branous plate having apparently no distinct motion, but being connected with a central plate, from the anterior margin of which arises a pair of very minute two-jointed palpi, the terminal joint being rather the longer and more slender of the two. I cannot perceive any distinct upper lip. Now this organization is very similar to that of the mouth of many *Coleopterous* larvæ; but, at the same time, it is equally analogous to the structure of the trophi of the mandibulated *Anoplura*, at least in the very few which I have examined and dissected; so that, in this respect, we have not made much way towards the solution of the question. This structure was observed, as I have said, in a specimen taken at large, and not in one actually reared from the eggs of the *Meloe;* but by the kindness of the Rev. L. Jenyns I have been enabled to make a similar investigation of the animals produced from the larvæ of the *Meloe*, and I find them identical.

Plate XV. Fig. 13. Head of the larva of *Stylops* exserted between the abdominal segments of an *Andrena* with the parasites emerging from the front of the head, and creeping amongst the hairs of the bee; 13 *a*, the parasite greatly magnified; 13 *b*, *b**. *b***, the parasites with the legs in different positions; 13 *c*, one of the legs; 13 *d*, *e*, *f*, terminal joints of the leg in different positions; 13 *g*, the larva of *Stylops*, with the parasites visible through its skin.

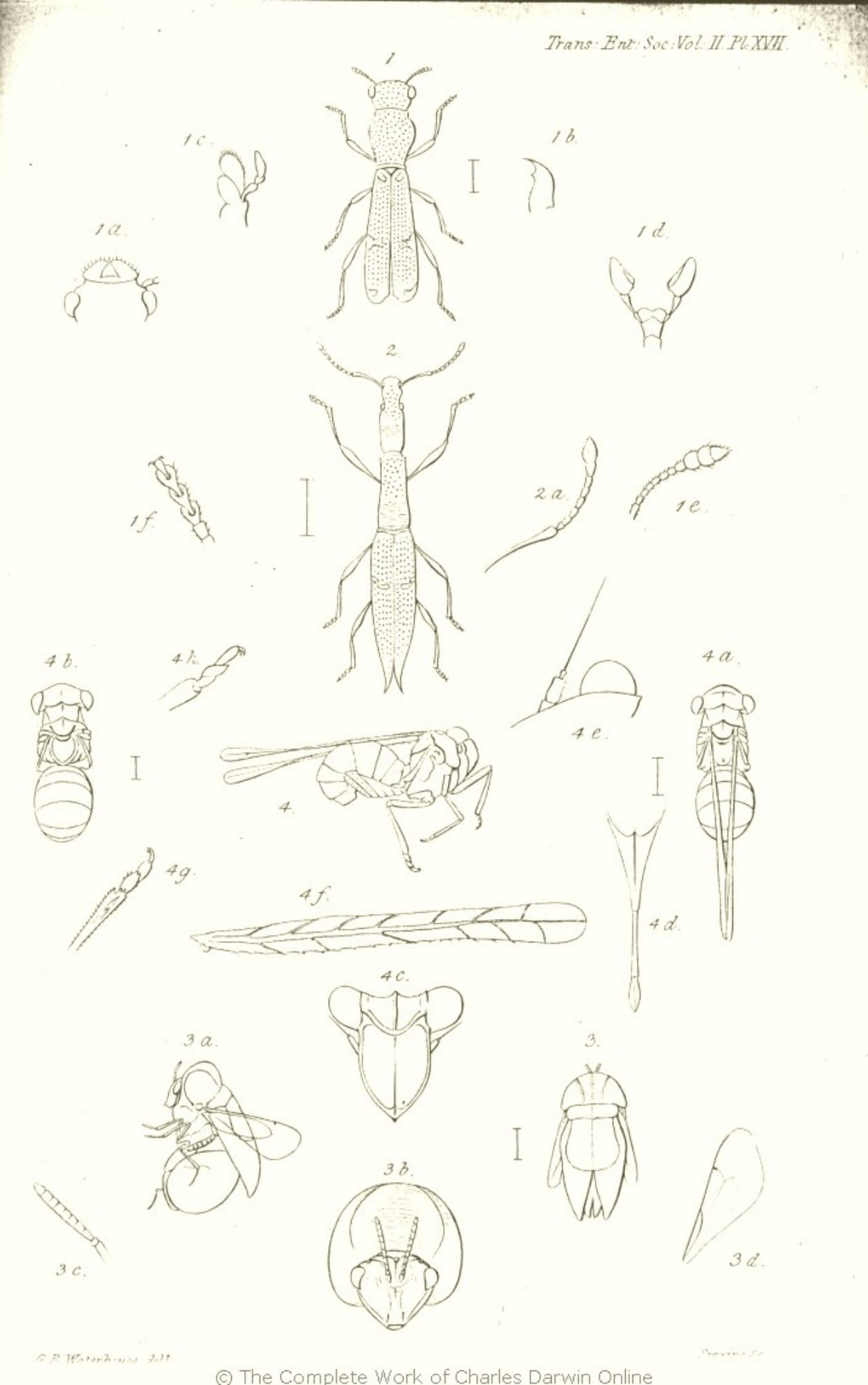
Fig. 14. The reputed larva of *Meloe* highly magnified; 14 *a*, underside of the head; 14 *b*, parts of the mouth detached; 14 *c*, side of the head; 14 *d*, eye; 14 *e*, mandible; 14 *f*, maxilla.

XXXV. *Descriptions of some New Species of Exotic Insects.* *By* G. R. Waterhouse, Esq., *M.E.S., Curator of the Zoological Society.*

[Read 5th December, 1836.]

I beg leave to lay before the Society the descriptions of some interesting forms of insects, constituting part of the collection brought to this country by C. Darwin, Esq. who has lately returned after an absence of five years, which time has been spent in collecting these and other objects of natural history, in various parts of the world.

Some time since, about January, 1835, I had collected together a number of specimens of insects to illustrate certain views relating to the analogies observable amongst them. I was however obliged very suddenly to leave London, and hence had not an opportunity of exhibiting them to the Entomological Society as I intended,—and thinking that I might not again be able to collect



so interesting a series, I requested our Secretary to place them before the next meeting; as however I wished him to make a few remarks upon them, explanatory of my views, he (as I have since thought very properly) declined doing the latter,* as there was a risk of his not having clearly understood my meaning. I had no time to put my remarks upon paper; the insects were therefore returned to the friends who had been so kind as to lend them to me. I may remark that the greater portion of them were from the collection of our liberal president, the Rev. F. W. Hope.

This collection consisted chiefly of Coleopterous insects, and among them I had most of the more curious *forms* observed in the section *Heteromera*,—my object being to show that the species thus selected were analogous representations of other groups of beetles; that is to say, that they departed from their own group in certain characters of form, colour, &c., and that in these respects they appeared to have borrowed (if we may use such a term) the characters of other groups of the same order, to which they bear such a resemblance that they might at first sight be mistaken for species belonging to those groups; and we often observe that the markings vary according to the habits of the individuals.

Let us take the genus *Colymbetes*, for instance. We find that for the most part those species which live in stagnant waters are immaculate, whilst those which live in running streams are spotted. Now although in these instances we may be willing to allow that the markings are connected with the habits, yet we are not aware for what reason.

Considering, therefore, that we are comparatively ignorant of the connection between the habits and structure of insects, beyond that it exists; in talking of the analogy which is found between two insects, as before stated, I allude only to a resemblance of form or in colour.

Whilst examining various collections of insects, at first when I perceived these resemblances I was inclined to believe that there existed a positive affinity between certain species of one group and those of several other groups; *i. e.* that each group not only possessed affinities to that immediately preceding and the one following, but that it possessed affinities to *many* other groups. I however found that I never could trace a positive linking of one group to more than two others,—that which preceded it and that which followed. I therefore felt compelled to give up my theory, which I afterwards had approached to one already made known—

* The series was exhibited at the meeting of the Entomological Society on the 2nd February, 1835. See Journal of Proceedings.

I mean the "*net-work theory*," as I have heard it termed. I perceived that these supposed affinities were in fact analogies. My next step was to make notes of these various analogies as I went through each group, and in so doing I found, as I thought, that each group preserved analogous representations to all other groups which are of equal value, and of the same greater section. For instance, I found analogies in one section of the *Coleoptera* to almost every other section of equal value, and I perceived that in the *order Coleoptera* there were analogous representations to almost nearly all the other *orders* of insects; and through the kindness of my friends I found no difficulty in collecting together, as before stated, a series of specimens to exhibit to the Society in illustration of these views.

In studying other branches of natural history I have found no reason to abandon these views; on the contrary, they seem to be confirmed. They have therefore been brought before the Society in the hopes of calling attention to the subject, as I think it one of great importance, and may go a great way to prove or disprove an exceedingly ingenious and favourite theory—I mean the circular and quinary system; for it may happen that in the formation of this theory analogies may in some instances have been mistaken for affinities. Before I conclude these remarks I will merely observe, that there appears to me to be three circumstances, each of which may give an appearance of correctness to the theory of the circular arrangement of animals, and yet that idea may still be erroneous.

In the first place, a group may be so arranged that the last species may be an analogous representation of the first, and if this be looked upon as an affinity, it might then be said that the last, possessing an affinity with the first, the group could only be arranged naturally by placing the species in a circular manner.

Again, it may so happen that certain species are removed from their natural affinities and wrongly placed, but so disposed that they possess an affinity to the first; here again, not to destroy this affinity, we must arrange the species in a circle.

The third case is this—supposing a certain series of species follow in succession according to their affinities, and we will imagine them to be placed in a straight line; now in the middle of this line there may be a species which bears an analogous representation to the group which commences the series; if this species, together with a few others immediately allied, be removed from their natural situation, and placed at the end of the line, and the case of analogy be called an affinity, the natural way to arrange

them would appear to be in a circle, that the supposed affinity in the last species to the first may not be violated.

These three cases may appear preposterous; but let us take into consideration the number of different arrangements proposed for this tribe of animals, and we must conclude that it is far from a difficult matter to be deceived in cases of affinity and analogy.

My aim in making these remarks is to gain information, for I have one good reason for believing them incorrect, and that is, that I *know* others better informed than myself do not agree with me in opinion; I shall therefore have the benefit of their views if the matter be discussed.

Four of the insects here described are remarkable for their resemblance to species of distinct groups; the first (*Belus testaceus*) is one of the *Curculionidæ*, and belongs to Schönherr's section *Orthoceri*; yet in its elongate form, and pointed elytra, it would appear to be a species of the genus *Lixus*, which genus belongs, as is well known, to a different section.

The insect described under the name of *Leptosomus acuminatus* is another instance of the same nature; here we have one of the true *Curculionidæ* representing the *Brentidæ*.

Our next insect is the *Allelidea Ctenostomoides*. This little beetle is evidently allied to the genus *Dasytes*; it nevertheless so closely resembles in form, colouring, and sculpture, a species of the genus *Ctenostoma*, among the *Cicindelidæ*, that at first sight I thought it might be one of that genus.

The last is perhaps one of the most remarkable instances. This is one of the *Chalcididæ*, in which the thorax is produced posteriorly into two processes, like the elytra of a Coleopterous insect (and they appear to answer the same purpose); and so strong is the case of analogy, that when viewed only from above, the insect might be mistaken for a species of the genus *Mordella*.

Now it may be said that it is nothing remarkable, supposing the same end to be gained, that the same means should be used; if it be fitted in one instance it would also be fitted in another. Nevertheless it is worthy of observation in many points of view. By observing these facts we often perceive that two individuals of distinct groups have habits in some respects similar, and the result is, that there is also a similarity in their form, sculpture, and colour, —here there is a step towards the discovery of the uses of these characters.*

* Why should species of one group possess nearly the same habits as those of another, when in this respect they differ from the generality of the species of their own section?

Order COLEOPTERA.

Section RHYNCOPHORA.

Genus BELUS, *Schonh.*

Belus testaceus.

B. ater ; supra crebrè punctatus ; thorace, elytris, pedibusque testaceis ; tarsis nigris, rostro gracile, subelongato at leviter curvato ; capite fere thoracem longitudine, equante ; thorace brevi, sulco dorsali obscurè impresso, cylindraceo ; elytris linearibus elongatis, latitudinem thoracis æquantibus, et ad apicem cuspidatis.

Long. corp. 4 lin.

Hab. in Australasia.

Obs.—This species, which was found near King George's Sound, appears to have all the principal characters of the genus to which I have referred it. The antennæ, if bent backwards, would extend considerably beyond the base of the thorax; they have the six basal joints long and slender, and the five following incrassated ; the terminal joint is rather longer than the preceding, and pointed at the apex. The eyes are large. The head and thorax are very thickly punctured, the punctures are confluent; there is a shallow fovea on the former between the eyes, and the latter has an indistinct dorsal channel. The elytra are also very thickly punctured, the punctures are confluent, and have an obscure indication of being arranged in longitudinal striæ. The four posterior femora are pitchy-red, and the apex of the anterior tibiæ is blackish.

CURCULIONIDÆ.

Leptosomus acuminatus, L. (Plate XVII. fig. 2.)

This insect is described by Fabricius (*Syst. El.* 2, p. 535,) under the name of *Curculio acuminatus*, and, according to Schönherr, it constitutes the genus *Leptosomus*.

The latter author, however, appears not to have had an opportunity of examining the insect, since he quotes its characters from another work. As it is a very interesting genus, and some of its characters appear not to be known, perhaps I may be excused for adding those characters.

As regards the genus, the additional characters are as follows: Antennæ inserted near the apex of the rostrum: funiculus about equal in length to the scapus, seven-jointed; the first coarctate, longer than broad; the five following equal, rather short; the seventh subobconic; club indistinctly three-jointed, ovate, acuminate. (Pl. XVII. fig. 2 *a*.)

L. acuminatus.

Obs.—A specimen of this insect, which is said to have been named by Fabricius, has been kindly lent me by the Rev. F. W. Hope; its specific characters are as follows:—

L. pitchy-red; head pitchy-black, nearly cylindrical, about equal in length to the thorax; coarsely punctured before the eyes, the punctures confluent; transversely furrowed on the posterior part; a large shallow fovea between the eyes. Thorax pitchy-red, elongate, nearly cylindrical, slightly narrower in the middle; coarsely punctured anteriorly, the punctures confluent; transversely furrowed posteriorly. Elytra about equal in length to the head and thorax, and rather broader than the latter; pitchy-red, with an oblique pale spot on each side near the middle; coarsely punctate-striated; apical spines black. Antennæ and legs reddish.

It will be seen upon comparing this description with that of Fabricius, that several points have been omitted by the latter; the sculpturing is not detailed, and the oblique pale spots on the elytra are altogether unnoticed—these spots consist of pale yellowish scales. The species is said to inhabit New Zealand; the specimen in Mr. Darwin's collection was found near Sydney, and differs in being of a smaller size, of a more elongate and narrower form. The puncturing on the head and thorax is indistinct; the former is black, and the thorax and elytra are nearly red, the latter is blackish towards the outer margins; on each side there is an irregular patch of gold-coloured scales, and between this and the suture there is another of a smaller size; these patches form an interrupted fascia, situated rather anterior to the middle part of the elytra.

Notwithstanding the difference of form and sculpturing combined with the different locality, I am loth to pronounce this a distinct species upon the examination of a single individual. The above remarks, together with an outline figure of Mr. Darwin's specimen, will, however, I hope, enable those who may possess specimens, or hereafter find other species, either to identify them with the Fabrician species, or point out their distinctions.

MELYRIDÆ.

Genus ALLELIDEA. (Pl. XVII. fig. 1.)

Labrum transversum, anticè rotundatum (fig. 1 *a*, front of head). *Antennæ* breves, 11-articulatæ; articulis tribus ultimis crassioribus (1 *e*). *Mandibulæ* bidentatæ (1 *b*). *Palpi-maxillares* tri-articulati; articulis ultimis obconicis (1 *c*). *Labium* bifi-

dum. *Palpi-labiales* 3-articulati, articulo terminali securiformi (1 *d*). *Thorax* subcylindraceus. *Elytra* linearia, elongata. *Tarsi* articulis intermediis obcordatis (1 *f*).

Allelidea Ctenostomoides.

A. æneo-nigra, capite thoraceque punctulatissimis; elytris *punctato-striatis, fasciâ mediâ nec non maculâ* ad basin, alterâque ad apicem, sub-flavescentibus, labio testaceo: antennis testaceis, ad apicem piceis; tarsis, femorumque basi pallidioribus.

Long. corp. $2\frac{1}{3}$ lin.

Hab. in Australasia.

Obs.—This genus is allied to *Dasytes*.

Order HOMOPTERA.

Genus Alleloplasis. (Pl. XVII. fig. 4.)

Antennæ tri-articulatæ; articulis duabus basalibus magnis, harum primâ brevissimâ, secundâ longitudine latitudinem excellente, tertiâ minutâ, orbiculari, setâ terminali (fig. 4 *e*). *Alæ* duæ, elongatæ, graciles; nervulo medio per totam uniuscujusque longitudinem excurrente, ramusculis obliquis ad latera divergentibus (4 *f*). *Tarsi* tri-articulati (4 *g*, *h*).

Alleloplasis Darwinii.

Descrip. Pitchy-brown; under part of the thorax pale testaceous. Abdomen black, with two white spots at the base on each side; above brown; beneath pale testaceous; the sides with two oblique white bands, each with a series of black spots. Wings spotted alternately with black and white. Legs pitchy-testaceous.

Length $1\frac{1}{2}$ lin.; wings included $2\frac{1}{3}$ lin.

Hab. in Australasia.

Obs.—This extraordinary insect was discovered by C. Darwin, Esq. whilst "sweeping in coarse grass and brushwood; King George's Sound." I have therefore named it after this gentleman, who has done so much towards the advancement of science, and to whom Entomology owes so much, since he has brought to this country an immense collection of insects from various parts of the world, and particularly of the minute species which had been comparatively neglected.

Plate XVII. Fig. 4. The insect seen sideways; 4 *a*, the same seen from above; 4 *b*, ditto, with the wings removed; 4 *c*, front of head; 4 *d*, promuscis; 4 *e*, eye and antenna; 4 *f*, wing; 4 *g* and 4 *h*, apex of tibiæ and tarsi.

Genus Cephalelus, Percheron.

This genus was characterized by M. Percheron in Guérin's *Magasin de Zoologie*, and as it was founded upon a single species, it is not remarkable that his definition is in one point too close to admit of some other species which evidently belong to the same natural group. I allude to the comparative length of the elytra: these in the species described by M. Percheron are shorter than the abdomen; he has therefore inserted this character into the definition of the genus, whereas it would appear from the circumstance of my possessing two new species in which the elytra are longer than the abdomen, it ought rather to be looked upon as a specific character.

Cephalelus marginatus.

C. pale brown. Elytra with the outer margin pale yellow, joined internally by a long blackish streak. Head much elongated anteriorly, and produced almost to a point.

Long. corp. 4—6¼ lin.

Var. β dark brown. Elytra inclining to black towards the outer margin; the margins pale testaceous.

Var. γ uniform pale brown.

Hab. King George's Sound.

Cephalelus brunneus.

C. pale brown. Head with anterior produced part rather broad and rounded.

Long. corp. 5—5½ lin.

Hab. near Sydney.

Obs.—These insects appear to vary much in size. I have examined several specimens of each of the species here described, and find that the most ready character for distinguishing them consists in the form of the anterior produced part of the head. In *C. marginatus* this portion is narrower, and consequently more pointed at the apex. In following the outline from the eye to the apex of the process, the line bends slightly inwards, so that towards the apex the two sides are nearly parallel. Then if we take a transverse section of this part of the head, we shall find the outline forms almost an oval but flatted beneath.

In *C. brunneus*, if we take the same section, we find the outline rounded above and concave beneath, nearly resembling the form of the new moon. In following the outline from the eye to the apex of the anterior portion of the head, the line is straight on each side, but converging gradually towards the apex, which part is rounded and broader than in *C. marginatus*.

Order HYMENOPTERA.

Genus THORACANTHA, Latr.

Thoracantha Latreillii. (Pl. XVII. fig. 3.)

T. atro-cærulea, antennis piceis, ad apicem testaceis, decem-articulatis; pedibus pallidè testaceis: thorace posticè producto et in duas prolationes diviso (elytra *Coleopterorum* fingentes) ad apicem abdominis extensas: capite et thorace antico sulculis notatis, his sulculis similibus segmentis cyclorum circa centrum unicum prope basin antennarum.

Long. corp. $1\frac{3}{4}$ lin.

The insect here described appears to be identical with one figured in Guérin's *Iconographie du Règne Animal*, but as there is as yet no description, it appeared desirable that so remarkable an insect should be better known; I therefore lay before the Society an outline drawing, and exhibit a specimen. It is of course described under Guérin's name, but should the *species* be distinct (for I think there can be no doubt as to the genus) I would propose the specific name of *Coleopteroides*, since this insect so remarkably resembles one of that tribe; viewed from above it resembles a species of *Mordella*. It has literally elytra or *wing-cases*, although they are not analogous to the members so called in Coleopterous insects.

From Bahia.

Plate XVII. Fig. 3. The insect seen from above; 3 *a*, ditto seen sideways; 3 *b*, front of head and thorax; 3 *d*, fore-wing; 3 *e*, antenna.

XXXVI. *Observations upon the* Chigoe, *or* Pulex Penetrans. *By* W. SELLS, Esq.

[Read 1st May, 1837.]

MOST persons who have been resident for any length of time in Jamaica, especially in the interior of the island, have experienced the attacks of this tiny tormenter, and can tell what it is to have a *Chigoe*. In the first instance of its occurrence, the newly arrived emigrant, being without previous experience, is at a loss how to account for a slight itching, or sort of tickling sensation, in one or other of his toes, and which he instinctively seeks to alleviate by rubbing the part smartly—this he repeats again and again, but alas! to no good purpose. At length, the itching increases to posi-

tive uneasiness, and then to pain; he is now induced to examine his toe, and finds it red and swelled—the part affected is most commonly near the nail. Upon careful inspection a point is visible in the cuticle where the enemy made good its lodgment; a servant is now commonly consulted, who tells him it is a *Chigoe*, and that it can easily be pulled (as the term is) either then, or in a day or two, when it will be in a better state to ensure a successful operation. The latter is effected by means of a fine needle, the point of which is used to dissect the skin back slowly and cautiously, and thus gradually expose what is called the bag, but which in reality is the enlarged abdomen of the female distended with ova, and which may be considered in some measure analogous to the pregnant female termites. The operator (who is almost always a female) then dexterously separates the bag from its slight surrounding adhesions, and turns it out whole, being of a rounded form, and in size of a small tare; the hollow (which resembles the pea-hole of an issue in miniature) is, by the white people, commonly filled with a drop or two of laudanum, and by the negroes, either with bruised green tobacco leaves, tobacco ashes, or snuff, and usually heals very quickly, without giving any further trouble; but every now and then, either from want of skill in the operator, restlessness of the patient, the inaccessible situation of the *Chigoe*, or other cause, the bag (say abdomen) is ruptured, and some of the embryo progeny are left behind; in this case considerable mischief frequently ensues, in the shape of inflammation and ulceration, and we have what the natives call, on account of its severity, '*a poison Chigoe.*'

White persons are seldom annoyed by *Chigoes*, their feet being protected by covering; but occasionally one is picked up when stepping upon the bed-room floor without stockings. As regards my personal acquaintance with them, although I may truly say of a large proportion of the evils and maladies incidental to Europeans who have been long resident in the West Indies, "dolor me facit experientiam,"—I have but little to lay to the account of the *Chigoe*, as during a twenty years' sojourn there I did not experience more than four or five attacks from it, and having an expert Chigoe-picker among my servants, the operation was always performed in good time, and never caused me any pain or inconvenience whatever. However, in the course of my medical practice, I have seen perhaps a dozen cases where white persons either from inattention, or an inflammatory habit, have suffered much for weeks together from the effects of a *Chigoe*.

The negroes, whose feet go naked, are consequently much ex-