth at the inner margin, when seen obliquely; beneath the middle of the mandible arises an elongated slender membrane, and the internal basal angles are much produced, but there is no transversely striated molarly plate. The mentum and maxillæ closely unite to form the underside of the mouth, the lobes of the latter and the labrum not being produced more forward than the front margin of the mentum. The outer lobe of the maxillæ is horny and 5-toothed; the inner division of the maxillæ is distinct, although small and horny; the inner lobe, arising from its extremity, small, membranous and ciliated. The mentum has the sides straight, but not parallel, the front margin being wider than the base, and almost straight; the labial palpi arise within, close to the anterior angles of the mentum, the tip of the second joint, and the short third joint, being only visible. Within the mouth, between the mandibles and the supposed labrum, I observed, in two specimens I dissected, a membranous piece which appears to me to be analogous to the membranous labrum of the *Scarabæidæ*. The two spurs of the middle tibiæ are acute, but the two at the extremity of the hind tibiæ are obtuse and flat; the fore tibiæ are obtusely tridentate on the outer margin, and the outer extremity of the two posterior tibiæ is produced into a thick diverging spur; all the ungues are simple and entire.

On reviewing these characters with reference to the group to which the genus naturally belongs, I see no grounds for regarding it as Trogideous, whilst its relation to the *Melolonthidæ* appears far stronger. This is more especially the case if Mr. Mac Leay be correct in the nomenclature of the part he terms labrum. It may appear strange that any doubt can exist as to whether a Lamellicorn beetle is Thalerophagous or Saprofagous;* but the fact is,

* By comparing the characters of *Mæchidius* with those of these two groups, as given by Mac Leay (*Horæ Ent.* i. pp. 68, 69) we shall perceive that the genus accords even better with the *Thalerophaga* than with the *Saprofaga*.

SAPROPHAGA.	MÆCHIDIUS.	THALEROPHAGA.
Antennæ 8- to 11-jointed,	Antennæ 9-jointed.	Antennæ 9- to 10-jointed.
Clava short, thick, 3-jointed.	Clava rather elongate, 3-jointed.	Clava rather elongate, often more than 3-jointed.
Feet always robust.	Feet rather slender	Feet less robust.
Tibiæ broad.	Tibiæ narrow.	Tibiæ rather narrow.
Ungues undivided.	Ungues undivided.	Ungues often divided.
Colour lurid or black.	Colour lurid.	Colour gay metallic.
Elytra generally extending to the anus.	Elytra not covering the anus.	Elytra rarely covering the anus.

I omit the nature of the food, because we are ignorant of that of *Mæchidius*.

that in these osculant genera, of whose habits nothing is known, we meet with a combination of characters which set all our divisions at nought. Looking at the structure of the maxillæ, we should expect the same habits as we find in *Melolontha*, but there is no molar plate for masticating leaves in the mandibles.

The following opposed characters of the *Trogidæ*, *Melolonthidæ*, and *Mæchidius*, will, I think, clearly prove that the genus in question belongs to the *Melolonthidæ*, and not to the *Trogidæ*.

TROGIDÆ.	MÆCHIDIUS.	MELOLONTHIDÆ.
Labrum distinct, transverse ovate.	Supposed labrum bilobed.	Labrum distinct, bilobed.
Mandibles without a molar plate, or strong oblique ridges beneath.	Mandibles without a molar plate, but with a few strong oblique ridges beneath.	Mandibles with a molar plate, but without strong oblique ridges beneath.
Maxillæ with the outer lobe membranous, ciliated; inner lobe toothed and horny.	Maxillæ with outer lobe horny, toothed; inner lobe small, membranous.	Maxillæ with outer lobe horny, toothed.
Anterior tibiæ not notched.	Anterior tibiæ notched.	Anterior tibiæ notched.
Podex covered.	Podex uncovered.	Podex uncovered.
Longitudinal veins of wings at unequal distances apart.	Longitudinal veins of wings at nearly equal distances apart.	Longitudinal veins of wings at nearly equal distances apart.

It further appears to me that the nearest approach to this genus is made by some of the numerous small *Aphodius*-like *Melolonthidæ* of New Holland.

(Since the above was written, I have found that Latreille states, "Je soupçonne que les *Mæchidies*, à raison de la forme et de l'échancrure du labre et de quelques autres caractères, avoisinent les *Mélolonthes*.")

Sp. 1. *Mæchidius Kirbianus*, W.

M. oblongus, obscurus, scaber, subcinereus; elytris punctis papillatis seriatim ordinatis seriebus plurimis; thoracis angulis posticis vix obtusangulis, lateribus rotundatis, dorso utrinque tri-impreso.

Long. corp. lin. ?

Habitat in Nova Hollandia.

In Mus. Britann.

Syn. *Trox spurius*, Kirby, loc. cit. Mac L. &c. (*Mæch. spur.*)

In size this species is nearly similar to *M. Macleayanus*, but

the head and thorax are considerably broader, as are also the legs. The upper surface of the body is opaque.

The sides of the thorax are regularly rounded, and slightly serrulate; the posterior angles are not emarginate, but are very obsoletely obtusangular; they are marked on each side with several transverse impressions; the anterior tibiæ have three obtuse teeth on the outside, the first of which is near the middle of the tibiæ; the lobe of the hind tibiæ is very prominent, and truncate at the tip; the antennæ are castaneous brown.

Mr. Kirby's description of the impressions on the body is as follows: "Corpus punctis pupillatis et centro oblongo eminentibus pallidis, subcinereum et scabrum."

These punctures on the elytra (of which there are about eighteen striæ in each) are nearly round and cinereous, each with a raised oblong centre, the space between each puncture being also elevated.

The specific name of *spurius* being applicable to the insect so long only as it remained in the genus *Trox*, to which it does not belong, I have ventured, in its stead, to designate it with the name of the venerable author by whom it was first made known.

Sp. 2. *Mæchidius Hopianus*, W. (Pl. V. fig. 3.)

M. oblongus, scaber, nigricans, opacus, setulis luteis (præsertim thorace) subcinereus; thoracis angulis posticis valde emarginatis.

Long. corp. lin. $5\frac{1}{2}$.

Habitat in Nova Hollandia? In Mus. D. Hope.

Oblongus, depressus, opacus; elytris vix thorace latioribus, lateribus fere parallelis. Caput transversum, punctatum, setosum, margine reflexo, antico parum emarginato, laterali vix bisinuato. Antennæ castaneæ. Thorax margine antico valde emarginato, lateribus rotundatis, angulis posticis valde emarginato-excisus, dorsi medio parum impresso, lateribus haud transverse impressis; tuberculis minutis, transverso-curvatis, elevatis, nitidis, scaber. Elytra oblonga; thorace parum latiora, lateribus fere parallelis, opaca, fusca; singulo striis 18 e punctis (circiter 40) ovatis parum impressis formatis, spatiis inter puncta elevatis nitidis; setulaque brevi crassa, lutea, decumbenti, in singulo puncto posita. Pedes nigricantes.

[Fig. 3 a, underside of head; 3 b, labrum; 3 c and 3 d, mandible in different positions.]

Sp. 3. *Mæchidius Mellianus*, W.

M. angustior, nigricans, capite anticè vix emarginato; thoracis lateribus rotundatis, angulis posticis extus prominentibus; tibiis anticis obtusè 3-dentatis.

Long. corp. lin. $4\frac{1}{2}$.

Habitat in Nova Hollandia. In Mus. D. Melly.

Præcedentibus minor, angustior et magis nigricans, valde punctatus, punctis rotundatis et setigeris. Caput margine antico fere recto, lateribus supra basin antennarum paullo dilatatis. Prothorax lateribus rotundatis, crenulatis; angulis posticis extus in spinam brevem crassam obtusam productis. Elytra oblonga, postice parum latiora, singulo seriebus 18 e punctis ovalibus setigeris longitudinaliter positis; setis brevibus. Tibiæ anticæ angustiores, obtusè 3-dentatæ, dente intermedio reliquis haud majori. Tibiæ posticæ apice haud dilatatæ, angulo externo longitudinaliter producto, truncato.

Sp. 4. *Mæchidius Macleayanus*, W.

Piceus, nitidus, punctatus, longius setosus; elytris oblongo-ovatis, depressis; thorace lateribus rotundatis, angulis posticis acutis.

Long. corp. lin. 5.

Habitat in Nova Hollandia. In Mus. nostr.

Præcedenti brevior et magis convexus. Caput angustius, rufopiceum, punctatum, setosum, margine reflexo, antico acute emarginato, lateralibus magis sinuatis. Thorax subconvexus, nitidus, elytris evidenter angustior, lateribus rotundatis, angulis posticis acutis, punctis magnis numerosis impressis, singulo setam gracilem longiorem emittenti. Elytra oblongo-ovata, subdepressa, nitida, striato-punctata (singulo striis circiter 20 e punctis ovatis impressis setigeris formatis). Pedes picei, nitidi, longius setosi; tibiis anticis 3-dentatis, dentibus acutis, intermedio majori; tibiis posticis ad apicem extus longitudinaliter productis truncatis.

Sp. 5. *Mæchidius Raddonanus*, Westw.

Piceus, opacus, punctatus, brevissime setosus, capitis margine antico profunde et acute emarginato, thoracis lateribus rotundatis, angulis posticis acutis.

Long. corp. lin. $4\frac{1}{2}$.

Habitat Port Philip, Australasia. (In Mus. D. Raddon.)

Præcedenti minor et pro magnitudine latior, opacus, breviter setosus, valde punctatus, punctis rotundatis. Caput marginibus elevatis, margine antico acute et profunde emarginato, ante oculos parum dilatato. Prothorax lateribus rotundatis (postice magis rectis quam in præcedente), angulis posticis acutis. Elytra rufo-picea, opaca, singulo striis 18 e punctis minutis subovalibus ornatis, puncto singulo in medio elevato et seta brevi (puncto haud longiori) decumbenti instructo. Pedes ut in præcedente.

Sp. 6. *Mæchidius rufus*, Hope, MSS.

Rufo-castaneus, nitidus, punctatus, tenue setosus, capite lato, marginibus elevatis, tibiis anticis obtuse 2-dentatis, femoribus posticis in medio dilatatis, tarsorum articuloque basali posteriorum longe penicillato.

Long. corp. lin. $2\frac{1}{2}$.

Habitat Port Essington, Australasia Septentrionali. In Mus. Hope.

Totus rufo-castaneus (oculis nigris exceptis), nitidus, punctatus. Caput latum, margine antico elevato, in medio parum emarginato. Palpi maxillares quam in præcedentibus longiores articulo ultimo curvato; mentum oblongum, utrinque versus basin setam longissimam emittens. Prothorax lateribus rotundatis, angulis posticis vix acutis nec prominulis. Elytra prothorace vix latiora, singulo (circiter 18) punctato-striato, striis lateralibus confusis; discoidalibus per paria currentibus, spatiis inter paria parum elevatis vel costatis, punctis elytrorum minoribus quam capitis et prothoracis; ovalibus singulo setam minutam emittente. Apex elytrorum et podex setis latis pallidis vel squamis obsiti. Tibiæ anticæ ad apicem obtuse bidentatæ; posticæ in medio marginis interni angulariter dilatatæ, apice bicalcaratæ. Tarsi postici articulo basali longo, extus penicillo longo setarum divergentium instructo et subtus setoso.

Obs. This species differs from all the preceding in the small size, red colour and curious structure of the hind feet.

[Fig. 4 a, mandible; 4 b, maxilla; 4 c, mentum and labial palpi; 4 d, antenna; 4 e, fore tibia; 4 f, hind tibia and tarsus.]

[P. S. I find this genus in the French Cabinets, under the name of *Geobatus*, placed amongst the *Melolonthidæ*.]

XVIII. *A Decade, or Description of ten new Species of Coleoptera, from the Kasya Hills, near the boundary of the Assam District.* By F. PARRY, Esq. F.L.S., &c.

[Read 6 February, 1843.]

Sp. 1. *Cicindela Assamensis*, Parry.

Atro-picea, elytris 4 flavo-maculatis, binis maculis humeralibus minoribus, duabus aliis infra medium disci positis, rotundatis, et majoribus. Corpus infra nitidum, viride, trochantibus rubris.

Long. lin. $9\frac{1}{2}$; lat. lin. 3.

Habitat in agro Assamensi.

This insect, (hitherto I believe undescribed,) although somewhat rare in our collections, appears to be widely spread, the three specimens with which I am acquainted coming from Assam, the Himalayas and the Kasya Hills. It verges considerably from the true typical form of *Cicindela*, and will probably form the type of a new genus.

Sp. 2. *Cicindela latipennis*, Parry.

Berrylino-viridis, fronte albido, disco subcupreo-æneo, thorace concolori; elytris tribus lateralibus lunulis flavis, alterâque fere mediâ ad suturam vergenti, apicibusque flavis. Corpus infra albo-tomentosum, pectore roseo-æneo nitenti, pedibusque concoloribus.

Long. lin. 8, lat. lin. 4.

From the Kasya Hills.

This insect appears to be somewhat abundant, as there were upwards of twenty specimens in a collection recently obtained by me.

Sp. 3. *Heptodonta Hopei*, Parry.

Viridis, fronte albido, lateribus brunneis, thorace cylindrico, elytrisque concoloribus immaculatis, apicibus sub-truncatis. Corpus infra viride nitidum, femoribus ad basin flavis, tibiisque tarsisque viridi-æneis.

Long. lin. $7\frac{1}{2}$, lat. lin. 3.

This new species I have named after my friend Mr. Hope, to whose genus *Heptodonta* it evidently belongs; it is the largest species I am acquainted with of that genus, and I think it most probable (like others composing this group) that it is found on trees.

Sp. 4. *Calosoma nigrum*, Parry.

Nigrum, mandibulis porrecto-falcatis, indentatis; thorace transverso-rotundato, parvo; elytris thorace quadruplo longioribus, postice dilatatis et lineato-punctatis, punctis in tribus lineis positis. Corpus infra atrum, pedibus concoloribus.

Long. lin. 14, lat. lin. $7\frac{1}{2}$.

The species of *Calosoma* from the East Indies are evidently rare. *C. Chinense*, of Kirby, is the only species mentioned in Dejean's Catalogue; the Rev. F. Hope possesses another received from Bombay, and I believe there is a fourth described from the Collection of Col. Sykes.

Sp. 5. *Athyreo frontalis*, Parry.

Affinis *Athyreo Orientali* (Hope's MSS.)

Castaneus, antennis flavis, capite antice nigro, postice castaneo, thorace ad marginem anticum parum elevato, postice valde excavato, foveolâ utrinque fortiter impressâ. Elytra fere glabra. Corpus infra valde pilosum, femoribus rubris, pedibus fuscescentibus.

Long. lin. $8\frac{1}{2}$, lat. lin. $5\frac{1}{2}$.

There were only two specimens in my collection, one differing most considerably in size from the other.

Sp. 6. *Mimela sapphirina*, Parry.

Læte cyanea, capite marginato virescenti, thorace nitido, violaceo, elytrisque striato-punctatis sapphirinis, fascia violacea parum distincta fere ad latera posita. Corpus infra atro-piceum, femoribus pallidioribus; tibiis tarsisque viridi-cyaneis.

Long. lin. $6\frac{1}{2}$, lat. lin. 5.

From the Kasya Hills.

Sp. 7. *Alaus irroratus*, Parry.

Affinis *Alao Assamensi* (Hope's MSS.), at minor.

Niger flavisque maculis minutis irroratus, capite fere atro, thorace obscuro subtilissime punctis asperso, elytris striatis, maculâ atrâ majori ad latera positâ, variisque aliis flavis per totum discum aspersis. Corpus infra obscurum, pedibus concoloribus.

Long. lin. 15, lat. lin. $6\frac{1}{2}$.

From the Kasya Hills.

Sp. 8. *Eumolpus pyrophorus*, Parry.

Affinis *Eumolpo rubido* (Hope's MSS.), at major.

Violaceus, capite læte cyaneo, thorace concolori, elytris igneo-æneis, humeris apicibusque cyaneis. Corpus infra violaceum, pedibus concoloribus.

Long. lin. $6\frac{1}{2}$, lat. lin. 4.

This insect is one of the most beautiful of the genus, and appears to be abundant, as there were many specimens in the collection above mentioned.

LAMIADÆ, Leach.

Subgenus *Batocera*.Sp. 9. *Lamia Batocera Calanus*, Parry.

Atro-cinerea, antennis atris et scabrosis, thorace bimaculato, maculis albis, elytris ad apicem bispinosis, ad basin scabris, disco maculis octo albis notatis. Corpus infra atro-cinereum, lateribus utrinque læte albo-marginatis, pedibus cinereo-tomentosis.

Long. lin. 26, lat. lin. $8\frac{1}{2}$.

From the Kasya Hills.

There is probably no family amongst the *Longicornes* in which so many new species have been lately added to our cabinets as in true *Lamia* (*Batocera* of Dejean). The last edition of the Baron Dejean's Catalogue mentions only six species, while the Cabinet of the Rev. F. W. Hope contains twenty-one species, and my own about fourteen. On first appearances it might be imagined that the species of *Lamia* might easily be separated, but I think it will prove quite the reverse, more especially when art steps in and tends to deceive the unpractised naturalist. The next insect I am about to describe is also a *Lamia*, and may be coloured by art in the usual way the Japanese paint their insects; however, I will give the description as the insect appears, and, coloured or not, it is evidently a new species.

Sp. 10. *Lamia Porus*, Parry.

Affinis *Lamiæ Roylii*, Hope.

Atro-cinerea, antennis corpore longioribus scabrosis, thorace unimaculato, scutello concolori, elytris ad suturam et ad latera parum mucronatis, ad basin scabris, maculisque puniceo-albis notatis.

Long. lin. 20, lat. lin. 8.

The above species is in form and markings closely allied to *Lamia Roylii*; the spots on the thorax and elytra are the colour of a rose pink.

At first I was inclined to think that art had been used in colouring the insect, but as other *Lamiadæ* have orange and yellow spots, and are found to run into red and pink, it is still possible that it may be natural. I may also remark, that in Mr. Hope's Collection there is a gigantic species received from China, named by him *Chinensis*, where the spots are to be found of the same peculiar pink colour.

XIX. On the Asiatic Goliathideous genera *Trigonophorus* and *Rhomborhina*. By J. O. WESTWOOD, F.L.S., &c.

[Read 3 July, 1843.]

THE Rev. F. W. Hope having received two new Indian species of Goliathideous beetles belonging to the genera *Trigonophorus* and *Rhomborhina* since the publication of my memoir on the Asiatic *Goliathides* in the 8th and 9th Numbers of my "Arcana Entomologica," affords me an opportunity of publishing a synoptic revision of the species of these two groups, the synonymy and specific distinctions of several of which have been incorrectly detailed by Dr. Burmeister in the Appendix to the Third Volume of his "Handbuch der Entomologie," p. 778—781.

TRIGONOPHORUS.

§ A. Cornu capitis inter oculos acutum in ♂, truncatum in ♀.

Sp. 1. *Tr. Nepalensis*. Atro-azurea, viridis vel viridi-cærulea; (nec secundum sexum varians), pedibus coxisque posticis fulvis; genibus, tibiæ apice tarsis antennisque nigris.

Long. corp. lin. 13—15, ♂ ♀.

Syn. *Cetonia Nepalensis*. Hope in Zool. Misc. p. 24, ♂.

Cetonia Hardwickii. Hope in op. sup. cit. ♀.

Gnathocera Hardwickii. Gory & Perch. Mon. Cet. pl. 19, fig. 1, ♀.

Cetoninus (*Coryphe Rhomborhina*, 1) *Hardwickii*. MacLeay, Cet. So. Afr. p. 30.

Coryphocera Hardwickii. Burm. Handb. d. Ent. 3, p. 232.

Trigophorus Nepalensis. Westw. Arc. Ent. 1, p. 121, pl. 29, fig. 3, ♂.

Rhomborhina? Cantori. Hope, Tr. Ent. Soc. 3, p. 63,
individ. mutilat.

Trigonophorus Cantori. Westw. op. cit.

Sp. 2. *Trigonophorus Saundersii*. Oblongus, aureo-viridis, elytris tenuissime rugosulis et punctatis, capite et abdomine subtus pedibusque brunneo-castaneis, metathorace subtus viridi; pilis pedum posticorum nigris.

Long. corp. lin. 12, ♂. ♀.

Syn. *Trigonophorus Saundersii*. Westw. Arcan. Ent. 1, p. 122, pl. 29, fig. 5, ♀; Burmeister, op. cit. p. 752.

Sp. 3. *Trigonophorus gracilipes* (n. sp. Pl. V. fig. 5). Oblongo-ovalis, supra et infra viridi-aureus, parum opalescens vel olivaceus, capite viridi, punctato, elytris tenuissime punctatis, pedibus gracillimis, femoribus viridibus cupreo-micantibus, tibiisque castaneis apice nigris; pilis pedum 4 posticorum fulvis, mesosterno tenui, cornu frontali trigono, antennis tarsisque nigris.

Long. corp. lin. 14, ♂ ♀.

Habitat in Indiæ Orientalis montibus Kasya dictis.

In Mus. D. Hope.

In addition to the characters detailed above, it may be mentioned, that the mesosternum has a dark castaneous line down the centre, which is smooth, but the sides are very thickly covered with minute punctures, which is not the case in the closely allied species, *Tr. Saundersii*.

§ B. Cornu inter oculos acutum in ♀.

Sp. 4. *Trigonophorus Dellessertii*. Viridi-ænea, supra sæpius olivacea, coxis posticis supra rubris.

Long. corp. lin. 18.

Syn. *Goliath. Dellessertii*. Guerin, Rev. Zool. 1839, p. 229.

Trigonoph. Del. Westw. Arc. Ent. 1, p. 122, pl. 29, fig. 4.

Coryphocera Del. Burm. Handb. d. Ent. 3, 234.

RHOMBORHINA.

§ A. Processus mesosterni apice transverso dilatato.

a. Pili pedum posticorum nigri.

Sp. 1. *Rhomborhina Mellii*. Læte viridis nitens, pedibus subtus æruginosis, supra cum tarsis nigris, apice elytrorum transversim scabriusculo.

Long. lin. 16.

- Syn. *Gol. Mellii*. Gory & Perch. Mon. Cet. p. 156, p. 26, fig. 4.
Rhomborhina Mellii. Westw. Arc. Ent. p. 118; Burm.
 Handb. d. Ent. 3, pp. 198, 780.
Rhomborhina distincta. Hope, in Trans. Ent. Soc. 3, 63;
 Westw. Arc. Ent. 1, p. 118, (variety.)
Rhomborhina pilipes. Melly, MSS.; Burm. Handb. d.
 Ent. 3, p. 779; Westw. Arc. Ent. 1, 192, (variety.)

Sp. 2. *Rhomborhina apicalis*. Læte cupreo-fulva, elytris apice
 scabris et nigris, tibiis tarsisque nigris, thorace subtus nigro
 (metasterno profundè canaliculato), abdomineque cum femo-
 ribus nigris vel nigro-æneis ♂ ♀.

Long. corp. lin. 15.

- Syn. *Rhomborhina apicalis*. Westw. Arc. Ent. pl. 30, fig. 2;
 Burm. Handb. d. Ent. 3, p. 779.

Sp. 3. *Rhomborhina hyacinthina*. Nigra, nitida, capite pronoti
 limbo inferiori, pectore, pedibusque cærulescentibus, tarsis
 nigris.

Long. corp. lin. 16 ♂ ♀.

- Syn. *Rhomborhina hyacinthina*. Hope, in Trans. Ent. Soc. 3,
 62; Westw. Arc. Ent. 1, pl. 30, fig. 1; Burm. Handb.
 d. Ent. 3, 199.

b. Pili pedum posticorum fulvi.

Sp. 4. *Rhomborhina opalina*. Olivaceo-ænea, cupreo plus mi-
 nusve tincta, scutelli apice sæpius æneo; antennis tarsisque
 nigris ♂ ♀.

Long. corp. lin. 13, 15.

- Syn. *Rh. opalina*. Hope, in Syn. Col. Nepal. p. 24; Gory &
 Perch. Mon. Cet. pl. 26, fig. 5; Westw. Arc. Ent. 1,
 p. 118.

Nec *Rh. opalina*. Burm. Handb. d. Ent. 199 = *Rh.*
Japonica.

§ B. Mesosterni processus haud dilatatus, subquadratus,
 vel subrotundatus (clypeus magis quadratus).

Sp. 5. *Rhomborhina resplendens*. Viridis, elytrorum disco circa
 scutellum nigro. ♂ ♀.

Long. corp. lin. 16.

- Syn. *Cetonia resplendens*. Schwartz, in Schonh. Syn. Ins. 1,
 63, App. 51.

Rhomb. respl. Westw. Arc. Ent. 1, 118; Burm. 3, 198.

Goliathus Heros. Hope, Latr.; Gory & Perch. Mon. Cet.
pl. 26, fig. 3.

Sp. 6. *Rhomborhina dives* (n. sp. Pl. V. fig. 5.) Tota lætissime viridi-aurea, nitida; clypeo marginato, viridi, tenuissime punctato; elytrorum disco impunctato, apice cum podice parum rugosulo, metasterni lateribus haud punctatis, tarsis antennisque nigris, pilis tibiaram intermediarum brevibus nigris.

Long. corp. lin. 16.

Habitat in Indiæ Orientalis montibus Kasya dictis.

In Mus. Hope.

Note.—The sides of the mesosternal process are nearly parallel, and the apex produced and slightly angulated at the tip.

Sp. 7. *Rhomborhina Japonica*. Brevis, lata, supra obscure brunneo-olivacea, subtus magis varia, capite magno, pedibus brevibus, obscurioribus, latis; elytris creberrime punctulatis, punctis in strias haud dispositis; scutello concolori, pilis pedum 4 posticorum fulvis ♀.

Long. corp. lin. 13.

Habitat in Japonia.

Syn. *Rhomborhina Japonica*. Hope, in Trans. Ent. Soc. 3, p. 62; Westw. Arc. Ent. 1, p. 30, fig. 4.

Rhomb. opalina. Burm. Handb. d. Ent. 3, pp. 199, 779.

Sp. 8. *Rhomborhina clypeata*. Viridis, rude punctulata; thoracis lateribus elytrorumque disco postice magis auratis, clypeo magno, antice subtruncato, punctis elytrorum in strias dispositis, pilis pedum posticorum fulvis ♀.

Long. corp. lin. 12½.

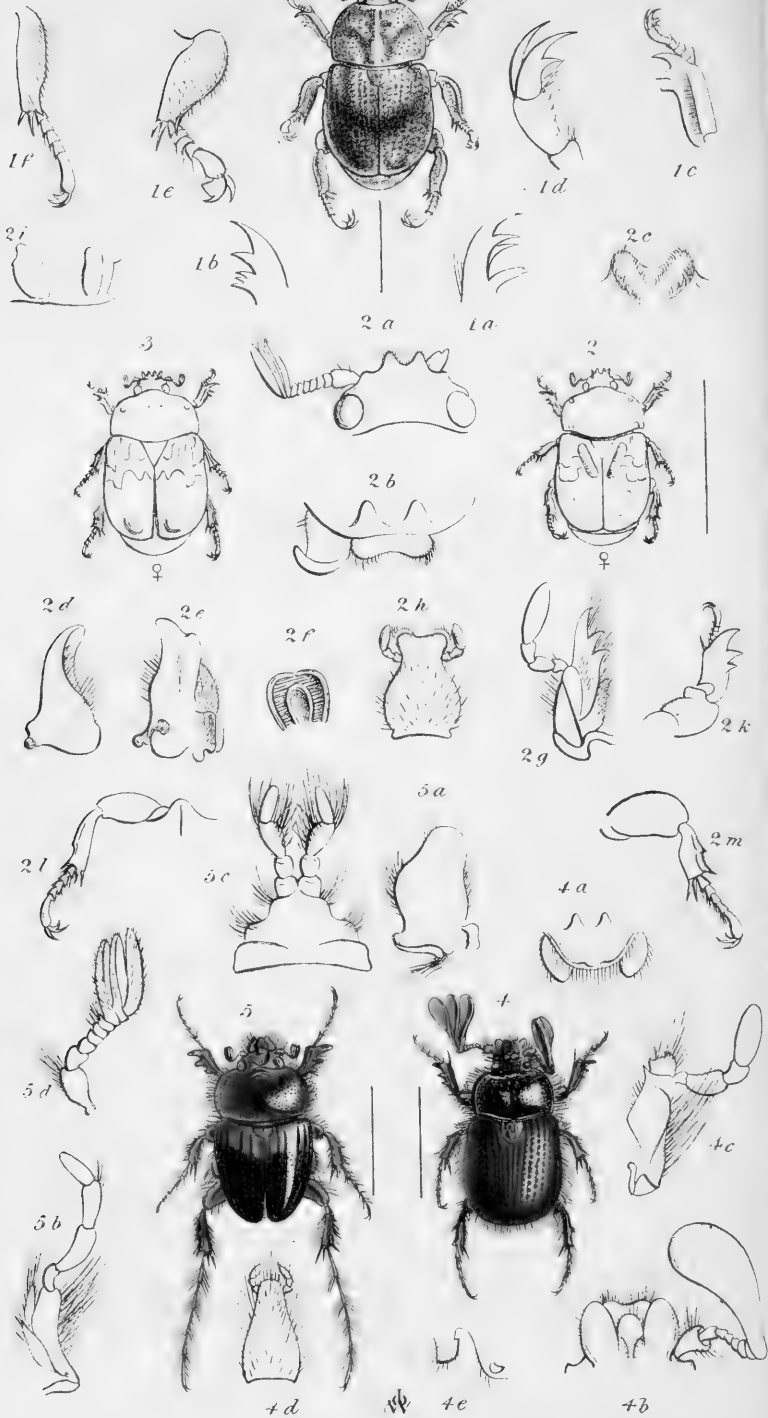
Habitat in Japonia.

Syn. *Rh. clypeata*. Westw. Arc. Ent. 1, pl. 34, fig. 3; Burm. Handb. d. Ent. 3, p. 199.

§ C. Mesosterni processus latitudine angustior.

Sp. 9. *Rhomborhina microcephala*. Robusta, brunneo-olivacea, nitidissima, capite parvo, clypeo subquadrato, tibiis anticis ♀ angustis mediocriter bidentatis, pedibus cyaneo-nigris, tibiis 4 posticis nigro-setosis ♀.

Long. corp. lin. 13, 14.



Syn. *Rhomborhina microcephala*. Westw. Arc. Ent. 1, pl. 30.
fig. 3.

Anomalocera Mearesii. Burm. Handb. d. Ent. 3, p. 781.

The habit of this species is so entirely that of the other *Rhomborhinæ* that I cannot agree with Dr. Burmeister in removing it to the genus *Anomalocera*, especially as the form of the mesosternal process is variable in the other *Rhomborhinæ*. It is proper, however, to add, that females only have yet been received of this species. The male, when known, will more satisfactorily enable us to settle the question.

XX. *Description of an Asiatic Genus of Lamellicorn Beetles belonging to the Family Rutelidæ.* By J. O. WESTWOOD, F.L.S., &c.

[Read July, 1841.]

Family RUTELIDÆ.

Genus PARASTASIA, Westw. (Pl. VI. fig. 1, 2, 3.)

Corpus supra valde gibbosum, pedibus brevissimis.

Caput mediocre humile, antice in medio bituberculatum, tuberculoque minori utrinque supra originem antennarum (fig. 2*a*).

Antennæ breves, 10-articulatæ.

Labrum bilobum, sub clypeum bilobum, fere occultum, ciliatum (fig. 2*b*, 2*c*).

Mandibulæ (fig. 2*d*, 2*e*) corneæ, ad apicem extus curvatæ (fig. 2*c*), angulo externo in dentem subrecurvum et prominentem producto, margine externo in medio subangulato, interno membranaceo et ciliato, portio molaris (fig. 2*f*) parva transverse strigosa, carina elevata fere rotundato-ovalis in medio notata.

Maxillæ corneæ, lobo externo producto tridentato (interdum 4-dentato), dente interno obsolete tridentulato vel trifido (inde maxillæ 5- vel 6-dentatæ evadunt) (fig. 1*a*, 1*b*, 2*g*).

Palpi maxillares 4-articulati, articulo 2do præcedenti majori; apicali longo-ovali, apice subacuto (fig. 2*g*).

Mentum oblongum, lateribus versus basin rotundato-dilatatis (fig. 2*h*). *Palpi* labiales ante apicem insertæ, 3-articulatæ.

Labium supra vix videas, margine antico ciliato.

Prothorax transverso-ovalis, valde elevatus et gibbus, angulis posticis parum productis, et humero elytrorum fere tegentibus; margine postico integro.

Scutellum mediocre, triangulare.

Elytra brevia gibbosa, anum haud tegentia.

Mesosternum (fig. 2i, 2l) inter pedes medios parum productum.

Pedes brevissimi; *femora* antica valde incrassata, tibiis brevissimis intus ad basin unidentatis, extus tridentatis; tarsis anticis in ♂ brevibus crassis, articulo 5to inflato, unguibus inæqualibus, uno simplici, altero crasso bifido (fig. 1c, 1d); tarsis anticis unguibusque in ♀ (fig. 2k) simplicibus, his æqualibus. *Pedes* intermedii in ♂ (fig. 1e) valde incrassati; tibiis setosis; in ♀ graciliores (fig. 2l), tarsorum articulis crassis ♂, tenuibus ♀, penultimo intus in spinam producto, unguibus in utroque sexu inæqualibus, uno simplici, altero majori intus unidentato; dente in ♂ lato obtuso. *Pedes* postici crassissimi, tibiis in ♂ gracilioribus quam in pedibus intermediis (fig. 1f); tarsis in utroque sexu gracilioribus, unguibus inæqualibus, uno integro, altero bifido (fig. 2m, pes posticus ♀).

This genus appears to be confined to the islands of the Indian Ocean, especially those of the Philippine range, whence several species have been brought by Mr. H. Cuming. This locality is highly interesting, since every species of the family to which the genus is strictly referable has hitherto been brought from the New World.* The form and horny structure of the parts of the mouth, and especially the produced mesosternum, prove that this genus is most nearly allied to the family *Rutelidæ*, as restricted by the removal of *Hexodon*, *Cyclocephala*, and some other groups which have not the produced mesosternum and the brilliant colours of the legitimate *Rutelidæ*. It appears most allied to *Chasmodia* in the bituberculated clypeus, more elongated galea to the maxillæ, and slighter toothing of the mandibles; but it is sufficiently distinct from all the allied genera in its details, as may be easily conceived when its geographical locality is taken into consideration.

I am indebted to Dr. Burmeister for calling my attention to this interesting genus, and for the suggestion of a generic name indicative of its representative character; and I take the present

* We must not however overlook the African genus *Phænomeris* of Hope (*Eupyga* of Mannerheim). The genus *Celidia* of Dejean's Catalogue cannot at present be ascribed with certainty to the family *Rutelidæ*. See Burmeister's Handb. d. Ent. iv. p. 371.

opportunity of expressing the gratification as well as instruction which English Entomologists have received by his visit to us during the present summer.

The generic characters are derived from a female of *P. canaliculata* and a male of *P. Westwoodii*.

The following are descriptions of the species of this genus.

Sp. 1. *Parastasia canaliculata*, Westw. (Pl. VI. fig. 2.)

Nigra nitida, elytris fulvo-variegatis, plagis duabus elevatis obliquis utrinque versus scutellum positis.

Long. corp. lin. $9\frac{1}{2}$.

Habitat in insulis Philippinensibus. D. Cuming.

In Mus. Dom. Hope.

Caput nigrum, nitidum, rugoso-punctatum, punctis interdum in utroque latere confluentibus. Antennæ nigrae, articulo basali piceo. Prothorax in parte antica punctatus, postice vero lævis nitidus, impressione parva utrinque versus medium marginis lateralis, alteraque versus angulos posticos in margine postico. Elytra lævia, nigra, nitida, singulo ad basin versus scutellum, tuberculis duobus elongatis elevatis, coloris fulvi, utrinque canaliculatis; plaga parva quadrata hujus coloris ex medio tuberculi externi evadit, quæ versus marginem lateralem postice extensa, et in maculam majorem fulvam dilatata, plagam denique ovalem obliquam in discum postice utriusque elytri videas. Corpus subtus nigrum, setulis fulvis in pedibus anticis et metasterno paullo indutum.

Sp. 2. *Parastasia rufopicta*, Westw. (Pl. VI. fig. 3.)

Nigra, nitida, tenuissime punctata, fascia irregulari ad basin elytrorum, in singulo elytro antice biramosa et postice in medio late emarginata.

Long. corp. lin. 11, lat. elytrorum lin. 6.

Habitat in India Oriental. Sylhet.

In Mus. Dom. Stainforth, nunc Parry.

Corpus crassissimum. Caput et prothorax nigri. Clypeus bicornutus et fronte carina elevata (in medio obsoleta) divisa. Caput valde punctatum. Prothorax punctis minutis in parte antica et lateralibus, disco et parte postica fere lævibus, punctis duobus majoribus versus medium fossulisque duabus rotundatis in medio lateris versus marginem. Elytra nigra, fascia irregulari undata versus basin notata, ad apicem scutelli, marginem lateralem haud attingente, hæc fascia ramos duos

fere rectos in singulo elytro antice emittit, et postice dentata, et in medio singuli elytri valde emarginata, tubercula duo elevata picea ad apicem elytrorum. Pedes ut in reliquis, nigri. Corpus etiam subtus nigrum. Pygidium piceum, opacum.

This is a considerably larger species than any of the others described in this memoir.

Sp. 3. *Parastasia bipunctata*, Westw.

Nigra, prothorace rufo, nigro-bipunctato, elytris nigris, basi fulvis, singulo maculis duabus nigris.

Long. corp. lin. $8\frac{1}{4}$.

Habitat in insulis Philippinensibus. D. Cuming.

In Mus. Britann.

Nigra. Prothorax rufum, macula parva rotundata nigra impressa utrinque versus medium marginis lateralis. Scutellum rufum, marginibus obscurioribus. Elytra nitidissima, basi supra versus scutellum haud elevato-tuberculata, dimidio basali, sutura, plaga media postica apiceque ad suturam fulvis, macula parva oblonga in medio singuli ad basin, alteraque ovali versus angulum humeralem nigris. Podex et margines laterales segmentorum abdominalium rufi.

Sp. 4. *Parastasia discolor*, Westw.

Nigra, prothorace rufo, elytris castaneo-rufis, basi scutelloque obscurioribus.

Long. corp. lin. $7\frac{1}{4}$.

Habitat in insulis Philippinensibus. D. Cuming.

In Mus. Britann.

Nigra. Caput punctatum, antice subacute bifidum. Pronotum rufum, tenuissime punctatum; medio marginis postici lævi, puncto parvo rotundato impresso obscuro in medio utriusque lateris paullo ante marginem. Elytra castaneo-rufa, basi paullo obscuriora nitida, obsolete punctato-striata. Scutellum nigrum. Abdomen lateribus rufis, segmento ultimo supra rufo.

Sp. 5. *Parastasia nigriceps*, Westw.

Luteo-fulva, capite, prothoracis maculis duabus, alterisque duabus ad basin elytrorum tarsisque nigris.

Long. corp. lin. $5\frac{1}{2}$.

Habitat in insulis Philippinensibus. D. Cuming.

In Mus. Britann.

Luteo-fulva. Caput nigrum, antennæ nigræ, articulo basali fulvo. Prothorax subobscurus, puncto parvo utrinque versus

marginem lateralem, maculisque duabus disci postice, nigris; maculaque parva ejusdem coloris in medio basi singuli elytri pone scutellum haud extensa. Tibiæ et articuli tarsorum apicibus nigricantes. Elytra vix lineato-punctata.

Sp. 6. *Parastasia confluens*, Westw.

Nigra, prothorace in medio rufo et impresso, elytris obscure rufis, singulo maculis duabus luteis ovalibus contiguis ante medium positis.

Long. corp. lin. $5\frac{3}{4}$.

Habitat in insulis Philippinensibus. D. Cuming.

In Mus. Britann.

Nigra. Caput valde punctatum. Antennæ fusco-nigræ. Prothorax niger, punctis validis impressis, præsertim in parte antica, punctoque majori utrinque in medio lateris paullo intus marginem; disco longitudinaliter impresso rufo. Scutellum rufum. Elytra nitida, punctis parum distinctis in striis dispositis; obscure rufa, disco paullo pallidiori, singulo inter medium et scutellum maculis duabus ovalibus magnitudine inæqualibus fulvis nigro-cinctis. Corpus infra nigro-fuscum, fulvo-pilosum.

Sp. 7. *Parastasia binotata*, Westw.

Nigra, elytrorum singulo macula magna prope scutellum fulva.

Long. corp. lin. $8\frac{1}{2}$.

Habitat in insula Java.

In Mus. DD. Melly and Curtis.

Nigra. Caput punctatissimum. Prothorax minus punctatum, præsertim in parte postica nitidiori, puncto majori impresso utrinque versus medium marginis lateralis. Elytra nitidissima nigra, macula magna rotundata ad basin singuli prope scutellum, fulva. Podex tenuissime strigosus et punctatus. Antennæ articulis mediis piceis. Corpus subtus, præsertim thorace, fulvo-pilosum.

Sp. 8. *Parastasia Horsfieldii*, Westw.

Nigra, elytris postice piceis.

Long. corp. lin. $9\frac{1}{2}$, lat. elytr. lin. $5\frac{1}{2}$.

Habitat in insula Java. D. Horsfield.

In Mus. Soc. Merc. Ind. Orient. Londini.

Tota nigra, nitidissima. Caput punctatum, punctis in parte antica majoribus et subconfluentibus, clypeo acute bifido

mandibulisque acutis et valde prominentibus. Pars postica capitis lævis. Prothorax tenuissime punctatus, antice et ad angulos posticos punctis numerosioribus; marginibus lateralibus in medio angulariter prominentibus, puncto magno impresso, intus marginem angulisque posticis subacutis punctisque duobus minoribus impressis. Elytra nitidissima, postice piceo-tincta, lævissima. Podex punctatissimus. Corpus infra griseo-pilosum. Pedes nigri, tarsis anticis brevissimis.

Sp. 9. *Parastasia bicolor*, Westw.

Nigra, prothorace miniato.

Long. corp. lin. 6, lat. elytr. lin. 3.

Habitat in insula Java. D. Horsfield.

In Mus. Soc. Merc. Ind. Orient. Londini.

Caput nigrum, clypeus in cornubus duobus conicis brevissimis erectis elevatus; caput antice fortiter punctatum, parte postica lævi. Antennæ et trophi picei. Mandibulæ minus prominentes. Prothorax lateribus rotundatis; miniatus, nitidissimus, convexus, tenuissime punctatus, puncto majori utrinque in medio lateris alteroque minori versus angulos posticos rotundatos. Elytra nigra, nitidissima, sub lente striis numerosis punctorum minorum, punctisque alteris sparsis. Abdomen segmento penultimo nigro, ultimo fulvo nitido, tenuiter punctato. Pedes nigri, basi picei. Prothorax infra piceo-rufus. Corpus infra nigrum, pilis brevibus fulvis, segmentis terminalibus fulvis.

Sp. 10. *Parastasia Westwoodii*, Burm. MS.

(Pl. VI. fig. 1.)

Piceo-brunnea, sordide opaca, thorace utrinque plagis obliquis fasciâque obscurâ in medio elytrorum nigris, antennarum basi, femoribus tibiisque lucidioribus.

Long. corp. lin. $5\frac{3}{4}$.

Habitat in insula Sumatra. D. Raffles.

Mus. Soc. Zool. Lond.

Caput brunneo-fuscum, valde punctatum; clypeo antice in angulos duos acutos subrecurvos producto, mandibulis parum prominulis. Antennæ ferruginæ, clava obscura, pronotum opacum, punctatissimum, piceo-brunneum, linea tenui longitudinali dorsali fulvescenti, postice parum dilatata, utrinque striga nigra ex angulis anticis pronoti, fere ad basin scutelli ducta, marginata; striga altera obliqua utrinque e

medio lateris et cum apice strigæ prædictæ connexa ; versus medium marginis lateralis utrinque punctum magnum adest. Elytra prothorace vix latiora, obscura, brunneo-picea, fascia media indistincta nigricanti notata, valde punctata, punctis in utroque elytro strias vix regulares circiter 16 formantibus ; podex tenue setosus. Corpus subtus nigricans, prosterno pedibusque rufescentibus, tarsis obscurioribus ♂.

Obs.—One of the maxillæ has four teeth, two being intermediate and of equal size, the lower tooth being scarcely trifid ; while the other maxilla has only one intermediate tooth, the inferior tooth being more strongly trifid.

This description is derived from a single specimen in the Collection of the Zoological Society, which was examined by Dr. Burmeister, who applied to it the name of *Hyppothetis Westwoodii*. Not having seen this insect until several months after Dr. Burmeister had left England, I was not aware that a generic name had been given by that author, and as in the interim an account of this paper had appeared in print, I have not thought it necessary to reject the name which I had myself given to it, upon a suggestion from Dr. Burmeister himself.

POSTSCRIPT.—Since the preceding paper was read some additions have been made to our knowledge of the genus *Parastasia*.

M. Guérin-Meneville, in the Zoological Supplement to M. Delessert's "Souvenirs d'un Voyage dans l'Inde," has described a species of *Parastasia* under the name of

Sp. xi. *Parastasia obscura*, G.-M., in Op. cit. p. 39, and Pl. XI. fig. 1.

"Nigra, punctata, scutello, elytris basi et margine exteriori fusco-fulvis, femoribus apice tibiis tarsisque fusco-fulvescentibus.

"Long. 12, larg. 7 millim.

"Habitat Pulo Penang."

As the specimen described by M. Guérin possesses simple and equal sized ungues in the anterior fore feet, it is evidently a female, that sex being distinguished by that character from the males ; the subgeneric name of *Carterosoma*, therefore, proposed by M. Guérin-Meneville for his insect, must be abandoned.

Dr. Burmeister has also described an additional species in his "Handbuch der Entomologie," under the name of

Sp. xii. *P. femorata*, Burm. in Op. cit. vol. iv. p. 375.

"Nigra, nitida, antennarum basi, femorum medio tibiisque intus fulvis.

"Long. 4''' ♂.

"Habitat in insula Java."

Professor Erichson has also favoured me with the following descriptions of three species of the genus, contained in the Royal Museum of Berlin.

"Sp. xiii. *Parastasia scutellaris*, Erichson in litt.

"Supra lutea, capite scutelloque nigris, infra nigra, abdominis lateribus luteis.

"Long. 7 lin.

"Caput punctulatum, inter oculos carina sinuata interceptum, apice bidentatum, nigrum, nitidum. Antennæ nigræ, clava oblonga. Thorax leviter convexus, testaceo-luteus, nitidus, sparsim subtiliter punctatus. Scutellum nigrum, nitidum, parce subtilissimeque punctulatum. Elytra striatim punctata, substriata, lutea. Abdomen supra et lateribus testaceum, ventre nigro. Pectus et pedes nigra, coxis posticis testaceis. Metasterni mucro brevis, triangularis.

"Habitat in ins. Riouw, prope Sumatram.

"Mus. Reg. Berolin.

"Sp. xiv. *Parastasia dimidiata*, Erichson in litt.

"Nigra, nitida, elytris postice luteis, pygidio rufo.

"Long. 4½ lin.

"Nigra, nitida. Caput lineis undulatis rugulosum, antice transversum bituberculatum, apice bicuspidatum, cuspidibus compressis recurvis. Thorax gibbus, antice transversim rugosus, disco posteriore lævi. Scutellum læve. Elytra punctato-striata, medio subimpressa, postice late testacea. Pygidium rufum. Metasterni mucro elongatus, acutus, leviter incurvus.

"Habitat in ins. Riouw, prope Sumatram.

"Mus. Reg. Berolin.

"Sp. xv. *Parastasia nitidula*, Erichson in litt.

"Nigra, nitida, elytris fusco-æneis, politis.

"Long. 4 lin.

"Nigra, nitida. Caput undulato-strigosum, antice tuberculo compresso armatum, antice bicuspidatum, cuspidibus compres-

sis, acutis, subrecurvis. Thorax gibbulus, antice et lateribus punctatus, disco posteriore lævigato. Scutellum lævigatum. Elytra fusco-ænea, polita, striato-punctata, striis postice abbreviatis, ante medium transversim impressa. Pygidium convexum, transversim rugosum. Metasterni mucro elongatus, acutus, incurvus.

“Habitat in ins. Bintam, prope Sumatram.

“Mus. Reg. Berolin.

“Omnes sunt genuinæ *Parastasiæ*, neque ad *Barymorpham* Guér. referendæ.”

M. Guérin-Meneville, in the work quoted above, has also described an insect closely allied to *Parastasia*, possessing however simple and equal claws to all the tarsi. The following are the characters of this section or subgenus.

BARYMORPHA, Guérin.

“Corps court, épais, presque globuleux. Chaperon bidenté, à dents relevées. Antennes de dix articles. Mandibules à sommet bilobé. Machoires armées de six fortes dents ou épines arquées. Pattes courtes, jambes antérieures épaissées, un peu aplaties, armées de trois dents à l’extrémité. Tarses courts, assez grêles, à dernier article beaucoup plus court que les quatre précédents, avec les crochets plus courts que cet article, egaux arqués et simples.”

Sp. 1, (xvi.) *Barymorpha bimaculata*, Guérin, in Op. cit. p. 41, Tab. XI. fig. 2.

“Rufo-castanea, capite nigro; thorace maculis duabus nigris notato; elytris flavo-nebulosis; pygidio nigro rufoque variegato.

“Long. 10, larg. 10 mill.

“Habitat Pulo Penang.”

Professor Burmeister has adopted this group as a second section in the genus *Parastasia*, and has added the description of another species.

Sp. 2, (xvii.) *Parastasia (Barymorpha) melanocephala*, Burm. in Op. cit. p. 377.

“Rufo-castanea, nitidissima, capite nigro.

“Long. 8” ♀.

“Habitat in insula Java.”

XXI. *Descriptions of some new Species of Coleoptera from Adelaide in New Holland. By the Rev. F. W. HOPE, F.R.S., President of the Entomological Society, &c.*

[Read 6th June, 1842.]

HAVING lately received through the post office a small collection of insects forwarded to this country from Adelaide in New Holland by one of the members of this Society, Mr. Fortnum, I describe the following species, prefacing the descriptions with the following extracts from Mr. Fortnum's letter, dated from that settlement on 10th August, 1841:—

“ From what little observations I have made of the Entomology of this country, it is very singular: the great scarcity of all forms of predaceous land beetles, those few that are found being chiefly under the loose bark of trees; a large black species is found under dung, logs, &c.: in fact *Coleoptera* generally are far from abundant: the most conspicuous and numerous insects being the ants, which appear to me in a great measure to replace the predaceous *Coleoptera*. I send you a species, which will give some idea of their powers; it stings with as much severity as the common wasp with you. The number of ants is surprising, and the great variety of forms among them is equally so. I have observed at least thirty species. The aquatics appear more numerous. The *Hydröus* (?) sent is from the salt (sea) water creek of the port; the others from fresh water holes inland. *Staphilinidæ* are rare. Of *Buprestidæ* I have only seen those sent. The *Onthophagus* is the only one I have seen; one individual was taken flying round human fæces: the *Hister* also. I send you all the *Lamellicornes* I have as yet observed. The same is to be said of the *Longicornes*, with the exception of a fine *Prionus*, which would have taken too much room. The little *Cassida* was found under the bark of the pine (*Callitris*). I think also that the numerous species of spiders, found here in every situation, perform in a great measure the part of the predaceous beetles. I have done as little in *Orthoptera* as in *Coleoptera*. There is a species of *Forficula*. Of *Blatta* there are a great number; of *Mantis* some interesting small forms, the males winged, ♀ apterous; of *Phasma* a fine species, near *Phyllium*; but I have seen few species. I have the larva of an *Xya* from the bed of a creek, and two fine species of *Gryllacris*. On my first arrival I observed an individual of *Mantispa*, which unfortunately evaded me; but I

am certain of its form, for I observed it on a leaf, and was particularly noticing a peculiar motion of its raptorial legs, when it suddenly darted off. I am thus particular in my mention of it, from a passage I happened to open upon in Mr. Swainson's volume on the Insects (Lardner's Cyclopaedia), which I have just received, and in which it says, 'of *Mantispa* the greatest number of species appears to occur in America, although it is found all over the world, *excepting New Holland*.' I have two species of *Myrmeleon*. In the other orders only a few straggling species, none of any remarkable forms. I have also three species of scorpions. I trust that as soon as I become settled I shall not only be enabled to collect the specimens, but also to make some observations on their habits, &c., and also to be enabled to collect the animals, birds, plants, &c. of this fine country. The animals here evidently possess much interest. I have an apparently new species of *Jerboa* (*Dipus*), totally different from that obtained by Major Mitchell, and figured in his narrative; mine is fully twice the size. The birds, too, present great variety and beauty. The reptiles are very numerous; I know about twenty species of lizards.

"The voyage out here was very pleasant. Nothing of particular interest occurred, except that when off the coast of Africa, about 300 miles from land, (Monday, 7th September, 1840,) a butterfly visited us; it looked like a fritillary, but we could not catch it. Long. $21^{\circ} 25' W.$, lat. $24^{\circ} 54' N.$ Again, on Sunday the 13th, long. $25^{\circ} 34' 30''$, lat. $12^{\circ} 15'$, three dragon flies, apparently true *Libellulæ*, with red abdomens, hovered about us, and I caught a *Noctua* off one of the sails; and the next day the dragon flies were still with us, and another butterfly, flying like *Vanessa*.

"I arrived on the 13th of December, after a passage of four months and a week: we did not touch anywhere on the voyage. I am happy to say my collection of *Orthoptera*, which I brought here, arrived perfectly safe. This is certainly a beautiful country; the plains about Adelaide are now looking like a park; in the summer (December, January, &c.) they are parched with the heat of the sun: a few days after my arrival the thermometer stood at 110° under a verandah in the town. The scenery up the hills of the Mount Lofty range, where I at present am living, is very beautiful, and has the advantage of being cooler in the summer than the plains. Yesterday (9th August) it snowed a little, and people were all complaining of the 'intense cold.' But how comparative our feelings are! when the thermometer here stands at from 45° @ 50° every one complains of the cold, and great coats

are in demand. The land about Adelaide is very fertile, and the wheat, &c. everywhere looks excellent, and abundant crops are expected."

Fam. BUPRESTIDÆ.

Sp. 1. *Stigmodera Fortnumi*.

Violacea, capite viridi, thorace punctulato, lateribus flavo-marginatis, medio purpurascenti. Elytra violacea, striato-punctata, ternisque latis fasciis flavis insignita. Corpus infra viride, lateribus thoracis, pectore segmentisque abdominis utrinque flavo notatis. Pedes virides.

Long. lin. 18, lat. lin. 8.

This magnificent species I name in honour of Mr. Fortnum, one of the most zealous Entomologists of this Society. His ardour in the pursuit of science induced him to visit the Australian continent, if I may so call it, and I am happy to say that his expectations have been in no way disappointed, as far as regards Zoology. To his exertions many naturalists are greatly indebted, and much may be expected from him. The above insect was taken at the new settlement named Adelaide.

Sp. 2. *Conognatha Bremeri*.

Nigra, capite fere trigono æneo, medio fortiter impresso. Thorax bronzeus, marginibus externis subimpressis, disco punctatissimo, lineâ longitudinali medio vix impressâ, fovea utrinque fortiter insculpta. Elytra nigra, binis fasciis rubris, lateribus externis anticè concoloribus. Corpus infra æneum et nitidum, pedibus concoloribus et punctatis.

Long. lin. 9, lat. lin. $3\frac{1}{2}$.

This beautiful species I name in honour of the Marquis de Breme, the author of several interesting Entomological treatises.

Sp. 3. *Conognatha coccinata*, Hope.

Coccinea, capite viride, antennisque concoloribus. Thorax lætè miniatus punctatus, maculisque ternis viridibus insignitus, binis externis minutis, medioque majori fere rotundato. Elytra coccinea, tribus fasciis lætè viridibus ornata, prima basale, duobus aliis fere apicalibus, viridi maculâ in singulo elytrorum inter basalem fasciam et apicales valdè conspicuâ. Corpus infra sanguineum, pectore segmentisque abdominis utrinque viridi-maculatis, pedibus concoloribus.

Long. lin. $5\frac{1}{4}$; lat. lin. 2.

Sp. 4. *Stigmodera Parryi*.

Nigra, capite anticè argenteo, antennis æneis, serratis. Thorax niger, punctatus. Elytra miniata, ad basin maculis ternis atris insignita, binis externe humeralibus et elongatis, tertioque infra scutellum posito, fere rotundato. Circa medium disci semicircularis macula ad suturam globum atrum format, apex elytrorum ater est et subbidentatus. Corpus infra chalybeo-æneum et punctatum, pedibus concoloribus.

Long. lin. $3\frac{1}{2}$, lat. lin. 1.

In Mus. Dom. Hope.

Sp. 5. *Stigmodera Guérinii*.

Violacea, thorace nigro, marginibus auratis. Elytra anticè et posticè nigro-violacea, in medio fasciâ latâ flavâ insignitâ. Corpus infra lætè violaceum, pedibus concoloribus.

Long. lin. 3, lat. lin. $1\frac{1}{4}$.

This elegant little *Buprestis* I have named in honour of Monsieur Guérin, the editor of the "Revue Zoologique" and other important Entomological works.

Fam. CANTHARIDÆ.

TMESIDERA, Westwood.

Sp. 6. *Tmesidera violacea*, Hope.

Violacea, capite nigro nitido, antennis concoloribus. Thorax niger, antice capite latior, angulis anticis rotundatis, posticis fere rectis. Dorsum lineâ longitudinale foveâque utrinque fortiter impressa insignitum. Elytra violacea, variolosorugosa. Corpus infra rubrum. Pedes antiqui nigri, quatuor postici concolores, femoribus rubris exceptis.

Long. lin. $5\frac{1}{4}$, lat. lin. $1\frac{3}{4}$.

Sp. 7. *Tmesidera assimilis*.

Nigra, antennis pedibusque concoloribus et nitidis. Thorax vix impressus. Elytra rubro-testacea, lineis parum elevatis.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{4}$.

The present insect closely approaches the type of the genus; it differs considerably in magnitude, and in many points cannot be compared with *rufipennis*. It inhabits Western Australia.

Sp. 8. *Tmesidera rubricollis*.

Nigra, thorace rubro, elytris atris subrugosis, pedibusque concoloribus. Corpus infra nigrum.

Long. lin. 3, lat. lin. 1.

I am aware of three other species of the above genus, but am unable to describe them, from the imperfect state in which they reached this country.

Fam. CARABIDÆ.

Sp. 9. *Calosoma Curtisii*.

Viride, thorace fere glabro, posticè fortiter impresso, elytris striato-punctatis et rugosis, punctisque impressis, in triplici serie ordinatis. Corpus infra piceo-castaneum, viridique colore tinctum; pedibus antennisque piceis, femoribus punctulatis.

Long. lin. 10, lat. lin. 4.

This singular insect was sent to me by Mr. W. Sharpe MacLeay. It is well figured by the late excellent artist Mr. C. Curtis; and I have much pleasure in naming it after that unobtrusive individual; hoping that his name will not be forgotten as an artist or as an Entomologist.

Sp. 10. *Calosoma Australe*.

Nigro-æneum, palpis articulisque quatuor primis antennarum piceis, reliquis flavo-piceis et tomentosis. Thorax subcordatus punctulatus, posticè utrinque fortiter impressus. Elytra nigro-ænea confertim punctato-striata, punctis subæneis in triplici serie ordinatis. Corpus infra nigro-piceum, pedibus concoloribus, tibiisque subciliatis.

Long. lin. 10, lat. lin. $3\frac{1}{2}$.

Fam. HETEROMORPHIDÆ, Hope.

SILPHOMORPHA, Westwood.

Sp. 11. *Silphomorpha Orectocheiloides*, Hope.

Totum corpus supra nigro-piceum, lateribus thoracis marginibusque elytrorum pallidioribus, infra brunneo-piceum, antennis pedibusque concoloribus.

Long. lin. $6\frac{1}{4}$, lat. lin. $2\frac{1}{4}$.

The above insect is from Adelaide.

ADELOTOPUS, Hope.

Sp. 12. *Adelotopus Fortnumi*, Hope.

Niger, marginibus lateralibus thoracis piceis, palpis ferrugineis.

Corpus infra atro-piceum, segmentis abdominis posticè brunneo-piceis, pedibus concoloribus.

Long. lin. $3\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Habitat circa Adelaida.

ACINOPUS, Ziegler.

Sp. 13. *Acinopus Australis*, Hope.

Niger, marginibus externis thoracis posticè lætè cupreis. Thorax magnus, transverse subrugosus. Elytra fere glabra, marginibus subæneis et punctatis. Corpus infra nigrum, femoribus posticis parum incrassatis.

Long. lin. 9, lat. lin. $2\frac{1}{2}$.

This singular insect is closely allied to *Acinopus* of Ziegler, in which it accords in its most essential characters. I know of no species however with the elytra smooth; the posterior thighs also are more incrassated than in *Acinopus*, it will therefore probably in future be formed into a subgenus.

Fam. BYRRHIDÆ.

Sp. 14. *Anthremis Australis*.

Niger, capite atro, thorace medio concolori, marginibus externis albis, elytris tribus fasciis undatis albis, corpus infra nigrum.

Long. lin. $1\frac{1}{4}$, lat. lin. $\frac{1}{2}$.

Fam. MELYRIDÆ.

Sp. 15. *Dasytes nigricans*, Hope.

Ater, pubescens, thorace longioribus capillis obsito. Elytra atra brunnea, marginibus externis pallidioribus.

Long. lin. $1\frac{3}{4}$, lat. lin. $\frac{3}{4}$.

Habitat in Adelaida.

Sp. 16. *Dasytes fuscipennis*.

Ater, antennis rubris, thorace pubescenti nigro. Elytra fusco-testacea punctata, pedibus concoloribus.

Long. lin. $1\frac{3}{4}$, lat. lin. $\frac{3}{4}$.

Fam. PSELAPHIDÆ.

ARTICERUS, Dalman.

Sp. 17. *Articerus Fortnumi*.

Sanguineus, capite elongato ovato, fronte rotundato. Thorax fere quadratus, angulis anticis rotundatis medio impressus. Elytra thorace latiora, marginibus posticis nigricantibus. Abdomen posticè rotundatum, utrinque maculâ nigrâ insignitum; pedibus robustis et incrassatis.

Long. lin. $\frac{1}{2}$, lat. lin. $\frac{1}{4}$.

I believe this is the first time that *Articerus* has been taken in a recent state: the species described by Dalman was found either in resin or amber. I am inclined to consider it as belonging to the resins, and that it could not be found in amber. The above species is named in honour of our fellow Entomologist, Mr. Fortnum, now actively collecting for us at the Adelaide settlement. It was found in the nest of a species of ant which is unknown to us.

Fam. TENEBRIONIDÆ.

TRIGONOTARSUS,* Hope.

Novum genus forma fere orbicularis. *Cælo* affinis *Escholtzii*. *Antennæ* 11-articulatæ, extrorsum magnitudine incretentes, ternis ultimis majoribus. *Caput* clypeo integro, ultimo articulo palporum cylindrico, apice acuto præcedenti majori. *Thorax* anticè emarginatus, scutellum nullum. *Elytra* posticè acuminata. *Tibiæ* anticæ trigonæ, externèque dentatæ, reliquæ simplices.

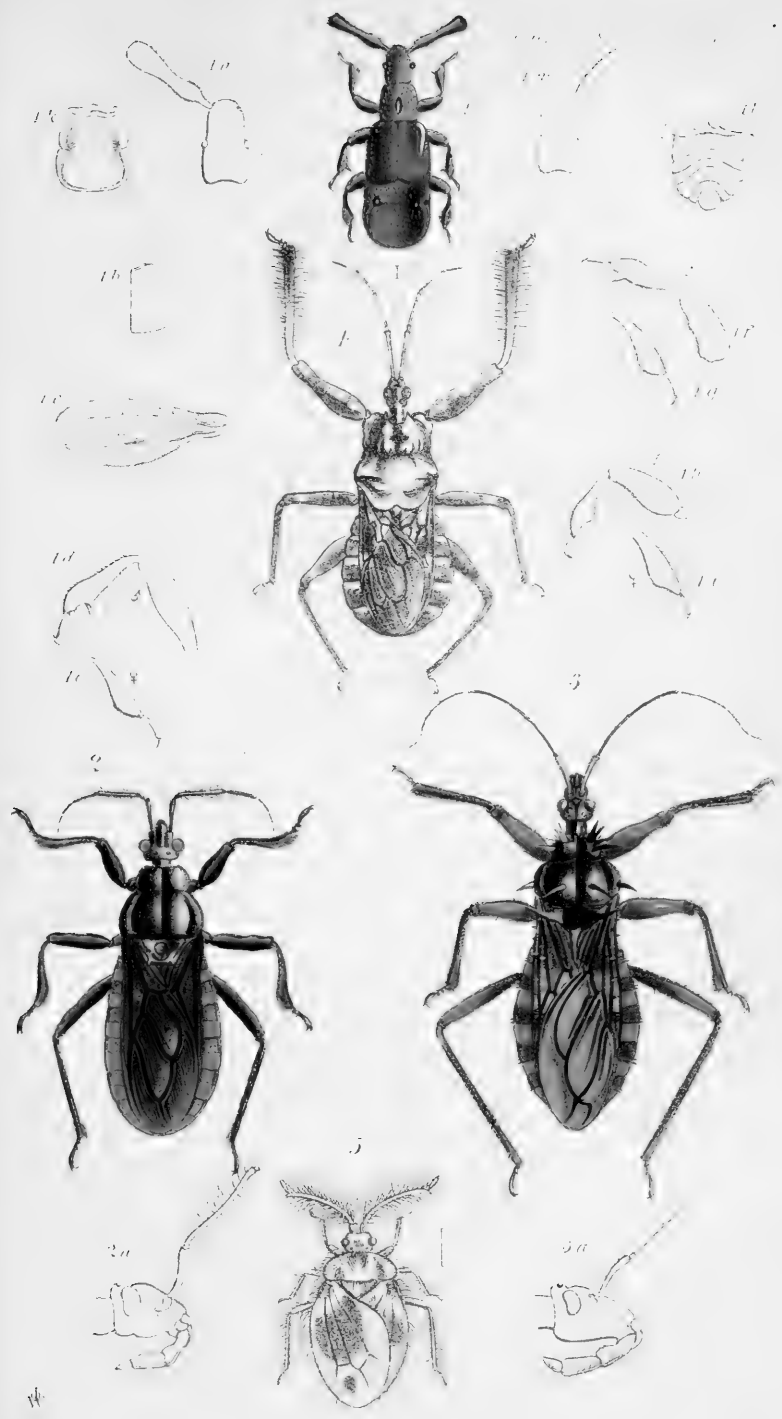
Sp. 18. *Trigonotarsus Australis*, Hope.

Fuscus, antennis apice piceis, thorace piloso, elytrisque concoloribus. Corpus infra squalidum et tomentosum; tibiis anticis rubris, antrorsum trigonis, externè dentatis, dente majori in medio posito.

Long. lin. $2\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

I have thought proper to make the above insect the type of a new genus; it approaches nearly to *Cælus* of Escholtz. As it is my intention to figure it shortly, I pass on to other *Heteromera* of New Holland.

* Τριγωνος, triangular—ταρσος, tarsus—*Trigonotarsus*.





Sp. 19. *Tagenia funerosa*, Hope.

Nigra, antennis pilosis, capite anticè depresso, thorace parum convexo, elytris striato-punctatis et hirsutis, pedibusque nigris.

Long. lin. 2, lat. lin. $\frac{1}{2}$.

This insect inhabits Van Diemen's Land.

Sp. 20. *Tagenia leucospila*, Hope.

Nigra, antennis incrassatis et pilosis, capite punctato albisque capillis asperso. Thorax transversè impressus et punctulatus.

Elytra fortiter punctata, punctis duplici serie signatis lineisque aliquot elevatis pilosis, variisque maculis albis pilosis per discum aspersis, pedibusque nigris.

Long. lin. 2, lat. lin. $\frac{1}{2}$.

This species occurs at Port Essington and at the Swan River, and I believe also in Van Diemen's Land.

Sp. 21. *Platynotus insularis*, Hope.

Niger, capite fere quadrato, thorace glabrato, postice angulato, marginibus elevatis. Elytra excavato-punctata, apicibus subacutiusculis. Corpus infra nigrum, tarsis piceis.

Long. lin. 7, lat. lin. 3.

I have received this insect from Melville Island, and have named it in my cabinet as *insularis*; a very minute specimen has reached me also from Port Essington.

Sp. 22. *Opatrum sphæroides*, Hope.

Nigrum, clypeo emarginato, antennis ultimis articulis incrementibus et piceis. Thorax punctulatus, elytris rugosis, subtuberculato-pilosis. Corpus infra nigrum, pedibus concoloribus, tarsis exceptis piceis.

Long. lin. $2\frac{1}{4}$, lat. lin. $1\frac{3}{4}$.

Sp. 23. *Isopteron opatroides*, Hope.

Fuscum, antennis rubro-piceis, thorace angulis anticis subacutis, posticis fere rectis. Elytra striato-punctata. Corpus infra atrum punctatum, femoribus et tibiis concoloribus, tarsisque piceis.

Long. lin. 4, lat. lin. $1\frac{1}{4}$.

Habitat in Western Australia.

Sp. 24. *Opatrum piceitarsis*, Hope.

Fuscum, capite anticè impresso, antennis piceis. Thorax fere quadratus, angulis anticis parum productis et acutis, posticis vix rectis. Elytra striato-punctata, thorace triplo longiora. Corpus infra fusco-griseum, femoribus et tibiis concoloribus, tarsisque piceis.

Long. lin. $3\frac{3}{4}$, lat. lin. 1.

Sp. 25. *Asida serricollis*, Hope.

Nigra, antennis tarsisque piceis, thorace valdè emarginato, lateribusque externè serratis. Elytra aliquot lineis minutis punctisque elevatis per totum discum aspersis. Corpus infra concolor, tarsis exceptis piceis.

Long. lin. $4\frac{1}{2}$, lat. lin. 2.

Sp. 26. *Endophlæus Australis*, Hope.

Flavo-brunneus, antennis nigricantibus pilosis. Thorax angulis anticis parum productis, posticis rectè acutis, disco lineâ longitudinali maculâ utrinque nigricanti insignito. Elytra flavo brunneoque colore variegata. Corpus infra concolor, tarsis infra flavo-comatis.

Long. lin. $3\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Sp. 27. *Endophlæus variicornis*, Hope.

Niger, antennis atris, articulis quibusdam flavis et pilosis, capite atro nitido. Thorax excavatus, anticè niger, posticè flavus, maculis duabus atro-pilosis ante scutellum positis. Scutellum flavum. Elytra sulcata, lineato-punctata, flavo brunneoque colore variegata. Corpus infra griseo-flavum.

Long. lin. $2\frac{1}{2}$, lat. lin. 1.

I received the above from the vicinity of Adelaide.

Fam. DIAPERIDÆ.

Sp. 28. *Neomida tetraspilota*, Hope.

Atra, capite anticè rubro, thorace nigro et nitido. Elytra concolora, quatuor maculis rubris insignita, binæ ad humeros binæque aliæ ad apicem positæ. Corpus infra nigrum, pectore utrinque rufescenti, pedibusque rubris.

Long. lin. $1\frac{3}{4}$, lat. lin. $\frac{1}{2}$.

Sp. 29. *Tetraphyllus sumptuosus*, Hope.

Violaceus, antennis concoloribus, thorace anticè posticèque cyaneo, lateribus auratis. Elytra striato-punctata, binis fasciis auratis insignita apicibusque concoloribus, medio disci lætè violaceo maculisque duabus cyaneis ante apicem positis. Corpus infra abdomine violaceo, pectore femoribusque auratis tibiisque cyaneis.

Long. lin. $2\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Sp. 30. *Cnodulon longipennis*, Hope.

Affine *Cupreo*, Fab. Oblongum, thorace atro, elytris viridi-purpurascens, striato-punctatis, punctis minutis; corpore infra atro et nitido.

Long. lin. $7\frac{1}{2}$, lat. lin. $3\frac{1}{2}$.

Sp. 31. *Cnodulon cupripennis*, Hope.

Oblongum, thorace atro-æneo, subtilissimè punctulato, antennis nigris. Elytra cupreo-ænea, vix sub lente striato-punctata, punctis sparsim aspersis. Corpus infra nigrum.

Long. lin. $6\frac{1}{2}$, lat. lin. $3\frac{1}{4}$.

Sp. 32. *Cnodulon cupricolle*, Hope.

Oblongum, thorace rosi-cupreo glabro, antennis atris. Elytra olivaceo-viridia lineato-punctata, punctis minutis. Corpus infra nigrum.

Long. lin. $5\frac{1}{2}$, lat. lin. $2\frac{1}{2}$.

The above insect inhabits Melville Island.

Sp. 33. *Cnodulon puncticolle*.

Oblongum, thorace atro punctulato, elytris cupreo-æneis sulcato-punctatis, sulcis fortiter punctatis, punctis inter strias minutis. Corpus infra nigrum et nitidum.

Long. lin. 6, lat. lin. 3.

Sp. 34. *Cnodulon sulcipennis*, Hope.

Oblongum, thorace atro glabro, elytris cupreo-æneis sulcato-punctatis, sulcis fortiter impressis, interstitiis striarum lævibus; corpore infra nigro et nitido.

Long. lin. $4\frac{1}{2}$, lat. lin. 2.

Sp. 35. *Cnodulon picicorne*.

Oblongum, thorace atro antennisque piceis. Elytra cupreo-ænea, purpurascentia, striato-punctata. Corpus infra nigrum, femoribus concoloribus, tibiis tarsisque brunneo-piceis.

Long. lin. 4, lat. lin. $1\frac{3}{4}$.

Sp. 36. *Cnodulon cyanipennis*, Hope.

Oblongum, thorace trapezoidali nigro, anticè contracto, posticè dilatato. Elytra lætè cyanea, striato-punctata. Corpus infra nigrum, pedibus antennisque concoloribus, antennis quatuor ultimis articulis magnitudine increscentibus; tarsis infra flavo-comatis.

Long. lin. 6, lat. lin. 2.

This insect, from the shape of the thorax, ought to be separated from *Cnodulon*.

Sp. 37. *Cnodulon anthracinum*, Hope.

Atrum, præcedenti affini. Caput fere quadratum, antennis palpisque piceis. Thorax glaber, elytris striato-punctatis; corpore infra concolore et nitido.

Long. lin. 4, lat. lin. $1\frac{3}{4}$.

I possess about ten other specimens of *Cnodulon*, which are undescribed. It appears that there are two, if not three, subgenera included at present amongst the New Holland insects ranked as *Cnodulon*.

Fam. TENEBRIONIDÆ.

Sp. 38. *Tenebrio longipennis*.

Niger, thorace fere quadrato, angulis anticis rotundatis, posticis acutis et denticulatis; elytris striato-punctatis, nitidis, atris; corpore infra pedibusque concoloribus.

Long. lin. 8, lat. lin. 2.

Sp. 39. *Tenebrio convexiusculus*, Hope.

Niger, præcedenti affinis, at minor; thorace convexiori; elytris fortissime punctatis, punctisque majoribus valde impressis.

Long. lin. 6, lat. lin. $1\frac{1}{2}$.

Sp. 40. *Tenebrio cyanipennis*, Hope.

Ater, antennis brunneo-piceis, thorace nigro-violaceo, fere glabro; elytris striato-punctatis et cyaneis. Corpus infra nigrum, femoribus et tibiis piceis, tarsisque infra flavo-comatis. Long. lin. $5\frac{3}{4}$, lat. lin. $1\frac{1}{2}$.

Fam. HELOPIDÆ.

Sp. 41. *Helops latipennis*, Hope.

Nigro-chalybeus, thorace fere quadrato, depresso et punctato; antennis atris, quatuor ultimis articulis piceis. Elytra thorace latiora, posticè parum dilatata, subtilissimè punctata et viridichalybea. Corpus infra nigrum, nitidum; femoribus, tibiis, palpisque piceis, tarsisque infra flavo-comatis. Long. lin. 10, lat. lin. 4.

Sp. 42. *Allecula pimeloides*, Hope.

Nigra, antennis piceo-tomentosis, thorace convexo, angulis anticis rotundatis. Elytra thorace triplo longiora, subacuminata, striato-punctata, striis haud fortiter impressis. Corpus infra nigrum, ultimo segmento abdominis in medio flavo-maculato. Long. lin. 8, lat. lin. $2\frac{1}{2}$.

Sp. 43. *Allecula omophiloides*, Hope.

Nigra, thorace depresso convexo, angulis posticis subacutis, lateribus medio dilatatis. Elytra striato-punctata, posticè valde dilatata. Corpus infra nigrum punctatum, tarsisque infra flavo-comatis. Long. lin. 6, lat. lin. 2.

Sp. 44. *Allecula melancholicha*, Hope.

Nigra, thorace fere rotundato, punctulato, elytrisque striato-punctatis, posticè gradatim dilatatis. Corpus infra nigrum. Long. lin. $5\frac{3}{4}$, lat. lin. $1\frac{1}{2}$.

Sp. 45. *Allecula canescens*, Hope.

Fusco-grisea, thorace albido-tomentoso; elytris striato-punctatis, fusco-cinerascentibus seu albidis capillis obsitis. Corpus infra concolor. Long. lin. 6, lat. lin. 2.

Sp. 46. *Allecula foveicollis*, Hope.

Picea, thorace glabro, foveâ impressâ rotundâ utrinque impressâ. Elytra striato-punctata picea, punctis fortiter insculptis. Corpus infra concolor, pedibus pallidioribus.
Long. lin. 5, lat. lin. $1\frac{1}{4}$.

Sp. 47. *Allecula Gouldii*.

Affinis precedenti, at minor. Picea, thorace glabro convexo, elytris parum pallidioribus, striato-punctatis, punctis leviter impressis. Corpus infra rubro-piceum.

Named in honour of Mr. Gould the Ornithologist.

Sp. 48. *Allecula nigricans*, Hope.

Atro-picea, thorace punctulato, elytris striato-punctatis, interstitiis striarum sparsim punctatis. Corpus infra piceum, pedibus concoloribus.

Long. lin. $4\frac{1}{2}$, lat. lin. 1.

This species was sent to me with the preceding, by Mr. Gould from Port Essington.

Fam. DYNASTIDÆ.

CORYNOPHYLLUS, Hope, n. g.

Corpus breve, crassum, convexum. *Caput* mediocre, vertice bituberculato, clypeo porrecto, apice emarginato. *Labrum* clypeo obtectum. *Mandibulæ* inermes, extus rotundatæ, clypeo haud obtectæ. *Maxillæ* elongatæ, lobo apicali brevissimo, longè ciliato. *Palpi* maxillares breviusculi crassi. *Mentum* elongato-conicum, apice rotundato, valde setosum. *Labium* haud visibile. *Palpi* labiales minuti, 3-articulati. *Antennæ* 10-articulatæ, articulis 4 et 5 minutis; tribus ultimis maximis flabellum curvatum efficientibus. *Prosternum* gracile, parvum, truncatum. *Tibiæ* 2 anticæ 3-dentatæ, 4 posticæ in medio spinosæ. *Tarsi* graciles.

Sp. 49. *Corynophyllus Fortnumi*, Hope. (Pl. VI. fig. 4.)

Niger, nitidus, fulvo-setosus, punctatissimus, antennis brunneofulvis, elytrisque castaneis, capitis vertice tuberculis duobus parvis, prothorace anticè retuso et longitudinaliter impresso, elytris rudè punctato-striatis.

Long. corp. lin. 7.

Fam. GEOTRUPIDÆ?

PHÆNOGNATHA, Hope.

Genus novum *Pachypo* affine, pedibus posticis longissimis. *Caput* in medio cornutum. *Labrum* porrectum, conicum. *Mandibulæ* exsertæ. *Antennæ* 9-articulatæ. *Maxillæ* lobis minutissimis. *Prothorax* anticè subretusus. *Elytra* conica, posticè valde attenuata. *Tarsi* gracillimi.

Sp. 50. *Phænognatha Erichsonii*, Hope.

Castaneo-fulva, capite unicorni, cornu nigro, posticè flavo tomentoso; thorace punctato, margine omni ciliato; elytris nigris, ad basin castaneis, striato-punctatis, punctis quasi erosis, corpore infra piloso; pedibus concoloribus et aurosetosis.

Long. corp. lin. 7 (nec 3), lat. lin. $2\frac{1}{2}$.

From Port Essington. Named in honour of Professor Erichson, who has figured some singular genera allied to *Pachypus* as well as to the above genus.

DESCRIPTION OF THE FIGURES.

Plate VI. fig. 4. *Corynophyllus Fortnumi*.

4 a, front of head; 4 b, ditto, with antenna from beneath; * labrum; † mandible; 4 c, maxilla; 4 d, mentum and labial palpi; 4 e, prosternum.

Plate VI. fig. 5. *Phænognatha Erichsonii*.

5 a, mandible; 5 b, maxilla; 5 c, mentum, labium, and labial palpi; 5 d, antenna.

Plate VII. fig. 1. *Articerus Fortnumi*.

1 a, head and basal joint of antenna; 1 b, elytron; 1 c, wing; 1 d, fore leg, male; 1 e, ditto, female; 1 f, middle leg, male; 1 g, ditto, female; 1 h, hind leg, male; 1 i, ditto, female; 1 k, abdomen from above; 1 l, ditto, from beneath; 1 m, head and basal joint of antenna, from a single specimen from the head of Gulf St. Vincent.

XXII. *Descriptions of some Coprophagous Lamellicorn Beetles from New Holland.* By J. O. WESTWOOD, F.L.S.

[Read 1st November, 1841.]

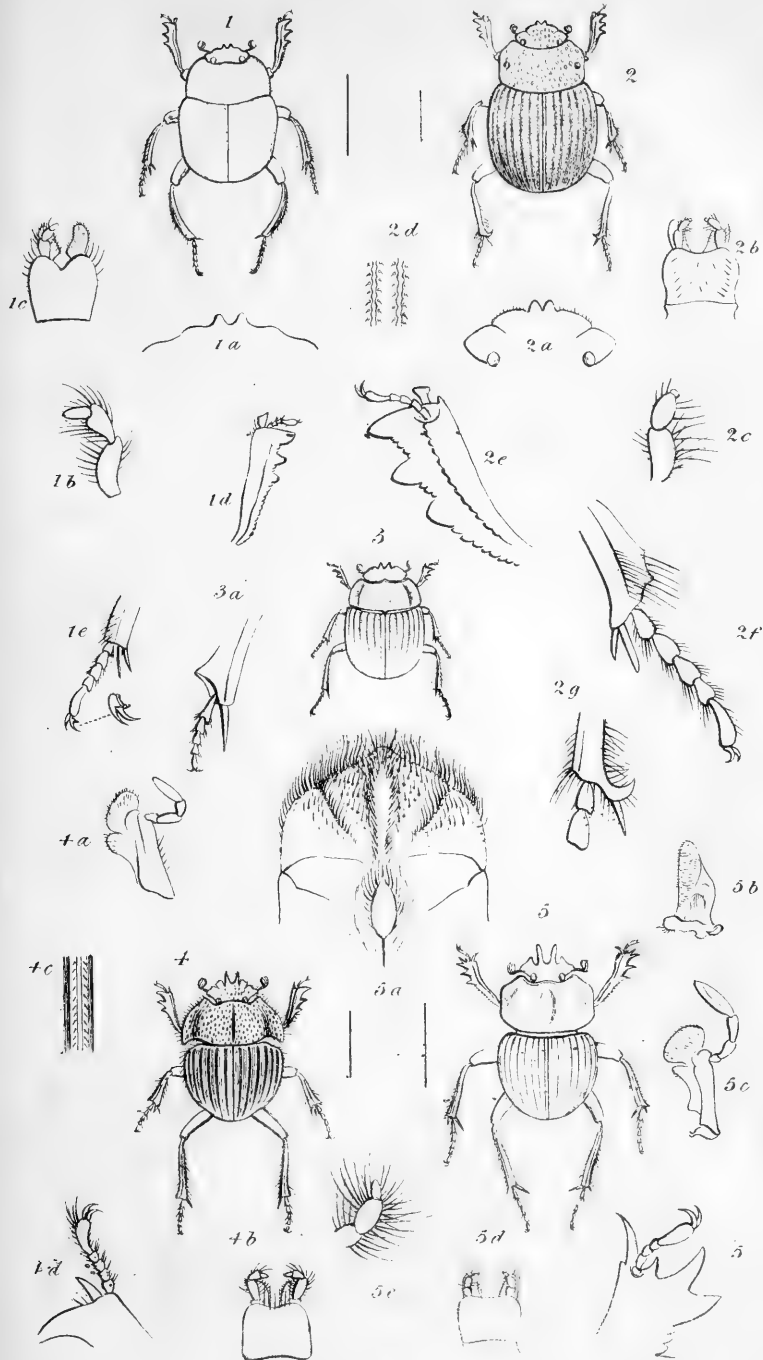
THE insects described below belong to that division of the family of the sacred beetles, (*Scarabæidæ*, MacLeay, *Ateuchites*, auct. al.) which is distinguished by having the head and thorax destitute of horns; the scutellum obsolete; the intermediate tibiæ with two spurs, and they, as well as the posterior tibiæ, not dilated into an elongated triangle at the tip, as in the *Coprides*.

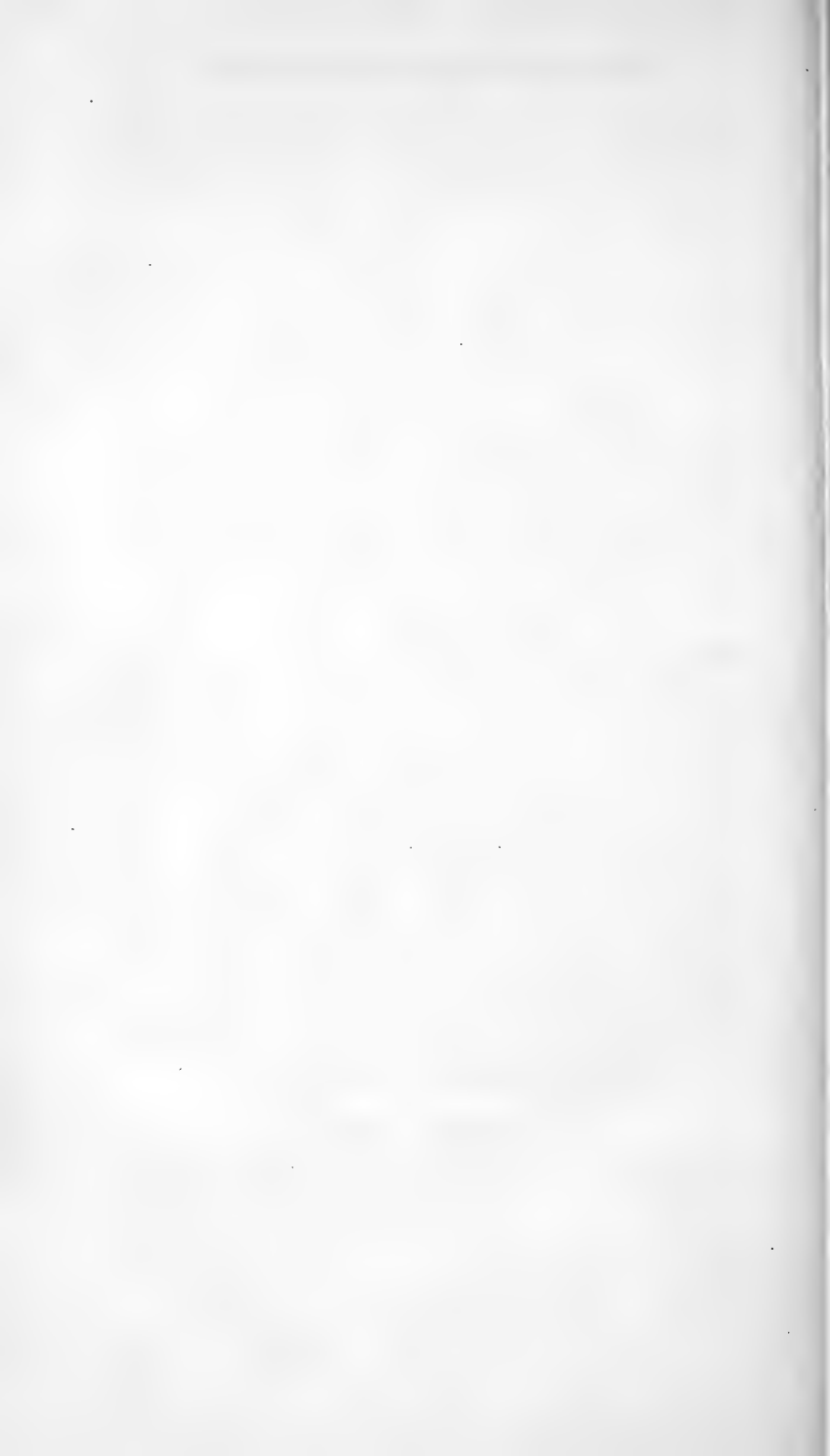
It is a remarkable peculiarity in Entomo-geography, that whilst the arid deserts of Africa produce great numbers of coprophagous *Scarabæidæ* of large size, New Holland is almost entirely destitute of these insects; and of these, the largest appears to be the

Circellium hæmisphericum, Péron, (Pl. VIII. fig. 3,) figured by Guérin in the "Iconographie du Règne Animal, Insectes," pl. 21, fig. 3, (and described in the texte, p. 76,) as $7\frac{1}{2}$ lines (15 millem.) long. This insect has been formed by Reiche into the genus *COPROECUS*, in the "Revue Zoologique, par la Société Cuvierrienne" for July in the present year (1841, p. 211).

M. Reiche, in his memoir on this group of insects, published since the above was written, states that in the specimen belonging to the Jardin des Plantes the antennæ and part of the trophi are wanting. His figure of the insect is much more elongate-oval than that of M. Guérin; it is, however, evidently not broad enough, according to the dimensions given by M. Reiche. This author has detected short but distinct tarsi in the fore feet, and a single spur at the extremity of the middle tibiæ. He has, however, represented the posterior tibiæ as terminating on the inside in an acute spine as long as the calcar; whereas M. Guérin figures it as truncated, obliquely emitting the calcar near the middle of the truncation: and he describes the elytra as very convex, with six elevated smooth costæ, each of which is accompanied on each side by a row of small punctures, in which respect it approaches *Tessarodon*, from which, however, it is separated by its possessing only one spur to the middle tibiæ.

Another species, remarkably distinct in having the hind angles of the thorax acute and prolonged backwards, and being $3\frac{1}{4}$ lines long, has been mistaken for the *Ateuchus Hollandiæ* of Fabricius, by Dejean, (who has formed it into the genus *AULACIUM*, adopted





by Reiche in the work above referred to,) whilst De Laporte formed it (with the same erroneous specific name) into his slightly characterized genus *Mentophilus* (Hist. Nat. An. art. Col. vol. ii. p. 74, pl. 4, fig. 4). Reiche has, however, proposed for it the specific name of *A. carinatum*. (Pl. VIII. fig. 4, and details.)

The real *Ateuchus Hollandiæ*, the original specimen of which, described by Fabricius from the Banksian Cabinet, I detected amongst the unarranged insects of that collection in the possession of the Linnæan Society, although still authenticated by the original label, has been formed by Mr. Hope into the genus *Tessarodon*, in his "Coleopterist's Manual," vol. i. p. 55; the insect itself being figured in his plate 3, fig. 15. More recently Mr. Hope has obtained two other species of the same genus from Australia, which have enabled me to give the following generic details; but as these insects absolutely disagree with the character expressed by the name *Tessarodon*, (having only two teeth in the front of the clypeus,) another name ought to be given to the genus.

TESSARODON, Hope, Reiche.

Corpus obovatum, subconvexum. *Caput* anticè in dentibus duobus triangularibus brevibus productum; angulis posticis posticè haud porrectis. *Mentum* subquadratum, anticè parum emarginatum. *Palpi* labiales breves, articulis duobus basalibus subæqualibus longe setosis, tertio (apicali) minimo. *Prothorax* rudè punctatus, lateribus in medio angulatis vel subangulatis, utrinque versus marginem profundè impressus. *Elytra* ovato-rotundata, tenuissimè striata, striis per paria ordinatis, singulo pari utrinque lineâ punctorum impressorum notato. *Pedes* longi. *Tibiæ* anticæ calcari brevi obliquè truncato instructæ; *tibiæ* intermediæ curvatæ depressæ, pone medium subdilatatæ, angulo apicali externo obliquè truncato, bicalcaratæ; *tibiæ* posticæ minus curvatæ, apice interno recurvo unicalcaratæ. *Tarsi* antichi brevissimi, articulo ultimo longo; *tarsi* 4 postici longiores, articulo 2^{do} præcedenti parum majori; unguibus parvis, valde curvatis.

Sp. 1. *Tessarodon Hollandiæ*.

T. subrotundatus, totus ater, clypeo quadridentato, prothorace punctis oblongo-ovalibus impresso, elytris sulcatis, striis per paria impressis.

Long. corp. lin. $2\frac{2}{3}$.

Habitat in Nova Hollandia.

In Mus. Soc. Linn. Lond., olim Banks.

Syn. *Scarabæus Hollandiæ*, Oliv. Ins. l. 3, 174, t. 13, fig. 119;
Fabricius, Ent. Syst. 1, p. 65.

Ateuchus Hollandiæ, Fabricius, Syst. El. 1, p. 57.

Tessarodon Novæ Hollandiæ, Hope, Col. Man. 1, p. 55,
pl. 3, fig. 15; nec *Aulacium Hollandiæ*, Dejean, vel
Mentophilus Hollandiæ, Lap.

This species is smaller and (in proportion to its size) broader than either of the two following; the sides of the head are produced on each side of the two middle horns into an advanced conical lobe; the club of the antennæ is pale yellow; the fore tibiæ are not so broad as in the next species, and the teeth on the outside are obtuse; the hind tibiæ appendiculated at the tip on the inside.

The above description, and the figure published in Mr. Hope's *Coleopterist's Manual*, were taken from the original specimen still preserved at the Linnæan Society.

Sp. 2. *Tessarodon angulatus*, Westw. (Pl. VIII. fig. 2.)

T. subovalis, obscurè castaneus, capite et prothorace rudè punctatis, clypeo in medio dentibus duobus conicis, lateribus ante oculos valde angulatis, tibiis posticis ad apicem appendiculatis.

Long. corp. lin. 3.

Habitat in Nova Hollandia apud Swan River?

In Mus. D. Hope.

This species is longer but not so broad as the typical species: it is entirely of a dark castaneous colour; the head with two conical flat spines in the middle, on each side of which the margin is rounded for a short distance, it then runs nearly straight to a very sharp angle in front of the eyes; the club of the antennæ is pale fulvous; the head and thorax are very strongly and irregularly punctate, and the elytra are rather deeply striated in double rows, with punctures on each side; the anterior tibiæ are furnished with a short spur dilated and truncated at the tip; the hind tibiæ are appendiculated on the inside at the tip.

Sp. 3. *Tessarodon piceus*, Hope.

T. parvus, subovalis, castaneus; capite et prothorace rudè punctatis, capitibus angulis ante oculos rotundatis, tibiis posticis simplicibus.

Long. corp. lin. $2\frac{1}{2}$.

Habitat Port Essington, New Holland.

In Mus. D. Hope.

Syn. *Tessarodon piceum*, Hope, MSS.

This species is very closely allied to *T. angulatus*, with which it agrees in general form, colour, and sculpture. It is, however, at once distinguished by the rounded lateral angles of the head (in front of the eyes), the simple hind tibiæ, and its small size.

CEPHALODESMIUS, Westw.

Corpus oblongo-quadratum, posticè rotundatum. *Caput* planum, clypeo in medio 4-dentato, dentibus elevatis, intermediis duobus valde elongatis divergentibus, apice obtusis; externis duobus minoribus conicis convergentibus acutis. *Mentum* subquadratum, lateribus parum rotundatis, margine antico subemarginato. *Palpi* labiales articulo 2do tumido ovato, tertio minuto tenui-ovali. *Prothorax* magnus transversus, valde convexus, lateribus in medio subparallelis, angulis anticis et posticis obliquè truncatis, dorso valde convexo, medio longitudinaliter subsulcato. *Elytra* subcordata convexa opaca, parum sulcata. *Pedes* longi graciles; *tibiæ* anticæ calcari acuto armatæ; *tibiæ* 4 posticæ rectæ graciles, apice parum latiores, intermediæ 2-, posticæ 1-calcatae. *Tarsi* simplices, antici minuti; *ungues* minuti, valde curvati.

This genus is at once distinguished by the peculiar form of the prothorax, the very porrected horns of the front of the clypeus, the elongated slender straight hind tibiæ, and the form of the labial palpi. I am only acquainted with a single species.

Cephalodesmius armiger, Westw. (Pl. VIII. fig. 5.)

Totus niger, capite nitido punctato, pronoto subopaco, tenuissimè punctato; elytris opacis subsulcatis, intra margines laterales acutè carinatis.

Long. corp. lin. 5 (cum corn. clyp.).

Habitat in Nova Hollandia.

In Mus. Brit.; Soc. Ent. London; Hope and Melly.

TEMNOPECTRON, Westw.

Corpus breve, valde convexum, subrotundatum, nitidum. *Caput* latum, clypeo anticè in lobos duos minutos obtusos producto. *Mentum* cordato-truncatum. *Palpi* labiales articulo 2do obconico, 3tio præcedenti dimidio breviori tenui-ovali. *Prothorax* lateribus rotundatis, et cum elytris subcontinuis, dorso glabro, sed sub lente tenuissimè punctulato; elytris valde

convexis ovatis, tenuissimè striatis. *Pedes* antici breves; calcari parvo obliquè truncato. *Tibiæ* posticæ subcurvatæ depressæ. *Tarsi* breves, unguibus subtus denticulo instructis.

This genus is distinguished by the broad round outline of the convex body, the truncation of the spur of the anterior tibiæ, the armature of the ungues and the curved hind tibiæ.

Temnoplectron rotundum. (Pl. VIII. fig. 1.)

T. nigrum, nitidum; tibiis anticis obtusè tridentatis, singulo elytro striis 8 tenuissimis, striâ suturali punctatâ.

Long. corp. lin. 5.

Habitat Melville Island.

In Mus. Dom. Hope.

Syn. *Ateuchus rotundus*, Hope, MSS.

The above, together with *Copris 4-pustulatus* and *Ateuchus bipustulatus* of Fabricius, constitute the whole of the Australian *Scarabæidæ* with elongated legs; and it is remarkable that all these possess anterior tarsi, whereas in their immediate allies from other parts of the globe the fore feet are destitute of tarsi.

DESCRIPTION OF PLATE VIII.

Fig. 1. *Temnoplectron rotundum*; 1 *a*, front of head; 1 *b*, labial palpus; 1 *c*, mentum, &c.; 1 *d*, fore tibia and tarsus; 1 *e*, middle ditto.

Fig. 2. *Tessarodon angulatus*; 2 *a*, head; 2 *b*, mentum, &c.; 2 *c*, labial palpus; 2 *d*, striæ of elytra; 2 *e*, fore tibia and tarsus; 2 *f*, middle ditto; 2 *g*, hind ditto.

Fig. 3. *Coproæcus hæmisphericus*; 3 *a*, hind foot.

Fig. 4. *Aulacium carinatum*; 4 *a*, maxilla; 4 *b*, mentum, &c.; 4 *c*, striæ of elytra; 4 *d*, anterior foot.

Fig. 5. *Cephalodesmius armiger*; 5 *a*, labrum highly magnified; 5 *b*, mandible; 5 *c*, maxilla; 5 *d*, mentum, &c.; 5 *e*, labial palpus; 5 *f*, anterior foot.

XXIII. *Descriptions of some Species of exotic Heteropterous Hemiptera.* By J. O. WESTWOOD, F.L.S.

[Read 1 August, 1842.]

I BEG leave to submit to the notice of the members of the Entomological Society figures and descriptions of several Heteropterous insects, belonging to the family *Reduviidæ*. Two of these belong to well known groups, and as such I should have hesitated in drawing up their isolated descriptions, did not their large size and fine colours render them especially worthy of attention. They are, in fact, considerably larger than any species of the family yet described. The third species differs in its structural characters so materially from the other groups in the family, that I have not hesitated in adding another to the already numerous genera of *Reduviidæ*.

Sp. 1. *Ectrichodia imperialis*, Westw. (Pl. VII. fig. 2.)

Purpurea; antennis et hemelytris nigris, abdominis lateribus fulvo-fasciatis. (Fig. 2 a, lateral view of the head.)

Long. corp. unc. $1\frac{3}{4}$.

Inhabits Cape Palmas on the west coast of tropical Africa. Collected by the Rev. Mr. Savage, and sent to the Rev. F. W. Hope: also in the British Museum from Sierra Leone.

Purpurea vel purpureo-nigra, parte postica pronoti æneo-tincta; capite parvo, inter oculos impressionibus duabus longitudinalibus; antennis nigris 6-articulatis (radicula basali haud inclusa), articulo 2ndo 1mo duplo longiori setoso, 3tio 1mo parum longiori, tribus ultimis gracillimis et sensim longitudine decrescentibus. Pronotum transversè et longitudinaliter impressum. Scutellum tuberculis duobus apicalibus, discoque impresso. Hemelytra nigra, cyaneo parum tincta. Pedes concolores, tibiis ad apicem spongiola fulva instructis. Abdomen subtus purpureum, maculis lateralibus conoideis fulvis.

I have applied the name of *imperialis* to this species, not only on account of its large size, but from its rich purple colour, varied at the sides of the abdomen with golden yellow.

Sp. 2. *Platymeris ducalis*, Westw. (Pl. VII. fig. 3.)

Nigra, nitida, spinosa; hemelytris fasciâ latâ rufâ abbreviatâ ante medium; abdominis segmentis femoribusque late rufo-fasciatis. (Fig. 3 a, lateral view of the head.)

Long. corp. unc. 1 $\frac{5}{8}$.

Inhabits Cape Palmas, tropical Western Africa. Rev. J. Savage. In the collection of the Rev. F. W. Hope; also in the British Museum, from Sierra Leone.

Caput parvum, nigrum, inerme. Antennæ gracillimæ, articulis 4; articulationibus intermediis haud computatis. Prothorax bipartitus, parte antica 12-spinosa, spinis 4 dorsalibus majoribus; parte postica etiam spinis 4 acutis. Scutellum spinis tribus magnis, acutis et erectis. Hemelytra nigra, fasciâ latâ rufâ (in medio interruptâ) ad apicem partis coriacei, hâc etiam spinulis numerosis armatis. Abdomen segmentis basi late rufo-fasciatis, apicibus segmentorum spinulis instructis. Femora incrassata, fasciâ latâ rufâ ante apicem.

ECTINODERUS, Westw. (Proceed. Ent. Soc. p. 74.)

Caput parvum, rotundatum, naso conico inter antennas haud instructum, collo elongato. Antennæ 4-articulatæ, articulationibus inter articulos haud computatis; articulo 1mo longo, haud apicem versus incrassato, tribus ultimis sensim brevioribus et tenuioribus (inter articulos 1 et 2 et 2 et 3 articuli rudimentales adsunt). Prothorax maximus, anticè supra basin pedum anticorum dilatatum; in medio transversè impressum posticèque in lobos duos supra basin hemelytrorum (apice scutelli tantum detecta) protensum. Abdomen subrotundatum depressum, lateribus hemelytris haud obtectis. Hemelytra areolis tribus discoidalibus, intermedia majori. Pedes (præsertim antici) valde elongati. Tibiæ anticæ setosæ.

Syn. *Pristhevarma*, Serv. and Am. Hist. Nat. Hem. p. 355.

A few species of *Reduviidæ* have already been described, in which the pronotum is dilated and extended backwards over the scutellum. Such is the case in the genus *Arilus* (*Reduvius serratus*, &c.), also in the *Reduvius tuberculatus* of the animal kingdom, arranged by Burmeister in the same genus. The genera *Notocyrtus*, Hoffmans. (*Saccoderes*, Spinola), including the *Reduvius dorsalis*, Gray, and the African genus which I have named *Dias-*

pidius, in the new edition of Drury's "Illustrations of Exotic Entomology," likewise exhibit this peculiarity, but the insect before us exhibits the same character in a curious degree of development, its sides behind being dilated into two thin plates extending over the base of the hemelytra, whilst there is a slight excision in the centre exposing the tip of the scutellum; the front of the prothorax is also curiously dilated into a pair of arched lobes over the base of the fore legs, which are singularly elongated. It is true that in many *Reduvii* the fore femora are greatly dilated, but here it is by an extension of the limb that the extra development is attained. From *Diaspidius* the present genus differs in its broad form, the different proportions of the joints of the antennæ, and the straight tibiæ. I regret that I am unacquainted with the locality of this curious insect, which is however, I believe, Singapore. The *Reduvius coccineus* of Perty seems, in some respects, to be allied to the present group.

Sp. 3. *Ectinoderus longimanus*, Westw. (Pl. VII. fig. 4.)

Obscurè luteus; capite, antennis et hemelytrorum membrana nigris; femoribus fasciâ mediâ apiceque tibiisque anticis (nisi ad basin) nigricantibus, hemelytrorum corio et abdominis lateribus luteo nigroque variis.

Long. corp. unc. $1\frac{1}{3}$.

Habitat Singapore?

In Mus. Westwood.

Sp. 4. *Ectinoderus Philippinensis*, Westw.

Nigricans; corpore subtus, basi pedum, et maculis duabus hemelytrorum luteis; pronoto posticè integro (haud in medio emarginato ut in præcedente).

Long. corp. unc. $1\frac{1}{2}$.

Habitat ad insulas Philippinenses, D. Cuming.

In Mus. Westwood.

Sp. 5. *Ectinoderus bipunctatus*.

Syn. *Pristhevarma bipunctata*, Serv. and Am. Hist. Nat. Hemipt. p. 355.

HOLOPTILUS, Serv. and St. Farg.

(Vide Trans. Ent. Soc. vol. ii. p. 248, Pl. XXII.)

Subgenus novum, ORTHOCNEMIS, Westw.

Antennæ ut videntur 3-articulatæ, articulo 2do elongato curvato (breviori quam in *H. urso*), longissimè setoso, setis triplici

serie ordinatis; articulo 3tio minuto ovali, in apicem precedentis subobliquè inserto. Caput supra posticè densè lanatum. Hemelytrorum membrana distinctè venosa, basi densè lanata. Pedes breviores quam in reliquis hujus generis; tibiis rectis, gracilibus, setosis. Alæ posticæ tenuissimæ, dimidio abdominis longitudine paullo superantes. Abdomen lateribus longè setosis.

Sp. 6. *Holoptilus* (*Orth.*) *basalis*, Westw. (Pl. VII. fig. 5.)

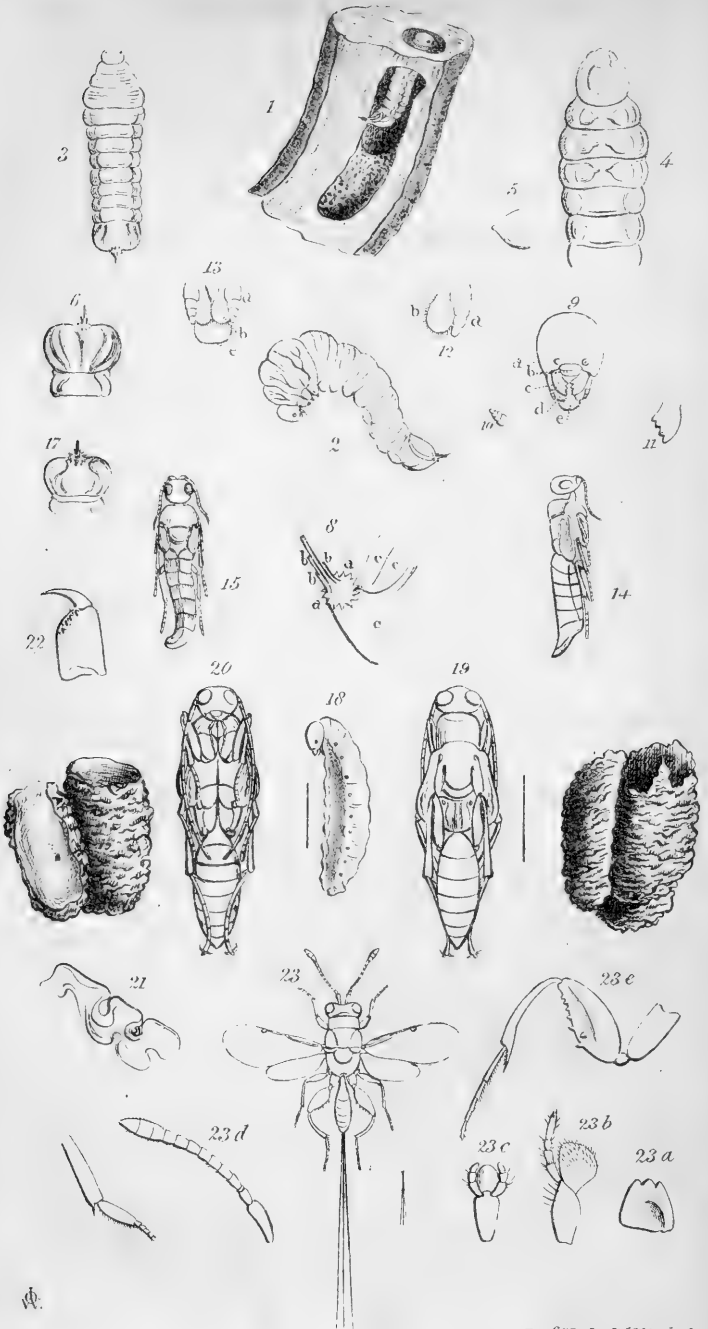
Obscurè rufescens; capite, antennis, pedibusque magis fulvescentibus; capite posticè et hemelytris ad basin densè et longè griseo-lanatis; his ad basin albis, plagâ maximâ mediâ nigrâ, apicibusque griseis, punctum nigrum includentibus.

Long. corp. lin. $2\frac{1}{2}$.

Habitat in Nova Hollandia, Adelaide. D. Fortnum.

In Mus. D. Hope.

This interesting insect seems to connect the two subgenera in this genus, described in my monograph upon the group in the second volume of the "Transactions of the Entomological Society of London," possessing the apparently 3-articulate antennæ and simply setose tibiæ of *Holoptilus*, and the maculated and venose hemelytra of *Ptilocnemis*. The hind feet are much shorter and less densely setose even than in *H. ursus*, but the crown of the head and the base of the hemelytra are very thickly lanose or setose.



W.

XXIV. *Memoirs on various Species of Hymenopterous Insects.* By J. O. WESTWOOD, F.L.S., &c.

[Read 4th February and 3rd June, 1839.]

I. *On the Economy and Relations of the Genus Xiphydria.*

[THE various situations in which the genus *Xiphydria* was arranged in the classifications of Latreille, Jurine and Leach, together with its intimate relation with the genus *Sirex*, Linn., and consequent importance in the distribution of the *Hymenoptera* given by Mr. MacLeay in the "Horæ Entomologicæ," (in which the *Tenthredinidæ* are removed from the rest and united with the *Trichoptera*, and *Sirex* is made an osculant suborder under the name of *Bomboptera*,) induced me, about twenty years ago, minutely to examine the structure of the ovipositor and sting of the chief groups of the Linnæan *Hymenoptera*, as well as the preparatory stages of such species as presented themselves. And although the general results of these inquiries have been given to the Entomologist in my "Introduction to the Modern Classification of Insects," a considerable number of details and sketches still remain unpublished. The discovery by Mr. Cooper of the preparatory stages of the genus *Xiphydria* afforded a very important clue to the solution of the question of the relations of that genus, and I accordingly drew up an extended memoir, (noticed in the *Zoological Journal* for 1827,) in which the entire structure of the genus, in its perfect and preparatory states, was reviewed with reference to that of the adjacent groups, and in which the position of the genus was traced, through the writings of preceding authors, and the formation of the ovipositor throughout the *Hymenoptera* especially examined; the propriety of the general arrangements of the order investigated; the situation of the present genus therein discussed, and a plan of distribution of the order proposed. During the last eighteen years, however, the philosophical investigation of the order has made such rapid strides that much of what I had written is now rendered useless; I have therefore struck it out of my memoir, which is here confined to the details of the structure of the insect in its different states, and a comparison thereof with the allied genera.—*J. O. W.* 1845.]

By the kindness of my friend, Abraham Cooper, Esq., R.A., I am enabled to present my readers with a description of the larva of a species of the Hymenopterous genus *Xiphydria*, which will,

I think, enable us satisfactorily to determine the family to which the perfect insect is referable.

In the month of November, 1826, this gentleman discovered near Hornsey, Middlesex, several of these larvæ alive and buried in the solid part of a branch of willow, which was perforated and devoured in different directions in a manner similar to the operations of the goat moth (*Cossus ligniperda*). Pl. X. fig. 1, represents the larva in one of the burrows. It would appear that Linnæus was aware that the larvæ of his *Sirex Camelus* (which is also a species of the genus *Xiphydria*) feed upon wood;* although De Geer, (*Hist. d. Ins.* vol. i. p. 567,) being ignorant of the economy of *Urocerus gigas*, placed that insect, together with *U. juvenus* and *spectrum*, with the *Ichneumonidæ*, and supposed its larvæ had similar habits to those of that family;† as did also Geoffroy, who established the genus *Urocerus* several years before Linnæus published the twelfth edition of the “*Systema Naturæ*,” wherein he called the same insects by the generic name of *Sirex*, which latter name must consequently be rejected.

Modern Entomologists however do not appear to be acquainted with the economy of the insect under description, for M. Le Pelletier de Saint Fargeau, in his Monograph on the *Tenthredinidæ*, tells us (Preface, p. 13) that he is neither acquainted himself with the larvæ of this genus nor of *Xyela* of Dalman, nor does he believe that they were at all known. Dr. Leach formed this genus and *Cephus* into his family *Xiphydriadæ*, and amongst its characters we find the following: “Larvæ with scaly feet, or at least not membranaceous.”‡ This description I shall however prove will not at all apply to the larva of *Xiphydria*. Latreille, in his “*Genera Crustaceorum, &c.*,” makes no mention of the larvæ of these two genera; but in the “*Règne Animal*”§ he forms of them a primary division of the *Tenthredinidæ*, and says, “*Les larves vivent probablement dans l'intérieur des végétaux ou dans les vieux bois;*” and in a late work he observes, without any expression of doubt, “*Larves sans pattes membraneuses vivent dans l'intérieur des végétaux.*”|| Dr. Klug, in his Monograph on the German *Siricidæ*, in which the present group is included

* “*Habitat in ligno antiquo corrupto.*”—*Faun. Suec.* No. 1576.

† “*Je ne connois point leurs vers, ni le lieu où ils vivent, mais la longue trarière de la femelle fait assez connoître qu'ils doivent être obligés de pondre leurs œufs dans d'autres corps, à la manière des Ichneumons.*”

‡ *Samouelle's Compend.* p. 267.

§ *Règne Animal*, vol. iii. p. 459.

|| *Familles Naturelles*, p. 442.

under the generic name of *Hybonotus*, merely observes—"Metamorphosis ex parte nota; constat nempe larvam Siricum morem observare et Xylophagam esse—Noxa certe nulla, præsertim cum in arboribus, nonnisi putredine jam corruptis larvæ inhabitent"—without adding any description of the larva itself.*

The larva is a soft, cylindrical, white and fleshy grub, with a small head and twelve segments to the body. When at rest the head of the insect is nearly obscured by the first three segments of the body, which are larger than the others. (Pl. X. fig. 2, represents the larva at rest.) The head is placed much lower than usual, (thus resembling, as Mr. Cooper remarked, the position of the head of the perfect insect,) and is of a harder substance than the remainder of the body, and is furnished with a small upper lip rounded in front (labrum, Pl. X. fig. 9*b*); a pair of strong short upper jaws or mandibles, (fig. 9*cc*, and fig. 11,) each having three or four teeth; a pair of under jaws or maxillæ, which offer a rather remarkable peculiarity of structure, being composed of two parts, the inner (fig. 12 and 13*bb*) fleshy and rather hairy at the interior margin, and the outer portion (fig. 12, 13*aa*) not longer than the inner, but having the rudiments of several joints; there is also a large fleshy under lip (labium, fig. 9 and 12*e*), which does not appear to possess any appendage: the under jaws and the under lip are united at their base, and have one common motion. The rudiments of the antennæ (fig. 9*a*, and fig. 10) are placed a little above the base of the mandibles and are very short, and formed of several small rings gradually lessening in size to the tip. I have not been able to discover any vestige of the eyes of the perfect insect.

The first three joints of the body are, as I have before said, much larger and broader than the head or any other of the joints (except the last). They appear very much wrinkled on their upper side when the insect is at rest (see fig. 2), but when in motion these wrinkles become inflated and form a smooth surface (see fig. 3). The under side of each of these three joints is furnished with a pair of very minute fleshy legs (fig. 4 and 5), of which, when in motion, the insect makes but little use, generally laying upon its side bent, as at fig. 2. Its motion is performed by stretching out the first three joints and then drawing the remainder of the body after them, similar to the motion of a worm. The next eight segments of the body are very nearly equal in size, and are without any vestige of feet, each being furnished with a pair

* Monogr. Siric. Germ. p. 14.

of lateral raised fleshy tubercles of the same length as the joint itself, which have somewhat the appearance of a row of white coral beads in miniature along each side of the body of the insect (see fig. 2 and 3). The last joint is larger than any of the eight preceding and is singularly formed, being flattened above with several impressed lines upon its surface and rounded underneath. It is also furnished at the apex with a short spine, composed of several pieces of various lengths soldered together (fig. 8bbb) and arising from the centre of a coronet of very minute spines (fig. 8aa). Of the duration of the insect in the larva state I can give no account.

The economy therefore of this insect is not very dissimilar to that of *Urocerus*, the larvæ of which resides in burrows in the solid wool of the fir; Mr. Marsham, in the tenth volume of the "Linnæan Transactions," relating a lively anecdote of the alarm of a nurse and some children at the appearance of several specimens of *Urocerus gigas*, which came out of the deal floor of a newly boarded room.

But it is not in economy alone that this similarity is perceivable, for if we examine the figure of the larva of *Urocerus*, given in the eighteenth plate of the "Introduction to Entomology," or its description as given by Klug in his admirable Monograph on the genus *Urocerus*, we shall not be able to find any material difference. He describes it as being "Mollis, cylindrica; segmentis tredecim æqualibus, ultimo excepto majori rotundato, pluries plicato spina parva terminali parva instructa; capite subgloboso, parvo, mandibulis exiguis armato; pedibus sex segmentis tribus prioribus infixis. Pupa folliculata, quiescens, imagini simillima alarum tantum rudimentis. Victus larvæ ex arborum ligno."*

With regard to the larvæ of other *Hymenoptera* the nearest approach to that of *Xiphydria* is made by the Tenthredinideous genus *Lyda*, the larva of which entirely loses the prolegs (although so peculiar a character of that family, but which nevertheless vary in number in the different genera). There is also another character which the larva of the *Uroceridæ* possess in common with those of the *Tenthredinidæ*, namely, that of having the rudiments of all the parts of the mouth of a mandibulated insect perfectly distinct, a character which no other Hymenopterous larvæ possess in so great a state of development. Nevertheless, as I have above stated, in the motion of the larvæ of *Xiphydria*, a considerable agreement is

* Monogr. Siric. German, p. 25.

perceived with the motions of the true Hymenopterous larvæ, which are more properly called vermiform. Looking, therefore, at the *Hymenoptera*, with reference only to the larvæ, we should say that they are primarily divisible into two great groups; the first comprising the *Tenthredinidæ* and *Uroceridæ*, and the second all the other *Hymenoptera*, the passage being formed by the *Uroceridæ*. But let us not forget that the state of the larva is only preparatory to that future state of which Mr. MacLeay has himself remarked, that "the true criterion of animal, as well as vegetable perfection, is the ability to continue the species;"* and Messrs. Kirby and Spence give it as their opinion, that a striking agreement in the perfect state, which is the acme of their nature, affords a much more satisfactory reason for keeping two tribes together, than any difference observable in their larvæ or metamorphosis for separating them.†

The pupa of this interesting insect decidedly belongs to the complete class of *Metamorphosis* in which the pupa is incomplete, being covered with a thin membraneous skin inclosing in separate and distinct sheaths the different organs of motion. Mr. Cooper found, on splitting a piece of the branch, several specimens in different stages of their pupa state (all, however, were dead): some being of a light brown colour and shrivelled up as though they had died immediately on assuming this state, (Pl. X. fig. 15,) and without having their future parts so distinctly perceivable; others in an intermediate state; and some nearly ready to assume their last state, and in which all the parts of the future insect had acquired their natural colour and consistency, being only covered with the thin and now transparent skin of the pupa (Pl. X. fig. 14). There were also several which had even become perfect insects found in the channels made by the larvæ, but which were also dead. I am not at all able to account for this circumstance, the larvæ being at the same time alive and healthy; for we cannot suppose that nature would thus suffer any of her creatures intentionally to perish without having attained their perfect state, and performed the very purposes of their existence. How long the pupa state continues I know not, nor at what period of the year the perfect insect is developed, although they have been taken in the month of June.

The pupa state is therefore exactly similar to that of all other *Hymenoptera*, and furnishes another proof that these insects ought not to be established into a distinct order as Mr. MacLeay proposes in his "*Horæ Entomologicæ*."

* *Horæ Entomologicæ*, 446.

† Introduction to Entomology, vol. iv. p. 374.

The *Tenthredinidæ*, *Ichneumonidæ*, and also the genus *Urocerus*, form cocoons in which to pass the pupa state; but Mr. Cooper tells me he did not perceive any thing like a cocoon in which his pupæ had been inclosed.

In examining the structure of the perfect insect,* I shall not enter into a detail of the structure of their trophi, (although those of *Xiphydria* differ both from the *Tenthredinidæ* and *Urocerus*,†) as I consider that variations in the general external organization of an insect (being clearly indicative of variations in its economy and habits) are of greater consequence than variations in the structure of its mouth, the latter being in my opinion entirely dependent upon the former. Moreover, we know that not only do the genera which Latreille has included in the *Uroceridæ* differ very much in the formation of their trophi, (which that author has proved to be of a very anomalous character,) but that there is even very great difference in these organs in the species of *Urocerus* themselves.

The antennæ of the female of *X. dromedarius* have fifteen simple joints,‡ thus differing from the greater portion of the *Tenthredinidæ* and agreeing with those of *Urocerus*, which vary in number from thirteen to twenty-four,§ while *Oryssus* has only eleven. They also agree with *Urocerus* in the formation of the basal joints, and with *Oryssus* in having them much shorter than in *Urocerus*. In *Cephus* and *Lyda* there are nearly thirty joints.||

In the shape and insertion of the head *Xiphydria* also agrees with *Urocerus*; and if we examine the trunk or thorax of both genera we shall find little (if any) difference, the extraordinary elongation in *Xiphydria* of the manitrunk (which may here with propriety be called the neck) only excepted: but even in *Urocerus* this part is distinct (as in fact it is in all the *Hymenoptera*), and the fore feet are always attached to it.¶ Jurine (who has confused the

* Mr. Curtis has entirely omitted this anomalous genus in his work on the genera of British insects.

† The trophi of this genus and of *Xiphydria*, however, agree in being much shorter than in the *Tenthredinidæ*.

‡ Mr. Kirby (Mon. Ap. Angl. vol. i. 219) says that this species has thirteen joints in the antennæ. Might not this description have been drawn from a male? Jurine says the antennæ of this genus have from fourteen to twenty joints.

§ Kirby, loc. cit. (*Sirex*). Jurine (p. 76) says from nineteen to twenty-seven joints.

|| Jurine, pl. 7, fig. 1 and 3.

¶ This (the manitrunk of Messrs. Kirby and Spence) is an extremely interesting part of the insect, as it clearly shows the correctness of the ideas of those authors in considering this part, which in the *Hymenoptera* and *Diptera*, and one

subject a little by giving to *Xiphydria* the generic name of *Urocerus*, while to the insects which are alone entitled to that name he has given the synonymous name of *Sirex**) tells us that it is in consequence of the motion of which this neck is susceptible that two of the species have been named after the dromedary and camel.

The trunk (thorax) also of *Xiphydria* perfectly corresponds with that of *Urocerus*, while the wings, not only of these two genera but also of *Lyda* and *Cephus*, appear to be formed on the same plan, clearly proving that although possessing characters sufficiently different to form two distinct families, the *Tenthredinidæ* and *Uroceridæ* can never be forced into different orders. Again, in the form and proportions of the legs there is a complete resemblance between *Xiphydria* and *Urocerus*. I need only mention the shortness of the intermediate tibiæ, the smallness of the fourth joint of the tarsus, and more particularly the dilatation of the posterior tibiæ both in the males of *Xiphydria* and *Urocerus*, while in the Tenthredinideous genus *Cræsus* both sexes have the posterior legs dilated.

Let us now turn our attention to the structure of the organs of oviposition and the uses of the different parts. These organs consist of a pair of outer valves or scabbards (valvæ) and the ovipositor (terebra), which latter comprises the sheaths (vaginulæ) and the saws (terebellæ). †

tribe of the *Neuroptera*, is the true analogue of the upper and under sides of the (generally called) thorax of the beetles, as perfectly distinct from the collar in these orders, which latter part appears however to be wanting in the beetles. The under side of the manitrunk is called the antepectus by Mr. Kirby, (Kirby and Spence, vol. iii. p. 551,—prosternum Aud.,) and its sides turn upwards and nearly form a horny covering. Its upper side is formed of a ligamentous membrane, properly representing the pronotum of the beetles. Latreille (Hist. Nat. vol. xiii. p. 138) says, that this neck is formed by an elongation of the thighs (hanches) of the fore legs of *Xiphydria*. This is, however, quite erroneous, as on separating it from the trunk (which is very easily done) the fore legs are found attached to it; and on the under side, at its base, there are a pair of circular apertures forming sockets, in which the globose basal joint (coxa) of the fore legs may work backwards and forwards.

* Half the confusion in generic nomenclature has arisen from authors employing for new genera *synonymous* names of the genera from which their new groups have been dismembered. Surely when an Entomologist thinks it necessary to form a new genus he might give himself the additional trouble of finding a new name for it, retaining always the old generic name for the *typical* species of the old genus.

† There is also another character clearly proving that all these insects are formed upon a similar plan, namely, the existence of a pair of minute styliform

In all the insects of these families which I have examined there is a pair of outer crustaceous plates (scabbards or valves) differing in size in different genera, all formed alike and arising very near to the insertion of the true ovipositor, each valve being composed of two joints;* the first extending from the base to where the valve emerges from the abdomen and where the other joint (varying very much in length) is united to it by a membrane. These plates, which are of equal size, are concave in the inside for the reception of the ovipositor. In the *Tenthredinidæ* they are smooth and rather hairy at the apex, but in *Urocerus* they are scabrose. With regard to the use of these valves, Mr. Marsham, in the volume of the "Linnæan Transactions," has clearly proved that in *Ichneumon manifestator* they are only to be considered as the protectors of the ovipositor when at rest, and that they are not used in the great act of oviposition, but are thrown over the back and unemployed.

With regard to the ovipositor itself of the saw-flies (*Tenthredinidæ*), I cannot do better than give the following interesting extract from "Peck's Natural History of the Slug Worm," quoted by Kirby and Spence, (vol. iv. p. 154). He compares one of the saws and its sheath "with the tenon-saw used by cabinet-makers, which, being made of a very thin plate of steel, is fitted with a back to prevent its bending. This back is a piece of iron, in which a narrow and deep groove is cut to receive the plate, which is fixed; the saw of the *Tenthredo* is also furnished with a back, but the groove is in the plate and receives a prominent ridge of the back, which is not fixed, but permits the saw to slide forward and backward as it is thrown out or retracted. The saw of artificers," he adds, "is single, but that of the *Tenthredo* is double, and consists of two distinct saws with their backs. The insect in using them first throws out one, and, while it is returning, pushes forward the other, and this alternate motion is continued till the incision is effected, when the two saws, receding from each other, conduct the egg between them into its place. In the artificial saw the teeth are alternately bent towards the sides or out of the right line, in order that the fissure or kerf may be made sufficiently wide for the blade to move easily. To answer this purpose in some measure in that of the *Tenthredo*, the teeth are little twisted, so as

processes rising from each side of the last segment of the abdomen. They are to be seen in the *Tenthredinidæ* and *Ichneumonidæ*, and also in *Xiphydria* and *Urocerus*, although much more minute in these two genera.

* In *Oryssus* each is formed of three joints. (Latr. Gen. Crust. &c., vol. iii. p. 247.)

to stand obliquely with respect to the right line, and their point of course projects a little beyond the plane of the blade, without being laterally bent. And all those in each blade thus project a little outwards, but the kerf is more effectually made, and a free range procured for the saws by small teeth, placed on the outer side of each; so that, while their vertical effect is that of a saw, their lateral effect is that of a rasp. In the artificial saw the teeth all point outward (towards the end) and are simple; but in the saw of the *Tenthredo* they point inward or toward the handle, and their outer edge is beset with smaller teeth, which point outwards (towards the end)." Valisnieri, Reaumur, and De Geer describe the groove as being in the back; but in Mr. Peck's insect, if there is no error in his account, it is, as in the *Cicada*, in the saw itself. In the genus *Cimbex*, belonging to the same tribe, the saw differs in shape, being somewhat sigmoidal, or resembling the letter S, while in that of other saw-flies it is cultriform, with a concave edge: other minor differences distinguish them, which need not be particularized.

In *Cephus* the valves and the ovipositor itself are formed as in the *Tenthredinidæ*, except that the sheaths and the saws are not transversely striated; the connexion between each sheath and saw having the appearance of a longitudinal stria, and, in fact, beginning to assume somewhat of the horny appearance of the ovipositor of *Urocerus*, between which and the ovipositor of *Xiphydria* I cannot perceive the slightest difference of structure.

The last segment of the abdomen of the female of *Urocerus juvenicus* appears, when viewed on the under side, as though divided into two segments, the apical part having at its base an excavated spot, which Latreille* regards as the anus.

Notwithstanding, however, the differences which certainly exist in the formation of the organs inclosed in the bipartite scabbard and valves in the different families above referred to, I think, from the circumstance of the minute styliform processes and the two external valves being similarly constructed in all these groups, we may without much difficulty trace the analogies of the other parts, (as has been attempted in detail in the 2d volume of my "Introduction to the Modern Classification of Insects.")

The manner in which the eggs are deposited by the ovipositor of the *Uroceridæ* and *Ichneumonidæ* does not appear to be ascertained, or whether the horny sides of the terebra are capable of extension on their under side. Messrs. Kirby and Spence observe upon the

* Genera Crust. vol. iii. p. 238.

ovipositor of *Pimpla*, (a genus of *Ichneumonidæ*, in which it is very long, exerted, and slender,) "How the egg is propelled, so as to pass in safety from the oviduct *along* this extended and very slender instrument to the grub for which it is destined, has not been certainly ascertained; but from an observation of Reaumur's, it should seem that it is aided in its passage by some fluid ejected at the same time with it, or is so lubricated as to slide easily without being displaced."* From these remarks, however, we might almost infer that it was supposed that the egg passed along the exterior surface of the terebra, but since in the *Tenthredinidæ* the eggs are conducted *between* the saws, I think there can be no doubt but that they are placed in such a similar situation in the abdomen of the female *Ichneumons*, &c. that they must pass within and between those organs which are analogous to the sheaths and saws of the *Tenthredinidæ*, and which have here become tubiform, and which, there is little doubt, have also the power of being opened and expanded on the under surface.

I do not intend to enter into a detail of the structure of the sting and ovipositor of the aculeate tribes, but shall only observe, that Latreille expressly says that the eggs do not pass through the former; † and that Messrs. Kirby and Spence describe the ovipositor as "the instrument of oviposition, being in some genera used as a weapon of defence, when it is called the *aculeus*;" ‡ and also they remark, that the stings of some *Hymenoptera* are analogous to the ovipositors of the majority of that order. § The manner in which the aculeate tribes deposit their eggs is, I believe, as yet, also unrecorded. || The plates, however, of Swammerdam may be consulted upon this subject by the student with great advantage, although this author was under the necessity of leaving the manner in which the eggs are excluded in doubt. ¶ (See his p. 205.)

I consider it therefore sufficiently proved that *Xiphydria* belongs

* Introd. vol. iv. p. 211. "Le tube ovipare de cette espèce (*Pimpla atrata*, F., the largest *Ichn.*, six inches long), est enveloppé d'une gaine élastique, dont les parois cèdent lorsque l'animal veut atteindre la chrysalide enfoncée dans quelque fente ou ouverture d'un arbre." Bull. Sc. Nat. Jan. 1828, p. 163, (Notes sur les *Ichneumons* en général, by Dalman, from the Swedish Trans. for 1825.)

† Gen. Crust. vol. iv. p. 51.

‡ Introd. vol. iii. p. 390.

§ Ibid. vol. iii. p. 717.

|| It may be worth noticing, that in a female of some *Bombus* which I took in copulâ, the sting was entirely protruded out of the abdomen.

¶ As however the structure of the sting is perfectly similar to that of the ovipositor of the *Ichneumons*, and as the egg in the latter passes down the ovipositor (see Lewis's papers in Mag. Nat. Hist.), it is agreeable to analogy that the eggs of the *Aculeata* pass down the sting.

to the family *Uroceridæ*; and if we recollect that Latreille admits into the family, without any expression of doubt, the genus *Oryssus*, which certainly differs from *Urocerus* in a much greater degree than *Xiphydria*, (although between the males of the latter genus and of *Oryssus* there is a very considerable resemblance,) I think there will remain little in favour of *Xiphydria* being placed at a distance from *Urocerus*, and as constituting a part of the family of the saw-flies, or as forming of itself the type of a separate family.

DESCRIPTION OF THE FIGURES.

Note.—The figures are more or less magnified, except where stated to the contrary.

Plate X. fig. 1. The larva making its way through the branch of willow, of the natural size.

2. The larva in the position in which it is generally at rest, and laying upon its side.
3. The larva stretched out, seen as when in motion.
4. The underside of the anterior segments of the larva, showing the position of the six feet.
5. One of the fleshy feet magnified.
6. The last segment of the body of the larva, upper side.
7. Do. under side.
8. Do. seen laterally; *aa*, the coronet of minute spines; *bbb*, the parts of which the apical spine is composed; *ccc*, portion of the segment.
9. The head of the larva seen from the front; *aa*, the rudiments of the antennæ; *b*, the upper lip; *cc*, the upper jaws; *dd*, the lower jaws; *e*, the lower lip.
10. The rudimental antenna, much magnified.
11. The upper jaw, do.
12. The lower jaws and lower lip of the larva; *aa*, the outer jointed part; *bb*, the ciliated interior part; *e*, the lip.
13. The lower jaw, more highly magnified.
14. A female pupa nearly ready to assume the perfect state.
15. A male pupa withered shortly after assuming that state.

P.S.—The parasitism of the genus *Urocerus* (*Sirex*), as suggested by the Baron de Geer, alluded to above,* has received another supposed confirmation in a memoir recently published by the Marquis Spinola, entitled “Considerazioni sopra i costumi degl’*Imenotteri* del *G. Sirex*, Fab. e sopra il miglior posto dei *Sireciti* nel metodo rationale;” † in which, after noticing the various

* The Count St. Fargeau (Encyc. Méth. t. x. p. 770, and Hist. Nat. Ins. Hym. t. i. p. 5, note 3,) has reaffirmed the parasitism of *Urocerus*.

† Genova, 1843. 8vo.

observations previously made on the economy of the genus, the author states that “nell’ estate del 1841, mi fu donato dal Signor Marchese Carlo Durazzo un insetto innominato col semplice iscrizione ‘Parasita in larva di *Farfalle,*’ con somma mia sorpresa reconobbi in esso una femmina del *Sirex gigas* ;” and on inquiring from Signor Franchi (from whom the insect had been obtained), he was informed that “la larva che ha dato recetto al parasita è quella del *Machaon*. Pero quando si sviluppò l’insetto, essa erasi da quindici giorni messi in crisalide ; si crede de poter anche asserire di aver veduto un *Sirex* uscire dalla crisalide del *Podalirius*.” From these remarks, and the statements of St. Fargeau, the Marquis arrives at the conclusion that “le larve dei *Sireci* sono zoofaghe,” proposing a classification of the order requisite for its distribution, in accordance to the supposed Zoophagous character of the *Sirecidæ*.

Having in the preceding pages endeavoured to prove the affinity of *Xiphydria* and the *Uroceri*, as well as to establish the Xylophagous character of the family formed of these two genera, I have deemed it necessary to notice the remarks of the Marquis Spinola cited above.

That the exuvizæ observed by the Count St. Fargeau lying at the side of the pupa of the *Urocerus* were those of the larva of some Longicorn beetle, upon which the *Urocerus* had parasitically subsisted, as considered by the Count, admits in my opinion of much doubt ; I consider in fact that they were the exuvizæ of the larva of the *Urocerus* itself. The structure of the head and manducatory organs of the latter in fact so closely resemble those of a Longicorn larva, that it is not surprising that the Count St. Fargeau should have mistaken them for the remains of the larva of a beetle which the *Urocerus* had devoured. It will of course follow that the finely pulverised particles of wood found in the burrows of these insects are the result of the boring of the *Urocerus* itself, and not of a larva upon which it has subsisted.

Neither can I consider the statement of the Marquis Spinola as more satisfactory in disproving the Xylophagous character of the *Uroceridæ*. The unsatisfactory mode in which the statement is made,—the very doubt of Signor Franchi, whether he had not obtained *Urocerus gigas* not only from *Papilio Machaon*, but also from *Papilio Podalirius*, (thus establishing a case of parasitism of one species upon two distinct species of animals, a circumstance of very unusual, if not of doubtful, occurrence,)—the well-known habits of the *Uroceri*, and of the two species of *Papilio* in question,

and the repeated opportunities offered by rearing the latter insects, as is so commonly practised abroad, and which have never hitherto afforded a case in support of such parasitism,—the totally different localities of the insects in question, the *Uroceridæ* inhabiting fir districts, and the *Papiliones* moist districts, where their favourite food occurs,—the many instances on record of the *Uroceridæ* being found in the larva state in the body of trees, where of course they could not be parasitic upon the *external feeding* larvæ of the two species of *Papilio* in question,—the impossibility of these larvæ being at one time internally parasitic on the larvæ of the *Papiliones* (as must have been the case with Signor Franchi's specimen), and externally parasitic on *Xylophagous* larvæ, feeding in the interior of trees, (like that of *Scolia*, observed by M. Passerini, which has also been assumed to be the case with the *Urocerous* larva,)—and lastly, but by no means of least importance, the structure of the mouth of the larvæ of the *Uroceridæ*, excellently adapted, from the formation of the mandibles, for feeding upon solid wood, but quite unlike those of any parasitic Hymenopterous larva,—are all circumstances which seem sufficiently to disprove the conclusion that “le larve dei *Sireci* sono zoofaghe.”

The genus *Cephus*, Latr. (*Trachelus*, Jur.; *Astatus*, Klug.) in various respects is one of great importance in regard to the relationships of the insects before us; and since the preceding memoir was written, several valuable observations have been made on its preparatory states, which throw considerable light upon its affinities, a circumstance of no little importance, when it is remembered that it has been arranged by the three great Entomologists, Leach, Klug, and Latreille, in as many different families, namely, the *Xiphydriadæ*, *Siricidæ*, and *Tenthredinidæ*.

The larva of *C. abdominalis* was observed by the late M. Audouin to be produced from eggs deposited in a spiral direction round the young shoots of the pear, the *larva feeding within the slender shoots*, and being fleshy, with six minute thoracic legs, but destitute of prolegs, and with the terminal segment of the abdomen attenuated, and terminated by two very minute points; there is also a minute conical lobe, near the base, on each side of this segment. This memoir has not yet been published.

A memoir on *Cephus pygmæus* was however published by MM. Dugaigneau and De Tristan, in the *Memoirs of the Société des Sciences, &c. d'Orleans*, vol. i., in which the injuries committed by this insect upon the rye crops in France were detailed, and the insect described; and M. Dagonet, in a series of observations made in 1839 and 1840, published at Chalons in 1840 and 1841, has also

detailed the habits and structure of the same larva, (without being aware of its being that of the genus *Cephus*); and still more recently, an excellent memoir on the same insect has been published by M. Guérin Meneville, with ample details of the larvæ, which agree with those of *C. abdominalis* described above. It is apodal, or rather has the three thoracic segments furnished beneath with "des espèces de mamelons destinés à remplacer les pattes."* In its larva state it lives within the stems of the rye. Unfortunately M. Guérin Meneville had not discovered the pupa, but adds, "elle doit se métamorphoser dans la coque transparente que la larve se construit, et que nous avons représentée à côté de la figure de cette larve." In the description of the plates, however, he incorrectly describes the figure here referred to as the "Nymphé du *Cephus pygmæus* renfermée dans son tube," which has doubtless led Mr. Curtis, who has copied this figure, in his memoir recently published in the Transactions of the Royal Agricultural Society, to refigure this cocoon, and describe it as the true pupa of the *Cephus*.

2. *On the Proceedings of a Colony of Polistes gallica, introduced into my Garden at Hammersmith from the neighbourhood of Paris.*

ON the 9th July, 1837, Messrs. Audouin, Brullé, and myself, being engaged in an Entomological excursion in the woods round Sévres, near Paris, discovered in the Parc de Belle Vue, upon a wall with a southern aspect, many nests of *Polistes gallica*, of different sizes, and generally a foot or two from the ground. They were attached to the wall by a small layer of the material of which they were composed, and a footstalk about one-sixth or one-fourth of an inch long, attached at the middle of the back of the layer of cells, which of course had a horizontal position. The day was rather overcast, and the wasps had not much activity. On one of the largest of the nests were seated about half a dozen wasps, one of which was a female, and the others workers. When approached they did not fly off, but ran about the surface of the nest with their heads up, in a menacing position, seeming to defend it, like the great ants when their ant-hill is disturbed. On one nest, containing seventeen cells (some only just commenced), was one female and two workers, which we secured with our forceps. Another larger nest I brought away, having removed its attendant wasps.

* Notice sur quelques Insectes nuisibles. Paris, 1843, p. 39.

These I put into my box, and in a few days some more neuters were produced. These I lapped up alive in paper with the nest, and brought to Hammersmith. I now kept them some days in a tumbler, giving them sugar and honey to eat, which they seemed to relish, as well as the young grubs in some of the cells. I subsequently took off the gauze covering of the tumbler, and placed it in the open air, to see the proceedings of the insects. The day was very hot, and for some time they were occupied in vibrating their wings whilst standing on the top of the nest, and elevating the head and front of their bodies; at length they ventured to take wing, and I was anxious to ascertain in what manner these insects (now for the first time let loose) would proceed so as to obtain a knowledge of the neighbourhood, and thereby be enabled to retrace their steps. There were five wasps, and their proceedings were alike. After quitting the glass they made a very small circuit round it, then another rather larger, and so by degrees till the diameter of the circle was not less than a yard. They then alighted on the leaves of the adjoining trees, and seemed much delighted to bask in the sun. They returned from time to time to the glass, and in the afternoon four out of the five returned. I then brought the glass into the house for the night, putting it out again the first thing on the next morning, when the missing wasp immediately made its appearance, hovering over the glass. I noticed at first that they passed the night with their bodies entirely immersed in the cells, but afterwards they congregated on the top of the gauze covering. In a few days I put the glass out of doors, when the wasps did not return to it regularly, but left it one by one. A little rain got into the glass one evening (notwithstanding I had put a cover over it), and melted the sugar, which attracted the ants and earwigs, (the wasps being all absent,) which devoured not only the sugar, but also the grubs. On Friday, 28th July, afternoon, the nest was deserted. Saturday was a wet and boisterous day, and the wasps did not return. Sunday, ditto. Monday was a fine day, and three of the wasps returned early in the morning, but of course found the nest without grubs. Some ants were in the glass, and occasionally one found its way upon the nest, when they were assaulted by the wasps. The mode of attack of the latter was singular; they appeared irritated, raised the front part of the body, made a dash at the ant with the jaws, and instantaneously jirked the intruder over their backs, without either stinging or killing it.

The spiracles of the larva, according to M. Audouin's observations and figures (MS. Obs. 1835, No. 23, inedit.), are placed only on the meso- and meta- thorax and first abdominal segment, a pecu-

liarity requisite from the dilated front of the body, which fills up the cell, and prevents access of air to the hind part of the body.

The flight of these wasps is very peculiar, and quite unlike that of the *Odyneri* or *Vespæ*. The long hind legs are extended backwards and downwards, reminding one of the flight of *Fœnus*. There is a species of *Tenthredo* very nearly allied to *T. scrophulariæ*, which I saw on the wing in September following, and which exactly reminds one of the flight of the *Polistes*.

P.S.—The preceding details offer abundant suggestions in support of the opinion, that it is principally by means of sight that insects, especially of the social species, are directed in their flights, and thereby enabled to retrace their steps to the hive or other dwelling place, and which has been maintained by Mr. Newport in a preceding page of the present volume. The cautious proceedings of my colony of wasps clearly indicated a gradual increase of knowledge of immediately contiguous objects; but can we suppose it possible that the same kind of knowledge is obtained by the bee in a direct flight of several miles from its hive, especially at a time whilst all its attention and energies are devoted to the great business of its life, that of hunting for and pillaging flowers?

I shall here mention, in support of the power assumed to be possessed by insects, of obtaining knowledge by means of sight, a circumstance which I observed many years ago in Fleet Street, and which, although it indicates an error of sense, seems more completely to establish the one in question than perhaps any previously recorded fact. On a bright sunny day I observed a white butterfly beating itself with violence against the outside of the panes of glass in a window on the north side of the street, on which the sun was shining with great force; at first I could not comprehend what could induce this action in the butterfly, but the mystery was solved when, on looking into the window, I observed the many gaily coloured labels of a chemist's jars and packets placed on the opposite side of the glass. This had doubtless been mistaken by the butterfly for flowers, which it endeavoured to reach in order to rob them of their sweets; of which of course the insect could have obtained no intimation by its sense of smell. How is it possible, with such facts as these before us, to adopt the conclusion of a work recently published, that insects are destitute of the senses? How is it possible to arrive at so unphilosophical a conclusion, that the highly organized eye of an insect does not possess the sense of sight?

3. Some account of the Habits of a new Species of fossorial Hymenopterous Insect from South Australia. By J. O. WESTWOOD.

[Read 3d January, 1842.]

THE various modes employed by the nidificating aculeated *Hymenoptera*, in the construction of their nests, and the adaptation of their structure to the purposes of their economy, in this respect afford materials for observations of the most interesting as well as instructive kind; interesting, from the singularity of the manœuvres and assiduity of the insects; and instructive, from furnishing us with complete details of the history of particular species, thereby confirming, in the most satisfactory manner, their relations with other species. The nest-making *Aculeatæ* may be divided into several distinct groups, from the mode of construction of their nests. Not to speak of the social kinds, which form beautiful structures composed of series of hexagonal cells, or of the social humble bees, we find the solitary nidificating species again divided into such as merely content themselves with making a burrow in rotten wood, or in a sand-bank, in which they bury a caterpillar, or other insect or spider, and those which fetch the materials of their nests from a distance, which they then either employ as a lining to their burrows, or else form into an exposed nest, without previously forming any burrow.

In our own country I believe no fossorial species exists which forms exposed nests, all the species (except the parasitic ones) possessing an economy, which is indicated by their name of *Fossores*. Some of the species, indeed, as well as some of the wasps and bees, fetch materials from a distance to line their cells, already formed in burrows; a few of the bees however (such as *Megachile muraria*) form naked nests on the surface of walls, &c. The exotic genus *Pelopæus* is the only recorded instance of a fossorial insect making an external nest.

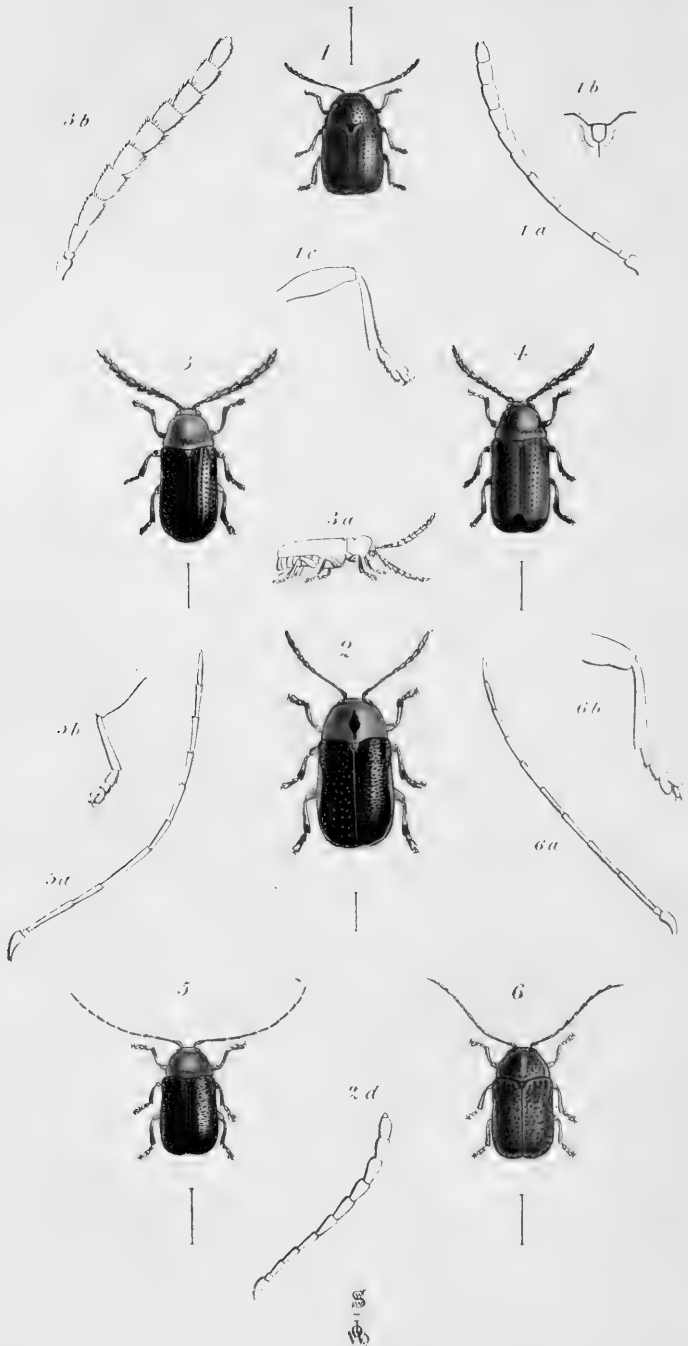
The nests which, with their inhabitants, form the subject of the present communication, were brought from Port Lincoln, South Australia, but unaccompanied by any details. They are however evidently nests formed externally, in the same manner as the nests of the *Megachile muraria*. They came to me in several masses, each consisting of two or three cells; each cell is about an inch long, and half an inch in diameter; they are smooth on the inner surface, and the case is about the thickness of the shell of a hazel nut, with the outer surface very rugose, as though formed of a succession of short transverse layers, which have dried into rounded

or elongated nodules. The substance of which they are composed is evidently earthy, as it will not burn, but retains its form when thrown into the fire.

On opening these cells I found in each a delicate white slender membranous sac, affixed by its base to the bottom of each cell, the upper end being free, and generally open, the insect having made its escape; on the outside of this membranous bag I found in several of the cells portions of the chelicerae of a large species of spider, which had evidently been devoured by the inhabitant of the cell whilst in the larva state, and previous to the formation of the membranous sac. Within one of these sacs I found a dead larva, represented in Pl. X. fig. 18, not differing in its structure from the larva of other fossorial species; whilst in each of two other of the sacs I found the dead pupa of the insect, which I at first mistook for an *Ichneumon*, from the great length of the antennae, and the slenderness of the body. These pupae were almost arrived at the perfect state, so that, with the exception of the wings, all the parts could be distinctly traced, as well as the colours of the future imago. The antennae are laid along the sides of the breast, and are long and slender, extending rather beyond the posterior coxae, and consist of thirteen joints, thus indicating the specimens to be males. The basal joint is robust, the second very short, and the remainder slender, and rather elongated. The fore wing, when moistened with water, and placed under the microscope, was seen to have two deep folds on the costa, whereby its length was reduced nearly one-half. The most peculiar feature was the large square prothorax, resembling that of the genus *Aporus*, and of various exotic *Pompili*; it is, in fact, by the structure of this part of the thorax, which is employed amongst the fossorial *Hymenoptera* as a primary distinctive character of the several families, that we are enabled to determine the natural relations of this insect. The entire body is black, and clothed with a very slight griseous pubescence. The antennae are white, and the tibiae and tarsi brownish white. The abdomen is slender, and composed of seven segments; at first the dorsal portion of the abdomen appeared to have the segments posteriorly margined with grey bands, but I found this to result entirely from the pellicle of the pupa having been scaled off from the base of each segment.

The strength of the founder of these nests may be imagined from the fact, that the single jaw of the spider found in one of the cells was as large as the entire head and prothorax of the perfect insect. The combat between the parent fossor and its prey must therefore





be an interesting scene. It is on this account that I apply to the species the name of *Pompilus? audax*.

P. ? ater, pubescens, prothorace magno quadrato, antennis albis, tibiis tarsisque fusco-albidis.

Long. corp. lin. $5\frac{1}{2}$.

Habitat in Australia meridionali, Port Lincoln.

Pl. X. fig. 16 & 17, cells; 18, larva; 19, pupa, dorsal surface; 20, pupa, ventral surface; 21, unfolded wing; 22, chelicera of spider.

XXV. *Descriptions of the Chrysomelidæ of Australia, allied to the Genus Cryptocephalus.* By W. W. SAUNDERS, Esq., F.L.S., &c.

[Read 3rd January, 1842, &c.]

THE large family *Chrysomelidæ*, the species of which are spread over almost every part of the world, has been much neglected by Entomologists, in comparison with other families of the order *Coleoptera*; and this is remarkable, as many of the individuals comprising it are extremely beautiful in colour, and the whole being phytophagous, or feeders on vegetable matter, it is important that they be well understood, for the purpose of ascertaining the habits and economy of those species, which, from their immense numbers, occasionally do such serious injury to the agriculturist both in this country and abroad. In the following papers it will be my endeavour to fill up a portion of the information required; and seeing that scarcely any of the numerous species from Australasia have been described, I purpose characterising such as are allied to the well-known genus *Cryptocephalus*, so abundant in species in the temperate parts of the old and new world. I say allied, for although there are certain species from Australasia closely approximating to *Cryptocephalus*, yet there are none that I can discover strictly belonging to it. Most of the species depart widely from the typical *Cryptocephali*, and are remarkable for the way in which the scutellum is elevated posteriorly, rising at times considerably beyond the plane of the elytra, and nearly at right angles to it. Carefully reviewing the various forms which have come under my observation from Australasia, I find they resolve themselves into several sub-genera, the characters of which are taken chiefly from the antennæ, and general shape of the body. The sub-genera form two sections: 1st. Those which have the lateral margins of the prothorax smooth and entire; 2nd. Those

in which it is rough or dentate. The present paper will include the species coming under the section with smooth and entire lateral margins to the prothorax, and the subgenera to which they belong may be characterised as follows :—

Antennæ	subclavate	6 terminal joints, forming a distinct clava . . .	<i>Dicenopsis.</i>
		7 terminal joints, gradually increasing in size	<i>Idiocephala.</i>
	ensiform		<i>Aporocera.</i>
filiform	5th joint twice as long as the 4th		<i>Mitocera.</i>
		5th joint about the same length as the 4th	<i>Ochrosopus.</i>

DICENOPSIS (δικην-οψις).

Antennæ inserted between and near the eyes, somewhat approximating, short, not half the length of the body, subclavate, 11-jointed: first joint pyriform, large; second small, orbicular; third, fourth and fifth slender, long, nearly equal in length; the remainder short, robust, of equal length, forming a kind of lengthened club, the terminal joint with a small apical appendage. *Head* vertical, immersed in the thorax up to the eyes. *Eyes* reniform. *Thorax* rounded in front, very convex, posteriorly as broad as the elytra. *Scutellum* subquadrate, elevated posteriorly. *Body* short, robust, cylindrical. *Tarsi* 4-jointed; third joint deeply bilobed, and nearly concealing the fourth.

Dicenopsis hæmatodes. (Plate IX. fig. 1.)

Syn. *Cryptocephalus hæmatodes.* Boisduv. Voyage de l'Astrolobe.

Body shining, brownish red, with the eyes and clava of the antennæ black brown. The upper surface deeply and coarsely punctured; the under surface punctured and pubescent. Legs brownish red, with a line along the upper surface of the femora; apices of the tibiæ and tarsi black.

Length $\frac{7}{10}$ inch.

In the Cabinets of the Rev. F. W. Hope and J. O. Westwood, Esq.

Native of New Holland and Van Diemen's Land.

This species nearly approaches to *Cryptocephalus*, but differs in the short sub-clavate antennæ.

IDIOCEPHALA, Hope, MSS. (ιδιος κεφαλη). Type *A. Roei*.

Head vertical, rotundate; immersed in the thorax up to the eyes. *Eyes* reniform. *Antennæ* wide apart, situated close to the eyes, subclavate, half as long as the body in the females, nearly as long as the body in the males; 11-jointed: first joint robust,

pyriform; second small, obconic; third, fourth and fifth longish, nearly of equal length, slender; the remainder sensibly larger, and gradually decreasing in length in the females, nearly of the same length in the males; the terminal joint with a small apical projection. *Thorax* transverse, as broad as the elytra, somewhat gibbous, narrow and truncate in front, rounded on the sides. *Scutellum* subtrigonate, much elevated at the apex. *Body* short, ovate; compressed in sect. 1; nearly cylindrical in sect. 2. *Legs* shortish. *Tarsi* 4-jointed: three first joints nearly of equal length; third deeply bilobed; fourth slender, cylindrical, reaching but little beyond the third.

This subgenus is distinguished from *Dicenopsis* before described by the antennæ, but more especially by the general shape of the species. *Dicenopsis*, however, approaches very closely to some of the robust species of the present subgenus.

SECTION I.

(Body ovate, compressed.)

Sp. 1. *Idiocephala Roei*, Hope, MSS.

Head rufous brown, deeply punctured, with the vertex, eyes, and antennæ black. *Thorax* rufous, shining, with a well defined black diamond-shaped patch on the centre of the disk, prolonged posteriorly to the scutellum, widely punctured. *Scutellum* black. *Elytra* rich shining green, deeply punctured, and wrinkled transversely, with a narrow marginal band of ochraceous yellow, terminating before the apex; under side of the body pale ochraceous yellow, pubescent, with the metasternal region black, and densely covered with silvery adpressed hairs. *Legs* black, with the bases of the femora and tibiæ rufous brown.

Length, female $\frac{21}{100}$, male $\frac{17}{100}$ inch.

From the Swan River.

In the Collections of the Rev. F. W. Hope and J. O. Westwood, Esq.

Var. *Atripennis*, W. W. S.; *Anodonta atripennis*, Hope, MSS.

Elytra black, with a purple iridescence; third and fourth joint of antennæ brownish.

Collections of Rev. F. W. Hope and J. O. Westwood, Esq.

Sp. 2. *Idiocephalus elegans*, W. W. S. (Plate IX. fig. 2.)

Head yellow brown, shining, slightly punctured, with a narrow black transverse band on the upper part, close to the margin of

the thorax. Antennæ black, with the second, third and fourth joints inclining to rufous brown. Eyes black. Thorax yellow brown, smooth, shining, slightly stained with black on the centre of the anterior margin, and with a well defined narrow longitudinal diamond-shaped mark on the vertex. Scutellum yellow brown, subquadrate. Elytra of a brilliant shining dark green, deeply punctured, and waved transversely, with a band of straw colour along the exterior margin, reaching from the base to very near the apex, gradually diminishing in width as it approaches the latter part. Under side of body yellow brown, slightly covered with short adpressed silvery hairs; the sides of the mesosternum dark fuscous. Legs yellow brown, with the apices of the tibiæ and tarsi black.

Length nearly $\frac{20}{100}$ inch.

Habitat Hunter's River, New South Wales.

In my own Cabinet, and that of the Rev. J. W. Horsley.

This elegant species is nearly allied to *Idiocephalus Roei* before described, but differs in the marking on the thorax, and in the character of the marginal band of the elytra. It is a native of the east coast of New Holland, where it was taken by Mr. J. Horsley, a very observing Entomologist. *Idiocephalus Roei*, its nearest ally, is a native of the western coast and Van Diemen's Land, where it appears to be one of the commonest species; so that the two, although so nearly allied, are inhabitants of parts of New Holland wide apart.

Sp. 3. *Idiocephala pulchella*, Hope, MSS.

Head rich rufous brown, with the vertex black, and longitudinally striate. Eyes and antennæ black, the latter with the third and fourth joints dull brown. Thorax rich rufous brown, shining, quite smooth. Scutellum of the same colour, very much elevated posteriorly. Elytra rich shining green, with a broad rufous brown lateral marginal band, produced inwards just below the shoulders. Under side of body rufous brown, pubescent. Legs and tarsi black.

Length $\frac{18}{100}$ inch.

Native of New Holland.

In the Collection of the Rev. F. W. Hope.

Sp. 4. *Idiocephala cyanipennis*, Hope, MSS.

Head, eyes and antennæ glossy black. Thorax rufous brown, shining, smooth. Scutellum black. Elytra shining steel blue, with

purplish iridescence closely and deeply punctured, the punctures forming irregular striæ near the apex, each stria of two rows of punctures. Under side of body pale ochraceous yellow. Legs and tarsi black.

Length of female $\frac{1.6}{100}$ inch; do. of male .13 inch.

Native of New Holland.

In the Cabinets of the Rev. F. W. Hope and J. O. Westwood, Esq.

Sp. 5. *Idiocephala albilinea*, Hope, MSS.

Head black, longitudinally striate, with a straw-coloured patch on the sinus of each eye, and another just below the insertion of the antennæ. Eyes and antennæ black. Thorax black, with the lateral margins white, widely and somewhat obsoletely punctured. Scutellum black, much elevated behind. Elytra bright yellowish brown, with a quadrate black patch on the disk, a little below the middle, which joins the scutellum by a sutural margin of the same colour; deeply and coarsely punctured, the punctures arranging themselves into regular striæ near the apex. Under side of body, legs and tarsi, shining black; the former minutely punctured, and slightly pubescent.

Length $\frac{1.6}{100}$ inch.

Native of Van Diemen's Land.

In the Cabinets of J. O. Westwood, Esq. and the Rev. F. W. Hope.

Sp. 6. *Idiocephala marginicollis*, W. W. S.

Head black, rugose, with the antennæ of the same colour. Eyes black, margined internally with corneous yellow. Thorax black, glossy, sparingly punctured; margined laterally with a very distinct narrow band of yellowish white. Scutellum quadrate, smooth, shining black. Elytra deeply punctured, glossy black. Legs and under side of body black; the latter slightly punctured.

Length $\frac{1.5}{100}$ inch.

Habitat New Holland.

In the Collection of the British Museum.

A very distinct species, and easily detected by its shining black colour, with white margins to the thorax.

Sp. 7. *Idiocephala atra*, W. W. S.

Black; face striate, with fine longitudinal lines. Thorax shining, slightly punctured, the punctures widely spread. Scutellum smooth,

shining. Elytra shining, irregularly striate and punctured, especially near the shoulders, which are slightly rugose. Abdomen somewhat longer than the elytra; covered underneath with silvery adpressed pubescence.

Length $\frac{18}{100}$ inch.

Native of Van Diemen's Land.

In the Collection of J. O. Westwood, Esq.

SECTION II.

(Body cylindrical.)

Sp. 8. *Idiocephala Bynoei*, W. W. S.

Head punctured, rufous brown, with a band across the vertex, near the margin of the thorax, and sinus of the eyes, black. Eyes black. Antennæ black. Thorax bright rufous brown, gibbous in front, shining and deeply punctured. Scutellum black, shining, rounded posteriorly. Elytra a little broader than the thorax, deeply punctured, with slight irregular transverse waves; rufous brown, with the base irregularly margined with black, the suture narrowly margined with the same colour, and an irregular broad transverse black band a little above the apex. Under side of body rufous brown, the mesosternum black, covered with short adpressed silvery pubescence. Legs rufous brown, with the apices of the tibiæ and tarsi black.

Length $\frac{20}{100}$ inch.

Collected in New Holland by Mr. Bynoe.

In the Collection of the British Museum.

This is a robust and well marked species. The description is drawn apparently from a male insect.

Sp. 9. *Idiocephala rugosa*, Hope. Olivier?

Head black, subrugose, and marked with faint longitudinal striæ. Eyes and antennæ black. Thorax black, shining, very gibbous in front, rugose and deeply punctured. Scutellum black, subtrigonal, smooth, very elevated behind. Elytra black, shining, with the apices rufous brown, rugose and deeply punctured, the part adjoining the scutellum elevated. Under side of body black, with the sides of the metasternal region densely covered with golden pubescence; also a small patch of the same coloured pubescence on each side the thorax underneath, and lateral patches on each segment of the abdomen, gradually decreasing in size with the

segments. Legs black, shining, with purplish iridescence. Tarsi black.

Length $\frac{1.8}{100}$ inch.

Native of New Holland.

In the Cabinet of the Rev. F. W. Hope.

Sp. 10. *Idiocephala similis*, W. W. S.

Entirely black. Head deeply and coarsely punctured. Thorax shining, gibbous in front, deeply and rugosely punctured. Scutellum much elevated behind, smooth. Elytra rugosely punctate, the surface undulating, shining, somewhat fuscous, and very rounded at the apex. Under side of body punctate, with the sides of the mesosternal region covered with adpressed silvery hairs, and also lateral patches of the same coloured pubescence on each segment of the abdomen, gradually decreasing in size with the segments. Legs with a purplish iridescence.

Male?—Length $\frac{1.4}{100}$ inch.

Habitat New Holland.

In the Cabinet of the Entomological Club.

Female.—Length $\frac{1.6}{100}$ inch.

Taken in the vicinity of Sidney, New South Wales, by Mr. Darwin.

In the Cabinet of the Entomological Society.

This species is nearly allied to *I. rugosa*, but wants the rufous apex to the elytra, and having silvery instead of golden pubescence on the under side of the body. The specimen belonging to the Entomological Club has lost its antennæ, but I have reason to suppose it is a male.

Sp. 11. *Idiocephala flaventris*, Hope, MSS.

Head jet black, longitudinally striate on the vertex, with a yellow heart-shaped patch on the face. Thorax rufous brown, shining with a black line running along the anterior margin. Scutellum subtrigonate, black, somewhat elevated at the apex. Elytra shining black, deeply and coarsely punctured, regularly striate, and marked a little above the middle with a V-shaped yellow band, the angle pointing posteriorly, and the sides not reaching the lateral margins. Under side of body pale yellow, shining. Legs pale yellow, with the apices of the tibiæ and tarsi black.

Length $\frac{1.4}{100}$ inch.

Native of New Holland.

In the Cabinet of the Rev. F. W. Hope.

Sp. 12. *Idiocephala tasmanica*, mihi.

Head rufous brown, with three round yellow spots placed in a triangle on the face. Eyes and parts of the mouth dark brown. Antennæ fuscous brown, gradually getting darker towards the apex, with the basal joint dull yellow. Thorax rich rufous brown, with the lateral and anterior margins yellow, and a narrow yellow longitudinal streak, half the length of the thorax, on each side of the vertex, commencing on the posterior margin. Scutellum yellow brown. Elytra rich rufous brown, with the apex, and a narrow margin round the scutellum, yellow; each elytron with four nearly equidistant longitudinal ridges, the two nearest the suture well defined, the others sub-obsolete, deeply and minutely punctured. Under side of body with the thoracic and metasternal regions dusky brown (the latter deeply punctured), abdomen yellow. Legs rufous brown, with the apices of the femora yellow; tarsi dusky.

Length $\frac{1\frac{2}{10}}{100}$ inch.

In the Collection of the Entomological Society.

Taken in Van Diemen's Land by Mr. Darwin.

Sp. 13. *Idiocephala sub-brunnea*, mihi.

Head shining black, minutely punctured, with the face rufous brown. Eyes black; mouth piceous. Antennæ black, with the first and second joints rufous brown. Thorax rufous brown, shining, somewhat gibbous in front, obsoletely punctured. Scutellum smooth, shining black. Elytra corneous brown, shining, deeply punctured, the punctures forming regular striæ laterally near the apex, with a margin along the base, which extends round the scutellum and half way along the suture, black, with a greenish iridescence. Legs corneous brown, with the tarsi piceous. Under side of body corneous brown, pubescent, with the mesosternal region black.

Length $\frac{2}{100}$ inch.

In the Cabinet of the Entomological Society.

Taken by Mr. Darwin in the vicinity of Sidney, New South Wales.

Sp. 14. *Idiocephala Darwinii*, mihi.

Head black, with a large triangular patch just above the mouth rufous brown; deeply punctured. Eyes black. Antennæ dusky brown, with the first, second and third joints underneath rusty

brown. Thorax rufous brown, shining, punctured, somewhat gibbous in front, with the anterior margin piceous. Scutellum smooth, black, shining, with a violet coloured iridescence, but little elevated at the apex. Elytra dark metallic green, with the apex of a livid horn colour, deeply punctured; the punctures forming regular striæ laterally near the apex. Legs horn-coloured, with the tarsi dusky. Under side of the body black, pubescent, with the apex of the abdomen horn-coloured.

Length $\frac{9}{100}$ inch.

In the Cabinet of the Entomological Society.

Taken in the vicinity of Sidney, New South Wales, by Mr. Darwin.

ΑΠΟΡΟCΕΡΑ (απορος κερας), mihi.

Head vertical, subtriangular. Antennæ two-thirds the length of the body, 11-jointed; the first swollen, pyriform; the second globular, small; the remainder subtriangular, broad, flattened, nearly of equal length, the fifth joint being somewhat the longest and broadest; the last joint with a terminal conical point, like a very small additional joint. Thorax gibbous in front, as broad as the elytra. Body cylindrical. Tarsi 4-jointed, the penultimate joint deeply bilobed.

This genus is nearly allied to *Clythra*, as before stated, differing chiefly in the antennæ, which are long, with the joints broad and flattened, without any tendency to being pectinated. It also approaches near to *Cryptocephalus*; but the antennæ again well distinguish it from that genus, which has those organs filiform.

Sp. 1. *Aporocera bicolor*, mihi. (Pl. IX. fig. 3.)

Head vertical, subtrigonal, not so broad as the thorax, red brown; with the eyes kidney-shaped and black. Antennæ, arising from the sinus of the eyes, black, 11-jointed, and rather more than two-thirds the length of the body, pubescent. Thorax as broad as the elytra, rounded and gibbous in front, smooth and shining, of deep reddish brown, nearly as long as broad, with a broad shallow transverse furrow a little behind the middle, and curving posteriorly. Scutellum small, black-green, triangular. Elytra nearly twice as long as broad, of a dark black shining green, deeply and coarsely punctured in regular striæ; each elytron with a large lateral lobe projecting downwards just behind the shoulders. Body beneath reddish brown, pubescent, with the region of the metasternum black, and the joints of the abdomen also striped

transversely with the same colour. Legs reddish brown, with the apices of the femora and tibiæ and the tarsi black. Tarsi 4-jointed; third joint deeply bilobed, the fourth joint little exceeding it.

Length $\frac{2.5}{100}$ inch.

In the Cabinet of the Rev. F. W. Hope.

Habitat New South Wales.

Sp. 2. *Aporocera apicalis*, W. W. S. (Pl. IX. fig. 4.)

Head vertical, subtriangular, red brown, with the eyes kidney-shaped and black. Antennæ inserted in the sinus of the eyes, not so long and rather stouter than in *A. bicolor*. Thorax red brown, gibbous and rounded in front, as broad as the elytra, with a wide shallow transverse furrow curved posteriorly a little behind the middle, smooth and somewhat shining. Scutellum small, triangular, red brown, margined with black. Elytra not quite twice as long as broad, deeply and coarsely punctured in regular striæ, red brown, with the apices black; each elytron having a large lateral lobe projecting downwards a little behind the shoulders. Under side of body black and pubescent. Legs red brown, with the apices of the femora and tibiæ and the tarsi black.

Length $\frac{2.5}{100}$ inch.

In the Cabinet of the Rev. F. W. Hope.

Habitat New South Wales.

Sp. 3. *Aporocera chalybea*, W. W. S.

Head dark chesnut brown, with the region about the mouth ochraceous, and the eyes black. Antennæ black. Thorax pitchy black, margined with ochraceous, shining and deeply punctured, except along the vertex and near the shoulders, which portions are extremely smooth. Scutellum quadrate, shining black, much raised behind. Elytra of a shining chalybeate blue, deeply and irregularly punctured. Under side of body and legs pale ochraceous yellow; the latter ochraceous, with the apices of the tibiæ and tarsi black.

Length $\frac{3.0}{100}$ inch.

From Port Essington.

In the Collection of the Rev. F. W. Hope.

Sp. 4. *Aporocera catoxantha*, Hope, MSS.

Head pale ochraceous, with the eyes black. Antennæ black, with the basal joint brown, as long as the body, somewhat slender. Thorax ochraceous, shining, punctured, except near the shoulders.

Scutellum subquadrate, pitchy brown, elevated behind. Elytra ochraceous, deeply and irregularly punctured, with broad lateral margins of dark metallic green, and the space round the scutellum of the same colour. Under side of body pale ochraceous. Legs pale ochraceous, with the apices of the tibiæ and tarsi black.

Length $\frac{2.5}{100}$ inch.

From Port Essington.

In the Cabinet of the Rev. F. W. Hope.

This species, in the length and slenderness of the antennæ, differs somewhat from the species on which the group was founded, but still there can be no doubt of the propriety of its being placed in the sub-genus *Aporocera*.

MITOCERA (*μιτος κερας*), W. W. S.

Antennæ inserted between and close to the eyes, longer than the body, filiform, 11-jointed: first joint large, pyriform; second small, obconic; third and fifth very long, of equal length; fourth joint half as long as the third and fifth; each of the remainder as long as the fourth. *Head* vertical, immersed in the thorax up to the eyes. *Eyes* reniform. *Thorax* subquadrate, narrowed in front, transverse, convex posteriorly, nearly as broad as the elytra. *Body* subelongate, flattened. *Tarsi* 4-jointed; first joint twice as long as the second, the third deeply bilobed and almost concealing the fourth.

Mitocera viridipennis, W. W. S. (Pl. IX. fig. 5.)

Head light red brown, with the crown, eyes and antennæ black. Antennæ one-third as long again as the body. Thorax red brown, with slightly raised lateral margins, the upper surface shining, coarsely and irregularly punctured. Scutellum subtrigonal, dark blue green. Elytra dark shining blue green, deeply and irregularly punctured, rounded at the apices where the margins are reddish brown. Under side of body light red brown, pubescent. Legs black, with the femora red brown.

Length $\frac{3.0}{100}$ inch.

From the Swan River.

In the Collection of the Rev. F. W. Hope.

A very distinct form, remarkable for the great length of the antennæ, with the third and fifth joints long.

OCHROSOPSIS (*ωχρος οψις*), W. W. S.

Head vertical or nearly so, immersed in the thorax up to the

eyes. *Eyes* reniform, with a deep and narrow sinus. *Antennæ* arising from just in front of the sinus of the eyes, wide apart, as long as the body, filiform, 11-jointed: first joint robust, clavate; second small, obconic; third, fourth and fifth nearly of equal length, the fourth the shortest; the remainder gradually decreasing in length, the terminal one pointed. *Thorax* rounded in front, transverse, nearly as broad as the elytra. *Scutellum* subquadrate, elevated behind. *Elytra* half as long again as broad, the apices rounded. *Legs* moderate, tarsi 4-jointed; the first three joints nearly of equal length, the third joint deeply bilobed and nearly covering the small terminal joint.

This genus differs from *Mitocera*, W. W. S., in the length of the antennæ, and in the proportions which the third, fourth and fifth joints of that organ bear to each other. The species are all pale coloured.

Sp. 1. *Ochrosopsis vermicularis*, Hope, MSS.

Head slightly projecting from thorax, reddish brown, eyes black. Antennæ as long as the body, reddish brown. Thorax corneous yellow, rugose, the depressions black. Elytra and scutellum corneous yellow, the former closely covered with large black impressions, which arrange themselves into irregular striæ. Under side of body reddish brown, covered with short silky pubescence. Legs light rufous brown.

Length $\frac{3.0}{100}$ inch.

From New Holland:

In the Cabinet of the Rev. F. W. Hope.

Sp. 2. *Ochrosopsis Australis*, Hope, MSS., type. (Pl. IX. fig. 6.)

Head ochraceous yellow. Eyes black. Antennæ about as long as the body, dusky brown. Thorax shining, reddish brown, with a longitudinal band on the vertex and two very faint oblique bands from the centre of the base towards the anterior angles corneous yellow, covered with large black impressions, which approximate towards the vertex. Scutellum dark shining brown. Elytra corneous yellow, covered with large closely set irregular impressions, dark brown or black, varying in different specimens, the impressions approximating round the scutellum and at the base of the elytra. Under side of body shining pale ochraceous yellow, sparingly covered with short pubescence. Legs dusky, corneous yellow.

Length $\frac{2.5}{100}$ inch.

From the Swan River.

In the Cabinet of the Rev. F. W. Hope.

Sp. 3. *Ochrosopsis erosa*, Hope, MSS.

Head ochraceous yellow. Eyes dusky brown. Antennæ rather longer than the body, black. Thorax shining, corneous yellow, nearly covered with coarse very black impressions, which approximate on each side the vertex so as to form two almost black patches, and leave a longitudinal band along the vertex and the margins free from impressions. Scutellum black, shining. Elytra pale ochraceous yellow, deeply and irregularly punctured with black, the punctures confluent in places and forming an irregular pattern. Under side of body straw coloured, shining. Legs light reddish brown.

Length $\frac{20}{100}$ inch.

From the Swan River.

In the Cabinet of the Rev. F. W. Hope.

Sp. 4. *Ochrosopsis melanocephala*, Hope, MSS.

Head ochraceous yellow, with the vertex and a central line down the face black. Eyes black. Antennæ nearly as long as the body, black. Thorax ochraceous yellow, with a small oblong patch near the hinder angles, and a large triangular patch on each side of the vertex in front, black, deeply punctured, the punctures light brown on the lighter portions. Scutellum small, black. Elytra shining, ochraceous yellow, somewhat closely punctured, with dark brown impressions, which are occasionally confluent transversely. Under side of body straw coloured, the region of the mesosternum closely punctured with black impressions. Legs reddish brown, with the apices of the femora and tibiæ and tarsi black.

Length $\frac{20}{100}$ inch.

From New Holland.

In the Cabinet of the Rev. F. W. Hope.

Sp. 5. *Ochrosopsis subfasciata*, W. W. S.

Head yellow brown, deeply punctured, with slight longitudinal waves. Eyes and parts of the mouth dark fuscous. Antennæ dark brown. Thorax dark brown, deeply punctured, with dull yellow rugosities. Scutellum dull yellow. Elytra dull yellow, with irregular striæ deeply punctate, forming transverse rugosities, the indentations dark brown and crossed a little above the middle with an indistinct dark brown band, and another of the same nature a little above the apex. Under side of body dull yellow,

punctured, and slightly covered with adpressed hairs. Legs yellow brown.

Length $\frac{2.5}{100}$ inch.

In the Collection of the British Museum.

Collected in New Holland by Mr. Tring.

Sp. 6. *Ochrosopsis rufescens*, W. W. S.

Head bright rufous brown, deeply punctured, with the parts of the mouth dull yellow, excepting apices of mandibles, which are black. Eyes black. Antennæ pale rufous brown. Thorax bright rufous brown, deeply punctured, narrowly margined in front and laterally with dull yellow. Scutellum black, punctured, shining, subtrigonate. Elytra with irregular striæ deeply punctate, bright rufous brown, with the rugosities yellow, excepting a little before the apex, where the rugosities being of the same colour as the indentations, there is the appearance of a broad transverse indistinct rufous brown band. Under side of body dull yellow, punctate, and covered with short adpressed hairs. Mesosternum dusky brown. Legs and tarsi dull yellow.

Length $\frac{2.5}{100}$ inch.

From Van Diemen's Land.

In my own Collection.

This is a rather more robust and cylindrical species than the others which I have described, with shorter and stouter antennæ.

Sp. 7. *Ochrosopsis apicalis*, W. W. S.

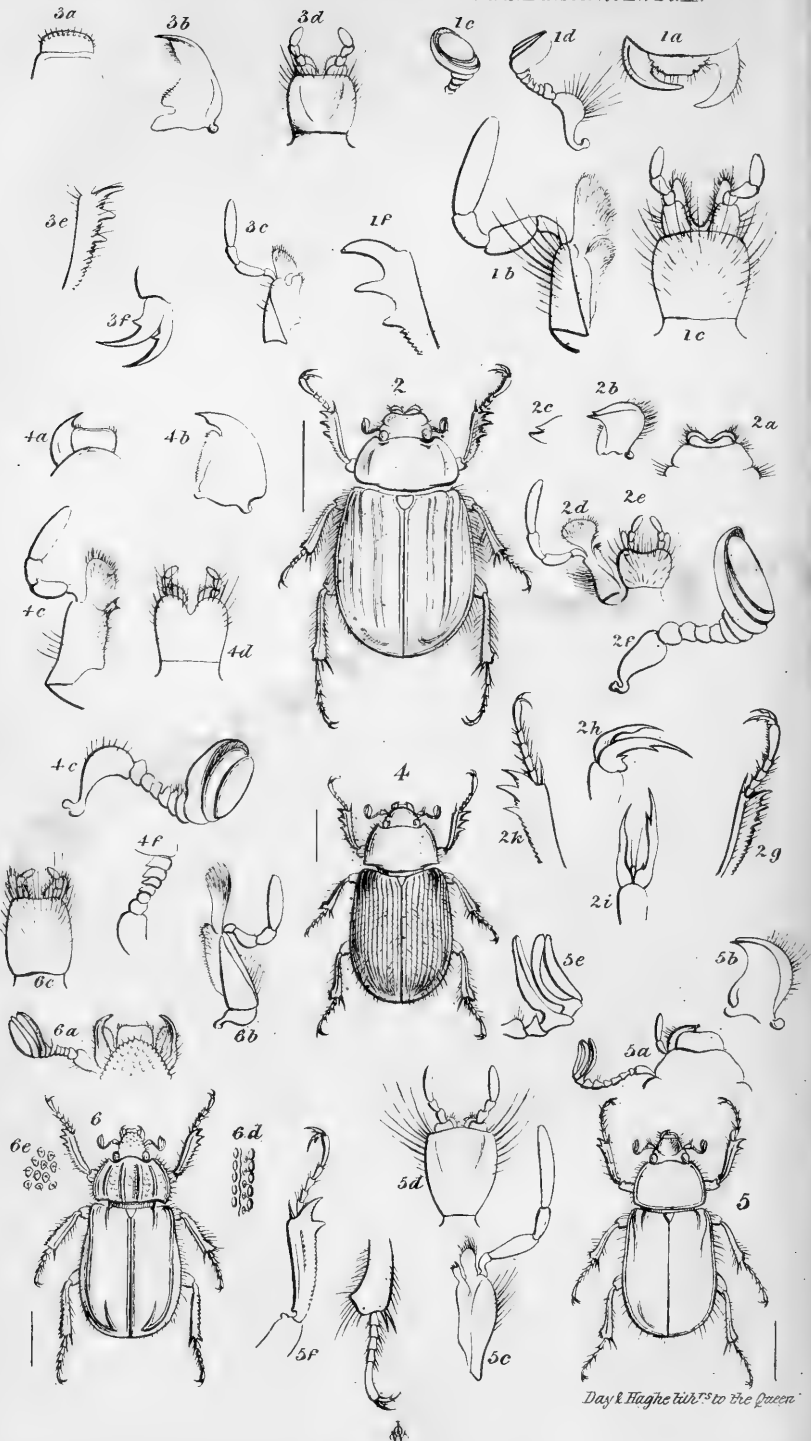
Head dark rufous brown, punctured, parts of the mouth paler, with tips of the mandibles dark fuscous. Eyes black. Antennæ rufous brown, not so long as the body, with the five terminal joints more robust than the four preceding. Thorax bright rufous brown, deeply punctured, with a transverse depression running along the hinder margin on the vertex; the anterior margin narrowly and obscurely margined with dull yellow, and the rugosities on the lateral margins of the same colour. Scutellum subtrigonate, rufous brown. Elytra bright rufous brown, punctured, with irregular striæ, having a small patch on each shoulder, and the apices ochraceous yellow, the punctate indentation on the latter being dark brown. Under side of body dusky brown, punctured, and covered with short adpressed somewhat silvery pubescence. Mesosternum somewhat darker. Legs and tarsi pale rufous brown.

Length $\frac{2.5}{100}$ inch.

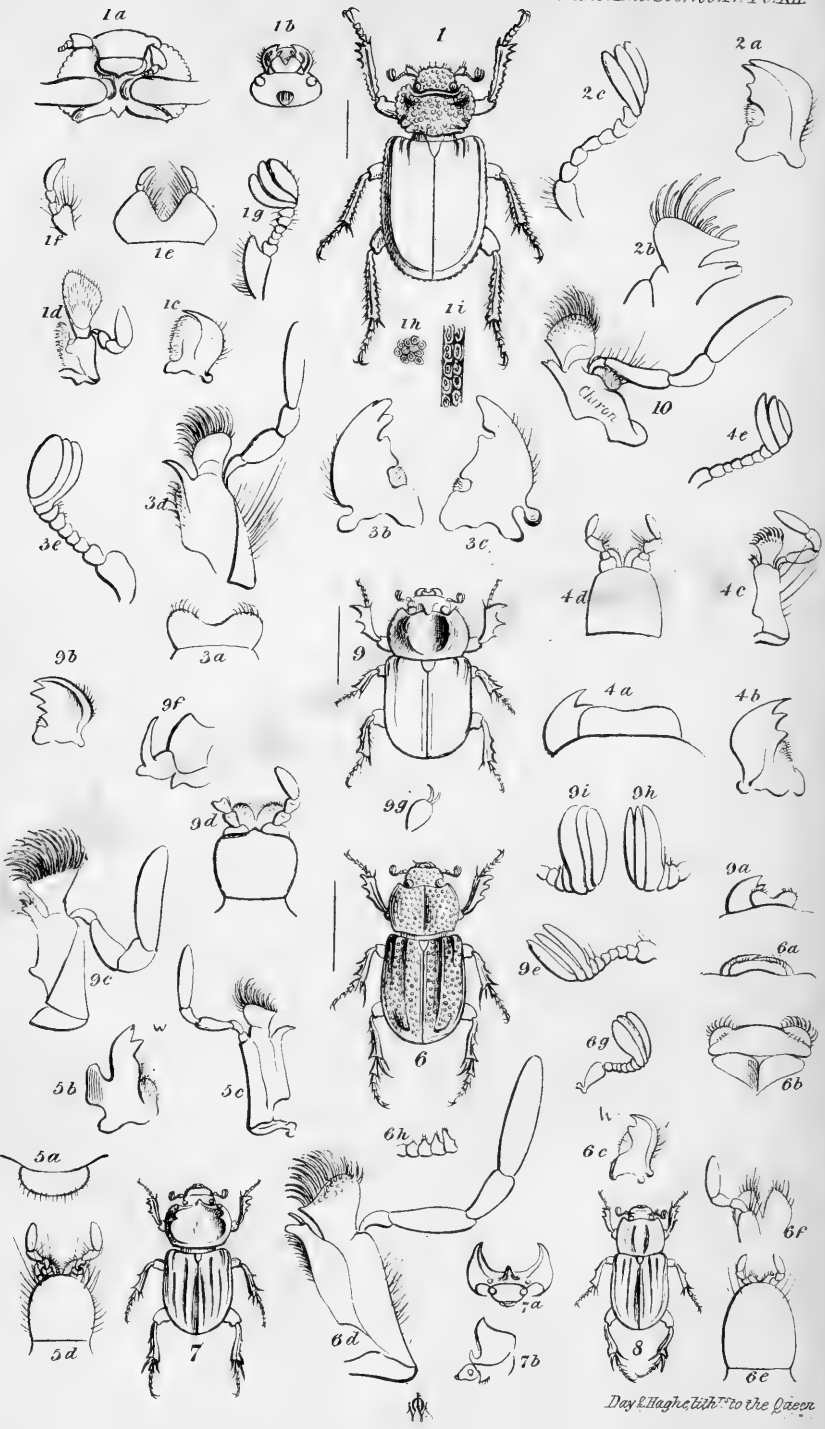
From Van Diemen's Land.

In my own Collection.









XXVI. *On the Lamellicorn Beetles which possess exerted Mandibles and Labrum, and 10-jointed Antennæ.* By J. O. WESTWOOD, F.L.S., &c.

[Read 3rd October, 1842, and completed 4th May, 1843.]

THE insects which form the subject of this paper, and which possess an exerted labrum, exposed mandibles and 10-jointed antennæ, form portions of the families *Trogidæ* and *Geotrupidæ* of MacLeay.

The former of these families, in the “*Horæ Entomologicæ*,” is distinguished from the other Saprophagous families as follows:— From the *Scarabæidæ* and *Aphodiidæ* by its exposed mandibles and labrum; from the *Dynastidæ* by its “*maxillæ processubus duobus, interno dente arcuato corneo sæpius instructo; labrum distinctum subquadratum et anus obvolutus;*” and from the *Geotrupidæ* by its corneous maxillæ.

The antennæ of the *Trogidæ* are described as “*breves, novem vel decem articulis,*” (p. 59,) in order to admit of the introduction of the Australian genera *Cryptodus* and *Mæchidius*, (the first of which, as I have shown in previous papers read before the Entomological Society, belongs to the Phileurideous *Dynastidæ*, whilst *Mæchidius*, as also shown by me in another paper, belongs to the *Melolonthidæ*,) as well as of the very interesting European genus *Ægialia*, which, in addition to its 9-jointed antennæ, possesses a strong corneous hooked inner lobe to the maxillæ, with the outer lobe spinulo-setose.*

This last named curious genus, therefore, justifies the admission of 9-jointed antennæ into the characters of the family of the *Trogidæ* of MacLeay, namely, the genera *Trox*, *Phoberus*, and *Acanthocerus*, possessing 10-jointed antennæ. All these genera, however, possess a character in respect to these organs by which they are distinguished by Mr. MacLeay from the *Geotrupidæ*, (with which they agree in their exerted mandibles and labrum,) namely, the separation of the three joints of the club of the antennæ, whereas in the *Geotrupidæ* the two terminal joints are received into the cup-like basal joint of the club. The majority of the genera of *Geotrupidæ* possess 11-jointed antennæ; Mr. MacLeay however adds to the family the genera *Orphnus* and *Hybosorus*, which possess 10-jointed

* The insect figured by Guérin as the type of this genus, in the “*Iconographie du Règne Animal*,” *Æg. cornifrons*, possesses 10-jointed antennæ, and forms the genus *Geobius*, Brullé (*Hybalus*).

antennæ. Mr. MacLeay's description of the maxillæ of *Orphnus* is however incorrect, since in this respect, as well as in the free joints of the club of its antennæ, it belongs to the *Trogidæ*.

In the "Règne Animal" Latreille united the *Geotrupidæ* and *Trogidæ* into his section *Arenicoli*, distinguished from the *Coprophi* (*Scarabæidæ* and *Aphodiidæ*, MacLeay) by the exerted mandibles and labrum, and the distinct terminal point of the labial palpi; and from the *Xylophili* (*Dynastidæ* and *Rutelidæ*) by the elytra covering the extremity of the abdomen and the exposed labrum, &c. He however divides the *Arenicoli* into two groups, *Geotrupides* and *Trogides*, which do not however precisely agree with MacLeay's two families; the *Geotrupides* being characterized by having the two lobes of the labium distinct and exerted, and the antennæ generally 11-jointed; whilst the *Trogides* are described as having 10-jointed antennæ, the labium entirely concealed beneath the mentum, and the maxillæ dentated on the inner edge. I have not however found Latreille's primary character of these two groups of so much importance as he gives to them; because, as the lobes of the labium are membranous and retractile, they shrink in drying, and thus often become concealed when they would be exerted while living; moreover they are often exerted but hidden beneath the scapes of the labial palpi.

Latreille divides his *Geotrupides* into three sub-sections.

1. Those with 9-jointed antennæ; namely, the genera *Ægialia* (which has been already noticed above as more strictly referable to the *Trogidæ* on account of its maxillæ and distinct joints of the club of the antennæ) and *Chiron*, MacLeay—a most interesting genus placed by its founder in the family *Lucanidæ*, but which Latreille, with greater acumen, introduces near to *Ægialia*. Mr. MacLeay, indeed, admits that he did not examine the maxillæ of this genus; but the strongly exerted dentate labrum and minute scutellum are sufficient to create suspicion of its Lucanideous relationship, whilst the maxillæ are very similar to those of *Orphnus* and *Ochodæus*.

2. Those with 11-jointed antennæ, including *Lethrus*, *Geotrupes*, *Athyreus*, *Elephastonus*, *Bolboceras*. To these Latreille adds *Ochodæus*; but that genus, although various recent French authors have described it as having 11-jointed antennæ (apparently from Latreille having introduced it into this group rather than *ex visu proprio*), in reality possesses ten joints to its antennæ, and, as above mentioned, is very close in its relationship to *Orphnus*.

3. Those with 10-jointed antennæ, namely, *Hybosorus* and

Acanthocerus; the first of which has a Geotrupideous and the second a Trogideous clava to its antennæ, the first also has Geotrupideous and the latter rather Trogideous maxillæ and labium.

The *Trogides* consist, according to Latreille, of the genus *Trox* alone, with *Phoberus* as a subdivision.*

The genus *Orphnus*, which MacLeay places in the family *Geotrupidæ*, is introduced by Latreille into the *Dynastidæ*, and is stated not to differ from *Oryctes*. This relationship will be examined in a subsequent part of this paper.

With these preliminary remarks on the relationship of these insects, I now proceed to the description of the various genera which possess 10-jointed antennæ, and which respectively belong to the families *Geotrupidæ* or *Trogidæ* as thus characterized.

GEOTRUPIDÆ.

TROGIDÆ.

<i>Antennarum clava</i> .. articulo basali infundibuliformi ..	—	articulis liberis.
<i>Maxillarum lobis</i> .. membranaceis ..	—	potius corneis, supero ciliato-dentato.
<i>Labii lobis</i> ..	plerumque porrectis ..	— plerumque retractis.

GEOTRUPIDÆ.

Antennarum clava articulo basali infundibuliformi; *maxillarum lobi* membranacei; *labium lobis* plerumque porrectis.

Antennæ 11-articulatæ .. *Geotrupes*, &c.

Antennæ 10-articulatæ.

Prothorax integer.

Tibiæ anticæ 3-dentatæ.

Mandibulæ uncinatæ .. *Hybosorus*.

Mandibulæ latiores.

Ungues bifidi.

Tibiæ posticæ in medio inermes .. *Silphodes*.

Tibiæ posticæ in medio dentatæ .. *Coilodes*.

Ungues simplices .. *Chætodus*.

Tibiæ anticæ 2-dentatæ .. *Apalonychus*.

Prothorax canaliculatus .. *Anaides*.

TROGIDÆ.

Antennarum clava articulis liberis; *maxillarum lobi* cornei, externo ciliato-dentato; *labium lobis* plerumque retractis.

Antennæ 9-articulatæ.

Corpus breve latum .. *Ægialia*.

Corpus longum parallelum .. *Chiron*.

* *Cryptodus* and *Mæchidius* are however mentioned in a note, not having been seen by Latreille; he however considers them as removed from *Trox*, and regards *Mæchidius* as allied to *Melolonthus*.

Antennæ 10-articulatæ.

Corpus supra planum; mentum profundè incisum ..*Cryptogenius*.

Corpus plus minusve convexum; mentum haud profundè incisum.

Caput sub pectus haud contractile; corpus haud globosum.

Pedes mediocres, tarsis gracilibus.

Prothorax maximus, anticè subbituberculatus..*Geobius*.

Prothorax mediocris, haud anticè subbituberculatus.

Prothorax anticè plus minusve retusus, dorso irregulari; caput sæpius cornutum in ♂; maxillarum lobus internus denticulatus.

Mandibulis 4-dentatis*Triodontus*.

Mandibulis 3-dentatis*Orphnus*.

Mandibulis 2-dentatis*Ægidium*.

Prothorax et caput simplicia; maxillarum lobus internus in spinam curvatam }
productus.....*Ochodæus*.

Pedes abbreviati, tarsis crassis*Trox, Phoberus*.

Caput sub pectus contractile; corpus globosum ..*Acanthocerus*; and the subgenera separated from it by Germar, in *Zeitschrift f. d. Ent.*

Fam. GEOTRUPIDÆ.

HYBOSORUS, MacLeay.

(Plate XI. fig. 1 and details.)

This genus is at once distinguished by its sickle-shaped mandibles, a remarkable character, which neither MacLeay nor Guérin have represented in their figures illustrative of this genus. The labrum is entirely exposed and has its sides serrated, another peculiar character not noticed by MacLeay, whose description of the inner lobe of the maxillæ ("lacina interna subcrustacea intus ad apicem unidentata") is also incorrect, as I have, on repeated dissection, observed both lobes to be equally membranous and destitute of teeth. The labial palpi arise from large scapes, which MacLeay has mistaken for the anterior margin of the mentum; and instead of the ligula or labium being, as he says, "vix distincta," its two lobes are porrected beyond the basal joint of the palpi. Guérin also has neither represented the scapes to the labial palpi nor the lobes of the labium. The ungues are simple in all the feet.

The species are confined to the old world.

Sp. 1. *Hybosorus arator*, Fabr., MacL. (*oblongus*, Dahl.)

Habitat Europa Australi (Hispania, Gall. mer.)

Long. corp. lin. 4.

Note: *H. arator*, Lap. Hist. Nat. Ins. Col. vol. ii. p. 108,

Senegallia; long. 3 lin.: Obscurè brunneus, tibiis anticis bidentatis. Species distincta?

Sp. 2. *Hybosorus latipes*, Germar, Perty, Ind.?

Sp. 3. *Hybosorus orientalis*, Hope, MSS.

Niger, nitidus, clypeo punctatissimo marginato, thorace tenue punctato, elytris striato-punctatis, tibiis anticis 3-dentatis.

Long. corp. lin. 6.

Habitat in India orientali.

Sp. 4. *Hybosorus Roei*.

Individua minora Indica, ex India orientali D. Roe missa ad Dom. Hope; elytra et thoracem colore piceo tincta, lineasque 4 long. habent. Vix tamen species distincta.

Sp. 5. *Hybosorus Laportei*.

Syn. *H. arator*, Lap. op. cit. supra.

Habitat Senegallia.

Sp. 6? *Hybosorus nitidulus*, Duf. Coll.? Lap. op. cit. p. 108.

“Brun rougeâtre, elytres *irregulièrement* ponctuées sur le disque, jambes antérieures fortement 3-dentées.”

Long. lin. 3, larg. $1\frac{1}{4}$.

Habitat Senegallia.

Obs.—Dejean gives this MS. species of Dufour as an *Orphnus*.

Sp. 7. *Hybosorus thoracicus*, Hope, MSS.

Oblongo-ovalis, piceo-rufus, thorace rufo; nitidus, capite thoraceque sublente tenue punctatis, elytris striato-punctatis, antennis luteis, tibiis anticis bidentatis.

Long. corp. lin. $3\frac{1}{2}$.

Habitat in Senegallia.

Mus. Hope, Melly.

Obs.—Color variat plus minusve piceus. Individua alia, nomine *H. oblongus* inscripta, in Mus. D. Melly vidi, sed haud distincta.

Sp. 8. *Hybosorus pinguis*, Westw.

Lator, piceo-niger, elytris nigris, clypeo punctato, thorace sublævi, elytris striato-punctatis, pedibus piceis, brunneosetosis, antennis fulvis, tibiis anticis 3-dentatis.

Long. corp. lin. 3, 4.

Habitat in Sierra Leone.

Mus. Hope, Melly. Alius duplo minor ex Africa in Mus. Melly haud differre videtur.

SILPHODES, Westw.

(Plate XI. fig. 2 and details.)

Corpus ovatum, subconvexum, marginibus reflexis et setosis.

Caput subtrigonum, margine laterali parum reflexo et ante oculos longè setoso. *Clypeus* fere rectè truncatus. *Labrum* porrectum, breve transversum, angulis anticis rotundatis, margineque antico in medio emarginato. *Mandibulæ* robustæ corneæ, exsertæ, margine externo valde rotundato et setoso, apice in dentem declivem producto, denteque altero minuto interno; margine interno setuloso. *Maxillæ* basi corneæ, extus setoso; lobo apicali magno membranaceo setoso, interno minuto ciliato, ciliis duabus crassioribus apicalibus. *Palpi* maxillares 4-articulati; articulo 1mo minuto, reliquis tribus longioribus, ultimo longo, parum curvato. *Mentum* fere rotundatum, longè setosum, margine antico emarginato. *Labium* laciniis duabus tenuibus productis. *Palpi* labiales breves, 3-articulati. *Antennæ* 10-articulatæ, clava 3-articulatæ; articulis infundibuliformibus, 1mo majori alteros duos recipiente. *Prothorax* transversus, posticè latior, anticè emarginatus, angulis posticis rotundatis, margine postico parum producto; lateribus reflexo-marginatis. *Scutellum* triangulare. *Elytra* ovalia, abdomen omnino tegentia, convexa, margine reflexo et ciliato. *Pedes* longitudine mediocres, tarsis posticis longioribus. *Tibiæ* 2 anticæ extus obtusè serratæ, dentibus tribus majoribus ad apicem et calcari unico armatæ. *Tibiæ* 4 posticæ angustiores, setis longissimis triplici serie positis. *Tarsi* 5-articulati; antici breves, articulo ultimo subtus spinulis armati. *Ungues* pedum anticorum dissimiles, majori intus ad basin spina brevi alteraque versus medium armato; minori fere recto, basi tamen valde curvato. *Ungues* pedum 4 posticorum fere similes, fere recti, ad basin tamen curvati.

The porrected labrum and mandibles, membranous lobes of the maxillæ and infundibuliform joints of the club of the antennæ, lead me to infer that this insect is much more nearly allied to the *Geotrupidæ* than to the *Trogidæ*, from which these characters especially remove it.* Its immediate relationship is *Hybosorus*, from which it is distinguished by the form of the mandibles, and

* A specimen of this genus, in the Cabinet of the Zoological Society, has a label attached to it in the handwriting of Mr. MacLeay, inscribed "*Trogidæ*, G. N." Had Mr. MacLeay however had an opportunity of examining the trophi of the genus, I am convinced he would have referred it to *Geotrupidæ*.

more especially by the dissimilarity in the form of the unguës, which is indeed a character which we meet with only amongst the *Melolonthidæ* and other Thalerophagous groups.

The genus bears a striking analogy to some of the species of the genera *Silpha* (*S. lævigata*) and *Necrophilus* (*N. hydrophiloides*, Esch.), not only in size but also in general appearance. This is the more interesting, because, from a label in the handwriting of Sir S. Raffles, attached to a specimen from Sumatra, (in the Zoological Society's Museum,) we learn that the species "feeds on dead animal matter. May, 1818." The construction of the trophi would certainly not have led to the idea of such a habit, the peculiar form of the mandibles and the membranous lobes of the maxillæ not appearing fit for such a mode of life.

The genus is probably confined to the sea coast, like *Ægialia* and the *Psammodii*.

Sp. 1. *Silphodes Indica*, Westw.

S. castaneo-fusca, lateribus rufescentibus, elytris striato-punctatis, mediocriter setoso-marginatis, tibiis anticis extus (et inter dentes) serratis, tarsis anticis simplicibus.

Long. corp. lin. $5\frac{1}{3}$.

Habitat in India Orientali.

In Mus. D. Melly.

Magnitudine quasi intermedia inter *S. Sumatrensem* et *Philippinensem*, illâ e tertia parte major, et magis glabrâ, hâc minor et angustior. Caput lateribus parum elevatis, clypeo ferrugineo punctato. Prothorax marginatus, tenuissimè punctatus, punctis lateralibus majoribus. Elytra regulariter striato-punctata, punctis haud profundis. Tibiæ anticæ extus (et inter dentes) serratæ. Tarsi antici et unguës simplices: an ♀?

Sp. 2. *Silphodes Madagascariensis*, Westw.

Piceo-castanea, lateribus pedibusque magis rufescentibus, capite anticè latiori, elytris minus ovatis, punctatis, punctis majoribus striisque tribus lævibus punctis utrinque marginatis, lateribus longius setosis.

Long. corp. lin. $5\frac{3}{4}$.

Habitat Madagascar.

In Mus. D. Melly.

Magnitudo fere *S. Gambiensis* at angustior, elytris et pedibus longius setosis, capite anticè magis quadrato, pone antennas magis rotundato, elytrorum punctis profundioribus striisque tribus lævi-

bus, singula striæ utrinque linea punctorum marginata. Tibiæ anticæ externè (et inter dentes) serratæ, unguibus (♂ ?) basi valde curvatis equalibus, uno dente in medio armato.

Sp. 3. *Silphodes dubia*, W.

Nigricans, lateribus vix setosis, prothorace lævi, elytris sub lente irregulariter punctatis, lineis tribus lævibus in singulo punctis utrinque marginatis, tibiis anticis externè (et inter dentes) serratis.

Long. corp. lin. $4\frac{1}{2}$.

Habitat — ?

In Mus. D. Hope.

S. Sumatrensi paulo major, et magis convexa; elytris, oculo nudo, lævibus, sed sub lente tenuissimè et irregulariter punctatis, striis tribus lævibus in singulo, stria singula utrinque punctis marginatâ. Tarsi antichi et ungues simplices.

Sp. 4. *Silphodes Sumatrensis*, W.

S. piceo-castanea, capite latiori, elytris striato-punctatis, margine longe setoso, tibiis anticis extus serratis, inter dentes integris.

Long. corp. lin. $3\frac{1}{2}$.

Habitat in Sumatra. D. Raffles.

In Mus. Soc. Zool. Lond.

Hæc species e cæteris differt statura minori, prothoracis lateribus magis parallelis, capite et parte antica prothoracis latioribus, elytris que magis convexis. Caput tenuissimè punctatum, inter oculos læve. Prothorax magis nitidus convexior punctatissimus, lateribus punctis majoribus marginatis. Elytra marginata ovalia convexa, minus dilatata, singulo striis circiter 18 equalibus e punctis impressis formatis. Setæ marginis elytrorum elongatæ. Pedes longiores et tenuiores. Tibiæ anticæ extus serratæ, spatiis inter dentes haud serratis.

It is this species which was observed by Sir S. Raffles to "feed on dead animal matter."

Mr. Hope has a specimen of this genus, which differs only from Sir S. Raffles' individual in being slightly larger, in being rather paler in colour, and in the striæ of the elytra not being quite so regularly or so deeply punctured; received with the erroneous name *Euparia castanea*, No. 83.

Sp. 5. *Silphodes Philippinensis*, W. (Pl. XI. fig. 2.)

S. piceo-castanea, capite thoraceque magis rufescentibus, elytris irregulariter valde punctatis striaque suturali alterisque 8

longitudinalibus (per paria dispositis) e punctis confluentibus formatis.

Long. corp. lin. $4\frac{1}{2}$ —6.

Habitat in insulis Philippinensibus. D. Cuming.

E præcedenti differt statura majori latiori, minus convexa, capite et parte antica prothoracis angustioribus, angulisque posticis hujus minus marginatis. Caput et prothorax tenuissimè punctata, hujus lateribus punctis majoribus. Setæ marginis elytrorum et pedum elongatæ. Tibiæ anticæ extus serratæ, spatiis inter dentes apicales etiam serratis.

Sp. 6. *Silphodes Gambiensis*, Westw.

S. castaneo-fuscus, prothoracis et elytrorum marginibus suturaque rufescentibus, elytris sub lente tenuissimè punctatis, striisque tribus e punctis majoribus in singulo. Long. corp. lin. 6.

Habitat apud ripos fluviorum Gambiæ et Senegalliæ. D. Tebbs. In Mus. Britann.

E *S. Philippinensi* differt capite angustiori, thorace minus punctato, elytris magis ovatis, setis marginalibus multo brevioribus, punctis disci irregularibus et minutis, lineis tribus in singulo e punctis majoribus formatis; ungues pedum anticorum æquales, parum curvati, uno in medio dentato.

Obs.—There is a genus indicated in Dejean's catalogue, between *Hybosorus* and *Ochodæus*, under the name of *Acallus*, (*Atimus*, Dej. Cat. 3rd edit.) composed of three species; *emarginatus*, Wiedemann [Wiedemann has described no species under such name], from Java, *affinis*, Dej., and *ciliatus*, Dej., both from Senegal. This genus is evidently identical with *Phæochrus* of Laporte, (Hist. Nat. Ins. Col. vol. ii. p. 108,) placed between *Geobius* and *Acanthocerus*, and composed of two species, *P. Senegallensis* and *P. emarginatus* (from Java). From the very short and slovenly description given of this genus, it is impossible to say whether it be identical with *Silphodes* or not.

COILODES, Westw. (κοιλότης, convexitas).

(Pl. XI. fig. 3, and details.)

Corpus breve, valde convexum, posticè rotundatum. Antennæ 10-articulatæ, clava rotundata, articulo 8vo magno infundibuliformi. Labrum porrectum, transversum, angulis anticis rotundatis, margine antico setoso, setis e punctorum serie productis. Mandibulæ elongato-trigonæ, extus curvatæ, apice

acutæ, margine interno emarginato setoso, basi internè inciso. *Maxillæ* lobis membranaceis setosis. *Mentum* quadratum, lateribus rotundis. *Palpi* labiales breves, 3-articulati, in scapulis crassos insidentes. *Labium* lobis duobus membranaceis ad basin articuli 2di palporum labialium productis. *Tibiæ* anticæ extus serratæ et 3-dentatæ. *Pronotum* in ♂ anticè excavatum, in ♀ vero integrum. *Ungues* tarsorum in ♂ intus in medio unidentati, in ♀ simplices. (Insecta Americana.)

The above characters will sufficiently characterize a small group of South American insects closely allied to and apparently representing the old world *Hybosori*, with which, in various respects, it is true that they structurally agree; but the form of the mandibles, and the sexual differences exhibited by the prothorax and unguis, will, I think, sufficiently distinguish them from that group. The type of the present genus is—

Sp. 1. *Hybosorus gibbus*, Perty, (Mart. and Spix, Del. An. Art. Bras. pl. 9, fig. 5).
(Pl. XI. fig. 3.)

Syn. *Hyb. Brasiliensis*, Laporte, H. d. Ins. Col. ii. p. 108.
Hyb. geminatus, Dej. Cat. ined.

Brevis, convexus, supra niger, nitidus; elytris marginatis, sub lente geminato-punctato-striatis; thorace ♂ anticè rotundato excavato, margine antico in medio tuberculo instructo; capitis fronte carina media transversa seu potius tuberculis duobus conjunctis, transversè positis.

Long. corp. lin. 3.

Habitat in Brasilia. In Mus. Hope, Melly, nostr.

Variat mas colore omnino luteo-fulvus. Habitat in Brasilia. Mus. Melly.

Sp. 2. *Coilodes Chilensis*, W.

C. piceus, thorace maris rufo-piceo, excavatione magna antica, margineque antico in medio tuberculo prominenti.

Long. corp. lin. 3½.

Habitat in Chili.

In Mus. Soc. Ent. Lond.

Præcedenti paullo major, magis piceus vel rufo-piceus, thorace magis impresso in parte magis antica. Aliter simillimus.

Sp. 3. *Coilodes castaneus*, W.

C. piceo-castaneus, nitidus, thorace maris parum excavato, elytris vix geminato-striato-punctatis, pedibus brunneis.

Long. corp. $2\frac{3}{4}$. *C. gibbo* valde affinis.

Habitat in Colombia.

In Mus. D. Melly (*Hybosorus castaneus*, Buq. MSS.)

Sp. 4. *Coilodes parvulus*, W.

C. luteo-brunneus, nitidus, elytris profundius geminato-striato-punctatis ♀.

Long. corp. lin. $2\frac{1}{8}$.

Habitat in Brasilia. In Mus. Melly.

Species 4 præcedentes forsitan varietates sp. ejusdem existimari debent.

From their geographical habitat I presume the following species belong to this genus:—

Hybosorus rufulus, Laporte, op. cit. p. 108.

Habitat in Insula St. Doming.

Hybosorus humeralis, Mann.

Habitat in Brasilia.

Hybosorus auger, Mann.

Habitat in Brasilia.

Hybosorus discus, Dej. Cat. ined.

Habitat Buenos Ayres, Brasilia.

Hybosorus granarius, Dej. Cat. ined.

Habitat in Brasilia.

Hybosorus testaceus, Dej. Cat. ined.

Habitat in Carthagera.

Hybosorus minutus, Buq., Dej. Cat. 3rd edit. ined.

Habitat Cayenne.

CHETODUS, Westw.

(Pl. XI. fig. 4, and details.)

Corpus oblongo-ovatum convexum, superficie setosa. *Caput* parvum, anticè triangulare, clypei apice rotundato. *Labrum* porrectum, latior quam longus, margine antico recto, angulis rotundatis. *Mandibulæ* conicæ crassæ subtrigonæ, extus rotundatæ, apice curvato et intus oblique truncato, membranaque setosa interna instructæ. *Maxillæ* lobo externo subovato membranaceo setoso, interno minuto subcorneo, apice stylis duobus brevibus instructo. *Palpi* maxillares subbreves, articulo 1mo brevissimo, 2ndo crasso, 3tio parum

breviori, tertio longiori attenuato. *Mentum* cordatum, basi truncatum. *Palpi* labiales minuti, scapo basali haud conspicuo. *Labium* e lobis duobus sub palpos conspicuis constans. *Antennæ* 10 articulatae, clava rotunda, articulo 8vo infundibuliformi. *Pronotum* integrum, posticè fere latitudine elytrorum. *Elytra* magna convexa, striata et setosa. *Tibiæ* anticae 3-dentatae, posticae 4 in medio haud dentatae. *Ungues* simplices. (Insecta Americae meridionali propria.)

Sp. 1. *Chætodus piceus*, Westw. (Pl. XI. fig. 4.)

C. piceus, nitidus, capite thoraceque rudè punctatis, elytris regulariter striatis, luteo-setosis, pedibus valde setosis, antennarum clava lutea.

Long. corp. lin. 3.

Habitat in Brasilia, D. Swainson.

In Mus. Soc. Zool. Lond.

Caput clypeo rotundato, tenue marginato, hoc et pronotum vagè et rudè punctatis, lateribus marginatis et setulosis. *Elytra* striata, singulo striis 12 simplicibus æque distantibus et setosis. *Pedes* mediocres, tibiis anticis serrulatis, apice tridentatis.

Sp. 2. *Chætodus irregularis*, Westw. (Plate XI. fig. 4f.)

C. piceus, nitidus, capite thoraceque grossè punctatis, elytris irregulariter striatis, antennarum clava obscuriore.

Long. corp. $2\frac{1}{2}$.

Habitat in Brasilia. In Mus. D. Melly.

Clypeus rufescens, tenue marginatus punctatus. *Pronotum* irregulariter et grossè punctatum, lateribus subserratis et setosis. *Elytra* striata, striis simplicibus, singulo striis 10; 1ma suturali, 2da et 3tia, 4a et 5tia approximatis, reliquis externis æque distantibus, punctis perpaucis ad margines striarum intermediarum. *Pedes* mediocres, tibiis anticis 3-dentatis.

The mandibles in this species have the outside near the base more gibbous, and the apex not so obliquely truncate within; the antennæ have the intermediate joints acutely produced within, the points being directed backwards; the maxillæ and mentum agree with those of the preceding species, but the lobes of the labium are more porrected.

Sp. 3. *Chætodus? basalis*, Westw.

C.? piceus, nitidus, elytris basi rufis, punctato-striatis, pedibus elongatis gracilibus.

Long. corp. lin. 2.

Habitat in Cayenna. In Mus. D. Melly.

Caput deest. Thorax tenue punctatus. Elytra striato-punctata, singulo circiter seriebus 12 punctorum impressorum, lateralibus magis irregularibus. Pedes longi graciles, tibiis anticis externè subserratis, apice 3-dentatis, dente interno minuto, tibiis intermediis et posticis in medio haud dentatis setosis, tarsis elongatis gracilibus, unguibus curvatis integris.

ANAIDES, *Westw.*

(Pl. XI. fig. 6, and details.)

Corpus supra planum, rugosum, setosum; thorace in medio longitudinaliter carinato, parte antica angustiore. *Caput* mediocre, subovale, anticè angustius, marginibus clypei parum elevatis, rugosis. *Labrum* exsertum, transversum, anticè margine setoso. *Mandibulæ* elongatæ, versus apicem curvatæ, acutæ, edentatæ, margine interno membrana instructo. *Maxillæ* elongatæ, lobo apicali longo setoso, edentato, apice parum latiori; lobo interno longo, gracili parum setoso, apice supero in dentem parvum corneum terminato. *Palpi maxillares* longitudine mediocres, articulo 1mo minuto, 2do et 3tio subæqualibus, 4to longiori elongato-ovali. *Mentum* oblongum, lateribus parum extus arcuatis, longè ciliatum. *Labium* e lobis duobus membranaceis distinctis, ponè palpos porrectis, constans. *Palpi labiales* breves, 3-articulati, articulo 3tio parum longiori. *Antennæ* 10-articulatæ, 1mo curvato, apice vix crassiori setoso, 3bus ultimis distinctis, clavam formantibus, 8vo majori. *Prothorax* transversus, lateribus arcuatis, antice angustior, (capite tamen latior,) et posticè elytrorum basi parum angustior, angulis posticis subacutis, dorso in medio longitudinaliter canaliculato. *Elytra* thorace latiora, pone humeros parum dilatata, podicem occultantia, lineâ elevatâ in utroque, ex angulo humerali fere ad apicem, et cum latere parallela, ductâ. *Pedes* longitudine mediocres. *Tibiæ* extus serratæ, intus setosæ, anticæ dentibus tribus extus versus apicem armatæ. *Tarsi* et ungues simplices.

This is a singular genus, which seems to partake of the characters of the *Trogidæ* and *Geotrupidæ* almost in an equal degree. In general appearance it has almost the appearance of a small *Trox*, but is more flattened on the back, which is increased by the two lateral carinæ of the elytra. The antennæ are also 10-jointed, whereas they are 11-jointed in the majority of the *Geotrupidæ*. The labium has its two lobes exposed beyond the extremity of the mentum.

The mandibles are destitute of the cavity filled with membrane on the inside as in *Trox*, the membrane in fact being present, but extending along the inside of the jaws. The maxillæ also more nearly resemble those of *Geotrupes* than *Trox*. The tothing of the tibiæ is quite unlike either *Trox* or *Geotrupes*, and resembles *Cryptogenius*, with which it also agrees in various other respects; as the structure of the mandibles, the lateral carinæ of the elytra, colour, texture, sculpture, geographical distribution, &c.

Anaides fossulatus, Westw. (Pl. XI. fig. 6.)

Nigro-fuscus, subnitidus, punctulatus, setosus; antennarum clava pallidiori, prothorace in medio fossula longitudinali.

Long. corp. lin. $3\frac{1}{2}$.

Habitat in America meridionali. In Mus. D. Hope.

Caput subtriangulare, angulo antico rotundato, marginibus serrulatis, punctatum. Prothorax variolosus setosus, setis e medio impressionum subrotundarum irregularium productis, carinis duabus longitudinalibus parallelis, spatio angusto intermedio parum excavato; lateribus subrotundatis, obtusè serrulatis. Elytra læviter striata, singulo striis 8 e punctis impressis ovalibus, connexis; et inter has strias linea fere recta, punctisque remotioribus subrotundis setigeris; inter humeros et scutellum carina parva et abbreviata, carinaque altera e humero fere ad apicem utriusque elytri extensa. Tibiæ anticæ ad apicem externè dentibus tribus acutis armatæ, reliquæ serratæ et setosæ.

Obs.—M. Guérin-Meneville possesses an undescribed insect, which appeared to me, on a casual examination, to belong to the present genus, which I learn is Dejean's Catal. genus *Adelops*.

APALONYCHUS, West., (*ἀπαλῶν ὀνόχον*).

(Pl. XI. fig. 5, and details.)

Corpus oblongo-ovatum, convexum. *Caput* mediocre, clypeo lato, anticè truncato. *Labrum* semicirculare, porrectum. *Mandibulæ* corneæ, porrectæ, extus valde curvatæ, apice oblique emarginato, intus ad basin incisæ. *Maxillæ* lobis duobus minutis, externo membranaceo integro setoso, interno minimo subcorneo, apice stylifero. *Palpi maxillares* elongati graciles. *Mentum* elongato-crateriforme, longe setosum. *Palpi* sublongi, 3-articulati, articulo ultimo longiori, in scapos duos breves latos insidentes. *Labium* inconspicuum. *Antennæ*

longiores quam in præcedentibus, 10-articulatæ, articulis tribus clavæ laxis intus elongato-productis, articulo 8vo majori, 9no curvato. *Prothorax* simplex. *Pedes* sublongi, tibiæ anticæ extus serrulatæ apiceque bidentatæ. *Tibiæ* 4 posticæ in medio inermes. *Ungues* pedum omnium in medio dente parvo acuto armati.

The type of this group completely proves the impossibility of limiting one family group in extensive tribes of insects by fixed characters, the curious structure of the antennæ, and the inner lobe of the maxillæ, materially receding from the Geotrupideous type; the arched exposed mandibles and labrum, curved mandibles, and toothed tarsal ungues, however, prove its near approximation to some of the preceding groups. The enlarged size of the first joint of the club of the antennæ appears rather Geotrupideous, whilst the concealed lobes of the labium are more Trogideous. The entire habit of the insect is, however, much more like some of the *Geotrupidæ* with 11-jointed antennæ than *Trox*.

Apalonychus Waterhousii, Westw. (Pl. XI. fig. 5.)

A. fulvo-castaneus, nitidus, lævis; antennarum clava lutea, elytris tenue et irregulariter punctato-striatis, lateribus longe setosis. Long. corp. lin. 4.

Habitat in Insula Cuba.

In Mus. D. Waterhouse; [et nunc etiam nostro, sub nomine *Trichops helvolus*. D. Erichsonio amicissime transmissus.]

Caput parte antica depressa; clypei lateribus parum marginatis. Caput et pronotum vage punctata, punctis minutis. Elytra punctatissima, punctis in strias numerosas parum regulares dispositis. Elytra et pronotum tenue marginata, pedes coloribus, longe setosi. Calcaria pedum posticorum breviores.

Fam. TROGIDÆ.

CRYPTOGENIUS, Westw.

(Pl. XII. fig. 1, and details.)

Corpus supra planum, rugosum, setosum, thorace subrotundato, elytris angustiori, pedibus longis. *Caput* suborbiculatum, margine antico tuberculato, clypeo infero magno, antice truncato. *Labrum* magnum, crustaceum, transversum, angulis anticis rotundatis, medio marginis anteriorum acuminato.

Hoc labrum (insecto quiescente) spatium inter clypeum et pedes anticos occupat, reliquis partibus oris omnino absconditis. *Mandibulæ* magnæ corneæ, extus curvatæ apice acutæ, margine interno tenui, tenuissime ciliato. *Maxillæ* basi corneæ, lobo apicali maximo membranaceo ciliato, lobo interno parvo membranaceo ciliato. *Palpi maxillares* breves, crassi, 4-articulati: articulo 1mo brevissimo; 2do et 3tio brevibus, crassis; 4to majori, ovato, apice attenuato. *Mentum* maximum, corneum, fere in duas partes incisione magna setosa marginis antici divisum. *Palpi labiales* breves, 3-articulati, articulis duobus basalibus brevibus, ultimo longiori-ovato. *Labium* membranaceum, e lobis duobus longissimè setosum formatum. *Antennæ* 10-articulatæ, articulo 1mo magno lato, angulo antico internè producto, articulis 3-7 sensim crassioribus. *Clava* 3-articulata, brevis, crassa, articulis distinctis. *Prothorax* fere rotundatus, supra depressus, margine antico emarginato lineaque transversa elevata cum illo proxima et parallela; lateribus tuberculatis et posticè angustatis, margineque postico in medio parum producto. *Scutellum* triangulare. *Prosternum* subacuminatum. *Elytra* thorace latiora, supra fere plana, anum tegentia, singulo seriebus 4 longitudinalibus tuberculorum costas totidem fere formantibus. *Pedes* elongati, tibiis subangustis, tuberculato-serratis; antici dentibus tribus majoribus ad apicem externè armatis. *Calcaria* pedum 4 posticorum brevissima. *Ungues* simplices. *Color* obscurus.

This most singularly formed *Lamellicorn* appears to me to be more nearly allied to the *Trogidæ* than to the *Geotrupidæ*, or any other family, although in several respects it differs from every known group. In its dull colour and tuberculated setose appearance, the large size of the exerted labrum, horny mandibles, 10-jointed antennæ, with the joints of the club free, and concealed labium, it agrees with the *Trogidæ*; but in its depressed form, concealed mouth (shutting in with the base of the fore legs), elongated feet, notched anterior tibiæ, membranous lobes of the maxillæ, mandibles not toothed and unfurnished with a membranous notch on the inner margin, and singularly formed mentum, it differs from the characters of that family. The points of agreement appear to me to be of greater value than those in which the genus differs from that family. If, on the other hand, we regard the membranous labrum and mandibles as the typical character of the *Aphodiidæ* and *Scarabæidæ*, it differs at once from those two families; whilst the distinctly free jointed clava of the 10-jointed

antennæ, depressed body, and concealed labium, remove it from the *Geotrupidæ*, with which it however agrees in several important characters, such as the membranous lobes to the maxillæ, notched fore tibiæ, horny mandibles, with the upper edge ciliated. The large exposed labrum also at once removes it from the *Dynastidæ*,

Cryptogenius Miersianus, W. (Pl. XII. fig. 1.)

Nigricans, subnitidus, luteo-setosus; capite thoraceque circulis concentricis confluentibus sculpturatis; elytris striis numerosis tenue impressis irregularibus, spatio inter strias impressionibus ovalibus confluentibus, singulo tuberculis triplici serie ordinatis, costaque elevata laterali. Long. corp. lin. $3\frac{1}{2}$. Habitat in Nova Grenada. In Mus. D. Miers et Hope.

D. Miers, Entomologus necnon Botanicus peritissimus, copiam ditissimam insectorum Americæ meridionalis collegit, multasque species singulares mecum benevolissime communicavit.

ΓΕΘΒΙΟΥΣ, Brullé, Exped. Sci. de Morée; Laporte, in Hist. Nat. ins. Col.

(*Hybalus*, Dejean, Catalogue, *Ægialia* pars Guérin, Icon. R. An.)
(Pl. XII. fig. 2 a—2 c, and details.)

This genus possesses a strong relationship with *Ægialia*, not only in its short broad outline, but also in the dentated mandibles and structure of the maxillæ; the antennæ are, however, 10-jointed, with a short basal joint, and the head cornuted in the males. Like *Cryptogenius* it possesses free joints in the clava of the antennæ, the first of the club being however larger than either of the others;* hence, as well as from the denticulation of the mandibles and structure of the maxillæ, and but slightly exposed labial lobes, this genus must rank in the family *Trogidæ*.

The upper lip is transverse, with the front margin strongly setose, and the angles rounded off.

The mandibles have their lateral edges exposed, being thin, and dilated outwards, the right hand mandible being slightly bifid at the tip, whilst the left hand one has an acute apical tooth, and another stronger and more acute below the apex within; both have a broad bidentate tooth in the middle of the inner margin, below which is a deep notch.

The maxillæ have the upper lobe triangular, the point directed inwards over the inner lobe; its upper edge is furnished with several

* The club of the antennæ is incorrectly described by Laporte as infundibuliform.

strong curved spinulose setæ, two of which are much stronger than the others. The inner lobe is produced into a rather long bifid horny point. The maxillary palpi are of moderate length, with the terminal joint cylindric-ovate.

The mentum is somewhat oblong, and rather narrowed in front. The lobes of the labium are slightly visible behind the base of the palpi, which have the middle joint angulated beyond the middle, and strongly setose.

The anterior tibiæ are rather broad, without serrations along the margin, and with three obtuse teeth; the middle and hind tibiæ are denticulato-setose in the middle; the calcaria of the four hind feet are long, and the ungues are simple.

The male, in addition to the upright horn at the front of the head, is distinguished by having the front of the thorax rather retuse, and furnished with two small tubercles.

Sp. 1. *Geobius Dorcas*.

Copris Dorcas, Fabr.* Ent. Syst. Suppl. p. 31; Syst. Eleuth. i. p. 44; Germar in Silb. Rev. Ent. vol. iv. p. 112; Guérin, Icon. R. An. Ins. texte, p. 81 (*Ægialia Dorcas*), pl. 22, fig. 1. (*Ægialia cornifrons*.)

Ægialia cornifrons, Dejean olim.

Geobius cornifrons, Brullé, Exped. Sc. de Morée, Ins. p. 173; Laporte, Ins. Col. vol. ii. p. 108.

Hybalus cornifrons, Dej. Cat.

? *glabratus*, Pk. teste Dej. Cat.

Habitat Ital. merid., Sicilia, Corfu, (Barbaria, teste Dej.)

Sp. 2. *Geobius barbarus*, Lap. Op. cit.

G. lævicollis, Dej. Cat. sine discr.

Habitat Algeria.

TRIODONTUS, Westw.

(Pl. XII. fig. 4 a—4 e, and details.)

Corpus ovale, depressum, fere *Colymbetis* pedibus posticis subelongatis. *Caput* in mare cornu erecto medio, fœminæ inerme.

Labrum exsertum transversum, margine antico fere recto, angulis rotundatis. *Mandibulæ* lateribus detectis, 3-dentatæ, dente interno in mandibula dextera, minimo fere inconspicuo.

Maxillæ fere ut in *Geobio*, lobo supero longiori, spinulis cur-

* In the first of these works Fabricius gives Tangier as the habitat of this species, and in the latter Mauritania.

vatis brevioribus et fere æqualibus, lobo interno parvo, apice dentibus vel spinis nonnullis minutis. *Mentum* fere quadratum, anticè vero parum angustatum. *Palpi labiales* breves, in scapos duos insidentes; 3-articulati, articulo basali minuto, 2do in medio intus angulato et setoso; labii lobi sub scapos labiales distincti. *Antennæ* 10-articulatæ breves, articulo basali parvo; clava articulis liberis. *Pronotum* in ♂ retusum et subtuberculatum. *Tibiæ* anticæ breves latæ, 3-dentatæ; posticæ 4 in medio dentatæ. *Calcaria* elongata. *Ungues* simplices elongati.

These characters are derived from a small species from Madagascar, known in various collections under the name of *Orphnus Madagascariensis*, but which M. Guérin has described in his "Iconographie" under that of *O. nitidulus*. It differs, however, in several respects from *Orphnus* as well as from *Geobius*, to which it is also nearly allied.

The front of the pronotum differs in different specimens (as in most cornuted insects), in the extent of the impression in front; in some are three small central tubercles in a row at the hind part of this impression, with two lateral ones, whilst in others they are more or less obliterated. I have also seen several specimens with the front of the thorax smooth and entire, as in the female, but with a small elevated tubercle in the middle of the clypeus, as though it were the rudiment of the horn of the male.

ÆGIDIUM. (Cat. Gall. sine descr.)

(Pl. XII. fig. 5—8, and details.)

Corpus oblongo-ovatum, thorace fere elytrorum latitudine, capite in utroque sexu inermi, pronoto vero in mare valde excavato, lateribus angulato-elevatis. *Caput* transversum. *Clypeus* margine antico lato, vix sinuato. *Labrum* exsertum, latum, angulis rotundatis ciliatis. *Mandibulæ* lateribus exsertis corneæ bidentatæ, dente apicale bifido, margine interno membrana ciliata instructo. *Maxillæ* lobo apicali lato, extus rotundato, intus in angulum acutum producto, margine supero ciliis latis corneis curvatis armato; lobo interno corneo subacuto, ante apicem supra seta spiniformi instructo. *Palpi* mediocres, filiformes, articulo ultimo elongato-ovato. *Mentum* ovatum, anticè angustius. *Palpi labiales* brevissimi, in scapos insidentes. *Labium* bilobum, lobis ultra basin palporum exsertis. *Antennæ* 10-articulatæ, articulis clavæ liberis, ultimo minori. *Thorax* latior quam longus, lateribus rotundis, anticè quam posticè vix latior, in mare excavatus, in fœmina vero canali

brevi centrali tantum instructus. *Prosternum* in spinam anticè productum. *Elytra* ovalia. *Pedes* mediocres; tibiis anticis haud serratis, apice externè 3-dentatis; tibiis posticis in medio extus subdentatis, apice externo in spinam acutam productis. *Calcaria* longa. *Ungues* simplices. *Podex* depressus, elytris haud tectus. (Insecta Americana.)

Sp. 1. *Ægidium Colombianum*, Westw. (Pl. XII. fig. 7, 8.)

Æ. nigrum, capite thoraceque lævibus nitidis, elytris subpiceis carinatis et punctis ovalibus obsitis; maris pronoto tuberculo frontali et excavatione magna dorsali; fœminæ pronoto canaliculato.

Long. corp. ♂ lin. 9; ♀ lin. 7½.

Habitat in Colombia. In Mus. D. Reich, Parisiis.

Sp. 2. *Ægidium parvulus*, Bilberg. (*Æg. muticum*, Dej. Cat. ined.)
(Pl. XII. fig. 6, and details.)

Æ. angustius, nigro-piceum, obscurum, undique punctatum, elytris bicarinatis, pronoto canali dorsali subobsoleto.

Long. corp. lin. 5½.

Habitat in insula Guadeloupe. In Mus. D. Hope et Melly.

Obs.—Individuum vidi reliquis simile, nisi in margine antico pronoti tuberculo instructo, ut in maribus reliquorum; aliter simillimus.

Sp. 3. *Ægidium hædulus*, Dej. Cat. ined.

Æ. nigrum, nitidissimum, pronoto maris in medio valde depresso punctato, lateribus angulato-elevatis, tuberculoque frontali in utroque sexu armato, ♀ impressione seu canali frontali lato minime profundo; elytris magis rotundatis, punctatis, punctis in strias irregulares dispositis.

Long. corp. ♂ 5; ♀ lin. 4.

Habitat in Brasilia.

In Mus. Hope, Melly, et Soc. Ent. Lond.

Obs.—Individa pro fœmina supra descripta tuberculum habent in medio marginis antici prothoracis, articulumque 2dum palporum labialium in medio intus angulatum et setosum. Mandibulæ maris dentes habent magis acutos quam in *Æg. parvulo*, et articulos 5, 6, et 7 antennarum intus acute dentatos.

Sp. 4. *Ægidium?* *Guianense*, Westw. (Pl. XII. fig. 5a—5d.)

Æg.? breve convexum, castaneum, pronoto posticè parum angustato, mandibulis extus cornu obtuso armatis.

Long. corp. lin. $4\frac{1}{2}$.

Habitat in Guiana. D. Schomburghk. In Mus. nostr.

E reliquis differt habitu, lateribus pronoti minus rotundatis, ut et structura partium nonnullarum essentialium. Vix tamen genus distinctum format.

Clypeus anticè rotundato-productus, punctatissimus. Labrum exsertum, semicirculare, ciliatum. Mandibulæ exsertæ, versus medium lateris externi cornu brevi lato truncato armatæ, dentibus duobus, supero bifido ut in *Ægidiis* veris. Maxillæ etiam ut in illis, lobo interno vero in hamum simplicem producto. Pronotum transversum, marginibus serrulatis, et cum elytris fere continuis; in medio versus marginem anticum parum longitudinaliter impressus et punctatus, spatio postico lævi nitido et fere punctis destituto, lateribus vero punctatis. Elytra punctata; punctis in strias fere regulares (10 in singulo) dispositis. Tibiæ anticæ acute 3-dentatæ, unguibus simplicibus. Tarsi 4 postici articulo basali intus ciliis rectis numerosis instructo.

ORPHNUS, MacLeay.

(Pl. XII. fig. 9, and details.)

This is an interesting genus, which evidently forms a connecting link with such of the smaller *Dynastidæ* as have the head cornuted, and the thorax excavated in front in the males. The entire structure of the mouth, however, proves its nearer relationship with the preceding genera; and hence the opinion of Latreille (*Règne An.* iv. 549), that it is identical with *Oryctes*, cannot be adopted.

The description of the trophi given by Mr. MacLeay disagrees so completely with the numerous dissections which I have made of nearly every species, that it is necessary to give the following characters of the parts of the mouth.

Labrum exsertum, transversum, anticè emarginatum, angulis rotundatis, margine antico valde setoso. *Mandibulæ* latæ planiusculæ, extus valde curvatæ, intus dentibus 4 acutis armatæ, dente 2do majori, margine interno versus basin membrana setosa instructæ. *Maxillæ* bilobæ, lobo exteriori obrigono, angulo interno acuto, dorso longe ciliato, ciliis curvatis et spinulosis, lobo interno parvo corneo, setigero,

subtridentato, dente intermedio longiori et acuto. *Palpi maxillares* articulo ultimo oblongo ovato, margine externo tamen fere recto. *Mentum* subquadratum, lateribus parum rotundatis, margine antico in medio paullo angulato. *Palpi labiales* in scapos duos breves et latos insidentes, articulo ultimo subovato, præcedentibus majori. *Labium* e lobis duobus rotundatis membranaceis ciliatis ad apicem articuli 1mi palporum extensis formatum.

Sectio 1. Species Indicæ.

Sp. 1. *Orphnus bicolor*, Fab. MacLeay.

Long. corp. lin. $3\frac{1}{2}$.

Sp. 2. *Orphnus Mysoriensis*, Westw.

O. brunneus seu nigro-piceus, tuberculo elevato in medio marginis postici prothoracis, elytris irregulariter punctatis.

Long. corp. ♂ lin. 5; ♀ lin. $4\frac{1}{3}$.

Habitat in Ind. Orient., Mysore.

In Mus. D. Hope.

Clypeus in mare cornu erecto, fere recto armatus, capite posticè punctulato. Prothorax glaberrimus, excavatione media profunda fere ad marginem posticum extensa, ubi desinit in tuberculo elevato, lateribus conico-elevatis, et acutis, versus caput parum prominentibus. Elytra subbrevia, valde convexa, punctatissima, punctis irregularibus striaque suturali. Tibiæ anticæ dentibus 3us magnis et acutis armatæ. Tarsi simplices. Fœmina differt capite thoraceque inermibus.

Sp. 3. *Orphnus picinus*, Westw.

O. piceo-niger, nitidus, capite ♂ cornu erecto, prothoraceque excavatione magna media, margine postico marginato, elytris striis irregularibus parum impressis.

Long. corp. ♂ lin. $4\frac{1}{2}$; ♀ lin. 4.

Habitat in Ind. Orient., Bombay.

In Mus. D. Melly et nostr.

Præcedenti parum minor, angustior et minus convexus. Prothorax ♂ excavatione magna ovali media punctata, fere ad marginem posticum thoracis extensa, tuberculo minuto versus marginem anticum, lateribus excavationis conico-elevatis, apicè obtuso, lateribusque versus caput fere rectis. Elytra striis nonnullis irregularibus impressis et vage punctatis.

Fœmina differt capite inermi prothoraceque integro, nisi excavatione minuta versus medium marginis antici.

Sp. 4. *Orphnus impressus*, Westw.

O. piceus vel rufo-piceus, capite posticè in ♀ tuberculo parvo armato, pronotoque anticè excavatione triangulari instructo ♀.

Long. corp. lin. $3\frac{1}{2}$ —4.

Habitat in India Orientali centrali.

In Mus. D. Hearsey et Soc. Ent. Lond.

O. *Mysoriensi* ♀ valde affinis, differt tamen statura minori, prothoraceque anticè impresso margineque postico in medio parum elevato et disco versus marginem posticum interdum longitudinaliter tenuissimè canaliculato.

♂ ? (vel ♂ *O. bicoloris*?) Niger, nitidus, vage punctatus, elytris irregulariter striatis, pedibus castaneis, clypeo cornu brevi erecto, pronotoque anticè semicirculariter excavato, excavatione vix ultra medium pronoti extensa, lateribus excavationis posticè vix elevatis.

Long. corp. lin. $3\frac{1}{2}$.

Habitat in Ind. Orient. centrali.

In Mus. D. Hearsey.

Idem vidi cum nomine "Africa" pro patria designatum—an recte?

Sp. 5. *Orphnus nanus*, Westw.

O. niger aut castaneus, nitidus, oblongus, capite ♂ cornu brevi erecto et pronoto semicirculariter excavato, excavatione haud ultra medium pronoti extensa lateribusque vix elevatis et in tuberculo terminatis, capite pronotoque vage punctatis, elytrisque irregulariter striatis punctisque majoribus in strias rudas dispositis.

Long. corp. lin. $2\frac{3}{4}$.

Habitat in India Orientali.

In Mus. D. Hearsey.

O. *impresso* valde affinis, præsertim in maribus; differt tamen magnitudine minori (multa enim vidi ejusdem magnitudinis). Fœmina etiam differt pronoto anticè magis retuso, clypeoque tuberculo elevato instructo.

Sectio 2. Species Africanæ.

Sp. 6. *Orphnus Meleagris*, (Dej. Cat. sine descr.)

(Plate XII. fig. 9, and details.)

Latus, castaneo-fulvus; elytris stria suturali punctisque irregularibus, capite cornu elevato conico frontali pronotoque valde excavato, lateribus conico-elevatis, versus caput subrotundatis.

Long. corp. lin. 5.

Habitat in Senegallia.

In Mus. D. Hope.

Species reliquis latior; fulvo-castaneus, nitidus, tenue punctatus; antennarum articuli 6 et 7 setam longam emittunt; pronoti excavatio subtriangularis, profunda, tenue punctata, fere ad marginem posticum extensa, lateribus excavationis in medio conico-elevatis, at versus caput parum rotundatis, margine postico pronoti haud tuberculato. Tibiæ anticæ latæ, fortiter tridentatæ, dente interno fere ad basin tibiæ posito. Tarsi antichi articulo basali brevissimo, articulis latis, ultimo ovato.

Fœminam simillimam at paullo obscurionem, capite et pronoto simplicibus, tarsis anticis ut in mare formatis, vidi in Mus. D. Hope, cum nomine *O. Dumolinii* inscriptam.

Sp. 7. *Orphnus MacLeay*, Laporte, (Ann. Soc. Ent. de France, vol. i. p. 405.)

“*O. fusco-nigricans*, capite anticè cornuto, thorace medio excavato, scutello posticè rotundato, elytris fusco-rubidis, valde punctatis, ad suturam stria impressis, corpore subtus pedibusque ferrugineis.

“Long. 4, larg. 2 lign.”

Habitat in Senegallia.

An idem cum præcedenti?

Sp. 8. *Orphnus Senegalensis*, Lap. (op. cit. p. 406.)

“*O. obscurè fuscus*, elytris irregulariter striatis, thoracis lateribus minus elevatis quam in præcedente.

“Long. 3, larg. 1½ lign.”

Habitat in Senegallia.

Insectum masculinum e Senegallia cum hoc nomine inscriptum in Mus. D. Hope hospitatur: colore castaneo, capite et margine

antico pronoti nigricantibus, lateribus excavationis pronoti conico-subelevatis et versus caput tuberculo utrinque armatis, tarsis simplicibus, elytris punctis versus suturam in striis irregularibus dispositis. Long. corp. lin. $3\frac{1}{2}$, (mensur. Angl.)

Fœminam hujus in Mus. D. Melly vidi simillimam, at capite in medio tuberculo minuto armato et pronoto anticè impresso. Long. corp. lin. $3\frac{1}{3}$. Habitat etiam in Senegallia.

Sp. 9. *Orphnus Verreauxii*, Reich. MSS. in Guér. Expl. Icon. R. An. p. 86.

E præcedentibus differt magnitudine majori (long. 14 mill. = 7 lin. mens. Angl.), capite cornu parvo elevato armato, pronoto excavatione transversa, tarsis anticis in ♂ ungue interno maximo depresso et bifido: in ♀ simplici.

Habitat Cap. Bon. Spei.

Sp. 10. *O. ? nitidulus*, Dufour. Dej. Cat. sine descr.

Habitat Senegallia.

DESCRIPTION OF THE PLATES.

Plate XI.

Fig. 1 a—1 f, details of *Hybosorus arator*.

1 a, clypeus, labrum and mandibles; 1 b, maxilla; 1 c, instrumenta labialia; 1 d, antenna; 1 e, terminal joints of antenna.

2, *Silphodes Philippinensis*; 2 a—2 k, details.

2 a, clypeus, labrum and mandibles; 2 b, mandible; 2 c, extremity of mandible seen sideways; 2 d, maxilla; 2 e, instrumenta labialia; 2 f, antenna; 2 g, anterior tibia and tarsus of the male; 2 h and 2 i, anterior ungues ♂ in different positions; 2 k, anterior tibia and tarsus of the female.

3 a—3 f, details of *Coilodes gibbus*.

3 a, labrum; 3 b, mandible; 3 c, maxilla; 3 d, instrumenta labialia; 3 e, anterior tibia; 3 f, ungues (in all the feet similar).

4, *Chatodus piceus*; 4 a—4 f, details.

4 a, clypeus, labrum and mandible; 4 b, mandible; 4 c, maxilla; 4 d, instrumenta labialia (one of the palpi removed); 4 e, antenna; 4 f, part of antenna of *Chatodus irregularis*.

5, *Apalonychus Waterhousii*; 5 a—5 g, details.

5 a, head and antenna; 5 b, mandible; 5 c, maxilla; 5 d, instrumenta labialia; 5 e, extremity of antenna; 5 f, anterior leg; 5 g, posterior tibia and tarsus.

6, *Anaides fossulatus*; 6 a—6 e, details.

6 a, head; 6 b, maxilla; 6 c, instrumenta labialia; 6 d, punctures of pronotum; 6 e, striation of elytra.

Plate XII.

Fig. 1, *Cryptogenius Miersianus*; 1 a—1 i, details.

1 a, underside of front of body, showing the mode in which the head folds into the anterior cavity of the prosternum; 1 b, underside of head; 1 c, mandible; 1 d, maxilla; 1 e, instrumenta labialia; 1 f, labial palpus removed; 1 g, antenna; 1 h, areolated punctures of the pronotum; 1 i, striation of elytra.

2 a—2 c, details of *Geobius Dorcas*.

2 a, mandible; 2 b, lobes of maxilla; 2 c, antenna.

3 a—3 e, details of *Ochodæus chrysomelinus*.

3 a, labrum; 3 b, 3 c, mandibles; 3 d, maxilla; 3 e, antenna.

4 a—4 e, details of *Triodontus nitidulus*.

4 a, labrum and mandible; 4 b, mandible; 4 c, maxilla; 4 d, instrumenta labialia; 4 e, antenna.

5 a—5 d, details of *Ægidium? Guianense*.

5 a, clypeus, labrum and mandible; 5 b, mandible; 5 c, maxilla; 5 d, instrumenta labialia.

6, *Ægidium parvulus*; 6 a—6 h, details.

6 a, front of head; 6 b, labrum; 6 c, mandible; 6 d, maxilla; 6 e, instrumenta labialia; 6 f, labium and labial palpus; 6 g, antenna; 6 h, part of antenna of *Æg. hædulus*.

7, *Ægidium Columbianum*, male; 7 a—7 b, details.

7 a, head and prothorax seen from the front; 7 b, the same seen laterally.

8, *Ægidium Columbianum*, female.

9, *Orphnus meleagris*; 9 a—9 i, details.

9 a, front of head; 9 b, mandible; 9 c, maxilla; 9 d, instrumenta labialia; 9 e, antenna; 9 f, head and prothorax seen sideways; 9 g, extremity of anterior tarsus and unguis; 9 h and 9 i, extremity of antennæ of *Orphnus picinus*.



Phyllotreta vittula Cur.

XXVII. *Descriptions of a few nondescript Species of Beetles.* By the Rev. F. W. HOPE.

[Read 2d October, 1843.]

Genus CALLIRHIPIS, Latr.

Sp. 1. *Call. Laportei*, Hope. (Pl. XIII. fig. 1.)

Rubro-testaceus, antennis nigris, articulo primo excepto, crasso, antrorsum flavescente. Thorax aurantius, lineâ mediâ longitudinali nigrâ, duabus aliis lateralibus majoribus. Elytra rufo-flava, 6 lineis elevatis in singulo conspicua, maculis tribus atris, ad basin positis, apicibusque nigris. Corpus infra rubro-testaceum, lateribus pectoris atris, abdomine nigricante. Pedes femoribus parum incrassatis rubris, tibiis tarsisque nigris chelisque ferrugineis.

Long. lin. $6\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Habitat in Columbia.

The above insect is most probably allied to *Callirhipis scapularis* of M. Laporte; I received it lately from Coban, and name it in honour of the monographer of the *Rhiphiceridæ*, M. Laporte, now better known as the Count de Castelnau. He is now actively engaged as the leader of the expedition sent out by the French government to explore the interior of several of the unknown regions of South America. There is a second species of *Callirhipis* from the same country in my Cabinet, closely allied to the former, but as it has probably been described by M. Guérin, I do not at present attempt to describe it till it has been compared with several of the genus lately described by him.

Genus SAPERDA, Fabr.

Sp. 2. *Saperda ocularis*, Hope. (Pl. XIII. fig. 2.)

Aurantia, antennis nigro-griseis pubescentibus, capite antrorsum atro, dorsoque flavo, oculis fere undique albo-cinctis. Thorax posticè niger, ternis albis maculis notatis, maculis binis aliis albis utrinque ad latera positis. Elytra thorace triplo longiora aurantia, octo maculis albis atro-cingulatis ornatis, nonoque albido infra scutellum posito. Corpus infra nigrum, segmentis abdominis utrinque albo-maculatis, pedibusque atro-griseis.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Habitat in America Meridionali.

The above beautiful species of *Saperda* will at some future time be regarded as a subgenus. I know of no described genus to which it can at present be appropriated.

Genus PHILIDOTUS, MacLeay.

Sp. 3. *Pholidotus Reichei*, Hope. (Pl. XIII. fig. 3.)

Totum corpus supra nigrum. Thorax lateribus serratis, elytrisque fere glabris. Caput transverso-oblongum, rugosum, angulis ante oculos rotundatis. Mandibulæ acutæ. Thorax valde rugosus, angulis anticis haud porrectis, posticis acutis, lateribus valde serratis, disco irregulariter elevato-rugoso-variolofo. Scutellum parvum. Elytra nigra, obscura, fere glabra, linea utrinque elevata, erosa, e humeris ad medium disci oblique descendente. Corpus infra nigrum, pectore fortiter variolofo, annulisque abdominis punctatis. Pedes simplices, femoribus et tibiis punctatis, capillisque ferrugineis obsitis.

Long. lin. 15, lat. lin. 5.

Habitat in Colombia.

This remarkable insect will undoubtedly at some future period be regarded as the type of a new genus; at present I consider it as a *Pholidotus*, till enabled to figure the other sex. It is named in honour of M. Reiche, of Paris, possessor of a rich cabinet of *Coleoptera*.

The figure, which was painted in Paris, is well done, and I am indebted to M. Guérin for it.

Genus HEXARTHRIUS, Hope.

Sp. 4. *Hexarthrius Buquetii*. (Pl. XIII. fig. 4.)

Niger, mandibulis exsertis, denticulatis, unidentatis apicibus furcatis, capite thoraceque scabriusculis. Totum corpus nigrum, nitidum. Caput clypeo producto subemarginato, in medio depressum. Mandibulæ arcuatæ, apicibus furcatis, capite thoraceque longiores, introrsum crenatæ unidentatæ, dente majori fere ad basin posito, intus recurvo. Thorax canaliculatus elytrisque lævibus. Pedes tibiis anticis externe denticulatis, mediis unispinosi posticisque inermibus.

Long. lin. 35, lat. lin. 9.

E Museo Dom. Buquetii descriptus.

Habitat in Java.

The above species is evidently allied to the *Lucanus Rhinoceros* of Fabricius; it differs chiefly in having its mandibles bifurcate, whereas in *Rhinoceros* they are simply acute. It is named in honour of M. Buquet, who possesses one of the chief cabinets of *Coleoptera*

to be met with in Paris; he is a Marchand d'Insectes, and his moderate prices, compared with others, and obliging manners, entitle him to recommendation.

The figure is by M. Guérin.

Genus LUCANUS, Linn.

Sp. 5. *Lucanus vitulus*, Dejean, ♀.

Niger, nitidus et glaber, quatuor tibiis posticis medio unispinosis.

Caput anticè rotundatum, mandibulis brevibus acutis. Thorax marginatus, transverso-oblongus, angulis anticis haud productis, posticis parum rotundatis. Elytra lævia, thorace duplo longiora. Pedes tibiis anticis externè denticulatis, quatuor posticis in medio unispinosis.

Long. lin. 16, lat. lin. 6.

Habitat in Java.

The above insect, of which I only know the female, is described from a specimen in the collection of M. Buquet; it was labelled *Vitulus Dejean*, and consequently I have retained the manuscript name; and as it was compared with others in the collection of the Baron Dejean, no doubt of its identity can exist.

Sp. 6. *Lucanus Parryi*, Hope.

Affinis *Luc. Nepalensi*, Hope, at multo minor. Niger, nitidus, mandibulis longitudine capite æqualibus, elytris glabris, tibiis posticis unispinosis. Totum corpus supra et infra nigrum, nitidum, læve. Caput convexum, mandibulis apicibus acutis, supra dentatis. Thorax convexus, angulis anticis parum productis, posticis oblique rotundatis. Elytra lævia, humeris tuberculatis; pedibus tibiis anticis externè serratis, quatuor posticis unispinosis et rufo-ciliatis.

Long. lin. 16½, lat. lin. 5¼.

Habitat in agro Nepalensi.

♀ Fœmina differt mandibulis supra et infra dentatis, clypeo submarginato, capite anticè rugoso-punctato, posticè glabro, tuberculo medio disci parum elevato.

The above species is described from the cabinet of Frederick Parry, Esq. of Cheltenham, after whom I have named it; the female is in my possession, and is also from Nepal.

XXVIII. *Monograph of the Genus Panorpa, with Descriptions of some Species belonging to other allied Genera.*
By J. O. WESTWOOD, F.L.S.

[Read 5th May, 1841.]

A VALUABLE Monograph on the family *Panorpidæ* having been recently published by Dr. F. Klug, in the "Transactions of the Berlin Academy for 1836," I have thought that it would be both useful and interesting to give descriptions of such new species of this family as I have met with in the principal collections of London, by way of supplement to the memoir of the learned professor of Berlin.

In the monograph above mentioned are described thirteen species of *Nemoptera*, (which genus is however correctly regarded as not naturally belonging to this family,) five of which, from Caffraria and Arabia, are new; eleven species of *Bittacus*, eight of which, natives of the Cape of Good Hope, Senegal, Mexico, Chili, Brazil and New Holland, are new; and seven species of *Panorpa*, two of which, from Mexico, are new. In the genus *Boreus* is contained only the *B. hyemalis*. And, lastly, a new genus is established under the name of *Chorista*, founded upon an Australian species (*C. Australis*, Klug), resembling the ordinary *Panorpæ* in size, but not having the front of the head rostrated, although the parts of the mouth are analogous to those of *Panorpa*. The female only of this interesting insect has yet been recorded. Still more recently Dr. Burmeister has published the description of another new species of *Panorpa* from the East Indies, in his "Handbuch der Entomologie." Such is the extent of our present knowledge of this family. It is therefore with pleasure that I am able to add considerably not only to the species but even to the genera of this family. I regret, however, that I am unable to add any further account of the preparatory states of the species than is contained in my "Introduction to the Modern Classification of Insects." Since that work was published a very elaborate memoir on the internal anatomy of the common species has appeared in the "Annals of Natural History," published in Holland by Van der Hoeven.

Genus PANORPA, Linnæus.

A. Species Europææ.

Sp. 1. *Panorpa communis*, Linnæus.

Fusco-nigra, meso- et metathorace linea media lata lutea, abdominis apice rufo; alis ad apicem subacutis, hyalinis, venis fasciis maculisque nigris, stigmatate elongato; vena prima longitudinali, pone stigma, ter furcata.

Sp. 2. *Panorpa Germanica*, Linnæus.

Fusco-nigra, meso- et metathorace linea media lutea, abdominis apice rufo-luteo; alis ad apicem rotundatis hyalinis, venis fasciis maculisque nigris, stigmatate breviori; vena prima pone stigma bis furcata.

Such are the only characters which I have been able to discover which afford any satisfactory ground for the establishment of more than a single species amongst the British individuals belonging to this genus. By Mr. Stephens five species are given as British, namely:—1. *P. communis*, Linn.; 2. *P. affinis*, Leach; 3. *P. apicalis*, Steph.; 4. *P. borealis*, Steph.; and 5. *P. Germanica*, Steph.; but the characters given by him of these supposed species rest only on difference of size and variation of marking of the wings, neither of which appear to me to afford grounds for specific distinctions. The *P. Germanica* of Linnæus is described by that author as half the size of *P. communis*, with the wings only marked with a dark apical spot and stigma. The *P. Germanica* of Stephens wants the apical spot, but has a dark mark on the costal edge of the wings. Dr. Klug has, however, reduced all those supposed species to varieties of *P. communis*, a step which will, I believe, in the end, be found to be correct. In fact Mr. Stephens himself states (Illust. 6, p. 53) that *P. borealis* may be a variety of *P. Germanica*, and he has subsequently informed me that he is now of the same opinion as regards *P. apicalis*. After a very careful examination of specimens of the remaining three species—*P. communis*, *affinis*, and *Germanica*—I must confess that I can find no decided characters beyond those given above; I therefore consider *P. affinis* as a variety of *P. Germanica*, and I am not without an idea that the variation in the form of the wings, and the difference in the number of furcations of the veins behind the stigma, will also prove unsatisfactory and insufficient.

Sp. 3. *Panorpa rufostigma*, Westwood.

Fulva, thorace luteo, lateribus nigris; alis hyalinis, fusco maculatis apiceque fusco, stigmatate magno rufo; vena 1ma longitudinali, post stigma, bis furcata.

Long. corp. cum cauda extensa $5\frac{3}{4}$ lin., expans. alar. lin. 13.

Habitat in Albania. D. S. S. Saunders.

Antennæ nigræ, articulis duobus basalibus fulvis. Caput fulvum, regione ocellorum lineaque supra basin antennarum nigris. Meso- et metathorax obscurè lutei, lateribus nigricantibus; scutellis luteis. Abdomen obscure fulvum, segmentis duobus basalibus ad basin nigris; cauda forcipeque ejusdem magnitudine ut in *P. commune*, pallide fulvis. Corpus subtus obscure luteum, pedibus magis fulvescentibus; alis hyalinis, stigmatate magno rufo, punctis tribus ante medium, in triangulum dispositis, linea irregulari obliqua pone stigma apiceque fuscis. An var. *P. Germanicæ*?

B. Species Asiaticæ.

Sp. 4. *Panorpa appendiculata*, Westwood.

Nigra, capite thoraceque fulvis; abdominis segmento 2do in ♂ appendiculo tenui valde elongato, alis nigris, albo-variis.

Expans. alar. 1unc.

Habitat Madras. D. W. Elliott. Mus. Britann. ♂ ♀.

Caput cum rostro luteo-fulvum. Antennæ nigræ, articulis 2us basalibus fulvis. Thorax fulvus, metathorax magis fulvescens. Pedes lutei, tarsi obscurioribus. Abdomen nigrum; forceps ♂ niger, maris segmentum 2dum in appendiculo pallide flavescenti elongato tenui et supra segmenta tria sequentia extenso productum, segmentum 5um inerme. Alæ nigræ, fasciis 5 latis irregularibus albis, 4ta interrupta; vena 1ma longitudinali post stigma bis furcata.

Sp. 5. *Panorpa Javanica*, Westw.

Nigra, thoracis abdominisque lateribus rufescentibus; alis sublatis hyalinis, fasciâ parvâ, postice dilatâtâ, ante medium alæ, fasciâ alterâ latâ, postice furcatâ pone medium; apiceque lato nigris.

Expans. alar. lin. $13\frac{3}{4}$.

Habitat in Java. D. Horsfield. In Mus. Soc. Merc. Ind. Orient.

Nigra, thoracis et abdominis lateribus rufescentibus; apex abdominis ♀ piceus; rostrum rufum. Antennæ nigræ, basi rufæ. Pedes rufi, tarsis obscurioribus. Alæ sublatae, vena prima longitudinali post stigma ter vel quadri-furcata, hyalinæ puncto parvo versus basin; fascia parva, antice interrupta et postice dilatata ante medium alæ; puncto altero oblongo paullo post medium alæ et versus stigma, fascia latissima postice furcata, apiceque lato nigris.

Sp. 6. *Panorpa angustipennis*, Westw.

P. nigra, rostro rufo, lobis lateralibus thoracis luteis, alis valde elongatis, basi angustis, fasciâ tenuissimâ ante medium alterâque versus apicem postice furcatâ; apice lato, postice abbreviato, nigris ♀.

Expans. alar. lin. $19\frac{1}{4}$.

Habitat "Tennasserim Coast" India vel Java. In Mus. D. Hops.

Caput nigrum, rostrum rufum, valde elongatum. Antennæ longæ, nigræ; articulis duobus basalibus rufis. Thorax niger, lobis lateralibus meso- et metathoracis luteis. Abdomen nigrum, ventre, pectore pedibusque luteis; tarsis obscurioribus. Alæ elongatæ, basi valde angustæ, hyalinæ; fascia tenuissima abbreviata ante medium alæ, puncto medio, fascia ante apicem (ad costam dilatata postice angusta et furcata) apiceque (antice lato postice tamen abbreviato) nigris; vena Ima longitudinali post stigma ter furcata.

Sp. 7. *Panorpa furcata*, Hardwicke. (Linn. Trans. xiv. t. 5, f. 2—6.)

Testacea, alis flavescentibus, punctis 4 ante medium, fasciâ latâ postice furcatâ apiceque lato nigris; abdominis ♂ segmento 5to furcâ cornea armato, 6mo et 7mo valde elongatis.

Long. corp. ♂ (cum forcip.) lin. $16\frac{1}{2}$, expans. alar. lin. 17— $19\frac{1}{2}$.

Habitat in Nepalia. D. Hardwicke. Mus. nostr. &c. ♂ ♀.

Sp. 8. *Panorpa Charpentieri*, Burmeister.

Capite abdomineque fuscis, thorace cum pedibus testaceo, dorso infuscato; alis hyalinis, puncto singulo fusco in cellula una media.

Long. corp. ♂ lin. $7\frac{1}{2}$, ♀ 6 lin.

Habitat in India Orientali.

P. *Charpentieri*, Burmeister, Hanb. d. Ent. 2, p. 958.

Sp. 9. *Panorpa Japonica*, Thunberg.

Nigra, pedibus testaceis, alis hyalinis, fasciis duabus maculisque atris.

Magn. *P. communis*.

Habitat in Japonia.

P. Japonica, Thunberg, Nov. Ins. Sp. Diss. 3, p. 67, f. 9; Klug, Mon. Panorp. p. 26; Olivier, Enc. Méth. 8, 715; Burm. Handb. d. Ent. 2, p. 957.

C. Species Americanæ.

Sp. 10. *Panorpa rufa*, G. R. Gray.

Rufo-testacea, antennis fuscis, basi rufescentibus, regione ocellorum nigra; alis elongatis, apice subacutis, hyalinis; maculis duabus basalibus, fascia obliqua ante medium, macula media costali, fascia pone medium postice furcata apiceque nigris, punctis nonnullis hyalinis in apice nigro; abdomine ♂ elongato, segmento 5to supra inermi.

Expans. alar. lin. $12\frac{1}{4}$.

Habitat in Georgia Americæ. In Mus. Britann. ♂ ♀.

Panorpa rufa, G. R. Gray, in Griffith's Animal Kingd. Insects, pl. 105, fig. 2.

Panorpa fasciata, Klug. Mon. Panorp. p. 25.

Sp. 11. *Panorpa lugubris*, Swederus.

Nigra, abdomine ferrugineo, apice nigro, segmento 5to ♂ inermi; alis nigris, albo-maculatis.

Expans. alar. lin. 12.

Habitat in America Septentrionali. Mus. nostr. ♂ ♀.

P. lugubris, Swederus. Swed. Trans. 1787, p. 279; Klug. Mon. Panorp. p. 20.

P. scorpio, Fabr. Ent. Syst. Emend. 2, p. 97; Oliv. Enc. Meth. 8, p. 715; Leach, Zool. Miscell. 2, tab. 94, f. 3, 4; Burmeister, Handb. d. Ent. 2, p. 957.

Sp. 12. *Panorpa nebulosa*, Westw.

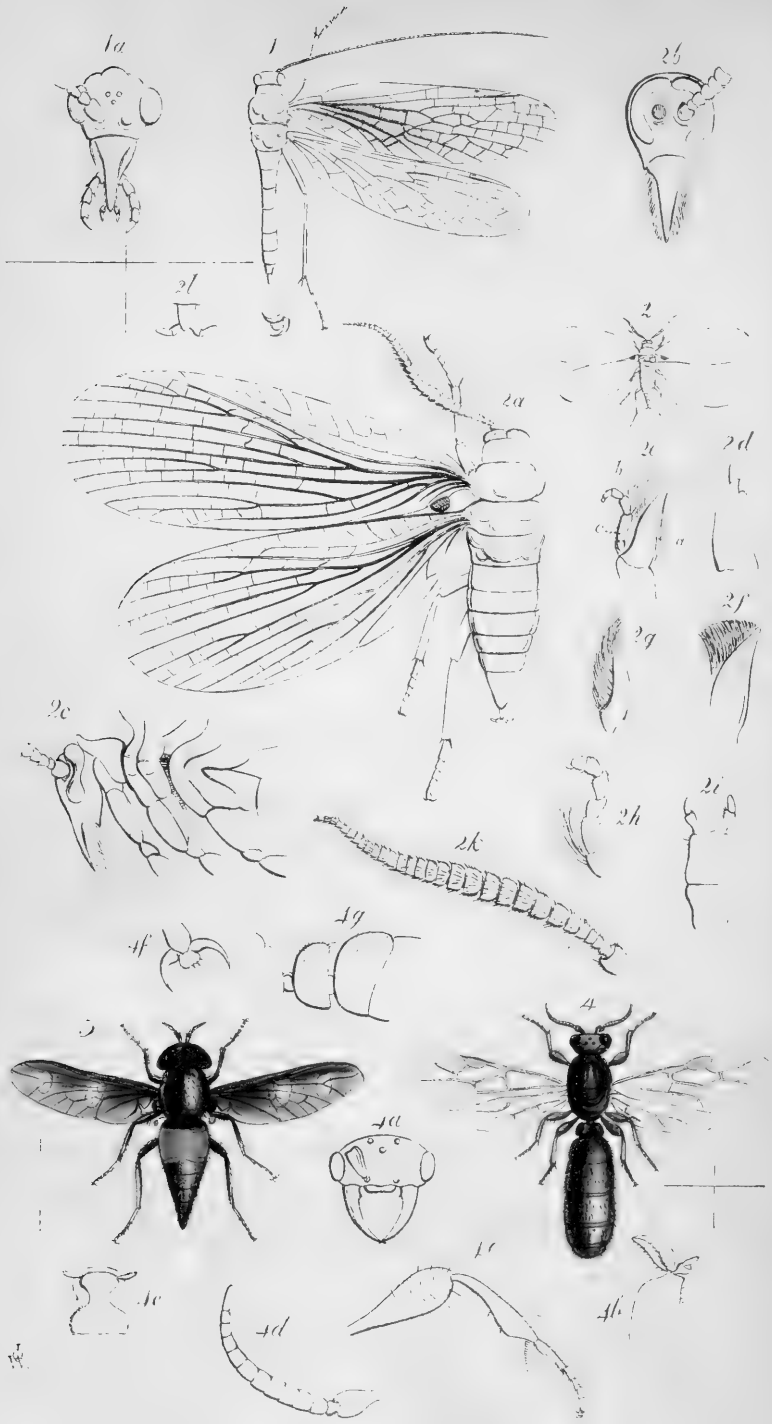
Obscure luteo-fulva, abdominis segmento 5to maris inermi; alis subcinereo-hyalinis, puncto magno nigro ad basin stigmatis, venisque brevibus transversis nebulosis.

Expans. alar. lin. 11.

Habitat in America boreali. Dom. E. Doubleday.

In Mus. Newman [nunc Mus. Britann.]

Obscure luteo-fulva, regione ocellorum nigra. Antennæ fuscæ. Mesothorax linea laterali ad basin alarum punctoque parvo



utrinque nigricantibus; metathorax etiam puncto parvo utrinque obscuro; prothorax margine antico nigro-ciliato; abdominis segmenta basalia ad latera obscuriora, segmento 5to maris inermi. Alæ subcinereo-hyalinæ, puncto magno costali ad basin stigmatis nigro, stigmate ipso pallido; venis omnibus transversis cinereo-nebulosis, cellulisque nonnullis apicalibus puncto cinereo notatis; vena prima longitudinali pone stigma, tantum bis (interdum semel) bifida. Alæ ♀ cinereo magis notatæ.

Sp. 13. *Panorpa punctata*, Klug.

Testacea, thoracis maculis abdominisque basi fuscis; alis hyalinis, nervis punctoque in singula cellula nigris.

Habitat in Mexico.

P. communi paullo minor.

P. punctata, Klug. Mon. Panorp. p. 25, pl. ann. fig. 9.

Sp. 14. *Panorpa terminata*, Klug.

Testacea, capite thoraceque fusco-maculatis; alis hyalinis, apice nigricantibus.

Magnitudo præcedentis.

Habitat in Mexico.

P. terminata, Klug. Mon. Panorp. p. 26, pl. ann. fig. 10.

Sp. 15. *Panorpa Americana*, Swederus.

Testacea, alis latis flavescens, fasciis tribus fuscis (2da recta, ultima apicali), anticis ante fasciam 1m, et inter fascias 1m et 2m puncto parvo fusco; venis fulvis, in partibus fasciatis fuscis; abdominis segmento 5to in ♂ cornu brevi erecto armato.

Expans. alar. lin. 11.

Habitat in Georgia Americæ. Mus. nostr. ♂, ♀.

Panorpa Americana, Swederus, Act. Holm. 1787.

Panorpa fasciata, Fabr. Ent. Syst. ii. p. 98. Klug, Mon. Panorp. p. 252.

My specimens of this insect exactly agree with the descriptions of Swederus and Fabricius, and cannot be considered as identical with the subsequently described allied species. The *P. fasciata* of Klug appears to be composed of several distinct species confused together.

Sp. 16. *Panorpa venosa*, Westw.

Obscure fulva, meso- et metathoracis lateribus obscuris, abdomine obscuro, linea dorsali pallidiori; alis pallide flavo-luteis, venis transversis fasciis apiceque nigricantibus. ♀.

Expans alar. lin. 12.

Habitat in Georgia Americæ. In Mus. Britann.

Obscure fulva, regione ocellorum nigra. Antennæ fuscæ, articulis duobus basalibus fulvis. Meso- et metathorax lobis lateralibus obscuris, scutellis pallidioribus. Abdomen fulvo-fuscescens, linea dorsali pallidiori. Pedes luteo-fulvi, tarsorum apice fusco. Alæ quam in sequentibus evidenter latiores et ad apicem magis rotundatæ, pallide flavo-luteæ, punctis numerosis obscure fuscis, uno prope basin (in alis anticis), fascia, in medio interrupta ante medium, linea brevi transversa incisa prope costam, tunc fascia obliqua irregulari pone medium apiceque irregulariter nigro-fuscis, venis transversis plus minusve nigro-fusco tinctis, stigmatibus fulvo; alæ posticæ minus maculatæ.

Sp. 17. *Panorpa confusa*, Westw.

Fulva, alis luteo-hyalinis, venis nigricantibus, transversis fusco-tinctis, fasciis apiceque tenuibus nigricantibus; abdominis segmento 5to maris supra spina longa armato, 6to ad basin haud inciso. ♂ ♀.

Expans. alar. lin. 11.

Habitat in America Septentrion. Massachusetts. In Mus. nostr.

Tota fulva, regione ocellorum antennisque nigris exceptis. Abdomen maris segmento 5to spina longiori acuta obliqua armato. Alæ lutescentes, costa basique magis luteis, venis nigricantibus; puncto parvo prope basin; fascia tenui, in medio interrupta, ante medium; tunc (pone medium) fascia tenui irregulari in medio geniculata, apiceque tenui, nigricantibus; venis transversis præsertim versus apicem alarum nigro tinctis; alæ posticæ minus variegatæ; articuli tarsorum ad apicem nigri.

I am indebted to Dr. Thaddeus W. Harris, a distinguished American Entomologist, for both sexes of this insect, which I received with the name of *P. fasciata* of Fabricius; from that species, however, they are quite distinct, as already noticed, whilst they have several characters which seem to warrant my considering them as specifically distinct from the following species.

Sp. 18. *Panorpa debilis*, Westw.

Luteo-fulva, abdominis basi supra nigro, segmento 5to cornu brevi obliquo armato, 6to basi supra emarginato; alis pallidis, fasciis apiceque fuscis.

Expans. alar. lin. 11.

Habitat in America Septentrionali. Dom. E. Doubleday.

In Mus. D. Newman [nunc Mus. Britann.]

Luteo-fulva, regione ocellorum nigra; antennis fuscis, ad basin rufescentibus. Abdomen segmentis tribus basalibus supra nigris; segmento 5to cornu brevi subobtusum obliquo supra ad apicem armato, 6to ad basin supra emarginato. Alæ pallidæ, luteo colore (nisi versus basin) vix tinctis; venæ longitudinales pallidæ (præsertim versus apicem alarum), puncto parvo versus basin; fascia in medio interrupta ante medium tunc (pone medium) fascia altera irregularis sublata, ad costam dilatata et in medio angulata apiceque lato fusco-nigris; vena 1ma longitudinalis pone stigma bis bifida. Tarsi articulis ad apicem nigris. Pedes setis brevibus nigris.

Individuum in Musæo Britannico vidi, ad hanc speciem ut mihi videtur etiam pertinens, læte fulvum, stigmatum alarum pallide flavo cornuque dorsali segmenti 5ti abdominis maris magis elongato.

This appears to be a much weaker insect than the preceding; the veins of the wings are slender and pale coloured, and the markings of the wings are much paler.

Sp. 19. *Panorpa subfurcata*, Westw.

Obscure fulva, capite magis rufescente, abdomine supra ad basin obscuro, segmento 5to cornu brevi dorsali armato; alis fusco-fasciatis, vena pone stigma ad apicem vix furcata. ♂ ♀.

Expans. alar. lin. 11—13.

Habitat in Nova Scotia. In Mus. Britann.

Obscure fulva. Caput rufescens, regione ocellorum antennisque nigris, harum articulis duobus basalibus rufescentibus. Thorax supra obscure luteus. Abdomen luteo-fulvum, supra ad basin obscurum; segmento 5to cornu brevi dorsali armatum, 6to supra ad basin haud emarginato. Pedes lutei, tarsorum articulis ad apicem obscuris. Alæ pallidæ, maculis duabus prope basin, fascia transversa ante medium, macula transversa in medio costæ, tunc (pone medium) fascia obliqua irregularis in medio vix angulata, ad costam dilatata, apiceque sublato (albo punctato) maculaque ad angulum analem nigris; vena

1ma pone stigma bis furcata, furca secunda fere ad apicem alæ, vena transversa stigma cum hac vena conjungenti obliqua; maculæ basales in alis posticis obsoletæ.

Genus EUPHANIA, Westw.

Caput prothorace haud occultum, infra in proboscidem longitudine mediocri productum; *ocellis* 3.

Antennæ alis longitudine æquales. *Thorax* et abdomen ut in *Panorpa*. *Pedes* elongati, graciles, tibiis bicalcaratis; tarsorum unguibus acutis, basi tantum serrulatis, pulvillo magno intermedio adjecto. *Alæ* longæ, elongato-ovatæ; anticæ costâ dilatata haud areolata, disci venis longitudinalibus fere ut in *Panorpa* dispositis (vena prima post stigma, attamen ad apicem haud furcata), venis brevibus transversis valde irregularibus, nonnullis obliquis, venis alarum posticarum magis regularibus.

The general characters of this insect so closely resemble those of *Panorpa*, that it is not without some hesitation that I venture to separate it from that genus in the absence of an opportunity of examining the trophi, the only known specimen being contained in the collection of the British Museum, and it being contrary to the regulations of that institution to allow the dissection of specimens of natural history. As, however, there are several decided characters, such as the shorter proboscis, very long antennæ, dilated costa to the fore wings, and comparatively unarmed ungues, in which this insect differs from the species of *Panorpa*, (which together constitute a remarkably distinct group, which would be broken down by the introduction of the present species therein,) I have considered it best to regard it as generically distinct.

Euphania luteola, Westw. (Pl. XIV. fig. 1.)

Fulva, antennis (articulis 4 vel 5 basalibus fulvis exceptis) nigris, meso- et metathorace piceis, ad latera rufescentibus; abdomine piceo, segmentis 4 apicalibus fulvis, pedibus piceis, femoribus fulvis; alis pallide luteis, ad basin magis fulvis, venis discoidalibus fuscis, basalibus tamen fulvis, stigmatate fusco.

Long. corp. lin. $5\frac{1}{2}$. Alar. expans. lin. $15\frac{1}{2}$.

Habitat — ? In Mus. Britann.

Fig. 1 a, the head seen in front.

Genus *MEROPE*, Newman.

Caput breve, sub prothoracem fere occultum ; subtus in rostrum longitudine mediocre productum. *Antennæ* inter oculos insertæ, basi contiguæ dimidio corpore vix breviores hirtæ, 30-articulatæ ; articulo 1mo crasso, 2do minori, 3tio minimo, 4to ad 10m sensim magnitudine crescentibus discretis transversis ; reliquis 20 sensim decrescentibus apicalibus minutissimis. *Ocelli* 0. *Oculi* laterales, reniformes, supra in verticem conjuncti. *Trophi* mediocriter elongati, rostrum formantes. *Labrum* elongatum, apice acutum. *Mandibulæ* planæ, corneæ, rectæ, apice dentibus duobus acutis curvatis alteroque interno obtuso armatæ. *Maxillæ* e lobis duobus apicalibus conicis extus valde ciliatis conniventibus constantes ; palpi loborum longitudine curvati, ut mihi videtur 5-articulati, articulo basali extus setis longis armato, reliquis irregularibus, ultimo, ut videtur, biannulato. *Labium* subquadratum, angulis anticis rotundatis, ciliatis ; palpi labiales breves, biarticulati. *Prothorax* brevis, transversus ; mesothorace angustior ; meso- et metathorax equales majores. *Alæ* haud plicatæ latissimæ, apice rotundatæ, subæquales ; venis multis longitudinalibus furcatis, venis minutis transversis connexis ; costa lata in areas multas divisa. *Pedes* graciles, subæquales ; tibiis omnibus apice bicalcaratis. *Tarsi* 5-articulati ; unguibus integris. *Abdomen* ♀ obesum, apice acutum, appendiculis duobus minutis biarticulatis divergentibus terminatum.

This singular genus (of which a single specimen, collected by Mr. E. Doubleday at Trenton Falls, in the United States of North America, has hitherto only been seen) possesses so much the appearance of a *Hemerobius*, in the short and very broad posteriorly rounded wings, that Mr. Newman, who published a description of it in the last volume of the Entomological Magazine, was unable to decide as to the natural family to which it belonged. Having, however, through the kindness of that gentleman, had an opportunity of examining and dissecting the mouth of this unique individual, I have been enabled to determine that its natural situation is in the present family, with the females of which it further agrees in the two minute biarticulate appendages at the extremity of the body. The want of ocelli, emarginate eyes, dilated antennæ, simple ungues, broad wings, together with the singular character which the anterior pair of those organs exhibit, in the possession of a minute semicircular tuberculous appendage near the base of

the inner margin, are characters which at once distinguish it from every other genus in the family.

The only species is, from the last-named character, named

Merope tuber, Newman. Ent. Mag. v. 180.

(Pl. XIV. fig. 2.)

Fuscescens, antennis, capite et prothorace saturatoribus; abdomine pedibus, alisque dilutioribus, oculis nigris.

Corp. long. .35 unc. Alar. expans. 1.05 unc.

Habitat Trenton Falls, N. Amer. D. Doubleday.

[Mus. Britann.]

DESCRIPTION OF THE FIGURES.

2, the insect of the natural size; 2a, the same magnified; 2b, the head in front; 2c, the head and thorax sideways; 2d, mandible; 2e, maxilla; 2f and 2g, maxillary lobes; 2h, maxillary palpus; 2i, labium; 2k, antenna; 2l, apex of body.

Genus BITTACUS, Latreille.

Sp. 1. *Bittacus affinis*, Westw.

Testaceus, abdominis apice tarsisque posticis obscurioribus, alis pallide fusciscentibus, stigmatibus fusco, venisque parum fusco tinctis.

Long. corp. lin. 9. Expans. alar. lin. 19½.

Habitat in Brasilia. In Mus. Britann.

Antennæ gracillimæ, apice obscuriores. *Mesothorax* lobis lateralibus dorsi puncto medio nigro. *Abdomen* segmentis basalibus ad apicem cingulo tenuissimo nigro, apiceque incrassato obscuro. *Alæ* pallide fusciscentes, stigmatibus (cum cellula sequenti) quam in *B. italico* paullo longiore fusco; apiceque alarum fusco paullo obscuriùs tincto; venis nigricantibus fusco nonnihil nebulosis, præsertim ad basin venarum longitudinalium et in venis lineam obliquam pone medium alæ formantibus. *Costa* cum vena mediastina, venâ brevi transversa in alæ medio, connexa; apiceque venæ mediastinæ cum v. postcostali, venâ obliqua connexa; stigmatibus postice venam unicam emittente; vena ramos posticos venæ postcostalis conjungente, valde obliqua, et fere e basi rami inferioris emissa.

B. italico minor, alis magis coloratis.

B. brasiliensi etiam affinis, differt tamen stigmatibus fusco, &c.

Sp. 2. *Bittacus punctiger*, Westw.

Fulvescens, femoribus setis paucis nigris e guttis minutis fuscis prodeuntibus armatis, alis paullo latioribus nitidis, flavido-hyalinis, stigmatate fere concolori guttisque numerosis paullo obscurioribus.

Long. corp. lin. 8. Expans. alar. lin. 20.

Habitat in Georgia Americæ. In Mus. Britann.

Totum corpus testaceo-fulvum, setis paucis nigris. Pedes graciles; femoribus tibiisque cingulo apicali tenui nigro, illis setulis nigris perpaucis e guttis minutis fuscis prodeuntibus. Tarsi vix obscuriores. Alæ nitidæ, flavido-hyalinæ, guttis numerosis paullo obscurioribus, præsertim ad basin venarum longitudinalium et ad venas transversas, stigmatate brevi fere concolori; venis pallidis, stigmatate postice venas duas breves emittenti, cellulam parvam subconicam formantibus, vena mediastina cum v. postcostali venâ transversa ante junctionem v. mediastinæ cum costa connexa; vena (ramos duos posticos venæ postcostalis conjungente) recte transversa et e medio cellulæ inferioris emissa.

B. italico minor, alis tamen pro magnitudine latioribus et pulchrioribus.

Sp. 3. *Bittacus pallidipennis*, Westw.

Totus fulvo-luteus, tibiaram apice summo nigricanti, alis pallidissime luteis unicoloribus, stigmatate vix obscuriori.

Long. corp. lin. 7. Expans. alar. lin. 16½.

Locus ignotus. In Mus. Britann.

Totum corpus gracile, unicolor, fulvo-luteum. Antennæ gracillimæ, apicem versus obscuriores. Pedes graciles, femoribus setulis nigris sparsis, tibiis præsertim pedum 4 anticorum ad summum apicem nigricantibus. Alæ pallidissime lutescentes (tamen vix coloratæ), unicolores, venis fulvis; stigmatate, cellulaque proxima parum obscuriori lutescente; stigmatate postice venas duas transversas (cellulam parvam oblongam formantes) emittente, vena mediastina cum v. postcostali vena parva recta (ante junctionem v. mediastinæ cum costa) connexa; vena ramos duos posticos venæ postcostalis conjungente recta et e medio cellulæ inferioris emissa; vena postcostali cum ejus ramo lmo postico haud in medio connexa.

Sp. 4. *Bittacus pilicornis*, Westw.

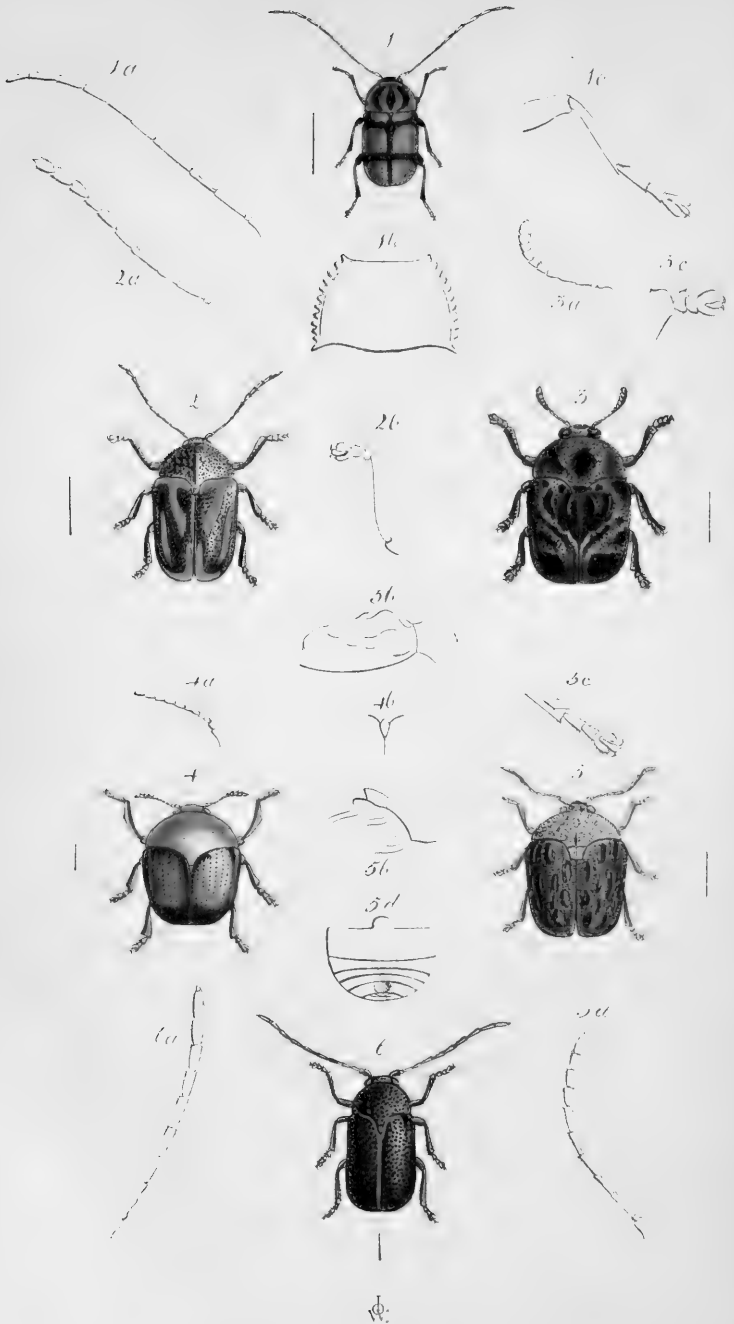
Pallide fusco-luteus, pedibus lutescentibus, alis hyalinis, stigmate vix colorato, antennis longe pilosis.

Long. corp. lin. 6. Expans. alar. lin. $18\frac{1}{2}$.

Habitat in America Septentrionali. D. Doubleday.

In Mus. D. Newman [nunc Mus. Britann.]

B. pallidipenni affinis at abunde distinctus. Totum corpus pallide fusco-luteum, capite (pallidiori) thoraceque nitidis; pedibus parum magis lutescentibus, antennis fuscis, longe et dense pilosis. Alæ hyalinæ, vix luteo-tinctæ, stigmate subelongato concolori postice venas duas (cellulam oblongam formantes) emittente; venis fuscis, v. transversis versus apicem alarum fusco nonnihil nebulosis; costa cum vena mediastina venâ parva transversa in medio alæ haud connexa; vena mediastina cum v. postcostali (vena brevi transversa ante junctionem v. mediastinæ cum costa emissa), connexa; vena postcostali ante ejus junctionem cum stigmate, cum ejus ramo Imo postico vena transversa connexa; vena Ima hunc ramum cum ramo sequenti conjungenti, subobliqua et e medio cellulæ inferioris emissa.



XXIX. *Descriptions of the Chrysomelidæ of Australia, allied to the Genus Cryptocephalus.* By W. W. SAUNDERS, Esq., F.L.S., &c.—continued from p. 154.

[Read 1st April, 1844, &c.]

IN a paper on the *Chrysomelidæ* of Australia, allied to *Cryptocephalus*, published in the last part of the Transactions of the Entomological Society, I pointed out that the sub-genera, which included the species I had under consideration, formed two divisions, distinguished by the lateral margins of the thorax being smooth in the first division, and dentalate or rough in the second division.

Having described, in the paper above alluded to, the species of the first division, I shall now proceed to describe those of the second, which arrange themselves into three sub-genera, distinguished as follows :

SECOND DIVISION.

(Lateral margins of the thorax dentate, or uneven.)

Antennæ, long . . .	} filiform	<i>Prionopleura.</i>
Antennæ, short . . .	subclavate	<i>Onchosoma.</i>

PRIONOPLEURA (*πριων πλευρα*).

Head vertical, immersed in the thorax up to the eyes. *Eyes* reniform, with a deep sinus. *Antennæ* rather wide apart, inserted just in front of the sinus of the eye, as long or longer than the body; ♂, filiform, the six terminal joints somewhat more robust than the others, 11-jointed: first joint robust; second small globose; third and fifth longer than the remainder; the six terminal nearly of equal length; ♀, shorter than body; third, fourth and fifth joints nearly equal, the remaining decreasing in size, and broader. *Thorax* subquadrate, rounded in front, with the lateral margins dentate or rugose, the upper surface rough, with elevated rounded points. *Scutellum* quadrate, elevated behind. *Elytra* as broad as or a little broader than the thorax, longer than broad, the upper surface rugose. *Legs* short, robust. *Tarsi* 4-jointed, the third joint deeply bifid, and thickly padded underneath.

The type of this genus is the *Cryptocephalus rugicollis*, Gray.

FIRST SUBDIVISION.

(Elytra with longitudinal elevated ridges more or less distinctly marked.)

Sp. 1. *Prionopleura bifasciata*, Hope. (Pl. XV. fig. 1, and details.)

Head rufous brown, with the portion above the insertion of the antennæ black, except two small lunate spots on the inner margin of the eyes; the forehead covered with small elevated points, and short silvery hairs. Eyes black. Antennæ black, with the second, third and fourth joints somewhat rufous, particularly beneath. Thorax rufous brown, with a black central longitudinal patch extending from margin to margin, somewhat diamond-shaped, and two lateral longitudinal black patches, one on each side, somewhat lunate, curving inwards. Scutellum slightly elevated behind, black, shining. Elytra rufous brown, deeply and coarsely punctured, with eight somewhat elevated longitudinal ridges faintly marked, having two broad black transverse bands, the first near the thorax, which narrows slightly in the middle, and extends into the shoulders, the second a little below the middle. Suture black. Under side of body dull rufous brown, covered with short, stiff, widely spread adpressed silvery hairs, the mesosternum dull black. Femora black, with the basal portions rufous brown. Tibiæ rufous brown, with the apices black. Tarsi black.

Length $\frac{3.0}{100}$ inch.

Habitat New Holland.

In the Collection of the Rev. F. W. Hope.

A very distinct and pretty species.

Fig. 1 a, antenna; 1 b, prothorax; 1 c, leg.

Sp. 2. *Prionopleura crucicolle*. (*Cryptocephalus crucicollis*, Boisd.)

Head chesnut brown, covered with small raised points, having a black transverse mark across the forehead, close to the margin of the thorax, the centre of which is produced forwards into a point. Antennæ chesnut brown, rather robust. Thorax deep rufous brown, with a narrow, transverse, black band across the centre, produced in the middle, backwards and forwards, so as to form the short arms of a cross. Scutellum black, shining. Elytra deep rufous brown, deeply and coarsely punctured, with five distinctly elevated longitudinal ridges, and three alternate somewhat obscure ridges on the back of each, marked with three longitudinal black patches at the base, between the elevated ridges, extending about

one-fourth the length of the elytra, and an irregular transverse black band across the middle, which in some varieties is joined by the inner basal black patch. Suture black. Under side of body rufous brown, covered with short, silvery, widely spread hairs. Legs and tarsi rufous brown; femora marked with a black line along the upper surface.

Length $\frac{30}{100}$ inch.

Habitat New Holland and Van Diemen's Land.

In the Collections of J. O. Westwood, Esq. and the Rev. F. W. Hope.

Sp. 3. *Prionopleura Hopei*, mihi.

Head rufous brown, with a broad black band down the forehead, between the eyes, and an oval spot of the same colour in front, on a line with the antennæ. Eyes black. Antennæ rather longer than the body, deep rufous brown, with the upper surface of the first joint, the whole of the terminal joint, and apex of the last joint but one, black. Thorax black, with a narrow margin of deep rufous brown, except just in front of the scutellum, where the black reaches the margin. Scutellum black, shining, smooth. Elytra deep rufous brown, deeply and coarsely punctured, with eight slightly elevated ridges, giving a rugose appearance, having two black patches at the base, one on the shoulders, and the other larger near the scutellum, which is prolonged posteriorly alongside the suture, and joins an irregular black transverse band, which crosses the middle. Under side of the body dull pitchy brown, with lighter shades, covered with short silvery adpressed hairs. Legs deep rufous brown; the femora with a black line along the upper side; tibiæ, with the apices, black. Tarsi black.

Length $\frac{22}{100}$ inch.

Habitat Van Diemen's Land.

In the Collections of the Rev. F. W. Hope and J. O. Westwood, Esq.

This species is allied to the preceding, but abundantly differs in the colour of the head, thorax and legs, and in the smaller size.

Sp. 4. *Prionopleura crux-nigra*, Hope, MSS.

Head dark rufous brown, deeply immersed in the thorax, sprinkled with short silvery hairs; parts of the mouth yellow. Eyes black. Antennæ deep rufous brown, the terminal joint black.

Thorax very dark rufous brown, sprinkled with short silvery hairs, with a black transverse band across the centre, which is produced in the middle, backwards and forwards, so as to form the short arms of a cross. Elytra deeply and coarsely punctured, with a few short silvery hairs near the apex; with nine longitudinal ridges, the five nearest the suture distinctly defined; dark rufous brown, with a narrow longitudinal black streak on the shoulders, and a broad sickle-shaped black band, commencing near the scutellum, which extends down the suture to near the middle, and thence curving in a transverse direction towards the external margin, along which it runs nearly to the shoulders. Under side of the body pitchy brown, with short adpressed silvery hairs. Legs deep rufous brown; femora with a black line along the upper surface. Tarsi rufous brown.

Length $\frac{2.5}{100}$ inch.

Habitat New Holland.

In the Collection of the Rev. F. W. Hope.

Another species nearly allied to *P. crucicollis*, but chiefly differing in the position of the markings on the elytra.

Sp. 5. *Prionopleura flavocincta*, mihi.

Head rufous brown, with a black transverse mark across the hinder part of the forehead. Eyes black. Antennæ rufous brown, with the two terminal joints black, about the length of the body. Thorax bright rufous brown, with a broad transverse central band produced in the middle, giving it somewhat a diamond shape. Scutellum dark brown. Elytra closely and minutely punctured, with nine distinct somewhat elevated ridges, deep rufous brown, crossed somewhat above the middle with a broad orange band, margined on each side with an interrupted black line. Under side of the body rufous brown, covered with short silvery adpressed hairs, the mesosternum having a large central triangular black patch. Legs and tarsi rufous brown; each femur with a black patch on the upper surface.

Length $\frac{2.0}{100}$ inch.

Habitat New Holland. Capt. Roe.

In the Collection of the Rev. F. W. Hope.

A small and well marked species.

SECOND SUBDIVISION.

(Elytra without elevated ridges.)

Sp. 6. *Prionopleura monochroa*, Bois.

Head dull orange, with a transverse line across the vertex, and a line down the face, reaching from the vertex to between the eyes, black. Antennæ as long as the body in the ♂, dull ochre, with the upper parts of the first and last joints black. Thorax and elytra uniform dull ochre, deeply and irregularly punctured, so as to give a rugose appearance to the surface. Scutellum small, black, quadrate, shining. Under side of body dull ochre, covered with short adpressed whitish hairs. Legs dull ochre, the tibiæ having a dark line along the upper surface. Tarsi dusky.

Length $\frac{4.0}{100}$ inch.

In the Cabinet of the Rev. F. W. Hope.

Habitat Australia.

Sp. 7. *Prionopleura cognata*, Hope, MSS.

Head yellowish amber brown, covered with small paler tubercles. Labrum yellow. Eyes black. Antennæ two-thirds of the length of the body, yellowish brown, with the first joint black. Thorax with the lateral margins slightly dentate, amber brown, covered with somewhat large yellow tubercles, and having an obscure longitudinal narrow black line along the vertex. Scutellum quadrate, elevated posteriorly, ochre yellow. Elytra dull ochre yellow, deeply and irregularly punctured, with an ill-defined black band extending nearly across, a little below the centre, and extending upwards to near the scutellum, leaving the shoulders and lateral margins free. Under side of body yellow brown, covered with short adpressed pale yellow hairs. Legs dull reddish brown, with the femora beneath, and apices of the tibiæ externally black brown. Tarsi reddish brown, robust.

Length $\frac{3.0}{100}$ inch; width $\frac{1.8}{100}$.

Habitat Van Diemen's Land.

In my own Cabinet and that of the Rev. F. W. Hope.

Sp. 8. *Prionopleura rugicollis*, Gray.

Head pale dull orange, sparingly clothed with yellow hairs, with a black streak down the face, commencing on the vertex, and an angular black line reaching across from the bases of the antennæ, and forming with the former a Y inverted. Antennæ as long as

the body, dull rufous brown, with the upper surface of the first joint black. Thorax with the lateral margins strongly dentate, covered with small pustules, intermixed with short shining yellow hairs; dull orange, with a broad longitudinal, somewhat lozenge-shaped, black brown patch along the whole length on the vertex. Scutellum dark chesnut brown, elevated behind, shining, somewhat quadrate, and strongly keeled. Elytra deeply and rugosely punctured, dull orange, with an obscure broad dark brown transverse fascia above the centre, and some obscure dark brown markings a little before the apex. Under side of body dull ochre yellow, clothed with very short whitish hairs. Legs dull chesnut brown, clothed with hairs of the same character.

Length $\frac{5}{10}$ inch.

Habitat New South Wales.

In the Cabinet of the Rev. F. W. Hope.

The above description is drawn from a male insect. The female differs in having considerably shorter and more robust antennæ; is larger in size; has the broad transverse fascia of the elytra more clearly defined, and has the under side of the body darker.

Length $\frac{3.5}{10}$ inch.

Habitat New South Wales.

In the Cabinet of the Rev. F. W. Hope.

GENUS ODONTODERES, Chevrolat, MSS.

Head immersed in the thorax up to the eyes. *Antennæ* wide apart, inserted just before the sinus of the eyes, subclavate, not quite so long as the body, 11-jointed: first joint pyriform; second small, globose; third, fourth and fifth long and slender, the fifth somewhat the longest; the remaining joints gradually decreasing in length but becoming more robust, and forming a kind of elongate clava, with the joints projecting slightly internally. *Thorax* nearly as broad as the elytra, transverse, rounded at the sides, with the lateral margins strongly and regularly dentate, convex above. *Scutellum* quadrate, elevated posteriorly. *Elytra* half as broad again as long, rounded at the apex. *Legs* moderate. *Tarsi* robust, the joints nearly equal in length.

Odontoderes Australis, Boisduval. (Plate XV. fig. 2, and details.)

Head black, rugosely punctured, with two small yellow marks on the face, situated close to the upper part of each eye. Antennæ and eyes black. Thorax black, covered with small regular tubercles. Scutellum smooth, quadrate, shining black. Elytra

yellow, shining, regularly and deeply punctured, each marked with three broad longitudinal black bands: the first somewhat triangular in shape, commencing near the scutellum and running half way along the suture; the second commencing near the shoulder and running to near the apex parallel to the first band and the suture; the third joining the second at the shoulder and running parallel to the lateral margin until it joins the second near the apex, enclosing with it an oblong oval yellow space. Under side of body black, clothed with short adpressed whitish hairs. Legs and tarsi black.

Length $\frac{3.0}{100}$ inch.

Habitat Australia.

In the Cabinets of the Rev. F. W. Hope, Capt. Parry, &c.

There is a little variation of marking in some specimens, caused by the second longitudinal band of the elytra meeting the sutural band a little below the middle, as shown in the figure accompanying this description.

Fig. 2 a, antenna; 2 b, fore feet.

ONCHOSOMA, New Genus (Ογκος ωμος).

Head vertical, immersed in the thorax nearly up to the eyes. *Antennæ* short, a little longer than the thorax, 11-jointed: first joint long, stout, somewhat pyriform; second orbicular; third, fourth and fifth slender, rather long, equal in length; the remaining joints gradually becoming shorter, but at the same time more robust, and forming an elongate club. *Thorax* transverse, with the lateral margins dentate or rough, and having two more or less elevated protuberances on the upper surface, one on each side of the central line. *Scutellum* subquadrate, much narrowed and somewhat elevated behind. *Elytra* with the surface rugose, short, rather longer than broad, with the apices rounded. *Legs* short, robust. *Tarsi* robust, 4-jointed: first and second joints transverse; third longer, deeply bilobed; fourth joint narrow, laying in the cleft of the third, and barely exceeding it in length.

The species of this genus are easily distinguished by the two protuberances on the upper surface of the thorax, which gives them an unusual appearance among their congeners the *Cryptoccephalides*. The species are very uniform in size and in the brown tints of their colours. The genus *Brachycaulus*, described by Monsieur Fermaire, in the "Annales de la Société Entomologique de France, 1843, premier trimestre, p. 13," appears to be a very near approach to *Onchosoma* and may prove identical, in which

case *Brachycaulus* having the priority must replace the former. Monsieur Fermaire describes the antennæ as being "en scie dans la dernière partie de leur longueur," a character I have been unable to detect, and which, combined with other differences, makes me hesitate to apply the name of *Brachycaulus* to the species I am about to describe.

Sp. 1. *Onchosoma Ewingii*, W. W. S.

Head dark amber brown, rugose, with minute rounded elevations, interspersed with a few sandy hairs; mouth rufous. Antennæ rufous brown. Eyes black. Thorax with the lateral margins strongly crenate, having two elevated protuberances on the upper surface, one on each side of the central line, each protuberance with a fovea on the external side; dark amber brown, with a black round spot margined with dull yellow in each fovea. Scutellum subquadrate, narrowed behind, dark amber brown, clothed with whitish adpressed hairs. Elytra rugose, with rounded elevations and deep punctures interspersed with whitish hairs, having a row of small protuberances at the base parallel with the thorax; dark amber brown, with the hinder half dull ochre, punctured with brown, and with six or seven elevated lumps of the same colour near the apex, leaving an oblique fascia pointing forwards about the middle. Under side of body chesnut brown, minutely furrowed longitudinally, and having an orange spot between the insertion of the hinder legs. Legs robust, dark chesnut brown, regularly punctured. Tarsi reddish brown.

Length $\frac{2.5}{100}$ inch.

Native of Van Diemen's Land.

In the Cabinets of J. O. Westwood, Esq., and Capt. Parry.

The first specimens of this species which were sent to this country were taken in Van Diemen's Land by Mr. Ewing, after whom I have named the species.

Sp. 2. *Onchosoma dorsalis*, W. W. S. (Pl. XV. fig. 3, and details.)

Head dark amber brown, deeply punctured; mouth light chesnut. Antennæ light rufous brown, with the enlarged joints somewhat darker. Eyes black. Thorax covered with minute rounded elevations, with the lateral margins strongly dentate, and having two elevated protuberances on the upper surface, one on each side of the central line, black, with the lateral margins, an indistinct band along the front, and a short band from the apex of each protuberance to the posterior margin, dull rufous. Scu-

tellum subquadrate, much narrowed behind, punctured, dark amber brown. Elytra deeply and irregularly punctured, marked with a kind of imperfect network of elevated nervures, and having a row of low protuberances along the base; dark amber brown, with a broad ochraceous band, commencing about the middle of the base and running in a curved direction to the lateral margin, and thence onwards until it reaches the suture a little below the middle, surrounding a large distinctly marked triangular area of the ground colour. Apex dull ochraceous. Under side of body dusky brown, minutely punctured and covered with short yellowish adpressed hairs. Legs robust, punctured, and tibiæ grooved longitudinally, dark rufous brown. Tarsi somewhat lighter.

Length $\frac{2.5}{100}$ inch.

Habitat New Holland.

In the Cabinet of the Rev. F. W. Hope.

This I consider the typical species, and from which the generic description and figure were taken.

Fig. 3 *a*, antenna; 3 *b*, body seen sideways; 3 *c*, extremity of anterior tibia and tarsus.

Sp. 3. *Onchosoma Tasmanica*, W. W. S.

Head black brown, rugosely punctured, with a small round chesnut spot on the face between the eyes. Scutellum light chesnut. Eyes black. Thorax rugose, with small rounded elevations, interspersed with a few short sandy coloured hairs, having two rounded protuberances on the upper surface, one on each side of the central line; dull rufous, with a round black spot on the outer side of each protuberance, and an ill-defined black band extending from the anterior margin over each protuberance to the posterior margin. Scutellum subquadrate, much narrowed behind, dull rufous, covered with short sandy hairs. Elytra deeply and rugosely punctured, with irregular elevated longitudinal nervures, and two elevations near the base, one near the shoulder and the other about midway between the latter and the scutellum, black, with a broad rufous band across the middle, almost vanishing at the suture, and another band of the same colour running longitudinally from the latter to the base along the middle; apex dull rufous. Under side of body corneous yellow, with short adpressed hairs. Legs robust, very dark chesnut, punctured, and covered with short sandy hairs. Tarsi above nearly black.

Length $\frac{2.0}{100}$ inch.

Native of Van Diemen's Land.

In my own Collection.

Sp. 4. *Onchosoma foveocollis*, Hope, MSS.

Head dark amber brown, rugose, sparingly covered with short sandy hairs. Antennæ dull rufous, robust. Thorax rugosely punctured, the punctures interspersed with sandy hairs, with the lateral margins dentate, and having two protuberances on the upper surface, one on each side of the central line; dark amber brown, inclining to rufous, on the lateral margins, with three round black spots bordered with sandy brown, one on the exterior side of each protuberance and one in the hollow between the thoracic elevations. Scutellum subquadrate, narrowed posteriorly; dull yellow, with the base black. Elytra rugosely punctured, with irregular longitudinal elevated nervures, and two elevations at the base, one near the shoulder and the other between that and the scutellum; dark amber brown, with an obsolete rufous brown fascia across the centre, and the apex of the same colour, the latter divided from the former by a row of ill-defined dark amber spots. Under side of body pale yellow, dusky towards the exterior margin, clothed with short adpressed whitish hairs. Legs robust, clothed with short whitish hairs; dark castaneous brown. Tarsi rather darker.

Length $\frac{18}{100}$ inch.

Native of Van Diemen's Land.

In the Cabinet of the Rev. F. W. Hope.

There is a variety of this species in Capt. Parry's collection, in which the dark markings on the elytra have almost vanished, merely leaving a black spot on the shoulder and a few irregular spots of dark brown about the base and apex. This species has the third, fourth and fifth joints of the antennæ shorter and more robust than in the typical species.

Sp. 5. *Onchosoma Klugii*, Hope, MSS.

Head yellow brown, with a large triangular chesnut spot on the upper part of the face, and a wavy line of the same colour beneath, joining the lower extremity of the eyes. Antennæ light chesnut brown. Thorax rugose, with minute rounded elevations, having the lateral margins rough, and two elevated somewhat pointed protuberances on the upper surface, one on either side of the central line; yellow brown, with the protuberances dark chesnut, a narrow longitudinal line of the ground colour being left between them. Scutellum subquadrate, narrowed behind; yellow brown, with the base chesnut. Elytra very deeply and coarsely punctured, with irregular strongly elevated longitudinal nervures;

yellow brown, with a broad chesnut band extending from the shoulders to a little above the middle of the suture, and some irregular markings of the same colour towards the apex, leaving a broad band of the ground colour across the middle. Under side of the body chesnut brown, punctured. Legs dark chesnut brown, punctured. Tarsi of the same colour.

Length $\frac{2.2}{100}$ inch.

Native of New Holland.

In the Cabinet of the Rev. F. W. Hope.

Sp. 6. *Onchosoma rufescens*, W. W. S.

Head punctured, dark amber brown, with some ill-defined rufous markings on the face. Antennæ reddish brown. Thorax rugosely punctured, with the lateral margins strongly crenate, and having two rounded protuberances on the upper surface, one on each side of the central line; chesnut brown, with a broad black band passing from the anterior to the posterior margin over each protuberance, and three rounded large black spots margined with castaneous, one the external side of each protuberance and one in the hollow between them. Scutellum subquadrate, narrowed behind, punctured, castaneous brown. Elytra deeply and rugosely punctured, with the longitudinal nervures but very indistinct, and having two slight elevations at the base, one on the shoulders and the other between that and the scutellum; dark chesnut brown, with a black patch on the shoulder, and an indistinct broad blackish band running along the basal half of the suture. Under side of body light reddish brown. Legs robust, punctured, chesnut brown, with a large black patch on the outer and inner sides of each femur a little below the middle. Tibiæ blackish towards the apex. Tarsi deep chesnut.

Length $\frac{2.5}{100}$ inch.

In the Cabinet of Capt. Parry.

Habitat New Holland.

This is a species distinct in the sculpture of the elytra and markings; but owing to the specimen having been gummed it is difficult to make out the original colour.

XXX. *Descriptions of various new Species of Buprestidæ from Australia.* By the Rev. F. W. HOPE.

[Read July 1, 1844.]

PERHAPS no two groups of insects exhibit the wonderfully rapid increase of Entomology more than the *Cetoniadæ* and *Buprestidæ*; the former have lately occupied much of the attention of the continental writers, and the latter have not altogether been disregarded. To the exertions of the Comte de Castelnau, Messieurs Gory and Solier of Marseilles, we are indebted for the descriptions of a vast number of species; and although I myself some few years back gave a synopsis of the species belonging to New Holland, and have since added various others, I am now enabled, from some valuable arrivals from Capt. Roe, of Swan River, and Mr. Fortnum, of Adelaide, to add many others; more than fifty species have reached me, the major part of them are now described; and if the whole are not now given, it is merely because some of them are too imperfect to describe, and others may be regarded as too closely allied to species, or varieties of others, previously described.

I regret to add that two of the most beautiful have nearly been devoured by ants, but I yet expect to receive others in a more perfect state, when they will be figured.

From examining a vast number of individuals from the different settlements, I think it will eventually be found, that although some species range over nearly the whole of that continent, yet the localities of Swan River, Port Essington, Sidney and Adelaide, have each of them a particular Entomological Fauna, and it is worthy of remark that, in many instances, each locality offers peculiar species greatly resembling those of other and opposite parts of the island.

Mr. MacLeay informs me that he has amassed a great number of new species, and it is to be hoped that, residing in the metropolitan region of *Buprestis*, his valuable observations on their larvæ and habits may soon be committed to the press. If, in addition to the above species now described, several others which are not yet pinned should be found in the mass of insects lately received, they can be added in a future supplement.

Sp. 1. *Chrysodema gigas*, Hope.

Viridis, thorace ferè quadrato, rugoso-punctato; elytris qua-

dricostatis, marginibusque externis elevatis, tarsisque infra flavis."

Long. lin. 19, lat. lin. $6\frac{1}{2}$.

Caput fere rotundatum, clypeo flavo medio excavatum et punctatum. Thorax fere quadratus, anticè parum angustior, angulis anticis paullo protensis, disco viridi-aureo purpurato et rugoso-punctulato, tuberculis quibusdam nitidis, lineâ longitudinale mediâ haud valde elevatâ. Elytra viridi-aurea, quatuor lineis elevatis, quintâque suturali ante medium disci interruptâ. Scutellum posticè rotundatum, violaceum, anticeque foveolatum. Apex elytrorum marginibus parum denticulatis. Corpus infra viride punctatum, annulis abdominis posticè violaceis. Pedes viridi-purpurascens tarsisque infra flavis.

This insect was lately sent me from Swan River, and is allied to *Chrysodema helopoides* of Boisduval. It appears to be the largest species of the genus, and is consequently denominated *gigas*.

Sp. 2. *Stigmodera signaticollis*, Hope.

Flava, thorace viridi-violaceo, utrinque flavo-maculato, elytris tribus fasciis violaceis, pedibus viridibus.

Long. lin. 14, lat. lin. 6.

Caput viride punctatum. Thorax violaceus, punctatus, maculâ irregulari flavâ utrinque positâ. Elytra flava striato-punctata, ad basin læte violacea, subrugosa, duabus fasciis violaceis cincta, apicibusque concoloribus. Corpus infra flavum, pectore annisque abdominis posticè viridibus et nitidis, antennis pedibusque concoloribus.

This beautiful insect is allied to *Conognatha Fortnumi*, Hope, and it inhabits the vicinity of the Swan River.

Sp. 3. *Stigmodera Mitchelli*, Hope.

Flava, thorace olivaceo-æneo, marginibus croceis, fossulâ utrinque parum distinctâ, elytris violaceis et quatuor fasciis flavis ornatis; corpore infra cyaneo, pedibusque concoloribus.

Long. lin. $11\frac{1}{2}$, lat. lin. 5.

Caput æneum punctatum, antennis cyaneis. Thorax atro-æneus, fossula utrinque impressa, marginibus latè-flavis. Elytra violacea, quadrifasciata, prima ad basin lata; 2da ante medium disci haud ad suturam extensâ; 3tia latiori, irre-

gulare, et ultimâ ante apicem posita fere lunulata. Corpus infra cyaneum, lateribus thoracis et abdominis læte flavis. Pedes cyanei.

This magnificent insect is named in honour of Sir — Mitchell, the Australian traveller, and it inhabits the neighbourhood of the Swan River.

Sp. 4. *Stigmodera sanguinosa*, Hope.

Ænea, thorace nigricanti, elytris sanguineis, punctis viridibus fortiter excavatis; corpore infra aurato, æneis griseisque pilis obsito, pedibus antennisque cupreis.

Long. lin. 10, lat. lin. 4.

Caput antice excavatum, pilisque flavis obsitum. Thorax nigro-æneus, punctatus. Elytra sanguineo-rubra, punctis aurato-viridibus fortiter excavatis apicibusque atris. Corpus infra albido-pilosum et cupreum, antennis pedibusque concoloribus.

This insect approaches to *Stigmodera Goryi*, Hope, but cannot be considered as a variety of that insect. It was captured at the Swan River by Captain Roe.

Sp. 5. *Stigmodera hæmatica*, Hope.

Sanguinea, capite atro-æneo, thorace in medio nigro-maculato; corpore infra sanguinoso, pectore pedibusque cyaneis.

Long. lin. 15, lat. lin. 6.

Caput nigro-æneum, pubescens. Thorax punctatus, rubro-sanguineus, maculâ mediâ longitudinali atra margineque postico concolore. Elytra tota fere sanguinea, striato-punctata, apicibus exceptis violaceis. Corpus infra sanguineum, pectore pedibusque cyaneis.

The above insect inhabits the vicinity of the Swan River.

Sp. 6. *Stigmodera Parryi*.

Brunneo-rubra, thorace æneo rubroque colore variegato, elytris brunneo-rubris; corpore infra eroso-punctato et æneo, pedibusque concoloribus.

Long. lin. $14\frac{1}{2}$, lat. lin. 6.

Caput æneum et pubescens. Thorax rubro-brunneus, variolisque æneis punctis erosus. Elytra striato-punctata, corpore subtus valde punctato et æneo, pedibusque concoloribus.

This insect I received from Captain Parry, in honour of whom it is named. It is from New Holland, but the exact locality is not known.

Sp. 7. *Stigmodera Cyanura*, Hope.

Flava, thorace viridi-nitido, maculâ flavâ parvâ utrinque positâ, elytris flavis, apicibusque latè cyaneis; corpore infra flavo viridique colore variegato.

Long. lin. 11, lat. lin. $4\frac{1}{2}$.

Caput viride punctulatum. Thorax læte viridis, sub lente tenuissimè punctatus, maculâ irregulari flavâ parvâ utrinque ad latera positâ. Scutellum viride, glabrum. Elytra flava striato-punctata, apicibus fasciâ lata violacea ornatis. Corpus infra læte flavum, annulis posticis abdominis viridibus, nitidis maculaque virescente utrinque posita, binis ultimis annulis autem flavis. Pedes aurato-virides.

This species is also from the vicinity of Swan River, and was collected by Captain Roe.

Sp. 8. *Stigmodera Hoffmanseggii*, Hope.

Violacea, thorace æneo, elytris purpurascensibus striatis, apice subserratis, humeris flavo-maculatis fasciisque duabus concoloribus ornatis; corpore infra chalybeo-violaceo, pedibusque æneis.

Long. lin. 9, lat. lin. 4.

Caput æneum, in medio fortiter impressum. Thorax olivaceo-æneus, creberrime punctulatus. Elytra violacea, humeris macula flava fere quadrata notatis, fasciisque binis concoloribus haud suturam attingentibus. Apex elytrorum subrugosus punctatus. Corpus infra chalybeo-violaceum, pectore virescente, annulisque abdominis postice concoloribus. Pedes ænei, tarsis viridiori colore saturatis.

This insect is allied to *C. Klugii* of Hope, and inhabits the neighbourhood of the Swan River. It is named in honour of Count Hoffmansegg, a celebrated Entomologist, of Berlin. He was, I believe, the predecessor of M. Klug.

Sp. 9. *Stigmodera perplexa*, Hope.

Ænea, thorace nigricanti, elytris flavis, tribus fasciis atro-violaceis signatis; corpore infra atro-æneo, pedibus concoloribus.

Long. lin. 7, lat. lin. 3.

Affinis *St. Burchellii*, Hope, at multo major et convexior.

Caput æneum, punctulatum. Thorax obscure æneus, creberrime punctatus. Elytra atro-violacea, punctatissima, margi-

nibus ad basin æneis ; fascia prima flava, in medio, lata, ad angulos autem attenuata, 2da vix ad suturam extensa, 3tia margine apicali in lunulam efformata. Apex bidentatus. Corpus infra obscure æneum et pubescens, pedibus antennisque concoloribus.

The above insect was received from Western Australia by Mr. Gould ; it is closely allied to a species which I formerly named after Mr. Burchell, but at once may be distinguished from that insect, as the elytra have only two spines at the apex, whereas Mr. Burchell's insect has three.

Sp. 10. *Stigmodera assimilis*, Hope.

Violacea, thorace olivaceo-æneo, elytris tribus fasciis flavis ; corpore infra purpurascente, pedibus concoloribus.

Long. lin. $5\frac{1}{2}$, lat. lin. 2.

Affinis *Stigmoderæ apicali*, Hope, at paullo latior. Caput cyaneum, thorace violaceo. Elytra violacea, ternis fasciis flavis signata, fasciis fortiter punctulatis. Corpus infra læte violaceum, pedibus concoloribus.

The above species was received from Port Philip, and is closely allied to *St. apicalis* alluded to above. There is a remarkable variety of it from the same locality, which has the elytra of a greenish tinge, and the first fascia continued along the entire base of the elytra, whereas in other specimens the first fascia is generally interrupted.

Sp. 11. *Stigmodera Adelaidæ*, Hope.

Purpurascens, thorace flavo-marginato, disco viridi creberrime punctulato, elytris violaceis et decem-maculatis ; corpore infra flavo, pedibus violaceis.

Long. lin. 5, lat. lin. 2.

Affinis *Stigmoderæ versicolori*, Laporte, at longior et latior. Caput viride, fronte maculâ flavâ rotundatâ parvâ signato. Thorax viridis, punctulatus, marginibus lateralibus flavis. Elytra purpurea, disco octo maculis croceis signato, binis aliis ad latera positis. Corpus infra læte flavum ; segmentis abdominis postice pedibusque violaceis.

The above species is from the settlement at Adelaide, and is allied to *St. versicolor*, Laporte, described as from Swan River. It may here be remarked, that the different settlements of Australia afford many insects closely resembling each other, and which,

when examined carefully, I think will be found to be distinct. If such is the case, the Entomology of Australia possesses an uniformity of character, in the representative species of each locality, which has not yet I believe been noticed.

Sp. 12. *Stigmodera purpurea*, Hope. *

Purpurea, thorace lateribus flavo-marginatis, elytrisque violaceis et octo maculis notatis, corpore infra flavo et violaceo.

Long. lin. 4, lat. lin. $1\frac{1}{2}$.

Caput antice violaceum, punctatum. Thorax purpurascens, punctatus, lateribus flavis. Elytra purpurea, binis lineis flavis ad basin, binisque aliis ad latera positis, quatuorque maculis flavis parvis in disco notatis. Corpus infra flavum, pectore purpureo segmentisque abdominis postice violaceis pedibusque concoloribus.

Received by Mr. Gould from Western Australia. It is allied to *St. flavopicta* of Gory.

Sp. 13. *Stigmodera hilaris*, Hope.

Æruginosa, elytris miniatis, humeris viridibus maculisque aliis concoloribus per discum positis, corpore infra lætè virescenti.

Long. lin. 3, lat. lin. 1.

Caput aurato-viride, punctatum. Thorax concolor et crebre punctulatus. Elytra rubro-miniata, maculâ mediâ commune viride ad scutellum positâ, humeris concoloribus, duabusque aliis irregularibus fere in fascias dispositis; apicibus atris et bispinosis. Corpus infra læte viride, pedibus concoloribus.

This lovely insect was received from Port Philip.

Sp. 14. *Stigmodera Saundersii*, Hope.

Atra, elytris miniatis, ad basin 4-maculatis, maculâ mediâ rotundatâ nigrâ apicibusque nigris.

Long. lin. 5, lat. lin. 2.

Caput rufo-æneum. Thorax atro-velutinus, lateribus subrotundis, creberrime punctulatis. Elytra miniata, humeris externis atro-notatis, macula scutellata commune, altera in medio disci posita, apicibusque atris. Corpus infra cyaneum, punctatum, pectore virescenti, pedibusque viridibus.

This singularly marked insect was lately sent me by Mr. Fortnum from the Adelaide settlement; it is named in honour of Mr.

Saunders, the late president of the Entomological Society; some specimens vary in size and are much smaller than the individual described.

Sp. 15. *Buprestes albivittis*, Hope.

Ænea, thoface punctulato, lateribus externis albis, elytrisque æneis, vittâ albidâ laterali notatis.

Long. lin. $12\frac{1}{2}$, lat. lin. 4.

Caput magnum, viridi-æneum et punctatum. Thorax cupreo-æneus, medio disci crebre punctulatus, lateribus albidis et subrugosis. Elytra serrata, striato-punctata, punctis parum distinctis; vitta lateralis alba longitudinalis e humeris ad apicem extendit. Corpus infra roseo-cupreum, pedibus concoloribus.

The above insect inhabits Van Diemen's Land, and belongs to Monsieur Gory's genus *Buprestis*.

Sp. 16. *Buprestis pyritosa*, Hope.

Igneo-cuprea, thorace flammanti punctato, elytris subviolaceis, maculis fasciisque duabus aureis notatis, pedibusque viridibus.

Long. lin. 5, lat. lin. 2.

Caput viridi-auratum, punctulatum, antennis nigricantibus, primis articulis autem viridibus. Thorax læte cupreus et iridescens et punctatum. Elytra violacea, serrata, striato-punctata, binis fasciis posticis auratis nitidis; macula flammanti splendidâ post scutellum positâ, humeris et lateribus ad medium disci auro-nitentibus. Corpus infra læte auratum punctatum, binis ultimis segmentis abdominis subcyaneis.

This splendid insect was received from Western Australia.

Sp. 17. *Buprestis verna*, Hope.

Viridis, capite cupreo-æneo, thorace elytrisque aurato-virescentibus et punctatis; corpore subtùs roseo-cupreo et pubescenti, pedibusque concoloribus.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Affinis *Bup. viridipenni*, Hope, at minor. Caput cupreo-æneum, punctatum, oculis nigris; totum corpus supra viride et punctatum, scutello excepto roseo-cupreo marginibusque externis elytrorum concoloribus. Corpus infra roseo-cupreum,

segmentis abdominis albidis capillis obsitis. Pedes cuprei et pubescentes.

The above insect was lately sent to this country by Mr. Fortnum from Adelaide.

Sp. 18. *Buprestis Porteri*, Hope.

Cuprea, capite obscurè æneo, scutello aureo; corpore subtùs aurato-æneo et pubescenti.

Long. lin. 3, lat. lin. 1.

Caput obscurè æneum, punctatum, antennis cyaneis. Totum corpus supra roseo-cupreum et punctulatum, infra aurato-æneum, pectore virescenti. Pedes ænei et pubescentes.

This insect comes from the vicinity of Port Philip and is named after a young naturalist now collecting actively in that locality, it is one of the smallest species known.

Sp. 19. *Buprestis Helenæ*, Hope.

Nigro-ænea, thorace concolore, maculis quatuor irregularibus elytrorum; corpore subtùs æneo, pedibus concoloribus.

Long. lin. $6\frac{1}{2}$, lat. lin. 3.

Caput æneum et punctatum, antennis concoloribus. Thorax atro-æneum, violaceo colore tinctum, et subtilissime punctulatum. Elytra striato-punctata, nigra, maculâ flavâ ad scutellum positâ; 2da irregulari, media, tertiâ fere fasciata ad suturum haud extensa at ad marginem et apicem conjuncta. Corpus infra æneum et pubescens, pedibus concoloribus.

This insect was first noticed in my collection as a novelty by a female Entomologist, and as her surname was objected to I can only give the christian one. It was sent to me by Captain Roe from Swan River.

Sp. 20. *Buprestis lanuginosa*, Hope.

Affinis præcedenti. Nigro-violacea, thorace cupreo, elytris maculis tribus aurantiacis, marginibus apicibusque sanguineis; corpore subtùs æneo, lanugine albidâ obsito.

Long. lin. $6\frac{1}{2}$, lat. lin. 3.

Caput æneum, medio foveolatum. Thorax cupreus, lateribus externis capillis albidis obsitis. Elytra violacea, striato-punctata, ad basin maculâ fere quadratâ flavâ notata; 2da mediâ irregulari tertiâque fere lunulatâ; lateribus externis

sanguineis, apicibusque 2-dentatis. Corpus infra æneum, pectore segmentisque abdominis lanugine albida aspersis.

This insect was also received from Captain Roe of the Swan River settlement.

Sp. 21. *Chrysobothris Australasiæ*, Hope.

Nigro-ænea, thorace pallidiori colore æneo, elytris nigricantibus, punctis duobus baseos fortiter impressis et alteris in medio cupreo-auratis; corpore subtus æneo, lateribus sublanuginosis.

Long. lin. 6, lat. lin. $2\frac{1}{2}$.

Caput cupreo-æneum, punctulatum. Thorax convexus, rugosus, antice fossula utrinque parum impressa. Elytra nigro-ænea, quatuor lineis elevatis, binis fossulis atris ad basin positis, binisque aliis in medio cupreo-aureis. Corpus infra æneum, punctatum, pedibus concoloribus.

The above insect was sent to me from Swan River by Captain Roe.

Sp. 22. *Anthaxia Fortnumi*, Hope.

Cyanea, thorace concolori, lateribus aurato-punctatis; elytris ad scutellum auro-fulgentibus, maculâ irregulari aureâ post humeros locatâ; corpore subtus violaceo, pedibus concoloribus.

Long. lin. 3, lat. lin. 1.

Caput cyaneum, fronte foveâ impressâ viride. Thorax violaceo-cyaneus, angulis lateralibus posticis læte-aureis et punctatis, margine posticè concolori. Elytra violacea, ad basin elevata, linea virescenti tenua notata, maculâ aureâ post scutellum in singulo positâ, alterâque obliquâ infra humeros conspicuâ. Corpus infra cyaneum, femoribus viridibus, tibiisque violaceis.

The above lovely insect is named in honour of Mr. Fortnum, who has devoted much of his time to the study of Australian Entomology. This is, I believe, the first notice of a true *Anthaxia* being found in New Holland.

Sp. 23. *Anthaxia Adelaidæ*.

Nigro-ænea, thorace cupreo-æneo, subtilissimè punctato, elytris nigricantibus violaceoque colore tinctis. Corpus infra atro-æneum, antennis pedibusque concoloribus.

Long. lin. $1\frac{1}{4}$, lat. lin. $\frac{1}{2}$.

The above species inhabits Adelaide.

Sp. 24. *Acmæodera nodosa*, Hope.

Nigra, thorace nodoso et tuberculato, elytris flavis maculis minutis variis variegatis; corpore infra atro-nitido, pedibusque concoloribus.

Long. lin. 4, lat. lin. $1\frac{1}{2}$.

Caput atrum et pubescens. Thorax concolor, nodosus, postice et lateraliter tuberculatus. Elytra flava striato-punctata, punctis auromicantibus. Maculæ variæ nigræ a posteriorem partem disci sparsim notatæ. Corpus infra nigrum, nitidum et punctatum, antennis pedibusque concoloribus.

I received the above insect from Captain Roe of Swan River, and am not aware of any notice of *Acmæodera* being found hitherto in Australia.

Sp. 25. *Acmæodera melanosticta*, Hope.

Atra, thorace nigro-nodoso, elytris flavis maculis variis atris variegatis; corpore infra concolori.

Long. lin. $2\frac{1}{2}$, lat. lin. $\frac{1}{2}$.

Caput fronte parum foveolatum. Thorax antice nodosus, nodis excavatis. Elytra flava, striato-punctata, punctis quibusdam auro-micantibus, variisque maculis minutis per totum discum aspersis. Corpus infra nigrum, pedibus concoloribus.

The above insect is from the Swan River, and was received at the same time with the former.

Sp. 26. *Agrilus purpuratus*, Hope.

Purpureus, thorace concolori, lateralibus angulis anticis luteis, elytris purpurascentibus; corpore infra albidis maculis notato.

Long. lin. 4, lat. lin. 1.

Caput purpureum, tribus albidis maculis notatum, linea media impressa. Thorax lineâ sericeâ longitudinali albidâ, lateralibus anticis maculis notatus. Elytra purpurascentia punctulata abdominali lineâ albidâ et sericeâ utrinque conspicua. Corpus infra medio abdominis purpureo, lateribus utrinque albo-maculatis, pedibusque roseo-cupreis.

I received this insect in abundance from Moriatta, where it was captured by Mr. Fortnum.

Sp. 27. *Agrilus assimilis*, Hope.

Purpureus, capite æneo-punctulato flavisque capillis ornato, thorace ad angulos anticos aureo maculato, elytrisque pur-

purascens; corpore infra æneo, lateribus annulorum abdominis subpilosis.

Long. lin. 4, lat. lin. 1.

This species is somewhat allied to *A. purpuratus*, and was sent to me from Western Australia.

Sp. 28. *Agrilus aurovittatus*, Hope.

Affinis *Agrilo purpurato*, Hope, at minor. Purpurascens, capite aurato et punctato, thorace lineâ longitudinali mediâ aureâ, binisque aliis ad latera positis; elytris cupreo-purpureis, vittâ suturali auratâ in singulo conspicuâ, corpore infra æneo, pedibus concoloribus.

Long. lin. $2\frac{3}{4}$, lat. lin. $\frac{3}{4}$.

I received the above species from Moriatta.

Sp. 29. *Agrilus pistacinus*, Hope.

Totum corpus supra et infra viride punctatum, antennis saturiore colore inquinatis. Caput ferè rotundatum; thorace angulis posticis rectè acutis; elytra ænea, creberrime punctulata. Corpus infra viride sericie albida obsitum, pedibus concoloribus.

Long. lin. 2, lat. lin. $\frac{1}{2}$.

I received this minute species from the Adelaide settlement and have named it from its pistacine colour, which soon fades after the death of the insect; it then becomes of a copper hue and is sometimes brassy.

Sp. 30. *Cisseis 14-notata*, Hope.

Affinis *C. stigmatæ*, Laporte. Atro-violacea, thorace concolori, lateribus roseo-cupreis, elytris obscuris, quatuordecim punctis flavis notatis.

Long. lin. $3\frac{1}{2}$, lat. lin. $1\frac{1}{4}$.

Caput anticè auratum et punctatum. Thorax atro-violaceus, marginibus lateralibus læte cupreis. Elytra nigricantia, quatuordecim maculis flavis notata. Corpus infra violaceum, pectore segmentisque abdominis croceo-flavis. Pedes violacei et pubescentes.

This beautiful species inhabits the vicinity of the Swan River.

Sp. 31. *Cisseis spilota*, MacLeay, MSS.

Viridi-ænea, thorace quatuor punctis albis notato, elytrisque variis minutis maculis ornatis; corpore infra æneo.

Long. lin. $5\frac{1}{2}$, lat. lin. $1\frac{3}{4}$.

Caput antice roseo-cupreum, nitidum et punctatum. Thorax fere quadratus, posticè paulo dilatatus, punctis quatuor albidis insignitus. Elytra elongata, striata, variisque minutis maculis variegata. Corpus infra æneum, segmentis abdominis utrinque albo-maculatis, pedibus cupreis.

This insect was sent to me by Mr. MacLeay from New Holland, under the name of *Æsthochrysa spilota*; it differs from *Cisseis*, and will one day be the type of a new genus. I refrain from giving its generic characters, as they will no doubt be published by that individual.

Sp. 32. *Ethon signaticolle*, Hope.

Affinis *E. bicolori*, Laporte, at longior. Violaceum, thorace aureo nitido, binis albidis punctis notato, elytris violascentibus, punctis variis albis per discum aspersis.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{1}{2}$.

Caput anticè excavatum, albis capillis obsitum. Thorax aureus, nitidus, binis punctis albis fere mediis, lateribus externis concoloribus. Elytra obscurè violacea, multis punctis albidopilosis variegata. Corpus infra atro-violaceum, segmentis abdominis utrinque maculis albis insignitis, pedibusque nigricantibus.

The above insect was received from the vicinity of Port Essington.

Sp. 33. *Ethon roseo-cupreum*, Hope.

Totum corpus supra cupreum et punctatum, capite foveolato, elytris læte cupreis et iridescentibus. Corpus infra æneum, lateribus abdominis albedo colore irroratis, pedibus concoloribus.

Long. lin. 3, lat. lin. $1\frac{1}{4}$.

The above species was captured at Moriatta, where it was taken in great abundance.

Sp. 34. *Ethon cupreicolle*, Hope.

Nigro-æneum, thorace cupreo-aurato, binisque minutis foveis albis notatis, lateribus concoloribus, elytris atris et punctis duodecim albidis notatis; corpore infra viridi et nitido, seg-

mentis abdominis utrinque albo-punctatis, pedibusque viridibus.

Long. lin. $2\frac{1}{2}$, lat. lin. 1.

The above species was taken at Moriatta.

Sp. 35. *Ethon æneicolle*, Hope.

Ænescens, thorace viridi-æneo, foveis dorsalibus albidis binis impresso, lateribus concoloribus, elytris nigricantibus, albo-punctatis et subtomentosis; corpore infra viride, segmentis abdominis utrinque albo-punctatis, pedibusque viridi-æneis.

Long. lin. $2\frac{3}{4}$, lat. lin. 1.

The above species I received from Adelaide.

Sp. 36. *Ethon Gouldii*, Hope.

Æneum, thorace cupreo-æneo, fortissimè punctato, lateribus externè lineâ elevatâ æneâ conspicuis, elytris iridescentibus, æneis, colore violaceo sparsim aspersis, maculis duabus obscuris post scutellum positis; corpore infra æneo, punctato, pedibus concoloribus.

Long. lin. 4, lat. lin. $1\frac{1}{4}$.

The above species is from Port Essington, and is named after Mr. Gould the Ornithologist to whom it was transmitted.

Sp. 37. *Stigmodera Stricklandi*, Hope.

Flava, thorace olivaceo-æneo, marginibus croceis, elytris atrovioleaceis, parte dimidiatâ anteriori flavâ, maculâ violaceâ in singulo ad latera positâ, fasciâque flavâ ad apicem binisque punctis rubro-miniatis in angulo apicis locatis; corpore infra viride, ultimis abdominis segmentis croceo colore inquinatis.

Long. lin. 10, lat. lin. $4\frac{1}{2}$.

Caput anticè æneum, lineâ mediâ violaceâ impressâ notatum.

Thorax olivaceo-æneus, lateribus externis croceis, lineâ mediâ longitudinali elevatâ distinctâ. Elytra flava, maculis violaceis in medio disci positis, fasciisque binis latis posticis concoloribus, apicibus duobus punctis miniatis insignitis. Corpus infra virescens, segmentis abdominis croceis, posticè viridi colore inquinatis, pedibusque concoloribus.

The above insect I received from Moriatta; it greatly resembles *Stigmodera Mitchellii* from the Swan River, and by some might be thought a variety of it; in the absence of the impressed foveæ of the thorax and in various other minor points it may readily be distinguished. It is named after the well known Ornithologist Mr. Strickland.

XXXI. *Some Account of the preparatory States of Bombyx (Actias) Selene of India.* By Capt. THOMAS HUTTON, (in a Letter addressed to J. O. Westwood, Esq.)

[Read 6th May, 1844.]

THE first specimen of this splendid moth was brought to me on the 13th April, 1842, by a boy who had captured it in a deep and warmly-sheltered glen at Mussooree. The specimen was a female, and was found clinging to the branches of a tree, or rather shrub, very similar to the Tartarian honeysuckle; it was accompanied by a male (in coitu), which effected its escape. As the specimen was much injured by her rough captor, I suffered her to live and deposit her eggs, which she did on the evening of the same day, to the number of 32, each being of the size of a large mustard seed, and of a mottled brownish colour. During the whole of the succeeding day she remained perfectly stationary, clinging to the window frame, but in the evening deposited 84 eggs, and on the following evenings she again deposited as follows: on the 15th, 38 eggs; on the 16th, 21 eggs; on the 17th, 16 eggs; on the 18th, 21 eggs; on the 19th, 14 eggs; on the 20th, 14 eggs; and on the 21st, 7 eggs, amounting in all to 246 eggs, and she then died.

On the 28th April I received a male and female from the same place, and in the evening the female deposited 89 eggs; and continued each night to increase the number until she had deposited 300 eggs, when she died.

On the 30th April, or eighteen days from the time of deposition, the first batch of eggs began to hatch; the newly born caterpillar is about three lines in length, hairy, and of a pale rufous red, with a single black band across the middle of the body, and a small black transverse mark on the anterior segment; along the back are two rows of small tubercles, and another along each side, from each of which spring a few short hairs, the base of which forms a small black dot; there is also an anal tubercle, larger than the others, and placed between the two last tubercles of the dorsal rows; the head is black.

I was now exceedingly puzzled to find out the proper food, and having unsuccessfully tried several kinds, at last gave them the leaves of our common hill oak (an *Ilex*), of which they ate sparingly and without appetite. This was evidently not the proper food; and although they continued to eat it they did not thrive, but died in such numbers that I had at last only five caterpillars left out of 546, and even these I was in daily expectation of losing, when by

a lucky chance, on the 30th of June, I discovered a single caterpillar in the forest feeding on a tree known to the natives as the "*Munsooree*."

Branches of this tree were now substituted for the oak, and from thenceforward the caterpillars ate greedily, and increased rapidly in size.

The first moult commenced when six days old, and this occupied three days, so that at the end of nine days the caterpillar appeared in its second stage. The black transverse band upon the body had disappeared, but the head still remained of that colour, and the rest of the body was hairy and rufous; the tubercles being black on the summit, and more prominent; prolegs brown.

The period between each change was about ten days in some specimens, but varied in others between that and shorter periods, probably depending in a great measure upon the quantity of nourishment obtained from the branches with which they were daily supplied.

In the third stage the caterpillar appeared of a bright rufous colour; the black dots or tubercles being larger and more prominent, but there were no black bands.

In the fourth stage the change was still more remarkable, for the caterpillar now appeared of a beautiful pale apple green, each tubercle headed with bright orange, except the four which spring from the second and third segments, which are ringed with black, and crowned with pale yellow; and the *anal* and *two posterior* tubercles, which are green throughout. From each tubercle springs a small tuft of hair, the centre one of each being longer than the others; the head and prolegs brown; along each side is a line which is red above and yellow below, and the spiracles are red; there is a line of very small yellow dots along each side, between the rows of tubercles.

In the fifth stage the colours are the same, as are they also in the sixth and seventh stages, but the caterpillar increases rapidly in size, and is most beautiful and delicate in appearance, with a semi-transparency of hue, which makes it look something like wax work.

One of these commenced spinning its cocoon on the 17th of July, being then about forty-six or forty-seven days old; and the remainder after the interval of a day or two, that is, on the 19th, 20th, and 25th July, spun up also.

The cocoon is formed of coarse brown silken threads, closely interwoven, and of an ovate form; it is inclosed among the leaves of the tree, which are in fact glued closely round it. It is hard,

and not furnished interiorly with a soft silken bed, the chrysalis lying within a hard and hollow chamber.

The chrysalis remained thus until the 14th August, when the one which had turned on the 17th July produced a perfect female, after a period of twenty-nine days. Another, which had turned on the 19th July, came forth a male on the 16th August, showing the time to be pretty uniform. A large caterpillar however, which I found in the forest on the 16th July, turned to a chrysalis on the 24th of that month, but instead of coming forth in the autumn, it remained in the chrysalis state throughout the winter, as did some others; coming out in the following summer, namely, on the 11th, 14th, and 18th of June.

There would consequently appear to be great irregularity in the time of coming forth from the pupa state, and this at first led me to consider the insect double brooded. On farther consideration, however, I am inclined to abandon that opinion.

The eggs deposited by the specimens procured on the 13th and 28th of April produced perfect insects in the middle of August; but had these been permitted in their turn to deposit eggs, no caterpillar would have been hatched from them until the following spring or summer months. It was probably from such ova that the caterpillars procured in the forest on the 30th June and 16th July had been produced, while the moths captured in the middle of April had come forth from pupæ which had survived through the winter in that state; the species is thus seen to be only single brooded, although the larvæ are found throughout the year.

The caterpillar feeds upon several trees common on these hills, and among others the walnut has been mentioned to me. The most common food appears to be the Munsooree, a shrub which is so common as to have given rise, I believe, to the name of this settlement, viz. "Munsoory," or more commonly among Europeans, "Mussooree." I do not know the botanical name of this shrub, but doubtless both Dr. Royle and Falconer will make you acquainted with it.

Note.—Capt. Hutton proceeds to notice the mode by which it appeared to him that the moth makes its escape from the cocoon, as noticed in the Journal of Proceedings of the 6th May, 1844, which it has not however been considered advisable to publish further in detail, until fresh observations promised by the author have been received.

XXXII. *Description of a new Genus of Longicorn Beetles.*
By J. O. WESTWOOD, F.L.S. &c.

[Read 2d October, 1843.]

ALTHOUGH many Longicorn beetles are remarkable for the elongation of the fore feet, few possess them greatly thickened, and there are none in which we find this character so strikingly developed as in the species of which I beg to offer the description to the Entomological Society, and which from this circumstance may be generically named

EUPROMERA.

Corpus breve, crassum, subdepressum. *Caput* breve, verticale, pronoto angustius. *Trophi* parum elongati. *Mandibulæ* apice graciles, acutæ. *Antennæ* fere corporis longitudine, in tuberculum in sinu oculorum insertæ, filiformes, 11-articulatæ; articulo 1mo clavato, 2ndo distincto, 3tio tertiam partem antennarum longitudine occupante, reliquis longitudine decrescentibus, ultimis brevissimis. *Prothorax* subquadratus, capite parum latior, dorso lateribusque subtuberculatis, pone medium paullo constrictus. *Elytra* prothorace e tertia parte latiora, parallela, apice inermia, singulo costa elevata tuberculisque nonnullis instructo. *Femora* antica maxima inflata, subtus pro receptione tibiarum canaliculata, lateribus canalis setigeris. *Tibiæ* anticæ curvatæ. *Pedes* 4 postici formæ ordinariæ subbreves, femoribus in medio subclavatis, tibiis externe post medium haud scopâ instructis.

Species unica. *Eupromera Spryana*. (Pl. XIII. fig. 5.)

Griseo-villosa, fusco luteoque parum variegata, apicibus articulorum antennarum fusco cinctis, elytris fusco tuberculatis.

Long. corp. lin. $3\frac{1}{2}$. Habitat in Brasilia.

In Mus. D. Hope. Communicavit D. Spry, M.E.S.

Etiam in Mus. nostr.

Caput obscurum; prothorax tuberculis tribus sat conspicuis in disco, in triangulum posita; elytra humeris subquadratis, singulo costa elevata abbreviata in disco versus suturam, alteraque laterali postica griseo fuscoque maculata tuberculoque elongato, fulvo-piloso, pone medium versus suturam; pedes fusco varii, tibiis posticis pone medium macula nigra notatis.

This species is named to commemorate the excellent talents of W. Spry, Esq. a member of this Society, to whom we are mainly indebted for the beautiful and at the same time highly useful work upon the genera of beetles found in this country, entitled "British Coleoptera delineated," a work of which no Coleopterous tyro ought to be destitute.

XXXIII. *Characters of various new Groups and Species amongst the Coprophagous Lamellicorn Beetles. By J. O. WESTWOOD, F.L.S. &c.*

[Read 7th March, 1842, &c.]

AS CONSIDERABLE interest is attached to the various types of form amongst the species of insects known by the ordinary name of sacred beetles (on account of the veneration with which the Egyptians regarded those particular species which are inhabitants of their strange land,) I need offer no apology in submitting to the notice of the members of this Society descriptions and figures of various new and interesting species belonging to that family lately arrived in this country.

One of these insects possesses characters differing so much from those of all the rest of the true and typical subgenus *Heliocantharus*, to which it is most nearly allied, that I am induced to regard it as possessing a higher rank than that of a mere species of that group; at the same time it is to be admitted that it seems scarcely entitled to an equal rank with the types of form which Mr. MacLeay has named *Mnematum*, *Pachysoma* and *Gymno-pleurus*.

SEBASTEOS, *Westw.*

Typus Scarabæorum sacrorum, *Heliocantharo* magis affinis.

Antennæ articulo 3tio et 4to 5to duplo longioribus, subæqualibus, 5to et 6to brevibus, pateriformibus; 7mo, 8vo et 9no clavam angustiore formantibus. Caput maximum. Clypeus radiatus, dentibus duobus anticis obtusis, intermediis latis truncatis, posticis duobus angulatis; clypeus subtus antice dentibus tribus deflexis armatus. Tibiæ anticæ angulatæ, extus 4-dentatæ, dentibus duobus apicalibus inter se remotis, intus serratulæ denteque medio armatæ. Tarsi antici obsoleti; postici 2 articulis subclavatis verticillatis.

Of these characters the variation in the relative size of the intermediate joints of the antennæ, the large size of the head, the curious horns with which the under side of the projecting lobes of the clypeus are armed, the curved fore legs armed on the inside beyond the middle with a short tooth, and the form of the hind tarsi, are those by which it is most easily distinguished from the true *Heliocanthari*.

Sp. unica. *Scarabæus (Sebasteos) Galenus*, Westw.

(Pl. XVII. fig. 1.)

Niger, nitidus, capite magno varioloso-punctato, pronoto punctato, margine postico lævi; elytris stria suturali alterisque quinque tenuibus sub lente punctatis; disco tenuissime punctato; pronoto utrinque versus marginem lateralem puncto majori impresso notato.

Long. corp. lin. 14.

Habitat in Africa meridionali. D. Burke.

In Mus. Soc. Zool. Lond.

This is one of the fine species of insects brought to England by Mr. Burke, and presented by the Earl of Derby to the Zoological Society of London, and which were captured in the hilly country lying between 25° and 26° south lat. and 27° and 28° east long.

Plate XVII. fig. 1, the insect of the natural size; 1 *a*, the head seen sideways; 1 *b*, the mentum and labial palpus; 1 *c*, the antenna; 1 *d*, intermediate tibia and tarsus; 1 *e*, posterior tarsus.

SCELIAGES, *Westw.* (in Trans. Zool. Soc. ii. p. 159.)

Sceliages Hippias, Westw. (Pl. XVII. fig. 2.)

Niger, nitidus, capite sub lente tenuissime punctato; clypeo cornubus duobus intermediis porrectis; pronoto fere lævi, elytrisque sublævibus et minus nitidis, singulo striis 6 vix discernendis; tibiis anticis haud in medio angulatis, extus 4-dentatis et serrulatis, metasterno antice producto et convexo-prominulo.

Long. corp. lin. 8.

Habitat in Africa meridionali. D. Burke.

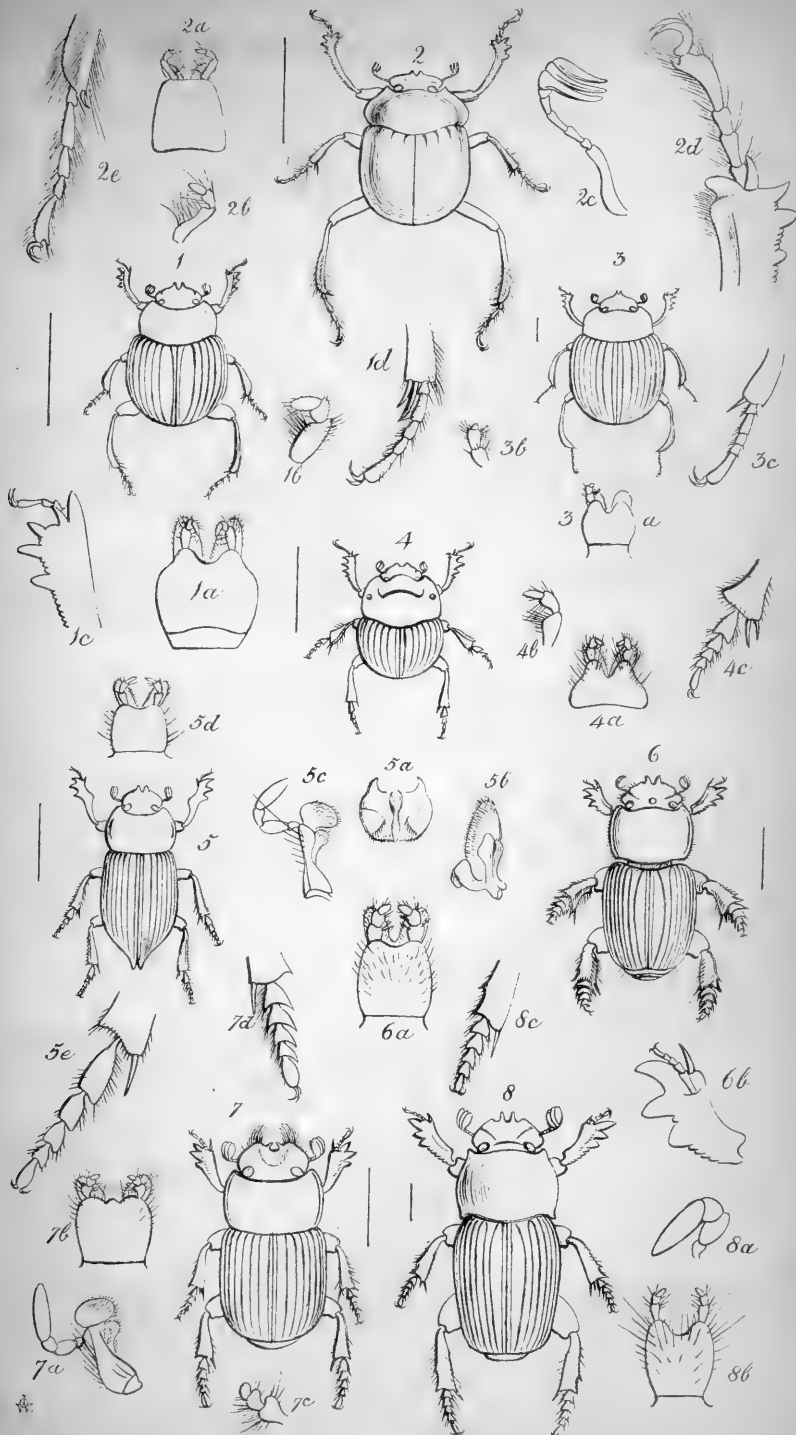
In Mus. Soc. Zool. Lond.

This species is distinguished from the *Sceliages Iopas*, described by me in the Transactions of the Zoological Society, by its less dilated form, as well as by the characters mentioned above.

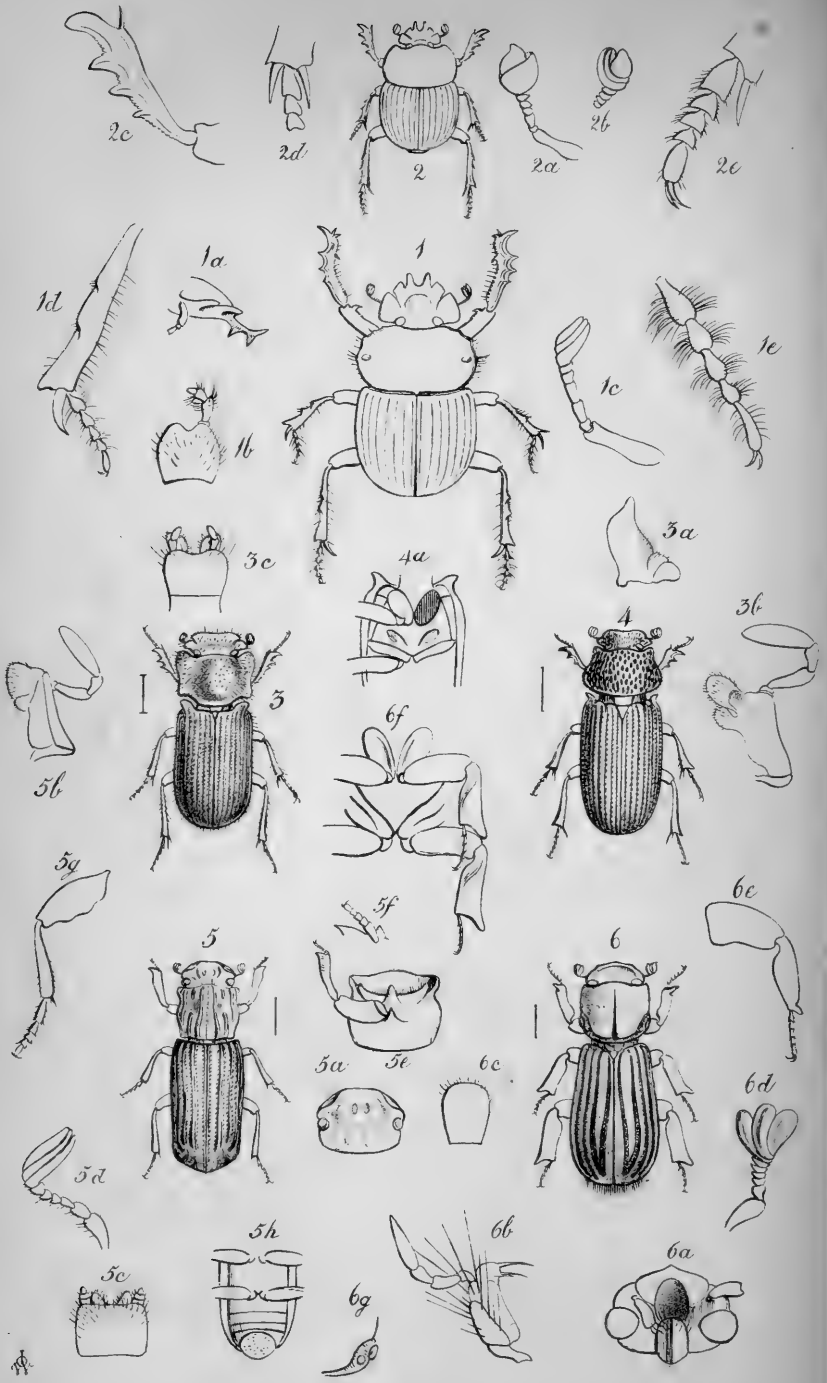
Plate XVII. fig. 2, the insect of the natural size; 2 *a*, the antenna; 2 *b*, the clava of the antenna seen from the opposite side; 2 *c*, anterior tibia; 2 *d*, base of middle tarsus; 2 *e*, posterior tarsus.

EPILISSUS, *Dej. Cat.*

The genus *Epilissus* of Dejean's Catalogue, adopted by Reiche in his synopsis of the Ateuchideous genera, published in the







“Revue Zoologique,” (1841, p. 212,) consists of Madagascar insects which differ very much from each other in several respects, so that I am induced to describe several of them as the types of respective subgenera. Retaining the *Canthon prasinus* of Klug, (Mad. Col. p. 73,) as the type of the typical subgenus, we find it distinguished by the following characters:—

Mentum latum, suborbiculare, antice valde emarginatum. *Palpi* labiales crassi, articulo ultimo præcedenti longitudine æquali. *Prothorax* lateribus fere rotundatis, haud reflexis. *Elytra* prothorace manifeste latiora, fere rotundata striata. *Pedes* parum elongati. *Femora* brevia, subtriangularia. *Tibiæ* anticæ elongato-triangularæ, depressæ, rectæ; margine externo serrulato, extus acute tridentatæ. *Tibiæ* 4 posticæ curvatæ, basi gracillimæ, apice sensim dilatato. *Tarsi* antici minutissimi; 4 postici tibiæ fere dimidio longitudine, articulo basali breviori, ultimo simplici, unguibus curvatis.

Plate XVI. fig. 1, *Epilissus prasinus*; 1 a, instrumenta labialia; 1 b, labial palpus; 1 c, anterior tibia and tarsus; 1 d, intermediate tibia and tarsus.

The *Canthon viridis* of Latreille, figured by Guérin in the “Iconographie du Règne Animal,” pl. 21, fig. 3, (Griffith, An. Kingd. Ins. pl. 45, fig. 4,) is evidently congeneric with *E. prasinus*; indeed Dr. Klug (Col. Mad. p. 73) suggests that it may be the female of that species.

Another beautiful species, described by Laporte under the name of *Circellium nitidum* (Hist. Nat. Ins. Col. vol. 2, p. 66), presents the following subgeneric characters, and may be named, from the great length of its feet, which give it a resemblance to a spider,

ARACHNODES, *Westw.*

Mentum basi latius, lateribus convergentibus, apice haud emarginatum. *Palpi* labiales graciles, articulo ultimo præcedenti fere dimidio minori. *Antennarum* clava elongata. *Prothorax* lateribus pone medium valde angulatis et reflexis. *Elytra* prothorace vix latiora, magis quadrata, haud striata. *Pedes* valde elongati, graciles. *Femora* elongata, parum compressa. *Tibiæ* anticæ graciles, ante apicem subito intus curvatæ et setosæ, margine externo serrulato, apice dentibus tribus parvis obtusis. *Tibiæ* 4 posticæ graciles, parum curvatæ, apice compresso et valde setoso, calcaribus minutis. *Tarsi* antici fere tibiæ dimidio longitudine; 4 postici tibiæ dimidio plus longiores, omnes compressi, valde setosi, articulo basali

minimo, 2ndo duobus sequentibus longiori, 5to latiori ad apicem subtus in spinam parvam producto; unguibus valde curvatis.

Plate XVI. fig. 2, *Arachnodes nitidus*; 2 a, instrumenta labialia; 2 b, labial palpus; 2 c, antenna; 2 d, anterior tarsus; 2 e, posterior tarsus.

The *Circellium clypeatum* of Laporte, (Hist. Nat. Ins. Col. vol. 2, p. 67,) will form another subgenus, distinguished by its very depressed form, short prothorax, having the sides rounded, the elytra striated, the mesosternum channelled down the middle, and the tibiæ very much curved.

The insects above described are of comparatively large size, being more than half an inch long and of splendid green tints; but there are several much more minute species of a black colour, also natives of Madagascar, which are, in fact, the pygmies of the family of the sacred beetles, not exceeding one-eighth of an inch in length. They may be characterized thus:—

NANOS, *Westw.*

Antennarum clava brevis, subrotundata. *Mentum* in medio latius, antice valde emarginatum. *Palpi* labiales brevissimi, lati; articulis 1 et 2 fere æqualibus, 3tio minimo. *Prothorax* lateribus fere rotundatis, haud reflexis. *Elytra* prothorace evidentè latiora, fere rotundata, lævissime striata. *Pedes* parum elongati, sublæves. *Femora* postica subovalia. *Tibiæ* anticæ curvatæ, depressæ, sensim latiores, apice extus 3-dentatæ; tibiæ 4 posticæ curvatæ, versus apicem paullo latiores. *Tarsi* antici mediocres, 4 postici longiores, unguibus valde curvatis.

Circellium pygmæus, Laporte. Hist. Nat. Col. 2, p. 67, is the type of this subgenus.

Plate XVI. fig. 3, *Nanos pygmæus*; 3 a, instrumenta labialia; 3 b, labial palpus; 3 c, posterior tibia and tarsus.

The remaining groups, which I propose to describe in this communication, belong to that section of the *Scarabæidæ* which possess short and triangularly dilated posterior tibiæ, and the tarsal joints of the hind feet gradually narrowed, of which *Copris* is the typical genus.

MACRODERES, *Westw.*

Corpus fere hæmisphæricum. *Clypeus* antice emarginatus, laciniis obtusis, postice transverse carinatus. *Mentum* sub-

triangulari, antice valde emarginatum, setosum. *Palpi* labiales articulo 2^{do} præcedenti parum minori, ultimo minuto ovali. *Prothorax* maximus, elytris fere major, lateribus rotundatis, antice utrinque obsolete retusus. *Elytra* prothorace haud latiori, semicircularia, punctulata et lævissime striato-punctata. *Tibiæ* anticæ extus dentibus tribus armatæ. *Femora* 4 postica brevia depressa; tibiæ apice dilatatae intermediæ 2-posticæ 1-calcaratæ. *Tarsi* antichi mediocres, articulo ultimo præcedentibus longitudine æquali; tarsi 4 postici articulo basali majori compresso-triangulari.

Type of the genus *Onthophagus Greenii*, Kirby, Linn. Trans. vol. 12, p. 397. Mr. Kirby observes of this insect, which is a native of the Cape of Good Hope, that it seems to vary from the habits of *Onthophagus*, and forms an intermediate link between it and *Copris*.

Plate XVI. fig. 4, *Macroderes Greenii*; 4 a, instrumenta labialia; 4 b, labial palpus; 4 c, intermediate tarsus and apex of tibia.

UROXYS, Westw.

Corpus oblongum, subdepressum, læve, nitidum, elytris postice acuminatis. *Clypeus* antice in lobos duos subacutos productus, vertice subconvexo. *Mentum* subquadratum, antice vix angustatum, margine antico parum emarginato. *Palpi* labiales articulis longitudine fere æqualibus, at sensim gracilioribus. *Prothorax* latior quam longus, lateribus in medio angulatis, tenuè marginatis. *Elytra* oblonga, prothorace vix latiora, apice singuli acuminato, lævissime striato-punctata. *Pedes* antichi elongati, tibiis anticis depressis, in medio (in uno sexu saltem), intus angulariter productis, extus versus apicem tridentatis. *Tarsi* brevissimi biunguiculati. *Pedes* 4 postici breves, tibiis apice triangulariter dilatatis, extus serrulatis. *Tarsi* articulo basali majori depresso; 4^{to} minuto, 5^{to} tenui, brevi, biunguiculato.

Uroxys cuprescens, Westw. (Pl. XVI. fig. 5.)

Cupreo-seu violaceo-nigricans, nitida; antennis rufescentibus; capite, pronoto et elytris lævissime punctulatis, horum singulo striis 8 læviter punctatis; tarsis piceis.

Long. corp. lin. $4\frac{3}{4}$.

Habitat Colombia. Mus. Hope.

Plate XVI. fig. 5, *Uroxys cuprescens*; 5 a, labrum; 5 b, mandible; 5 c, maxilla; 5 d, instrumenta labialia; 5 e, posterior tarsus.

SCATONOMUS, *Erichson*. (Wieg. Archiv.)

This genus, as described by Erichson, comprises several species of an oblong form, some of which are especially distinguished by the very broad emargination of the clypeus, within which are occasionally two acute teeth, and the angles of the emargination are furnished with a thick pencil of fulvous hairs.

In *Scat. fasciculatus*, Er. the anterior tibiæ are broad and triangular, with three teeth close to the extremity on the outside; the mentum has a small prominence in the middle of its frontal emargination; the labial palpi are very short, with the joints subglobose, and gradually diminishing in size.

Pl. XVI. fig. 7. *Scatonomus fasciculatus*; 7 a, maxilla; 7 b, instrumenta labialia; 7 c, labial palpus; 7 d, posterior tarsus.

[The two following insects were referred by me to the genus *Scatonomus* of Erichson (Wiegmann's Archiv. f. Naturg. i. p. 256), when this paper was read before the Entomological Society, their general characters and habits appearing to me to be sufficiently congeneric with those of *Scat. fasciculatus*, which Erichson places in the genus without any expression of doubt, although it seems to recede as much from the typical species *S. viridis* (judging from the figure given by Dr. Erichson of that insect) as the two following species do from *S. fasciculatus*. As Dr. Erichson, however, in his *Jahrbericht* for 1842, (translated by the Ray Club,) has stated that the two following insects do not enter into his genus, I now restore to them the generic name of *Onthocharis*, proposed without characters in Dejean's Catalogue.]

Onthocharis myrmidon, Lacordaire, MS. (Pl. XVI. fig. 8.)

Subcylindricus, niger; capite et pronoto viridibus, nitidis; clypeo profunde emarginato, in sinu acute bidentato, elytris leviter striatis, prothoracis angulis posticis prominentibus.

Long. corp. lin. 2.

Habitat Cayenne.

In Mus. D. Melly.

Caput viride, antice piceum, tenuissime punctatum, clypeo late et profunde emarginato, dentibus duobus acutis in sinu antico. Antennæ luteo-rufescentes. Mentum ovale, antice valde emarginatum. Palpi labiales articulo basali obconico, 2do et 3tio fere æqualibus, præcedenti brevioribus. Prothorax elytris fere lator, lateribus rotundatis, angulis posticis postice parum productis, viridis, tenuissime punctatus. Elytra chalybæo-

nigra, nitida, singulo striis 7 lævibus (spatiis intermediis planis), ad basin paullo angustiora (inde subovata apparent). Pedes breves, latiores, picei. Tibiæ anticæ depressæ, versus basin interne angulatæ, extus tridentatæ, subtus serratæ. Tarsi minuti. Tibiæ 4 posticæ subtriangulares, depressæ, extus serratæ. Tarsi articulis basalibus latioribus compressis.

Pl. XVI. fig. 8. *Onthocharis myrmidon*; 8 a, maxillary palpus; 8 b, mentum and labial palpi; 8 c, hind tibia and tarsus.

Onthocharis smaragdinus, Westw.

Brevis, subcylindricus, smaragdinus; capite antice profunde emarginato, in sinu obtuse bidentato; elytris leviter striatis, tibiis 4 posticis angustioribus, prothoracis angulis posticis in lobum parvum productis.

Long. corp. lin. $2\frac{1}{2}$.

Habitat in Brasilia.

In Mus. Gory (nunc D. Hope).

Onthocharis smaragdina, Gory, MSS.

Scat. myrmidonti paullo latior et inde minus cylindricus, dentibus duobus clypei apice obtusis; tibiis anticis minus dilatatis, margine interno in medio haud emarginato; elytris magis ovatis, striis ut in specie predicta dispositis; pedibus 4 posticis nigricantibus, minus dilatatis; tarsis compressis, at multo angustioribus quam in *Sc. myrmid.*; pronoti angulis posticis (e latere visis) in angulum acutum reflexum productis.

The two preceding species, in habit and colours as well as several parts of their structure, appear to be intermediate between the typical *Scatonomi*, and the genus next to be described under the name of

ANOMIOPUS, Westw.

Corpus oblongum, subconvexum, pedibus latissimis. *Mentum* ovale, subplanum, basi truncatum, antice vix emarginatum. *Palpi labiales* breves, articulis sensim minoribus. *Clypeus* antice in medio in dentibus duobus productus. *Prothorax* lateribus rotundatis marginatis, convexus. *Elytra* marginata, striisque 7, vix punctatis, impressa. *Pedes* breves, latissimi, tibiis anticis versus basin interne angulatis, externe dentibus tribus inter se valde distantibus armatis. *Tarsi* antichi minuti. *Tibiæ* 4 posticæ valde compressæ, extus, pone medium subangulatæ tarsisque latissimis.

[Dr. Erichson, in his *Jahrbericht* for 1842, considers that this

genus can scarcely be distinguished from *Onthocharis*, as the Berlin Collection possesses a series of species in which a gradual transition is found in the hinder tarsi, from the broadest form (as in *A. virescens*), to their narrow condition, as existing in *O. myrmidon*. With the insects before me, I prefer retaining the group as a provisional subgenus.]

Sp. 1. *Anomiopus virescens*, Westw. (Pl. XVI. fig. 6.)

Æneo-virescens, dentibus duobus clypei obtusis; capite, pronoto, et elytris tenuissimè, sed irregulariter punctulatis; elytris lævissime striato-punctatis, punctis vix distinctis; tibiis 4 posticis in medio prominulis; tibiis anticis basi externe 4-serratis, vertice puncto impresso.

Long. corp. lin. $3\frac{1}{2}$.

Habitat in Brasilia.

In Mus. D. Melly.

Pl. XVI. fig. 6. *Anomiopus virescens*; 6a, instrumenta labialia; 6b, anterior tibia and tarsus.

Sp. 2. *Anomiopus nigricans*, Westw.

Æneo-niger, dentibus duobus clypei acutioribus tenuioribus et parallelis; fortius punctatus; vertice puncto nullo in medio, sed duobus minoribus inter partem posticam oculorum, capite antice et postice purpureo-tinctis; antennarum clava piceo-nigra, articulis basalibus brunneis, pronoti disco postice linea longitudinali brevi impressa; elytris paullo longioribus, cyaneo-nigris, striis profundioribus; pedibus anticis castaneis, tibiis basi externe 7-denticulatis, pedibus posticis æneo-nigris, tarsis piceis, tibiis in medio extus haud prominulis; tarsis parum angustioribus; podice punctis magnis impresso.

Long. corp. lin. $2\frac{1}{2}$.

Habitat in Brasilia.

In Mus. D. Melly.

XXXIV. *Description of the male of Gastroxides ater, a Dipterous Insect belonging to the Family Tabanidæ. By W. W. SAUNDERS, Esq. F.L.S.*

[Read 7th July, 1845.]

IN the first part of the third volume of the Entomological Society's Transactions I described a dipterous insect from the north of India, belonging to the family *Tabanidæ*, under the name of *Gastroxides ater*. At that time I was only acquainted with the female, but since then, through the kindness of Mr. Westwood, I have been allowed to examine and figure the male, which is in Col. Hearsey's Collection, and differs from the female in having the second joint of the abdomen rufous, and the eyes large, and contiguous vertically. This figure and description I now beg leave to lay before the Society.

Gastroxides ater, ♂, W. W. Saund. (Pl. XIV. fig. 3.)

(Trans. Ent. Soc. iii. p. 59, Pl. V. fig. 4, ♀.)

Head broader than the thorax, semicircular. *Face* yellowish brown, with a large, elevated, shining chesnut brown tubercle in the centre, extending from the mouth to the base of the antennæ. *Region of the mouth* black, hairy. *Proboscis* about the length of the head. *Eyes* dark rufous brown, large, and meeting on the vertex. *Antennæ* black, rather more slender than in the female, and having the spine at the base of the terminal joint not so prominent. *Thorax* orbicular, black, hairy. *Wings* marked as in the female. *Abdomen* black, with the posterior margin of the first joint, the whole of the second joint, and the anterior margin of the third joint, bright rufous. *Legs* black.

Length, $\frac{1}{2}$ inch; expansion of wings, 1 inch.

From Northern India.

In the Collection of Col. Hearsey.

XXXV. *Notes on the Genera Holoparamecus, Curtis; Amphibolonarzon, Porro; Latrinus, Waltl; and Calyptobium, Villa.* By J. O. WESTWOOD, F.L.S.

[Read 5th May, 1845.]

IN 1833, Mr. Curtis, in a paper published in the second number of the *Entomological Magazine* (p. 186), containing the characters of some undescribed genera and species indicated in his "Guide to an Arrangement of British Insects," described a minute beetle, measuring one-half a line in length, under the name of *Holoparamecus depressus*, belonging to the family *Corticaridæ*, with the observation, "This insect appears to connect *Scydmaenus* and the group I have called *Corticaridæ*, which has hitherto been included in the family of *Engidæ*. I took a single specimen in Norfolk many years since, and believe it to be granivorous." Of this insect, in 1836, he published an excellent figure in his "Generic Illustrations," describing and representing the antennæ as 9-jointed, the tarsi as 3-jointed and slender, the body depressed, with several impressions on the hind part of the thorax, and giving figures of the upper lip, mandible and maxillæ, having unfortunately failed in discovering the labium and its parts. Of its relations he thus observes: "This very minute insect recedes from the typical groups of the Coleoptera, having only 9-jointed antennæ, and triarticulate tarsi; it is, however, undoubtedly allied to *Corticaria* as well as to *Latridius*, with which it accords in the shape of the antennæ, and in the numerical structure of the tarsi;" adding, that the genus *Eutheia* seems to strengthen the opinion, that this genus connects the *Corticaridæ* with the *Scydmaenidæ*." Of the habits of the genus he states, that he "took a single specimen of *H. depressus* many years since, running up the outside of a flour mill in Norfolk, which led me to believe that it fed upon grain; but I have since found several specimens amongst small pieces of decayed wood and bark, which came from Mexico I believe, and this renders it probable that it may live in the crevices and under the bark of trees, and also that it is, like many other insects, an imported species."

In preparing the "Generic Synopsis" of my "Introduction to the modern Classification of Insects," I had occasion to examine an insect in my own collection, obtained from that of the late Mr. Haworth, by whom it was labelled *Sierra Leone*, and which agreed in all respects with Mr. Curtis's figure, except that the antennæ were 10-jointed; I therefore introduced the genus into my list, with the characters

“oblong, depressed, antennæ 10-jointed, club 2-jointed, thorax obcordate, tarsi 3-jointed.” In the meantime Signor Villa had introduced into his Catalogues of European Coleoptera, a genus amongst the *Xylophaga*, to which he first gave the name of *Calypptobium*, then that of *Amphibolonarzron*, Porro, with his own name as a synonym, and then again that of *Calypptobium*, with the name of *Latrinus* of Walzl as a synonym; all these names appear to have been unaccompanied by any description. In 1843, however, M. Aubé, whose devotion to the minute Coleoptera is so well known, published a memoir on the genus *Calypptobium* in the Annals of the Entomological Society of France, describing four species, and giving a series of details of the parts of the mouth, &c.; the legs, 3-jointed tarsi, labrum, mandibles, maxillæ, and entire habit agreeing with Mr. Curtis’s figure of his *Holoparamecus*, with which M. Aubé was unacquainted, but representing and describing the antennæ as 11-jointed, and also describing and figuring the lower parts of the mouth overlooked by Mr. Curtis, and of which the labial palpi, from the very large and nearly globular shape of the middle joint, and the smaller triangular terminal joint, as well as the 3-jointed simple tarsi, entirely confirm the relationship of the genus to *Latridius* and *Mycetæa*. Of the four species described by M. Aubé, *Calypptobium Villæ* is found abundantly near Milan; *C. caularum* was taken by the Marquis de la Ferté Sénectère “dans du fumier de couches à melons,” as well as by M. Aubé himself “dans le fumier d’une bergerie” near Chateaux, and by M. Langeland in a similar situation near Paris; M. Reiche had found it also in a box of insects from Senegal. *C. Kunzei* was found by M. Kunze “dans des champignons” received from Brazil; and *C. nigrum*, the fourth species, was discovered by Mr. Melly in his late journey in Sicily.

M. Aubé considers the genus *Calypptobium* to approach closely to *Monopis*, an undescribed genus of Zeigler, founded on the *Hypophylæus brunneus* of Gyllenhal, but differing in its 3-jointed tarsi, *Monopis* having them 4-jointed; he admits, however, that its place is uncertain, and that it might be convenient to unite it to the *Trimera* of Latreille, immediately in the neighbourhood of *Cholovocera* of Motschoulski.

At the meeting of the French Entomological Society in the month of January, 1844, M. Guérin Meneville read a “note sur le genre *Holoparamecus*, et sur sa synonymie, et description d’une espèce nouvelle de ce genre,” affirming that *Calypptobium* is synonymous with *Holoparamecus*, and that *H. depressus* of Curtis is the *Calypptobium Villæ* of Aubé. The supposed new species described

by M. Guérin was discovered by him in the stoves for pine apples at Fleury, and proves, from subsequent communications made to the same society at the next meeting, to be identical with the *Calyptobium caularum*, which had been inaccurately described by M. Aubé, who "s'excuse de son erreur relativement au nom d'*Holoparamecus* en disant, qu'il n'a pu reconnaître comme identiques un genre figuré par M. Curtis, avec neuf articles aux antennes et le sein qui en présente réellement onze."

We have thus a genus, of which the characters assigned to it by three different writers entirely agree, except that Mr. Curtis describes the antennæ as 9-jointed, M. Aubé as 11-jointed, and myself as 10-jointed; it appears, however, from a communication published by M. Motschoulski,* that the species with 9-jointed antennæ was long ago described in Germany under the name of *Sylvanus singularis* by Beck,† and that in consequence of this discovery, M. Guérin Méneville has ascertained that his species possesses only nine joints, for which he accordingly proposes to retain the generic name of *Holoparamecus*, and to employ that of *Calyptobium* for those with 11-jointed antennæ. If such a step were, however, to be adopted, it would be necessary to give a third generic name to my insect with 10-jointed antennæ.

On examining these insects, and comparing them with M. Aubé's figures, it is impossible to arrive at any other conclusion than that they belong to one and the same genus, and that the variation in the number of the joints of the antennæ is either a specific or sexual character, a circumstance in itself of so unusual occurrence in the clavicorn *Coleoptera*, that I have considered it well worthy of being brought before the notice of the Society.

Under these circumstances, I now beg leave to exhibit to the Entomological Society my original specimen from Sierra Leone, possessing ten joints to the antennæ; and two other species, one taken by myself in the decayed part of a wooden case, containing insects lately received from India, and the other received by me from M. Reiche, without any indication of its country, but with the specific name of *difficile* of Villa, which is identical in Villa's Catalogue with *Cal. Villæ*.

The former of these two specimens I observed to run with considerable agility, secreting itself quickly in crevices of the decayed wood.

* Rev. Zool. par la Soc. Cuvier, 1844, p. 442.

† Beitr. zur Baierisch. Ins. Faun. "Nitidus, ferrugineus, depressus, antennis 9-articulatis, elytris substriatis.—Il se trouve dans le riz pourri. Peut-être est-il exotique?"

XXXVI. *Description of a new Dorylideous Insect from South Africa belonging to the Genus Ænictus.* By J. O. WESTWOOD, F.L.S., &c.

[Read 5th December, 1842.]

THE attention of Hymenopterologists was a short time ago (namely in the summer of 1840) strongly aroused by the announcement by Mr. Shuckard of the "discovery of an insect belonging to the group typified by *Dorylus* that will," as he expressed himself, "I expect, help to clear up the difficulty which has hitherto attended the completion of these genera, as yet consisting of males only." But though the interest raised by this announcement was great, the question of the nature and relations of these groups was still left almost in statu quo; in fact, the insect in question proved to be the male of a species belonging to another genus of this singular group, affording no clue to the solution of the question in dispute; indeed, the result of Mr. Shuckard's observations rather tended to the assertion of the ordinary bisexual character of *Dorylus* and its allies, and its consequent isolation from the family of the ants. The insect described by Mr. Shuckard was named by him *Ænictus ambiguus*, and was described from specimens collected in India by Colonel Sykes. The geographical range of the species of this group was indeed an interesting fact, for hitherto no *Labidus* has been found but in the new world, although *Dorylus* was known to enjoy a wider range, occurring not only in Africa but also in the East Indies, whence I had a short time previously described a species collected by Mr. Saunders. To this gentleman I have since been indebted for a specimen of *Ænictus ambiguus*, of which species there are specimens in a large collection of Indian insects recently arrived in England, and now offered for sale by a merchant in the city. Previous to the publication of Mr. Shuckard's memoir I had also discovered another species of *Ænictus* in one of the store drawers of the Linnæan Society's Cabinet, which I believe to be also a native of India. Of this species, as well as of several new species of *Labidus*, I published figures and descriptions in my "Arcana Entomologica" (pl. 20), wherein I endeavoured to prove the ant-nature of this group of insects, an opinion which I am happy to learn has been adopted by the distinguished Hymenopterists Drs. Klug and Erichson of Berlin. Under these circumstances I was greatly interested in recently detecting in a collection

of South African insects sent by Mr. Drege to Mr. Saunders an insect belonging to this subfamily, which in several respects seems more fully to confirm the Formicoid character of the group. The insect in question was indeed sent by Mr. Drege as an individual belonging to one of his species of ants, (No. 1485,) of which other specimens (being a true species of *Formica*) were also sent. The insect disagrees in one or two slight respects from Mr. Shuckard's character of *Ænictus*, but I have not thought it necessary to propose a new subgenus for its reception. Of these characters the most striking are the slightly opaque whitish wings, with the veins and stigma almost concolorous with the membrane of the wing; the antennæ gradually attenuated from the fourth or fifth joint, and the very clavate femora to all the feet: the palpi of this insect differ materially from those of *Labidus*.

Ænictus inconspicuus, Westw. (Pl. XIV. fig. 4.)

Nigro-cinereus, pubescens, antennis rufo-piceis, apicibus sensim acuminatis, articulo basali nigro; mandibulis longis, acutis, piceo-rufis, basi nigris; alis fere translucidis, venis stigmateque fere inconspicuis; pedibus perbrevibus, femoribus clavatis, pedunculo abdominis transverso, antice parum angustiori, disco haud canaliculato.

Long. corp. lin. 4, expans. alar. lin. $6\frac{1}{2}$.

Habitat in Africa australi. Drege.

In Mus. W. W. Saunders.

DESCRIPTION OF THE FIGURES.

Fig. 4, the insect magnified; 4*a*, the head seen in front; 4*b*, maxilla; 4*c*, labium; 4*d*, antenna; 4*e*, fore foot; 4*f*, ungues and pulvillus; 4*g*, base of the abdomen seen sideways.

XXXVII. *Descriptions of some Exotic Insects, belonging to the Family Aphodiidæ.* By J. O. WESTWOOD, F.L.S.

[Read 7th August, 1843, and 7th April, 1845.]

EUPARIA CASTANEA. (Pl. XVII. fig. 3.)

THIS insect has hitherto been known only by the short description given in the *Encyclopédie Méthodique* (vol. x. p. 357), by Messrs. Serville and St. Fargeau, who merely state that "ce nouveau genre, très voisin de celui d'*Aphodie*, s'en distingue par les caractères suivans: côtés de la tête dilatés, et formant un triangle, angles postérieures du corselet fortement échancrés, angles huméraux des élytres pointus, et très prolongés en devant;" giving the following short specific description:

"*Euparia fuscè castanea*; punctata; capitis angulis lateralibus dilatato-subspinosis; thoracis basi sinuatâ, utrinque marginatâ; elytris striato-punctatis, humeris porrecto-subspinosis.

"Long. 3 lin.

"Patrie inconnue."

Dejean introduced this insect into his "Catalogue des Coléoptères" as a native of North America; a specimen of the same insect, sent by M. Gory to Mr. Hope for examination, was also labelled North America.

This specimen was $2\frac{1}{2}$ lines long (English measure), of a dark castaneous colour, with the elytra somewhat darker, the pronotum very glossy, and the sides of the body clothed with short pale luteous setæ. The head is nearly as broad as the prothorax, with a deep incision on each side, leaving the lateral angles free and prominent. The mandibles (fig. 3a), maxillæ (fig. 3b), and lower parts of the mouth (fig. 3c), as may be expected, scarcely differ from those of *Aphodius* (Mod. Class. Ins. i. 201, cut 20, fig. 15—18); the mentum is however more quadrate, and broader in front (fig. 3c), and I did not perceive the basal joint of the labial palpi, which was probably retracted. The prothorax is broad, and has the fore angles porrected, whilst the hind ones are emarginate. Each elytron has eight fine simple longitudinal striæ, each of which is margined with a row of small punctures on either side. The fore tibiæ are tridentate, and the hind ones simple and slender.

Pl. XVII. fig. 3. *Euparia castaneu*; 3a, mandible; 3b, maxillæ; 3c, instrumenta labialia.

Euparia nigricans, Westw. N. Sp. (Pl. XVII. fig. 4.)

E. piceo-nigra, capitis parte antica tarsisque rufescentibus, pronoti angulis anticis porrectis, posticis latioribus rotundatis, angulisque humeralibus elytrorum acute porrectis.

Long. corp. lin. $2\frac{1}{2}$.

Habitat — ?

In Mus. Dupont, Parisiis.

This insect, in the form of the head and the produced anterior angles of the elytra, resembles the preceding species, but the form of the prothorax is very different, being considerably narrower before than behind, with the fore angles porrected and rounded, the hind angles rounded off, and the disk covered with large deep punctures, and the margins setose. Each elytron is marked with eight rows of deeply impressed striæ. The scutellum is elongate, triangular. The anterior tibiæ are tridentate, and the hind ones slender, but dilated at the tips.

I regret that I am not able to give the locality of this species, M. Dupont having sent me the insect with no other indication than was afforded by a bit of green paper attached to it. As Entomologists can never be universally brought to agree upon the employment of particular coloured labels for particular geographical districts, and moreover as such a plan, even if adopted, would still require the indication of more precise localities, now that the geographical range of insects has become so much more important an element in entomological science than it has until lately been deemed, I cannot but strongly object to the employment of any other mode of indication of localities than that of their absolute name upon tickets attached to the specimens.

Pl. XVII. fig. 4. *Euparia nigricans*; 4a, meso- and meta-sterna.

RYPARUS, Guérin, ined.

This genus has hitherto remained undescribed, being, I believe, only indicated by name in Dejean's "Catalogue des Coléoptères." An unique specimen, received by Mr. Hope from M. Guérin himself, has been kindly lent me for examination, and I now beg leave to offer the following description and accompanying figure of this interesting insect to the Entomological Society.

Caput magnum, supra fere planum, angulis lateralibus ante oculos parum prominentibus. *Antennæ* 9-articulatæ. *Maxillæ* ut in *Aphodio* formatæ. *Mentum* transverso-quadratum, antice valde setosum. *Labium* e lobis duobus membranaceis

ciliatis constans. *Palpilabiales* breves, laterales, et, ut videntur, triarticulati. *Prothorax* fere quadratus, capite parum lator, lateribus versus angulos anticos sinuatis, disco longitudinaliter costato. *Prosternum* ante pedes anticos porrectum. *Pedes* antici breves, femoribus crassis, tibiis extus edentatis tarsisque brevibus. *Elytra* prothorace paullo latiora, ante medium parum dilatata, disco costata, costis ante apicem terminatis. *Scutellum* minimum fere inconspicuum. *Pedes* 4 postici graciles, breves, tibiis haud denticulatis. *Abdomen* segmento anali subtus rotundato, granuloso.

Ryparus Desjardinsii, Guérin. (Pl. XVII. fig. 5.)

Niger, opacus, punctatus, luteo-squamosus; pronoto costis 6 longitudinalibus, intermedio utrinque ante medium interrupto, elytrorum sutura costisque 4 (in singulo) elevatis glabris, costis utrinque punctatis; antennis luteis.

Long. corp. lin. $2\frac{1}{3}$.

Habitat in Insula Mauritii. D. Desjardins.

In Mus. D. Hope.

This species has been named by M. Guérin Méneville in honour of the late M. J. Desjardins, an excellent entomologist, long resident in the island of Mauritius, where his loss will be felt as long and deeply as it is by those entomologists who, like myself, had been in frequent correspondence with him.

Pl. XVII. fig. 5. *Ryparus Desjardinsii* magnified.

5 a, the head seen from above; 5 b, maxilla; 5 c, instrumenta labialia
5 d, antenna; 5 e, underside of the prothorax; 5 f, anterior tarsus;
5 g, hind leg; 5 h, underside of the abdomen.

In a small collection of *Coleoptera* recently received from Capt. Boys, corresponding M. E. S., collected at Mhow, in Malwa, in Central India, there were several specimens of a small Lamellicorn beetle, which, although resembling a small species of *Aphodius* in general figure, presented so curious an aspect from their deeply sculptured prothorax, setose tips of the elytra, and broad flat feet, destitute of spines or spurs, that I was induced to examine the structure of the mouth, and therein detected a formation of which I believe no other Coprophagous Lamellicorn offers an analogy. The nature of the food of this great division of the genus *Scarabæus* of Linnæus, consisting of wet vegetable or excrementitious matter, needs only membranous maxillæ and mandibles, whilst their

feet are strongly digitated for boring through it or the earth; whereas in the little insects before us we find the maxillæ armed with strong horny setæ or spines, and the feet, although broad, entirely destitute of spines or spurs, presenting in this respect, as well as in the bundles of setæ at the extremity of the abdomen, a singular analogy to some of the species of *Paussus*. It is therefore quite certain that these insects must differ very materially from the *Aphodiidæ* in their habits, and, from the formation of the maxillæ, they might perhaps be considered as more nearly related to the *Trogidæ*, in several of which we have the maxillæ furnished with strong horny spines, as in this new genus, but the mandibles of the *Trogidæ* are corneous and large, whereas in this new genus the mandibles, as well as the labrum and labial palpi, are obsolete; at least I have been unable to discover any rudiment of them in three specimens which I have dissected. From the setose extremity of the elytra the genus may be named

CHÆTOPISTHES.

Corpus oblongum, glabrum, dorso valde sulcato. *Caput* antice deflexum, fronte semicirculari marginato, margine parum reflexo, acumine subangulato, clypeo infra parum convexo, cavitate ovali os includente. *Labrum* obsoletum? *Mandibulæ* membranaceæ?, obsoletæ? *Maxillæ* corneæ, extus valde setosæ, lobo apicali corneo, in unguem acutissimum curvato, subtus setis rectis corneis armato. *Mentum* ovale, basi truncatum. *Labium* et palpi labiales obsoleti? *Antennæ* 9-articulatæ, articulo 2do tribus sequentibus æquali; 6to intus acute producto, tribus ultimis clavam articulis liberis formantibus. *Prothorax* fere rotundatus, antice truncatus, convexus, glaberrimus, medio profunde sulcatus. *Metasternum* subtriangulare. *Elytra* glabra, apicibus setosis, singulo 4-sulcato, sulcis æqui-distantibus. *Pedes* lati, compressi; tibiæ nec spinosæ nec serratæ, angulis externis apicalibus acutis, oblique truncatis.

Chætopisthes fulvus, Westw. (Pl. XVII. fig. 6.)

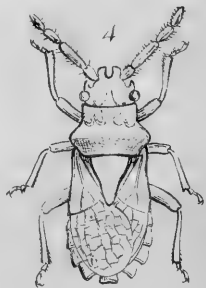
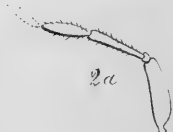
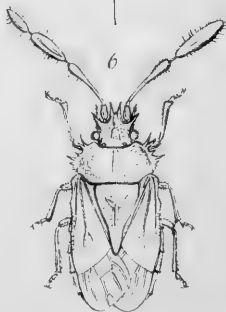
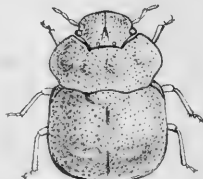
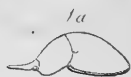
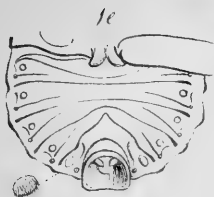
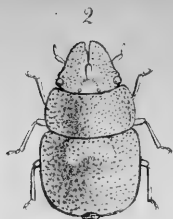
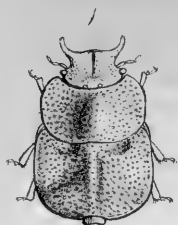
Totus fulvus, nitidus, capite et prothorace parum castaneis, hoc per totam longitudinem ejus sulcato, angulis posticis basi-que transverse impresso, impressionibus setulosis.

Long. corp. lin. $1\frac{3}{4}$.

Habitat in India centrali. D. Boys.

Pl. XVII. fig. 6. *Chætopisthes fulvus* magnified.

6a, the underside of the head; 6b, maxilla; 6c, mentum; 6d, antenna; 6e, fore foot; 6f, middle and hind feet; 6g, posterior angle of the pronotum.



P.S.—Since this memoir was read, Dr. Klug has published a new part of the “*Symbolæ Physicæ*,” in which he has figured a minute insect from Abyssinia, closely allied to the one above described, under the name of *Corythoderus loripes* (Pl. XLII. fig. 11, and our Pl. XVII. fig. 7). It differs however from Captain Boys’ insect, not only in the form of its feet, but also in the sulcation of its prothorax and elytra. Dr. Klug has unfortunately omitted to describe the trophi, the specimen being unique.

XXXVIII. *Descriptions of various exotic Heteropterous Hemiptera.* By J. O. WESTWOOD, F.L.S., &c.

(Continued from Vol. II. pp. 24, 253; Vol. III. p. 31; and Vol. IV. p. 122.)

[Read 7th October, 1844, &c.]

PLATASPIS BUCEPHALUS, *White.* (Entomologist, p. 136.)

(Pl. XVIII. fig. 1.)

As the specimen of this remarkable insect, described by Mr. White, was mutilated, I beg leave to present to the Entomological Society a figure and details drawn from a perfect specimen recently received by the Reverend F. W. Hope, in a collection of insects forwarded to him from Cape Palmas by Mr. Savage.

This specimen (as well as evidently that described by Mr. White) is a male, possessing the broad head with corniform appendages (so commonly indicative of that sex), a scutellum emarginate at its tip when seen from behind, and the exerted sexual apparatus, concave on its lower surface except at the base, of the male. I am the more particular in determining the sex of this specimen, as either the sexual distinctions in this genus have been regarded as sectional, or the sexes have been transposed in some recent works on the *Hemiptera*. Of the identity of the sex there can be no question, since, independent of the enlarged size and dilated or cornuted structure of the head of the males, I have extracted the ova from the abdomen of a specimen of an allied species, having the scutellum destitute of the emargination, and the sexual apparatus agreeing with the figures which I have given as those of

he female in my paper on this genus in "Charlesworth's Mag. of Nat. Hist.," January, 1838, figs. ii. 5, and iii. 9.

The space between the ocelli is considerably shorter than that between the ocelli and the eyes; the promuscis extends to the base of the second pair of legs, it is slender and 4-jointed, the first and fourth joints the shortest, and the second and third longer, being nearly of equal length.

The first, second, third and fourth ventral segments have a long impressed line on each side, terminating near the margin of the abdomen in a small dot, which might be mistaken for a spiracle, but the true spiracles are present and placed rather in advance of this dot and somewhat nearer to the median line of the body: the fifth segment, which is very much angulated in the middle, has also a short impressed line on each side, but this terminates in the true spiracle, whilst a little in advance of it is a much larger oval patch of short decumbent hairs.

The legs are short and compressed, the tibiæ are especially short, being scarcely longer than the tarsi. The insect is, however, unable to fold up its feet in the same way as the *Histeridæ* as suggested by Mr. White, because there are no impressions on the under surface of the body in which the four hind feet could be lodged.

The insect is nearest allied to *Plataspis coccinelloides* and *coracina*, (to the first of which Messrs. Serville and Amyot restrict the name of *Thyreocoris*, giving the name of *Heterocrates* to the second,) in consequence of having the ocelli placed very close together. In comparison with these insects, and in respect to the characters which Messrs. Serville and Amyot have employed for their genera, the present insect must be considered as a separate genus, and it is therefore proper to add that Mr. White has himself applied the subgeneric name of *Ceratocoris* to it in the Index of Addenda and Corrigenda at the end of the "Entomologist."

Plate XVIII. fig. 1, the insect slightly magnified; 1 *a*, the insect of the natural size seen sideways; 1 *b*, antenna; 1 *c*, fore foot; 1 *d*, extremity of the abdomen seen from above; 1 *e*, underside of the abdomen.

Plataspis (Aphanopneuma) biloba. (Pl. XVIII. fig. 2.)

Supra obscure lutea, nitida, depressa, subparallela, undique nigroguttulata, guttulis punctatis; spatio magno bilobo fulvescenti

ad basin scutelli, capite ♂ in lobos duos magnos conicos convergentes producto.

Long. corp. lin. 7.

Habitat in Africa tropical. occident. D. Savage.

In Mus. D. Hope.

This insect differs from the other species of this and the adjacent subgenera, which have the ocelli more close together than the distance between them and the eyes, in the more parallel form of the depressed body, in the conical form of the porrected head, and the nearly straight sides of the prothorax; whilst from *Heterocrates coracina* it differs in having the promusci extending only to the base of the hind legs, with four joints, the first and fourth joints shortest and the second and third longer and nearly of equal length. But the most curious character is the hidden position of the spiracles; there is, indeed, along the lateral margins of the ventral surface of the abdomen, on each side, a lateral row of minute pale spots on the black disc, each of which presents in the centre a little black dot, which at first sight appears like one of the real spiracles; but the latter are quite lateral and placed within the very narrow membranous fold which unites the dorsal and ventral surfaces of the abdomen. It is from this character that I have given the subgeneric name used above. The antennæ in the only specimen which I have seen have only three joints, (not including the radicle between the first and second,) but it is probable that the fourth joint has been broken off; the basal joint is pale luteous, the remainder black. The feet are much more slender than in *Ph. Bucephalus*. The abdomen beneath is very flat and highly polished and black; the femora and tibiæ are luteous; the wings are of a black brown colour, and of the ordinary structure of the genus.

Plate XVIII. fig. 2, the insect slightly magnified; 2*a*, antenna, with the presumed terminal joint indicated by dots; 2*b*, apex of the abdomen seen from above; 2*c*, underside of the abdomen.

Plataspis (Cantharodes) cænosa, Westw. (Pl. XVIII. fig. 3.)

Supra obscura, sublutescens, opaca, nigro-punctatissima; scutello fasciâ indistinctâ medianâ subpallidiori; capite magno, subconcavo, postice in collum angustato; prothorace antice valde emarginato, lateribus rotundatis, in medio parum angulatis; pedibus subgracilibus.

Long. corp. lin. 8.

Habitat Cape Palmas, Africæ tropic. occid. D. Savage.

In Mus. Hope, Westw.

This is the largest species of this group of *Scutelleridæ* hitherto detected, and which, in the comparative proximity of the ocelli, enters into Serville and Amyot's first division of the group, subfamily or genus. From the other subgenera it differs in the broad subdepressed form, with the head prominent, nearly semicircular, subconcave above, with a depressed mesial line terminating in a bifid impression, and with the hind part of the head considerably elongated, forming a kind of neck, which is received in the deep emargination of the front of the prothorax. The antennæ are 4-jointed, exclusive of the radicle between the first and second joints; the promuscis extends to between the middle feet; the body above is destitute of gloss, with the front half of the prothorax elevated into four slight bosses; the sides are nearly rounded, but with a slight angulation in the middle; the base of the scutellum is transversely raised in the middle, giving the appearance of a distinct very broad short scutellum; across the middle of the scutellum extends a paler very obsolete fascia, and beyond this are two short nearly obsolete transverse paler streaks. The feet are comparatively slender; the abdomen beneath is not flat, but has a longitudinally central raised part; the spiracles are distinct at the sides of the abdomen within the lateral margins of its ventral surface. The appearance of the anal portion is represented in the figure, which leads me to infer that the specimen before me is a male. As this species will not enter any of the subgenera *Thyreocoris*, as restricted by Serville and Amyot, *Heterocrates*, *Ceratocoris* or *Aphanopneuma*, I have been obliged to form it into a separate subgenus, which, from the resemblance of the insect to certain *Heteromeros* beetles, I have named *Cantharodes*.

Plate XVIII. fig. 3, the insect slightly magnified; 3a, extremity of the abdomen; 3b, underside of abdomen.

EUMENOTES, *Westw.*

Corpus depressum, oblongum. *Caput* latum, antice cornubus duobus planis truncatis, alterisque duobus ante oculos armatum. *Antennæ* satis crassæ, 4-articulatæ; articulo 2ndo reliquis longiori, 4to ovali præcedenti parum breviori. *Promuscis* ad pedes posticos extensa, 4-articulata, articulo 2ndo reliquis longiori, alteris tribus longitudine æqualibus. *Prothorax* antice lateribus rectis, haud capite latior, postice utrinque in angulum parum productus. *Hemelytrorum* corium vena furcata instructum, membrana multi-areolata, marginibus abdominis haud tegentia. *Pedes* simplices.

This genus comes very close to *Anaurus*, Burm. (*Platydius*, Westw. Zool. Journ.; *Megymenum*, Guér.; *Corydius*, De Haan,) in all its more essential characters, but differs entirely in the form of the head and thorax, and in the antennæ not being dilated as in this genus. Unfortunately the locality of the only known individual of the genus is unknown.

Sp. unica. *Eumenotes obscura*, Westw. (Pl. XVIII. fig. 4.)

Obscure brunnea, punctata, apice scutelli rufescenti, membrana apicali hemelytrorum nigricanti, pronoti margine postico transverso deflexo, abdominis lateribus subserratis.

Long. corp. lin. 4.

Habitat — ?

In Mus. Britann.

Plate XVIII. fig. 4, the insect magnified; 4a, promuscis.

EPIRODERA,* *Westw.*

Genus novum *Enicocephalo* Westw. affine. *Caput* parvum, quasi bipartitum, colloque brevi postice instructum. *Nasus* brevis, porrectus, apice rotundato; parte postica subglobosa antice et postice constricta, ocellos duos gerente. *Antennæ* capite dimidio longiores, graciles, 4-articulatæ; articulo 2^{do} longiori, ultimo elongato, ovali, vix precedenti tenuiori. *Promuscis* fere capitis longitudine libera, 3-articulata, articulo intermedio multo longiori. *Prothorax* latissimus, angulis anticis lateralibus porrectis, lateribus inflato-rotundatis, pone medium constrictum, margineque postico bituberculato. *Scutellum* parvum, triangulare. *Hemelytra* abdomen fere tegentia corio parvo, membrana apicale maxima, area magna media venis 4 ad margines emissis. *Abdomen* oblongum, valde deplanatum parallelum, apice rotundato. *Pedes* breves, satis crassi; femoribus crassis, subtus serratis.

This genus is one of those small forms amongst the *Reduviidæ* which possess the appearance of the *Aradi*, and have the antennæ not attenuated at the tips. The rostrum is however free, and the veining of the hemelytral membrane very similar to that of *Enicocephalus* and *Holoptilus*. Another group allied to these

* At the suggestion of Mr. A. White (to whom this paper was referred by the Publication Committee) the name of *Physoderes* given to this genus, as printed in the Journal of Proceedings, has been altered, as being too near to *Physodera*, a subgenus separated from *Lebia*.—J. O. W.

insects from Van Diemen's Land has recently been characterized by Dr. Erichson under the name of *Isodermus*, in which the hemelytra are destitute of veins.

Epirodera notata, Westw. (Pl. XVIII. fig. 5.)

Obscure brunneo-fulvescens, pronoto in medio partis anticæ lineis duabus latis parallelis notisque tribus lateralibus obscuris; hemelytris corpore concoloribus membrana fusca abdominibus lateribus detectis, nigro flavoque alternatim coloratis, capitis parte postica obscura; alis posticis fulvis, pronoto subtus concolori nigro vario.

Long. corp. lin. $4\frac{1}{2}$.

Habitat — ?

In Mus. Britann.

Plate XVIII. fig. 5, the insect magnified; 5 a, the head seen sideways.

STENOTOMA, *Westw.*

Genus novum inter *Corecidas Heteropterorum* locandum. *Caput* subtriangulare, lobo antico subconico et ad apicem acute bispinoso, spinis duabus ante oculos porrectis alterisque duabus ad latera capitis locatis. *Oculi* magni; *ocelli* 2 minuti ad marginem anticum pronoti approximati; *promusci* 4-articulata, gracilis, ad basin pedum posticorum extensa, articulo 1mo in canali infero capitis recepto, 2ndo reliquis paullo longiori. *Antennæ* 4-articulatæ, dimidium corporis longitudine superantes, articulo basali brevi, 2ndo clavato setoso, 3tio ovali lato, 4to ovali-oblongo, præcedenti minori et parum breviori. *Pronotum* lateribus pone medium angulatis, marginibus spinosis, parte postica vix elevata. *Scutellum* elongatum, postice attenuatum, subcarinatum. *Hemelytra* abdominis longitudine corio punctato, areola transversa ad basin membranæ apicalis venas 4 longitudinales emittenti, vena altera margine laterali parallela. *Pedes* breves graciles, tarsis 3-articulatis, articulo intermedio minuto. *Abdomen* hemelytris tectum, angulis posticis lateralibus segmentorum acutis.

The name of this genus is derived from the very slender thread-like connexions between the second and third, and third and fourth joints of the antennæ; these are not noticed in the above description; if included they would, together with the

minute radicle connecting the basal joint with the head, raise the number of joints in the antennæ to seven.

Sp. 1. *Stenotoma Desjardinsii*, Westw. (Pl. XVIII. fig. 6.)

Lutea, fulvo-parum-variegata, undique fusco-punctata, antennis fuscis, abdominis lateribus fusco et albido alternatim maculatis.

Long. corp. lin. 3.

Habitat in insula Mauritiæ. D. Desjardins et Templeton.

In Mus. nostr.

(An. *Phricodus hystrix*,* Spinola in Guér. Mag. Zool. 1840.)

This curious insect is named in honour of its discoverer, the late Julien Desjardins, whose exertions in the cause of science in the distant island of Mauritius merit far greater respect than can be shown by this feeble mark of recognition.

One of my specimens is curiously deformed in one of its antennæ, as represented in the accompanying sketch, the two apical joints being soldered together, and the preceding joint more elongated than in the opposite antenna, as though to make up for the deficiency in the number of joints.

* P.S. I have added this citation at the suggestion of Mr. A. White. The insect described by the Marquis Spinola is however stated to be a native of the Cape of Good Hope, and is arranged both by him and by M. Germar (in the Rev. Entomol. de Silberman, tom. v. p. 134, No. 34) as one of the *Aradites*, the antennæ being described as 4-jointed, the first extremely minute and basal, the second small and pear-shaped, the third long and clavate, and the fourth very minute and setaceous. Upon this mode of computation the left hand antennæ of the insect above described by me must be considered as having seven joints. The learned Marquis has moreover represented his insect as not possessed of two ocelli, nor as having the closed cell at the base of the membranaceous part of the hemelytra. The head moreover in my insect does not exhibit the two deep circular impressions between the eyes, seen in M. Spinola's figure of *Phricodus hystrix*.

XXXIX. *Observations on the Fossil Insects of Aix in Provence, with Descriptions and Figures of Three Species.* By the Rev. F. W. HOPE, F.R.S., P.E.S.

[Read 5th August, 1844.]

IN my late visit to the Continent, besides amassing a rich collection of recent insects, my attention was also directed to those which for some period or periods have been entombed in a fossil state. The major part were obtained at Aix in Provence, and at Sinigaglia in Italy.

It is not my intention at present to describe any of the latter formation, and I only at present figure three from the former locality, being doubtful if they will interest the Entomological Society equally as much as existing and recent species.

Little I believe has been written on the fossil insects of Aix, excepting a memoir by Marcel de Serres* and Mr. Murchison, and some notices by Mr. J. Curtis, published in 1831 or 1832. Heinrich Georg Bronn, in his "Lethæa Geognostica," † (published in 1838,) gives in his second volume a catalogue of the genera which have been discovered at Aix; and as it is a work little known to many of us, I insert the list of names there published, adding the letter B to designate those with which he was acquainted, and the letter H to particularize those which have fallen under my inspection.

COLEOPTERA.

	GENERA.		Remarks.
1	<i>Harpalus</i> , B. & H. †..	1	An insect resembling <i>Harpalus ruficornis</i> , only smaller.
2	<i>Helobia</i> , H.....	2	The elytra closely resemble that genus.
3	<i>Dyticus</i> , B.	3	
4	<i>Colymbetes</i> , H.	4	An insect similar to <i>C. striatus</i> , and I have seen some specimens resembling <i>Hiphydrus</i> .
5	<i>Hydrobius</i> , B. & H. ..	5	Some specimens are closely allied to <i>H. fuscipes</i> .
6	<i>Staphylinus</i> , B. & H. .	6	Apparently three distinct genera.
7	<i>Lathrobium</i> , B.	7	
8	<i>Sisyphus</i> , B.	8	
9	<i>Pachypus</i> , B.	9	

* Marcel de Serres mentions 62 genera of Insects; vide "Géolog. des Tertiaires du Midi de la France."

† "Lethæa Geognostica, von Heinrich Georg Bronn," in 2 vols. 8vo. published in 1838.

‡ B. alludes to the species mentioned in Bronn's Catalogue, and H. those which have fallen under the inspection of Mr. Hope.

COLEOPTERA—continued.

GENERA.		Remarks.
10	<i>Geotrupes?</i> H.	10
11	<i>Melolontha</i> , B. & H. ..	11 Single elytra, chiefly like <i>Rhisotrogus</i> .
12	<i>Cetonia</i> , B.	12 I heard of some examples, but never saw a specimen.
13	<i>Buprestis</i> , B. & H.	13 Small, with acuminate elytra.
14	<i>Elater</i> , H.	14 One <i>Elater</i> allied to <i>niger</i> ; two distinct species.
15	<i>Atopa</i> , H.	15 Probably <i>Atopa cervina</i> , only darker.
16	<i>Ptinus</i> , B.	16 Unseen by me.
17	<i>Sepidium</i> , B.	17 Elytra similar certainly, and yet I doubt the genus.
18	<i>Opatrum</i> , B. & H.	18 Not uncommon; one species is elongated and small.
19	<i>Asida</i> , B. & H.	19 Probably two or three species.
20	<i>Bruchus</i> , B.	20
21	<i>Apion</i> , B.	21
22	<i>Rhynchites</i> , H.	22 A dark species.
23	<i>Sitona</i> , B.	23
24	<i>Lixus</i> , H.	24 Several; they vary much in size.
25	<i>Cleonis</i> , B. & H.	25
26	<i>Balaninus</i> , H.	26 Very fine; one figured.
27	<i>Cionus</i> , B.	27
28	<i>Brachycerus</i> , B. & H. .	28 A species approaching an African form; at least I know no European species like it.
29	<i>Rhynchanus</i> , H.	29
30	<i>Meleus</i> , B.	30
31	<i>Hypera</i> , B. & H.	31
32	<i>Naupactus</i> , B.	32
33	<i>Rhinobatus</i> , B. & H. ..	33 Allied to <i>Cynara</i> , but smaller.
34	<i>Dorytomus</i> , B.	34
35	<i>Apate</i> , B. & H.	35
36	<i>Scolytus</i> , B. & H.	36 In colour like recent insects.
37	<i>Hylurgus</i> , B.	37 Probably a genus allied to <i>Hylurgus</i> .
38	<i>Bostrichus</i> , H.	38 Dark, sometimes pitchy.
39	<i>Trogosita</i> , B. & H.	39 A form very similar; ferruginous; one very perfect.
40	<i>Ips</i> , B.	40
41	<i>Callidium</i> , B.	41 I saw three specimens of some longicorns, but too imperfect to make out the genera.
42	<i>Cassida</i> , B. & H.	42 The species is very small.
43	<i>Chrysomela</i> , B. & H. ..	43 Three or four species, one deeply punctured.
44	<i>Coccinella</i> , H.	44 One with four black guttæ.

ORTHOPTERA.

45	<i>Forficula</i> , B. & H.	45 Only the forceps.
46	<i>Gryllus</i> , B. & H.	46 Legs and wings.
47	<i>Gryllotalpa</i> , B.	47
48	<i>Acheta</i> , B. & H.	48 Much injured; several species probably.
49	<i>Locustæ</i> , B. & H.	49
50	<i>Tridactylus</i> , B.	50

HYMENOPTERA:

51	<i>Tenthredo</i> (<i>Selandria</i>), B.	51
52	<i>Pimpla</i> , B.	52
53	<i>Ichneumon</i> , B. & H. ..	53
54	<i>Cryptus</i> , B.	54

HYMENOPTERA—*continued.*

GENERA.		Remarks.
55	<i>Agathis</i> , B.	55
56	<i>Anomalon</i> , B. & H. ..	56
57	<i>Ophion</i> , B.	57
58	<i>Polistes</i> , B.	58
59	<i>Vespa</i> , H.	59
60	<i>Formica</i> , B. & H.	60
61	<i>Chalcididæ</i> , H.	61

I met with three specimens.
A *Vespa*, if not a *Polistes*.
A dark species.
Several.

NEUROPTERA.

62	<i>Libellula</i> , B. & H.	62
63	<i>Agrion</i> , H.	63
64	<i>Phryganea</i> (and larvæ), B. & H.	64

Wings of more species than one.

HEMIPTERA.

65	<i>Pentatoma</i> , B. & H. ..	65
66	<i>Coreus</i> , B. & H.	66
67	<i>Lygæus</i> , B. & H.	67
68	<i>Miris</i> , B.	68
69	<i>Syrtsis</i> , B.	69
70	<i>Tingis</i> , B. & H.	70
71	<i>Aradus</i> , B. & H.	71
72	<i>Corizus</i> , Hope	72
73	<i>Reduvius</i> , B. & H. ..	73
74	<i>Ploiaria</i> , B.	74
75	<i>Gerris</i> , B. & H.	75
76	<i>Notonecta</i> , H.	76
77	<i>Nepa</i> , B.	77
78	<i>Ranatra</i> , H. ?	78
79	<i>Cicada</i> , B.—H. ?	79
80	<i>Delphax</i> , B. ?	80
81	<i>Cercopis</i> , B.	81
82	<i>Tettigonia</i> , B.	82
83	<i>Thrips</i> , B.	83
84	<i>Aphis</i> , B. & H.	84

Several species.
Apparently three species, one black.
Several species.
Somewhat resembling *Cardui*.
Closely like *Corticalis*.
One figured.
Certainly different species, if not genera also.
Gerris?
A small species, nearly white.
A form resembling *Ranatra*.
A mass of insects resembling *Aphidæ*.

LEPIDOPTERA.

85	<i>Satyrus</i> , B.	85
86	<i>Zygana</i> , B.	86
87	<i>Sesia</i> , B.	87
88	<i>Bombyx</i> , B. & H. ?	88

Part of a wing of a *Bombyx*.

DIPTERA.

89	<i>Mycetophila</i> , B. & H. ..	89
90	<i>Rhingia</i> , H.	90
91	<i>Bibio</i> ? H. ? B.	91
92	<i>Hirtæa</i> , B. & H.	92
93	<i>Tabanus</i> , B. & H.	93
94	<i>Sargus</i> , B.—H. ?	94
95	<i>Ceratopogon</i> , B. & H. ..	95
96	<i>Nephrotoma</i> , B.	96
97	<i>Limnobia</i> , B. & H.	97
98	<i>Corethra</i> , H.	98

Wings expanded.
Hirtæa in copula.
A black species.
Very perfect.

DIPTERA—continued.

GENERA.		Remarks.
99	<i>Trichocera</i> , B.	99 Very delicate.
100	<i>Platyura</i> , B.	100
101	<i>Sciara</i> , B.	101
102	<i>Scatops</i> , B. & H.	102
103	<i>Penthetria</i> , B.	103
104	<i>Dilophus</i> , B.	104
105	<i>Anisopus</i> , B.	105
106	<i>Asilus</i> , B.—H. ?	106 Most likely part of an <i>Asilus</i> .
107	<i>Empis</i> , B. & H.	107
108	<i>Nemestrina</i> , B.	108
109	<i>Xylophagus</i> , B.	109
110	<i>Orycera</i> , B.	110
111	<i>Nemotelus</i> , B. & H.	111
112	<i>Aphritis</i> , B.	112
113	<i>Tipula</i> , H. ?	113 A species allied to <i>rivosa</i> .

In addition to the 113 genera given in the above tables, many others might easily be mentioned, and when all the specimens I collected reach this country the catalogue will be considerably increased. Amongst the *Arachnida* I have noticed an elongated species of *Chelifer*, and in the *Myriapoda*, *Julus* and *Scolopendra*; in *Insecta*, there are about twenty genera added, hitherto I believe unnoticed by any individual; and from the numerous specimens in the hands of geologists and others, many more may yet be expected to occur.

Before I attempt to describe the few species I have had figured, I must refer the Entomologist, for an account of the formation of Aix, to the writings of Murchison, Philips and Lyell. Some few remarks, derived from persons living on the spot, are also added. As my intended cicerone, in a visit to the fossil beds, was a medical man, and happened to be called away on more important matters than hunting for fossils, I had not during my stay another opportunity of visiting the spot myself, and therefore I was obliged to commit to paper the few observations I gleaned from my friends in conversation.

The fossil insects are generally found in two laminated beds, each stratum rarely exceeding two inches in thickness, the stone itself looking like that which is commonly used in lithography; a third bed is also reported to have been discovered, but as it is not equally rich in specimens as the two uppermost beds, much attention has not been bestowed upon it. Each of the above seams (if that word may be used) is composed of various thin laminæ,

differing in thickness, and on their surface the major part of the insects are imbedded. Of the various specimens of rock which I examined and split into laminæ, the two upper appeared to contain a much larger proportion of insects than the remainder, and the second from the top afforded generally specimens of plants half carbonized; some of the fossil insects were also of a ferruginous and ochreous colour. Terrestrial and aquatic species are mingled together. Some of the *Coleoptera* are frequently without their antennæ, femora and tarsi, and appear, from their contorted position and mutilation of limbs, to have struggled hard to avoid their inhumation. The *Diptera*, on the contrary, which are amongst the most elegant fossils known, seem to be uninjured, and in great perfection; indeed it is difficult to imagine how such delicately attenuated fragile forms (with limbs scarcely thicker than gossamer silk) are found in any state of preservation. The presence of the genera *Limnobia*, *Corethra*, *Trichocera* and *Tipula*, lead one to the conclusion that the waters, if they carried the insects down in their course, must have very gradually and gently subsided. I cannot help thinking, from the perfect state in which many of them appear, that the insects (as the waters were absorbed) settled on the slimy deposit, and instantly became enveloped: another flood would bring down an increase of sediment, and cover the insects entirely; in such a way apparently the different laminæ were formed, and the insects preserved. In concluding these remarks I have only to add, that if the present paper is thought worthy of the attention of the Society, I shall have some other opportunities of adding to these observations, and give also some account of the fossil insects of Sinigaglia, a locality nearly as rich as Aix, but one which, from inquiries, seems to be scarcely known in England.

DESCRIPTIONS OF THREE FOSSIL SPECIES OF INSECTS.

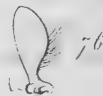
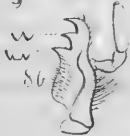
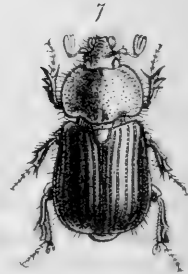
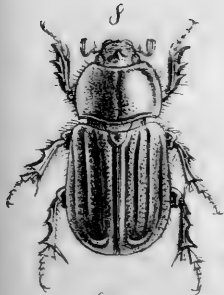
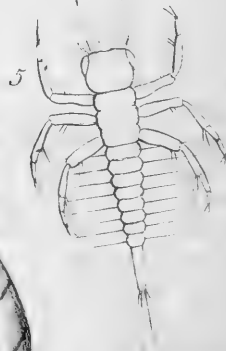
Sp. 1. *Balaninus Barthelemyi*, Hope. Aix.

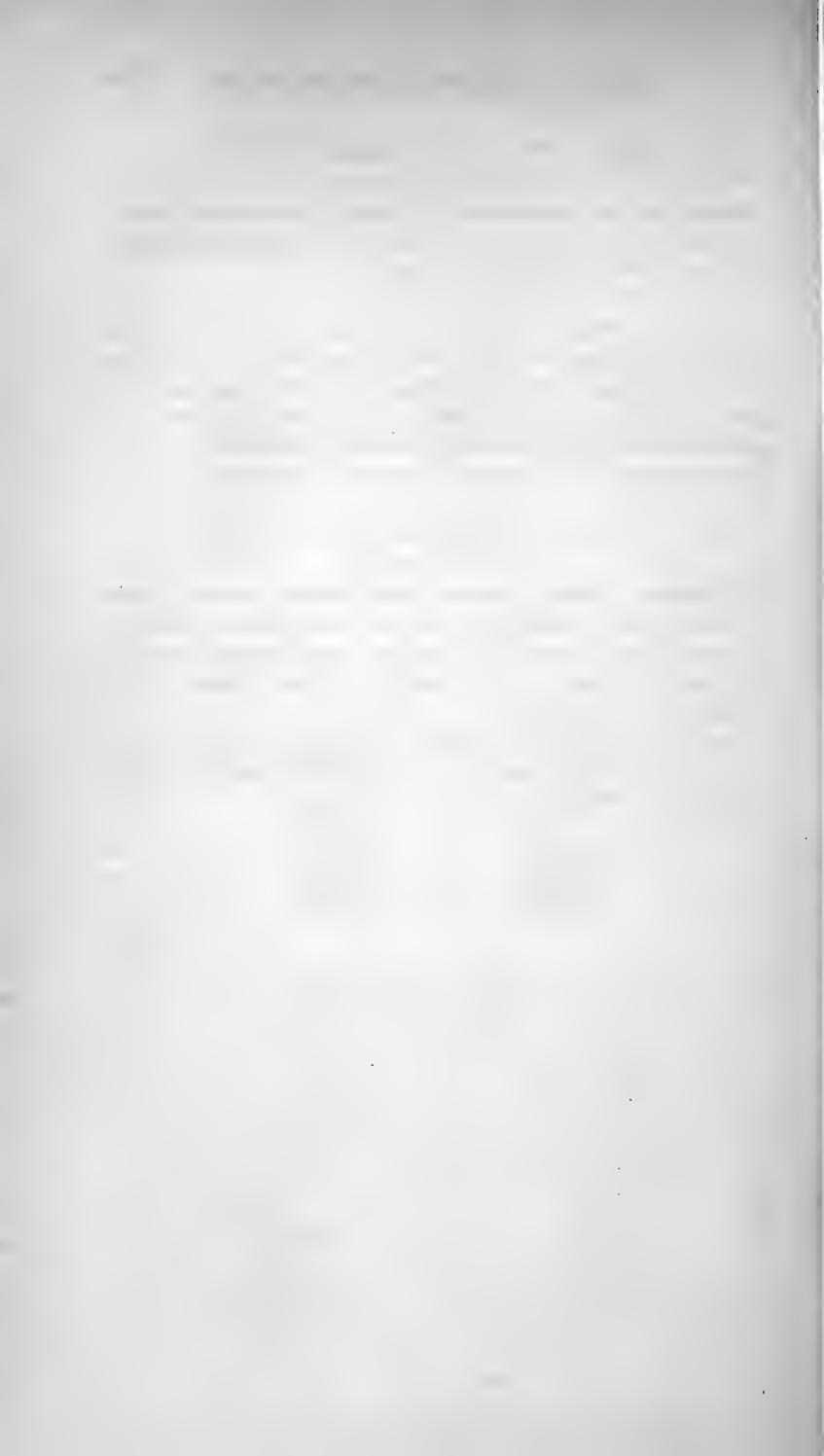
(Pl. XIX. fig. 1.)

Faunicolor, rostro crasso, subtilissime punctato, thorace convexo, confertissime tuberculato, tuberculis rotundatis, elytris que striato-sulcatis, striis punctis elevatis serie dispositis.

Long. lin. $4\frac{1}{2}$, lat. lin. $1\frac{3}{4}$.

The above specimen was given me by Monsieur Barthelemy of Marseilles; it is named in honour of that zealous naturalist. It appears, from the state of the proboscis and fragments of the femora, to have suffered much from abrasion. In colour it closely resembles some recent species still found in the vicinity of Aix.





Sp. 2. *Rhynchænus? Solieri*, Hope. Aix.

(Pl. XIX. fig. 2.)

Fuscus, rostro subcanaliculato, thorace convexo, subtilissime punctato, elytrisque striatis, punctisque elevatis serie dispositis, corpore infraque punctulato.

Long. lin. $3\frac{1}{2}$, lat. lin. $1\frac{1}{4}$.

The above fossil is named after the celebrated Entomologist of Marseilles, Monsieur Solier, whose invaluable writings on the *Heteromera* deserve the highest encomium. The specimen appears, from the broken off tibiæ and distorted position of the posterior right leg, to have struggled much previous to its death. The punctures on the elytra are delicately reticulated.

Sp. 3. *Corizus Boyeri*, Hope. Aix.

(Pl. XIX. fig. 3.)

Faunicolor, antennis extrorsum increscentibus, capite fere rotundato, oculis prominentibus; thorace fere quadrato, lateribus externis parum gibbosis; scutellum magnum, sparsim punctatum; pedibus femoribus posticis parum incrassatis.

Long. lin. 4, lat. lin. $1\frac{1}{4}$.

The above specimen is named in honour of Monsieur Boyer of Aix, to whom I am indebted for much valuable information respecting the fossil insects of Aix.

XL. On the *Economy of the Genus Palmon of Dalman, with Descriptions of several Species belonging thereto.*
By J. O. WESTWOOD, F.L.S., &c.

[Read 5th March, 1844.]

AT the meeting of the Linnæan Society on the 6th February last, a very interesting paper was read by J. Curtis, Esq., F.L.S., containing descriptions of two singular nests of Hymenopterous insects, which he had recently obtained from Brazil: one of them consisted of a very numerous assemblage of the cocoons of a Tenthredinideous insect so closely packed together that when transversely cut the mass had very much the appearance of a piece of honeycomb, many of the cells being hexagonal, pentagonal, &c.; the whole was enclosed in a thick cottony covering, evidently spun by the larvæ in common, previous to the formation of the cocoons; and Mr. Curtis was led to believe that the object of this covering was to prevent *Ichneumon* flies, of which there is a vast number of species in Brazil, from depositing their eggs in the cocoons enclosed within. The great resemblance which exists between the appearance of the mass of cocoons described by Mr. Curtis and the masses of eggs of the *Mantidæ*, at once called to my mind some insects in my collection which at once disproved this suggestion of Mr. Curtis; and as they belong to a genus to whose history some interest is attached, I beg leave to offer the following remarks upon, and descriptions of them to the Entomological Society.

The instinct by which the females of the parasitic families *Ichneumonidæ*, *Chalcididæ* and *Proctotrupidæ* are taught to deposit their eggs in the most seemingly secure retreats of their prey, is one of the greatest interest. That species of *Chalcididæ*, for instance, not possessing exerted ovipositors, should be enabled to detect their prey and penetrate the thick solid galls of the willow leaf or the hard egg-cases of the *Blattæ*, is not more worthy of attention than that other species possessing long exerted but extremely delicate ovipositors should be able to penetrate the woolly bedeguar or the thick flossy outer covering of the eggs of the *Mantidæ*, and yet all these circumstances take place.

In addition to a short notice by myself in the second volume of my "Modern Classification of Insects," the only statement I have hitherto met with respecting the last mentioned circumstance is

the following, published by an anonymous writer in the Entomological Magazine, vol. iii. p. 178, "During the winter of 1834 I observed in Cephalonia on grass, the asphodel and other plants, particularly in marshes, brown ovoid masses resembling the cocoons of small moths, and on examining them more closely found that they were tough brownish white, composed of layers of scales placed with great regularity, and forming cells in series; the cells contained a yellowish liquid like the yolk of an egg. Having several specimens I detected in one a minute white grub in some of its cells: this was in December, 1833. On the 27th of May, happening to look at one which lay in my desk, I observed four or five minute *Chalcidæ* settled on it, and upon opening it to discover whether they were the real occupants or intruders, I discovered several emerging and perfectly formed. They are minute, about two lines in length, not including the ovipositor, black, with part of the body and the feet reddish, hinder legs variegated and thighs thickly incrassated, eyes red, antennæ clavate, oviduct exerted and twice the length of the body. It appeared to make fully as much use of its hind legs as of its wings, leaping to a considerable distance. In some specimens the oviduct was four times the length of the body and recurved. On the 24th May I found several young *Mantes* in the desk, and removing them I placed one of the excrescences under a tumbler where it would not be disturbed for a few days; several young *Mantes oratoricæ* made their appearance, which removed all doubts as to the excrescence not being a mass of eggs. The young *Mantes* devoured each other, and the number diminishing I let them out."

The short description of the parasites contained in the preceding account is sufficient at once to point out the generic group to which they belong; an elongated exerted ovipositor, incrassated hind thighs and clavate antennæ, being the characters of the genus *Palmon* of Dalman, founded in the Swedish Transactions for 1825 upon three species, observed only by that author in gum copal, and which were considered by him as intermediate between the genera *Leucospis* and *Torymus* (*Callimome*, Spin.) This treatise of Dalman has been overlooked by Mr. Walker in his various monographs upon this family, in one of which (*Entom. Mag.* vol. i. p. 118) he has evidently described a species of this group from the south of France under the name of *Priomerus pachymerus*, and of which a beautiful figure by Mr. Haliday was published in the "*Entomologist*."

Having received several species of this genus, natives of Brazil,

the Isle of France, King George's Sound, Austria and Egypt from Dr. Klug, M. V. Andouin, and other distinguished Entomologists, I shall terminate this notice with a description of them and the other species noticed by the previous authors above mentioned.

Sp. 1. *Palmon bellator*, Dalman, in Kongl. Vetensk. nya Handl. (Swedish Trans. 1825, p. 390, tab. v. fig. 21, 22, 23.)

Cyaneus, abdomine pedibusque pallide ferrugineis; femoribus posticis concoloribus multidenticulatis, denticulis circiter 9 obscuris inæqualibus, antennarum scapo flavo, flagelli clava maxima brunnea, quam caput longiore; alis hyalinis, colore fuliginoso diluto tinctis, nervo ordinario ramuloque stigmatali obscurioribus.

Long. vix $1\frac{1}{2}$ lin. Paris, ovid. except.

Habitat in gum copal.

Sp. 2. *Palmon clavellatus*, Dalm., ut supra, tab. v. fig. 24.

Obscure cyaneus, abdomine brunneo, apice obscuro; pedibus ferrugineis, femoribus obscurioribus, posticis nigricantibus, multidentatis, antennarum flagello ferrugineo longitudine capitatis sesquialtera, clava brunnea quam caput multo brevior
♀.

Magn. *P. bellatoris*.

Habitat in gum copal.

Sp. 3. *Palmon capitellatus*, Dalman, ut supra.

Obscure cyaneus, abdomine brunneo, apice obscuriore; pedibus ferrugineis, femoribus obscurioribus, posticis nigricantibus multidenticulatis, antennarum flagello flavo, gracile, capite duplo longiore clava oblonga brunnea, flagelli vix tertiam partem efficiente ♀.

Statura *P. clavellati*.

Habitat in gum copal.

Sp. 4. *Palmon pachymerus*.

Priomerus pachymerus, Walker, in Ent. Mag. i. 118.

Nigro-viridis, abdomine æneo-viridi, oviductu corpore dimidio longiore, antennis fuscis, pedibus rufis, alis subhyalinis, oculis ocellisque rufis, antennarum clava nigra, scapo rufo, abdomine

subtus rufo, coxis nigro-viridibus, thoracis disco obscure viridi, marginibus magis nitidis (♀).

Exp. alar. lin. $1\frac{3}{4}$.

Habitat in Gallia meridionali mense Julio.

Sp. 5. *Palmon religiosus*, Westw. (Tab. nostr. X. fig. 23, and details.)

Niger, subæneus; thorace tenuissime punctato; antennis nigricantibus, articulo basali luteo; abdomine piceo, subtus magis luteo, dorso æneo-tincto nitido; pedibus luteis, coxis posticis dentibusque femorum posticorum nigris, oviductu corpore ferè dimidio longiori (♀).

Long. corp. lin. $1\frac{1}{2}$.

Habitat in ovis *Mantidis religiosæ*. D. Kollar.

In Mus. D. Hope.

The female of this species is represented in Plate X. fig. 23, its natural size being indicated by the lines on the left side of fig. 23c. Figure 23a represents one of the mandibles, which is short, thick and obtusely tridentate; 23b, one of the maxillæ, with its four-jointed palpus; 23c, the mentum, with the ovate labium at its extremity, and the labial palpi, which are three-jointed and as long as the labium; 23d, one of the twelve-jointed antennæ, the three terminal joints forming a club and the second and third joints being separated by a minute annulus. These organs are inserted in the middle of the face between the eyes within a round slight common depression, the basal joint of the antenna reaching as high as the forehead; the anterior feet are simple, with the femora rather thickened in the middle; the calcar curved; the tarsi rather longer than the tibiæ, five-jointed and slender; the middle feet are slender, with the tibiæ as long as the tarsi, the calcar short and straight and very slender; and the hind feet (fig. 23e) have the femora incrassated and toothed; the tibiæ curved and terminating in a spine, spinulate within and having the minute calcar at its tip.

Sp. 6. *Palmon insularis*, Westw.

Cupreo-nigricans, vix tenuissime punctatus, collare magis cuprescenti; antennis nigricantibus, basi fuscis; abdomine chalybæo nitido, basi subluteo, oviductu vix corporis longitudine; pedibus anticis albidis, femoribus in medio infumatis, coxis et femoribus posticis cupreo-æneis apice tarsisque albidis (♀).

Long. corp. lin. $1\frac{1}{2}$.

Habitat in ovis *Mantidis* ex "Ile de France." D. V. Audouin.

In Mus. Westwood.

Sp. 7. *Palmon fraternus*, Westw.

Cæruleo-viridis, tenuissime punctatus; antennis crassiusculis, luteis, apice fusciscentibus; abdomine purpureo nitidissimo, subtus luteo, oviductu abbreviato, pedibus luteo-fulvis; coxis et femoribus posticis æneis vel chalybæis, apice extremo luteis (♂ ♀).

Long. corp. lin. $1\frac{1}{4}$.

Habitat cum præcedenti.

In Mus. Westwood.

Sp. 8. *Palmon obscurus*, Westw.

Niger, æneo-vix-tinctus, fere lævis, opacus; antennis nigris, basi articuli 1mi luteo, articulo apicali albido; abdomine nigro submetallico, nitido, oviductu corpore fere dimidio longiori; pedibus 4 anticis piceo-luteis, posticis nigricanti-æneis, dentibus validis, tarsis luteis (♀).

Long. corp. lin. $1\frac{1}{2}$.

Habitat King George's Sound. D. Dr. J. Hooker.

In Mus. Westwood.

Sp. 9. *Palmon melleus*, Westw.

Læte aurato-viridis, punctatissimus; abdomine melleo; antennis crassis, melleis, apice fuscis; pedibus melleis, coxis posticis basi viridibus spinisque femorum posticorum nigris (♂).

Long. corp. fere lin. 2.

Habitat in ovis *Mantidis Brasilicæ*. D. Klug.

In Mus. Westwood.

Sp. 10. *Palmon Olenus*, Walker, Mon. Chalc. 2, p. 7.

Æneo-viridis, antennis fulvis, abdomine cyaneo et cupreo-vario, subtus fulvo; pedibus fusco-fulvis, femoribus coxisque viridibus, tibiis fuscis, alis limpidis, oviductu rufo, vaginis nigris (♀).

Long. corp. lin. 2, exp. alar. lin. $2\frac{1}{2}$.

Habitat Sydney, New South Wales.

Subgenus novum, *PACHYTOMUS*, Westw.

Palmoni congruit nisi abdomine maris plano depresso-elongato, spinisque femorum posticorum tantum 4,* articulo basali

* The figure at the left hand corner of the bottom of Plate X. represents the extremity of the fore tibiæ, with its tarsus.

tarsorum omnium dilatato, necnon œconomia specierum quæ in ficibus more *Blastophagorum* habitant.

Sp. 1. *Pachytomus Klugianus*, Westw.

Cupreo-æneus, tenuissime punctatissimus; antennis basi tantum luteis, abdomine piceo-fulvo, apice nigricanti; pedibus 4 anticis pallide flavescentibus, posticis piceis, geniculis luteis.

Long. corp. lin. $1\frac{1}{2}$.

Habitat in ficibus Ægypti. D. Klug.

In Mus. Westwood.

XLI. *On the Habits of the Genus Sialis.* By
W. F. EVANS, Esq.

[Read 25th April, 1844.]

As THE habits of some of our most common insects appear to be little known, I have thought that the following observations on the natural history of the *Sialis lutarius* may probably be new and not entirely devoid of interest.

On the 25th of April I found, on the rushes round the margin of a small pond, a great many patches of eggs, and shortly observed many of the *Sialis lutarius* depositing them.

They form large patches of from two to three inches in length, generally encircling the whole rush near the top, but sometimes deposited on one side only, and extended to about a line in breadth.

I counted 100 in a square line, so that each batch may be fairly considered to contain from 2000 to 3000 eggs; the greater portion of which must consequently perish either in the egg or larva state; as, common as the insect is, and widely distributed throughout the country, we should be perfectly overwhelmed with the swarms of the perfect insect if such were permitted, when it is considered that round this one small pond there could not have been less than 100 patches of them.

The eggs are of a very singular form, and placed in a slanting position (Pl. XIX. fig. 4).

The females, whilst depositing them, appeared perfectly motionless on the rush, and varied considerably in size, being from five

lines to nearly double that in length. Some parts of the patches of eggs are of a much lighter colour than the rest.

On the third of May I found many of the eggs hatching, the little larvæ tumbling about in great numbers, with their bodies erected like the *Staphylinidæ*.

On putting them into water they swam about with the greatest activity, wriggling and undulating their bodies about much like a serpent or the tadpoles, and working their legs at the same time.

Their heads are remarkably large; but I have thought the accompanying sketch (Plate XIX. fig. 5) will better portray them than a written description, and I have also brought some of them alive and some eggs for exhibition.

XLII. *Remarks on the Entomology of New Zealand.* By
WM. STEPHENSON, Esq., Surgeon.

[Read 2d December, 1844.]

As the effects of insects, in harmonizing the productions of the earth in the grand scheme of the Omnipotent Being, are perhaps as much or even more conspicuous in New Zealand than in any other country, a few cursory remarks on the Entomology of these unexplored islands (drawn from observation on the spot) would no doubt be received with interest, had the task devolved upon one more capable of doing it justice.

It has been asserted in print that New Zealand affords few insects, but I am prepared with facts to prove that in those islands they abound in certain tribes; and the preponderance of some over that of others, in conjunction with divergency of form, will give an idea of the peculiarities of New Zealand Entomology. They are proportioned to the utility which each genus, tribe or family performs in a primeval world, where all is seen undisturbed by man. In this country, where vegetation is but slightly checked in winter by the frost, the face of which is extremely hilly, with deep precipitous ravines intervening, upon which there is a profusion of rain at all seasons, it may naturally be expected to be found as it is, viz. clothed with the most gigantic forms of vegetation.

The country is subject to frequent and very hard gales of wind, which tear up by the roots huge trees, mostly of hard wood, that being the general nature of New Zealand timber. These at different periods are sooner or later attacked by insects depositing their ova upon them in swarms, verified by observed effects. They are principally of the order *Coleoptera*, as far as my observations went, but *Lepidopterous* larvæ were also found in very limited proportions. The larvæ soon perforate the robust trunks and branches of these monsters of the forest, in order evidently to allow the moisture to penetrate for the purpose of hastening their decomposition; a further proof of which is afforded by the difference of time in which some of the species arrive at the imago state to that of others. I have noticed that the smaller species of *Coleoptera*, in their larva state, feed more superficially on the bark and soft exterior of the wood; but the larger ones, and some *Lepidoptera*, perforate, as with an auger, to the heart of the tree, increasing the caliber with the growth of the larvæ. The former I believe, in many instances, pass into the pupa state in one season, but the latter frequently remain three or more years previous to that change.

This seems ordained, in order to hasten the decay of the exterior, whilst the harder and more durable substance is being perforated more and more, in order to admit air and moisture. These borings are partially filled up by the excrementitious matter of the larvæ, which detains the water, and keeps the adjacent parts in perpetual moisture, materially hastening their decay. No sooner is a tree deprived of vitality, than it is attacked in rotation by various tribes of *Coleopterous* insects, the effects of which may be observed at any time in hundreds of instances, after they have accomplished their final change, and eaten their way out through the bark, in order to perform the duty of continuing the species.

The *Tetramera*, or Phytivorous beetles, seem to form three-fourths of the *Coleoptera* of New Zealand. I could only find two species of *Cicindela*; the larger is rather numerous on dry foot-paths; the smaller, of which I have only one specimen, was taken on a path in a wood; but I have seen others in similar situations with the first, but they are rare. In *Carabidæ* few species are to be found, and those thinly scattered. Aquatic *Coleoptera* were few in the localities which I visited.

In *Brachelytera* three or four species were procured, inhabiting decayed vegetable matter, putrid carcasses, &c. In *Serricornia* the *Elateridæ* are rather more numerous; two or three species were collected. No *Buprestidæ* could any where be found or

heard of, yet I cannot but believe they do exist; but New Zealand being a country not abounding in flowers, and as I left before the height of summer, it might have been too early for their appearance. I made every inquiry amongst woodcutters, timber merchants, &c. but could nowhere hear of any insect resembling them; and as they are frequently clothed in rich colours, they are objects of attraction to even unentomological eyes. I conclude, therefore, that if they do exist, they must either be very rare, or of obscure and sombre colours. The *Clavicornia* are not numerous; a few interesting examples are the specimens of *Lucanidæ*, and were taken under bark and rubbish at the roots of trees, but require very diligent search. I was informed that, in the valley of the Hut River, a much larger species had been observed. A species, (*Mitophyllus irroratus*, Parry,) the lamellæ of whose antennæ (three in number) are as long as the rest of these organs, with projections from the anterior part of the head, in a vertical direction, resembling in this respect the *Goliathus*, was found under bark. The few examples of *Cetonia* which I procured were taken in promiscuous places, to which they had accidentally fled. I searched and beat all the flowering shrubs and trees in vain; they are evidently rare.

I could find no traces of *Geotrupidæ*, unless a small roundish, obscurely marked insect,—of which I took a considerable number under the rejectamenta of the sea, sometimes buried in the sand to the depth of six inches,—be considered one. I found under dry cowdung some small black species, resembling *Harpalus*, but which I believe had only made a common sheltering place thereof.

In *Heteromera* I found but two or three examples under bark, near the roots of decayed trees, but they are scarce. In *Tetramera* the numbers must be immense, from observed effects. The *Curculionidæ* are in some instances of singular form, and considerable beauty; all of which, as far as I observed, are wood-feeders. Two large rostrated species, allied to *Brentus*, feed in the larvæ state on the hard internal part of a tree, called, by the Maories, Pukatea, and are very abundant, but not easily procured. The *Longicornis* are also very abundant, particularly a large species, found in all its stages in the Kaikhatea (*Dacrydium excelsum*) in profusion; both the larva and pupa of this insect are sought after and eaten by the Maories, either in a raw state, or half roasted in hot ashes; I have seen them swallowed by scores, and pronounced *ka pai* (very good); all the remaining species were taken in or upon slightly decomposed wood, except two, one of which was taken by sweeping herbage, and the latter on a man's arm. An example or two of *Coccinellæ* were captured, but they are rarely seen.

The *Forficulæ* are not numerous ; two species were found under rubbish.

In *Hymenoptera* I observed only about seven or eight species, amongst which was a bee, with large burthens of farina on its hind legs ; but where it nidifies, and whether or not it produces honey, are questions that no doubt will soon be solved by the Rev. Mr. Cotton, present chaplain to the bishop, whose writings on Apiology are well known. In *Neuroptera* I observed five or six species of *Libellulæ* ; three were captured ; but the high winds, and their instinctive alertness, prevented further success. In *Homoptera* three species of *Cicada* were found ; the largest is a numerous species, and in fine weather makes a continual chirruping noise, which may be heard at a great distance on low brushwood, and on the *Phormium tenax*. A peculiarly formidable insect, allied to *Gryllus* (*Deinacrida*, White), is found in old trees, secreting itself in rents and crevices ; it is an abundant species, and carnivorous ; called by the Maories *Weta*. The male is distinguished from the other sex by its enormous head, the bite of which is very severe ; both sexes are apterous, the female very prolific in ova. I have seen two other species of this genus, the others I lost ; they are rare ; habitat as the first, but not in society with it ; all apterous. The small grasshoppers are most numerous, and afford many obscurely marked species. In *Diptera*, the carrion flies perform a more important part in nature, as scavengers in New Zealand, than I have observed in any other country ; they are large and very numerous, depositing living maggots. There is also a yellowish coloured one, which also deposits living maggots ; these arrive to the pupa state in six days, and to that of the imago in nine and a half days from the time of ejection.

The *Tipulidæ* are rather numerous and ornamental. Mosquitoes abound in some localities ; the species is of one obscure black colour. In *Lepidoptera* there are decidedly few species ; in *Diurna* I have seen about seven ; in *Noctuidæ* they are much more numerous, but the high winds, together with the economy of the larvæ, renders them very difficult to procure. There is a large caterpillar of a Lepidopterous insect, found feeding upon the stem and roots of the brassica, and other tribes of culinary vegetables. These are of a large size, nearly black ; are nocturnal feeders, burrowing in the earth during the day ; it appears to be an *Hepialus*, and is very destructive to gardens, &c.

The entomological climate of New Zealand would agree with the third of that of Latreille, and it is interesting to find a similarity

or approximation in species to some of the British ones, although separated by 174° of east longitude.

Amongst the diurnal *Lepidoptera* the Painted Lady is the most numerous; and there is a resemblance in another species to our Red Admiral, the principal difference being in an ocellated spot on the underside of the superior wings, connecting this with *Vanessa Io*. In the *Coleoptera* there are approximating species, particularly amongst *Carabi*; but there is a wide difference, in proportion to numbers, in different orders of insects in general. The *Coleoptera* preponderate greatly over all others, not so much in the number of species perhaps, as in the aggregate; but even this inequality might be expected, where the natural decay of large trees is to be completed.

The figure in Pl. XIX. 6, is a rough sketch of a supposed larva found in abundance in old potato grounds, about six or eight inches beneath the surface, at Motuaka, Nelson district, New Zealand. They are supposed to feed on the roots of the sow thistle, which is very common in such situations, because on their being crushed they contain a bland milky semi-fluid.* I submit this to the notice of Entomologists, on the authority of a gentleman of strict veracity, who has left a friend and relation on the spot, from whom I have not the least doubt specimens may be obtained.

When the observer contemplates the grand scheme of Omnipotence, as displayed in adjusting and proportioning the quantities of order, family or tribe, with the effects they are destined to perform, together with their beautifully varied organization, as best befitting their economy, he cannot but feel a sublimity of thought unknown or unappreciated by unentomological minds. Insects, in common with the rest of the animated tribes, keep each other in check; and in addition to this, they perform the most herculean effects in the conversion of huge masses of hard timber into its mother earth, in order to fit it for reproduction, which they effect in an incredible short space of time; and thus the grand system is continued in a series of circumvolutions, independent of the aid of mankind.

The collector of insects has many insurmountable difficulties to cope with in New Zealand, which renders his efforts very unproductive.

In the first place, their food is so very abundant, that you must labour long and hard for few specimens. A powerful digger, such as I possessed, was of little comparative use. I have been strip-

* This has more the appearance of an impregnated female, of an alliance to the *Termites*; they are seen of all sizes.

ping off bark, digging in rotten wood and at the roots of trees, for hours at a time, with no better success than two or three specimens, and yet the larvæ abound.

Again, travelling is very difficult and laborious, rendering it impossible to pursue a specimen on the wing with success.

I have examined trunks of trees in search of *Longicorns*, &c. but could find very few Coleopterous insects in the day-time in exposed situations. The gigantic lichens, parasites, &c. are so numerous on the old trees, in which they secrete themselves, and these being frequently from fifty to sixty feet high, renders it next to impossible to examine them. The night-trap, of which I exhibited a model, would have been useful in sheltered places, or in calm nights (which are rare), but I could not get one made in Port Nicholson. I was compelled to give up collecting objects of natural history, and therefore took my departure, after a short residence of four months. It is my intention to proceed out to some other country more prolific in specimens with as little delay as possible; but have not yet determined whether it shall be to California, Mexico or New Holland.

XLIII. On *Pleomorpha*, a Genus of minute *Chrysomelidæ* from Australia. By W. W. SAUNDERS, Esq., F.L.S., &c.

[Read 1st September, 1845.]

GENUS PLEOMORPHA ($\pi\lambda\epsilon\omicron\varsigma, \mu\omicron\rho\phi\eta$).

Head vertical, nearly circular, with the mandibles more or less projecting, immersed in the thorax nearly up to the eyes. *Eyes* oval, elongate, with a slight sinus on the interior margin. *Antennæ* short, not half the length of the body, placed wide apart close to the eyes, 11-jointed; 1st joint long, robust, pyriform; 2nd, short, turbinate, robust; 3rd—6th, slender, gradually increasing in length; 7th—10th, broad, triangular, forming with the broad terminal ovate joint a long serrated clava, terminal joint with a minute knob or accessory joint at the apex. *Thorax* transverse, rounded and gibbous in front, as broad as the elytra, with the centre of the hinder margin produced into a very obtuse angle posteriorly. *Scutellum* small, flat, oblong, ovate. *Body* cylindrical, short, abruptly truncate. *Elytra* rounded at the apex, forming with the thorax a very obtuse oval. *Legs* robust, the anterior pair elongate in the males? *Tarsi* 4-jointed, 1st, 2nd and 3rd joints broad, transverse; the latter deeply bifid, the terminal joint cylindrical, clavate.

This is a genus of small, robust, rounded *Chrysomelidæ*, with antennæ having a distinct and serrated club. The largest species which I have seen only reaches $\frac{1.5}{100}$ inch in length. The general appearance of the species approaches near to the *Cryptocephali* of old authors; but looking to the distinctly serrated club of the antennæ, the more or less projecting mandibles, and the elongation of the fore legs, I think the true place for it is not far from *Clythra*.

Sp. 1. *Pleomorpha Davisii*, W. W. S. (Pl. XV. fig. 4.)

Head rufous, with the eyes and a transverse line across the forehead adjoining the thorax black. Antennæ rufous, with the joints forming the club black. Thorax rufous, smooth and shining. Scutellum black. Elytra smooth, shining, punctato-striate, testaceous, with the apex broadly tipped with black, a broad margin along the base of the same colour, the suture margined with black and the punctures near the basal margin black also. Underside

of abdomen black. Legs castaneous, with the tarsi dusky. Fore legs elongate.

Length $\frac{1.0}{100}$ inch.

In the Collection of the British Museum and that of J. O. Westwood, Esq.

Taken in the vicinity of Adelaide, South Australia, by W. Davis, after whom I have named the species.

(Fig. 4 a, antenna ; 4 b, scutellum.)

Sp. 2. *Pleomorpha ruficollis*, W. W. S. (*Cryptocephalus æneipennis*? Dej.)

Head and eyes black, with a patch on the face, and the parts of the mouth rufous. Antennæ rufous, with the joints forming the club black. Thorax bright rufous, smooth and shining. Scutellum small, ovate, black. Elytra smooth, shining, punctato-striate, dark bronzy green. Underside of the abdomen black. Legs rufous, with the tarsi dusky.

Length $\frac{8}{100}$ inch.

In the Collection of J. O. Westwood, Esq.

Taken by Mr. Lewis in Van Diemen's Land.

This species varies with the face sometimes entirely black or entirely rufous.

This may be the *Cryptocephalus æneipennis* of Dej. as described in the "Voyage de l'Astrolabe," but the short description there given leaves me much in doubt of the identity of the species with the one above described.

Sp. 3. *Pleomorpha rufipes*, W. W. S.

Head dark bronzy brown, with the parts of the mouth rufous. Antennæ rufous, with the club black. Thorax smooth, shining, dark bronzy brown. Scutellum and elytra of the same colour, smooth, shining, the latter faintly punctato-striate. Underside of the body black. Legs bright rufous, with the tarsi dusky.

Length $\frac{8}{100}$ inch.

In the Collection of J. O. Westwood, Esq.

Taken in Van Diemen's Land by Mr. Lewis.

Sp. 4. *Pleomorpha concolor*, W. W. S.

Entirely of a dark blue green, excepting the underside of the first joint of the antennæ, which is rufous, and the eyes, which are bronzy brown. Head, with the mandibles considerably projecting, shining, minutely punctate. Thorax shining, smooth, minutely and

faintly punctured. Elytra shining, punctato-striate; the punctures of the striæ, adjoining the external margin, deeper than those on the disk. Underside of abdomen clothed with short whitish adpressed hairs.

Length $\frac{1.2}{100}$ inch.

In the Collection of Capt. Parry.

From Australia.

Sp. 5. *Pleomorpha atra*, W. W. S.

Entirely black, excepting the underside of the two first joints of the antennæ, which is rufous, and the joints forming the club of the antennæ and tarsi, which are pitchy brown. Head, with the mandibles considerably projecting, minutely punctate. Thorax shining, smooth, minutely and faintly punctured. Elytra shining, punctato-striate.

Length $\frac{1.5}{100}$ inch.

In the Collection of the Rev. F. W. Hope.

From Western Australia.

A nearly allied species to the foregoing, but differs in the size and colour.

P.S.--Some of the species of this genus are taken on the leaves of several species of *Acacia*, in South Australia.

XLIV. *On the Sectional Characters of the Genus Lucanus, with Descriptions of some new Species of Lucanidæ.* By J. O. WESTWOOD, F.L.S., &c.

[Read 5th February, 1844, and 3rd March, 1845.]

IN reviewing the distributions which have been proposed by Entomologists, for the more natural or more convenient arrangement of extensive groups of insects, we repeatedly find certain characters employed which, looking at higher results in connexion with the economy and existence of the creatures before us, it requires but very little acquaintance with the insect world to perceive can by no possibility have the slightest influence; in other words, that they are entirely unimportant as connected with insect life and which we thence term artificial characters.

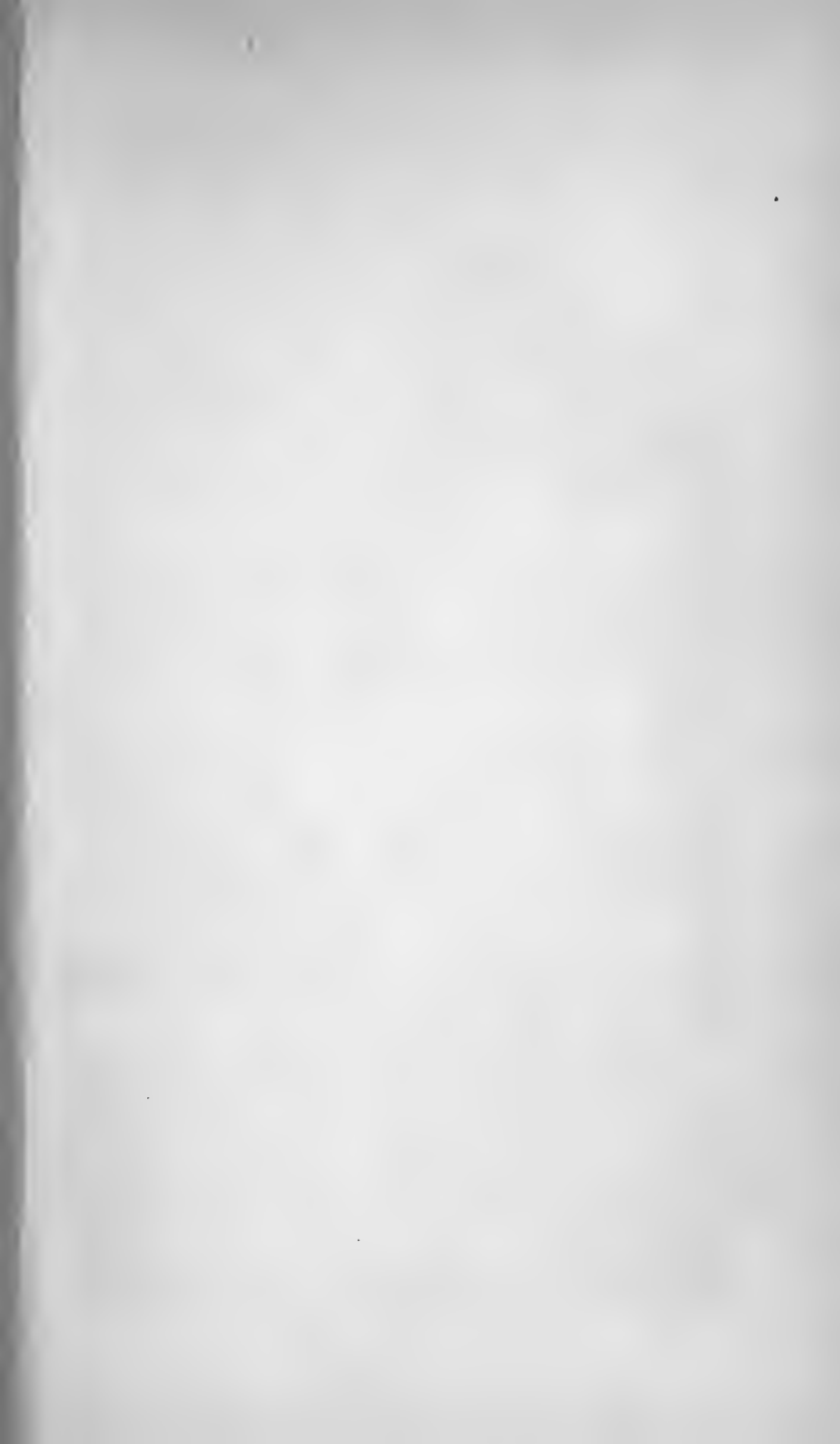
The employment of such characters is, it is true, absolutely requisite for furthering the ends of science, although this is much to be regretted, because, as must have happened in the experience of every Entomologist, we are constantly exposed to the ridicule of others, ignorant of the science and of the nature of those artificial characters, when they find us occupied in counting the joints in the antenna of a beetle or carefully tracing the intricacies of the veining of the wings of a fly. What, ask they, can be the possible use of wasting your time and talents on such frivolous pursuits as these? What can possibly be gained by knowing whether this beetle has five joints in its hind tarsus or only four? What possibly can be learned by finding out that there are three or only two short transverse veins between the subcostal and radial veins of the wing of a sand wasp?

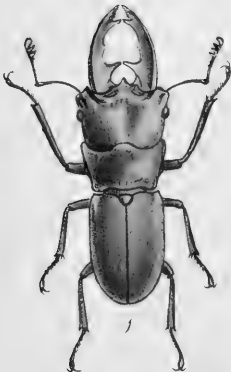
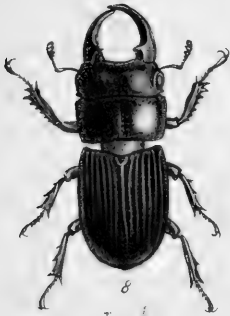
Now nothing, in the whole course of an examination of extensive tribes of insects, is more remarkable than the pertinacity (if we may be so bold as to employ such a term) with which these trivial characters are maintained throughout such groups. It may, indeed, appear a trivial question, whether a beetle possesses more than eleven joints in its antennæ, but when we know that at least ninety-nine out of every hundred species of beetles possess exactly eleven joints in the antennæ, we at once arrive at the conclusion that a departure from this typical number as it is termed must be attended with some circumstances not without interest if we could but determine them. So again it may at first sight seem very immaterial whether this species of sand wasp possesses three or only two transverse veins forming the sub-

marginal cells, but when it is known that the character of the species is as distinctly impressed, not only on the precise number but absolutely on the precise points of insertion of these veins as it is on the highest points of its economy or outward structure, we equally at once arrive at the same conclusion that a knowledge of this character, artificial as it may be, is from the mere simplicity of its employment, a character as valuable as though it were derived from its most important organs. There is, in fact, so singular an uniformity maintained in these comparatively unimportant characters, that the examination of them becomes as strong an evidence of the marvellous power of the Creator as the most elaborately constructed portion of their frames; in fact, we oftener find deviations from the typical structure of higher parts than from these trivial ones. To find a *Carabus* with only four joints in its tarsus would in fact be as great an anomaly and a much greater rarity than to find one with monstrously furcate antennæ. It is on these grounds that the employment of these comparatively trivial characters is justifiable and indeed absolutely necessary, and it is especially on this account that the employment of the characters to be derived from the veining of the wings in *Hymenoptera*, *Diptera*, *Lepidoptera*, &c., has been so much and so long insisted upon.

These remarks have been suggested by a recent examination of an extensive group of beetles with the view of determining their species. To do this effectually it was requisite to examine the whole group with much attention so as to determine the relative value of the various sectional characters which the different species exhibited, or, in other words, to learn whether by grouping the species from the possession or want of certain structural peculiarities we should not run the risk of separating more widely apart than was evidently warranted by nature, species which possessed an evident affinity between themselves resulting from their possessing other characters in common.

The group in question was the genus *Lucanus*, possessing nearly 150 species in the whole; and from an examination of at least 120 species I was led to the conclusion that the number of small spines upon the outer edge of the middle and posterior tibiæ constituted the most available artificial character for grouping those species together which evidently possessed the greatest natural relationship with each other. The employment of this character had been partially adopted by the Rev. F. W. Hope, in his isolated descriptions of some of the species, published in the Linnæan Transactions and elsewhere, but it had not hitherto been applied to the





whole genus, nor had it ever been conjectured that in some species the differences exhibited by these spines afforded sexual characteristics, although the extensive employment of the character amongst the *Cetoniidæ* and Goliath beetles had shown it to possess both sectional and sexual distinctions.

The number of joints in the club of the antennæ at first suggested itself, and indeed it had been already proposed by MacLeay, as a primary sectional character; but this, in addition to the difficulty in its employment, owing to the greater or less development of the joint preceding the clava, was shown to be inefficient, by separating species which agreed together in their entire habitus. Its employment also was found to be opposed by the number of these tibial spines, which brought together in the most natural manner the great majority of the species.

By the employment of this character the genus *Lucanus* is divisible into three great groups: first, those with two or three spines on the outside of the posterior and intermediate tibiæ, amongst which are most of the largest species in the family, including our well-known stag beetle, which may in fact be considered as the type of the family; second, those with only one spine in the middle of the four posterior tibiæ in both sexes, in which section are brought together the gigantic species of *Dorcus* from the East, the small typical *Dorci* of moderate climes, and the group which Mr. MacLeay has called *Ægus*, but of which no Entomologist has ever been able to lay down characters sufficient to separate it from various other sections of *Lucanidæ*; third, an extensive group of species, being nearly the half of the whole genus, which either possess no spines to the four posterior tibiæ, or have one small one developed in the middle of these tibiæ in the females alone; of the species which belong to the first of these two subsections with simple tibiæ, *Lucanus metallifer* of Boisduval, *L. Burmeisteri*, Hope, Ent. Trans.; *L. bicolor*, F.; *Delessertii*, Guérin; *Saundersii*, Hope (*bicolor*, Saunders); *Baladeva*, Hope; *glabratus*, De Haan, &c., may be mentioned; whilst of those which have the tibiæ of the males simple and those of the females 1-spined, may be cited *L. Downesii*, Hope, Z. Tr.; *L. cinnamomeus*, Guérin; *L. dorsalis*, Erichs., which is probably the female of *L. cavifrons*, Burm. MS., and a considerable number of new species from the East and Africa contained in Mr. Hope's Collection.

Sp. 1. *Lucanus faunicolor*, Hope. (Pl. XX. fig. 1.)

L. mandibulis magnis porrectis, dente valido ante alteroque

pone medium apicibusque serratis, totus supra luteo-fusco-pulverosus, antennis longis, tibiisque inermibus ♂.

Long. corp., cum mandib. ♂, unc. $1\frac{1}{2}$.

Habitat in Oriente. Insula Java?

In Mus. D. Buquet, Parisiis.

An varietas *L. metallici*, Boisduv.?

Caput magnum subquadratum, disco fere plano, margine antico deflexo, et in nasum conicum parum elevatum porrectum, angulis anticis lateralibus ante oculos oblique truncatis. Oculi rotundati, cantho antice vix incisi. Mandibulæ capite longiores, dente valido interno ante, alteroque (oblique truncato) pone medium, apicibus intus serratis. Antennæ longæ, articulo 1mo curvato, 7mo intus attenuatim producto et setoso. Pronotum capite angustius, lateribus in medio angulato-deflexis. Elytra pronoto haud latiora. Totum corpus supra nigrum, virescente tinctum at omnino squamis luteis vel faunicoloribus tectum, margine externo elytrorum obscure nigricanti. Pedes longi, graciles, tibiis simplicibus, anticis spina rudimentali in medio externe instructis. Tarsi articulis basalibus subtus fulvo-setosis. Prosternum simplex.

Sp. 2. *Lucanus Rafflesii*, Hope. (Pl. XX. fig. 2.)

L. castaneo-rufus, nitidus; mandibulis, scutello, et sutura elytrorum nigris; capite et pronoto lateribus punctatis.

Long. corp. ♀, unc. 1.

Habitat in Insula Java?

In Mus. Dom. Guérin, Parisiis.

Caput pronoto duplo minus, punctatum, angulis lateralibus anticis oblique truncatis. Mandibulæ breves, nigrae, nitidæ, costatæ. Pronotum lateribus rotundatis et punctatis, elytrorum fere latitudine æquans, disco lævi nitido. Elytra nitida subdepressa, sutura et scutello nigricantibus. Totum corpus supra castaneo-rufum. Pedes concolores, tibiæ anticæ 6-dentatæ, 4 posticæ in medio externe 1-dentatæ. Oculi cantho subdivisi.

Sp. 3. *Lucanus sericeus*, Hope. (Pl. XX. fig. 3.)

L. niger, lateribus late piceo-castaneis, luteo-sericeis, mandibulis brevibus, tibiis anticis extus serratis et 3-dentatis, pronoto in medio angulato.

Long. corp. unc. $\frac{5}{6}$.

Habitat in Insula Java.

In Mus. Dom. Guérin, Parisiis.

Caput mediocre, angulis anticis lateralibus oblique sub-truncatis. Mandibulæ breves, nigræ. Caput nigrum, rude punctatum, lateribus piceo-castaneis. Oculi cantho parum incisi. Antennæ articulo 7mo intus parum producto setaque armato. Pronotum capite latius, lateribus in medio angulato-productis, dorso nigro, punctato, lateribus piceo-castaneis, fulvo-pilosis. Elytra minutè punctatissima, pronoti latitudine, obscure piceo-castanea, tenue fulvo-pilosa, sutura obscura. Tibiæ anticæ extus serrulatæ, dentibusque tribus validioribus apicem versus armatæ. Tibiæ 4 posticæ in medio extus dente unico armatæ.

Sp. 4. *Lucanus reticulatus*, Buquet, MS. (Pl. XX. fig. 4.)

L. mandibulis brevibus crassis, intus obtuse dentatis, subdepressus, niger, pronoto subquadrato elytrisque squamoso-reticulatis.

Long. corp. lin. 6.

Habitat in Nova Zeelandia.

In Mus. D. Buquet, Parisiis.

Caput parvum, nigrum, nitidum, margine antico depresso. Mandibulæ breves, obtusæ, dentibusque duobus obtusis armatis. Antennæ articulo 7mo vix intus producto setoso. Oculi cantho subdivisi. Mentum transversum, angulis anticis rotundatis, margine antico in medio parum emarginato. Pronotum subquadratum, capite multo latius, lateribus parum rotundatis, disco spatiis nonnullis luteo-squamosis. Elytra pronoti latitudine obscure luteo-squamosa, spatiis vel interstitiis glabris reticulata. Pedes breves, nigri. Tibiæ anticæ extus 5-6-dentatæ, 4 posticæ in medio dente unico armatæ.

Sp. 5. *Lucanus (Dorcus) capitatus*, Westw.* (Pl. XX. fig. 5.)

Niger, tenuissime punctatus, capite et pronoto latissimis, mandibulis capite longioribus, apice falcatis, intus ante medium dente valido suberecto obtuso instructis, pedibus et elytris piceis, his 6-striatis.

Long. corp. (mandibulis exclusis) lin. 16 ; lat. capitis lin. 7½.

Habitat Malacca.

In Mus. D. Guérin, Parisiis.

Caput magnum, latissimum, disco fere plano, tenuissime punctatum ; utrinque, pone basin mandibularum, tuberculo conico elevato instructum. Mandibulæ capite longiores, sat tenues,

* *L. platycephalus*, Guérin, MSS., but not *L. platycephalus*, Hope, in Trans. Ent. Soc. vol. iv. p. 73.

apice curvatæ, intus ad basin profunde incisæ, denteque obtuso elevato ante medium armatæ. Antennæ parvæ, articulo 7mo ad basin intus angulato et setoso, 8vo et 9no magnis et intus valde productis, 10mo vel apicali fere rotundato compresso. Pronotum latissimum, disco fere plano, tenue punctato, margine antico utrinque emarginato, lineaque impressa curvata cum illo parallela, lateribus subparallelis extus angulis anticis truncatis. Elytra pronoto angustiora, postice sensim angustata, depressa, piceo-fusca, subopaca, singulo striis sex lævibus notato. Tibiæ anticæ extus 7-8-serratæ, 4 posticæ in medio externe dente unico armatæ.

Sp. 6. *Lucanus (Dorcus) æqualis*, Hope, MSS. (Pl. XX. fig. 6.)

Piceo-niger, capitis et pronoti lateribus magis piceis, lævis, oblongo-subparallelus, elytris striis 6 punctatis, capite lato, mandibulis capite parum longioribus falcatis, singula ad basin dente supero armata, oculis cantho divisis.

Long. corp., mandibulis exclusis, lin. $11\frac{1}{2}$; lat. pronoti fere lin. 5.

Habitat in Oriente.

In Mus. Dom. Guérin? Parisiis.

Sp. 7. *Lucanus (Dorcus) Malabaricus*, Hope, MSS. (Pl. XX. fig. 7.)

Niger, elytris opacis, punctatissimis, singulo 7-striato, striis alternatis profundioribus; capite angusto, lateribus angulatis, pronoto fere quadrato, mandibulis depressis, capite duplo brevioribus, subtriangularibus, intus dente armatis.

Long. corp., mandibulis exclusis, lin. 10; lat. pronoti lin. 4.

Habitat in Malabaria.

In Mus. Dom. Guérin? Parisiis.

Sp. 8. *Lucanus (Dorcus) distinctus*, Hope, MSS. (Pl. XX. fig. 8.)

Niger, nitidus, capite et pronoto elytrorum latitudine, mandibulis falcatis, basi supra dente acuto armatis, pedibus et elytris piceis, his 7-striatis, lateribusque punctatis.

Long. corp., mandibulis exclusis, lin. $12\frac{1}{4}$; lat. pronoti anticè lin. $5\frac{1}{2}$.

Habitat in Oriente.

In Mus. Dom. Guérin? Parisiis.

Caput pronoti latitudine, supra fere planum, nitidum, nigrum, utrinque pone oculos dente parvo armatum. Mandibulæ capite parum longiores, falcatæ, acutæ, singulâ supra versus

basin dente acuto elevato instructâ. Antennæ articulo 7mo intus acute producto, tribus ultimis clavam depressam formantibus. Pronotum elytrorum latitudine, postice parum angustatum, disco fere lævissimo, marginibus attamen cum linea media longitudinali sub-punctatis. Elytra picea, subdepressa, lateribus fere parallelis, singulo 7-striatis, striis 1ma et 2da internis fere ad apicem extensis, 3tia cum 4ta, et 5ta cum 6ma, ad apicem connexis, marginibus lateralibus punctatis. Tibiæ anticæ extus 7-denticulatæ, 4 posticæ in medio externe dente unico armatæ.

Sp. 9. *Platycerus Oregonensis*, Westw. (Pl. XX. fig. 9.)

(An. *Pl. securidens*, Say.)

Pl. chalybæus elytris violascentibus, mandibulis capite parum longioribus, versus basin curvatis, dente supero alteroque interno versus apicem armatis, pronoti lateribus marginatis.

Long. corp. lin. 6.

Habitat ad littora septentrionali-occidentalia Americæ borealis (Oregon.)

In Mus. D. Guérin, Parisiis.

Caput transversum, quadratum, nigrum, nitidum. Mandibulæ capite parum longiores basi curvatæ, intus setosæ, dente parvo supero alteroque interno fere ad apicem instructæ, apice extremo acuto et obliquo. Antennæ articulo 7mo intus parum angulato-producto. Pronotum chalybæum, capite parum latius, pone medium paullo dilatatum, disco punctato, et in medio lineâ tenui longitudinali notato, marginibusque lateralibus marginatis. Elytra oblonga, pronoto haud latiora, violacea, nitida, punctata, punctis nonnullis lineas irregulares formantibus, angulis humeralibus prominentibus. Pedes breves, nigri. Tibiæ anticæ extus serratæ, dentibusque 6 majoribus et acutis armatæ.

XLV. *Descriptions of two new Genera of Carabideous Insects.* By J. O. WESTWOOD, F.L.S.

[Read 2nd June, 1845.]

PLATYNODES, *Westw.* (Pl. XXI. fig. A. and details.)

Genus novum *Morioni* proximum, e quo differt præcipue formâ latâ depressâ, thorace cordato-truncato, &c.

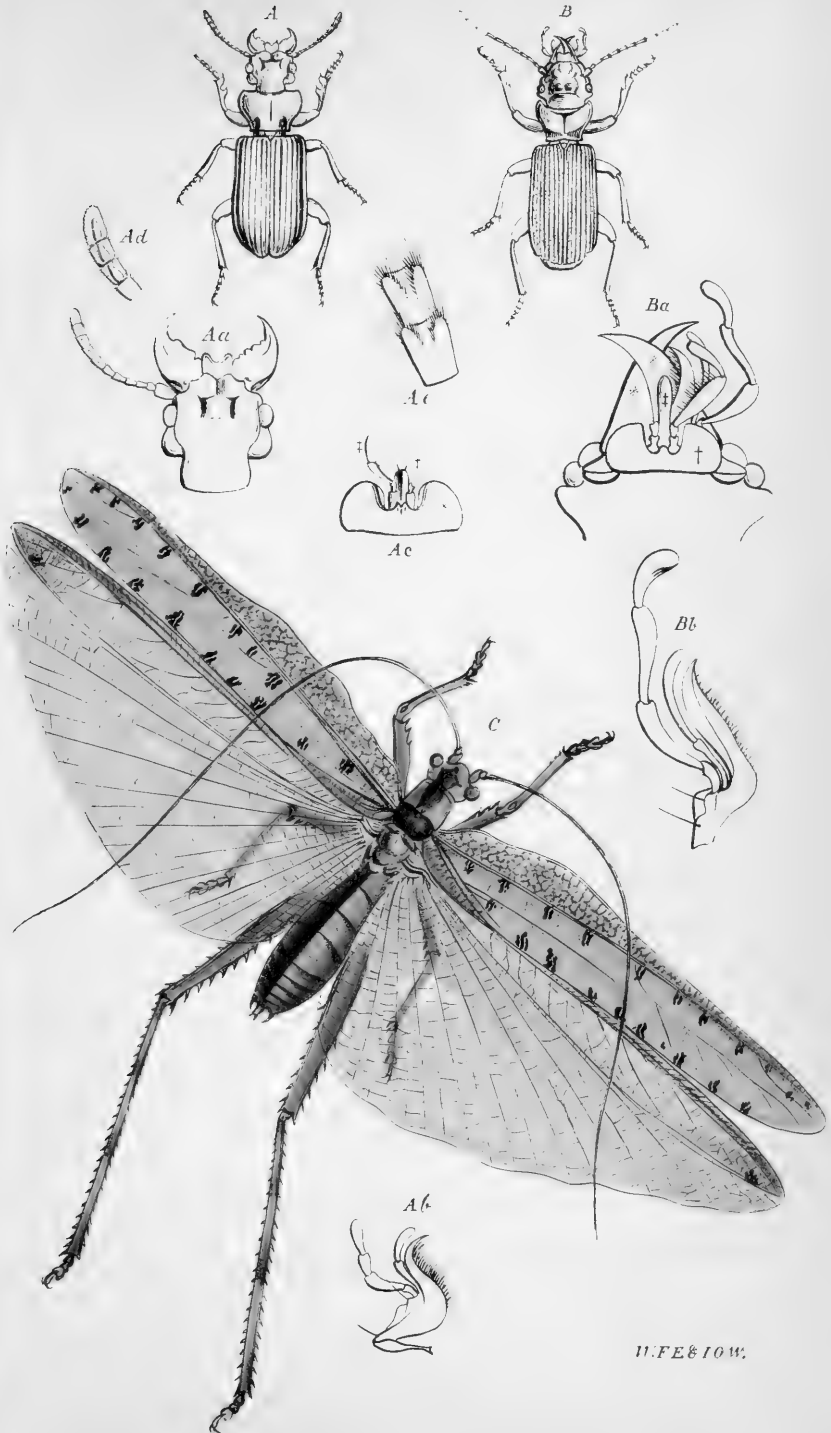
Caput magnum, subquadratum, planum; angulis posticis pone oculos rotundatis et semiglobosis, e vertice linea valde impressa utrinque separatis, lineisque duabus impressis verticalibus, (fig. *Au*). *Labrum* porrectum, subquadratum; angulis anticis rotundatis margineque antico valde emarginato et ciliato. *Mandibulæ* magnæ, porrectæ, apice acutæ, intus obtuse et late dentatæ. *Maxillæ* valde curvatæ, lobo interno in spinam acutissimam terminato. *Palpi* externi breves, articulo 2do longiori, apicalibus fere filiformibus, (fig. *Ab*). *Mentum* latum, lobis duobus magnis rotundatis planis, medio valde emarginato, dente bifido in medio emarginaturæ, (fig. *Ac**). *Labium* parvum, corneum, angustum, apice rotundatum, supra carinatum, (fig. *Ac†*). *Palpi labiales* parvi, (fig. *Ac‡*). *Antennæ* satis breves, articulis apicalibus compressis velutinis, spatio tenui longitudinali nitido in singulo tantum relicto, (fig. *Ad*). *Prothorax* magnus, planus, capite latior, valde cordato-truncatus, marginatus; angulis anticis rectis, posticis acutis, linea tenui longitudinali media, et excavatione oblonga versus angulos posticos impressa. *Elytra* prothorace latiora deplanata, anguste marginata, pone medium paullo dilatata, lineis tenuissimis et simplicibus striata. *Pedes* robusti. *Tibiæ* anticæ apice latæ, intus valde emarginatæ. *Tarsi* antichi haud dilatati, articulo singulo subtus lineis duabus postice convergentibus setarum rigidarum instructo; tibiæ intermediæ extus spinulis minutis armatæ, posticæ duæ inermes. *Corpus* subtus planum, prosterno postice porrecto, dilatato et transverse truncato. *Abdomen* segmentis 4, singulo ad marginem posticum punctis duobus impressis.

This fine genus has somewhat the appearance of a flat *Scarites*, but its nearest affinity is the genus *Morio*.

Species unica. *Platynodes Westermanni*, Westw.

(Plate XXI. fig. A. magn. naturali.)

Niger, subnitidus, capite magis nitido, antennarum articulis





apicalibus brunneis, superficie corporis lævi; singulo elytrorum striis 7 simplicibus et gracillimis instructo, spatio inter strias 6 et 7, ad latera, in carinam elevato spatiosoque intus marginem lateralem punctis parvis rotundatis impresso.

Long. corp. lin. $13\frac{1}{2}$, lat. elytr. pone medium lin. $4\frac{1}{2}$.

Habitat in Guinea.

In Mus. nostr. D. Westermanno amicissime communicatus.

HELLUODES, *Westw.* (Plate XXI. fig. B. and details.)

Caput maximum, (prothorace multo majus,) porrectum, pone oculos in collum contractum; vertice inæquali, lævi, haud punctato, (fig. *Ba*, caput subtus visum). *Labrum* porrectum, latius quam longum, antice in medio parum emarginatum, angulis posticis rotundatis. *Mandibulæ* porrectæ acutæ, margine interno inermi, apice parum acuminatæ, (fig. *Ba**). *Maxillæ* elongatæ, graciles, apice subunguiculatæ. *Palpi* interni valde curvati, 2-articulati. *Palpi* externi maxillis vix duplo longiores; articulis 2 et 3 subæqualibus, hoc extus parum curvato; 4to dimidio breviori, intus inflexo, apice crassiori, (fig. *Bc*). *Mentum* latum, in medio valde emarginatum, dente medio fere oblitterato, (fig. *Ba*†). *Labium* angustum, gracile, apice rotundato, (fig. *Ba*‡). *Palpi* labiales articulo 2do sequenti crassiori et longiori, intus setoso. *Antennæ* graciles, haud compressæ, longitudine mediocri, articulo 2do plus dimidio longitudinis 3tii, 4to 5to breviori. *Prothorax* truncato-cordatus, fere latitudine capitis (pone oculos) æqualis, marginatus. *Elytra* depressa, ad partem mediam latiora, punctatissima. *Pedes* mediocres, tibiis anticis ante apicem emarginatis; tarsis in specimine unico simplicibus, articulo 4to parvo, calcaribus brevibus.

This genus approaches nearest to *Helluo* in its general characters, although in its habit it resembles *Morio*, but in the particular structure of the parts of the mouth it is certainly not far removed from *Anthia*. Its locality, Ceylon, combined with its large head, &c., renders it an interesting link in the tribe of beetles to which it belongs. Unfortunately the extremity of the elytra are injured, so that I cannot determine the extent to which they may have been truncated.

Helluodes Taprobanæ, Westw.

(Plate XXI. fig. B.)

Niger, nitidus; labro, femoribus apiceque abdominis piceo-rufis.

Long. corp. lin. 15.

Habitat in Insula Taprobana.

In Mus. D. Melly.

Caput supra irregulare, haud punctatum, collo pone oculos valde declivi, inter oculos tuberculis duobus parvis rotundatis elevatis instructum. Pronotum tenue punctatum, marginibus lateralibus elevatis, et utrinque, versus angulos posticos, impressione profunda intus extensa et fere conjuncta notatum. Elytra punctis minutis irregularibus obsita, depressa, singulo striis 7 simplicibus parum impressis, interdum punctis notatis, punctis autem irregulariter dispositis, singulo etiam versus scutellum striola simplici abbreviata.

XLVI. *Descriptions of various Coleopterous Insects from New Holland, collected chiefly by Mr. FORTNUM, at Adelaide. By the Rev. F. W. HOPE, F.R.S., &c.*

[Read 2d February, 1846.]

IN the second part of the fourth volume of the Entomological Transactions, published in 1845, I described several new species of Coleoptera, collected in Adelaide by Mr. Fortnum. That zealous individual has lately returned to England, and transferred to my hands his entire collection. Amongst the insects are many important additions, which will tend to illustrate the Entomological Fauna of that interesting country. Acquainted with the localities and habits of many of the species, he has kindly offered me the assistance of his note book. I intend therefore to present to the Society descriptions of a series of new species of the different groups, with Mr. Fortnum's notes appended thereto, and I am happy to say that I shall have several of the species now described to add to the riches of our Entomological Cabinet.

COLEOPTERA LAMELLICORNIA.

DYNASTIDÆ.

Sp. 1. *Corynophyllus Fortnumi*, Hope, ♀. (Pl. XIX. fig. 7.)

Vid. p. 112, Vol. 4, part 2, of our Transactions, where the male of the above species is described. The female has lately been

brought to this country by Mr. Fortnum, and is now added, with a short description.

♀. *Castanea nitida*, clypeo punctulato, margine anteriori vix emarginato; thorace nigricanti, angulis anticis et posticis rotundatis; elytrisque rude punctato-striatis.

Long. lin. 8, lat. lin. 5.

Fig. 7 a, antenna; 7 b, mandible; 7 c, maxilla; 7 d, instrumenta labialia.

SEMANOPTERUS,* *Hope*. (Pl. XIX. fig. 8, and details.)

Novum genus. Type *S. Adelaidæ*, Hope.

Caput antice rotundatum, medio cornutum. *Mandibulæ* robustæ, obtusæ et hirsutæ, (fig. 8 a). *Maxillæ* apice 3 dentatæ, dentibus acutis, (fig. 8 b). *Palpi* maxillares 4 articulati, 1mo brevi minimo, 2do robustiori, 3tio obconico, ultimo elongato ovato. *Mentum* medio dilatatum, antice contractum et emarginatum, (fig. 8 c). *Corpus* fere oblongum subdepressum, elytris thorace vix latoribus. *Pedes* validi; tibiis externis 3 dentatis, dentibus acutis.

The above insect from Adelaide appears to be a form peculiar to New Holland. In habit it approaches *Cheiroplatys*, from which it may readily be distinguished by the elevated lines on the elytra, as well as in its general sculpture. It possesses the grooved thorax of *Cheiroplatys*, and seems to approach *Phileurus*. I suspect that both sexes have the thorax hornless. It is found under dead bark in Adelaide, and has not yet, I believe, been taken alive.

Sp. 1. *Semanopterus Adelaidæ*, Hope. (Pl. XIX. fig. 8.)

Niger, clypeo brevi cornu armato, sub lente vix punctato. Thorax glaber, convexus, in medio sulcatus, sulco sparsim punctulato. Elytra postice magnitudine parum increscentia, quibusdam lineis elevatis politis signata, interstitiis punctulatis, punctis triplice serie impressis; latera scabriuscula. Corpus infra piceum, pedibus ciliatis, podice rufescente, tenuissime punctato.

Long. lin. $10\frac{1}{2}$, lat. lin. 6.

In Mus. Dom. Hope.

It was brought to England by Mr. Fortnum, and found dead under the bark of trees.

* From *σημανω* and *πτερον*.

Sp. 2. *Semanopterus subæqualis*.

Niger, clypeo dente parvo armato; thorace in medio sulcato, sulco haud fortiter impresso, et punctato. Discus glaber, sub lente tenuissime punctatus. Elytra fere æqualia, ad apicem parum increscentia, lineis elevatis et punctis triplici serie ordinatis. Corpus infra atrum, pedibus piceis et ciliatis. Podex rufus, creberrime punctulatus.

Long. lin. 10, lat. lin. 5.

Sp. 3. *Semanopterus depressus*, Hope.

Affinis præcedenti. Niger, pectore pilis ferrugineis obsito. Clypeus niger, dente parvo armato. Thorax in medio sulcatus, disco glabro et nitido, sub lente tenuissime punctulato. Elytra lineis quibusdam elevatis signata, punctisque in triplici serie ordinatis. Corpus infra piceum, femoribus rufescentibus, ano rubro, creberrime punctulato.

Long. lin. 10, lat. lin. 5.

Habitat in Australia.

Its real locality is unknown to me, as I purchased it in a box from New Holland.

Sp. 4. *Onthophagus cereus*, Hope, ♂.

Niger, nitidus; antennis piceis, clypeo fere trigono, postice furcato, seu occipite laminâ latâ bicorni armato. Thorax disco canaliculatus, antice retusus, in medio bituberculatus. Elytra sub forti lente lineato-punctata. Corpus infra nigrum, pilis flaveolis obsitum. Tibiæ anticæ quadri-dentatæ.

Alter sexus minor, thorace quadrituberculato, tuberculis mediis majoribus, lateralibus minutis et rotundatis.

Long. corp. lin. 5.

The above species in its lustre resembles black sealing-wax, whence its trivial name.

Sp. 5. *Onthophagus Adelaidæ*, Hope.

Nigro-æneus, clypeo sub bidentato, postice furcato seu cornubus duobus acutis, lateraliter divergentibus, armato. Thorax atro-æneus et granulate rugosus. Elytra depressa, sub lente striato-punctata, antennis pedibusque piceis. Alter sexus differt clypeo inarmato.

Long. corp. lin. 4.

[Read 2d March, 1846.]

Fam. SERRICORNIA.

BUPRESTIDÆ.

Genus STIGMODERA.

Sp. 1. *St. Smaragdina*, Hope.

Viridis, antennis atris; thorace aurato-punctulato; elytris concoloribus, fortiter insculptis, marginibus externis cyaneis. Corpus subtus auratum, nitidum, segmentis abdominis lævibus, femoribus viridibus, tibiis cyaneis, tarsisque piceis infra ciliato-spongiosis.

Long. corp. lin. 9.

Habitat in Nova Hollandia.

In Mus. Dom. Hope.

Sp. 2. *St. Xanthopilosa*, Hope.

Affinis *10-maculatæ*, at longior; elytris vix thorace latioribus; atro-violacea, thorace roseo-æneo et punctulato. Elytra flavo-marginata, striata, striis punctatis, maculis quatuor luteis; prima prope ad scutellum subrotundata, secunda fere oblonga, tertia parum transversa, ultima in apice minori. Corpus infra argentea lanugine obsitum; pedesque violacei.

Long. corp. lin. 7.

This beautiful species is from Adelaide.

Sp. 3. *St. Vegeta*, Hope.

Læte cyanea, antennis concoloribus, thorace punctulato. Elytra violacea, fasciis tribus flavis fere ad suturam terminata; prima irregulari ad basin posita e humeris ad latera extensa, secunda latiori fere media, tertiaque minori. Corpus infra læte cyaneum, pedibus concoloribus.

Long. corp. lin. $4\frac{1}{2}$.

In Mus. Dom. Hope.

From Adelaide.

Sp. 4. *St. colorata*, Hope.

Affinis *flavo-pictæ*, Gory, at latior. Viridis, thorace cyaneo, elytris flavis, maculis duabus violaceis e humeris ad medium disci descendentibus, macula tertia media parva concolori

fascia postica, maculaque quarta ante apicem positis, apicibusque flavis. Corpus infra viride, punctulatum, pedibus concoloribus.

Long. corp. lin. 4.

Habitat in Adelaida.

Sp. 5. *St. media*, Hope.

Sanguinea, thorace cyaneo, elytris flavis, marginibus externis sanguine inquinatis. Elytrorum discus maculis binis humeralibus cyaneis, tertia cruce lata concolori, apicibusque sanguineis. Corpus infra cyaneum et argenteo-tomentosum.

Long. corp. lin. $5\frac{1}{2}$.

Inhabits Adelaide.

Sp. 6. *St. delectabilis*, Hope.

Viridis, thorace concolori, nitido et punctulato. Elytra striato-punctata, macula suturali majore viridi, altera minori utrinque posita, fascia lata aurato-viridi, maculaque irregulari concolori apice terminata. Corpus infra læte viride, punctulatum, pedibus violaceis.

Long. corp. lin. $6\frac{1}{2}$.

Inhabits Port Philip.

LAMELLICORNIA.

Sp. 7. *Aphodius Adelaidæ*, Hope.

Niger, nitidus, clypeo submarginato, antennis atris. Thorax glaber, elytris sub lente striato-punctatis. Corpus infra nigrum, femoribus tibiisque rubro-piceis.

Long. corp. lin. $2\frac{1}{2}$.

The above insect, I believe, is the first described of *Aphodius* from New Holland; as there are some others in my collection I describe them.

Sp. 8. *Aphodius cincticulus*, Hope.

Affinis *Anachoretæ*, Fab. Caput nigrum, submarginatum, antice flavescens, tuberculo unico armatum. Thorax ater, nitidus, margine omni pallescente. Scutellum flavum. Elytra striata, fusco-flava, margine flavescenti. Sutura nigra.

Corpus, antennæ et pedes pallescentia.

Long. corp. lin. 2.

Habitat circa Adelaidam.

Sp. 9. *Aphodius sculptus*, Hope.

Niger, antennis flavo-piceis, clypeo emarginato; thorace varioloso-punctato, elytris lineis elevatis glabris insignitis interstitiis sculptilibus. Corpus infra atrum nitidum, pedibus concoloribus.

Long. corp. lin. $2\frac{1}{2}$.

The above insect was received from Port Philip; its sculpture is very remarkable, whence it is named.

Sp. 10. *Aphodius Tasmanicæ*, Hope.

Fusco-brunneus, clypeo integro, vix reflexo; thorace nigricanti punctulato, margine omni pallescente. Elytra striato-punctata, fusco-brunnea. Corpus infra concolor, pedibus flavescens et ciliatis, posticis longissimis.

Long. corp. lin. 5.

Habitat in Tasmania.

In Mus. Dom. Hope.

The above insect is from Van Diemen's Land. In form it approaches *Promeces* of Illiger from Africa, and is also somewhat allied to *Elongatulus*, Fab., from China. The length of the elytra when compared with the thorax, as well as the long posterior tibiæ, seems to mark this form as peculiar to New Holland. Some specimens said to come from Sydney certainly seem closely allied.

Sp. 11. *Aphodius Howitti*, Hope.

Præcedenti affinis, at minori. Fusco-piceus, clypeo integro, vix reflexo. Thorax disco nigricanti punctulato, margine omni rubro-piceo. Elytra striato-punctata, atro-picea. Corpus infra flavescens, pedibus concoloribus et ciliatis.

Long. corp. lin. $4\frac{1}{2}$.

The above insect was sent to me from Port Philip by Mr. Howitt, in whose honour it is named. It evidently pertains to the same section as *Aphodius Tasmanicæ*.

XLVII. Remarks occasioned by the publication of a Work entitled "Insect Life." By J. W. DOUGLAS, Esq.

[Read March 2, 1846.]

THE phenomena of insect life are so various and wonderful, and we are so ill able to account for many of them, that whatever professes to throw a new light thereon is worthy of some attention. I have therefore thought it right to bring under the notice of the Society the ideas contained in a book lately published by Dr. Badham,* and presented to this Society by the author; and I am the more induced to do this, that I have neither seen any notice of it in the reviews, nor heard any mention of it here, and it might appear that Entomologists tacitly acquiesced in the startling notions it contains. I wish this notice had fallen into abler hands, but it will I trust have the effect of exciting observation and discussion, that thereby the truth,—the great end of the naturalist's researches,—may be ultimately elicited. To avoid misrepresentation I shall give the author's own words, adding a few remarks as I proceed.

The book opens with some observations on the difficulty that exists, where the forms of animal and vegetable life converge, of pointing out the characters by which they may be referred to their respective kingdoms, showing that neither in structure, want or power of motion, food, modes of increase, chemical constitution, nor sensibility, is the distinction to be found. It is said, "the possibility of fixing any limit between the two kingdoms presupposes that the highest order of plants is lower than the lowest specimen of animal life; whereas to the careful observer, the scheme of nature does not present a graduated scale, on which every class is necessarily higher or lower than the next, there being many living productions which, while on several grounds they bear a strong analogy to the animal world, are yet in other respects (such as complexity of organization or variety of function) lower than ferns or lichens, or even than some of the phenerogamic classes. When indeed we arrive at less questionable examples, wherein may be traced the substance of one order and the machinery of another, the voluntary motion of this tribe and the irritable tissues of that, co-existent in all their completeness, every

* "Insect Life," by David Badham, M.D., late Radcliffe Travelling Fellow of the University of Oxford; F.R.C.S. London; M. Ent. Soc. France. W. Blackwood and Sons, Edinburgh and London, 1845.

thing which is considered necessary to the constitution of an animal is so unequivocally present, that any one would be laughed at who should refuse to bestow that title on their possessor (an insect for instance), and yet by the familiar use of this word, animal, we are led to form conclusions unsupported by experience, and, starting with the belief that it implies a being that feels, we argue from the name to the fact, and from the fact back again to the name.”

Next is the assertion, “that insects do not feel.” “The power to feel appertains only to those creatures in whom the life of growth has reached its consummation. It is admitted on all hands that higher degrees of intelligence are associated with higher degrees of anatomical structure, especially of the nervous system, and it is equally certain that the sensibility of creatures is in proportion to their intelligence : hence we should expect sensation to be more or less perfect according as the nervous system is more or less developed, and its amount to be immediately connected with all those physical conditions upon which intelligence has also been ascertained to depend, viz. the temperature and colour of the blood, the absence or presence of a spine, and the form and substance of the brain. Accordingly, it ought to follow that the sensibility of creatures of cold blood, such as fish, amphibiæ and reptiles, where few or no traces of intelligence can be discovered, should be proportionably low ; and in point of fact the signs of it are very faint and few. Surely, therefore, when we descend lower still, and come to creatures of the same kind as Anacreon’s *Cicada*,—creatures altogether without blood(!)—and this deficiency is common to all the insect tribes,—it is reasonable to expect that the sensibility of which we had observed the progressive decline in passing from the higher to the lower qualities of the circulating fluid, should here be totally obliterated.”

A comparison of the nervous system of the different orders of animals is then made, showing that in the brain and spinal cord of the vertebrata “all that qualifies the animal to feel is centralized, and from the same originating cord all that enables it to move proceeds to its destination.” In the class of insects, on the contrary, there is no brain ; “a medullary cord runs through the whole body of the animal, giving branches to the different organs in its way. Placed at intervals upon this cord, something like beads, or lying between its two elementary threads, are seen roundish knobs, which have obtained the name of ganglia : they are various in size, uncertain in number, and are placed at unequal distances in different tribes of insects ; but in no case do they, as far as visible structure is concerned, present the least similarity to

the brain." It is moreover stated, that there is a direct connexion between the temperature of animals in general and the amount of red globules in their blood, and that there is as marked a connexion between the amount of sensibility and of animal heat as there is between the latter and the amount of cruorine in the blood; from all which it is inferred, that as sensibility is in proportion to the size and quality of brain, and the amount of red globules in the blood, a creature which has no brain and "no red blood" (just now it was "altogether without blood") should be devoid of sensibility.

There are also, it is stated, several points in which the physiology of insects resembles that of plants rather than that of animals, viz. perpetuation and superfœtation of species, longevity if the functions of generation be delayed, evolution of heat under certain circumstances, the generation of spontaneous light, and the operation of poisons.

This, then, is an outline of the theory that insects are devoid of sensation. The proofs adduced are the following:—

TOUCH.

In the higher animals, "the particular senses are so far independent of the diffused sensibility of the organs which administer to them, that the sense, or *particular* office of the nerve, may be lost, while the sensibility of the external structure remains. In amaurosis, or extinction of the visual power, the general sensibility of the retina is retained; the ear which has lost its hearing may ache; both taste and smell have been nearly abolished, without in the least impairing the common sensibility of the mucous membrane of the mouth and nose. But the reverse will by no means be found to follow: we have no experience of the ear, the eye, the palate or the nostril carrying on their peculiar functions after the general sensibility of the tissues has been extinguished. In touch we have positive experience to the contrary; a skin on which stimuli would fail to act,—a skin which could neither smart, ache, nor be tickled, ceases to be the organ of touch, as we see it exemplified in the effects of intense cold, which, by depriving the surface of that blood which supports and vivifies its subtle organization, numbs its general sensibility, and at the same time paralyses the particular sense, while an increasing warmth communicates to the over-sensible skin an increased nicety in the fulfilment of its office. If, then, an highly organized tissue can, through the withdrawal of some of the conditions of its healthy state, become utterly unserviceable as a means of distinguishing the surfaces of

bodies, what shall we say of integuments, which not only do not wince under the poisoned barbs of thistles and stinging nettles, but which in many instances carry within them and are full of liquids so caustic, that we employ them for the vesication of our own skins? and though the induction is but partial, the objection will apply universally; for who would dream of granting to one insect what he denied to another?

“It is the more important to attend to this, because many esteemed writers on Entomology,—though forced by the conduct of an insect when injured, to admit that he shows small evidence of general sensibility,—have yet, when their subject brings them to speak of touch in the abstract, made it the great instrument by which the wonders of insect architecture are accomplished. Thus, although unable from what they see to impute much general sensibility to the spider, they yet assert that the delicacy of his touch is displayed beyond the possibility of doubt; and that the fact of his working his nets with his hind legs, and in the dark, indicates that this sense, being the only one which he can turn to account, possesses an additional portion of accuracy in compensation for the help which it would otherwise have derived from the sense of sight. Now this is certainly an inconsistency; but the after assumption which is resorted to for a particular end does not invalidate the previous admission. Whoever contents himself with simply recording what he sees, and does not go out of his way to suppose a power of which there is no evidence, (!!) in order to explain, and that very inadequately, the marvellous works of bees and spiders, will admit, that as insects give very equivocal signs of any diffused sensibility, their possession of the sense of touch must be proportionably obscure; while the exquisite degree of it which has been pretended, must be seen to be utterly unfounded. And yet this is the favourite sense with Entomologists, and the one to which they refer almost all the operations of insects;—by touch alone, by the mere crossing of the antennæ, ants are said to deliver themselves of matters arising in the conduct of their affairs, to record which whole sentences are required; while the *tactus eruditissimus* of bees discerns the presence and applauds the mandates of their queen. To what purpose is all this waste of suppositions? The geometrical figure of the web or the cell, the activity of the makers of them, sustained until the completion of their task,—all in the wonder that is most wonderful, remains as unexplained as ever!”

But if the sense of touch has no share in producing the mar-

vellous works of bees and spiders alluded to, by what means are they accomplished? Our author is silent.

SIGHT.

“He that would assert the title of insects generally to the possession of this sense, is already in possession of two important arguments to start with. An organ can be pointed out in which to lodge the supposed faculty; and as that faculty is, from analogy, the most useful of all the senses, it would seem an anomaly that an intelligent creature (the intelligence, however, being entirely assumed, and for the present unchallenged,) should have been created without it. The greater number of insects, then, must be admitted to have what most physiologists would call eyes; but whether they are properly so called, can only be fully determined by the function they exercise, in inquiring into the exercise of which it may perhaps be not very difficult to show, that they differ entirely from organs of sight as we possess them and understand them.” The structure of the eyes of insects is then noticed; and Marcel de Serres and Cuvier are quoted to show that their “composition exhibits externally a cornea of various degrees of convexity, cut into facettes or corneules, whereof each is supposed to represent an eye. All these corneules are lined on their inner surface with an *opaque varnish, and this varnish affords no passage for the transmission of light.* Secondly, a number of short hexagonal prisms, entering the concavity of the lenses, come into contact with this varnish, and these it is usual to consider as so many retinæ, each having that relation to the particular lens with which it communicates. Next in order comes the choroid, which is penetrated by the prisms just mentioned, and which are given off from beneath it by the general expansion of the optic nerve, properly called the retina.” “The insect being absolutely and unavoidably subject to the same external conditions for vision as ourselves, cannot be supposed to see through a *black pigment*, any more than we can through a *white cataract*; and as all insects equally have this black pigment, *all must be equally blind.*”

I was not prepared for this, nor, I should think, are any of my hearers. The presence of an optic nerve is not denied; and of what use is an *optic* nerve if not for sight? Mr. Newport has proved,* as I thought, that a bee flies straight to its hive by the sense of sight alone; but it is said “if insects want a brain of

* Trans. Ent. Soc. of London, Vol. IV, p. 57.

what use are eyes?” How then do they fly straight to their homes? Or to take an instance familiar to every one—how does a dragon-fly hawk for his prey and dart unerringly upon it if he be blind? There is no answer, unless this is an answer, “ that it would be wiser to leave their conduct unexplained than to resort to an explanation which is no explanation at all, or which proves too much; for many of the actions of bees and spiders, if they imply sight, imply also an intelligent and spontaneous use of it.” Do their actions, then, imply less intelligence if their authors be blind?

SMELL.

“ The general objection still obtains here—the absence of a brain to receive the message of the sense and to determine the consequent act.” The attraction of insects to certain plants and substances is then noticed; and it is added, “ but if we hesitate to admit or deny the sense of smell to insects, in what other way can we explain, or how indeed can we explain at all, such facts. Indeed we know not! but this we certainly know, that there are many acts performed by insects which cannot be explained at all by the operation of any of the senses, nor by all of them together; acts which we are fain to refer, accordingly, to the mysterious power called instinct.” So that because we cannot account for some of the acts performed by insects, we are to give up each one of them as inexplicable. It would be about as wise to give up the Newtonian theory of the universe, because we cannot thereby fully account for the falling stars. Can any one doubt that the flesh-fly visits carrion and that moths are attracted to sugar by the sense of smell?

TASTE.

“ ‘ Without taste,’ says an eminent modern writer, ‘ no animal could continue its existence; it is a sense indispensable to all organized beings, though its peculiarities cannot always be traced to the structure or form of the organs.’ This statement, however, is an assuming of the question, nor is it possible to acquiesce in it. Do not the absorbents select without tasting, and are not some animals little better than absorbents? That some insects show a marked preference for this or the other kind of nourishment is, if true, anything but conclusive as to their taste; for one is at a loss to conceive how, if insects were led by flavour to the choice of food, so many should be found to feed on insipid substances.” Now I do not see that this disproves the power of

tasting, for these substances, though insipid to us, may be palatable and relishing to insects. Few that have seen the *penchant* of certain insects for substances to us disgusting or insipid, and the avidity with which they devour them, can doubt this. Do we not say they have a "taste" for such things, and by what other words can we express the idea?

HEARING.

Many have been the theories as to the seat of this sense in insects, and it is a matter not yet satisfactorily determined; nevertheless there are so many facts in insect economy that imply the possession of it, that it has not hitherto been possible to deny its existence in some insects at any rate. Why have they the power of making a noise if not to be heard by others of their species? And that such is the case is proved by the answers returned to them. Yet this sense, like the others, our author denies they possess, and curiously recites the following in corroboration. "The melancholy click of the death-watch (*Anobium*) loses all its terrors when it is found that the ominous sound is not a voice, but the result of mechanical friction. You have only to send him a counter-scratch from your side of the wainscot, when, mistaking you for a brother *Anobium*, he returns the signal." Why, is not this admitting that he *heard* the noise?

Under this head (though I do not see any connexion therewith) follows a number of instances of the wonderful proceedings of insects, "none of which," says Dr. Badham, "can proceed from sensuous impressions, if what has now been written against the probability of insects possessing the senses be correct." It is added, "from the above examples, which it would be foreign to my purpose and useless to multiply, it appears that the intelligence which prompts the actions of the dog, or of the higher animals generally, has no share in bringing about any of those of which insects are the agents. First, because, as we have seen, anterior to all experience or apprenticeship, they execute faultlessly whatever they have to do. Secondly, because on the supposition of the conduct of an insect proceeding from intelligence at all, we should be obliged to admit that he shows in one part of his conduct a greater and in another a less amount of it than could possibly proceed from one and the same individual; and lastly, because many of the daily actions of insects cannot be explained by referring them merely to intelligence, but suppose prescience as well, which, as it is not an attribute of brutes, can much less be supposed to belong to creatures so vastly below them as insects."

To what conclusion then are we to come? It is, that all the phenomena of insect life are referable to instinct, which is held to be synonymous with vitality,—“instinctive and vital acts being but different manifestations of life, executed in accordance with the pre-established harmony between the creature and the external world.”

I do not now propose to examine the physiological doctrines propounded in this book; I only contend that the facts of insect life do not bear out the theory. For in insects we see organs analogous to the organs of the senses of the higher animals, and perceive actions performed, which, if proceeding from the higher animals, we should at once acknowledge as conclusive proof of sensation; and I do not think that we are warranted in assuming that such creatures as insects are destitute of sensation, because we cannot trace a complete identity with the higher animals in the structure and functions of their organs or their nervous system; nor in disputing the possession of a faculty (such as hearing) when we see its manifestation, because we do not know the organ by which it accomplished its purpose.

XLVIII. *On two new Sub-Genera of Australasian Chrysomelidæ, allied to Cryptocephalus.* By W. W. SAUNDERS, Esq. F.L.S.—(continued from p. 270.)

[Read 5th April, 1847.]

CHLOROPLISMA, W. W. S. Χλωρος, σπλισμα.

Head vertical, immersed in the thorax up to the eyes, with the parts of the mouth but little projecting. *Eyes* reniform, with a deep sinus, in front of which the antennæ are inserted. *Antennæ* (Pl. XV. fig. 6a) nearly filiform, about as long as the body, 11-jointed; first joint robust, pyriform, second orbicular, third, fourth and fifth slender, the fourth the shortest and about half the length of the fifth, the remaining joints somewhat more robust and shorter than the fifth joint, gradually decreasing in length towards the apex, terminal joint ovate pointed. *Thorax* trapeziform, convex on the upper surface, with the posterior angles slightly

rounded. *Scutellum* moderate, subquadrate, narrowed and elevated posteriorly. *Elytra* somewhat broader than the thorax, elongate, being in length once and a half the breadth, slightly rounded at the apex and well covering the abdomen. *Legs* somewhat long and slender. *Tarsi* 4-jointed, third joint broad and deeply bifid.

This subgenus approaches to *Idiocephala*, W. W. S., differing chiefly in the relative proportions of the second, third and fourth joints of the antennæ, and in the more elongate and less cylindrical shape of the insect.

Chloroplisma viridis, Hope MSS. (Pl. XV. fig. 6.)

Entirely of a rich bright metallic shining green, excepting the underside of the first joint, the whole of the second, third and fourth, and the underside of the fifth joints of the antennæ, where the colour is rufous, and the apices of the tibiæ and the tarsi, which are dark piceous. The whole of the upper surface, except the scutellum, is deeply and widely punctured, conjoined with slightly elevated rugosities, giving it a rough and uneven appearance. Scutellum smooth and very polished. Abdomen covered with adpressed whitish hairs.

Length $\frac{1\frac{5}{100}}{100}$ of an inch.

From New South Wales.

This insect I have only met with in the rich collection of the Rev. F. W. Hope.

LACHNABOTHRA, W. W. S. *Λαχνη, βοθρος.*

Head vertical, immersed in the thorax up to the eyes, with the parts of the mouth little prominent. *Eyes* elliptical, with a sinus on the anterior margin. *Antennæ* (Pl. XV. fig. 5a) about half the length of the body, nearly filiform, placed wide apart near the sinus of the eyes, 11-jointed; first joint robust, pyriform, second orbicular, third to seventh nearly of equal length, fifth the longest, all more slender and longer than the four terminal joints; apical joint ovate pointed. *Thorax* trapeziform, nearly twice as broad as long, very convex above, somewhat produced on the hinder margin, and the upper surface covered with small irregular hollows or pits, clothed with downy pubescence. *Scutellum* large, subquadrate, somewhat narrowed and much elevated behind (Pl. XV. fig. 5b). *Elytra* rather broader than thorax, somewhat longer than broad, rounded at the apex. *Abdomen* (fig. 5d) large, the

fifth joint having a deep rounded excavation in the centre near the anus on the underside. *Legs* short, robust. *Tarsi* 4-jointed; third joint broad and deeply bifid (fig. 5c).

The short, robust, broadly ovate shape, joined with the remarkably elevated scutellum and singularly sculptured thorax, distinguish this subgenus from all its allies that I am acquainted with. It would appear in some respects to approach *Onchosoma*, a subgenus I have already described in the Entomological Society's Transactions, but it is evidently distinct and a very remarkable form.

Lachnabothra Hopei, W. W. S. (Pl. XV. fig. 5.)

Dull chesnut brown. Antennæ and parts of the mouth yellow brown. Eyes black. Head rugose, covered with irregularly laid adpressed yellow white hairs. Thorax with about eighteen excavations or pits on the upper surface, densely clothed with soft down-like whitish hairs, which radiate from the centres of the excavations, giving the whole a peculiar silky appearance. Scutellum with an elevated longitudinal ridge along the centre, clothed with adpressed whitish hairs, except at the apex. Elytra rugose, with elongate rounded elevations and deep impressions, sparingly covered with yellowish-white short hairs. Abdomen underneath punctured and sparingly clothed with yellowish-white adpressed hairs. Legs rufous brown, with the tarsi paler.

Length $\frac{2.3}{100}$ inch., breadth $\frac{1.5}{100}$ inch.

From New South Wales.

In the Cabinet of the Rev. F. W. Hope, after whom I have named the species.

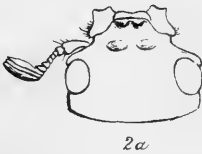
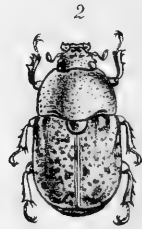
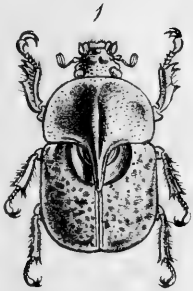
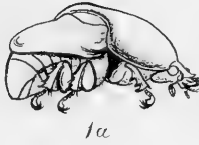
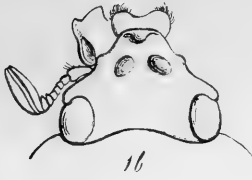
XLIX. *Description of a new Genus of Lamellicorn Beetles from India, belonging to the Family Rutelidæ. By J. O. WESTWOOD, F.L.S., &c.*

[Read 3rd August, 1846.]

Family RUTELIDÆ.

Genus PEPERONOTA, *Westw.* (Pl. XXII. fig. 1, and details, of the male; fig. 2, and details, of the female.)

Corpus breve, crassum, valde convexum; pedibus brevissimis. *Caput* mediocre, subtriangulare, vertice bituberculato, clypeoque tuberculato, tuberculo unico in ♂, duobus in ♀, (fig. 1 *b*, caput ♂; 2 *a*, ♀, supra visum). *Labrum* porrectum, breve, transversum, corneum, anticè in medio subemarginatum, (fig. 1 *b*, ♂, 2 *b*, ♀). *Mandibulæ* breves, latæ, corneæ, angulo externo antico in tuberculo obtuso producto (ore clauso, clypeo et labro haud obtecto); angulo interno quadrato, spatio subtus tenue setigero; portione molari lata tenuissime transverse strigosa, (fig. 1 *c*, 1 *d*, 1 *e*, mandibulæ maris, supra, externe et interne visæ). *Maxillæ* corneæ, lobo externo producto, 6-dentato; dentibus sic (ex apice) dispositis 1, 2, 3; palpi maxillares breves, 4-articulatæ, articulo 2ndo 3tio duplo longiori, ultimo majori subovali, (fig. 1 *f* and 2 *c*). *Mentum* crateriforme, valde setosum, apice paullo dilatato, margine antico in medio emarginato; palpi labiales breves, 3-articulati, articulo intermedio minori, (fig. 1 *g*, 2 *d*). *Antennæ* breves, 10-articulatæ, sexu conformes, clava 3-phylla parva, (fig. 1 *b*, 2 *a*). *Pronotum* fere semicirculare, valde gibbosum, nitidissimum, punctatum, medio marginis postici in mare, in cornu tenui supra scutellum et basin suturæ extenso productum, cujus apex deflexus in impressionem suturæ receptus (fig. 1 *a*, corpus ♂ e latere visum); canali tenui longitudinali per medium pronoti maris extenso; fœminæ simplex inerme; margine postico in medio rotundato, utrinque subsinuato. *Scutellum* latum, fere semicirculare. *Elytra* brevina, convexa; maris opaca nisi spatio nitido semicirculari depresso prope scutellum; fœminæ minus opaca, punctata, singulo versus apicem tuberculo elevato instructo; marginibus lateralibus integris, apicibus anum haud tegentibus. *Podex* deflexus. *Pro-* et *meso-sterna* omnino mutica





et simplicia, nec elevata nec porrecta. *Pedes* brevissimi, in maribus præsertim incrassati; tibiæ anticæ 3-dentatæ, dentibus duobus apicalibus approximatis; tibiæ intermediæ extus biangulatæ, singulo angulo in medio dentibus duobus instructo; tibiæ posticæ extus 1-angulatæ, dentibus duobus eodem modo positis. *Tarsi* brevissimi, 5-articulati, maris robustiores præsertim in pedibus anticis, articulo 5to majori curvato, apice subtus onychia distincta setigera armato; unguibus omnibus in utroque sexu æqualibus, uno bifido, altero simplici; unguibus pedum anticorum maris magnis difformibus, majori valde curvato et supra dente armato, minori simplici.

Fig. 1*h*, tibia et tarsus anticus; 1*i*, tibia et tarsus intermedius maris; 2*e*, apex tibiæ, cum tarso antico; 2*f*, tibia intermedia; 2*g*, tibia postica fœminæ.

In the first part of the fourth volume of the Transactions of the Entomological Society I described a genus of Lamellicorn beetles belonging to the family *Rutelidæ*, composed of species inhabiting Asia and its dependent islands, being the only insects of that family which had hitherto been discovered in that quarter of the world, the great majority of the species being almost exclusively natives of the New World. The genus *Parastasia*, in several of its characters, constitutes a very marked addition to the family, which, with *Chalcentis*, (formed of two Brazilian species,) and probably with the addition of the undescribed Australian group, named *Cælidia* in Dejean's Catalogue, has been formed by Dr. Burmeister into a separate subfamily, distinguished by the subsinuated labrum, the clypeus generally dentate at its anterior extremity, and the short broad scutellum.

The insects which constitute the genus of which the characters are laid down above, represent another and not less important link in the classification of this beautiful family. Like *Parastasia*, they are inhabitants of the East; and thus, in an Entomo-geographical point, are particularly interesting; but it is in their characters that we look for their chief peculiarities. And here we find that whilst they possess, with only one or two immaterial exceptions, the entire characters of the family *Rutelidæ*, as laid down by Mr. MacLeay in the "Horæ Entomologicæ," i. p. 69, they possess generic distinctions which will at once remove them from every known Rutelideous group.

It may, I think, be laid down as a rule, that where the males of any insect exhibit strikingly marked external sexual charac-

ters, it is the female which must be examined, with the view to the situation of the species in the system, for in this sex those characters which most strikingly individualize the species are not reproduced, and consequently the characters of the family are more clearly to be seen. Thus, whilst the male of the species before us possesses a character which not only at once individualizes it amongst the great mass of Lamellicorn beetles, but also distinguishes it from every known Coleopterous insect, (namely, the posterior production of the middle of the hinder part of the pronotum into a curved slender horn, extending backwards over the scutellum and base of the suture,) the female at first sight possesses so little of distinctive peculiarity that it might be mistaken for a dull-coloured *Chasmodia* or *Pelidnota*. It is worthy of further remark, that whilst so many of the *Rutelidæ* possess a strongly porrected mesosternal spine, this insect has the pro- and meso-sterna entirely simple, and not in the least degree prominent or porrected; in fact it would almost seem to be a freak of nature which has metamorphosed the porrected mesosternum of *Rutela* into the recurved pronotal horn of *Peperonota*. In its simple sterna, moreover, this genus affords a better representation of the *Geotrupidæ* (of which the *Rutelidæ* are the analogues in the Classification of MacLeay) than the ordinary types of the family. In addition to the preceding observations I shall only notice, that the rugose tuberculated clypeus, the identity in the mode in which the tarsal ungues of both sexes are notched, and the broad and very short scutellum, constitute its chief marks of distinction from the majority of the family to which it belongs.

As it is contrary to the strict rules of nomenclature to derive either a generic or specific name from a sexual character, I have abstained from employing the singular formation of the pronotum as a ground for the appellation of the insect; I therefore propose for it the name of

Peperonota Harringtonii.

Obscure luteo-fulva (♂) vel nigra (♀), capite supra nigro, antennarum clava fulva, pronoto maris fulvo, disco brunneo, fœminæ nigro punctato, elytris luteo- vel castaneo-fulvis, maculis minutis irregularibus, plus minusve confluentibus notatis.

Long. corp. lin. 10, ♂; lin. 9, ♀.

Habitat in India orientali, prope montes Himalayanæ, et mecum (pro descriptione) communicato Dom. Harrington, F.L.S. Entomologo indefesso. (In Mus. Dom. Parry et Melly.)

The male has the head nearly flat and subtriangular, black above, and (except at the hind part) thickly covered with large but rather shallow punctures; the clypeus is not separated from the crown of the head, it is armed in the middle with a conical tubercle, between which and the eyes (forming a triangle) are two other tubercles; the labrum is short, rather dilated, and rounded at the sides, with the fore margin emarginate; the mandibles are black, with the basal portion pitchy, they are broad, and almost square, with the outer anterior angle porrected; behind this is a deep impression, serving to receive the basal joint of the antennæ, which, as well as the palpi, are pitchy; the clava with the extremity of its joints fulvous. The pronotum is fulvous, very glossy, and finely punctured, with a large, irregular, somewhat heart-shaped, dark pitchy patch in the middle, having a paler slender central line; the hind margin of the pronotum is extended into a slender, glossy, castaneous horn, which follows the curve of the pronotum, so as to form an arch over the scutellum and base of the suture of the elytra, which are depressed for its reception. The elytra are of a dull luteo-fulvous colour, not glossy, except at the depressed basal part (which is of a blackish colour), and they are covered with numerous darker brown, small, and more or less confluent spots, the basal part and the apical margin being nearly free from spots. The depressed basal part forms, with the scutellum, nearly a semi-circle. The penultimate dorsal segment of the abdomen (which, as well as the last segment, is not covered by the elytra) is of a dull black colour, without visible punctures, but with a depressed transverse line near its base. The anal segment is dark fulvous, also impunctate. The legs are luteo-fulvous, with pitchy tarsi, and with the fore tibiæ pitchy on the inside; the spines of the tibiæ are black. The underside of the body is dull luteous, clothed with pale hairs, and the head is pitchy, with the jugulum and mentum castaneous.

The female is much darker coloured and smaller than the male. The head and pronotum black, the latter more strongly punctured; the two tubercles on the crown of the head are much less developed, forming in fact an almost continuous slight transverse carina; the front of the clypeus has, however, two distinct elevated tubercles. The mandibles are smaller than in the male, and the antennæ more luteous-coloured. The scutellum is black, glossy, and punctured, this part of the body and the base of the elytra being of the normal structure. The elytra are of a reddish chestnut colour, more glossy than in the male, punctured, and covered with small more or less confluent black spots. Each elytron ex-

hibits two longitudinal narrow striæ, bounded by punctures, but lost before reaching their extremity; the base of the elytra is black and glossy, except the humeral angles, which are brighter fulvous. The underside of the body and legs are black, the latter slightly varied with luteous-red on the underside of the femora.

I cannot close this memoir without expressing my thanks to H. G. Harrington, Esq. the possessor of one of the finest collections of exotic Lepidopterous insects in this country, for an opportunity of describing and figuring this interesting addition to our knowledge of the Lamellicorn insects.

[P.S. Captain Parry possesses a female of this genus from Java, which has the pronotum and thighs of a rich orange-red, and the elytra much less irrorated with brown spots, but which I am unable to distinguish specifically from the type.]

L. *Description of a Species of Grasshopper from New South Wales.* By W. F. EVANS, Esq. M.E.S.

[Read 4th Aug. 1845.]

Ephippitytha maculata, Evans. (Pl. XXI. fig. c.)

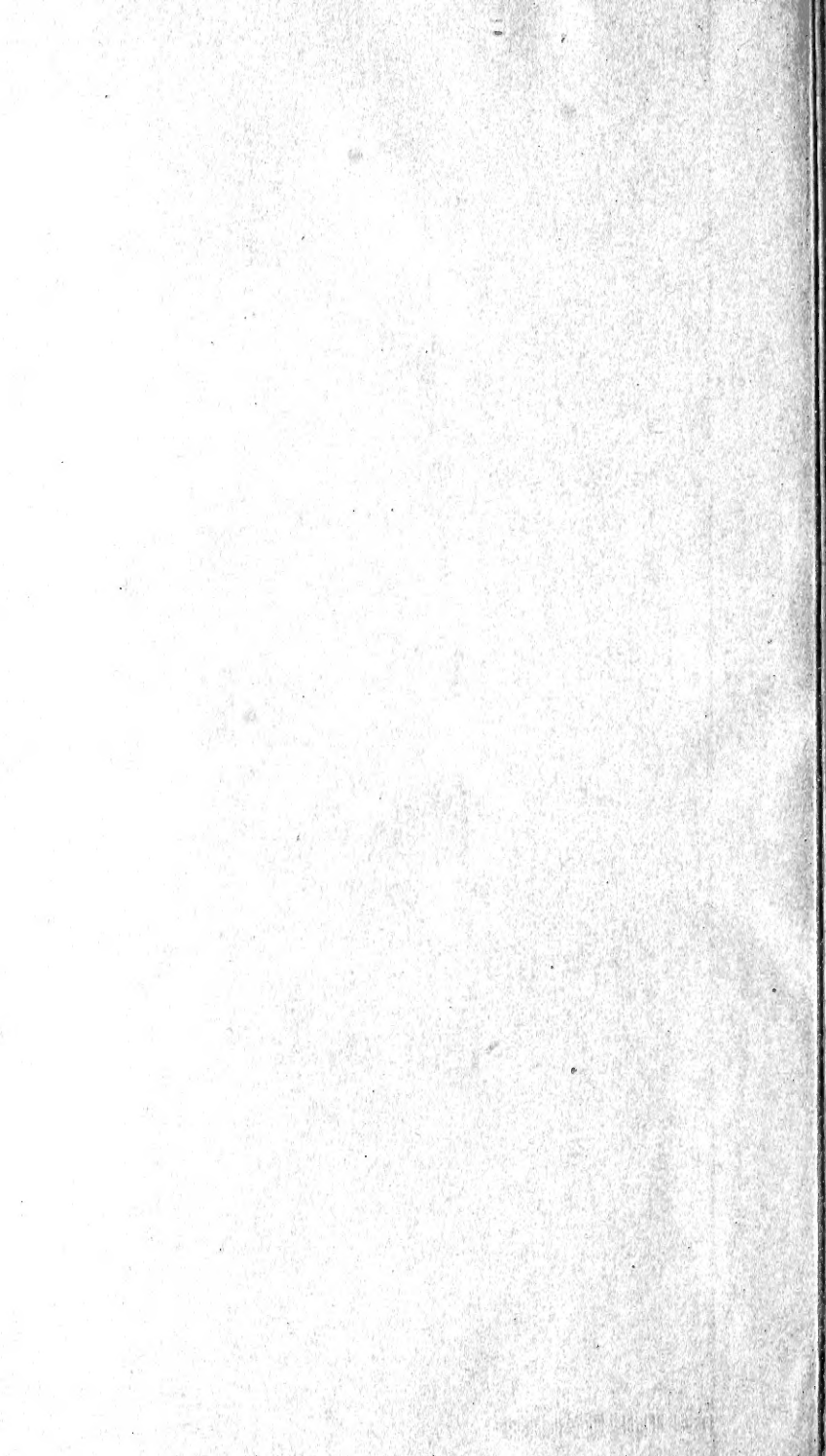
Wing-cases pale green, each with sixteen, nineteen, or twenty roundish spots of a bluish black colour, running along the inner edge of the marginal or principal nervure, and the inner margin of the wing case.

Wings one-eighth of an inch longer than the wing-cases; of a pale green colour, becoming gradually of a lighter tint towards the outer margin; with a pink tinge near the apex (as in the wing-cases), and a single bluish black spot near the tip.

Tibiæ of the hind legs with four bands of fuscous brown, of which colour are also the two basal joints of the tarsi.

Expanse of wings $4\frac{1}{2}$ inches; length of body $1\frac{1}{4}$ inch.

In Mus. Britann., Hope, and my own.



11/6/1962



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