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THE
ENTOMOLOGICAL
MAGAZINE.

VOL. III.



LONDON:
FREDERICK WESTLEY AND A. H. DAVIS,
STATIONERS'-HALL-COURT;
WAUGH & INNES, EDINBURGH; AND W. F. WAKEMAN, DUBLIN.

M DCCC XXXVI.

LONDON :
R. CLAY, PRINTER, BREAD-STREET-HILL.

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EXPLANATION OF THE PLATES.

PLATE XI.—See ART. V.

- Fig. 1. Wing of *Ensina sonchi*.
 2. Ditto *Oxyphora Westermanni*.
 3. Ditto *Terellia Serratulæ*.
 4. Ditto ditto *Alciphron*.
 5. Ditto ditto *florescentiæ*.
 6. Ditto *Forellia arnicæ*.
 7. Ditto *Orellia Wiedemanni*.
 8. Ditto *Tephritis cornuta*.
 9. Ditto ditto *lappæ*.
 10. Ditto ditto *tussilaginis*.
 11. Ditto ditto *arctii*.
 12. Ditto *Urophora cardui*.
 13. Ditto ditto *pugionata*.
 14. Ditto ditto *solstitialis*.
 15. Ditto *Aciura lychnidis*.
 16. Ditto ditto *discoidea*.
 17. Ditto *Sphenella signata*.
 18. Ditto *marginata*.
 19. Ditto *Urellia radiata*.
 20. Ditto *Acinia corniculata*.
 21. Ditto ditto *parietina*.
 22. Ditto ditto *laticauda*.
 23. Ditto ditto *heraclei*.
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 27. Ditto ditto *absinthii*.
 28. Ditto *Noeeta guttularis*.
 29. Ditto *Auomoia Goedii*.
 30. Ditto *Euleia onopordinis*.
 31. Ditto *Acidia cognata*.
 32. Ditto ditto ? *artemisiæ*.
 33. Ditto ditto ? *Zoë*.

PLATE XII.—See ART. XXIII.

- Fig. 1. *Iphitrachelus* Lar. *Mas*.
 2. *Platygaster Catillus*, *Fem*.
 3. Thorax of ditto, vertical section, scutel mucronate.
 4. *Platygaster cochleatus*, vertical section, scutel produced.
 5. Ditto *relutinus*, *Mas*, antenna.
 6. Ditto ditto *Fem*.
 7. Ditto *Tipulæ*, *Mas*.
 8. Ditto ditto *Fem*, antenna.
 9. Ditto ditto thorax, vertical section, scutel mucronate.
 10. Ditto *ruficornis*, *Mas*.
 11. Ditto ditto thorax, vertical section, scutel fasciculate.
 12. Ditto ditto trophi.
 13. Abdomen of a male *Platygaster*, beneath.
 14. Ditto female ditto.
 15. *Platygaster attenuatus*, *Fem*.
 16. *Inostenma areolata*, *Fem*.
 17. Ditto, vertical section, scutel obtuse.
 18. Ditto, antenna.
 19. Ditto, ditto *Mas*.
 20. Ditto, abdomen, ditto.
 21. *Inostenma scrutator*, *Fem*, antenna.

PLATE XIII.—See ART. XXXII.

- Fig. 1. *Telenomus brachialis*, *Fem*.
 2. Ditto *Laricis*, *Fem*.
 3. Ditto ditto *Mas*, antenna.
 4. Ditto *othus*, *Fem*.
 5. *Gryon misellus*, *Mas*.
 6. *Bæus seminulum*, *Fem*.
 7. *Teleas varicornis*, *Fem*.
 8. Ditto *claricornis*, *Fem*.
 9. Ditto ditto *Mas*, antenna.
 10. *Xenomerus Ergenna*, *Mas*.
 11. *Thoron metallicus*, *Fem*.
 12. Ditto ditto *Mas*, antenna.

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E R R A T A.

- Page 16, line 36, *for Tababus read Tabanus.*
 19, — 41, *for hough read though.*
 20, — 28, *for segmente read segmento.*
 21, — 15, *for lavigatum read lævigatum.*
 28, — 41, *for læa read alæ.*
 34, — 2, *for juceis read piceis.*
 35, — 7, *for subhylinæ read subhyalinæ.*
 37, — 3, *for conterminò read contermino.*
 44, — 1, *for Piconiger read Piceoniger.*
 49, — 21, *for paratetum read paratelum.*
 96, — 21, *for cingulata read cingulatæ.*
 157, — 23, *for Cælionys read Cælioxys.*
 176, — 17, *for Jonicus read Ionicus.*
 180, — 7, *for Zygoneuva read Zygoneura.*
 183, — 34, *for parapsides-ferè read parapsides fere.*
 207, — 15, *for Bombicydæ read Bombycidæ.*
 277, — 6, *for Portimus read Portunus.*
 290, — 24, *for King Ouzel read Ring Ouzel.*
 297, — 9, and page 298, line 4, *for Gecarcinus read Gegarcinus*
 301, — 24, *for Compte read Comte.*
 303, — 12, *for Rupfertafeln read Kupfertafeln.*
 309, — 34, *for scabiosa read Scabiosa.*
 349, — 7, *for Præcedenti read Præcedente.*
 381, — 40, *for Destoma read Distoma.*
 383, — 39, *for Ascans read Ascaris.*
 387, — 11, *for Vena read Filaria.*
 413, — 18, *for Jalla read Pentatoma.*
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THE
ENTOMOLOGICAL MAGAZINE.

APRIL, 1835.

ART. I.—*On the Series of Nature, and on the Relations of Animals. Remarks occasioned by a Review of the Preliminary Discourse on Natural History.* By WILLIAM SWAINSON, Esq.

THE Reviewers having now, in the ordinary phrase, “done their duty,” with my Preliminary Discourse, permit me, through the medium of your valuable pages, to make a few observations upon what has been said of my labours. I may safely appeal, indeed, to your present indulgence; inasmuch as the remarks which follow, in their spirit, are as applicable to the study of Entomology as to any other branch of Zoology; and may, by eliciting others from such of your readers as are versed in the details of our science, tend to advance its best interests. I should wish, moreover, to discuss the questions at issue more as matters of science, than in the ordinary style of answering reviewers. When opinions are fairly and candidly stated, in temperate and courteous language, we cannot doubt that truth is the sole object for which the writer contends; and he is, to say the least, entitled to a calm and conciliatory answer. But when, on the other hand, a reviewer sets out with a dishonest and malicious intention of misrepresenting an author, perverting his meaning, falsifying his statements, and fastening opinions upon him which he has never uttered; when, moreover, from lack of argument, he is obliged to have recourse to jesting, he evidently shows he is neither a lover of

science nor a lover of truth. The two leading scientific journals, the Literary Gazette and the Athenæum, have given us, on the present occasion, striking examples of these opposite classes of writers; and this, perhaps, is the best test of their relative merits, of the feelings of their respective editors, and the abilities of their coadjutors. The remarks which follow will be chiefly, if not exclusively, directed to the opinions expressed by the writer in the Literary Gazette; the other will be dismissed in a few words.

The chief points at issue are such as every naturalist must be deeply interested in. They are, I. The Scale of Nature, and, II. The Relations of Animals.

The first question will not detain me long, and I give it the priority, in support of my belief that the writer (evidently a good physiologist) has but a very slight, I might add, superficial acquaintance with Zoology; and that he is still less acquainted either with the labours, or the opinions, of the large majority of British naturalists. The principal objections urged against the circular theory of affinities, are, 1. That it leads to "discordance among its divers followers." 2. "To most unnatural deductions to fill up hiatus and gaps." 3. "That the general form or contour of an animal is made a primary distinction."

Now, as to the validity of these objections. 1. If discordance of opinion as to the value of a system is to condemn it, what system that has ever been invented must not, by such a test, be condemned? Let us take that of the Règne Animal, of which the writer has such an overweening opinion. It claims to be, and in many parts really is, based upon the mutual connexion of structure with habit. Why then has this system been opposed,—strenuously and successfully opposed,—*on the very same principles of arrangement*, by De Blainville, in the whole Animal Kingdom; by Illiger, in the Quadrupeds and Birds; by Lamarck, in the Invertebrata; by Temmink, Vieillot, Lesson, Latreille, Wagler, and Bonaparte, in Ornithology; and by a host of others of minor note. Here there is a "discordance of opinion" among the followers *of the principles of M. Cuvier*, far, very far greater than what we have had among the advocates of circularity. The truth is, that no system ever given to the world has received so much opposition as that of M. Cuvier; for, although his anatomical facts have

never, for a moment, been questioned by his opponents, they have all differed from him in the *inferences to be drawn from those facts*. The foregoing list substantiates this assertion in its letter and in its spirit. So that, if “discordance” among those who profess to follow the same principles, is to be urged as proof of the unsoundness of those principles, then the system of M. Cuvier is the most objectionable that was ever invented.

2. But there seems to be another strong objection to the circular theory, arising from its advocates being led to “most unnatural deductions to fill up hiatus and gaps. The circular theorists hesitating not to quote from extinct worlds; when it appears to have been an essential condition to those beings, that, in the different eras which succeeded one another, with the usual character of their family, they united the characters of types, which made their appearance at more remote periods.”

There appears to me much ambiguity and looseness in this observation. The writer speaks of extinct animals, which, nevertheless, have “the usual character of their family;” meaning, as I presume, their *recent* family. If so, the objection amounts to this,—because *some* of the types or forms of a recent family are found only in a fossil state, therefore we are to take no notice of them in our survey of existing races: we should have, in short, two systems of circles, one for the recent types, and another for the fossil types, of *the same family!* This I presume to be the writer’s meaning,—however absurd it may appear,—because he goes on to say that, “with the usual character of their family,” these extinct animals “united the characters of types which made their appearance at more remote periods.” What these still “more remote types” are, to which *extinct* animals have but a partial connexion, we are not informed. Who has seen them, or heard of them? They are clearly *in nubibus*. They must relate to imaginary animals, created *before all those* whose remains have been discovered! If this inference is not to be drawn from the passage, here fully quoted, I must confess its meaning is utterly past my comprehension. But again, if all those extinct animals which *have* been discovered show us, as the writer himself admits, the “usual character of their family,” as seen in the recent types of that family, the logical inference follows, that both belong to

one family group. I must confess, however, that to me the wording of this objection is devoid both of precision and consistency. But as it is far from my wish to pervert the Reviewer's meaning, I shall view the objection in another light; viz. as condemning the introduction, into the circular arrangement, of such forms as more especially belonged to former ages of the world. By what means, therefore, let me ask, has the writer discovered that nature pursued a new set of primary laws,^a in every age or "day" of the creation? If it could be shown that the characters of any races of the fossil quadrupeds were so anomalous as to exclude them from the great tribes or families of living examples,—that their structure set at defiance all those principles of variation with which we are now familiar,—then, indeed, we should have something like presumptive evidence to favour this writer's extraordinary cavil. But a perusal of M. Cuvier's invaluable memoirs on these animals would have satisfied the Reviewer that such anomalies did not occur. And we, "the circular theorists," can assure him we are not behind-hand in the power of assigning nearly all these animals to their legitimate station in the *one* scheme of nature. But if what I have here urged in defence of introducing fossil animals into the natural system will not satisfy the Reviewer, his own authority, M. Cuvier himself, shall cancel his objection. We beg, therefore, he will turn to the first volume of the *Règne Animal*, and he will there discover, doubtless to his no small astonishment, that the extinct genera of *Mastodon*, *Anoplotherium*, *Paleotherium*, and *Lophiodon*, are actually introduced in the natural series, and incorporated with the living species of the *Pachydermes*, as part and parcel of that order: for although, as every Zoological student knows, these genera are all fossil; yet, to use the writer's own words, "they have the usual characters of their *family*"—or rather, *order*. And, accordingly, M. Cuvier introduces them in the true series of *Pachydermata*. Here again the Reviewer, in condemning the circular theorists, condemns alike the *Règne Animal*.

The third objection against the circular theory is, that "the general form or contour of an animal is made a primary distinction;" meaning, I presume, that the *outer* structure of an

^a I speak not here of *variation of form*, but of the *principles* upon which that variation of form is regulated. — See my volume, *On the Geography and Classification of Animals*, p. 224.

animal is regarded, upon ordinary occasions, more than the *inner*. And why should it not? Is not the one, in all vertebrated animals, an index to the other? Cannot we decide as accurately,—nay, and with infinitely greater accuracy,—on the station of an animal, (its essential structure, its economy, and its habits,) from its outward form, as the anatomist can do from “the fragment of a bone?” We should be pursuing a day-dream, indeed, if this had not, and could not, be done among us, “by the hand of a master, with perfect ease;” yes, and with a precision, moreover, of which the writer seems not to have the most distant conception. Waving this, however, I beg to inquire from him, whether outward structure is not as much a branch of comparative anatomy as any other? *The study of anatomy, in short, is the study of structure*, and he who despises one part of the study despises it *in toto*. Where knowledge is to be gained by two methods, the one simple, the other difficult, I should always give the preference to that which most facilitates its acquisition. What, in short, are the bill, the wings, the tail, and the feet of birds, but so many parts of their comparative (although external) anatomy? And what other parts so powerfully and strikingly determine and modify the external form? Now these are precisely the characters which both M. Cuvier and myself have chosen as the foundation of our respective ornithological systems; but with this difference, that I have endeavoured to substantiate, by analysis, the system of this variation,^b while not the least attempt has been made to effect any such generalization in the Règne Animal. I mention this, not as depreciating that celebrated work, but as one of the many proofs that its illustrious author had neither time nor inclination to study affinities, with the object of discovering the natural series. It is no disparagement to the highest naturalist, that he is obliged, from the boundless extent of our science, to limit his chief attention to some of its parts, and comparatively to neglect others. I have more than once repeated my surprise, that M. Cuvier, occupied with his innumerable inquiries in comparative anatomy, (in itself the study of a life,) should have accomplished so much in Zoology. Nothing can detract from his splendid talents in the former department; but I must confess my belief, in the language of one who well knew his

^b Northern Zoology, Vol. II. The Birds.

powers, that "perhaps no man living has made so little use of his knowledge to construct a natural arrangement."

I had almost passed over another objection, not indeed stated in precise language, but which seems to be urged against us, for laying any stress on the "unusual development of any particular part of the body, as an excessive tail," &c.; for, it is argued, where this development occurs it is not accompanied by a similarity of functions, therefore the character is subordinate or useless. Here the writer seems to be unconscious, that in thus censuring me, he is also condemning M. Cuvier, Geoffroy St. Hilaire, and all the princes of our science. I must, therefore, again entreat he will turn to the Règne Animal, where he will find that M. Cuvier separates the genus *Inuus* from that of *Macacus*, because the latter have tails, and the former none. M. Geoffroy distinguishes *Pithecia* from *Mycetes*, because the tail of one is short, and of the other long and prehensile. *Cebus* again is separated from *Mycetes*, because its long prehensile tail is covered with hair. And as a sixth example, in the very same family, *Callithrix* is detached from *Cebus*, because its long hairy tail is not prehensile! Now it so happens, that all these instances of primary generic characters, drawn from the structure of the tail, occur in a single group of the Règne Animal. If then I have erred upon this point, it is some consolation that the censure of the Reviewer is equally shared between me and M. Cuvier. In selecting this as a subject for condemning the "circular theorists," the critic has been peculiarly unfortunate.

I have ventured to express a belief that the writer is but very slightly acquainted with Zoology, and that he is equally so as to the sentiments of our most leading naturalists. To defend the circular theory, is really now become, as I am afraid your readers will think, a work of supererogation; seeing that all those who, by their writings, stand in the foremost ranks of our native science, have, either directly or indirectly, by advocating or adopting this brilliant discovery of our illustrious countryman, rendered all further defence of this prime article of our creed, *on the score of authority*, quite unnecessary. When we look to the names of MacLeay, Horsfield, Gray, Professor Lindley, Vigors, Stephens, Sir W. Jardine, Selby, Bell, Newman, and Westwood; not to mention such illustrious men as Fries, Agardh, Nees Von Essenbeck, and Isidore

Geoffroy St. Hilaire upon the Continent, our list comprises nearly all the most distinguished naturalists now living. We differ, indeed, among ourselves, as to numerical divisions; but the grand principle being unanimously admitted, *that no group is natural whose affinities are not circular*, will soon bring about a harmony of agreement in the details.

But the time is gone by when even names, illustrious as they may be, can outweigh logical deductions from undisputed facts. If every one, therefore, of the above distinguished Zoologists and Botanists, was to read his recantation, and yet was unable to substitute any other theory, explaining and illustrating the facts of nature as fully as *this* does, their secession would have no influence whatever upon the philosophic naturalist, who will ever give the preference to that system, whatever it may be, which establishes the *greatest uniformity of principle* in the variation and construction of animals. After all, the value of a system is best seen in its details, in its *workings*, and by its realizing our ordinary conceptions on the affinities of nature. It is not abstract theories, however learnedly promulgated or defended, which will ever persuade us that the following is the natural series of animals, although it is so stated in the Règne Animal. Nowhere, as Mr. MacLeay truly observes, “do we find inconsistencies so conspicuous as in this series, which is that nevertheless of the most learned comparative anatomist in existence.”^c

Cats.	Elephant.
Seals.	Pig.
Opossums.	Horse.
Mice.	Camel.
Hares.	Antelope.
Sloths.	Sea-Cow, (<i>Manatus</i>).
Armadillos.	Whales.
Ducks-bill, (<i>Ornithorhynchus</i> .)	Eagles, &c.

Why will the Reviewer, and similar devotees to the Règne Animal, provoke such comparisons from those who rejoice to honour M. Cuvier in his proper sphere?

We now come to the second point of discussion, no less important and interesting than the last, viz. the *resemblances of animals*.

^c See Horæ Entom., p. 271.

With such a very limited knowledge of Zoology as our critic, from what has been said, would seem to possess, I am rather surprised that he should attempt to grapple with questions of the most difficult and abstruse nature; questions, upon which the experience of near thirty years barely enables me, with doubt and difficulty, to venture. Such scruples, however, do not appear in the following *new* definitions of the various resemblances of animals, as thus given and prefaced by our Reviewer. "When Zoology became a philosophic study, the connexion having been traced between form and function, two elements of scientific classification were admitted: but every casual observer may also detect, in the animal kingdom, the repetition, as it were, of certain organs in creatures removed by the other features of their structure far from one another;"—then the Reviewer quotes *my* examples, (without acknowledgment,) as if they were facts, brought forward by *himself*, of analogies. We then have the definitions. "Taking the three terms, *Affinity*, *Analogy*, and *Resemblance*, in the definitions which should belong to them in natural history," our writer defines them in the following words:—

1. "By *affinity*, we would understand functional relation, or a similarity of structure, in which a similarity of function or of habit is implied.

2. "By *analogy*, we would express a repetition of similar structures, where the whole of the functions or habits entailed by that structure are not present; and,

3. "By *resemblance*, we would signify a repetition of structure where function is not implied at all."

To each of these I must call the reader's attention. Definitions are dangerous experiments, and require that every word should be weighed before it is committed to paper.

1. If, as it is urged, affinity can only be applied to two animals having "a similarity of structure, and a similarity of function or of habit," there are very few affinities in the animal world. For, let us only see how this law would act in practice. By this rule there would be no affinity between the Orang-Otang (*Simia satyris*, L.), and the Chimpanzee (*Troglodytes niger*, Geoff.); the former has the facial angle 65, and is destitute of superciliary ridges; the latter has a facial angle of 50, and possesses these ridges: there is not then "a similarity of

structure ;" therefore, according to this law, there is no affinity, as insisted upon by M. Cuvier, between them. These two genera again, according to this rule, can have no affinity with the long-armed Apes or Gibbons (*Hylobates*, Illiger), because they differ from the former both in structure and in habits; the buttocks of the Gibbons are callous, while those of the Orangs are hairy; and yet all Zoologists have placed these animals immediately following each other.

But let us test the truth of this proposition in our own branch, Entomology: the *Gonepteryx Rhamni*, Leach, has no "similarity of structure or of habit" with *Eurymus Edusa*, Sw.; therefore, according to the above canon, they have no affinity with each other. For the same reason, we must be wrong in supposing *Pontia cardamines* is related by affinity to *P. napi*, for their structures are different. But not to multiply further instances, we must be quite wrong in supposing that any one genus can have an affinity with another genus; because, as no two genera are "similar in structure," by "which a similarity of function or of habit is implied;" so we must, by following the above rule, confine "affinities" to species, and to those species only, where the structures, functions, and habits, are perfectly similar.

2. Next as to *analogy*. By this term, our writer "would express a repetition of similar structure, where the whole of the functions or habits entailed by that structure are not present."

What is this, but to say, in other words, that an animal may have a peculiar structure, and yet be unable to exercise those functions and habits which this very structure implies?—It would be like two wood-peckers, having a "repetition of a similar structure"—that is, a wedge-shaped bill, stiff tail, and scansorial feet—the one able to use these endowments, the other denied this power! Is there any such woodpecker known to exist? Does any such instance of contradiction occur in the feathered creation? or can the writer point out one solitary example of such an anomaly in the whole animal kingdom? I feel confident he never could have thought upon his own words, for they directly and palpably assert, that there are animals who have been endowed by the Creator with a peculiar structure, and yet have been denied the power of performing the functions and habits thereunto belonging. Now, if such an animal is an instance of *analogy*, and is not to be found in

the creation, it follows that *analogy*, as defined by our author, no where exists.

3. *Resemblance*, with naturalists, is usually considered as too comprehensive a term to express similitudes; and therefore we divide resemblances into two distinct sorts, viz. that of analogy and affinity, only using the general or generic term, when we are unable, from a deficiency of analysis, to decide upon its specific nature in the case before us. Our critic, however, is of a different opinion, and thinks that it deserves a separate definition. Resemblance he defines as “a repetition of structure, when function is not implied at all.”

Now, if this definition be correct, it is a complete denial of what he previously says,—that “Zoology, as a philosophic study, consists in tracing the *connexion between form and function*,” and again in the following paragraph:—Zoology is “a science of structure and of function, and a philosophy founded on the use of parts and the habits of animals; as such, it cannot retrograde.” This is most true, but the assertions in the above definition would imply that structure and function are quite independent of each other; and that one may exist, and in the same individual too, without the other; consequently, that there is no solid basis even for his own definition of the “Philosophy of Zoology.” If, in cases of *resemblance*, which are innumerable, there is *no* connexion between structure and function, how can they be traced? and what becomes of the philosophy of our science? This definition, in short, reiterates the last, in asserting that nature presents the most outrageous anomalies:—it maintains that two animals may have a “similarity of structure,” yet that one of them may not have a single function or habit of the other.

Our author has refrained from bringing forward any facts or examples in support of his first and second propositions, but he quotes those I have given as instances of *analogy*, and he calls them *resemblances*; as proofs, in short, where the structure is unaccompanied by its corresponding function. But upon what authority does he assert this? His, or rather *my* instances of analogy, (p. 254,) are the “Tragopan Pheasant of India, the Horned Screamer of America, and the Unicorn Chatterer of Brazil,” all which have horn-shaped protuberances on their heads. But what does the critic, any more than myself, know of the *functions* of these organs? If he, or any one else, can enlighten us upon these points, science will be truly benefited;

but, labouring under this ignorance, are we to say that these peculiarities have no connexion with the habits of the birds? Every thing we know of nature opposes the extravagant idea. Besides, it so happens, that upon *one* of these birds our critic is completely wrong, when he gives it as an instance of "a repetition of structure, when function is not implied at all." The horned screamer of Brazil has a real (spur-shaped) horn upon its front, which is used as a defence, precisely as much as are the horns of the bull or of the antelope. It is *not*, therefore, an instance of what our author calls *resemblance*, because the structure is accompanied by the function. I have instanced this bird as an example of analogy between the genus *Pala-media* and the tribe of *Ruminantia*: both have horns used for the same purposes,—so far there is a *resemblance*; but the one is a bird, and the others are quadrupeds, and this makes the resemblance to be one of *analogy*. In like manner, the horned and bulky *Dynastidæ* are analogous, as Mr. Kirby truly observes, to the same order of quadrupeds, and, consequently, to the same genus of birds. For myself, I know not of one animal in creation which will come under the author's definition, either of *analogy* or *resemblance*.

I think the Reviewer, or at least your readers, will admit I have now given to each of these definitions every attention; without any attempt, knowingly, to pervert the meaning their words would seem to convey. That the novel views contained in the Preliminary Discourse, no less than the undisguised opinions therein contained, would excite dissent and censure, was naturally to be expected; but when dissent is courteously expressed, I am not only willing, but anxious, to excite discussion; for even if I am throughout in error, much good will eventually result by such errors being detected. Posterity will judge whether I am in a day dream; and whether my Reviewer's concluding sentence upon my labours, that "they will not do honour to the progress of Zoological science in this country," is founded on an incapacity for comprehending them, or in immutable truth.

One concluding sentence. Knowing pretty well the sentiments of our leading naturalists, either personally or by their writings, I have naturally been anxious to surmise which of them could be the advocate of such singular opinions. Now there is only *one* among us who adopts, or who advocates, the Binary or Dichotomous system,—who excludes fossil from

living animals, — who has set himself in opposition to the geological views of *Cuvier*, *Buckland*, and *Conybeare*, — who has criticised *Leach*, *MacLeay*, *Samouelle*; and, on a former occasion, myself. And when, moreover, I trace in your pages, under the signature of D. D., the eccentric opinions contained in the “Philosophy of Zoology,” and the “History of British Animals,” I feel persuaded that all these are but diversified productions of *one pen*. The Dichotomous system, some how or other, is always brought in, as in the present case; for the Reviewer says, “we shall come to the Dichotomous system, which *must be true*, for by the affinities of two beings, the links in the chain of creation are moulded.” True it is that affinities are so marked, but we have seen that these links, which *must* differ in structure, are not what the writer defines to be *affinities*; and that, consequently, if he is correct, there is no chain of creation.

I have alluded to my suspicions as to the author of this review, that our younger students should not be alarmed by perceiving, under a variety of anonymous shapes and signatures, so much stress laid upon “the Dichotomous system;” and thus be frightened from adopting, or examining, any other. I may be wrong in this supposition, but it is strengthened by so many collateral circumstances, that nothing but a public denial on the part of Dr. Fleming will remove this impression. If this is given, I will cheerfully and sincerely acknowledge I have done him temporary injustice; — but his silence must be looked upon as an affirmative.

P. S. — I have neither time nor inclination to notice *the authors* of the other review: its falsehood is best refuted by the volume itself.

January 20, 1835.

W. S.

ART. II. — *A few Words on the Transformation of Insects.*
By EDWARD NEWMAN. *Read at the Linnæan Society,*
April 1, 1834.^a

“In nova fert animus mutatas dicere formas.”

THE metamorphosis of insects has, in all ages, attracted admiration. What can be more wonderful than that an

^a In order to account for the appearance of this article in the Entomological Magazine, after its having been read at the Linnæan Society, it seems necessary

unsightly and voracious worm should pass through a shrouded and death-like sleep, and wake at last a glorious butterfly, to bask in sun-shine, bathe in realms of liquid air, and quaff the heaven-distilled nectar of beauteous flowers! Well might such a miracle be made a poet's theme! Well might those philosophers, on whose minds there dawned, albeit dimly, the great truth of an after life;—well might they imagine their toilsome existence typified in the caterpillar, their descent to the quiet grave in the tomb-like repose of the chrysalis, and the hereafter they sighed for, in the spirit-like resurrection of the happy butterfly;—and, seizing with avidity the idea, well might they designate these aërial creatures by the name of “souls.”

Wonderful indeed is this transformation from one form to another, and wonderful it ever must remain; yet science has offered us an explanation, which, while it fills us with admiration, strips the subject of that paradoxical seeming which led some of our predecessors to suppose that one animal was actually converted into another; science has shown us that the butterfly pre-exists not only in the chrysalis but in the crawling caterpillar.

It is a very general and a very convenient opinion, that an insect is a being having a quadruple existence; that at birth it is an egg; which hatching produces a larva or caterpillar; this becomes a pupa, and finally an imago; from the imago eggs again proceed, and thus the round of existence is complete. This is confessedly a convenient idea, but the possibility of its application is so partial, that definitions drawn from it must be incomplete,—methods founded on it wholly artificial.

When an organized being first exists, it does not, as far as human observation has reached, bear any resemblance to its parent. When an organized being has reached perfection, it precisely resembles its parent. The degrees or steps by which a being mounts to this perfection and similarity to its parent, constitute that which in an insect is termed metamorphosis.

In every organized being there is a tendency in every part of its substance to become unfitted for its functions, and therefore useless. There is in every organized being a tendency to

throw off, discard, or get rid of all parts of its substance which have become useless. Finally, there is a tendency to form or create fresh portions of substance, to supply the place and perform the functions of those portions thus thrown off. In this three-fold disposition is to be found a solution of all those mysterious changes we behold in animals and vegetables. Generally this change of substance is most readily detected in the exterior covering; but in man, the most perfect animal, the only undeniable proof of it is to be found internally even in the bones. Numberless experiments prove that the substance of bones is continually undergoing change; portions are constantly being absorbed, other portions as continually secreted. By these processes certain portions of matter escape to fulfil other ends, while other portions of matter, introduced as nutriment into the stomach or lungs, are mixed with the blood, and rush to supply the place of that abstracted. Matter cannot perish; each created article must endure for ever. Neither is matter afresh created. The mass of matter remains unalterably the same; but to this disposition of matter to change its relative position, thus operating in the substance of organized beings, are to be attributed the shedding of hair in quadrupeds, the moulting of birds, the sloughing of snakes, the extraordinary changes of Amphibia, and the metamorphosis of Insects.

It has just been observed that the bones of man bear more ample testimony to this constant tendency to exchange of substance, than any of his less solid parts; the same may perhaps be said of all vertebrates, although some of them testify it so abundantly in other ways. Now the skeleton, or external covering of annulates, performs, in a great degree, the same part in the animal functions as the skeleton of the vertebrates; the two are not identical but analogous,—they are substitutes for each other.

In all Condylpodes this tendency to exchange of substance induces a full, complete, and often repeated ecdysis, or change of skin. We find the crab and the butterfly undergoing this ecdysis in an equal degree, both as to extent and number of times, but with how different a result!—the crab remains a crab, but it is a crawling grub becomes a butterfly!

Condylpodes divide into four great groups, three of which are again subdivisible into two each. The easiest and most

convenient character for the primary division of annulates is the number of legs.

HEXAPODA have, in their final state, six articulated legs. They have no power to reproduce a leg, if accidentally lost. Two distinct tribes are included in this group:—

TRIBE I.—TETRAPTERA, or *winged insects*.

II.—APTERA, or *wingless insects*.

OCTOPODA have, in all their states, eight articulated legs. They have power to reproduce a leg, if accidentally lost. Two distinct tribes are included in this group:—

TRIBE III.—ARACHNOIDA, or *spiders*.

IV.—ACAROIDA, or *acari*.

ANISOPODA have, in all their states, the number of the legs varying from that of the *Octopoda* to that of the *Myriapoda*. They have power to reproduce a leg, if accidentally lost. Two distinct tribes are included in this group:—

TRIBE V.—MALACOSTRACA, or *crabs, lobsters*, and similar shell-fish, with simple legs.

VI.—ENTOMOSTRACA, *aquatic animals*, somewhat similar, but having legs with branchial appendages.

MYRIAPODA have an indefinite number of legs in their final state; generally more than twenty, but only six in their first state. They have the power to reproduce a leg, if accidentally lost. One tribe only is included in this group:—

TRIBE VII.—MYRIAPODA, or *centipedes*.

Of these seven tribes, the *Tetraptera* offer the most obvious characters in their metamorphosis for farther subdivision. It may be remarked as a singular fact, without applying it to any theory, that the perfect *Aptera* frequently represent the imperfect *Myriapoda*, likewise the perfect *Myriapoda* represent the imperfect *Tetraptera*. The *Tetraptera*, like the *Condylopoda*, constitute four perfectly distinct groups, three of which are, in like manner, double groups, and the fourth is most heterogeneous in its contents, but from carrying the organs of sense, &c. to greater perfection, superior to the others.

AMORPHA, in which the penultimate state is provided neither with mouth nor organs of locomotion; consequently it neither eats nor moves, neither does it bear any resemblance to the perfect state. This group contains:—

CLASS I.—LEPIDOPTERA.

II.—DIPTERA.

NECROMORPHA, in which the penultimate state is provided with mouth and organs of locomotion, detached from the body, but so enveloped in a case that it can employ neither. The resemblance, therefore, to the perfect insect is very considerable, excepting in the total want of motion. This group contains:—

CLASS III.—HYMENOPTERA.

IV.—COLEOPTERA.

ISOMORPHA, in which all the stages are active and voracious, and of similar form. This group contains:—

CLASS V.—ORTHOPTERA.

VI.—HEMIPTERA.

ANISOMORPHA, in which appears the Amorphous, Necromorphous, and Isomorphous characters, together with a typical and distinct character. This group is equivalent to:—

CLASS VII.—NEUROPTERA.

The Amorphous insects are divisible into two distinct groups; one of which is by far more decidedly and essentially amorphous than the other; and, strange as the assertion may appear, the possession of this character in the extreme is nothing more than an approach to the Necromorphous group, which does not in any degree possess the character. The two groups of Amorphous insects are not limited to the classes *Lepidoptera* and *Diptera*, but are separated by the fact of their possessing, in the penultimate or quiescent state, the last skin of the ante-penultimate, or previous state; thus,

1. AMORPHA ADERMATA, which do not retain the skin of the previous state on entering the quiescent state; which possess a slight power of *motion*, but not of *locomotion*; which exhibit the site of the wings, legs, antennæ, eyes, &c. *Papilio*, Lin.; *Sphinx*, Lin.; *Phalæna*, Lin.; *Tipula*, *Tabanus*, *Asilus*, *Bombilius*, &c., are the leading groups of *Amorpha Adermata*. *Culex* has a

locomotive pupa, and forms, therefore, an aberrant order of this section.

2. *AMORPHA DERMATA*, which, on assuming the quiescent state, retain the last cuticle of the previous state, which do not exhibit the least trace of the site of the wings, legs, antennæ, or eyes. The sections contain the great orders, for which the genera, *Syrphus*, *Æstrus*, *Musca*, &c. serve as types.

The insects of the last section, possessing, as they certainly do, the extreme character of the *Amorpha*, nevertheless, as has previously been stated, testify a very evident approach to the neighbouring *Necromorpha*; for, when the skull or covering of the quiescent insect is broken, a perfectly Necromorphous form is disclosed; and thus, though nothing could appear more different than the exterior appearance of the two, yet this examination proves that the real difference exists only in the circumstance that one group retains the covering of the previous state longer than the other group. If we select two well-known insects, the flesh-fly (*Musca vomitoria*), and the honey-bee (*Apis mellifica*), we shall find little or no difficulty in tracing the similarity. The grubs or maggots from which these insects proceed are not dissimilar; but the grub of the fly merely ceases to feed, becomes quiescent, and hardens externally, while that of the bee ceases to eat, is walled in its cell by the workers, lines its cell with silk, casts its covering, and becomes quiescent, every limb being distinct, detached, and perfect, but enveloped in a delicately soft and smooth skin, and perfectly motionless. This is the true Necromorphous character. Now the fly, on the contrary, is Amorphous; but if a few days before the perfect insect appears, the hard and apparently inorganic case which covers it is gently opened, we find within a form precisely resembling the Necromorphous form of the bee just described:—thus it appears clear that the so-called pupæ of the bee and the fly are neither substantially nor numerically the same state. Every ecdysis is certainly a transformation; and therefore, calling the imago, as it certainly is, the ultimate state, then the so-called pupa of the bee is the penultimate; and the so-called pupa of the fly the antepenultimate. The difference is thus explained:—the fly, on assuming the perfect state, casts two skins, the bee only one.

In turning to the other section of the *Amorpha*, the *Amorpha Adermata*, the butterflies, moths, and gnats, we find, on examining them in the quiescent state, abundant evidence that we have before us not only organized but animated beings; in these, the grubs, before becoming quiescent, cast their covering in the same manner as the bee; but still unlike that insect, retain two distinct coverings, thus resembling the *Amorpha Dermata*. Both these coverings are cast at the same time; the interior, fine, semi-transparent, and delicately soft, must have been observed by all who have paid any attention to the rearing of *Lepidoptera*. Now the whole of the *Necromorpha*, as far as has yet been ascertained, finally undergo a *single*, and the whole of the *Amorpha*, on the other hand, a *double* ecdysis.

The *Isomorpha*, of which the common cricket is an excellent example, have no quiescent state; neither can we find that they possess any state precisely equivalent to that portion of the lives of the two great groups which we have been comparing. Their whole existence between the egg and the imago, consists of a gradual series of approaches to perfection, and during this interval, copulation certainly, and not improbably reproduction, often takes place. No character is yet known by which the penultimate, antepenultimate, and prior states can be determined.

In the heterogeneous group, *Anisomorpha*, a group in metamorphosis, as in all other characters, equally related to the other three, we find a typical and distinct section in the dragon-flies (*Libellula*, Lin.) These, like the *Isomorpha*, have no quiescent state: their preparatory state is aquatic, active and voracious: when arrived at the period for assuming the imago, they leave the water, and fixing their feet firmly to a slender stick or blade of grass, emerge from a double skin, and fly away. The exterior skin is hard, corneous, and brittle; the interior, soft, fine, and pliable. Even the magnificent wings leave behind them a covering, which, unfolded with great care, will be found to retain an impression of their complicated meshes. The May-fly (*Ephemera*), one of the Anisomorphous insects, has a metamorphosis still more striking, and one that has been deemed anomalous and unaccountable. In the antepenultimate skin it leaves the water, and attaches itself by the legs like the dragon-fly. Its antepenultimate skin then opens

on the back; the insect emerges and flies away, leaving that one skin only: that beautifully delicate skin which the dragon-fly quits simultaneously with the harder one, being still retained by the May-fly. Here then we have the strange fact of an insect's flying before it reaches the imago; that is, flying in its penultimate state. In twenty or thirty minutes at the farthest it settles again, casts its skin, and becomes a perfect imago.

It thus appears, that, although until the final ecdysis, no insect arrives at perfection; yet before that period, even in the state immediately preceding, it may feed, run, and even fly; or may swim, crawl, barely move, or be without motion, without apparent life, or without apparent organization. It appears that the apparently lifeless or quiescent state may be entered without ecdysis; that ecdysis itself may be either single or double; that the states called pupa, in various tribes, are neither substantially nor numerically the same. That comparing those few insects herein noticed, the fly, the bee, the cricket, the dragon-fly, and the May-fly, all of which represent great orders, we shall find it perfectly impossible to apply, if we aim at precision, any other than a numerical denomination to their intermediate states; and finally, therefore, that insects, like higher animals, have but three eras of existence, the fœtal, the adolescent, and the adult.

As to the number of times ecdysis takes place in the life of an insect, little can be said at present, owing to the carelessness and imperfection of our researches; and on this account it will be found safer to count downwards from the imago, than upwards from the eggs. Although the contrary has been asserted, and perhaps generally believed, it yet remains to be proved that the grubs of *Diptera* and aculeate *Hymenoptera*, undergo any ecdysis until full grown. The order *Tenthredinites*, on the contrary, and the *Lepidoptera*, change very frequently, with some exceptions; for example, the caterpillar of the great *Sphinx Ligustri* sheds its skin but once.

These various facts, so simple, so obvious, so plain, so completely within the reach of the most cursory observer, proclaim that each variation in the number or manner of ecdysis is but another mode of metamorphosis; proclaim that metamorphosis, though in annulates, a complete and oft-repeated ecdysis, is but

another instance of that constant loss and reparation of substance which is incident to all organized beings; proclaim the existence of a general uniformity of plan, with which the widest differences, the greatest discrepancies, are not only compatible, but are essential to perfect harmony, are the surest and safest guides to natural arrangement, and serve, like the key-stones of arches, to unite objects before devoid of continuity; proclaim finally the greatness of Him whose will shapes the whole into perfection.

ART. III.—*Essay on Parasitic Hymenoptera.*

By A. H. HALIDAY, M. A.

(Continued from Vol. II., page 468).

Of the Ichneumonones Adsciti.

GEN. VI. LEIOPHRON. (*Appendix.*)

Subgen. I.—PYGOSTOLUS^a.

Palpi labiales 4-articulati, articulo penultimo minutissimo: abdomen subsessile; segmento 1^{mo}. perbrevis; ano verticaliter fisso: aculeus linearis deflexus: alarum anticarum areola radialis apicem alæ attingens; antica disci remota.

Leiophron (*partim*) *N. ab Ess. Act. Acad.* IX. 303.

Gen. VI.

————— *Monogr.* 43. Gen. VII.

†Sp. 1. *L. P. falcatus*. Fem. *Testaceus, macula verticis, metathorace, abdominis basi et alarum stigmatibus fuscis.*
(Long. vix. 2 lin.)

Leiophron falcatus. *N. ab Ess. Monogr.* 44. Sp. 1.

Ab *L. stictico* differre videtur statura plus duplo minore, alarum stigmatibus fusco, segmento 1^{mo}. abdominis ante tubercula nonnihil producto: siletur etiam punctum fuscum marginis antici thoracis: reliqua ad amussim conveniunt.

Habitat Germaniam.

Adnot.—*Leiophron clavipes* *N. ab Ess. Monogr.* 45. Sp. 2, nobis pariter invisus ad proprium subgenus relegandus videtur.

^a *Pygostolus*, a πυξ et στελλω, propter fissuram ani.

Subgen. II.—ANCYLUS.^b

Palpi labiales 3-articulati: mesothoracis scutum bisulcum: abdomen subsessile ano incurvato: aculeus incurvatus, brevissimus: alarum anticarum areola radialis apicem alæ fere attingens; antica disci contigua.

Leiophron (*partim*), *N. ab Ess. l. l.*

Sp. 5. L. A. ater.

* Leiophron ater. . . *N. ab Ess. Monogr. 46. Sp. 3.*

————— excrucians *Hal. Ent. Mag. II. 461. Sp. 4.*

“*Mas.*—Feminæ simillimus abdomine angustiore; antennis longioribus 25-articulatis” (*i. e.* radícula in numerum computata?)

“*demto pedicello totis nigris.*”

“*Habitat Germaniam.*”

Subgen. III.—CENTISTES.^c

Palpi labiales 3-articulati: mesothoracis scutum lavigatum: abdomen subsessile segmento 1^{mo}. longiusculo obconico: aculeus deflexus subulatus: alarum anticarum areola radialis apicem alæ fere attingens; antica disci contigua.

Subgen. IV.—LEIOPHRON.

Palpi labiales 3-articulati: abdomen plerunque petiolatum; aculeus reconditus: alarum anticarum areola radialis ab apice alæ remota, perbrevis, semilunata; stigma latissimum.

Perilitus, Sectio I. (*partim*). *N. ab Ess. Act. Acad. IX. 302.*

————— *Monogr. 29.*

Adnot.—Periliti dichori ab his differunt præcipue alarum stigmatem minore, areola radiali ampliore, metathorace brevi subtruncato, segmento 1^{mo}. arcuato, condylo^d et petiolo magis discretis; *feminæ* præterea aculeo lineari exerto: sunt tamen proximi, etsi generice separandi ob discrimen electum palporum, cujus fidem minuit inconstantia quam inter illos animadvertemus.

^b *Anchylus*, Ἀγκυλος, incurvus, propter aculeum incurvatum.

^c *Centistes*, a Κεντιζω, aculeo pungo, propter aculeum subulatum.

^d *Condylos*, *i. e.* Segmenti 1^{mi}. regio inter tuberculas et apicem quæ Gravenhorstio audit pars antica, sono ambiguo et ab usu communi nimis abhorrente.

Genus IV^{um}. *Agathis* et V^{um}. *Bracon*, calidioris cœli alumni, pauculas tantum species nostratia frigora immittunt, quasi exploratum: mox erunt et hæ nobis breviter lustrandæ: interea subgenerum indicia iterum edimus hoc schemate.

GEN. IV. AGATHIS.

Os	{	breve	I. MICRODUS.	
				Ex. <i>Bassus calculator</i> , Panzer.
		rostriforme	II. AGATHIS.	
				Ex. <i>Ag. malvacearum</i> , Latr.

GEN. V. BRACON.

<i>Alarum posticarum</i> <i>areola brachialis</i> <i>posterior</i> ,	{	minuta	I. BRACON.	
				Ex. <i>Br. denigrator</i> , Fabr.
		magna	II. CYANOPTERUS.*	
				Ex. <i>Br. flavator</i> , Fabr.

Adnot.—Genera *Stephanus* (*Jurine Hym. Ord. II. Gen. IV.*) et *Plancus* (*Curtis. Ent. Mag. I. 188. Gen. DXLVIII.*), qui Neesio ab Ess. *Hybrizon* audit (*Monogr. 27. Gen. V.*), ambo ni fallor referenda sunt in *Evaniadas*. Illa vero claudunt seriem *Ichneumonidum Braconoideorum*, N. ab Ess. Etenim *Cælinius*, *Spathius*, *Perilitus*, *Hormius*, *Blacus*, (*Ichneutes* etiam, si conjecturæ fidis) palpis 6-articulatis gaudent, insequitur protenus sectio altera,

Ichneumonidæ; *areolâ disci exteriore nullâ completâ in alis anticis*; *abdomine haud penitus incurvatili*; *palpis maxillaribus 6-articulatis*.

Ichneumonides Adsciti Linea II. s. Bassi. *N. ab Ess. Berl. Mag. VI. 200.*

————— *Act. Acad. IX. 306.*

————— *Alysioides. N. ab Ess. Monogr. 197.*

* ————— *Fam. III. Spinola Ins. Lig. II. 86.*

————— II. . . *Latreille Fam. Nat. Dict. Nouv. d'Hist. Nat.*

————— III^{me}. coupe. *Latr. Règne Animal. Nouv. Ed. IV.*

Alysiidæ *Stephens's Syst. Cat. 355.*

Animadvertendum vero dispositionem Generum per Familias et Sectiones l. s. l. exhibitam a Methodi legibus declinare sæpius.

* *Cyanopterus*, *Κυανέα πτερά*, propter alas coloratas.

GEN. VII. PERILITUS.

Palpi maxillares 6-, labiales 3-variis 2-articulati: caput transversum; occiput marginatum: mandibulæ forcipatæ: alarum anticarum areola disci antica parum remota, vel incompleta; posticarum areola brachialis posterior anteriore parum brevior, nervus recurrens exterior nullus: abdomen petiolatum; aculeus linearis exertus.

*Perilitus . . . *N. ab Ess. Act. Acad. IX. 302. Gen. V.*

———— . . . ————— *Monogr. 29. Gen. VI.*

Zele (partim). Curtis, Br. Ent. 415.

Caput oblatum, thoracis latitudine; occiput marginatum, parum concavum: oculi pilis raris, reectis, subtilissimis consiti, s. subglabri: ocelli in triangulum: clypeus fere semicircularis, ab epistomate lineâ impressâ, utrinque foveolatâ, discretus: mandibulæ cuneatæ, curvatæ, apice bidentes, forcipatæ, cum labro os antice claudentes, labrum breve, transversum, margine rotundatum: epipharyngis ligula apicalis attenuata, prostans: maxillæ lobus membranaceus obtusus: palpi maxillares 6-articulati, articulo 1^{mo}. brevi: labii lobus integer obtusus: palpi labiales 3-articulati vel bi-articulati: antennæ graciles, longitudine et articulorum numero variis: thorax oblongus, convexus; mesothoracis scutum sulculis ordinariis impressum, in ultima specie lævigatum: abdomen ovatum aut lanceolatum, feminis apice compressum; segmentum primum elongatum, prope medium tuberculatum, basi attenuatum petiolatum; secundum magnum, sequentia decrescentia: aculeus linearis exertus: pedes graciles: alarum anticarum areola disci antica parum remota, vel cum cubitali-interiore confluens; brachialis-posterior anteriorem parum superans; stigma distinctum; posticarum areola brachialis-posterior ampla, anteriore parum brevior, nervo recurrente apicis recto; nervus recurrens exterior nullus.

Staturâ et coloribus referunt hi quodammodo *Exetastes* et *Mesochoros* inter *Ichneumonidas Genuinas*. Quoad cætera vero Genus videtur optime definitum: abdomen vere petiolatum est, accedens in structuram qualem denique in *Ichneumone* et *Crypto* absolutam vidimus. Ex *Ichneumonidis Adscitis* vix ulli alii cum his confundi queunt, præter *Leiophrontes* e Subgenere 4^{to}. de quibus jam dictum est. *Helcontes* pauci (Subg. *Zele*) abdomine subfalcato et staturâ totâ *Perilitos* quasi simulantes, alarum et petioli ratione habita distingui poterunt; illis etenim areola disci antica costæ contigua est, et segmentum primum attenuatum

equidem at nullo modo petiolatum, quum tubercula ejusdem ad ipsam basin sita sint. *Periliti* vero siqui propter areolam fere contiguam ad illos accedant, tamen petioli formam Generi propriam retinent. *Blaci* (e Subg. *Ganychoro*) capitis formâ et alis statim agnoscendi sunt.

SUBGENERA.

Alarum anticarum areolæ cubitales { tres I. METEORUS.
duæ II. PERILITUS.

Subgen. I.—METEORUS.^f

Alarum anticarum areolæ cubitales tres, 2^{da}. parva; radialis apicem alæ fere attingens: abdominis segmentum primum sensim dilatatum.

*Bracon, Fam. II. Genuini. *N. ab Ess. Berl. Mag. V. 21.*
Perilitus, Sectio II. . . ———— *Act. Acad. IX. 302.*
————— . . ———— *Monogr. 33.*

Palpi maxillares elongati vel mediocres; articulus 1^{mus}. brevissimus, 2^{dus}. illo parum longior, 3^{tius}. longior et crassior cultratus, reliqui lineares e quibus 6^{tus}. 4^{to}. brevior, 5^{to}. vero plerunque longior est. Palpi labiales 3-articulati; articuli longitudine subæquales, 1^{mus}. obconicus, 2^{dus}. crassior obovatus, 3^{tius}. basi sensim attenuatus.^g

SECTIO A.

Alarum posticarum areolæ radiales 2, mox confusæ; anticarum cubitalis 2^{da}. subquadrata.

N. B. Nervus recurrens ante apicem areolæ cubitalis 1^{ma}. insertus in plurimis: alarum posticarum area radialis a brachiali perparum remota, uti etiam in specie 5^{ta}. et 6^{ta}., in sequentibus manifestius remota.

Sp. 1. P. M. albitarsis. Fem. *Rufo-testaceus, tarsis posticis albidis; aculeo brevi.* (Long. corp 4½; alar. 9 lin.)

Perilitus albitarsis . *N. ab Ess. Monogr. 34. Sp. 7.*

Fem.—Rufo-testaceus: oculi virides, maximi: epistoma angustum: mandibulæ apice fusæ: palpi prælongi, pallidi: antennæ circiter 43-articulatæ, graciles, corpore longiores, apice obscuriores: metathorax lineolis et rugulis fere oblitteratis: abdomen oblongum, falcato-compressum; segmentum 1^{muum}. gracile, reliquo abdomine

^f *Meteorus*, Μετεωρος, propter folliculum pupæ pensilem.

^g Oris partes collatæ e speciebus 3^{tia}. 5^{ta}. 6^{ta}. 7^{ma}. et 13^{ma}.

brevius, a medio in apicem sensim conico-dilatatum, vix aciculatum : aculeus segmento 1^{mo}. non longior, valvulis fuscis : pedes longi graciles, unguicularibus^h fuscis, trochanteribus posterioribus nonnunquam fusciscentibus ; tarsorum posticorum articulo 1^{mo}. apice, 2^{do}. 3^{tio}. et 4^{to}. totis albidis : alæ longæ, lutescentes, nervis fuscis, stigmate luteo, lanceolato ; posticarum areola radialis interior subtiliter designata.

Habitat Germaniam, Galliam (*N. ab Ess.*) Hiberniam borealem, rarus.

Adnot.—Hic sollicite distinguendus ab *Helconte Testaceatore*.

Sp. 2. P. M. albiditarsus. Mas. *Piceus, facie, orbita, abdominis medio pedibusque ferrugineis ; posticis obscurioribus, tarsis albidis.* (Long. corp. 4 ; alar. 8½ lin.)

Zele albiditarsus . *Curt. B. E.* 412. Sp. 4. et *Fig.*

Mas.—Caput ferrugineum orbitâ superâ concolore, vertice reliquo piceo : antennæ corpore $\frac{1}{3}$ longiores, circiter 46-articulatæ, nigro-fusæ subtus dilutiores, scapo et pedicello ferrugineis : palpi prælongi : thorax piceus, scutelli apice et suturis obscure ferruginosis ; metathorax punctulatus : abdomen piceum, segmento 2^{do}. sordide ferrugineo : segmentum 1^{mu}m. validum obconicum, basi sulcatum, obsolete aciculatum : pedes anteriores ferruginei, coxis et tarsis pallidioribus ; postici elongati, satis validi, coxis et femoribus ferrugineis aut piceis, trochanteribus pallidis, tibiis piceis basi ferrugineis, tarsis albidis, unguiculari ferrugineo : alæ brunneo-hyalinæ, lineolâ hyalinâ obsoletâ, stigmate nervis que brunneis, radice et squamulis ferrugineis : stigma lanceolatum : nervus recurrens insertus solito interiûs : alarum posticarum areolæ radiales insigniter discretæ.

Habitat in Hiberniâ boreali, nobis semel lætus ;—prope Londinum. *J. Curtis.*

Sp. 3. P. M. caligatus. *Niger, abdominis segmento 2^{do}. pedibusque rufis ; tibiis tarsisque posticis fuscis, illis basi albidis.* Fem. *Aculeo brevi.* (Long. corp. 2½ ; alar. 5 lin.)

Fem.—Niger nitidus : antennæ circiter 34-articulatæ, corpore parum breviores, teretes, basi subtus piceæ : os ferrugineum : oculi magni : epistoma subquadratum : metathorax obsolete punctatus : abdominis segmentum 1^{mu}m. validum, obconicum, læviusculum ;

^h *Unguicularis*, i. e. articulus ultimus tarsorum.

2^{dum}. rufescens, apice nigrum: aculeus $\frac{1}{2}$ abdominis longitudine: pedes rufo-testacei; anteriores et posteriorum trochanteres pallidiores; posteriorum tibiæ tarsique fuscis, illarum basis perbrevis spatio pallida: alæ obscure hyalinæ, stigmatibus nervisque fuscis, radice et squamulis stramineis; stigma latius quam præcedentibus, ovato-lanceolatum; areola cubitalis 2^{da}. latior quam longior: posteriorum areola radialis interior subtiliter designata.

Mas.—Antennæ longiores; abdominis segmentum 2^{dum}. obscuriùs rufescens.

Habitat Hiberniam borealem; Ebudas insulas, rarior.

Sp. 4. *P. M. chlorophthalmus*. *Testaceus; alarum anticarum nervo recurrente interstitiali. Mas. Metathorace et petioli basi fuscis. Fem. Petiolo sulcato; aculeo fere abdominis longitudine.* (Long. corp. $3\frac{1}{2}$.; alar. $6\frac{1}{2}$ lin.)

**Bracon chlorophthalmus* . *Spinola. Ins. Lig. II. 133. Sp. 21.*

Bracon chrysophthalmus . *N. ab Ess. Berl. Mag. V. 21. Sp. 30.*

Perilitus chrysophthalmus . *N. ab Ess. Monogr. 35. Sp. 8.*

Mas.—Obscure testaceus: oculi virides: antennæ circiter 38-articulatæ, corpore longiores, et colore obscuriores, (scapo et pedicello exceptis,) apice fusca: pleuræ, pectus fere totum et metathorax fuscis; hic punctato-rugulosus: abdominis segmentum 1^{um}. basi fuscum, læviusculum, (forma fere qualis *P. pendulatori*, No. 7.): alæ lutescenti-hyalinæ, nervis fusciscentibus, stigmatibus luteo, radice et squamulis stramineis: stigma ovato-lanceolatum: areola cubitalis 2^{da}. latior quam longior, apice attenuata, major tamen quam sequentibus; posteriorum areolæ radiales inter se discretæ nervo subtilissimo et plane decolore, non nisi lucis obliquo reflexu et ægre distinguendo; areola cubitalis-interior pari modo indicata.

Fem.—"Totus testaceus (luteo-ferrugineus): antennæ corpore longiores: abdomen oblongum, petiolus manifeste sulcatus: aculeus fere longitudine abdominis; vel paulo longior secundum Spinolam."

N. B. Cave ne cum hoc confundatur *Rogas chlorophthalmus*, (*N. ab Ess. Monogr. 202, sp. 3.*), qui in genus *Helcontia* referendus erit.

Habitat Italiam, *Spinola*; Germaniam, *N. ab Ess.*; Hiberniam borealem, *mas* mihi semel lectus.

SECTIO B.

Alarum posticarum areola radialis unica, anticarum cubitalis 2^{da}. transversa; nervus recurrens fere interstitialis.

Conf. P. chlorophthalmus, No. 4.

Sp. 5. P. M. micropterus. *Antennis et pedibus brevibus validis; segmento 1^{mo}. apice parum dilatato læviusculo; alis parvulis fuscans.* Mas. *Niger pedibus piceis.* Fem. *Antennis revolutis basi, abdominis medio pedibusque piceo-ferrugineis; aculeo abdomine brevior.* (Long. corp. $1\frac{1}{2}$ — $2\frac{1}{2}$; alar. $2\frac{1}{3}$ —4 lin.)

Fem.—Piceus aut niger: caput solito angustius, facie latâ sub-antennis tumidâ, oculis parvis: os piceo-ferrugineum: palpi breves: antennæ longitudine capitis cum thorace, validæ revolutæ piceo-ferrugineæ apice nigræ, circiter 24-articulatæ: thorax subcompressus; metathorax scabriculus: abdominis segmentum 1^{um}. gracile, basi ascendens, arcuatum medio tuberculatum, postice parum dilatatum, fere lævigatum: abdomen reliquum vel segmentum 2^{dum}. piceum aut sordide ferrugineum, venter compressus apice truncatus: aculeus abdomine brevior: pedes breves validi piceo-ferruginei: alæ solito minores angustæ, volando fere ineptæ, fuscans stigmatate nervisque piceis, radice et squamulis ferrugineis: areola cubitalis 2^{da}. major quam proxime sequentibus.

Mas.—Niger ore pedibusque piceis; pedes antici tarsisque dilutiores: antennæ corpore paulo breviores, circiter 27-articulatæ, validæ teretes nigræ: alæ paulo majores quam *femine*, sed minores quam reliquis: abdomen lanceolatum apice subcompressum.

Habitat in gramine pascuorum passim non infrequens.

Sp. 6. P. M. abdominator. *Niger nitidus, abdominis medio pedibusque rufis; alis brunneis, lineolâ hyalinâ; abdominis segmento 1^{mo}. obconico, longitudinaliter striato.* Fem. *Antennis basi rufis; aculeo abdomine brevior.* (Long. corp. 2— $2\frac{1}{2}$ lin.; alar. $3\frac{1}{4}$ — $4\frac{1}{2}$ lin.)

**Bracon abdominator* . N. ab *Ess. Berl. Mag.* V. 24. Sp. 36.

Perilitus abdominator . N. ab *Ess. Monogr.* 41. Sp. 17.

Fem.—Niger nitidus: antennæ plane filiformes, capite cum thorace longiores, circiter 24-articulatæ, rufæ scapo apiceque fuscis: oculi parvi: os piceum, palpi apice pallidiores: metathorax quam

reliquis manifestiùs rugoso-reticulatus, lineolâ longitudinali elevatâ : abdominis segmentum primum brevius quam sequentibus, obconicum circa medium tuberculatum, longitudinaliter striatum et basi sulcatum ; 2^{dum}. rufum aut piceum, 3^{tium}. basi nonnunquam rufescens, reliqua nigra : pedes validi rufi, femoribus et tibiis posticis apice, tarsisque iisdem totis reliquis apice, fuscis : alæ augustiores quam sequentibus, brunneo-hyalinæ lineola hyalinâ sub-stigmate brunneo, radice et squamulis ferrugineis ; stigma ovato-lanceolatum ; areola cubitalis 2^{da}. brevis antrorsum attenuata.

Var. β.—Pedibus gracilioribus rufis immaculatis ; antennis sæpe totis nigris.

Mas.—Caput minus : antennæ corpore longiores teretes, circiter 28-articulatæ, nigræ, vel basi subtus piceæ : segmentum 2^{dum}. concolor aut piceum, rarius rufum.

Habitat Hiberniam ; in agris passim non infrequens ;—Germaniam, *N. ab Ess.*

Sp. 7. *P. M. pendulator. Testaceus immaculatus ; vel capite thoraceque fusco variis, metathorace et segmento 1^{mo}. totis nigricantibus ; segmento 1^{mo}. elongato obconico, subtiliter striato. Fem. Antennis corporis longitudine ; aculeo abdomine parum brevior. (Long. corp. 2—2 $\frac{2}{3}$; alar. 3 $\frac{2}{3}$ —5 $\frac{1}{2}$ lin.)*

**Ichneumon rufus, &c.* . *De Geer*. II. 596. t. 44. f. 11—13 ?
(Sed confer *P. chlorophthalmus*,
No. 4.)

Ichneumon pendulator . *Latreille, Hist. Nat.* XIII. 181.
Sp. 8.

Bracon ictericus . . . *N. ab Ess. Berl. Mag.* V. 22.
Sp. 34. t. 2. f. 6.

Zele Ephippium . . . *Curt. B. E.* 415. Sp. 5.

Perilitus ictericus . . . *N. ab Ess. Monogr.* 37. Sp. 12.

Antennæ *femine* corporis longitudine vel parum breviores, circiter 33-articulatæ, basi summâ vel latius flavescens ; *maris* longiores : metathorax subtiliter reticulato-rugulosus medio obsoletius ; apice nonnihil attenuato-rotundatus, denticulo parvo ad foramen petioli utrinque elevato in varietatibus *α.β. γ.*, in reliquis obsoletiore : segmentum 1^{mm}. elongato-obconicum, circa medium tuberculatum, longitudinaliter striatum striis quam in *P. abdominalatore* multo subtilioribus : abdomen illis oblongo-ovatum ; his medio latius, aculeo minus elongato : læa subhyalinæ ; stigma

ovato-lanceolatum, sordide luteum rarius infuscatum: nervus recurrens areolæ cubitalis 1^{ma}. apici summo insertus in *Var.* α. β. γ.

Var. α.—*Fem.* flavo-testaceus facie et pedibus dilutioribus, tarsis posticis obscurioribus, stemmaticoⁱ fusco: oculi obscure virides: antennæ apice fuscæ.

Var. β.—*Mas et Fem.* antennæ fuscæ scapo et pedicello flavescens: pectus fusco-maculatum: thoracis dorsum fuscum, lituris scuti et apice scutelli testaceis; metathorax et segmentum 1^{mm}, nigro-fusca: segmenta post 2^{dum}, dorso nonnumquam infuscata: tibiæ posticæ apice et tarsi iidem obscuriores.

Var. γ.—*Mas et Fem.* his mox thorax totus fuscus, pleuris tantum antice rufescentibus, tum vertex totus fuscus; nonnumquam stigma fusco-maculatum; iisdem petiolus regulosus potius quam striatus.

Adnot.—Cave ne hanc varietatem confundas cum *P. cinetello*, No. 10, qui differt petiolo longiore, antennis fere filiformibus, metathoracis sculptura et abdominis forma.

Var. δ.—*Fem.* testaceus, stemmatico, antennis basi dentâ, (metathorace) et segmento 1^{mo}. fuscis; femoribus, tibiis digitisque posticis apice obscurioribus.

Mas.—Stigmate fusco-maculato; tibiis posticis prope basin annulo fusco.

Var. ε.—*Fem.* obscuriùs testaceus, suturis thoracis fuscis, stigmatibus liturâ piceâ.

Var. ε. ζ.—*Mas* his antennæ pedesque validiores; colores mox in castaneum aut piceum transeunt: alæ fumato-hyalinæ, stigmatibus maculato; vel obscuriores, hoc piceo: stigma quoque sensim dilatatum transitum in *P. obfuscatum*, No. 11, innuit.

Pupa in folliculo ovato-attenuato sericeo flavicante inclusa, fili ope a folio pendet: De Geerio prodibant larvæ ex erucâ *Zugæncæ Filipendulæ*: foliis *Coryli* appensam vulgo inveniri, et larvis *Crypti Arcatoris* obnoxiam esse memorat Cl. Curtis, l. 1.^k

Habitat, Galliam, *Latreille*—Germaniam, *N. ab Ess.*—Sueciam, *De Geer*—Angliam, *J. Curtis*.—In nemoribus Hiberniæ nobis passim frequens. *Var. ε. ζ. Mares* e ripis *Senani* allati.

ⁱ *Stemmaticum*, i. e. regio media verticis, sæpius triangularis, cui ocelli insident.

^k Folliculos plurimos oblongo-ovatos sericeos candidos filo suspensos prope castra *Lasiocampe processionæ* Reaumurii vulgo inveniebat (Tom. II. Mem. XI. p. 449.) Ichneumonem ex istis prodiisse narrat absque indicio speciei. Verisimile est Perilitum fore.

Sp. 8. P. M. rubens. *Testaceus immaculatus; vel capite thoraceque fusco-variis, metathorace et segmento 1^{mo}. totis nigricantibus; segmento 1^{mo}. obconico elongato læviusculo.* Fem. *Antennis capite cum thorace longioribus; aculeo abdomine brevior.*

*Bracon rubens . N. ab Ess. Berl. Mag. V. 22. Sp. 32?
Perilitus rubens . N. ab Ess. Monogr. 35. Sp. 10?

Edimus hic suo loco speciem præcedenti valde affinem: fatendum vero discrimen esse nimis anceps, quum utrique statura partium inconstans sit. A *P. pendulatore* genuino qualis in nemoribus et hortis ille vulgo obuius sit, discrepant exemplaria in arenis maritimis mihi lecta, hisce notis: colores in utroque mutabiles, in his sordidiores et magis confusi: statura minor: antennæ breviores: mesothoracis sulculi in foveam punctatam latiore effusi: metathorax confertius rugulosus: petiolus basi et apice, aut fere totus lævigatus.

Mas.—Antennæ corpore parum longiores.

Var. α.—*Fem.* rufo-testaceus, petiolo obscuriore, antennis apice fusciscentibus; pedes pallidiores; alæ fumato-hyalinæ stigmatè sordide luteo.

Var. β.—*Mas* et *Fem.* obscure testaceus, vertice medio, metathorace, segmento 1^{mo}. et posterioribus fuscis.

Var. γ.—*Mas* et *Fem.* fuscus orbita, facie, pleurarum et scuti lituris et scutelli apice rufescentibus; pedes sordide lutei, coxis posticis infuscatis.

Habitat in arenis maritimis non infrequens.

Sp. 9. P. M. colon. Fem. *Flavus dorso nigricans; orbita, segmenti 2^{di} fascia fusco-bipunctata et stigmatè flavis; petiolo, antennis pedibusque gracilibus; aculeo $\frac{1}{2}$ abdominis longitudine.* (Long. corp. $2\frac{1}{4}$; alar. $4\frac{1}{2}$ lin.)

Fem.—Statura tota gracilis; antennæ corpore longiores graciles, circiter 30-articulatæ, basi subtus flavescens: caput nigricans; orbita obscuriùs, facies dilutiùs flavescens: thorax nigricans pectore flavo, apice scutelli et suturis contiguis piceo-ferrugineis; metathorax inæqualis scabriculus: petiolus quam *P. pendulatore* longior et gracilior, subtilissime striatus, nigricans: abdomen breve planum fere rhombicum, lævissimum nitidum; segmentum secundum flavescens puncto laterali fusco, apice determinate

nigricans ; sequentia nigricantia ; anus et venter flavi ; venter ab apice segmenti 2^{di}. subito tumidus, arcuatus compressus : pedes elongati graciles pallide flavi, tibiis posticis apice tarsisque obscurioribus : alæ subhyalinæ, stigmatè, radice et squamulis pallide flavis : nervus recurrens areolæ 2^{dæ} insertus.

Habitat in nemoribus prope *Senanum* lectus rariùs.

Sp. 10. P. M. cinctellus. Fem. *Nigricans, capite et thorace antice ferrugineo-variis; antennis ante basin, abdominis fascia pedibusque ferrugineis; segmento 1^{mo}. obconico, basi lineari-elongato; alis glaucis lineolâ hyalinâ, stigmatè maculato; aculeo abdomine breviorè.* (Long. corp. vix. 2; alar. 3 lin.)

**Bracon cinctellus* . *N. ab Ess. Berl. Mag. V. 23. Sp. 5.*
Perilitus cinctellus . *N. ab Ess. Monogr. 40. Sp. 15.*

Fem.—Caput nigricans, orbita et facie ferrugineis: antennæ circiter 26-articulatæ, corpore breviores, filiformes, ferruginæ scapo et apice fuscis: thorax antice ferrugineus, lituris dorsi confluentibus, pectore fere toto et metathorace nigricantibus: metathorax granulatus opacus, apice non attenuatus at subtruncatus: abdominis segmentum primum basi magis elongatum quam in *P. pendulatore* et plerisque aliis, fere lineare, lævigatum, apice obconico-dilatatum aciculatum: abdomen planum lævissimum nitidum, brevius et minus compressum quam *P. pendulatori*, nigricans segmento 2^{do}. (apice demto) ferrugineo: pedei pallide ferruginei, genubus posticis fusciscentibus: alæ quam *P. abdominalis* dilutiores, stigmatè flavo liturâ piceâ.

N. B. *Bracon cinctellus*, (*Spinola Ins. Lig. II. 135. Sp. 22.*.) vix huc pertinere potest.

Habitat Hiberniam borealem minus frequens.—Germaniam *N. ab Ess.*

Sp. 11. P. M. obfuscatus. Mas. “*Obscurè testaceus, metathorace (thoracis dorso in aliis) nigro; abdomine oblongo-ovato, petiolo obscuriore; alis obscure hyalinis, stigmatè magno fusco puncto albo, &c.*” (Long. corp. 2 $\frac{3}{4}$ lin.)

**Bracon obfuscatus* . *N. ab Ess. Berl. Mag. V. 22. Sp. 33.*
Perilitus obfuscatus . *N. ab Ess. Monogr. 37. Sp. 11.*
Zele thoracicus . . *Curt. B. E. 415. Sp. 9.*

Exemplar femellum ab amico *Curtisio* communicatum *Z. thoracici* nomine adscripto, huc referendum videtur. — Magnitudo *P.*

abdominatoris; caput deest: thorax nigro-fuscus, pleuris anticè, scuti lineolis, scutelli apice sordide rufescentibus: abdomen testaceum, postice fuscum; segmentum 1^{mu}m. brevius quam speciebus 6^{ta}. et 7^{ma}., fuscum, subtiliter rugulosum: aculeus abdomine brevior: alæ quam præcedentibus latiores, hyalinæ, stigmatate majore fere trigono, fusco puncto baseos determinate pallido ut in proxime sequentibus.

Habitat prope Londinum lectus.—*J. Curtis.*

Sp. 12. P. M. atrator. “*Piceo niger*” (*ore*), “*antennis basi subtus pedibusque ochraceis*” (*ferrugineis*); “*abdominis medio piceo, segmento 1^{mo}. elongato obconico; stigmatate fusco puncto pallido; aculeo abdomine longiore.*” (Long. corp. $2\frac{3}{4}$ lin.)

**Zele Atrator* . . . *Curt. B. E.* 415. Sp. 1.

Perilitus Similar . *N. ab Ess. Monogr.* 41. Sp. 16.

Fem.—“*Antennæ corpore breviores, basi subtus ochraceæ: palpi pallide ochracei.*” *Curtis, l. l.*—Exemplar a clm^o. auctore nobis transmissum caret capite: corpus nigrum nitidum; abdominis segmentum 2^{du}m. piceum: petiolus qualis in sequentibus plerisque, aciculatus: aculeus longitudine abdominis cum metathorace: pedes ferruginei; posticorum femora supra, tibiæ apice tarsique obscuriores: alæ fere quales proxime sequentibus.

Habitat Germaniam, *N. ab Ess.*—Angliam, *J. Curtis.*

Sp. 13.—P. M. filator. *Niger nitidus, ore, antennis basi pedibusque ochraceis (ferrugineis); segmento 1^{mo}. basi valde elongato lineari, apice obconico-dilatato; stigmatate fusco puncto pallido.* *Fem. Aculeo abdominis longitudine.* (Long. corp. $2\frac{1}{4}$ — $2\frac{3}{4}$; alar. 4— $4\frac{3}{4}$ lin.)

Fem.—*Niger nitidus*: antennæ capite cum thorace longiores, circiter 22-articulatæ, graciles filiformes, basi aut latiùs ferruginæ: clypeus et os ferruginei: epistoma fuscum: oculi sat magni: metathorax nitidulus, rugulis et lineolis elevatis parum distinctis: segmentum 1^{mu}m. reliquo abdomine non brevius, basi ultra modum elongatum gracillimum, apice cito dilatatum striolis arcuatis subtiliter exaratum: abdomen ovato-lanceolatum subcompressum, segmento 2^{do}. nonnunquam piceo: pedes dilute ochracei aut ferruginei, coxis et genibus posticis sæpius obscurioribus: alæ fere sequentium latæ hyalinæ; stigmatate trigono fusco, puncto baseos determinate pallido; radice et squamulis stramineis:

nervus recurrens apici summo areolæ 1^{mæ}. insertus : areola radialis quam in reliquis paulo latior.

Mas.—Antennæ corporis longitudine teretes 23—31-articulatæ, nigre vel basi obscurius rufescentes.

Habitat in nemoribus passim frequens. *Femina*, locis fungiferis autumno.

Sp. 14.—P. M. delator. Fem. *Niger nitidus, ore, antennis basi subtus pedibusque ferrugineis, posterioribus infuscatis; segmento 1^{mæ}. obconico, basi elongato attenuato; stigmatè fusco puncto pallido; aculeo longitudine abdominis.* (Long. corp. 1½; alar. 2⅔ lin.)

Fem. P. filatori. Simillimus at petioli formâ statim distinguendus : petiolus brevior quam *P. cinctello* No. 10, sculpturâ præcedentis : segmentum 2^{dum}. piceum : pedes posteriores fusciscentes, articulorum basi pallidiore : antennæ graciles 23-articulatæ, basi subtus obscurius ferrugineæ.

Habitat cum præcedente multo rarior.

Sp. 15.—P. M. vexator. Fem. *Niger nitidus, ore, antennis basi et pedibus ferrugineis; segmento 1^{mæ}. obconico, basi elongato attenuato; stigmatè latissimo, fusco puncto pallido; aculeo longitudine abdominis.*

Præcedentibus duobus iterum simillimus, magnitudine intermedius ; stigmati latitudine ab utroque, petiolo brevior a *P. filatori* insuper, distinguendus : oculi magni : epistoma subtus angustatum, fusco ferrugineum : antennæ 19—20-articulatæ.

Habitat cum præcedentibus rarus.

Sp. 16.—P. M. profligator. Fem. *Niger nitidus, ore, antennis basi pedibusque ferrugineis; abdominis medio piceo; segmento 1^{mæ}. obconico antice attenuato; stigmatè fusco puncto pallido; aculeo longitudine abdominis.*

Fem. P. delatore minor, et illi proximus ; differt præcipue collo et metathorace brevioribus, segmento 1^{mæ}. versus basin coarctato, haud lineari : segmentum 2^{dum}. (nonnunquam basis 1^{mi}. etiam) piceum aut ferruginosum : antennæ breviores, 20—21-articulatæ, ferrugineæ apice fuscæ : pedes pallide ferruginei immaculati : areola radialis paulo magis oblonga basi angustior.

Habitat ibidem rarus.

Sp. 17.—*P. M. jaculator*. Fem. *Niger nitidus, pedibus et stigmatibus juceis; segmento 1^{mo}. obconico; aculeo abdomine longiore.* (Long. corp. $1\frac{1}{3}$; alar. $2\frac{1}{2}$ lin.)

Fem.—Antennæ corpore breviores, graciles filiformes, 20—22-articulatæ: abdominis segmentum 1^{mm}. subtiliter rugulosum: aculeus corpore paulo brevior: alæ obscure hyalinæ, stigmatibus piceo, basi non determinate pallescente, nervis piceo-pallidis; areolâ radiali angustiore quam proxime præcedentibus.

Habitat in Hibernia boreali infrequens: *P. scutellator*, *ibid.* 38, Sp. 13.

Obs.—Ad hoc subgenus pertinent etiam, *P. pallidus*, (N. ab Ess. Monogr. 35, Sp. 9,) *P. ruficeps* (*ibid.* 39, Sp. 14,) *P. consimilis* (*ibid.* 42, Sp. 18), et *Bracon cinctellus* (Spinola, Jus. Lig. ii. 133, Sp. 22), *Br. petiolatus* (Spin. *ibid.* 137, Sp. 23), potius *Spathius* esse videtur.

Subgen. II.—PERILITUS.

Alarum anticarum areolæ cubitales duæ.

* Bracon. Fam. II. Heterocl. II. A. *N. ab Ess. Berl. Mag.*
V. 26.

Perilitus. Sectio I. *N. ab Ess. Art. Acad.*
IX. 302.

————— ——— Monogr. 29.

Adnot.—Subgenera plura nominatim instituere dubitavi ob inconsistentiam palporum.

SECTIO A.—(DICHORI.)

Areola antica disci completa; radialis ab apice alæ remota: unica species mihi nota accedit staturam Subgeneris 1^{mi}. Palpi longitudine mediocres ab illo parum discrepant; maxillarium vero articulus 2^{du}s. 3^{ti}o. non est brevior: metathorax brevior est et apice quasi retusus: segmentum 1^{mm}. a medio dilatatum: alarum posticarum areola radialis a brachiali longè remota, ut etiam in sequentibus.

Sp. 18.—*P. rutilus*. Mas. *Niger, facie, orbita pedibusque obscure ferrugineis.* Fem. *Capite, abdomine postice pedibusque ferrugineis; aculeo abdominis fere longitudine.* (Long. corp. $1\frac{1}{3}$ — $1\frac{3}{4}$; alar. $2\frac{3}{4}$ — $3\frac{1}{4}$ lin.)

* Bracon rutilus. *N. ab Ess. Berl. Mag.* V. 27. Sp. 40.

Perilitus rutilus. *N. ab Ess. Monogr.* 31. Sp. 3.

Fem.—Caput clare ferrugineum, stemmatico fusco: antennæ corporis longitudine, teretes, 25—26-articulatæ, fuscae scapo ferrugineo:

thorax niger, scuti sulculis postice in foveam punctatam effusis; metathorax punctato-rugulosus: segmentum 1^{mum}. reliquo abdomine brevius, gracile medio tuberculatum, dehinc in apicem petiolo plus duplo latius, fere oblongum apice vix dilatatum, subtiliter longitudinaliter aciculatum, nigrum: abdomen oblongo-ovatum, totum vel tantum postice fusco-ferrugineum: aculeus abdomine parum brevior: pedes clarè ferruginei: alæ subhyalinæ, stigmatè lutescente, nervis, radice, squamulis pallide fuscis: stigma trigonum: areola radialis elongato-semicordata, alæ apicem nullo modo attingens: nervus recurrens interstitialis.

Mas.—Colore obscurior: antennæ validiores, corpore longiores: abdomen nigro-piceum: pedes obscure ferruginei, tarsis, posticorum etiam coxis basi tibiisque fuscescentibus: alarum stigma nervique fuscescentes.

Habitat Germaniam, *N. ab Ess.*; Hiberniam, minus frequens.

SECTIO B. (SYNCHORI.)

Areola cubitalis-interior cum anticâ disci confluens; radialis semicordata ab apice alæ remota. a. Palpi labiales 3-articulati.

Sp. 19. *P. brevicollis*. Fem. *Niger, facie, orbita et pedibus ferrugineis; segmento 1^{mo}. obconico; areolâ radiali longiusculâ; aculeo $\frac{1}{2}$ abdominis brevior.* (Long. corp. 1 $\frac{3}{4}$; alar. 3 $\frac{1}{4}$ lin.)

Fem.—Robustior et duplo major *P. cerealium*, staturâ totâ facile distinguendus: antennæ 26-articulatæ corpore parum breviores, scapo rufescente: orbita, facies, os rufo-ferruginæ: palpi maxillares mediocres, articulis exterioribus non insigniter brevioribus; labiales 3-articulati, articulis longitudine subequalibus: mesothoracis scuti sulculi effusi in depressionem latam confertim punctatam, lineolâ longitudinali media distinctam; anguli posteriores prope scutelli basin gibbi: metathorax perbrevis, verticaliter truncatus, rugoso-reticulatus: abdominis segmentum 1^{mum}. ascendens, multo validius quam sequentibus, obconicum medio tuberculatum, rugulosum angulis apicis longitudinaliter striatis: aculeus $\frac{1}{2}$ abdominis brevior, arcuatus, valvulis fusco-ferrugineis: pedes sordide ferruginei, tarsis, posticorum coxis etiam et tibiæ apice, fuscescentibus: alæ hyalinæ, nervis et stigmatè fuscescentibus, radice et squamulis dilutiùs: stigma angustius quam *P. rutilo* latè ovato-lanceolatum: areola radialis fere ut in illo, apicem alæ quam stigma propius clausa.

Habitat in Hibernia boreali semel mihi lectus.

Sp. 20. *P. conterminus*. Mas. *Rufo-testaceus, abdomine postice nigricante; antennis corpore brevioribus*. (Long. corp. 1; alar. 2 lin.)

Perilitus conterminus. *N. ab Ess.* Monogr. 32, Sp. 4.

Caput rufo-testaceum; stemmaticum fuscum: palpi fere quales sequenti, modo maxillarium articulus 1^{mus}. minus abbreviatus; deinde 2^{dus}. 3^{tius}. crescentes: antennæ corpore breviores, filiformes, 18—21-articulatæ, fuscae basi rufescentes: thorax rufo-testaceus, scuti sulculis impunctatis: metathorax læviusculus, inæqualis, areis ordinariis ob colorem distinctioribus: segmentum 1^{mm}. gracile, medio tuberculatum, dehinc in apicem lineare, petiolo dimidio latius, vix aciculatum, rufo-testaceum: abdomen ovato-orbiculatum, nigrum antice rufescens: pedes immaculati: alæ fere ut in *P. cerealium*, sed areola radialis adhuc minor, quasi semilunata.

Variat corpore fere toto castaneo vel piceo, segmento 1^{mo}. tantum rufo. *De femina* consulendus *N. ab Ess. l. l.* conferenda quoque sequentis varietas γ .

Habitat Germaniam, *N. ab Ess.*; Hiberniam occidentalem; autumnno pluries lectus.

Sp. 21. *P. secalis*. Fem. *Niger, antennis basi, ore, orbita pedibusque ferrugineis; alis hyalinis; aculeo dimidii abdominis longitudine*. (Long. corp. 1½; alar. 3¼ lin.)

Ichneumon secalis. *Linn. Fna. Suec.* 1641.

Fem.—Statura *P. cerealium*. Palpi discrepant ab illo; maxillarium articulus 1^{mus}. brevissimus, 3^{tius}. 2^{do}. longior et crassior, 4^{tus}. adhuc longior, 6^{tus}. illo brevior at 5^{to}. paulo longior; labiales 3-articulati, articulus 1^{mus}. obconicus, 2^{dus}. et 3^{tius}. breviores ovati: antennæ 21—25-articulatæ, corpore parum breviores filiformes, basi sordide rufescentes: metathorax nitidiusculus vage punctatus: segmentum 1^{mm}. fere ut in illo efformatum, longitudinaliter striatum: pedes ferruginei, coxis posticis basi, tarsis apice fuscis: alæ quam *P. cerealium* ampliores, hyalinæ, nervis et stigmatibus fuscescentibus, radice et squamulis obscure stramineis: stigma latè ovato-lanceolatum.

Var. β .—Duplo minor (Long. corp. 1 lin.) antennis 19—20-articulatis.

Var. γ .—Adhuc fere minor, rufo-testaceus, abdomine postice nigricante: antennæ 18-articulatæ, apice fuscae: thoracis dorsum

fusco-nebulosum scuti sulculi impunctati: segmentum 1^{mm}. postice minus dilatatum: huic speciei propior esse videtur quam *P. conterminò*; tamen illius esse feminam vero non est absimile.

Habitat in agris passim haud infrequens; — in Suecia. — *Linnæus*.

(B.) b. — *Palpi labiales 2-articulati.*

Sp. 22. *P. cerealium*. Mas. *Niger, ore, orbita pedibusque ferrugineis*. Fem. *Capite pedibusque ferrugineis; abdomine postice obscuriùs ferrugineo; aculeo $\frac{1}{2}$ abdominis longitudine*. (Long. corp. 1—1 $\frac{1}{2}$; alar. 2—3 lin.)

Fem. — *P. rutilo* valde similis: antennæ 20—22-articulatæ, corpore paulo breviores filiformes, scapo subtus ferrugineo: caput ferrugineum, stemmatico (nonnunquam margine occipitis) fusco: palpi maxillares breves, articulo 1^{mo}. vix distincto; 2^{do}. longiore quam 3^{tio}.; 5^{to}. et 6^{to}. arcte connexis, conjunctim 4^{to}. non longioribus; 6^{to}. conico-attenuato: labiales biarticulati tantum: thorax et segmentum 1^{mm}. quales illi, nigri. Abdomen paulo brevius, apice compressum et truncatum, piceum apice ferruginosum: alæ subhyalinæ stigmatè lutescente vel obscuriore, radice et squamulis sordide stramineis nervis fusco-pallidis: stigma latè ovato-lanceolatum: areola radialis quam illi multo brevior, $\frac{1}{2}$ intervalli inter alarum apicem et stigma non occupans, semicordata.

Mas. — Antennæ corpore longiores: abdomen ovatum: colores obscuriores.

Habitat in agris passim non infrequens.

Sp. 23. *P. Æthiops*. *Niger alis albidis*. Mas. *Tibiis basi rufo-piceis*. Fem. *Orbita picea; femoribus tibiisque ferrugineis; aculeo $\frac{1}{4}$ abdominis longitudine*. (Long. corp. 1 $\frac{1}{2}$; alar. 3 $\frac{1}{4}$ lin.)

Mas. — *Perilitus Æthiops*. *N. ab Ess.* Monogr. 32, Sp. 5.

Fem. — *P. secalis* non dissimilis: antennæ corpore vix breviores, 25-articulatæ: orbita et os picea: metathorax confertim ruguloso-reticulatus: abdominis segmentum 1^{mm}. quam illi multo latius, medio valide tuberculatum, condylo lato oblongo apice parumper dilatato, longitudinaliter striato: trochanteres apice, femora et tibiæ ferruginei, postici obscuriores; tarsi fusci: alæ albido-hyalinæ, stigmatè nervisque fuscis, radice piceo-straminea, squamulis nigris: stigma ovato-lanceolatum angustius quam *P. secalis*.

Mas.—Totus niger: antennæ corpore $\frac{1}{3}$ longiores, 27—30-articulatæ: abdomen ovato-lanceolatum; segmentum 1^{um}. quam *femineæ* multo gracilius: femora antica, vel omnia rufo-picea, basi nigra; tibiæ basi, anticæ fere totæ, rufo-piceæ: alæ albida: palpi maxillares; articulus 1^{mus}. brevis at distinctus, 5^{tus}. et 6^{tus}. conjunctim $\frac{1}{2}$ longiores 4^{to}., 6^{tus}. apice attenuatus; labiales tantum biarticulati.

Habitat in arenis maritimis. *Fem.* semel lectus, *Mas* pluries.

Var. β.—*Mas* duplo, triplo minor, antennis 24—25-articulatis.

Habitat in agris passim frequens. Germaniæ, *N. ab Ess.*

SECTIO C.—TANYCHORI.

Areola cubitalis-interior cum anticâ-disci confluens; radialis apicem alæ fere attingens, cultrata.

Sp. 24. *P. idalius.* *Fem.* *Ferrugineus, vertice dorsoque thoracis et abdominis castaneis; antennis basi et pedibus pallidioribus; aculeo brevi.* (Long. corp. $1\frac{3}{4}$; alar. 3 lin.)

Fem.—A præcedentibus differt satis universâ statura: palpi graciles longiusculi, numero et proportione articulorum Subgeneri *Meteoro* fere conformes: caput ferrugineum orbitâ concolore, vertice dilute castaneo: oculi virides: antennæ capite cum thorace parum longiores, 21—23-articulatæ, graciles, fuscæ basi flavo-ferrugineæ: thorax castaneus nitidus, pectus ferrugineum; sulculi ordinarii oblitterati; metathorax lævis nitidus, postice foveolâ mediâ punctulatâ, fuscæ: segmentum primum reliqui abdominis longitudine, gracillimum teres, basi punctulatum et fuscæ, postice lævigatum, tuberculis pone medium sitis, apice lenissime dilatatum: abdomen ovato-lanceolatum, castaneum ano dilutiore; venter ferrugineus: aculeus $\frac{1}{4}$ abdominis brevior: pedes pallide ferruginei: alæ hyalinæ, stigmatate obscuriûs, radice et squamulis dilutiûs stramineis: nervi picco-straminei, longitudinales-exterioribus et brachialis-anterior fere totus decoloribus: stigma trigonum, angustius quam *P. rutilo*.

Habitat in *Quercetis* Hiberniæ rarissimè.

Adnot.—In hoc Subgenus præterea referendi videntur, e *Perilitis* Neesianis Sectionis 1^{ma}. *P. terminatus* (Monogr. 30. Sp. 1.) et *P. consuetor* (ibid. Sp. 2.); nisi hic forte potius *Leiophron* sit e Subgenere 4^{to}. *P. conjungens* (ibid. 33. Sp. 6.) autem mox nobis proferendus erit inter *Alysias*.

GEN. VIII.—BLACUS.

Bracon, Fam. I. Heterocl. II. *N. ab Ess. Berl. Mag. V. 18.*

Palpi maxillares 6-articulati; labiales 3-articulati: caput parvulum subglobosum; occipite marginato abdomen subsessile aut vix subpetiolatum, ventre carinato compresso, ano truncato; aculeo lineari exerto: alarum anticarum areola disci-antica contigua completa; cubitales duæ; brachialis-posterior anteriore multo longior.

Caput subglobosum, thorace non latius ideoque parvulum, quum hic compressus sit et solito angustior: occiput truncatum, marginatum; vertex amplus: ocelli in triangulum: frons ampla, declivis: oculi parvi ovati, pilis subtilissimis raris consiti vel subglabri: facies sub antennis tumida: clypeus linea impressa utrinque foveolatâ ab epistomate discretus, sat amplus, transversus: labrum transversum, lateribus rotundatum, aut semiovatum, epipharyngis ligula apicali attenuata prostante: mandibulæ cuneatæ, curvatæ, apice bidentes, forcipatæ, cum labro os antice claudentes: maxillæ lobus membranaceus obtusus: palpi maxillares 6-articulati; articuli 1^{mus.}, 2^{dus.} breves; 3^{tus.} longior crassior cultratus; 4^{tus.} adhuc longior linearis; 6^{tus.} 4^{to.} brevior 5^{to.} vero paulo longior: labii lobus integer obtusus: palpi labiales 3-articulati; articulus 1^{mus.} obconicus; 2^{dus.} brevior, dilatatus apice oblique truncatus; 3^{tus.} basi sensim attenuatus, s. subclavatus: thorax oblongus compressus: mesothoracis sulculi ordinarii ante scutellum conniventes: abdomen circiter thoracis longitudine, illo antice multo angustius, postice vel sensim incrasatum vel compressum: venter compressus carinatus; anus truncatus: aculeus linearis exertus: *maris* forceps analis exertus: segmentum 1^{muum.} oblongum, tuberculis inter basin et medium, ideo subsessile aut vix subpetiolatum: alarum anticarum stigma distinctum; areola disci-antica costæ contigua; radialis lata cultrata, apicem alæ fere attingens; cubitales duæ; nervus recurrens prope apicem 1^{mæ.} insertus; areola brachialis-posterior ultra anteriorem valde elongata, apice attenuata; postica-disci parva angusta: alarum posticarum areola brachialis-posterior oblonga angusta, $\frac{1}{2}$ anterioris longitudine, nervo recurrente apicis recto: nervus recurrens exterior nullus.

Subgenera.

<i>Antennarum articuli .</i>	{	<i>maris</i> 19, <i>feminae</i> 17	II. BLACUS.
		plures	I. GANYCHORUS.

Illa Subgenera affinitate multiplici transituque fere continuo congrredi videntur: Neesius ab Essenbeckio jam pridem collocaverat utrunque serie proxima: miror ideo magis virum oculatissimum vestigia priora mox deseruisse, *Ganychoris* cum *Bracone* relictis, *Blacis* vero in genus proprium constitutis quibuscum *Aphidii* plures consociati sunt.

Subg. I.—GANYCHORUS.¹

Antennæ filiformes, articulis pluribus quam 19 in mare, quam 17 in femina. Scutellum apice elevatum. Abdomen clavatum; segmento 1^{mo}. lineari-conico, tuberculis inter medium et basin. Alarum anticarum areola disci-antica angulæ antico in mare subtruncato: stigma attenuatum. Ungues pectinato-fissiles.

*Bracon, Fam. I. Heterocl. II. A. N. ab Ess. Berl. Mag. V. 18.

Bracon, Sectio I. N. ab Ess. Act. Acad. IX. 303.

————— ————— Monogr. 48.

Blacus, Sectio a. A.H.H.Ent.Mag. I. 262.

Antennæ feminae circiter corporis longitudine, filiformes, articulis exterioribus longitudine sensim decrescentibus, ultimo rursus longiore; *maris* longiores et graciliores, articulo unico plerunque auctæ: (oris partes e Sp. 2^{um}. et 3^{tia}.) palpi quam sequentibus longiores et graciliores; maxillarium articuli 1^{mus}. et 2^{dus}. obiter inspecti pro unico accipi possent, ob nexum intimum et colorem pallidum, obverso vero maxillæ dorso junctura illorum angularis statim apparebit. Prothorax in collum parvum antice truncatum attenuatus: metathorax subcubicus aut rotundatus, granulatus, areis satis distinctis i. e. dorsali, apicali et lateralibus; area dorsalis fere cordiformis lineolâ longitudinali bipartita: abdomen subclavatum, ventre carinato compresso, ano truncato; a latere visum triangulare; segmentum 1^{num}. oblongum, postice parum dilatatum, rugulosum: segmenta reliqua ante marginem foveolis serie transversâ impressis; 2^{dum}. longius, 7^{num}. minutissimum: pedes longi graciles aut mediocres; calcaria parva subulata: unguiculares anteriores in *femina* insigniter incrassiti: ungues anteriores dilatati pectinato-fissiles; posticorum cuspis elongata, lacinia inferior setacea inconspicua: alæ angustiores quam sequentibus; stigma angustissimum trigonum: nervus cubitalis

¹ *Ganychorus*, Γανυμαί χορος, propter mores.

ex angulo in alæ apicem recta ductus: nervi longitudinales-exteriore cito abrupti, unde areola cubitalis-exterior postice incompleta est: parastigma^m in *mare* majus, angulum anticum areolæ disci præsecans: in *femina* non ita: alarum posticarum areola radialis parum remota.

Adnot.—*Bracon lucidator*, (*N. ab Ess.* Monogr. 90, Sp. 3) et *Br. fuscipes* (*ibid.* Sp. 4), ab his genericè separandi sunt.

Sp. 1. *B. G. pallipes*. *Niger abdominis medio piceo, pedibus pallide ochraceis*. *Mas.* *Antennis 25-articulatis, pubescentibus, basi ferrugineis; stigmatis apice obscuriore*. *Fem.* *Antennis circiter 24-articulatis, ferrugineis apice fuscis; stigmatate silaceo; aculeo $\frac{1}{4}$ abdominis longitudine*. (Long. corp. plusquam 2; alar. $4\frac{1}{2}$ lin.)

Fem.—*Niger*: os et clypeus obscure ferruginei: palpi pallidiores: antennæ corporis longitudine, 24-, nonnunquam 25-articulatæ, articulis exterioribus minoribus quam in sequente; ferrugineæ scapo, articulis singulis flagelli puncto apicali, 5 aut 6 ultimis totis, fuscis: scutelli apex transversim acute elevatus: metathorax subrotundatus: abdomen subclavatum; sequentum 1^{mum}, vix $\frac{1}{3}$ abdominis longitudine, lineare postice sensim dilatatum, tuberculis propius medium quam basin sitis: segmentum 2^{dum}, paulo dilutius piceum: aculeus vix $\frac{1}{4}$ abdominis longitudine: pedes pallide ochrei, unguicularibus saltem anterioribus et unguibus fuscis: alæ hyalinæ, stigmatate, parastigmatate, radice, squamulis silaceis; stigmatis apex fusco-limbatus: nervi fuscopallidi, nonnulli fere decolores.

Mas.—Caput oblatius: antennæ corpore longiores confertim pubescentes, articulis exterioribus brevioribus quam sequenti, intus ferruginosæ scapo fusco, apice latiùs fuscæ: metathorax lenius declivis, obsoletius rugulosus: abdomen lineare apice parum incrassatum: pedes quam *feminæ* longiores graciliores: stigmatis apex et parastigma fuscescentes.

Habitat in lucis umbrosis Angliæ, Hiberniæ, Scotiæ, minus frequens.

Sp. 2. *B. G. tripudians*. *Mas.* *Rufo-castaneus, capite anoque fuscis, pedibus silaceis, stigmatate ochraceo; antennis 21-articulatis pubescentibus, basi ferrugineis*. *Fem.* *Niger, abdominis medio piceo, pedibus et stigmatate silaceis;*

^m *Parastigma*, punctum callosum, aut anastomosis, qua nervus transversus areolæ brachialis apicem claudens, concurrat cum costâ ante basin stigmatis.

antennis 19-articulatis, ferrugineis apice fuscis; aculeo vix $\frac{1}{3}$ abdominis longitudine. (Long. corp. $1\frac{1}{2}$; alar. $3\frac{1}{2}$.)

Fem.—Nigro-piceus segmento 2^{do}. abdominis dilutiore: antennæ vix corporis longitudine, ferrugineæ scapo et apice fusciscentibus: os et clypeus obscure ferruginei: thorax qualis præcedenti: abdomen basi gracilius et postice manifestiùs incrassatum; segmentum 1^{mu}m. vix $\frac{1}{3}$ abdominis longitudine, gracile, fere lineare, tuberculis propius medium quam basin sitis: pedes graciles silacei unguicularibus saltem anterioribus et unguibus fuscis: alæ hyalinæ stigmatè, radice, squamulis silaceis; nervi plerique decolores, nonnulli fusco-pallidi.

Mas.—Rufo-castaneus, capite abdominisque segmentis posterioribus fuscis: os et clypeus ferruginei: antennæ graciliores quam sequenti, pubescentes, fuscæ basi ferrugineæ: prothorax ferrugineus: pectus fuscum: abdomen lineare postice incrassatum: pedes quam *femine* longiores graciliores: stigma et parastigma dilute ochracea.

Habitat in salice capreâ præsertim, gregarius. In convalle tutâ qua requiescunt auræ, prope rivuli comantes ripas et amæna murmura, horis pomeridianis ubi sol æstivus e cælo serenissimo effulgeat, *Blaci tripudiantis mares* innumeri choros vulgo implicant aërios, alternis orbibus, *Chironomorum* modo; spectaculum gratissimum.

Sp. 3. *B. G. ruficornis.* *Niger, abdominis medio piceo; pedibus ferrugineis; alis subhyalinis, stigmatè fusco basi flavo.* *Mas. Antennis 21-articulatis, fuscis basi rufescentibus.* *Fem. antennis 20-articulatis, rufo-ferrugineis apice obscurioribus; aculeo $\frac{1}{3}$ abdominis longitudine.* (Long. $1\frac{1}{2}$; alar. $3\frac{1}{2}$ lin.)

* *Bracon ruficornis.* *N. ab Ess. Berl. Mag. V. 18. Sp. 24. t. 1. f. 3.*

————— ————— Monogr. 49, Sp. 1.

Fem.—Niger aut nigro-piceus, abdominis segmento 2^{do}. rufo-piceo: os ferrugineum: antennæ longitudine fere corporis, rufo-ferrugineæ, articulis flagelli singulis puncto apicali; 5 aut 6 ultimis totis, fusciscentibus: scutellum apice angulatum, nec tam acute elevatum quam præcedentibus: metathorax rotundatus nec tam abrupte truncatus quam sequentibus, confertim granulatus: abdomen brevius quam præcedentibus, subclavatum: segmentum 1^{mu}m. $\frac{1}{3}$ abdominis longitudine, validius quam illis, sensim parum

dilatatum, leviter canaliculatum, tuberculis prope basin: aculeus segmenti 1^{mi}. longitudine: pedes ferruginei unguicularibus fuscis: alæ fere hyalinæ stigmatè fusco, hujus basi et parastigmatè flavescens, radice et squamulis stramineis: nervus cubitalis et nonnulli præterea fusci, plerique pallidiores.

Mas.—Metathorax rotundato-declivis: abdomen gracilius quam *feminæ*, lineari-clavatum.

Var. β.—*Mas* et *Fem.*—Corpore rufo-castaneo, capite anoque (nonnunquam metathorace et segmento 1^{mo}.) fuscis.

Var. γ.—Exemplar femellum alterum, parvulum, antennis crassioribus brevioribus, apice non infuscatis, ab amico Curtisio *Spathii minuti* nomine adscripto missum, pro specie distincta inferre vix audeo.

Habitat in nemoribus umbrosis Angliæ, Hiberniæ, passim, *Var. a* rarior, *β.* frequens; Germaniæ, Italiæ, *N. ab Ess.*

Sp. 4. B. G. diversicornis. *Niger, abdominis medio piceo; pedibus ferrugineis, femoribus posticis fusco-annulatis; alis obscuris. Mas. Antennis 21-articulatis. Fem. Antennis 20-articulatis, fuscis basi rufescentibus; aculeo 1/3 abdominis longitudine.* (Long. corp. 1 $\frac{1}{4}$; alar. 2 $\frac{1}{4}$.)

* *Bracon ruficornis*. *Var. β. N. ab Ess. Berl. Mag. V. 18. Sp. 24.*

Bracon diversicornis. . . *N. ab Ess. Monogr. 49, Sp. 2.*

Fem.—Os piceo-ferrugineum: antennæ breviores et validiores quam *B. ruficorni*, articulis exterioribus magis ovatis, fuscae pedicello et articulis 5 aut 6 proximis plerunque rufo-ferrugineis: metathoracis forma intermedia inter illum et sequentem: abdomen pedesque fere ut in hoc: alæ paulo minores quam *B. ruficorni*, brumescens stigmatè nervisque fuscis, radice et squamulis fusco-ferrugineis.

Mas.—Antennæ basi rufescentes, vel fere totæ fuscae: alæ dilutiores quam *feminæ*; areola disci antica angulo tantum leviter præsecto.

Habitat Germaniam, *N. ab Ess.* Hiberniam; cum præcedente, rariùs.

Sp. 5. B. G. ambulans. *Fem. Niger, abdominis medio piceo; pedibus ferrugineis, femoribus posticis fusco-annulatis; alis abbreviatis; antennis 20-articulatis, rufo-ferrugineis apice fuscis; aculeo 1/3 abdominis longitudine.* (Long. corp. 1 $\frac{1}{4}$; alar. 1 $\frac{3}{4}$ lin.)

Fem.—Piconiger, abdominis segmento 2^{do}. rufescente: os et clypeus obscure ferruginei: antennæ articulis exterioribus paulo brevioribus et ultimo majore quam *B. ruficorni*, illi vero quam speciei 4^{te}. similiores et pari modo pictæ: caput fere rotundato-cubicum in hoc, in reliquis evadit sensim paulo oblatius: metathorax fere cubicus, apice rectâ truncatus, confertim granulatus: abdomen brevius et magis compressum: segmentum 1^{mum}. vix $\frac{1}{2}$ abdominis longitudine, validius tuberculis obsoletioribus: pedes breviores, obscurius ferruginei, annullo brunneo ante apicem femorum posticorum: unguiculares omnes et basis coxarum posticarum fuscis: alæ parvæ et angustæ, brunnescentes, stigmatе nervis que fuscis, radice et squamulis stramineis.

Var. β.—Mesothoracis scuto et scutello rufo-piceis.

Habitat cum præcedentibus rariûs.

Subg. II.—BLACUS.

Antennæ corpore breviores; maris 19-articulatæ, filiformes; feminae 17-articulatæ, apice moniliformes: abdomen compressum, segmenti 1^{mi}. tuberculis prope basin: ungues integri: alæ utriusque sexui pari modo areolatæ; stigmatе trigono.

* Bracon. Fam. I. Heterocl. II. B. *N. ab Ess. Berl. Mag.*
V. 19.

Blacus. Sectio I. ———— *Act. Acad.*
IX. 306. Gen. XII.
————— ———— Monog. 189.
Gen. XIV.

Blacus. Sectio b. *Hal. Ent. Mag.* I.
262.

Caput sæpe oblatius quam in præcedentibus: palpi breves, validiores, articulo maxillarium 3^{tio}. labialium 2^{do}. insigniûs dilatatis: antennæ *feminae* breves validæ, articulis exterioribus valde distinctis subrotundatis, ultimo longiore: prothoracis collum minus attenuatum: thorax vagè punctatus pubescens, sulculis postice concurrentibus punctatis: metathorax subcubicus, apice medio quasi retusus, angulis superis productis; rugulosus, arcis minus distinctis, lineolâ longitudinali elevatâ: abdominis segmentum 1^{mum}. brevius, oblongum, rugulosum, tuberculis prope basin:

segmenta posteriora magis compressa : pedes validi et breviores : tarsi graciles : ungues haud pectinato-fissiles : alarum stigma trigonum minus attenuatum : arcola radialis angustior apice acutiùs clausa : nervus cubitalis plerisque ultra angulum lenissime subarcuatus. *Maris* antennæ quam *feminæ* longiores et graciliores, corpore tamen breviores, filiformes, 19-articulatæ : caput oblatius : metathorax obsoletius rugulosus, angulis subdepressis : abdomen gracilius : pedes graciliores : alæ sæpe ampliores.

Adnot.—Character hujus Subgeneris a meipso olim exhibitus *l. c.* nonnihil depravatus est, Sectionem B. tantum referens quoad alas.

Adnot.—*Blaci* Neesiani e Sectione secundâ (*Act. Acad.* IX. 306. Monogr. 192), nobis *Aphidii* sunt e Subgenere primo (*Praon. Ent. Mag.* I. 483). Ibidem collocabat et ipse Neesius quondam Speciem unicam in *Actis Berolinensibus* editam (*Bracon exoletus*, *Berl. Mag.* V. 30, Sp. 47). In *Actis Academicæ* vero et Monographiâ, Species congeneres in Sectionem Blacorum conscripsit, illâ nihilominus in locum antiquiorem relatâ ; quam verisimile est *clm.* auctori non diutius adfuisse, quum characterem e priore opere ne verbo quidem immutatum reddidit.

To be continued.

ART. IV.—*Discussion on the Luminosity of Fulgora Candelaria, &c., at the Ninety-ninth Monthly Meeting of the Entomological Club.* (Mr. DAVIS in the Chair.)

MR. DAVIS. — Gentlemen, the present highly respectable meeting of the friends of the Entomological Magazine,—for I see several amongst us who are not members of the club,—has been convened for the purpose of considering the propriety of altering the figure which appears on the wrapper, and in the title page of the Magazine. It has recently been asserted that the insects of the genus *Fulgora* are not luminous. The whole evidence in favour of the luminosity of *Fulgoræ* is summed up in the “ Introduction to Entomology, by Kirby and Spence ; ” a work of which I scarcely know how to speak in terms of sufficient praise. I will, with your permission, gentlemen,

read the whole passage :—“ A genus, in the order *Hemiptera*, called *Fulgora*, includes several species, which emit so powerful a light, as to have obtained, in English, the generic appellation of *lantern flies*. Two of the most conspicuous of this tribe are the *F. laternaria* and *F. candelaria*; the former a native of South America, the latter of China. Both, as indeed is the case with the whole genus, have the material which diffuses their light included in a hollow subtransparent projection of the head. In *F. candelaria* this projection is of a subcylindrical shape, recurved at the apex, above an inch in length, and the thickness of a small quill. We may easily conceive, as travellers assure us, that trees studded with multitudes of these living sparks, some at rest, and others in motion, must, at night, have a superlatively splendid appearance. In *F. laternaria*, which is an insect two or three inches long, the snout is much larger and broader, and more of an oval shape, and sheds a light, the brilliancy of which transcends that of any other luminous insect. Madame Merian informs us, that the first discovery which she made of this property caused her no small alarm. The Indians had brought her several of these insects, which, by day-light, exhibited no extraordinary appearance; and she inclosed them in a box until she should have an opportunity of drawing them, placing it upon a table in her lodging-room. In the middle of the night, the confined insects made such a noise as to awaken her, and she opened the box, the inside of which, to her great astonishment, appeared all in a blaze; and in her fright letting it fall, she was not less surprised to see each of these insects apparently on fire. She soon, however, divined the cause of this unexpected phenomenon, and reinclosed her brilliant guests in their place of confinement. She adds, that the light of one of these *Fulgoræ* is sufficiently bright to read a newspaper by; and though the tale of her having drawn one of these insects by its own light is without foundation, she doubtless might have done so if she had chosen. Another species is figured by Donovan, in his *Insects of India*, of which the light, though from a smaller snout than that of *F. laternaria*, must assume a more splendid and striking appearance, the projecting part being of a rich deep purple, from the base to near the apex, which is of a fine transparent scarlet; and these tints will, of course, be imparted to the transmitted light.” The passage

you will find in the Second Volume, p. 413. The veracity of the authority of the Introduction to Entomology stands so unimpeachably high, that it seems scarcely necessary for me to say, that on a reference to Madame Merian's Insects of Surinam, I find the abstract here given perfectly correct. Neither need I repeat to you, that the wood-cut on the wrapper of the Magazine represents *Fulgora candelaria*, the *fire-fly* or *lantern-fly* of China.

Before entering on the discussion of the abstract fact of the luminosity of *Fulgora*, I think it necessary to express my opinion as to the course we should adopt on its termination. I would beg briefly then to state, that if the non-luminosity of the *Fulgora* be positively proved, it is incumbent on us at once to deprive it of its rays, which must tend to mislead; and at an early opportunity we must again meet, and consider the propriety of removing it altogether from its present situation, and substituting some other insect in its place. Mr. Doubleday has a motion on the subject, which he will now read to you.

MR. DOUBLEDAY.—I beg to move, “That the representation of *Fulgora candelaria*, which appears on the wrapper of the Entomological Magazine, be forthwith deprived of the radii intended to indicate luminosity, and that the motto, signifying ‘allow me to illuminate the world,’ be henceforth omitted.”

Mr. Chairman, I have to thank you for the impartial manner in which this subject has been introduced. Nothing could have laid the subject so fairly before us as the passage you have read. I now call your attention to the leading fact in that passage; *viz.* that the species *laternaria* is the only species concerning which there is any evidence as to its luminosity, and this evidence is that of Madame Merian, an authoress who has been detected, over and over again, in the most gross mistatements. Witness that remarkable one lately pointed out by Mr. MacLeay, concerning *Mygale avicularia*, which was supposed, on the sole authority of Madame Merian, to kill birds, having first entangled them in its web; a more fabulous story than which the history of gnomes and fairies cannot boast. In the instance before us, Madame Merian gravely tells us, that the *Fulgoræ* are produced from the great *Cicadæ*; so much for her accuracy! But I will trouble you to refer to the note at the bottom of the page which you have

been reading; it runs thus:—"It is necessary to state, that not only have several of the inhabitants of Cayenne, according to the French Dictionnaire d'Histoire Naturelle, denied that this insect shines, in which denial they are joined by M. Richard, who reared the species; but the learned and accurate Count Hoffmanssegg informs us, that his insect collector, Sieber, a practised entomologist of thirty years' standing, and who, when in the Brazils for some years, took many specimens, affirms, that he never saw a single one in the least luminous."

The passage, however, relates a remarkable circumstance, which induces me to quote it, namely, that not only *Fulgoræ*, but the large *Cicadæ*, of the South of France, when dead, become phosphorescent. By the way, you will find the passage in the Encyclopédie Méthodique, Article *Fulgore*, not in the Nouvelle Dictionnaire:—"Après avoir cependant questionné quelques naturalistes qui ont habité les colonies, touchant cette Fulgore qui pouvoit produire une matière phosphorique aussi lumineuse, ils nous ont dit n'avoir jamais pu s'appercevoir que cet insecte eût cette propriété; et peut-être doit-il être encore permis de conserver quelque doute sur la vérité du fait.—M. Richard, naturaliste du roi, a élevé à Cayenne plusieurs espèces de Fulgores, et entr'autres celle dont parle Mérian, sans qu'il ait pu découvrir quelque trace lumineuse sur le corps de ces insectes. Quoi qu'il en soit Réaumur nous apprend qu'ayant eu la curiosité de voir l'intérieur de la vessie de cette Fulgore, il n'y vit qu'une cavité considérable, renfermée par un cartilage médiocrement épais. Quand on supposeroit que les substances qui y étoient lorsque l'animal vivoit, s'étoient desséchées, elles n'auroient jamais pu remplir, lors même qu'elles étoient molles, qu'une petite partie de cette cavité. Se résoudroient-elles en phosphore après la mort de l'insecte, et produiroient-elles alors la lumière qui le fait distinguer? Ce qui peut venir à l'appui de cette conjecture, c'est que j'ai souvent trouvé, au midi de la France, de grandes espèces de Cigales entièrement phosphoriques après leur mort." Here is the antidote with the poison, *three* respectable and accredited witnesses against one notoriously inaccurate one.

I may remark, that the structure and economy of the *Fulgoræ* leads me forcibly to suspect that they are diurnal and

not nocturnal insects; and this being the case, what would be the use of their lights? I shall now proceed to prove, by most unexceptionable witnesses, that the English glow-worm, *Lampyrus*, and cognate genera, are the fire-flies of the old continent; and that these, together with *Elater*, and cognate genera, are the fire-flies of the new; leaving the *Fulgora* to be the fire-fly of poets and painters only. It is unknown except in fiction, therefore let fiction alone retain it.

“ Pictoribus atque poetis
Quidlibet audendi semper fuit æqua potestas
Scimus.”

Does it not become us then to discard a fictitious emblem from a work whose false steps are recorded with anxious accuracy? Beginning with the Old World, our little island, cold though it be, has its fire-fly. The glow-worm is the only representative which we boast of this night-cheering insect, and the luminosity appears to be, in our species, almost confined to one sex, the lady lighting up the beacon of love; the male, however, is not without its tiny lamps, two minute phosphorescent spots appearing on the under side of the *paratetum*. I have a specimen now living, which has been reared from the egg, by my friend Rogerson, of the Greenwich Observatory. It is seldom, in this country, that we have the satisfaction of seeing this insect on the wing, but instances have occurred. At Llanhowel, in South Wales, a resident observer has several times had transitory glimpses of these wandering lights, which might have passed for *ignes fatui*, but that they flew to his reading lamp, and proved themselves corporeal. France, Spain, Italy, and Turkey, have their *luccioli* in abundance. A friend of mine, resident for some years near the Bay of Naples, describes their appearance as superlatively beautiful on a summer's eve. He observed, that when the air was heavy with the *bruma del mare*, they ceased to fly, and settled on the olives and other shrubs, from which he delighted in shaking them, and causing a shower of fire, like the golden rain of an exploded rocket. The oriental Forbes noticed them at Rome. “I have seen them,” says he, “produce a fine effect in the dark recesses of the majestic Coliseum, and illumine the garden of the Villa Medici. On the banks of the Arno they add much to the beauty of a Tuscan evening.” The same author remarked them again in India,

and here his evidence is invaluable, because *he*, a naturalist, expressly declares the *fire-fly of India* (mark that, gentlemen,) to be a *Lampyrus*, and not a *Fulgora*. “While sitting,” says Forbes, “at his tent-door after supper, reviewing his late negociations at Poonah, he perceived the dark side of the grove illuminated by thousands of fire-flies flitting among the branches, and shining with a brilliancy of which the faint light of the European glow-worm gives but little idea. Those who have travelled in Italy during the summer months, and have there seen the *Lampyrus*, or *Lucciola*, although not so numerous as in the Asiatic woods, can easily conceive the nocturnal splendour of these insects in the torrid zone.” And in another place,—“Especially the *Lampyrus*, or fire-flies, which glitter by thousands in the dark recesses of the banian tree, and in perpetual motion on the extremities of the feathery branches of the gracefully waving tamarind, produce a singular and brilliant effect.” The female of these appears to be generally without wings, like our own glow-worm. I recollect Mrs. Heber, in her narrative of the Bishop’s tour in Ceylon, after elegantly describing the wandering fire-flies, she says, “I also saw glow-worms on the ground, just like our English ones, but larger, and more brilliant.” These were evidently the females of the flying ones, which entered her palanquin, and made her start every time they lighted on her muslin dress. This reminds me of the tasteful practice in the East, of the swains adorning their favourite ladies with these shining creatures, which, Smith says, is also done in Italy.

But I am dwelling too long on the *Old World*, which is to me a weary world; my hopes, and wishes, and thoughts, are turned entirely on the *New*, where primæval forests wave their glorious arms, and mighty rivers, broad as seas, pour their resistless waters into the Atlantic. America, thou country of my dreams, when shall I see thee?

“O that *thy* deserts were my dwelling place!”

The fire flies of America are both *Lampyrus* and *Elaterites*; the latter are the most brilliant, and in the greatest abundance. No writer on that lovely country has forgotten to mention them. Prince Maximilian, in his Brazil, does not, as far as I recollect, once mention the *Fulgoræ*; but he continually alludes to the brilliancy of the fire-flies, and always adds,

Lampyrus, Elater. A writer, in a recent number of Blackwood's Magazine, who has evidently seen what he describes, alludes pointedly to the *Elater*. He says,—“ I could not but admire the thousands and tens of thousands of fire-flies that spangled the gulf below, a tiny galaxy; they did not twinkle promiscuously, but seemed to emit their small green light by signals, beginning at the head of the ravine, and glaring all the way down in a wavy, continuous, lambent flash, every fly, as it were, taking the time from its neighbour a-head; then for a moment all would be dark, until the stream of sparkles flowed down once more from the head of the valley, and again disappeared astern of us.” A few lines lower down, in the same passage, we have, “ See that brilliant one creeping up the handle of my whip; it comes along with its two tiny burners, like the lights in a carriage, meeting you.” This was in Jamaica, and reminds me that old Mouffët tells a capital story about Jamaica fire-flies; and these, I have proof positive, are *Elaterites*. When Sir Somebody Something, and Sir Something Somebody, first landed on that island, they saw, at night, a great army of Spaniards issue from a wood with torches, and in their hurry to get back to their ships, they ran neck over heels into the sea. The great army of Spaniards turned out to be fire-flies!

There is a story better still in Solis's *Historia de la Conquista de Mexico*: in fact, the fire-fly decided the fate of Cortez, if not, for some time, of Montezuma. You will doubtless remember that Cortez was recalled by Velasquez, the governor of Cuba, that he refused to obey, and that Velasquez sent Parfilo de Narboez to compel him to return. Cortez was then at Mexico, but hastened back, and met Narboez at Zempoala, after some unsuccessful attempts at reconciliation. Finding that Narboez had by far the greatest force, Cortez attacked him by night, and routed his forces, which, in the obscurity, could not distinguish the number of their enemies. “ At length,” says Solis, “ the battle ceased, because resistance had ceased: the partisans of Narboez shut themselves up in their fortifications; so frightened were they that they dare not even fire, and were only anxious about blocking up the entry. The soldiers of Cortez shouted victory! some for Cortez, some for the King, but the most heedful for the Holy Ghost; exclamations of anticipated joy, which increased the terror of

the enemy. And there was a circumstance which happened very apropos in that conjuncture, namely, that most were persuaded that Cortez had brought a very powerful army, which, as appeared to them, occupied most of the plain. From the windows of their retreat, they discovered, at different distances, some lights, which, interrupting the obscurity of the night, appeared to their eyes lighted matches and troops of musqueteers, being certain insects, *gusanos*, like our glow-worms, *lucernas o noctilucas*, but of greater size and splendour in that hemisphere; a fear which caused much strife among the common soldiers, and left those who were the most courageous, doubtful. So much does fear deceive those who are cast down, and so much are the least trivialities of chance inclined to favour the fortunate." These are, as nearly as I can recollect, Solis's words. I have translated, as well as I could, as I went on, because some, or *one* present, prefers English to any other language.

My favourite, and almost the god of my idolatry, Humboldt, has not said much that I recollect on the subject; nor does he very particularly specify the luminous genera; yet he speaks of fire-flies.—“Comme émus,” says he, “du pressentiment d'une perte aussi douloureuse, tristes et rêveurs, nous nous éloignâmes de ce tombeau d'une peuplade entière. C'était par une de ces nuits sereines et fraîches qui sont si ordinaires sous la zone torride. La lune, entourée d'anneaux colorés, brillait au zénith; elle éclairait la lisière du brouillard, qui, comme une nuage à contours fortement prononcés, voilait la fleuve écumeuse. Une multitude innombrable d'insectes repandait une lumière phosphorique rougeâtre sur la terre couverte de plantes. Le sol resplendissait d'un feu vivant, comme si les astres du firmament étaient venus s'abattre sur la savane. Des bignonias grimpants, des vanilles odorantes, et des banisteria à fleurs d'un jaune doré, décoraient l'entrée de la caverne. Au-dessus, les cimes des palmiers se balançaient en frémissant. C'est ainsi que s'évanouissent les générations des hommes; que s'éteint peu à peu le nom des peuples les plus célèbres! mais lorsque chaque fleur de l'esprit se flétrit, lorsque les ouvrages du génie créateur, périclitent dans les orages des temps, une vie nouvelle s'élançe éternellement du sein de la terre. Prodigue, infatigable, la nature génératrice fait sans cesse éclore les tendres boutons et ne s'inquiète pas si, les

hommes, race perverse et implacable, ne détruiront point le fruit dans sa maturité." The cavern alluded to is that of Atarupé, near the rapids of the Oronoco. You must pardon me for quoting beyond my subject, but it was so beautiful I could not leave off.

In turning over a copy of Oviedo, I met with a whole chapter on "flies and other winged insects, that fly and shine by night." I read it twice over, and will, if you please, give you the substance of it in English as near as I can recollect. "There are in all these islands many flies, or winged insects, and beetles, which shine by night, and fly about, like those which, in Castille, are called luciérnagas (glow-worms) and otherwise, and which fly about in the summer, which do the same here almost at all times, because there is here little difference between the length of the days and nights, and the weather is always mild; for in this island of Española, and the other islands round about, the heat is never excessive, and cold is rarely felt, save when the north wind blows on the sierras, of which there are many. There are, therefore, here, many and different sorts of these glow-worms, but mostly small. However, there is one in particular, which is called *Cocuyo*, which is a thing much to be noticed. This is an animal well known in this island of Española (Hayti) and in the neighbouring ones, and is a species of beetle as large as the last joint of the thumb, or rather less; it has two hard wings, below which are two thinner wings, which it protects and covers with its upper ones when it ceases to fly. It has *eyes* which shine like candles, so that whenever it flies it illuminates the air as would the flame; and if, at the beginning of night, when it is just growing dark, any one should take a *Cocuyo* in his hand, all who needed to light a candle, and saw it from a distance, would come thither to get a light, thinking it to be one already lighted. In like manner, shut up in a dark room, they give sufficient light to see very well to read or write a letter. And if one puts together four or five of these *Cocuyos*, and ties or strings them together, they serve as well as a tolerable lantern in the fields or mountains, or any where soever, the night being very dark. When war was carrying on in this island of Española, and the other islands, the Christians and Indians made use of these lights in order not to lose one another. And especially the Indians, as being most dexterous

in catching these animals, made collars of them when they wished to be seen a league or more off. And thus, both in the fields and houses, people, by means of the light of these *Cocuyos*, do whatsoever they need to do, without the breeze, or a brisk wind, or rain being able to put out their light, and leaving them unable to see whither they go. On this island, when the soldiers sallied out by night, the adalic, or guide, who went before, placed, when the night was dark, a *Cocuyo* on his head, and served as a pharos to all the rest who followed. The same light which this animal has in its eyes, it also has in its back; and when it opens its wings to fly, or flies (goes flying), it shows more light from that which it uncovers, which was below them, and with this it gives as much light as with its eyes; and so the one being joined to the other, the light is greater when it flies. It was customary to keep these *Cocuyos* in confinement for the services of the house, and to sup at night by their splendour. And thus likewise did some Christians in times past, in order not to waste their money in oil for lamps, which then was very dear, or not to be got. And when they saw that from the *Cocuyo* growing weak, or from its grief at its captivity, its shining quality (*virtud resplandeciente*) deaden, or began to diminish, they let it go, and caught others for other following days. The Indians rubbed their faces and chest with a certain paste which they made of these *Cocuyos*, when they celebrated their feasts, and sought to amuse themselves by frightening any one who was off his guard, or knew not what it was; and it appeared as though all those parts which had been anointed with that material were on fire. And as the animal would grow weaker and die, so little by little this brightness faded away, until at last it disappeared from every part, and resolved itself into nothing. And this suffices as to the glow-worm and other animals which shine; of all which, and of all beetles that give light in like manner, I believe that the *Cocuyo* holds the sovereignty in all that is written."

Now the eyes Oviedo speaks of are very plainly the luminous spots on each side of the *prothorax* of the *Elater*, and there appears to be no part in the passage which refers to any insect like the *Fulgora*. I had once the pleasure of seeing this beautiful insect, *Elater*, living and shining; it was in the possession of Mr. Curtis, a gentleman, I believe, known to you

all. From what I have said, I think I have established the fact, that the fire-flies of Mexico, Brazil, Jamaica, England, France, Spain, Italy, Ceylon, and Hindostan, are not in any single instance *Fulgoræ*. I have now only to thank you, Mr. Chairman and gentlemen, for the very kind and attentive manner in which you have been pleased to listen to me.

MR. HANSON.—Mr. Chairman, after the luminous speech of the late Editor, I shall not presume to trespass on your time further, than to say that I perfectly coincide with that gentleman in the opinions which he has advanced, and therefore most cordially second the motion.

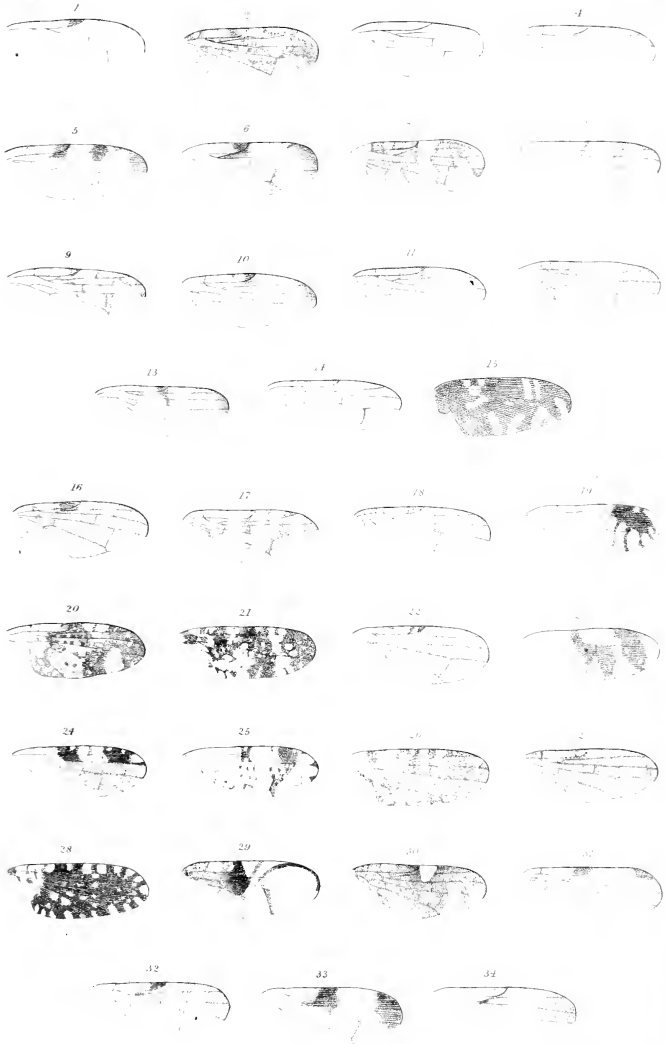
Dr. K——.—Mr. Chairman, I hope I am not out of order: I am so fond of keeping others in order, that I would not for the world be out of order myself; but it seems to me, that before the question is put from the chair, any of the “Noes” ought to be heard. I am aware, Sir, you did not expect that there could be a single “No;” and it is very odd that there should be a “No,” very odd indeed; but, Sir, it is no less odd than true, and I could not sit quiet and give a silent “No,” and so remain in the unpleasant minority of one, because it would look like factious opposition. To the question, Sir, which you will have to propose, I most decidedly say “No.” What! put an extinguisher on the fire-fly!—put out her light!—never! never! never! The learned ex-editor, and author of the Delta Letters, ought never to have thought of such a thing. I congratulate my learned friend certainly on the brilliancy of his speech; it was altogether luminous,—one blaze throughout,—one bright mass of knowledge,—and clear and convincing as heart could desire. I never read any of his productions that displayed greater talent:—he shows up the fire-flies of every country, marshals them before us, and proves, to our infinite satisfaction, that fire-flies are fire-flies, (Mr. DOUBLEDAY, *Elater*). Well, proves that fire-flies are *Elater*. (Mr. DOUBLEDAY, and *Lampyrus*.) Well, *Elater* and *Lampyrus*! be it so. Now, Sir, I have just enough entomology in me to know what these names mean; and at this I am much comforted. And I also know, and I have long known, that *Elater* and *Lampyrus* are luminous insects. I think the learned ex-editor, and author of the Delta Letters, has not illumined their luminosity with any new light. Does

my learned friend advance this as a new discovery? In faith he does: he calls aloud to us in a voice of wonder,

“ Like Katerfelto with his hair on end,
At his own wonders wondering for his bread,—”

that *Lampyrus* and *Elater* are luminous insects! Most precious discovery! most wondrous and learned Delta! and at this you cry, *Ευρηκα*. (Mr. DOUBLEDAY, No! that *Fulgora* is not luminous, that is the point.) O, indeed! Then, Sir, the learned ex-editor, and author of the Delta Letters, did not confine himself to the point; all the pleasing quotations about fire-flies were not to the point, were beside the mark. But what is the question? If I understand it rightly it is this:— Is the insect which stands as figure-head of the fire-fly luminous or not luminous? The insect is called *Fulgora candelaria*. Is it luminous or not luminous? Is that the question, Mr. Chairman? Very well, Sir! then I maintain that as it is luminous by common consent, it must remain luminous until proved to be not luminous. Now, Sir, the learned ex-editor and author of the Delta Letters, as far as I heard him, made no allusion, directly or indirectly, to *Fulgora candelaria*; and therefore his speech, however able, however perfect, however convincing, however comforting, however learned, leaves the main question entirely untouched. (Mr. DOUBLEDAY, I will withdraw the motion.) Oh! withdraw the motion; the Chairman cannot permit it until we have just examined the matter. I am only beginning to peep into it. (Mr. DOUBLEDAY, I have had quite enough.) Well, well, we will make a tack. The learned ex-editor, Sir, proves the non-luminosity of *Fulgora candelaria*, by stating, that Madame Merian had a poetic fancy; and he thus proves her ladyship's taste for poetry. Madame Merian says, that *some insects*, not *Fulgora candelaria*, shone in the box. She opened the box, they fell on the floor, and still shone. To contradict this, a Frenchman is cited, and he most distinctly states, that the insects are phosphorescent as soon as dead. Now, why were not Madame Merian's insects dead? and if dead, they had as much right to shine as the Frenchman's fire-flies. Surely this is but slender proof of the poetry of Madame Merian. I observe, Sir, my friend, the learned ex-editor, is not inclined to press the matter; and I have,





therefore, cautiously avoided all severity in my reply. I will beg to propose, as an amendment, "That this discussion be resumed this day six months."

(*The remainder of the Discussion in our next*).

ART. V. — *Descriptions of the British Tephritites.* By
FRANCIS WALKER.

THE lively and rich colours of these insects, their emerald eyes glowing with the hues of the rainbow, and their wings fancifully adorned with bands, stars, and circles, have been much admired by Entomologists: their habits, while grubs, are also very interesting; most of them inhabit galls on various plants of the syngenesious kind, for piercing which, the female fly has a broad horny *telum*, a character peculiar to the order. The perfect insects walk and fly slowly, and generally repose on flowers. Desvoidy observes that they are to the other *Muscina* as the *Curculionites* are to the *Coleoptera*, or the *Tenthredinites* to the *Hymenoptera*.^a They are allied to the *Sapromyzites* and to the *Phytomyzites*; the narrow *peristoma* (or cavity of the mouth) and the habits of the grubs, distinguish them from the former, the antennæ and the nervures of the wings from the latter, and the *telum* (or tip of the abdomen) from both.

The body is moderate as to size, generally downy, and thinly clothed with hairs and bristles, rarely smooth and shining. The head is transverse, as broad as the thorax, rounded, sometimes narrowed and lengthened in front; the eyes are rather small, brilliant green, varied with splendid colours during life, dull green, or dull red after death; the

^a *Essai sur les Myodaires*, a work that has been little noticed in this country. He has much improved their systematic arrangement; his investigations on their structure and economy are extensive and laborious; and, moreover, he has given to them some hundred new generic names, that have great euphony and simplicity, very unlike those

"Heaps of huge words uphoorded hideously,
With horrid sound, though having little sense,"

now so prevalent in Entomology.

His chief faults are the utter disregard with which he treats the works of Meigen, Fallen, and Wiedemann, and his fondness for giving specific names to mere varieties.

three little eyes are pale, nearly limpid, placed on the front of the head between the eyes, in a triangle, which generally has a dark colour; the parts of the mouth are small; the *peristoma* (or cavity to which the base of the mouth is attached, and in which it is commonly retired during repose) is round, oval, or angular; the *facialia*, which border upon its sides, are fringed with black hairs; the *epistoma* (or front of the peristoma) is often prominent; the feelers are moderately long, their tips armed with a few black bristles: the antennæ are 6-jointed, short; the first and second joints have a few black hairs above, the former is small, the latter larger, cup-shaped; the third is still larger, its shape varying from round to cylindrical; the fourth and fifth are very small, the former joins the base of the third; the sixth is long, dark, like a bristle, almost always downy, the thorax is arched, oval, sometimes nearly square; the scutellum prominent; the abdomen is oval, rather longer than the thorax, more or less arched, sometimes cylindrical or round; it has five cross segments, of which the basal one is the largest; on each side beneath is a long, sometimes hardly seen, striped plate, hiding part of the segments of the belly: the telum is smooth and shining, of the female long, with four segments like tubes; the ovipositor is red, hidden within the telum when not in action; the legs are slender, straight, hairy; the tips of the tibiæ armed with two black spines; the soles of the feet pale; the claws black; the wings are moderate, downy; the five long and two cross nervures nearly straight, one of the latter is in the middle of the wing, the other much longer and nearer the tip; at the base of the wing are some little nervures, more or less indistinct; the costa is hairy, joins the fourth nervure at the tip of the wing, and has two bristles towards its base; the winglets are obsolete.

Among the British species, the snowy white *Urellia*, the rich saffron *Forellia*, the prettily-spotted *Orellia*, and the deep brown *Noeeta*, with its brilliant jet scutellum, are remarkable for their beauty.

Desvoidy has divided his *Myodariæ* into nine families; the Tephritites, or Aciphoreæ, as he calls them, in allusion to their telum, form the sixth; he has again divided these into seventeen genera, that are arranged as follows:—

Mouth	once bent.	Peristoma	long, twice bent.	3d joint of antennæ	long, epistoma prominent.	nearly round	I. ENSINA.
Antennæ	reaching the epistoma	not reach-	ing the epistoma.	Feelers	with four cross bands.	with the side borders not pouting.	IX. SITAREA.
	not long nor thick.	Epistoma	Wings	not prominent.	angular. Colour	yellow, or brown, or green.	XI. TEPHRITIS.
	with four cross bands.	Peristoma	with the side borders not pouting.	Peristoma	rather longer than broad	rather longer than broad	XII. UROPHORA.
	with the side borders	Peristoma	with the side borders	Peristoma	black. Epistoma	prominent and triangular	XIII. ACIURA.
	black.	Epistoma	black.	Epistoma	white	white	XIV. SPHENELLA.
	white	Epistoma	white	Epistoma	white	white	XV. URELLIA.
	Like Xyphosia: peristoma square, or nearly square, the sides slightly stretched out:						
	telum short						XVI. ACINIA.
	Like Acinia: 3d joint of antennæ hollow above: peristoma longer than broad, the borders not stretched out: telum small: wings black, with limpid dots						XVII. NOETA.

ENSINA.—*Desvoidy*.

Distinguished by the pale colour, the head narrowed and lengthened in front, the long and bent mouth, the short and slender telum, and the almost spotless wings.

Body downy; peristoma long and angular; epistoma prominent; feelers long and slender; third joint of antennæ short, nearly round; telum of female flat, longer than half the abdomen; fifth long nervure not reaching the border of the wing; cross nervures straight and upright.

Sp. 1. *Ens. sonchi*. *Yellow; thorax grey, and abdomen green above, wings white, sometimes with a few very small brown spots.* (Plate I. fig. 1.)

Musca sonchi . *Linn. Syst. Nat.* II. 998; *Gmel. Syst. Nat.* V. 2857. 121.

Tephritis sonchi . *Fallén, Dipt. Suec. Ortol.* 14. 23.

Trypeta sonchi . *Meig. Europ. Zweiflug. Ins.* V. 345. 50.

Trypeta obsoleta *Wied. Meig. Europ. Zweiflug. Ins.* V. 349. 60.

Ensinae chrysanthemi, herbarum, pratensis, linariæ, scorzonæræ, daronici . *Desvoidy, Essai sur les Myodaires, 752. 753. 1—6.*

Yellow: head black behind, clothed with white hairs, and round the eyes with a few black hairs; border of the forehead red; mouth almost white; thorax clothed with white hairs and black bristles, grey above, black beneath, yellow before and on each side; scutellum pale green with a yellow border, red at the tip, the disk sometimes grey or green, metathorax black; abdomen dark green above, with a band of yellow on the hind border of each segment, clothed with grey or black hairs and bristles; telum black, of the female with the tip, and sometimes a spot on each side near the base yellow; legs yellow, sometimes brown above; thighs sometimes tawny; 5th joint of tarsi, and sometimes 3d and 4th joints of 4 hind tarsi brown; wings white, with a few hardly seen cross bands, and along the upper border some much darker and more marked small brown spots, varying in number; nervures brown, yellow towards the base of the wing; borders of cross nervures brown; poisers lemon colour. (Length of body 1—1½ line; of wings 2—2⅔ lines.)

Common in the south and west of England during the autumn.

OXYPHORA.—*Desvoidy*.

Has the mouth like *Ensina*, but is much larger, the colour is tawny, the head is not narrowed nor lengthened in front, the wings are rust colour, varied with a few little limpid spots.

Body downy; peristoma nearly round, scarcely longer than broad; epistoma slightly prominent; feelers long and rather broad; 3d joint of antennæ short, oval, compressed, flat above, convex beneath; scutellum rather prominent; abdomen slightly arched; telum very short; wings long; 5th long nervure not reaching the border of the wing; short cross nervure straight, upright; the other one slightly bent, nearer above to the tip of the wing.

Sp. 1. Oxy. Westermanni. Fem. *Rust colour; wings brown, varied with numerous yellow, and a few white spots.* (Fig. 2.)

Musca vinulus? . . . *Harris, Exp.* 117, Pl. XXXIV. fig. 21.

Tephritis Westermanni . *Meig. Europ. Zweifflug. Ins.* V. 333. 32. Pl. L. fig. 6.

Oxyphora Cardui . . . *Desvoidy, Essai sur les Myodaires,* 757. 2.

Rust colour, clothed with yellow hairs and black bristles: head pale, yellow beneath and round the eyes, with a few white bristles above; mouth and feelers tawny, clothed with white hairs; antennæ tawny, 6th joint with a very short down; scutellum tawny; metathorax pale yellow, silky; abdomen not bristly; telum wedge-shaped, not longer than one fifth of the abdomen black at the tip; legs clothed with short yellow hairs; wings rich brown, varied with small yellow and white spots; the former are very numerous, and often joined together in the disk of the wing, they are fewer towards the border, and cease altogether at the tip and along the lower part of the wing; the latter are few, various in size and shape, most of them along the lower border, largest one long and narrow in the disk of the wing between the 4th and 5th long nervures; nervures brown, paler towards the base; poisers tawny. (Length of body $3\frac{1}{4}$ lines; of wings $6\frac{1}{2}$ lines.)

Very rare in England.

TERELLIA.—*Desvoidy*.

Sides of the body nearly parallel, shoulders square.

Body slightly angular; feelers long, broader towards their tips; thorax nearly linear, with three white stripes on each side

beneath ; abdomen with four rows of black spots ; wings either unspotted, or with spots reaching from the upper border into the middle of the wing.

Body tawny, covered with white down ; head broad, short, rounded in front, clothed with white hairs and black bristles, pale beneath ; peristoma angular, scarcely longer than broad, almost white ; epistoma not prominent ; lip moderately long, clothed with black and white hairs ; feelers long and broad, their tips bright yellow ; antennæ yellow ; 3d joint bright yellow, flat above, convex beneath, slightly pointed ; thorax angular, with a few black bristles above, and a black spot beneath on each side between the fore and middle legs ; scutellum covering the metathorax ; abdomen nearly flat, sparingly clothed with black hairs ; telum of the female broad, flat, as long as half the abdomen, gradually narrowing from the base to the tip ; legs clothed with black hairs ; wings limpid ; nervures brown, yellow toward the base of the wing ; cross nervures straight and upright ; poisers yellow.

The species inhabit dry and chalky districts, and are not common.

Sp. 1. *Ter. serratulæ*. Male and Fem. *Wings limpid, unspotted.* (Fig. 3.)

Musca serratulæ . . . *Linn. Syst. Nat.* II. 997. 118 ;
Faun. Suec. 1871 ; *Gmel. Syst.*
Nat. V. 2856. 118 ; *Fabr. Mant.*
Ins. II. 352. 115 ; *Spec. Ins.* II.
453. 96 ; *Ent. Syst.* IV. 356.
182 ; *Turt.* III. 620.

Dacus serratulæ . . . *Fabr. Syst. Antl.* 278. 27.

Tephritis serratulæ . . . *Fallén, Dipt. Suec. Ortol.* 14. 22.

Trypeta serratulæ . . . *Meig. Europ. Zweiflug. Ins.* V.
346.

Trypeta pallens . . . *Wied. Meig. Europ. Zweiflug. Ins.*
V. 347 ; *Pl. L.* fig. 5.

Terelliæ palpata & luteola. *Desvoidy, Essai sur les Myodaires,*
758. 9. 1, 2.

Head beneath and sometimes round the eyes almost white ; mouth tawny, sometimes yellow ; 1st, 2d, 4th, and 5th joints of the antennæ sometimes almost white ; thorax above with two black bands joined together before, pale red beneath ; the two black or rarely brown spots circled with yellow ; metathorax brown ; abdomen

sometimes yellow, 4th segment with a black spot on each side of its hind border; telum of the female with a black spot on each side of the base, brown at the tip; legs pale yellow, almost white beneath; coxæ with flesh-coloured spots; middle and hind thighs partly, and fore thighs altogether flesh-coloured, clothed with white hairs; wings with a yellow spot between the upper border and the end of the 1st long nervure; poisers sometimes almost white. (Length of body 2—2½ lines; of wings 3⅔ lines.)

June and September; Isle of Wight.

Sp. 2. Ter. Alciphron. Male and Fem. *Like Serratulæ but much darker, wings limpid, spotted beneath the upper border.* (Fig. 4.)

Tephritis Alciphron . *Newman Ent. Mag. I. 505.*

Like *Serratulæ* in size and shape: head yellow beneath; disk of the thorax almost black, with three angular tawny spots behind; sides pale yellow; scutellum dark tawny, the sides and tip paler; metathorax brown; spots on the abdomen hardly seen; telum of female with a black stripe on each side above and beneath, 1st segment altogether black; legs tawny; tarsi darker: wings of the male with two large brown spots beneath the costa, one in the middle, the other much larger and reaching to the tip; wings of the female with two small black spots, one at the end of the 2d, the other of the third nervure, and a yellow spot between the costa and the end of the 1st nervure; costa yellow, black towards the tip of the wing; cross nervures of male with brown borders. (Length of body 2—2¾ lines; of wings 3⅔—4 lines.)

June; Isle of Wight.

Note.—*Trypetæ Wenigeri* and *Colon* of Meigen are nearly allied to *serratulæ* and *Alciphron*.

Sp. 3. Ter. florescentiæ. Male and Fem. *Much smaller than serratulæ, colour livelier, wings limpid, varied with white, and with four large black spots.* (Fig. 5.)

Musca florescentiæ . *Lin. Faun. Suec. 1880.*

Musca rufi-cauda . . *Fabr. Ent. Syst. IV. 353. 169.*

Dacus rufi-caudus . . *Fabr. Syst. Antl. 276. 17.*

Tephritis florescentiæ . *Fallén, Dipt. Suec. Ortol. 7. 9.*

Trypeta florescentiæ . *Meig. Europ. Zweiflug. Ins. V. 321. 16.*
Pl. XLVIII. fig. 25.

Head beneath and mouth yellow; thorax yellow beneath, with a black (*male*) or brown (*female*) stripe on each side; disk black,

with a yellow stripe on each side, and an angular spot of the same colour between; scutellum of the female yellow, sometimes reddish yellow; metathorax black, in the female rust colour beneath; 4th segment of abdomen of male with a black spot on each side of its hind border; telum of female rust colour, black above at the base and banded with black before the tip, sometimes black altogether above and at the tip beneath; legs yellow; thighs of the female almost white; wings varied with white, and with four large black spots, varying in size, three of them costal, and the 4th near the lower border where the 5th long and the cross nervures meet; there is also a pale brown spot at the base of the wing, between the 3d and 4th nervures; cross nervures of the female, and sometimes of the male, bordered with brown; a variety has the middle costal spot and the one near the lower border joined together, and thus forming a band across the wing. (Length of body $1\frac{1}{4}$ —2 lines; of wings $2\frac{3}{4}$ — $3\frac{1}{2}$ lines.)

June; near London; New Forest, Hampshire; Isle of Wight.

FORELLIA.—*Desvoidy*.

Distinguished by the rich saffron colour, the peristoma angular and hardly longer than broad, the slightly prominent epistoma, the long and nearly cylindric 3d joint of antennæ, the yellow wings spotted with black.

Body downy, rather long; mouth short; feelers nearly cylindric, not thickened; antennæ rather long; scutellum short, obtuse, nearly triangular, almost hiding the metathorax; abdomen nearly flat above, of the female longer than of the male, and gradually narrowing from the base to the tip; telum of the female with half the length of the abdomen; cross nervures of wings slightly curved, short one having the upper, longer one the lower end nearest the tip of the wing.

Sp. 1. For. arnicæ. Male and Fem. *Saffron colour, wings slightly yellow, varied with grey and white, and with four large black spots.* (Fig. 6.)

Musca arnicæ. *Linn. Syst. Nat.* II. 997. 115; *Faun. Suec.* 1872; *Gmel. Syst. Nat.* V. 2856. 119; *Fabr. Ent. Syst.* IV. 352. 166; *Schrank, Austr. Ins.* 959; *Aldrov. Ins.* 346. Pl. I. fig. 5; *Scop. Ent. Carn.* 941.

- Musca flava*, *alis fulvis*, &c. *Geoff. Ins.* II. 498. 12.
- Musca miliaria* *Schrank, Austr. Ins.* 476. 968;
Gmel. Syst. Nat. V. 2863. 306.
- Musca onopordinis* *Don.* II. 67. Pl. LXII.? *Turt.* III.
 622?
- Musca arcuata* *Fabr. Mant. Ins.* II. 352. 105;
Sp. Ins. II. 451. 86; *Ent.*
Syst. IV. 353. 170; *Gmel.*
Syst. Nat. V. 2856. 242;
Panz. Faun. Germ. XCVIII.
 22.
- Trupanea sphærocephali* . *Schrank, Fauna Boica*, III. 2515.
- Dacus arcuatus* *Fabr. Syst. Antl.* 277. 19.
- Tephritis arnicæ* *Fabr. Syst. Antl.* 316. 1; *Latr.*
Gén. Crust. et Ins. IV. 355;
Dict. d'Hist. Nat. 24. 196.
 385; *Fallén, Dipt. Suec. Ortal.*
 8. 10.
- Trypeta arnicæ* *Meig. Europ. Zweiflug. Ins.* V.
 333. 31.
- Forellia onopordi* *Desvoidy, Essai sur les Myodaires*,
 761. 1.

Body bright saffron colour, tawny beneath, clothed with black and white hairs, and a few white bristles; head beneath and throat white; epistoma rust colour in front; lip tawny, clothed with black and white hairs; feelers yellow, clothed with white hairs; antennæ yellow; metathorax grey; side plates beneath the abdomen brown; telum rust colour, of the female brown at the tip; legs yellow, clothed with black hairs; wings slightly yellow, with several hardly seen grey and white spots, almost white at the base, having also four large black spots, sometimes varied with limpid punctures, the 1st joining the middle of the costa, the 2d and largest at the tip of the wing, the 3d on the lower cross nervure, the 4th and smallest near the base of the wing, under the 5th nervure; costa and nervures yellow, the former brown towards the tip; poisers pale yellow. (Length of body $2\frac{1}{2}$ —3 lines; of wings 4—5 lines.

Common in July; on thistles, near London.

ORELLIA.—*Desvoidy*.

The very prominent borders of the peristoma will distinguish this genus from all the other *Tephrites*. It resembles *Ceratites* in shape and markings.

Sp. 1. Orel. Wiedemanni. *Yellow, thorax varied with black, wings limpid, with four brown bands.* (Fig. 7.)

Trypeta Wiedemanni. *Meig. Europ. Zweiflug. Ins. V. 320. 15. Pl. XLIX. fig. 2.*

Orellia flavicans. . *Desvoidy, Essai sur les Myodaires, 765. 1.*

Head bright yellow above with a few bristles, the front ones black, those behind white, paler beneath; epistoma prominent; mouth bright yellow; feelers not thickened; antennæ bright yellow; 3d joint nearly oval, pointed and slightly turned upwards at the tip; 6th joint very downy; thorax black, clothed with white hairs and black bristles, smooth and shining behind; scutellum bordered with yellow, not hiding the metathorax, with a cross yellow band behind, and nine yellow rays parting from the centre on all sides; these rays are sometimes very broad, and occupy nearly the whole of the disk of the mesothorax; metathorax dull greyish black; abdomen bright yellow, paler towards the tip, each segment with a black sometimes hardly seen spot on either side; telum rust-colour, very short; legs deep yellow; wings limpid with four brown bands joined to the costa, and bordered with darker colour, 1st very short, 2d rather longer and sometimes joined to the 1st., 3d still longer, and reaching the lower border, 4th joined to the 3d., and passing along the costa to the tip of the wing; nervures brown, yellow toward the base of the wing; cross nervures straight and upright; poisers pale yellow. (Length of body 2 lines; of wings 3½ lines.)

Found near London, but is not common.

TEPHRITIS.—*Latreille*.

Colour green or brown: telum of female longer than half the abdomen; wings limpid with five light brown bands bordered with darker colour.

Body downy, clothed with white hairs; head rounded, rust-colour above, yellow beneath; peristoma white, angular, not longer than broad; epistoma not prominent, slightly notched in the middle; mouth short; 3d joint of antennæ nearly cylindrical; scutellum

triangular, rounded at the tip, scarcely hiding the metathorax, which is black and slightly shining above; abdomen clothed with black hairs; telum rust colour, of female wedge-shaped; legs clothed with black hairs; 1st band of wing scarcely seen; costa and nervures brown, yellow toward the base of the wing; shorter cross nervure straight and upright; longer one slightly bent, its upper end nearer the tip of the wing; poisers pale yellow.

Sp. 1. *Teph. cornuta*. *Sea-green, antennæ of male with a long appendage above.* (Fig. 8.)

Musca cornuta . . *Fabr. Ent. Syst.* IV. 357. 186.

Scatophaga cornuta *Fabr. Syst. Antl.* 209. 28.

Tephritis cornuta . *Fallén, Dipt. Suec. Ortol.* 4. 1; *Curtis Brit. Ent.* V. 241.

Trypeta cornuta . *Meig. Europ. Zweiflug. Ins.* V. 318. 12. Pl. XLVIII. fig. 2.

Body sea-green: peristoma broader in front; lip yellow; antennæ yellow, those of the male with the 2d joint emitting a long pale yellow almost cylindric lobe armed with stout black bristles, 2d joint of the female brown above, 3d joint bright yellow, paler at the base; thorax with a few black bristles above, yellow on each side and beneath, with a large grey spot on each side between the fore and middle legs; abdomen with four black spots at the base of each segment from the 2d to the 5th; the spots are often hidden by the border of the preceding segment; legs yellow; wings limpid, 2d and 3d bands shortened; 4th reaching the lower border, 5th at the tip of the wing darker. (Length of body 2—3 lines; of wings 4—5¼ lines.)

June and September; Isle of Wight.

Sp. 2. *Teph. lappæ*. *Tawny, antennæ of both sexes simple.* (Fig. 9.)

Musca arctii . . *Panz. Faun. Germ.* XXII. 23.

Trypeta lappæ . *Meig. Europ. Zweiflug. Ins.* V. 318. 11.

Tephritis arctii? *Desvoidy, Essai sur les Myodaires,* 767. 6.

Tawny, clothed with white hairs and black bristles; antennæ pale red, 3d joint clothed with white down; thorax with a grey spot on each side beneath the fore and middle legs; mesothorax varied with grey above; scutellum almost yellow; abdomen greyish brown, covered with a thick down, and having four black spots at the base of each segment; legs pale tawny; wings with the 2d

band joined to the 3d, and the 4th to the 5th, at the upper border, the two former reaching a little lower than the middle of the wing. (Length of body 3 lines; of wings $4\frac{1}{2}$ lines.)

Found near London.

Sp. 3. *Teph. tussilaginis*. Like *T. lappæ*, but smaller, slenderer, and paler. (Fig. 10.)

Musca tussilaginis *Fabr. Mant. Ins.* II. 353. 122; *Spec. Ins.* II. 454. 101; *Ent. Syst.* IV. 359. 193; *Gmel. Syst. Nat.* V. 2858. 250.

Trupanea acanthi *Schrank, Fauna Boica*, III. 2509.

Dacus tussilaginis *Fabr. Syst. Antl.* 277. 24.

Trypeta tussilaginis *Meig. Europ. Zweiflug. Ins.* V. 319. 13. Pl. XLVIII. fig. 26.

Tephrytes cylindrica et impunctata. *Desvoidy, Essai sur les Myodaires*, 767. 4, 5.

Yellow, clothed with white hairs and black bristles; antennæ pale red, 3d joint clothed with white down; thorax tawny above, with a grey spot on each side beneath between the fore and middle legs; abdomen tawny, covered with a thick down, and having four black spots at the base of each segment; telum darker at the tip; legs yellow; wings with the 2d band joined to the 3d at the upper border, the latter reaching nearly to the lower border, 4th and 5th bands separate. (Length of body $2\frac{3}{4}$ lines; of wings 4 lines.)

Found near London.

Sp. 4. *Teph. arctii*. Like *T. lappæ*, but much smaller. (Fig. 11.)

Musca arctii *Degeer, Ins.* VI. 42. 16. Pl. II. fig. 6—14.

Musca punctata? . *Schrank, Ins. Austr.* 963.

Trupanea punctata? *Schrank, Fauna Boica*, III. 2510.

Tephritis solstitialis *Panz. Faun. Germ.* CIII. 22.

Tephritis arctii . . *Fallén, Dipt. Succ. Ortol.* 4. 2.

Trypeta arctii . . *Meig. Europ. Zweiflug. Ins.* V. 317. 10. Pl. XLVIII. fig. 28.

Tephrytes jaceæ, dorsalis, pusilla et abdominalis . *Desvoidy, Essai sur les Myodaires, 766. 768. 1, 2, 3. 7.*

Light brown, beneath paler, almost tawny; antennæ pale red, 3d joint clothed with white down; thorax grey above, the sides yellow, a black spot on each side between the fore and middle legs; scutellum almost yellow, with three black punctures; spots of the abdomen largest on the 3d segment; legs pale tawny; wings with the 2d band joined to the third, (the latter nearly reaching the lower border), and the 4th to the 5th at the upper border. Length of body $1\frac{3}{4}$ — $2\frac{1}{2}$ lines; of wings $2\frac{3}{4}$ — $3\frac{1}{2}$ lines.)

Common near London, in the autumn.

UROPHORA^b.—*Desvoidy.*

Like *Tephritis*, but colour black, scutellum bright yellow, telum of female very long, compressed, almost cylindric, wings white, with black bands.

Body clothed with grey down and black hairs; head yellow or tawny, with a few black bristles, slightly narrowed in front, black behind; peristoma angular, white, bordered with saffron, hardly longer than broad; epistoma not prominent, slightly notched in front; mouth saffron, yellow towards the base; antennæ short, tawny; 3d joint red, almost cylindric, slightly concave above, convex beneath; throat yellow; thorax beneath and metathorax above shining, the former with a bright yellow line on each side, and a cross band of the same colour at the base of the fore legs; abdomen nearly linear; telum of the female narrowing to the tip; legs clothed with black hairs; wings yellow at the base; costa and nervures yellow, brown towards the tip of the wing; cross nervures nearly upright, longer one slightly bent; poisers bright yellow.

Sp. 1. *Uro. cardui.* *Telum of female as long as half the abdomen, wings with four broad bands forming a waved line.* (Fig. 12.)

Musca cardui . *Linn. Syst. Nat.* II. 998. 126; *Faun Suec.* 1876. 1063; *Degeer, Ins.* VI. 49. 18; *Gmel. Syst. Nat.* V. 2858. 126; *Fabr. Mant. Ins.* II. 353. 120; *Spec. Ins.* II. 454. 100; *Ent. Syst.* IV. 359. 191; *Stew.* II. 263; *Turt.* III. 621.

^b This name has been applied to a genus of *Hemiptera*.

Musca cardui . *Gæd. Ins.* I. 50; *List. Gæd.* 313. 102. Pl. CXXIX.; *Blank. Ins.* 189. Pl. XVI. fig. T.; *Réaum. Ins.* III. 457. Pl. XLV. fig. 12—16; *Leeuwenh.* 58, fig. 10.

Musca alis linea undulata, &c. *Geoff. Ins.* II. 496. 8.

Trupanea cardui, *Schrank, Fauna Boica*, III. 2514.

Tephritis cardui. *Fabr. Syst. Antl.* 321. 21; *Latr. Gén. Crust.* IV. 355; *Règne Anim.* V. 534; *Lam. Anim. sans Vertèbres*, III. 364. 2.

Trypeta cardui . *Meig. Europ. Zweiflug. Ins.* V. 326. 23. Pl. XLIX. fig. 9.

Urophoræ Reaumurii, *liturata*, *Sonchi*, *centaureæ* et *Dejeanii*. *Desvoidy, Essai sur les Myodaires*, 770—772. 4—8.

Head bright yellow, paler beneath; telum of female as long as half the abdomen; legs tawny; coxæ brown; thighs black, tawny at either end; wings with the 1st band joined to the 2d, and the 3d to the fourth above, 2d and 3d joined together below. Length of body $2\frac{1}{4}$ — $2\frac{3}{4}$ lines; of wings $3\frac{1}{2}$ — $4\frac{1}{4}$ lines.)

Inhabits thistles in the south of England during the summer and autumn.

Sp. 2. *Uro. pugionata*. *Telum of the female as long as the abdomen, wings with four separate rather broad bands.* (Fig. 13.)

Trypeta pugionata *Meig. Europ. Zweiflug. Ins.* V. 330. 28. Pl. XLIX. fig. 11.

Urophoræ solstitialis et *femoralis* . *Desvoidy, Essai sur les Myodaires*, 769, 770. 2, 3.

Head tawny above, paler beneath; legs tawny; coxæ yellow beneath; thighs black, tawny at either end; wings with the 1st band shortened, 2d sometimes divided, 3d and 4th sometimes joined together above. (Length of body $1\frac{1}{2}$ — $2\frac{1}{2}$ lines; of wings 3— $3\frac{1}{2}$ lines.)

Common in the south of England during the summer and autumn.

Sp. 3. *Uro. solstitialis*. Larger than *U. pugionata*, telum of female longer than the abdomen, wings with four narrow bands, 1st and 2d often shortened, divided, or wanting. (Fig. 14.)

Musca solstitialis . *Linn. Syst. Nat.* II. 999. 127; *Faun. Suec.* 1879; *Gmel. Syst. Nat.* V. 2858. 127; *Berk.* I. 165?; *Stew.* II. 263; *Turt.* III. 621; *Don.* IX. 15. Pl. 294?; *Fabr. Sp. Ins.* II. 454. 103; *Ent. Syst.* IV. 359. 195.

Musca alis fasciis tribus, &c. . } *Geoff. Ins.* II. 499. 14.

Musca dauci . . } *Fabr. Mant. Ins.* II. 353. 118; *Ent. Syst.* IV. 358. 187; *Gmel. Syst. Nat.* V. 2857. 248.

Musca stylata . . } *Fabr. Mant. Ins.* II. 351. 104; *Sp. Ins.* II. 451. 85; *Ent. Syst.* IV. 353. 168; *Gmel. Syst. Nat.* V. 2855. 241.

Dacus stylatus hastatus et dauci . } *Fabr. Syst. Antl.* 275—277. 13. 15. 22.

Tephritis solstitialis *Fabr. Syst. Antl.* 321. 25; *Fallén, Dipt. Suec. Ortal.* 6. 5; *Lam. Anim. sans Vertèbres*, III. 364. 1.

Trupaneæ cirsiæ et leucacanthi . . } *Schrank, Fauna Boica*, III. 2505. 2507.

Musca jacobææ . *Panz. Faun. Germ.* XCVII. 22.

Tephrites jacobææ et aprica . . } *Fallén, Dipt. Suec. Ortal.* 6, 6. 7, 7.

Trypetæ stylata, cuspidata, aprica et solstitialis . *Meig. Europ. Zweiflug. Ins.* V. 327—329. 24—27. Pl. XLIX. fig. 5, 10, 12, 13.

Urophora cardui . *Desvoidy, Essai sur les Myodaires*, 769. 1.

Note.—Some of these synonyms may belong to the preceding species, for it often agrees with the descriptions attached.

Head tawny above, paler beneath; legs tawny; fore-coxæ yellow beneath; thighs sometimes black at the base; wings with four separate bands, 1st one shortened, sometimes wanting; 2d generally entire, but sometimes shortened or divided, or even nearly effaced; 3d and 4th usually joined together at the upper border,

sometimes separate, the former rarely shortened above. (Length of body 2—3 $\frac{1}{4}$ lines; of wings 3 $\frac{1}{2}$ —4 $\frac{1}{2}$ lines.)

Common in the south of England during the summer and autumn.

ACIURA.—*Desvoidy*.

Like to *Urophora*, but more shining, peristoma longer, telum of female much shorter, wings almost entirely black.

Body shining; head and thorax clothed with black hairs and bristles, the former scarcely narrowed in front; peristoma very pale, angular, much longer than broad; epistoma notched in the middle; mouth red; feelers pale, slender; antennæ red, 3d joint short, slightly concave above, convex beneath; scutellum almost a semicircle, not prominent; abdomen nearly linear; telum of female very short; legs hairy; wings black or brown, varied with limpid spots; nervures brown, yellow at the base; cross nervures nearly upright; poisers yellow.

Sp. 1. *Aci. lychnidis*. *Black, legs red, wings black, with several little limpid spots.* (Fig. 15.)

Musca lychnidis . . *Fabr. Mant. Ins.* II. 353. 120; *Ent. Syst.* IV. 360. 197; *Gmel. Syst. Nat.* V. 2858. 251.

Tephritis lychnidis . *Fabr. Syst. Antl.* 322. 26; *Fallén, Dipt. Suec. Ortal.* 14. 24.

Trypeta lychnidis . *Meig. Europ. Zweiflug. Ins.* V. 324. 21. Pl. XLIX. fig. 6.

Head red; thorax slightly grey above, with a reddish spot on each side near the base of the wing; scutellum sometimes with a red border; spots of wings mostly long and narrow, some of them reaching from the border into the disk. (Length of body 3 lines; of wings 4 $\frac{3}{4}$ lines.)

Very rare in England.

Sp. 2. *Aci. discoidea*. *Red, abdomen black, wings brown, with a few large limpid spots.* (Fig. 16.)

Musca discoidea . . *Fabr. Ent. Syst.* IV. 350. 155; *Gmel. Syst. Nat.* V. 2854. 239?

Dictya discoidea . . *Fabr. Syst. Antl.* 326. 3.

Tephritis centaureæ. *Fallén, Dipt. Suec. Ortal.* 16. 26.

Trypeta discoidea . *Meig. Europ. Zweiflug. Ins.* V. 323. 19. Pl. XLIX. fig. 14.

Thorax greyish brown above; scutellum red; metathorax black; wings brown, at the base limpid with a brown cross band, at the tip with one small and three large limpid spots. (Length of body 2 lines; of wings $3\frac{1}{2}$ lines.)

Very rare in England.

SPHENELLA.—*Desvoidy*.

Like *Urophora*, but head narrowed and lengthened in front, peristoma longer, epistoma triangular and very prominent, telum of female short.

Sp. 1. Sphe. signata. *Black; head tawny, scutellum yellow, wings white, with six dark brown bands.* (Fig. 17.)

Trypeta signata . *Meig. Europ. Zweiflug. Ins. V. 332. 30.*
Pl. XLIX. fig. 4.

Tephritis Hebe . *Newm. Ent. Mag. I. 506.*

Body clothed with black down and hairs; head with a few black bristles, tawny above, paler beneath, black behind; antennæ tawny, 3d joint red, flat above, convex beneath; sides of thorax yellow; metathorax shining; legs tawny, clothed with black hairs; wings inclining to yellow at the base, 1st band hardly seen, 2d shortened at both ends, 3d and 5th nearly reaching the lower border, 4th and 6th confined to the upper border; nervures and poisers yellow, the former brown towards the tip of the wing. (Length of body $1\frac{1}{2}$ line; of wings $2\frac{2}{3}$ lines.)

In the south of England during the summer; but not common.

Musca marginata, Linn. is nearly allied to the genus *Urellia*, but has a larger scutellum, and the spots on its wings are altogether different.

Greyish tawny; legs yellow; wings white, spotted along the upper border and at the tip. (Fig. 18.)

Tephritis marginata . *Fallén, Dipt. Suec. Ortal. 7, 8.*

Trypeta marginata . *Meig. Europ. Zweiflug. Ins. V. 322.*
17. Pl. XLIX. fig. 15.

Body downy, clothed with white hairs; head with a few bristles above (those in front black, those behind white), round the eyes and beneath white, behind black; mouth and borders of peristoma

yellow; antennæ yellow, 3d joint darker; throat black; thorax with a few black bristles above, grey beneath; scutellum almost hiding the metathorax, which is brown; abdomen brown, that of the female with the hind borders of the segments yellow; telum black, of the female shorter than half the abdomen; wings at the base above slightly brown with three small darker spots; beneath the costa are three large black spots, often varied with little limpid circles, the 1st in the middle of the wing, nearly square, and often joined to the 2d, which is near the tip, and reaches the lower border, the 3d at the tip, irregular in shape; two small pale brown hardly seen spots on the middle of the 5th nervure; costa black, yellow at the base; nervures yellow, brown towards the tip of the wing; poisers pale yellow. (Length of body $1\frac{1}{2}$ —2 lines; of wings 3— $3\frac{1}{2}$ lines.)

Common in the south and west of England during the autumn.

URELLIA.—*Desvoidy*.

Distinguished by the white colour, the narrow peristoma, the prominent epistoma, the small scutellum, and the milk-white wings, with a star-shaped spot near the tip of each.

Body short, white, downy, clothed with white hairs; head rounded, narrower in front, with a few bristles above, those between the eyes black, those behind white; peristoma oval, long, narrow; epistoma prominent; mouth short, tawny; feelers yellow, not thickened; antennæ short, tawny, 1st joint clothed with white hairs, 3d almost oval, flat above, convex beneath; thorax with a few black bristles; scutellum small, short, semicircular, not prominent, nor hiding the metathorax; telum black, as long as half the abdomen; legs clothed with black and white hairs; stars in the wings varied with little white circles; nervures yellow, brown towards the end of the wing; poisers bright yellow.

Sp. 1. *Urel. radiata*. *Spots on the wings black*. (Fig. 19.)

Musca radiata . . . *Fabr. Ent. Syst. Suppl.* 565. 157.

Musca alis macula radiata, &c. . . . } *Geoff. Ins.* II. 494. 3.

Tephritis radiata . . . *Fabr. Syst. Antl.* 319. 16; *Panz. Faun. Germ.* CIII. 21; *Fallén Dipt. Succ. Ortol.* 12. 19.

Trupanea radiata . . . *Schrank, Fauna Boica*, III. 2525.

- Tephritis terminata* . *Fallén, Dipt. Suec. Ortul.* 13. 20.
Trypetæ terminata et radiata } *Meig. Europ. Zweiflug. Ins.* V. 343.
 47, 48. Pl. L. fig. 3, 10.
Urellia calcitrapæ . *Desvoidy, Essai sur les Myodaires,*
 774. 1.

Head above pale yellow, with a curved black spot above the base of the antennæ; peristoma pale brown inside; 3d joint of antennæ brown above; legs yellow, thighs almost white; star on the wing black; a small black spot of the same colour on the middle of the 5th nervure; costa black, yellow towards the base of the wing. (Length of body $\frac{3}{4}$ — $1\frac{1}{4}$ lines; of wings 2— $2\frac{1}{2}$ lines.)

In the south and west of England during the autumn.

ACINIA.—*Desvoidy.*

Bands on the wings, broad, spotted, often passing into each other.

Body short, downy, hairy, varying in colour from saffron to black; head rounded, scarcely narrower in front, with some bristles above, those in front black, those behind white; peristoma angular, longer than broad, almost white; epistoma not prominent; mouth short, clothed with white hairs; feelers not thickened; antennæ short; 3d joint almost oval, flat above, with a slight notch before the tip, convex beneath; thorax clothed with white hairs and a few black bristles; scutellum short, almost semicircular, scarcely hiding the metathorax; abdomen clothed with black and white hairs, the former more prevalent at the tip; telum of the female broad, flat, gradually narrowing from the base to the tip, much shorter than half the abdomen; wings banded, the bands varied with numerous little limpid or white circles.

Sp. 1. *Acin. corniculata.* *Saffron colour, wings limpid, with four broad brown bands.* (Fig. 20.)

- Tephritis corniculata* . *Fallén, Dipt. Suec. Ortul.* 8. 11.
Trypeta corniculata . *Meig. Europ. Zweiflug. Ins.* V. 335. 34.
Acinia jaceæ *Desvoidy, Essai sur les Myodaires,*
 776. 1.

Dull saffron colour, paler beneath; head beneath yellow, and clothed with black and white hairs; mouth and antennæ yellow, 3d joint of latter rich yellow; metathorax reddish yellow; a hardly seen brown spot on the sides at the base of each abdominal segment; plates beneath reddish yellow; telum rust colour, of female black at the tip; legs pale tawny, clothed with black and white hairs; wings

limpid, slightly yellow at the base, with four broad united brown bands, varied with many tawny punctures; a small black spot joining the middle of the costa; nervures brown, yellow towards the base of the wing; poisers bright yellow. (Length of body $2\frac{1}{4}$ — $2\frac{3}{4}$ lines; of wings $4\frac{1}{3}$ — $4\frac{2}{3}$ lines.)

Found in England and Scotland during the summer.

Sp. 2. *Acin. parietina*. *Smaller and darker than corniculata, bands of wings more spread.* (Fig. 21.)

Musca parietina . . . *Linn. Syst. Nat.* II. 996. 107; *Faun. Suec.* 1863; *Gmel. Syst. Nat.* V. 2854. 107.

Tephritis pantherina . *Fallén, Dipt. Suec. Ortol.* 10. 14.

Trypeta parietina . . *Meig. Europ. Zweiflug. Ins.* V. 334, 33. Pl. L. fig. 7.

Smaller and darker than *corniculata*; head above saffron colour, beneath yellow and clothed with black and white hairs; mouth yellow; antennæ saffron colour; metathorax yellowish brown; abdomen spotted like that of *corniculata*; telum black; legs reddish yellow, clothed with black and white hairs; wings limpid, with a slight yellow tinge, branded like those of *corniculata*, but the bands are more spread, often over nearly the whole wing; a small black spot joins the middle of the costa; nervures yellow, brown towards the tip of the wing; poisers bright yellow. (Length of body $1\frac{1}{2}$ — $1\frac{3}{4}$ lines; of wings $2\frac{3}{4}$ — $3\frac{1}{4}$ lines.)

In a small variety of the male the 3d band of the wing disappears in front, and consequently does not join the 4th.

South of England, during the summer and autumn.

Sp. 3. *Acin. laticauda*. *Like parietina, but larger, wings more tinged with yellow, bands paler and more spread.* (Fig. 22.)

Trypeta laticauda . *Meig. Europ. Zweiflug. Ins.* V. 339. 41. Pl. L. fig. 11.

Head saffron-colour above, yellow and clothed with black and white hairs beneath; mouth yellow; antennæ saffron-colour; metathorax yellowish brown; abdomen spotted like that of *corniculata*; telum rust-colour, short and broad; legs reddish yellow, clothed with black and white hairs; wings limpid, tinged with yellow; bands tawny, very irregular, and often spread over the whole wing; a small spot joining the middle of the costa and the bor-

ders of the cross nervures brown; nervures yellow, brown at the tip or the wing; poisers yellow. (Length of body 2 lines; of wings $3\frac{1}{2}$ lines.)

Very rare in England.

Sp. 4. *Acin. heraclei*. *Dark tawny, wings limpid with two spreading black bands.* (Fig. 23.)

Musca heraclei . . *Linn. Syst. Nat.* II. 998; *Faun. Suec.* 1877; *Gmel. Sys. Nat.* V. 2858. 125; *Fabr. Ent. Syst.* IV. 354. 172.

Tephritis heraclei . *Fabr. Syst. Ant.* 277. 21.

Trypeta heraclei . *Meig. Europ. Zweiflug. Ins.* V. 338. 39.

Acinia plantaris . . *Desvoidy, Essai sur les Myodaires,* 778. 6.

Dark tawny, paler beneath; head tawny above, yellow and clothed with black and white hairs beneath; mouth and antennæ tawny; telum rust-colour, of the female black at the tip; legs reddish yellow, clothed with black and white hairs; wings limpid, slightly yellow at the base, with two spreading black bands, one through the middle of the wing, and inclining towards the tip below, the other near the tip, much broader; nervures yellow, their tips brown; poisers bright yellow. (Length of body 2— $2\frac{1}{4}$ lines, of wings $3\frac{3}{4}$ —4 lines.)

South of England, during the autumn.

Sp. 5. *Acin. leontodontis*. *Brown, wings white, with two broad black branching bands.* (Fig. 24.)

Musca leontodontis . . *Degeer, Ins.* VI. 46. 17. Pl. II. fig. 15—18.

Musca stellata . . . *Sulzer, Ins.* 216. Pl. XXVIII. fig. 12. c; *Fuesly Schweiz. Ins.* 1125; *Panz. Faun. Germ.* XX. 23.

Musca parietina . . . *Fabr. Mant. Ins.* II. 351. 96; *Sp. Ins.* II. 450. 79; *Ent. Syst.* IV. 350. 154.

Musca scabiosæ . . . *Fabr. Ent. Syst.* IV. 361. 200.

Dacus scabiosæ . . . *Fabr. Syst. Antl.* 278. 26.

Trupanea leontodontis . *Schrank, Fauna Boica,* III. 2519.

Tephritis parietina . . *Fabr. Syst. Antl.* 319. 13.

Tephritis leontodontis . *Fallén, Dipt. Suec. Ortol.* 9. 13.

- Trypetæ leontodontis } *Meig. Europ. Zweiflug. Ins. V.*
 et confusa . . . } 335. 337. 35. 37. Pl. L. fig. 8, 9.
 Acinia claripennis . . . *Desvoidy, Essai sur les Myodaires,*
 778. 7.

Head tawny above, darkly brown behind, yellow and clothed with white hairs beneath; mouth, antennæ, and borders of peristoma tawny; throat dark brown; thorax tawny beneath; metathorax and abdomen greyish brown; underside of the former black and shining in the middle, of the latter tawny; telum black; legs tawny, clothed with black hairs, thighs greyish tawny, outer sides of fore-thighs clothed with white hairs; wings white, each with two broad black sprinkled branching bands, more or less diffused, often joined together in the middle; costa and nervures yellow, brown towards the tip of the wing; poisers yellow. (Length of body $1\frac{1}{2}$ —2 lines; of wings $3\frac{2}{3}$ —4 lines.)

In England and Scotland during the summer and autumn.

Sp. 6. *Acin. hyoscyami.* *Grey, telum black, wings limpid with two narrow black bands.* (Fig. 25.)

Musca hyoscyami . . *Lin. Syst. Nat. II. 998; Faun. Suec. 1873; Gmel. Syst. Nat. V. 2856. 120; Stew. II. 262.*

Tephritis hyoscyami . *Fallén, Dipt. Suec. Ortol. 9. 12.*

Trypeta hyoscyami . *Meig. Europ. Zweiflug. Ins. V. 337. 38. Pl. L. fig. 2.*

Grey, paler beneath; head tawny above, darker behind, yellow and clothed with white hairs beneath; mouth, antennæ, and borders of peristoma tawny; metathorax black and shining beneath; telum black; legs tawny, clothed with black hairs, thighs darker; wings limpid, inclining to white, each with two narrow black sprinkled bands joined to the upper border, one on the middle of the wing very short, the other nearer the tip, and reaching nearly to the lower border; disk of the wing with many little irregular dots; nervures and poisers yellow, the former brown at their tips. (Length of body $1\frac{3}{4}$ line; of wings $3\frac{3}{4}$ lines.)

Very rare in England.

Sp. 7. *Acin. flavicauda.* *Greyish brown, telum rust-colour, wings limpid, each with two dark-grey branching bands.* (Fig. 26.)

Trypeta flavicauda . . *Meig. Europ. Zweiflug. Ins. V.*
336. 36.

Aciniæ pedicularum } *Desvoidy, Essai sur les Myodaires,*
arctii et annulata . } 776, 777. 2—4

Tephritis Theora . . *Newm. Ent. Mag. I.* 506.

Head tawny above, pale yellow, and clothed with white hairs beneath, almost white round the eyes and in the grooves; peristoma bordered with yellow; mouth pale yellow; antennæ tawny, 3d joint yellow; thorax beneath, metathorax and abdomen grey, posterior segments of the latter with hardly seen spots on each side; telum dark rust-colour, of the female black at either end; legs tawny, clothed with black hairs; wings limpid, each with two broad sprinkled dark-grey branching bands, occupying almost the whole of the wing, their colour darker as they approach the costa, which, like the nervures, is black, changing to yellow towards the base. (Length of body $1\frac{1}{4}$ —2 lines; of wings $3\frac{1}{2}$ —4 lines.)

Common in the south and west of England, during the autumn.

Sp. 8. *Acin. absinthii*. *Dark grey, like flavicauda, but smaller, telum black, bands of wings more spreading.* (Fig. 27.)

Musca cinereus . . *Harris, Exp. 75. Pl. XXI. fig. 11.*

Tephritis absinthii . *Fabr. Syst. Antl. 322. 30.*

Tephritis punctella. *Fallén, Dipt. Suec. Ortol. 13. 21.*

Trypeta absinthii . *Meig. Europ. Zweiflug. Ins. V. 340. 42.*

Acinia millefolii . *Desvoidy, Essai sur les Myodaires, 777. 5.*

Tephritis Alethe . *Newm. Ent. Mag. I.* 506.

Dark grey, almost black; head tawny above, pale yellow and clothed with white hairs beneath, white round the eyes and in the grooves; peristoma bordered with yellow; mouth pale yellow; antennæ reddish-yellow; abdomen hoary beneath; telum black; legs tawny, clothed with black hairs; coxæ, trochanters, and thighs grey; wings with two dark grey bands joined together and reaching over the whole surface, varied with numerous little limpid spots and circles, darker towards the fore border; nervures brown, changing to yellow at the base of the wing; poisers bright yellow. (Length of body $1-1\frac{1}{2}$ line; of wings $2\frac{1}{2}-3\frac{1}{2}$ lines.)

Common in England and Scotland during the summer and autumn.

NOEETA.—*Desvoidy*.

Body much arched, scutellum smooth and shining, wings black, with limpid dots.

Peristoma rather longer than broad; epistoma not in the least prominent; mouth short; palpi moderate; 3d joint of antennæ very short, convex beneath, slightly concave above, and turned upwards at the tip, 6th joint long; thorax very convex; scutellum very smooth, shining, convex, semicircular, prominent, almost concealing the metathorax; abdomen much arched; telum convex, longer than half the abdomen, very broad at the base, suddenly narrow and compressed towards the tip; wings black, varied with numerous little limpid circles.

Sp. 1. *Noe. guttularis*. *Brown; scutellum, metathorax, and telum black; legs tawny, with black thighs.* (Fig. 28.)

Trypeta guttularis . . . *Meig. Europ. Zweiflug. Ins. V.*
341. 44.

Noeetæ flavipes et brunica. *Desvoidy, Essai sur les Myodaires, 778, 779. 1, 2.*

Head tawny in front, with a few black bristles before and white bristles behind, beneath very pale yellow clothed with white hairs, rich brown behind; antennæ yellow; thorax rich brown, clothed above with white hairs and black bristles, and varied with little black spots round the bristles, and with some hardly seen brown stripes, pale tawny beneath; scutellum and metathorax black, shining; abdomen dark brown, almost black, clothed with tawny hairs; telum black; legs tawny; coxæ and thighs black, the latter armed with black bristles; wings black, the disk with a few, the borders with many little limpid circles; nervures brown, yellow towards the base of the wing; poisers yellow. (Length of body $1\frac{1}{4}$ —2 lines; of wings 2— $3\frac{2}{3}$ lines.)

Found but rarely in England and Scotland during the autumn.

ANOMOIA.^c

Has the 3d joint of the antennæ much longer and more cylindrical, and the lower cross nervure of the wing much longer and more slanting than the other Tephritites.

Body broad, flat, downy; head short, not narrowed or lengthened in front; peristoma six-sided, scarcely longer than broad, front

^c Ἀνόμοιος, dispar.

side long, hind side short; epistoma not prominent; mouth short; feelers slender; scutellum prominent, semicircular, not hiding the metathorax; abdomen short, broad, nearly round, slightly arched; lateral plates beneath not much developed; telum of the female very short; wings ample; lower end of the longer cross nervure much inclined towards the tip of the wing.

Sp. 1. *Ano. Goedii*. *Grey*; head tawny; legs yellow; wings limpid, with a black spot at the base, sending forth rays to the upper and lower border and to the tip of the wing. (Fig. 29.)

Musca purmundus. *Harris, Exp.* 74. Pl. XXI. fig. 6.

Trypeta Goedii. *Meig. Europ. Zweifflug. Ins.* VI. 382. 64.

Head tawny above, pale yellow beneath, almost white round the eyes and in the grooves, with a few black hairs beneath, and still fewer black bristles above; above the base of the antennæ is a clear white curved spot, its front side notched in the middle; peristoma white; mouth tawny; feelers yellow; antennæ tawny, 3d joint dull red; thorax tawny, bearing a few black bristles, the disk brownish grey, with some half-effaced stripes; scutellum yellow; metathorax black, shining, its sides inclining to tawny; abdomen dark brown, tinged with grey, clothed sparingly with black hairs, tawny beneath; hind border of each segment hoary; telum black; legs yellow, clothed with black hairs; wings limpid, tawny at the base; a large black mark varied with a few little limpid dots reaches from the base nearly to the middle of the wing, and touches the fore but not the hind border; at the end of this are two black cross bands, one reaching the fore, the other the hind border of the wing; beyond these are two longer black bands, one straight passing by the longer cross nervure, and joining the lower border; the other curved, rising to the upper border, and accompanying it to the tip of the wing; nervures and poisers yellow, tips of the latter brighter. (Length of body $1\frac{3}{4}$ line; of wings 4 lines.)

Very rare in England; found in August on a lime tree; near London.

EULEIA.^d

This genus differs from all the preceding by the 6th joint of the antennæ, which is smooth, and neither downy nor hairy; it has

^d Εὐ, benè, λείος, lævis,

the shape of *Anomoia*, but the lower cross nervure of the wing is short and straight.

Body smooth, shining; peristoma rounded, longer than broad; epistoma prominent; mouth hairy; lip bent; feelers stout; 3d joint of antennæ cylindric, rather long; scutellum prominent, semicircular, not hiding the metathorax; abdomen oval, of the male narrower than of the female; telum of female very short, scarcely reaching beyond the abdomen; wings ample.

Sp. 1. *Eul. onopordinis*. *Rust colour or dark brown; legs yellow; wings limpid, along the upper border of each a large brown mark, varied with limpid spots, and sending forth several branches to the lower border.* (Fig. 30.)

Musca cæsi *Harris, Exp.* 75. Pl. XXI. fig. 8.

Musca onopordinis . . *Fabr. Mant. Ins.* II. 353. 125;
Spec. Ins. II. 455. 104; *Ent.*
Syst. IV. 360. 198; *Gmel. Syst.*
Nat. V. 2859. 252; *Stew.* II.
 263.

Musca centaureæ . . *Fabr. Ent. Syst.* IV. 360. 199.

Scatophaga onopordinis . *Fabr. Syst. Antl.* 210. 31.

Tephritis centaureæ . . *Fabr. Syst. Antl.* 322. 28.

Tephritis onopordinis . *Fall. Dipt. Suec. Ortol.* 15. 25.

Trypeta onopordinis . . *Meig. Europ. Zweiflug. Ins.* V.
 316. Pl. XLVIII. fig. 24.

Trypeta centaureæ . . *Meig. Europ. Zweiflug. Ins.* V.
 324. Pl. XLIX. fig. 8.

Body varying from rust colour to dark brown, paler beneath; head tawny, with a few black bristles above, pale yellow or almost white beneath; mouth tawny; feelers and antennæ yellow; thorax clothed with a few white hairs and black bristles, a black dot on each side above the base of the wing, on the disk sometimes alternate dark and pale bands; scutellum sometimes yellow; metathorax black, shining, sometimes with a tawny stripe through the middle; abdomen clothed above with black hairs and a few black bristles; telum black; legs yellow, clothed with white and black hairs, the thighs also with some black bristles; wings limpid, a large brown changing mark covering the upper half of the wing, paler at the base, in it are four limpid spots of various sizes and shapes, and it sends four or five branches that join the lower border of the wing; nervures brown, yellow at the base;

poisers pale yellow. (Length of body $1\frac{1}{2}$ —2 lines; of wings $3\frac{1}{4}$ — $4\frac{1}{4}$ lines.)

Common in England; on currant bushes, hazel trees, &c. in the summer.

ACIDIA.—*Desvoidy*.

Desvoidy does not include this genus with his *Aciphoreæ*, but it can hardly be separated, though it is almost without their peculiar characters, and much resembles some of the *Sapromyzites*.

Body rather long and narrow, slightly shining; head round; peristoma large, angular, not longer than broad; epistoma scarcely prominent; mouth of moderate length; feelers not thickened; 3d joint of antennæ long and cylindric, 6th joint very downy; scutellum small, shining, prominent, semicircular, hiding no part of the metathorax, which is also shining; abdomen of the male convex, nearly cylindric, scarcely as broad as the thorax, rather narrower at the base; abdomen of the female broader at the base, narrower at the tip; telum very short; wings long and narrow; cross nervures straight and upright.

Sp. 1. *Acid. cognata*. Tawny; wings limpid, with tawny or brown bands. (Fig. 31.)

Trypeta cognata. Wied. Meig. Europ. Zweifflug. Ins. V. 315. Pl. XLVIII. fig. 19.

Acidia cognata. Desvoidy, Essai sur les Myodaires, 721. 2.

Body tawny, clothed with a few black hairs and bristles; head almost white round the eyes, pale yellow beneath, a white curved spot above the base of the antennæ; mouth yellow, clothed with white hairs; antennæ yellow; metathorax with a large black spot on each side; legs pale tawny, clothed with black hairs; wings limpid, each with an irregular pale tawny mark reaching from the base to the middle, where at the upper border is a square dark brown spot, beyond this a narrow tawny band darker above stretches across the wing, still nearer the tip is another band of the same size and shape, but brown at both ends, and from it a dark brown curved band runs along the upper border of the wing, and ends with the costa; nervures and poisers yellow, tips of the former darker. (Length of body $2\frac{3}{4}$ lines; of wings $5\frac{1}{2}$ lines.)

Rare in England; found in the autumn on ivy; near London.

Note.—The structure of the two following species is somewhat different from that of *cognata*.

Sp. 2. Acid.? artemisiæ. *Pale tawny; wings limpid, with five or six black spots.* (Fig. 32, 33.)

Musca perelegand *Harris, Exp.* 74. Pl. XXI.
fig. 5.

Musca artemisiæ *Fabr. Ent. Syst.* IV. 351. 162.

Tephritis artemisiæ *Fabr. Syst. Antl.* 317. 5.

Tephrites alternata et interrupta. *Fall. Dipt. Suec. Ortol.* 5.
3, 4.

Trypetæ artemisiæ, alternata, } *Meig. Europ. Zweifflug. Ins.*
continua, intermissa abrotani. } V. 312—314. Pl. XLVIII.
fig. 16, 17. 20, 21, 22.

Body pale tawny, with a few black bristles above, yellow beneath; head round, almost white about the eyes and beneath; peristoma white, nearly round, not longer than broad; epistoma not prominent; mouth yellow, clothed with white hairs; palpi not thickened; antennæ yellow; 3d joint moderately long, nearly cylindric; thorax above with three slender pale brown stripes, and a small black spot close to the base of each wing; scutellum convex, moderate, triangular, obtuse at the tip, not hiding the metathorax, which is black and shining; abdomen long, oval, very slightly arched; telum very short, passing very little beyond the abdomen; legs pale tawny, clothed with black hairs; wings limpid, slightly yellow at the base, having four spots and the tip black; 1st spot large, irregular, nearly square, joining the middle of the costa; 2d small, surrounding the lower cross nervure; 3d still smaller, round, below the fifth nervure; 4th hardly seen, near the base of the wing; nervures brown, yellow towards the base; poisers yellow; a variety has a 5th spot below the costa, between the 1st spot and the tip of the wing; it sometimes joins the 2d, and thus forms a band across. (Length of body 2 lines; of wings $4\frac{1}{4}$ lines.)

May to July; on grass in damp meadows; near London.

Sp. 3. Acid.? Zoë. *Bright yellow; wings limpid, with two or three black spots.* (Fig. 34.)

Trypeta Zoë. *Wied. Meig. Europ. Zweifflug. Ins.* V. 315.
Pl. XLVIII. fig. 14, 15.

Last comes the beautiful little Zoë, with its bright yellow body and black and white wings.

Body bright yellow, with a few black bristles above ; head round the eyes and beneath white ; mouth pale yellow, clothed with white hairs ; antennæ bright yellow ; thorax with three slender pale brown hardly seen stripes above and a lemon-colour stripe on each side ; metathorax black, shining ; abdomen clothed with black hairs ; telum rust colour ; legs yellow, clothed with black hairs ; wings limpid, slightly yellow at the base, with two large black spots, one nearly square, joining the middle of the costa, the other at the tip ; the female has a third narrower spot joining the upper border before the tip of the wing ; nervures yellow ; poisers bright lemon colour. (Length of body $1\frac{1}{4}$ — $1\frac{1}{2}$ line ; of wings $3\frac{1}{3}$ — $3\frac{2}{3}$ lines.)

May and June ; on grass in meadows ; near London.



ART. VI.—*Memoir on the Metamorphosis and Natural History of the Pinnotheres, or Pea-Crabs.* By W. THOMPSON, F. L. S.

IF we were to search out an instance amongst the *Crustacea*, best calculated to exemplify the employment of deep design, and admirable adaptation of an animal to the mode of life it was intended for by its benevolent Creator, I think we should find it in the *Pinnotheres*. No person who reads this memoir with attention, but must be convinced of these obvious truths, or insensible to the operation of a providence, which caters for the most insignificant creature with as much care as for man himself, and which shows the Supreme in his attributes of omniscience and omnipotence, here, as at every step we take in our investigations into the ample book of nature.

The species of this curious and highly interesting genus of crabs, of which the type is *Cancer pisum*, Linn. the *Pinnotheres pisum* of Latreille, &c., are exclusively parasitic, but unlike the more familiarly known hermit-crabs, which take up their residence in empty univalve shells, these find their way into the tenements of living bivalves, which the females never afterwards quit ; there they remain, feed, grow, receive the visits of the males, and breed. How wonderfully they are adapted to this mode of life is obvious on the slightest inspection : their small size, rounded form, without angles or projecting spines, the softness and yielding nature of their shell,

the delicacy of all their members, their extreme inactivity, are all circumstances which, on the other hand, render them more or less unfit for a separate existence; and yet some naturalists, and amongst them the intelligent and accomplished Cuvier, shut their eyes, as it were, to all these peculiarities, and pretend to doubt the leading points of their history, and imagine that it is only by accident we find these and other Crustacea within the bivalve shells! It is not because Pliny, in his voluminous compilation, appears to be at variance with himself, in his account of this animal, nor that because both ancients and moderns have embellished the subject with various imaginary conceits, that we are to discredit a circumstance so often noticed by competent observers, and that in various different species, and in both the Old and New World, and which indeed it is so easy to be convinced of by due investigation. No doubt, other crustaceous animals are occasionally found within bivalve shells, but this appears to be rare, and they are obviously of species which have a separate existence; not so the *Pinnotheres*, the females of which are *never found* in any other situation, but within living shell-fish, and the males but rarely, and this because they appear to go from shell to shell in search of unimpregnated females, at the season of their amours. To be convinced, let any person take a sweep with a dredge on any bank of old muscles, modioli, or pinnae, where the *Pinnotheres* have been before observed, and almost every shell will be found to contain one full-grown female, some two, and others three, independent of young ones and males, which occasionally occur in common with the females, while not a single stray individual will be seen. As the fishermen at Cove often have recourse to those shell-fish for bait, I have had a pint, and upwards, of the pea-crab brought to me out of the muscles obtained in a few hauls of the dredge, and although so very abundant, I have myself dredged in every direction within the harbour, with a very fine net, and at all seasons, and never procured *a single specimen* of the pea-crab, either male or female, in this way, although crabs equally small (*Porcellanæ*) have been abundantly captured.

Asistotle, of all the ancients, is the only naturalist who has given us any correct notions of these animals; but as he probably did not investigate for himself, he seems to be in doubt, whether the *Pinnophylax*, or guardian of the *Pinna*, was a small shrimp, or a crab. Lib. V. cap. xv. A few lines further

on, he says, "There breed in some shells white and very small crabs; the greatest numbers are found in that species of muscle which have the shell protuberant (*Modioli*, no doubt); next in that of the *Pinnæ*, whose crab is named *Pinnotheres*. They are also found in cockles and oysters. These little crabs never grow in any sensible degree, and the *fishermen* imagine that they are formed at the same time with the animal they inhabit." He also gives currency to the idea, that their lives are so dependent upon each other, that if the shell-fish loses its little crab, they shortly afterwards perish themselves. It would be idle to combat such palpable absurdities; I shall, therefore, proceed to state what appears to be matter of fact.

The pea-crabs differ so much in the appearance of the two sexes, that it is not to be wondered at if they have been considered as forming distinct species by some of the most acute naturalists, a difference that results from that wonderful adaptation of the means to the end proposed throughout the whole of the creation. The females being of a domestic and indolent nature, adapted to live constantly enfolded within the soft mantle of the inhabitant of the shell, are soft and globular, with very short members; the males, on the contrary, being erratic, and going from shell to shell, require a form and structure more calculated to make their way amidst banks of shells, and within the opening valves of such as favour the residence of their mates; hence they are of a flatter form and firmer texture, of a smaller size, with long compressed members, and those adapted to swimming as well as running, being densely and deeply fringed; their extreme activity, and the facility with which they swim, contrasting singularly with the remarkable indolence and inactivity of the other sex. This peculiar structure in the males may serve to explain that passage of Aristotle, from which Cuvier supposed that the Grecian philosopher intended a species of *Portunus*,—"Cancelli autem qui perquam exigui in pisciculis reperiuntur, pedes novissimos latiusculos habent, ut ad nondum utiles sint, quasi pro pinnullis aut remis pedes haberentur."—*De Part. Anim. Lib. IV. cap. viii.*, as quoted by Cuvier, in his *Diss. Crit. sur les Ecrivisses*.

As the females are found with an amazing group of ova under their abdominal plate, in spring, summer, and autumn, it is probable that they have several successive broods; this circumstance renders it no difficult matter to select a number

of females with mature ova at any convenient time, and to preserve them alive in sea-water for a few days, or until the ova should hatch.

METAMORPHOSIS IN PINNOTHERES.

From several females selected and kept alive after the above manner, I had the satisfaction to see the ova hatch in great numbers under the form of a new kind of *Zoë*, differing from all those previously discovered, with the front and lateral spines deflected, so as to resemble a tripod. In this stage the minute animals are like all the *Zoea*, purely natatory, disperse themselves abroad, probably undergo a further change, and may be supposed to gain an easy access within the bivalve shells, before they lose the power of swimming. For a considerable time the young females are scarcely to be distinguished from the males, and in this stage both differ so much from the adult, as to render it probable that they have often been taken for individuals of a different species, as would appear to have been the case with Dr. Leach, whose figures of *Pinnotheres Latreillii*, in Mal. Pod. Brit. T. XIV. f. 6, 7, 8., refer to the young of his *P. pisum*; this, I find, is also the opinion of Montagu.

In what the food of the *Pinnotheres* consists remains to be determined, but must necessarily be, either the minute marine animals which flow in with the current of sea-water to the bronchia and mouth of the shell-fish, or the mucous secretions and ejections of the animal itself. The various notions entertained upon this subject, and upon the connexion subsisting between these two animals, may serve as an amusing conclusion to this outline of the natural history of the *Pinnotheres*, and cannot fail to excite our surprise, that such fables should ever have been written, quoted, and given credit to, by men of the character of Cicero, Pliny, Oppian, Hasselquist, &c.

“The *Pinna*,” says Pliny, “is never found without its companion, which is called *Pinnotheres*, or by others, *Pinno-phylax*; this is a little shrimp, in some places a small crab, which bears it company in order to partake of its food. The *Pinna* gaping wide, and showing her naked body to tempt the little fishes, they soon make their approaches, and when they find they have full license, grow so bold as to enter in and fill it; this being seen by the guardian shrimp, by a slight nip he gives the signal to the *Pinna*, who thereupon shuts her shell

and suffocates whatever it incloses, giving a share of the booty to her companion."—Pliny, Hist. Nat. Lib. IX. cap. xlii. This history is nearly copied after Cicero de Nat. Deorum, Lib. II. cap. xlvi. Oppian has a conceit still more absurd, giving to the *Pinnotheres* a remarkable degree of ingenuity and dexterity, in supposing that it throws a small stone between the valves of bivalve shells, on finding them open, which preventing them from closing, enables it to devour the inhabitant! Hasselquist goes astray in another direction, and supposes the crab to go out and cater for the *Pinna*, and when it returns, to cry out for the shell to be opened!!

On a due consideration of the facts stated in the former part of this memoir, and reasoning from analogy, we may fairly conclude that the crab is altogether useless and quite unnecessary to the well-being of the shell-fish, and indeed attended with more or less inconvenience and annoyance, but that the shell-fish is absolutely requisite to the very existence of the crab, as much so, as all other animals to their respective parasites.

The species of this genus would merit a separate memoir, bearing in mind the discrepancies presented by their young and by the two sexes, which even misled the best Crustaceologist of the age, who mistook both the one and the other for so many different species, describing the young as *Pinnotheres Latreillei*, and the male as *P. varians*.—Mal. Pod. Brit. T. XIV. f. 9, 10, 11.

On this part of the Irish coast but two species have been hitherto observed, viz. *P. pisum* and *P. pinnae*, the latter being found in *Pinnae* and *Modioli*. In the Mediterranean and Red Sea, some others are met with in the various species of *Pinnae*, and as some of these are $2\frac{1}{2}$ feet in length, we find their parasitic *Pinnotheres* to harmonize in relative size, being in these huge bivalves nearly as large as a pigeon's egg. In America, one species inhabits the *Ostrea virginica*. In the West Indies one has been discovered by the late L. Guilding, in a cell, near to the muscular attachment of the animal of *Turbo pica*! Many more will, no doubt, be added to the list of species already known, now that the attention of Naturalists has been directed to these singular animals.

From the statements of Aristotle and Pliny before alluded to, and those of a later date, by Forskal, Desc. Anim. p. 94, under the head of *Cancer custos*, of which he gives as the

habitat "Lohajæ intra Pinnae nigrae; in saccato raro," it is probable that some *Macrourous decapoda*, of an unknown genus, participates in the singular manners and habitudes of the pea-crabs.

It does not appear that the *Pinnotheres* are used as food any where except in the United States of America, where the species described by Mr. Say, under the specific name of *Pinnotheres ostreum*, and found in the common oysters of that country, is said to be "excellent food, and those who eat oysters seldom reject it. When the fresh oyster is opened in considerable numbers, the crabs are often collected and served apart for the palates of the luxurious."—*Journ. Acad. Nat. S. Phil. Vol. I. p. 68.* From this it may be presumed, that the bad consequences often arising from eating muscles, &c., and attributed to the presence of these animals, must be owing to other causes.

Fig. 1.

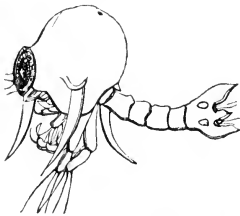


Fig. 2.

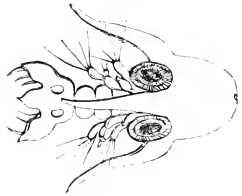


Fig. 3.

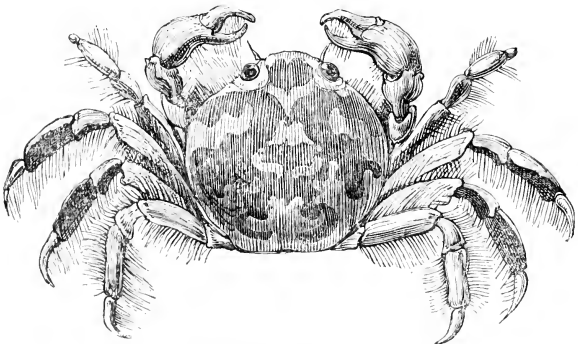


Fig. 1. Zoe of *Pinnotheres pisum* magnified.—Fig. 2. The same in a front view.—
Fig. 3. Male of *Pinnotheres pisum*, or Pea-Crab, magnified.

ART. VII.—*Insects found on Hampstead Heath.* By W. E. SHUCKARD.

DEAR SIR,—It may not prove wholly uninteresting to your readers, particularly to those located in or near the metropolis, to be apprised, now that the season is about to commence, of what one particular district in its immediate vicinity promises them by the exercise of a due degree of assiduity. It has fallen to my lot to capture the following insects at Hampstead and Highgate. I do not pretend to give it as a *Fauna Insectorum* of that district, although it may be considered as a contribution thereto, for my attention was directed chiefly to the collection and observation of the habits of the *Aculeate Hymenoptera*. In this pursuit I have had, however, the good luck to introduce one or two entirely new things to the British lists; and I strongly advise every collector of the insects of Great Britain not to neglect a place which seems hitherto most undeservedly to have been very much overlooked, and which is, I dare say, as rich in the other orders as I have found it in my favourite one. What would the Aurelian say to the capture of Petiver's *Cynthia Hampsteadense*? I certainly cannot promise him so much, but a friend of mine took, two years ago, within almost a stone's-throw of the Heath, that remarkable variety of *Vanessa Urticæ*, of which, I believe, only three specimens are known to exist.

In the list of Coleoptera I include those only which I consider my best captures. I have taken a great number of more common ones, with which it would be idle to swell the array, but in the list of the Aculeate Hymenoptera, I mention all that I have taken at the above place, and they will be found to constitute the majority of the known British species; and besides these, I have captured many new ones, which, as I have not yet named, I can merely indicate. The insects in *italics* were unknown as British until I took them, and I consider them very interesting additions to our Fauna. The list of the multitude of the species of *Tenthredinidæ*, and *Ichneumonidæ*, and *Diptera*, which I have not yet had leisure to examine and name, I will forward to you at some future time.

COLEOPTERA.

Lamprias chlorocephalus	Oiceoptoma thoracica	Simplocaria semistriata
Ocys tempestivus	Tetratoma ancora	Onthophilus striatus
Choleva angustata	Cerylon Histeroides	Onthophagus ovatus
	Lycytus oblongus	Aphodius testudinarius
	Megatoma undata	Hoplia argentea

Necrobia quadra	Crabro albilabris	Nomada ruficornis
Corynetes violaceus	affinis	Fabriciella
Ptilinus pectinicornis	spinipectus	quadrinotata
Anobium Castaneum	Diodontus tristis	flavoguttata
Striatum	luperus	rufocincta
Hylesinus Fraxini	minutus	Sheppardana
Cionus Scrophulariæ	Xylæcus insignis	Dalii
Tanymecus Palliatus	gracilis	ferruginata
Brachytarsus scabrosus	corniculatus	Signata
Saperda cylindrica	Pemphredon lugubris	and fourteen species not de-
Tetrops præusta	Cemonus unicolor	terminable, by Kirby.
Callidium Alni	lethifer	Melecta punctata
Toxotus meridianus	Mellinus arvensis	Cælioxys conica
Donacia Lemnæ	Gorytes mystaceus	Stelis aterra
dentipes	4-fasciatus	Megachile Willughbiella
sagittaria	libitinarius	ligniseca
impressa	tumidus	centuncularis
Proteus	Psen bicolor	Anthidium manicatum
simplex	Equestris	Chelostoma maxillosa
Crioceris melanopa	Cerceris arenaria	Heriades campanularum
Mniophila muscorum	Odynerus (many species)	Osmia hirta
Cryptocephalus moræi	Epipone spinipes	cærulescens
Cassida salicorniæ	Vespa vulgaris	bicornis
Chilocorus 4-verrucatus	rufa	Eucera longicornis
Coccinella impunctata	Saxonica	Saropoda furcata
Mycetocharus scapularis	Germanica	vulpina
Rhipiphorus paradoxus	holsatica	subglobosa
Proscarabeus violaceus	two apparently new	Anthophora retusa
Megalodera thoracica	Andrena rosæ	Haworthana
Pselaphus Heisei	cingulata	Apathes rupestris
Bryaxis fossulatus	albicans	campestris
Arcopagus bulbifer	fulvescens	Barbutellus
	cineraria	vestalis
	nitida	Bombus muscorum
	tibialis	floralis
	nigroænea	Beckwithellus
	bimaculata	Sowerbianus
	Trimmerana	Curtisellus
	varians	Hypnorum
	helvola	Posterellus
	Gwynana	sylvarum
	spinigera	fragrans
	armata	Hortorum
	subdentata	Skrimpshiranus
	fulva	soroensis
	Clarkella	terrestris
	Smithella	lucorum
	rufitarsus	subinterruptus
	fulvicrus	Donovanellus
	contigua	Burrellanus
	chrysosecelus	Cullumanus
	albicus	pratorum
	Shawella	Derhamellus
	minutula	Raiellus
	nana	lapidarius
	parvula	Harrisellus
	pilosula	
	xanthura	
	convexiuscula	
	fuscata	
	Afzeliella	
	and forty species, which I can-	
	not determine by Kirby.	
	Cilissa tricincta	Diptera.
	Panurgus ursinus	Hæmatopota Italica
	Nomada Goodeniana	Bombylius major
	alternata	minor
	Lathburiana	Dioctria æstuans
	flava	craboniformis
	rufiventris	Sybistroma (new species?)
	Marshamella	Sargus pallipes
	cornigera	Chrysothoxum arcuatum
	subcornuta	bicinctum
	lineola	Criorhina Oxycanthæ
	sexcincta	Sericomya borealis
	Schæfferella	Buceutes — ?
	Jacobæ	Gasterophilus Equi
	solidaginis	Echinomya grossa
	picta	Tachina (several)
		Gonia aurifrons
		Musca (several)
		Anthomya (ditto)
		Ulidia
		Lissa dolium

HYMENOPTERA.

Cimbex femorata ♀
Abia sericea ♀
Methoca Ichneumonides ♀
Tengyra Sanvitali ♂
Myrmosa melanocephala
Tiphia minuta
Sapyga punctata
Pompilus niger
notatus
cinctellus
exaltatus
fasciatellus
fuscus
affinis
gibbus
crassicornis
viaticus
Ammophila sabulosa
hirsuta
Tachytes pompiliformis
Astata boops
Nyssus spinosus
interruptus
trimaculatus
dimidiatus
Oxybelus uniglumis
Trypoxylon figulus
clavicerum
Crabro cribrarius
patellatus
tarsatus
Xylurgus
sexcinctus
vagus
vagabundus
subpunctatus
lobatus
leucostoma
capitosus
podagricus
elongatulus
proximus
assimilis

A goodly assemblage! will, I expect, be the exclamation of many upon seeing this list; but I honestly assure them, that every individual insect has been captured by myself within a circumference of less than five miles upon the Hampstead and Highgate district. I can promise them equal success if they will but work as hard as I have done. My only instrument has been a bag-net; and all my captures I secure in small pill-boxes, for I care not to say that I dread impaling an insect alive. If we allow ourselves extraordinary latitude in tracing systematic analogies, let us make one step further, and conceive analogies of feeling to exist;—if erroneous (as has strongly been endeavoured to be proved, but never satisfactorily) we certainly err on the right side—that of humanity—which I feel well rewarded for having respected, by the beautiful condition of the insects in my collection. I advise the collector not to be deterred by the fear of having this sentiment styled morbid, for it is a duty to be as summary as possible in the destruction of life, when it is rendered essential to the pursuit of science. The development of man's intellect is of more importance than the life of any subordinate creature, although for its attainment we are not privileged to give unnecessary pain by inflicting a lingering death. It is very evident that they possess feeling, although, perhaps, remote in its acuteness to our's; therefore, to refer the contortions of an impaled insect to mere impatience of restraint, is, I take it, a bitter sarcasm upon the obtuseness of our own sensibility.

I hope the above list will induce collectors to consider those places worth their attention, and I wish them more success than I have myself met with; but to insure it, they must be assiduous.

Yours, &c.

29, Grove Street, Camden Town.

W. E. SHUCKARD.

ART. VIII.—*Monographia Chalciditum.* By FRANCIS
WALKER.

“ ——— the green myriads in the peopled grass.”

(Continued from Vol. II., page 502.)

SECTIO IV. Fem.

Corpus breve, parvum: caput thorace paullo latius: mandibulæ subquadratae, arcuatae, dentibus 4 sat longis acutis armatae; dens 1^{us}. magnus, arcuatus; 2^{us}. 3^{us}. et 4^{us}. minores: maxillæ longæ, subarcuatae: laciniae angustæ, acuminatae, intus lobatae; palpi 4-articulati, filiformes, graciles; articulus 1^{us}. mediocris; 2^{us}. paullo longior; 3^{us}. 1ⁱ. longitudine; 4^{us}. subfusiformis, 2^o. duplo longior: labium longiovatum, angustum; palpiger apice furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, ligula vix longiores, extrorsum crassiores; articulus 1^{us}. mediocris, 2^{us}. brevissimus, 3^{us}. longiovatus, 1^o. longior et crassior: antennæ graciles, fere filiformes, corporis dimidio multo longiores, apice vix crassiores; articuli 5^o. ad 10^{um}. curtantes; clava fusiformis, articulo 10^o. plus duplo longior vix latior: thorax ovatus: prothorax supra vix conspicuus: mesothoracis parapsides scuto in unum confusæ: metathorax brevis: abdomen ovatum, supra planum, apice paullo attenuatum, non compressum nec angulatum; segmentum 1^{um}. magnum; 2^{um}. et sequentia ad 5^{um}. breviora; 6^{um}. et 7^{um}. paullo longiora: oviductus abdomine occultus: alæ amplæ; nervus cubitalis radiali multo brevior.

Sp. 62. Pter. longicornis. Fem. *Viridi-æneus, antennæ nigrae, pedes fulvi, alæ sublimpidæ.*

Viridi-æneus, parum nitens: oculi ocellique obscure rufi: antennæ nigrae; articulus 1^{us}. fulvus: abdomen æneum; discus nigro-cupreus; segmentum 1^{um}. viride, basi fulvum, apice æneo-cupreum: pedes pallide fulvi; coxæ æneo-virides; meso- et metatarsi flavi, apice pallide fuscæ: alæ sublimpidæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fulvum, minutum. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{2}{3}$.)

Var. β.—Caput et thorax æneo-iridia.

Var. γ.—Caput viride : antennæ articulo 1^o. apice fusco : thorax æneo-viridis : stigma flavum.

Var. δ. Var. γ. similis : antennæ articulo 1^o. flavo : abdomen viridi-æneum.

Var. ε.—Caput et thorax viridia : pedes flavi ; meso- et metatarsi pallidiores, apice fulvi.

Found near London.

SECTIO V. Mas et Fem.

Mas.—Corpus angustum, sublineare : caput thorace latius : antennæ subfiliformes, capitis thoracisque longitudine ; articuli 5^o. ad 10^{um}. subæquales ; clava lanceolata, articulo 10^o. duplo longior non latior : thorax longiovatus : prothorax brevissimus : parapsidum suturæ vix conspicuæ : abdomen depressum, basi ad apicem gradatim latescens, thorace multo angustius et paullo longius ; segmentum 1^{um}. longum ; sequentia breviora, subæqualia : sexualia exerta : alæ mediocres ; nervus cubitalis radiali brevior.

Fem.—Caput thorace paullo latius : antennæ extrorsum crassiores ; articuli 5^o. ad 10^{um}. paulatim curtantes et latescentes ; clava articulo 10^o. duplo longior et paullo latior, articulus 11^{us}. linearis, 12^{us}. 13^{us}. mucronem brevem abrupte acuminatum fingentes : abdomen ovato-lanceolatum, thorace latius et paullo longius, supra planum, subtus convexum, non angulatum nec compressum : oviductus occultus.

Sp. 63. Pter. subniger. Mas et Fem. *Nigro-æneus, antennæ nigro-piceæ, pedes fusco-flavi, femora viridia, alæ sublimpidæ.*

Mas.—Niger, obscurus, parum æneonitens : oculi ocellique rufi : os fulvum : antennæ nigro-piceæ ; articuli 1^{us}. et 2^{us}. nigro-ænei : abdomen nigro-æneum, nitens : sexualia fulva : pedes fulvi ; coxæ et femora nigro-viridia : meso- et metapedum tibiæ fusco cingulata, tarsi flavi apice fuscii : alæ sublimpidæ ; squamulæ et nervi fusca, illæ apice obscuriores ; stigma parvum.

Fem.—Antennæ basi caput et thorax nigro-viridia : abdomen nitens. (Corp. long. lin 1—1 $\frac{1}{6}$; alar. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—*Mas*, caput et thorax nigro-viridia : protibiæ et protarsi pallide fusca.

Var. γ. Mas, Var. β. similis : meso- et metatibiæ fuscæ, apice basique fulvæ.

Var. ♂.—*Fem.* mesotibiæ omnino fulvæ; metatibiæ fusco anguste cingulatæ.

September; coast of South Devonshire and Cornwall.

SECTIO VI. Fem.

Corpus mediocre: caput thorace latius: antennæ graciles, extrorsum crassiores, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. lineares, curtantes; clava longiovata, articulo 10^o. duplo longior et manifeste latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen longiovatum, acuminatum, subtus carinatum, non angulatum nec compressum, thorace longius; segmentum 1^{um}. magnum; sequentia breviora, 2^o. ad 6^{um}. longitudine crescentia: oviductus occultus: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 64. Pter. latipennis. Fem. *Æneo-viridis, abdomen purpureum, antennæ fuscæ, pedes flavi, alæ limpidæ.*

Æneo-viridis, nitens: caput viride: oculi ocellique rufi; antennæ fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen purpureum; segmentum 1^{um}. viride, basi cupreum, apice purpureum; 2^{um}. et sequentia basi æneo-viridia: pedes læte flavi; coxæ virides; femora fulva; metatibiæ fulvo cingulata; meso- et metatarsi pallide flavi, apice fusci: alæ limpidissimæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fuscum, minutum. (Corp. long. lin 1½; alar 2.)

Found near London.

Sp. 65. Pter. imbutus. Fem. *Antennæ quam præcedenti obscuriores, alæ minores.*

Cupreo-æneus, parum nitens: caput postice æneo-viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. obscure fuscus, basi fulvus: abdomen viridi-cupreum; discus purpureus; segmentum 1^{um}. basi viride cupreo varium: pedes fulvi; coxæ et femora viridia, hæ apice flava; meso- et metapedum tibiæ fusco-cingulatæ apice flavæ, tarsi pallide flavi apice fusci: alæ flavo-limpidæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. 1½; alar. 1¾.)

September; Isle of Wight.

Sp. 66. Pter. mediocris. Fem. *Caput quam præcedentibus minus.*

Viridi-æneus, parum nitens: caput thorace paullo latius: os fulvum: oculi ocellique rufi: antennæ fuscae; articulus 1^{us}. fulvus, apice obscurior; 2^{us}. viridi-fuscus: abdomen purpureo-cupreum; segmentum 1^{um}. læte viride apice cupreum; sequentia basi viridia: pedes fusci; coxæ virides; femora apice flava; meso- et metapedum tibiæ pallide fuscae apice flavæ, tarsi flavi apice fusci: alæ limpidae; squamulæ et nervi flava, illæ apice fuscae; stigma fulvum, parvum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{3}$; alar. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Var. β.—Antennæ articulo 1^o. fusco, basi fulvo: thorax æneo-viridis: stigma fuscum.

September; Isle of Wight.

SECTIO VII. Fem.

Corpus longum, angustum: caput thorace paullo latius: antennæ extrorsum crassiores, corporis dimidio vix longiores; articuli 5^o. ad 10^{um}. curtantes, sensim latescentes; clava longiovata, acuminata, articulo 10^o. duplo fere longior vix latior: thorax longiovatus: prothorax brevissimus; mesothoracis parapsides scuto fere in unum confusæ: metathorax brevis: abdomen subfusiforme, acuminatum, thorace multo longius, supra planum, subtus angulatum, non compressum; segmenta 1^{um}. et 6^{um}. sat longa, reliqua breviora: oviductus abdomine occultus: alæ mediocres; nervus cubitalis radialis brevior.

Sp. 67. Pter. spicatus. Fem. *Viridis, abdominis discus cupreus, antennæ nigrae, pedes flavi, femora fulva, alæ limpidae.*

Læte viridis: oculi ocellique obscure rufi: antennæ nigrae; articulus 1^{us}. fulvus, apice nigro-fuscus: abdomen thorace angustius; discus cupreus; segmentum 1^{um}. cyaneo-viride, cupreo varium: pedes læte flavi; coxæ virides; femora fulva; tarsi apice fusci; protarsi pallide fulvi, apice obscuriores: alæ limpidae; squamulæ et nervi flava, illæ apice nigrae; stigma minutum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{3}$; alar. lin. $1\frac{3}{4}$ —2.)

Var. β.—Abdomen purpureum; segmenta basi viridia, 1^{um}. cyaneo-viride apice purpureum; stigma fulvum.

Found near London.

ART. IX.—*Notes on a Review of Mr. Swainson's Preliminary Discourse on the Study of Natural History.* By EDWARD DOUBLEDAY.

SIR,—Well knowing how great a friend you are to fair criticism, I have not hesitated to send you the enclosed Notes, with a view to their publication in your next number. My object is, to illustrate the degree of candour and fairness with which Mr. Swainson's excellent Preliminary Discourse has been reviewed in the Athenæum.

Had that review emanated from a less respectable source I should not have noticed it; but when a periodical, so universally esteemed for the fairness and correctness of its remarks, deviates from the honourable course it generally holds, I do feel that it is incumbent on some one to notice it, and I only regret that it has not already been done by some one more competent than myself. I will not deny that there are some few trivial errors in Mr. Swainson's Discourse, some trifling omissions, but they are like spots on the sun, only conspicuous when beheld through mediums which magnify them, and shear off the bright rays from the other parts. But let me here say that I altogether exonerate the Editor of the Athenæum from blame; I believe that he has, unknowingly, been made the tool of some disappointed and rejected scribbler, or of some one,

“Blest with each talent, and each art to please,
And born to write, converse, and live with ease,”

can

“Bear like the Turk, no brother near the throne:
View him with scornful, yet with jealous eyes,
And hate for arts that caused himself to rise.
Like Cato, give his little senate laws,
And sit attentive to his own applause;
Who, if two wits on rival themes contest,
Approves of each, but likes the worst the best;
Who but must laugh, if such a man there be,
Who would not weep if Atticus were he.”

ATHENÆUM. No. 366.
Nov. 2, 1834.

PRELIMINARY DISCOURSE ON
NATURAL HISTORY.

1. “Our author takes a fancy to depreciate Cuvier and the whole school of Comparative Anatomists, as if their labours had had no effect

1. “It is the transcendent genius he (Cuvier) has shown as a Geologist and Comparative Anatomist, that will perpetuate his name as long

on the progress of Zoology.—He estimates them exactly in proportion as he understands them.”

2. “Mr. Swainson’s facts are not accurate, and his bibliographic knowledge incorrect.”—(Followed by the pompous announcement of two little known works of Merrems, and one by Caius, in 1570, upon Breeds of Dogs.)

3. Relations of analogy—“by which it appears the author *intends resemblance*; though we need scarcely stop to say these are matters totally distinct.”

4. “Relations of analogy have chiefly been sought out by the exertions of himself and his brethren, and behold the specimens which he produces of the value of their labours.

‘The eagle he is lord above,
The lion lord below,’ &c.
‘The zebra and the tiger,’ &c.

“The fact, indeed, of the resemblance in all these cases, is perfectly undeniable; but no (collateral) proofs are to be drawn from them!”

5. “On another point we can be more positive.—We had the pleasure, this morning, of seeing a considerable number of the Sloanean insects; which we have Mr. Swainson’s authority for asserting, cannot now, by any possibility, be in existence! To be as particular as

as those sciences are cultivated.”—P. 87.

See also p. 86.

“The incomparable (dissections of) Savigny.”—P. 87.

“The exquisite and elaborate work of Poli on the Comparative Anatomy of the Mollusca, is alone sufficient to immortalize a name; and this unrivalled publication led the way to the valuable Memoirs by Cuvier on the same class.”—P. 89.

2. Instead of two or three, the writer, *had he known of them*, could have enumerated near 200 books, which, in the “*Sketch*” of Zoology, Mr. Swainson must have purposely omitted, for they would have filled the volume.

3. “Relations or resemblances, in the ordinary acceptation of the words, have long been considered as of two kinds, expressed by the terms *analogy* and *affinity*.”—P. 182.

4. These are *popular* illustrations of what the writer actually admits to be resemblances—that is, *analogies*. The “specimens” of *scientific analogy* constantly appealed to, are those substantiated by Mr. MacLeay, in the circles of Lamellicorn insects, and by Mr. Swainson, in the Northern Zoology: of both which “specimens” the writer is truly or wilfully ignorant.

5. A quibble. The author’s obvious meaning is, that the insects could not now exist in an entire, or even a tolerably perfect state; and this the writer confirms. Having seen these relics, he *knows* that they are all “ghosts”—broken wings, “a good deal faded in colour,” as he

possible," &c.—one, a *Prionus*—" is the ghost of an insect."

6. (This, I presume, is intended for the mortal stab.)

" Mr. Swainson seems incapable of forming a just conception of the peculiar genius or merits of the men whom he attempts to describe. Pliny, without doubt one of the most learned men of antiquity;—Pliny, the very type of Encyclopædists;—Pliny, whose works contain, as he himself informs us, extracts from more than 2,000 volumes; is characterised by Mr. Swainson as deficient in—what do you suppose, gentle reader?—in *erudition!* We fear (?) Mr. Swainson might have sought for this deficiency nearer home."

says; about 150 fragments, in short, of what was once a collection of 5,435 specimens, the number originally deposited "safely" in the British Museum."

6. "His (Pliny's) voluminous works rather show us a compilation of other men's thoughts and discoveries, than a selection of well-digested information or of original research. Amidst all the polished graces of diction, *great and diversified erudition*, and no inaptitude for occasionally describing with clearness and precision, we look in vain for the powerful genius and the originality of his great master Aristotle; and we at once perceive that Natural History, under the Romans, had made a retrograde movement."—*Prel. Dis.* p. 8.

ART. X.—*List of Entomological Works.*

1. *British Entomology; by John Curtis. Nos. 133 and 134, January and February, 1835.*

2. *Illustrations of British Entomology; by J. F. Stephens. Nos. LXIX. to LXXI.*

3. *A Manual of Entomology, from the German of Dr. Hermann Burmeister; by W. E. Shuckard, M. E. S. With Original Notes and additional Plates. No. I. Price 1s.—*We have received the first number of this useful work, of which we venture to say, that it will materially extend the

" Mr. Swainson has communicated to the Editor a little anecdote belonging to this subject:—In the year 1817, long before the present Zoologists of the British Museum (excepting Mr. Kœnig) came there, I assisted my friend, Dr. Leach, one day, in picking out these "ghosts" of the Sloanean Collection, (then deposited in the dark under-ground vaults.) from among hundreds, nay, thousands, that were even then reduced to dust." And yet this writer takes upon himself to inform Mr. Swainson upon his own personal acts!

taste for Entomology. Its cheapness (for the whole will be comprised in eighteen numbers, price 1s. each) will render more accessible a knowledge of the researches of Kirby, and of many celebrated French and German entomologists, from whose works Dr. Burmeister's Manual contains copious extracts. The present number is accompanied with two plates, illustrating the eggs, larvæ, and pupæ of insects.

4. *Philosophical Transactions of the Royal Society of London*, 1. 834. *Part II. On the Nervous System of the Sphinx Ligustri Linn. during the latter Stages of its Pupa and Imago State; and on the Means by which its Development is effected; by George Newport, Esq.*—This work, of which the first part was published in 1832, is illustrated by five plates, beautifully representing the anatomy of the insect.

5. *The Magazine of Natural History, &c.; conducted by J. C. Loudon, F. L. G. and Z. S. &c. No. XLVII. March, 1835.* 1. *Notice of the Ravages of Insects upon Barley and Turnips; by J. C. Farmer, Esq.: with Observations thereon, &c.; by J. O. Westwood, Esq., F. L. S., &c.* 2. *Illustrations in British Zoology; by George Johnston, M. D.*—In this latter article are figures and description of *Camponia eruciformis*, which is supposed to be the larva of some Dipterous fly; if this be the case, it is a solitary instance of a larva living in the sea.

6. *Outlines of Comparative Anatomy; by Robert E. Grant, M. D., &c. Part I. containing Osteology, Ligaments, and Muscles, illustrated with Sixty-five Woodcuts.* 1835.—We have been delighted with the perusal of this excellent work, and we earnestly recommend it to the attention of all lovers of Natural History.

7. *Histoire Naturelle des Insectes; par M. V. Andouin et M. A. Brullé.* 1834.

8. *Monographie des Passales et des Genres qui en ont été séparés; accompagnée de Planches dessinées par l'Auteur, où toutes les espèces ont été figurées; par A. Percheron.* Paris, 1835.

9. *Hymenopterorum Ichneumonibus affinium, Monographiæ, Genera Europæa et Species illustrantes; scripsit C. G. Nees ab Esenbeck, Dr. Volumen Secundum. Stuttgartiæ et Tubingæ, 1834.*

10. *Iconographie, &c. des Coléoptères d'Europe; par M. le Comte Dejean, et M. le Docteur J. A. Boisduval. Tome IV. Livraison 7. Paris, 1834.*

11. *Magasin de Zoologie; par F. E. Guérin. Paris, 1834.*

12. *Iconographie du Règne Animal de M. le Baron Cuvier; par M. F. E. Guérin. Paris. Livraison 37. Insectes, pl. 15, 16, 17, 18, 19, 20, 51.*

13. *Suites à Buffon, &c. Histoire des Insectes; Diptères par M. Macquart. Tome Premier. Accompagné de Planches. Paris. 1834.*

14. *Die Wanzenartigen Insecten, &c. von D. Carl. Wilh. Hahn.; Zweiter Band, Fünftes Heft. Nürnberg, 1834.*

15. *Die Arachniden, &c. von de Carl. Wilh. Hahn.; Zweiter Band, Viertes Heft. Nürnberg, 1834.*

ART. XI.—Varieties.

1. *Professor Studer's Cabinet and Books.*—We are requested to state that the representatives of the late Professor Studer, of Berne, wish to sell his cabinet of Insects. The collection is extremely complete in Swiss specimens, containing many that are unique; all are in a state of high perfection. There are about 4000 species, and 14,000 specimens. The *Lepidoptera* are all set on English needles, the *Coleoptera* on pieces of card, and every part displayed with a perseverance that cost the worthy possessor his eyesight. The collection remains at Berne, and may be seen on application to either of the present professors. The entomological works of the late professor are also for sale, including Cramer, Olivier, Degeer, Reaumur, Schœffer, Jurine, Stoll, Herbst, Rœsel, Esper, Lamarck, Huber, Meigen, Borkhausen, Ochsenheimer, Panzer,

Encyclopédie Methodique, &c. Applications for further information is to be made to M. le Pasteur Studer, at Erlenbach, canton of Berne.

2. *Vitality of *Æstrus Ovis**.—On the 26th of September last, being at Ventnor, in the Isle of Wight, I observed on the walls of the house a fine specimen of *Æstrus Ovis*. Having captured the insect, I pierced it, and being about to leave for a day's excursion, I set the wings out, knowing that Dipterous insects generally die speedily. I believe I opened the box several times before my return to town, but the insect appeared perfectly still; at least I did not observe any thing to attract my attention. But, on the 8th of October, I was about to unpin the specimen and consign it to my cabinet, when, to my surprise, I found it still alive, and comparatively strong and active. Entertaining, as I do, the opinion that insects are not susceptible of much sensation, I am still averse from allowing them to remain pierced when they may so readily be deprived of life by the process described in Vol. II. p. 436; but in this case, I thought the fact so remarkable, that a departure from my ordinary plan, which had been unavoidably carried so far, might be permitted, for the sake of ascertaining to what extent vitality, under such circumstances, might exist. I examined the box day by day, and it was not till the evening of the 13th that I found the legs motionless; even then they were sufficiently pliable to be moved so as to set the insect out. I am not aware whether there is any instance on record of life enduring in an insect, especially of this order, for so long a period. Regarding its peculiar economy and habits, it appears to me to be an interesting fact, and affords, I think, a pretty conclusive argument against those who contend for "beetles and flies suffering as much pain as the human species, or the lower warm-blooded animals,"—a doctrine so frequently to be met with in all and sundry the books written for the young on Natural History. It would be a curiosity indeed in physiological science could we hear of a man, pinned by a lancer's spear to the earth, resisting hunger, cold, and pain, for sixteen days; or of a turnspit dog, who should be spitted in his turn, whining out his breath for a fortnight, without even the smell of the cookery to which he had been accustomed.

I trust it will not be thought that I am contending for the

practice of every insect to die by the pin. We may be inflicting a minor degree of suffering—though I think this extremely doubtful, and conceive that it would be almost as easy to persuade me that because the vegetable when cut, often pours out its juices and dies, that it also is conscious of suffering.

A. H. DAVIS.

3. *Bites of Insects*.—During the early part of November, a gnat alighted on one of my fingers, and coolly elevating its hinder pair of legs, very gently insinuated its set of lancets into my skin. I allowed the fragile phlebotomist to exercise her skill for a few seconds, but finding the process not particularly agreeable, I broke the whole set of lancets by a gentle pressure. I anticipated, from past experience, that the venom would produce a considerable inflammation, but no signs followed, and I concluded I had put a stop to her operations before the poison entered. Not the slightest degree of irritation followed for twenty-two hours, when a slight itching of the finger began at the precise point where the puncture was made; it increased considerably, and on the next morning I found the usual indication of a gnat bite, a small but conspicuous swelling, which continued to annoy me for some days. I was not before aware that so long a period elapsed between the bite and its effects.

Connected with this, I may mention a fact which occurred to me some years since; a specimen of *Stomoxys irritans* alighted on the fleshy part of my hand, between the fore-finger and thumb, and instantly pierced the skin; the first plunge of the lancets gave me some pain, but I was curious to watch the process; I took out my glass and endured the annoyance, watching the blood-thirsty wretch fill up each segment of its previously thin body. I waited and watched till it had gorged so plentifully as to let fall a drop of pure blood from the anal extremity; when not knowing but, like Munchausen's horse, it might continue to drink, merely making a canal of itself, I punished its trespass by summarily putting it to death.

A. H. DAVIS.

4. *Chlorops circumdata*.—The name of this insect was inserted by mistake in a list of described *Diptera*, new to Britain, in Vol. II. p. 439 of the Magazine.—ED.

ENTOMOLOGICAL MAGAZINE.

 JULY, 1835.

ART. XII.—*Discussion on the Luminosity of Fulgora Candelaria, &c., at the Ninety-ninth Monthly Meeting of the Entomological Club.* (Mr. DAVIS in the Chair.)

(Concluded from page 57.)

MR. HOYER.—Mr. Chairman, I beg leave to second the amendment. I think the objections made by our learned friend, the author of the Letters of Delta, are any thing but sound. He sets out with attempting to throw a slur over the accuracy of Madame Merian; and brings forward, certainly, a very high authority to his support,—namely, Mr. MacLeay. The charge, notwithstanding all this, I think, will not stand the test of a cross-examination. Let us bring up the poor lady upon her defence, against these mighty Goliaths. Now, what says she?

“J’ai trouvé sur le Quajares, plusieurs grosses araignées noires de cette espèce, qui avoient leur domicile dans ce gros nid rond, qui représente le coccon de la chenille de la planche suivante, car elles ne filent pas des coccons longs, comme quelques voyageurs ont voulu me le faire accroire, et elles sont armées de dents aiguës, dont la morsure est très dangereuse, parcequ’elle y rependent, je ne sais quelle humidité. Les *Fourmis*, leur servent de nourriture, et elles les attrapent sur les arbres, ou elles les évitent difficilement parceque, comme toutes les araignées, elles ont huit yeux, &c. Quand elles ne trouvent pas de fourmis, elles *arrachent* des petits oiseaux de leur nids, et elles en sucent tous le sang.”

Here, then, is nothing about entangling the bird in the web; and I conceive she has a right to retort upon her accusers. Her account I think rational; and that so powerful an insect as she describes, when pressed by hunger, should attack the nest of the humming-bird, is, in my opinion, by no means improbable. That the old, or parent bird, would not become its prey, is likely; but what resistance could a brood of young ones make in the absence of the parent bird? Little or none, I expect, will be allowed; and, therefore, under these circumstances, I see no reason to doubt her statement.

Now as to the fire-fly: any person reading her account of it, will readily perceive, that as to the larva of the insect, she writes in doubt; and, consequently, with ambiguity. Her words are as follows:—

“Les Indiens ont voulu me persuader que de ces mouches, provenoient les ‘Lantarendragers’ ou ‘Portes-Lanterne,’ qui sont tels que j’ai ici représenté,” &c.

Further on, she says, it is true:

“Je conserve une de ces mouches, qui est prête à se transformer: elle a conservé toute la forme d’une mouche, n’ayant pas même changé ses ailes; mais cette vessie, dont j’ai parlé, lui a crue à la tête,” &c.

Here it is pretty evident she may be at fault, and confounding the larva of the one with the other.

In describing the perfect insect, however, she is clear and distinct; and its very local name (in my opinion, one of the strongest proofs of her correctness,) bears her out in her statement. In truth, a person reading her history of the insect, must feel it was next to impossible for her to make a mistake, unless it was a wilful one. To do so, she apparently could have no object; therefore, until the author of the Letters of Delta brings forward something like clear and distinct proofs of her inaccuracy, I shall vote for the support of the poor slandered fire-fly.

MR. WALKER.—Mr. Chairman, I shall beg leave to address a few words to you in support of the motion of the author of the Delta Letters. Many kinds of *Fulgora* inhabit Africa and Asia. *F. candelaria* is very abundant in China; and it is next to impossible, that their luminosity, if real, would have escaped the notice of the European residents, or that the natives would not have alluded to it by giving the insects some significant

name: yet that property has never been noticed in them, but frequently in *Lampyris*. In the last-mentioned genus, and in the phosphorescent *Elateres*, the luminous parts have a pale sulphur colour quite different from that of the rest of the body; whereas the snout of *Fulgora* never shows the like peculiarity. Von Sack, in his "Voyage to Surinam," mentions three different species of insects there, which are called fire-flies. His description of *F. laternaria*, or the lantern-carrier, is probably copied from Merian. He adds: "On putting two of them in a glass, a common print may easily be read by it. It seems, that the real species is principally found in the mountainous parts of Guiana, and only appears there in the rainy season. I have not been able to procure a living one." He then describes *Elater* and *Lampyris*. Lacordaire observes, that at Cayenne, where the *Fulgoræ* are very rare, some of the inhabitants say that they emit a very brilliant light; others absolutely deny this fact. Having never seen the insects alive, he was obliged to remain in doubt. Spix and Martius often saw *F. laternaria* alive, but never observed any phosphorescence in it. The Indians call it *Jacarénam-boya*, or the crocodile-snake, and say that it inflicts wounds, and is extremely venomous. It flies swiftly, describing large circles, and appears chiefly in the evening on the sandy islands of the Amazon river. Its evening flight is an argument very much in favour of its being luminous; but even allowing the luminosity, still it has a snout very different in shape from those of *F. candelaria*, and the rest of the species of the Old World; and there is not the slightest authority for maintaining that these latter are luminous. As for common consent proving their luminosity, common sense proves that their luminosity would have been observed and talked of had it existed. It would be as rational to maintain that every *Elater* is luminous. I was astonished when I heard the author of the Letters of Rusticus talking about *common consent*; he told us that the weasel sucked blood by *common consent*; and that if a tail had been denied him by his first historian, he would be tailless by *common consent*. Common consent on subjects, means that the human mind has never thought about them till roused and freed from bondage by peculiar circumstances. Kœmpfer, in his History of Japan, tells us, that "the glow-worms (*Cicindelæ*) settle on some trees, like a fiery cloud, with this surprising circumstance, that

a whole swarm of these insects, having taken possession of one tree, and spread themselves over its branches, sometimes hide their light all at once, and a moment after make it appear again with the utmost regularity and exactness, as if they were in a perpetual systole and diastole." This was on the river Meinam. Of *Buprestis vittata*, in Japan, he says, "Another particular sort of Spanish flies is called *Fan-mio*; they are extremely caustic, and ranked among the poisons. They are found upon rice-ears, and are long, slender, and smaller than the Spanish flies, blue, or gold coloured, with scarlet or crimson spots and lines, which makes them look very beautiful." He thus describes another insect unknown to me:—"But the finest of all the flying tribe of insects, and which, by reason of its incomparable beauty, is kept by the ladies among their curiosities, is a peculiar and scarce night-fly, about a finger long, slender, round-bodied, with four wings, two of which are transparent, and hid under a pair of others, which are shining, as it were polished, and most curiously adorned with blue and golden lines and spots. They say that all other night-flies fall in love with it; and that to get rid of their importunities, it maliciously bids them (for a trial of their constancy) to go and to fetch fire. The blind lovers scruple not to obey commands; and flying to the next fire or candle, they never fail to burn themselves to death. The female is not near so beautiful as the male, but grey, or ash-coloured, and spotted." Howison, in his "Views of European Colonies," thus notices the West Indian fire-flies:—"One species emits a flash of white light at regular intervals of two or three seconds; while the other, or larger kind (*Elater noctilucus*), displays two blazing spots of an emerald colour, and of unremitting brightness. The aborigines of Hispaniola are said to have employed the fire-flies of the latter sort to destroy the gnats and small insects which infested their huts, and also to give light in the evenings, and when they went abroad. In the last case, they would tie several fire-flies to their toes, and be guided by their light during a journey through the darkest woods. In the present day, the poorer inhabitants of Cuba often use as a lantern, a calabash pierced with small holes, and containing twelve or fifteen *Cucuyos*; these afford sufficient light for all ordinary purposes, but it is necessary to shake the vessel occasionally, in order that the concussion may excite the insects to give out

all their phosphorescence, which becomes feeble if they are allowed to remain long in a state of inactivity." I fear that all this will be considered unavailing as regards the emission of new light on the main question.

MR. NEWMAN.—Seeing that my friend, the Editor, presses the original motion, I shall think it my duty, Mr. Chairman, to press the amendment proposed by my friend, the author of the Letters of Rusticus. I was in hopes, when the author of the Letters of Rusticus so ably and clearly pointed out that the author of the Letters of Delta had in no way disproved the luminosity of our insect; and when my learned friend, seeing the weakness in this point of his otherwise masterly speech, requested of the Chairman permission to withdraw his motion; I was in hopes, I say, that the discussion would then have at once terminated. Great indeed was my surprise, when I heard the present Editor of the Magazine going over a series of interesting but intangible topics, and adducing inapplicable arguments, precisely similar to those of the author of the Letters of Delta, which the author of the Letters of Rusticus had already so ably refuted. I am compelled to say, that the speech we have last heard, however luminous, throws on our luminous subject but one solitary ray of light, and that ray has disclosed a fact which militates against the theory advocated by the speaker; I refer to that part of his speech in which the Editor produces evidence of the luminosity of the kindred species, *Fulgora laternaria*, and acknowledges that that point is proved. I am clear that the Editor, notwithstanding that shake of the head, and these words, "But even allowing the luminosity" of *F. laternaria*. Now *laternaria* being, by our friends opposite, thus acknowledged to be luminous, and *candelaria* being reported luminous, and not one tittle of evidence being adduced to the contrary, all the supposed intended negative evidence relating to *laternaria* alone, surely we shall be acting with undue precipitation if we venture to legislate on the subject at present; surely we shall be acting more safely and more wisely if we accede to the proposition of the author of the Letters of Rusticus, and adjourn the consideration of the subject *sine die*, leaving the author of the Letters of Delta at liberty to resume it whenever he shall have obtained more conclusive information. And now the strongest argument that I hear in favour of the change, is that of the present Editor,

who says, "*Fulgora candelaria* is very abundant in China; and it is next to impossible that their luminosity, if real, would have escaped the notice," &c. Now, as not one writer or traveller has ever seen *Fulgora candelaria* alive, but only in boxes, and spitted on long needles, it is extremely probable that its luminosity would have escaped notice; at least, so it appears to me. I came here, not as a speaker, but as a listener; and I came, moreover, prepared to adopt what I considered the inevitable course of exchanging our old lamp, as in the story of Aladdin, for a new. I know well the opinion of the present and late Editors; and I know that that opinion was against the luminosity of our insect; my surprise was therefore a most agreeable surprise, when I found that opinion totally unsupported by the information which they had brought to bear on the subject. It is, therefore, with no view of supporting my own ideas—for you will recollect, Sir, the design of the fire-fly, and its accompanying motto, was my own—against the united voices of reason and truth, but from a sincere wish to establish truth by deferring the decision until we shall have incontestible evidence before us, that I now press the amendment. To me it has appeared very singular that these gentlemen should have shown so great a reluctance in approaching the real subject of inquiry. I had anticipated that they would have proved, beyond a possibility of doubt, that our emblem was an emblem of error, and our motto a motto devoid of meaning. But they shun the inquiry. Like the fisherman, who sailed his lugger round the very brink of Charybdis, avoiding with infinite dexterity the whirlpool that must inevitably have annihilated him, they have drawn a circle round the object of our inquiry, but carefully avoided making a nearer approach to it—for approach had surely been fatal—than the circumference of the circle which they have drawn. No one has been more delighted than myself in listening to the truly eloquent speech of the author of the Letters of Delta;—eloquent, because so pregnant with knowledge; and my delight has been the more ardent, because that brilliant speech has not dimmed for an instant the lustre of our fire-fly lamp.

In the extract which you read from Kirby and Spence, you must have observed, Sir, a very remarkable omission, and one for which it appears difficult to account, especially in the work of authors so scrupulously attentive to veracity and accuracy:

it is this; that although these authors speak of the observations of travellers on trees studded with the lights of multitudes of *Fulgoræ*, yet no travellers, indeed, no traveller, is referred to, to whose works the inquirer might turn in order to examine, and duly weigh his evidence on the subject. I do not hesitate to say that I fully believe this omission accidental, not intentional. If the works of these travellers are nowhere to be found, then I acknowledge there will be some reason for fearing that our beacon-banner, like the manifold theories of the day, will become less palpable than the reflection of a nonentity, less substantial than the shadow of a shade.

The learned author of the Delta Letters dwells on the fictitious character of Merian's work, and laughs at the idea of her *Fulgoræ* being luminous in life, admitting, nevertheless, their luminosity after death. On this, the author of the Letters of Rusticus accounts for the luminosity of Merian's *Fulgoræ*, by supposing they were dead. Now we gain nothing by this, because we want to prove the luminosity of a living, not a dead, *Fulgora*; for ours is the effigy of a fire-fly in the full blaze of his living and flying brightness. But surely the Doctor has ventured on a slight departure from history, when he endeavours to make it appear that Merian's fire-flies were dead; for he will doubtless recollect, that it was on account of the great noise they made in fighting that the box was opened. Now I imagine that fighting and noise are rather at variance with the economy of dead insects. But waiving this unimportant discrepancy, there is something poetically beautiful; and I could have wished to have wreathed the idea into verse, in the fact as recorded by the Frenchman, that the instant the spirit has departed, the body, instead of mingling with and becoming part and parcel of the earth, whence it originally sprang, dies but to assume a brighter being,—lighting up its own funereal pile, and truly possessing the “gilded halo hovering round decay.”

The Editor has treated the author of the Letters of Rusticus with great severity for using the expression—*common consent*. Now I am well aware of the Doctor's capability of self-defence, were the opportunity allowed him; but as we are only allowed, Sir, to address you once on these occasions, excepting the right of reply always reserved for the proposer, I shall volunteer my services in his behalf. It appears to me the Doctor is not

only perfectly right, but perfectly consistent, in his observation on the two occasions which the Editor has pitted against each other. In the first instance, the Doctor expresses his contempt of that class of naturalists, who, having the real object daily before them, prefer examining it through the medium of a book, which, in ninety-nine cases out of a hundred, is a crude, ill-digested medley of the writings of others. Instead of following in the train, the Doctor prefers employing his own eye-sight. In the second instance, eye-sight is not available—assiduous watching and observation are entirely useless; had it not been so, I feel confident that the author of the Letters of Rusticus would not have appealed to “*common consent*.” If, at some future day, the Hong, and other merchants, Lords Commissioners of the Woods and Forests of the Celestial Empire, should allow the Doctor free ingress and egress; and if, after such privilege, we still find him referring us to “*common consent*” on the present question, I shall be much astonished, and shall most willingly acknowledge his inconsistency. In the mean time, I shall consider it perfectly justifiable to laugh at a fabulous account, attached by common consent to the weasel, and perfectly justifiable to pay respect to a fabulous account attached by common consent to the fire-fly of China. As regards the weasel, “*common consent*” certainly implies, as the Editor has well observed, “that the human mind has never thought about it till roused and freed from bondage by peculiar circumstances;” but as regards the fire-fly of China, common consent simply implies a belief in the observations of others, until we have an opportunity of making our own.

It has struck me as not a little remarkable, that the three speakers in favour of the proposed change—1st. The learned mover; 2d. the worthy seconder, whom I hope we shall one day see in the chair of the Entomological Society, — a society from which I regret having been compelled to withdraw, by an act which ostensibly emanated from the body; but which, I have subsequently found, the body not only disavow, but most severely condemn; — a society which I have laboured, and which I will labour, to serve, to the best of my abilities; and 3dly, the Editor of the Magazine.—It is a little remarkable, I say, that neither of these three have attended to the recent arguments of Dr. Hancock on the very

subject now under consideration,—arguments entirely in favour of their view of the subject; but I must say arguments, which, like their own, merely tend to show that it is difficult for us to prove the luminosity of *Fulgora candelaria*.

Sir, I, for one, refuse to submit to the line of argument throughout adopted; I most unhesitatingly insist, that the *onus probandi* lies with the mover of the alteration; we have chosen a course, we have selected an ensign and a motto, and it is with our opponents to prove that we are in the wrong, ere we shall think ourselves called on to extinguish the ensign, to desert the colours which we have so often led to victory, or to abandon the motto which we have so triumphantly wreathed around our brows. Let us nail our colours to the mast,—let us rally around them,—let us guard them with love and veneration. When we forsake or exchange them, we betray ourselves. Oh! as they have never been struck to the power of an enemy, it is my ardent, my sincere hope, they never may be lowered to gratify the fancies of a friend.

MR. BOWERBANK.—Mr. Chairman, I will just state that it is my intention to support the amendment. I think alterations of the kind now proposed always objectionable; and I must say that, on the present occasion, I have not heard one single argument advanced in favour of the change, but what has been fairly met, and completely overthrown by the supporters of the amendment.

MR. DAVIS — (*after a long pause, during which no one rose.*)—If Mr. Doubleday has any reply, now is the time. You will recollect, gentlemen, that Mr. Doubleday's reply closes the debate.

MR. DOUBLEDAY.—Mr. Chairman, my habitual deference to the learned author of the Letters of Rusticus, and my unwillingness to press a proposal which might cause some little difference of opinion amongst our members, and disturb that harmony in which our debates are generally conducted, induced me to offer to withdraw my motion. I felt that I should be left in a minority, not because my cause was a weak one, but because I had no eloquence to oppose to that of the learned Doctor, and of my friend, the author of *Sphinx Vespiformis*, who, I was quite sure, would support the amendment directly I heard it proposed. I felt that I had against me the opinions of learned men, supported by the greatest talents and the greatest

eloquence amongst us ; and what had I to oppose to it ? I am not eloquent ;—I cannot use nice-turned phrases ;—I am not used to addressing an assembly like those now before me—

“ Mais quelque défiance
 Que me doit donner la susdite éloquence,
 Et le susdit crédit ; ce néanmoins, messieurs,
 L'ancre de vos bontés me rassure. D'ailleurs,
 Devant le grand Dandin l'innocence est hardie
 Oui, devant ce Caton de Basse-Normandie
 Ce soleil d'équité que n'est jamais terni.
 Victrix causa Diis placuit sed victa latoni.”

The last four lines I must beg leave to translate thus. “ From the perfect confidence that I feel in the good sense of those I have the honour to address, and in the impartiality of our Chairman, I have no doubt that my want of eloquence to support a good cause will not injure it even when it has such opposition to contend with.” I must first reply to the learned author of the Letters of Rusticus, who talks so much of common consent. He first misrepresents the objects of my remarks, then ridicules them. In quoting the different authors to whom I referred, I had in view one thing, which was to prove that we have, in favour of the luminosity of *Fulgora*, only the authority of a woman, notorious for her falsehoods or blunders, (contradicted positively by more than one *correct* observer); whilst, on the other hand, we have a host of authorities to prove the brilliancy of the *Lampyrites* and *Elateres* in the tropics, and that therefore it was far better either to cut off the rays round our *Fulgora*, or to place on our title-page the figure of an insect undoubtedly luminous, rather than that of one whose luminosity was at the least, very, very doubtful. But the author of the Letters of Rusticus tells me it is luminous by common consent. *Common consent* of whom? all the world? No, forsooth, not of a thousand persons. Well, then, being luminous by common consent, it is so to be till proved not to be so. It is written in the History of Gualtimala, composed by a monk of the name of Juarros, that in a certain province of what is now called Central America, there is a species of grasshopper, to the *exterior surface*, or outer coat, of whose stomach adhere certain little seeds like those of the passion-flower. These being sown, spring up and become a species of gourd, bearing little round fruit, the seed of which being next

year sown, produce good and fine melons. The insect, of course, is rare, but the common consent of the inhabitants of that part proves it to be true; and, therefore, it is true until some one proves, by direct observation, that there is no such insect.

“O medici mediam pertundite venam!”

O most learned Rusticus, what hath befallen thee, to allow thyself to fall into such a train of reasoning? *Common consent* forsooth! Well, how many things have been believed by common consent, and are still believed by the multitude, which are false. Let the learned Doctor read Azara's *Quadrupédos de Paraguay*; let him there observe how many things reported by travellers, and believed by common consent to be true, are found to be false when examined by competent observers. Are *we* to believe, as the vulgar do, by *common consent*, that hedge-hogs suck cows,—that they go into orchards in the autumn, and curling themselves into a ball, roll about amongst the fallen apples, and thus carry them home to their winter hiding-place? Who is to prove a direct negative to this story?

But the Doctor has another argument. Dead *cicadæ* shine, therefore dead *Fulgora* may shine; certainly this may be. Is our fire-fly dead? No! she is alive, and,

“Non hiemes illam, non flabra, neque imbres
Convellunt; immota manet.”

Why then should we put a [✓]dead *Fulgora* on the cover, or the title-page? Dead fish are luminous; but what would the Doctor have said, had our excellent friend, Yarrell, placed on the cover of his admirable *British Fishes*, a putrescent salmon? Thus much for our friend the Doctor. Our Editor has quoted a passage, which is a good specimen of the authority we have for the luminosity of *Fulgora*. “They are,” says the author, “luminous, but I have never seen them alive.” Then how does he know they are luminous? Who told him? I should say that he had read it in Merian, or had heard it from some one who had adopted the notion first broached by her ladyship. In the remarks made about *common consent* by the Editor I fully agree. My friend, the author of *Sphinx Vespiformis*, who, on some occasions, has shown himself by no means slow in resolving, and acting too,

when circumstances required promptitude of resolution and action, now pleads for time and inquiry.

I have shown above the value of the evidence to which he alludes, when he asserts that one part of the Editor's speech proves that *F. laternaria* is luminous, (as for this being admitted by that speech, I heard no such admission); but as our friend said, granting this, conceding it to be proved, it does not prove that *candelaria* is luminous also. Now I am about to prove to the satisfaction, I doubt not, of my learned friend of the seven circles, that the human nose is splendidly luminous.

Perhaps I may first be allowed to read a few lines from our great dramatist:—

“*Fal.*—Do thou amend thy face, and I'll amend my life: Thou art our admiral, thou bearest the lantern in the poop,—but 'tis in the nose of thee: thou art the knight of the burning lamp.

“*Bard.*—Why, Sir John, my face does you no harm.

“*Fal.*—No, I'll be sworn; I make as good use of it as many a man doth of a death's head, or a *memento mori*: I never see thy face, but I think upon hell-fire, and Dives that lived in purple; for there he is in his robes, burning, burning. If thou wert any way given to virtue, I would swear by thy face; my oath should be, By this fire: but thou art altogether given over: and wert indeed, but for the light in thy face, the son of utter darkness. When thou ran'st up Gadshill in the night to catch my horse, if I did not think thou had'st been an *ignis fatuus*, or a ball of wild-fire, there's no purchase in money. O, thou art a perpetual triumph, an everlasting bon-fire-light! Thou hast saved me a thousand marks in links and torches, walking with thee in the night, betwixt tavern and tavern: but the sack that thou hast drunk me, would have bought me lights as good cheap, at the dearest chandlers in Europe. I have maintained that salamander of yours with fire, any time this two and thirty years; Heaven reward me for it!”

Now here we find it asserted by no less an authority than Shakspeare, that a man's nose was once luminous. We have no evidence to prove that all noses are not luminous, no one has ever denied their luminosity; *ergo*, they are luminous. I trust our opposition will admit the truth of this reasoning; or,

at least, will give time for inquiry. Our friend, the author of *Sphinx Vespiformis*, says, that I avoid the subject; that I am fearful of inquiry, for that would prove fatal. Let me tell him I have no such fear, I wish for inquiry. Had not circumstances, which I cannot control, prevented me, I should now be *inquiring* into this point in the very country of *F. laternaria*. But my prospects have been blighted,—my hopes have faded away; and with these, all “the life of life has fled;” but yet sometimes, in my solitary wanderings through our forest, or whilst I rest myself on the stump of some old oak tree, my imagination calls up to my view the splendid scenery of tropical America, her vast rivers, her snowy mountains, her groves of palms, of *Lecythis*, of *Cavanillera*, and a thousand other magnificent trees, intertwined by *Paulini*, *Banisteria*, *Passifloræ*, and *Bignoniæ*, with blue, crimson or golden blossoms, from which the humming-bird now pecks the tiny insect, now darts from them through the air,

“Like winged flowers, or flying gems;”

and then a voice seems to whisper to me, such lands must thou visit—such scenes wilt thou find displayed before thee. O that these visions may be realized! O that they may not be a mere mirage of a mind enthusiastic solely on one subject! But I am wandering from my point. There have been those who have inquired, and of these no one has confirmed the statement of Madame Merian from his own observation; and one, the last, from his own observations, positively denies it. No doubt, when his forthcoming volume on the Natural History of British Guiana appears, we shall there find convincing proofs of the want of luminosity under which *F. laternaria* lies. But some day I shall observe these things for myself.

“Si qua est Heleno prudentia si qua
Vati fides, animam si veris implet Apollo;”

and no one will rejoice more than I shall, if I find that I am now in error. I shall then think of my worthy friend, and exclaim, “O! that thou wert but with me.” Kirby, I will admit, speaks of the observations of travellers as to fire-flies, which he supposes to be *Fulgoræ*; but I doubt not that had he referred to these, we should have found their words equally applicable to the *Lampyrites* as to *Fulgoræ*. But the

venerable Father of Entomology, in this country, having his mind preoccupied with the idea of the luminosity of *Fulgora*, applied these vague expressions to them.

I rejoice to hear the author of *Sphinx Vespiformis* overthrow the reasonings of Rusticus about dead *Fulgoræ*, but he seemed very loth so to do. He wants them to be luminous when dead; I grant they may be so, and grant there is then,

“ A gilded halo hovering round decay,
The farewell beam of beauty past away.”

But it is not immediately after the spirit has fled that this is to be observed. After death, those particles of the body, which the power of the genius of Rhodes has retained in subjection, now no longer subjected to his power, solve those bonds which he had imposed on them, and “ Freed from their fetters, they follow with impetuosity, after a long privation, the impulse which leads them to unite themselves; and the day of death is to them a nuptial feast;” and from the chemical changes which now take place rises a phosphorescent light, which serves as a nuptial torch.

How can we be justified in ridiculing a fabulous account of an animal in our own country, and believing a fabulous account of another, because it comes from China? Lery, in his “*Historia Navigationis in Brasiliam quæ et America dicitur*,” has the following passage:—“*Cæterum miserrimi nostri Barbari, in hac etiam vita miserè ab Cacodæmone torquentur (quem alio nomine Kaaggerre vocant) ipse enim eos nonnunquam vidi etiam nobiscum colloquentes protinus instar phreneticorum exclamantes, ‘Hei! Hei! opem ferte nobis nos enim verberat Aygnam,’ immo affirmabant illi Cacodæmonem ab se conspici modò belluæ specie, modo avis, modo etiam aliqua portentosa forma. Quia autem magnopere mirabantur nos ab Cacodæmone non infestari,*” &c., and this he illustrates with a cut representing the Cacodæmone tormenting the Tououpinambaultii. Will my friend assert, that although it is perfectly just to ridicule ghost stories in England, we are to believe them when originating with a nation, the name of which is composed not of two but seven syllables, and which, besides, is some few thousands of miles from us. Perhaps as the country of the barbarians, with the name of seven syllables, is not so distant from us as is the Celestial Empire from the

country of the barbarians, who rejoice in the name of two syllables long only; this may have some influence, as distance seems much to add to the degree of belief we are to give to a story. What Dr. Hancock's arguments have to do with *F. candalaria* more than *F. laternaria*, I do not know; but this I must say, that they first called my attention to the subject, although I must own that it has always appeared odd to me, that a part supposed to secrete a luminous fluid should, in the dead animal, appear never to have had any trace of glands, but to be merely a continuation of the integuments, differing in nothing from those of the rest of the body.

Let the division this evening be what it may, I shall still adhere to my present opinion, not blindly and against positive evidence, but until some observer who is entitled to credit shall say, "I have seen a *Fulgora* actually alive, and shining;" or until I myself have seen one. And, Mr. Chairman, I do hold, that were we to place, instead of the *Fulgora*, the image of an *Elater*, or more properly, a *Pyrophorus*, surrounded with rays, radiating not from its nose, (like Bardolph's), but from its whole thorax, we should be acting more wisely than by leaving there the figure of an insect which only shines by common consent. Under these circumstances I must press my motion to a division.

MR. HANSON.—Mr. Chairman, although I was quite willing to second the motion of my friend, the author of the Letters of Delta, yet I must say that I did so, more that the subject might thereby gain a full and fair discussion, which, without a seconder, it could not have had. I willingly admit, that the learned disquisitions of my friend, the author of the Letters of Delta, and the present Editor, do bring authorities seemingly overwhelming in favour of *Elater* and *Lampyrus*; nevertheless, retain the rays, say I; we are quite convinced of one thing, that the figure is emblematical, that the rays are ideal. We were quite convinced of this when we agreed on adopting the figure as it is: on these grounds, Sir, I shall vote for the amendment.

MR. DAVIS.—Gentlemen, in opening this discussion, I expressed my opinion, that a motion similar to that subsequently proposed by Mr. Doubleday, should have my approbation, provided the non-luminosity of the insect in question were clearly proved. I have paid every attention in my

power to the debate; and I must say that, as far as my own satisfaction is concerned, the non-luminosity of the insect in question is *not* proved. I am willing to divide the club on the amendment if desired, but it appears useless to do so. The amendment will be carried most certainly. Mr. Doubleday, do you still wish for a division?

MR. DOUBLEDAY.—There are several Entomologists who wish to have the subject definitely settled, and the present vote will set the matter completely at rest; because, supposing that I am beaten—of which there is no doubt—the question cannot, by the laws of etiquette, be again tried, while the club consists of the same members. As the meeting is a full one, and we have been very fully and fairly heard, I must say, that I think this opportunity for a final settlement of the subject ought not to be lost, and I therefore respectfully request the division.

MR. DAVIS.—Perhaps Dr. K—— will collect the signatures for the amendment, and some other gentlemen, also not a member of the club, those against it. The substance of the amendment, gentlemen, is, “That no alteration be made as regards the figure and motto in the wrapper of the Entomological Magazine.”

For the Amendment.

W. BENNETT,
C. S. BIRD,
J. S. BOWERBANK,
J. F. CHRISTY,
W. CHRISTY, JUN.
A. H. DAVIS,
SAMUEL HANSON,
J. HOYER, •
EDWARD NEWMAN.

Against it.

E. DOUBLEDAY,
T. INGALL,
F. WALKER.

Majority Six.

ART. XIII. *Essay on Parasitic Hymenoptera.*

By A. H. HALIDAY, M. A.

*(Continued from page 45).**Of the Ichneumones Adsciti.*

SECTIO A.

Alarum anticarum areola disci-antica antice angulata.

Adnot.—*Ganychoris* hi propiores. Antennæ quam in Sectione B longiores: abdomen etiam minus compressum, in formam clavatam illorum transiens, a latere visum triangulare: alarum posticarum areola radialis parum remota.

Sp. 6. B. hastatus. Fem. *Niger, antennis et pedibus brunneis; alis fuscis; aculeo corpore brevior.* (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$ lin.)

Fem.—*Niger*: os brunneum: antennæ capite cum thorace longiores, articulis exterioribus decrescentibus at omnibus subcylindricis, brunneæ apice obscuriores: metathorax validè angulatus: abdomen lineari-lanceolatum, segmento 1^{mo}. postice nonnihil dilatato: aculeus gracilis subarcuatus, corpore parum brevior: pedes villosi brunnei: alæ fuscæ, stigmatibus nervisque fuscis, squamulis piceis: areola radialis angusta, nervo cubitali ex angulo rectâ excurrente.

Habitat Angliam. (*Mus. J. Curtis.*)

Sp. 7. B. humilis. *Niger, pedibus brunneis; alis subhyalinis.* Fem. *Aculeo $\frac{1}{3}$ abdominis longitudine.* (Long. corp. vix 1; alar. vix 2 lin.)

**Bracon humilis*. *N. ab Ess. Berl. Mag. V. 19. Sp. 26, t. 1. f. 4.*

Blacus humilis. *N. ab Ess. Monogr. 191. Sp. 3.*

Fem.—*Niger*: os piceum: antennæ capite cum thorace parum longiores, articulis flagelli interioribus magis elongatis quam *B. triviali*, exterioribus decrescentibus ovatis: metathoracis anguli parvi obtuse prominuli: abdomen compressum; segmentum 1^{um}. oblongum, apice perparum dilatatum: pedes graciles picei,

brunnei vel ochracei; tibiæ et tarsi (apice demto) dilutiores: alæ subhyalinæ stigmatè nervisque pallide piceis, squamulis piceis.

Var. β.—Duplo major (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$): abdomen sublavatum parum compressum: alarum nervi validiores.

Var. γ.—Antennæ capite cum thorace non longiores, apice crassiores.

Mas.—Differt ut in reliquis.

Habitat Germaniam, *N. ab Ess.* — Hiberniam; in spicis Cerealium Autumno frequens.

SECTIO B.

Parastigma majus, angulum areolæ disci-anticæ præsecans.

Adnot. — His abdomen ubique fere compressum, a dorso visum lineare; a latere trigonum, vel potius oblongum dorso arcuato carinato: antennæ *fæminæ* latiùs moniliformes: areola radialis alarum posticarum longiùs remota.

Sp. 8. B. paganus. *Niger, pedibus piceoferrugineis.* Fem. *Antennis brevissimis moniliformibus; aculeo $\frac{1}{3}$ abdominis longitudine.* (Long. corp. $1\frac{1}{2}$ —2; alar. $3\frac{3}{4}$.)

Fem. — Niger: mandibulæ ferruginæ: palpi picei, maxillarum articuli duo ultimi pallidi: antennæ capitibus cum thorace longitudine, vel breviores; validæ, moniliformes, apice non crassiores; articulis flagelli interioribus adhuc brevioribus quam sequenti, exterioribus globosis, ultimo oblongo-ovato: thorax vage punctatus, pubescens; scutellum confertius punctatum: metathoracis anguli obtuse prominuli: abdominis segmentum 1^{mum}, subrectangulum, duplo longius quam latius, basi summa nonnihil constrictum: aculeus villosus $\frac{1}{3}$ abdominis longitudine: pedes validi piceo-ferruginei, tarsi apice fuscis; antici dilutiores; posteriorum femora medio, tibiæ apice, sæpe obscuriores: alæ albido-hyalinæ, stigmatè nervisque fusciscentibus, vel ochreis tum costa et parastigmatè obscurioribus, squamulis piceis.

Mas.—Notis ordinariis a *femina* differt.

Habitat in nemoribus minus frequens.

Sp. 9. B. trivialis. *Niger, pedibus ferrugineis.* Fem. *Aculeo $\frac{1}{2}$ abdominis longitudine.* (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$ lin.)

Præcedenti similis: antennæ paulo longiores, versus basin sensim graciliores; articulis exterioribus globoso-ovatis, ultimo oblongo:

metathoracis anguli productiores: segmentum 1^{um}, paulo longius: aculeus $\frac{1}{2}$ abdominis parum longior: pedes graciliores, ferruginei apice summo tarsorum fusco: alarum stigma nervique pallidiores.

Mas.—Ut antea.

Habitat in nemoribus passim gregarius, omnium vulgatissimus.

Var. β.—Duplo major, *B. pagano* æqualis et similis: semel tantum lectus.

Adnot.—*Blacorum* species genuinæ tres mihi invisæ.—Bl. errans. *N. ab Ess.* Mon. 190, *Sp.* 1.—Bl. longipennis, *ibid.* *Sp.* 2.—Bl. exilis, *ibid.* 191, *Sp.* 4.

GEN. IX. HELCON.

Palpi maxillares 6-articulati; *labiales* 3—4-articulati: *caput transversum*: *abdomen sessile*: *alarum anticarum areola disci-antica contigua completa*; *brachialis-posterior anteriorem parum superans*: *posticarum nervus recurrens unicus*.

TABULA SYNOPTICA SUBGENERUM.

<i>Alarum anticarum areolæ cubitales.</i>	duas; <i>radialis</i>	subovata; abdomen	{	cuneata angustissima	9. ORGILUS.
				{	3-annulatum { ovatum fornicatum 1. TRIASPIS. aut fere exannulatum { oblongum planum 2. CALYPTUS.
				segmentis ordinariis discretis	3. EUBADIZON.
tres; <i>palpi labiales</i>	4-articulati; <i>oris partes</i>	haud elongata; frons	{	3-articulati	4. DIOSPILUS.
				{	æquata; { immarginatum 5. MACROCENTRUS. <i>occiput</i> { marginatum 6. ZELE.
				inæqualis mucronata [7. HELCON.] parum elongatæ [8. CARDIOCHILES.]	

Adnot.—Genus *Eubadizonta* quondam constituendum mihi proposueram; his subgeneribus, *Triaspis*, *Calyptus*, *Eubadizon*, *Diospilus*: postea ab *Helcon* nullum discrimen satis stabile deprehendi: siquis tale excogitaverit, ita mallet ipse.

Subgen I.—TRIASPIS.^a

Palpi labiales 3-articulati: caput oblatum; occiput marginatum: abdomen late sessile, ovatum fornicatum, rimulosum; segmentis tribus subæqualibus, plus minus coalitis; ventre concavo: alarum anticarum areolæ cubitales duæ; radialis ovato-acuminata.

Sigalphus. Fam. I. a. . *N. ab Ess. Berl. Mag.* VII. 247.

Sigalphus. Sectio I. . . *Act. Acad.* IX. 309.

————— . . *Monogr.* 267.

Caput thoracis latitudine, oblatum suborbiculatum; occiput marginatum; vertex transversus rotundatus; oculi mediocres ovati, glabri aut subglabri (ut in reliquis hujus Generis); facies planiuscula; clypeus fere semicircularis, linea impressa utrinque foveolata discretus.—(Oris partes ex *H. caudato*): mandibulæ curvatæ, acute bidentes: labrum transversum rotundatum, fere semiovatum, epipharyngis ligula apicali attenuata prostante: maxillæ lobus distincte bipartitus; lobi subæquales, exterior rotundatus, membranâ paulo firmiore: palpi maxillares breviusculi; articulus 1^{mus}. et 2^{dus}. subæquales; 3^{tus}. longior crassior obovatus; 4^{tus}. adhuc longior; 5^{tus}. 6^{to}. brevior et 2^{do}. æqualis (in *Sig. pallipede* autem secundum descriptionem, *N. ab Ess.* palpi longiores sunt, articulus 5^{tus}. 6^{to}. longior, 3^{tio}. fere æqualis:) labium compressum, lobi apice sinuato: palpi labiales 3-articulati; articulus 1^{mus}. et 2^{dus}. subclavati; 3^{tus}. paulo longior, utrinque attenuatus: antennæ 19—28-articulatæ, articulis exterioribus subovatis, rectiusculæ, corpore plerunque breviores in *feminis* saltem: thorax oblongo-ovatus; prothorax inconspicuus; mesothoracis sulculi ordinarii ante scutellum concurrentes; metathorax truncatus, angulatus: abdomen thoracis longitudine, et eo ferme latius, ovatum, basi retusum, apice rotundatum; fornicatum, rimulosum; segmentis tribus subæqualibus, plus minusve coalitis; reliquis conglobatis, infra ventrem concavum retractis, absconditis: aculeus exertus linearis: pedes mediocres, graciles; calcaria gracilia: alarum anticarum stigma ovato-lanceolatum aut trigonum; areola radialis ovato-acuminata, aut fere semicordata, longe ante apicem alæ clausa; cubitales duæ, interior fere in medio nervum recurrentem excipiens: posticarum areola radialis parum remota; brachialis-posterior $\frac{1}{2}$ anterioris longitudine.

^a Triaspis, Τρεῖς et Ἀσπῖς, propter abdomen cataphractum triannulatum.—*Sigalphii* nomen vindicat Latreillii auctoritas, et jus antiquius.

Adnot.—*H. lepidus a caractere illo typico in pluribus recedit.*
Conf. H. fasciatus. No. 10.

Sp. 1. *H. T. lepidus. Niger, antennis basi subtus, ore pedibusque rufis, tibiis tarsisque posticis fuscis; abdomine obovato rimuloso. Mas. Facie genisque ferrugineis. Fem. Aculeo longitudine abdominis. (Long. corp. 2½; alar. 5 lin.)*

Caput thorace latius, crassum; genis convexis; oculis parvis rotundatis; facie latissima transversa: mandibulæ sub clypeo fere reductæ: palpi elongati, fere ut in *Calypto*; labialium articulus 3^{tus} elongatus: antennæ *feminæ* corpore breviores, 29-articulatæ, dense pubescentes, apice revolutæ, articulis exterioribus brevissimis pateræformibus,—*maris* corpore longiores, gracillimæ, 31-articulatæ: thorax antice posticeque magis attenuatus; metathorax rugulosus: abdomen longius, obovatum, intricato-rimulosum opacum; segmentum 1^{mum}. paulo longius quam latius, antrorsum attenuatum, basi carinis 2 abbreviatis; 2^{dum}. subæquale; 3^{tium}. paulo brevius; sequentis margo subexertus: venter vix concavus, at carinatus, apice gibbus, rufo-pellucens: caput *feminæ* nigrum, ore ferrugineo, palpis pallidioribus; *maris* ferrugineum, vertice fronteque totis nigris: antennæ basi subtus late rufescentes; *maris* clarius ferrugineæ: prothorax hujus litura laterali fulvescente: pedes rufo-ferruginei, coxis concoloribus; postici validiores, tibiis fuscis basi pallidis, calcaribus minimis, tarsis dilutius fuscescentibus: alæ hyalinæ stigmatate fusco, nervis pallidioribus, radice et squamulis ferrugineis: areola radialis longior quam genuinis, oblongo-ovata apice attenuata: nervi axillari-recurrentis alterius rudimentum extat ante apicem areolæ brachialis-posterioris.

Habitat Angliam. (*J. Curtis.*)^b

^b †Sp. 2. *H. T. carinatus. "Ater, ore pedibusque rufis, tibiis posticis basi excepta nigris; abdominis" obovati rugulosi "segmentis 2^{do}. et 3^{to}. subcarinatis. Fem. aculeo recto longitudine dimidii abdominis. (Long. corp. 2—2½ lin.)*

Sigalphus carinatus . . . *N. ab Ess. B. M. VII. 299. Sp. 1.*

————— . . . ————— *Monogr. 267. Sp. 1.*

Habitat Germaniam. *N. ab Ess.*

†Sp. 3. *H. T. semirugosus. Fem. 'Ater, nitidus,' antennis basi subtus, ore pedibusque totis rufis; abdominis obovati segmento 1^{mo}. bicarinato et 2^{do}. punctulato-rugulosis, reliquis lævissimis; aculeo abdominis longitudine. (Long. corp. 2 lin.)"*

Sp. 5. H. T. caudatus. *Niger nitidus, pedibus piceis, tibiis rufescentibus; abdomine subtilissime rimuloso, segmento 3^{tio}. sublævi nitidulo.* Fem. *Aculeo corpore longiore.* (Long. corp. 1; alar. $2\frac{1}{4}$ lin.)

Sigalphus caudatus . *N. ab Ess. Berl. Mag. VII. 250. Sp. 4.*
 ————— ————— Monogr. 268. Sp. 4.

Fem.—*Niger nitidus*, subtilissime pubescens: mandibulæ rufescentes: palpi picei: antennæ corpore breviores, 19—21-articulatæ: mesothoracis sulculi subtilissime punctulati; metathorax inæqualis, punctulatus: abdomen ovatum; segmentis 2 anterioribus subobscuris, subtilissime rimulosis; 3^{tio}. paulo longiore, læviusculo nitidulo, ano rotundato: pedes picei, coxæ nigræ, femora antica apice tibiæque rufescentes; tibiæ posticæ apice tarsique fuscæ: alæ hyalinæ stigmatibus fuscis, nervis dilutioribus. *Mas.* Antennis longioribus.

Adnot.—Femora vix incrassata videntur in femina.

Var.—Major (Long. corp. $1\frac{1}{2}$; alar. $3\frac{1}{4}$) antennæ 23—25-articulatæ: abdominis segmenta anteriora crassiùs rugulosa, obscura: aculeus corpore brevior: femora plerumque nigricantia: alarum nervi obscurius fuscæ. *Mas.* conformis.

Habitat Germaniam, *N. ab Ess.*—Angliam, Hiberniam, frequens.

Sp. 6. H. T. obscurellus. *Niger nitidus, pedibus fuscis, tibiis basi, anticis totis pallide rufis; abdomine subtilissime rimuloso, segmento 3^{tio}. sublævi nitidulo.* Fem. *Aculeo longitudine abdominis.* (Long. corp. 1; alar. $2\frac{1}{4}$ lin.)

Sigalphus obscurellus . *N. ab Ess. Berl. Mag. VII. 252.*
 Sp. 7.
 ————— . ————— Monogr. 270. Sp. 7.

Sigalphus semirugosus . *N. ab Ess. B. M. VII. 249. Sp. 2. tab. VII. fig. 1.*
 ————— . ————— Monogr. 267. Sp. 2.

Habitat Germaniam. *N. ab Ess.*

Adnot.—Hic et præcedens *H. lepidi* staturam sectari videntur.

†Sp. 4. H. T. striatulus. “*Ater, pedibus rufis, palpis, coxis, trochanteribus femorumque basi fuscopiceis; abdomine obovato, ruguloso-striato, segmentis æqualibus.* Fem. *Aculeo longitudine corporis.* (Long. $1\frac{1}{2}$ lin.)

Sigalphus striatulus *N. ab Ess. B. M. VII. 249. Sp. 3.*
 ————— ————— Monogr. 268. Sp. 3.

Habitat Germaniam. *N. ab Ess.*

H. caudati minoribus individuis simillimus: antennæ paulo breviores: abdomen paulo brevius sculptura pari: femora antica apice, tibiæ eadem totæ, posteriores basi summâ tantum, pallecentes.

Var. β.—Pedes sordide ferruginei; femorum margo superus, tibiæ posteriores apice tarsi que obscuriores; coxæ et trochanteres picei.

Habitat Germaniam, *N. ab Ess.*—Hiberniam, in arenis maritimis copiose.

Adnot.—Adsunt etiam aliæ species binis antecedentibus affines, quum vero discrimen specierum lubricum sit, novas edere non placet, nisi copia major exemplarium in subsidium accesserit.

Sp. 7. *H. T. fulvipes. Niger pubescens, pedibus rufo-ferrugineis; abdominis rugulosi segmento 3^{tio}. concreto lævi.* Fem. *Ano rotundato; aculeo corporis longitudine.* (Long. corp. 1 lin.)

Sigalphus pallipes. N. ab Ess. B. M. VII. 251. Sp. 6. tab. VII. fig. 5.

————— Monogr. 270. Sp. 6.

Est hic intermedius inter præcedentes et sequentem; ab illis, statura brevior, punctura crassior, discrepans; ab hoc, abdomine minus convexo, segmentis 3 subdiscretis, ano *feminæ* rotundato.

Marem feminæ genuinæ conformem communicavit amic. *Curtis*, nomine "*fulvipes*" adscripto.

Feminam possideo qualem *N. ab Ess. l. l.* ad calcem memoravit: forsitan distincta species; hæc itaque addenda videntur. (Long. corp. $1\frac{1}{4}$; alar. $2\frac{3}{4}$ lin.) Antennæ 23-articulatæ, corporis longitudine, apice attenuatæ: abdomen breve, postice dilatatum, ano obtuso subrotundato: segmenta tria satis discreta; 1^{um}. basi bicarinatum et 2^{um}. rugulosa; 3^{ium}. punctato-rugulosum: aculeus corpore brevior: palpi pedesque læte rufo-ferruginei, coxis tantum fuscis: alæ *H. ambigu*, stigmatate crassiusculo ovato, fusco.

Habitat Germaniam, *N. ab Ess.*—Angliam, Hiberniam.^c

^c †Sp. 8. *H. T. obscurus. "Niger obscurus, pedibus piceis, tibiis anticis totis, posterioribus basi rufis; abdomine obscuro, subtissime intricato-ruguloso, convexo, 1^{mo}. et 2^{do}. segmento subdiscretis. Fem. Ano emarginato; aculeo abdomine brevior. (Long. corp. 1 lin.)"*

Sigalphus obscurus N. ab Ess. Berl. Mag. VII. 252. 8.

————— Monogr. 271. 8.

Sp. 9. H. T. ambiguus. *Niger pubescens pedibus rufo-ferrugineis; abdomine convexo subintegro rimuloso. Fem. Ano emarginato; aculeo abdomine brevior.* (Long. corp. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Sigalphus ambiguus. *N. ab Ess. Berl. Mag. VII. 253. Sp. 9.*

—————, ————— *Monogr. 272. Sp. 9.*

Mas.—*Niger* parum nitens, pubescens et vage punctulatus: antennæ 22-articulatæ, apice attenuatæ: thorax brevis, antice gibbus; mesothoracis sulculis late confertim punctatis, lobo intermedio longitudinaliter depresso; metathorax perbrevis, angulis apicis acute elevatis: abdomen perbreve, obovatum, convexum, totum confertim rimulosum opacum, postice lineolas longitudinale obsoleta levigata, basi que obtuse bicarinatum: segmentorum omne discrimen fere deletum, ut in *Chelonis genuinis*: pedes breves, rufo-ferruginei coxis fuscis; postici crassiores, tibiæ apice tarsisque obscurioribus: alæ hyalinæ, stigmatibus crassiusculo ovato fusco, nervis pallidioribus; areola radialis major quam in *H. caudato* et affinis.

“*Femine* anus profunde retusus, aculeus abdomine brevior.”

“*Var. β.*—Pedibus fuscis, femoribus anterioribus apice, tibiis iisdem totis, posterioribus basi rufis.”

“*Var. minor.*—Antennæ 20-articulatæ: pedum colores ut in *Var. β.* tibiæ omnes concolores: alarum nervi pallidi.” *N. ab Ess.*

Habitat Germaniam. *N. ab Ess.*—Hiberniam; *mas* mihi bis lectus.

Subgen. II.—CALYPTUS.^d

Palpi labiales 3-articulati: caput latum oblatum; occiput marginatum: abdomen oblongum planum, segmentis 3; 1^{mo}. discreto, conico-attenuato; 2^{do}. et 3^{io}. magis coalitis, margine inflexo ventrem obtegentibus: alarum anticarum areolæ cubitales 2; radialis subovata.

Eubazus. A. H. H. Ent. Mag. I. 262.

Statura fere *Triaspidis*: caput thorace latius, pone oculos parum attenuatum: facies latior: antennæ basi distantes, longiores,

“*S. ambiguo* simillimus; dimidio minor, abdominis punctura subtilior: segmenta connata quidem, sed 1^{mo}. et 2^{do}. linea transversa impressa angustissima lævi indicata, hoc vero cum 3^{do}. intime conjuncto: pedes obscure picei, femoribus anticis apice, tibiis iisdem totis, posterioribus versus basin latiore aut breviori spatio rufis, tarsis fuscescentibus.”

“*Habitat* Germaniam. *N. ab Ess.*”

^d Calyptus, a *καλυπτω*, propter ventrem vaginatum.

tereti-filiformes. — (Oris partes ex *H. tibiali*.) Mandibulæ sub clypeo arcte forcipatæ, breves, apice compressæ, obtuse emarginatæ vel etiam subtruncatæ: labrum brevius, lineari-transversum, epipharynga trigonam apice attenuatam latiùs retgens: palpi maxillares longi; articuli 1^{mus}. et 2^{dus}. breves; 3^{tius}. lineari-cultratus; reliqui lineares, 4^{tus}. longissimus, 5^{tus}. et 6^{tus}. decrescentes: labiales 3-articulati; articuli subæquales, 1^{mus}. obconicus, 2^{dus}. obovatus, 3^{tius}. subclavatus: metathorax magis attenuatus, declivis: abdomen thoracis longitudine et latitudine, oblongum planum; segmentum 1^{mum}. discretum, antrorsum attenuatum, tuberculis prope medium; 2^{dum}. et 3^{tium}. æquilata, lineolâ tantum subillimâ discreta, quasi unicum maximum conficientia, cujus margines inflexi ventrem obtegunt, alter alteri in medio late superimpositus, relicto inter apices eorum obliquos sinu anali profundo, intra quem reliqua segmenta conglobata et retracta latent: ex hoc sinu prodit *maris* stylus obtusus compressus, *femine* aculeus linearis exertus: pedes postici validiores; calcaria perparva: alarum anticarum stigma ovato-lanceolatum; areola radialis oblongo-ovata, alæ apicem propius accedens.

Conf. Eubadizon macrocephalus. *N. ab Ess.* Mon. 234. 1.

Eubadizon coxalis . . . ————— 235. 3.

Sp. 10. *H. C. fasciatus.* *Niger, pedibus piceo-rufis, coxis nigris; alis obscuris, litura hyalina sub stigmatate; abdomine perbrevis.* Fem. *Aculeo abdominis longitudine.* (Long. corp. 1 lin.)

Sigalphus fasciatus . *N. ab Ess. B. M.* VII. 250. Sp. 5.

————— . ————— Monogr. 269. Sp. 5.

Exemplar femellum unicum male asservatum adest, at de specie vix dubius sum.—Antennæ mutilatæ, sed articuli qui supersunt breviores quam cæteris: palpi breves: mandibulæ rufæ: thorax et abdomen brevia; segmentum 1^{mum}. latum rugulosum; 2^{dum}. et 3^{tium}. conjunctim parum longiora quam latiora, subæqualia: aculeus deflexus: pedes breves, piceo-rufi, coxis et trochanteribus nigris; tibiæ posticæ apice tarsisque obscuriores: alæ obscuræ, absque litura hyalina manifesta: areola radialis brevior q. c. ovato-acuminata.

Mas.—Mihi invisus, differt in pluribus secundum descriptionem *N. ab Ess. l. l.*: abdomen totum læve: pedes obscuriores; postici elongati incrassati, fere toti fusci: alæ albidohyalinæ,

fasciâ mediâ latâ fusciscente plus minusve distinctâ, lineolâ hyalinâ e stigmatate transcurrente.

Habitat Germaniam, *N. ab Ess.*—Angliam.

Sp. 11. H. C. puber. *Mas. Niger pubescens, pedibus ferrugineis, coxis basi nigricantibus; tibiis tarsisque posticis fuscis, illis basi ferrugineis; segmento 1^{mo}. brevi valido, punctato-ruguloso.* (Long. corp. $1\frac{2}{3}$; alar. 4 lin.)

Mas.—*Niger nitidus*, confertim albido-pubescens: mandibulæ basi nigræ: labrum ferrugineum: antennæ 31-articulatæ, corpore longiores: metathorax punctatus, lineis elevatis areatus, area media quinque-angulari: abdominis segmentum 1^{mum}. haud longius quam apice latius, basi vero duplo angustius, punctato-rugulosum, angulis baseos obtuse carinatis, tuberculis obsoletis; reliqua vage punctulata, albido-pilosa; 2^{dum}. 1^{mo}. fere duplo longius; 3^{tium}. apice rugulosum: pedes ferruginei; coxæ basi, posticæ supra, nigro-fuscæ; tibiæ posticæ fuscæ basi late ferrugineæ; tarsi apice, posteriores fere toti fusciscentes: alæ obscure hyalinæ, stigmatate nervisque fuscis: squamulæ piceæ, margine rufescentes.

Habitat in nemoribus prope Senanum lectus rarius.

Sp. 12. H. C. tibialis. *Niger pubescens, pedibus ferrugineis, coxis basi nigricantibus; tibiis tarsisque posticis fuscis, illarum summa basi ferruginea; segmento 1^{mo}. longiusculo, ruguloso, lateribus angulato.* *Fem. Aculeo corporis longitudine.* (Long. corp. 2; alar. 4 lin.)

Præcedenti simillimus, paulo gracilior: *feminæ* antennæ corporis longitudine 30-articulatæ: segmentum 1^{mum}. sesqui-longius quam latius, rugulosum, tuberculis ante medium prominulis; reliqua lævissima, minus elongata quam illi et subtilius pilosa: tibiæ posticæ fere totæ fuscæ: coxæ posticæ nonnunquam apice tantum ferrugineo: alæ fumato-hyalinæ lineola hyalina obsoleta, stigmatate nervisque fuscis, radice et squamulis ferrugineis.—*Mas.* Antennæ corpore $\frac{1}{4}$ longiores, 32-articulatæ.

Habitat in nemoribus Hiberniæ borealis lectus rarius.^e

^e †Sp. 13. H. E. macrocephalus. *Fem. "Ater, nitidus, pedibus piceo-rufis; abdominis segmento 1^{mo}. rugoso; alis hyalinis; aculeo corpore sesquilongiore.* (Long. corp. $1\frac{1}{2}$ —2 lin.)"

Eubazus macrocephalus. *N. ab Ess. B. M. VI. 215. Sp. 1.*

Eubadizon macrocephalus. ——— Monog. 234. Sp. 1.

Habitat Germaniam, *N. ab Ess.*

Subgen. III.—EUBADIZON.

Palpi labiales quasi 3-articulati: caput latum oblatum; occiput marginatum; facies planiuscula: abdomen lineare, segmentis ordinariis discretis, 1^{mo}. longiusculo parum attenuato: alarum anticarum areolæ cubitales duæ; radialis subovata.

*Eubazus *N. ab Ess. Berl. Mag. VI. 214.*
Gen. VII.

Eubazus (partim) *N. ab. Ess. Act. Acad. IX. 307.*
Gen. IV.

Eubadizon, Sectio I. *N. ab Ess. Monogr. 233. Gen. IV.*

Charmon *A. H. H. Ent. Mag. I. 262.*

Statura fere *Calypti*, plerunque vero gracilior: pedes graciliores, postici haud incrassati: abdomen lineare, segmentis 8, omnibus aut plerisque discretis; 1^{mo}. longiore, basi parum angustato, tuberculis inter basin et medium: venter *feminæ* compressus, carinatus.

Sp. 14. H. E. semistriatus. *Niger nitidus, ore pedibusque flavo-ferrugineis; abdominis segmentis 2 anterioribus subtiliter rugulosis. Fem. Aculeo corpore sesqui-longiore. (Long. corp. 1 $\frac{3}{4}$ lin.)*

Eubazus pallipes, fem. *N. ab Ess. B. M. VI. 215. Sp. 2.*

Eubadizon pallipes ———— Monogr. 235. Sp. 2.

Mas.—Antennæ graciles, corpore parum longiores, 28-articulatæ, scapo et pedicello subtus ferrugineis: mandibulæ parvæ fere occultæ, cum labro palpisque flavo-ferrugineæ: clypeus parvus semicircularis: mesothoracis sulculi punctulati; metathorax confertim punctatus: abdomen thorace vix angustius, lineare planum; segmentum 1^{mum}. $\frac{1}{4}$ totius longitudine, sesqui-longius quam latius, tuberculis angulatis ante medium sitis, confertim rugulosum; 2^{dum}. illo brevius, ruguloso-striatum, margine laterali tenui discreto lævi; reliqua decrescentia, lævia, incisuris vix discretis; 2^{dum}. et 3^{tium}. conjunctim sequentibus paulo longiora: forceps magnus conchiformis e sinu lato anali prodit: pedes flavo-ferruginei; margo apicalis tibiæ posticarum tarsique iidem fere toti fuscentes: alæ hyalinæ, stigmatibus nervisque fuscis, radice et squamulis ferrugineis: areola radialis apice acuminata: posticarum areola brachialis-posterior $\frac{2}{3}$ anterioris longitudine.—*Feminam* non vidi.

Habitat Germaniam, *N. ab Ess.*—Angliam, *J. Curtis*, (*Mus. J. Curtis.*)[†]

Sp. 16. H. E. flavipes. *Niger nitidus, pedibus flavo ferrugineis; abdominis segmento 1^{mo}. bicarinato, reliquis lævissimis.* Fem. *Aculeo corpore longiore.* (Long $1\frac{1}{3}$ — $1\frac{2}{3}$; alar. $2\frac{1}{2}$ —3 lin.)

Statura fere sequentis, sed abdomen, antennæ pedesque breviores. Fem. Antennæ corpore breviores, filiformes, 21-articulatæ, articulo ultimo magno oblongo.—Oris partes ab illo non multum discrepant: labrum tenuissimum, lineari-lanceolatum, haud sinuatum: palpi multo breviores; maxillarium articulus 1^{mus}. basi attenuatus et curvatus, 2^{do}. longior: labialium articuli subæquales; 1^{mus}. obconicus, 2^{dus}. obovatus, 3^{tius}. utrinque attenuatus; articuli penultimi minuti qualis in illo deprehenditur nullum vestigium.—Mesothoracis sulculi impunctati; metathorax areatus, vage punctulatus: abdomen thorace angustius et vix longius; segmentum 1^{num}. plusquam $\frac{1}{3}$ totius longitudine, tuberculis parvis inter basin et medium; dorso carinis 2 acute elevatis, postice approximatis, interstitiis vix striolatis; reliqua lævissima, 2^{dum}. et 3^{tium}. vix discreta, conjunctim 1^{mo}. æqualia, reliqua brevissima: venter carinatus, pallido pelluceus; aculeus gracilis, corpore haud sesquilongior: pedes flavo-ferruginei; tibiæ posticæ apice tarsique iidem fere toti fuscescentes: alæ hyalinæ, stigmatibus fusco, nervis pallidioribus, radice et squamulis pallide ferrugineis: posticarum areola brachialis-posterior vix $\frac{2}{3}$ anterioris longitudine.—Mas.—Antennæ corpore paulo longiores, 24—25-articulatæ.

Habitat Hiberniam borealem, rariùs.

Sp. 17. H. E. pectoralis. *Niger nitidus, scutello et pectore rufis; stigmatibus pedibusque pallidis.* Fem. *Aculeo corporis longitudine.* (Long. corp. $2\frac{1}{2}$ —3; alar. $4\frac{1}{2}$ —6 lin.)

Eubadizon pectoralis. *N. ab Ess.* Monogr. 236. Sp. 4.

Fem. Antennæ corpore longiores, gracillimæ, 42—46-articulatæ: oculi magni ovati: facies subquadrata; clypeus transversus: mandibulæ rufescentes; palpi pallidi: mandibulæ arcuatæ

[†] +Sp. 15. H. E. coxalis. Mas. “*Niger nitidus, pedibus luteis, coxis fuscis; abdominis 1^{mo}. segmento conico-angustato rimuloso; alis hyalinis.* (Long. corp. $1\frac{3}{4}$.)”

Eubazus pallipes mas? *N. ab Ess. B. M. VI.* 215.

Eubadizon coxalis. ——— Monogr. 234. Sp. 1.

Habitat Germaniam. *N. ab Ess.*

acute bidentes: labrum tenuissimum, arcuatum medio sinuatum, epipharyngis trigonæ acuminatæ basin summam prætexens: maxillæ lobus membranaceus, integer ovatus: palpi maxillares valde elongati graciles; articuli 1^{mus}. et 2^{dus}. breves; 3^{tius}. lineari-cultratus; reliqui lineares, 4^{tus}. longissimus, tum 5^{tus}. 6^{tus}. decrescentes: labium breve, lobi apice subretuso: palpi labiales 4-articulati; articulus 1^{mus}. brevior obconicus; 2^{dus}. dilatatus, oblique subtruncatus; 3^{tius}. perexiguus ovatus; 4^{tus}. elongatus, linearis basi attenuatus: thorax oblongus, utrinque attenuatus; niger nitidus; pectus, scutellum et suturæ pone hoc rubræ: sulculi impunctati; metathorax lævis, fossula media punctulata: abdomen thorace longius et angustius, lineare, apice compressum; segmentum 1^{um}. vix $\frac{1}{3}$ totius longitudine, lineare apice parum dilatatum, prope basin tuberculatum; subtiliter rugulosum, aut læviusculum; reliqua lævissima; 2^{dum}. et 3^{tium}. subtilius discreta, sequentia conjunctim longitudine æquant: aculeus corporis longitudine, valvulis depressis pubescentibus, nigris: pedes graciles, pallide flavi; tibiæ posticæ tarsique apice paulo obscuriores: alæ hyalinæ, stigmatæ, radice, squamulis stramineis, nervis plerisque fuscescentibus: stigma late obovata-lanceolatum; areola radialis ovato-attenuata, apicem fere alæ attingens: posticarum areola brachialis-posterior anteriore parum brevior; nervus tenuis axillaris prope radicem alæ.—*Mas.* Antennæ longiores; abdominis segmenta posteriora longiora; stylus analis compressus, obtusus, exertus.

Variat.—Thorace rubro, propectore et metathoracis dorso tantum nigricantibus: antennarum scapus et pedicellus rufi. — Obviæ sunt etiam varietates intermediæ.

Habitat Germaniam, *N. ab Ess.*—Hiberniam, non infrequens.

Subgen. IV.—DIOSPILUS.^g

Palpi labiales 3-articulati: caput transversum crassum; occiput marginatum: alarum anticarum areolæ cubitales tres.

*Bracon. Sect. IV. Trib. 1. } *N. ab Ess. Act. Acad. IX. 303.*
Macrocephali. . . . }

————— *N. ab Ess. Mon. 60.*

Eubazus (partim) ————— *Act. Acad. IX.*
307?

Eubadizon. Sect. II. . . . ————— *Mon. 236?*

Annot.—Helcontum *palpis labialibus 3-articulatis, areolis cubitalibus 3, multæ species: mutantur et hæ forma ut e locis laudatis*

^g *Diospilus*, a $\delta\iota\omega\varsigma$, et $\sigma\pi\iota\lambda\omicron\varsigma$, propter stigma conspicuum.

patet: character nobis a binis derivatus, in universum itaque cautè propagandus.

<i>Conf.</i> Bracon nobilis . . .	<i>N. ab Ess.</i> Mon. 61. 16.
———— melanoscelus —————	62. 17.
———— dispar. . .	———— 63. 19.
———— . . .	<i>Berl. Mag.</i> V. 12, 13.
———— filator . . .	Mon. 64. 20.
———— capito . . .	———— 64. 21.
———— Ehippium. ———	65. 22.
———— dissimilis . . .	———— 65. 23.
———— flavicornis . . .	———— 66. 24.
Eub. trigonus . . .	———— 236. 5.

Magis dubii videntur,

Bracon analis. . .	———— 63. 18.
———— gagates . . .	———— 67. 25.
———— ebeninus . . .	———— 67. 26.

Sp. 18. H. D. oleraceus. *Niger nitidus, pedibus rufis aut fuscis; alis hyalinis, areola subquadrata; abdominis ovati convexi segmento 1^{mo}. ruguloso. Fem. Aculeo corpore brevior.* (Long. corp. 1—2½; alar. 2¼—5½ lin.)

Statura *Triaspidis*: caput crassius, vertex latiùs planiusculus; occiput latum; genæ convexæ; oculi parvi rotundati; facies latissima planiuscula lævis, supra clypeum profunde bifoveolata: mandibulæ sub clypeum arcte forcipatæ, apice bidentes: oris partes quales *Calypto* fere; palporum labialium articulus 3^{tus}. longior: antennæ *femineæ* corpore breviores, filiformes, sat validæ, pubescentes: mesothoracis sulculi fere impunctati; metathorax brevis rugulosus: abdomen thoracis longitudine, et eo vix angustius; ovatum, convexum, apice rotundatum: segmentum 1^{mm}. paulo longius quam latius, basi attenuatum, rugulosum; reliqua lævissima nitida, vix discreta: margines inflexi ventrem amplectuntur: aculeus e gibbo anali prodit, abdomine sesquilogior, valvulis crassis pubescentibus: pedes breves: alæ latæ; anticarum stigma latum trigonum; areola radialis ante alæ apicem clausa, late ovata vix acuminata; cubitalis 1^{ma}. nervum recurrentem excipit; 2^{da}. illâ parum minor, paulisper obliquata, nec plane rectangularis, nec æquilatera, at ferme latior quam longior; nervi axillari-recurrentis alterius vestigium ante apicem areolæ brachialis posterioris; ut in *H. lepido*, No. 1: alarum posticarum

areola radialis parum remota; brachialis-posterior $\frac{2}{3}$ anterioris longitudine. — *Mas.* Antennæ longiores: abdomen angustius, minus convexum.

Var. a.—(Long. $1-1\frac{2}{3}$; alar. $2\frac{1}{4}-3\frac{1}{2}$ lin.) Antennæ 22—27-articulatæ, nigrae: mandibulæ ferrugineæ: palpi obscuriores: pedes rufo-ferruginei, coxis basi aut fere totis nigricantibus, tibiis posterioribus apice tarsisque fere totis fuscis: alæ hyalinæ, stigmatate nigro-fusco, nervis fuscis, radice et squamulis ferrugineis. Exemplar femellum majus (Long. $2\frac{1}{2}$; alar. $5\frac{1}{2}$ lin.) communicavit amic. Curtis: huic pedes fere toti rufo-ferruginei: antennæ 29-articulatæ, scapo subtus piceo.

Var. β.—Pedibus rufo-piceis; aut fuscis, tibiis basi pallidioribus: hi plerunque e minoribus.

Variat aculeo corporis longitudine.

Habitat Angliam, Hiberniam; in *Brassica Rapa*, *Sinapide nigra*, etc. frequens.

Sp. H. D. *speculator*. Fem. *Niger, ore, antennis basi pedibusque ferrugineis; alis obscure hyalinis, areola transversa, oblique attenuata; abdominis obovato-lanceolati segmento 1^{mo}. conico-angustato, ruguloso; aculeo fere corporis longitudine.* (Long. corp. $1\frac{3}{4}$; alar. $3\frac{1}{2}$ lin.)

Antennæ graciliores quam præcedenti; mutilatæ, (at si recte meminimus, corpore breviores, filiformes): facies confertim punctata: metathorax magis attenuatus, subtiliter reticulato-rugulosus: abdomen thorace vix longius; segmentum 1^{um}. longiusculum sensim attenuatum, prope basin tuberculatum, subtiliter reticulato-rugulosum, angulis apicis depressis lævigatis; reliqua lævissima; venter postice compressus gibbus, valvula parva obtusa prominula: aculeus gracilis corpore parum brevior: pedes graciliores q. pr.—Niger, subtiliter pubescens: antennæ basi late ochraceæ: os, clypeus pedesque ferruginei: pedes postici sordidiores, femorum margine supero prope apicem (apiceque tarsorum omnium,) fuscescente: alæ multo angustiores q. pr. subfumato-hyalinæ, stigmatate nervisque fuscis, radice et squamulis ferrugineis: areola radialis oblonga, in alæ apicem fere recta excurrens; cubitalis 2^{da}. 1^{ma}. duplo minor, longitudine posticâ et latitudine apicis fere pari, sed antrorsum valde attenuata, quasi triangularis angulo antico subtruncato: nervuli illius adscititii nullum vestigium: posticarum areola brachialis-posterior $\frac{1}{2}$ anterioris parum longior.

Adnot.—*Bracon flavicornis* *N. ab Ess.* Mon. 66. 24. proxime affinis videtur.

Habitat in Hibernia-boreali semel lectus.

Subgen. V.—MACROCENTRUS.

Palpi labialis 4-articulati; caput valde oblatum; occiput immarginatum retusum; vertex transversè fastigiatus: abdomen lineare, segmentis anterioribus subæqualibus, 2^{do}. marginato: aculeus elongatus: pedes elongati, calcariis conspicuis: alarum anticarum areolæ cubitales tres.

*Bracon Fam. I. B. a. Lineares. *N. ab Ess. Berl. Mag. V.*
13.

Rogas Sect. I. Lineares . . . *Act. Acad. IX. 306.*

_____ . . . *Monogr. 200.*

Macrocentrus *Curtis. Ent. Mag. I. 187.*
Gen. DXLVI.

Caput thoracis latitudine, valde oblatum; occiput superne retusum, immarginatum; vertex transverse compressus, in lineam contractus; ocelli elevati; frons inermis, abrupte declivis; oculi ovati; facies lata planiuscula; clypeus transversus, linea impressa utrinque foveolata sejunctus: mandibulæ arcuatæ, acute bidentes: labrum lineari-transversum, epipharyngis ligula apicali attenuata prostante: maxillæ lobus obtusus, membranaceus aut firmioris substantiæ: palpi maxillares modo elongati, et tum ratio articulorum fere qualis Helconti; modo (in *H. infirmo*,) breviusculi, articulis 1^{mo}. et 2^{do}. ratione reliquorum minus abbreviatis, 3^{tio}. obovato, exterioribus breviusculis: labii lobus integer obtusus: palpi labiales 4-articulati; articulus 1^{mus}. et 2^{dus}. subæquales, ille obconicus hic dilatatus obovatus; 3^{tius}. 2^{do}. longior, aut vix longior; 4^{tus}. longior linearis; (in *H. infirmo* vero articuli longitudine subæquales, 3^{tius}. et 4^{tus}. obovati:) antennæ basi distantes, corpore plerunque longiores in utroque sexu, graciles setacæ, 30—50-articulatæ: thorax oblongus subcompressus; mesothoracis lobi tuberosi; metathorax brevis subtruncatus: abdomen thorace longius et angustius, lineare, apice compressum, dorso planum: segmenta discreta 8; 1^{mum}. longiusculum, basi tuberculatum; 2^{dum}. et 3^{tium}. parum breviora, illius latera sulco discreta; reliqua breviora, transversa: venter carinatus, anus truncatus: valvula segmenti 6^{ti}. producta, compressa, obtusa, libera: aculeus linearis, corpore plerunque longior, rarius longitudine abdominis: pedes elongati; postici haud incrassati; calcaria plerunque magna: alarum anticarum stigma late ovatum aut ovato-lanceolatum; areola radialis prope apicem alæ clausa, oblongo-ovata, latior quam Subgeneribus VI^{to}. et VII^{mo}. cubitalis 1^{ma}. sub medio nervum recurrentem excipiens;

2^{da}. minor oblonga, angulo posteriore baseos attenuato: posticarum radialis vix remota; brachialis posterior $\frac{1}{2}$ anterioris longior; nervus parvulus axillari-recurrens prope basin.

Adnot.—*Lissonota* (Pimplarum Subgenus) non valde dissimilis.

Sp. 19. H. M. linearis. Fem. *Abdominis linearis segmentis 3 anterioribus rimulosis; antennis et aculeo corpore longioribus; capite, antennis basi, prothorace, ventre pedibusque flavo-testaceis, macula verticis fusca; reliqui corporis colore mutabili.* (Long. corp. $2\frac{1}{2}$; alar. $4\frac{1}{2}$ lin. aut minor.)

**Bracon linearis*. *N. ab Ess. B. M. V. 13. Sp. 15. tab. I. fig. 1.*

Rogas linearis. ——— Monogr. 200. Sp. 1.

Statura elongata linearis: antennæ corpore multo longiores. gracillimæ, circiter 45-articulatæ: palpi graciles; labialium articuli exteriores elongati lineares: metathorax confertim punctulatus: abdomen lineare, haud falcatum; segmentis 1^{mo}. 2^{do}. 3^{tio}. concinne striatis, 2^{do}. distincte marginato: pedes elongati graciles: alarum stigma late ovatum; areola cubitalis 2^{da}. apice parum attenuata.

Var. a.—Piceo-niger: caput flavotestaceum, vertice medio nigricante: antennæ fuscæ, scapo et pedicello pallidis: prothorax. pedesque toti pallide flavotestacei, coxæ et trochanteres dilutiores: venter testaceus, basi pallidior: alæ hyalinæ, stigmatibus flavo litura fusciscentibus, nervis fuscis, radice et squamulis stramineis.

Variat mox, pleuris antice et dorso mesothoracis obscure testaceis, hoc fusco-maculato.

Var. γ.—Testaceus, prothorace, ventre pedibusque pallidioribus; stemmatico, metathoracis punctis pone scutellum abdominisque dorso antice fusciscentibus; *vel* abdominis dorso toto fusco, segmentis intermediis margine omni testaceo: antennarum articuli plures pallidi: stigma obsoletius maculatum.

Var. δ.—“Corpore toto concolore” (flavotestaceo). *N. ab Ess. l. l.*

Habitat Germaniam. *N. ab Ess.*—Angliam; Hiberniam.

^b †Sp. 20. H. M. pallipes. Fem. *Niger pubescens, palpis, antennarum articulo 1^{mo}. coxis et trochanteribus dilute flavis; ventre basi et pedibus luteis; abdominis linearis segmentis 3 anterioribus rugulosis; aculeo corpore longiore.* (Long. corp. 2 lin.)

**Bracon pallipes*. *N. ab Ess. B. M. V. 14. Sp. 16.*

Rogas pallipes. ——— Monogr. 203. Sp. 4.

“Antennæ corpore longiores, 1^{mo}. articulo crasso: abdomen lineari-elongatum,

Sp. 21. H. M. thoracicus. Fem. *Niger, thorace rufo, pedibus flavotestaceis, abdominis lineari-subfalcati segmento 2^{do}. striolato; aculeo corpore longiore.* (Long. corp. 3 lin. aut major.)

**Bracon thoracicus* . *N. ab Ess. B. M. V. 14. Sp. 18.*

Rogas thoracicus . ———— *Monogr. 205. Sp. 9.*

Macrocentrus bicolor. *Curt. Ent. Mag. I. 188.*

Statura fere sequentis modo gracilior: caput nigrum, clypeo et ore rufis, palpis flavotestaceis: antennæ corpore longiores, 49-articulatæ, nigrae subtus piceae: thorax totus rufus: metathorax punctulatus: abdomen quam illi longius et gracilius; nigrum; segmentum 1^{mum}. obsoletius acculatum, 2^{dum}. confertim striatum, marginatum, 3^{tium}. basi striatum: pedes flavotestacei, unguibus, posticorum tibiis apice et unguiculari fuscis: alæ obscure hyalinae, nervis fuscis, stigmatæ flavotestaceo: stigma et areolæ ut in sequente.

Habitat Germaniam, N. ab Ess.—Angliam, J. Curtis.

Sp. 22. H. M. marginator. *Niger nitidus, pedibus rufis, tibiis tarsisque posticis nigris.* Fem. *Abdomine lineari-subfalcato; aculeo corpore sesqui-longiore.* (Long. corp. 3 lin.; alar. 6 lin.)

**Bracon marginator* . *N. ab Ess. Berl. Mag. V. 14. Sp. 18.*

Rogas marginator . ———— *Monogr. 205. Sp. 9?*

——— *nidulator* . . ———— *204. Sp. 7.*

Fem.—Antennæ corpore longiores, circiter 45-articulatæ: palpi elongati pilosi picei: thorax vage punctulatus, scutellum confertius: metathorax crasse punctatus: abdomen solito brevius et latius; segmentum 1^{mum}., 2^{dum}. apice demto, 3^{tium}. basi summa subtilissime aciculata, 2^{dum}. distincte marginatum: pedes rufi; trochanteres superi, coxæ anteriores, posticarum apex nigri; tibiæ tarsique postici nigro-fusci: alæ fumato-hyalinae, stigmatæ fusco litura dilutiore, nervis fuscis, radice ferruginea, squamulis nigris: stigma late ovato-lanceolatum, angustius quam Sp. 19^m: areola cubitalis 2^{da}. longior, apice non attenuata.

apice subcompressum, segmentis 3 anterioribus majoribus, rugulosis, 3^{to}. lateribus rufescente: terebra ferruginea valvulis nigris: alæ hyalinae, nervis stigmatæ pallide fuscis."

Adnot. ab H. lineari. Var. a.—Videtur hic non multum discrepans.

"*Var. ventre basi concolore.*"

Habitat Germaniam, N. ab Ess.

Variat Mas coxis, omnibus nigris: antennæ longiores quam *feminae*: abdomen antice angustius.

Adnot.—*N. ab Ess.* in Monographia disjunxit, *R. marginatorem* segmento 2^{do}. striolato; coxis et trochanteribus rufis; palpis testaceis; abdomine longiore. — *R. nidulatorem* segmento 2^{do}. lævissimo; palpis piceis; coxis et trochanteribus anticis totis, posterioribus apice plus minusve nigris. — Exemplaria nostra, abdominis sculpturâ cum illo; quoad palporum pedumque colores cum hoc, ferme conveniunt.

Habitat Germaniam, *N. ab Ess.*—Angliam; Hiberniam; Ebudes Insulas. Circa aggeres arenosos Hymenopterorum cuniculis perforatos deprehendi pluries *feminam* volitantem et consistentem.

Sp. 23. H. M. infirmus. *Niger, palpis pedibusque pallide testaceis.* Fem. *Antennis brevibus basi pallide testaceis; aculeo corpore longiore.*

Rogas infirmus . *N. ab Ess.* Mon. 203. Sp. 5.

Fem.—Caput subdepressum, unde facies brevis latissima transversa: mandibulæ testaceæ: palpi pallidiores, breviusculi: antennæ corpore breviores, sat validæ, 30—33-articulatæ; fuscæ, basi late pallide testaceæ, scapo fusco: thoracis lobi minus tuberosi, sulculi punctulati; metathorax punctato-granulatus: abdomen lineare; segmentum 1^{mm}. oblongum, basi haud angustatum obsolete canaliculatum tuberculis obtusis; 2^{di}. latera basi marginata, ambo cum basi 3ⁱⁱⁱ. subtiliter aciculata: venter basi pallens: pedes pallide testacei, rarius immaculati; ut plurimum femora postica apice, mox etiam tarsi obscuriores: pedes quam cæteris multo breviores, femoribus subclavatis: alæ obscure hyalinæ, stigmatibus fusco basi pallido, nervis fuscis, radice et squamulis obscure stramineis.

Variat mox, coxis saltem posticis basi fuscis, antennarum basi palpisque obscurioribus, aut piceis.—*Variat* etiam staturâ pedum et antennarum graciliore.

Mas.—*Feminae* genuinæ conformis et concolor, modo antennæ longiores, totæ nigræ.—Illi vero sæpius abdominis segmenta anteriora læviuscula, 1^{mm}. basi attenuatum, tuberculis angulatis: pedes plerunque sordide ferruginei, coxis et apice femorum omnium latius piceis: præterea antennæ pedesque sensim graciliores et longiores evadunt; quasi intermedius inter hanc et sequentem speciem, sed alæ hujus.

Habitat in pratis Hiberniæ passim minus frequens.

Sp. 24. *H. M. picipes*. Mas. *Niger, pedibus fuscopiceis; abdomine lineari-subclavato; areola cubitali 2^{da}. antrorsum oblique attenuata.* (Long. corp. 2; alar. 3½ lin.)

H. infirmi maribus gracilioribus primo aspectu simillimus: statura gracilior: antennæ 35-articulatæ, corpore paulo longiores: metathorax punctulatus: abdomen piceum; segmentum 1^{mum}. nigrum, læviusculum, antrorsum attenuatum, tuberculis prominulis; 2^{dum}. læviusculum, basi marginatum; reliqua lævissima: pedes elongati gracillimi, fere ut in *H. lineari*, sed tarsi postici longiores: alæ albido-hyalinæ, stigmatate fusco basi albido, nervis radice squamulisque fuscis: areola secunda cubitalis antrorsum oblique attenuata, latitudine apicis longitudinem anteriorem superante: hic itaque sequenti magis affinis videtur.

Habitat Hiberniam; in arenis maritimis semel lectus.

Sp. 25. *H. M. collaris*. Fem. *Niger, facie, ore, thorace antico pedibusque totis rufo-testaceis; abdomine lineari-subclavato; aculeo fere abdominis longitudine.* (Long. corp. 1¾; alar. 3 lin.)

**Bracon collaris*. *Spinola, Ins. Lig. II. 140.*

Rogas collaris. *N. ab Ess. Monogr. 204. Sp. 8.*

Fem.—Caput piceum, clypeo et ore testaceis: antennæ corporis longitudine, 31-articulatæ, nigrae: thorax piceus, prothorace, dorso mesothoracis et pleuris antice testaceis: metathorax punctulatus: abdomen basi sensim attenuatum, piceum; segmento 1^{mo}. et 2^{do}. basi marginato, læviusculis; reliquis lævissimis: pedes flavotestacei: alæ hyalinæ, stigmatate flavotestaceo litura fuscescente, nervis pallide fuscis: areolæ fere ut in *H. picipede*.

Adnot.—Secundum Descript. l. l. facies quoque testacea esset, et thorax antice potius ruber: etiam nigra sunt, quæ in exemplari nostro picea: hoc itaque immaturum videtur.

Habitat "Italiam; Germaniam."—Hiberniam; semel lectus.

Subgen. VI.—ZELE.

Palpi labiales 4-articulati, articulo 3^{tio}. minutissimo: caput oblatum; occiput marginatum; vertex transversus rotundatus: antennæ elongatæ: abdomen subclavatum, falcatum; segmento 1^{mo}. longissimo: aculeus brevis: pedes elongati, calcaribus conspicuis: alarum anticarum areolæ cubitales tres.

- Zeles (partim) *Curt. Br. Ent.* 415. fig.
1—6.
- Zeles *A. H. II. Ent. Mag.* I.
262.
- Rogas. Sectio I. Lineares (partim). *N. ab Ess. Mon.* 200.

Caput transversum, thoracis latitudine; occiput marginatum, parum concavum; vertex transversus, subrotundatus; frons inermis: ocelli magni, ovati, tuberosi, contigui: oculi magni ovati, protuberantes: facies planiuscula, subquadrata, clypeus semicircularis, lineâ transversâ impressâ, utrinque profunde foveolata sejunctus: mandibulæ arcuatæ, acute bidentes: labrum conspicuum, fere semicirculare, dense ciliatum, epipharyngis ligula tenuissima prostante: palpi maxillares valde elongati; articuli 1^{mus}, 2^{dus}, brevissimi; 3^{tus}, dilatatus cultratus; reliqui lineares, 4^{tus}, longissimus, 5^{tus}, 6^{tus}, decrescentes: palpi labiales 4-articulati; articuli 1^{mus}, et 2^{dus}, longitudine subæquales, ille obconicus, hic valde dilatatus, oblique truncatus; 3^{tus}, minutus obovatus; 4^{tus}, longissimus linearis subarcuatus, basi constrictus: antennæ setacæ, corpore longiores, circiter 50-articulatæ: thorax oblongus compressus; sulculi ordinarii ante scutellum concurrentes; metathorax brevis, subtruncatus: abdomen thorace longius, lineari-clavatum, postice compressum præsertim in *femina*, falcatum, ano truncato: segmenta dorsii 8 conspicua; 1^{num}, elongatum lineare, ipsa radice incrassatum et tuberculatum; reliqua decrescentia; 2^{di}, lateribus parum depressis, nec distincte marginatis; posteriora transversa: forceps maris compressus obtusus subexertus: *feminae* aculeus brevis: pedes elongati; postici vix crassiores; calcaria magna: alarum anticarum stigma lanceolatum; areola radialis oblongo-lanceolata, subsinuata, alæ apicem attingens: areola cubitalis 1^{ma}, nervum recurrentem sub medio excipiens; 2^{da}, minor, oblonga, angulo posteriore baseos attenuato: posticarum brachialis posterior $\frac{1}{2}$ anterioris longior, dilatata; nervo axillari parvo prope basin alæ.

Adnot.—De relatione hujus ad *Perilitos* jam dictum est: inter Ichneumonidas Genuinos *Panisci* species non valde aliena.

Sp. 26. H. L. testaceator. *Testaceus tarsis posticis albidis; alarum posticarum areola radiali coarctata.* Fem. *Aculeo* $\frac{1}{3}$ *abdominis longitudine.* (Long. corp. 4—5; alar. 9—10 $\frac{1}{2}$ lin.)

- * *Zele testaceator* . . . *Curt. Br. Ent.* 415. Sp. 3.
Mas. Rogas annulicornis . *N. ab Ess. Mon.* 201. Sp. 2.

Fem.—Testaceus; palpi pallidiores; mandibulæ apice fuscae; stemmaticum nigricans; ocelli crystallini; oculi obscure virides; antennæ apice fuscæ: punctum ordinarium nigrum supra radicem alarum: metathorax haud distincte areatus, obsolete punctulatus: abdomen basi pari modo punctulatum; segmentum 1^{um}, antice lævigatum et medio longitudinaliter elevatum: aculeus segmenti 1^{mi}, longitudine: pedes testacei, ungues fusci; tarsi postici fere toti pallescentes: alæ fumato-hyalinæ, lineola interrupta obscure hyalina sub stigmate, areolam cubitalem 2^{dam}, percurrente; nervi fusci, costa in *femina* magis lutescens; stigma, radix, squamulæ luteo-testaceæ: alarum posticarum area radialis cum brachiali angulatim contigua, ante medium coarctata ob sinum nervi cubitalis.—*Mas.* Antennæ validiores, latius infuscatæ: abdominis dorsum plerunque fuscens.

Habitat Germaniam, *N. ab Ess.*—Angliam, Hiberniam; non infrequens.

Sp. 27. *H. Z. chlorophthalmus. Rufotestaceus; alarum posticarum areolis radialibus duabus. Fem. Aculeo subexerto.* (Long. corp. 3 $\frac{3}{4}$; alar. 9 lin.)

Rogas chlorophthalmus . *N. ab Ess. Monogr.* 202. Sp. 3.
 (demto synonymo.)

Fem.—Præcedenti similis: statura tota gracilior: abdomen brevius, clavatum, minus compressum; aculeo ascendente, vix apicem abdominis superante: pedes graciliores: tarsi omnes concolores: alæ ampliores; anticarum stigma et areola radialis latiores; posticarum area radialis a brachiali remota, et in 2 areolas partita.

“*Mas.*—*Feminæ* simillimus, etc.” *N. ab Ess.*

Habitat Italiam; Germaniam, *N. ab Ess.*—Scotiam; mihi semel lectus.ⁱ

ⁱ Subgen. VII.—HELCON.

Palpi labiales 4-articulati: caput transverso-quadratum; occiput marginatum; vertex planiusculus; frons inæqualis mucronata: antennæ apice revolutæ in femina: thorax elongatus, antice compressus; mesothoracis scutum trilobum, tuberosum: abdomen oblongo-lanceolatum, segmento 1^{mo}, longiusculo: aculeus elongatus: pedes postici elongati incrassati, femoribus clavatis, calcaribus inconspicuis: alarum anticarum areolæ cubitales tres.

*Helcon. *N. ab Ess. Berl. Mag.* VI. 216. Gen. VIII.

————— *Act. Acad.* IX. 307. Gen. III.

————— *Monogr.* 224. Gen. III.

Subgen. IX.—ORGILUS.^k

Palpi labiales 4-articulati, articulo 3^{to}. minutissimo: caput postice excavatum; occiput immarginatum; facies convexa: abdomen oblongo-lanceolatum, segmentis anteriori-

^k Orgilus, Οργίλος, iracundus.

Caput crassum; occiput parum concavum, marginatum; vertex amplus, planiusculus; frons utrinque elevata subcarinata, medio retusa, acumine inter antennis armata: oculi parvuli, protuberantes; facies tumida, variolosa; clypeus brevis, indistinctus, margine recto; genæ margine infero compresso os utrinque muniunt: labrum rectum, obtuse trigonum, dense ciliatum: mandibulæ breves, validæ, vix curvatæ, apice bidentes: maxillæ lobus membranaceus, obtusus: palpi maxillares elongati pilosi; "articulus 1^{mus}. brevissimus;" 2^{us}. brevis obconicus; 3^{ius}. dilatatus cultratus; reliqui lineares; 4^{us}. longissimus, 5^{us}. 6^{us}. decrescentes: labii lobus apice submarginatus: palpi labiales pilosi, 4-articulati; "articulus 1^{mus}. brevis obconicus;" 2^{us}. valde dilatatus, oblique subtruncatus; 3^{ius}. illo vix brevior, obovatus; 4^{us}. valde clongatus, linearis.—Antennæ corporis longitudine, sat validæ setacæ, apice revolutæ, 43-articulatæ in *H. angustatore* ♀.—Thorax elongatus, cylindricus, antrorsum compressus; prothorax productus gibbus, variolosus, margine elevatus; mesothoracis lobi valde convexi, intermedius versus caput protrusus; metathorax crassus, apice truncatus, reticulato-rugosus et lineis longitudinalibus carinatis 4 s 6 partitus: abdomen thorace angustius et parum longius, lineare, dorso planum; apice compressum, subfalcatum: segmentum 1^{um}. lineare vel antrorsum parum attenuatum, basi tuberculatum, plerunque bicarinatum; 2^{um}. et 3^{ium}. illo parum breviora; tum reliqua brevia, transversa: anus truncatus, valvula ventrali obtusa, libera, porrecta: aculeus linearis elongatus: pedes longi; antici valde remoti; tarsi elongati: pedes postici longissimi, coxis magnis, femoribus incrassatis sæpe dentatis, tibiis tarsisque crassiusculis, calcaribus minutissimis: alæ minores quam affinibus; anticarum stigma lanceolatum; areola radialis oblongo lanceolata, apicem alæ non attingens; cubitalis 1^{ma}. nervum recurrentem sub medio excipiens; 2^{da}. parva, vix longior quam latior, sed angulo posteriore baseos producto, attenuato; brachiales fere conterminæ, ex apice posterioris in marginem posticum rectâ transcurrit nervus spurius, qualem in nullo alio deprehendi (annon nervus axillari-recurrens alter insolito situ?): posticarum areola radialis contigua; brachialis-anterior lata; posterior illâ paulo brevior, apice dilatata, nervo axillari distincto prope basin alæ.

Adnot.—Character nobis desumptus ab *H. angustatore*: consulenda est universius Generis descriptio a clm^o.: Neesio l. l. diligenter elaborata.

"*Metamorphosin* in larvis Coleopterorum xylophagorum subire verosimile est. *Feminae* in truncis cæsis putridisque plerunque inveniuntur, obambulantes, et terebra sua aditus ad larvarum habitacula pertractantes." *N. ab Ess.*

Adnot.—Generis *Acænitis* inter *Ichneumonidas Genuinos* analogia aperta.

†Sp. 28. *H. carinator*. "*Niger, ore pedibusque totis rufis, tibiis tarsisque posticis nigris; abdomine lineari-oblongo, 1^{mo}. et 2^{do}. segmento subæqualibus, punctulato-rugosis, illo basi retuso, acute bicarinato; femoribus posticis inermibus. Fem. aculeo longitudine corporis. (Long. 4—5 lin.)*"

bus subæqualibus : aculeus elongatus : pedes postici validi, femoribus compressis, calcaribus magnis : alarum anticarum areolæ cubitales duæ ; radialis angusta cuneata.

*Helcon carinator. *N. ab Ess. Berl. Mag.* VI. 218. Sp. 1.

————— Monogr. 227. Sp. 1.

Habitat Germaniam.

†Sp. 29. *H. tardator.* “*Ater, nitidus, pedibus totis rufis, tibiis tarsisque posticis nigris ; abdomine lineari, segmento 1^{mo}. rugoso bicarinato 2^{do}. longiore ; femoribus posticis inermibus. Fem. Aculeo corpore brevior.* (Long. $5\frac{1}{2}$ —6 lin.)”

*Helcon tardator. *N. ab Ess. B. M.* VI. 218. Sp. 2. tab. IV. fig. 6.

————— Monogr. 228. Sp. 2.

Habitat Germaniam.

Sp. 30. *H. angustator.* “*Ater, nitidus, abdomine lineari, basin versus angustato ; segmento 1^{mo}. convexiusculo, punctato-ruguloso, obsolete canaliculato ; pedibus totis rufotestaceis, tibiis tarsisque posticis nigro-fuscis ; femoribus posticis inermibus.* (Long. $3\frac{1}{2}$ —5 lin.)”

*Helcon angustator. *N. ab Ess. B. M.* VI. 219. Sp. 3.

————— Monogr. 228. Sp. 2.

Variat, aculeo modo abdominis longitudine, modo corporis, aut intermediâ.

Habitat Italiam ; Germaniam, N. ab Ess.—Galliam, J. Curtis.

Sp. 31. *H. dentator.* *Fem.* “*Ater, nitidus, abdomine lineari-subclavato, basin versus angustato ; segmento 1^{mo}. subconico, convexiusculo, punctulato, obsolete canaliculato ; pedibus totis rufotestaceis, tibiis tarsisque posticis nigro-fuscis, femoribus posticis unidentatis ; aculeo corpore longiore.* (Long. $5\frac{3}{4}$ lin.)”

**Pimpla dentator.* *Fabr. Syst. Piez.* 114. Sp. 7.

Helcon æquator. *N. ab Ess. B. M.* VI. 219. Sp. 4.

————— Monogr. 229. Sp. 4.

Habitat Italiam ; Germaniam.

†Sp. 32. *H. ruspator.* *Fem.* “*Ater, nitidus ; abdomine subclavato, 1^{mo}. segmento conico-angustato, rugoso, bicarinato ; pedibus rufis, coxis nigris, femoribus posticis clavatis, valide unidentatis ; aculeo corporis longitudine.* (Long. $4\frac{1}{2}$ lin.)”

**Ichneumon ruspator.* *Lin. Fna. Suec.* 1625.

Cryptus ruspator . *Fabr. Syst. Piez.* 88. Sp. 77.

Ichneumon, etc. . *Geoffr.* II. 326. Sp. 12.

Helcon dentator . *N. ab Ess. Berl. Mag.* VI. 220. Sp. 5.

Helcon ruspator. . ——— Monogr. 230. Sp. 5.

Habitat Germaniam, Galliam, Sueciam. Auct. laud.

†Sp. 33. *H. annulicornis.* “*Fem. Ater nitidissimus ; abdominis sublinearis 1^{mo}. segmento acute bicarinato ; pedibus rufis, coxis trochanteribusque anterioribus tibiis tarsisque posticis nigris, his medio et antennarum annulo albis ; femoribus posticis unidentatis.* (Long. circiter $5\frac{1}{4}$ lin.)”

Helcon annulicornis. *N. ab Ess.* Monogr. 231. Sp. 6.

Habitat Germaniam.

- **Microdus*. Fam. I. *N. ab Ess. Berl. Mag.* VI. 185.
Microdus. Sect. II. ———— *Act. Acad.* IX. 304.
 ————— ———— *Monogr.* 149.

Adnot.—Forma capitis et abdominis non dissimilis equidem *Microdis*; sed alæ trophique conjunctionem sanè dirimunt: præterea a *Macrocentris* non discrepant multum caractere universo.

Sp. 35. H. O. obscurator. (Long. $1\frac{1}{2}$ — $2\frac{1}{4}$; alar. $2\frac{1}{2}$ — $3\frac{1}{2}$ lin.)

- **Microdus obscurator*. *N. ab Ess. B. M.* VI. 186. Sp. 3.
 tab. IV. fig. 1.
 ————— . *N. ab Ess.* *Monogr.* 151. Sp. 14.
 ————— lævigator . ———— *B. M.* VI. 185. Sp. 2.

Subgen. VIII.—CARDIOCHILES.

Palpi labiales 4-articulati: oris partes parum elongatæ; labii lobus bifidus: caput oblatum; occiput marginatum; clypei margo bituberculatus: antennæ breves porrectæ: abdomen thoracis longitudine, oblongum; (segmento 2^{do}. brevissimo, bistriato?) valvula ventralis aculeum exertum fulciens: pedes postici elongati validi, femoribus tibiisque compressis: alarum anticarum areolæ cubitales tres.

- **Cardiochiles*. *N. ab Ess. Act. Acad.* IX. 307. Gen. II.
 ————— *Monogr.* 221. Gen. II.

Adnot.—Characteres Genericos fuse expositos videas loco laudato, unde hæc paucula excerpſi de insecto mihi invisio: credo sulcum illum cujus memorat Cl. Auctor in segmento 2^{do}., revera designare fines 2^{di}. et 3^{ti}.; quum ipse tantum septem segmentorum mentionem fecerit; illa vero inter *Helcontes* modo discreta, modo coalita extent: jam *Microgastris* forma erit planè analoga.

†Sp. 34. H. C. saltator. (Long. $2\frac{1}{2}$ lin.)

Cardiochiles saltator. *N. ab Ess.* *Monogr.* 224. Sp. I. (exclus. Synonym.)

Fem.—“Ater, nitidissimus, pubescens: mandibulæ piceæ: mesothoracis scutum, totum vel apice tantum, scutellumque, femora antica apice, tibiæ eadem et tarsi toti læte rufi: abdomen lævissimum: aculeus longitudine circiter $\frac{1}{2}$ abdominis: alæ obscure hyalinæ, apice late fuscæ, nervis et stigmate nigro-fuscis.”

Add.—“Antennæ dimidio corpore longiores, pubescentes: metathorax punctato-rugosus areatus: abdominis segmentum 2^{dum}. subquadratum, sulco transverso basi propiori divisum, campo antico-lineolis 2 impressis antrorsum conniventibus tripartito.”

“*Mas.*—Scutello nigro.”

“*Var. β.*—*Mas.* thorace nigro, solo apice lobi medii mesothoracis rufo.”

Habitat Italiam.

- Microdus lævigator . *N. ab Ess.* Monogr. 150. Sp. 13.
 ————— annulator . ————— *Berl. Mag.* VI. 186. Sp. 4.
 ————— ————— Monogr. 152. Sp. 15.

Caput vix thoracis latitudine; occiput excavatum, haud distincte marginatum; vertex transversus, rotundatus; facies medio convexa, subcarinata, supra clypeum profunde bifoveolata: mandibulæ breves, apice bidentes: labrum lineari-transversum, lateribus rotundatum, epipharyngis ligula apicali attenuata prostante: maxillæ lobus obtusus, membranâ firmiore: palpi maxillares breviusculi; articulus 1^{mus}. brevissimus obconicus; 2^{dus}. paulo longior et crassior; 3^{tius}. illis conjunctim vix brevior, crassior, cultratus; 4^{tus}. paulo longior; 5^{tius}. et 6^{tus}. breviores, fere lineares: labii lobus integer obtusus: palpi labiales 4-articulati; articulus 1^{mus}. obconicus; 2^{dus}. illius longitudine, crassior, obovatus; 3^{tius}. minutissimus, ovatus; 4^{tus}. reliquis paulo longior, lineari clavatus: antennæ validæ, teretes, circiter 30-articulatæ; in *femina* corporis longitudine, apice recurvæ; in *mare* longiores: thorax oblongus, subcompressus; mesothoracis sulculi parum profundi; metathorax apice subtruncatus, denticulo parvo utrinque prope foramen petioli: abdomen oblongum, apice compressum, thorace longius et angustius; segmentum 1^{mum}. oblongum, antice parum attenuatum, denticulo laterali prope basin; 2^{dum}. illi fere æquale, reliqua decrescentia in octavum minutissimum: venter compresso-carinatus ano oblique truncato, rimâ segmenti ultimi antrorsum descendente: valvula ventralis obtusa compressa, haud anum attingens: pedes longiusculi; postici validiores, femoribus tibiisque compressis; calcaria valida, postica $\frac{1}{2}$ metatarsi longitudine: alæ angustæ; anticarum stigma lanceolatum; areola radialis angusta cuneiformis, longe ante apicem alæ clausa; cubitales duæ, nervus illas sejungens valde obliquus, in nervum cubitalem extrorsum fere recta continuatus; nervus recurrens areolæ 1^{mæ}. sub medio insertus: posticarum areola radialis vix remota; brachialis-posterior dimidio anterioris parum longior.

Niger, capite thoraceque subobscuris, pubescentibus: mandibulæ piceæ aut rufæ; palpi nigri: metathorax punctulatus, vel granulatus: abdominis segmentum 1^{mum}. subtiliùs crebre punctulatum, basi obsolete canaliculatum; 2^{dum}. pariter punctulatum, margine plerunque lævi; reliqua lævissima nitida; nonnunquam segmenta anteriora fere lævigata sunt: aculei longitudo modo corpus æquaas, modo abdomen parum superans: alæ modo fumato-hyalinæ, modo fuliginosæ, lineolâ hyalina Y-formi sub stigmatibus plus minusve distinctâ, stigmatibus nervisque fuscis: pedum colores variant; modo,

α. pedes nigri; femora antica apice, tibiæ eædem fere totæ, rufescentes; tibiæ posteriores basi fusco-piceæ; calcaria rufo pallida; modo,

β. coxæ et trochanteres nigri, apice rufi; femora anteriora rufa, margine supero et infero, anticorum versus basin tantum, nigricante; postica nigra margine infero late rufo; tibiæ rufæ, posticæ apice fuscæ; calcaria rufa; tarsi fusci: his præterea antennæ basi piceo rufæ, scapo nigro: sed illæ diversitates tam coloris quam puncturæ sensim collabuntur.

Habitat Germaniam, *N. ab Ess.* — Angliam; Hiberniam; in litoribus præsertim arenosis non infrequens.

Adnot.—*Microdus punctulator*, *N. ab Ess. B. M.* VI. 185. Sp. 1. Monogr. 150. Sp. 12: discrepat, puncturâ totius abdominis multo densiore, segmentorum post secundum marginibus posticis tantum lævibus nitidis; aculeo $\frac{1}{2}$ abdominis longitudine: suspicabar esse meram varietatem sed talem non ipse vidi.

ART. XIV.—*Remarks on the Entomology of Epping and its Vicinity.* By EDWARD DOUBLEDAY.

“What is writ, is writ,
Would it were worthier.”

DEAR SIR, — The list of *Lepidoptera* captured in this neighbourhood, and some other parts of the enclosed paper, were drawn out many weeks ago, just at the time when the return of spring, whilst it made me think of preparing for a new campaign, recalled the memory of former adventures. As the sportsman, when the sultry days of August are almost passed, enjoys, by anticipation, the sports of the approaching September—thinks and tells of his excursions in years that are gone by; so in the spring the entomologist, whilst anxiously looking forward to the time when the first warm days call forth *Brepha notha*, *Echinomyia ursina*, and a profusion of bees and other insects, turns back to the events of other days, dwells with pleasure on the captures he has made; and then, recurring again to the prospects of the future, rejoices in the expectation of similar success, happy in the hope of increasing his own collections, but happier far in the prospect of being

able to augment those of his friends and fellow-labourers in science.

I was induced to attempt to give a sketch of our Entomology, (which I had intended to render far more perfect than the hasty outline I now send you,) by the hope of being able to contribute to the gratification of others, by making known what rare insects we capture here, and thereby enabling those lovers of science to whom these may be desiderata, to know in what quarter to apply for specimens, and to tell them that these will be cheerfully given, as they may occur, to all scientific collectors who do not possess them. The wish to make some remarks on the habits of particular species, an opportunity for which is afforded by such a paper, and the hope that I might be aiding, in some degree, our knowledge of Insect Geography, by adding to my list of species some notices on the climate, elevation, soil, and other local characters of this neighbourhood, were two other motives which led me to begin this paper. Had I at once proceeded to finish it, it might have been far more perfect than it now is; but when I had some little leisure to do well that which it was in my mind to do, and which I had promised you that I would do, I allowed my habitual dislike of writing to prevail over me, circumstances turned my attention to other fields for study, where,

“ *Circumriguo surgebat lilia prato
Candida purpureis mista papaveribus;
Quæ modo decerpens tenero pueriliter ungui
Proposito florem prætuli officio.*”

Or, in plain English, I spent that time in reading the chronicles of the deeds of Spaniards in the days of the first discovery and succeeding desolation of the land of my affections, which ought to have been employed on this paper. And now that, in order to fulfil my promise to you, I must prepare it for the press, unforeseen and uncontrollable events have snatched from me those few hours of daily leisure on which I could count, and the affairs of business just now occupy me so fully, that they sometimes barely allow me time for needful repose. I lament now my error, but,

“ *Quid juvat errores mersa jam puppe fateri,
Quid lacrymæ delicta juvant commissa secutæ.*”

My only course is, by extra exertion, to endeavour to make

this paper a little like what it ought to have been, and perhaps would have been, and then trust to your readers' goodness of heart to excuse the imperfections of my work.

I remain, yours, most truly,

E. DOUBLEDAY.

EPPING,

May 21, 1835.

The town of Epping (anciently Eppinges) is now situated on the road from London to Newmarket, about sixteen miles from town. I say it is *now* situated, because, in former days, it stood, I believe, two miles from its present location; and, as it has once migrated two miles, we may suppose, that should similar causes operate again, it may make another move.

According to a multitude of observations made by my uncle, Mr. T. Squire, well known as a mathematician and astronomer, the town stands in lat. $51^{\circ} 41' 42''$ north long. $6' 15''$ east, at an elevation of 389 feet above the level of the sea. The mean annual temperature is $50\frac{3}{4}^{\circ}$, the mean of January 36° , of February 39° , of March 43° , of April 49° , of May 56° , of June 61° , of July 64° , of August 64° , of September 60° , of October 51° , of November 46° , of December 39° . The mean annual fall of rain is 26.77 inches. The soil of the adjoining country is generally a stiff cold clay, occasionally becoming more or less gravelly. Its surface consists of gently undulating hills, whose summits rise about one hundred, or rather more, feet, above the intervening valleys—but this is more especially the case on the eastern side of the road to London—and it is almost solely to this part that my remarks in this paper will apply. The eastern half of a circle, whose radius is about four miles, and whose centre is situated about a quarter of a mile to the west of the town, includes the place in which nearly all the insects mentioned in this paper have been taken, with one or two exceptions, by my brother, Mr. H. Doubleday, and myself. As there are some parts of this limited district which I have not thoroughly examined, I have no doubt that further researches will enable me to add many more species, even to the list of *Lepidoptera*. Last season our own little garden afforded three species, which I had not before seen in this neighbourhood — *Miselia compta*, *Hadena saponaria*, and *Agrotis radiola*.

The country in this semicircle is composed chiefly of pasture and wood-land, in about equal proportions—there is but little arable land; no river flows through it, and we have no large pieces of water. But let us examine it in detail, beginning at the south-western extremity:—There, at High-Beech, the ranges of little hills which compose most of this semicircle, terminate and give place to the valley in which stands the town of Waltham Abbey, whose monks, in former times, possessed all the land in this part, and in whose church lies, or is said to lie, all that remains of the last of our Saxon kings. The soil of High-Beech is sandy, but only for a small space. A portion of the forest here consists of tall trees, chiefly beeches and oaks, but nearly all that part of it which lies to the south and south-west of the town, is little more than an assemblage of pollard hornbeams, whose seeds are in winter a favourite food of the grosbeak, a bird by no means rare here. Intermixed with the hornbeams are a few pollard and some tall oaks, and many tall crab-trees, hollies, and white-thorns. In the two latter the grosbeak mostly builds. Gentle reader, were this the proper place, I could tell thee many a history of this and our other birds, although I am not professedly an ornithologist; but as Sancho says, “Tal vez ay, que se busca una cosa, y se halla otra.” And thus it has happened, that in my solitary walks after insects, I have often learned as much of birds as of them. But this is neither here nor there.

We have few flowers of which insects are fond, in this, or indeed in any part of our woods,—the *Umbelliferæ* in particular are almost entirely wanting. There are a few rather rare plants which occur here, as *Campanula hederacea*, *Polygonum multiflora*, *Hypericum elodes*, *Veronica montana*, &c. The Entomology of this part differs chiefly from that of the rest of our neighbourhood, in offering fewer both of species and individuals, but *Polyommatus Argus*, *Melitæa Selene*, and *Hipparchia Galathea*, are abundant here; whilst in the woods to the east of the town the first never occurs, the second is very rare, although *M. Euphrosyne* abounds, and the third has nearly disappeared. I have also taken here *Brachinus crepitans*, *Cychrus rostratus*, *Carabus catenulatus*, *Berosus ariceps*, *Panurgus ursinus*, *Acrocera globula*, and some other insects we do not take elsewhere within our district.

To the east and south-east of the town are the woods

belonging to M. C. Marsh, Esq. of Park-hall, to Sir J. Smyth, of Hill-hall, and the woods called Ongar Park-woods, the property of Capel Cure, Esq., of Blake-hall. Adjoining these woods is a small portion of forest, resembling the rest of our forest in the abundance of hornbeams, but having fewer beeches, and a good many birches. This has, as well as the other parts, many open boggy places, which of course have their peculiar insects. There are likewise a vast number of gravel-pits, especially old deserted ones; these being mostly full of water are the resort of numerous aquatic insects, amongst which I may mention—*Pælobius Hermannii*, *Rantus pulverosus*, *R. notatus*, *R. exoletus*, *R. agiles*, *R. adspersus*, *Liopterus oblongus*, *Dytiscus circumflexus*, and many other of the *Dytiscites*, *Berosus luridus*, *globosus*, &c. About midsummer the rushes on their sides swarm with *Nocutites*, which come to suck the honey of their flowers. Amongst these I may mention—*Mythimna grisea*, *Caradrina ambigua*, *C. sepii*, *C. cubicularis*, *C. alsine*, *C. glareosa*, *Leucania comma*, *L. impura*, and *L. pallens*, *Bombycia viminalis*, and *Acosmetia lineola*. There also we take, *Anax formosa*, *Æshna teretiuscula*, *Gomphus vulgatissimus*, *Cordulia ænea*, *Libellula 4-maculata* and *Agrion rubellum*—the three last in profusion. *Libellula prænubila* is also found in the adjoining fields.

I have recently been told that the last-named insect is merely the female of *L. 4-maculata*, and such I believe is now the opinion of some entomologists. For my part, I am far from being of this way of thinking. I am at a loss to discover how one *male* insect can be the female of another; and we certainly do take males with all the markings of a true *prænubila*, although there is not one male to ten females. But let me state the case fully and fairly.

About the end of May,—when,

“ Los prados se visten flores
 Agules, blancas y rojas
 Los arboles verdes hojas
 Las aves nueva colores,”—

we see flying along the hedges, or over the flowery fields, certain *Libellulæ*, which bear a great resemblance in their flight to *L. depressa* ♀; in fact, at a distance, they might be

mistaken for that insect. They take wide circuits over the grass, or skim, sparrow-hawk like, along the hedges. On a more attentive examination, we find that they closely resemble in form *L. 4-maculata*, but are a far prettier insect, owing to the predominance of a sub-orange hue over their body and a large portion of their wings, the apex of which is mostly marked with a fuscous patch, as is also the middle of the costa of the anterior wings; but these marks are not constant. A few days later there comes forth a host of *L. 4-maculata* over every pond and gravel-pit in this part. These never, or at least very rarely, leave their native ponds, but hover over them like a *Kestrel*, from morn till dewy eve, when they go to sleep somewhere or other, but where I know not, as I never could find them so much as dozing. From their dull colour, and being clothed with a long pallid pubescence, they appear as they fly almost grey, whereas *L. prænubila*, the pubescence of which is shorter and more fulvous, appears as I have said before, just like a *L. depressa* ♀. The females, which are very rare, are a little yellower than the males. The wings of these never have the fuscous marks.

No stress can be laid on the disparity of sexes, because sometimes, if not always, the female of *Cordulia ænea* is extremely rare, equally so with that of *L. 4-maculata*. Last year I took above fifty *Cordulix*, without finding one female; neither could I detect one amongst the hundreds which swarmed over these pits.

The woods of which I was speaking prior to this digression, extend in length about three miles; their breadth varies very much, being broken in upon by pieces of cultivated ground, which almost break them into distinct patches of wood. They are crossed in various directions by foot-paths and broad rides cut in direct lines through them. Eight of these meeting at a fir-tree, on the top of a small hill, have given it the title of the centre tree. On either side of these woods are other small ones, the property of Sir J. Smyth and Mr. Marsh. These woods are chiefly oak, with some birches and aspens, beneath which is dense and almost impenetrable underwood, of oak, hornbeam, hazel, birch, aspen, and *Rhamnus frangula*, the whole intermixed with willows, brambles, and honey-suckles. Beneath, in the spring, the ground is covered with primroses, wood-anemones, and the wild hyacinth, and the air is perfumed

with the delicious fragrance of the humble lily of the valley. But there are none of the umbelliferous plants, of which the *Egeriites* and *Lepturites* are so fond. The underwood is cut in rotation when at about fifteen years growth, which of course affects the number of insects. But this is increased or diminished by causes which seem to defy all our attempts at discovering them. Species vanish from spots where they have abounded, and we know not why: no change perceptible to us has taken place in any of the peculiarities of the spot, but its old inhabitants are gone. The hand of man cannot have exterminated them, as it has the noblest tenants of our woods; their countless numbers are not to be destroyed by him as the *Accipitres* have been. Have they fallen a prey to the tribes of insectivorous birds which abound here? for this is truly,

“ A populous solitude of bees and birds,
And fairy forms, and many coloured things.”

But they are not now more numerous than they formerly were. Perhaps they have fallen before foes more nearly of their own rank in creation,—enemies more of their own kind. It may be so; but we know too little of their history to be able to judge.

We can easily conceive that those insects which prefer the tall underwood will not remain when that is cleared, neither will those which prefer the newly-cleared parts remain after these have grown up. But spots congenial to their habits are always close by; yet we find insects which once abounded becoming gradually more rare, or suddenly disappearing altogether. Until within the last four or five years, *Rhynchites populi*, *Saperda populnea*, *Chrysomela rufipes*, *C. decempunctata*, *Campylis dispar*, *Telephorus Alpinus*, *Pogonocerus nebulosus*, *Clythra 4-maculata*, *Melandria caraboides*, *Aporus Avellanæ*, and *Attelabus curculionoides*, were all far from rare. The six first were abundant in almost all parts of these woods, especially the lovely *R. populi*, of which a hundred might have been collected in a few hours from the young aspen shoots; in fact, one stroke of my stick has brought eight or ten at once into my nets. But now this has totally vanished; and the five others are so rare, one, two, or three years may pass over without their occurring. The other species mentioned were never *very* common, but now they are rare, though

perhaps less so in a great degree than the other species which formerly abounded. Yet the woods,

“ The coverts of old trees, with trunks all hoar,
And light leaves young as joy, stand where they stood.”

And they stand, as a whole, unaltered; for though portions are every year doomed to the axe, yet others are constantly growing up, and the woods have undergone these partial changes, perhaps, for centuries. Thus much as to the locality. I must now proceed to give a slight outline of our Entomology,—very slight truly in all classes, save *Lepidoptera*,—but my time is too short to do more.

In the Geodephagous *Coleoptera*, we have little to boast of; in fact, with the exception of *Dromius sigma*, which Mr. Waterhouse took here last winter, and *Anisodactylus pæciloides*, I cannot mention one rare species. The following genera have not occurred here to my knowledge; some of them, of course, could not be expected to occur; but I mention all undoubtedly British genera, to avoid ambiguity.

Drypta	Trimorphus	Cheporus
Odtacantha	Licinus	Oodes
Lebia	Epomis	Zabrus
Lamprias	Rembus	Pangus
Polistichus	Callistus	Actephilus
Tarus	Odontonyx	Stenolophus
Scarites	Platyderus	Masoreus
Dyschirius	Pogonus	Epaphius
Calosoma	Sogines	Aëpus
Pelophila	Miscodera	Lymnæum
Nebria	Broscus	Cilenum
Panagæus	Pterostichus	Blethisa

Of *Brachinus* I never knew of but one specimen, and that was *B. crepitans*, being taken near us. Of *Agonum*, *Harpalus*, &c. we have scarce any but the most common and widely-dispersed species, unless *A. sex-punctatum* be an exception. This splendid insect may now and then be found running in the open parts of the woods, especially where the underwood has been lately cut.

In the *Dytiscites*, notwithstanding our want of streams and large pieces of water, we are better off, as there are only the genera *Agabus*, *Hydaticus*, *Graphoderus*, *Leionotus*, *Cybister*, and *Orectochilus*, which we do not possess; and of the other genera we frequently take some of the more uncommon species.

In the *Rypophaga* we want—

Dryops	Sphærites	Synchita
Georyssus	Thymalus	Cicones
Elmis	Pria	Cerylon
Enicocerus	Phloiophilus	Crypta
Hydrous	Byphyllus	Bitoma
Spercheus	Triplax	Lasioderma
Tritoma	Mycetophagus	Paramecosoma
Alexia	Tetratoma	Holoparamecus
Corylophus	Ips	Xylotrogus
Sericoderus	Nemosoma	Tiresias
Scaphidium	Colydium	

The extreme rarity of *Boleti*, or, as they are commonly called, *saps*, on the trees about us, account for the absence of some genera; others cannot be expected to occur here; and if any of the minute genera, whether honoured with a name of six syllables in length, or doomed to rest content with only two, really occur here, they have as yet escaped me.

Of some genera, as *Leiodes*, *Octhebius*, *Micropeplus*, and *Necrodes*, we rarely find a specimen; other genera and species, on the contrary, abound. *Necrophorus humator* and *mortuorum*, *Oiceoptoma thoracica*, many species of *Catops* and *Nitidula*, are in unusual abundance. Perhaps it may be worth my mentioning, that *N. vespillo* is here very scarce, whilst *N. mortuorum* is so common that I have taken dozens out of one decaying rook.

In the *Helocera*, *Trinodes*, *Limnichus*, *Syncalypta*, *Nosodendron*, *Oomorplus*, *Simplocaria*, *Onthophilus*, and *Platysoma*, are those genera which do not occur here. Our soil and situation will account for the absence of most of these, as well as for the scarcity of the *Byrrhi*, of which we only take *B. pilula* and *sericea*: the former of these is not very common here.

In the *Lamellicornes* we are a little deficient. Of the *Lucanites*, *Dorcus parallelipipedus*, and *Lucanus cervus*, are the only species taken here, both very rarely; the latter is, I am told, more common at Loughton. Of the other *Lamellicornes*, we have *Typhæus*, *Geotrupes*, *Aphodius* (numerous), *Trox* (*sabulosus* only, and that very rare), *Serica* (rare), *Melolontha*, *Hoplia* (rare), *Cetonia aurata* (rare). The other genera do not occur, neither do any of the *Buprestites* in the next division.

All the species of *Elater*,—as the genus now stands in Mr. Stephens's Nomenclature,—are strangers to us, (except *E. bipustulatus*). Also,

Cerophytum	Atopa	Gibbium
Eucnemis	Drilus	Lasioderma
Sericus	Lycus	Dorceatoma
Ectinus	Enicopus	Ochina
Lepidotus	Dolichosoma	Choragus
Drasterius	Opilus	Bostrichus
Ludius	Thanasimus	Apate
Selatossomus	Clerus	Dinoderus
Cardiophorus	Xiletinus	Trypodendron
Ctenonychus	Mezium	Platypus

Of the *Rhyncophora* I have so many hundred unexamined specimens, that I dare not venture to give a list of what I imagine that we do not possess. And the same may be said of the *Bracheytra*.

Notwithstanding the abundance of wood in this part, the *Longicornes* are but little numerous; we only take,

Trogosita Mauritanica	Clytus arietis	Rhagium bifasciatum
Prionus coriarius (rare)	arcuatus (rare)	Toxotus meridianus
Cerambyx moschatum (rare)	Callidium violaceum (very	Leptura elongata
Pogonocerus hispidus (rare)	rare)	scutellata (rare)
nebulosus	variable	melanura
Saperda populnea	alni (rare)	lævis
Tetrops præusta	Obrium minutum	ruficornis
Clytus mysticus	Rhagium inquisitor	Pachyta livida

From the above list it will be seen that we do not possess one-third of the British species of this division; and that of these, seven are of rare occurrence here.

A large portion of the *Eupoda*, and also of the *Cyclica* and *Trimeri*, belong to our locality; but the finer species of the second group, as *Chrysomela lamina*, *C. Banksii*, *C. fulgida*, *C. graminis*, *C. sanguinolenta*, and others, which in some parts are common, are wanting here. *Zeugophora subspinosa* abounds on the young aspens in Park-hall woods; *Z. flavicollis* I have only once taken. The following genera do not occur here.

Macrop læa	Diaperis	Orchesia
Auchenia	Phaleria	Mordella
Calomicrus	Bolitophagus	Rhipiphorus
Cardiapus	Opatrum	Ripididius
Dibolia	Heliophilus	Sitaris
Mniophila	Pedinus	Oncomera
Timarcha	Phylan	Nothus
Eumolpus	Crypticus	Conopalpus
Sphærosoma	Eryx	Lymexylon
Endomychus	Mycetocharus	Meloe
Lycoperdina	Cistela	Cantharis
Hispa	Allecula	Sytaris
Sarrotrium	Phloiotrya	Notoxus
Hypophlæus	Dircæa	Aderus
Stene	Hypulus	Xylophilus
Uloma	Abdera	Euglenes
Alphitobius	Scraptia	Eutheia
Alphitophagus	Hallomenus	

Of the *Orthoptera* I can say but little, except that we are deficient in the larger species; and as to the *Neuroptera*, I

must confess to a plentiful degree of ignorance as to names. Of *Libellulites* we have most of the species at all common, as well as those I have mentioned above. I have only taken here *Sialis lutarius*, and two only of the *Perlites*. In the *Phryganites*, *Neuronia fusca* and *Phryganea grandis*, which, I have been told, are considered rare, are both common here, especially the former.

The genera *Cimbex*, *Clavellaria*, *Amasis*, *Lophyrus*, *Messa*, *Melicerta*, *Tarpa*, and *Janus*, I have not found here; but of the other *Tenthredinina*, we have a fair proportion; some not very common species occurring, as *Zaræa fasciata*, *Hylotoma Anglica*, *H. ustulata*, *H. segmentaria*, *Schizocerus pallipes*, *Cladius difformis*, *C. Geoffroyi*, *C. pallipes*, *Cræsus septentrionalis*, *Selandria alni*, *Allantus microcephalus*, &c. Of the genus *Lyda* we have only *L. sylvatica*, the larva of which feeds in companies on the pear. Of *Cephus* we find only *C. pygmæus*. Of the fossorial *Hymenoptera* we have but few species, but perhaps more than I am aware of, as I have not paid to these all the attention they deserve. Of the *Apina*, we have about, or rather more than half, the British species; amongst which are *Stelis aterrima*, *Heriades campanularum*, *Megachile circumcincta*, and *M. Xanthomelæna*, *Cælionys conica*, *Apathus rupestris*, &c. Of the other *Hymenoptera* I can say nothing certain. *Stylops Dalii* I have taken here, as I have before mentioned.

I now come to the *Lepidoptera*; and of the species of this order which I have taken here I must give a full list, as far as the *Platypterycidae*, and to this I shall append some observations on certain species.

Gonepteryx rhamnii	Hipparchia Galathea	Acherontia Atropos
Collas electra	Tithonus	Sphinx convolvuli
Pontia brassicæ	Janira	ligustri
chariclea	Hyperanthus	Deilephila galii
rapæ	Thecla betulæ	Elpenor
metra	W. album	Porcellus
napi	quercus	Macroglossum stellatarum
Mancipium cardamines	rubi	Sesia bombylifformis
Leucophasia sinapis	Lycæna Phlæas	fuciformis
Melitæa Silene	Polygonimatus Argiolus	Ægeria ichneumoniformis
Euphrosyne	Alexis	culiciformis
Argynnis Adippe	Argus	formiciformis
Paphia	Thymele alveolus	tipuliformis
Vanessa C. album	Tages	Hepialus hectus
Polychloros	Pamphila lineæ	lupulinus
urticæ	sylvanus	humuli
Io	Ino statices	sylvinus
Atalanta	Anthrocera trifolii	Zeuzera Æsculi
Cynthia cardui	filipendulæ	Cossus ligniperda
Apatura Iris	Smerinthus tiliæ	Pygæra bucephala
Hipparchia Ægeria	populi	Clostera reclusa
Megæra	ocellatus	Episema cæruleocephala

Cerura vinula	Carædrina ambigua	Leucania pallens
Stauropus fagi	sepii	Phlogophora meticulosa
Notodonta Ziczac	cubicularis	Cucullia verbasci
Leiocampa dictæa	alsines	umbraticæ
diætæoides	glareosa	lactucæ
Lophopteryx carmelita	Glæa vaccinii	Eremobia ochroleuca
camelina	polita	Abrostola triplasia
Ptilodontis palpina	satellitæ	Urticæ
Ptilophora variegata	Amphipyra pyramidea	Plusia Iota
Chaonia Dodonea	Pyrophila tetra	percontationis
Petasia Cassinea	Næmia typica	Gamma
Saturnia carpini	Xylina rhizolitha	chrysitis
Lasiocampa rubi	putris	Anarta heliaca
roboris	Calocampa exoleta	Erastria fuscula
Trichiura cratægi	Xylophasia lithoxylea	Phytometra ænea
Pæcilocampa populi	polyodon	Acosmetia arcuosa
Eriogaster lanestris	rurea	lineola
Lasiocampa neustria	combusta	Mormo maura
Odonestis potatoria	Epomidion	Catocala nupta
Gastropacha quercifolia	Hadena remissa	sponsa
Psilura monacha	Thalassina	Brepha Parthenias
Dasychira pudibunda	Genistæ	notha
Demas coryli	contigua	Euclidia mi
Orgyia antiqua	plebeia	glyphica
Leucoma salicis	Lithorhiza	Fidonia atomaria
Porthesia chryssorthea	capsincola	Anisopteryx leucophaæaria
auriflua	Saponariæ	arscularia
Arctia caja	Heliophobus popularis	Hibernia capreolaria
Phragmatobia fuliginosa	Mamestra furva	prosapiaria
Spilosoma menthæstri	pisi	defoliaria
lul. ricipeda	brassicæ	Phigalia pilosaria
Diaphora mendica	Chenopodii	Nyssia hispidaria
Fumca muscella	Persicariæ	Biston prodromarius
Callimorpha Jacobæa	Euplexia lucipara	betularius
miniata	Hama basilinea	Himera pennaria
Lithosia gilveola	testacea	Crocallis elinguaris
complana	Apamea nictitans	Odontopera bidentata
griseola	didyma	Geometra alniaria
Gnophria rubricollis	oculea	quercinaria
Setina eborina	I. niger	illunaria
Triphæna orbona	furca	Juliaria
pronuba	Miana literosa	lunaria
innuba	strigilis	illustraria
fimbria	Æthiops	Pericallia syringaria
interjecta	humeralis	Angerona prunaria
Janthina	terminalis	Rumia cratægata
Cerigo texta	fasciuncula	Ouraapteryx sambucaria
Lytæa umbrosa	Miselia Oxyacanthæ	Campæa margaritaria
Rusina ferruginea	Aprilina	Hipparchus papilionarius
Agrotis æqua	compta	Hemitea vernaria
suffusa	Polia advena	cythisaria
segetum	bimaculosa	Cleora bajularia
radiola	herbida	lichenaria
exclamationis	flavocincta	Alcis repandaria
hortorum	dysodea	destrigaria
Graphiphora augur	seladonia	rhomboidaria
brunnea	Apatela aceris	Hemerophila abruptaria
triangulum	Acronycta megacephala	Boarmia abietaria
baja	ligustri	tetragonaria
festiva	Psi	crepuscularia
punicea	tridens	consonaria
C. nigrum	rumicis	extersaria
pecta	Bryophila perla	punctularia
Semiophora gothica	Thyatira derasa	Halia vaularia
Orthosia instabilis	batis	Numeria pulveraria
munda	Scoliopteryx libatrix	Cabera pusaria
sparsa	Ceropacha duplaris	exanthemata
stabilis	diluta	Ephyra omicronaria
cruda	flavicornis	pendularia
litura	ridens	orbicularia
pistacina	Tethea subtusa	porata
lunosa	retusa	punctaria
flavilinea	Bombycia viminalis	trilinearis
macilentæ	Cosmia affinis	Bradypetes amataria
Upsilon	trapetzina	Epione apiciaria
Mythimna grisea	Xanthia gilvago	Enrymenie dolabraria
conigera	flavago	Phasianæ plumbaria
Grammesia trilinea	Nonagria Typhæ	Larentia cervinata
bilinea	Leucania comma	chenopodiata
Segetia xanthographa	impura	multistrigaria

Cidaria munitata	Melanippe hastata	Minoa chærophyllata
unidentaria	Xerene procellata	euphorbiata
ferrugata	adustata	Bapta punctata
miaria	rubiginata	Emmelesia decolorata
montanata	Euthalia miata	turbaria
fluctuata	elutata	albulata
propugnata	Lozogramma petraria	candidata
Harpalyee fulvata	Scotosia rhamnata	luteata
ocellata	betulata	Strenia clathrata
subtristata	Triphosa cervinata	Venilia maculata
sylvaticata	dubitata	Ptychopoda dilutaria
biangulata	Camptogramma bilineata	Acidalia osseata
silaceata	Eucosmia undulata	virgularia
corylata	Chesias spartiata	aversata
Polyphasia immanata	Oporabia dilutata	remutata
marmorata	Cheimatobia brumata	subsericeata
comma-notata	rupicapraria	lactata
centum-notata	Lobophora polycommata	floslactata
perfuscata	viretata	Pæcilophasia marginata
Steganolophia prunata	hexapterata	Chlorissa thymiaria
Lampropteryx suffumata	Eupithecia rectangulata	putataria
badinata	V. ata	Timandra imitaria
Anticlea rubidata	absinthiata	Ania emarginata
derivata	minutata	Ennomos flexula
Electra spinachiata	marmorata	Drepana faleataria
testata	simpliciata	hamula
pyraliata	And some other species, of the	unguicula
Anaitis plagiata	names of which I am not	
Abraxas grossulariata	quite certain.	

To be continued.

ART. XV.—*Observations on the British Cynipites.*

By FRANCIS WALKER.

THE *Cynipites*, like other tribes of insects, have some characters which are nearly constant, and some which vary much. Among the former, are the head, the joints of the antennæ, and the nervures of the wings; among the latter, the habits and economy, the thorax, and, still more, the abdomen. The greatest variation is between *Anacharis* and *Ibalia*.

The whole tribe were formerly called gall-flies, and it was supposed that they laid their eggs in plants, which their grubs caused to swell around them, and to form excrescences, or galls. It may be inferred, from the recent discoveries of Entomologists, that only a very small portion of the British species live thus; the rest are parasitic upon other insects. The external characters are sometimes very similar, although the economy is different; *e.g.* the species of the 10th and 23d groups in the following arrangement, move slowly, counterfeit death when touched, have the abdomen compressed, and the forewings very long and broad. *Cynips aptera* lives under ground, forms galls on roots, and is infested by *Callimome roboris*;

C. megaptera inhabits round berry-like galls on the trunks of trees: *C. rosæ* forms the mossy galls met with on rose-bushes; and the oak-apples are produced by a fourth species.

I am indebted to Mr. Haliday for much valuable information of the structure and economy of these insects, of which there are more than one hundred British species.

I.—*Anacharis, Dalman. Ent. Mag. Vol. II. p. 518.*

II.—*Egrips, Haliday. Corpus mediocre, compactum, convexum, atrum, læve, nitens, parce et breviter hirtum: caput transversum, subquadratum, thorace paullo latius, lævissimum, nitidissimum: mandibulæ mediocres, quadratæ, subarcuatæ, dentibus magnis acutis 3 armatæ: maxillæ longæ, graciles, subarcuatæ: lacinie acuminatæ, intus lobatæ: palpi 4-articulati, graciles, longitudine mediocri: articuli 1^{us}, et 2^{us}, mediocres lineares subæquales, 3^{us}, longicyathiformis intus apice angulatus 2^o, paullo brevior, 4^{us}, fusiformis fere linearis 3^o, longior et gracilior: labium longum, angustum, lanceolatum: palpiger furcatus: ligula brevis, lata, ciliata: palpi 3-articulati, breves, clavati: articuli 1^{us}, et 2^{us}, graciles, lineares, hic brevissimus: 3^{us}, angustiovarius, 1^o, longior et crassior: antennæ articulis *mas* 14, *fem.* 13, filiformes, corpore paullo longiores, breviter pubescentes: articuli 1^{us}, et 2^{us}, nitidi, hic subrotundus parvus, ille fusiformis validus: sequentes ad postremo proximum subfiliformes, basi et apice paullo angustiores, longitudine gradatim decrescentes; ultimus acuminatus, præcedente longior et gracilior: thorax ovatus, altus, postice angustior, supra transverse scitissime undatus: prothorax supra brevissimus vix conspicuus: mesothorax maximus: parapsidum suturæ bene determinatæ, punctatæ, postice mutuo accedentes: paraptera et epimera conspicua; scutellum extens, plus minusve exsculptum, parum nitens, apice abrupte declive, dum supra conspicitur ovatum, tum a latere angulum subacutum fringens: metathorax mediocris, scaber, obscurus, declivis: petiolus brevis, gracilis, teres, glaber, parum nitens, scite impressus et sulcatus, metathorace infimo insertus: abdomen ovatum, glabrum, thorace angustius et plerunque paullo brevius, non compressum nec acuminatum: segmenta 6 transversa recta supra conspicua, basale maximum, sequentia ad apicale gradatim decrescentia: segmenta ventralia laminâ angustâ occulta: oriductus minutus, reconditus: pedes graciles, simplices, recti, brevissime pubescentes: tibiæ apice bispinosæ: protibiæ spina unica longa valida curva armatæ: tarsi articulis 1^o, ad 4^{um}, longitudine decrescentibus, 5^{us}, 4^o, longior; ungues et pulvilli*

parvi; protarsi articulo 1^o. subtus inciso: alæ mediocres, brevissime pubescentes; proalæ nervus longitudinalis alæ basi emergens, sub costam spatio excurrans, dein abrupte flexus illam attingens et alæ apicem accedens; transversus basalis longitudinali subcostali decedens, in alæ discum recte declivis et desinens; transversus medius longitudinali ad angulum progreditur, in alæ discum excurrit ubi extimo transverso recurrente jungitur et conficitur: nervus quoque spurius sæpe manifestus alæ basi emergens ad nervi transversus basalis apicem furcillatus, furcæ alæ apicem attingentes, una ad nervorum mediæ et extimi concursum angulum fingens, altera quoque angulum fingens margini postico accedentem: metalæ nervo unico subcostali simplici.

Fem. antennæ paullo breviores articulo ultimo præcedentis latitudine non acuminatus.

Sect. I. corpore brevioribus antennis crassioribus petiolo brevissimo sulcato aliterque distinguendæ, æstivæ s. autumnales, quercetis tiliisque apricis frequentes.

Ex. Anacharis rufipes, Westwood; A. fumipennis, Westwood; Cynips nitidula, Dalman.

III.—Sect. II. similis: antennæ extrorsum crassiores; articuli 9^o. ad 12^{um}. præcedentibus manifeste latiores; ultimus adhuc latior, ovatus: mesothoracis scutellum summo apice productum acuminatum, inde ad infimum basin retractum, ideoque angulum acutum fingens; alæ longæ.—Species unica Scotiæ incola.

IV.—(Melanips, Haliday.) Corpus mediocre, compactum, altum, atrum, nitens, breviter hirtum: caput transversum, subquadratum, læve, thoracis vix latitudine, postice sulcis transversis rugosum: oculi mediocres, laterales, globosi: ocelli in triangulo supra verticem positi, spatium circumstantes elevatum: medius paullulum ante laterales prostrans: antennæ articulis *mas* 14, *fem.* 13, filiformes, corporis longitudine aut paullo breviores, breviter pubescentes; articuli 1^{us}. et 2^{us}. nitidi, hic subrotundus parvus, ille fusiformis validus; 3^{us}. subtus concavus; sequentes ad postremo proximum subfiliformes, basi et apice paullo angustiores, longitudine gradatim increscentes; ultimus acuminatus, præcedente paullo longior: thorax ovatus, altus, fere lævis, rarius scitissime et confertim punctatum obscurum: prothorax supra brevissimus utrinque latior: mesothorax maximus; scutum medio ad apicem trisulcatum; parapsidum suturæ bene determinatæ, punctatæ, postice mutuo accedentes; paraptera et epimera magna; scutellum extans, exsculptum, obscurum, basi

nonnunquam bifoveolatum, postice abrupte declive, dum supra conspicitur brevi ovatum, tum a latere angulum rectum minus determinatum quam Sect. I. fingens: metathorax mediocris, scaber, obscurus, declivis, utrinque hirtus: petiolus crassus, brevissimus, vix conspicuus, punctatus, parum nitens: abdomen longiovatum, non acuminatum, altius quam latum, thorace angustius et brevius, læve, nitidissimum, glabrum, nonnunquam oculo armato scitissime punctatum; segmenta 1^{um}. et 2^{um}. maxima, subæqualia, fere dorsum omne occupantia, illum basi utrinque hirtum; sequentia brevissima, vix conspicua: oviductus longus, rectus: pedes ut 1^o. at crassiores: alæ mediocres, brevissime pubescentes; nervi genuini ut Sectione 1^o.: nervi transversi medius et extimus angulum fingentes obtusiorum ideoque cum nervo longitudinali spatium includentes longius: nervi spurii plerunque bene determinati rarissime omnino oblitterati, ad nervorum medii et extimi concursum spatium includentes triangulare: metalæ nervo unico subcostali ramulum rejiciente abbreviatum.

Fem.—*Mari* similis: antennæ breviores: abdomen altius, apice acutius; segmenta subtus expansa.

Parasitæ, levipedes.

V.—Sect. IV. similis: *mari* antennæ corpore longiores, articulis 4^o. ad 13^{um}. longitudine æqualibus: *fem.* antennæ extrorsum crassiores corpore breviores; articuli 4^o. ad 12^{um}. longitudine æquales: scutellum scaberrimum, basi utrinque foveolatum.

VI.—(*Onychia*, *Haliday*.)—Sect. IV. affinis: antennæ *mari* 14-articulatæ corporis longitudine, *fem.* 13-articulatæ paullo breviores: thorax obscurus, scaber; scutellum sulcatum, productum, acuminatum: petiolus brevis, gracilis: abdomen læve, nitidum; segmentum 1^{um}. reliqua omnino obtegens: alæ mediocres; nervi spurii fere obsoleti.

Species unica, *Evania ediogaster*, *Rossi*.

VII.—Sect. II. similis: caput thorace angustius: *mari* antennæ subsetacæ, corpore multo longiores; articuli 4^o. ad 12^{um}. longitudine increscentes; 13^{us}. 12ⁱ. vix longitudine; 14^{us}. paullo longior: thorax longiovatus, convexus: mesothorax lævissimus, nitidissimus; scutum medio apice impressum, parapsidum suturæ postice profundiores; scutellum non extans, basi utrinque foveolatum, apicer leniter declive non angulatum: petiolus quasi bipartitus: abdomen longiovatum; segmenta 1^{um}. et 2^{um}. maxima, subæqualia; sequentia brevissima: alæ quam Sect. I. ampliores; nervi haud aliter Sect. IV.

VIII.—(Figites, *Latreille*.) Caput scabrum, parum nitens: mandibulæ quadratæ, subarcuatæ, dentibus una 2 obtusis altera 3 acutis armatæ: maxillæ longæ, graciles, subarcuatæ; laciniae acuminatæ, intus lobatæ; palpi 4-articulati, graciles, extrorsum crassiores, articulus 1^{us}. brevis, 2^{us}. et 3^{us}. longiores, 4^{us}. adhuc longior, fusiformis: labium longum, obconicum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati breves, articulus 1^{us}. mediocris, 2^{us}. multo brevior, 3^{us}. fusiformis setosus 1^o. longior: *mari* antennæ subsetacæ, corpore paullo longiores; articuli 4^o. ad 14^{um}. longitudine increscentes: *fem.* antennæ subclavatæ moniliformes, corpore breviores; articuli 4^o. ad 12^{um}. ovati longitudine decrescentes, latitudine crescentes, 13^{us}. 12^o. multo latior et fere duplo longior: prothorax punctatus: mesothoracis scutum læve, medio apice impressum, parapsidum suturæ postice profundiores; scutellum extans, scaberrimum, basi utrinque profunde excavatum, ante apicem transverse impressum, postice angulum rectum fingens: metathorax utrinque projectus: petiolus brevis, crassus, quasi bipartitus, profunde sulcatus, parum nitens: abdominis segmentum 1^{um}. mediocre, basi nonnunquam sulcatum, utrinque basin versus abrupte retractum; 2^{um}. maximum; reliqua minima: alarum nervi transversim extimus et medius tenues, angulum acutiorē fingentes spatium ideoque cum nervo longitudinali brevius quam Sect. III. includentes; nervi spurii triangulum ad nervorum medii et extimi concursum fingentes, sæpissime obsoleti.

Parasitæ.

IX.—Corpus mediocre, compactum, convexum, atrum, nitens, læve, breviter et parce hirtum: caput thorace angustius, postice subtilissime punctatum: oculi et ocelli ut Sectione I.: antennæ 14-articulatæ, clavatæ, graciles, corpore paullo breviores, breviter pubescentes; articuli 1^{us}. et 2^{us}. crassi, hic breviovatus, ille longicyathiformis; 3^{us}. et sequentes ad 13^{um}. longitudine et latitudine crescentes; 14^{us}. ovatus, 13^o. latior et duplo longior: thorax ovatus, subtilissime punctatus: prothorax brevissimus: mesothorax maximus, scuti parapsidum suturæ conspicuæ, postice mutuo accedentes; scutellum non extans, basi impressum, apice leniter declive non angulatum: metathorax mediocris, quadratus, abrupte declivis: petiolus brevissimus, obscurus, punctatus: abdomen longiovatum, lævissimum, nitidissimum, glabrum, thorace paullo longius et angustius; segmentum 1^{um}. mediocre, pilis albis basi utrinque dense hirtum; 2^{um}. maximum; reliqua minima: pedes gracillimi; tarsi longi: alæ amplæ, dense

pubescentes; nervi genuini costæ medium vix attingentes; nervus transversus medius nervi 1ⁱ. ex quo costam attingit ad nervum transversum extimum longitudine; nervi spurii bene determinati, ad nervorum extimi et medii concursum simplices: metalæ nervo unico subcostali, ramulum rejiciente brevem.

X.—(Eucoila, *Westwood*.) Corpus breve, altum, nitens, læve, fere glabrum: caput subquadratum, parvum, breve, thorace angustius: oculi et ocelli ut Sectione I.: mandibulæ quadratæ, subarcuatæ, dentibus una 2 obtusis, altera 3 acutis armatæ: maxillæ longæ, angustæ, intus rectæ, extus convexæ; lacinia acuminatæ, intus lobatæ; palpi 4-articulati, graciles, apice crassiores, articulus 1^{us}. longissime cyathiformis, 2^{us}. dimidio brevior apice crassior, 3^{us}. gracillimus 1^o. longior, 4^{us}. fusiformis 3^o. brevior sed multo latior: labium longum, angustum, postice acuminatum; palpiger furcatus; ligula brevis, latissima, ciliata, postice angustior; palpi 3-articulati, crassi, breves, articulus 1^{us}. longus apice latior, 2^{us}. brevissimus, 3^{us}. mediocris longiovatus: *mari* antennæ articulis 15, setacæ, corpore dimidio aut duplo longiores, brevissime pubescentes; articuli 1^{us}. et 2^{us}. nitidi, hic subrotundus, ille cyathiformis validus; sequentes ad 14^{um}. longi, filiformes, paulatim longitudine increscentes latitudine decrescentes; 15^{us}. 14^o. paullo brevior aut longior: *fem.* antennæ articulis 13, subclavatæ, corporis dimidio paullo longiores, breviter hirtæ; articulus 3^{us}. longus, subfiliformis; 4^{us}. et sequentes ad 13^{um}. ovati, longitudine et latitudine paulatim crescentes: thorax ovatus: prothorax supra brevissimus, utrinque latior, antice hirtus: mesothorax maximus; scutum latissimum, non sulcatum; parapsides in unum confusæ; scutellum extans, scabrum, obscurum, basi utrinque foveolatum, medio quasi catilliferum, postice subproductum pilis nonnullis rigidis hirtum: metathorax mediocris, declivis, parum nitens, utrinque pilis albis hirtum: petiolus brevissimus, ægre discernendus: abdomen longiovatum, altum angustum, compressum, contractum, thoracis longitudine; segmentum 1^{um}. maximum, reliqua omnino obtegens, basi pilis albis densissime hirtum, subtus aciem fingens; oviductus longus, spiralis; pedes et Sectione I.: alæ brevissime pubescentes, apice breviter ciliatæ: proalæ maximæ: nervus longitudinalis ut Sectione I.; nervi transversus medius et extimus longiores subundati; nervi spurii sæpe optime determinati ad genuinas aspirantes, ubi medii et extimi attingunt angulum simplices.

Parasitæ, tardipedes.

XI.—*Mas* et *Fem.* Sect. X. similis: antennæ articulis 4^o. ad 14^{um}.

longitudine decrescentibus; *mari* 3^{us}. maximus 4°. duplicato longior, *fem.* mediocris.

Species *unica*.

XII.—*Mas* et *Fem.* Sect. X. similis: *fem.* antennæ clavatæ: alæ minores, ciliatæ; nervi transversi breviores recti; nervi spurii obsoleti.

XIII.—*Fem.* Sect. X. similis: antennæ subclavatæ; articuli 3°. ad 6^{um}. latitudine subæquales, 7°. ad 13^{um}. multo latiores.

XIV.—*Fem.* Sect. X. similis: antennæ clavatæ; articuli filiformes, 3°. ad 7^{um}. latitudine æquales, 8°. ad 12^{um}. latitudine crescentes; 13^{us}. 12°. latior et duplo longior.

XV.—(Kleidotoma, *Westwood*.)—*Mas* et *Fem.* Sect. X. similis: *mari* antennæ submoniliformes; articuli 4°. ad 13^{um}. longiovati: *fem.* antennæ clavatæ; articulus 2^{us}. longicyathiformis; 3^{us}. et sequentes ad 10^{um}. brevissimi, subrotundi; 11^{us}. 12^{us}. et 13^{us}. multo latiores: mandibulæ quadratæ, subarcuatæ, dentibus una 2 obtusis, altera 3 acutis armatæ: maxillæ longæ, angustæ, intus rectæ, extus convexæ; lacinia acuminatæ, intus lobatæ; palpi 4-articulati, graciles, extrorsum crassiores, articuli 1^{us}. et 2^{us}. mediocres, 3^{us}. longior et gracilior, 4^{us}. fusiformis latior: labium longum, angustum, postice acuminatum; palpiger furcatus; ligula brevis, lata, ciliata; palpi breves, articulus 2^{us}. brevissimus: alæ longius ciliatæ; nervi medium non attingentes.

XVI.—*Fem.* Sect. X. similis: antennæ clavatæ; articuli 3°. ad 9^{um}. angusti, latitudine gradatim crescentes, longitudine subæquales; 10°. ad 13^{um}. multo latiores.

XVII.—*Fem.* Sect. XIII. similis: articulus 11^{us}. 10°. longior, 12^{us}. et 13^{us}. multo latiores.

XVIII.—*Fem.* Sect. X. similis: antennæ clavatæ; articuli 4°. ad 8^{um}. angusti, longitudine crescentes; 9°. ad 13^{um}. multo longiores, longiovati, longitudine et latitudine crescentes.

XIX.—*Mas* et *Fem.* Sect. VIII. similis: *mari* antennæ submoniliformes; articulus 4^{us}. 3°. multo longior et latior; *fem.* articuli 3^{us}. et 4^{us}. longitudine æquales.

XX.—*Mas* et *Fem.* Sect. XIII. similis: thorax et abdomen valde compressa: alæ minimæ vix ullæ: *mari* antennæ articulo 3°. valde arcuato.

Species *unica* (*Figites* subapterus, *Ent. Mag.* Vol. II. p. 117,) ad littora maris degit.

XXI.—*Fem.* Sect. VIII. similis : antennæ subclavatæ, corporis longitudine ; articuli 1^{us}. et 2^{us}. cyathiformes, hic brevior et angustior ; 3^{us}. longus, filiformis ; 4^{us}. brevior ; sequentes ad 13^{um}. longitudine subæquales, latitudine crescentes : alæ brevissimæ.

XXII.—*Fem.* Sect. XXI. similis : proalæ amplissimæ : metalæ angustæ.

XXIII.—(*Cynips*, *Linné.*) *Mas* et *Fem.*—Corpus breve, angustum, convexum, nonnunquam pube sericea tectum : caput parvum, breve, thorace angustius, subquadratum, scabrum, obscurum transversum : oculi et ocelli ut Sectione I. : mandibulæ quadratæ, tridentatæ, subarcuatæ ; dens externus longus acutus, 2^{us}. et 3^{us}. approximati, hic obtusus ille acutus : maxillæ longæ, angustæ, fere rectæ ; lacinia acuminatæ, intus lobatæ ; palpi 4-articulati, breves, validi, extrorsum crassiores, articulus 1^{us}. longus apice latior, 2^{us}. et 3^{us}. paullo breviores lineares, 4^{us}. fusiformis 3^o. latior et multo longior apice obtusus : labium longum, obconicum, antice abrupte angustius ; palpiger furcatus ; ligula brevis, lata, ciliata ; palpi 3-articulati breves, validi, subclavati, articulus 1^{us}. longicyathiformis, 2^{us}. brevis, 3^{us}. fusiformis 1^o. longior : *vari* antennæ 15-articulatæ, subsetacæ, corpore longiores ; articulus 1^{us}. cyathiformis crassus ; 2^{us}. subrotundus angustior : 3^{us}. longus, subtus incisus ; sequentes ad 15^{um}. longitudine decrescentes : *fem.* antennæ 14-articulatæ, filiformes aut extrorsum crassiores corporis longitudine aut paullo breviores ; articulus 14^{us}. acuminiatus, 13^o. longior : thorax ovatus, altus, scaber, obscurus nonnunquam lævis ; prothorax brevissimus, supra vix conspicuus : mesothoracis scutum læve, nitens, sæpe glabrum, parapsidum suturæ bene determinatæ, postice mutuo accedentes ; scutellum extans, breviovatum, subproductum : metathorax brevis, abrupte declivis : petiolus gracilis, brevissimus, lævis, nitens : abdomen ovatum, compressum, nitens, læve, fere glabrum : segmentum 1^{um}. maximum ; reliqua brevissima : sexualia occulta : oviductus in spiram convolutus : pedes ut Sectione I. : alæ amplissimæ, nervus longitudinalis ubi nervo transverso medio jungitur quasi discerptus, ante costam attingit abruptus : nervus transversus extimus longissimus, versus alæ apicem productus : medius brevis arcuatus : basalis ad radicem alæ propensus : nervi spurii optime determinati genuinos fingentes, areolam triangulam ad nervorum extimi et medii

concursum fingentes: metalæ nervo unico subcostali ramulum rejiciente longum.

Tardipedes, gallicolæ, (Cynips megaptera, Panzer, &c.)

XXIV.—*Mas et Fem.* Sect. XXI. similis: antennæ moniliformes; thorax angustus; segmenta non bene determinata; scutellum non extans nec productum: abdominis segmentum 1^{um}. magnum; sequentia breviora: alæ nullæ.

Species unica (Cynips aptera, Fabricius) radicibus subterraneis gallicola.

XXV.—*Mas et Fem.* Sect. XXI. similis: abdomen minus compressum: antennæ moniliformes; *mari* 14-*fem.* 13-articulatæ, 3^{us}. quasi tortus, subtus arcuatus, apice dilatatus: abdomen thorace brevius et angustius; segmentum 1^{um}. magnum reliqua breviora: alæ mediocres; nervus transversus extimus quam Sect. XXI. brevior.

XXVI.—*Mas et Fem.* Corpus mediocre, convexum, subtilissime scabrum, parce hirtum: caput breve, subquadratum, thoracis latitudine: trophi minimi: mandibulæ quadratæ, bidentatæ, fere rectæ; dentes acuti: maxillæ longæ, angustæ, fere rectæ; lacinia acuminatæ, intus lobatæ; palpi 3-articulati?, breves, clavati, apice setosi; articulus 1^{us}. longicyathiformis, 2^{us}. brevis, 3^{us}. longiovatus: labium angustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 2-articulati?, brevissimi; articuli lati, subrotundi: *mari* antennæ 15-articulatæ, filiformes, corporis longitudine; articulus 1^{us}. cyathiformis; 2^{us}. subrotundus; 3^{us}. longus, gracilis, teres; sequentes ad 15^{um}. curtantes: *fem.* antennæ paullo breviores, extrorsum crassiores; articulus 14^{us}. 13^o. major: thorax ovatus: prothorax supra vix conspicuus: mesothoracis parapsidum suturæ bene determinatæ, postice mutuo accedentes fere occurrentes: scutellum extans, fere rotundum, postice declive: metathorax mediocris declivis: petiolus brevissimus: abdomen ut Sect. XXIII.: alæ mediocres; nervi ut Sect. XXIII., extimus transversus brevior.

Tardipedes, gallicolæ (Cynips lenticularis, Olivier, &c.)

XXVII.—*Mas et Fem.* Corpus mediocre, convexum, hirtum: caput subquadratum, thorace paullo latius, scite punctatum, postice angustius: *mari* antennæ 15-articulatæ, filiformes, corpore longiores; articulus 1^{us}. breviccyathiformis; 2^{us}. rotundus; 3^{us}. longus, gracilis, linearis; sequentes ad 13^{um}. curtantes; 14^{us}. 13^o. paullo longior: *fem.* antennæ 14-articulatæ, paullo breviores: thorax ovatus: prothorax supra vix conspicuus: mesothoracis scutum subtilissime squameum; parapsidum suturæ

bene determinatæ, postice mutuo accedentes; scutellum breviovatum, extans, scabrum, vix productum, postice declive: metathorax mediocris, declivis: petiolus brevissimus: abdomen ovatum, subcompressum, thorace brevius et angustius, supra glabrum, nitens; segmentum 1^{um}. maximum, reliqua obtegens: alæ amplæ; nervus extimus transversus quam Sect. XXIII. multo brevior.

Cynips Rosæ, *Lin.* gallicola.

XXVIII.—(*Ibalia, Latreille*). Corpus longum, gracile, pubescens, parum nitens: caput mediocre, thoracis latitudine, scabrum, subquadratum; vertex inter ocellos parum elevatus: mandibulæ subquadratæ, una bidentata, altera tridentata, dentes breves, vix acuti: maxillæ breves, latæ, apice intus maxime lobatæ: palpi 5-articulati, mediocres, apice crassiores; articulus 2^{ds}. sat longus; 5^{us}. adhuc longior et crassior, ovato-fusiformis: labium latum, obconicum; ligula brevis, lata; palpi 3-articulati, breves, crassi; articulus 3^{us}. subfusiformis, pilosus, 1ⁱ. et 2ⁱ. fere longitudine: antennæ filiformes, graciles, corpore breviores; *mari* articulis 15, 2^{us}. brevissimus, 3^{us}. intus apice dilatatus, 4^{us}. et sequentes ad 15^{um}. curtantes; *fem.* articulis 13, 1^{us}. validus longicyathiformis, 2^{us}. parvus subrotundus, 3^{us}. et sequentes ad 12^{um}. primo gradatim denique abrupte curtantes; 13^{us}. 12^o. paullo longior: thorax fere cylindricus, transverse sulcatus: prothorax brevis: mesothoracis scutum per medium longe sulcatum; parapsidum suturæ bene determinatæ, postice mutuo accedentes; scutellum subquadratum, scabrum, supra planum, postice abrupte declive angulum rectum e latere visum fingens, apice utrinque breviter recurvum et acute productum: metathorax mediocris, declivis, apicem versus utrinque spinis duabus minutis obtusis armatus: petiolus brevissimus: abdomen valde compressum, cultratum, thorace multo longius, segmentis 6 supra conspicuis, *mari* subarcuatum segmentis subæqualibus; *fem.* segmenta 1^{um}. 2^{um}. et 3^{um}. subæqualia; 4^{um}. paullo longius; 5^{um}. magnum, fere ad abdominis apicem productum; 6^{um}. mediocre, apice rotundatum; segmenta ventralia lamina occulta: oviductus supra abdomen recurvum: pro- et mesopedes mediocres: metapedes longi, validi; coxæ magnæ; tarsi articulo 1^o. reliquis una multo longiore: alæ angustæ; proalæ nervus 1^{us}. basi emergens, ad costam proxime excurrens, dein illam attingens et ad alæ apicem accedens; transversus basalis 1^o. subcostali decedens, in alæ discum incurve declivis et desinens; transversus medius brevissimus, 1ⁱ.; angulo progreditur, transverso

extimo longissimo ad costam valde proximo mox jungitur et conficitur: nervi 2 ad cellulam minutam sub nervorum medii et extimi concursum, unus e angulo postico alæ apicem attingens, alter ad angulum internum nervi basalis medio jungitur et cellulam majorem perficit; nervus quoque 2^{us}. excurrens 1ⁱ. basi emergens, per marginem posticum progreditur, medio flexus et ramulum brevem postice emittens, apice furcatus; nervus denique per marginem posticum spurius: metalæ nervus longus costam percurrentes; nervus quoque spurius 1ⁱ. basi emergens, spatio excurrens, ramulum brevem postice emittens, denuo in 1^{um}. rediens.

XXIX.—Corpus breve, altum, compactum, fere glabrum: caput thorace paullo latius: vertex inter ocellos parum elevatus: *mari* antennæ 14-articulatæ, filiformes, corpore paullo longiores; articulus 1^{us}. brevi-cyathiformis; 2^{us}. subrotundus; 3^{us}. longus, subtus parum incisus; sequentes ad 13^{um}. minime curtantes; 14^{us}. 13^o. paullo longior: *fem.* antennæ 13-articulatæ, extrorsum crassiores, corpore paullo breviores; articuli 3^o. ad 12^{um}. curtantes; 13^{us}. 12^o. plus duplo longior: thorax breviovatus, lævis, nitens: prothorax mediocris: mesothoracis parapsidum suturæ conspicuæ, postice mutuo accedentes; scutellum subrotundum, scabrum, vix extans, subproductum, postice declive: metathorax mediocris, declivis: petiolus brevissimus, crassus, sulcatus: abdomen ovatum, altum, contractum, nitens, læve, thorace brevius et angustius; *mari* segmenta 1^{um}. et 2^{um}. maxima; reliqua occulta; *fem.* segmentum 1^{um}. sequentia omnia obtegens: pedes breves, validi: alæ mediocres; nervus 1^{us}. costam spatio ante exitum percurrentes; extimus sat longus; medius rectus, ad alæ apicem proclivis; nervi spurii bene determinati, areolam includentes triangulam.

XXX.—Præcedentis structura: mandibulæ quadratæ, subarcuatæ, una tri-, altera bidentata; dentes acuti: maxillæ longæ, angustæ; lacinie acuminatæ, lobatæ; palpi 4-articulati, breves, extrorsum crassiores, articuli 1^{us}. et 2^{us}. mediocres, 3^{us}. brevior, 4^{us}. fusi-formis 1^o. longior: labium longum, perangustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, breves, validi, articulus 1^{us}. longi-cyathiformis, 2^{us}. brevissimus, 3^{us}. ovatus 1ⁱ. longitudine: antennæ *mari* articulis 14, 3^{us}. maximus, 14^{us}. 13^o. paullo longior; *fem.* articulis 13, 11^o. ad 13^{um}. sæpe approximatis quasi clavam fingentibus: thorax scaber, obscurus: mesothoracis parapsides suturis vix conspicuis aut quòd alæ extinctæ scuto in unum confusæ, scutellum extans: abdomen nitens, læve: alarum nervi sæpe vix conspicui.

Gallicolæ, plerumque minutæ.

XXXI.—(Allothria, *Westwood.*)—Sect. XXIX. similis: mesothoracis parapsidum suturæ et alarum nervi spurii omnino obsoleta: palpi maxillares 4-, labiales 3-articulati: antennæ *mas* 14-, *fem.* 13-articulatæ filiformes: mesothoracis scutum lævissimum glabrum, scutellum convexum rotundatum: abdomen subcompressum fere globosum. Levipedes, parvæ sæpe minimæ, nonnunquam apteræ, Aphidum corpora parasitice incolentes.

ART. XVI.—*Remarks suggested by a Postscript to the Fifth Volume of Stephens's "Mandibulata."* By the Rev. G. T. RUDD.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—In a Postscript to his fifth volume of *Mandibulata*, Mr. Stephens adverts to a comparison which he fancies is made in your second volume, p. 516, "between the elaborate researches of Kirby and Gyllenhal," and certain genera described in his *Illustrations*. From the sensitive manner in which he notices the remarks in the article he refers to, it is, I am sorry to say, too evident he considers them made in a spirit unfriendly to his work. I beg leave to disclaim any such feeling; but I assert my undoubted right of forming and expressing an opinion on the manner in which Mr. Stephens, or any other author, executes the task he undertakes for the instruction of those who may purchase or study his publication. In the article in question, I state, "whoever sits down to investigate and make out individuals of a genus, in which the described species are numerous, will soon discover the unsatisfactory progress he can attain, the uncertainty in which he remains, after the most careful study of his author, as to the specific types to which his several specimens are to be referred;" and in a note, "the genera *Harpalus*, *Amara*, *Cercyon*, *Aleochara*, &c. of the *Illustrations*," are cited as cases in point. Without any hesitation, I repeat, that whoever sits down "to make out" a species of any one of the genera here enumerated, unless it be a very strongly marked one, will, after the most careful study of the "*Illustrations*," remain uncertain as to what particular species it is to be referred; but that if the same person turn to Gyllenhal's work, or to Kirby's *Mon. Ap. Ang.*, to ascertain an insect in the orders or family treated on

by them, he will rise satisfied that he has identified his species, or at least, that it is not described in their pages. Mr. Stephens says, I have been "regardless" of a note appended to the genus *Amara* in his Illustrations. I assure him I was fully aware of that note, which, as I understood, and do still understand it, has no reference to the difficulty of expressing with distinctness specific differences, but of ascertaining the number, and nomenclature, and location, of British insects generally, and of the species of *Amara* in particular.

The accuracy and precision of Gyllenhal's descriptions seem fully admitted by Mr. Stephens, though accounted for by the length of time that admirable author took to mature them.

In reference to Kirby's unequalled performance, Mr. Stephens says, "Although ALL his typical species may be ascertained according to the remarks in the paper referred to, it is stated by Mr. Shuckard, one of our best hymenopterologists, in Vol. III. p. 92, of the same publication, that he cannot ascertain above fifty species of *Andrena* and *Nomada* thereby." Now, "in the paper referred to," no such words as "all his typical species may be ascertained," nor any like them, as quoted by Mr. Stephens, occur!!!! From what motive Mr. Stephens has allowed himself to attribute to me words, and an assertion certainly not employed or made by me, is best known to himself. He has taken the trouble, too, of giving additional emphasis to the passage, by printing ALL in italics!!!!

My friend Mr. Shuckard's^a testimony is of the highest value; and if *he* distinctly (for I do not understand his remark in Vol. III., p. 92, exactly as Mr. Stephens interprets it,) affirms that, from want of precision in the specific characters given by Kirby, he is unable to ascertain above fifty species of *Andrena* and *Nomada*, then I will readily allow the Monog. Apum Angliæ is much more imperfectly executed than entomologists generally imagine. Mr. Stephens, with the view, I

^a In June of last year, during a collecting excursion to Hampstead, where, by the way, I captured *Astata boops*, *Hedychrum roseum*, *Methoca ichneumonides*, and several other reputed rare insects, Mr. Shuckard expressed his high admiration of Kirby's accuracy; and I well remember he said he was quite satisfied, that if any one possessed an insect described in the Monog. Ap. Angliæ, he would be able to determine it most satisfactorily. See also Mr. Shuckard's high eulogium of the Monog. Ap. Angliæ, in his paper on the *Aculeate Hymenoptera*, published in the first part of the Transactions of the Entomological Society, for 1835.

suppose, of showing that "the comparison" was invidious, enters into a statement of the periods occupied by Kirby and Gyllenhal, in preparing their respective works. It seems our celebrated countryman "devoted two or three years of his undivided attention to the small group of 212 insects," and with a result so imperfect, that out of the 100 species of *Andrena* and *Nomada*, described by him, "one of the best hymenopterologists of the present time cannot ascertain above fifty species,—i. e. exactly one half. Now if such be the extreme difficulty of conveying, in definite and intelligible terms, the characters by which species may be distinguished, *inter se*, that two or three years of undivided attention to a small group of 212 insects, by even a Kirby, has failed; what prospect does Mr. Stephens offer to his subscribers, when he pledges himself to describe, during the next twenty months, the 4,800 species recorded in his Catalogue, and not yet given in the Illustrations; (when, too, he states explicitly in "the Postscript," he can only employ a few hours stolen from relaxation and repose each evening after the fatigues of the day,) to say nothing of the hosts of minute Hymenoptera not indicated even in the Catalogue, and the probable extensive additions that will be made to our *Fauna Insectorum* in the course of the current period!!! I think I do not overrate the number of British insects already known to exist, and still undescribed in the Illustrations, at 6,000, which will give 300 a month for the exercise of Mr. Stephens's descriptive powers!!!! If Kirby's *Mon. Apum Angliæ*, after all his care, tact, and time, and with its limited extent of subject, still leaves the entomologist unable to ascertain above 50 out of 100 *Andrena* and *Nomada*, I am afraid Mr. Stephens affords just ground for apprehension, that to describe 300 insects per month is a task more easily undertaken than well accomplished. However, "*Nous verrons.*"

ART. XVII. — *Some Observations on the Structure and Functions of Tubular and Cellular Polypi, and of Ascidiæ.* By JOSEPH JACKSON LISTER, Esq. F.R.S. (*From the Philosophical Transactions, Part II. for 1834.*)

THE science of Natural History is now advancing with a rapidity which, twenty years ago, her most enthusiastic

volaries, even in their wildest visions, could not have anticipated. The circulation of blood in insects, and also in torpid vertebrates; the metamorphosis of Crustacea, the mechanism of pulvilli, and the circularity of relation, are discoveries which, with many others, must mark the present as the brightest era that has hitherto dawned on Zoology. Among those whose active and powerful minds have contributed largely, though often secretly and anonymously, to the great mass of knowledge now possessed, the author of the paper before us stands conspicuous. Mr. Lister is one of that rare class of men who prefer obscurity to notoriety,—who are ever more willing to allow others the merit of their discoveries than to claim it for themselves,—who instantly communicate to an inquirer the brilliant result of years' research, making no reservation as to its appropriation. This is the spirit that we desire to see; we are certain that the true proprietor of scientific knowledge loses nothing by it. Often have we seen another parading, for a short time, in the borrowed plumage of philosophy, often christening some discovery with his own name; but the deceit is never successful: no one thinks of Americus as the discoverer of America.

The paper before us is one of extraordinary merit; whether we regard the remarkable nature of the facts, the perspicuous manner in which they are recorded, or the lasting influence which such a record must exercise over the whole science of Zoology, we do not hesitate in pronouncing it one of the most valuable the Philosophical Transactions have ever contained.

We suppress a short introductory essay which we had prepared, of the state of our knowledge of the *Acrita*, previous to the publication of Mr. Lister's paper, because we consider it our duty to devote all possible space to original communications; and we shall, therefore, content ourselves with referring the reader to the splendid work of Savigny,^a and confine ourselves to a simple notice of the essay before us.

Mr. Lister's first observation is on the *Tubularia indivisa*. When magnified about one hundred times, a current of particles was seen within the tube, resembling, in its steady continuous flow, the circulation observable in *Chara*.^b The

^a Mémoires sur les Animaux sans vertèbres, par Jules-Cesar Savigny.—Partie Seconde. Paris, 1816.

^b A genus of plants.

particles were various in size; some very small, others apparently aggregations of smaller ones; some were globular, but most were without a regular form of any kind; they flowed at a uniform rate, in distinct currents, upwards and downwards, each current occupying half of the circumference. There were slight vortices in the current at certain nodous portions of the tube: no passage of particles was observed between the tube and the stomach. The action between the stomach and mouth was different from that in the tube. The mouth became swollen by a flow from the stomach, which continued about a minute; the contents of the mouth then returned to the stomach, which expanded,—the mouth at the same time contracting,—during which operation the connecting orifice was seen distinctly to open, and it continued so on the return of the flow to the mouth, till the stomach became nearly emptied; the orifice then gradually closed; and again re-opening, allowed the fluid to repass into the stomach: the intervals between each contraction of the orifice were very nearly eighty seconds.

The second observation is on *Sertularia pluma*; the specimen examined contained 400 to 500 polypi. “All the polypi were connected together by a soft granulated matter, which extended throughout the interior of the branches, stem, and root. With a power of 300,^c a current of particles, varying in size and form, was observed running along the axis of this soft matter. It flowed in one channel, alternately backwards and forwards, through the main stem and lateral branches of a plume, and through the root, as far as the opacity permitted its being traced: sometimes it was seen to continue into the cells. The stream was, throughout, in one direction at one time; it might be compared to the running of sand in an hour-glass, and was sometimes so rapid in mid-tide, that the particles were hardly distinguishable; but it became much slower when near the change. Sometimes it returned almost without a pause; but at other times it was quiet for awhile, as the particles took a confused whirling motion for a few seconds, the current afterwards appearing to set the stronger for this suspension. The whirling, or starting motion, took place sometimes at one, sometimes at another part of the stem and branches during the intervals of the currents. Five ebbs and

^c Observed also with a power of 100.

five flows occupied fifteen minutes and a half,—the same average time being spent in the ebb as in the flow. The longest continued stream was two minutes and a quarter; the longest suspension, half a minute. When the connexion of a plume with the root was interrupted by bending its stem, the stream running down the middle was observed to continue its flow up one of the lower and stronger lateral branches, and then to return down that branch, and up the main stem,—the course of the current in most of the other side branches being still the same as in the middle one. On a stem being cut off below the commencement of the side branches, a few seconds passed before any thing exuded from the stump. A small stream of particles then issued, followed by a flow of viscous matter; this stopped awhile, then went on again, but ceased altogether in about five minutes. It hung like honey about the end; and on its gradually clearing away, the wound appeared healed. The alternate currents in the axis of the soft matter were seen in all the *Sertulariæ* that were examined, and appear to be an essential character of this family.”

Sertularia setacea. “From its transparency, and the smaller number of its moving particles, their individual quivering motions, and the course of its currents, were more conspicuous than in the former species. The stream sometimes extended only to the pulp below the septum, and sometimes mounted into the stomach; and in whichever part it terminated, agitation took place there on the ceasing of the upward flow. The soft part within the branches, which adhered generally to one side of the tube, had the look of a slimy matter, inclining to granular, and held together by greater tenacity at its outside. Nothing like muscular motion was seen in the pulp of this or any other species. As a little globular animalcule was driving rapidly past one of the expanded polypi, it instantaneously seized it, and brought it to its mouth by contracting its arms. They gradually opened again, except one, that remained awhile doubled with its end on the animalcule. The mouth, indistinctly, seemed filled with hairs or tentacula, that closed over the prey; and after a few seconds, it was carried slowly down, in the manner of the *Actiniæ*, the mouth contracting and the neck enlarging into the stomach: here it was uncertainly seen, and soon disappeared. Agitation of particles in the stomach followed the

swallowing, and then the currents between the stomach and the branch went on again as usual."

Mr. Lister concludes, from his various observations of the *Sertulariæ*, that the circulating fluid is the great agent in absorption, and that it performs a prominent part in the obscure processes of growth. In this we fully agree, as these properties are indisputably possessed by the blood of vertebrated animals; but its flowing into the stomach of the polypus seems altogether an anomalous fact, and exceedingly difficult to account for. Our author suggests whether this fact does not indicate that the circulating fluid is also a solvent of the food.

There are five plates accompanying this paper, engraved by Basire, from the author's drawings; and we wish to call the attention of naturalists to them, as perfect models of accuracy and neatness.

ART. XVIII.—*Notes on various Insects.* By JONICUS.

SIR,—As a military man, whose profession is his first, and entomology a second pursuit, I feel diffident in publishing any of my observations on this, to me, most fascinating branch of Natural History; believing from the present advanced state of the science, that such facts as a young and self-taught entomologist conceives new, may be merely details of well-authenticated truisms to his more experienced readers. Should you consider the following worth inserting amongst the varieties of your excellent publication, I trust they will make due allowance for my having regarded natural habits with deeper interest than scientific arrangement.

1. *Filaria*.—On the 18th of April last, finding to my surprise that a female specimen of *Zabrus gibbus*, which I had placed, with several other beetles, three hours before, in solution of spirits of wine, was not completely deprived of motion when taken out, I again submerged it in the spirits, and returned in about an hour. I then observed what appeared to be a black intestine protruding from the anus of the *Zabrus* about an inch; and on more closely examining it, observed that it was an animated worm. Gently extracting it, I freed the beetle from two of these parasites—the second white and

entwined with the end of the former black worm, which folded with it in a knot. The beetle was dead: the two worms lived for a few minutes, shrivelled up and died. Each was nearly five inches long, the black more firm in texture than the white, which I suppose had not arrived at maturity. It exactly resembled *Gordius Aquaticus*, and were it not for the acknowledged resemblance of some of the *Filaria* to the *Gordii*, I should feel inclined to believe it that *Annelide*. This happened at Fermoy, Ireland.

2. *Scarites lævigatus*.—"Niger: tibiis anticis tridentatis, posticè bidentulatis: elytris oblongis, subdepressis, obsolete striato-punctatis, punctisque duobus posticis impressis."

Common in Cephalonia from the 18th of April to the 20th of August. Found on sandy beaches, where the sand shrimps dwell. The latter, as every person must have observed, burrow in the sand like a dog, forming a perpendicular hole. About the 20th of April, 1834, I watched one of the *Scarites* running on the sand, apparently in search of food. It ran into a shrimp hole, but finding it deserted, immediately came out and entered another: the shrimp happening to be near the top, sprung out when my friend was looking into his hole; the *Scarites* however entered, but found nothing. At the next hole it was more fortunate, and I soon saw it return, dragging out its prey. On retiring behind some sea-weed to finish its meal, I captured it with the shrimp in its mouth. There is a smoother variety of this *Scarites*. The *S. pyracmon* is also found on the Lixurie coast.

I should observe that the Ionian Isles are particularly rich in various species of insects, many hitherto reckoned rare. In the course of eight months I captured in Cephalonia the following species of *Scaritides*:—

Scarites Pyracmon.—Two dead specimens found in the sands.

———— *lævigatus*.—Common.

—————Var. with former.

Siagona Oberleitneri.—Amongst the barren clay hills of Lixurie.

Ditomus robustus.—About sixteen specimens.

———— *Calydonius*.—Not common.

———— *Sphærocephalus*.—Not uncommon.

———— *obscurus*.—Not uncommon.

In Corfu, during October and November, 1834, I captured the same *Siagona* and *Ditomi*, also *Clivina Fossor*.

The Rev. C. F. Kuper had captured several *Scarites* in Corfu; also specimens of *Ditomus Dama*, and a variety of *D. obscurus*, or distinct species. He may probably enlarge the list of known *Ditomi* hereafter.

3. *Eggs of Mantis Religiosa and Chalcis*.—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 17th of May, happening to look at one which lay in my desk, I observed four or five minute *Chalcidæ* settled in it, and upon opening it to discover whether they were the real occupants or intruders, I discovered several emerging, or 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 body and recurved. On the 24th of 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, and in 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.

ART. XIX.—*Notes on Diptera*. By FRANCIS WALKER.

PLANETES. N. G. *Cecidomyiæ proximum*. Fem. *Antennæ* 12-articulatæ, corporis dimidii longitudine; *articuli longi, æquales, quasi bipartiti, basi rotundi, apice ovati*;

12^{ac}. *conicus, acuminatus* : thorax trans caput longe productus : pedes crassi ; tarsi incurvi, articulo basali brevissimo. P. extremus. Fem. Obscure ferrugineus, parce hirtus : thoracis et abdominis latera pallida : antennæ fuscae : pedes nigro-fusci : alæ fuscae, breves, pubescentes. (Corp. long. lin. 1½ ; alar. lin. 2½.) Found near London.

Cecidomyia producta, Meigen. Found near London.

Erioptera pygmæa, Macquart. Inhabits woods near London in May.

Limnophila, Macquart. Separated from *Limnobia*, Meigen, and comprising *L. punctata*, Meigen, and other species, that have five posterior cells to each wing.

Limnobia occulta, Meigen. Frequents the verdant banks of mountain rivulets in North Wales, and the vicinity of the lakes of Westmoreland and Cumberland during the autumn. The species of insects, as well as the soil and climate of the above-mentioned countries, are nearly alike.

Cylindrotoma, Macquart. Founded upon *Limnobia distinctissima*, Meigen. Taken at New Lanark, Scotland.

Tipula dispar, Haliday. Rare near London, but very common in North Wales from September to November. The short wings of the female, like those of many winter moths, are useless for flight, and it crawls over heath and furze bushes.

Pachyrhina, Macquart. A genus answering to Meigen's second division of *Tipula*, and comprising *T. crocata*, *pratensis*, *imperialis*, &c.

Ptychoptera lacustris, Meigen. Found at New Lanark. It has darker and more slender legs than *P. contaminata*.

Dictenidia and *Xiphura*, Brullé. These two genera were separated from *Ctenophora*, by Brullé. The type of the former is *C. bimaculata* ; of the latter, *C. atrata* ; while *C. pectinicornis* is left with that genus. *Ptychoptera* is allied to *Dictenidia* and *Ptych. pectinata*, Macquart connects them.

Hexatoma nigra, Latreille. Found at New Lanark, Scotland.

Bolitophila maculipennis. B. fusca major ; alæ maculis duabus fuscis, una disco, altera ad nervi subcostalis apicem. (Corp. long. lin. 3½ ; alar. lin. 6.) Found but very rarely near London in the spring ; and in the autumn, near Ambleside, in Westmoreland.

B. fusca, Meigen. Found in hedges, woods, &c. during the spring, autumn, and winter, in various parts of England.

Orphnephila devia, Haliday. September, North Wales; frequents moist shady spots.

Lestremia, Macquart. This genus has more affinity to *Molobrus* than to *Cecidomyia*. The antennæ resemble those of *Zygoneura*, which is still nearer allied to *Molobrus*.

Chrysomyia, Macquart. Answering to Meigen's second division of *Sargus*, and comprising *S. formosus*, *S. politus*, &c.

Atherix melæna, Hoffmannsegg. May, in woods near London. The male probably belongs to the genus *Spania*, Meigen. The disposition of the nervures of the wings varies very much.

Atherix immaculata, Fabricius. Found near London in June.

Tachypeza arenaria, Haliday. Inhabits sea-weed and rocks on the coasts of South Devonshire, Cornwall, and the Isle of Wight, during the summer and autumn. Var.? β . *alata*. *Alæ amplæ, subfuscæ ad costam obscuriores*. September, South Devonshire and Cornwall.

T. graminum, Fallen. September, in the Isle of Wight, near Alum-bay.

T. prælusio. *Griseo-fusca, oculi obscuriores, pedes pallidiores, alæ angustæ brevissimæ sublimpidæ*. (Long. lin. $\frac{1}{2}$.) Dull, pale, half the size of *T. graminum*; body longer and more slender, antennæ very short, abdomen thrice the length of the thorax, looks like a little *Molobrus*, runs fast, but has not the activity of the preceding species. September, on plants in a thick wood, near the Devil's-bridge, North Wales.

T.? *hirta*. *Nigra, obscura, parce hirta, T. arenaria triplo major, oculi et halteres obscure rufi, pulvilli flavi; alæ subfuscæ amplæ, nervi nigri*. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. $2\frac{1}{2}$.) June, on sea-weed in the Isle of Wight.

Drapetis, Megerle; 1 *aterrima*, Haliday; 2 *fuscipes*, Macquart; 3 *nigra*, Meigen; 4 *exilis*, Megerle; 5 *flavipes*, Macquart. All these inhabit Britain, but probably are not all distinct species, for their size and the colour of their legs and wings vary very much; they run with extraordinary swiftness. *D. nigra* and *D. exilis* may be found near London from May to October, among grass, and beneath planks placed on decayed vegetable matter, &c. When in these situations

they are not easily recognized among the endless numbers of *Borborites*, which they resemble in form and habit. Like them also they are infested by *Acaris*, often so much so as to appear like moving heaps of those animals, the *Drapetis* being concealed from the sight, and scarcely able to run. I have seen them also in North Wales. *D. flavipes* inhabits the same localities near London, and in the New Forest, Hampshire, but is much rarer. *D. fuscipes* lives on the coasts of Wales, Devonshire, and Cornwall.

Argyra, Macquart. Founded upon *Porphyrops diaphanus*, *argyrius*, and the other species belonging to Meigen's first division of that genus.

Medeterus conspersus, Haliday. September, in swampy spots on mountains in Westmoreland, Cumberland, and North Wales, particularly abundant on the summit of Plynlimmon.

M. alpinus, Haliday. With the preceding, but much rarer.

Machærium maritimum, Haliday. June, on the sea-coast, near Lymington, Hampshire.

Platyzeza picta, Meigen. The largest and handsomest British species of *Platyzeza*, and has most development of the character whence the generic name is derived. Found near London in the spring.

P. dorsalis, Meigen. August, on grass beneath the trees near London. The little nervure, which unites the two last longitudinal nervures, at the lower base of the wing of this species is curved and short, in the others it is long and straight.

P. atra, Meigen, and *P. holosericea*, Meigen. August, on grass beneath trees near London.

P. fumipennis. Mas. *Aterrima, holosericea, halteres et pedes picei, metatarsi vix incrassati, alæ fulvofumosæ, nervus 5^{us}. longitudinalis marginem attingens, nervus transversus ordinarius margini proximus.* (Corp. long. lin. 2; alar. lin. 4.) August, on grass beneath trees near London.

P. aterrima. Mas. *Aterrima, holosericea, halteres et pedes atris, metatarsi valde incrassati, alæ fumosæ, nervus 5^{us}. longitudinalis abbreviatus, nervus transversus ordinarius margini proximus.* (Corp. long. lin. 1½; alar. lin. 3½.) July; on grass beneath trees near London.

Callomyia elegans, Fabricius, *C. speciosa*, Meigen, *C. antennata*, Fallen. Found in summer on grass beneath trees near London.

Trixa ---. September, North Wales. The same species as that which Dr. Leach sent to Meigen, and which the latter described as a variety of *T. variegata*, but observed that it might be distinct.

Themira pilosa, Ent. Mag. Vol. I. p. 254. For *Themira pilosa*, read *Themira superba*, Haliday, (*Sepsis-idem*, E. M. I. 170.) and transfer the reference to *Themira putris*. I am indebted to Mr. Haliday for the correction of this error.

Psila rufa, Hoffmanssegg. September; on heath near Llangollen, North Wales.

P. pallida, Fallen. Found near New Lanark, Scotland.

Diastata obscurella, Meigen. Frequents the dampest and most shady woods. Found during the summer and autumn in Hampshire, Devonshire, and North Wales.

Phora abdominalis, Fallen. October; on larches, North Wales.

ART. XX. — *Monographia Chalciditum*. By FRANCIS WALKER.

(Continued from page 97.)

———“the green myriads in the peopled grass.”

Sp. 68. Pter. junceus. Fem. *Viridis, abdominis discus pupureo-cupreus, pedes flavi, antennæ et femora nigra, alæ limpidæ.*

Obscure viridis: oculi ocellique rufi: antennæ nigrae; articulus 1^{us}. basi fulvus: abdomen pupureo-cupreum, basi apice subtus et utrinque viride: pedes læte flavi; coxæ virides; trochanteres fusci; femora nigra, apice flava; meso- et metatarsi apice fusci; protibiæ et protarsi sordide fulva: alæ limpidæ; squamulæ et nervi flava, illæ apice fusca; stigma minutum. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{3}$.)

Found near London.

SECTIO VIII.—Fem.

Corpus longum, angustum: caput thorace paullo latius: antennæ filiformes, corporis dimidio non longiores; articuli 5^o. ad 10^{um}.

curtantes; clava fusiformis, articulo 10^o. fere duplo longior: thorax longi-ovatus: prothorax brevissimus: mesothoracis parapsides vix conspicuæ: metathorax brevis: abdomen fusiforme, acuminatum, thorace multo longius, supra planum, subtus angulatum, non compressum; segmenta subæqualia: oviductus abdomine occultus: alæ amplæ.

Sp. 69. Pter. filicornis. Fem. *Viridis, abdomen aureo-viride, antennæ nigræ, pedes fulvo-flavi, alæ limpidæ.*

Læte viridis: oculi ocellique rufi: antennæ nigræ, graciles; articulus 1^{us}. fulvus, apice niger: abdomen aureo-viride; segmentum 1^{um}. cupreomicans, sequentia apice cuprea: pedes læte fulvi; coxæ virides; meso-et metapedum tibiæ et tarsi læte flava, hi apice fuscii: alæ limpidæ; squamulæ et nervi fulva, illæ apice nigræ; stigma fuscum, parvum. (Corp. long. lin 1½; alar. lin. 2¼.)

Found near London.

SECTIO IX.—Fem.

Corpus longum, angustum, subtilissime squameum, fere glabrum: caput thoracis latitudine: mandibulæ quadratæ, subarcuatæ, similes, dentibus 4 minutis armatæ; dens 1^{us}. acutus; 2^{us}. brevior et obtusior; 3^{us}. multo minor; 4^{us}. brevis, latus, obtusus; maxillæ longæ, subarcuatæ; lacinia angustæ, acuminatæ, intus lobatæ; palpi 4-articulati, graciles, filiformes, articulus 1^{us}. medio-cris, 2^{us}. paullo longior, 3^{us}. 1ⁱ. longitudine; 4^{us}. longi-fusiformis, acuminatus, 2^o. plus duplo longior: labium longum, angustum, subfusiforme; apex s palpiger apice furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, extrorsum crassiores, ligula vix longiores; articulus 1^{us}. medio-cris; 2^{us}. brevissimus; 3^{us}. longi-ovatus, 1^o. longior et crassior: antennæ graciles, extrorsum crassiores, corporis dimidio vix longiores; articuli 5^o. ad 10^{um}. longitudine decrescentes sensimque crassiores; clava linearis, acuminata, articulo 10^o. plus duplo longior vix latior: thorax longi-ovatus, parum-convexus: prothorax brevissimus: mesothoracis scuto parapsides-fere in unum confusæ: metathorax bene determinatus, medio sulcatus: abdomen longi-ovatum, acuminatum, fere læve, thorace paullo longius, supra planum, subtus carinatum, non compressum nec angulatum; segmentum 1^{um}. longum; 2^{um}. 3^{um}. et 4^{um}. brevia; 5^{um}. 6^{um}. et 7^{um}. paullo longiora: oviductus abdomine omnino occultus: alæ amplæ; nervus cubitalis radiali brevior.

Sp. 70. Pter. muscarum. Fem. *Viridis, æneo cupreo et cyaneo varius, antennæ nigrae, pedes flavi, alæ limpidæ.*

Ichneumon muscarum . . . *Linn. Syst. Nat.* II. 938. 62; *Faun. Suec.* 1636; *Gmel. Syst. Nat.* V. 2713. 62; *Deg. Ins.* I. 604—608; tab. 32. fig. 17—21; *Fabr. Sp. Ins.* I. 438. 109; *Mant. Ins.* I. 270. 130; *Syst. Ent.* 342. 84; *Ent. Syst.* II. 185. 214; *Müll. Faun. Fridr.* 621; *Vill. Ent. Linn.* III. 205. 230.

Cleptes muscarum . . . *Fabr. Syst. Piezat.* 156. 7.

Cynips viridis nitens, &c. . *Geoff. Ins.* II. 308. 31.

Lætissime viridis, nitens: maxillæ et labium viridia; lacinia, palpi maxillares et ligula flava; palpi labiales pallide fusci: oculi ocellique rufi: antennæ nigrae; articulus 1^{us}. fulvus, apice niger: mesothoracis postscutellum viridi-æneum: abdominis discus purpureus; segmentum 1^{um}. cupreo varium, 6^{um}. et 7^{um}. æneo-viridia: pedes læte flavi; coxæ virides; femora extus fulvo vittata; meso- et metatarsi apice fusci: alæ limpidissimæ; squamulae et nervi flava, illæ apice nigrae; stigma fulvum, minutum. (Corp. long. lin. 1—1½; alar. lin. 1½—2¼.)

Var. β.—Caput supra thoracisque suturæ æneo-viridia: abdomen viridi-cupreum, fasciis 4 medio connexis purpureis; segmentum 1^{um}. viride, cupreo maculatum.

Var. γ.—Abdominis segmenta basi utrinque et subtus læte cuprea.

Var. δ.—Thorax cupreo-viridis.

Var. ε.—Abdomen cupreum; discus purpureus; segmenta apice viridia.

Var. ζ.—Antennis articulus 1^{us}. fuscus, basi fulvus, apice niger: abdominis segmenta cupreo varia; 1^{um}. cupreum, apice viride.

Var. η.—Abdomen læte viride; discus purpureus.

Var. θ, Var. η, similis: antennæ articulo 1^o. supra fusco: profemora extus fusca.

Var. ι.—Abdominis segmentum 1^{um} cyaneum.

Var. κ.—Thorax supra cyaneo-viridis.

Var. λ.—Viridi-cyaneus: antennis articulus 1^{us}. fuscus, basi fulvus, apice niger: abdominis discus purpureus: profemora extus fusca.

Var. μ.—Caput et thorax æneo-viridia : abdomen cupreo-varium.

Var. ν.—Antennæ articulo 1^o. flavo, apice fusco.

Var. ξ. Var. μ. similis : antennæ articulo 1^o. fusco, apice nigro : abdomen viride ; discus cupreus.

Var. ο.—Antennæ nigro-fuscæ : proalæ subfulvæ.

Common on windows, &c. in most parts of Britain, throughout the year. Taken at Paris by the Comte de Castelneau.

SECTIO X.—Fem.

Caput thorace paullo latius : antennæ mediocres, subclavatæ, corporis dimidio breviores ; articuli 5^o. ad 10^{um}. curtantes et latescentes ; clava longi-ovata, articulo 10^o. duplo longior et manifeste latior : thorax ovatus, convexus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen acuminatum, thorace longius, subtus carinatum, non compressum nec angulatum ; segmentum 1^{um}. magnum ; reliqua breviora ; 2^{um}. et sequentia ad 6^{um}. longitudine crescentia : oviductus occultus : alæ mediocres ; nervus humeralis ulnari duplo longior ; cubitalis radiali brevior ; stigma ramulum brevem emittens.

* ABDOMEN LONGI-OVATUM.

Sp. 71. Pter. basalis. Fem. *Æneo-viridis*, abdomen cupreo-purpureum basi viride, antennæ fuscæ, pedes flavi, femora viridia, alæ limpidæ.

Æneo-viridis, parum nitens : caput viride : oculi ocellique rufi : antennæ fuscæ, apice et subtus pallidiores ; articulus 1^{us}. fulvus, apice obscurior : abdomen cupreo-purpureum, nitens, thorace multo longius vix angustius, paullo attenuatum ; segmentum 1^{um}. læte viride ; sequentia basi viridia : pedes læte flavi ; coxæ et femora viridia, hæ apice flava ; metatibiæ fulvo cingulatæ ; meso- et metatarsi pallidi, apice fuscæ : alæ limpidæ ; squamulæ et nervi flava, illæ apice fuscæ ; stigma fulvum, parvum. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{3}{4}$.)

September ; Isle of Wight.

Sp. 72. Pter. decusus. Fem. *Viridi-æneus*, abdominis discus purpureus, antennæ fuscæ, pedes rufi, alæ sublimpidæ.

Viridi-æneus, parum nitens : caput antice viride : oculi ocellique rufi : antennæ fuscæ, corporis dimidio vix longiores ; articulus

1^{us}. fulvus, apice fuscus: thoracis segmentorum suturæ cyaneo-virides: abdomen æneo-viride, nitens; discus purpureus; segmentum 1^{um}. cupreo varium: pedes rufi; coxæ virides; genua, meso- et metatarsi flava, hi apice fusci: alæ griseolimpidæ; squamulæ fulvæ, apice fusæ; nervi fusci, basi fulvi; stigma obscurius, parvum. (Corp. long. lin. $1\frac{1}{5}$; alar. lin. $1\frac{3}{4}$.)

Found near London.

**ABDOMEN OVATUM.

Sp. 73. Pter. lautus. Fem. *Æneo-viridis, abdomen nigro-cupreum, antennæ fulvofusæ, pedes flavi, femora viridia, tibiæ fulvo cingulatæ, alæ fusæ.*

Æneo-viridis, brevis, latus: caput viride: oculi ocellique rufi: antennæ fulvofusæ; articuli 1^o. ad 4^{um}. pallide fulvi: abdomen nigro-cupreum; segmentum 1^{um}. splendide cupreum: pedes flavi; coxæ et femora viridia, hæ apice flava; meso- et metatibiæ fulvo cingulatæ; tarsi apice fusci: alæ fulvo-fusæ, basi fere limpidæ; squamulæ et nervi fulva, illæ apice fusæ; stigma fuscum, mediocre. (Corp. long. lin. $\frac{4}{5}$ —1; alar. lin. $1\frac{1}{5}$ — $1\frac{1}{2}$.)

Var. β .—Thorax viridis.

Found near London.

Sp. 74. Pter. infectus. Fem. *Viridi-æneus, abdomen cupreo - purpureum, antennæ fusæ, pedes fulvi, femora viridia, tibiæ fusco-cingulatæ, alæ limpidæ.*

Æneus, parum nitens: caput æneo-viride: oculi ocellique rufi: antennæ obscure fusæ; articulus 1^{us}. fulvus, apice fuscus: abdomen cupreo - purpureum; segmentum 1^{um}. læte viride, cupreo varium; sequentia basi utrinque viridia: pedes flavi; coxæ et femora viridia, hæ apice fulva; meso- et metapedum tibiæ fusco cingulatæ; tarsi apice fusci: alæ limpidæ; squamulæ et nervi fulva, illæ apice fusæ; stigma obscurius parvum; nervus cubitalis radialis vix brevior. (Corp. long. lin. $\frac{5}{4}$ — $1\frac{1}{3}$; alar. lin. $1\frac{1}{4}$ — $1\frac{5}{4}$.)

Var. β .—Viridi-æneus: caput viride: abdomen viride; discus cupreo-purpureus; segmentum 1^{um}. basi cupreo-varium.

Var. γ .—Abdomen purpureum, utrinque cupreo-æneum; segmentum 1^{um}. æneo-viride, cupreo-varium.

Var. δ. Var. β. similis: caput viridi-æneum: thorax cupreo-æneus: protibiæ fusco cingulatæ.

Var. ε.—Antennæ articulo 1^o. omnino fulvo.

Var ζ. Var. β. similis: thorax viridis.

September; near London; Isle of Wight.

Sp. 75. Pter. placidus. Fem. *Viridi-æneus, abdominis discus purpureus, antennæ nigro-fuscæ, pedes fulvi, femora viridi fusca, tibiæ fusco-cingulatæ, alæ limpidaæ.*

Æneus, parum nitens: caput viride: oculi ocellique rufi: antennæ nigro-fuscæ; articulus 1^{us}. basi et subtus fulvus: abdomen viridi-æneum; discus purpureus; segmentum 1^{um}. viride, cupreo varium: pedes fulvi; coxæ virides; femora viridi-fusca; meso- et metapedum tibiæ fusco cingulatæ, apice flavæ; tarsi flavi, apice fusci: alæ limpidaæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. $1\frac{1}{3}$ — $1\frac{1}{2}$; alar. lin. $1\frac{3}{4}$ —2.)

Var. β.—Abdominis segmentum 1^{um}. viridi-æneum, cupreo varium: profemora extus fusco vittata.

Var. γ. Var. β. similis: caput æneo-viride: scutellum cupreo-æneum.

New Lanark, Scotland. September; Isle of Wight.

Sp. 76. Pter. impeditus. Fem. P. placido *simillimus, antennæ breviores.*

Æneus, parum nitens: caput æneo-viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. basi et subtus fulvus: abdomen æneo-viride; discus purpureus; segmentum 1^{um}. cupreo varium: pedes flavi; coxæ virides; femora viridi-fusca, apice flava; tibiæ fusco cingulatæ; tarsi apice fusci; protarsi fulvi: alæ limpidaæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fuscum, parvum. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{3}$; alar. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$.)

Var. β.—Stigma pallide fulvum.

September; Isle of Wight.

Sp. 77. Pter. ovatus. Mas. et Fem. P. impedito *simillimus at brevior.*

Mas.—Viridis: os fulvum: oculi ocellique rufi: antennæ fulvæ, extrorsum crassiores; articulus 1^{us}. obscure fuscus, basi fulvus; 5^{us}. et sequentes ad 10^{um}. curtantes; clava articulo 10^o. paullo

latior et plus duplo longior: abdomen thorace vix longius, basi cyaneo-viride; discus cupreus; sexualia fulva, exerta: pedes flavi; coxæ et femora viridia, hæ apice flava; tarsi apice fusci; protarsi fulvi: alæ limpidae; squamulæ et nervi flava, illæ apice fuscæ; stigma pallide fulvum, parvum.

Fem.—Æneo-viridis: caput viride; antennæ obscure fuscæ; articulus 1^{us}. basi et subtus fulvus: abdomen æneo-viride; discus purpureus; segmentum 1^{um}. cupreo varium: stigma flavum. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β. Fem.—Viridis: abdominis discus purpureus.

Var. γ. Fem.—Caput et thorax viridi-ænea.

Var. δ. Fem. Var. β. similis: meso- et metatibiæ fusco cingulatæ: stigma fulvum.

Var. ε Fem. Var. δ. similis: antennæ pallide fuscæ.

September; Isle of Wight.

SECTIO XI.—Fem.

Corpus angustum: caput thorace latius: antennæ clavatæ, latæ, corporis dimidio multo breviores; articuli 5^o. ad 10^{um}. latitudine crescentes longitudine subæquales; clava longi-ovata, articulo 10^o. duplo longior et manifeste latior: thorax longi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax bene determinatus: abdomen longi-ovatum, thoracis longitudine et latitudine, subtus carinatum, non angulatum nec compressum; segmentum 1^{um}. magnum; sequentia breviora: oviductus occultus: alæ angustæ; nervus cubitalis radiali multo brevior.

Sp. 78. Pter. contractus. Fem. *Viridis, abdominis discus purpureus, antennæ fuscæ, pedes flavi, alæ sublimpidæ.*

Viridis, nitens: oculi ocellique rufi: antennæ pallide fuscæ; articulus 1^{us}. fulvus: mesothoracis scutellum et abdomen æneo-viridia, hujus discus purpureus, segmentum 1^{um}. cupreo varium: pedes læte flavi; coxæ virides; meso- et metatarsi pallidi, apice fusci: alæ sublimpidæ; squamulæ et nervi pallide flava, illæ apice fuscæ; stigma minutum. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

Sp. 79. Pter. linearis. Fem. *Viridis, abdomen cupreo-purpureum segmentis basi viridibus, antennæ fuscæ, pedes fulvi, femora viridia, alæ limpidæ.*

Viridis; oculi ocellique obscure rufi: antennæ obscure fuscæ; articulus 1^{us}. fulvus, apice obscurior: abdomen cupreo-purpureum; segmentum 1^{um}. lætè viride, apice purpureum; sequentia basi viridia: pedes fulvi; coxæ et femora viridia, hæ apice fulva; meso- et metatarsi flavi, apice fuscæ: alæ limpidæ; squamulæ et nervi flava; illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{5}$.)

September; near London. Isle of Wight.

Sp. 80. Pter. formosus. Fem. *Cyaneo-viridis, abdominis discus cupreus, antennæ fuscæ, pedes flavi, femora viridifusca, alæ limpidæ.*

Cyaneo-viridis, nitens: caput supra et antice viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. fulvus: mesothoracis scutum cupreo-varium: abdominis discus cupreus: pedes lætissime flavi; coxæ cyaneo-virides; femora viridifusca, apice flava; tarsi apice fuscæ; protarsi pallide fulvi: alæ limpidissimæ; squamulæ flavæ, apice fuscæ; nervi fulvi, stigma minutum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{5}$; alar. $1\frac{1}{2}$ — $1\frac{5}{4}$.)

Found near London.

SECTIO XII.—Fem.

Corpus angustum, sublineare: caput thorace multo latius: mandibulæ parvæ, quadratæ, subarcuatæ, dentibus 4 brevissimis armatæ: maxillæ longæ, subarcuatæ; lacinia angustæ, acuminatæ, intus lobatæ; palpi 4-articulati, filiformes graciles; articuli 1^{us}. et 3^{us}. subæquales; 2^{us}. paullo longior; 4^{us}. longifusiformis, 3^o. fere duplo longior, apice acuminatus pilosus: labium breve, obconicum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, crassi, ligula vix longiores; articulus 1^{us}. subcyathiformis; 2^{us}. brevissimus; 3^{us}. fusiformis, acuminatus, 1^o. multo longior: antennæ extrorsum crassiores, corporis dimidio breviores; articuli 5^o. ad 10^{um}. longi, subæquales; clava valde acuminata, articulo 10^o. duplicato longior: thorax longiovatus: prothorax brevissimus: mesothoracis parapsides scuto in unum confusæ: metathorax brevis: abdomen longiovatum, valde depressum, thorace paullo longius et latius; segmenta

subæqualia : oviductus occultus : alæ angustæ; nervus cubitalis radiali multo brevior.

Sp. 81. Pter. fulviventris. Fem. *Viridi-cyaneus, abdomen fulvum, antennæ flavæ, fusco cingulatæ, pedes flavi, alæ limpideæ.*

Viridi-cyaneus, parum nitens : oculi ocellique rufi : antennæ fuscæ ; articuli 1^{us}. et 2^{us}. virides ; 3^{us}. et sequentes ad 6^{um}. flavi ; clava flava : abdomen fulvum : pedes flavi ; coxæ et femora basi viridia ; meso- et metatarsi apice fusci : alæ limpideæ ; squamulæ et nervi flava ; stigma minutum. (Corp. long. lin. $1\frac{1}{6}$; alar. $1\frac{1}{4}$.)

September ; Isle of Wight.

SECTIO XIII.—Mas et Fem.

Mas.—Corpus longum, sublineare : caput thorace vix latius : antennæ filiformes, corporis dimidio longiores ; articuli 5^o. ad 10^{um}. longitudine decrescentes ; clava quasi compressa, apice acuminata, articulo 10^o. angustior et plus duplo longior : thorax longi-ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ conspicuæ : metathorax medioeris : abdomen sublineare, thorace paullo brevius : alæ angustæ ; nervus cubitalis radiali multo brevior.

Fem.—Corpus quam *mari* latius : antennæ extrorsum crassiores, corporis dimidio paullo breviores ; clava valde acuminata, articulo 10^o. plus duplo longior non latior : thorax ovatus : abdomen ovatum, thorace paullo latius non longius, subtus angulatum, non compressum ; segmentum 1^{um}. magnum ; sequentia breviora, subæqualia : oviductus occultus.

Sp. 82. Pter. tricolor. Mas et Fem. *Cyaneo-viridis, abdomen plerunque purpureum aut cupreum, antennæ mari nigræ, fem. fuscæ apice flavæ, pedes fulco-fusci, femora viridia, alæ subgriseæ fusco sæpe maculatæ.*

Mas.—Cyaneo-viridis : oculi ocellique rufi : antennæ nigræ ; articulus 1^{us}. rufus ; 2^{us}. viridis : abdomen obscure purpureum, nitens, apice et subtus pilis albis parce hirtum ; segmentum 1^{um}. basi fere ad apicem læte viride : pedes fusci ; coxæ et femora viridia ; genua, tibiæ apice et tarsi flava, hi apice fulvi ; protibiæ et protarsi fulva : alæ subgriseæ ; proalæ sub stigma obsolete fuscæ ; squamulæ et nervi fusca, illæ antice virides ; stigma mediocre ; metalarum nervi pallide flavi.

Fem.—Viridis: antennæ obscure fuscae; articulus 1^{us}. fulvus, apice fuscus; clava flava: abdominis segmentum 1^{um}. læte cupreum: tarsi apice fusci: proalæ sub stigma obscure fuscae; stigma concolor. (Corp. long. lin. 1—1 $\frac{2}{3}$; alar. lin. 1 $\frac{1}{4}$ —2 $\frac{1}{5}$.)

Var. β. Fem.—Cyaneo-viridis: antennæ articulo 1^o. pallide fulvo, subtus et basi flavo: abdominis segmentum 1^{um}. viridi varium; sequentia nigro-cuprea: femora fusca, tibiæ pallide fuscae.

Var. γ. Fem. Var. β. similis: antennæ pallide fuscae: tibiæ fulvæ, apice flavæ.

Var. δ. Fem. Var. β. similis: antennæ apice fulvæ.

Var. ε. Fem. Var. β. similis: abdominis segmentum 1^{um}. viride.

Var. ζ. Fem. Var. β. similis: abdominis segmentum 1^{um}. cupreum.

Var. η. Fem. Var. β. similis: alarum maculæ vix conspicuæ.

Found by the Rev. G. T. Rudd, near Darlington. September; near the sea-shore; Isle of Wight, Dorsetshire, South Devonshire.

SECTIO XIV.—Fem.

Corpus mediocre: caput thorace paullo latius: antennæ clavatæ, crassæ, corporis dimidio longiores; articuli 5^o. ad 10^{um}. longitudine decrescentes latitudine increscentes; clava articulo 10^o. paullo latior vix duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, subtus angulatum, apice elevatum acuminatum, non compressum, thorace paullo longius et latius; segmentum 1^{um}. magnum; sequentia breviora: oviductus occultus: alæ mediocres; nervus cubitalis radiali vix brevior.

Sp. 83. *Pter. maculipennis.* Fem. *Viridis, abdomen cupreum, antennæ nigræ, pedes flavi, femora fusca, proalæ fusco maculatæ.*

Viridis, parum nitens: oculi ocellique rufi: antennæ nigræ; articulus 1^{us}. flavus; 2^{us}. 3^{us}. et 4^{us}. fusci: abdomen cupreum; segmentum 1^{um}. læte cupreo-æneum: oviductus rufus: pedes flavi; coxæ virides; femora fusca; meso- et metatarsi pallide flavi, apice fusci: alæ sublimpidæ; proalæ sub nervis ulnari et cubitali fusco-maculatæ; squamulæ fuscae; nervi fulvi; stigma minutum. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β. — Abdomen purpureo-cupreum; segmentum 1^{um}. læte cupreo-viride: femora flava.

Var. γ *Var. β* similis: caput et thorax viridi-ænea.

July, August; grass in fields; near London.

SECTIO XV.—Fem.

Corpus breve, latum: caput magnum, thorace latius: antennæ clavatæ, compactæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. latitudine increscentes longitudine decrescentes; clava articulo 10^o. latior et duplo longior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsides scuto in unum confusæ: metathorax mediocris: abdomen brevi-ovatum, thoracis longitudine et latitudine, supra planum, subtus convexum angulatum, apice abrupte angustius elevatum acutum; segmentum 1^{um}. ejus dimidium occupans; sequentia brevissima; 6^{um}. et 7^{um}. paullo longiora: oviductus occultus: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 84. Pter. rufiventris. Fem. *Æneo-viridis*, antennæ fuscæ, abdomen plerunque rufum, pedes flavi, alæ sæpe fusco varicæ.

Æneo-viridis, parum nitens: caput viride: oculi ocellique rufi: antennæ fuscæ; articuli 1^o. ad 4^{um}. fulvi: mesothoracis scutellum æneum: abdomen rufum, medio ad apicem viridi-cupreum; segmentum 1^{um}. basi utrinque viridi maculatum: pedes flavi; coxæ virides; tarsi apice fuscii: proalæ sublimpidæ, in cujusque disco maculæ 2 fuscæ, una sub nervo ulnari, altera ad apicem propior minor vix conspicua; squamulæ et nervi fulva, illæ apice fuscæ; stigma minutum; metalæ limpidæ, nervi flavi. (Corp. long. lin. $1\frac{1}{8}$ — $1\frac{1}{4}$; alar. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—Thorax viridis: metafemora supra fusca: alarum maculæ vix conspicuæ.

June and October; on laurels; near London.

Sp. 85. Pter. transiens. Fem. *Viridi-æneus*, abdomen basi subfulvum, antennæ nigræ, pedes flavi, alæ limpidæ.

Viridi-æneus, parum nitens: caput viride: oculi ocellique obscure rufi: antennæ nigræ; articuli 1^{us}. et 2^{us}. fulvi: metathorax viridis: abdomen viride, basi viridi-fulvum micans; discus obscure cupreus: pedes flavi; coxæ virides; tarsi pallide flavi, apice

fusci; protarsi obscuriores: proalæ sublimpidæ; squamulæ et nervi fulva, illæ apice fusæ; stigma fuscum, parvum; metalæ limpida, nervi flavi. (Corp. long. lin. 1; alar. lin. 1½.)

Found near London.

SECTIO XVI.—Fem.

Corpus breve, latum: caput thorace paullo latius: antennæ clavatæ, compactæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. brevissimi, gradatim latiores et breviores; clava longi-ovata, maxima, articulo 10^o. multo latior et quadruplo longior: thorax subrotundus, paullo longior quam latus; prothorax brevissimus; mesothoracis parapsidum suturæ vix conspicuæ; metathorax parvus: abdomen brevi-ovatum, thorace vix longius; supra planum, subtus angulatum, apice abrupte angustius elevatum acuminatum; segmentum 1^{um}. magnum; sequentia brevia: oviductus occultus: alæ mediocres; nervus cubitalis radialis vix brevior.

Sp. 86. Pter. grandiclava. Fem. *Viridi-æneus*, abdomen fere nigrum, antennæ nigro-fusæ, pedes fulvi, alæ fulvo-limpidæ.

Æneus: caput viride, inter oculos æneo-viride: oculi ocellique obscure rufi: antennæ nigro-fusæ; articulus 1^{us}. pallide fulvus; 2^{us}. fuscus: pro- et metathorax æneo-virides: abdomen supra purpureo-viride, subnigrum; segmentum 1^{um}. cupreo-viride, micans: pedes pallide fulvi; coxæ virides; meso- et metatarsi flavi, apice fusci: alæ fulvo-limpidæ; squamulæ et nervi fulva, hi basi flavi, illæ apice fusæ; stigma parvum. (Corp. long. lin. 1; alar. lin. 1½.)

Found near London.

SECTIO XVII.—Fem.

Corpus breve, latum: caput magnum, thorace latius: antennæ clavatæ, corporis dimidio vix breviores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava articulo 10^o. fere duplo longior paullo latior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax mediocris: abdomen brevi-ovatum, supra planum, subtus convexum, non angulatum, thorace paullo latius vix brevius; segmentum 1^{um}. magnum; reliqua brevia: oviductus occultus: alæ angustæ; nervus cubitalis radialis paullo brevior.

Sp. 87. Pter. congruus. Fem. *Æneo-viridis, abdominis discus purpureus, antennæ nigro-fuscæ, pedes fulvi, alæ sublimpidæ.*

Æneo-viridis, parum nitens : caput viride : oculi ocellique obscure rufi : antennæ nigro-fuscæ ; articulus 1^{us}. fulvus, apice fuscus ; 2^{us}. fuscus : abdomen æneum, nitens ; discus obscure purpureus ; segmentum 1^{um}. læte viridi-cupreum ; pedes fulvi ; coxæ virides ; femora basi fusca ; tarsi flavi, apice fusci ; protarsi fulvi : alæ sublimpidæ ; squamulæ viridi-fuscæ ; nervi flavi ; stigma minutum ; metalæ limpida. (Corp. long. lin. $\frac{5}{4}$ —1 ; alar lin. 1—1 $\frac{1}{4}$.)

Var. β.—Abdomen viridi-æneum ; discus obscure cupreus ; segmentum 1^{um}. cupreo varium.

Var. γ.—Abdomen viride ; discus obscure cupreus : femora omnino fulva.

August ; near London.

SECTIO XVIII.—Mas et Fem.

Mas.—Corpus breve, contractum : caput thorace vix latius : antennæ clavatæ, capitis thoracisque longitudine ; articuli 5^o. ad 10^{um}. brevissimi, latitudine increscentes ; clava maxima, longi-ovata, articulo 10^o. multo latior et plus duplo longior : thorax ovatus, parum convexus : prothorax supra vix conspicuus : mesothoracis parapsides scuto in unum confusæ : metathorax mediocris : abdomen rotundum, thorace latius ; segmentum 1^{um}. magnum ; sequentia brevia : alæ perangustæ, hirtissimæ ; nervus cubitalis radiali vix brevior.

Fem.—Caput thoracis latitudine : antennæ capite thoraceque paullo breviores ; clava ovata, mediocris, articulo 10^o. latior et duplo longior : abdomen brevi-ovatum, thorace paullo latius, supra planum, subtus angulatum, non compressum.

Sp. 88. Pter. fucicola. Mas et Fem. *Nigro-æneus, antennæ nigro-piceæ, pedes fulvi aut picei, alæ subfuscæ.*

Mas.—Nigro-æneus, obscurus : oculi ocellique obscure rufi : antennæ nigro-piceæ ; articuli 1^{us}. basi 2^{us}. que apice fulvi : abdomen nitens : pedes fulvi ; coxæ nigro-æneæ ; tarsi apice fusci : alæ subfuscæ ; squamulæ et nervi fusca ; stigma minutum. (Corp. long. lin. $\frac{1}{4}$; alar. $\frac{1}{3}$.)

Fem.—Antennæ articulis 1^o. et 2^o. nigro-æneis: femora et tibiæ fulvo-picea: alæ nonnunquam ademptæ. (Corp. long. lin. $\frac{2}{3}$; alar. 1.)

September; on sea-weed, near Torquay, in South Devonshire.

SECTIO XIX.—Fem.

Corpus mediocre: caput thorace latius: antennæ graciles, extrorsum crassiores, corporis dimidio longiores; articuli 5^o. ad 10^{um}. vix curtantes; clava lanceolata, articulo 10^o. duplo longior vix latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax parvus: abdomen longi-ovatum, supra planum, subtus valde angulatum, apice elevatum lanceolatum, thorace longius; segmentum 1^{um}. magnum; sequentia breviora: oviductus occultus: alæ breves, angustæ; nervus cubitalis radiali brevior.

Sp. 89. Pter. nubilipennis. Fem. *Viridi-cyaneus, abdomen rufum, antennæ nigræ apice fuscæ, pedes rufi fusco cingulati, proalæ fusco nebulosæ.*

Cyaneus: os fuscum: oculi ocellique obscure rufi; antennæ nigræ, apice fuscæ; articulus 1^{us}. flavus; 2^{us}. 3^{us}. et 4^{us}. fulvi: gula fulva: abdomen rufum, apice æneo-fuscum; segmentum 1^{um}. basi utrinque viride: pedes rufi; coxæ cyaneæ; femora et metatibiæ supra apices versus fusca; tarsi flavi, apice fusci: alæ sublimpidæ; proalæ fusco nebulosæ; squamulæ cyaneo-fulvæ; nervi fulvi; stigma parvum. (Corp. long. lin. $\frac{5}{4}$; alar. lin. $\frac{3}{4}$.)

Var. β.—Caput et thorax viridi-cyanea: femora et tibiæ omnino rufa.

Found near London.

SECTIO XX.—Mas et Fem.

Mas.—Corpus breve, sublineare: caput thorace latius: antennæ graciles, subfiliformes, corporis dimidio longiores; articuli 5^o. ad 10^{um}. subæquales; clava lanceolata, articulo 10^o. plus duplo longior paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ conspicuæ: metathorax mediocris: abdomen subrotundum, thorace latius et brevius, apice truncatum; segmentum 1^{um}. magnum; sequentia breviora: alæ parvæ aut minimæ.

Fem.—Longior : caput thorace paullo latius : antennæ subclavatæ ; corporis dimidii longitudine ; clava articulo 10^o. latior : abdomen ovatum, subconvexum, thorace paullo longius, subtus angulatum, apice elevatum acuminatum : oviductus occultus.

Sp. 90. Pter. apicalis. Fem. *Viridis æneo et cyaneo-varius, antennæ fuscæ, pedes fulvi, alæ fulvo-limpidæ.*

Æneo-viridis : caput viride : oculi ocellique rufi : antennæ obscure fuscæ, apice pallidiores ; articulus 1^{us}. niger, basi fulvus : abdominis segmentum 2^{um}. sæpe magnum : pedes fulvi ; coxæ virides ; meso- et metatarsi flavi, apice fulvi : alæ fulvo-limpidæ, parvæ ; squamulæ et nervi flava, illæ apice fuscæ ; stigma parvum. (Corp. long. lin. $\frac{1}{5}$ — $\frac{3}{4}$; alar. lin. $\frac{1}{2}$ —1 $\frac{1}{4}$.)

Var. β.—Antennæ fuscæ ; articulus 1^{us}. basi fulvus.

Var. γ.—Viridis.

Var. δ, Var. γ. similis : antennæ pallide fuscæ : squamulæ apice fulvæ.

Var. ε.—Viridi-æneus ; caput æneo-viride : antennæ fuscæ ; articulus 1^{us}. obscurior, basi fulvus : abdomen basi cupreo-æneum.

Var. ζ.—Abdomen basi cyaneo-viride.

Var. η.—Cyaneo-viride.

Var. θ.—Caput cyaneo-viride : abdominis discus cyaneus.

Var. ι.—Viridi-æneus : abdomen viride.

Var. κ.—Antennæ fulvæ ; articuli 1^o. ad 4^{um}. fuscæ.

Var. λ.—Æneo-viridis : mesothorax æneus : abdomen basi viride.

May to October ; on grass in fields ; near Londom. Isle of Wight.

Sp. 91. Pter. hemipterus. Mas et Fem. *Viridis æneo et cyaneo-varius, antennæ fuscæ aut fulvæ, pedes fulvi aut flavi, alæ rix ullæ.*

Mas.—Viridis, nitens : oculi ocellique rufi : antennæ fuscæ ; articuli 1^o. ad 4^{um}. fulvi : sexualia fulva : pedes pallide fulvi ; coxæ virides ; meso- et metatarsi flavi, apice fuscæ : alæ minimæ, subfulvæ ; squamulæ et nervi fulva.

Fem.—Antennæ obscure fuscæ, apice pallidiores ; articulus 1^{us}. nigro-fuscus, basi fulvus. (Corp. long. lin. $\frac{1}{5}$ — $\frac{1}{2}$.)

Var. β.—*Mas*, antennæ fulvæ ; articulo 1^o. ad 4^{um}. flavi : pedes flavi ; meso- et metatarsi pallidiores.

- Var. γ.*—*Mas*, caput et abdomen cyaneo-viridia.
Var. δ.—*Mas*, viridi-æneus : abdomen basi et caput viridia.
Var. ε.—*Mas*, abdomen cyaneum.
Var. ζ.—*Mas*, æneo-viridis : abdomen basi cupreo varium.
Var. η.—*Mas*, æneus : caput æneo-viride : abdomen cupreo-æneum ; segmentum 1^{um}. cupreo-viride.
Var. θ.—*Mas*, cyaneus : antennæ fuscae ; articuli 1^{us}. fulvus, apice fuscus.
Var. ι.—*Mas*, antennæ fuscae ; articulus 1^{us}. basi fulvus.
Var. κ.—*Fem.* æneo-viridis.
Var. λ.—*Fem.* antennæ articulo 1^o. prorsus nigro-fusco.
Var. μ.—*Fem.* cyaneus : antennæ fuscae ; articuli 1^o. ad 4^{um}. obscuriores : profemora supra pallide fusca.
- July to September ; on grass in fields ; near London.

SECTIO XXI.—*Mas* et *Fem.*

- Mas.*—Corpus mediocre : caput thorace paullo latius : antennæ extrorsum crassiores, corporis dimidio vix longiores ; articuli 5^o. ad 10^{um}. longitudine decrescentes ; clava longi-ovata, articulo 10^o. latior et plus duplo longior : thorax crassus, brevi-ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen planum, sublineare, thorace brevius et angustius ; segmentum 1^{um}. magnum ; sequentia brevia : sexualia exerta : alæ mediocres ; nervus cubitalis radiali brevior.
- Fem.*—Antennæ clavatæ, corporis dimidii vix longitudine ; articuli 5^o. ad 10^{um}. latitudine crescentes ; clava ovata, articulo 10^o. duplo longior et paullo latior : metathorax brevissimus : abdomen ovatum aut longi-ovatum, thorace angustius, supra planum, subtus angulatum, apice acuminatum elevatum : oviductus plerunque occultus.

Sp. 92. *Pter. cingulipes.* *Mas* et *Fem.* *Viridis cyaneo varius, abdominis discus cupreus, antennæ fuscae, pedes flavi, femora viridia, alæ albo-limpidae.*

- Mas.*—*Viridis* : oculi ocellique rufi : antennæ fuscae ; articulus 1^{us}. fulvus ; 2^{us}. subtus pallidior : abdomen cyaneo-viride, nitens ; discus cupreo-æneus : sexualia fulva : pedes flavi ; coxæ et femora viridia ; meso- et metatarsi pallide flavi, apice fulvi : alæ albolimpidæ ; squamulæ fulvæ, antice virides ; nervi flavi ; stigma minutum.

Fem.—Parum nitens: antennæ nigro-fuscæ; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen ovatum, læte cyaneo-viride, thorace paullo longius; discus obscure purpureus; segmentum 1^{um}. cupreo-varium; 5^{um}. et 6^{um}. cyanea: oviductus fulvus: pedes fulvi; coxæ et femora viridia; meso- et metapedum tibiæ et tarsi flava, fusco hi terminati illæ cingulatæ. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—*Mas*, antennæ articulo 1^o. fulvo apice viridi, 3^o. fusco-viridi.

Var. γ.—*Mas*, cyaneus: abdominis discus cupreus; segmentum 1^{um}. viridi varium.

Var. δ.—*Mas*, meso- et metatibiæ fusco cingulatæ; protibiæ et protarsi fulva.

Var. ε.—*Mas*, caput et thorax viridia.

Var. ζ.—*Mas*, antennæ articulis 1^o. et 2^o. fusco-viridibus.

Var. η.—*Fem.* cyaneo-viridis: abdomen cyaneum; discus obscure purpureus; segmentum 1^{um}. cupreo varium.

Var. θ.—*Fem.* cyaneus: abdominis discus obscure purpureus.

Var. ι.—*Fem.* cyaneo-viridis: abdomen purpureo-cyaneum; discus obscure purpureus; segmentum 1^{um}. cyaneo-viride.

Var. κ.—*Fem.* cyaneo-viridis: abdomen cyaneum; discus obscure cupreus.

September; Isle of Wight.

Sp. 93. *Pter. albipennis.* *Fem. Præcedente gracilior, abdomen longius et angustius.*

Læte viridis: oculi ocellique rufi: antennæ obscure fuscæ; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen longi-ovatum, cyaneo-viride; discus æneus; segmentum 1^{um}. æneo-varium, 7^{um}. viridi-æneum: pedes fulvi; coxæ et femora viridia; meso- et metapedum tibiæ apice et basi tarsique flava, hi apice fusci: alæ albo-limpidæ; squamulæ fulvæ, antice virides; nervi flavi; stigma minutum. (Corp. long. lin. $\frac{5}{4}$ —1 $\frac{1}{5}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—Abdomen cyaneum; segmentum 1^{um}. cupreo-varium; 7^{um}. viridi-æneum.

Var. γ.—Viridi-cyaneus: abdomen cyaneum, basi cyaneo-viride: meso- et metatibiæ fusco-cingulatæ.

Var. δ, Var. ρ, similis: meso- et metatibiæ fusco cingulatæ.

September; Isle of Wight.

Sp. 94. Pter. plenus. Mas et Fem. P. cingulipedis *statura, antennæ graciliores, alæ ampliores.*

Mas.—Viridi-cyaneus: oculi ocellique rufi: antennæ fulvæ; articuli 1^{us}. et 2^{us}. nigro-fusci, ille basi flavus: pedes læte flavi; coxæ et femora viridia; profemora apice flava; trochanteres et protarsi fulvi; meso- et metatarsi apice fusci: alæ albo-limpidæ; squamulæ et nervi flava, illæ antice viridi-fuscæ; stigma minutum.

Fem.—Viridis: antennæ fuscæ; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen æneo-viride; segmenta 2^o. ad 4^{um}. apice viridi-cyanea: femora apice flava. (Corp. long. lin. $\frac{3}{4}$ —1 $\frac{1}{4}$; alar. lin. 1—1 $\frac{1}{2}$.)

September; near Linton, North Devonshire.

Sp. 95. Pter. solutus. Fem. *Æneo-viridis, antennæ fuscæ, pedes flavi femoribus viridibus tibiis fusco cingulatis, alæ limpidæ.*

Æneo-viridis: oculi ocellique rufi: antennæ fuscæ; articuli 1^{us}. et 2^{us}. obscuriores, ille basi fulvus: thoracis discus æneus: abdomen læte viride, ovatum, thorace paullo longius et angustius; segmentum 1^{um}. cupreo-varium; sequentia basi et medio cuprea: pedes flavi; coxæ et femora viridia; tibiæ fusco cingulatæ; protarsi fulvi; meso- et metatarsi apice fusci: alæ limpidæ; squamulæ et nervi fulva, illæ apice fuscæ; stigma pallide fuscum, minutum. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$.)

Var. β.—Antennæ obscure fuscæ; articuli 1^{us}. et 2^{us}. nigro-virides.

Var. γ.—Caput et thorax viridia, hujus discus viridi-æneus: tibiæ fulvo cingulatæ.

September; near the Land's End, Cornwall.

Sp. 96. Pter. berylli. Fem. *Viridis, abdominis discus cupreus, antennæ nigræ, pedes flavi, femora viridia, alæ limpidæ.*

Sature viridis: oculi ocellique rufi: antennæ nigræ, corporis dimidii longitudine; articulus 1^{us}. nigro-fuscus, basi fulvus: abdomen longi-ovatum, nitens, thorace multo longius et angustius, apice attenuatum; segmentum 1^{um}. apice basique cupreum; 2^{um}. 3^{um}. et 4^{um}. cuprea, basi utrinque viridia; 5^{um}. et 6^{um}. apice 7^{um}. que basi cuprea: oviductus subexertus: pedes flavi; coxæ et femora viridia, hæ apice flavæ; meso- et metapedum tibiæ fulvo cin-

gulatæ, tarsi apice fusci; protarsi fulvi: alæ limpidae; squamulæ virides; nervi fulvi; stigma fuscum, parvum. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. 2.)

August; near London.

Sp. 97. Pter. thoracicus. Fem. *Cupreo-æneus*, antennæ piceæ, pedes fulvi, femora æneo-viridia, tibiæ fusco cingulatæ, alæ limpidae.

Cupreo-æneus: caput viridi-æneum, inter oculos cupreo-æneum: oculi ocellique rufi: antennæ nigro-piceæ, corporis dimidio vix breviores; articulus 1^{us}. basi fulvus: thorax brevis, latus, crassus: abdomen longi-ovatum, nitens, thorace longius et multo angustius, apice non attenuatum; segmentum 1^{um}. læte viride, cupreo-varium, apice obscure cupreum; 2^{um}, 3^{um}, et 4^{um}. obscure cuprea, basi utrinque æneo-viridia; sequentia æneo-viridia: pedes fulvi; coxæ et femora æneo-viridia; tibiæ nigro-fuscæ, apice basique fulvæ; meso- et metatarsi flavi, apice fusci: alæ limpidae; squamulæ æneo-fuscæ; nervi pallide fusci; stigma obscurius, mediocre. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. 2.)

Found near London.

Sp. 98. Pter. cupreus. Fem. *Cupreus*, abdomen basi viride, antennæ nigrae, pedes fulvi, femora ænea, tibiæ fusco cingulatæ, alæ limpidae.

Cupreus: caput æneo-cupreum: oculi ocellique rufi: antennæ nigrae, corporis dimidii longitudine; articulus 1^{us}. nigro-æneus, basi fulvus: thorax crassus: abdomen ovatum, nitens, thorace paullo longius vix angustius non attenuatum; segmentum 1^{um}. læte viride cupreo varium: oviductus occultus: pedes fulvi; coxæ et femora ænea; meso- et metapedum tibiæ fuscæ apice basique flavæ, tarsi flavi apice fusci: alæ limpidae; squamulæ et nervi fulva, illæ apice virides; stigma pallide fuscum, parvum; metalorum nervi flavi. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. 2.)

Var. β .—Abdominis segmentum 1^{um}. læte cupreum.

September; Isle of Wight.

SECTIO XXII.—Fem.

Sect. XXI. similis: clava longi-ovata, articulo 10°. plus duplo longior.

Sp. 99. Pter. mesochlorus. Fem. *Viridis æneo et cupreo varius, antennæ fuscae, pedes flavi, femora fusca, alæ limpidæ.*

Viridis, obscurus: oculi ocellique rufi: antennæ pallide fuscae, corporis dimidio breviores; articulus 1^{us}. fulvus, apice fuscus; clava fulva: abdomen cupreo-viride, thorace multo longius et angustius, apice attenuatum; segmentum 1^{um}. læte viride micans: pedes flavi; coxæ virides; femora fusca, apice flava; tibiæ fulvo cingulatæ; protarsi fulvi; meso- et metatarsi apice fusci: alæ limpidæ; squamulæ et nervi fulva, illæ apice obscuriores; stigma fuscum, minutum. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{3}{4}$.)

Var. β .—Viridi-æneus: abdomen segmento 2^o. ad apicem viridicupreum: alæ minime fulvo tinctæ.

Var. γ , Var. β , similis: thoracis dorsum cupreo-æneum: abdominis segmentum 1^{um}. cupreo-varium.

Var. δ .—Abdominis segmenta 2^o. ad 5^{um}. purpurea, subtus cuprea; 6^{um}. et 7^{um}. cupreo-viridia.

September; Isle of Wight, Dorsetshire, South Devonshire.

SECTIO XXIII.—Mas et Fem.

Corpus mediocre, *fem.* latius: caput thorace latius: mandibulæ subquadratae, arcuatae, similes, dentibus 4 acutis armatae; dens 1^{us}. magnus, arcuatus; 2^{us}. paullo minor; 3^{us}. et 4^{us}. multo minores, subæquales: maxillæ longæ, subarcuatae; laciniae angustæ, acuminatae, intus lobatae, extus pilosæ; palpi 4-articulati, graciles, filiformes; articuli 1^{us}. et 3^{us}. subæquales; 2^{us}. paullo longior; 4^{us}. longi-fusififormis, 3^o. fere duplo longior, apice pilosus: labium longi-ovatum, angustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, crassi, ligula vix longiores; articulus 1^{us}. subcyathiformis; 2^{us}. brevissimus; 3^{us}. fusiformis, acuminatus, 1^o. multo longior: *mari* antennæ filiformes, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. longitudine sensim decrescentes; clava linearis, acuminata, articulo 10^o. duplo longior: *fem.* antennæ crassiores, subfiliformes; clava longi-ovata; articulo 10^o. duplo fere longior vix latior: thorax *mari* longi-ovatus, *fem.* ovatus; prothorax brevissimus; mesothoracis parapsidum suturæ vix conspicuæ; metathorax bene determinatus: *mari* abdomen sublineare, depressum, thorace angustius vix longius, subtus carinatum; segmentum 1^{um}. magnum; sequentia breviora, subæqualia; sexualia exerta: *fem.* abdomen ovatum, vix acuminatum, thorace paullo brevius,

supra planum, non angulatum nec compressum; segmenta 6^{um}. et 7^{um}. quam *vari* paullo longiora; oviductus subexertus: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 100. Pter. puparum. Mas. *Viridis, antennæ fulvæ, pedes flavi.* Fem. *Æneo-iridis, antennæ nigræ, pedes fusci, femora viridia.*

- *Goed. Ins. I. 178. tab. 77; Mer. Ins. Europ. tab. 44, 52; Frisch. Ins. IV. 10. tab. 1. fig. 5. 1, 2; Roes. Ins. II. 18. tab. 3. fig. 4, 5, a. b.; Réaum. Ins. VI. tab. 30. fig. 13, 14, 15; De Geer. Ins. I. tab. 30. fig. 8; Onom. Hist. Nat. IV. 505; Müller. Syst. Nat. Linn. V. 2, 860. 66.*
- Cynips viridi sericeus, &c. *Geoff. Ins. II. 305. 24.*
- Ichneumon Antiopæ . . . *Scop. Ent. Carn. 765.*
- Ichneumon puparum . . . *Linn. Syst. Nat. II. 939. 66; Faun. Suec. 1636; Fabr.^b Sp. Ins. I. 438. 113; Mant. Ins. I. 270. 135; Syst. Ent. 342. 88; Ent. Syst. II. 186. 221; Gmel. Syst. Nat. V. 2713. 66; Schrank. Enum. Ins. Austr. 758; Vill. Ent. Lin. III. 206. 234; Müll. Zool. Dan. Prodr. 159. 1855; Friesli. Verz. 50. 967.*
- Diplolepis puparum . . . *Fabr. Syst. Piezat. 151. 15.*
- Cynips puparum . . . *Fourc. Ent. Par. II. 387. 24; Encycl. Méthod. V. 782. 12.*
- Pteromalus puparum . . . *Swed. Act. Holm. an. 1795; Nees ab Esenb. Ich. affn. Monogr. II. 107. 21.*

Mas.—Lætissime viridis, nitens: labium et maxillæ viridia, illum quasi squameum; lacinia fuscæ; palpi, palpiger, labium et maxillarum lobi pallide flava: mandibulæ flavæ, apice obscuriores: oculi ocellique rufi: antennæ fulvæ; articuli 2^o. ad 6^{um}. intus necnon sequentes apice basique fusci: abdomen viridi-

^b This author's description was probably taken from *Pter. muscarum*.

aureum; discus cupreo micans: sexualia fulva: pedes læte flavi; coxæ virides; meso- et metatarsi pallidiores, apice fulvi: alæ limpidiissimæ; squamulæ et nervi flava, illæ apice fuscæ; stigma fulvum, parvum.

Fem.—Æneo-viridis, parum nitens: palpi fusci, basi viridi-fusci: antennæ nigræ; articulus 1^{us}. fulvus, apice nigro-fuscus: abdomen viridi-æneum; discus obscure cupreus; segmentum 1^{um}. læte viride, cupreo varium: oviductus rufus; vaginæ nigræ: pedes fusci; coxæ æneo-virides; femora viridi fusca; genua, tibiæ apice tarsique flava, hi apice fusci; protibiæ fusco-fulvæ; protarsi fulvi: alarum squamulæ et nervi fulva, illæ apice fuscæ; stigma pallide fuscum. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{5}$; alar. lin. $1\frac{1}{4}$ —2.)

Var. β.—*Mas*, thorax æneo varius.

Var. γ.—*Mas*, antennæ fulvæ; articulus 2^{us}. intus fuscus; sequentes apice basique minime fuscæ.

Var. δ.—*Mas*, thorax supra cyaneo-viridis.

Var. ε.—*Mas*, antennæ fusco-fulvæ; articulus 1^{us}. flavus, apice fulvus.

Var. ζ.—*Fem.* caput viride: abdomen æneum; segmenta basi viridia.

Var. η.—*Fem.* *Var β*, similis: thorax viridis.

Var. θ.—*Fem.* tibiæ flavæ; meso- et metatibiæ fulvo fasciatæ.

Var. κ. *Fem.* abdomen æneo-viride, basi ad medium cupreum.

Var. ι.—*Fem.* abdomen æneum; segmentum 1^{um}. viride, basi cupreum.

Var. λ.—*Fem.* caput et metathorax viridia.

Var. μ.—*Fem.* antennæ articulo 1^o. fusco, basi fulvo; meso- et metatarsi basi flavi.

Described from specimens found near London, or sent to me from Paris, by the Comte de Castelleau. It is very abundant in Europe during the summer, infesting butterflies (*Vanessa* and *Pontia*) while in the chrysalis state. The fly appears in three weeks after the egg is laid. The relative number of males and females in a chrysalis is very variable. I once had a bright gold-coloured chrysalis of *Vanessa Polychloros*. In a few days its metallic hue changed to a dead yellow, that became gradually darker. I then opened it and found it full of pupæ. Their colour was pale, but soon turned to black, and then to a metallic green. They employed their legs, particularly the fore-pair, to divest themselves of their covering. Twenty males first came to maturity in the morning, and twenty more, and one female, in the afternoon of the same day. On the following day, thirty-nine males and four-

teen females appeared in the morning, three males and eight females in the afternoon. Two females appeared on the third day, and one on the fourth, making in the whole eighty-two males and twenty-six females. I have seen thirty females and four males emerge from three holes in the middle of a chrysalis of *Pontia rapæ*, and thirty-six females and four males from another chrysalis of the same butterfly; these last were much smaller than the former. Degeer mentions an instance when one chrysalis produced only males, and another only females.

SECTIO XXIV.—Mas. et Fem.

Mas.—Corpus mediocre: caput thorace vix latius: mandibulæ quadratæ, subarcuatæ, similes, dentibus 4 minutis armatæ; 1^{us}. acutus; 2^{us}. et 3^{us}. paullo breviores et obtusiores; 4^{us}. latus, obtusus: maxillæ longæ, subarcuatæ; lacinia angustæ, acuminatæ, intus lobatæ, extus pilosæ; palpi 4-articulati, graciles, filiformes; articuli 1^{us}. et 3^{us}. subæquales; 2^{us}. paullo longior; 4^{us}. longi-fusiformis, 2^o. fere duplo longior, apice acuminatus pilosus: labium longi-ovatum, angustum; palpiger furcatus; ligula brevis, lata, ciliata; palpi 3-articulati, extrorsum crassiores, ligula paullo longiores; articulus 1^{us}. mediocris, 2^{us}. brevissimus, 3^{us}. fusiformis, 1^o. longior: antennæ filiformes, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. longitudine decrescentes; clava linearis, acuminata, articulo 10^o. duplicato longior: thorax longi-ovatus, convexus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax bene determinatus: abdomen sublineare, depressum, subtus carinatum, thoracis longitudine et latitudine, basi angustius; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: sexualia occulta: alæ mediocres; nervus cubitalis radiali brevior.

Fem.—Mari latior: antennæ crassiores, subfiliformes; clava longi-ovata, articulo 10^o. duplo fere longior vix latior: abdomen rotundum, supra planum, subtus angulatum, thorace multo brevius: oviductus occultus.

Sp. 101. Pter. omnivorus. Mas. *Viridis, abdomen flavo-maculatum, antennæ fulvo-fuscæ, pedes flavi.* Fem. *Viridi-æneus, antennæ nigro-fuscæ, pedes fulvi, femora fusca.*

Mas. — Læte viridis, nitens: os fulvum: oculi ocellique rufi: antennæ fulvo-fuscæ; articulus 1^{us}. fulvus, apice obscurior: thorax

æneo-iridis: abdomen basin versus flavo maculatum; discus cupreus: pedes læte flavi; coxæ virides; tarsi apice fulvi; ungues et pulvilli fusci: alæ limpidae; squamulae et nervi flava, illæ apice fulvæ; stigma minutum.

Fem.—Viridi-æneus, parum nitens: oculi ocellique obscure rufi: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: metathorax æneo-iridis: abdomen æneo-cupreum; segmentum 1^{um}. læte viride, fulvescens, apice cupreum, subtus pallidius: pedes fulvi; coxæ virides; femora fusca, apice flava; tarsi pallide fulvi; ungues et pulvilli fusci. (Corp. long. lin. 1—1 $\frac{3}{4}$; alar. 1 $\frac{1}{2}$ —2 $\frac{1}{4}$.)

Var. β.—*Mas*, antennæ articulo 1^o. pallide fulvo, basi flavo.

Var. γ.—*Mas*, thorax viridis.

Var. δ.—*Mas*, abdomen utrinque et apice cupreum.

Var. ε.—*Fem.* caput et thorax æneo-iridia: meso- et metatibiæ fusco cingulatæ.

Var. ζ.—*Fem.* femora fulva.

Var. η.—*Fem.* tibiæ et tarsi obscure fulva.

July; near London. Reared from the chrysalises of *Papilionites*, at Paris, by the Comte de Castelneau; of a species of *Acronycta*, by Mr. Davis; and of *Eyprepia caia*, which *Exorista larvarum* had already infested, by Mr. Newman, who published an interesting account of it in Loudon's Mag. Nat. Hist. Vol. V. p. 252.

SECTIO VI.

Sp. 102. Pter. lugubris. Fem. P. mediocri *similis at minor brevior obscurior.*

Viridi-æneus, parum nitens: caput viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. obscurior, basi fulvus: abdomen nitens; segmentum 1^{um}. viride, cupreo varium; discus cupreo-purpureus: pedes flavi; coxæ virides; femora viridi-fusca, apice flava; tibiæ fuscæ cingulatæ; tarsi apice fusci; protarsi fulvi: alæ sublimpidæ; squamulae et nervi flava, illæ apice fuscæ; stigma fulvum, parvum. (Corp. long. lin. $\frac{3}{4}$ —1; alar. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—Mesothorax cupreo-æneus.

Var. γ.—Caput et thorax æneo-iridia

September; Isle of Wight.

Sp. 103. Pter. nigro-æneus. Fem. *P. lugubri similis at obscurior, antennæ crassiores.*

Nigro-æneus, parum nitens: caput nigro-viride: oculi ocellique rufi: antennæ fuscæ; articulus 1^{us}. obscurior, basi fulvus: abdomen nitens; segmentum 1^{um}. viride, cupreo-varium; discus cupreo purpureus: pedes flavi; coxæ virides; femora viridifusca, apice flava; tibiæ fusco cingulatæ; tarsi apice fusci; pro-tarsi fulvi: proalæ subfuscæ; squamulæ virides; nervi fulvi; stigma minutum; metalæ sublimpidæ. (Corp. long. lin. $\frac{5}{4}$ —1; alar. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—Abdomen nigro-viride; segmentum 1^{um}. cupreo-æneum.

Var. γ, Var. β, similis: abdominis discus cupreus.

September; Isle of Wight.

ART. XXI.—*Varieties.*

5. *Two Pupæ of Saturnia in one Cocoon.*—The following singular fact perhaps might not be deemed unworthy of insertion in your valuable magazine. A lady, whose name is Eginton, residing near Worcester, had a very fine larva of *Saturnia Paronia minor* brought to her, which shortly afterwards formed its cocoon, and from its extraordinary size, she entertained great expectations of a very fine specimen to adorn her cabinet the following spring; but to her great astonishment there emerged therefrom a *male* and *female* of the species in great perfection. A few days afterwards I called upon the lady, and witnessed this most singular fact, and made such inquiry as to be fully satisfied that no other insect of the kind, in either state, could have gained admission into the box where the larvæ had been deposited to undergo its transformation.

With the lady's kind permission I have thought fit to mention her name, who can, if needful, corroborate this very singular and extraordinary vagary of nature, as I am quite disposed to think that many Entomologists will imagine that some mistake must have been made, or else perhaps doubt or disbelieve the circumstance altogether; and really I must be candid enough to remark, that had I not been an eye-witness thereto, I should be much inclined to dispute the truth of it

myself. I have been an Entomologist, and have collected diligently for upwards of thirteen years, and have known very singular occurrences, such as hermaphrodites of the order *Sphingites*, and some instances of Lepidopterous insects with five wings; others, where circular and rather large holes have occurred in the anterior wings, though the specimens have been quite perfect in every other respect; but an instance like the foregoing is, I think, of very unusual occurrence.

A. EDMUNDS, Jun.

PARK-PLACE, LONDON-ROAD. WORCESTER,
May 12, 1835.

6. *On the assembling of certain Insects.*—Probably it has fallen to the lot of most of the ardent collectors of insects, to witness the extraordinary “gathering” of the males of several species of *Lepidoptera*, to pay their attentions to their virgin females. On one occasion I had ocular demonstration of the attractive charms of a female of one of the *Bombicydæ*, and with ruthless hand put the gallants to death in great numbers. Recently I was fortunate enough to ascertain that one *Coleopterous* insect at least was an “assembler.” During the Easter week I met with *Elater cylindricus* in great profusion, on the banks of the Tees, below Yarm. All I captured were males, with one single exception. They appeared to be only just emerging from the pupæ; and feeling anxious to witness their development, I took some pains to find whence they came. At length I spied an *Elater* emerging from a bank which had been cast up by a recent flood—its head only was visible. I turned out the insect with my finger, and suffered it to crawl for a minute or two on the sand thrown out. The “gentlemen” soon made their appearance, and in less than five minutes, sixteen had assembled on a space I covered with my hand, running over the little sandy heap with most vigorous ardour. The female was in my fingers, and soon the males arrived and crawled about my hand with extraordinary eagerness. I removed several yards lower down the river; and after remaining a few minutes on one spot, was soon visited by numerous suitors, who forced their way with great accuracy towards the object of their pursuit.

G. T. RUDD.

YARM, May 18, 1835.

7. *The Aphis of the Cowslip.*

“Now in the cowslip’s dewy cell
The *Aphis* makes its bed.”

It begins in March to spread itself over the calyxes of the cowslips; it then appears like a green speck, sprinkled with white powder, and has tribes of little spring-tails and ticklers^a skipping around it. In the course of a month it becomes wonderfully populous, and varies from half a line to a line and a half in length,—and to one with wings on its back are fifty without. The young one is dingy green, oval convex, formed of transverse parallel segments, the antennæ paler and longer than the body, tipped with brown from the third to the sixth joint, the seventh all brown, the eyes dark brown, the mouth and horns of the abdomen with brown tips, the legs short and thick. As it advances in life it becomes darker, its antennæ and legs are longer and more tapering, and some of the thoracic segments develope and bear wings or the rudiments thereof. The wings are almost colourless, the costa pale green, and the nervures brown. When it arrives at perfection the thorax is often spotted with black, and the potent juice of the cowslip gives it a jolly and rosy appearance. It does not inhabit—

———“pale primroses,
That die unmarried, ere they can behold
Bright Phœbus in his strength.”

Their insipidity is not agreeable to its taste, nor their hairy leaves to its skin. When the summer comes the cowslips fade and wither away, and the *Aphis* is seen no more; or its only vestiges are, some bleaching skeletons amidst a tangled mat of spiders’ webs. TOT.

8. *Pieris Cratægi.* Yesterday this butterfly was so abundant at Oldenbarn, that I took nearly thirty specimens with my fingers, from the blossoms of *Chrysanthemum Leucanthemum*, on which they settled.

LEOMINSTER, July 24, 1835.

HENRY NEWMAN.

^a *Smythurus* and *Thrips*.—ED.

THE
ENTOMOLOGICAL MAGAZINE.

OCTOBER, 1835.

ART. XXII.—*Wanderings in New South Wales, &c., being the Journal of a Naturalist.* In 2 Vols. By GEORGE BENNETT, Esq. F.L.S. London: Bentley. 1831.

IN this most amusing work, the author confines himself to a simple narrative of his own observations, together with such comments as were made on the spot. He observes every object with the intelligent eye of a naturalist, and describes it without any attempt at effect: we may indeed say, that his style is *too* careless. We wish, also, Mr. Bennett had assisted us with more technical names of the objects he describes; such names might have appeared as foot notes, and thus situated, would have instructed the man of science, without annoying the more rapid mere-amusement reader. The value of the work may be imagined from our extracts, which we have not selected as in any way better than the average of the work, but as being strictly entomological. We commence with a notice of a larva, apparently Lepidopterous.

It attaches itself to the sprigs of shrubs; and, like the caddis worms, protects itself by a habitation from which it can protrude the anterior part of its body, being attached internally to its case by the tail, and by that means can feed and change its locality at pleasure, bearing its case with it, and re-attaching itself to any other place that may suit its habits. Thus I have had them moving about in my room, attaching themselves to one place, and then removing

to another; at first, much to my surprise at their power of mobility, until I saw it was effected by the protrusion of the larva from its habitation. The case is composed, internally, of a very tough web, and the exterior is covered by bits of twigs, interwoven upon it in a perpendicular direction: it suspends itself from the twig by a strong cluster of filaments. I have found this larva inclosed in its case, of various sizes, from three to six inches; this has led me to conclude that, like the caddis worms, they increase in size in the larva state, enlarging their habitations as the former ones become too small for the increased size of their bodies. I found, by cutting one of the cases open, that they readily repair any injury their dwellings may have sustained; for a few hours only elapsed, after I had made the incision to view the inclosed larva, [when] I found the case restored as firmly as before.—Vol. I. p. 67.

The following fact of a species of lobster, burrowing deep in mud, is new to us:—

In the river there is a small and new species of lobster, which is also procured in large quantities from the muddy ponds on the Yas Plains: they are delicious eating, and are taken readily, by placing a piece of raw meat on a bent pin. When one is felt at the bait, it is to be dragged gently to the margin of the pond (which is very muddy, but not deep), and taken on the back by the hand. A number can thus be caught in a short time. The aborigines call them *Murugonan*. They burrow deep in the mud, and the blacks capture them by thrusting the hand into the holes, and dragging them out, although they often extend to such a depth that the whole length of the arm is inserted before the animal is secured. The ponds in which the lobsters are taken are always full of water, being supplied by springs: one of them was about fifty yards in length by twenty in breadth, but of no great depth at any part. They form a chain along the plains during the dry season of the year; but, during heavy rains, they unite into a running stream, which empties itself into the Yas river. It is only at the season when there is merely a chain of ponds or swamps that the lobsters can be caught with facility. In the Murrumbidgee, Yas, Tumat, and other large rivers, there is a different, and larger species of lobster, which is frequently found in the stomachs of the river cod. This kind is called *Mungola* by the aborigines, and they are captured measuring a foot and a half in length, and weighing three or four pounds. I examined a small one captured in the Murrumbidgee, at Jugiong. The colour of the upper surface of the shield was dark-green, with reddish tinges on the sides, the rings of the tail studded

with short thick spines, and similar, but smaller spines, on the sides of the shield; the spines and claws were white; the legs having been pulled off by the blacks, to prevent their escape during the time they were employed in catching others, I could not ascertain their colour. They are found under the large stones in the rivers, and are taken by the hand when the rivers are low. The natives usually seek for them in the evening, or at night, by torch-light, and say it is difficult to get them during the day-light. In March, the season commences at Sydney, for cray-fish, which are caught in large quantities, and of enormous size, about the sea-coast, and are hawked about the streets at a cheap rate; therefore, in this colony, cray-fish abound in the sea, and lobsters in the river.—Vol. I. p. 214.

The following notice of the *Cicadæ* is interesting:—

As the summer season was now fully set in, the previous silence of the woods was broken by the incipient, shrill, chirping noises, which resounded over them, occasioned by the male *Tettigoniæ*, or tree-hoppers, emerging from the larva to the winged state; the cases [which] the fly had left being seen on almost every tree or post. This genus is remarkable for the instrument with which it cuts grooves in the wood for the purpose of depositing its eggs. The musical organs, or drums, are only found in the males, and are equally interesting. The best published account respecting them is that by Réaumur. The aborigines call these insects *Galang galang*, and formerly used them as food, first stripping off their wings. They ate them in the raw state; that is, as the native blacks told me, “When no white feller here, no black feller get bread or yam.” My notice was particularly directed by the natives to the drums in the male insects, as the means by which they produced their thrilling sounds: at the same time adding, in their peculiar English, “Old woman *Galang galang* no got, no make a noise;” implying that the females do not possess these musical instruments. There are several species of this genus known in Australia. During rain, these insects are silent, but recommence their clamour on the appearance of fine weather.—Vol. I. p. 237.

We now proceed to the account of the Bugong moths, a remarkable example of the gregarious propensity of insects. Most of our readers will recollect Réaumur’s history of countless myriads of *Ephemera*, and various instances of similar multitudes of locusts and other insects. Captain Cook tells us, that at Thirsty Sound, on the coast of New South Wales,

every branch and twig, for several acres, was covered with a species of butterfly, and the air was so crowded with them, that millions might be seen in every direction. And Captain King, as quoted by our author, observes: "Here, (Cape Cleveland,) as well as at every other place that we had landed upon within the tropic, the air is crowded with a species of butterfly, a great many of which were taken. It is, doubtless, the same species which Captain Cook remarks as so plentiful in Thirsty Sound. The numbers seen by us were indeed incredible; the stem of every grass-tree (*Xanthorrhæa*), which plant grows abundantly upon the hills, was covered with them; and, on their taking wing, the air appeared, as it were, in perfect motion. It is a new species, and is described by my friend, Mr. W. S. Mac-Leay, under the name of *Euplæa hamata*."—(*Survey of the Coast of Australia*, Vol. I. p. 195.)

In England we have occasionally seen gnats and ants almost equally numerous; and in northern countries, the cruel mosquito is no less abundant. But we must proceed with the account of the *Bugongs*.

Near this station is a lofty table-mountain, rising above numerous wooded hills, varying in their degrees of elevation: it forms the commencement of a mountainous range, extending in a south-west direction. It is named the Bugong mountain, from the circumstance of multitudes of small moths, called *Bugong* by the aborigines, congregating, at certain months of the year, about masses of granite on this and other parts of the range. The months of November, December, and January, are quite a season of festivity among the native blacks, who assemble from far and near to collect the *Bugong*; the bodies of these insects contain a quantity of oil, and they are sought after as a luscious and fattening food. I felt very desirous of investigating the places where these insects were said to congregate in such incredible quantities, and availed myself of the earliest opportunity to do so.—Vol. I. p. 266.

Mr. Bennett was prevented by the weather from ascending the mountain till the 12th of December. Part of the ascent was made on horseback, the remainder on foot: at last he arrived at the summit of the mountain, composed of enormous masses of granite.

This was the first place where, upon the smooth sides or crevices of the granite blocks, the *Bugong* moths congregated in such incre-

dible numbers; but from the blacks having recently been here, we found but few of the insects remaining. . . . At last, we arrived at another peculiar group of granite rocks, in enormous masses, and of various forms; this place, similar to the last, formed the locality where the Bugong moths congregate, and is called *Warragong* by the natives. The remains of recent fires apprised us that the aborigines had only recently left this place for another of similar character a few miles further distant. . . . From the result of my observations, it appears that the insects are only found in such multitudes on these insulated and peculiar masses of granite; for about the other solitary granite rocks, so profusely scattered over the range, I did not observe a single moth, or even the remains of one. Why they should be confined only to these particular places, or for what purpose they thus collect together, is not a less curious than interesting subject of inquiry. Whether it be for the purpose of emigrating, or for any other particular cause, our present knowledge cannot satisfactorily answer.—Vol. I. p. 269.

This scarcely seems to us a subject for deep speculation: the eggs of Lepidopterous insects are deposited by thousands in one spot; the larvæ of many are gregarious; the pupæ change, and the moths appear in company. They probably select the granite, as affording a commodious footing, an exposure to the sun, a refuge from the sun, or a shelter from the wind or rain. Perhaps resembling the granite in colour, the similarity hides them from insectivorous birds; perhaps the smooth and perpendicular sides of the granite present an obstacle to insectivorous quadrupeds, which would otherwise devour them. We have no occasion to suppose that emigration, or any other unusual economy, is the object of their immense congregations; let us rather refer it to the simple operation of that heaven-born instinct which tends to the preservation of the unwitting object of its care, in every, even the most simple, propensity which it displays.

To procure them with greater facility, the natives make smothered fires underneath those rocks about which they are collected, and suffocate them with smoke, at the same time sweeping them off frequently in bushfulls at a time. After they have collected a large quantity, they proceed to prepare them, which is done in the following manner:—A circular space is cleared upon the ground, of a size proportioned to the number of insects to be prepared; on it a fire is lighted, and kept burning, until the ground is considered to

be sufficiently heated, when the fire being removed, and the ashes cleared away, the moths are placed upon the heated ground, and stirred about, until the down and wings are removed from them: they are then placed on pieces of bark, and winnowed, to separate the dust and wings mixed with the bodies; they are then eaten, or placed into [in] a wooden vessel, called a *walbun* or *culibun*, (usually made from one of the knotty protuberances so commonly seen upon the trunks of the large *Eucalypti* trees,) and pounded by a piece of wood into masses or cakes, resembling lumps of fat, and may then be compared, in colour and consistence, to dough made from smutty wheat mixed with fat. The bodies of the moths are large, and filled with a yellowish oil, resembling in taste a sweet nut. These masses will not keep above a week, and seldom for that time; but by smoking, they are able to preserve them for a much longer period. The first time this diet is used by the native tribes, violent vomitings, and other debilitating effects, are produced; but after a few days, they become accustomed to its use, and then thrive and fatten exceedingly upon it. These insects are held in such high estimation, that they assemble from all parts of the country to collect them from these mountains. It is not only the native blacks that resort to the Bugong, but crows also congregate for the same purpose. The blacks (that is, the crows and aborigines), do not agree about their respective shares; so the stronger decides the point; for when the crows (called *Arabul* by the natives) enter the hollows of the rocks to feed upon the insects, the natives stand at the entrance, and kill them as they fly out, and afford them (*i. e.* the crows afford the natives) an excellent meal, being fat from feeding upon the rich Bugong. So eager are these feathered blacks, or Arabuls, after this food, that they attack it even while it is preparing by the natives; but as the aborigines never consider any increase of food a misfortune, they lay in wait for the Arabuls with waddies or clubs, and kill them in great numbers, and use them for food.—Vol. I. p. 273.

Some of our younger readers may not have met with a history of the den-constructing spider. It has repeatedly been our own good fortune to see the singular residence of this creature.

There is a spider, which I frequently observed about Yas Plains, and also at other parts of the colony, which forms a den in the ground; the opening is about an inch in diameter; over this a lid is formed of web incorporated with earth, and a web hinge, accurately fitting the external aperture, which the animal can shut at pleasure.

I have heard of a person who was accustomed to feed one of these insects ; after feeding, it would enter the habitation, and shut down the lid, by drawing it close with one of its claws. It is nearly impossible to discover their habitations when the lid is closed, from its being so accurately fitted to the aperture.—Vol. I. p. 328.

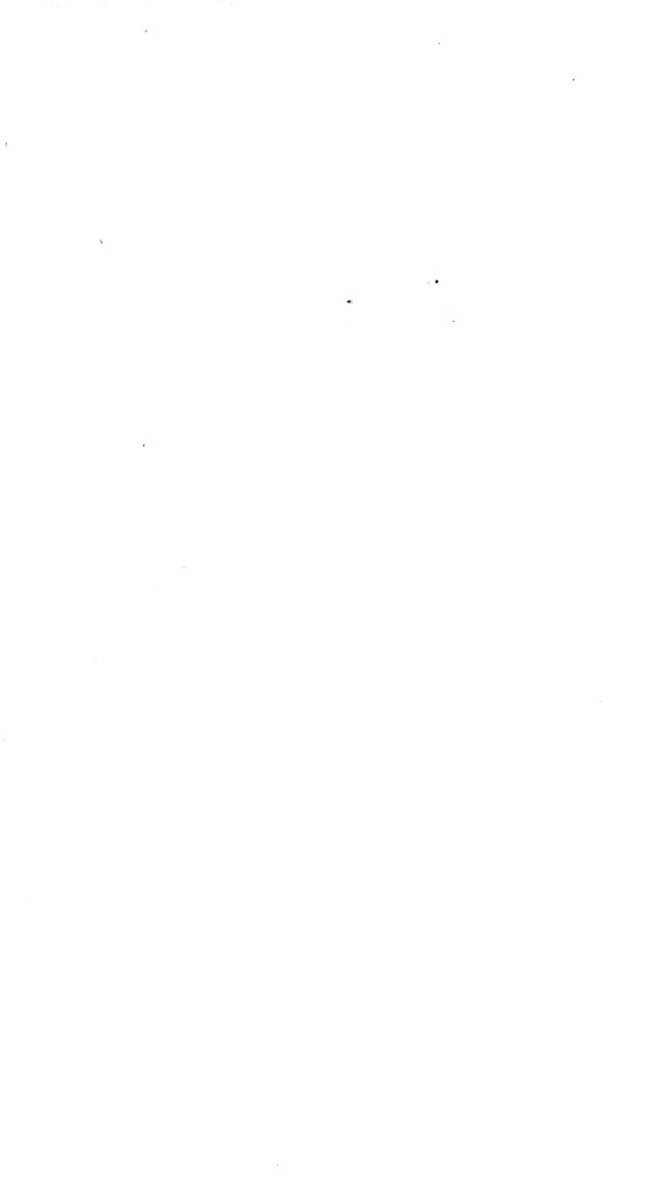
There is a passage relative to the King-crab, which we do not exactly understand. We understand the King-crab to be the genus *Limulus* ; but if so, surely the author has mistaken the tail for the head. However, we will transcribe the passage, leaving our more learned readers to decide what animal is intended.

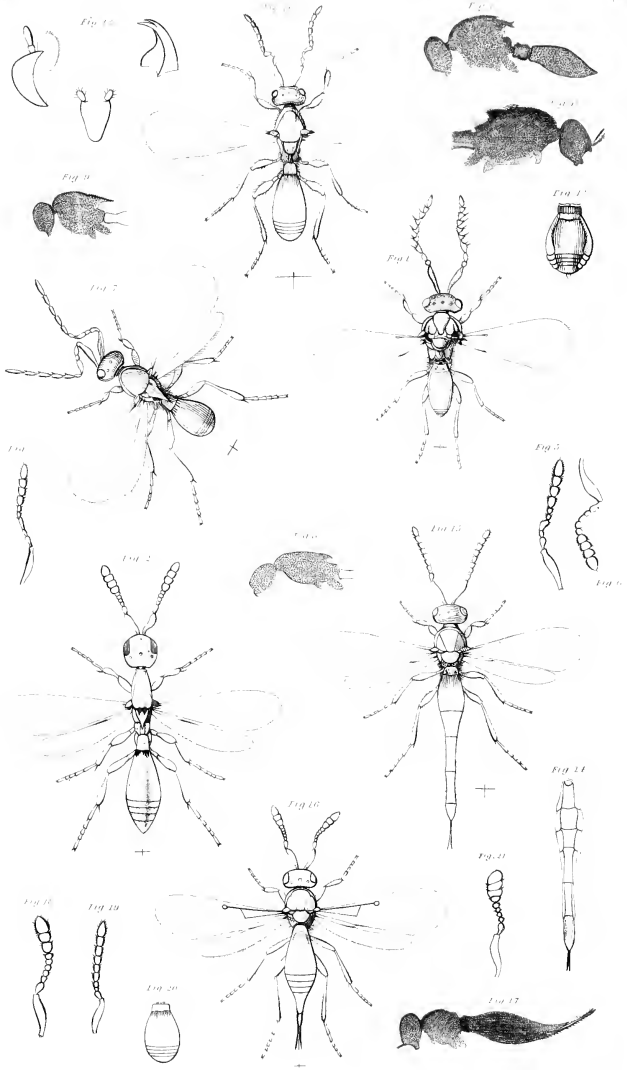
Observing an antenna of some crustaceous animal projecting from the moist sand left by the receding tide, I pulled it, and drew out two fine King-crabs, jointed together by their under surfaces, and thus united, burrow [? they had burrowed] in the sand. They are called *Ecan mimi* by the Javanese ; but on this coast [Sumatra] they are named *Moi moi*. The male is larger than the female. They are eaten by the Javanese ; but on this coast they are not eaten, although the natives observe the Chinese are fond of them. The females lay their eggs in the sand, after carrying them for some time, and in about the second month the young are produced : these animals are perfectly harmless ; they crawl rapidly ; and when touched, draw the upper part of the shell a little inwards ; and as they move, the long antenna bears a resemblance to a tail. When placed on the back, they find much difficulty in regaining their natural position.—Vol. I. p. 400.

One quotation more, and we have done. The second volume lays temptingly before us, but we resist. We could not open it without meeting with some passage which we should wish to purloin. It abounds in portraits from the life,—sketches from nature. Therefore, gentle reader, we recommend thee to read Bennett's Wanderings ; which, though not penned by a Waterton, though without the perfect finish, the exquisite style, of THE Wanderings, are nevertheless truth-breathing, original, and delightful ; and being so, are surely worth the perusal of every naturalist. Every body knows the Hermit-crab, and therefore every body will understand the following :—

A great number of the *Paguri*, Hermit, or Soldier-crabs, of different sizes, were running about the beach : two large specimens

that I found had each taken possession of the *Dolium perdis*, or Partridge-shell, to which they were as firmly attached as if in their natural habitation. The crustaceous portions of these animals is of a beautiful lilac colour, the softer parts yellow, and the antennæ of a dark red colour. The natives call them by the general name of *Sepo*. The smaller kinds inhabit *Murices*, *Trochi*, *Neritæ*, *Helices*, *Lymnææ*, *Cerethii*, and the univalve shells. In some instances, I saw large shells of *Harpa*, &c. inhabited by very small animals of this kind, moving their heavy and cumbrous dwelling slowly, and with difficulty; there were some of a red, and others of a sea-green colour, but the larger were invariably of a beautiful lilac. May not this change of colour depend upon their age? The *Paguri* feed upon dead animals, fish, and all kinds of offal, as well as vegetable matter,—such as the skins of plantains, remains of cocoa-nuts, fruits, &c. I have often observed a number of these creatures, of various sizes, congregated about a dead and putrid fish: and it is ludicrous, on disturbing them in the midst of their feast, to see them marching away, jumbling and overturning one another in the hurry, causing a clattering noise to proceed from the collision of their burrowed [? borrowed] coverings; and should they not be able to escape capture, they draw themselves closely into the shell, closing the aperture so firmly, by closing the claws over the entrance, as to render it impossible to extract them without breaking the shell to pieces. Thus secured, they remain immovable, and apparently dead, and may be kicked or thrown about without giving any indications of life; but danger past, they emerge partly from the shell as before, and move briskly away. The natives use them occasionally, but rarely, as food. It is not an improbable supposition, that the ova of these curious crustaceous animals are deposited in the empty shells lying upon the beach; and the changes these *crustacca* undergo is one of the most interesting subjects of investigation which could engage the attention of a practical naturalist. It is a curious fact, that no matter whatever form the univalve shell may have, the posterior or soft parts of the animals inhabiting it are accommodated to it, thus causing persons not accustomed to observe the changes of natural objects, to regard this as an original inhabitant, and it is sometimes difficult to persuade them of the reverse; the posterior portion of the animal being naked, and the anterior crustaceous, the former evidently requires some protection.—Vol. I. p. 404.





ART. XXIII.—*On the Species of Platygaster, &c.* By
FRANCIS WALKER.

THE *Oxyurites* or *Proctotrupites*, a tribe of parasitic *Hymenoptera*, of which this family forms a part, are an extensive group, and have a greater variety of structure than the *Chalcidites* or *Ichneumonites*, though inferior in number, and less attractive, from their usual black colour and minute size. They are distinguished by the shape of the ovipositor, which is flexible, retractile, and tubiform, like that of the *Chrysites*. They have most affinity to the *Cynipites*, but these are at once known by the peculiar conformation of the wing-nervures.

In this family, as in *Scelio* and *Teleas*, and some other genera, the segments of the abdomen above form a rim around those below. The wing nervures are very generally obsolete; but in some species a single nervure proceeds from below the border, and ends in a round dot before the middle of the wing, and in two instances is forked.

The two groups into which they have been divided by the form of the scutellum, may also be generally distinguished from each other by several other slight differences. The first group, comprising the species with the scutellum more or less lengthened and pointed behind, has the body generally hairy, the female antennæ clubbed, the thorax smooth and shining, the abdomen of the female varying much in form, the second segment with two impressions at the base, the wings often fringed: while in the second group, or the species having the scutellum formed as a tubercle, the body is seldom hairy, the tips of the antennæ are very slightly dilated, the thorax is punctured, the abdomen has usually the same shape in both sexes, with the second segment furrowed at the base, and the wings are seldom fringed.

The sexes are often alike in shape, but the males may be easily distinguished from the females by their antennæ, in which the fourth joint is much more developed, and the tenth joint longer, and more pointed.

The colour is generally black, that of the legs and antennæ

often red; the wings are iridescent and pubescent. They run swiftly, with their antennæ incessantly vibrating, and are found on trees, but more often among grass in fields and woods, during the summer and autumn. They destroy the minute *Diptera* (*Cecidomyiæ*, &c.) that infest the corn, grasses, and other plants. These, while in the grub state, reside within the inmost recesses of the florets, and the *Platygaster* would be unable to reach to them were not its abdomen often very long and slender, and flexible towards the tip; it has also a very long hair-like ovipositor concealed within the abdomen when not in action.

In the fourth and fifth volumes of the Linnean Transactions is a long and interesting account of *Tipula* (*Cecidomyia*) *Tritici*, by Kirby, who also describes three minute species of *Hymenoptera*, that he found on the ears of wheat.

The first of these *Ichneumon* (*Platygaster*) *Tipulæ*, lays its eggs in the grubs of *C. tritici*. He did not clearly ascertain the history of the second, but he suspected it to be parasitic on the eggs of the same fly; the third, *Ichneumon* (*Macroglenes*) *penetrans*, belongs to the *Chalcidites*.

In the first volume of the Entomological Magazine there is an excellent methodical arrangement of these and other minute *Hymenoptera*, by Mr. Haliday; who, by the loan of his MSS. and collection, contributed much of the following descriptions:—

Caput breve, transversum, mediocre, thoracis plerunq̄ue latitudine, postice concavum: mandibulæ arcuatæ, apice bidentatæ: maxillæ subtrigonæ, paullulum arcuatæ, lobo terminatæ ovato externe piloso; palpi biarticulati, articulus 1^{us}. brevis, 2^{us}. longus apice setis duabus armatus: labium obconicum: ligula brevis, lata; palpi unarticulati, breves, apice setis duabus armati: oculi laterales, minuti: ocelli supra verticem trigone dispositi: antennæ 9- aut 10-articulatæ, geniculatæ, moniliformes, vibrantes, corporis longitudine aut breviores, vix pubescentes; articulus 1^{us}. linearis aut subfusiformis, longitudine triens: thorax antice et postice angustior: prothorax minimus, supra brevissimus, utrinque longior; mesothoracis scutum maximum, parapsides subtrigonæ postice latiores: paraptera trigona: scutelli abdominisque structura varia; hujus segmenta dorsalia ntrinque aciem fingentes segmentorum ventralium margines amplectentem: oviductus et ejus vaginæ 2 laterales longa, gracillima, flexilia, in abdomen dum

quietem agunt recepta: pedes subæquales, mediocres, parce pubescentes; coxæ mediocres; femora clavata; tibiæ subclavatae, apice spinis armatae, metatibiæ longiores, protibiæ spina bifida majore armatae; tarsi longi, graciles; articuli 1^o. ad 3^{um}. aut 4^{um}. longitudine decrescentes; 4^{us}. aut 5^{us}. præcedente longior; protibiæ breviores crassiores; ungues minuti, distincti; pulvilli longi: alæ subtilissime pubescentes, iridescentes, sæpe ciliatae; squamulæ magnæ, nitidæ; os basale crassum, longum: proalæ nonnunquam nervus basalis puncto terminatus et rarissime nervulum demittens recte declivem; metalæ ante medium stigma costale setis 5 hamatis armatum.

Feminae plerunque abdomen latius aut longius et acutius, antennæ breviores et apice crassiores, alæ angustiores.

* *Tarsi pentameri.*

GENUS I.—PLATYGASTER, *Latreille.*

Platygaster, *Latreille, Curtis, Haliday, Nces ab Essenbeck, Scelio, Latreille.* Ichneumon, *Kirby.*

Alarum nervi obsoleti.

* *Thorax comp. essus.*

1. *Fem.*—Corpus longum, angustum: antennæ clavatae, ejus dimidio vix longiores; articulus 2^{us}. ovatus, mediocris; 3^{us}. et sequentes ad 6^{um}. minimi; 7^{us}. et sequentes lati; 10^{us}. 9^o. paullo longior: thorax longi-ovatus, compressus, quasi galeatus, capite multo angustior: mesothoracis parapsidum suturæ vix conspicuæ; scutellum compressum, apice subarcuatum, acuminatum, metathoracem non transiens: abdomen longi-ovatum, fere planum, thorace latius et paullo longius; segmentum 1^{um}. breve; 2^{um}. dimidium occupans; 3^{um}. et sequentia brevia, subæqualia.

Sp. 1. Plat. Catillus. *Fem. Ater, antennæ piceæ, pedes picei aut rufi, tarsi flavi, alæ limpidæ.*

Ater, nitens, lævis, glaber: oculi ocellique nigro-picei: antennæ piceæ; articuli 3^o. ad 6^{um}. pallidiores: metathorax abdominisque segmentum 1^{um}. scabra, obscura: pedes picei; coxæ nigro-piceæ; tibiæ rufo-piceæ, basi rufæ; tarsi flavi, apice picei: alæ limpidæ, angustæ; squamulæ piceæ. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{6}$.)

Var. β.—Antennæ nigro-piceæ; articuli 1^{us}. subtus, 2^{us}. et 10^{us}. apice picei: coxæ, trochanteres et femora nigra; pro- et mesotibiæ flavæ, supra piceo vittatæ; metatibiæ piceæ.

Var. γ.—Antennæ articulo 2^o. rufo-piceo.

Var. δ.—Antennæ articulo 1^o. rufo: pedes rufi; coxæ piceæ; tarsi flavi, apice fuscii.

Var. ε, Var. ζ, similis: metafemora et metatibiæ apice picea.

June; on grass beneath trees; near London. New Forest, Hampshire. Mr. Haliday has found it under the shade of trees, once at Holywood, and once in Galway, Ireland.

***Thorax non compressus.*

**Scutellum productum.*

†*Scutellum valde productum, spiniforme, abdomen attingens.*

2. *Mas.*—Antennæ filiformes, corporis fere longitudine; articulus 2^{us}. ovatus; 3^{us}. minimus; 4^{us}. magnus, longus, sublinearis; 5^{us}. parvus, ovatus; 6^{us}. et sequentes majores, fusiformes, subæquales; 10^{us}. linearis, acuminatus, 9^o. longior: thorax ovatus, convexus: mesothoracis parapsidum suturæ vix conspicuæ: abdomen brevi-ovatum, thorace vix longius; segmentum 1^{um}. seorsum angustum, longum; 2^{um}. maximum; 3^{um}. et sequentia minima.

Fem.—Antennæ subclavatæ, corporis dimidio longiores; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. et 5^{us}. mediocres; 6^{us}. minor; 7^{us}. et sequentes majores, lati, subæquales; 10^{us}. acuminatus, 9^o. longior.

Sp. 2. Plat. Tipulæ. *Mas et Fem. Ater, antennæ rufæ apice nigræ aut piceæ, pedes rufi fusco cingulati, alæ sublimpidæ.*

Ichneumon Tipulæ. *Kirby, Linn. Trans. IV. 232; V. 108; tab. 4. figs. 8, 9; Stew. II. 231; Turt. III. 476.*

Mas.—*Ater*, nitens, fere lævis, parce et breviter pubescens: caput subtilissime punctatum, parum nitens: oculi ocellique nigro-picei: antennæ piceæ; articuli 1^o. ad 5^{um}. rufi: scutellum apice fuscum; metathorax et abdominis segmentum 1^{um}. scabra, obscura, pilosa: abdomen læve, glabrum; segmentum 2^{um}. basi bifoveolatum: pedes pallide rufi; metatibiæ tarsi que apice picea: alæ sublimpidæ; squamulæ piceæ.

Fem.—Antennæ piceæ; articulus 1^{us}. rufus; 7^{us}. et sequentes nigri: coxæ piceæ; mesofemora et mesotibiæ apice picea; metafemora et metatibiæ apice nigro-picea; tarsi apice pallide fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β.—*Fem.* antennæ articulis 2^o. ad 6^{um}. rufo-piceis, 7^o. ad 10^{um}. nigro-piceis.

Var. γ.—*Fem.* antennæ articulis 7^o. ad 10^{um}. piceis: pedes pallide rufi; meso- et metapedum coxæ omnino, femora et tibiæ tarsique omnes apice pallide picea.

Var. δ. *Fem.* *Var. γ.* similis: propedum femora et tibiæ apice pallide picea.

Var. ε. *Fem.* *Var. γ.* similis: mesopedum femora et coxæ omnino rufa.

Mr. Haliday has found the female on *Cerealìa*, in England, Ireland, and Scotland; the male only once on a rose-tree. The former is common on grass in fields near London, in June and July.

Sp. 3. Plat. Nydia. Fem. P. Tipulæ *simillimus*, *alæ fuscæ*.

Ater, nitens, lævis, parce et breviter pubescens: caput subtilissime punctatum, parum nitens: oculi ocellique nigro-picei: antennæ rufo-piceæ, capite thoraceque longiores; articulus 1^{us}. rufus; 7^{us}. et sequentes nigri: scutellum apice rufum: metathorax abdominisque segmentum 1^{um}. scabra, obscura, pilis albis utrinque hirta: abdomen segmento 2^o. ad apicem glabrum, thorace latius, fere rotundum: pedes rufi; coxæ et metatibiæ apice nigro-piceæ; femora necnon pro- et mesotibiæ fusco maculata; tarsi pallidiores, apice fusci; metafemora apice picea: alæ fuscæ, ciliatæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Pro- et mesotibiæ femoraque immaculata.

June; Windsor Forest. — July; on grass in fields; near London.

Sp. 4. Plat. Laodice. Fem. P. Tipulæ *minor*, *abdomen longius*, *alæ angustiores limpidæ*.

Ater, nitens, fere lævis, parce et breviter pubescens: caput subtilissime punctatum, parum nitens: oculi ocellique nigro-picei: antennæ piceæ; articulus 1^{us}. basi pallide rufus; 7^{us}. et sequentes nigri: scutellum apice fuscum: metathorax et abdominis segmentum 1^{um}. scabra, obscura, pilosa: abdomen læve, glabrum;

segmentum 2^{um}. basi bifoveolatum : pedes rufi ; femora, tibiæ et tarsi apice picea : alæ limpidaæ ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{2}$ — $\frac{2}{3}$.)

Var. β.—Antennæ articulis 7^o. ad 10^{um}. nigro-piceis : procoxæ pallide rufæ.

Var. γ.—Antennæ articulo 1^o. omnino rufo : profemora et protibiæ omnino rufa.

Var. δ, Var. γ, similis : meso- et metapedum femora et tibiæ apice nigro-picea.

Var. ε.—Antennæ rufæ ; articuli 7^o. ad 10^{um}. picei : pedes rufi ; meso- et metafemora metatibiæque apice picea ; pro- et mesotibiæ piceo cingulataæ.

Var. ζ, Var. ε, similis : femora omnia necnon pro- et mesotibiæ rufa.

Var. η.—Pedes omnino rufi.

June ; on grass in fields ; near London.

3. *Mas.*—Antennæ subclavataæ, corporis dimidio longiores ; articuli 3^{us}. et 5^{us}. parvi ; 4^{us}. paullo major ; 6^{us}. et sequentes majores, longi-ovati, æquales ; 10^{us}. acuminatus, 9^o. longior : thorax ovatus, convexus : mesothoracis parapsidum suturæ vix conspicuæ : abdomen ovatum, thorace longius ; segmentum 1^{um}. seorsum angustum, longum ; 2^{um}. maximum ; 3^{um}. et sequentia minima.

Sp. 5. Plat. Nice. Mas. *Rufus, alæ subfuscaæ.*

Rufus, semipellucidus, nitens, fere lævis, parce pubescens : caput fuscum, postice rufum : oculi ocellique nigro-picei : antennæ fuscaæ ; articuli 1^o. ad 3^{um}. pallide rufi : mesothoracis scuti discus et mesoscutellum basi fusca ; metathorax abdominisque segmentum 1^{um}. scabra, obscura, pubescentia : metathoracis post-scutellum optime distinctum, convexum, petioli partem anteriorem fingens : abdomen læve, glabrum : pedes pallide rufi ; tarsi apice obscuriores : alæ subfuscaæ ; squamulæ rufæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

June ; on grass beneath trees ; near London.

†† *Scutellum productum, compressum, acuminatum, abdomen non aut vix attingens.*

4. *Fem.*—Antennæ clavataæ ; articulus 2^{us}. longi-cyathiformis ; sequentes ad 6^{um}. minimi ; 3^{us}. et 4^{us}. lineares ; 5^{us}. et 6^{us}.

rotundi; 7^{us}. et sequentes latissimi, approximati, æquales; 10^{us}. ovatus, 9^o. longior: thorax ovatus: scutellum fere trigonum, abdomen non attingens: metathorax brevissimus: abdomen thorace multo longius, postice attenuatum, supra teliforme, oblique quasi obcapitatum; segmentum 2^{um}. ejus trientem occupans; 1^{um}. et 3^{um}. brevissima; 4^{um}. multo longius; 5^{um}. 4^o. longius; 6^{um}. adhuc longius, acuminatum; segmentum 2^{um}. ventrale subtus valde dilatatum, circulum fingens.

Sp. 6. Plat. Osaces. Fem. *Ater*, antennæ piceæ apice nigræ, pedes rufo-picei, alæ limpidae.

Ater, nitens, lævis, glaber: oculi ocellique nigro-picei: antennæ piceæ, corporis dimidio breviores; articuli basi et subtus pallidiores; 7^{us}. et sequentes nigri: mesothoracis parapsidum suturæ vix conspicuæ: abdomen thorace vix triplo longius; segmentum 1^{um}. et metathorax scabra, obscura, pilis albis dense hirta: pedes picei; femora et tibiæ basi rufa; protibiæ rufæ, piceo cingulatæ; tarsi pallide rufi, apice picei: alæ limpidae; discus subfuscus; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{5}{4}$.)

Var. β .—Metafemora omnino nigra.

September; on grass in fields; near London. Found once in September on willows at Holywood, in Ireland, by Mr. Haliday.

Sp. 7. Plat. ventralis. Fem. *Ater*, pedes rufo-picei, alæ fusæ.

Epimeces ventralis . . *Westwood, Loudon's Mag. Nat. Hist.*
Vol. VI. No. XXXV. p. 421.

Ater, parum nitens, subtilissime punctatus, parce pubescens: oculi ocellique nigro-picei: antennæ nigræ, corporis dimidii vix longitudine; articulus 1^{us}. piceus, subtus rufus: mesothoracis parapsidum suturæ bene determinatæ: scutellum, metathorax, abdominis segmentum 1^{um}. omnino 2^{um}. que basi pilis albis dense hirta; hoc basi quoque bifoveolatum: abdomen læve, glabrum, thorace vix duplo longius; segmenta 3^o. ad 6^{um}. nisi ad apices subtilissime punctata, vix nitentia: oviductus flavus: pedes nigro-picei; trochanteres, femora et tibiæ basi rufa; tarsi rufi, apice picei; propedes pallidiores, tibiis rufis piceo cingulatis: alæ fusæ, basi sublimpidae; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Antennæ articulis 2^o. ad 6^{um}. piceis: protibiæ subtus rufæ.

Var. γ.—Antennæ articulo 1^o. omnino picco.

July; on grass in fields; near London.

5. *Fem.*—Antennæ clavatæ; articulus 2^{us}. longi-cyathiformis; sequentes ad 6^{um}. minimi, 3^{us}. et 4^{us} lineares, 5^{us}. et 6^{us}. rotundi; 7^{us}. et sequentes latissimi, approximati, æquales; 10^{us}. ovatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ; scutellum fere trigonum, abdomen non attingens: metathorax brevissimus: abdomen teliforme, thorace multo longius, postice attenuatum; segmentum 1^{um}. brevissimum; 2^{um}. longi-ovatum, abdominis triente paullo brevius; sequentia angusta, longa; 4^{um}. 3^o. multo longius; 5^{um}. adhuc longius; 6^{um}. 4^o. brevius, acuminatum.

Sp. 8. *Plat. Craterus. Fem. Ater, antennæ nigro-piceæ, pedes piceo rufi, femora nigra, alæ limpide.*

Ater, subnitidus, lævis, fere glaber: oculi ocellique nigro-picei: antennæ nigro-piceæ, corporis dimidio breviores; articulus 1^{us}. basi 2^{us}. que apice pallidiores: metathorax abdominisque segmentum 1^{um}. scabra, obscura, pilosa; 2^{um}. nitidum, glabrum; sequentia subtilissime punctata, obscura; pedes nigri; femora basi et trochanteres picea; tibiæ rufæ, apice supra pallide piceæ; metatibiæ apice nigro-piceæ; tarsi pallide rufi, apice picei: alæ limpide, albæ; squamulæ piceæ. (Corp. long. lin. $\frac{5}{6}$; alar. lin. 1.)

Var. β.—Metatarsi supra piceo-rufi.

Var. γ.—Metatibiæ apice pallide piceæ.

Var. δ.—Antennæ articulo 1^o. obscure rufo.

July; on grass in fields; near London.

6. *Mas.*—Antennæ filiformes; articulus 2^{us}. longi-cyathiformis; 3^{us}. minutus; 4^{us}. magnus, 3^o. approximatus; 5^{us}. paullo minor; 6^{us}. mediocris; sequentes latiores, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: scutellum abdomen non attingens: abdomen longi-ovatum.

Fem.—Antennæ clavatæ; articuli 3^{us}. et 4^{us}. parvi, angusti, lineares; 5^{us}. et 6^{us}. cyathiformes, breviores, non latiores; 7^{us}. et sequentes multo latiores, subæquales; 10^{us}. 9^o. paullo longior: abdomen seorsum convexum et acutum, thorace dimidio longius.

Sp. 9. Plat. Sosis. Mas et Fem. *Ater, antennæ piceæ, pedes rufo-picei, alæ fuscæ.*

Mas.—*Ater*, nitens, lævis, parce albo-hirtus : caput obscurum, punctatum : oculi obscure picei : mandibulæ rufæ : antennæ piceæ, corporis dimidio multo longiores ; articulus 1^{us}. rufus, supra apice piceus ; 2^{us}. apice rufus : mesothoracis parapsides scuto in unum confusæ ; scutellum cultriforme, metathoracem non transiens, apice fuscum : metathorax et abdominis segmentum 1^{um}. scabra, obscura, utrinque albo dense hirta ; segmentum 2^{um}. maximum, glabrum ; 3^{um}. et sequentia brevia : pedes obscure picei ; femora et tibiæ basi, trochanteres et tarsi pallide rufa, hi apice picei ; propedum femora et tibiæ obscure rufa ; tarsi fulvi, apice picei : proalæ fuscæ, angustæ, basi necnon metalæ omnino sublimpidæ ; squamulæ piceæ.

Fem.—Antennæ subclavatæ, corporis dimidio paullo longiores ; articulus 1^{us}. fuscus, basi rufus ; 7^{us}. et sequentes nigro-picei : abdomen conicum, acuminatum, thorace dimidio longius ; segmentum 2^{um}. ejus dimidium occupans ; 3^{um}. brevissimum ; 4^{um}. 3^o. paullo longius ; 5^{um}. adhuc longius ; 6^{um}. 5^o. duplo fere longius, acuminatum : oviductus flavus : coxæ nigræ ; femora et tibiæ nigro-picea, basi rufa ; profemora et protibiæ picea, basi rufa. (Corp. long. lin. $\frac{1}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{1}{2}$ —1.)

Var. β.—*Mas.* mesofemora rufo-picea ; mesotibiæ rufæ, piceo cingulatæ.

Var. γ.—*Mas.* antennæ articulis 1^o. et 2^o. piceis, ille basi rufus.

Var. δ.—*Mas.* antennæ articulis 1^o. et 2^o. pallide fuscis, hic apice et ille basi rufi.

Var. ε, Mas. Var. γ, similis : profemora rufo-fusca.

Var. ζ.—*Mas.* antennæ articulis 3^o. ad 7^{um}. obscure rufis.

Var. η.—*Mas.* antennæ rufo-piceæ ; articuli 1^{us}. basi 2^{us}. que flavi.

Var. θ.—*Fem.* tarsi omnes flavi, apice picei.

Var. ι, Fem. Var. θ, similis : protibiæ rufæ, fusco cingulatæ.

May to August ; on grass in fields ; near London. Found by Mr. Haliday on willows, at Holywood, in Ireland.

Sp. 10. Plat. Rhanis. Fem. *Ater, pedes rufo-fusci, alæ sublimpidæ.*

Ater, obscurus, subtilissime punctatus, parce pubescens : oculi ocellique nigro-picei : antennæ nigræ ; corporis dimidio paullo longiores : articulus 1^{us}. basi fuscus : mesothoracis parapsidum

suturæ vix conspicuæ : scutellum, metathorax et petiolus dense albo-hirta : abdomen nitidum, læve, glabrum ; segmentum 2^{um}. ejus dimidio longius ; 3^{um}. 4^{um}. et 5^{um}. brevina ; 6^{um}. multo longius : pedes picei ; coxæ nigræ ; tibiæ basi et propedum femora tibiæque omnino piceo-rufa ; tarsi rufi, apice picei ; metatarsi picei ; articulus 1^{us}. basi rufus : alæ sublimpidæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Var. β.—Femora nigra ; profemora picea ; metatarsi rufi, apice picei.

June ; on grass in fields ; near London. Isle of Wight.

Sp. 11. Plat. Myles. Fem. *Abdomen quam hujus sectionis præcedentibus brevius.*

Ater, nitens, lævis, fere glaber : caput thorace latius : oculi nigro-picei : antennæ nigro-piceæ, corporis dimidii vix longitudine ; articulus 1^{us}. basi flavus : thorax angustus : mesothoracis parapsides scuto in unum confusæ : scutellum abdomen non attingens, apice fuscum : metathorax abdominisque segmentum 1^{um}. pilis albis dense hirta : abdomen ovatum, nitidissimum, thorace latius vix longius : pedes nigro-picei ; trochanteres pallidiores ; tibiæ basi rufæ ; tarsi rufi, apice picei ; protibiæ rufæ, supra fusco vittatæ : alæ albo-limpidæ, angustæ ; squamulæ piceæ, optime determinatæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. β.—Protibiæ piceæ, apice subtus rufæ.

Found at Holywood, in Ireland, by Mr. Haliday.

7. *Mas.*—Antennæ filiformes ; articulus 2^{us}. parvus, subrotundus ; 3^{us}. minimus ; 4^{us}. magnus, dilatatus, 3^o. approximatus ; 5^{us}. parvus ; 6^{us}. et sequentes magni, longi-ovati, discreti, subæquales ; 10^{us}. acuminatus, 9^o. paullo longior : thorax longi-ovatus, angustus, utrinque abrupte declivis : mesothoracis parapsidum suturæ vix conspicuæ ; scutellum abdomen non attingens : metathorax abdominisque segmentum 1^{um}. bene determinata : abdomen longi-ovatum, apicem versus latius ; segmentum 2^{um}. ejus plus dimidium occupans ; 3^{um}. et sequentia brevina, subæqualia.

Sp. 12. Plat. Seron. *Mas. Ater, antennæ nigro-piceæ, pedes rufi, metapedum femora et tibiæ apice picea, alæ subfusæ.*

Ater, longus, gracilis, nitidus, lævis, parce pubescens : antennæ nigro-piceæ, corpore paullo breviores ; articulus 1^{us}. rufus : oculi ocellique nigro-picei : metathorax abdominisque segmentum 1^{um}.

punctata, parum nitida, utrinque pubescentia; segmenta 2^{um}. et sequentia glabra: pedes rufi; coxæ, metafemora, metatibiæ tarsique apice picea: alæ subfuscæ; squamulæ rufo-piceæ. (Corp. long. lin. 1; alar. lin. 1½.)

September; on grass in fields; near London.

Sp. 13. Plat. Mamertes. Mas. *Præcedenti simillimus, antennæ breviores, alæ albo-limpidæ.*

Mas.—Ater, nitens, lævis, fere glaber: caput thorace latius: oculi nigro-picei: antennæ nigræ, corpore breviores; articulus 1^{us}. basi piceus: abdomen cochleatum, thorace longius et latius: pedes nigri; tibiæ basi piceæ; protibiæ subtus apice tarsique flava, hi apice picei: alæ albo-limpidæ, postice ciliatæ; squamulæ nigro-piceæ. (Corp. long. lin. ¾; alar. lin. 1.)

Found in September, on willows, in Kent; and at Holywood, in Ireland, by Mr. Haliday.

Fem.?—Caput thorace vix latius: antennæ clavatæ, corporis dimidii longitudine; articulus 1^{us}. subfusiformis; 2^{us}. longi-cyathiformis; sequentes parvi, 3^{us}. et 4^{us}. lineares, 5^{us}. et 6^{us}. rotundi; 7^{us}. et sequentes lati: thorax ovatus, convexus: abdomen obclavatum, thorace fere duplo longius; segmentum 1^{um}. et metathorax pilis albis utrinque hirta; 2^{um}. ovatum, postice angustius; sequentia obscura, quasi telum fingentia; 3^{um}. mediocre; 4^{um}. multo longius; 5^{um}. adhuc longius; 6^{um}. 3ⁱ. longitudine: trochanteres et tibiæ piceæ, hæ basi flavæ; protibiæ flavæ, apice supra fusco maculatæ. (Corp. long. lin. 1; alar. lin. 1½.)

Found in September, on willows, at Holywood, in Ireland, by Mr. Haliday.

8. *Fem.*—Corpus crassum, breve: antennæ capitatæ; articulus 2^{us}. cyathiformis; 3^{us}. et 4^{us}. parvi, angusti, lineares; 5^{us}. et 6^{us}. cyathiformes, breviores, non latiores; 7^{us}. et sequentes multo latiores, subæquales; 10^{us}. 9^o. paullo longior: thorax brevi-ovatus: mesothoracis parapsides scuto in unum confusæ; scutellum abdomen attingens: metathorax et abdominis segmentum 1^{um}. brevissima: abdomen piriforme, arcuatum, vix acuminatum, thorace paullo longius; segmentum 2^{um}. ejus dimidium occupans, ovatum, latum; sequentia abrupte angustiora; 3^{um}. et 4^{um}. brevia; 5^{um}. et 6^{um}. paullo longiora; segmentum 2^{um}. ventrale subtus valde dilatatum.

Sp. 14. Plat. Tarsa. Fem. *Ater, antennæ piceæ apice nigra, pedes piceo rufi nigro cingulati, alæ limpidae.*

Ater, subnitidus, subtilissime punctatus, parce pubescens: caput obscurum: oculi ocellique nigro-picei: antennæ piceæ, corporis dimidio longiores; articulus 1^{us}. rufus, apice supra piceus; 7^{us}. et sequentes nigri: metathorax et abdomen basi dense albo-hirta: abdomen nitidum, læve, glabrum; segmenta 3^{um}. et 4^{um}. apice, 5^{um}. et 6^{um}. omnino punctata, obscura: pedes rufi; coxæ et femora omnino tibiæque apice nigra; profemora et protibiæ rufo-picea; tarsi pallide rufi, apice picei: alæ limpidae; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

August; on grass in fields; near London.

9. *Mas*. — Antennæ filiformes; articulus 2^{us}. cyathiformis; 3^{us}. minutus; 4^{us}. magnus, 3^o. approximatus; 5^{us}. mediocris; 6^{us}. et sequentes longi-ovati, latiores, discreti, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsides scuto in unum confusæ; scutellum abdomen attingens: metathorax abdominisque segmentum 1^{um}. brevissima: abdomen ovatum; segmentum 2^{um}. ejus dimidio longius; sequentia brevia, subæqualia.

Fem.—Antennæ clavatæ; articuli 3^{us}. 5^{us}. et 6^{us}. parvi, subrotundi; 4^{us}. angustus, linearis; 7^{us}. et sequentes magni, lati, breves, subæquales: scutellum longius: abdomen convexus, apice acuminatum et fere attenuatum.

Note.—*Platygaster decurvatus* *Ess. Monogr.* may be placed here.

Sp. 15. Plat. Jasius. *Mas et Fem. Ater, antennæ nigropiceæ, pedes rufo-picei, alæ subfusca.*

Mas.—*Ater*, parum nitens, subtilissime punctatus, parce pubescens: oculi ocellique picei: antennæ nigro-piceæ, corpore breviores; articuli 1^{us}. et 2^{us}. apice rufi: scutellum cultriforme: metathorax et abdominis segmentum 1^{um}. scabra, obscura, pilis albis utrinque dense hirta: abdomen nitens, læve, glabrum, thoracis longitudine: pedes rufi; coxæ omnino, meso- et metapedum femora tibiæque necnon tarsi omnes apice picea: alæ subfusca; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Fem.—Antennæ nigrae, corporis dimidio longiores; articulus 1^{us}. basi rufus; 2^{us}. et sequentes ad 6^{um}. nigro-picei: pedes picei; meso- et metatibiæ rufæ, hæc piceo terminatæ, illæ cingulatæ; protibiæ et tarsi omnes pallide rufa, hi apice picei. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

August and October; on grass in fields; near London.

Sp. 16. Plat. Acco. Fem. *P. Jasio similis, antennæ graciliores, alæ angustiores.*

Ater, nitens, lævis, parce et breviter hirtus: oculi nigro-picei; antennæ piceæ, corporis dimidio paullo longiores; articuli 7^o. ad 10^{um}. nigri, lati: thorax ovatus; scutellum, metathorax abdominisque segmentum 1^{um}. pilis albis densissime hirta: abdomen convexum, nitidissimum, acuminatum, thorace longius; segmentum 2^{um}. magnum, glabrum; sequentia brevia: pedes rufi; coxæ et femora picea, hæ basi rufa; profemora pallidiora; meso- et metatibiæ tarsique omnes apice fusca: alæ limpidae; proalæ minime fulvo tinctæ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found in Ireland, by Mr. Haliday.

Sp. 17. Plat. Euryale. Fem. *Præcedenti similis, abdomen nullo brevius et obtusius.*

Ater, nitens, lævis, parce hirtus: oculi nigro-picei: antennæ piceæ, validæ, clavatæ, corporis dimidio vix longiores; articulus 1^{us}. flavus, apice piceus; 7^{us}. et sequentes ad 10^{um}. nigro-picei: thorax ovatus, convexus: mesothoracis parapsides scuto in unum confusæ; scutellum breve: metathorax abdominisque segmentum 1^{um}. pilis albis dense hirta: abdomen ovatum, glabrum, thorace paullo longius et latius; segmenta 3^o. ad 7^{um}. ejus trientem occupantia: pedes rufi; coxæ, meso- et metafemora metatibiæque picea, hæ basi pallidiores; tarsi apice fusci: alæ albo-limpidae; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Found once at Holywood, in Ireland, by Mr. Haliday.

Sp. 18. Plat. Halia. Mas. *Ater, antennæ pedesque picea, tarsi flavi, alis subfuscæ.*

Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei: antennæ piceæ, corpore paullo breviores; articulus 1^{us}. omnino, 2^{us}. apice et subtus rufi: metathorax abdominisque segmentum 1^{um}. dense pubescentia: abdomen glabrum, latum, thorace brevius: pedes picei; propedes flavi, coxis piceis, tibiis piceo cingulatis; meso- et metapedum femora et tibiæ basi flava; tarsi omnes flavi, apice picei: alæ subfuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{1}{2}$.)

August; on grass in fields; near London.

10. *Mas.*—Antennæ subfiliformes; articulus 2^{us}. ovatus, basi angustior; 3^{us}. et 5^{us}. minimi; 4^{us}. maximus, 3^o. approximatus; 6^{us}. mediocris, cyathiformis; sequentes latiores, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ bene determinatæ; scutellum abdomen attingens: metathorax abdominisque segmentum 1^{um}. brevissima: abdomen ovatum; segmentum 2^{um}. ejus dimidio longius; sequentia brevia, subæqualia.

Fem.—*Mari* similis: antennæ subclavatæ, crassiores.

Sp. 19. Plat. Abaris. *Mas* et *Fem.* *Ater*, antennæ rufopiceæ, pedes picei, protibiæ tarsique rufa, alæ fuscæ.

Mas.—*Ater*, parum nitens, subtilissime punctatus, parce pubescens: oculi ocellique nigro-picei: antennæ pallide piceæ; articuli 1^{us}. et 3^{us}. rufi; 4^{us}. 5^{us}. et 6^{us}. rufo-picei: scutellum nisi ad apicem, metathorax, abdominis segmentum 1^{um}. omnino 2^{um}. que basi pilis albis dense hirta: abdomen nitidum, læve; segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes picei; coxæ nigrae; profemora apice, protibiæ, genua et tarsi rufa; hi apice picei: alæ fuscae; squamulae piceæ.

Fem.—Antennæ nigro-piceæ; articulus 1^{us}. rufus; 2^{us}. et sequentes ad 6^{um}. rufo-picei: pedes rufi; coxæ et metapedum femora tibiæque apice nigro-picea; tarsi apice picei. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{5}{4}$ —1.)

August to October; on grass beneath trees; near London.

11. *Mas.*—Antennæ filiformes; articulus 2^{us}. longi-cyathiformis; 3^{us}. 5^{us}. et 6^{us}. minuti; 4^{us}. magnus, 3^o. approximatus; 7^{us}. et sequentes lati, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum abdomen attingens: metathorax abdominisque segmentum 1^{um}. brevia: abdomen brevi-ovatum; segmentum 2^{um}. ejus plus dimidium occupans; sequentia brevia, subæqualia.

Fem.—Antennæ subclavatæ; articuli 3^o. ad 6^{um}. minuti; 3^{us}. et 4^{us}. lineares; 5^{us}. et 6^{us}. breviores, non latiores.

Sp. 20. Plat. Ozines. *Mas* et *Fem.* *Ater*, antennæ pedesque rufopicea, alæ limpidae.

Mas.—*Ater*, nitens, lævis, parce pubescens: caput subtilissime squameum: oculi ocellique picei: antennæ rufo-piceæ, corporis

dimidio multo longiores; articulus 1^{us}. rufus, apice rufo-piceus; 7^{us}. et sequentes picei: abdomen glabrum basi cum metathorace dense albo-hirtum: pedes rufi; coxæ, metafemora, metatibiæ et tarsi apice picea: alæ limpidae; squamulæ piceæ.

Fem.—*Mari* similis: abdomen paullo longius: pedes picei; femora et tibiæ basi tarsique rufa, hi apice picei; profemora et protibiæ pallidiora. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. β.—*Fem.* antennæ articulis 2^o. ad 6^{um}. piceis.

August; on grass in fields; near London.

Sp. 21. Plat. Trebius. Mas et Fem. *Ater, antennæ piceæ, pedes rufi, metapedes piceo cingulati, alæ fuscæ.*

Mas.—*Ater*, nitens, lævis, parce pubescens: caput subtilissime squameum: oculi ocellique nigro-picei: antennæ rufo-piceæ, corporis dimidio multo longiores; articulus 1^{us}. rufus; 7^{us}. et sequentes picei: metathorax et petiolus dense albo-hirta: abdomen glabrum: pedes rufi; coxæ nigro-piceæ; metapedum femora et tibiæ apice picea; tarsi pallidiores, apice rufo-picei: alæ fuscæ; squamulæ piceæ.

Fem.—*Mari* similis: antennæ et pedes pallidiora. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Found near London.

12. *Mas* et *Fem.*—*Mari* antennæ subclavatæ; articuli 7^o. ad 10^{um}. lati: *fem.* antennæ clavatæ; articuli ultimi latiores approximati: cætera ut 1^o.

Sp. 22. Plat. scutellaris. Mas et Fem. *Præcedentibus similis scutello brevior, ater, antennæ basi pedesque pallida, metafemora picea.*

Platygaster scutellaris. *Nees ab Essenbeck Hym. Ich. affn. Monogr. II. 309. 18.*

Ater, nitens, lævis, parce pubescens: oculi nigro-picei: antennæ corporis dimidio paullo longiores; articuli 1^{us}. apice 2^{us}. que basi supra fuscæ; 7^{us}. et sequentes ad 10^{um}. nigro-picei: thorax ovatus: scutellum, metathorax abdominisque segmentum 1^{um}. pilis albis dense hirta: abdomen glabrum, vix petiolatum, thorace latius vix longius: pedes fulvi; coxæ, meso- et metafemora

picea; metatibiæ apice fuscæ; tarsi flavi apice fuscî: alæ limpidae; squamulæ piceæ. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—*Fem.* mesofemora fulva.

Found on willows at Holywood, in Ireland, by Mr. Haliday.

††† *Scutellum brevius, vix acuminatum, abdomen non attingens.*

13. *Mas.*—Antennæ filiformes; articulus 2^{us}. cyathiformis; 3^{us}. 5^{us}. et 6^{us}. minimi; 4^{us}. magnus, 3^o. approximatus; 7^{us}. et sequentes lati, fere rotundi; 10^{us}. acuminatus, 9^o. longior: thorax longi-ovatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. bene determinata: abdomen thorace longius; segmenta 3^o. ad 6^{um}. brevia subæqualia.

Sp. 23. Plat. Leptines. *Mas. Ater, antennæ pedesque picea, tarsi rufi, alæ fuscæ.*

Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei: antennæ pallide piceæ, corporis dimidii longitudine; articulus 1^{us}. basi subtusque rufus: thorax angustus; scutellum apice, metathorax et abdomen basi utrinque dense albo-pilosa: abdomen longi-ovatum, glabrum; segmentum 1^{um}. latum: pedes picei; coxæ nigrae; meso- et metapedum femora et tibiæ basi rufa; profemora et protibiæ rufo-picea, subtus pallidiora; tarsi pallide rufi, apice rufo-picei; ungues et pulvilli fuscî: alæ fuscæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

July; on grass in fields; near London.

Sp. 24. Plat. Larides. *Mas. Præcedente crassior; alæ latiores, pallidiores.*

Ater, nitens, lævis, parce pubescens: caput subtilissime punctatum: oculi ocellique nigro-picei: antennæ nigro-piceæ, corporis dimidio paullo longiores; articuli 1^o. ad 6^{um}. picei, subtus rufi: abdomen longi-ovatum, glabrum; segmentum 1^{um}. et metathorax dense albo-hirta: propedes omnino rufi; meso- et metapedes picei; trochanteres femora et tibiæ basi, tarsique nisi ad apices flava: alæ sublimpidae; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Var. β.—Pedes omnes picei; tarsi, tibiæ basi et propedum trochanteres flava.

July; on grass in fields; near London.

14. *Mas*.—Antennæ filiformes; articulus 2^{us}. cyathiformis; 3^{us}. parvus; 4^{us}. magnus, 3^o. approximatus; 5^{us}. et 6^{us}. mediocres; 7^{us}. et sequentes paullo majores, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. bene determinata: abdomen spathuliforme, thorace longius; segmentum 2^{um}. ejus plus dimidium occupans, basi utrinque impressum.

Fem.—Antennæ subclavatæ; articulus 2^{us}. longi-cyathiformis; 3^{us}. et 4^{us}. mediocres, æquales; 5^{us}. et 6^{us}. paullo minores; sequentes majores; 9^{us}. et 10^{us}. approximati, hic apice rotundus.

Sp. 25. Plat. Nereus. *Mas* et *Fem.* *Ater*, antennæ piceæ, abdominis margo pedesque rufi, alæ fuscæ.

Ater, nitens, lævis, parce pubescens: caput subtilissime squameum: oculi ocellique nigro-picei: *mari* antennæ rufo-piceæ, corporis dimidio multo longiores; articulus 1^{us}. rufus, apice piceus; 3^{us}. 4^{us}. et 5^{us}. rufi: *fem.* antennæ piceæ, breviores, crassiores, subtus pallidiores; articulus 1^{us}. omnino 2^{us}. que apice rufi: scutellum apice et subtus, metathorax abdominisque segmentum 1^{um}. utrinque albo-pilosa: abdomen læve; acies rufa: segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes læte rufi; coxæ piceæ; tarsi pallide rufi; ungues fuscæ: alæ obscure fuscæ, latæ; squanulæ rufo-piceæ. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, femora et tibiæ obscure rufa: antennæ articulis 4^o. et 5^o. rufo-piceis.

Var. γ.—*Mas*, antennæ piceæ; articulus 1^{us}. basi subtusque rufus: coxæ nigræ; femora tibiæque apice supra, tarsi apice, ungues et pulvilli picea.

July; on grass in woods; near London. September; near Linton, North Devonshire.

Sp. 26. Plat. Tritici. (Haliday, Curtis' Brit. Ent. 309.) *Mas* et *Fem.* *Præcedentis statura*, alæ paullo limpidiores et angustiores.

Mas.—*Ater*, nitens, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ piceæ, corpore thoraceque paullo longiores; articuli 1^{us}. et 2^{us}. rufi: scutellum apice pubescens, nonnunquam fuscum: metathorax abdominisque segmentum 1^{um}. scabra, obscura, albo-pilosa: abdomen nitens, læve, thorace paullo longius; segmentum 1^{um}. obsolete striatum; 2^{um}. glabrum, basi

utrinque foveolatum; 3^{um}. et sequentia albo-hirsuta: pedes rufi; coxæ nigræ; tarsi pallide rufi, apice picei; ungues et pulvilli concolores: alæ fuscæ; metalæ pallidiores; squamulæ rufæ.

Fem.—Antennæ nigro-piceæ: femora picea: alæ angustiores. (Corp. long. lin. $\frac{5}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, mesofemora et mesotibiæ apice picea.

Var. γ.—*Mas*, antennæ articulis 1^o. ad 4^{um}. rufis.

Var. δ.—*Mas*, antennæ piceæ; articuli 1^{us}. subtus 2^{us}. que apice rufi.

Var. ε.—*Mas*, metafemora et metatibiæ apice picea.

Var. ζ.—*Mas* et *Fem.* pedes omnino rufi.

Var. η.—*Fem.* antennæ articulo 1^o. rufo: femora basi rufa.

Var. θ.—*Fem.* *Var. η*, similis: pedes rufi; coxæ et tarsi apice picea; metafemora apice piceo-rufa.

Var. ι.—*Fem.* antennæ articulo 1^o. rufo, apice supra piceo.

Found by Mr. Haliday on *Cerealia* and willows in England and Ireland. March to May, and October; on grass; near London. June; New Forest, Hampshire. September; Cumberland; New Lanark, Scotland.

Sp. 27. Plat. Roboris. (Haliday, MSS.) *Mas* et *Fem.* *Præcedenti simillimus, at validior.*

Mas.—Ater, nitens, lævis, parce pubescens: oculi nigro-picei: antennæ piceæ, corporis dimidio multo longiores; articulus 1^{us}. læte rufus; 3^{us}. et 4^{us}. obscure rufi: scutellum pubescens: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, thorace multo longius; segmentum 2^{um}. glabrum; sequentia brevia, subæqualia: pedes rufi; coxæ nigræ; metafemora, metatibiæ et tarsi apice picea; mesotibiæ apice rufo-piceæ: alæ fuscæ; metalæ pallidiores; squamulæ rufo-piceæ.

Fem.—Antennæ piceæ; articulus 1^{us}. rufus, apice supra piceus; 7^{us}. et sequentes nigro-picei: mesotibiæ omnino rufæ. (Corp. long. lin. $\frac{4}{5}$; alar. lin. $1\frac{1}{3}$.)

Var. β.—*Mas* et *Fem.* femora et tibiæ omnino rufa.

Found in Ireland, by Mr. Haliday.

Sp. 28. Plat. Furius. *Mas* et *Fem.* *P. Tritici brevior, alæ obtusiores.*

Mas.—Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei: antennæ rufo-piceæ, capite thoraceque multo longiores;

articuli 1^o. ad 3^{um}. rufi: scutellum pubescens, apice piceum: metathorax et abdomen basi utrinque albo-pilosa, ille scaber obscurus: abdomen ovatum; segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes rufi; coxæ piceæ; meso- et metapedum femora tibiæque apice, ungues et pulvilli picea: alæ subfuscae; squamulæ piceæ.

Fem.—Antennæ nigræ, capite thoraceque paullo longiores; articuli 1^{us}. basi 2^{us}. que apice fuscæ: coxæ nigræ. (Corp. long. lin. $\frac{2}{5}$ — $\frac{3}{4}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—*Mas*, antennæ articulo 1^o. rufo, apice supra piceo: femora et tibiæ omnino rufa.

Var. γ.—*Mas*, mesofemora omnino rufa.

Var. δ.—*Mas*, antennæ nigro-piceæ; articulus 1^{us}. basi rufus.

Var. ε.—*Mas*, *Var. δ* similis: antennæ articulo 1^o. subtus rufo: mesotibiæ omnino rufæ.

Var. ζ.—*Mas*, antennæ piceæ; articulus 1^{us}. rufus: mesopedes rufi; metatarsi rufo-picei.

Var. η.—*Fem.* profemora apice picea.

Var. θ.—*Fem.* meso- et metapedum femora et tibiæ apice nigro-picea.

July and August; near London. September; Isle of Wight. Penzance, Cornwall. Found in Ireland, by Mr. Haliday.

Sp. 29. *Plat. scelionoides*, Haliday, MSS. *Fem. P. Furio gracilior, alæ angustiores.*

Ater, nitens, lævis, parce pubescens; oculi nigro-picei: antennæ piceæ, corporis dimidio paullo longiores; articulus 1^{us}. rufo-piceus; 2^{us}. apice flavus: scutellum, metathorax abdominisque segmentum 1^{um}. pubescentia: abdomen longi-ovatum, thorace dimidio longius; segmentum 2^{um}. glabrum; sequentia brevia, subæqualia: oviductus flavus: pedes rufi; coxæ piceæ; metafemora et tarsi apice rufo-picea: proalæ subfuscae; metalæ fere limpidæ: squamulæ obscure rufæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Var. β.—Abdominis segmentum 1^{um}. et acies rufo-picea.

Found in Ireland, by Mr. Haliday.

Sp. 30. *Plat. Belus. Fem. Præcedente brevior, antennæ nigræ.*

Ater, nitens, lævis, parce pubescens: oculi nigro-picei: antennæ nigræ, corporis dimidio paullo longiores: scutellum, metathorax

abdominisque segmentum 1^{um}. pubescentia; abdomen longi-ovatum; segmentum 2^{um}. glabrum; sequentia brevia: pedes picei; coxæ et femora apice nigra; tibiæ basi et tarsi obscure rufa, hi apice picei: alæ fuscæ, angustæ; metalæ sublimpidæ; squamulæ nigrae. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{4}{3}$.)

Var. β.—Antennis articuli 1^{us}. basi 2^{us}. que apice picei.

Found rarely at Holywood, in Ireland, by Mr. Haliday.

Sp. 31. Plat. filicornis. (Haliday, Curtis' Brit. Ent. 309.)

Mas. P. Furio *similis*, *antennæ longiores*.

Ater, fere lævis, parum nitens, parce hirtus: oculi nigro-picei: antennæ fuscæ, corpore paullo breviores; articulus 1^{us}. flavus; 6^{us}. et sequentes ad 10^{um}. longi, lineares: thorax ovatus; scutellum apice piceum: abdomen nitens, læve, glabrum, thoracis longitudine; segmentum 1^{um}. scabrum, hirtum: pedes flavi; metacoxæ, meso- et metatibiæ tarsi que omnes apice pallide picea: alæ sublimpidæ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Found by Mr. Haliday, at Holywood, in Ireland.

Sp. 32. Plat. Crates. Mas. P. scelionoide *similis*, *alæ angustiores obscuriores*.

Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei: antennæ obscure piceæ, capite thoraceque longiores; articulus 1^{us}. basi rufus: metathorax abdominisque segmentum 1^{um}. obscura, pubescentia; segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes obscure rufi; femora et tibiæ basi pallidiora; coxæ piceæ; tarsi pallide rufi, apice obscuriores: alæ fuscæ angustæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

September; Isle of Wight.

Sp. 33. Plat. Otreus. Mas et Fem. *Alæ quam*. P. Furio *longiores obscuriores*.

Mas.—Ater, nitens, subtilissime punctatus, parce pubescens: oculi ocellique nigro-picei: antennæ piceæ, corpore vix breviores; articulus 1^{us}. rufus, apice piceus: scutellum apice, metathorax abdominisque segmentum 1^{um}. utrinque pilosa: segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes rufi; coxæ nigrae; metafemora et metatibiæ apice picea; tarsi pallide rufi, apice picei: alæ fuscæ; squamulæ rufo-piceæ.

Fem.—Antennæ breviores; articulus 1^{us}. rufo-piceus: pedes rufi. (Corp. long. lin. $\frac{2}{3}$ —1; alar. lin. 1—1 $\frac{1}{3}$.)

Var. β.—*Mas*, antennæ obscure piceæ; articulus 1^{us}. basi rufus; 2^{us}. apice 3^{us}. que pallide fusci: meso- et metapedum femora et tibiæ picea, basi rufa.

Var. γ.—*Mas*, antennæ articulo 1^o. piceo, basi rufo.

Var. δ.—*Mas*, antennæ nigro-piceæ; articulus 1^{us}. fuscus, subtus rufus; 2^{us}. apice rufus.

Var. ε.—*Mas*, *Var. γ*, similis: metatarsi supra picei.

Var. ζ.—*Mas*, *Var. ε*, similis: pro- et mesopedum femora et tibiæ apice picea.

Var. η.—*Mas*, antennæ rufo-piceæ; articulus 1^{us}. et pedes rufi.

Var. θ.—*Mas*, antennæ rufo-piceæ.

Var. ι.—*Fem.* metafemora et metatibiæ apice picea.

Var. κ.—*Fem.* mesofemora apice obscuriora.

Var. λ.—*Fem.* antennis articulus 1^{us}. omnino 2^{us}. que apice rufi: pedes rufi; ungues picei: alæ basi pallidiores et fusco vittatae.

Var. μ.—*Fem.* immatura? abdominis segmentum 1^{um}. piceum: pedes omnino læte rufi.

Var. ν.—*Fem.* antennæ articulo 1^o. nigro-piceo, basi rufo.

August to October; on grass in fields; near London. September; Isle of Wight. New Lanark, Scotland. Found in Ireland, by Mr. Haliday.

Sp. 34. Plat. Prorsa. *Mas* et *Fem.* *Ater*, antennæ fuscæ aut piceæ quam *P. filicorni* breviores, pedes plerunque flavi, alæ sublimpidæ.

Ater, nitens, lævis, parce pubescens: oculi ocellique nigro-picei: os piceum: antennæ fuscæ; articulus 1^{us}. *fem.* 2^{us}. quoque flavi: scutellum apice, metathorax abdominisque segmentum 1^{um}. pubescentia, obscura; segmentum 2^{um}. glabrum; 3^{um}. et sequentia parce albo-hirta: pedes læte flavi; ungues fusci: alæ sublimpidæ; squamulæ rufæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{4}{5}$.)

Var. β.—*Mas* et *Fem.* coxæ et metapedum femora tibiæque apice ferruginea.

Var. γ.—*Mas*, antennæ articulis 1^o. et 2^o. fuscis; hic apice, ille basi subtusque flavi.

Var. δ.—*Mas*, abdomen utrinque rufo marginatum.

Var. ε.—Fem. Var. γ, similis: pedes ferrugini; trochanteres, genua et tarsi flava.

Var. ζ.—Fem. antennæ nigro-piceæ; articuli 1^{us}. et 2^{us}. pallidiores: pedes picei; trochanteres, genua et tarsi ferruginea.

May to September; on grass in woods; near London. Isle of Wight; New Forest, Hampshire. New Lanark, Scotland.

Sp. 35. Plat. Abas. Mas et Fem. *Piceus, præcedente gracilior.*

Piceus, angustus, nitens, lævis, parce pubescens: caput nigropiceum: oculi ocellique nigro-picei: antennæ piceæ, corpore breviores; articuli 1^{us}. et 2^{us}. rufi, hic basi et ille apice rufo-picei: scutellum dense pilosum, apice pallidius: metathorax abdominisque segmentum 1^{um}. pubescentia, obscura: abdomen nigropiceum; segmentum 2^{um}. glabrum: pedes rufi; ungues picei: alæ fusæ, longæ, ciliatæ; squamulæ rufæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Mas, antennæ fulvæ; articulus 1^{us}. flavus: thorax subtus et utrinque pallidior: metathorax abdominisque segmentum 1^{um}. pallide picea.

Var. γ.—Mas, antennæ articulo 1^o. apice supra piceo.

Var. δ.—Mas, alæ subfusæ.

Var. ε.—Mas, antennæ articulis 1^o. ad 4^{um}. rufis: metathorax abdominisque segmentum 1^{um}. rufa.

Var. γ.—Fem. Var. β, similis: antennæ piceæ; articulus 1^{us}. basi et subtus flavus: metapedum femora et tibiæ apice picea.

Var. η.—Fem. antennæ articulis 1^o. et 2^o. flavis: pedes flavi.

Var. θ.—Fem. antennæ articulis 3^o. ad 6^{um}. rufis.

July and August; on grass in woods; near London. New Lanark, Scotland.

15. *Mas.*—Antennæ filiformes; articulus 2^{us}. longi-cyathiformis; 3^{us}. mediocris; 4^{us}. magnus, 3^o. approximatus; 5^{us}. et 6^{us}. cyathiformes, hic paullo latior; 7^{us}. et sequentes adhuc majores, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ: metathorax abdominisque segmentum 1^{um}. bene determinata: abdomen spathuliforme, thorace longius; segmentum 2^{um}. ejus plus dimidium occupans, basi scite sulcatum et utrinque impressum.

Fem.—Antennæ subclavatæ ; articuli 3^{us}. et 4^{us}. angusti, æquales ; 5^{us}. paullo brevior ; 6^{us}. latior ; 7^{us}. et sequentes adhuc latiores, æquales ; 10^{us}. conicus, 9^o. longior.

Sp. 36. Plat. Pisis. Mas et Fem. *Ater, antennæ piceæ aut rufæ, pedes rufi-piceo cingulati, alæ fuscæ.*

Platygaster nodicornis? Nees ab Essenbeck, *Hym. Ich. Monogr.* II. 299. 2.

Mas.—*Ater*, parum nitens, subtilissime punctatus, pubescens : mandibulæ rufæ : oculi ocellique nigro-picei : antennæ piceæ, corpore breviores ; articulus 1^{us}. rufus : scutellum apice, metathorax et abdomen basi utrinque dense pilosa : abdomen nitens, læve, glabrum ; segmentum 1^{um}. sulcatum ; 3^{um}. et sequentia parce albo-hirta : pedes rufi ; coxæ et femora basi nigra ; metafemora, metatibiæ apice, tarsi apice, metatarsi basi, ungues et pulvilli picea : alæ fuscæ, basi limpidae, *mari* latiores ; proalæ basi fusco vittatæ ; squamulæ rufæ.

Fem.—*Mari* similis : antennæ breviores : alæ angustiores. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, antennæ articulo 2^o. apice subtusque rufo.

Var. γ.—*Mas*, antennæ omnino rufæ.

Var. δ.—*Mas*, antennæ apice nigro-piceæ.

Var. ε.—*Mas*, pedes rufi ; coxæ nigrae ; metatibiæ apice et tarsi piceo-rufa.

May and June ; on grass in woods ; near London.

Sp. 37. Plat. Remulus. Mas et Fem. *Ater, præcedente brevior, antennæ nigrae, pedes nigro-picei, alæ fuscæ.*

Mas.—*Ater*, nitens, fere lævis, pubescens : caput subtilissime punctatum, obscurum : oculi ocellique nigro-picei : mandibulæ rufæ : antennæ nigrae ; corpore multo breviores ; articulus 2^{us}. apice fuscus : scutellum apice dense pubescens : metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilosa : abdomen læve, glabrum, segmentum 3^{um}. et sequentia parce albo-hirta : pedes nigri ; protibiæ et protarsi rufa ; mesotibiæ, meso- et metatarsi picea ; metatibiæ nigro-piceæ : alæ fuscæ, basi pallidiores et fusco vittatæ ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. 1— $1\frac{1}{4}$.)

Fem.—*Mari* similis : antennæ paullo breviores.

Var. β.—*Mas*, meso- et metatibiæ nigrae.

Var. γ.—*Mas*, propedes tibiis tarsisque piceis, genubus rufis.

Var. δ.—*Mas*, antennæ apice supra nigro-piceæ, subtus piceæ.

Var. ε.—*Fem.* antennæ piceæ; articulus 1^{us}. rufus.

June; on grass in woods; near London.

Sp. 38. Plat. Didas. *Mas et Fem. Præcedenti similis sed longior, antennæ graciliores, alæ latiores et longiores.*

Mas.—Ater, nitens, fere lævis, pubescens: caput subtilissime punctatum, obscurum: oculi ocellique nigro-picei: antennæ nigro-piceæ; corpore breviores; articulus 1^{us}. rufus: scutellum apice dense pubescens: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque albo-pilosa: abdomen læve, glabrum; segmentum 3^{um}. et sequentia parce albo-hirta: pedes nigro-picei; propedum genua, tibiæ tarsique rufa: alæ fuscæ, basi pallidiores; squamulæ rufo-piceæ.

Fem.—*Mari* similis: antennæ breviores, nigræ; articulus 1^{us}. rufus. (Corp. long. lin. 1; alar. lin. 1½.)

June; on grass in woods; near London.

†††† *Scutellum obtusum, vix productum.*

16. *Mas.*—Antennæ filiformes, corporis dimidio longiores; articulus 2^{us}. cyathiformis; 3^{us}. parvus; 4^{us}. magnus, 3^o. approximatus; 5^{us}. et sequentes longi, lineares, subæquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ: metathorax abdominisque segmentum 1^{um}. bene determinata: abdomen spathuliforme, thorace longius; segmentum 2^{um}. ejus plus dimidium occupans, scitissime sulcatum.

Fem.—Antennæ extrorsum crassiores, breviores; articuli 3^{us}. et 4^{us}. longi-cyathiformes, æquales; 5^{us}. et sequentes quam *mari* breviores.

Sp. 39. Plat. ruficornis. *Mas et Fem. Ater, antennæ piceæ (mas) aut nigræ (fem.), pedes rufi, femora apice picea, alæ subfuscæ.*

Scelio ruficornis . . *Latreille Hist. Nat. des Crust. et des Ins. XIII. 227.*

Platygaster ruficornis. *Latr. Gen. Crust. et Ins. IV. 32.*

Platygaster grandis . *Nees ab Essenbeck, Hym. Ich. affn. Monogr. II. 300. 4.*

Mas.—Ater, obscurus, subtilissime punctatus, pubescens: oculi ocellique nigro-picei: mandibulæ maxillæ et labium nigra: palpi,

ligula et maxillarum lobi rufa: antennæ piceæ; articulus 1^{us}. rufus: mesothoracis scutum postice et scutellum pilosa: abdomen basi utrinque et subtus pilosum; segmentum 2^{um}. scite sulcatum et apice punctatum, vitta media lævis nitens; 3^{um}. et sequentia albo-hirta, basi lævia nitida: pedes rufi; coxæ nigræ; meso- et metafemora apice basique nigra; tarsi apice, ungues et pulvilli fusci: alæ subfuscæ, basi limpida; proalæ basi fusco vittatæ; squamulæ nigræ.

Fem.—Paullo longior: antennæ nigræ; articuli 1^{us}. 3^{us}. et 4^{us}. rufi: abdominis segmentum 2^{um}. nitens, læve, antice scite sulcatum: trochanteres et mesofemora nigra: metafemora nigro-picea, nitida, basi rufa: alæ fere lucidæ; in proalæ cujusque disco vitta angusta limpida. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 1 $\frac{1}{2}$ —1 $\frac{3}{4}$.)

Var. β.—*Mas*, antennæ nigro-piceæ; articulus 1^{us}. rufus.

Var. γ.—*Mas*, antennæ et pedes omnino picea; propedes obscuriores: alæ obscuræ.

Var. δ.—*Fem.* antennæ nigro-piceæ; articuli 1^o. ad 4^{um}. rufi: pedes rufi.

Var. ε.—*Fem.* antennæ articulis 1^o. ad 4^{um}. obscure rufis: abdominis segmentum 2^{um}. sulcis fere ad medium productis: genua, mesotibiæ et metatarsi nigro-picea.

July; on grass beneath trees; near London. England, Ireland, and Scotland, in marshes, Mr. Haliday.

Sp. 40. Plat. Erato. *Mas. Præcedente brevior et crassior, alæ obscuriores latiores.*

Ater, obscurus, subtilissime punctatus pubescens: oculi ocellique nigro-picei: antennæ rufæ; articulus 2^{us}. fuscus: mesothoracis scutum postice et scutellum pilosa: abdomen basi utrinque et subtus pilosum; segmentum 2^{um}. scite sulcatum et apice punctatum, vitta media nitida lævis; 3^{um}. et sequentia albo-hirta, basi lævia nitida: pedes nigri; propedes, meso- et metatibiæ basi mesotarsisque rufa; metatarsi picei: alæ obscure fuscæ, basi limpida; proalæ basi fusco vittatæ; squamulæ nigræ. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{3}{4}$.)

September; near Keswick, in Cumberland.

Sp. 41. Plat. Matuta. *Mas et Fem. Præcedentibus lævior, nitentior, gracilior, alæ obscure fuscæ angustiores.*

Ater, subnitens, subtilissime punctatus, pubescens: oculi ocellique nigro-picei: antennæ piceæ; articulus 1^{us}. rufus; 3^{us}. et 4^{us}.

rufo-picei : mesothoracis scutum postice, scutellum, metathorax et abdomen basi utrinque pilosa : abdomen nitidum, læve ; segmentum 1^{um}. obscurum, sulcatum ; 2^{um}. scite sulcatum, apex et vitta dorsalis nitida lævia ; 3^{um}. et sequentia albo-hirta : pedes rufi ; coxæ nigræ ; trochanteres, tarsi apice, ungues et pulvilli picei : alæ obscure fuscæ, angustæ, basi sublimpidæ ; squamulæ nigræ. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$.)

September ; near Keswick, Cumberland.

Sp. 42. Plat. Cotta. Fem. *Præcedentis statura, alæ sub-fuscæ.*

Ater, obscurus, subtilissime punctatus, pubescens : oculi ocellique nigro-picei : antennæ nigræ ; articuli 1^o. ad 4^{um}. rufo-picei : mesothoracis scutum postice, scutellum, metathorax et abdomen basi utrinque pilosa : abdomen læve, nitidum ; segmentum 1^{um}. omnino 2^{um}. que basi subtilissime striata ; 3^{um}. et sequentia albo-hirta, apice punctata : pedes nigri ; propedum femora apice, tibiæ et tarsi rufa ; trochanteres, mesotibiæ, meso- et metatarsi nigropicea ; ungues et pulvilli fuscæ : alæ subfuscæ, angustæ ; proalæ basi lucidiores et fusco vittatæ ; squamulæ nigræ. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 1 $\frac{5}{4}$.)

Var. β.—Antennæ articulis 1^o. ad 4^{um}. rufis.

June ; New Forest, Hampshire.

17. *Mas.*—Præcedenti similis : mesothoracis parapsidum suturæ vix conspicuæ : abdominis segmentum 2^{um}. læve.

Sp. 43. Plat. Rutubus. *Mas. Ater, antennæ piccæ, pedes rufi, alæ fuscæ perangustæ.*

Ater, nitens, lævis, longus, angustus, parce et breviter pubescens, fere cylindricus : oculi ocellique nigro-picei : antennæ piccæ, capite thoraceque longiores ; articuli 1^{us}. omnino, 2^{us}. 3^{us}. que subtus rufi ; 4^{us}. minime dilatatus, 5ⁱ. magnitudine : thorax longi-ovatus : metathorax abdominisque segmentum 1^{um}. scabra, obscura, ille utrinque productus acutus : abdomen fusiforme, thorace multo longius ; segmentum 2^{um}. glabrum, thoracis longitudine, basi scite sulcatum, utrinque rufo marginatum ; sequentia brevia, subæqualia : pedes rufi ; tarsi pallidiores ; ungues et pulvilli basi fuscæ : alæ obscure fuscæ, perangustæ ; squamulæ piccæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

June ; Windsor Forest.

** *Scutellum tuberculo simile, non productum.*

† *Fem. abdominis segmenta postica attenuata.*

18. *Fem.*—Antennæ extrorsum crassiores, corporis dimidio breviores; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. et sequentes mediocres, breves, æquales; 10^{us}. paullo longior, conoides, 9^o. approximatus: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ; scutellum minime convexum: metathorax brevissimus: abdomen teliforme, thorace duplicato multo longius; segmenta 1^o. ad 3^{um}. sequentibus paullo breviora; 1^{um}. bene determinatum; 2^{um}. et 3^{um}. ovatum fingentia, hoc 1ⁱ. longitudine, illum thorace paullo brevius; 4^{um}. basi paullo latius, 3^o. fere duplo longius; 5^{um}. lineare, 4^o. multo longius; 6^{um}. acuminatum, 4ⁱ. longitudine.

Sp. 44. Plat. ensifer. *Fem. Ater, pedes rufo-fusci, alæ albæ.*
Epimeces ensifer. . Westwood, Loudon's Mag. Nat. Hist.
 VI. 421. fig. g.^a

Ater, nitens, lævis, fere glaber: caput subtilissime punctatum: oculi ocellique nigro-picei: antennæ nigrae; articuli 1^{us}. basi 2^{us}. que apice fusci: abdomen scitissime sulcatum; segmentum 1^{um}. scabrum, obscurum: pedes obscure picei; coxæ nigrae; trochanteres rufo-picei; tibiæ piceæ, apice basique rufæ; protibiæ rufæ, piceo cingulatæ; tarsi rufi, apice picei: alæ albolimpidæ; squamulæ obscure piceæ. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—Femora basi rufo-picea; protibiæ piceæ, basi apice et subtus rufæ.

July; on grass in fields; near London. Found in Ireland, by Mr. Haliday.

19. *Fem.*—Antennæ subclavatæ, capitis thoracisque longitudine; articulus 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. 3^o. approximatus; sequentes 5^o. ad 9^{um}. gradatim latescentes; 10^{us}. brevi-ovatus, 9^o. paullo longior et latior: thorax brevi-ovatus: mesothoracis parapsidum suturæ conspicuæ; scutellum maxime convexum: metathorax brevissimus: abdomen teliforme, thorace triplo longius; segmenta 1^o. ad 3^{um}. sequentibus paullo longiora; 1^{um}. brevissimum; 2^{um}. fusiforme, thorace paullo longius; 3^{um}. 2ⁱ. dimidio

^a Many natural genera are probably comprised in *Platygaster*, but the genus *Epimeces*, referred to above, is founded on error; sexual characters are there regarded as sectional, and *vice versa*. The observation on *Plat. ruficornis* is also erroneous.

brevius ; 4^{um}. 3^o. longius ; 5^{um}. adhuc longius, lineare ; 6^{um}. acuminatum, 3ⁱ. longitudine.

Sp. 45. Plat. Acrisius. Fem. *Ater, præcedente brevior, abdomen basi angustius apice latius, tarsi picei, alæ albæ.*

Ater, obscurus, subtilissime punctatus, fere glaber : caput scite undatim sulcatum : oculi ocellique nigro-picei : antennæ nigrae : abdomen scitissime sulcatum, pilis albis breviter et parce hirtum ; segmentum 1^{um}. scabrum ; 2^{um}. læve, glabrum, nitens, basi sulcatum ; 3^{um}. et sequentia basi et apice nitida glabra : pedes nigri ; profemora apice, tibiæ basi et apice tarsique picea : alæ albo-limpidæ ; squamulæ obscure piceæ. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{8}$.)

Found near London.

20. Fem.—Antennæ clavatæ, corporis dimidio breviores ; articulus 2^{us}. cyathiformis ; 3^{us}. minimus ; 4^{us}. et sequentes ad 9^{um}. latitudine crescentes ; 10^{us}. brevi-conoides, 9^o. vix longior : thorax brevi-ovatus : mesothoracis parapsidum suturæ conspicuæ : scutellum minime convexum : metathorax brevissimus : abdomen teliforme, thorace plus duplo longius ; segmentum 1^{um}. bene determinatum ; 2^{um}. et 3^{um}. ovatum fingentia thoracis longitudine, hoc 1^o. brevius ; 4^{um}. 3^o. duplo longius ; 5^{um}. lineare, 4^o. longius ; 6^{um}. acuminatum, 1ⁱ. longitudine.

Sp. 46. Plat. elongatus. (Haliday, Curtis' Brit. Ent. 309.)

Fem. *Ater, antennæ basi pedesque rufa, alæ fusæ.*

Ater, nitidissimus, lævis, glaber, caput postice et scutellum subtilissime punctata : oculi ocellique nigro-picei : mandibulæ rufæ : antennæ nigro-piceæ, crassæ ; articuli 1^o. ad 3^{um}. rufi : abdominis acies rufus ; segmentum 1^{um}. et metathorax scabra, obscura, utrinque pilosa ; 2^{um}. basi scite sulcatum ; 3^{um}. et sequentia scitissime sulcata basi et apice lævia : pedes omnino rufi ; ungues picei : alæ fusæ ; squamulæ rufæ. (Corp. long. lin. 1 ; alar. lin. 1.)

Var. β.—Antennæ articulis 1^o. et 2^o. supra pallide piceis.

Var. γ.—Antennæ omnino piceæ : meso- et metafemora piceo-rufa.

June and July ; on grass in fields ; near London.

21. *Mas.*—Antennæ filiformes, crassæ, capite thoraceque paullo longiores ; articulus 2^{us}. cyathiformis ; 3^{us}. minimus ; 4^{us}. magnus, 3^o. approximatus ; 5^{us}. et sequentes mediocres, breves, æquales ; 10^{us}. conoides, acuminatus, 9^o. longior : thorax brevi-ovatus :

mesothoracis parapsidum suturæ conspicuæ; scutellum convexum: metathorax brevissimus: abdomen ovatum, thorace longius et angustius; segmentum 1^{um}. bene determinatum; 2^{um}. thorace paullo brevius; sequentia brevia, subæqualia.

Fem.—Antennæ graciles, extrorsum crassiores, capite thoraceque longiores; articulus 3^{us}. minutus; 4^{us}. mediocris; 5^{us}. et 6^{us}. paullo latiores; 7^{us}. et sequentes adhuc latiores, æquales; 10^{us}. ovatus, 9^o. multo longior: abdomen teliforme, thorace triplo longius; segmentum 2^{um}. longi-ovatum, thorace paullo brevius; 3^{um}. 2ⁱ. dimidiati longitudine; sequentia angusta, plana, subincurva; 4^{um}. 3^o. multo longius; 5^{um}. adhuc longius; 6^{um}. brevius, acuminatum.

Sp. 47. *Plat. attenuatus.* (Haliday, Curtis' Brit. Ent. 309.)
Mas et Fem. Ater, fem. abdomen thorace triplo longius, genua et tarsi picea, alæ subfuscæ.

Mas.—*Ater*, subtilissime punctatus, parum nitens, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigrae; articulus 2^{us}. apice fuscus: thorax convexus: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque densius hirta: abdomen læve, nitens; segmentum 2^{um}. glabrum, basi scite sulcatum: oviductus pallide fuscus: pedes nigri; genua et tarsi picea; pro- et mesogenua rufo-picea; protibiæ apice subtus rufæ: proalæ fuscæ, angustæ; metalæ limpidæ; squamulæ nigro-piceæ.

Fem.—Abdominis segmenta 3^o. ad 6^{um}. scitissime sulcata, basi et apice lævia: genua et tarsi nigro-picea, propedibus pallidiora: proalæ subfuscæ. (Corp. long. lin. *mas* $\frac{1}{2}$ — $\frac{2}{3}$, *fem.* 1— $1\frac{1}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β. Mas, propedes rufo-picei; coxæ tarsi que obscuriora.

April and May; on grass in fields; near London.

22. *Fem.*—Antennæ extrorsum crassiores, capite thoraceque longiores; articulus 2^{us}. longi-cyathiformis; 3^{us}. minimus; 4^{us}. 3^o. approximatus; 5^{us}. et 6^{us}. æquales, mediocres; 7^{us}. et sequentes latiores et longiores; 10^{us}. conoides, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ optime determinatæ; scutellum convexum: metathorax abdominisque segmentum 1^{um}. brevia: abdomen teliforme, thorace plus duplo longius; segmenta 2^{um}. et 3^{um}. ovatum fingentia thorace paullo longius, hoc illius trientis longitudine; sequentia plana; 4^{um}. 3^o. duplo longius; 5^{um}. adhuc longius; 6^{um}. acuminatum, 4^o. brevius.

Sp. 48. Plat. Gyge. Fem. *Ater, pedes rufi, femora picea, alæ subfusæ.*

Ater, parum nitens, subtilissime squameus, fere glaber : caput supra profundius excavatum : oculi ocellique nigro-picei : antennæ nigrae, graciles ; articuli 1^{us}. basi et apice 2^{us}. que apice flavi : mesothoracis scutum antice utrinque leviter sulcatum ; scutellum semicirculum fingens : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen nitidum, læve, glabrum ; segmentum 2^{um}. basi scite sulcatum ; sequentia teretia, quasi telum fingentia : pedes rufi ; coxæ nigrae ; trochanteres et femora picea ; profemora et metatibiæ piceo-rufa ; tarsi apice picei : proalæ subfusæ ; metalæ sublimpidæ ; squamulæ piceæ. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—Profemora rufa ; metatarsi picei.

April ; on grass beneath trees ; near London. Found in Ireland, by Mr. Haliday.

23. *Fem.*—Antennæ subclavatae, capite thoraceque paullo longiores ; articulus 2^{us}. longi-cyathiformis ; 3^{us}. minutus ; 4^{us}. mediocris, 3^o. approximatus ; 5^{us}. et 6^{us}. æquales ; 7^{us}. et sequentes majores ; 10^{us}. conoides, 9^o. longior : thorax ovatus : metathorax brevis : abdomen teliforme ; segmentum 1^{um}. sat bene determinatum ; 2^{um}. ovatum, convexum, thorace paullo brevius ; sequentia teretia, plana ; 4^{um}. 3^o. fere duplo longius ; 5^{um}. 4ⁱ. longitudine ; 6^{um}. brevius, acuminatum.

§ *Mesothoracis parapsidum suturæ conspicuæ ; scutellum convexum : abdomen thorace plus duplo longius.*

Sp. 49. Plat. Munitus. Fem. *Ater, abdomen thorace duplicato longius, tarsi nigro-picei, alæ subfusæ.*

Ater, parum nitens, subtilissime punctatus, parce et breviter pubescens : caput posticum transverse sulcatum : oculi ocellique nigro-picei : antennæ nigrae, latæ : thoracis latera læviora, nitidiora : metathorax abdominisque segmentum 1^{um}. scabra : abdomen læve, nitens, glabrum ; segmentum 2^{um}. basi scite sulcatum ; oviductus rufus : pedes nigri ; femora et tibiæ lata ; genua et tarsi nigro-picea ; propedum genua et tarsi picea, tibiæ apice subtus rufæ : alæ subfusæ, sat latæ ; metalæ sublimpidæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. lin. 1— $1\frac{1}{4}$.)

Var. β.—Genua et tarsi picea ; progenua et protarsi rufa, hi apice picei.

Found near London.

Sp. 50. Plat. Tisias. Fem. P. Munito *multo gracilior, alæ angustiores.*

Ater, subtilissime punctatus, fere lævis, parum nitens, pilis nonnullis brevissimis vix conspicuis hirtus: oculi ocellique nigro-picei: antennæ nigræ, graciles; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra; abdomen nitidum, læve, fere glabrum; segmentum 2^{um}. basi scite sulcatum; pedes nigri; genua et tarsi picea; propedum genua, tibiæ apice subtus et tarsi rufo-picea, hi apice obscuriores: alæ subfuscæ, angustæ; metalæ sublimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{1}{2}$ — $\frac{5}{4}$.)

Var. β.—Genua et tarsi rufo-picea; protibiæ et protarsi rufa, hi apice et illæ supra picea.

May; on grass in fields; near London.

§§ *Mesothoracis parapsidum suturæ optime determinatæ; scutellum globosum: abdomen thorace vix duplo longius.*

Sp. 51. Plat. Cyrsilus. Fem. *Ater, tarsi rufo-picei, alæ sublimpidæ.*

Ater, nitens, lævis, parce et breviter pilosus: oculi ocellique nigro-picei: antennæ nigræ, graciles, capite thoraceque longiores; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra: abdomen glabrum; segmentum 2^{um}. basi scite sulcatum: pedes nigri; genua et tarsi picea; propedum genua, tibiæ apice subtus et tarsi rufo-picea, hi apice obscuriores: alæ sublimpidæ; proalæ latæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

May; on grass in fields; near London. Found in Ireland, by Mr. Haliday.

24. Fem.—Antennæ extrorsum crassiores, capite thoraceque multo longiores; articulus 2^{us}. longi-cyathiformis; 3^{us}. minutus; 4^{us}. paullo major; 5^{us}. et 6^{us}. mediocres; 7^{us}. et sequentes longi-ovati, latiores; 10^{us}. acuminatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum globosum: metathorax abdominisque segmentum 1^{um}. brevia: abdomen thorace vix duplo longius, apicem versus sub-incurvum; segmentum 2^{um}. ejus dimidii longitudine, ovatum; 3^{um}. breve; 4^{um}. longius; 5^{um}. adhuc longius; 6^{um}. acuminatum, 4ⁱ. longitudine.

Sp. 52. Plat. Pelias. Fem. *P. Cyrsilo similis, antennæ graciliores, abdomen brevius.*

Ater, parum nitens, subtilissime squameus, pubescens; oculi ocellique nigro-picei: antennæ nigræ, graciles; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra: abdomen nitens, læve, glabrum; basi scite sulcatum; pedes nigri; trochanteres, genua et tarsi nigro-picea; propedum genua, tibiæ apice et tarsi rufo-picea, subtus pallidiora: alæ sublimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Found near London. August; on willows, in Ireland; Mr. Haliday.

25. Fem.—Antennæ subclavatæ, capite thoraceque paullo longiores; articulus 2^{us}. longi-cyathiformis; 3^{us}. et 4^{us}. mediocres, approximati; 5^{us}. et sequentes ad 9^{um}. subrotundi, gradatim latescentes; 10^{us}. ovatus, 9^o. longior et latior: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ; scutellum convexum: metathorax brevis: abdomen fusiforme, convexum, thorace plus duplo longius; segmentum 2^{um}. ejus dimidium occupans; 3^{um}. et 4^{um}. brevia, subæqualia; 5^{um}. et 6^{um}. longiora, plana, quasi trullam fugientia, hoc acuminatum.

Sp. 53. Plat. Vænia. Fem. *Ater, nitens, tarsi rufi, alæ sublimpidæ.*

Ater, nitidissimus, lævis, glaber: oculi ocellique nigro-picei: antennæ nigræ; articulus 2^{us}. apice fuscus: metathorax scaber, utrinque pilis albis hirtus: abdominis segmentum 1^{um}. sulcatum, sat bene determinatum; 2^{um}. longi-ovatum, apice latius: oviductus rufus: pedes nigri; trochanteres picei; tibiæ nigro-piceæ, basi rufæ; tarsi rufi, supra picei, apice obscuriores: alæ sublimpidæ; metalæ limpidæ; squamulæ nigro-piceæ. (Corp. long. lin. 1; alar. lin. $1\frac{1}{4}$.)

May; on grass in fields; near London.

26. Fem.—Antennæ extrorsum crassiores, capitis thoracisque vix longitudine; articulus 2^{us}. cyathiformis; sequentes breves, approximati; 3^{us}. et 4^{us}. vix disjuncti; 5^{us}. et 6^{us}. mediocres; 7^{us}. et sequentes paullo latiores, æquales; 10^{us}. ovatus, 9^o. longior: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ; scutellum parum convexum: metathorax abdominisque segmentum 1^{um}. brevia: abdomen teliforme, thorace duplo longius;

segmentum 3^{um}. 2^o. trientis longitudine; 4^{um}. 3^o. multo longius; 5^{um}. et 6^{um}. 4ⁱ. longitudine, hoc acuminatum.

Sp. 54. Plat. *Cebalus*. Fem. *Ater*, *obscurus*, *protarsi picei*, *alæ albo-limpidæ*.

Ater, *obscurus*, subtilissime punctatus, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, validæ, capitis thoracisque vix longitudine: metathorax abdominisque segmentum 1^{um}. scabra: abdomen nitens, læve, glabrum; segmentum 2^{um}. longi-ovatum, basi scite sulcatum: oviductus flavus, apice fuscus: pedes nigri, validi; tarsi lati; propedum genua, tibiæ apice subtus et tarsi picea: alæ albo-limpidæ; squamulæ nigro-piccæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found near London.

27. *Mas*.—Antennæ filiformes, corpore breviores; articulus 2^{us}. cyathiformis; 3^{us}. minutus; 4^{us}. maximus, 3^o. approximatus; 5^{us}. et sequentes ovati, æquales; 10^{us}. acuminatus, 9^o. longior: thorax ovatus, altus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum globosum: metathorax brevis: abdomen ovatum, thorace vix longius; segmentum 2^{um}. ejus fere totum occupans; 1^{um}. bene determinatum; 3^{um}. et sequentia brevissima.

Fem.—Antennæ extrorsum crassiores, capite thoraceque paullo longiores; articulus 2^{us}. longi-cyathiformis; sequentes ovati; 3^{us}. minutus; 4^{us}. mediocris, 3^o. approximatus; 5^{us}. et 6^{us}. breves; 7^{us}. et sequentes paullo latiores; 10^{us}. ovatus, 9^o. longior: abdomen thorace dimidio longius; segmentum 2^{um}. ejus dimidium vix occupans; 3^{um}. breve; sequentia paullo longiora, 6^{um}. acuminatum.

§ *Mesothoracis parapsidum suturæ conspicuæ*.

Sp. 55. Plat. *Demades*. *Mas* et *Fem*. *Ater*, *tarsi picei*, *alæ fuscæ*.

Ater, parum nitens, subtilissime punctatus, breviter pubescens: caput posticum transverse sulcatum: oculi ocellique nigro picei: antennæ nigræ; articulus 2^{us}. apice fuscus: metathorax scaber: abdomen nitidum, læve, glabrum; segmentum 1^{um}. sulcatum; 2^{um}. longi-ovatum, basi scite sulcatum: oviductus fuscus: pedes nigri; genua et tarsi picea; propedum genua, tibiæ apice subtus et tarsi piceo-rufa: hi apice obscuriores: proalæ fuscæ; metalæ

sublimpidæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{10}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Var. β.—*Mas*, genua et tarsi pallidiora.

Var. γ.—*Fem.* genua et tarsi rufo-picea; progenua et protarsi rufa, hi apice picei.

Var. δ.—*Fem.* genua et tarsi nigro-picea, propedibus pallidiora.

Found near London.

Sp. 56. Plat. Orcus. Fem. *Præcedenti similis, alæ latiores.*

Ater, parum nitens, subtilissime punctatus, dense et breviter pubescens: caput posticum transverse sulcatum: oculi ocellique nigropicei: antennæ nigræ: metathorax scaber: abdomen nitens, læve, glabrum; segmentum 1^{um}. profunde sulcatum; 2^{um}. longiovatum, apice latius, basi ad medium scite sulcatum: pedes nigri, validi; genua et tarsi nigro-picea; propedum genua, tibiæ apice subtus et tarsi pallidiora: alæ obscure fuscæ, apice latæ obtusæ; metalæ subfuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 57. Plat. Chrysippus. Fem. *Abdomen quam præcedentibus longius.*

Ater, obscurus, subtilissime punctatus, breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque paullo longiores; articulus 2^{us}. apice fuscus: mesothoracis parapsidum suturæ optime determinatæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitidum, læve, glabrum, convexum thorace duplicato brevius, apicem versus minime incurvum; segmentum 2^{um}. ejus dimidio paullo brevius, basi scite sulcatum, apice latius; 4^{um}. et sequentia quasi telum fingentia; 6^{um}. 5^o. brevius: oviductus pallide flavus, abdominis dimidio longius: pedes nigri; trochanteres et genua picea; protibiæ apice et tarsi rufo-picea, subtus pallidiora: alæ obscure fuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{6}$.)

May; on grass in fields; near London.

Sp. 58. Plat. Gorge. Mas et Fem. *Ater, pedes rufo-picei, alæ albo-limpidæ.*

Mas.—Ater, parum nitens, subtilissime squameus, breviter pubescens: caput posticum sulcis transversis scite undatum: oculi

ocellique nigro-picei: antennæ nigræ, breves, crassæ, capitis thoracisque longitudine; articuli 1^{us}. basi 2^{us}. que apice fuscæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen longi-ovatum, nitidum, læve, glabrum, thorace paullo longius et angustius, apice rotundum non acuminatum; segmentum 2^{um}. ejus dimidio multo longius, basi scite sulcatum; 3^{um}. et sequentia brevissima: pedes nigri; trochanteres, genua et tarsi nigro-picea; propedes pallidiores, tibiæ apice subtus et tarsi rufa, hi apice fuscæ: alæ albo-limpidæ, breves; squamulæ piceæ.

Fem.—*Mari* similis: abdomen thorace dimidio longius, postice attenuatum et acuminatum; segmentum 2^{um}. ejus dimidio paullo brevius, apice latius; 3^{um}. 2ⁱ. quintæ partis longitudine; 4^{um}. 3^o. longius; 5^{um}. 4^o. multo longius; 6^{um}. 4ⁱ. longitudine, acuminatum: pedes nigro-picei; trochanteres, genua et tibiæ apice rufopicea; tarsi rufi, apice picei. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Found near London.

§§ *Mesothoracis parapsidum suturæ vix conspicuæ.*

Sp. 59. Plat. Iolas. *Fem. Ater, tarsi nigro-picei, alæ limpidæ.*

Ater, parum nitens, fere lævis, breviter pubescens: oculi ocellique picei: antennæ nigræ, graciles, capite thoraceque multo longiores; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitidum, læve, glabrum, thorace multo longius: segmentum 2^{um}. ovatum, abdominis fere dimidium occupans, basi scite sulcatum; 3^{um}. 2ⁱ. quintæ partis longitudine; 4^{um}. paullo longius; 5^{um}. adhuc longius; 6^{um}. 5ⁱ. longitudine, acuminatum: pedes nigri; genua et tarsi nigro-picea: alæ limpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{2}{3}$.)

Found near London.

Sp. 60. Plat. Galenus. *Fem. Præcedente minor, abdomen plus attenuatum.*

Ater, nitens, lævis, glaber, minimus: oculi nigro-picei: antennæ nigræ, subclavatæ, corporis dimidio multo longiores: thorax brevi-ovatus; segmenta vix conspicua: mesothoracis parapsides scuto in unum confusæ: pro- et metathorax brevissima: abdomen longi-ovatum, subarcuatum, postice attenuatum acuminatum, thorace dimidio longius; segmentum 1^{um}. brevissimum; 2^{um}.

maximum; 3^{um}. et sequentia brevia, subæqualia: pedes nigri; genua et tarsi obscure picea: alæ limpidae, parvæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Found in Ireland, by Mr. Haliday.

†† *Mari et Fem. abdomen ovatum aut longi-ovatum, non attenuatum.*

28. *Mas.*—Antennæ moniliformes, nodosæ, corpore paullo breviores; articulus 2^{us}. brevi-cyathiformis; 3^{us}. minimus; 4^{us}. maximus, dilatatus, 3^o. approximatus; 5^{us}. et sequentes ad 9^{um}. æquales, sub-cyathiformes; 10^{us}. angusti-ovatus, acuminatus, 9^o. longior: thorax ovatus, convexus: mesothoracis parapsidum suturæ conspicuæ; scutellum globosum, extans: metathorax brevis, utrinque apice dentatus: abdomen spathuliforme, thorace paullo longius; segmentum 1^{um}. bene determinatum; 2^{um}. maximum; sequentia brevia.

Fem.—Antennæ moniliformes, extrorsum crassiores, corpore multo breviores; articulus 2^{us}. cyathiformis; 3^{us}. parvus; 4^{us}. mediocris, cyathiformis, 3^o. approximatus; 5^{us}. et sequentes subæquales; 10^{us}. ovatus, 9^o. paullo longior et angustior: abdomen longi-ovatum, thorace longius et paullo latius.

§ *Thorax punctatus.*

‡ *Mesothoracis parapsidum suturæ conspicuæ.*

Sp. 61. Plat. Otanes. *Mas et Fem. Ater, propedes rufi, alæ albo-limpidae.*

Mas.—*Ater*, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior: caput postice nitens, fere læve: oculi ocellique nigro-picei: os piceum: antennæ nigræ; articulus 1^{us}. basi et apice, 2^{us}. apice 3^{us}. que basi fusci: metathorax abdominisque segmentum 1^{um}. scabra, utrinque pilis albis vestita: abdomen nitens, læve, 2^{um}. basi ultra medium scite sulcatum: pedes nigri; tibiæ basi et trochanteres picea; spinæ tibiales et propedes rufa, horum coxæ nigræ, femora et tibiæ supra piceo vittata, tarsi obscure rufi apice picei: alæ albo-limpidae; squamulæ nigro-piceæ.

Fem.—Abdomen latius: antennæ graciliores: meso- et metapedes omnino nigri: alarum margines obscuriores. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{3}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, tibiæ basi apiceque rufo-piceæ; propedum femora et tibiæ omnino rufa.

Var. γ.—*Mas*, tibiæ basi rufæ; tarsi picei.

Found near London.

Sp. 62. Plat. Pleuron. Mas et Fem. *Præcedente minor brevior crassior, antennæ quoque breviores crassiores.*

Mas.—Ater, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior: oculi ocellique nigro-picei: os piceum: antennæ nigræ; articuli 1^{us}. et 3^{us}. basi 2^{us}. que apice fuscæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis vestita: abdomen nitens, læve; segmentum 2^{um}. basi ultra medium scite sulcatum: pedes nigri; tibiæ basi rufo-piceæ; tarsi nigro-picei; propedes picei, coxis nigris, femoribus tibiisque subtus rufis: alæ albo-limpidæ; squamulæ piceæ.

Fem.—*Mari* similis: antennæ nigræ, graciliores; articulus 2^{us}. apice pallidus: oviductus fuscus: protibiæ omnino rufæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ — $1\frac{1}{4}$.)

Var. β.—*Mas*, sulci abdominales segmenti 2ⁱ. medium non attingentes.

Var. γ.—*Mas*, propedum tibiæ tarsique rufa; illæ supra medio piceæ.

April to June; on grass in fields; near London.

Sp. 63. Plat. Sonchis. Mas et Fem. *Præcedenti similis, lævior nitidior, alæ subfuscæ.*

Mas.—Ater, parum nitens, fere glaber: caput punctatum, obscurum: oculi ocellique nigro-picei: antennæ nigræ, crassæ: thorax subtilissime punctatus, subtus et utrinque lævis, nitidus: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis vestita: abdomen nitens, læve; segmentum 2^{um}. basi fere ad medium scite sulcatum: pedes nigri; genera et tarsi nigro-picea; propedes picei coxis nigris, femoribus apice tibiisque subtus rufis: alæ subfuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{4}{5}$ —1.)

Fem.—*Mari* similis: antennæ graciliores et paullo breviores.

Var. β.—*Mas* et *Fem.* genua et tarsi rufo-picea, propedibus rufa.

April to July; on grass in fields; near London.

Sp. 64. Plat. Taras. Mas et Fem. *Præcedentis statura, alæ ampliores obscuriores.*

Mas.—Ater, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior: caput postice nitens, fere læve: oculi ocellique nigro-picei: antennæ nigræ; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis dense hirta: abdomen nitens, læve; segmentum 2^{um}. basi ultra medium scite sulcatum: pedes nigri; tarsi

nigro-picei ; spinæ tibiales rufæ ; propedum femora apice et tibiæ subtus rufo-picea : alæ subfuscæ, basi pallidiores ; metalæ sublimpidæ ; squamulæ nigro-piceæ.

Fem.—*Mari* similis : antennæ breviores : alæ minores. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{6}$; alar. lin. $1\frac{1}{3}$ — $1\frac{2}{3}$.)

Var. β.—*Mas* et *Fem.* profemora et protibiæ picea, subtus rufa.

Var. γ.—*Mas* et *Fem.* tibiæ basi rufo-piceæ ; propedes rufi coxis nigris, femoribus et tibiis supra piceo vittatis, tarsis piceis.

Var. δ.—*Mas* et *Fem.* sulci abdominales segmenti 2ⁱ. medium vix attingentes.

Var. ε.—*Fem.* Profemora apice et protibiæ subtus nigro-picea.

Var. ζ.—*Fem.* tibiæ basi et tarsi rufa, hi apice picei ; propedes rufi coxis nigris, femoribus basi tarsisque apice piceis.

Var. η.—*Fem.* tarsi picei ; propedum femora et tibiæ rufa supra piceo vittata, tarsi rufo-picei.

May ; on grass in fields ; near London.

Sp. 65. Plat. Orus. *Mas* et *Fem.* *Præcedente gracilior, alæ obscuriores angustiores.*

Mas.—*Ater*, obscurus, subtilissime punctatus, pilis nonnullis albis hirtus, subtus lævior et nitidior : oculi ocellique nigro-picei : antennæ nigræ ; articulus 2^{us}. apice fuscus ; metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilis albis hirta : abdomen nitens, læve ; segmentum 2^{um}. basi ultra medium scite sulcatum : pedes nigri ; tarsi nigro-picei ; propedes rufi, coxis nigris, femoribus tibiisque supra piceo vittatis, tarsis piceis : alæ fuscæ ; metalæ sublimpidæ ; squamulæ nigro-piceæ.

Fem.—*Mari* similis : antennæ breviores et tenuiores : abdomen paullo longius et angustius. (Corp. long. lin. $\frac{2}{3}$ —1 ; alar. lin. 1— $1\frac{1}{2}$.)

Var. β.—*Fem.* sulci abdominales segmenti 2ⁱ. medium non attingentes : protarsi rufi, apice picei.

Var. γ.—*Fem.* genua et tarsi rufo-picea.

Common in June ; near London. Found in Ireland, by Mr. Haliday.

Sp. 66. Plat. Dictys. *Fem.* *Ater alis limpidis, P. Otani similis, antennæ breviores, abdomen longius, alæ paullo breviores et angustiores.*

Ater, longus, subtilissime punctatus, parce hirtus, parum nitens : caput obscurum, postice rugosum : oculi ocellique nigro-picei :

antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. basi et apice 2^{us}. que apice fuscæ: metathorax abdominisque segmentum 1^{um}. obscura, punctata: abdomen nitidum, læve, glabrum; thorace paullo longius, segmentum 2^{um}. basi fere ad medium scite sulcatum; 3^{um}. et sequentia pilis nonnullis albis hirta: pedes nigri; genua et tarsi rufo-picea; protibiæ et spinæ tibiales rufæ, illæ supra piceo vittatæ; metatarsi picei: alæ albæ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Found near London.

Sp. 67. Plat. Philinna. Fem. P. Otani *fem. similis, antennæ breviores, abdomen longius.*

Ater, longus, fere glaber: caput transverse rugosum, obscurum: oculi ocellique rufo-picei: antennæ nigræ, corporis dimidio breviores; articulus 2^{us}. apice fuscus: thorax ovatus, subtilissime punctatus, parum nitens: metathorax abdominisque segmentum 1^{um}. scabra obscura: abdomen longi-ovatum, læve, nitens, thorace multo longius; segmentum 2^{um}. basi ad medium scite sulcatum: pedes nigri; genua et tarsi picea; propedum tibiæ et tarsi obscure rufa, hi apice et illæ supra picea: alæ albæ, sat latæ; squamulæ nigro-piceæ. (Corp. long. lin. 1; alar. lin. $1\frac{1}{4}$.)

Found near London.

Sp. 68. Plat. Cratinus. Fem. P. Pleuroni *similis, alæ angustiores.*

Ater, parum nitens, subtilissime squameus, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, corporis dimidio longiores; articuli 1^{us}. et 2^{us}. apice picei: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen læve, nitens, thorace longius; segmentum 2^{um}. basi scite sulcatum: oviductus fuscus: pedes nigri; tibiæ piceæ, apice basique rufæ; tarsi rufi, apice picei; profemora apice subtus rufa; spinæ tibiales rufæ: alæ sublimpidæ, angustæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{5}$ — $\frac{5}{4}$; alar. lin. 1— $1\frac{1}{4}$.)

New Lanark, Scotland.

Sp. 69. Plat. Olorus. Mas et Fem. P. Oro *similis, minor antennæ graciliores.*

Mas.—Ater, parum nitens, subtilissime punctatus, pilis albis parce hirtus: caput transverse rugosum, obscurum: oculi ocellique nigro-picei: antennæ nigræ, corporis dimidio multo longiores; articulus 2^{us}. apice pallidus: thorax utrinque et subtus nitidus, lævis, postice utrinque albo pilosus: metathorax abdominisque seg-

mentum 1^{um}. rugosa, obscura : abdomen nitens, læve, thorace paullo longius ; segmentum 2^{um}. basi scite sulcatum : pedes nigri ; profemora et protibiæ obscure picea, hæ apice basique rufæ ; genua rufo-picea ; spinæ tibiales rufæ ; tarsi rufi, apice picei ; metatarsi supra pallide picei : alæ fuscæ ; squamulæ nigro-piceæ.

Fem.—*Mari* similis : antennæ paullo breviores. (Corp. long. lin. $\frac{2}{3}$; alar. 1 $\frac{1}{4}$.)

Var. β.—*Mas*, Propedum femora et tibiæ rufa, medio supra picea.

Found near London.

Sp. 70. Plat. Sterope. Fem. P. *Oloro simillimus, alæ angustiores.*

Ater, parum nitens, subtilissime punctatus, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ, capite thoraceque longiores ; articulus 2^{us}. apice fuscus : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen nitens, læve, glabrum, thorace paullo longius ; segmentum 2^{um}. ejus fere totum occupans, basi scite sulcatum ; sequentia brevissima, pilis nonnullis albis hirta : pedes nigri ; genua et tarsi picea ; propedum genua, tibiæ apice subtus et tarsi rufo-picea : alæ limpidæ, perangustæ ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{4}{5}$.)

Var. β.—Genua tarsique omnia piceo-rufa.

Found near London.

Sp. 71. Plat. Cebes. Mas. P. *Dictyi similitudine, antennæ graciliores, alæ angustiores obscuriores.*

Ater, longitudine mediocri, subtilissime punctatus, parum nitens, fere glaber : oculi ocellique picei : antennæ nigræ, corporis dimidio multo longiores ; articuli 1^{us}. basi 2^{us}. que apice nigro-picei : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen læve, nitens, thorace paullo longius ; segmentum 2^{um}. basi scite sulcatum : pedes picei ; genua pallidiora ; coxæ nigræ : alæ subfuscæ, perangustæ ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{4}$.)

New Lanark, Scotland.

Sp. 72. Plat. Deipyla. Mas. P. *Præcedenti simillimus paullo brevior, antennæ graciliores, alæ obscuriores angustiores.*

Ater, parum nitens, subtilissime punctatus, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigro-piceæ, capite

thoraceque longiores; articuli 1^{us}. basi 2^{us}. que apice pallidi: thorax subtus lævis, nitens: metathorax abdominisque segmentum 1^{um}. scabra obscura: abdomen longi-ovatum, nitens, læve, thorace paullo longius et latius; segmentum 2^{um}. glabrum, apice latius, basi scite sulcatum: pedes picei, unicolores: proalæ fuscae, perangustæ; metalæ sublimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{5}$; alar. lin. 1.)

May; on grass beneath trees; near London.

Sp. 73. Plat. Eriphyle. Fem. P. Oro *similis*, *antennis articulus 7^{us}. sequentibus minor.*

Ater, latus, obscurus, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, clavatæ, capite thoraceque paullo longiores; articulus 2^{us}. apice fuscus: thorax subtus et utrinque lævior nitidior: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, nitidum, læve, glabrum, acuminatum, thorace paullo longius et latius; segmentum 2^{um}. basi scite sulcatum: pedes nigro-picei; trochanteres, genua et tarsi pallidiora; protibiæ apice subtus rufæ: alæ albolimpidæ, breves; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found near London.

Sp. 74. Plat. Evadne. Mas et Fem. P. Philinnæ *similis*, *alæ obscuriores.*

Mas.—Ater, angustus, longus, parum nitens, subtilissime punctatus, breviter pubescens, caput posticum sulcis transversis scite lineatum: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque vix longiores; articulus 2^{us}. apice fuscus: mesothoracis parapsidum suturæ bene determinatæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque dense pubescentia: abdomen subfusiforme, nitens, læve, glabrum, thorace multo longius; segmentum 2^{um}. ejus dimidio longius, basi scite sulcatum; sequentia brevia, subæqualia: pedes nigri; genua et tarsi nigro-picea: alæ fuscae, angustæ; metalæ sublimpidæ; squamulæ nigro-piceæ.

Fem.—*Mari* similis: abdomen acutius et paullo longius: genua et protibiæ apice subtus rufa; tarsi picei. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{5}$; alar. lin. $\frac{1}{2}$ — $\frac{5}{4}$.)

Var. β.—*Fem.* pedes nigro-picei; trochanteres, genua et tarsi piceo-rufa.

June and July; near London. New Forest, Hampshire.

Sp. 75. Plat. Œclus. Mas et Fem. *Præcedenti similis, antennæ longiores, alæ latiores.*

Mas.—Ater, latus, parum nitens, subtilissime squameus, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque longiores; articuli 1^{us}. basi 2^{us}. que apice fuscæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, convexum, nitidum, læve, glabrum, basi angustius; segmentum 2^{um}. basi scite sulcatum; 3^{um}. et sequentia brevissima: pedes nigri; trochanteres picei; genua et protarsi rufa, hi apice picei; protibiæ rufæ, supra piceæ: alæ subfuscae aut sublimpidæ, sat latæ; metalæ limpidae; squamulæ piceæ.

Fem.—*Mari* similis: abdomen longi-ovatum, supra convexum, postice abrupte angustum et acuminatum, subtus basi convexum apicem versus incurvum; segmentum 2^{um}. ejus fere dimidii longitudine, apice latius; 3^{um}. 2ⁱ. sextæ partis longitudine; 4^{um}. 3^o. longius; 5^{um}. adhuc longius; 6^{um}. 5^o. brevius, acuminatum: pedes nigri; trochanteres genua et tarsi picea, subtus pallidiora; progenua et protarsi piceo-rufa, hi apice obscuriores. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$; alar. lin. $\frac{2}{3}$ — $\frac{4}{5}$.)

Found in Ireland, by Mr. Haliday. May; near London. New Lanark, Scotland.

Sp. 76. Plat. Bucolion. Mas. *Ater, pedes rufo-picei, alæ fuscae latæ obtusæ.*

Ater subnitens, subtilissime punctatus, pilis nonnullis albis hirtus: caput obscurum, punctatum, postice scite rugosum: oculi ocellique nigro-picei: antennæ nigro-piceæ, corporis dimidio longiores; articuli 1^{us}. et 2^{us}. apice picei, ille basi rufus: mesothoracis parapsidum suturæ bene determinatæ: metathorax obscurus, punctatus, utrinque pilis albis vestitus: abdomen nitens, læve, glabrum, thorace paullo longius et angustius; segmenta 1^{um}. omnino 2^{um}. que basi scite sulcata; 3^{um}. et sequentia pilis nonnullis albis hirta: pedes rufo-picei; coxæ nigro-piceæ; trochanteres, tibiæ apice basique et tarsi rufa, hi apice picei; protibiæ rufæ, supra apices versus piceæ: proalæ fuscae; metalæ sublimpidæ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{6}$.)

Found near London.

†† *Mesothoracis parapsidum suturæ vix conspicuæ.*

Sp. 77. Plat. Abia. Mas et Fem. *Ater, pedes rufi, alæ limpidae.*

Mas.—Ater, parum nitens, subtilissime punctatus, fere glaber, subtus lævior et nitidior: oculi ocellique nigro-picei: antennæ

nigræ, capite thoraceque longiores; articulus 1^{us}. rufus, apice supra piceus; 4^{us}. parum dilatatus: scutellum pilis albis hirtum: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitens, læve, thorace longius et latius, basi utrinque pilis albis vestitum; segmentum 2^{um}. basi scite sulcatum: pedes rufi; coxæ piceæ; femora et tarsi apice picea; tibiæ supra apices versus rufo-piceæ; alæ sublimpidæ, angustæ; squamulæ rufo-piceæ.

Fem.—*Mari* similis: antennæ piceæ, breviores; articuli 1^o. ad 4^{um}. rufi: abdomen thorace vix longius: pedes rufi; coxæ piceo-rufæ; tarsi apice picei. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Pedes rufi; coxæ basi et tarsi apice picea.

New Lanark, Scotland. September; Cumberland.

Sp. 78. Plat. Oscus. Mas et Fem. P. *Abiæ similis, alæ longiores et latiores.*

Mas.—*Ater*, parum nitens, subtilissime punctatus, parce hirtus: oculi ocellique nigro-picei: antennæ omnino nigræ, sat graciles; articulus 4^{us}. parum dilatatus: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitens, læve, pilis nonnullis albis hirtum; segmentum 2^{um}. glabrum, basi scite sulcatum: pedes rufi; coxæ nigræ; femora pallide picea, apice basique rufa; tarsi apice picei: alæ sublimpidæ; squamulæ rufo-piceæ.

Fem.—*Mari* similis, paullo latior; antennæ paullo breviores, articuli 1^{us}. basi 4^{us}. que picei, 2^{us}. et 3^{us}. rufi. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{5}{4}$ —1 $\frac{1}{4}$.)

Var. β.—*Mas*, antennis articuli 1^o. ad 6^{um}. pedesque omnino rufi.

Var. γ.—*Fem.* antennæ obscure piceæ; articuli 2^{us}. et 3^{us}. pallide picei, subtus rufi: profemora rufa; meso- et metatibiæ pallide piceæ.

Var. δ. Fem. Var. β. similis: antennæ articulo 1^o. rufo, 2^o. et 3^o. piceis.

Var. ε.—*Fem.* antennæ piceæ; articuli 1^{us}. apice et basi, 2^{us}. 3^{us}. que omnino rufi: profemora rufa.

Ireland, Mr. Haliday. Near London, England. New Lanark, Scotland.

Sp. 79. Plat. Lysicles. Fem. P. *Oscos similis, paullo latior.*

Ater, parum nitens, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, corporis dimidio paullo longiores;

articuli 1^o. ad 4^{um}. rufi: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitens, læve, pilis nonnullis albis hirtum, thorace paullo longius et latius; segmentum 2^{um}. glabrum, basi scite sulcatum: pedes rufi; coxæ piceæ; tarsi apice picei: alæ albidolimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—Antennæ articulis 1^o. ad 4^{um}. supra pallide piceis.

Var. γ, Var. β, similis: meso- et metapedes supra picei.

Var. δ, Var. β, similis: metafemora supra picea.

Var. ε, Var. β, similis: meso- et metapedum femora et tibiæ supra picea.

Var. ζ.—Antennæ articulo 5^o. piceo.

Var. η.—Antennæ articulis 1^o. ad 5^{um}. rufis.

Var. θ.—Antennæ articulis 5^o. ad 10^{um}. piceis.

Found in August by Mr. Haliday, in marshes and grass in drains, at Holywood, Ireland. September; on grass in fields; near London. Isle of Wight. New Lanark, Scotland.

Sp. 80. Plat. Vestinus. Mas. *Præcedenti similis, brevior, alæ fuscæ.*

Ater, parum nitens, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ nigro-piceæ, capite thoraceque paullo longiores; articuli 1^o. ad 4^{um}. rufo-picei: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen nitens, læve, thorace paullo longius et latius; segmentum 2^{um}. glabrum, basi utrinque impressum: pedes rufi; coxæ piceæ; protarsi flavi; ungues et pulvilli picei: alæ fuscæ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

September; near the Land's End, Cornwall.

Sp. 81. Plat. Nisus. Fem. P. *Oscosimilis at ejus dimidio minor.*

Ater, parum nitens, subtilissime punctatus, fere glaber: oculi ocellique nigro-picei: antennæ piceæ, corporis dimidio multo longiores, validæ; articuli 1^o. ad 4^{um}. rufi: thorax subtus et utrinque lævis, nitens: metathorax obscurus, punctatus: abdomen læve, nitens, glabrum, thorace paullo longius; segmenta 1^{um}. omnino 2^{um}. que basi scite sulcata; 3^{um}. et sequentia pilis nonnullis albis hirta: pedes rufi; tarsi apice picei: alæ hyalinæ, albidæ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

§§ *Thorax lævis, nitens.*

Sp. 82. Plat. Ægens. Fem. *Ater, pedes picei, tarsi rufi, alæ albo-limpidæ.*

Ater, nitens, lævis, parce et breviter hirtus: oculi nigro-picei: antennæ nigrae, extrorsum crassiores, corporis dimidio paullo longiores; articuli 1^{us}. basi et apice 2^{us}. que apice et subtus picei: thorax ovatus: mesothoracis parapsidum suturæ conspicuæ: abdomen cochleatum, thorace dimidio longius; segmentum 1^{um}. sulcatum, utrinque hirtum; 2^{um}. basi minime sulcatum; 3^{um}. et sequentia brevia: pedes picei; coxæ et femora nigra; trochanteres apice rufi; tarsi et protibiæ rufa, illi apice picei: alæ albo-limpidæ; squamulæ nigro-piceæ. (Corp. long. lin. 1; alar. lin. 1½.)

Found in Ireland, by Mr. Haliday.

Sp. 83. Plat. Ennius. Fem. *P. Ægeo brevior et multo minor.*

Ater, nitens, lævis, parce hirtus: caput postice scite sulcatum: oculi nigro-picei: antennæ piceæ, subclavatae, corporis dimidio longiores; articulus 1^{us}. niger, apice piceus; 3^{us}. flavus: thorax ovatus: mesothoracis parapsides scuto in unum confusæ; scutellum hirtum: metathorax scaber: abdomen longi-ovatum, thorace paullo longius; segmentum 1^{um}. omnino 2^{um}. que basi scite sulcata; 3^{um}. et sequentia brevissima: pedes flavi; coxæ et femora picea, hæ apice flava; meso- et metatibiæ piceo cingulatæ; tarsi apice picei: alæ albo-limpidæ; squamulæ piceæ. (Corp. long. lin. 1; alar. lin. ⅔.)

Found in Ireland, by Mr. Haliday.

Sp. 84. Plat. Minthe. Fem. *Ater, antennæ et pedes nigro-picea, tarsi rufi, alæ limpidæ.*

Ater, nitens, lævis, breviter pubescens: caput posticum transverse striatum: oculi ocellique nigro-picei: antennæ nigro-piceæ, capite thoraceque longiores; articulus 2^{us}. apice fuscus: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen læve, nitidissimum, glabrum, thorace longius, apicem versus latius; segmentum 2^{um}. basi utrinque foveolatum; sequentia brevissima: pedes nigro-picei; coxæ nigrae; femora basi et trochanteres rufopicea; tibiæ basi et tarsi rufa, hi apice picei: alæ limpidæ; squamulæ piceæ. (Corp. long. lin. ¾; alar. lin. 1¼.)

Found near London.

Sp. 85. Plat. Cleodæus. Mas et Fem. *Præcedente multo brevior, alæ limpidiores.*

Mas.—Ater, nitens, lævis, fere glaber : caput posticum transverse lineatum : oculi ocellique obscure picei : antennæ nigræ, corpore breviores ; articuli 1^{us}. basi et apice 2^{us}. que apice fulvi : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen thorace paullo longius ; segmentum 2^{um}. basi scite sulcatum : pedes nigro-picei ; coxæ nigræ ; genua et tarsi rufa, hi apice fuscii ; mesotibiæ piceæ ; protibiæ rufæ, medio supra piceæ : alæ limpidæ ; squamulæ piceæ.

Fem.—*Mari* similis : antennæ paullo breviores et graciliores, omnino nigræ : metafemora nigra ; mesotibiæ nigro-piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found near London.

Sp. 86. Plat. Abisares. Mas et Fem. P. Cleodæo *similis, alæ angustiores.*

Mas.—Ater, nitens, fere lævis, parce et breviter pubescens : oculi ocellique nigro-picei : antennæ nigræ, capite thoraceque longiores ; articulus 2^{us}. apice fuscus ; 4^{us}. dilatatus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax abdominisque segmentum 1^{um}. scabra, obscura : abdomen læve, thorace latius et paullo longius ; segmentum 2^{um}. glabrum, basi scite sulcatum : pedes nigro-picei ; genua et tarsi rufo-picea ; protibiæ apice et protarsi basi rufa : alæ sublimpidæ ; squamulæ piceæ.

Fem.—Antennæ breviores, capite thoraceque vix longiores : abdomen longi-ovatum, thorace longius non latius ; segmentum 3^{um}. et sequentia brevia, subæqualia : pedes nigri ; genua et tarsi picea ; protibiæ apice et protarsi rufo-picea. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—*Mas*, tarsi rufi, apice picei.

Autumn ; near London. Isle of Wight. Land's End, Cornwall. Found in Ireland, by Mr. Haliday.

Sp. 87. Plat. niger. Mas et Fem. *Præcedenti similis at latior, alæ quoque multo latiores.*

Platygaster niger . . *Nees ab Esenbeck, Hym. Ich. affin. Monogr. II. 304. 12.*

Mas.—Ater, nitens, lævis, brevis, latus, convexus ; pilis albis hirtus : caput posticum scite rugosum : oculi ocellique nigro-picei : antennæ nigræ, graciles, corpore breviores : thorax seorsum

convexum : mesothoracis parapsidum suturæ conspicuæ : metathorax abdominisque segmentum 1^{um}. rugosa, obscura : abdomen glabrum, thoracis latitudine et longitudine ; segmentum 2^{um}. basi scite sulcatum ; 3^{um}. et sequentia pilis nonnullis albis hirta : pedes nigri ; spinæ tibiales rufæ ; genua et tarsi nigro-picea ; protarsi picei : alæ limpidæ, mediocres ; squamulæ nigro-piceæ.

Fem.—*Mari* similis : antennæ paullo breviores : abdomen thorace multo longius, apice acuminatum. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β.—*Mas*, protibiæ apice et protarsi rufo-picea.

Var. γ.—*Fem.* tarsi picei ; protibiæ apice et protarsi rufa, hi apice et illæ supra picea.

Found in Ireland, by Mr. Haliday. Common in summer and autumn ; near London. September ; Cumberland.

Sp. 88. Plat. Manto. Mas et Fem. P. nigro *minor angustior*, alæ *minores*.

Mas.—Ater, nitens, lævis, fere glaber : caput parum nitens, postice transverse sulcatum : oculi ocellique rufo-picei : antennæ nigrae, corporis dimidio multo longiores ; articulus 2^{us}. apice fuscus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax abdominisque segmentum 1^{um}. scabra, obscura, utrinque pilosa : abdomen thorace paullo longius ; segmentum 2^{um}. basi scite sulcatum : pedes nigri ; trochanteres, genua et tarsi picea ; propedes rufo-picei coxis nigris : alæ albo-limpidæ ; squamulæ piceæ.

Fem.—*Mari* similis : profemora nigra ; antennæ breviores et graciliores ; abdomen paullo latius. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{5}$ — $\frac{5}{4}$.)

Var. β.—*Mas*, protibiæ et protarsi flava, hi apice et illæ supra picea.

Var. γ.—*Mas* et *Fem.* tarsi flavi, apice picei.

Var. δ.—*Fem.* meso- et metapedum genua et tarsi nigro-picea.

From spring to autumn ; on grass in fields ; near London. September ; Isle of Wight. New Lanark ; Scotland. Found in Ireland, by Mr. Haliday.

Sp. 89. Plat. Strato. Mas et Fem. *Præcedente gracilior*, alæ *angustiores*.

Mas.—Ater, nitens, lævis, fere glaber : oculi ocellique nigro-picei : antennæ nigrae, corpore paullo breviores ; articuli 1^{us}. basi 2^{us}. que

apice fusci: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. scabra obscura: abdomen glabrum, thoracis longitudine; segmentum 2^{um}. basi scite sulcatum; 3^{um}. et sequentia pilis nonnullis albis vestita: pedes nigro-picei; trochanteres picei; genua, tibiæ apice basique et tarsi rufa, hi apice picei; propedum femora apice rufa, tibiæ rufæ piceo cingulatæ: alæ limpidae; squamulæ rufo-piceæ.

Fem.—*Mari* similis: antennæ graciliores breviores. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{5}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

Var. β.—*Mas*, tarsi supra picei.

New Lanark, Scotland.

Sp. 90. Plat. Laricis. (Haliday MSS.) *Mas. Ater, antennæ piceæ, pedes rufi, alæ limpidae.*

Ater, nitens, lævis, fere glaber: oculi nigro-picei: antennæ pallide piceæ, corporis dimidio longiores, extrorsum crassiores; articulus 1^{us}. flavus; 2^{us}. et sequentes ad 5^{um}. fulvi; 7^{us}. et sequentes lati, quasi nodosi: thorax ovatus, postice hirtus: metathoracis scutellum acuminatum: abdomen glabrum, thorace longius non latius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata: pedes fulvi; tarsi flavi, apice fusci: alæ limpidae; squamulæ obscure rufæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found in Ireland, by Mr. Haliday.

Sp. 91. Plat. Euhemerus. *Fem. Abdomen quam præcedentibus longius.*

Ater, nitens, lævis, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, capite thoraceque longiores; articulus 2^{us}. apice fuscus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum magnum, dense pubescens, postice prominulum: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen longi-ovatum, glabrum; segmentum 2^{um}. basi scite sulcatum: pedes nigro-picei; coxæ nigræ; tibiæ basi rufæ; protibiæ rufæ, supra piceæ; tarsi rufi, apice metatarsi quoque supra picei: alæ limpidae; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{5}{4}$.)

Found near London.

Sp. 92. Plat. Athamas. *Fem. Præcedente crassior, antennæ paullo breviores.*

Ater, nitens, lævis, parce et breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ, sat latæ, capite thoraceque longiores:

thorax altus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen læve, glabrum, ovato-fusifforme, thorace longius angustius et minus convexum; segmentum 2^{um}. ejus dimidium occupans; sequentia brevia, subæqualia: pedes nigri; genua et tarsi nigropicea; progenua et protarsi rufo-picea, hi apice obscuri: alæ albo-limpidæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{3}{8}$; alar. lin. 1.)

Found near London.

Sp. 93. Plat. Plotinus. Mas et Fem. *Ater, tarsi nigropicei, alæ fuscæ latæ.*

Mas.—*Ater*, nitens, lævis, pilis nonnullis albis hirtus: caput transverse rugosum: oculi ocellique nigro-picei: antennæ nigræ: metathorax obscurus, punctatus: abdomen thorace paullo longius et latius; segmentum 1^{um}. omnino 2^{um}. que basi scite sulcata: pedes nigri; tarsi nigro-picei; protibiæ apice et spinæ tibiales rufæ; protarsi picei: alæ fuscæ, latæ, obtusæ; squamulæ nigropiceæ.

Fem. — *Mari* similis: antennæ breves, corporis dimidio paullo longiores: abdomen thorace multo longius; sulci ejus segmenti 2ⁱ. medium attingentes. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ — $1\frac{1}{6}$.)

Var. β.—*Mas*, propedum femora et tibiæ picea apice subtus rufa, tarsi rufi apice picei.

Var. γ.—*Mas*, propedum femora et tibiæ rufa, supra piceo vittata.

Var. δ.—*Mas*, alæ subfuscæ.

Var. ε.—*Fem.* tibiæ basi rufo-piceæ: sulci abdominales segmenti 2ⁱ. medium vix attingentes.

Found near London.

Sp. 94. Plat. Pedasus. Fem. P. Plotino *gracilior, tarsi rufi.*

Ater, nitens, lævis, breviter pubescens: caput parum nitens: oculi ocellique nigro-picei: antennæ nigro-piceæ, capite thoraceque longiores; articuli 1^{us}. basi 2^{us}. que apice fuscii: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen thorace paullo longius; segmentum 2^{um}. glabrum, basi scite sulcatum: pedes picei; coxæ nigræ; protibiæ apice subtus, genua et tarsi rufa, hi apice picei: alæ subfuscæ; metalæ sublimpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β.—Femora tibiæque basi rufa: meso- et metatarsi piceo-rufi.

July; on grass in fields; near London.

Sp. 95. Plat. Zosine. Mas. *Præcedentis statura, antennæ et pedes nigra.*

Ater, nitens, lævis, pilis nonnullis albis hirtus: caput transverse rugosum: oculi ocellique nigro-picei: antennæ nigræ; articulus 4^{us}. parum dilatatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. obscura, punctata: abdomen thorace longius non latius; segmentum 2^{um}. basi scite sulcatum: pedes nigri; tarsi nigro-picei; protibiæ apice rufo-piceæ: alæ fuscæ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 96. Plat. Dryope. Mas. *Præcedente minor et brevior, tarsi pallidiores.*

Ater, nitens, lævis, glaber: oculi nigro-picei: antennæ nigræ, extrorsum crassiores, corporis dimidio longiores; articuli 1^{us}. basi 2^{us}. que apice picei: mesothoracis parapsidum suturæ non bene determinatæ: metathoracis scutellum acuminatum: abdomen ovatum, thorace paullo latius et longius; segmentum 1^{um}. scabrum; 2^{um}. basi scite sulcatum: pedes nigri; trochanteres et genua rufa; tarsi picei; propedum genua, tibiæ apice et subtus tarsique flava, hi apice picei: proalæ subfuscæ; metalæ limpidæ; squamulæ piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Found in Ireland, by Mr. Haliday.

Sp. 97. Plat. inermis. (Haliday, Curtis' Brit. Ent. 309.)
Mas et Fem. *P. Zosines statura et coloribus, alæ angustiores.*

Mas.—Ater, nitens, lævis, fere glaber: oculi ocellique nigro-picei: antennæ nigræ, graciles, subfiliformes, capite thoraceque paullo longiores; articulus 2^{us}. apice fuscus; 4^{us}. dilatatus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. scabra, obscura: abdomen ovatum, nitens, læve, glabrum, thorace multo longius, apice latius; segmentum 2^{um}. ejus dimidio longius, basi scite sulcatum; 3^{um}. brevissimum; sequentia paullo longiora; 6^{um}. acuminatum: pedes nigri; genua et tarsi nigro-picea; propedum genua, tibiæ subtus apice et tarsi

piceo-rufa: alæ fuscæ; metalæ sublimpidæ; squamulæ nigropiceæ.

Fem.—*Mari* similis, breviter pubescens: antennæ apice latæ: abdomen fusiforme. (Corp. long. lin. $\frac{2}{5}$ — $\frac{3}{5}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Var. β.—*Fem.* genua et tarsi omnia nigropicea.

May; on grass beneath trees; near London. Found in Ireland, by Mr. Haliday.

Sp. 98. Plat. Sagana. Mas et Fem. *Præcedente minor gracilior, alæ angustiores limpidiores.*

Ater, nitens, lævis, parce et brevissime pubescens: oculi ocellique nigropicei: antennæ nigræ, corporis dimidio paullo longiores; articulus 2^{us}. apice fuscus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax abdominisque segmentum 1^{um}. obscura, punctata: abdomen longi-ovatum, angustum, nitens, læve, glabrum, thorace longius; segmentum 1^{um}. omnino 2^{um}. que basi scite sulcata: pedes nigri; genua et tarsi nigropicea; protibiæ apice rufo-piceæ; spinæ tibiales rufæ: proalæ subfusæ; metalæ sublimpidæ, angustæ, parvæ; squamulæ piceæ.

Fem.—*Mari* similis: abdomen acutius; segmentum 2^{um}. ejus plus dimidium occupans; sequentia brevia, subæqualia; 6^{um}. paullo longius acuminatum. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

July; on grass in fields; near London.

Sp. 99. Plat. Ilione. Mas. *Præcedenti similis, antennæ multo longiores.*

Ater, fere planus, nitens, lævis, parce et breviter pubescens: oculi ocellique nigropicei: antennæ nigræ, corporis dimidio multo longiores; articuli 1^{us}. apice et basi 2^{us}. que apice fusci; 4^{us}. parum dilatatus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum fere planum: metathorax abdominisque segmentum 1^{um}. obscura punctata: abdomen nitens, læve, glabrum, thorace paullo longius; segmentum 2^{um}. basi scite sulcatum: pedes nigri; femora basi apiceque et trochanteres picea; tibiæ basi apiceque, spinæ tibiales et tarsi rufa, hi apice picei; protibiæ rufæ, nigro cingulatæ: alæ subfusæ; squamulæ rufo-piceæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Found near London.

GENUS II.—INOSTEMMA, *Haliday*.

Psilus, *Jurine*. *Platygaster*, *Latreille*, &c.

Proalæ cuique nervus unicus basalis proxime sub costam, alæ triente paullo brevior, stigmatè terminatus.

† *Antennæ 10-articulatæ*.

DIV^o. 1^a.

Mas.—Corpus parce et breviter pubescens: caput breve, transversum, thoracis latitudine, antice vix productum, postice concavum: antennæ moniliformes, capitis thoracisque longitudine; articuli 2^o. ad 9^{um}. cyathiformes; 2^{us}. et 3^{us}. mediocres; 4^{us}. et 5^{us}. paullo minores; 6^{us}. et sequentes latiores, discreti; 10^{us}. angusti-ovatus, acuminatus, 9^o. longior: thorax ovatus, convexus: prothorax parvus, supra brevissimus, utrinque longior: mesothoracis parapsidum suturæ conspicuæ; scutellum fere planum, non prominens, semicirculum fingens: metathorax mediocris: abdomen angusti-ovatum, thorace paullo longius, basi angustius; segmentum 1^{um}. breve, lineare; 2^{um}. maximum, abdominis plus dimidium occupans; sequentia brevia, subæqualia: alæ mediocres; humerus simplex.

Fem.—Caput et thorax abdominis cornu receptione sulcata: antennæ clavatæ, capitis thoracisque vix longitudine; articuli 2^o. ad 4^{um}. longi-cyathiformes, angusti; 5^{us}. et 6^{us}. multo breviores, non latiores; 7^{us}. multo latior; 8^{us}. et 9^{us}. adhuc latiores; 10^{us}. ovatus, vix acuminatus: abdomen acuminatum, quam *mari* longius, apice paullo elevatum; segmentum 2^{um}. ejus dimidium occupans; 3^{um}. et 4^{um}. brevia; 5^{um}. et 6^{um}. longiora: segmenta ventralia eodem modo disposita, marginem utrinque fingentia: cornu arcuatum, levissime striatum, segmenti 1ⁱ. dorso affixum, thorace applicatum et caput attingens: oviductus abdomine duplo longior, in cornu receptus?

The female in this division has a horn rising from the first segment of the abdomen, and bending over the thorax to the head. Its use has not yet been ascertained; Leclerc de Laval supposed that it incloses the ovipositor; but Nees ab Esenbeck denies this.

Sp. 1. *Ino. Boscii*. *Mas* et *Fem*. *Atra*, *fem. cornu caput postice attingens, alæ albo-limpidæ*.

Psilus Boscii . . *Jurine, Hymen*, 318.

Platygaster Boscii. *Latr. Règne Anim.* III. 475; *Nouv. Edit.* V. 302; *Encycl. Method.* X. 150; *Curtis' Brit. Ent.* 309; *Nees ab Esenbeck, Hym. Ich. affn. Monogr.* II. 306. 14.

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ; articulus 2^{us}. apice fuscus: thorax utrinque et subtus lævis, nitens: abdominis segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitens, læve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lævia nitentia, pilis albis parce et breviter hirta: oviductus pallide flavus: pedes picei; coxæ nigræ; tibiæ basi et tarsi rufa, hi apice picei; metatarsi supra rufo-picei: alæ albo-limpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{3}{4}$ —1 $\frac{1}{4}$.)

Var. β.—*Mas* et *Fem.* tarsi omnes necnon protibiæ basi et apice rufa.

Var. γ.—*Mas*, mesotarsi supra picei.

On grass in woods, near London; during the summer and autumn. June; New Forest, Hampshire. New Lanark, Scotland. Found by Mr. Haliday, on *Cerealìa*, in England, Ireland, and Scotland.

Sp. 2. Ino. *Melicerta*. *Fem.* *Abdomen quam P. Boscii brevius, cornu caput non attingens, alæ subfuscæ.*

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ: thorax utrinque et subtus lævis, nitens: abdomen quam *P. Boscii* brevius, apice minus acuminatum et elevatum; segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitidum, læve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lævia nitida, pilis albis parce et breviter hirta: cornu caput vix attingens: pedes picei; coxæ nigræ; tibiæ basi tarsi que piceo-rufa; protibiæ apice et protarsi rufa, hi apice picei: alæ subfuscæ; metalæ sublimpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{4}{5}$ —1.)

Var. β.—Tarsi omnes rufi, apice picei.

June and July; near London.

Sp. 3. Ino. *Lycon*. *Fem.* *P. Boscii similis, cornu caput fere superans.*

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ; articulus 2^{us}. apice fuscus:

thorax utrinque et subtus lævis, nitens: abdominis segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitens, læve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lævia nitentia, pilis albis parce et breviter hirta: cornu caput fere superans: pedes picei; coxæ nigræ; tibiæ basi et tarsi piceo-rufa: protibiæ apice et protarsi rufa, hi apice picei: alæ albo-limpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found near London.

Sp. 4. Ino. Menippus. Mas et Fem. *Præcedenti simillima, alæ fuscæ.*

Atra, obscura, subtilissime squamea, fere glabra: oculi nigro-picei: ocelli pallide rufi: antennæ nigræ, *mari* capite thoraceque longiores, articuli 2^{us}. et 3^{us}. mediocres subæquales, 4^{us}. dilatatus, 5^{us}. et sequentes subæquales: thorax utrinque et subtus lævis, nitens: abdominis segmentum 1^{um}. scabrum, sulcatum; 2^{um}. nitens, læve, glabrum, basi scite sulcatum; sequentia subtilissime punctata, apice lævia nitentia, pilis albis parce et breviter hirta: cornu caput fere superans: pedes nigro-picei; coxæ nigræ: alæ fuscæ, quam *I. Boscii* angustiores; squamulæ et nervi nigro-picea. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β.—*Fem.* trochanteres, genua et tarsi picea.

Var. γ.—*Fem.* genua et tarsi rufo-picea.

July; on grass in woods; near London. It is sometimes infested by a small red parasite.

Div^o. 2^a.

Fem.—Antennæ capitatæ, capite thoraceque breviores; articulus 2^{us}. cyathiformis, mediocris; 3^{us}. et sequentes ad 6^{um}. minimi; 7^{us}. et sequentes magni, lati, approximati, clavam fingentes longi-ovatum; 10^{us}. subtrigonus, 9^o. longior, vix acuminatus: thorax brevi-ovatus, convexus; mesothoracis parapsidum suturæ conspicuæ; scutellum semicirculum fingens, non prominens: metathorax brevis: abdomen oviforme, inerme, supra subtusque valde convexum, apice acuminatum; segmentum 1^{um}. breve, sublineare; 2^{um}. maximum; sequentia brevia: alæ mediocres; humerus simplex.

Ichneumon inserens, Kirby, (Linn. Trans. V. 107,) is allied to the following species; but according to the description and figure, it has the tip of the first joint of the antennæ dilated and divided.

Sp. 5. *Ino. scrutator*. Fem. *Atra, tarsi rufi, alæ fusæ.*

Atra, subtilissime squamea, parum nitens, breviter pubescens: oculi ocellique nigro-picei: antennæ nigræ; articulus 2^{us}. apice fuscus: metathorax longius pilosus: abdomen nitens, læve, glabrum, thorace longius et angustius, apice fuscum; segmentum 1^{um}. obscurum, sulcatum, pubescens; 2^{um}. basi scite sulcatum: pedes picei; coxæ nigræ; tibix basi tarsique rufa, hi apice picei; protibiæ apice subtus rufæ; metatarsi supra rufo-picei: alæ fusæ; squamulæ et nervi nigro-picea. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{5}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Tarsi omnes supra rufo-picei.

Var. γ.—Metatarsi supra rufo-picei.

Var. δ.—Pedes nigro-picei; coxæ nigræ; tarsi picei; protarsi pallidiores.

June; on grass in woods; near London. Found rarely by Mr. Haliday, on *Cerealia*, at Holywood, in Ireland.

DIV^o. 3^a.

Mas.—Corpus mediocre, parce et breviter pubescens: caput fere læve thoracis latitudine: antennæ moniliformes, extrorsum crassiores, corporis dimidio paullo longiores; articulus 1^{us}. longus, subfusiformis, gracilis; 2^{us}. cyathiformis; 3^{us}. minutus; 4^{us}. mediocris; 5^{us}. et sequentes ad 9^{um}. majores, latescentes; 10^{us}. conoides, acuminatus, 9^o. multo longior: thorax brevi-ovatus, subtilissime squameus, parum convexus: prothorax brevissimus, supra vix conspicuus: mesothoracis parapsidum suturæ non bene determinatæ; scutellum parvum, planum, semicirculum fingens: metathorax mediocris: abdomen cochleatum, læve, planum, thorace vix longius; segmentum 1^{um}. breve; 2^{um}. glabrum, maximum, basi scite sulcatum; 3^{um}. et sequentia brevia, subæqualia: pedes graciles: alæ mediocres: humerus ramulum emittens in alæ discum recte declivem.

Fem.—Antennæ clavatæ, corporis dimidio multo breviores; articuli 3^o. ad 7^{um}. minimi, brevissimi, latescentes; 8^{us}. et sequentes maximi, lati; 10^{us}. conoides, 9^o. paullo longior: abdomen ovatum, thorace duplo longius, apice quasi caudam fingens; segmentum 1^{um}. brevissimum; 2^{um}. omnino læve; apicalia gracillima, cylindrica, teretia.

Sp. 6. *Ino. areolata.* (Haliday, MSS.) Mas et Fem. *Atra, tarsi picei, alæ subfusæ.*

Atra: caput et thorax parum nitentia: antennæ nigræ; articulus 1^{us}. basi piceus; abdomen nitens: oviductus rufo-piceus; vaginæ nigræ: pedes nigri; genua et tarsi picea; protarsi nigri: proalæ subfusæ; squamulæ nigro-piceæ: nervi pallidiores; metalæ sublimpidæ. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Found by Mr. Haliday, on grass in drains of the sea-coast, at Holywood, in Ireland; sometimes, like *Ino. Menippus*, infested by a small red parasite.

Div^o. 4^a.

Fem.—Corpus breve, crassum: caput thoracis latitudine: antennæ clavatæ, corporis dimidio paullo longiores; articulus 1^{us}. gracilis, fere filiformis; 2^{us}. cyathiformis; 3^{us}. parvus; 4^{us}. et sequentes æquales, mediocres, subquadrati; 10^{us}. a cuminatus, 9^o. duplo fere longior: thorax brevi-ovatus, convexus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ; scutellum tuberculo simile: metathorax brevis: abdomen ovatum, convexum, thorace paullo brevius et angustius; segmentum 2^{um}. magnum; 1^{um}. 3^{um}. etc. parva: alæ mediocres: humerus ramulum emittens in alæ discum recte declivem.

Sp. 7. *Ino. Atinas.* Fem. *Atra, antennæ nigro-fusæ, pedes fusci, alæ subfusæ.*

Atra, subtilissime punctata, parum nitens, parce et brevitur pubescens: oculi nigro-picei: antennæ nigro-fusæ; articuli 1^{us}. basi 2^{us}. que apice fulvi: abdomen nitens, læve, glabrum: pedes fusci; trochanteres, genua, protibiæ apice subtus tarsisque fulva, hi apice obscuriores: alæ subfusæ; squamulæ nigro-piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

†† *Antennæ 9-articulatæ.*

Div^o. 5^a.

Mas.—Antennæ 9-articulatæ, moniliformes; articulus 1^{us}. validus, fusiformis; 2^{us}. parvus, globosus; sequentes verticillato-pilosæ, valde remoti; 3^{us}. magnus, brevi-fusiformis; 9^{us}. acuminatus: 8^o. multo longior, thorax latus, brevi-ovatus, supra planus: prothorax brevissimus: mesothoracis parapsidum suturæ vix

conspiciuæ: scutellum breve, quasi semicirculum fingens: metathorax mediocris, utrinque angulatus: abdomen longi-ovatum, convexum, thorace multo angustius; segmentum 1^{um}. breve, latum; 2^{um}. maximum; sequentia brevissima subclavata; tibiæ tarsique gracilia.

Sp. 8. Ino. Mecrida. Mas et Fem. *Atra, pedes nigri tarsi picei, albo-limpidæ.*

Mas.—*Atra*, brevis, lata, nitens, lævis, fere glabra: oculi ocellique nigro-picei: antennæ nigræ, easdem *Eurytomæ* simulantes, corpore paullo breviores; articulorum petioli picei: metathorax abdominisque segmentum 1^{um}. scabra, obscura; 2^{um}. basi scite sulcatum: pedes nigri; genua et tarsi picea; propedes picei, genua, tibiæ apice subtus et tarsi flava: alæ albo-limpidæ; squamulæ et nervi picea. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Found near London.

** *Tarsi tetrameri.*

GENUS III.—IPHITRACHELUS, *Haliday.*

Mas.—Corpus breve, latum: caput thoracis latitudine: oculi prominentes: antennæ 10-articulatæ, nodosæ, verticillato-pilosæ, easdem *Eurytomæ* simulantes, corpore paullo breviores; articulus 1^{us}. crassus, quasi membrana inclusus; 2^{us}. parvus, fere rotundus; 3^{us}. major, longi-ovatus; 4^{us}. adhuc major, dilatatus; 5^{us}. et 4^{us}. sequentes æquales, discreti; 10^{us}. fusiformis, acuminatus, 9^o. duplo longior: thorax brevis, convexus, paullo longior quam latus: prothorax supra inconspicuus: mesothoracis parapsidum suturæ bene determinatæ; scutellum gibbum, fere rotundum, scuto discretum: metathorax mediocris; stria supra dorsum membranacea, quasi foveas 3 fingens: abdomen longi-ovatum, sublineare, fere planum, thorace multo angustius; segmentum 1^{um}. breve, membrana tectum; 2^{um}. maximum, dorsum fere omne occupans; 3^{um}. et sequentia brevissima: pedes graciles; femora subclavata; tarsi tetrameri, articuli 1^o. ad 3^{um}. longitudine decrescentes, 4^{us}. 3^o. paullo longior, ungues et pulvilli minuti: proalæ humerus brevis, simplex, capitatus.

Sp. 1. Iphi. Lar. (Haliday.) *Mas. Ater, pedes flavi, alæ fusæ.*

Ater, obscurus, glaber, scitissime squameus: caput breve: oculi ocellique nigro-picei: antennæ nigræ; articulus 1^{us}. fulvus; 2^{us}.

fuscus : spatium inter mesothoracis scutum et scutellum læve, nitens ; metathorax et abdomen lævia, nitentia, hoc thoracis longitudine ; membrana fulva : pedes flavi ; tarsi apice fusci ; protarsi pallidiores : alæ fuscae, latæ, apice obtusæ ; squamulæ et nervi picea. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{2}{3}$.)

Found in August, by Mr. Haliday, in the Isle of Arran, Scotland.

ADDENDA.

DIV^o. 10^a.

Sp. 100. Plat. cochleatus. Fem. *Ater, antennæ pedesque flava, illæ apice fuscae, alæ limpidæ.*

Ater, nitens, lævis, pubescens : caput subtilissime squameum, fere glabrum : oculi nigro-picei : antennæ flavæ, corporis dimidio paullo longiores ; articuli 7^o. ad 10^{um}. fusci, subtus pallidiores : thorax dense pubescens : mesothoracis parapsides scuto in unum confusæ : metathorax abdominisque segmentum 1^{um}. scabra, obscura, pubescentia : abdomen læve, glabrum : pedes flavi ; ungues et pulvilli pallide fusci : alæ limpidæ ; squamulæ piceæ. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{3}$.)

Found at Holywood, in Ireland, by Mr. Haliday.

DIV^o.

Sp. 101. Plat. Hyllus. Fem. *Ater, alæ limpidæ.*

Ater, nitens, lævis, glaber : caput posticum scitissime squameum : oculi nigro-picei : antennæ nigrae, clavatae, corporis dimidio paullo breviores ; articuli 3^o. ad 6^{um}. minimi angusti, 7^o. ad 10^{um}. magni lati : mesothoracis parapsides scuto in unum confusæ : scutellum, metathorax abdominisque segmentum 1^{um}. pilis albis utrinque dense hirta : abdomen longi-ovatum, subcompressum, maxime convexum, thorace duplo longius, apice acuminatum ; segmentum 1^{um}. brevissimum ; 2^{um}. maximum ; 3^{um}. et sequentia brevia : pedes nigri ; genua et tarsi nigro-picea ; protarsi pallidiores : alæ albo-limpidae ; squamulæ nigro-piceæ. (Corp. long. lin. $\frac{5}{4}$; alar. lin. 1.)

Found in Ireland, by Mr. Haliday.

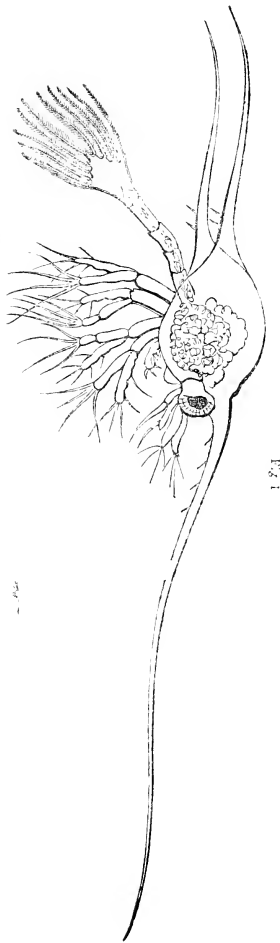
ART. XXIV.—*Memoir on the Metamorphosis in Porcellana and Portunus.* By J. V. THOMPSON, F. L. S., Deputy Inspector-General of Hospitals.

METAMORPHOSIS IN PORCELLANA.

PERCEIVING in the May Number of the Magazine of Natural History, that doubts are still entertained by naturalists, not only of the universality of metamorphosis in the *Crustacea*, but more especially in regard to certain species and genera, I am particularly happy to have it in my power to satisfy the doubts of one gentleman, Mr. Westwood, (*loc. cit.*) with regard to *Porcellana*, which, for particular reasons, he appears to think must form one exception.

It is well known to Crustaceologists that this anomalous genus constitutes the connecting link between the *Brachyura* or crabs, and the *Macroura*; having the extensile tail of the latter, the body of the former, and a kind of intermediate form of all the other parts, and admirably illustrates that axiom of Linnæus—“*Natura non facit saltus.*” When, therefore, the extraordinary facts relating to the metamorphosis of the *Brachyura* and *Macroura* had become known to me, I naturally felt a great desire to ascertain whether the same law prevailed with regard to this intermediate genus, and was so fortunate as to succeed in hatching the spawn of the species of *Porcellana*, which we have in such abundance in the deep water of the harbour of Cove. I had previously discovered, by towing, a very remarkable *Zoë*, totally different in aspect from all those known or described. This was on the 28th of May; and what is very singular, in four days after, viz. the 2d of June, I had the high gratification of seeing the very same *Zoë* emanate from the ripe spawn of *Porcellana*, (fig. 1.) Notwithstanding the minuteness of this curious larva, it is rendered conspicuous against the light, by reason of its very long spines, and may be taken in great abundance during the whole of the month of June.

In this instance we have another proof, in addition to that of *Pinnotheres*, given in the present volume, p. 85, that the *Zoëa*, or larvæ of the *Crustacea*, differ materially in the length and disposition of the spines and form of tail. In the present



case, the frontal and lateral spines are disposed in a horizontal plane, and stretch out directly forwards and backwards, all of them being very greatly attenuated and elongated; the extre-

mity of the tail also differs from that of every other with which I am acquainted, in being spatulate and very deeply fringed.

I beg here to repeat that my proofs of metamorphosis in the *Brachyura* extend to the repeatedly enumerated genera of *Cancer* (Zool. Res.), *Carcinus*, (Memoir just sent to the Royal Society), *Portimus*, (accompanying Memoir,) *Pinnotheres*, (Ent. Mag.), *Porcellana*, (above given,) *Gegarcinus*, *Thelphusa*, *Eriphia*, *Inachus*, and *Pagurus*. In the *Macroura* to *Homarus*, *Palæmon*, *Crangon*, *Astacus*, and *Galathea*.

In regard to the changes which the crabs undergo after their last metamorphosis, and to which Mr. Westwood alludes, I agree with that gentleman that we as yet want facts to guide us. That they still differ from their parents in the form of their clypeus, and in its indentures (at least in *Carcinus*), is evident by an inspection of the figure which accompanies my Memoir now before the Royal Society; and by a careful perusal of my notes, I find the following additional information, viz.—

“On the second change, the projection in front between the eyes disappears, and the five denticulations at the sides become more marked, with a very slight widening of the clypeus at this part; the inner pair of antennæ are also more developed and conspicuous. On the third change, the clypeus dilates a little more, the three posterior denticuli appear spinous, the two anterior ones remaining obtuse.”

It is therefore certain that another, or fourth change, is required in this individual before a naturalist could pronounce as to its species by a simple comparison with the parent crab.

METAMORPHOSIS IN PORTUNUS.

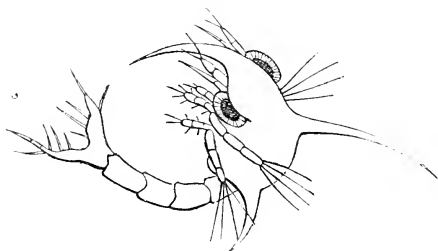
Having, in a Memoir which has been laid before the Royal Society, made known the particulars of the double metamorphosis in the *Brachyura* (crabs) as observed in *Carcinus mænas*, in which these curious changes of form and structure have been traced in as complete and satisfactory a manner as the case probably admits, so as to render quite evident that the young first present themselves to our notice as *Zoëa*, and that they assume a second intermediate form, or that of *Megalopæ*, previous to their taking on that of their parent; I have,

in the present Memoir, to adduce proofs of the same thing in another genus, *viz.* that of *Portunus*.

The genus *Carcinus* appears to connect the genuine crabs (*Arcuati*,) with those of the natatory division to which *Portunus* belongs; which therefore offers, very apropos, the second illustration of this curious fact. The most striking character of this genus, is to have the hinder, or fifth pair of members, formed like paddles, for swimming; and which, when the animal crawls, are bent up over the other feet.

Several species of *Portunus* inhabit the harbour of Cove, as *depurator*, *arcuatus*, *corrugatus*, and *marmoratus*, of which the last is perhaps the most common. One of this species (*P. marmoratus*) being dredged up with spawn ready to hatch, has enabled me to observe and sketch its *Zoë*, (fig. 2,) which

Fig. 2.

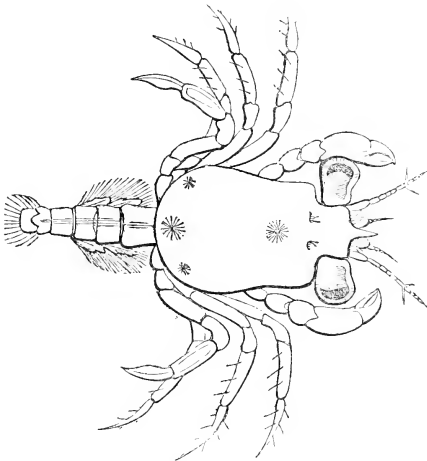


bears a considerable general resemblance to those previously depicted of *Cancer pagurus*, (Zool. Res. Pl. VIII. fig. 1,) and of *Carcinus mænas*. In all these instances, it may be observed, that I had myriads of the fully-developed larvæ before me, and not solitary specimens; some struggling to extricate themselves from the envelopes of the ova, others swimming about in full activity. So great indeed is the resemblance of the *Zoëa* of the above-named genera, that did we not know others of a different form, as Leach's *Zoë clavata*, the *Zoë of Pinnotheres* (see p. 90), and that of *Porcellana* of the preceding Memoir, we might be apt to suppose a general correspondence in this respect in the larvæ of all the *Brachyura*.

As it will hardly ever be possible, by any contrivance, to

insulate and preserve alive these almost imperceptible creatures, until they attain to their full growth as *Zoëa*, we cannot calculate upon ever tracing them during the whole of their progress. However, it is by no means unlikely that the *Zoëa* being captured in their adult state, may be observed in the act of passing into the second form of *Megalopæ*, as very nearly happened in the instance given in *Zool. Res.* p. 8. We must, until then, be satisfied with the facts detailed in the Memoir on *Carcinus*, where it is clearly shown that *Megalopa* is an intermediate stage between *Zoë* and the perfect crab, and from which we have every reason to presume that the same prevails with regard to the other genera of which we have not an equally clear chain of evidence. These facts first became known on the 8th of June, 1827; and on the 14th of the same month, I obtained the *Megalopa* (fig. 3,) which, from the

Fig. 3.



structure of its hind feet, is evidently that of a *Portunus*. It would be presumptuous, however, to say that it is that of the identical species of which the above-described *Zoë* is the larva, although it is not improbable from *P. marmoratus* being the most common species.

The proof here is also less complete than in *Carcinus*, as this *Megalopa* has not been observed to pass into the crab, which from analogy it is to be inferred that it does; for, notwithstanding all the care that could be bestowed upon it to keep it alive, it unfortunately died before this eventful period arrived; indeed, success is hardly to be expected in regard to the marine species of *Crustacea*, as they require such a mass of water, and such frequent changes of it, to preserve them but for a few days. This may be considered one of the many cases in which we are limited in our inquiries into the workings of Omnipotence, and must remain satisfied and thankful for what the Deity has placed within our power, and pleaseth to reveal.



ART. XXV.—*A Tour in the Prairies. By the Author of the Sketch-book.* London: Murray. 1835.

SWEET poet of America! it is delightful to us to see thee descending from the airy regions of fiction, and adorning, with thy all but perfect pen, the simple history of fact. We despise not fiction, but we positively reverence truth; and truth recorded in a poet's language is perhaps the most satisfying of all human productions. Irving and Cooper, the twin poets of America, have infinitely exalted that great and rising country in the estimation of the literary world. Alike in vivid imagination, in power of description, and in their scorn of the trammels of rhyme, these poets have found favour, not only with their countrymen, but with every one who understands the language in which they write. Yet they differ:—Irving is the more quiet, the more facetious, the more comic, the more carefully precise, and excelling almost every writer in the appropriate and harmonious collocation of words and syllables. Cooper is the more bustling, the more exciting, the more tragic, the more splendid. Reader! we are not deviating from our path; we are consulting the welfare of Entomology, in shewing thee that Washington Irving is an entomologist. We shall extract the entire chapter, which bears for its title—

A BEE HUNT.

The beautiful forest in which we were encamped abounded in bee-trees: that is to say, trees, in the decayed trunks of which wild bees had established their hives. It is surprising in what countless swarms the bees have overspread the far West, within but a moderate number of years. The Indians consider them the harbinger of the white man, as the buffalo is of the red man; and say, that in proportion as the bee advances, the Indian and the buffalo retire. We are always accustomed to associate the bee-hive with the farmhouse and the flower-garden, and to consider these industrious little animals as connected with the busy haunts of men; and I am told that the wild bee is seldom to be met with at any great distance from the frontier. They have been the heralds of civilization, stedfastly preceding it, as it advanced from the Atlantic borders; and some of the settlers of the West pretend to give the very year when the honey-bee first crossed the Mississippi. The Indians, with surprise, suddenly found the mouldering trees of their forests teeming with ambrosial sweets; and nothing, I am told, can exceed the greedy relish with which they banquet, for the first time, on this unbought luxury of the wilderness.

At present the honey-bee swarms in myriads in the noble groves and forests that skirt and intersect the prairies, and extend along the alluvial bottoms of the rivers. It seems to me as if these beautiful regions answer literally to the description of the land of promise, "a land flowing with milk and honey;" for the rich pasturage of the prairies is calculated to sustain herds of cattle as countless as the sands upon the sea-shore, while the flowers with which they are enamelled render them a very paradise for the nectar-seeking bee.

We had not been long in the camp, when a party set out in quest of a bee-tree; and being curious to witness the sport, I gladly accepted an invitation to accompany them. The party was headed by a veteran bee-hunter, a tall lank fellow, in home-spun garb, that hung loosely about his limbs, and a straw-hat, shaped not unlike a bee-hive; a comrade, equally uncouth in his garb, and without a hat, straddled along at his heels, with a long rifle on his shoulder. To these succeeded half a dozen others, some with axes and some with rifles; for no one stirs far from the camp without fire-arms, so as to be ready either for wild deer or wild Indian.

After proceeding some distance, we came to an open glade, on the skirts of the forest. Here our leader halted, and then advanced quietly to a low bush, on the top of which I perceived a piece of honey-comb. This, I found, was the bait or lure for the wild bees.

Several were humming about it, and diving into its cells. When they had laden themselves with honey, they would rise up in the air, and dart off in one straight line, almost with the velocity of a bullet. The hunters watched attentively the course they took, and then set off in the same direction, stumbling along over twisted roots and fallen trees, with their eyes turned up to the sky. In this way they traced the honey-laden bees to their hive in the hollow trunk of a blasted oak, where, after buzzing about for a moment, they entered a hole about sixty feet from the ground.

Two of the bee-hunters now plied their axes vigorously to the root of the tree to level it with the ground. The mere spectators and amateurs, in the mean time, drew off to a cautious distance, to be out of the way of the falling of the tree and the vengeance of its inmates. The jarring blows of the axe seemed to have no effect in alarming or agitating this most industrious community. They continued to ply at their usual occupations,—some arriving full-freighted into port, others sallying forth on new expeditions, like so many merchantmen in a money-making metropolis, little suspicious of impending bankruptcy and downfall. Even a loud crack, which announced the disrapture of the trunk, failed to divert their attention from the intense pursuit of gain. At length down came the tree with a tremendous crash, bursting open from end to end, and displaying all the hoarded treasures of the commonwealth.

One of the hunters immediately ran up with a wisp of lighted hay as a defence against the bees. The latter, however, made no attack, and sought no revenge: they seemed stupified by the catastrophe, and unsuspecting of its cause, and remained crawling and buzzing about the ruins without offering us any molestation. Every one of the party now fell to, with spoon and hunting knife, to scoop out the flakes of honey-comb with which the hollow trunk was stored. Some of them were of old date, and a deep brown colour; others were beautifully white, and the honey in their cells was almost limpid. Such of the combs as were entire were placed in camp kettles, to be conveyed to the encampment; those which had been shivered by the fall were divided on the spot. Every stark bee-hunter was to be seen with a rich morsel in his hand, dripping about his fingers, and disappearing as rapidly as a cream tart before the holiday appetite of a school-boy.

Nor was it the bee-hunters alone that profited by the downfall of this industrious community. As if the bees would carry through the similitude of their habits with those of laborious and gainful man, I beheld numbers, from rival hives, arriving on eager wing, to enrich themselves with the ruin of their neighbours. They busied them-

selves as eagerly and cheerily as so many wreckers on an Indiaman that has been driven on shore—plunging into the cells of the broken honey-comb, banquetting greedily on the spoil, and then winging their way full-freighted to their homes. As to the poor proprietors of the ruin, they seemed to have no heart to do any thing, not even to taste the nectar that flowed around them, but crawled backwards and forwards in vacant desolation, as I have seen a poor fellow, with his hands in his breeches pocket, whistling vacantly and despondingly about the ruins of his house that had been burned.

It is difficult to describe the bewilderment of the bees of the bankrupt hive, who had been absent at the time of the catastrophe, and who arrived, from time to time, with full cargoes from abroad. At first they wheeled about the air, in the place where the tree had once reared its head, astonished at finding all a vacuum. At length, as if comprehending their disaster, they settled down, in clusters, on a dry branch of a neighbouring tree, from whence they seemed to contemplate the prostrate ruin, and to buzz forth doleful lamentations over the downfall of their republic. It was a scene on which the melancholy Jacques might have moralized by the hour.

We now abandoned the place, leaving much honey in the hollow tree. “It will be all cleared off by varmint,” said one of the rangers.

“What vermin?” asked I.

“O, bears and skunks, and racoons, and ’possums. The bears is the knowingest varmint for finding out a bee-tree in the world. They’ll gnaw for days together at the trunk, till they make a hole big enough to get in their paws, and then they’ll haul out honey, bees and all.”

ART. XXVI.—*Remarks on the Entomology of Epping and its Vicinity.* By EDWARD DOUBLEDAY.

(Continued from page 159)

“Ablatum mediis opus est incudibus illud
 Defuit et scriptis ultima lima meis.
 Et veniam pro laude peto: laudatus abunde,
 Non fastiditus si tibi, Lector, ero.”

DEAR SIR,—IN this, my second epistle to you on this subject, it is my intention merely to offer a few remarks on

sundry species of *Lepidoptera*, which I did not like to pass over and leave, *aliis post commemoranda*. I have, however, little new to offer. I cannot say, *Dulci animos novitate tenebo*. All I hope for these few lines, is,

“ Ut non ignava legentum
Otia delectant, admoneantque mei.”

There remains also for me to remark on several other classes. These I must for the present postpone; but as you seem to think that your readers would not object to a small slice of Ornithology, I mean to append a list of such birds as have, to my certain knowledge, occurred in this neighbourhood. Perhaps it may be thought by some that there are other places more fitted for such lists. There may be, and perhaps it would not be hard to find one; but,

“ Non procul a stabulis audet secedere, si quæ
Excussa est avidi dentibus agna lupi.
Quicumque Argolica de classe Capharea fugit;
Semper ab Euboicis vela retorquet aquis.
Et mea cymba semel vasta percussa procella
Illum, quo læsa est, horret adire locum.”

I remain, yours most truly,

EPPING, July 18, 1835.

E. DOUBLEDAY.

Pontia napi. Though this butterfly appears here in profusion, I never met with either *P. sabellicæ*, or *napiæ*; which I cannot but think to be mere varieties of this insect. I have often, whilst collecting, been struck with the tendency to vary exhibited by some species in certain localities, whilst in other places we find no such a tendency. I will mention a very common insect as an example of this:—*Harpalus æneus*, in this neighbourhood, scarcely ever varies from its type. At Sudbury and Walton I have found nearly every one of the five species it has been divided into equally common. How can we account for this?

Leucophasia sinapis. For five seasons I had never found this interesting insect, and had concluded that it had altogether disappeared. But in one of the few rambles I have been able to take this year, I captured one specimen. The same day I obtained, *inter alia*, *Lyda inanita*, *Doros Conopsea*, and *Conopia culiciformis*.

Melitææ Euphrosyne et Selene. I have never yet seen these insects in the autumn. Mr. Stephens speaks of an autumnal brood.

Argymnis Adippe. Rare here.

Vanessa C. album. Many years since this insect used to occur in profusion. I cannot be certain as to the year, but should judge that it was about fifteen or sixteen years ago, for it was when I was a mere child; but I have loved every thing that lived, every thing beautiful, from my childhood, and in my very earliest years was, in some sort, a collector. Some specimens taken there were in existence not very long back, but are now *pulvis et umbra*, or rather only the first. Since those times I have never met with the insect here.

Apatura Iris is very rare here. I have only taken one specimen, a male, in a field adjoining Mr. Marsh's woods. It had settled on the foot-path. I have heard of others being seen here by persons to whose judgment I can trust.

Theclæ W. album et rubi. The former of these is very rare here. Of the latter, one specimen only has occurred within my knowledge.

Polyommatus Argiolus. Surely this butterfly ought to form a separate genus. Its habits, the texture of its wings, and their form, seem to point out an affinity to some of the *Theclæ*.

Polyommatus Agestis. My friend, Mr. John Ray, (a worthy namesake of our great naturalist) discovered this species in plenty in a field not a mile from the town. I was not previously aware of its occurrence here.

Sphinx convolvuli. I have known of several captures of this noble insect in this parish, but they have all been made by unscientific persons; and, consequently, nearly all totally spoiled by the captors. I have, however, a fine pair captured here.

Deilephila Galii. The only specimen which has occurred here was captured by my brother, very early one morning, in August, 1831, hovering over the flowers of *Argemone grandiflora*. *D. porcellus* and *elpenor* are far from common, but come nearly every year to the honey-suckles in our garden. The *Sesiæ* and *Ægeriæ*, mentioned in my list, are all rare here, except *E. tipuliformis*, which unfortunately is but too common.

Cossus ligniperda is very rare here.

Clostera reclusa. Some years ago I reared several from larva found on birch. I have not seen it of late.

Stauropus fagi. Only one specimen taken here.

Lophopteryx Carmelita. A wing only, picked up by my brother, as mentioned in Stephens, H. Vol. II. p. 197.

Trichiura cratægi. Mr. Stephens takes no notice of the extraordinary variation in colour in different larvæ of this insect. I know of no insect where the variation is so striking.

Demas coryli. This insect is, I believe, generally rare. Here it was most decidedly so until last autumn, when myself, and a companion, beat out thirty larvæ in two days, from the underwood in Mr. Cure's woods.

Leucoma salicis. Very rare here.

Porthesia Chrysoorhea. This is in general very rare here; but this year the larva has occurred in tolerable abundance.

Porthesia auriflua. I have observed that this insect, as well as the preceding species, is to be much more frequently met with in confined gardens in towns, than in more open situations. *L. salicis* also seems rather partial to the neighbourhood of large towns. *P. auriflua* is here excessively rare.

Diaphora mendica. This insect seems to be diurnal. I have only taken it on the wing in the day-time.

Triphæna orbona. The most common of the *Noctuidæ* in this neighbourhood. *T. fimbria* and *T. interjecta* are both scarce here. The latter appears to be common in the neighbourhood of Coggeshall, the Bœotia of Essex.

Cerigo texta. I cannot but think that Mr. Stephens has fallen into a very great error, in placing this genus next to *Triphæna*. Its crested thorax, the position of its wings when at rest, and its general colouring, mark its close affinity to *Nania*, near which genus Mr. Curtis has placed it.

Lytæa umbrosa. Common in some seasons on the flowers of the common sunflower.

Rusina ferruginea. I have never taken this insect myself here, but have seen a specimen, which was captured near us two years since.

Agrotis hortorum, &c. I have a number of specimens captured in this neighbourhood, which I am utterly unable to refer to any described species with certainty. Although varying infinitely, I believe that they are all *one* species, but that

they belong to *many nominal* species. Hence the difficulty I find in identifying them.

Grammesia trilinea. In profusion in some seasons. *G. bilinea* is much rarer.

Hadena lithoriza. The larva of this moth feeds on our honey-suckles; it is very elongate, rather tapering towards the head and tail, of a greyish ash colour, with deeper marking, and occasionally (when young) a black lateral line. It appears in June. In the beginning of July it spins on the surface of the ground a pretty firm cocoon, strengthened externally with small fragments of wood, or grains of sand. The pupa is of a lightish brown, rather elongate, tapering very gradually towards the tail. The posterior margins of the abdominal segments appear, at first sight, to be furnished behind with a row of small hooks, but a nearer inspection with a lens shows that this apparent row of hooks is in reality a flat denticulated process of the posterior margin, corresponding to certain crenulations of the margin of the next segment. The larva, in the day time, remains on the branches of the honey-suckles, or on the stumps of the trees which they grow round, consequently is not easy to find.

Manestra furva. Generally rare here; but in the summer of 1832 was excessively common, frequenting the flowers of the raspberry. *M. oleracea*, which I omitted in my list, has once or twice occurred here.

Eremobia ochroleuca. I have never met with this insect here myself, but have seen a specimen, which was captured at Bobbingworth, about three miles from this parish.

Erastria fuscula. This differs from the rest of the genus in not being diurnal.

Hibernia capreolaria. I think that Mr. Stephens is in error as to the female of this insect; but I am not quite satisfied on this point. What I believe to be the female, agrees with his description of that of *A. leucophæaria*.

Geometræ illunaria et Juliaria. That these are but one species I have no doubt. I have repeatedly raised both from the larva, and have had specimens, which might with equal propriety be referred to either, being exactly intermediate between the spring and summer broods. I had once a female, a decided *illunaria*, which laid her eggs in the box in which I had her. The larvæ soon hatched, and from these

came forth specimens, some of which did not appear till October, but none remained until the spring. They were in fact *Juliaria*, though some were rather larger than that commonly is. The spring brood varies much in size, but is *generally* larger; yet I have raised specimens from larvæ found in the autumn, little bigger than *Juliaria*.

Boarmia tetragonaria. This, and the two following species, are about equally plentiful here. Perhaps this is the most common. I have taken eight or ten specimens of it in one evening, and seen more. It may mostly be found sitting on the pollard hornbeans, near the head, never low down, like *B. abietaria* and *crepuscularia*. Sometimes we find it on the oak and birch, but this is very seldom. It appears to prefer damp and shady parts of the forest.

Boarmia strigularia. I have this year bred this insect from larvæ found in June. I had not found it here before.

Boarmia punctularia used to be abundant here, but of late I have not found it.

Lampropteryx badiata and *Anticlea derivata* are both very common here.

Melanippe hastata appears to be purely diurnal.

Cheimatobia rupicaprararia is found here in profusion. I have captured forty in an hour.

Drepana hamula has this year been unusually common.

I may here mention, that this season some insects, which I have not seen here for some years, have re-appeared. Amongst others, *Rhyuchites populi* and *Attelabus cuculionoides*, but not in their usual numbers. *Luperus rufipes* has literally swarmed in our woods by myriads. One stroke of the stick would at once bring a score into a net.

From the few walks I have this year been able to take, I should conceive that this has not been a bad season for insects in general, though not particularly favourable to *Lepidoptera*.

And now let me turn to a subject which has not hitherto employed my pen. Perhaps this is one reason why I feel desirous to try my hand at it.

“Juvat integros accedere fonteis
Atque haurire: Juvatque novos decerpere flores.”

I have first to state, that I owe all my knowledge of Orni-

thology, or nearly all, to my brother. With his beautiful collection of British birds always before my eye, continually hearing his remarks on them and their habits, I have gained knowledge without labour, without study.

Perhaps I may lay claim to some few observations, which I might be able to make on this subject, but these are few; for though I have observed many things, those have been few which I had not previously learnt from him.

I have, in the following list, adhered exactly to Mr. Selby's arrangement, because I conceive his work to be by far the best on our British birds. With this and Temminck's Manual, the British Ornithologist need never, or very rarely, be at a loss upon any point. And what lover of nature is there that would not be an Ornithologist? How much pleasure, and how pure, can be reaped in a few hours' walk through the fields or woods, from observing the habits of their feathered inhabitants! How pleasing, on a calm summer evening, to watch the Nightjnr skinning over the open heath, or circling some solitary oak, in search of its insect prey! How sweet to wander before sun-rise, through the woods, when the whole choir of summer birds welcome with their songs the approach of day!

There are moments when even the most fortunate feel desponding; and,

“ Lone—as the corse within the shroud,
 Lone—as a solitary cloud,
 A single cloud on a summer day,
 While all the rest of heaven is clear,
 A frown upon the atmosphere,
 That hath no business to appear
 When skies are bright and earth is gay.”

But truly to be pitied would that man be who did not reap some joy from the animated and happy scene around him.

But men will not gather pleasure where it grows most luxuriantly; they prefer the unwholesome vegetation of a stagnant marsh to the bountiful produce of a rich field.

“ O! miseris hominum mentis! O pectora cœca!”

How few persons would believe that the following list of our birds can excite any feelings of interest in the mind of a rational person, or could be made subservient to any useful purpose!

Catalogue of Birds which have occurred in the neighbourhood of Epping.

Accipiter fringillarius,	Sparrow Hawk	Carduelis elegans,	Goldfinch
Falco subbuteo,	Hobby	Linaria cannabina,	Common Linnet
tinnunculus,	Kestrel	montana,	Mountain Linnet, or
aeson	Merlin	minor,	Twite
Buteo vulgaris,	Common Buzzard		Lesser Redpole Lin-
Milvus vulgaris,	Kite		net
Otus vulgaris,	Long-eared Owl	Coccothraustes vulgaris,	Grosbeak, or Haw-
brachyotos,	Short-eared Owl	chloris,	finch
Strix flammea,	Barn Owl		Green Grosbeak, or
Ulula stridula,	Tawney Owl		Greenfinch
Hirundo rustica,	Chimney Swallow	Loxia curvirostra,	Common Crossbill
urbica,	Martin	Pyrrhula vulgaris,	Bullfinch
riparia,	Sand Martin	Sturnus vulgaris,	Starling
Cypselus murarius,	Common Swift	Corvus corax,	Raven
Muscicapa grisola,	Spotted Fly-catcher	corone,	Carion Crow
Lanius collurio,	Red-backed Shrike	cornix,	Hooded Crow
Merula viscivora,	Missel Thrush	frugilegus,	Rook
pilaris,	Fieldfare	monedula,	Jackdaw
musica,	Song Thrush	Pica melanoleuca,	Magpie
iliaca,	Redwing	Garrulus glandarius,	Common Jay
vulgaris,	Blackbird	Picus viridis,	Green Woodpecker
torquata,	King Ouzel	major,	Great Spotted Wood-
Saxicola Enanthe,	Wheat-Ear	minor,	pecker
rubetra,	Whin-Chat		Lesser Spotted Wood-
rubicola,	Stone-Chat		pecker
Erythaca rubecula,	Redbreast	Yunx torquilla,	Wryneck
Phaenicura rutililla,	Redstart	Sitta Europæa,	Nuthatch
Salicaria Locustella,	Grasshopper Warbler	Certhia familiaris,	Common Creeper
Phragmitis,	Sedge Warbler	Troglodytes Europæus,	Common Wren
Arundinacea,	Reed Wren	Upupa Epops,	Hoopoe
Philomela Luscinia,	Nightingale	Cuculus canorus,	Cuckoo
Curruca atricapilla,	Blackcap	Columba palumbus,	Ring Dove
hortensis	Greater Pettechaps	Ænas,	Stock Dove
cinerea	Whitethroat	turtur,	Turtle Dove
garrula	Lesser Whitethroat	Phasianus colchicus,	Common Pheasant
Sylvia hippolais?	Lesser Pettechaps, or	Perdix cinerea,	Common Partridge
sibilatrix,	Chiff-Chaff	rubra,	Red Partridge
trochilus	Wood Wren	coturnix,	Quail
Regulus auricapillus,	Willow Wren	Ardea cinerea,	Common Heron
	Gold-crested Regu-	Botaurus stellaris,	Common Bittern
	lus, or Golden-	Totanus ochropus,	Green Sandpiper
	crowned Wren	Hypoleucos,	Common Sandpiper
Parus major,	Great Titmouse	Scolopax rusticola,	Woodcock
cæruleus,	Blue Titmouse	gallinago,	Common Snipe
palustris	Marsh Titmouse	gallinula,	Jack Snipe
ater,	Cole Titmouse	Rallus aquaticus,	Common Rail, or
caudatus,	Long-tailed Tit-		Water Rail
	mouse	Crex pratensis,	Corn Crake
Accentor modularis,	Hedge Sparrow	Gallinula chloropus,	Common Moorhen,
Motacilla alba,	Pied Wagtail		or Gallinule
boarula,	Grey Wagtail	Vanellus Cristatus,	Crested, or Green
flava,	Yellow Wagtail		Lapwing, or Pewit
Anthus pratensis,	Meadow Pipit	Charadrius pluvialis,	Golden Plover
arbores,	Tree Pipit	Edicnemus crepitans,	Common Thickknee,
Alauda arvensis,	Sky Lark	or Norfolk Plover	
arborea,	Tree Lark, or Wood	Cygnus ferus,	Wild, or Whistling
	Lark		Swan
Emberiza miliaria,	Common Bunting	Anas Boschas,	Wild Duck
citrinella,	Yellow Bunting, or	Querquedula crecca,	Teal
	Yellowhammer	Podiceps minor,	Little Grebe, or Dab-
			chick
schœniculus,	Reed Bunting	Sterna Hirundo,	Common Tern
Passer domesticus,	House Sparrow	Larus ridibundus,	Black-headed Gull
Fringilla cœlebs,	Chaffinch	canus,	Common Gull
montifringilla,	Mountain Finch, or	rissa,	Kittiwake
	Brambling	Puffinus Anglorum,	Shearwater
Carduelis spinus,	Siskin		

Besides the above, I may mention that the great ash-coloured Shrike (*Lanius excubitor*), the Cormorant (*Phalacrocorax carbo*), the Scaup Duck (*Fuligula marila*), the

Grey-lag Goose (*Anser palustris*), have been killed at Harlow, and the Whimbrel (*Numenius Phaeopus*) at Sewardstone; the former place being about six miles north of us; the latter, about the same distance to the south.

The five last birds in my list in no wise belong to us, and must have been driven inland by stress of weather. The Tern was killed flying over some large old gravel pits, which were full of water; the Shearwater was picked up dead in a field near the town; the three species of Gulls were all met with, in a very exhausted state, after long stormy weather.

Of the species of Hawks contained in my list, two only are at all common here; namely, the Sparrow-hawk and Kestrel. The Hobby is very rare. The Merlin is merely a visitant in the autumnal months, and that very rarely. I only know of one having been killed here, and that a young female. The Buzzard and Kite are now extinct, (thanks to the game-keepers); but the former I have seen within four or five years. Previous to that time I have very often watched them soaring high in the air, over the Park-hall and Hill-hall woods. They feed chiefly on small quadrupeds, toads, frogs, and insects; but a toad is their most favourite dish.

Hirundo riparia does not breed here.

Merula torquata. Seen only at the time of their equatorial, or polar migrations.

Salicaria arundinacea. One specimen shot at a large pond near the town. I am not aware of its being found near any of the rivers around us. It is common at Sudbury.

Motacilla Boarula. A winter visitant. I saw this bird in June, in the Vale of Llangollen, and near Snowdon.

Fringilla Montifringilla. An occasional visitant at the time of their spring and autumn migrations. The bill of this bird becomes nearly black in summer. This change is not uncommon amongst this tribe of birds.

The Grosbeak has a pale whitish bill in winter; in summer it is of a deepish lead colour; so also has the Chaffinch.

Carduelis spinus. An occasional visitant.

Coccothraustes vulgaris. This interesting bird is very common here, though rarely to be seen, save by a practised Ornithologist, from its shyness. In the winter it visits our gardens, to feed on the fallen stones of plums, bullaces, or laurel, which it dexterously cracks with its powerful bill.

Sometimes it may be found in small companies, of ten or fifteen, feeding on the fallen seeds of the hornbeans. It generally builds in a tall whitethorn, or holly; the nest is sometimes as loose as a Ring-dove's, but at others it bestows rather more pains upon it. It lays from five to six eggs. When the young are fledged, they visit the gardens near the forest in search of green peas. I have been told that last year, nearly, if not quite thirty, were killed in the garden of Colonel Conyers, of Copt-hall, whose park, I believe, to be a favourite breeding place of this bird.

Corvus cornix. Very rarely seen here.

Picus minor. Not often met with in this neighbourhood.

Upupa Epops. One specimen of the Hoopoe was killed a few years since, about a mile from the town.

Botaurus stellaris has occurred here but once.

Edicnemus crepitans. In calm moon-light evenings in spring, we frequently hear the call of this interesting bird, as it passes over at a considerable height. I never knew of more than one specimen being killed in this parish.

Totanus ochropus occurs here in May, July (the first week), August, and September.

Had I time, I could with much pleasure have said more on this subject; but this being wanting, I must now conclude. And as it may be long, very long, before I shall again obtrude myself on the notice of your readers, allow me to wish them all good night; and to add thereto one other wish, in the words of an unfortunate poet:—

“ Detur inoffensæ metam tibi tangere vitæ,
 Qui legis hoc nobis non inimicus opus.
 Atque utinam pro te possint mea vota valere
 Quæ pro me duros non tetigere Deos!”

ART. XXVII.—*List of Entomological Works.*

1. *On the History, Habits, and Instincts of Animals; by the Rev. W. Kirby, M. A.; being No. VII. of the Bridge-water Treatises.* London: Pickering. 1835.

2. *The Magazine of Natural History; conducted by J. C. Loudon.* London: Longman. 1835. *Monthly Numbers, XLVII. to LII.*

NEWMAN, in a paper read before the Linnæan Society of London, and lately published in this Magazine,^a has shown most clearly, that the metamorphosis of insects is nothing more than ecdysis, or a sloughing of the external covering. It is perfectly true, that ecdysis occasionally takes place with little or no alteration of external form; it is true also, that in metamorphosis a complete change of external forms frequently takes place; but it is equally true, that we are acquainted with every degree in the graduated scale between the maximum and minimum degree of change. Under these circumstances, we are compelled to acknowledge that metamorphosis is ecdysis, and that ecdysis is metamorphosis; for the mind refuses to apply one reasoning to any given portion of a series, and seek another reasoning for a different portion of the same series.

There is no subject which has caused so great a sensation among Naturalists as the metamorphosis of *Decapods*. For this highly important discovery we are indebted to Mr. Thompson. He has shown, beyond the possibility of dispute, that *Decapods* commence their existence under a form widely differing from that in which they arrive at maturity. Bosc, in his "Histoire Naturelle des Crustacés," has named, described, and figured, a minute oceanic insect, under the name of *Zoëa pelagica*.^b Latreille altered the name to *Zoë*, in his "Genera Crustaceorum et Insectorum;"^c and Leach, in the "Edinburgh Encyclopædia,"^d and "Encyclopædia Britannica,"^e adopts the latter name, and describes the insect. This same *Zoë* is now proved to be the state of a crab, or some *Decapod*, immediately on its exclusion from the ovum. Another genus, named *Megalopa* by Leach, and not hitherto supposed to be related to *Zoë*, proves also to be a young crab advanced another stage towards perfection; but it appears that more than one ecdysis is necessary to convert a *Zoë* into a *Megalopa*, and probably several more to convert a *Megalopa* into a crab. The very recent date of these important discoveries clearly shows how much we are still in the dark as to the value of our genera of *Crustacea*, and how completely we stand in need of a complete revision of our classification in this branch of Entomology. Sincerely do we hope that Mr. Thompson

^a See page 12 of the present volume.

^b Tom. II. p. 135, pl. 15, f. 3, 4.

^c Tom. I. p. 21.

^d VII. 889.

^e Suppl. I. 423.

will undertake it; aided by the labours of Desmarest, Audouin, Milne, Edwards, and other continental writers—and with his own great knowledge, derived from real observation, there is no man living so competent to the task.

Long after the *Decapods* have relinquished their preparatory form, and assumed that in which they reach perfection, they have yet to undergo a repeated and complete ecdysis, the mode of which appeared to vary considerably in different orders. In a common lobster, which Mr. Newman has shown us, destroyed while in the very act of casting its shell, the cephalothorax, or principal shell, is parted longitudinally down the back, and one half appears ready to fall each way. In the spider-crab Mr. Hill describes the moult thus:—

A few days since a spider-crab was sent alive to me, taken in the act of changing its coat. The operation was singular. The upper and lower shell being parted, the legs were withdrawn from their old cases, and served as a lever to detach the under shell from the upper. Some exertion of the legs was necessary to raise the upper shell: this had been accomplished, but it was not entirely detached from the body when brought to me. The body was quite soft, and the new skin of about the consistence of parchment.—*Magazine of Natural History*, Vol. VIII. p. 468.

We will now proceed to a statement of the Rev. Mr. Brec's, a writer, whose veracity is beyond doubt; and we find that, touching the question of metamorphosis considered as the decided change of shape, we have in the common fresh-water cray-fish, (*Astacus fluvialilis*) an exception to the general rule. The first passage quoted refers to the ecdysis of cray-fish, after having attained a considerable magnitude.

On these occasions, I well recollect, we seldom failed to find first the *exuviae*, or cast shells, of the cray-fish; secondly, certain cray-fish, which had so lately undergone the operation, that their new shells had not yet acquired their usual firm consistency, but were soft and flabby, and as pliable to the touch as a piece of thin parchment. These soft-shelled individuals we used to consider as out of season, and we generally refrained from taking them. Thirdly, I may state, that when the cray-fish came to be dressed, and served up at table, it was no unusual occurrence to meet with some which had so nearly approached the period of their change, that on breaking the outward shell, a second and newly-formed shell was perceptible beneath it. Fourthly, and to crown all, I have more than once seen

cray-fish in the act of casting their shells; *i. e.* with the old shell not completely thrown off, but still adhering to the animal. Of the precise mode and manner in which they disengage themselves from their old shells, I regret I can give no particular account. I can state, however, that the shell is cast entire, not broken into pieces, nor split above, so that the cray-fish, as we might expect, must crawl out from the fore-part beneath. The operation of casting the shell, I should conclude, is not confined to any one fixed period of the year, but is regulated by other causes. My visits to the brook in question were made in the months of July and August; at which season, as already stated, some specimens were to be found which had recently undergone the change, others were about to undergo it; but by far the greater number exhibited no signs either of recent or future casting of the shell.—*Magazine of Natural History*, Vol. VIII. p. 468.

Mr. Thompson, it should seem, maintains the existence of transformations *throughout* the *Crustacea*, similar, I suppose, to those of the larvæ of insects. Now here, again, I cannot speak to the fact as regards crabs and lobsters; and I know that there are anomalies in nature. But *the young of the fresh-water cray-fish most unquestionably are hatched, and come into the world of the same shape as the adult ones*. In the above-mentioned brook, I have caught cray-fish with the ova apparently just hatched, and the minute young not having yet, as it were, left the nest, but still adhering to the under part of the parent.—*Ibid.* p. 469.

The same number of the *Magazine of Natural History* contains a notice, with figures, of a new *Phyllosoma*, by Mr. Lukis; also a notice, with figures, of *Squilla Desmarestii*, by the same gentleman; the figures are admirably cut in wood. Some observations on the living *Squilla* are so interesting that we cannot forbear quoting them.

The *Squilla* I kept alive in a basin of sea-water for two days, during which time I had a fair opportunity of observing its activity and peculiar habits. It sported about, and after a first approach, exhibited a boldness rather unexpected. When first alarmed, it sprang backward, with great velocity; after which, it placed itself in a menacing attitude, which would rather have excited a fear of exposing the hand to it. The prominent appearance of the eyes, their brilliancy and attentive watching, and the feeling power of the long antennæ, evinced quick apprehension and instinct. I brought a silver tea-spoon near them, which was struck out of my hand with a suddenness and force comparable to an electric shock. This blow

was effected by the large arms, which were closed, and projected in an instant with the quickness of lightning. An apparent anxiety to keep the head and claws in front, made me suspect that the animal lodges its hinder part in holes and recesses, from which it can strike at its prey or other passing objects. The attitude represented in the figure (nearly linear), was maintained during my observations; and I did not see any inclination to close the tail in a more compacted form.—*Magazine of Natural History*, Vol. VIII. p. 464.

Recurring to the work whose title stands at the head of this article, it seems to us that we shall scarcely do our duty without offering an observation on its general tenor. Far be it from us to set up our opinion in opposition to that of Mr. Kirby; far be it from us to tell one so much our superior in these matters that he is wrong: yet will we venture, in humility and perfect kindness towards Mr. Kirby, whom we respect and love, to make a few comments on the work before us. Mr. Kirby starts with the motto, “*C'est la Bible à la main que nous devons entrer dans la temple auguste de la nature, pour bien comprendre la voix du Créateur;*” and keeping this maxim in view, facts in nature are bent into unison with the Bible, or passages in the Bible receive new and strange interpretations to make them agree with nature. Now, though we admit to the full the exquisite beauty and sublimity of various metaphorical and illustrative allusions to natural objects which occur throughout the Holy Scriptures, yet we consider the sacred volume designed for higher objects than the elucidation of scientific questions, or the description of perishable objects. We cannot view it as a book of Natural History. Nevertheless, wide as is the difference between Mr. Kirby's belief and our own on this point, and wider it cannot be, we must still add, that we feel confident that Mr. Kirby's views are not promulgated without a firm and conscientious belief, on his part, that they are perfectly sound, and calculated to advance the design of the work he has undertaken,—that of showing “the power, wisdom, and goodness of God, as manifested in the creation.” As works of science, we have been sorely disappointed with the Bridgewater Treatises. Considered as a work of science, we offer no opinion of the individual treatise now under consideration; yet we have no hesitation in recommending it to the general reader.

The aged cannot rise from its perusal without pleasure, nor the young without having received instruction.

On the history of *Crustacea*, Mr. Kirby has been somewhat diffuse; and although a work of this sort is necessarily a compilation, and contains in the way of fact little or nothing of novelty, yet, in the present instance, the mass of information collected from various authentic sources is highly valuable. In extracting the following passage respecting a species of land-crab (*Gecarcinus carnifex*), we have been more attracted by its interest than its novelty.

They descend the mountains, which are their usual abode, in such numbers, that the roads and woods are covered with them. They feel an impulse so to steer their course, that they may travel by the easiest descent, and arrive most readily at the sea, the great object at which they aim. They resemble a vast army marching in battle array, without breaking their ranks, following always a right line; they scale the houses and surmount every other obstacle that lies in their way. They sometimes even get into the houses, making a noise like that of rats; and when they enter the gardens, they commit great devastations, destroying all their produce with their claws. They are said to halt twice every day, and to travel chiefly in the night. Arrived at the sea-shore, they are there reported to bathe three or four different times. When retiring to the neighbouring plains or woods, they repose for some time, and then the females return to the water and commit their eggs to the waves. This business despatched, they endeavour to regain, in the same order, the country they had left, and by the same route, but only the most vigorous can reach the mountains. The greater part are so lean and weak that they are forced to stop to recruit their strength in the first country they reach. When arrived again at their habitations, they have a new labour to undergo, for now is the time of their moult. They hide themselves in their subterranean retreats for this purpose, so that not a single one can be seen: they even stop up the mouth of their burrows.—*Kirby, on the History, &c.* Vol. I. p. 124.

With regard to the actual process of moulting, our author gives the account long since published by Réaumur; and it is rather remarkable that that illustrious entomologist's observations were made on the very same animal as those of Mr. Bree, recorded above. Our desire to bring together all the authentic information within our reach on this interesting

subject, induces us to transcribe the passage even at the risk of being charged with the repetition of an oft-told tale. One word on the previous quotation: the fact that it is essential for the *Gecarcinus carnifex* to pass its first days in the water, clearly proves the young of that species have a different economy from the adults. This fact establishes a metamorphosis almost as decisively as the detection of the young under a totally different shape.

In the spring, in boxes pierced with holes, which he placed both in the river and in an apartment, Réaumur put the fresh-water cray-fish (*Astacus fluviatilis*). He observed, that when one of these was about to cast its crust, it rubbed its feet one against the other, and gave itself violent contortions. After these preparatory movements it swelled out its body more than usual, and the first segment of its abdomen appeared more than commonly distant from the thorax. The membrane that united them now burst, and its new body appeared. After resting for some time, it recommenced agitating its legs and other parts, swelling to the utmost the parts covered by the thorax, which was thus elevated and separated from the base of the legs; the membrane which united it to the underside of the body burst asunder, and it only remained attached towards the mouth. In a few minutes from this time the animal was entirely stripped, except the legs. First, the margin of the thorax was seen to separate from the first pair of legs: at that instant drawing back its head, after reiterated efforts, it disengaged its eyes from their cases, and all the other organs of the anterior part of the head. It next uncased one of its fore-legs, or all or part of the legs on one side, which operation is so difficult, that young ones sometimes die under it. When the legs are disengaged, the animal casts off the thorax, extends the tail briskly, and pushes off its covering and that of its parts. After this last action, which requires the utmost exertion of its remaining vigour, it sinks into a state of great weakness. Its limbs are so soft that they bend like a piece of wet paper; but if the back is felt its flesh appears unexpectedly firm; a circumstance arising, perhaps, from the convulsive state of the muscles. When the thorax is once disengaged, and the animal has begun to extricate its legs, nothing can stop its progress. Réaumur often took them out of the water with the intention of preserving them half uncased; but they finished, in spite of him, their moult in his hands. Upon examining the exuviae of these animals, we find no external part wanting: every hair is a case which covers another hair. The lower articulations of the legs

are divided longitudinally, at a suture which separates during the operation, but which is not visible in the living animal.—*Kirby, on the History, &c.* Vol. II. p. 52.

The time requisite for hardening the newly-acquired crust, according to its previous state, is from one to three days. Those animals which are ready to moult, have always two strong substances, called crabs' eyes, placed in the stomach, which, from the experiments of Réaumur and others, appear destined to furnish the matter, or a portion of it, of which the shell is formed; for if the animal is opened the day after its moult, when the shell is only half-hardened, these substances are found only half diminished; and if opened later, they are proportionably smaller. Thus has Creative Wisdom provided means for the prompt consolidation of the crust of these creatures, so that it is soon rescued from the dangers to which, in its naked state, it is exposed.—*Ibid.* Vol. II. p. 55.

With this doctrine we scarcely agree; it has always appeared to us, that the stomach is the least likely part of the animal to contain the matter for the future shell; and we confess we are unable to devise a process by which the mass of calcareous matter contained in these substances shall be conveyed through the flesh to the external skin. The reproduction of lost members in *Crustacea* is a most interesting subject, and one which claimed the close attention of Réaumur. Mr. Kirby, quoting that high authority on this subject, gives us the following account:—

When a leg is mutilated in the summer, if examined a day or two after the experiment, the first circumstance observable is a kind of covering membrane, of a reddish hue; in five or six days more this membrane becomes convex; next it is protruded into a conical shape, and keeps gradually lengthening as the germinating leg is developed; at last the membrane is ruptured, and the leg appears at first soft, but in a few days it becomes as hard as the old one. It now wants only size and length, and these it acquires in time, and at every moult it augments in a more rapid proportion than the legs which have their proper size. The antennæ, maxillæ, &c. are reproduced in the same manner; but if the tail is mutilated it is never reproduced, and the animal dies.—*Ibid.* Vol. II. p. 57.

It seems to us unaccountable, that *Crustaceology*, one of the most interesting branches of Entomology, should have so few students in comparison with the other branches of the

science. We have, perhaps, ourselves been somewhat to blame in not allowing it a more prominent place in our pages than we have hitherto done. We now announce our intention of repairing this error; and, aided by the valuable contributions of Mr. Thompson, we hope that no future number will appear without, at least, one article on *Crustacea*. The singular and varied economy of these creatures, their gigantic size, and the value of many species as articles of food and commerce, surely might weigh with the Entomologist, even though he held it of no importance that without them his cabinet must be incomplete. Of the Hermit, or Soldier-crabs, we have already spoken in our opening article. Mr. Kirby's work contains a still more complete and interesting account of them; but after the quotation from Mr. Bennett's "Wanderings," we must not transcribe it. Our author mentions a huge lobster, which ascends the cocoa and palm trees by night, devouring their fruit, of which it is so fond, that in confinement it will subsist on it for months, without suffering from want of water. One kind of land-crab is distinguished by the extraordinary disproportion of its claws; one of them, sometimes the left, sometimes the right, being enormously large, while the other is very small, and often concealed, so that the animal appears single-handed. These crabs "have the habit of holding up the great claw, as if beckoning to some one." Another species of land-crab runs so fast that it is difficult to overtake it on foot. A third species requires a fleet horse to run it down. Bosc relates, that he found these in Carolina, where he experienced great difficulty in riding them down and shooting them with a pistol. There is a story, delightfully told, in a little book lately published, which, being founded on fact, gives some idea of the size, strength, and activity of a land-crab. It happened that, in one of the insurrections of the blacks in the West Indies, a corporal of marines was murdered, the head being separated completely from the body. At night, the body and head were buried by his comrades in a grave, which it may be supposed was not very deep. The next day a kind of skeleton-looking object was seen sporting about with the corporal's head under his arm. The sailors who witnessed this, as a matter of course, supposed the animal to be the corporal's ghost; but an officer of marines, accustomed to the country, knew better. He loaded a couple

of rifles, and going out with his servant in quest of the so-called ghost, soon found him. The head was still held under the arm of the animal, who, at sight of the enemy, made off with all speed. However, the first rifle-shot, well directed, caused him to drop the head; and a second, after a severe chase among the brushwood, laid him kicking on his back. It need scarcely be added that the ghost was a large land-crab.

3. *British Entomology; by John Curtis. Nos. CXXXV. to CXXXVIII., March to June, 1835.*

4. *Illustrations of British Entomology; by J. F. Stephens. Nos. LXXII. to LXXX.*

5. *A Manual of Entomology, from the German of Dr. Hermann Burmeister; by W. E. Shuckard, M. E. S. With Original Notes and additional Plates. Nos. II. to VIII.* This work will henceforth appear in double Numbers.

6. *The Transactions of the Linnæan Society of London. Vol. XVII. Part 2, 1835. On Diopsis, a genus of Dipterous Insects, with Descriptions of twenty-one Species; by J. O. Westwood, Esq., F. L. S.*

7. *A Treatise on the Geography and Classification of Animals; by William Swainson, Esq.*

8. *Etudes Entomologiques, ou Description d'Insectes nouveaux, et Observations sur leur Synonymie; par M. de Laporte, Comte de Castlneau. Livraison 2. Paris, 1835.*

9. *Iconographie du Règne Animal de M. le Baron Cuvier; par M. F. E. Guérin. Paris. Livraisons 38 et 39. Insectes, pl. 40, 56, 57, 58, 67, 68, 69, 70, 71, 73, 75.*

10. *Iconographie, &c. des Coléoptères d'Europe; par M. le Comte Dejean, et M. le Docteur J. A. Boisduval. Tome IV. Livraison 8. Paris.*

11. *Magasin de Zoologie; par. F. E. Guérin. Paris, 1835.*

12. *Annales de la Société Entomologique de France. Tome III. Trimestre 4. Paris, 1834; et Tome IV. Trimestre 1. 1835.*
13. *Genera des Insectes, &c.; par M. M. E. Guérin et A. Percheron. Livraison 1. Paris, 1835.*
14. *Faune Entomologique des Environs de Paris; par MM. Boisduval et Lacordaire. Tome I. Paris, 1835.*
15. *Tableaux Synoptiques des Lépidoptères d'Europe; par MM. Villiers et Guenée. Paris, 1835.*
16. *Coléoptères du Mexique; par A. Chevrolat. Fasciculo 3. Paris, 1834.*
17. *Histoire Naturelle des Lépidoptères Rhopalocères ou Papillons diurnes des départemens des Haut et Bas-Rhin, de la Moselle, de la Meurthe et des Vosges, publiée par L. P. Cantener. Livraison 3. Paris, 1834.*
18. *Monographie des Cétaines, et Genres voisins, &c.; par M. H. Gory, et M. A. Percheron. Livraison 7. Paris, 1834.*
19. *Histoire Naturelle des Lépidoptères, ou Papillons de France; par Godurt, continuée par M. Duponchel. Tome IX. Nocturnes; Tome VI., Livraison 3 et 4. Supplement, &c. Tome I. Livraison 17. Paris, 1834.*
20. *Iconographie des Chenilles, &c. Tome I. Livraisons 11 et 12.*
21. *Icones Historiques des Lépidoptères nouveaux ou peu connus; par le Docteur Boisduval. Livraisons 27, 28, 29, 30.*
22. *Collection Iconographique et Historique des Chenilles, &c.; par MM. Boisduval, Rambur et Graslin. Livraisons 25—30.*
23. *Histoire Naturelle des Lépidoptères d'Europe, par N. Lucas; ouvrage orné de près de 400 figures peintes d'après nature; par A. Noel. Paris, 1834.*

24. *Faune Entomologique de l'Océanie, comprenant les Coléoptères, les Hémiptères, les Hyménoptères et les Diptères.* Par le Docteur Boisduval. Paris, 1835.

25. *Histoire Naturelle et Iconographie des Insectes Coléoptères, par F. L. de Laporte, Comte de Castlneau, et H. Gory.* Livraison 1. Paris, 1835. — This Number treats of the *Chrysochroidæ*, a family of *Buprestites*, comprising the following genera, — *Sternocera*, *Julodis*, *Acmaødera*, and *Chrysochroa*. It is illustrated by four plates beautifully coloured.

26. *Handbuch der Entomologie von Hermann Burmeister.* Zweiter Band. Mit 2 Rupfertafeln und erklärendem Text in Quart. Berlin, 1835.

27. *Outlines of Comparative Anatomy; by Robert E. Grant, M.D. Part II. containing the Muscular and Nervous Systems.* Illustrated with thirty wood-cuts. London, 1835.

28. *Suites à Buffon, &c. Histoire des Insectes; Diptères par M. Macquart.* Tome II. Accompagné de Planches. Paris, 1835.

29. *Suites à Buffon, &c. Histoire Naturelle des Crustacés, par M. Milne Edwards.* Tome I. Paris, 1834.

30. *Mémoire sur l'Organisation des Cirripèdes et sur leur Rapports Naturels avec les Animaux Articulés; avec 2 planches; par G. J. Martin-Saint-Ange.* Paris, 1835.

31. *Monographie Die Arachniden.* Von D. Carl. Wilh. Hahn. Nürnberg, 1835.

So rapid is the progress of Entomology, and so abundant the works on the science, that were we to give an analysis, however cursory, of each, we should not have a single page left us for original matter. We trust this will be a sufficient apology to the authors of twenty-nine publications, whose titles only we have given in the above list.

ART. XXVIII.—*Varieties.*

9.—*Locality of certain forms in Natural History.*—“It is very remarkable that, in the production of certain forms of the animal and vegetable kingdom, nature should be so closely tied down to localities—a circumstance which we are as yet unable to account for. The forests of Brazil abound with hideous amphibia and innumerable insect tribes. It is impossible to touch the branch of a tree, or the leaf of a plant, without disturbing beetles or other insects; but in Oahoo, as in the other islands of the South Seas, there is the greatest paucity of insects. In vain we examine the under-surface of the leaves,—in vain we shake the trees,—no insects fall down; we, however, meet with snails of very pretty forms, and often of brilliant colours; sometimes striped very regularly, and a good deal like our *Helix nemoralis*; sometimes entirely grass-green, which colour they however lose when dead, and which can have been communicated to the shell only by the animals having subsisted on green leaves. Instead of insects, nature has, in the Sandwich Islands, placed millions of land-snails upon the trees, while she has observed a medium in the Indian isles. There, as for instance at Manilla, she has assigned to vegetation partly land-snails and partly insects—both frequently of enormous size and the most brilliant colours. There is a great variety in the size, colour, and form of the land-snails of the Sandwich Islands. Mr. Von Chamisso has already described an *Auricula Owaihiensis*, and an *Auricula sinistrorsa*; and Mr. Green, an *Achatina Stewartii*, and an *Achatina Oahnensis*, besides several new kinds brought back by the French naturalists and ourselves. It is a curious circumstance, that the greater number of these snails are sinister; while among us, and in all other parts, this deviation is very rare;—nay, there are some kinds of the species *Achatina*, which seem to occur only sinister in the island of Oahoo.”—*Meyer's Voyage Round the World.*

10. *Hermaphrodite specimen of Polyommatus Alexis.*—A specimen of this pretty little butterfly has been taken at Deptford, with the wings on one side bright blue, on the other brown; in one instance possessing all the characters of the male, in the other, all those of the female. Such an individual has been figured in the last number of the *Annales de la Société Entomologique de France.* E. N. D.

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ART. XXIX.—*Wanderings and Ponderings of an Insect-Hunter.*

CHAPTER I.

[The Insect-Hunter walketh over Blackheath, across the fields, to Eltham; thence, by Sidcup and Foots' Cray, to Birch Wood; he descanteth on writers and dogs; he entereth the wood, and recordeth its productions; he concludeth the chapter.]

IT happened, one fine morning, towards the end of June, that I rose before the sun, fitted myself out for an entomological expedition, and walked quietly over Blackheath, behind Morden College, and across the fields towards Eltham. The tower of Severn-droog, that *ultima Thule* of Cockaigne, seemed to float, like an anchored ship at sea, on the dense white mass of mist that entirely hid from my sight Shooter's Hill, on which the tower stands. The skylarks hovering in the blue ether above me, were hymning the praises of their Maker. The corn-fields, heavy with dew, were not undulated by a single breeze. Near as I was to his multitudinous dwelling, surrounded by the evidence of his toil, there was no sound of man;—I was perfectly, deliciously alone. The presence, aye even the distant voice of man would have oppressed my very breathing, would have destroyed the charmed existence which I then possessed. I continued on my way, and each successive mile produced its variety; its men, its birds, its insects. Each mile was pleasing after its manner, but those traversed in the earliest hour were the most delightful.

After passing Sidcup, the country opens beautifully before the traveller; a thousand fields and long tracts of wood appear before him. Hops, raspberries, plums, and cherries, are scattered profusely over the landscape, making the surface of the country appear like a continuous garden. About three miles distant to the left, a little cluster of black fir-trees mark that ever-welcome resting-place, Birch Wood Corner. Descending the hill, we reach Foots' Cray, remarkable for the advertisements at its various public-houses, that ale is there sold by the *yard* instead of by the *pint*. About a mile beyond Foots' Cray, on the grass, by the road side, I have frequently met with *Chrysomela Goettingensis*: the locality is to the left of the road, and about one hundred yards on the London side of the turnpike-gate. At this spot I have taken *Zabrus gibbus*, crawling across the road. About three quarters of a mile further, the trees again appear, not distant now, but showing their black tops in the very centre of the road, above which they appear to dance, rising and falling with every step the traveller takes. The extreme top of these trees always puts me in mind of a hound with tail erect, and nose puzzling on the ground in the attempt to recover a lost scent. The road is now cut through the hill, leaving a sandy bank on either side, the favourite haunt of bees, sand-wasps, and tiger-beetles. A few minutes more, and I am seated in the little bay-windowed room at the Bull Inn, the supposed scene of those strange imaginary dialogues which have been published, from time to time, in the Entomological Magazine, under the title of *Colloquia Entomologica*. At the period I first visited this inn, these dialogues had not seen the light, and therefore, could give no interest to the spot; but now the case is different: I never enter the room without a vivid impression that within its walls those dialogues are supposed to have occurred. That I am the Entomophilus, and my friend Doubleday, as he acknowledges, is the Erro, cannot be matter of doubt to ourselves or those who know us; that the ideas, the fears, the anticipations, the aspirations, the reflections, are the genuine property of those in whose mouths they are placed is equally incontrovertible; but it is doubtful, very doubtful, whether any one has the right thus to exhibit to the public the workings of minds which, in the freedom of social intercourse, he may have seen thus unveiled.

Independently of the Colloquia, the Bull has its interests. It is there the Entomological Club hold their symposia: happy, happy days, of which the anticipation or the remembrance last throughout the year. To me the very dogs are acquaintance; and however ludicrous it may appear to some of my readers, I acknowledge that I love dogs. The admission will be fatal to my reputation, will lose me many readers: the "Insect-Hunter" loves dogs! he cannot help it: it may be a failing, but it is irradicable, inherent. There is something so intelligent, so affectionate, about dogs, that I cannot help loving them. Rockwood is no more! his deep mellow voice will never again elicit the echo of those lovely woods: he lived till life became a burthen. I was present when sentence of death was passed on him. I could not remonstrate: the deed was a deed of kindness. I wandered to the wood to be out of the way; my net, instead of being flung jauntily into the hollow of my arm, as an American backwoodsman carries his rifle, was left inverted by the fire-place. I sought for no insects, but whistled on my devious way. I always whistle when I am melancholy; and a singing in my ear told me I had lost a friend.

I have an entomological friend who has a very different feeling towards dogs—a feeling I cannot understand. He never travels without a dog-stick; and as soon as he spies a dog at a distance he puts himself in an attitude of hostility. His muscles become rigid, his eyes become fixed, and he advances towards the unfortunate animal with all the zeal of Don Quixote charging a windmill or a flock of sheep. He is possessed of cynophobia; he fears an attack, and attacks first to gain the advantage. The poor animal, unsuspecting of harm, at first appears lost in astonishment, then bristles his mane, and grows uncomfortable; and, at last, in sheer self-defence, is driven to make the attack, which is so much the object of dread. But enough of dogs for the present.

Birch Wood, as a locality for insects, has no equal in the vicinity of London: it matters not which class the collector is in quest of, he here may suit himself. The character of the wood is more various than that of any other with which I am acquainted. We enter it, from the Bull Inn, through a field of elder-trees; an elder orchard, on the blossoms of which specimens of *Trichius nobilis* have occasionally been found, and the pretty little *Malachius fasciatus* occurs in abundance.

After this field, or orchard, we pass through a belt of under-wood, principally Spanish chestnut, to a large plantation of Scotch and larch firs, on the trunks of which, if carefully examined, may be found a variety of moths. The various species of *Aleis* and *Boarmia* are most abundant, each in its appointed season. *Achatia piniperda* I have also frequently found half hidden in the cracks of the bark. It is necessary to thin these plantations as the trees increase in size: the whole plantation is surveyed, a portion of the trees marked, and, with the axe, cut down close to the ground. On the stumps, immediately after the fall of the tree, will be found specimens of *Hylobius abietis*, and *Hylurgus piniperda*, and *ater*. When the stumps have rotted, and become touch-wood, they will be found to contain vast numbers of *Rhagium bifasciatum*, in the various stages of larva, pupa, and imago, and if a young oak has shared in the periodical condemnation, its decaying stump will be found to contain *Rhagium vulgare*. Both these *Rhagia* may be beaten, in abundance, from the blossom of the whitethorn and holly. Beneath the fir-trees, the grass, which is long, abounds in minute *Diptera* and parasitic *Hymenoptera*, and the *fungi* are most productive of *Coleoptera*. The *Agarici* produce *Oxyporus rufus*, and other rare *Staphylinites*; the *Boleti* produce *Agathidia* and *Staphylinites*, and the *Lycoperdines*, which are abundant, almost invariably contain *Lycoperdina bovista*.

Leaving this plantation, we pass through a thicket containing a number of juniper-trees and seedling firs: on these junipers I first discovered the beautiful *Acanthosoma picta*, one of the most splendid British insects of the order *Cimicites*; it abounds here in March and the beginning of April, and is again met with in August and September. A species of *Perilampus* inhabits the same trees, and is readily beaten from them into a folding-net, the only way in which the *Acanthosoma* has been taken. Beyond this thicket the wood is composed principally of oak-trees, with an abundant undergrowth of hazel, birch, dogwood, whitethorn, &c.

A portion of this undergrowth is cut down close to the ground, every year, and converted into hoops, and faggots, and hurdles, by which means the wood presents a diversity of growth; a plot of a few acres being quite bare, while on one side of it another plot has a year's growth, and on the other

side ten years' growth. When a portion of the undergrowth has been cut, the ground is spontaneously covered with the humble ground-ivy and the common bugle, (*Ajuga reptans*.) Round the blossoms of the bugle the elegant *Sesia* hover to extract the sweets. Both the species *fuciformis* and *bombiformis* may be taken daily, as long as the flower continues in blossom. The time is May, and synchronous with the *Sesia* are the elegant butterflies *Euphrosyne* and *Selene*, the lively *Lucina*, and the feeble, frail, and slender *Sinapis*. The wood is, throughout, intersected with roads, the thick foliage of the sides of which is most prolific, and should be carefully beaten into the large clap-net: the produce will be a variety of *Noctuites*, (particularly the rich *N. fimbria*,) *Tortricites*, and beetles of all kinds; and the grassy edges of the roads, if swept with the round hand-net, yield multitudes of minute *Hymenoptera* and *Diptera*. In these roads the umbellate flowers are the resort of *Zaræa fasciata*, *Leptura 4-fasciata*, and other rarities.

To the south-east of the wood, and closely joining it, is a field of heath, which produces the following *Orchideæ* in abundance:—*Ophrys apifera*, *Listera ovata*, *Orchis bifolia*, *morio*, *mascula*, and *maculata*. In this field, the males of *Saturnia carpini* and *Endromis versicolor*, are occasionally taken on the wing: they fly in the afternoon, and invariably against the wind.

To the south-west of the wood is another field, like the former, uncultivated, and, throughout the summer, a perfect flower-garden. Here abound the various species of *Hieracium*, and other composite flowers, on which sun-loving insects delight to settle. Here also grow, in great profusion, *Lotus corniculatus*, *Thymus serpyllus*, *Acinos vulgaris*, *Echium vulgare*, *Polygala vulgaris*, with its various shades of red, purple, blue, and white; *Orchis mascula*, *maculata*, and *morio*, and the tall white *bifolia*, are most conspicuous; *scabiosa succisa* and *arvensis*; *Centaurea nigra* and *scabiosa*. The entomological produce is abundant and various: on the *Centaurea* feed a number of *Tephritites*, the most abundant of which are—*Alciphron*, *cornuta*, *pugionata*, and *sonchi*. I have taken a hundred specimens of *cornuta* from the flowers of *Centaurea scabiosa* in a single day; and a month earlier, before the flowers were expanded, I have found *Alciphron*

almost equally abundant on the same plant. On the bright blue *Echium* I have taken *Ceratina cærulea*, one of our rarest British bees. On several dwarf umbellate flowers *Tiphia femorata* abounds. Several species of *Cryptocephalus* are found on the flowers; and the bright sun-loving *Pyrastæ* hover over the thyme in great numbers; that little beauty *octo-maculata* is not uncommon; and the gay red and green *Zygæna* fly from blossom to blossom of the *Centaurea scabiosa*. But I cannot give a list of the entomological treasures of this lovely spot; the task were too tedious: my object is to show the character of the places which I visit, not to record their every production. Entering the wood, at the farther corner of the garden-field, we come to another excellent insect locality, a pond in winter, a bog in summer. In winter this pond is most productive in *Colymbetes*. I well recollect, one Easter Monday, when I had wandered here with three companions, the extraordinary luck that we had in fishing that little pond. It strikes me that some reader may object to my applying the term winter to Easter Monday; that reader will find an answer by going into the woods on that day; they will reply, it is winter still. On the day in question, we took *Colymbetes bimaculatus*, *fenestralis*, *fuliginosus*, *guttiger*, *ater*, and *oblongus*, by hundreds, and about a dozen *Grapii*, out of this one little pond. In July I have watched for hours over and about the bed of this pond the beautiful vagaries, the elegant air-wanderings of the purple emperor, now alone, now with a companion soaring upwards, in circles and semicircles, till the eye refused its office, and sank to the earth for rest. And here, in August and September, the brilliantly red dragon-fly, *Sympetrum rufo-stigma*, chases his dingy bride over the withering rushes.

The roads in this wood afford the most excellent mothing; *Stauropus fagi*, *Peridæa serrata*, *Notodonta carmelita*, being among the rarities taken here. I wandered backwards and forwards for an hour in search of these, but without success, and I did not reach the inn till it was too late to distinguish the night moths as they flew, and the night-jar had ceased his tiresome monotonous burr. I was soon installed in my arm-chair with a variety of substantials before me, the discussion of which occupied but short time. Then I lighted my cigar, and meditated on the past, the present, and the future. I felt

myself to be standing on the very summit of a hill ; before me lay the future, an interminable diversified region, misty and indistinct. I turned me, and looked back on the past—it was a bright, a sunny, and a goodly landscape. I gazed thereon with pleasure. Reader, dost thou ask why the past was to me so much more brilliant than the future? I will tell thee: with me the present is blessed and sanctified by content. He that pursues his path in feverish excitement, in discontented drudgery, feasting his imagination with dazzling views of future glory, will never look back on such a life as mine. He may attain the summit of his hopes, but he will attain it merely to find that it is utterly unworthy the sacrifices he has made in its pursuit. He will look back on the past as on a scene of desolation, and the tinsel glitter of the future he will find is tarnished.

As this, my first chapter, is drawing to a close, it may be well to explain who and what I am. The anonymous is used by an author for the same purpose as a veil by a woman: it enables him to be a little more pert than he would otherwise think quite decorous; and, moreover, it excites a degree of curiosity which insures observation. The anonymous is seldom employed for concealment. The author of *Pelham* would be mortified at not being known as the author of *Pelham*. The author of the *Letters of Delta* would be cut to the quick if he heard a whisper that another laid claim to his inimitable vapouring about South America. The anonymous therefore I must preserve, at the same time taking especial care to make myself known lest I should hereafter have to complain that

Hos ego versiculos feci, tulit alter honores.

Who and what I am I will therefore tell you—by-and-bye.

CHAPTER II.

[The Insect-Hunter meeteth with a companion; they discourse; they journey together to Darenth; the Insect-Hunter discloseth a portion of his history.]

The next morning, whilst breakfasting, I received a visit from a brother of the net, a worthy man, with whom I have

since kept up something like an intimacy. He is still living, and the hand of time, during the years I have known him, has pressed on him but lightly. I will describe him as I saw him first: there is so vivid an impression made by the first view, that a figure seldom afterwards appears to present itself in so decided relief, seldom affords so striking a contrast with the existences around it. Mr. — was of a spare make and moderate height; he appeared to have outlived the age of man by some half dozen or half score years, during which period no great change in his garments or equipments appeared to have taken place; his hat was placed on his head so jauntily aside that it almost hid his left eye; his coat, waistcoat, and small-clothes had outlived the fashion which formerly, as imperiously as now, dictated their proportions. His net was in his right hand, and such a net! the variety of its hues, and the multiplicity of its rents, which had been carefully mended, bore ample testimony to its long servitude. A large flat pincushion, the repairs of which, in a diversity of materials, gave it the appearance of mosaic, hung round his neck by a piece of twine. His right hand held a hazel wand, the upper half of which was barked, and the extreme end shivered into a brush by beating the bushes. His entrance was magnificent; the polished grace with which he lifted his hat with one hand, at the same time giving the wand an inimitable and almost unintentional flourish with the other; the profundity of his bend, his bland and gentlemanly expression of countenance, would have done honour to the politest era of the past century. His overture being accomplished, he addressed me thus:—"Your servant, Sir; took the liberty Sir —; have you taken the lobster this year?" The first and second sections of this address I attempted to answer with all the good manners I could muster: the third section utterly posed me. It occurred to me, if there was a lobster in the house, what a pretty addition it would have made to my breakfast; but I kept this idea to myself. I produced my collecting boxes, which contained mostly *Hymenoptera* and *Diptera*, many of them very minute. When the old gentleman saw them, a smile of conscious, yet beneficent superiority irradiated his face. He ejaculated—"Only clear-wings!" and closing the boxes, returned them to me, with an expression of countenance that told most obviously, although courteously, what an utter

greenhorn he considered me. Leaving the room for a few minutes, he returned with two large folding-boxes filled with *Geometrites*, *Noctuites*, and a row of *Colias Electra*; or, as he termed them, *slender-bodies*, *full-bodies*, and *clouded yellows*. The whole were for sale, at prices proportionate to their rarity, on which subject I felt myself woefully ignorant. I made a few trifling purchases, and we became excellent friends.

This brother of the net, I found, had been staying some weeks in the neighbourhood, making Birch Wood Corner his head-quarters, and occasionally spending a day or two in some other favourite woods in the neighbourhood. On the morning in question he was going to Darenth Wood, or rather Darn, that being the name by which he designated it, and by which it is usually known. I immediately volunteered myself as a companion, and my offer was accepted. Long preparation was not needed by either of us, and within half an hour we were marching side by side. The lane, from Birch to Darenth, turns out of the Maidstone road to the left, immediately beyond the premises of the Bull. About a mile from Birch, my companion showed me the spot where he had taken five specimens of the beautiful *Issoria Lathonia*, or Queen of Spain. He found them settling on flowers in the hedges, by the way-side. As we proceeded, I was asked a variety of questions, intended to elicit my name and rank in the entomological world. My companion was well acquainted with the leading entomologists, and spoke of them as intimates, relating a variety of transactions which he had had with each. We descended into a most romantic chalk-pit, to the right of the lane, in which is a cave of considerable extent, with a roof finely arched. In the pit was a fine old plant of *Atropa belladonna*, then magnificently in blossom. In this place I quite exhausted the polite patience of my companion, by my long examination of a colony of *Anthophora retusa*. This bee is said to build a kind of mud hive, or nest, against the trunk of a tree, a bank, or wall; but in the present instance, and many others which I have since examined, there was no external building whatever, the bees entering the face of the bank by perfectly round smooth holes. Another kind of bee, *Melecta*, was continually arriving with the *Anthophoræ*, and entering their holes; it appeared to be on a perfectly friendly footing with the

rest of the community. It is the economy of this bee to lay its eggs in the nest of the *Anthophora*; the grubs, on hatching, devour the food provided by the *Anthophoræ* for their own young, which, thus deprived of their support, shrivel up and die.

At length, emerging from the pit, we continued our course along the lane till it opens on Dartford Heath. To the left is Mr. Menett's park, the palings of which are the favourite resort and resting-place of moths: my companion pointed out to me a spot on these palings where he had taken, during the previous September, a fine specimen of *Catocala Fraxini*, the Clifton nonpareil. Leaving this park directly behind us, we stretched across the heath, bearing rather to the right, and after a sunny, dusty, and, as regards captures, unprofitable walk, we arrived, at four o'clock, at the Fox and Hounds, at Darenth. Kelham, the landlord of the Fox and Hounds, is quite a character: his tall gaunt figure, his toothless mouth, ever on the smile, his broad straw hat, his scarcely intelligible dialect, contribute to render him a man whom, once known, is not easily forgotten. The evening of our arrival at Kelham's was spent in nothing—I cannot now say with what success, but I perfectly recollect that my box, on my return, contained many species which, at that time, were quite unknown to me.

I was not, at the period of which I am writing, a perfect novice in entomology; "the boy is father of the man," and from my earliest years, I had been a hunter of butterflies; but the taste, during the years of adolescence, had been well nigh dormant, until I quite accidentally met with Mr. Samouelle, in the year 1825. I had never before conversed with any one who possessed so much knowledge of the subject. Mr. Samouelle, at the very time I became acquainted with him, was engaged in the formation of a social Entomological Society, and I was at once admitted a member. The first meeting of this Society, which I attended, I never shall forget. The slender knowledge I possessed of insects was derived from Berkenhout's "Synopsis," and Marsham's volume on *Coleoptera*; but, in the course of conversation, not a single name was mentioned that I had ever read in either of these authors. I was a perfect dummy. I longed for the utterance of one sentence about "*Emperors*" or "*Admirals*;" then I could have

chimed in; but no, every word was entirely scientific. I resolved, before another month, to furnish myself with a little more knowledge; I procured Samouelle's "Compendium," and went to work. Entomology soon opened up to me a new and delightful world; and, as I lay on my sleepless bed at Darenth, I felt a greater love than ever for the science, on account of the agreeable society into which it had introduced me.

ART. XXX.—*British Species of the Dipterous Tribe Sphæroceridæ.* By A. H. HALIDAY, M.A.

THIS group was first distinguished from the other *Muscidæ*, under the generic name of *Borborus*, by Meigen, in the year 1803. Latreille, in 1809, called the same *Sphæroceræ*; and, at a much later period, Fallén included it along with *Cælopa*, in his genus *Copromyza*. With the last-named author, it forms a part of the family *Heteromyzides*, while Latreille has ranked it in his vast and undigested section *Scatomyzides*. In Robineau Desvoidy's Essay on this family, we have it subdivided into nine genera, forming the most considerable portion of *Putrellidæ*, the 2d section of his 7th tribe *Napæellæ*. The remainder of that section is composed of the *Ephydræ* of Fallén; a conjunction that does not seem very natural. His generic and specific characters are unusually vague in this instance; and, as he has made no reference to the work of Fallén, it is not easy to identify the species intended by him. An admirable arrangement of the genus is given in the last volume of Meigen's European *Diptera*: thirty species are described, and distributed in six sections, characterized mostly by the wings. Macquart (in the system of *Diptera*, forming part of the Suites à Buffon) has elevated the group to a higher rank, and adopted those sections for his genera, admitting also *Olina*, from R. Desvoidy, and adding an eighth, *Crumomyia*, to receive *Borborus glacialis* of Meigen. Neither of these last two appears to have occurred in Britain, and the type of the genus *Ceroptera* has been found only in Portugal. I extract Macquart's synoptic table of the genera entire, and propose to adhere to his arrangement and nomenclature.

Order, DIPTERA.—3d Subdivision, *Dichætae*.—1st (7th) Family, *Athericera*.—8th Tribe, *Muscidae*.—3d Section, *Acalyptereæ*.—15th Sub-Tribe, *Spherooceridæ*

complete; the costal	} bristly at the base	1. CEROPTERA.		
		naked	2. SPHEROCERA.	
Winged; 4th and 5th main-nerves	} ending with a spine; the 2d cross-nerve	distinct; the body	} almost naked	3. BORBORUS.
				} the 5th incomplete; hind shanks
} not both complete,	} without a spine, legs very hairy	} confounded with the 4th main-nerve; the costal bristly at the base	5. HETEROPTERA.	
			} both incomplete	6. OLINA.
				7. LIMOSINA.
				8. APTERINA.

A very small proportion of the species described by continental authors have yet been found in Britain. The diligent researches of Mr. F. Walker have added several well-marked species to our Fauna, and he most kindly transmitted the entire of his rich collection for my use. Even with these accessions the list is scanty, but I have convinced myself that many of their characters are subject to vary so much as to render great caution expedient in separating species. I have therefore omitted several, which may prove distinct, from not having a satisfactory series of examples. There is so much uniformity of colour among these insects, that we must generally depend on less obvious distinctions. I have found the disposition of the nerves in the wings sufficiently constant to be of service in this respect.

Fam.—MUSCIDÆ.

Tribe.—SPHÆROCERIDÆ.

Calyptra fere nulla. Nervus longitudinalis 1^{us}. *simplex, vix* $\frac{1}{3}$ *costæ pertingens: tarsorum posteriorum articulus* 1^{us}. *dilatatus, 2^{do}. brevior: antennarum articulus* 3^{us}. *sphæroideus, arista dorsali elongata gracillima.*

SYNONYMA.—Borborus, Meigen.—Sphærocera, Latr.—Copromyza spp. Fallén.—Nerea, Bacchis, Mycetia, Sphærocera, Lordatia, Coprina, Fimetia, Scatophora, Olina, Rob. Desvoidy.—Spæroceridæ, Macquart.

Front broad, subquadrate, a little inclined: orbits, frontals, and stemmatic triangle usually distinguished: ocelli three: eyes round: antennæ rather distant, short, slightly deflected: 1st joint very small: 2d as long as 3d; 3d transversely spheroidal, obliquely compressed: arista dorsal, long and slender, with only two joints apparent: face broad, impressed, membranaceous: epistoma prominent, bearing vibrissæ at the corners: clypeus exerted transverse: cavity of the mouth very large, rounded: labium thick, fleshy; below with a broad bellying sheath of horny consistence, and hairy: labella round, obliquely striate: labrum short: tongue obsolete: maxillæ with a small linear and hairy lobe disengaged from the lip: palpi linear, bristly: thorax rather depressed: abdomen depressed, oblong, often showing only six segments in the male, as the penultimate is withdrawn; and but five in the female, the remainder being very small, tubular, and internal; sometimes falling short even of that number, from

some being indistinct : legs long, formed for running or leaping : onychii distinct, feathery : 1st joint of the hind feet shorter than the 2d, dilated : wings in repose lying flat on the back : the 1st main nerve short, not divided : axillary lobe rather large : calyptra nearly at their smallest, the interior auricle disappearing : the larvæ inhabit putrid substances.

Synopsis of Indigenous Genera.

Arista	with the basal joint scarcely distinct	{	naked	SPHÆROCERA.
			pubescent; wings	{ perfect . BORBORUS. abortive . APTERINA.
{	jointed at the base; 2d or principal cross-nerve of the wing	{	perpendicular	LIMOSINA.
			oblique	HETEROPTERA.

GEN. I.—SPHÆROCERA.

Arista glabra quasi exarticulata : frons, scutellum setis expertes : areola analis completa : nervus transversus ordinarius ab alæ margine remotus.

Borborus, A. b. . . . *Meig.* VI. 200.

Sphærocera *Macq. S. à B.* II. 564. II.

Lordatia, Coprina . . . *Rob. D.* 808. VIII. 810. IX.

Front much produced, flat, without long bristles : face very short, concave : antennæ reposed in deep lateral cavities : arista naked, the 1st joint very minute : thorax with the numeral callosities very protuberant, the suture before the wings deep, the sides of the metathorax angular : abdomen broad, very flat, margined, the 1st segment almost concealed : middle shanks without lateral bristles, hind pair ending in a curved spur : first joint of the hind feet very much dilated : anal cell of the wing, and the small one before it complete : principal cross nerve distant by its own length from the margin : 5th main nerve continued beyond it ; 4th approaching the 3d, at the tip of the wing, by a gentle curve.

A. *Thoracis lineæ scutellumque hispidulæ.*

Sp. 1. Sph. subsultans. *Abdominis segmento 2^{do}. prægrandi ; pedibus posticis elongatis incrassatis, mas, femoribus clavatis.*

Musca subsultans *Fabr. Sp. Ins.* II. 444. No. 1.

Rhagio subsultans *Schra. F. B.* III. 2402.

Calobata subsultans . . . *Fabr. Syst. Aul.* 264. No. 17.

- Copromyza subsultans . . . *Fall. Heterom.* 7. No. 3.
 Borborus subsultans . . . *Meig.* VI. 200. No. 2.
 Sphærocera subsultans . . . *Macq. S. à B.* II. 565. No. 1.
 Sphærocera curvipes . . . *Latr. Gen.* IV. 359.
 Lordatia merdarum, sterco-
 raria, cadaverina, necro-
 phaga *Rob. D.* 809. Nos. 1, 2, 3, 5.

Rather dull black, with faint lines on the thorax : frontal triangle more glossy : there are a number of minute points disposed in distant lines on the thorax, and scattered over the scutel : abdomen very broad, the 2d segment appearing very large, as the 3d is confounded with it ; the rest are small, and gradually narrower : the coxæ, and the base of the shanks are rust brown ; or the posterior legs are testaceous, with the feet, and generally the knees dusky ; the hind legs are very long, both the thighs and shanks thick, and the spur strong ; in the male the hind thighs are still more thickened : poisers dirty white : wings yellowish hyaline, often with brown streaks between the nerves : when newly excluded, the insect is of a pale greenish brown, with paler legs, darker abdomen, and hyaline wings ; and most species of the tribe at that period are of the same colour. (Length $1\frac{1}{2}$ — $2\frac{1}{2}$; wings 3—4 lines.)

Every where abundant on dunghills, hotbeds, &c.

Sp. 2. *Sph. monilis.* *Pedibus simplicibus, annulo tarsorum anticorum albo.*

Head and thorax as in No. 1 : abdomen as in *Sph. denticulata* : hind legs longer and more slender than in this last, and the 1st joint of the feet less dilated : fore feet rather thick, with the end of the first joint and the entire second white : the hind legs are scarcely thicker in the male than the female. (Length $1\frac{1}{2}$; wings 3 lines.)

Found in the New Forest by F. Walker, Esq. ; also near London.

AA. *Thorax et scutellum granulati, hujus margo denticulatus.*

Sp. 3. *Sph. vaporariorum.* *Capite thoraceque nigris ; femoribus posticis parum incrassatis fem. claratis mas.*

Lordatia coprina, *Rob. D.* 809. No. 4.

Resembles the following species, but the hind thighs of the male are nearly as large as in No. 1, and a little thickened in the female also :

the 1st joint of the hind feet is less dilated than in No. 4, the wings shorter: abdomen attenuate behind: thorax generally without impressed lines, but is more irregularly and thinly shagreened about the middle than elsewhere. (Length 1; wings 2 lines.)

I find it commonly on deliquescent cucumbers. Mr. F. Walker also takes it near London.

Sp. 4. *Sph. denticulata*. *Capite thoraceque nigris; femoribus posticis maris parum incrassatis.*

Borborus denticulatus . *Meig.* VI. 200. No. 3.

Sphærocera denticulatus . *Macq. S. à B.* II. 565. No. 2.

Coprina bovina . . . *Rob. D.* 810. No. 1.

Dull black: arista blackish: thorax and scutel shagreened and set with minute points, the former with two impressed smooth lines, the margin of the latter with a number of sharp teeth: abdomen, in the female particularly, broader than the thorax; the 2d, 3d, and 4th segments nearly equal, 5th small: coxæ and knees brown; or the legs are testaceous, with the feet and the end of the shanks dusky in the fore pair. Hind thighs of female slender, a little thickened in male: poisers whitish: wings hyaline, with brownish nerves; or of a dusky tinge, with the costal nerve blackish. (Length $1\frac{1}{4}$; wings $2\frac{3}{4}$ lines, or less.)

In the same localities with the 1st species, but much less abundant.

Sp. 5. *Sph. scabricula*. *Brunnea, abdomine nigro.*

Head and thorax chestnut-brown, opaque, very thickly shagreened, and set with minute white points, lying flat: head very long: eyes small: arista whitish: teeth of the scutel very sharp, decurved: abdomen black: legs short, set with very minute whitish bristles, light brown, with the knees and feet paler: hind thighs of the male not thickened: feet very short; 1st joint of the hind pair as long as the next three together: wings whitish hyaline, with pale ferruginous nerves; the costal brown: they are shorter than in No. 4, and the rib is finely ciliate. (Length $\frac{5}{4}$; wings $1\frac{1}{2}$ line.)

Found near London, by Mr. Walker.

GEN. II.—BORBORUS.

Arista pubescens, quasi exarticulata. Frons et scutellum setigeræ. Areola analis completa. Nervus transversus ordinarius alæ margini proximus.

- Borborus A. c. . *Meig.* VI. 201.
 ——— . . . *Macq. S. à B.* II. 565. III.
 Sphærocera, &c. *Rob. D.* 807. VII. &c .

Front less produced than in *Sphærocera*, some long bristles bordering the frontals: face longer: antennæ obliquely advanced: arista pubescent, the basal joint very minute: thorax smooth; scutell short, with a pair of bristles at the end: anal cell of the wing and the small one before it complete: the cross nerves remote, the principal one being close to the margin, and the 5th main nerve scarcely, if at all, continued beyond it: 3d and 4th not approaching.

- A. *Tibiæ posticæ calcari instructæ.*
 B. *Tibiæ mediæ extrinsecus setigeræ.*

Sp. 1. *B. nitidus.* *Niger nitidus, halteribus albidis; alis ferrugineis; mas femoribus posticis basi uncinatis.*

- Borborus nitidus, *Meig.* VI. 201. No. 4.
 ————— *Macq. S. à B.* II. 566. No. 1.
Nerea nitidus . *Rob. D.* 803. No. 3.
 Borborus hamatus, *Ent. Mag.* I. 177.
 ————— *Curt. B. E.* 469.

Shining black: frontals dull black: arista hairy: palpi *not* dilated: thorax with a brassy tinge: segments of the abdomen nearly equal in length; two filiform appendages beneath in the male: legs hairy: the posterior coxæ, the trochanters, and knees, sometimes rust brown; the middle shanks have a row of long spines down the outside. In the male the thighs are very thick; the fore pair serrate below; the hind pair longer, curved, and armed at the base below with a hook: the small second spur of these shanks is twisted and angular, and catches on the hook: in the female there is only a tubercle in its place: the 1st joint of fore feet slightly unguiculate at the tip; the 2d joint of the hind feet is thickened, and as well as the 1st, covered below with yellow down: in the female the fore thighs only are thickened, and the basal joints of the hind feet are more slender: poisers whitish: the wings are rust yellow; the nerves brown; the cross nerves often darker. (Length $2\frac{1}{2}$; wings, 5 lines.)

Inhabits fungi; not abundant in England and Ireland.^a In France, according to Macquart, may be found throughout

^a Found in Lanarkshire, Scotland.—ED.

the winter. The identity of Meigen's insect, which is described as having a testaceous face, is doubtful. I have deferred to the authority of Macquart in uniting them.

Sp. 2. *B. suillorum*. *Niger nitidus, halteribus albidis; alis ferrugineis, nervis transversis infuscatis.*

Mycetia tibialis, *Rob. D.* 806. No. 2.

Very like the last: the bristles on the outside of the middle shanks are much finer; the legs more slender; the thighs of male unarmed, and only the fore pair thickened; the 2d joint of the hind feet slender: the posterior coxæ, the trochanters and feet, and the extreme base of the shanks, are rust brown, the fore and hind feet darker: the cross nerves of the wings are constantly suffused with brown. (Length $1\frac{1}{2}$; wings, 3 lines.)

Inhabits fungi in England and Ireland, but is rather uncommon. I cannot determine whether Macquart's 9th species may not be the same, though the great difference of size makes it less likely. In any case the name *punctipennis* will have to be dropped, as it is already used by Wiedemann.

Var. β.—Shanks and feet ferruginous; end of the fore shanks and base of the fore and hind feet brown.

Mycetia communis, *Rob. D.* 805. No. 1.

Taken by Mr. F. Walker near London.

Sp. 3. *B. niger*. *Niger, opacus, villosus, halteribus fuscis; alis hyalinis.*

Borborus niger, *Meig.* VI. 201. No. 6.

————— *Macq. S. à B.* II. 566. No. 3.

Dull black, hairy: a glossy line down the front: arista thickly pubescent: thorax slightly tinged with green: segments of the abdomen nearly equal: knees and feet dusky: fore thighs thick, hairy: first joint of the fore feet unguiculate at the tip in the male; middle shanks with strong bristles or spines on the outside; the 2d joint of the hind feet scarcely thickened: poisers dusky: wings obscurely hyaline, with brown nerves. (Length $2\frac{1}{4}$; wings, $4\frac{1}{2}$ lines.)

Not common in Ireland; generally on mountain heaths. Mr. Walker has taken a specimen in England.

Borborus nigrifemoratus, *Macq. S. à B. II. 567. No. 5.*

Like varieties β γ of the last: male glossy black; the narrow margin of the front testaceous: the 2d and 3d segments of the abdomen equal in length: the shanks and feet brown; the base of the former testaceous; or the posterior shanks with the middle feet entirely of the latter colour; the hind feet longer than in the last: the cross nerves of the wing more remote; the small one not reaching to one-third of the discoidal cell. I have seen no females, and only 2 males of this insect, and am still rather doubtful whether it be the species cited, or really distinct from the last.

In Mr. Walker's collection.

Sp. 6. *B. flavipennis. Niger; facie, coxis anticis et genibus testaceis; halteribus albidis; alis flavescentibus pallido-nervosis. Fem.*

Black: the frontals dull; the triangle glossy: face and palpi testaceous: thorax shining: abdomen dull black: 2d segment not longer: legs hairy: the fore coxæ and the extreme base of the shanks rust-yellow: poisers whitish: wings yellowish: nerves scarcely darker; the small cross-nerve placed about the first third of the discoidal cell: resembles the next species, but the fore and hind thighs are thick; the 1st joint of the hind feet almost triangular; the 2d very little longer; and the cross-nerves are much less distant. (Length $1\frac{1}{2}$; wings, $2\frac{5}{8}$ lines.)

Found by Mr. Walker near London.

Sp. 7. *B. longipennis. Niger; pedibus ferrugineis; femoribus et tibiæ apice fuscis; halteribus albidis; alis pallido-nervosis; nervis transversis remotis.*

Black: pubescent, with little gloss: frontals opaque: segments of the abdomen nearly equal: the extremity in the male but little thickened: hairy: the underside and sometimes the incisures pale: legs hairy; in the male pitchy brown, with the fore coxæ, and knees and the base of the shanks, rust-brown: in the female, either of the same colour, or rust-yellow, with the fore and hind feet, the end of the shanks and of the posterior thighs, brown: the spur springs before the extremity of the hind shank and is very slender and long: the 2d joint of the hind feet is one-half longer than the 1st, and a little thickened: in the male, the first joint of the fore feet is very distinctly unguiculate; poisers whitish: wings hyaline with pale nerves; the small cross-nerve

usually at the first fifth of the discoidal cell. (Length $1\frac{1}{2}$; wings, 3 lines.)

On the sea coast of Ireland; in various parts of England; not rare.

Sp. 8. *B. vitripennis*. *Niger; halteribus albidis; alishyalinis fusco-nervosis, nervis transversis remotis.*

Borborus vitripennis, *Meig.* VI. 206. No. 20.

Resembles the last in most points: is entirely black: the frontals very deep and opaque; black: the triangle and thorax shining: the abdomen of the male is clavate at the end and less hairy: legs entirely black; base of the poisers blackish: wings with the nerves more evident from their dusky colour; the cross nerves scarcely so remote. (Length 1; wings, $2\frac{1}{3}$ lines.)

On sandy coasts of Ireland; shores of Cornwall. Mr. Walker.

Varies with the legs less hairy and much longer, the 2d joint of the hind feet not thickened.

Found by Mr. Walker on the shores of Cornwall.

AA. *Tibiæ posticæ ecalcaratæ.*

Sp. 9. *B. ater*. *Niger nitidus, glaber, fronte antice et genubus testaceis; halteribus albidis.*

Borborus ater. *Meig.* VI. 203. No. 11.

B. geniculatus, *Macq. S. à B.* II. 567. No. 6.

Glossy black, nearly glabrous: fore margin of the front and sides of the face testaceous: frontals almost naked, narrow, dull black: arista very slightly pubescent: scutel flat, semicircular, the terminal bristles minute: segments of the abdomen nearly equal: legs rather short and almost naked; the fore thighs thick and shining: the extreme base of the shanks, in general also the fore coxæ and the base of the middle feet, pale testaceous: the 2d joint of the hind feet not dilated, nor is the 1st of the fore pair unguiculate in the male: poisers whitish: wings hyaline; nerves brown; the middle of the costal blackish; the small cross nerve a little above the middle of the discoidal cell. (Length $1\frac{1}{2}$; wings, 3 lines.)

Every where common.

GEN. III.—APTERINA.

Borbori, modo alæ et halteres abbreviati.

Borborus B. *Meig.* VI. 209.

Apterina. *Macq. S. à B.* II. 573. VIII.

Sp. I. *A. pedestris*.

Borborus pedestris, *Meig.* VI. 209. No. 30.

Apterina pedestris, *Macq.* II. 574. No. 1.

Dull black, hairy: arista pubescent: scutel very obtusely triangular: abdomen of male short, clavate, 2d segment very large, with a longitudinal line; those which follow very short, the last large: legs long and hairy; thighs thick, especially the fore pair; hind shanks with a curved spur; 2d joint of the feet twice as long as the 1st, not thickened; 1st joint of the fore pair unguiculate in the male: poisers abortive, dusky: wings shorter than the thorax: nerves disposed as in *Borborus*, but indistinct; the 2d cross nerve falling on the margin, and forming a continuation of the costal. (Length $1\frac{1}{2}$ — $1\frac{3}{4}$ line.)²

Mr. Dale has taken this species in Dorsetshire. I found it near London. It occurs in the north both of Germany and France.

GEN. IV.—LIMOSINA.

Arista pubescens basi geniculata. Areola analis incompleta.

Nervi transversi approximati. Nervi longitudinales 4^{us}. et 5^{us}. abbreviati.

Borborus A. e. *Meig.* VI. 207.

Limosina . . *Macq. S. à B.* II. 571. VII.

Front bristly: arista pubescent, the 1st joint a little elongated: scutel large, flat, with long bristles: middle legs elongated, the shanks usually with lateral spines or bristles; no spur at the end of the hind shank: costal nerve of the wing often bristly at the base; the 2d main nerve distant from the tip; the 4th and 5th vanishing beyond the principal cross nerve, which is remote from the margin: no anal cell, nor any complete one above the discoidal.

A. *Antennæ oblique porrectæ.*

B. *Scutellum disco glabrum, nudum.*

C. *Segmentum 4^{tum}. abdominis in mare utrinque cirrosum.*

Sp. 1. *L. silvatica. Nigra nitida, alis subhyalinis; halteribus fuscis.*

Borborus silvaticus, Meig. VI. 207. No. 24.

————— *Curtis, B. E.* 469. No. 24.

Limosina silvaticus, Macq. S. à B. II. 572. No. 1.

Mycetia claripennis, Rob. D. 806. No. 3.

Shining black, frontals dull blackish brown; face testaceous; arista very delicately pubescent: scutel long, with two marginal and two apical bristles: fourth segment of the abdomen in the male furnished at each angle with a long curved tuft of hair: legs long, pubescent; spines of the middle shanks few and distant; 2d joint of hind feet more than twice as long as first, linear, not thickened. In the male the middle legs are different; the thighs are bearded and armed with a long spine at the base beneath; the shanks have a pencil of hair within, about the middle; the 1st joint of the feet is compressed, hollowed out below, and bearded: poisers blackish brown: wings hyaline or yellowish: nerves dusky; the costal blackish, ciliate at the base; the 2d main nerve terminating halfway between the 1st and 3d; the latter a little sinuous, running to the tip of the wing: the discoidal cell longer than usual, with its posterior angle rounded. (Length $1\frac{3}{4}$, wings, $3\frac{1}{2}$ lines.)

Abundant, particularly on fungi; the variety with limpid wings on sandy coasts

CC. *Segmentum 4^{thum}. abdominis nudum.*

D. *Halteres nigri capitulo albido.*

Sp. 2. *L. limosa. Nigra, alis infuscatis; scutelli setis bis quaternis.*

Copromyza limosa, Fallén, Heterom. 8. No. 6.

Borborus limosa . Meig. VI. 207. No. 23.

Limosina limosa . Macq. S. à B. II. 572. No. 2.

Nerea riparia . . Rob. D. 802. No. 1.

Dusky black: front thickly set with bristles: face short, very much elevated between the antennæ, brownish: thorax often dull rusty brown: scutel long, produced beyond the metathorax; with three bristles at each side, and two at the tip: abdomen dull black: legs black, thinly hairy, the middle shanks thickly armed with spines, and the same pair of feet bristly: 2d joint of hind feet linear, twice as long as the first: poisers black, with a whitish knob: wings brownish: costal nerve bristly at the base; 2d main nerve continued nearly to $\frac{2}{3}$ of the interval between the 1st and 3d, the latter reaching the tip of the wing: interval of the cross nerves about twice as long as the principal one. (Length $1\frac{1}{2}$; wings, 3 lines.)

Very abundant on putrescent vegetable matter in most situations.

Sp. 3. *L. humida*. *Nigra, facie albida; scutelli setis quaternis.*

Form of the last, but with much fewer and slighter bristles on every part; one only at each side of the scutel, which is not so long: the face is hoary: thorax with dull blue reflections: abdomen of a glaucous tinge: legs and base of the costal nerve simply pubescent: wings obscure hyaline: nerves as in the last.

Not rare about muddy drains, near Holywood. Mr. Walker has taken it in England also.

DD. *Halteres unicolores, vel basi pallidiores.*

Sp. 4. *L. arcuata*. *Nigra, tibiis tarsisque ferruginosis; alarum nervo 3^{to}. subarcuato; scutelli setis bis quaternis.*

Limosina arcuata, *Macq. S. à B. II. 572. No. 4.*

Like *L. limosa*, face less elevated: fore coxæ, both extremities of the shanks, and the feet reddish brown: poisers dusky red: wings obscure hyaline or brownish: nerves rust brown, costal bristly at the base; 2d main nerve extending over $\frac{2}{3}$ of the interval between the 1st and 3d, the latter curved, and terminating before the tip of the wing: interval of the cross nerves one half longer than the principal one: size of *L. limosa*; sometimes but half the size.

Every where rather common in shady situations, on fungi, &c.

Sp. 5. *L. geniculata*. *Nigra, coxis anticis, genubus tarsisque ferruginosis; alis infuscatis; halteribus fuscis; scutelli setis bis ternis.*

Limosina geniculata, *Macq. S. à B. II. 572. No. 3.*

Resembles the last, but the wings are as in *L. limosa*: the scutel has two bristles on each side: one half smaller than *L. limosa*.

I have found this species near Holywood, and Mr. Walker has taken it in England; but it seems very uncommon.

Sp. 6. *L. crassimana*. *Nigra alis infumatis; halteribus fuscis; tarsis crassis; mas, tibiis anticis clavato-compressis.*

Nerea stercoraria, *Rob. D. 803. No. 2?*

Black; the front sometimes with a narrow reddish margin: arista finely pubescent: scutel scarcely so long as the metathorax (with but four bristles, as in all which follow to the end of this section): legs more pubescent than in any of the following; spines or bristles of the middle shanks scattered: feet thick; fore pair

evidently dilated in the male, in which also the fore shanks are clavate and furrowed, and the hind feet have two joints dilated: poisers brown or blackish: wings rarely hyaline, generally dusky: nerves darker; base of the costal ciliate with short hairs; the 2d ending nearer to the 3d than 1st: interval of the cross nerves generally one-half longer than the principal one. (Length 1; wings $2\frac{1}{2}$ lines, sometimes less.)

In profusion every where on dunghills and hotbeds, more rarely on fungi.

Sp. 7. *L. ochripes*. *Nigra capite pedibus que rufis; tarsis posticis nigris.*

Borborus ochripes, *Meig.* VI. 209. No. 29.

Limosina ochripes. *Macq. S. à B.* II. 572. No. 5.

Head tawny red, a dot on the crown, and the occiput black; antennæ black, or red at the base: arista very delicately pubescent: thorax and abdomen black: scutel shorter than metathorax: legs pubescent, tawny; hind feet, generally also the fore pair and ends of fore shanks, blackish; middle shanks with few bristles; 2d joint of hind feet linear, twice as long as first: poisers whitish: wings almost hyaline: nerves pale; base of the costal pubescent; 2d half way between 1st and 3d; interval of cross nerves nearly twice as long as the principal one: generally larger than the preceding.

Not rare on sandy coasts of Ireland. New Forest, and near London; Mr. Walker.

Sp. 8. *L. scutellaris*. *Nigra scutello aterrimo; facie, coxis, genibus que testaceis; halteribus albidis; tarsorum posteriorum articulis duobus incrassatis.*

Like the last in character: head black, face and fore margin of the front pale testaceous: thorax glossy black: scutel elongate, opaque, deep black: abdomen dull black: shanks and feet dusky: the fore coxæ, the base of the shanks, often the entire of the middle shanks and feet testaceous or rust brown: 2d joint of the hind feet twice as long as the first, and thickened: poisers whitish: wings hyaline, with pale brown nerves, the costal darker; 2d terminating much nearer to the 3d, which does not quite reach the tip of the wing: smaller than No. 6.

With No. 6, but not common; north of Ireland. Near London; Mr. Walker.

Sp. 9. *L. nivalis*. *Nigra facie pedibusque ferruginosis; halteribus et alis abbreviatis.*

Borborus nivalis, *Ent. Mag.* I. 178.

————— *Curt. B. E.* 469. No. 29^d.

Dusky black : face dull rust colour : areola finely pubescent : scutel shorter than metathorax : legs pubescent, dull rust colour ; thighs and often the middle of the posterior shanks dusky ; 2d joint of hind feet not dilated : poisers abortive, dusky : wings not extending to the end of the abdomen, sometimes very small, brownish : no second cross nerve : about as large as No. 6.

Not uncommon during the winter about the roots of trees in the north of Ireland : leaps very actively.

Sp. 10. *L. quisquilia*. *Nigra alis infumatis; halteribus fuscis; tibiis mar. simplicibus.*

Resembles *L. crassimana* both in size and character, but the feet are slender, and the fore shanks not clavate in the male : from most of the small species which follow, it differs by the longer scutel and more pubescent legs : I consider it as distinct, though not satisfactorily characterized.

Has occurred once or twice along with *L. crassimana*.

Sp. 11. *L. fungicola*. *Nigra nitida, fronte opaca; halteribus nigris; alarum lineola costali nigra.*

Glossy black : the pubescence very fine : front opaque, deep black, with a glossy triangle : face elevated between the antennæ, rather hoary : legs slender, scarcely pubescent : fore knees and middle feet brown : middle shanks with only a pair of bristles on the outside : 2d joint of hind feet one half longer than 1st, and somewhat thickened : poisers black : wings ample, blackish, rarely hyaline : nerves dusky ; the costal pubescent at the base ; black from the 1st to the 2d main nerve ; the latter extends scarcely half way from the 1st to the 3d : the sub-marginal cell is wider than usual ; the interval of the cross nerves almost twice as long as the principal one : smaller than No. 6.

Inhabits fungi, Holywood. North Devon, and near London ; Mr. Walker.

Sp. 12. *L. erratica*. *Nigro-fusca facie pedibusque ferrugineis; halteribus fuscis; alis infumatis.*

Approaches the last in character : the marginal and sub-marginal

cell of the wings are much narrower, the cross nerves less distant: the legs sometimes are entirely ferruginous; in others the thighs and the middle of the shanks are pitchy; or the legs are blackish, with the knees and feet ferruginous: wings brownish, with distinct brown nerves, the costal not incrassate: from the following it differs by the wings, the 2d joint of the hind feet not thickened, &c.; but I am not satisfied that all these varieties belong to one species, or that some of them may not connect the present with the last.

Sp. 13. *L. clunipes*. *Nigro-fusca facie pedibusque ferrugineis; halteribus fuscis; alis hyalinis: tarsorum posteriorum articulis duobus incrassatis.*

Borborus clunipes, *Meig.* VI. 208. No. 26.

Limosina clunipes, *Macq. S. à B.* II. 573. No. 7.

Dusky: margin of the front and the face ferruginous: arista thickly pubescent: breast and legs ferruginous: 2d joint of hind feet nearly twice as long as 1st, and a little thickened: wings hyaline: the nerves nearly colourless, disposed as in the following; the costal ferruginous, slightly ciliate at the base, but without a spine, and a little thickened along the middle: scarcely so large as No. 18.

Occurs along with No. 6, but rare. Mr. Walker takes it in England.

Sp. 14. *L. spinipennis*. *Nigra pubescens halteribus nigris; alis denigratis, costa incrassata, basi spinigera.*

Rather dull black: face elevated between the antennæ: arista with thick black pubescence: thorax thickly pubescent: more bristles on the middle shanks than in *L. fungicola*; 2d joint of the hind feet scarcely thickened: poisers black: wings blackish: costal nerve thickened along the middle, somewhat bristly at the base, with a long erect spine springing near the root: 2d nerve ending half way between the 1st and 3d; interval of cross nerves rather longer than the principal one: size of No. 18.

Occurs but rarely, in company with No. 6.

Sp. 15. *L. heteroneura*. *Nigra, facie pedibusque ferruginosis; alis infuscatis, nervis transversis fere contiguis.*

Black, pubescent: face reddish: arista thickly pubescent: legs nearly naked, dusky; the fore pair, the knees and shanks rust brown: middle shanks with a pair of bristles only on the outside: poisers

brown : wings brownish : the costal nerve a little bristly at the base ; 2d nerve as in the last : interval of the cross nerves not longer than the small one. (Less than No. 18.)

In the same situations.

BB. *Scutellum setis aspersum.*

Sp. 16. *L. fuscipennis.* *Nigra pedibus piceis ; alis infuscatis ; halteribus fuscis capitulo pallido.*

Borborus fuscipennis, Ent. Mag. I. 178.

Resembles *L. limosa* very much ; the legs are rather shorter and more hairy, and the cross nerves less distant : dusky black : face very short and elevated between the antennæ, so that the head is nearly triangular above : front thickly set with bristles, its fore margin piceous : palpi reddish : thorax and scutel often dull rust brown : scutel elongate, with several bristles at the sides, and a few on the disk : abdomen opaque black : legs hairy, pitchy brown : middle pair very thickly armed with spines or bristles ; 2d joint of hind feet not thickened : poisers yellowish, with dusky base : wings brownish : the nerves nearly as in *L. limosa*, and dusky. (Length $1\frac{1}{4}$; wings $2\frac{1}{2}$ lines, sometimes much less.)

Inhabits sea-weeds drying on the shore.

BBB. *Scutellum pubescens.*

Sp. 17. *L. vagans.* *Nigra opaca, alis infumatis ; halteribus flavidis.*

Borborus vagans, Ent. Mag. I. 178.

Dull black : eyes small : arista finely and thickly pubescent : scutel as long as the metathorax : legs pubescent, dusky, with the fore coxæ and knees, and the middle feet rust brown ; sometimes the legs are entirely of the latter colour : middle shanks with numerous bristles ; 2d joint of the hind feet twice as long as the 1st, not thickened : poisers yellowish : wings brownish yellow ; nerves of the same colour ; costal more dusky, bristly at the base, rather thick : 2d nerve extending over $\frac{2}{3}$ of the interval between the 1st and 3d : interval of the cross nerves longer than the principal one. (Length 1 ; wings 2 lines, or less.)

Not rare on sea-weed.

Sp. 18. *L. lugubris.* *Nigra pubescens, alis denigratis ; halteribus fuscis.*

Face piceous : eyes larger than in the last ; scutel shorter ; colour deep black : middle shanks and feet dusky : middle shanks with

fewer bristles; 2d joint of hind feet shorter: wings blackish: base of the costal nerve less bristly, 2d ending half way between the 1st and 3d; cross nerves not so distant. (Length $\frac{5}{4}$; wings $1\frac{1}{2}$ line.)

Common in the same situations with No. 6.

AA. *Antennæ in latera aversæ.*

B. *Oculi nudi.*

C. *Areola marginalis costam mediam superans.*

Sp. 19. *L. zosteræ. Nigra opaca alis infumatis.*

Borborus zosteræ, Ent. Mag. I. 178.

Opaque black: front gibbous, bristly: face much elevated between the antennæ, which are turned in opposite directions, lying close to the eyes; their 2d joint is very bristly, and larger than the 3d: the arista thickly pubescent, the pubescence whitish: thorax scarcely pubescent, very flat, with an impressed line down the middle: scutel not as long as the metathorax; glabrous, with four bristles, as also in those which follow: legs rather short, thinly hairy, piceous, with the knees and feet tawny, or entirely tawny: middle shanks armed with numerous bristles: 2d joint of hind feet not very long, scarcely thickened: poisers with a deep brown knob: wings of a brownish yellow, the nerves of the same colour; costal more dusky, rather thick, bristly at the base; 2d nerve extending little more than half way between the 1st and 3d: intervals of the cross nerves considerably longer than the principal one. (Length $1\frac{1}{4}$; wings 3 lines.)

There is a variety scarcely a third that size, but differing so little in other respects, that I cannot consider it a distinct species.

Common on sea-weed: Mr. Walker has found it near London; and also in the Isle of Wight, Cornwall, and North Wales.

Sp. 20. *L. leucoptera. Nigro-fusca, alis albis, costa nigricante.*

Dusky with paler legs: eyes small: arista with thick whitish pubescence: scutel short, nearly semicircular: middle shanks bristly; 2d joint of hind feet long and scarcely thickened: poisers brown: wings whitish; the costal nerve and those next to it dusky, the rest colourless; the costal region dusky towards the end: costal nerve with a few bristles at the base, a little thickened from the 1st to the 2d main nerve; the latter ending much nearer to the 3d; marginal cell long and very narrow; sub-

marginal broad not extending quite to the tip of the wing: interval of the cross nerves equal to the principal one. (Rather less than No. 18.)

The examples which I have before me are not in good order, but the small eyes, the 2d joint of the antennæ, which is very bristly, and the wings satisfy me that the species is better placed in this section than in A. Taken by Mr. Walker, near London.

CC. *Areola marginalis perparva.*

Sp. 21. *L. nigerrima. Atra velutina alis albis.*

Borborus nigerrimus . . . *Ent. Mag.* I. 178.

_____ *Curt. B. E.* 469. No. 29^b.

Limosina minima *Macq. S. à B.* II. 573. No. 9.

Deep black, without gloss: pubescence of the arista abundant, whitish: the feet short: middle shanks almost naked: poisers black: wings white hyaline; nerves colourless, the costal blackish, not thickened: the 2d nerve scarcely reaches to the middle of the rib, the 3d is arched and terminates before the tip of the wing; the marginal cell therefore is exceedingly small, the submarginal wide and oblong ovate: the cross nerves are almost contiguous. (Length not $\frac{1}{2}$, wings 1 line.)

Occurs along with No. 6, but very rare: Mr. Walker has taken it near London.

BB. *Oculi hispiduli.*

Sp. 22. *L. melania. Atra opaca alis hyalinis.*

Resembles the preceding very much: deep black, opaque: eyes small, with minute erect hairs; arista thickly pubescent: legs piceous, middle shanks almost without bristles: poisers black: wings hyaline: nerves darker, very delicate, the costal blackish; 2d extending nearly half way between the 1st and 3d; the latter scarcely arched, nearer to the tip of the wing than in the last species: interval of the cross nerves equal to the principal one. (Length not $\frac{1}{2}$ line.)

Found with the last, but still more uncommon.

GEN. V.—HETEROPTERA.

Limosinæ characteres sed nervus ordinarius transversus valde obliquatus.

Borborus A. d. . . *Meig.* VI. 206.

Heteroptera . . *Macq. S. à B.* II. 570. v.

Sp. 1. *H. pusilla*.

Copromyza pusilla . *Fallén, Heterom.* 8. No. 5.

Borborus pusilla . . *Meig.* VI. 206. No. 22.

Heteroptera pusilla . *Macq. S. à B.* II. 570. No. 1.

Resembles a *Limosina*: the principal cross nerve is placed so slanting that it becomes confounded with the 4th main nerve, but forms with the 5th a very acute angle advanced towards the margin of the wing: the 2d nerve is also continued nearer to the tip: black: thorax and scutel pubescent; the latter shorter than the metathorax: legs finely pubescent; not many bristles on the middle shanks; first joint both of the fore and hind feet acutely produced at the tip, in the latter triangular: poisers whitish: wings whitish hyaline, or dusky; nerves blackish brown. (Length 1; wings 2 lines.)

Taken by Mr. Walker, near London; and in the Isle of Wight.

The larva of *Borborus equinus* is like that of *Scatophaga stercoraria* in general form. The skin is quite transparent, so that the internal structure and the minutest ramifications of the tracheæ can be seen through it; but I could not discover any trace of arterial circulation. The pulsations of the dorsal vessel were from 90 to 110 a minute. The skin is closely set with very minute erect points or short bristles, most thickly on the last segment. The mandibles come out under two conic processes of the head, each of which bears a smaller appendage of similar form on the upper side. The anterior opening of the tracheæ is furnished with the usual fan-like process. The intermediate segments have no inequalities of any kind. The last has the usual conic protuberances behind the anal cleft, and its margin bears a circle of smaller ones; those being the least which lie immediately above and below the openings of the tracheæ, which are of the usual form, each consisting of three oblong spiracles surrounded by a dark ring. The full grown larvæ, when extended, are about $4\frac{1}{2}$ lines in length. They do not enter the ground to undergo their transformation. Of a number out of eggs laid the first week of October, but few had changed at the end of that month; but probably the period is less in summer, as Meigen says that

Sphærocera equina undergoes all its transformations in eighteen days. The puparium is about 3 lines long, of a bright chestnut, cylindric, with the anterior extremity a little attenuate, bearing two protuberances the remains of the anterior spiracles; the other end is blunt, the conic processes of the last segment remaining as a number of small points. The whole surface is very finely shagreened.

Synopsis Specierum.

<i>Sphærocera, Macq.</i>	<i>Limosina.</i>
<i>subsultans, Fabr.</i>	<i>arcuata, Macq.</i>
<i>monilis, Hal.</i>	<i>geniculata, Macq.</i>
<i>vaporariorum, Hal.</i>	<i>crassimana, Hal.</i>
<i>denticulata, Meig.</i>	<i>ochripes, Meig.</i>
<i>scabricula, Hal.</i>	<i>scutellaris, Hal.</i>
<i>Borborus, Macq.</i>	<i>nivalis, Hal.</i>
<i>nitidus, Meig.</i>	<i>quisquilia, Hal.</i>
<i>suillorum, Hal.</i>	<i>fungicola, Hal.</i>
<i>niger, Meig.</i>	<i>erratica, Hal.</i>
<i>equinus, Meig.</i>	<i>clunipes, Meig.</i>
<i>nigrifemoratus, Macq.</i>	<i>spiniennis, Hal.</i>
<i>flavipennis, Hal.</i>	<i>heteroneura, Hal.</i>
<i>longipennis, Hal.</i>	<i>fuscipennis, Hal.</i>
<i>vitripennis, Hal.</i>	<i>vagus, Hal.</i>
<i>ater, Meig.</i>	<i>lugubris, Hal.</i>
<i>Apterina, Macq.</i>	<i>Zosteræ, Hal.</i>
<i>pedestris, Meig.</i>	<i>leucoptera, Hal.</i>
<i>Limosina, Macq.</i>	<i>nigerrima, Hal.</i>
<i>silvatica, Meig.</i>	<i>melania, Hal.</i>
<i>limosa, Fall.</i>	<i>Heteroptera, Macq.</i>
<i>humida, Hal.</i>	<i>pusilla, Fall.</i>

ART. XXXI.—*Portions of a Letter from the Author of the Letters of Rusticus to Edward Newman.* Published by Permission of the Writer.

DEAR NEWMAN,—The heat of the weather kills me. I wish the comet would take some other course. Why does he wreak his vengeance on the earth. Why don't he parch up Jupiter; or if he must come here, why don't he do, as Washington Irving says he ought—deluge the earth with water. Indeed I hear he is soaking the Scotch and Irish, at the very time that he is roasting us. I have not seen him yet: I suppose he is not visible—pray goodness he never may be; if he come within eyeshot he'll roast us alive. The ground is

already cracked, as though the earth were about to open to the centre ; we shall want leaping poles to cross the chasms.

Did you ever observe the flies on the sunflowers cleaning themselves? They first have a good long feast of honey, and cover themselves with pollen; eyes, legs and wings, all as yellow as gold. When one of the thieves has managed to get so polleny that he can't see, he sets to work to clean himself: it is most amusing to see his operations; the hind legs clean the wings, and the fore legs the head; with great skill the pollen is scraped off the head, eyes, and face, and then rolled up into pellets by the fore legs and thrown away with a kind of jerk. I have seen this done fifty times. The humble bees on a sunflower are also very odd-mannered; they get as drunk as Bacchus or Silenus; then they get sleepy as Morpheus, and cross as Cerberus; if you touch one he leans on one side, cocking up the opposite legs into the air, and plays divers other antics, till with his various trials to show that he is sober, and able to fight and defend himself, he sidles, staggers, rolls, and falls to the ground, and there lays on his back till he has slept himself sober.

I have to-day cut open codling after codling, and found the pips regularly garrisoned with *aphites*—mark the termination—not one lone *aphis*, but a whole troop of all sizes. When I let in the daylight there was a considerable sprawling and waving of legs, and no small alarm in the hive, but by degrees they got used to light and fresh air, and were quite still. I tried to tickle them with a straw in order again to watch their movements, when lo and behold, they were dead,—gathered to their fathers,—gone to the tomb of all the Capulets. Some had heaved anchor and dropped from the pip; others fixed more firmly had died at their post, and tucking their legs together under them, hung by their beak. In no apple was there any road in or out; there was no chance of their passing to the outer air, or of their having come from it; indeed their speedy death proved that change of air did not agree with them. I was particularly careful in my search for a *via*, but there was none. I have often seen the same thing in a bloated poplar leaf; but here is a possibility of the egg being laid between the cuticles of the leaf, then the sap-suction commencing, the bloat may be caused; but this is impossible in a huge apple, with an inch and a half of pulp in every direction.

I am quite unable to explain the mystery, so, like many other wisecracs, I content myself with wondering how, in the name of fortune, the aphites got there.

Another odd station for aphites is on the roots of plants. I have found them by hundreds on a thistle root, closely packed together, and almost as white as snow. The other day I pulled up a large thistle that grew on an ant-hill, and thus I brought to light a whole colony of these white aphites. I had long known of the great value which ants set on these little beasts, so I shook down some dozens of them from the thistle root, among the ants, which were all a-swarm at the damage I had done to their dwelling. No sooner were the ants aware of the presence of the aphites than they began to fondle them with their legs—sometimes positively taking them round the neck—to tap them on the back with their antennæ, and to lick them with their tongues; they then took hold of them with their jaws, lifted them from the ground, and carried them with the greatest care, one by one, into the recesses of the nest.

I walked by the same way about three hours afterwards, and found the nest all quiet and orderly, and not an aphite was to be seen; so I went to work with my knife and scraped down the side of the hill. I soon came to the aphites; they were clustered together on little bits of thistle root, which had been broken off in the ground, and were attended by numbers of ants. As soon as the ants found their cattle were again in jeopardy, they drew them gently from the root and carried them still further into the nest. I am quite convinced that honey-dew is the excrement of aphites, and that ants devour this honey-dew, and a sweet clear liquid honey it is. I have often watched an ant go from one aphite to another, stand behind each, and gently squeeze the body with its fore legs; perhaps one aphite in ten, not more, will give out a small drop of honey as clear as crystal, which the ants instantly swallow. The ants take much more care of the aphites than the aphites do of themselves: they are sad dull, stupid creatures. It is very pretty to see the licking and washing and cleaning and caressing which the ants constantly bestow on them. When the aphites cast their skin, the ants instantly carry it away, nor will they let any dirt or rubbish remain among them or on them. But the most amusing care of the ant is guarding

the aphites from the attacks of that little parasitic fly, whose operations Mr. Haliday has so well described.^a You must have seen a sheep-dog run over the backs of a whole flock of sheep, when closely crowded together, in order to bring back some sinner that has gone astray; so will the ants in the hot sunshine run about over an establishment of aphites, driving away the rascally parasite that is for ever hovering about them to destroy them. Believe me ever yours,

Godalming, 15th August, 1835.

P. S. I forgot to tell you that all our turnips this year are destroyed by the *blacks*; and I begin to think that these are the real turnip-fly, the smaller animal being only the turnip-flea. About the middle of July these real turnip-flies were showered down on us, as it were from the clouds; they fell thicker than rain drops, and hovered about the turnips in such myriads that the whole fields were coloured with a rainbowy tinge, when the hot sun shone on the filmy gauzy wings of the flies. I will give you an entomological description of one of these flies:—the head and antennæ are as black as a coal: the thorax is yellow before and on the top, but coal black on the sides and behind: the body is yellow: the wings are clear and very shining, and tinged with yellow, and the upper ones have a dash of coal black along the upper margin, which reaches three quarters of the way from the thorax to the tip of the wing: the legs are yellow, spotted with black. I could not find that these flies tasted the turnips; they only came to them on family business.

About the 9th of August the turnips began to look queer; the flies had disappeared almost entirely before this, you must recollect. One Saturday I looked well over them, and found they were swarming alive with little black caterpillars. I told two or three men who were hoeing them that the turnips looked bad, and I showed the grubs to them, but they thought nothing of it, and I found I could not persuade them that any thing was the matter. On Sunday I could not get out as far as a turnip-field. On Monday I went out and the turnips were *not*: they had in two short days been swept from the face of the earth. The land was every where as bare as on the

^a Ent. Mag. Vol. 11. p. 98.

day it had been sowed. There was no speck of green for the eye to rest upon. It was a wild and universal desolation, and the black crawling vermin that had caused the ruin were clustered in bunches on the ground, and on the remnants of the turnips, and were dying of starvation. No plague of Egypt could have been more effective: the mischief was complete. Some few fields received the blast a few days later than others, but all had it; not one escaped unless the crop were Swedes, and it is remarkable that these were untouched. I need not tell you that I boxed some of the grubs, to learn something of their history, but have not progressed in the affair yet. I am certain the grubs are the produce of the fly; the eggs were laid on the young leaves of the turnips, and hatched and turned into grub. The build of the grub proves beyond a doubt that it is the larva of the fly. It is rather rough coated, but without hairs; it is of a dull leaden sort of black colour, and has a lighter line along each side; it has twenty feet. It is fond of resting on the leaf curled up in a ring, and if disturbed tumbles on the ground without opening; indeed, if not in a ring before, it rolls itself into one when touched. I send you a pen and ink sketch both of the grub and fly. The grub is the natural size; the fly is of the length and breadth of the cross below it: the parts I have left white are yellow. I think I have done it accurately enough for you to tell me the name.^b I find, on referring to the accounts of the enemies of turnips, that these *blacks* were well known formerly, but the race seems to have become extinct and forgotten. I find a hundred recipes for their destruction, all of which are moonshine, except one, which is for a wonder rational. It is this:—buy an immense lot of ducks, and turn them in your turnips, and they will devour the grubs by millions, and become in a few days as fat as butter. Thus two birds are killed with one stone—the ducks fatted and the turnips saved. When we get on a little further with our inquiries into the history of animals, especially such little things as insects, you may depend upon it we shall find the best way to check the increase of any hurtful kind is to encourage any other animal, beast, bird, fish, or insect, that makes the injurious

^b The insect described is the *Athalia spinarum* of most entomological cabinets, but is described by Stephens as the *Tenthredo centifolia* of Panzer; *Athalia centifolia*, Stephens.



Scutellum	non conspicuum } costalis, Nervus cubitalis } conspicuum. Alæ nervus	} ad costæ medium. Abdomen	} sessile; ejus	} segmentum 2 ^{um} . longius.	} segmenta subæqualia	I. BÆUS.
						} petiolatum
		} prope costæ apicem Mari antennæ				III. TELENOMUS.
		} verticillato pilosæ brevissimæ pubescentes				IV. THORON.
						V. XENOMERUS.
						VI. TELEAS.
		} subcostalis. Palpi maxillares				VII. SCELIO.
						VIII. SPARASION.

GEN. I.—BÆUS—*Haliday*.

Fem.—"Corpus brevissimum, contractum, apterum: scutellum nullum: antennæ breves clava compacta 5-annulata, ovato-acuminata."—*Haliday*.

Sp. 1. *Bæus seminulum* (*Haliday*, *Ent. Mag.* I. 270.) *Ater*, antennæ et pedes picea, genua et tarsi pallidiora. (Pl. XIII. fig. 6.)

Ater, convexus, altissimus, glaber, subtilissime punctatus, parum nitens: caput magnum, thorace multo latius; frons convexa: oculi ocellique picei: antennæ piceæ, capitatæ, 11-articulatæ, corporis dimidio longiores; articuli 3^o. ad 6^{um}. minimi; 7^o. ad 11^{um}. latissimi, clavam fingentes ovatam maximam: thorax subcubicus: abdomen subrotundum, thorace latius vix longius; segmentum unum ejus dorsum fere totum occupans: pedes picei, validi, saltatorii; genua et tarsi pallidiora, hi apice fuscii. (Corp. long. lin. $\frac{1}{5}$.)

August; on windows and among grass in fields; near London. Taken during the same month, by Mr. Haliday, in new mown meadows in Galway, Ireland.

GEN. II.—GRYON—*Haliday*.

"Antennæ 12-articulatæ maris flagello filiformi crassiusculo, *femine* clava 5-annulata: palpi maxillares 3-articulati: ramulus stigmaticalis brevis: abdomen ovatum segmentis anterioribus æqualibus tertio brevior."—*Haliday*.

Sp. 1. *Gryon Nanno*. Mas. *Ater*, antennæ et pedes rufa, alæ fusce.

Ater, subtilissime punctatus, glaber, parum nitens: caput longiusculum, thoracis latitudine: oculi ocellique picei: antennæ rufæ, moniliformes, capitis thoracis que longitudine, apice graciliores; articuli 3^o. ad 11^{um}. transversii, approximati, brevissimi; 12^{us}. conoides, acuminatus, 11^o. longior: thorax ovatus, parum convexus: mesothoracis parapsidum suturæ conspicuæ; postscutelli dorsum spinam brevem validam emittens: abdomen longiovatum, planum, glabrum, nitens, læve, thorace paullo latius et dimidio longius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata; 3^{um}. longius: pedes rufi; tarsi apice fuscii: alæ fusce, breves,

angustæ; squamulæ piceæ; nervi fusci, metalæ sublimpidæ.
(Corp. long. lin. 1; alar. lin. 1½.)

June; New Forest, Hampshire.

Sp. 2. Gryon Phlias. Fem. *Ater, antennæ nigræ, pedes picei, alæ sublimpidæ. T. Nanno. Fem.?*

Ater, subtilissime punctatus, glaber, parum nitens: caput longiusculum, thoracis latitudine: oculi ocellique picei: antennæ nigræ, clavatæ, thoracis longitudine; articuli 3^o. ad 7^{um}. minimi 8^o. ad 12^{um}. clavam fingentes fusiformem: thorax ovatus, parum convexus: meso-thoracis parapsidum suturæ conspicuæ: post-scutelli dorsum spinam brevem validam emittens: abdomen longi-ovatum, planum, glabrum, nitens, læve, thorace paullo latius et dimidio longius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata, 3^{um}. longius: pedes picei; trochanteres genua et tarsi pallidiora: alæ sublimpidæ, breves, angustæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. 1; alar. lin. 1½.)

July; Forest of Fontainbleau.

Sp. 3. Gryon Matuta. Mas. *Ater, pedes picei, alæ fusæ.*

Ater, brevis, latus, crassus, altus, punctatus, obscurus, glaber: caput breve, thoracis latitudine: oculi et ocelli picei: antennæ nigræ, latæ, subfiliformes, corpore breviores, apice minime angustiores: thorax rotundus, convexus, postice abrupte declivis; meso-thoracis scutum et scutellum lata, maxima, parapsidum suturæ indistinctæ; metathorax supra vix discernendus: abdomen rotundum, fere planum, thorace vix longius; segmenta 3 sub-æqualia dorsum fingentia: pedes picei, validi; coxæ obscuriores: alæ fusæ, breves, angustæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. ½; alar. lin. ½.)

July; Forest of Fontainbleau.

Sp. 4. Gryon misellus. (Haliday, Ent. Mag. I. 771.) Mas et Fem. *Ater, antennæ piceæ, mari abdomen basi flavum, pedes mari flavi fem. fulvi, alæ subfusæ. (Pl. XIII. fig. 5.)*

Hemisius minutus? Westwood, London and Edinb. Phil. Mag. &c. Third Series, II. 12. 445.

Ater, obscurus, sublinearis, punctatus, parum convexus, brevissime pubescens: caput longiusculum, thorace paullo latius: oculi

et ocelli picei : antennæ *mari* piceæ validæ, subfiliformes, corpore paullo breviores ; scapus flavus ; articuli 3^o. ad 11^{um}. transversi, subæquales, flagellum longi-fusifforme fingentes ; 12^{us}. 11^o. multo longior, acuminatus : antennæ *fem.* nigro-piceæ, clavatæ, corporis dimidio longiores ; scapus basi flavus ; articuli 3^o. ad 7^{um}. brevissimi, 8^o. ad 12^{um}. lati clavam acuminatam fusiformem fingentes : thorax breviovatus, parum convexus ; mesothoracis parapsides scuto in unum confusæ ; metathorax parvus : abdomen breviovatum, nitens, læve, glabrum, fere planum, thorace paullo longius, *mari* basi flavum, *fem.* nigrum aut piceum ; segmenta subæqualia : pedes *mari* flavi, *fem.* fulvi genubus tarsisque pallidioribus : alæ subfuscæ, angustæ, *mari* corpore breviores, *fem.* abdominis longitudine ; squamulæ piceæ ; nervi fuscii. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$.)

Var. β.—*Fem.* abdomen basi fulvum.

Found by Mr. Haliday ; on grass under trees ; from July to October ; at Holywood and in Galway, Ireland. Near London. Taken by Mr. Davis.

GEN. III.—TELENOMUS.—*Haliday.*

Caput mediocre, breve, convexum, thoracis plerunque latitudine : mandibulæ parvæ, subtrigonæ, arcuatæ, unidentatæ : maxillæ subtrigonæ ; palpi biarticulati : oculi laterales, mediocres : ocelli supra verticem trigone dispositi : antennæ ad os insertæ ; articulus 1^{us}. longus, minime arcuatus ; 2^{us}. longi-cyathiformis : prothorax supra non conspicuus : mesothorax maximus ; scutellum non prominens : metathorax vix conspicuus : abdomen sessile ; segmentum 1^{um}. brevissimum ; 2^{um}. maximum ; sequentia brevina, subæqualia : alæ nervus cubitalis ante costæ medium in discum oblique descendens.

* *Antennæ fem. 10-articulatæ.*

Sp. 1. Telen. Eris. Fem. *Ater*, antennæ nigro-piceæ, pedes picei, tarsi pallidiores, alæ subfuscæ.

Ater, latus, brevis, parum nitens, punctatus, pubescens : caput thoracis latitudine : oculi ocellique picei : antennæ clavatæ, nigro-piceæ, corporis dimidio multo longiores ; articulus 4^{us}. longus ; 5^{us}. brevior ; 6^{us}. adhuc brevior ; 7^{us}. et sequentes ad 10^{um}. breves, dilatantes ; 11^{us}. brevi-conoides, 10^o. vix longior : thorax brevi-ovatus, convexus : mesothoracis scutellum nitens, læve,

glabrum : abdomen brevi-ovatum, convexum, nitens, læve, glabrum, thorace paullo longius : pedes picci ; trochanteres genua, tibiæque apice flava ; tarsi pallide fusci, basi flavi : alæ subfuscæ, sat latæ ; squamulæ piceæ ; nervi fulvi, cubitalis longus. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

Var. β.—Protibiæ flavæ, fusco cingulatæ.

Var. γ.—Alæ sublimpidæ.

Found by Mr. Haliday at Holywood, Ireland. September ; near London ; Isle of Wight.

Sp. 2. Telen. Coilus. Fem. *Præcedente minor brevior lævior glabrior.*

Ater, nitens, lævis, brevis : oculi ocellique picci : antennæ clavatæ, robustæ, corpore paullo breviores : thorax convexus, fere rotundus, breviter pubescens : abdomen subquadratum, planum, glabrum, thorace brevius et angustius ; segmentum 2^{um}. ejus fere totum occupans : pedes fusci ; trochanteres, genua et tarsi flava ; protibiæ flavæ, fusco cingulatæ : alæ subfuscæ, sat latæ ; squamulæ rufo-piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{1}{2}$.)

Found by Mr. Haliday, at Holywood.

** *Antennæ articulis* mari 12, fem. 11.

† *Caput subcubicum.*

Mesothoracis parapsides scuto in unum confuscæ : nervus cubitalis in alæ apicem directus.

Sp. 3. Telen. othus (Haliday, Ent. Mag. I. 271.) Fem. *Abdomen thorace plus duplo longius.* (Pl. XIII. fig. 4.)

Ater, nitens, lævis, glaber : caput thoracis latitudine : antennæ piceæ, clavatæ, graciles, submoniliformes, corporis dimidio longiores ; articuli 3^o. ad 8^{um}, curtantes et dilatantes ; 9^{us}. 10^{us}. et 11^{us}. lati, subæquales, clavam fingentes fusiformem ; 11^{us}. acuminatus : oculi ocellique picci : thorax ovatus, fere planus, brevissime pubescens : abdomen fusiforme, planum, thorace plus duplo longius : oviductus fuscus : pedes picci ; trochanteres et genua rufa ; tibiæ rufo-piceæ ; meso- et metatarsi flavi, apice picci : alæ sublimpidæ, angustæ ; squamulæ rufo-piceæ ; nervi flavi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Var. β.—Femora rufo-picea ; tibiæ rufæ.

Taken by Mr. Haliday at Holywood.

Sp. 4. Telen. laricis. (Haliday, Ent. Mag. I. 271.) Mas et Fem. *Abdomen thorace longius, pedes picei.* (Pl. XIII. fig. 2. Fem.; fig. 3. Mas antenna.)

Ater, nitens, lævis, glaber: caput thoracis latitudine: oculi ocellique picei: *mari* antennæ nigro-piceæ, moniliformes, graciles, corpore paullo breviores; articuli 3^o. ad 11^{um}. curtantes; 12^{us}. longi-conoides, acuminatus, 11^o. multo longior: *fem.* antennæ clavatæ, submoniliformes, corporis dimidio paullo longiores; articuli 3^o. ad 8^{um}. curtantes et dilatantes; 9^{us}. 10^{us}. et 11^{us}. lati, subæquales, clavam fingentes fusiformem non acuminatam: thorax ovatus, fere planus, brevissime pubescens: *mari* abdomen ovatum, planum, thorace longius, quam *fem.* brevius et latius: *fem.* abdomen longi-ovatum, thorace longius: oviductus piceus, exertus: pedes picei; trochanteres et genua flava; tarsi flavi, apice picei: alæ sublimpidæ, angustæ; squamulæ rufo-piceæ; nervi fusi. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{1}{2}$ — $\frac{2}{5}$.)

Taken by Mr. Haliday at Holywood. July, September; near London; North Wales.

Sp. 5. Telen. heteropterus (Haliday, Ent. Mag. I. 271.) Fem. *Abdomen thorace vix longius, pedes flavi.*

Ater, lævis, gracilis, nitens: caput thorace paullo latius: oculi ocellique picei: antennæ fusæ, clavatæ, graciles, submoniliformes, corporis dimidio longiores; articuli 1^o. ad 3^{um}. flavi; 3^o. ad 8^{um}. curtantes et dilatantes; 9^o. ad 11^{um}. lati, subæquales, clavam fingentes fusiformem non acuminatam: thorax breviter pubescens, parum convexus: abdomen ovatum, glabrum, fere planum, thorace vix longius: pedes flavi: alæ sublimpidæ, angustæ; squamulæ fusæ; nervi flavi. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{1}{2}$.)

Taken by Mr. Haliday at Holywood, Ireland.

Sp. 6. Telen. Zethos. Mas et Fem. *Nigro-piceus, antennæ et pedes flava, alæ limpidæ.*

Nigro-piceus, nitens, lævis, glaber: caput thorace paullo latius: oculi ocellique picei: antennæ corpore breviores, *mari* flavæ basi pallidiores, moniliformes; articuli 3^o. ad 11^{um}. curtantes; 12^{us}. longi-conoides, acuminatus, 11^o. multo longior: *fem.* pallide flavæ, clavatæ, submoniliformes; articuli 3^o. ad 8^{um}. curtantes et dilatantes; 9^{us}. 10^{us}. et 11^{us}. lati, subæquales, clavam fingentes fusiformem non acuminatam: thorax brevi-ovatus, fere planus:

abdomen brevi-ovatum, thorace paullo angustius : oviductus flavus : pedes pallide flavi : alæ limpidæ, mediocres ; squamulæ piceæ ; nervi pallide flavi. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Reared by the Rev. Lansdown Guilding, from the eggs of a Lepidopterous insect in St. Vincent's Isle.

†† *Caput transversum.*

* *Caput thoracis latitudine: mari antennæ submoniliformes; articuli 3^o. ad 11^{um}. curtantes; 12^{us}. acuminatus, 11^o. multo longior: fem. antennæ clavatæ; articuli 3^o. ad 7^{um}. discreti, curtantes et dilatantes; 8^o. ad 11^{um}. lati, elavam fingentes fusiformem non acuminatam: mesothoracis parapsides non bene determinatæ aut scuto in unum confusæ: nervus cubitalis in alæ marginem posticum directus.*

‡ Fem. antennæ clavatæ; articuli 3^o. ad 8^{um}. discreti.

§ *Thorax subplanus.*

Sp. 7. Telen. Phylas. Mas. *Alæ angustæ, tarsi rufo-fusci.*

Ater, nitens, lævis, gracilis: oculi ocellique picei: antennæ nigrae, graciles, corpore paullo breviores: thorax longi-ovatus, brevissime pubescens, parum convexus: abdomen planum, thoracis longitudine et forma: pedes nigro-picei; trochanteres, genua et tarsi rufo-fusca: alæ limpidæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found by Mr. Haliday at Holywood, Ireland.

Sp. 8. Telen. Dorsennus. Mas. *Alæ quam præcedenti latiores, tarsi flavi.*

Ater, nitens, lævis, gracilis, glaber: oculi ocellique picei: antennæ nigro-piceæ, graciles, corpore paullo breviores: thorax longi-ovatus, parum convexus: abdomen planum, longi-ovatum, thorace vix brevius: pedes picei; trochanteres, genua et tarsi fulva; meso- et metatarsi basi flavi: alæ limpidæ; squamulæ piceæ; nervi pallide fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

July; near London.

Sp. 9. Telen. Andria. Fem. *Ater, pedes rufi, femora picea, alæ limpidæ.*

Ater, obscurus, punctatus, breviter pubescens: oculi ocellique picei: antennæ nigro-piceæ, corporis dimidio vix longiores: thorax parum convexus: abdomen ovatum, nitens, læve, glabrum, thorace

longius : oviductus piceus, exertus : pedes rufi ; coxæ et femora picea : alæ limpidaæ, angustæ ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. β.—Meso- et metatibiæ piceæ.

Taken by Mr. Haliday at Holywood, Ireland. Found near London.

Sp. 10. Telen. Tritia. Fem. *Præcedenti latior, pedes omnino rufi.*

Ater, mediocris, punctatus, obscurus, pubescens : oculi ocellique picei : antennæ nigro-piceæ, corporis dimidio multo longiores : thorax brevi-ovatus : abdomen ovatum, nitens, læve, glabrum, thoracis longitudine : pedes rufi ; coxæ piceæ ; tarsi apice fusci : alæ sublimpidaæ, mediocres ; squamulæ piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. 1.)

June ; Isle of Wight.

Sp. 11. Telen. Horus. Fem. *Ater, pedes picei, alæ fuscæ.*

Ater, nitens, lævis, gracilis : oculi ocellique picei : antennæ nigro-piceæ, corporis dimidio longiores : thorax brevissime pubescens, parum convexus : abdomen ovatum, glabrum, fere planum, thorace longius : pedes picei ; trochanteres, genua et tarsi flava, hi apice picei : alæ fuscæ, angustæ ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

September ; North Wales.

Sp. 12. Telen. brachialis, (Haliday, Ent. Mag. I. 271.)
Fem. T. *Horo brevior et latior, alæ quoque latiores.*
(Pl. XIII. fig. 1.)

Ater, nitens, lævis : caput thorace paullo latius : oculi ocellique picei : antennæ nigræ, robustæ, corporis dimidio longiores : thorax ovatus, breviter pubescens : abdomen ovatum, glabrum, thorace minime longius et latius ; segmentum 2^{um}. ejus dorsum fere totum occupans : oviductus fuscus : pedes nigro-picei ; trochanteres, genua et tarsi fusca : alæ subfuscæ, sat latæ ; squamulæ piceæ ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found by Mr. Haliday at Holywood, in Ireland. September ; North Wales.

Sp. 13. Telen. Stilpo. Fem. T. *Horo brevior, T. brachiali angustior, pedes nigro-picei, alæ subfuscæ.*

Ater, nitens, lævis, brevis, sat latus : oculi ocellique picei : antennæ

nigræ, corporis dimidio longiores: thorax ovatus, fere planus, brevissime pubescens: abdomen ovatum, planum, glabrum, apicem versus latius, thorace vix longius; segmentum 2^{um}. ejus fere totum occupans: pedes nigro-picei; trochanteres, genua et tarsi flava, hi apice obscuriores: proalæ subfuscæ, angustæ; metalæ limpidæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{4}$; alar. lin. $\frac{2}{5}$.)

Found by Mr. Haliday at Holywood. Taken near London.

§§ *Thorax convexus.*

* *Thorax lævis.*

Sp. 14. Telen. Othonia. Mas et Fem. *Ater, minimus, pedes fusci; tarsi flavi, alæ sublimpidæ.*

Ater, brevis, nitens, lævis, glaber: antennæ piceæ, *mari* corporis longitudine, *fem.* corporis dimidio longiores: oculi ocellique picei: thorax brevi-ovatus: abdomen subquadratum, thoracis longitudine, apicem versus latius: pedes fusci; trochanteres, genua et tarsi flava, hi apice obscuriores: alæ sublimpidæ, parvæ; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{4}$; alar. lin. $\frac{1}{3}$ — $\frac{1}{2}$.)

May and July; near London.

Sp. 15. Telen. Vinicius. Fem. *Præcedente latior, pedes picei; alæ fuscæ.*

Ater, brevis, latus, nitens, lævis, glaber: oculi ocellique picei: antennæ nigræ, corpore vix breviores: thorax rotundus, convexus: abdomen subquadratum, ad apicem latius, thorace vix longius; segmentum 2^{um}. ejus dorsum fere totum occupans: pedes picei; trochanteres, genua et tarsi flava, hi apice fusci: alæ fuscæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{3}$; alar. lin. $\frac{1}{2}$ — $\frac{2}{3}$.)

September; near London; Isle of Wight.

** *Thorax punctatus.*

† *Pedes picei.*

Sp. 16. Telen. Cleostratus. Mas et Fem. *Ater, minimus, pedes picei, alæ sublimpidæ.*

Ater, brevis, latus, subtilissime punctatus, parum nitens, glaber: oculi ocellique picei: antennæ nigræ, graciles, *mari* corporis longitudine, *fem.* corporis dimidio longiores: thorax perconvexus, paullo longior quam latus: abdomen nitens, læve, *mari* subquadratum apicem versus latius thorace brevius et angustius, *fem.*

brevi-ovatum thorace paullo longius ; segmentum 2^{um}. ejus dorsum fere totum occupans : pedes picei ; trochanteres, genua et tarsi pallidiora : alæ sublimpidæ, amplæ ; squamulæ piceæ ; nervi fusi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

Found near London.

Sp. 17. Telen. Orphne. Mas. *Præcedente paullo major, alæ latiores limpidæ.*

Ater, brevis, latus, glaber, subtilissime punctatus, parum nitens : oculi ocellique picei : antennæ nigræ, graciles, corporis longitudine : thorax perconvexus, rotundus : abdomen nitens, læve, convexum, thorace vix longius ; segmentum 2^{um}. ejus dorsum fere totum occupans : pedes fusi ; trochanteres, genua et tarsi flava ; protibiæ flavæ, fusco cingulatæ : alæ limpidæ, latæ ; squamulæ piceæ ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 18. Telen. Situs. Fem. *Ater, præcedente major, pedes picei, alæ obscure fusæ.*

Ater, latus, brevis, parum nitens, subtilissime punctatus, pubescens : oculi ocellique picei : antennæ nigræ, corpore breviores : thorax brevi-ovatus, valde convexus : abdomen subquadratum, nitens, læve, glabrum, apice latius, thorace brevius ; segmentum 2^{um}. ejus dorsum fere totum occupans : pedes picei ; trochanteres, genua et tarsi pallide fusca : alæ obscure fusæ, latæ ; squamulæ piceæ ; nervi fusi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. 1.)

May ; near London.

Sp. 19. Telen. Trophonius. Fem. *Præcedentis similitudine, antennæ breviores, alæ angustiores fusæ.*

Ater, brevis, latus, subnitens, glaber, subtilissime punctatus : oculi ocellique picei : antennæ nigræ, corporis dimidio longiores : thorax rotundus, convexus ; scutellum nitens, læve : abdomen nitens, læve, rotundum, thorace paullo longius et latius ; segmentum 2^{um}. ejus fere totum occupans : pedes picei ; trochanteres, genua et tarsi fulva, hi apice fusi : alæ fusæ ; squamulæ piceæ ; nervi fusi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 20. Telen. Pilumnus. Fem. *Præcedentis statura, pedes picei, alæ limpidae.*

Ater, brevis, latus, punctatus, obscurus, brevissime pubescens: oculi ocellique picei: antennæ nigræ, corporis dimidio longiores: thorax rotundus, convexus: abdomen brevi-ovatum, nitens, læve, glabrum, fere planum, thorace paullo longius: oviductus piceus, exertus: pedes picei; trochanteres, genua et tarsi fusca, hi subtus flavi: alæ limpidae; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 21. Telen. Belenus. Mas et Fem. *Præcedentibus latior et crassior, pedes picei, alæ sublimpidæ.*

Teleas phalænarum? *Nees ab. Esenbeck, Hymenopt. Ichneum. affn. Monogr. II. 387.*

Ater, brevis, latus, obscurus, punctatus, brevissime pubescens: caput breve, thoracis latitudine: oculi ocellique picei: antennæ nigræ, sat latæ, *mari* corpore breviores, *fem.* corporis dimidio longiores: thorax valde convexus, fere globosus: abdomen fere rotundum, subplanum, nitens, læve, glabrum, thorace paullo angustius vix brevius; segmenta 1^{um}. et 2^{um}. basi sulcata: pedes picei, robusti; trochanteres, genua et tarsi rufa; protibiæ rufæ, piceo cingulatæ; tarsi apice fusci: alæ sublimpidæ, latæ; squamulæ piceæ; nervi fusci; cubitalis longior et radiali angulum minus acutum quam hujus generis speciebus plerisque fingens. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Found by the Comte de Castelleau, under leaves of oak trees at Paris. September; Devonshire. Found by Mr. Davis.

— *Pedes flavi.*

Sp. 22. Telen. Alcon. Mas. *Ater, pedes rufi, alæ sublimpidæ.*

Teleas Linnei? *Nees ab Esenbeck, Hymenopt. Ichneum. affn. Monogr. II. 288.*

Ater, brevis, latus, punctatus, obscurus, brevissime pubescens: caput breve: oculi ocellique picei: antennæ nigro-piceæ, graciles, corpore breviores: thorax valde convexus, fere globosus; scutellum nitens, læve, glabrum: abdomen subplanum, fere rotundum, nitens, læve, glabrum, thorace paullo angustius vix brevius;

segmenta 1^{um}. omnino 2^{um}. que basi sulcata: pedes rufi; coxæ piceæ: alæ sublimpidæ, latæ; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Found under bark of elms at Paris, by the Comte de Castelleau, who also has reared it from the eggs of a *Pentatoma*.

Sp. 23. Telen. Turesis. Mas et Fem. *Præcedentis dimidii magnitudine, alæ angustiores.*

Teleas pumilio? Nees ab Esenbeck, *Hymenopt. Ichneum. affin. Monogr. II. 288.*

Ater, brevis, latus, subnitens, subtilissime punctatus, pubescens: oculi ocellique picei: antennæ nigro-piceæ, *mas* corpore paullo breviores, *fem.* corporis dimidio longiores; articulus 1^{us}. basi rufo-piceus: thorax valde convexus, fere rotundus: scutellum nitens, læve, glabrum: abdomen nitens, læve, glabrum, thorace vix longius, apicem versus latius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata, hoc abdominis dorsum fere totum occupans: oviductus fulvus: pedes rufi; meso- et metatarsi pallidiores, apice fuscii; coxæ piceæ: alæ fulvo-limpidæ; squamulæ rufo-piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

September; near London; Cumberland.

‡‡ Fem. *antennæ capitatae; articuli 3^o. ad 8^{um}. approximati.*

Sp. 24. Telen. Colotes. Fem. *Ater, pedes rufi, alæ subfusæ.*

Ater, latus, brevis, parum nitens, subtilissime punctatus, pubescens: oculi ocellique picei: antennæ fusæ, corporis dimidio longiores; articuli 1^{us}. et 2^{us}. flavi; clava picea: thorax subrotundus, convexus: abdomen subquadratum, nitens, læve, glabrum, thoracis longitudine, apicem versus latius; segmentum 2^{um}. ejus dorsum fere totum occupans: pedes rufi; tarsi pallidiores, apice fuscii; coxæ piceæ: alæ subfusæ, angustæ; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

June; near London.

Sp. 25. Telen. Nauplius. Fem. *Ater, antennæ quam præcedenti crassiores, pedes rufi, alæ limpidæ, nervus cubitalis brevis.*

Ater, brevis, latus, obscurus, punctatus, brevissime pubescens: oculi ocellique picei: antennæ nigræ, validæ, corporis dimidio

vix longiores; articulus 1^{us}. basi fulvus: thorax convexus, fere rotundus: postscutellum prominens: abdomen brevi-ovatum, glabrum, subtilissime punctatum, thorace paullo longius: pedes rufi; trochanteres piceæ; tarsi apice fuscii: alæ fuscæ, breves; squamulæ piceæ; nervi fuscii. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{5}$; alar. lin. $\frac{1}{5}$ — $\frac{1}{2}$.)

Found near London; and in Lanarkshire, Scotland.

Sp. 26. Telen.? *Æthra*. Fem. *Ater*, *pedes nigro picei, tarsi rufi, alæ fusca*.

Obs.—Teleadi propius accedere videtur, nervo cubitali longiore tantum discrepans.

Ater, brevis, latus, crassus, nitens, subtilissime punctatus, pubescens: *Teleadis* similitudine: oculi ocellique picei: antennæ nigræ, robustæ corporis dimidio vix longiores; articulus 1^{us}. basi fulvus: thorax rotundus, convexus: mesothoracis parapsidum suturæ conspicuæ; postscutellum spinam brevem validam emittens: abdomen fere rotundum, thorace paullo longius et latius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata; 3^{um}. longius: pedes nigro-picei, validi; trochanteres, genua et tarsi rufa, hi apice fuscii: alæ fuscæ, breves, angustæ; squamulæ piceæ; nervi fuscii. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{2}{3}$.)

Found near London. Taken by Mr. Davis.

GEN. IV.—THORON.—*Haliday*.

Caput transversum, thoracis latitudine: mandibulæ subquadrata, tridentata, longitudine mediocres; una dentibus æqualibus, altera dentibus medio et interno minimis: maxillæ lata, truncata, subtrigonæ, intus apice lobo brevi terminata; palpi 4-articulata, moniliformes, extrorsum crassiores; articulus 1^{us}. longi-cyathiformis, mediocris; 2^{us}. et 3^{us}. breviores; 4^{us}. fusiformis, acuminatus, 1°. paullo longior et latior: labium obconicum, mediocre; ligula non conspicua; palpi biarticulati, brevissimi, articulus 2^{us}. minimus: *mari* antennæ 12-articulata, moniliformes; radculus longissimus; articulus 1^{us}. longus; 2^{us}. cyathiformis; 3^{us}. et sequentes ad 11^{um}. ovati; 12^{us}. fusiformis, 11°. longior: *fem.* antennæ capitata; articuli 3°. ad 7^{um}. curtantes, vix dilatantes; clava 5-articulata, longi-ovata, magna, solida: prothorax supra vix conspicuus: mesothoracis parapsidum suturæ postice vix mutuo accedentes; postscutellum tuberculo simile, non acuminatum: metathorax mediocris, utrinque spinosus: abdomen

longi-ovatum, petiolatum; segmentum 1^{um}. angustum; 2^{um}. longius; 3^{um}. adhuc longius; 4^{um}. et sequentia brevia: segmenta ventralia 1^{um}. et 2^{um}. maxima; sequentia brevissima: pedes longi, graciles: alæ pubescentes, ciliatæ; nervus costalis alæ dimidio vix longior, ramulum emittens in alæ disco oblique descendentem et mox stigmatē calloso terminatus: metalæ nervus unicus costalis simplex.

Sp. 1. Thor. metallicus. Mas et Fem. *Nigro-æneus, antennæ nigrae, pedes rufo-picei, alæ fuscae*. (Pl. XIII. fig. 11. fem. fig. 12. antenna mas.)

Teleas metallicus . . . *Haliday, Curtis, Brit. Ent. VII. 333.*

Thoron metallicus . . . *Haliday, Ent. Mag. I. 272.*

Teleas fornicatus, mas. *Nees ab Esenbeck, Hymenopt. Ichneum. affn. Monogr. II. 292.*

Teleas solidus, fem. . . ————— 290.

Nigro-æneus, convexus, nitens, lævis, pilis albis parce hirtus: oculi ocellique picei: antennæ nigrae, *mari* corporis longitudine: fem. corporis dimidio paullo longiores; articulus 1^{us}. basi et radculus rufi: thorax brevi-ovatus, crassus: mesothoracis parapsidum suturæ bene determinatæ: metathorax punctatus, obscurus: abdomen *mari* thorace multo longius, fem. acutius thorace plus duplo longius; segmenta 1^{um}. omnino 2^{um}. que basi ad medium sulcata: pedes rufo-picei; coxæ nigro-piceæ; trochanteres, femora apice et subtus protibiæque rufa: alæ fuscae, mediocres; squamulæ piceæ; nervi obscure fuscii. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 2.)

Var. β.—Meso- et metapedum femora et tibiæ omnino rufa.

Near London; from March to October; at the roots of grass, moss, &c.; by the edges of brooks and ponds; Devonshire. Found by Mr. Haliday at the edges of ponds, among roots of aquatic plants, and on the water, at Holywood, Ireland. The female is much more abundant than the male.

GEN. V.—XENOMERUS.^a

Mas.—Antennæ 12-articulatæ, verticillato-pilosæ, moniliformes; articulus 1^{us}. longus, gracilis; 2^{us}. brevi-cyathiformis; 3^{us}. et sequentes ad 11^{um}. ovati, discreti, subæquales; 12^{us}. teliformis,

^a Ξένος, alienus, μέρος, pars.

acuminatus, 11^o. longior : abdominis segmenta 1^{um}. et 2^{um}. subæqualia ; 3^{um}. magnum ; sequentia brevia : alæ nervus cubitalis brevis, e costæ medio in discum fere recte descendens.

Sp. 1. Xen. Ergenna. Mas. *Ater, antennæ nigro-piceæ, pedes picei, alæ limpidæ.* (Pl. XIII. fig. 10.)

Ater, brevis, latus, nitens, lævis, glaber : caput thorace vix latius : oculi ocellique picei : antennæ nigro-piceæ, graciles, corpore multo longiores : thorax brevi-ovatus, convexus : prothorax supra non conspicuus : mesothoracis parapsidum suturæ distinctæ : metathorax brevis : abdomen subrotundum, fere planum, thorace paullo brevius : pedes picei, longi, graciles ; trochanteres, genua et tarsi pallidiora : alæ limpidæ, angustæ, corpore longiores ; squamulæ piceæ ; nervi fuscii. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $1\frac{1}{4}$.)

July ; on windows ; near London.

GEN. VI.—TELEAS.—*Latreille.*

Corpus compactum, convexum, pilis albidis hirtum : caput mediocre, transversum, subquadratum, thoracis vix latitudine : mandibulæ longæ, subquadratæ, tridentatæ, paullo arcuatæ, basi intus dilatatæ ; dentes acuti, externus mediocris, internus minor, medius adhuc minor : maxillæ latæ, subtrigonæ, intus apice lobo brevi terminatæ ; palpi triarticulati, graciles, filiformes ; articulus 1^{us}. mediocris ; 2^{us}. brevior ; 3^{us}. acuminatus, 1ⁱ. et 2ⁱ. longitudine : labium obconicum, mediocre ; ligula non conspicua ; palpi unarticulati, brevissimi : antennæ 12-articulatæ, pubescentes, basi pedicello unico ortæ : *mari* antennæ filiformes aut moniliformes ; articulus 1^{us}. longus, minime arcuatus ; 2^{us}. brevissimus ; 3^{us}. 1^o. brevior ; 4^{us}. et sequentes ad 11^{um}. longitudine decrescentes ; 12^{us}. acuminatus, 11^o. paullo longior : *fem.* antennæ plus minusve clavatæ ; articulus 1^{us}. longissimus, subarcuatus ; 2^{us}. longicyathiformis, gracilis ; 3^{us}. et 4^{us}. longiores, subæquales ; 5^{us}. et 6^{us}. minuti ; 7^{us}. et sequentes ad 12^{um}. latiores, breves, clavam fingentes fusiformem : oculi mediocres, laterales, vix prominentes : ocelli 3, vertice triangulo instructi : thorax brevi-ovatus : prothorax brevissimus, supra vix conspicuus : mesothorax maximus ; scutum et scutellum magna, hoc semicirculum fingens, ejus parapsides vix conspicuæ ; post scutellum spinam emittens brevem validam arcuatam : metathorax mediocris, scaber, utrinque bispinosus : abdomen fere planum, ovatum aut subfusiforme, thorace plerunque longius ; segmenta 6 dorsalia et totidem ventralia

conspicua, quorum 1^{um}. angustum, 2^{um}. longius, 3^{um}. adhuc longius, 4^{um}. 5^{um}. et 6^{um}. parva: pedes pubescentes; coxæ et trochanteres parva; protarsi breves articulo 1^o. validiore subarcuato: articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^{us}. 4^o. paullo longior; ungues et pulvilli minuti: alæ angustæ, subtilissime pubescentes, iridescentes, cuique nervus costalis unicus, alæ triente brevior, apice ramulum emittens brevem stigmatate terminatum minimo: metalæ nervo unico simplici, dimidii longitudine.

* *Alæ perfectæ.*

† *Antennæ filiformes; articuli lineares.*

Sp. 1. Tel. varicornis (Latreille? MSS.) Fem. *Ater, antennæ albo cingulatæ, pedes rufi, alæ fuscæ.* (Pl. XIII. fig. 7.)

Ater, scaber, obscurus, pubescens, parum convexus: caput thoracis latitudine: oculi ocellique picei: antennæ nigræ, subfiliformes, extrorsum crassiores, capitis thoracisque longitudine; articulus 1^{us}. basi piceus; 3^{us}. et sequentes ad 6^{um}. albi; 12^{us}. acuminatus, gracilior, flagellum longi-fusiforme: thorax ovatus: abdomen longi-ovatum, subnitens, subtilissime punctatum, fere glabrum, basi scitissime sulcatum, thorace fere duplo longius: pedes rufi; coxæ nigro-piceæ: proalæ fumosæ; metalæ pallidiores; squamulæ piceæ; nervi fuscii. (Corp. long. lin. 2½; alar. lin. 3¼.)

Described from a French specimen in the British Museum, named "*Acanthophora varicornis*" by Latreille? Those taken by Mr. Haliday in sand-pits, Kent, and at Holywood, Ireland, are much smaller, and their antennæ are banded with red.

Sp. 2. Tel. Metabus. Mas. *Ater, genua rufa, alæ subfuscæ, abdomen thorace multo longius.*

Ater, punctatus, parum nitens: caput transverse undatim sulcatum: oculi ocellique picei: antennæ corpore longiores: thorax breviovatus, confertim punctatus: abdomen subfusiforme, thoracis latitudine at multo longius, sulcatum, ad suturas læve, apicem versus dense hirtum; segmentum 1^{um}. profunde et confertim sulcatum; 2^{um}. sulcis postice evanescentibus; 3^{um}. sulcis ad huc levioribus: pedes nigri; genua, trochanteres necnon tibiæ basi et apice rufa: alæ longitudine mediocri: proalæ subfuscæ;

metalæ sublimpidæ; nervi fuscii; squamulæ piceæ. (Corp. long. lin. 2; alar. lin. 3.)

May; near London.

Sp. 3. Tel. elatior. Mas et Fem. *Præcedentis structura at lævior glabrior nitentior, mari abdomen thorace paullo longius.*

Teleas elatior . . . Haliday, Curtis, Brit. Ent. VII. 333.
Prosacantha spinosula? Nees ab Esenbeck, Hymenopt. Ichn. affn. Monog. II. 296.

Ater, punctatus, parum nitens: caput posticum transverse undatim sulcatum: oculi ocellique picei: antennæ mari corpore longiores, fem. capite thoraceque paullo longiores: thorax brevi-ovatus, punctatus: abdomen nitens, læve, fere glabrum, mari ovatum thorace paullo longius, fem. longi-ovatum thorace multo longius; segmenta 1^{um}. et 2^{um}. ad discum 3^{um}. qui basi scite sulcata: pedes nigri; trochanteres, genua tibiæque apice et basi flava; tarsi fuscii, articulus 1^{us}. basi flavus: alæ longitudine mediocri, sublimpidæ; squamulæ piceæ; nervi fuscii. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 2 $\frac{1}{3}$ —2 $\frac{2}{5}$.)

Var. β .—Abdominis segmenta 4^o. ad 6^{um}. punctata.

Found by Mr. Haliday, in marshes; in England, Ireland, and Scotland. Common near London. Taken near Paris, by the Comte de Castelneau.

Sp. 4. Tel. Lycaon. Mas. *Præcedenti similis at brevior, alæ quoque breviores obscuriores.*

Ater, punctatus, nitens: caput transverse undatim sulcatum: oculi ocellique picei: antennæ corpore longiores: thorax brevi-ovatus, punctatus: abdomen ovatum, nitens, læve, fere glabrum, thorace paullo longius; segmenta 1^{um}. et 2^{um}. ad discum 3^{um}. que basi scite sulcata: pedes nigro-picei; coxæ nigræ; trochanteres necnon femora tibiæque apice rufa; tarsi rufo-picei: alæ fuscæ; nervi obscuriores; squamulæ piceæ. (Corp. long. lin. 1—1 $\frac{1}{3}$; alar. lin. 2—2 $\frac{1}{2}$.)

Var. β .—Abdominis sulci segmenti 3ⁱⁱ. fere apicem attingentes.

Var. γ .—Minor, alæ subfuscæ.

September; near London, Devonshire, and Lanarkshire.

Sp. 5. Tel. Therycides. Mas et Fem. *Præcedenti similis, antennæ graciliores, alæ angustiores.*

Mas.—Ater, subnitens, subtilissime punctatus, fere glaber: oculi ocellique picei: antennæ corpore longiores, thorax brevi-ovatus: abdomen ovatum, thorace paullo longius; segmenta 1^{um}. et 2^{um}. scite et profunde sulcata: pedes picei; coxæ nigræ; trochanteres et genua rufa; meso- et metatarsi rufo-picei, basi rufi: proalæ subfuscæ; metalæ sublimpidæ; squamulæ piceæ; nervi fuscii.

Fem.—*Mari* similis: antennæ corporis dimidio longiores: thorax punctatus, obscurus: abdomen longi-ovatum, thorace multo longius; segmentum 3^{um}. basi sulcatum: pedes nigro-picei; coxæ nigræ; trochanteres genua et tarsi rufa. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{3}{4}$ —2 $\frac{1}{4}$.)

Var. β.—*Mas*, pedes nigro-picei; trochanteres, genua et tarsi pallidiora: alæ fuscæ.

Taken at Holywood, Ireland, by Mr. Haliday; and at Paris, by the Comte de Castleneau. September; near London, North Wales, Isle of Wight, and Lanarkshire. July; Forest of Fontainbleau.

Sp. 6. Tel. Cephisus. Mas. *Præcedente paullo latior, antennæ breviores.*

Ater, subnitens, subtilissime punctatus, fere glaber: oculi ocellique picei: antennæ corpore longiores: thorax brevi-ovatus: abdomen ovatum, thorace paullo longius; segmenta 1^{um}. et 2^{um}. scite et profunde sulcata: pedes rufi; coxæ nigræ; femora et tibiæ picea, basi et apice rufa; tarsi apice picei: alæ albidæ, apud costam fuscæ; squamulæ piceæ; nervi fuscii. (Corp. long. lin. 1 $\frac{1}{6}$; alar. lin. 2.)

June; Windsor Forest.

Sp. 7. Tel. Galba. Mas. T. Cephiso *simillimus, antennæ crassiores.*

Ater, rugoso-punctatus, pubescens, obscurus: oculi ocellique picei: antennæ corpore longiores: thorax ovatus: abdomen longi-ovatum, nitens, læve, glabrum, apice pubescens; segmenta 1^{um}. omnino 2^{um}.que basi scite sulcata: pedes picei; trochanteres et genua rufa: alæ subfuscæ; squamulæ piceæ; nervi fuscii. (Corp. long. lin. 1 $\frac{1}{6}$; alar. lin. 2.)

May; near London.

Sp. 8. Tel. Aratus. Mas. T. *Therycidi similis, alæ angustiores obscuriores.*

Ater, subnitens, subtilissime punctatus, fere glaber : oculi ocellique picei : antennæ corpore longiores : thorax brevi-ovatus : abdomen ovatum, thorace paullo longius ; segmenta 1^{um}. et 2^{um}. scite et profunde sulcata : sexualia pallida : pedes nigri ; genua rufa ; trochanteres et tarsi picei : alæ obscure fuscæ, angustæ ; nervi picei. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{2}{3}$.)

September ; near London ; North Wales. Found by Mr. Haliday at Holywood, Ireland.

Sp. 9. Tel. Doto. Mas et Fem. *Ater, pedes rufi, mari femora piceo cingulata, alæ fuscæ.*

Mas.—Ater, obscurus, punctatus, pubescens : oculi ocellique picei : antennæ nigræ, corpore longiores : thorax brevi-ovatus ; scutellum læve, nitens : abdomen ovatum, læve, nitens, parce pubescens, thorace paullo longius ; segmenta 1^{um}. et 2^{um}. scite sulcata : pedes rufi ; femora et mesotibiæ piceo cingulata ; tarsi apice picei : proalæ fuscæ ; metalæ pallidiores ; squamulæ piceæ ; nervi fusi.

Fem.—Antennæ capite thoraceque longiores : pedes omnino rufi. (Corp. long. lin. $\frac{2}{3}$ —1 $\frac{1}{2}$; alar. lin. 1—1 $\frac{2}{3}$.)

July, October ; near London. Found by Mr. Haliday at Holywood, Ireland.

Sp. 10. Tel. Glaucus. Fem. *Præcedenti similis, antennæ graciliores, alæ latiores limpidæ.*

Ater, subtilissime punctatus, pubescens, parum nitens : oculi ocellique picei : antennæ nigræ, corporis dimidio longiores : thorax brevi-ovatus : abdomen ovatum, nitens, læve, fere glabrum, thorace latius et multo longius ; segmenta 1^{um}. omnino 2^{um}. que basi ad medium scite sulcata : pedes picei ; trochanteres, genua et tarsi rufi, hi apice obscuriores : alæ limpidæ ; squamulæ piceæ ; nervi fusi. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

Sp. 11. Tel. ephippium. (Haliday, Curtis, Brit. Ent. VII. 333.) Mas. *Rufus, caput antennæ et abdomen nigropicea.*

Rufus, lævis, nitens, pubescens : caput nigro-piceum : oculi ocellique picei : antennæ nigro-piceæ, corpore dimidio longiores ;

articulus 1^{us}. rufus; 2^{us}. rufo-piceus: thoracis discus rufo-piceus: abdomen nigro-piceum, ovatum, thorace longius; segmenta 1^{um}. omnino 2^{um}. que basi rufa, sulcata: pedes rufi; protarsi obscuriores; meso- et metatarsi apice picei: alæ corpore longiores, angustæ, fulvescentes; nervi concolores. (Corp. long. lin. $\frac{2}{3}$ — $\frac{5}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{3}$.)

Taken by Mr. Haliday, on grass under trees, at Holywood. July; near London.

Sp. 12. Tel. flavipes. (Haliday, Curtis, Brit. Ent. VII. 333.) Mas. *Nigro-piceus*, T. ephippii *similitudine at minor*.

Nigro-piceus, subtilissime punctatus, nitens, pubescens: oculi ocellique picei: antennæ nigro-piceæ, corpore dimidio longiores; articuli 1^{us}. et 2^{us}. flavi: abdomen ovatum, thorace paullo longius et latius; segmenta 1^{um}. et 2^{um}. omnino 3^{um}. que basi sulcata: pedes flavi; tarsi obscuriores: alæ fulvo-limpidæ, angustæ, corpore longiores; nervi fulvi. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{3}{4}$ —1.)

Taken by Mr. Haliday, on grass under trees, at Holywood. September; near London. Isle of Wight.

Sp. 13. Tel. Mermerus. Mas et Fem. T. *Arato et præcedentibus minor et brevior*.

Ater, parum nitens, punctatus, pubescens: caput fere læve: oculi ocellique picei: antennæ nigræ; *mas* corpore dimidio longiores, articulus 1^{us}. piceus basi pallidior; *fem.* corporis dimidio longiores, articulus 1^{us}. basi piceus thorax fere rotundus: abdomen læve, nitens, disco glabrum, thorace paullo longius et latius, *mas* brevi-ovatum basi nigro-piceum, *fem.* ovatum; segmenta 1^{um}. et 2^{um}. sulcata: pedes *mas* picei, tarsi tibięque basi genua et trochanteres pallidiora; *fem.* nigri, trochanteres et genua rufa, tarsi picei basi rufi: proalæ fuscæ; metalæ pallidiores; squamulæ piceæ; nervi fuscii. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. 1— $1\frac{1}{4}$.)

Var. β.—*Mas*, abdominis segmentum 3^{um}. basi sulcatum.

Var. γ.—*Fem.* minor: alæ obscuriores angustiores.

Common during the summer and autumn, on grass in fields, lime trees, &c. near London; the female inhabits moss in winter. Isle of Wight; North Wales; Devonshire. Forest of Fontainebleau. Found in Lincolnshire by Mr. Davis, and at Holywood, Ireland, by Mr. Haliday.

Sp. 14. Tel. Chesias. Mas. T. Mermero *similis*, *antennæ multo breviores*.

Ater, punctatus, pubescens, parum nitens: oculi ocellique picei: antennæ nigræ, corpore paullo longiores: thorax brevi-ovatus: abdomen ovatum, nitens, læve, disco fere glabrum; segmenta 1^{um}. omnino 2^{um}.que basi sulcata: pedes nigri, genua rufa; tarsi picei, basi et subtus pallidiores: alæ fuscæ, angustæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $1\frac{1}{4}$.)

September; near Keswick, Cumberland.

Fem. ?—T. *Mermero gracilior*.

Antennæ capitis thoracisque longitudine: abdomen longi-ovatum, disco glabrum; segmentum 1^{um}. confertim sulcatum; 2^{um}. et 3^{um}. basi scite sulcata: genua et tarsi picea. (Corp. long. lin. $\frac{5}{4}$; alar. lin. $1\frac{1}{4}$.)

Found near London.

Sp. 15. Tel. Xenetus. Fem. T. Mermero *minor brevior*, *alæ limpidiores*.

Ater, pubescens, subtilissime punctatus, parum nitens: oculi ocellique picei; antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. basi piceus: thorax fere rotundus: abdomen nitens, læve, fere glabrum, ovatum, segmenta 1^{um}. omnino, 2^{um}. basi fere ad apicem 3^{um}.que basi sulcata: pedes picei; trochanteres et genua rufa; tarsi rufo-picei, basi et subtus pallidiores: alæ sublimpidæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

Var. β . — Abdominis segmentum 3^{um}. fere ad apicem scitissime sulcatum.

From May to September; on grass in fields, windows, &c.; near London; Hampshire; Cumberland; Cornwall. Found at Epping by Mr. Doubleday.

Sp. 16. Tel. Paula. Fem. *Præcedente minor*, *alæ et pedes obscuriora*.

Ater, parum nitens, punctatus, pubescens: oculi ocellique picei: antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. basi piceus: thorax fere rotundus: abdomen ovatum, nitens, læve, disco glabrum; segmenta 1^{um}. omnino 2^{um}.que fere ad apicem sulcata, hoc parvum; 3^{um}. maximum, basi et nonnunquam fere ad apicem scitissime sulcatum: pedes nigri; trochanteres et genua

rufa; tarsi picei, basi rufi: alæ fuscæ; nervi picei. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{2}{5}$.)

April, September; near London; Devonshire; North Wales; Isle of Wight. Found by Mr. Haliday at Holywood, Ireland.

Sp. 17. Tel. Chyllene. Fem. *T. Paula similis, alæ angustiores.*

Ater, punctatus, obscurus, fere glaber: oculi ocellique picei: antennæ corporis dimidio longiores: thorax brevi-ovatus: abdomen brevi-ovatum, nitens, læve, glabrum, thorace longius et latius; segmenta 1^{um}. omnino, 2^{um}. basi ad medium 3^{um}.que basi sulcata: oviductus pallidus: pedes nigro-picei; trochanteres, genua et tarsi pallidiora: alæ fuscæ, angustæ; squamulæ piceæ; nervi fusi. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{2}{3}$.)

September, October; near London; Isle of Wight; North Wales; Cumberland; Lanarkshire,

Sp. 18. Tel. Ægle. Mas et Fem. *T. Xeneto similis, minor, gracilior, alæ angustiores.*

Ater, pubescens, subtilissime punctatus, parum nitens: oculi ocellique picei: antennæ nigræ, *mas* corpore multo longiores, *fem.* corporis dimidio longiores: thorax fere rotundus: abdomen brevi-ovatum, nitens, læve, fere glabrum, *fem.* thorace longius et latius; segmenta 1^{um}. omnino necnon 2^{um}. et *fem.* 3^{um}. quoque basi scite sulcata: pedes nigro-picei, trochanteres et genua rufa; tarsi rufo-picei, basi et subtus pallidiores: alæ sublimpidæ, angustæ, squamulæ piceæ; nervi fusi. (Corp. long. lin. $\frac{1}{2}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$ — $\frac{1}{3}$.)

Near London. Found also by Mr. Haliday at Holywood, Ireland; and by Mr. Davis.

Sp. 19. Tel. Bassus. Fem. *Præcedente latior brevior, pedes rufi.*

Ater, obscurus, punctatus, pubescens: oculi ocellique picei: antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. piceus, basi pallidior: thorax fere rotundus: abdomen ovatum, nitens, læve, parce pubescens, basi sulcatum: pedes rufi; femora obscuriora: alæ sublimpidæ, angustæ, breves; nervi picei. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{1}{2}$.)

July; near London.

Sp. 20. Tel. Asramanes. Fem. *Ater, præcedentibus brevior, pedes nigro picei, alæ fuscæ.*

Ater, brevis, latus, parum nitens, punctatus, fere glaber: oculi ocellique picei: antennæ nigræ, corporis dimidio longiores: thorax rotundus: abdomen nitens, subtilissime punctatum, glabrum, rotundum, thorace paullo longius et latius; segmenta 1^{um}. omnino 2^{um}.que basi sulcata: pedes nigro-picei; trochanteres, genua et tarsi pallidiora: alæ fuscæ, angustæ; squamulæ piceæ; nervi fusci. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Found near London.

Sp. 21. Tel. Medon. Fem. *Præcedentis statura, alæ limpidæ.*

Ater, brevis, latus, nitens, lævis, glaber: oculi ocellique picei: antennæ nigro-piceæ, corpore paullo breviores: thorax rotundus; mesothoracis parapsidum suturæ conspicuæ; spina brevis: abdomen rotundum, thorace paullo latius: pedes picei; trochanteres, genua et tarsi pallidiora; alæ limpidæ, angustæ; squamulæ piceæ; nervi fulvi. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

October; near London.

†† *Antennæ mari moniliformes; articuli ovati.*

Sp. 22. Tel. clavicornis. Mas et Fem. *Ater, femora incrassata, tibiæ subclavatæ, tarsi breves lati, alæ fuscæ.* (Plate XIII. fig. 8, Fem.; fig. 9, antenna Mas.)

Scelio brevicornis . . *Latr. Hist. Nat. des Crust. et des Insect. XIII. 227.*

Scelio longicornis . . *Latr. Gén. Crust. et Insect. I. Tab. 12. fig. 9, 10.*

Scelio rugosulus . . *Latr. Gén. Crust. et Insect. I. Tab. 12. fig. 11, 12.*

Teleas clavicornis . . *Lat. Gén. Crust. et Insect. IV. 33; St. Fargeau et Serville, Encycl. Méthod. X. 556.*

Cinipsillum clavicorne, *Lam. Anim. sans Vertèbres. VI. 158.*

Mas.—Ater, brevis, latus, crassus, parum nitens, punctatus, pubescens: caput nitens, fere læve: oculi ocellique picei: antennæ nigræ, corpore paullo longiores: abdomen ovatum, planum, subtilissime sulcatum, disco fere glabrum, thorace longius vix latius:

pedes nigro-picei; trochanteres et genua rufa; tarsi picei, basi et subtus rufi; metatarsis articulus 1^{us}. seorsum crassus: alæ fuscæ; nervi picei.

Fem.—Obscurus: antennis articuli 7^o. ad 12^{um}. valde approximati: pedes rufi; coxæ et femora nigra; metafemora quam *mari* crassiora; tibiæ piceo cingulatæ; tarsi apice picei. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$ —2.)

Var. β.—*Fem.* tibiæ tarsique omnino rufa.

Paris; Comte de Castelneau. Holywood; Mr. Haliday. From May to September; near London; Windsor Forest; Hampshire; Isle of Wight; Cornwall; South of France.

Sp. 23. Tel. Brasilas. Mas et Fem. *Ater, pedes rufo-picei validi, alæ fuscæ.*

Ater, obscurus, punctatus, pubescens: oculi ocellique picei: antennæ nigræ, validæ, *mari* corpore vix longiores, *fem.* corporis dimidio paullo longiores: thorax brevi-ovatus: abdomen ovatum, sulcatum, glabrum, thorace longius, ad suturas læve nitens: pedes validi, picei; trochanteres, genua et tarsi rufo-picea: alæ fuscæ; squamulæ piceæ; nervi fuscii. (Corp. long. lin. $\frac{2}{3}$ —1 $\frac{1}{4}$; alar. lin. 1—1 $\frac{2}{3}$.)

Var. β.—*Mas* et *Fem.* abdomen læve, nitens, basi sulcatum: trochanteres, genua et tarsi rufa.

Var. γ.—*Fem.* pedes rufo-picei; trochanteres, genua et tarsi rufa.

September; near London; North Wales; Isle of Wight. July; south of France.

Sp. 24. Tel. Ocyroe. Mas. *Ater, pedes nigro-picei graciles, alæ subfuscæ.*

Ater, nitens, subtilissime punctatus, pubescens: oculi ocellique picei: antennæ corpore vix longiores: thoracis spina dorsalis brevis, recta: abdomen ovatum, læve, fere glabrum, thorace dimidio longius; segmenta 1^{um}. et 2^{um}. profunde et confertim sulcata; 3^{um}. basi subtilissime sulcatum: pedes nigri; trochanteres et genua rufa; tarsi picei, basi rufi: alæ subfuscæ, mediocres; nervi fuscii. (Corp. long. lin. 1; alar. lin. 1 $\frac{3}{4}$.)

From June to September; near London; Isle of Wight. Epping, Mr. Doubleday; Paris, Comte de Castelneau.

Sp. 25. Tel. Smerdis. Mas. *Præcedentis dimidii magnitudine.*

Ater, subnitens, parum punctatus, pubescens: oculi ocellique picei: antennæ nigræ, moniliformes, corpore paullo longiores: thorax brevi-ovatus: abdomen ovatum, nitens, læve, glabrum, apice parce pubescens; segmenta 1^{um}. omnino 2^{um}. que basi scite sulcata: pedes picei; genua pallidiora; trochanteres flavi: alæ subfusæ; nervi picei. (Corp. long. lin. $\frac{1}{5}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$ — $\frac{5}{4}$.)

Var. β.—Minor: abdomen basi piceum.

May to July; near London; Fontainebleau.

** *Alæ truncatæ aut nullæ.*

Sp. 26. Tel. Lamus. Fem. *Ater, abdomen piceum, pedes flavi, alæ sublimpidæ breves.*

Ater, pubescens, punctatus, parum nitens: oculi ocellique picei: antennæ fulvæ; articulus 1^{us}. basi flavus; clava picea: thorax fere rotundus; spina minima: abdomen piceum, nitens, læve, glabrum, thorace paullo longius et latius, basi fulvum: pedes flavi: alæ sublimpidæ, breves, angustæ; nervi picei. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{3}$.)

Taken by Mr. Haliday, on grass under trees, at Holywood, Ireland.

Sp. 27. Tel. apricans. (Haliday, Curtis, Brit. Ent. VII. 333.) Fem. *Ater, pedes picei, tarsi rufi, alæ fusæ vix thoracis longitudine.*

Ater, punctatus, obscurus, pubescens: caput nitens, sublæve: oculi ocellique picei: antennæ nigræ, corporis dimidio paullo longiores: thorax brevi-ovatus: abdomen ovatum, nitens, læve, glabrum, thorace paullo longius et latius; segmenta 1^{um}. omnino 2^{um}. que basi sulcata: pedes nigro-picei; tibiæ pallidiores; trochanteres, genua et tarsi rufa, hi apice fuscii: alæ fusæ, angustæ perbreves, vix thoracis longitudine; squamulæ piceæ; nervi fuscii. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $\frac{1}{2}$.)

Taken by Mr. Haliday, on sandy banks, at Holywood, Ireland.

Sp. 28. Tel. Procris. Mas. *Ater, apterus, antennæ mari filiformes, pedes picei.*

Ater, punctatus, brevissime pubescens, parum nitens: caput thoracis latitudine: oculi ocellique picei: antennæ filiformes, corpore

dimidio longiores; articulus 1^{us}. basi piceus: thorax brevi-ovatus: abdomen ovatum, nitens, subtilissime punctatum, fere glabrum, thorace paullo longius et latius; segmenta 1^{um}. omnino 2^{um}. que fere ad apicem sulcata: pedes picei; trochanteres, genua et tarsi rufo-picea. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$.)

Var. β.—Pedes nigri; trochanteres, genua et tarsi picea.

Var. γ.—Trochanteres, genua et tarsi rufa, hi apice picei.

Common on grass in fields, near London, during the summer and autumn; Isle of Wight. Found by Mr. Haliday at Holywood, Ireland.

Sp. 29. Tel. Timareta. Mas et Fem. *Ater, antennæ mari moniliformes, alæ vix conspicuæ.*

Mas.—Ater, punctatus, pubescens, parum nitens: oculi ocellique picei: antennæ nigræ, moniliformes, corpore longiores: thorax brevi-ovatus: abdomen ovatum, nitens, læve, fere glabrum; segmenta 1^{um}. omnino 2^{um}. que basi sulcata: pedes nigri; trochanteres et genua rufo-picea aut picea; tarsi picei aut nigropicei: alæ vix conspicuæ.

Fem.—Antennæ corporis dimidio longiores, quam *fem.* sectionis 1ⁱ. plus clavata; articuli 3^{us}. et 4^{us}. breviores. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$.)

September; near London, Isle of Wight, Devonshire, and Lanarkshire. July; South of France. Found by Mr. Haliday at Holywood, Ireland; and by Mr. Doubleday at Epping.

Sp. 30. Tel. pulex. Fem. (Haliday, Curtis, Brit. Ent. VII. 333.) *Præcedentis dimidii magnitudine aut minor.*

Ater, brevis, punctatus, obscurus, pubescens, minimus: caput thorace paullo latius: oculi ocellique picei: antennæ nigræ, validæ, corpore paullo breviores: thorax rotundus: abdomen læve, nitens, glabrum, rotundum, thorace paullo longius et latius: pedes picei; genua et tarsi flava: alæ nullæ. (Corp. long. lin. $\frac{1}{5}$ — $\frac{1}{4}$.)

Found by Mr. Haliday, at Holywood, Ireland.

GEN. VII.—SCELIO.—*Latreille.*

Caput subquadratum, thorace vix latius: mandibulæ longæ, arcuatæ, apice bidentatæ; dentes acuti, subæquales: maxillæ breves,

latae, subtrigonæ, intus apice lobo brevi lato terminatæ; palpi 3-articulati, filiformes, graciles; articulus 1^{us}. mediocris, 2^{us}. brevis, 3^{us}. fusiformis 1ⁱ. et 2ⁱ. longitudine: labium obconicum, sat longum; ligula brevis, minima; palpi 3-articulati, mediocres; articulus 2^{us}. brevissimus, 3^{us}. fusiformis 1^o. paullo longior: *mari* antennæ 10-articulatæ, moniliformes, longi-fusiformes; articulus 1^{us}. flagelli fere dimidii longitudine; 2^{us}. cyathiformis; 3^{us}. et sequentes ad 9^{um}. subæquales, approximati, breves, fere rotundi; 10^{us}. conoides, 9^o. longior et angustior: *fem.* antennæ 12-articulatæ, fusiformes, quam *mari* crassiores; articuli 2^{us}. et 3^{us}. cyathiformes, hic brevior; 4^{us}. et 5^{us}. brevissimi; 6^{us}. et sequentes ad 12^{um}. breves, approximati, subæquales, clavam fusiformem fingentes: prothorax brevis: mesothoracis scutellum semicirculum fingens: metathorax mediocris: abdomen thorace multo longius; segmenta 6 dorsalia et totidem ventralia transversa subæqualia: alæ angustæ; nervus subcostalis, basi crassus, ad costæ medium stigma magnum at non bene determinatum fingens, et mox abruptus: metalis nervi non conspicui.

Sp. 1. *Scel. rugosulus*. Mas et Fem. *Ater, scaber, pedes nigri aut rufi, alæ fusæ.*

Scelio rugosulus . . . *Latr. Hist. Nat. des Crust. et des Insect. XIII. 227; Gén. Crust. et Insect. IV. 32; St. Fargeau et Serville, Encycl. Méthod. X. 389; Curtis, Brit. Ent. VII. 325; Boy. de Fonscol. Ann. Sci. Nat. XXVI. 306; Nees ab Esenbeck, Hymenopt. Ichneum. affn. Monogr. II. 263.*

Cinipsillum rugosulum. *Lam. Anim. sans Vertèbres IV. 158.*

Ater, obscurus, scaber, parce et breviter pubescens: oculi ocellique picei: antennæ nigrae, validæ, *mari* thoracis longitudine, *fem.* paullo breviores et latiores: thorax ovatus, convexus; mesothoracis parapsidum suturæ vix conspicuæ: abdomen longi-ovatum, planum, basi angustius, *fem.* paullo longius et apice acutius: pedes nigri; tibiæ piceæ; trochanteres et tarsi rufo-picei: alæ fusæ, mediocres; vittæ basi et disco limpidiore; squamulæ piceæ; nervi vix conspicui. (Corp. long. lin. $1\frac{5}{4}$ —2; alar. lin. 2— $2\frac{1}{4}$.)

Var. β.—*Mas*, tarsi rufi.

Var. γ.—*Mas*, tibiæ tarsique rufa.

Var. δ.—*Mas*, pedes omnino rufi.

Var. ε.—*Fem.* tibiæ rufo-piceæ; genua, tarsi et protibiæ rufa.

Found by the Comte de Castelneau, at Paris; by Mr. Haliday, in August, on marshy heaths, in the Isles of Skye and Arran. Summer and autumn; near London, Isle of Wight, Dorsetshire, Devonshire, South of France, &c.

GEN. VIII.—SPARASION.—*Latreille.*

Caput subquadratum, antice in aciem transversam acutam productum: mandibulæ arcuatæ, longæ, angustæ, bidentatæ; dentes subæquales: maxillæ breves, latæ, intus apice lobatæ; palpi 5-articulati, longissimi, filiformes; articulus 1^{us}. gracilis; 2^{us}. brevissimus; 3^{us}. longi-cyathiformis, 1^o. longior; 4^{us}. 1ⁱ. longitudine; 5^{us}. multo longior: labium subpentagonum, ligulam obtgens; palpi 3-articulati, mediocres; articulus 1^{us}. longi-cyathiformis; 2^{us}. brevior; 3^{us}. fusiformis, 1^o. multo longior: oculi laterales, sat magni: antennæ 12-articulatæ, apice graciliores, *mari* capitis thoracisque longitudine, *fem.* paullo crassiores et breviores; articuli approximati; 1^{us}. fusiformis, longus; 2^{us}. et 3^{us}. longi-cyathiformes; 4^{us}. brevior; 5^{us}. et sequentes ad 11^{um}. cyathiformes; 12^{us}. conicus, angustus, acuminatus: thorax ovatus, convexus: pro- et metathorax brevia: mesothoracis parapsidum suturæ conspicuæ; postscutellum tuberculum fingens subacutum: abdomen sessile, sublineare, planum, basi et apice angustius; segmenta 6 dorsalia subæqualia conspicua, totidem ventralibus aciem fingentia: pedes validi, currales; femora et tibiæ subclavata; tarsis articulus 1^{us}. multo longissimus, protarsis subtus arcuatus; sequentes ad 4^{um}. longitudine decrescentes; 5^{us}. longior; ungues et pulvilli parvi: alæ pubescentes, iridescentes, mediocres; proalis nervus subcostalis ad costæ medium stigma fingens et inde ramulum emittens angulatum, in alæ apicem porrectum; metalis nervus subcostalis unicus simplex.

Sp. 1. Spar. frontale. *Mas* et *Fem.* *Atrum*, *protibiæ apice subtusque rufæ, tarsi picei, alæ fuscæ.*

Sparasion frontale. *Latr. Hist. Nat. des Crust. et des Insect.* XIII. 230; *Gen. Crust. et Insect.* IV. 32; *St. Fargeau et Serville, Encycl. Méthod.* X. 443; *Curtis, Brit. Ent.* VII. 317; *Nees ab Esenbeck, Hymenopt. Ichneum. affin. Monogr.* II. 260.

Ceraphron cornutus. *Jurine Hymenopteres.* (Pl. 13.)

Oxyurus frontalis . *Lam. Anim. sans Vertèbres.* IV. 129.

Mas.—Atrum, punctatum, pubescens, parum nitens : caput thoracis latitudine : oculi et ocelli picei : antennæ nigræ, pubescentes : abdomen thorace multo longius ; segmenta scitissime sulcata, apud suturas læviora : sexualia picea : pedes nigri ; trochanteres, genua et tarsi picea ; protibiæ apice et subtus rufa : alæ fuscaë ; nervi obscuriores ; squamulæ piceæ.

Fem.—Lævius, nitentius ; alæ obscuriores. (Corp. long. lin. 1½ ; alar. lin. 2½.)

Very rare in England ; abundant in the Forest of Fontainebleau ; taken also in the south of France, and at Paris, by the Comte de Castelneau.

ART. XXXIII.—*Of the Double Metamorphosis in Macro-podia Phalangium, or Spider-Crab, with Proofs of the Larvæ being Zoëa in Gegarcinus hydrodomus, Thelphusa erythropus, Eriphia carribæa, and Grapsus pelagicus.* By J. V. THOMPSON, F. L. S., Deputy Inspector-General of Hospitals.

HAVING, in preceding memoirs, given an account of the double metamorphosis in *Carcinus*^a and *Portunus*,^b and brought forward proofs that the larvæ of *Cancer*,^c of *Pinnotheres*,^d and of *Porcellana*,^e are also *Zoëa*, I have now to furnish all the other data illustrative of the same fact which my journal affords.

The above-mentioned genera include several of the more distinct and familiar types of the *Brachyura*, and those which I now make known, embracing the triangular division and several of the land-crabs, bring to a very satisfactory conclusion this interesting point.

^a In a paper sent to the Royal Society last April.

^b In the Entomological Magazine, Vol. III. p. 277.

^c Zool. Res. pl. 8.

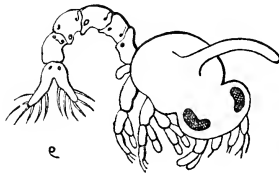
^d Ent. Mag. Vol. III. p. 85.

^e Ent. Mag. Vol. III. p. 275.

DOUBLE METAMORPHOSIS IN MACROPODIA PHALANGIUM.

This, which is our common spider-crab, is very abundant in the deep water of the harbour of Cove, and is often met with in spawn during the summer months; but as these kind of crabs are not to be kept alive out of their proper element, it was only by chance that I succeeded in discovering its larva, by capturing a female on the very point of hatching. This not only enabled me to sketch its imperfectly developed larva, (fig. 1.)

Fig. 1.



but also to secure a stock of them, as the best proofs of a fact which many zoologists are yet inclined to disbelieve. These sufficiently show that the larva is a *Zoë*, with only two pair of cleft members. *Megalopæ*, of the same yellowish brown colour as the spider-crab, are also not uncommon in the same locality, but the full grown *Megalopa* (fig. 2.) has so much of the character of the perfect crab in its colour, texture, antennæ, and spines of the corselet, as to render it almost certain that it belongs to no other species; taking into account the discoveries previously made of *double* metamorphosis, and that the *Brachyura* pass through this intermediate disguise in quitting that of *Zoëa*.

In this instance, the proof is certainly not quite so clear and satisfactory as in those above referred to, and although the probability is in favour of the opinion I venture to hazard, yet it might be the *Megalopa* of the *M. Dorsettensis*, the only other species common here, to which it could possibly belong.

Fig. 2.



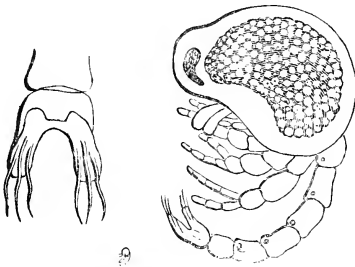
**METAMORPHOSIS IN GEGARCINUS HYDRODOMUS, AND SOME
OTHER TERRESTRIAL AND AMPHIBIOUS GENERA.**

Having exhausted the subject of metamorphosis, or rather the proofs I had to bring forward in relation to our native crabs, it is peculiarly pleasing and satisfactory to have it in my

power to adduce some additional proofs of the same fact by examples taken from the above enumerated foreign genera of land and amphibious crabs, which friends abroad have enabled me to do, by sending me females carefully preserved in spirits, with ova on the point of hatching.

The *Zoëa*, or larvæ of these, although not perfectly developed, are as much so as that of the spider-crab, as given above, (fig. 1,) with which indeed they correspond in every essential particular. Fig. 3 represents that of *Gegarcinus*

Fig. 3.



hydrodomus (Herbst. Pl. 41.) Fig. 4 is the larva of the crab (Herbst. Pl. 47. f. 7,) which I name *Thelphusa erythropus*.

Fig. 4.

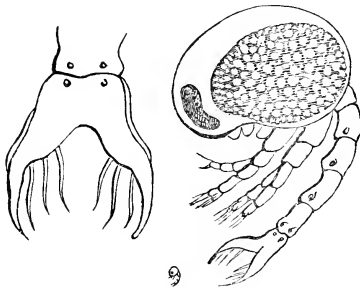
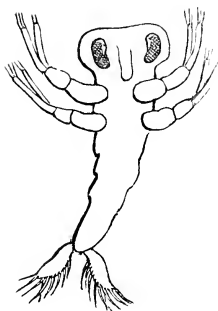


Fig. 5 is the larva still less perfectly formed of the crab I have designated as *Eriphia carribæa*. The larva of

Fig. 5.

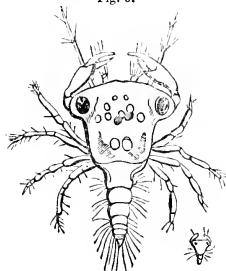


another crab, found abundantly on the gulf-weed off the coast of America, so exactly resembles the other larvæ as not to require a figure; this I have set down in the catalogue of my *Crustacea*, (now in the possession of the Royal College of Surgeons of Ireland) as *Grapsus pelagicus*.

In concluding, I beg to recapitulate the genera of the *Brachyura*, to which my proofs of metamorphosis have now extended; viz. 1. *Cancer*. 2. *Carcinus*. 3. *Portunus*. 4. *Macropodia*. 5. *Pinnotheres*. 6. *Gegarcinus*. 7. *Thelphusa*. 8. *Grapsus*. 9. *Eriphia*. 10. *Porcellana* (an intermediate genus.)

Amongst the luminous *Crustacea*, taken in a voyage from the Mauritius, is the *Megalopa* (fig. 6) met with in the

Fig. 6.



Atlantic Ocean, on the 17th September, to the westward of the Cape Verd Islands.

Specimens of the larvæ and *Megalopæ* of the *Macropodia Phalangium*, of the larvæ of *Thelphusa erythropus* and *Grapsus pelagicus*, will be deposited, for inspection, in the Museum at Chatham, together with specimens of the following, illustrative of metamorphosis in the *Macroura*: viz. *Astacus marinus*,^f *Palinurus locusta*, *Crangon vulgaris*, and *Pagurus Bernhardus*, of which latter tribe I have a sufficient number to be enabled to supply also duplicates to the Linnæan Society and British Museum.

^f “ In the beginning of July last (1835) I procured about two ounces of the eggs of the common lobster, taken by some fishermen at Sherringham, near Cromer, from what they term a sick lobster, *i.e.* one about to cast its spawn. The whole, having been put into spirits of wine, were of a red colour, except the eyes, which have the appearance of a large black spot on each egg. On opening an egg with a needle, the young lobster was immediately developed, and at the same time a strong colouring liquid exuded from the egg. Among the eggs were a few specimens of the young lobster. Their extreme delicacy and tenderness rendered it almost impossible to dissect them, but they displayed themselves very beautifully in water, and the extremities might be distinctly seen under the microscope. Blotches of colour were visible in the claw and upon various parts of the body. The eyes appeared in this early state sessile. The double antennæ were perceptible, the large claw was distinctly and perfectly formed, and the second leg with the terminal claw well made out. The other legs appeared imperfectly formed, and to be either very numerous, or mingled with transparent skin-like appendages, having the appearance of the skins of legs cast off in moulting. The tail was well developed, and was distinctly perceived even in those young which were forced from the egg with a needle. Two specimens of the young, which appeared double, were found, being strongly united at the head. Mr. Travis, a surgeon of Scarborough, clearly alludes to this state of the lobster; in his letter to Pennant,* he says, ‘ Though the ova be cast at all times of the year, they seem only to come to life during the warm summer months of July and August: great numbers of them may be found, *under the appearance of tadpoles*, swimming about the little pools left by the tide among the rocks, and many also, *under their proper form*, from half an inch to four inches in length.’—*Mr. Brightwell, in No. LIII. of the Magazine of Natural History.*—ED.

* See British Zoology, vol. iv. p. 12.

ART. XXXIV.—*Notes on various Insects.* By IONICUS.*(Continued from page 178.)*

SIR,—IN offering a few more remarks on the entomology of Cephalonia and Corfu, I must limit my observations to a few of the most remarkable insects added to my cabinet in the course of eight months in the former and four in the latter. It is quite impossible, that in such a short space of time I could make myself acquainted with its list of insects. The few entomologists there had not commenced their collections much before my own; and on meeting in Corfu, we found several conspicuous species in each cabinet which were not to be found in any of the others.

4. *Carabus Preslii* is the only one of the genus which we found. It was common in spring and autumn under stones and rubbish in both islands. But if I was disappointed in *Carabi*, I had the pleasure to find that they gave way to an allied, and to me more interesting, genus, *Procrustes*.

5. *P. spretus* was the most common of these. There were likewise several varying very slightly in the form of their elytra, and their smoothness or rugosity, which we could not make out from Dejean. Some we felt convinced were new species, particularly a male and female I caught together in Cephalonia. In general appearance they so much resembled each other, that we could scarcely consider them as distinct species until the sexes of each were found together. They appear first in spring, and again in the autumn, from October till December.

6. *Calosoma auropunctatum*.—I found one specimen of this rare and handsome beetle in a limestone cavern not far from Point Kobbo, in Cephalonia, on June 12th, early in the morning. Amongst the brushwood of the high cliffs near this cavern, the most conspicuous shrub was a large species of spurge, most of which was completely stripped by the full-grown caterpillars of the *Deilephila Euphorbiæ*, some of which I took home and bred. I had never before seen a specimen of *C. auropunctatum*, but believe it to be the larger variety.

7. *Cicindela littoralis*.—Common about the bridge of Argostoli, the Lixurie and Argostoli coast, on the sands, from

April till September, living principally on insects thrown up by the sea. We could not find it in Corfu. It is much more active than *C. campestris*, and is extremely difficult to capture.

8. *Brachinus Græcus* is rather rare. It is a fine large species, and is met with under stones at the edges of marshes and moist ground. On the approach of danger it immediately salivates, and a bubble of liquid matter appears at its mouth (as frequently as at the anus); but upon contact with the air, it explodes with a considerable report, and the gaseous matter may be seen rising up like smoke. It has a pungent fetid odour, not unlike some of the churchyard beetles. On being immersed in boiling water to kill it, it let off one of its explosions, and the water for about an inch around it effervesced much in the same manner as a Seidlitz powder.

9. *Typhæus Ionicus*?^a—Smaller than *T. vulgaris*: thorax with a small curved horn at each side of the apex, and a very slight prominence at its centre: elytra striated. It is extremely common both in Cephalonia and Corfu during winter, spring, and autumn. On first meeting Mr. Kuper, he remarked, that he had also considered it as a distinct species. The female sex, like that of *T. vulgaris*, is unarmed, and in habits resembles the latter.

10. *Ateuchus variolosus* flies always in the middle and heat of the day. It walks backwards with its pellets, in which it buries its eggs, and which are generally made of asses' dung. The pellet is about an inch and a half, or two inches in diameter, and in rolling it, they stand almost on their heads, with their backs to it, guiding it with their hind feet, and occasionally mounting to the top, when they find difficulty in urging it on, probably to destroy its equilibrium. Its wedge-shaped and dentated clypeus gives it strong mechanical powers in removing obstacles; and as I frequently found it buried under stones, in looking for *Carabi*, we may remark the wisdom of Providence in furnishing it with a lever to raise such heavy weights. Although common near Gibraltar, in Albania, and Cephalonia, we did not find it in Corfu.

11. *A. sacer*.—I found two specimens on the sea shore near Lixurie.

12. *Gymnopleurus pillularius* has similar habits, and is the

^a *Geotrupes subarmatus*? Dejean, Catalogue, 148.—Ed.

stronger in proportion to its size. A friend placed one of them under a tumbler for me; but it soon brought the tumbler to the edge of the table, and overhanging it sufficiently to drop down. We afterwards placed a book above the tumbler, but this additional weight was not sufficient to prevent another display of its Herculean powers. Its pellets are twice the size of itself, and both male and female assist in rolling them. It is a common species in spring and autumn.

13. *Sisyphus Schæfferi* also rolls pellets. I could not discover the use of its long hind legs.

14. *Cymindis miliaris* and *C. homagrica* I found under moss-grown stones in a pine forest on the Black Mountain, Cephalonia, and close to a hut called Kennedy's Cottage. *Lamia Lugubris* I had captured, on a former excursion, on the very summit of the mountain, 5,316 feet above the level of the sea, on a mound of stones, containing petrified bones and fragments of terra cotta vases, supposed to have been the site of an altar to Jupiter. On this excursion I particularly gave my attention to examining the white bleached trunks of the pines which once clothed the mountain—a noble forest—and gave to it its surname of Black—(this forest was almost completely consumed by fire)—but without success. On returning to Kennedy's Cottage, I was told by a brother officer, who had remained behind, that he had amused himself in the morning by watching two of them crawling up one of the pines close to the cottage. I accordingly examined the tree, and even took the trouble to climb it, but without success, and sat down to our pic-nic dinner not altogether pleased; for I had been very unsuccessful, finding only scorpions, centipedes, and insects extremely common either in England or Cephalonia; but after dinner, at sunset, the *Lamiæ* again took their walk, and I captured them crawling down the pine. In winter, part of the Black Mountain is covered with snow, and in summer the climate is a delightful contrast to the heat of Cephalonia. I found equally few flowers, the only interesting plants being the piony rose, holyhock, bee orchis, and sweet briar. I felt the more surprised, from having shortly before crossed the Simplon and Cenis, in which nature seems to do her best to blend the floras of Italy and Lapland. *Lamia tristis* I also found on pine; and may remark that it was much darker in colour than such as I found on white cypress, olive, fig, and quince.

This *Lamia* is most commonly found under stones, or crawling on walls, and appears to approach in habits the *Dorcadion* genus.

15. *Gryllus Italicus*. Fab.—The only species of locust in Cephalonia which appeared in such numbers as to prove destructive. The larvæ appeared in May: some were very small, and they quite covered the ground for several yards, leaping in every direction when approached. The grass was always burned and withered in the places they frequented. The full-grown locust appeared about the middle of June, and on examining one, which I caught, I found a great many large pink eggs attached to the under wings, which were likewise pink. I extremely regret not being able to pay more attention to this circumstance, nor to breed the parasites. How these eggs came to be attached to the wings, which are under and protected by the tegmina, it is difficult to conjecture. I mention this as a hint to such entomologists as are in localities with *Gryllus carulescens*, our English and closely allied species.

Nov. 4, 1835.

ART. XXXV.—*On the Origin of the Entozoa in the Bodies of Animals.* By HENRY METFORD, M. R. C. S.

THE term *Entozoa* (from the Greek ἐντός, within, and ζῶον, an animal) was first employed, by Rudolphi, to designate all those creatures which naturally and permanently infest the interior of other animals; the first part of the definition excluding all those which reside in the animal for a limited period only, such as the larvæ of insects, &c.; the latter part of the definition being used in contradistinction to *Ectozoa*, or those animals which inhabit the surface of the body. The term 'Parasite' has also been applied to them, probably from an analogy between their mode of life and that of a court-spunger, or any other animal living on the labour, or at the expense of another; but as this includes a great variety of living creatures, exceedingly dissimilar in other respects, this single point of similarity does not furnish us with the groundwork on which to found a rational nomenclature. The very simple structure of the *Entozoa* points out to us the necessity

of assigning to them nearly the last place in the chain of animal existence, as we proceed from man, the most perfect and complicated organism, downwards. Cuvier has placed them in the second class of *Zoophytes*, and has included with them several *external* species. According to his arrangement, we have them divided into the *Cavitaires*, or those which have an abdominal cavity and a distinct intestinal canal; and the *Parenchymateux*, or those in which no proper intestinal tube is evident, and which, for the most part, possess a homogeneous structure.

This arrangement of Cuvier's is, however, unnatural, seeing that worms, most dissimilar in appearance, round, flat, and globular, are here promiscuously associated. The classification of Goeze is perhaps the most natural, (although far from perfect,) and it is that which Rudolphi has embraced—substituting classical names for German ones. The following are the orders. (See Rudolphi.)

1. *Nematoidea*—(νήμα, a thread, and εἶδος, form) *vermes teretes*; *Rundwürmur* of Zeder.
2. *Acanthocephala* (ἄκανθα, a thorn, and κεφαλή, the head) *vermes uncinati*; *Lakenwürmur* of Zeder.
3. *Trematoda* (τρήμα, a foramen); *vermes suctorii*; *Sangwürmur* of Zeder.
4. *Cestoidea* (κίστος, a band, and εἶδος, form) *vermes tæniæformes*; *Baudwürmur* of Zeder.
5. *Cystica* (κύστις, a bladder); *vermes vesiculosæ*, *Blasenwürmur* of Zeder.

I have not thought it requisite, at present, to enter more fully into a description of this singular class of animals, than to give that general idea of their external characters which the classification of Goeze presents, but hope, at a future time, to avail myself of your excellent Magazine, by giving the results of my examination into the structure of some of them. Perhaps to most persons the title at the head of this paper would convey a correct idea of the object of the inquiry, but lest it should not be explicit to all, I wish to state that I am not about to inquire into the mysteries of worm generation, (for this would indeed be hopeless,) but to confine myself to the question, Whence do they arise? Nearly all the orders of animals with which we are acquainted are subject to them;

indeed, on the authority of Rudolphi, no class is exempt, for the vermes themselves are liable to their depredations; and I believe we are yet ignorant of the limit to the application of the doctrine of "vive inter vivos." That the existence of parasitical worms should long have been known and observed is not surprising, for they are constantly obtruding themselves on our notice, in the every-day operations of the anatomist, comparative and human, the butcher and the cook. The Billingsgate fishwoman can tell us a long history about them; for, if in any class of animals they superabound, they seem to do so in the fish. Coextensive with the discovery of these creatures in the different parts and organs of animals, has been the inquiry, Whence their origin? and to the solution of this difficulty the minds of men have been directed from a very early period; it is not my intention, however, to enter into an examination of the crude notions which have from time to time been entertained on this subject, although we might possibly derive some amusement from doing so, nor to examine into the favourite doctrine of the ancients, spontaneous generation on the one hand, or that modification of it entertained by some of the moderns on the other.^a It is now two years since I first gave this subject much consideration, when I instituted experiments, with the hope of throwing some light upon it; how far I have succeeded in this remains to be seen in the sequel. Upon a superficial view of the inquiry, it evidently divides itself into two branches—either that the source from which worms are derived is an extrinsic one, or that they are spontaneously generated within the animal which they infest. The latter I am unwilling to admit: let us examine the facts which favour the former opinion; and first, do they gain access through any of the mucous canals? This view of the matter has met with many advocates, some of whom have hastily adopted it as the most probable; others, from the supposed observation of parasitical animals in situations exterior to the body. Rudolphi objects strongly to this method of

^a It is not an uncommon idea, in many parts of the country, that the seeds of gooseberries are the eggs of worms; and, in proof of it, we are asked to account for the prevalence of the verminous diathesis during the gooseberry season in any more probable manner! And I have heard it gravely asserted that the liver fluke-worm, *Distoma hepaticum*, is the offspring of the seeds of the *Ranunculus flammula*, or *Ranunculus acris*! Hasty induction is the most fruitful source of error, and often leads men to confound the *propter hoc* with the *post hoc*.

explaining the difficulty, and successfully controverts the arguments adduced in its favour. If the worms found in animals were indeed to be met with in other situations, it would furnish great support to that opinion which refers their origin to an outward source, but those instances which have been adduced admit of an easy solution. Linnæus (System. Natur. Ed. xii.) tells us that he has found the *Distoma hepaticum*, or liver-fluke, in spring water; the *Tænia vulgaris* rather small in muddy springs; the *Ascaris vermicularis*, or thread-worm, in marshes, and in the roots of putrefying plants. It is evident that this celebrated naturalist, whilst travelling in Gothland, had confounded the features which characterize the *Distoma hepaticum* and the *Tænia gasterostei solida*, (which he has often mistaken for *Tænia vulgaris*,) with those of *Planaria lactea*; but what worm he could have mistaken for the *Ascaris vermicularis* I am at a loss to conceive.^b

As he had investigated but few *Entozoa*, and these only incidentally, we cannot wonder at the vagueness and want of precision in his descriptions. The fact of his having confounded the *Tænia* of man with those of the *Mammalia*, and having denied the existence of a head in all of them, is sufficient proof that he had not submitted them to careful examination; in the same way, therefore, he may have easily mistaken extrinsic worms for human, the change in which he had supposed to have taken place during the period of their abode in the animal body. He has betrayed himself into a similar error in the existence of the *Lumbricus terrestris*, or common earth-worm, a variety of which he says he has met with in the intestines; he hastily concludes that this differs from the *Ascaris Lumbricoides*, and improperly adds it to the genus *Lumbricus*.

Gadd informs us, that it had occurred to him in 1747 to find the *Tænia articulata flava*, (characterized by two lateral apertures,) and identical with that which infests man, in the river Fennonnia, which contains yellow ochre. As nothing fur-

^b "Vermen album molliusculum, cylindraceum, antice crassum subrostratum, postice attenuatum, pluribus abhinc annis, quod non dissimulandum, in aquâ palustri copiose reperi et microscopii ope pingi curavi, ab Ascaride vermiculari tamen diversum, cum vero ejus descriptionem facere accuratiusque examen instituere impeditus fuerim, nec postea unquam occurrerit, hoc seponere lubet. Facile erit Ascaris vermicularis a perillustri a Linné in paludibus reperta."—*Otto. F. Müller. Verm. terrestr. et fluviatil. Historia. Vol. I. Part II. p. 36.*

ther is added concerning it, or the mode in which he discovered it, the observation of such a man, unknown to Helminthologists, cannot be of itself sufficient to establish the fact: whether he mistook the *Planaria lactea*, or the common ligula of fish, for the *Tænia*, cannot be positively asserted.

Unzer remembers to have seen the *Tænia* in a well. Tissot likewise asserts, that a *Tænia* he had found in a similar situation, corresponded with that found in man; the former, however, on being questioned by O. Fr. Muller on the *Tænia* he had discovered, said that it was only a portion about an inch long, which may have been digested by a man or fish, and carried into the well by accident; and this was actually the case in the instance of Tissot. But even Gmelin, as we learn from Pallas, declared that he had himself once doubted whether the eggs of frogs, linked together, were not a new species of *Tænia*. The illustrious Muller, whilst travelling on the confines of Suecia, having been assured that a certain river abounded with *Tæniæ*, made a search accordingly. He drew out masses of dead entangled *Tæniæ*, and with them (a fact which explains the circumstance) a quantity of the intestines of fishes, which the fishermen were in the habit of throwing into the water. As the *Tænia* was found in the river dead, we cannot conclude that this was the place of its birth.

Bremser found *Ascarides lumbricoides* at all periods of the year in water, which he drew from the well of Cœnubus Divus Ludgerus, in which he could find neither fish nor any living creature, from the bodies of which they could have been excreted. He found these same worms not only at Helmstad, but also in spring water near Ballenstad, in the beginning of December 1772. These white *Ascarides* were about three lines in length, never so much as four, and of the thickness of a slender thread; but he had observed that the mouth was furnished with three distinct nodules, and by the assistance of a microscope, he perceived, in the midst of these a tubule, so that there could be no doubt as to the species. He inferred, that by drinking this water, the worms would be carried into the body, and by being nourished, become larger. Now, if the observation of Bremser had led him to the opinion that the worm in question was an *Ascaus*, still I cannot understand why he should have regarded it as the young of the *A. lumbricus*, and not rather that of the *A. vermicularis*, and the

want of resemblance to the former being already conspicuous, argues the fallacy of his opinion. But amongst the innumerable species of *Ascarides* known, which of them, in the state of embryos, does he imagine he could recognize, so as to refer it to this or that species? He surely cannot be ignorant that the characters he has mentioned as diagnostic of *Ascaris lumbricoides* (viz. the nodules of the mouth with the intervening tubule), are common to the whole of the genus *Ascaris*, and if he believed that *Ascarides* could exist in such a cold medium as water (and this too in the month of December,) this knowledge alone should have induced him to regard it as a peculiar worm. But if he had wished to establish the identity of this species, he should have done so by furnishing good descriptions or drawings of it, so that by examining its external features and internal structure, a correct judgment might have been formed of the animal. We should now refer to the remarks which were made by Muller (p. 382, note) on the *Ascaris vermicularis* of Linnæus. Leuwenhoeck, Schœffer, and others, have been led into a similar error with respect to the *Distoma hepaticum*, when they have contended for the existence of these animals in streams, brooks, &c., for O. F. Muller, a most indefatigable investigator of aquatic animalcules, has detected many *Planariæ* in such situations, but never any thing like the Liver-Fluke. Nor have these writers ever given any proof of their having *seen* the true *Distoma*; they have merely made the vague statement.

We are not in the possession of any certain and indubitable facts proving that parasitical worms are generated in water, or in any situation external to the body. The worms of warm-blooded animals cannot live in a low temperature, and therefore soon die when removed from the animal body. Bireis must have lost sight of this fact, or it may never have occurred to him, since he thinks that the *Ascaris lumbricoides* of man could support life in cold spring water in the midst of winter, when the temperature of the human body is about 98° Fahrenheit. Such worms can scarcely be transferred to water in a living state, as exposure to the air alone soon destroys them. The *Filaria Medinensis*, or Guinea worm, indeed, attempts sometimes to leave the body before death, but in its exit it quickly becomes dry and rigid, and perishes; nor is it possible to protract the life of a ligule for any considerable time when

removed from the body of a fish. Where, I would ask, would the worms find a suitable kind of nourishment, or a place of abode in any respect resembling the situation they had left? If worms pass in and out of the animal body in the mode which Bremser would have us to believe, they certainly should be far more numerous than they are, we should meet with them more frequently, and they would promiscuously infest every animal to whom they should be accessible.

Those who have failed in supporting this position, still tenacious of their opinion, bring it forward in a new dress, and maintain that worms undergo a positive metamorphosis in the body of the animal, or, in some way or other, accommodate themselves to the change. But is this true? For aquatic or terrestrial worms carried into the body by accident, soon die, and that from two causes; for they either suffer digestion, or sink under the increased temperature. I have often found extraneous worms in many animals, but invariably dead, and more or less digested; they may be found chiefly in the stomachs of mice, moles, hedge-hogs, birds, and fishes. These facts alone are sufficient to prove the difference between extrinsic and parasitic worms, because those of the latter class, which pass their lives in the œsophagus, stomach, and intestines, resist the solvent power of the gastric and intestinal fluids, and the triturating force exercised by the stomach: indeed, I have often seen in the stomach of the common pigeon, the lining membrane of which is nearly as hard as that of the fowl, abundance of *Tenia* and *Amphistomata* attached to it; and even when the bird had been dead ten hours, I have found them adherent to the inner coat of the stomach. What extraneous worms, I would ask, could resist the power of such a stomach? I am well persuaded that none could; but even supposing this possible, the natural temperature of the first orders of animals would prove rapidly fatal to them. Frequent mention is made by authors of the *Gordius aquaticus*, or hair-tail worm, having found its way into the bodies of men and horses; and Pallas himself relates an instance. The subject of it was a man, who some days after washing in a river, perceived on the dorsum of his feet an inflamed spot, of about an inch in diameter. The centre was rendered somewhat prominent by the presence of a projecting *Gordius*, of a darkish colour, not unlike a horse-hair; on attempting to remove it

he drew forth the worm, a foot and a half in length. Pallas does not tell us whether the worm was living or not; but as the worm differs essentially from the *Filaria medinensis*, or Guinea worm, which may exist in the body for months and years without exciting suspicion of its presence, it is not to be wondered at that the *Gordius*, uneasy in its new habitation, should speedily excite inflammation; and it is said, indeed, that the *Gordius* is fatal to fish as soon as they become inhabitants of their bodies, and yet fish are infested by their own peculiar parasites without fatal consequences. Bacounim observed, that the *Gordius aquaticus* (*aquarum Taurinensium*) was destroyed when exposed to a temperature at or above 25° or 26° Reaumur, (90° or 91° Fahrenheit,) in milk or water; and he asserts, as the result of experiment, that dogs may swallow them with impunity. The *Gordius* very rarely finds an entrance into man or any other animal, excepting fish; and Pallas, who has seen them nowhere so abundant as near Waldai, says, that in this situation he had never heard of their having been detected under the human skin. Even allowing that the fact of the *Gordius* taking up its abode in the horse is supported on numerous authorities, it still remains a question whether the observers have not mistaken the *Filaria papillosa equi* for the *Gordius*. A similar error has prevailed in respect to nearly all the *Ascarides* of fish,—for they have been mistaken for *Gordii*; and I have observed, in dissecting dead fish, *Ascarides* which have left their usual situation, and wandered into the mouth and branchiæ. Degeer (in *Bibl. n.* 234) describes a certain species of *Filaria* infesting a kind of moth, and in another place a plate is given of it, when it stands for the true *Gordius aquaticus*. The doctrine of the metamorphosis of worms was long since refuted by Vallisnieri, and I shall briefly notice that such a metamorphosis does not take place in any of these animals, neither amongst the viviparous or oviparous, for the same *gradual* evolution and perfection of the body which is observed in all the other classes of animals is necessary here.

“ A cow to bear a fawn you ne'er did see,
Nor eagle's egg the gentle dove set free.”

There are certain peculiarities which distinguish foetal and adult *Entozoa*, but in these no perceptible change whatever

takes place; and if any really does occur, it is so inconsiderable that they may be easily recognised. Some naturalists, indeed, have carefully observed, during many years, the growth of intestinal worms: nor are we ignorant that insects which take up a temporal abode in the animal body undergo a metamorphosis; these are furnished with a special apparatus for that end, which may be observed in certain larvæ; but the structure of insects is much more complicated than that of the *Entozoa* and *Gymnodeta*. Kunsemüller must certainly have overlooked this, when he pronounces it as a still doubtful question whether the *Vena medinensis*, or Guinea-worm, be a naked worm, or the larva of an insect which lives in stagnant waters and marshy situations, and deposits its ova under the human skin; for the larvæ of insects differ widely from all the *Entozoa*, and from the *Filarie* in particular, even the most simple of them, and this both in external form and internal structure. Jordens is drawn into a somewhat similar error, and he describes, as a new species of *Ascarides*, two larvæ of the genus *Musea*, dejected by a man, and thus enriched the genus by adding the two species *Stephanostoma* and *Conostoma*!

Although the advocates of this doctrine may be convinced of its fallacy by these and such like arguments, and may be satisfied of the impossibility of extrinsic worms finding an entrance into the deep-seated parts of the body which are obnoxious to certain species of worms alone, they allow additional latitude to their imagination, and conceive that, instead of the animals themselves, their *ovulæ* may be carried into the body.

Many of the ancients, and some of the moderns, have conceived that the *ovulæ* of worms, which pass out of the animal into the air and water, may be carried into the bodies of other animals through the medium of food and drinks, and, being deposited there, become hatched. This idea owes its foundation, no doubt, to the observation of a profusion of eggs in the genital apparatus and ovaries of certain worms; and the experiment instituted by Pallas, in which ovules placed in the stomach of a dog produced young *Tæniæ*, was considered by him conclusive of the question. This celebrated individual has been much praised for this discovery, but he is obliged to support his position by a variety of arguments, many of which are opposed to the result of his experiments. He thinks

that the propagation of *Tæniæ* admits of a ready explanation, when we remember how fish are transported into lakes and ponds, recently stagnant, by aquatic birds, or how the *Vorticella rotatoria* is generated in rain-water contained in the pipes under the roofs of houses, and other lofty situations. He thinks that this mode of propagation is indubitable as regards the *Tæniæ* at least, the eggs of which he supposes to be every where distributed (external to the body), and that by accident they become transported into other animals through the medium of nutriment. The following is a summary of his arguments:—

1. Worms are by far the most common in large cities, or in other situations much frequented either by men or animals, particularly under the influence of bad food and insufficient ventilation; where humidity of the atmosphere and soil may preserve the ova and protect them whilst out of their natural situation; where the water of cisterns, closed wells, or rivers receiving the filth and refuse from the city itself, is used as the common drink: so, on the other hand, all the species of worms are infinitely more uncommon in the deserted and only recently-inhabited regions of Russia and Siberia, or among the shepherds and Nomades, or among wild animals, than in the more civilized and thickly-populated parts of Europe.

2. The place of abode of certain species of worms is always the same, whether it be in warm-blooded animals, birds, or fishes; and doubtless it is in these animals alone that they would meet with that degree of temperature and kind of nutriment necessary to their development, and in the absence of which they would perish.

3. Worms have been observed in new-born animals, and even in the *foetus in utero*.

And lastly, it has not been an uncommon observation, that the *Tæniæ* has materially aggravated an epidemic; however this may be, it is certain that the *Feræ*, or beasts of prey, are notoriously infested with worms; that the *Glîres*, who carefully masticate their nutriment, are less commonly so; and that it is a very rare occurrence comparatively to discover them in the *Ruminantia*, in whom the food undergoes extreme comminution. Carnivorous birds and those which are domesticated are very subject to them; and among the migratory fish and those which are tenacious of life, parasitical animals abound.

These, then, are the arguments which this celebrated man

has urged in support of his position, viz. that the eggs of worms are carried into the body, and are there hatched; nor has any one of his supporters brought forward more powerful arguments, or contributed any new ones, that I am aware of. But, as regards the first argument, it cannot be a matter of surprise that the verminous diathesis should attack the poorer classes of society in densely-peopled towns, surrounded, as they are, by all the evils of poverty, sustaining life by the roughest kinds of food, and with water frequently of an unwholesome nature; causes which must weaken the intestinal canal, impair digestion, produce a copious secretion of unhealthy mucus, and thus favour the generation of worms. For a similar reason, the weakest animals should most frequently suffer from them, as would be seen in the young of all animals, and particularly in those which are domesticated. Nor is the fact (which the author lays much stress upon), viz. that certain classes of animals are more obnoxious to them than others, depending on the mechanism of their digestive apparatus, supported on indubitable evidence.

I never understood that the *Feræ* were particularly liable to worms; and it appears, on the testimony of Goeze, that they are frequently found *free* from them. Pallas remarks the same thing in the instance of the dog and cat; but we must not forget that by domestication they are unlike the same animals in a wild state. Among the *Glires*, hares and rabbits are more obnoxious to worms than the weasel, fox, or otter, and the rat and mouse are much more subject to them; for in these we find *Cysticercus hepatis fasciolaris* exceedingly common; and frequently, too, *Ascarides*, *Tæniæ*, and others are to be found. The *Ruminantia* are, above all, most subject to worms. Pallas was unacquainted with many of these, some of which have been since discovered by Rudolphi. The sheep and goat abound with worms; also the cow and stag, and it would be difficult to discover one individual free from them. Pigs, who delight in filth and refuse, are not (as Goeze has truly remarked) more liable to worms than other animals. I believe that the carnivorous tribes of birds are not more subject to worms than others. Rudolphi, indeed, has frequently found falcons free from them, and has never found so many among the genus *Strix*, or owl tribe, as in that of the *Scolopax*, snipe, woodcock, &c.; for the former never have *Tæniæ*, whilst the latter possess a profusion of

them. Some authors deny the presence of worms in the small birds, even in the *Passeres*; but this opinion is founded on imperfect observations, for at least three species of worms have been detected in the nightingale (*Motacilla Luscinia*)^c. In swallows I have found them also, and in the sparrow and others. It cannot be doubted that the domesticated birds labour under worms to a great extent, particularly those reared in cities, and that are crammed: those who range freely in the country, and that are in good health, are less troubled with them; yet aquatic birds abound in worms. As far as regards fish, it is entirely false that the migratory ones nourish more of them than others; for during many years of careful examination of *Harengus* and *Salaris*, Rudolphi never found a larger number in them than in the non-migratory kinds. It, after all, depends mostly upon the nature of the food and the season of the year; thus the pike (*Esox Lucius*) sometimes abound in worms, at others are destitute of them; so fishes that take in quantities of sand in their attempts to gorge large objects, as has been seen in the sturgeon (*Acripenser sturio*) in particular, and in those whose stomachs and intestines are replete with the *débris* of hard shells, as may be often seen in the *Pleuronectes*, are often free from them.

The explanation of the fact, that whole families are often simultaneously afflicted with, or are free from worms, is not difficult; for the most part they all partake of the same kind of food or drink, whether that be bad or good, by which the *verminous diathesis* is increased or diminished; and the case mentioned by Goeze of a family, in Brunswick, being all of them (two servants excepted) afflicted with the Lumbric worm, admits of a similar explanation, for the latter were probably furnished with more robust constitutions, indulged in spirits, or were, in some way or other, protected from the bad influence of the common fare.

The second argument is by no means favourable to the doctrine supported by Pallas, viz. that certain species of worms infest particular species of animals, and are not to be met with promiscuously in every species; for if the ovules are diffused through the atmosphere, or are floating in the

^c *Monostoma ventricosum*, in the liver; *Distoma macrostomium*, in the rectum; *Tania platycephala*, in the small intestines.

water, they easily might find access to the interior of a great variety of animals, which certainly has not been observed.

I must confess that I am astonished at the third argument brought forward by this great man, for it is diametrically opposed to his hypothesis. "It is impossible that worms discovered in the *foetus in utero* can owe their existence to ovules derived from without, since there is no external communication."

But in addition to these objections to the hypothesis, there are abundance of others, and those too of great importance; I do not deny that many of the eggs of worms, living in the alimentary tube, may pass out with the *fæces*, but I feel persuaded that they rapidly die. The great number of eggs existing in one worm does of itself present a great obstacle to their being all expelled; and, in order that they should not all perish, they are made to abound to such a degree that some of them at least should find a congenial settlement. That they are capable of maintaining life whilst under the influence of air is highly improbable, seeing that it rapidly destroys the worms themselves, rendering them stiff and dry:—would the tender ovules be less susceptible of such influence? And if we could form a conception of the myriads of eggs and seeds which the imaginations of authors have wafted into our atmosphere, we may well smile, for they had formed a large part of its constitution.

As the eggs of worms found in warm-blooded animals require the same degree of temperature as the parents, I can hardly think it possible that the germs could be preserved alive in so cold a medium as water. But even allowing that the ovules are capable of supporting life under all the circumstances of extrinsic existence, it still remains a question,—How do they reach those regions of the body which some of them are known to occupy? That they are of too large a magnitude to pass by the small vessels I shall prove presently, and these are the only media through which they can arrive at the brain, the liver, and some other situations. As great a difficulty involves the solution of the question—By what means are they transported from these situations into the water, air, &c.? Lastly, How does this doctrine apply to those *Entozoa* which lead a solitary life enclosed in a cyst, unprovided with the means for copulation, and in whom there is no vestige either of genital organs or eggs? If, however, it

should be thought that the arguments as yet brought forward may be easily overthrown, there is still one which sets all controversy at defiance; and this is, that *a large proportion of intestinal worms are viviparous*, therefore we must cease to assume that they are procreated from ovules derived from without, and it would be too great a tax upon our powers of speculation to conceive any mode by which living embryos could be carried into the bodies of foetal animals enclosed in the uterus; and no one who has duly considered the preceding arguments will contend that these embryos are capable of maintaining life out of the animal body.

The fact that *Entozoa* reside, and are propagated in the healthy bodies of animals, is one which proves that animal bodies are best adapted to the habits and nature of intestinal worms; for foreign worms quickly die in them, nor have they the remotest tendency to propagate. We have indeed observed the larvæ of *Dipterous* insects, and of certain species of the genus *Estrus*, in various parts of domestic animals, but they leave the body, after a stated time, to undergo a metamorphosis out of it; the eggs, therefore, are deposited on the surface of the animal by the perfect insect, and the generative process is not conducted within it: and this is certainly an important distinction; nevertheless it is still doubtful whether some species of *Coleoptera*, of the hardier kinds, may not undergo a metamorphosis within an animal body. But these are carried into the body from without by accident, and their young are evident to the senses.

They are generated too in all parts of the animal body.

This is an argument of great weight, for animals (insects) carried into the body from without, are only found in those parts of it which have extensive external communication, viz. the intestinal canal, under the skin, frontal sinuses, &c.; whereas there is no part of the body, however far removed from external communication, which is free from parasitical inhabitants, and it is impossible to conceive any method by which they can make their way to the brain and other excluded parts.

But besides, parasitical worms residing in an animal not only do not inflict any injury on their host, but frequently excite no suspicion of their presence. On the contrary, when extrinsic animals take up their abode in the bodies of animals,

they soon prove themselves very unwelcome guests, by tormenting with severe pain, and by producing great emaciation; unless indeed they are speedily ejected, or perish under the intolerable heat of their new residence, or yield to the digestive powers of the stomach and intestines: for whether they be under the skin or in the stomach, they are constantly restless, excepting perhaps the larvæ of the *Æstrus*, which, as they are more congenial, and exist in fewer numbers, are sometimes nourished with impunity. *Entozoa*, on the contrary, frequently never excite a knowledge of their presence, and are productive of but little mischief, and that little accidentally. I think that those worms which spring up in the body and have become habituated to it, lead a tranquil life, and bear the continual but moderate motions of all the parts, and the accustomed stimulus of the chyme, fæces, &c. without inconvenience; and that it is not till the motions of the body have become unusually violent (perhaps spasmodic), the food poor or insufficient, the secretions of the chyme acrid, as in typhus, that they become irritable, and attempt an exit. Hence, as I have before stated, no sooner have they been dejected, or taken flight, than they as quickly perish. Some authors, opposed to the innate doctrine, have laid great stress upon the fact that some species of worms are peculiar to certain species of animals; but how they would wish us to apply the fact in their favour I am at a loss to discover.

In having pointed out the extravagance of some writers on this subject, it must not be understood that I deny their position *in toto*, for I am aware that many worms are peculiar to certain animals, and that there is less distinction between the *Entozoa* of similar kinds of animals, or of similar parts of the same, than between those of either, in which there is a striking dissimilarity. Now this could hardly take place, supposing the parasite germs to be carried in from without; for those animalcules which are diffused through the same region, and occupy the same situation promiscuously, are all equally exposed to the chance of indiscriminate transportation into the same animal body. It was the opinion of Retzius that the ovules found a congenial habitation in those animals only, or in those situations within the animal in which we discover them, and that they either perished or were not developed when carried into others less congenial, or positively noxious,

and consequently, that we could scarcely pronounce that worms are connate; and he further urges, that those animals which feed in dry, arid situations are never infected by them, and, on the contrary, that those who seek their food in low and humid districts are exceedingly prone to them. With great deference to the opinion of this celebrated individual, I do not think his hypothesis—"the eggs can only be developed in those situations in which we discover them"—by any means removes one difficulty; for I apprehend that if they were placed in the bodies of different animals (I do not mean in those which present the extremes of difference), that they would be hatched, as it is termed, and take up their abode in them. But the ovules, and these too in a very recent state, must be immediately deposited in animals furnished with the requisite degree of temperature; and as this latter is a condition essential to the growth and development of the embryo worm, wherever it may have been deposited, it admits of no delay in what we may term its middle state, viz. the cold air and water. I am led, from this train of reasoning, to view the hypothesis which regards external communication as essential (whether it be with dry or moist air, dry or humid ground) as an absurd one. I shall have occasion to notice, presently, the influence which humid situations may have in favouring the "verminous diathesis."

I have already pointed out the necessity of giving the *Entozoa* a distinct place in the chain of living organized beings. Their tender and delicate structure, their almost universal inability to endure exposure to air and cold, render the warm animal fluids essential to their vitality; their very great mobility and elasticity give them the power of contracting their bodies into an extremely small space, of elongating them almost indefinitely, of drawing them up into innumerable plicæ, or folds, and even of crawling along the intestinal canal. They are furnished with contractile porules, or mouths for suction, with unciform retinacula, by means of which they firmly adhere to sustaining parts without injuring them; and so tenacious is their hold, that when once firmly fixed, they will allow their bodies to break asunder rather than give way to any efforts made for the purpose of disengaging them. Some of them possess an absorbing function, by means of which nutritious fluids, easy of assimilation, are conveyed into the body; in short, we see in

these animals a singular and beautiful adaptation of structure and function to the peculiar circumstances of their existence, and they present us with another instance of the fostering care which nature displays in the preservation of her offspring. The proportion between males and females (that of the latter being by far the greatest); the immense number of embryos and eggs generated, by which arrangement the preservation and maturation of some, at least, is preserved; the extreme delicacy of structure in these, of itself an unanswerable objection to their being transported into other situations; and, lastly, their fugacious vitality, (the parents dying immediately on the exclusion of their young); are facts, all of which conspire to form the opinion that they are peculiar animals.

A careful examination of the facts bearing on this question has brought us to the conclusion that neither the eggs of worms, nor the worms themselves, enter the animal body by any of the mucous cavities. Under this conviction, therefore, I thought it very desirable to ascertain the earliest period in the life of an animal at which worms exist, and with this view instituted the following experiment. Having a pregnant cat at hand, I determined upon making the experiment upon her kittens. I had two motives in selecting cats as the subjects of experiment: 1st, That I have invariably found worms in adult cats at various ages; viz. *Ascaris mystax* in the stomach and small intestines, and *Tenia cuneiceps* in the latter situation. 2dly, That the kittens would have been killed in the usual course of events, and therefore that I was not laying myself open to the charge of wantonly wasting life. Well, her accouchement brought five young. The first I killed instantly, but on examination found nothing but mucus and meconium. At the end of the third day I examined the second, and discovered two *Ascarides* in the stomach, and several pieces of small *Teniae* in the small intestines. At the expiration of the fifth day the third was examined, but to no purpose; for, although I explored the whole intestinal part with a lens, no trace of a worm was present. At the end of the tenth day the alimentary canal of the fourth was exposed. Three *Ascarides* in the stomach, one in the duodenum, and two perfect *Teniae*, besides pieces, were brought to light.

I deferred the examination of the fifth till the fifteenth day,

when, to my surprise, the stomach contained only one *Ascaris*, and that a small one, and the small intestines only a few pieces of *Tænia*. I should have mentioned, that the excrement of the kittens in the box presented occasionally pieces of *Tæniæ*. The results of this experiment were so far satisfactory as that they made known the very early period at which cats become the subjects of worms, but no farther, since they were not direct proofs of the cognate origin of parasitical animals; indeed, the fact of my having detected none in the first animal, and six worms, besides fragments of others in the fourth, went rather to favour that view which regards intestinal worms as of external origin. It then struck me that if their existence in foetal animals could be determined beyond a doubt, that the inquiry would then be brought within somewhat narrower limits, and that the question of their external origin would be set at rest. I had not an opportunity of pursuing the subject till the following autumn and winter, when I had frequent opportunities of examining foetal lambs in the Whitechapel slaughterhouses: here, in several instances, I found the fluke, of no mean size, in the biliary tubes. I have since found, on referring to the excellent helminthological work of Rudolphi, that he notices the same thing as having been observed by Pallas, but adds, that the observation requires confirmation, seeing that many inorganic substances, concrete mucus, albuminous flukes, &c. have been confounded with worms, an insinuation which, by the by, Pallas ill deserves. Having convinced myself of the cognate origin of parasitical animals in the *Mammalia*, I determined to embrace the first opportunity which should occur of examining the intestines of birds in ovo. In the following spring such an opportunity presented itself, and the thrush was the subject. It may be well to mention, that the thrush affords "a house and home" to at least three species of worms; viz. *Distoma mesostomum*, *Tænia angulata*, and *Ascaris lancea*; the two latter I have often found in the adult thrush, and my object now was to look for them in the bird in ovo. The nest of a thrush, accessible to observation, was easily found. During the first few days I contented myself with examining the nest occasionally only, but for some days previous to the time at which I hoped they would break the shell, I watched them more narrowly, and on examining the nest one morning found one of the birds just liberated from its prison.

I took the remainder, broke the shells, and found in all the young, numbers of pieces of *Tæniæ*, although I looked in vain for the other species; viz. the *Ascaris* and *Distoma*. The *Tæniæ* were so completely enveloped in the thick mucus contained in the intestines, that they would certainly have eluded my observation had I not diffused the contents of the canal in clear water. I am not aware that this fact has been noticed before; if any of your readers are aware of similar cases, they would confer a benefit upon science by publishing them. I doubt not but that it is universal, and that if sufficient care is exercised in making the investigation, that they will be found in every instance. I intend, at a future time, if leisure and opportunity permit, to pursue the inquiry further, and to examine at what earliest period of foetal life worms can be detected; but I think enough has been already adduced to prove the fallacy of the hypothesis which refers their existence to an external source. And here the question rests at present. And is it not far better that, in the absence of facts, the question should be thus suspended, than that a hasty inference should be formed which future observations may invalidate? If, then, they are innate, whence do they originate? Are they transmitted to the foetus through the medium of the male or female parent? I am constrained to the belief that this is not probable. I shall examine into the possibility of communication by the male parent, more for the sake of avoiding a charge of partiality than for any other reason. A few words, however, will suffice, as it is above all other theories most foreign to the truth, and is now hardly supported by any one. The male parent does indeed vivify the germ of the future offspring, and as it were impart to it a spark of the quickening fire; but it is on the mother that the vivified germ depends for all its growth and development. The ova of amphibious animals, fishes, &c. are deposited by the female parent, and are subsequently called into life by the contact of the male fluid; nor, indeed, does actual coition take place in the majority of animals. Whether these ova absorb the seminal particles or not, is a question which I cannot solve; but the experiments of Spallanzani prove that the infinitesimal portion of semen is sufficient for fecundation. Having diffused three grains of frog's semen in two pounds of common water, he found that every particle of the water possessed the fecundating power; for on applying a

little of this water to the eggs with a camel-hair pencil, they were rendered equally fruitful with those which had been fecundated in the usual manner. So, in other animals, we are not ignorant of the means by which generation is effected; and in these a very small portion of semen only is conveyed to the ovaris during coition. And when conception has taken place, we observe that the ovum is latent during the first few days, that it then appears very small, and at a later period becomes an evident embryon. These facts being established, we think that the opposite proposition is proved, viz. "the *Entozoa* cannot be transferred to the ovules by means of the male parent;" for who would contend for the possibility of the eggs of worms being contained in so small a quantity of semen? or how could the eggs of worms, infesting the different regions of the body, gain access to the seminal fluid of the parent? or supposing, for the sake of argument, that this is possible, how are the germs of animals to become the recipients of parasitical ovules of equal, perhaps superior, magnitude with themselves? If, in addition to this, we remember, that many of the *Entozoa* are viviparous, and that it is therefore physically impossible that their embryones can be contained in the semen of the parent, and that they can be thence transferred to the ova in the ovaries of the female; and with the knowledge that some worms (as the *Cysticerci*) are solitary, never copulate, and therefore produce no eggs, we shall be convinced of the falsity of this hypothesis; and it is unnecessary that I should give any further illustration of my opposing arguments. All the objections which are urged above apply with equal force to the following hypothesis, and those which I am about to oppose to the latter are equally fatal to the hypothesis just treated.

Are they communicated by the female parent?

That the ova of worms are communicated by mothers to their fœtal young, is a theory which Vallisnierus, Goeze, Bloch, Werner, and nearly all helminthological authors, have warmly supported, and pronounced indubitable.

Those authors, indeed, who have been sensible of the difficulties which surround this hypothesis, have *not* pronounced it indubitable, but have rather embraced it as the most probable, seeing that all the other theories are untenable, and fall short of solving the difficulty: but I think they cannot have deeply examined the nature of it. I find it surrounded with

insurmountable objections, which I should like briefly to notice in this place.

If it be true that mothers communicate worms to their fœtuses, they must nourish in their own bodies all the species of worms communicable. Let us see if this is probable.

There are twelve species of worms, if not more, known to infest man. These are—1. *Filaria medinensis*. 2. *Hamularia lymphatica*. 3. *Trichocephalus*. 4. *Ascaris lumbricoides*. 5. *Strongylus gigas*. 6. *Bothriocephalus*. 7. *Distoma hepaticum*. 8. *Polystoma pinguicola*. 9. *Tænia lata*. 10. *Tænia solium*. 11. *Cysticercus*. 12. *Echinococcus*. We find in the horse nine distinct worms; namely—1. *Filaria*. 2. *Oxyuris*. 3. *Ascaris*. 4. *Strongylus gigas*. 5. *S. armatus*. 6. *Distoma*. 7. *Tænia perfoliata*. 8. *T. plicata*. 9. *Cysticercus*. In *Colymbus Septentrionalis* there are seven: *Strongylus*; two species of *Ascaris*; *Distoma*; *Amphistoma*; two species of *Bothriocephalus*. In *Rana temporaria* as many: two species of *Ascaris*; *Strongylus*; *Echinorhynchus*; *Distoma*; *Amphistoma*; *Polystoma*. A similar number infest *Gasterosteus aculeatus*: *Ascaris*; *Echinorhynchus*; *Monostoma*; *Distoma*; *Tricuspidaria*; *Bothriocephalus*; and *Tænia*. It is needless to cite more examples. Now it has never occurred to any one to find in one subject all the species of worms peculiar to a certain animal. No woman was ever infested with the twelve species of worms above enumerated, and no individual mare ever contained the nine species of worms which have been found in the horse; and so of the rest. Some species of worms are exceedingly rare. The *Cysticercus*, for instance, is by no means frequently found in man or in the horse; indeed, some had doubted its existence altogether in the horse, till it was found by Chabertus. It is characterised by a long attenuated caudal vesicle. The *Echinococcus* is observed but rarely in man; it may be found, perhaps, in one or two instances in many thousands. The *Tæniæ* themselves, one species at least, are rare in certain situations; the *T. lata* is rarely found with us.

Now if, after a lapse of ten generations, or more, a very rare species of worm should be found in a descendant of this stock, we must conceive the eggs to have been transmitted by all the female parents, and to have been eventually deposited in this solitary individual, which, in my opinion, is to conceive an absurdity.

It is preposterous to tell us that the germs of the *Entozoa* (than which nothing is more delicate) are thus preserved for centuries, transferred from one generation to another; and it is equally incredible that the germs (in each generation equally exposed to circumstances favourable to their development) should, as it were by choice, select this particular individual for their nidus.

We know of no means by which the ovules of worms can be carried first into the uterus or ovaries of the female parent, and secondly from thence into the fœtus.

Even supposing that all parasitical worms are produced from eggs, still I cannot conceive any method by which they can be transferred to the uterus or ovary of the female, or from them to the contained fœtus or germ. As worms exist in every region of the body, it is indispensable that their eggs should first be absorbed by the lymphatics, thence carried into the veins, pass with the blood through the lungs, and through the arteries, before they can be deposited in the ovary or uterus; and when (after this perilous journey) they shall have arrived so near the place of their destination, they have to pass through the vessels of the placenta. But throwing out of the question the dangers attendant upon such an expedition, there are two powerful objections to this finely-spun theory; first, the trunks of the vessels, arterial as well as venous, both those concerned in nutrition and secretion, are attenuated to that degree that they become colourless, and refuse to transmit red globules; and, secondly, we should have every part of the system abounding with the eggs of worms.

The first consideration does clearly point out the fallacy of the hypothesis, for globules of blood are infinitely smaller than the eggs of worms, and those vessels which will not transmit the former will undoubtedly reject the latter; and I am not now making the comparison with the eggs of the larger species, such as those of *Ascaris lumbricoides*, *Strongylus gigas*, *Echinorhynchus*, or *Tænia*, but with those of the smaller species, such as the *Distoma trichocephalus*, and such like; and I am well convinced that no *Eutozoon* could be mentioned, whose eggs would not each be capable of containing many globules of blood. I would now call the attention of the reader to the vessels which by means of their minute radicles absorb the different fluids. Their mouths are invisible to the

naked eye, and the orifices of the tumid extremities of the villi of the intestines, called by Lieberkuhn *ampullæ*, are more imaginary than real; but, independently of this, the villi of the intestines are wanting in by far the majority of animals, so that in these absorption is carried on through excessively fine pores, in a natural state quite incapable of transmitting the eggs of worms. For a similar reason, the nutrient and secreting vessels distributed to the uterus, &c. are incapable of depositing eggs by their minute radieles. The same objection is afforded by an examination of the ultimate branches of the pulmonary vessels, which form a net-work in the cells of the bronchi. It is true that they carry red blood; but would *their* calibre admit the eggs of the larger worms—those of the *Lumbric* worm for instance? I have no hesitation in saying, that one ovule of the *Ascaris lumbricoides* would conceal many of the minute pulmonary vessels. A considerable time ago, Werner made an arithmetical calculation, in which he estimated the ovules of worms to be so diminutive as to allow of their passing readily from one body to another with the sanguineous globules; in fact, that it was possible for them to be transported from the uterus to the most remote parts of the fœtal body. If, instead of an arithmetical computation, this great naturalist had instituted a comparison of the relative dimensions of these ovules and globules as seen under the microscope, he would have arrived at a very different conclusion. Rudolphi has compared the ovules of *Ascaris labiata* and *Distoma polymorphum* of the eel with globules of blood procured from a small wound made in his own finger, both being placed under the microscope. Globules of blood appeared exceedingly minute when placed by the side of these ovules, although the worms are not large. An ovule of the *Ascaris*, indeed, exceeded a globule in diameter by ten or twenty times. Let us, then, be careful how we admit an hypothesis which, like this, is so encumbered with inconsistencies. It is impossible that such ova can traverse those vessels which are subservient to nutrition, and it is certain that the red globules do not. I think that enough has been said to prove the falsity of this theory; but if another argument is wanting, we possess it in the fact, that if the ovules are carried to the uterus and ovaries through the medium of the absorbent and sanguiferous systems, we must assume that every part of the body abounds

with them; this being assumed, by far the greater portion of them must either perish, or by an *error loci*, be deposited in uncongenial situations, and fail in reaching the place of their destination. The loss which the ovules would sustain in thus being whirled round in the circulating torrent is prodigious and inconceivable. In no microscopic examination either of the minute vessels or their contained fluids have parasitical ovules been discovered—

“ Transeat cum ceteris.”

Are the ovules transferable from the uterus or ovaries to the fœtus?

All the difficulties inseparable from the preceding arguments apply with increased force when brought to bear on this question. Granting that the ovules are in fact brought together in the embryo, to conceive a process by which they are to be deposited in the different situations they are destined to occupy in the embryo bids defiance to the powers of human imagination. In the livers of the fœtal lambs the *Distoma hepaticum* has been found. The ovules of these, therefore, to be transferred from the uterus to the fœtus, must have passed through the absorbent vessels, the arteries and the veins, and from these into the vena portæ and pori biliarii!! How improbable! We have to contend with a greater difficulty, when we remember that many occupy the brain and other inaccessible situations; and still a greater presents itself when we call to mind that the ovules are propelled to every part of the body, until they attain a congenial settlement, which some of them (as before mentioned) could not have attained till after the lapse of several generations.

The obstacles are equally great if it be said that the eggs of worms are communicated from the mother to her offspring by the milk, or by any other means.

The doubts which I have thrown on this theory, in its application to man and the larger *Mammalia*, become increased when applied to the rest. By far the majority of the fœtal *Mammalia* undergo protracted utero-gestation, and then commence lactation; in a few, the family *Didelphida* for instance, the young resort to the mammæ in a very tender state. Those authors who have been made sensible of the difficulties attendant on the transportation of the ovules from

the uterus and the ovaries to the fœtus, have conceived it possible that the ovules are imbibed by the young with the maternal milk. But worms have been observed in the fœtus, and cannot therefore have received them from this source. Many infants are entirely deprived of the breast, and if the ovules are communicated to the infant by its mother's milk, the eggs of all the species must, of necessity, be transferred to the mammæ; the minute structure of the vessels of these organs, as of the uterus, &c. before alluded to, forbids such an event.

With respect to birds, it was the opinion of Werner that the ovules were communicated to the young by the beaks of their parents; that the food, after remaining for a certain time in the crop, became saturated with the fluids of the body, and charged with parasitical germs, and that in this way they found a ready entrance into the bodies of the young birds.

But to this may be objected, that there are many birds who do not feed their young with food laid up in the crop. But, as far as I have observed, those which are furnished with a crop are particularly free from worms, nor have I read any thing to the contrary. And if worms or their eggs are conveyed thither, we should have one or other of the *Strongyli* among their number; the eggs of the other worms then arrive at the crop by the same avenues as those by which they reach the uterus and mammæ in the *Mammalia*.

If this theory be examined in its bearing upon the fishes, the objections will be found still greater. Werner believed that the worms or their ovules would find ready access to the bodies of young fishes, from the fact that they receive their nourishment in the same fluid in which the adult fishes deposit their excrement.

Plausible as this may appear, I believe it to be altogether an unsatisfactory explanation. We must not forget that a very large proportion of the parasitical worms infesting fish do not reside in the intestinal canal, but that they occur either free or enclosed in cysts in the liver, in the abdominal cavity, and in the muscles; therefore the ovules of these cannot be dejected with the excrement, and, of consequence, they are not swallowed by the young fish.

We do not find ourselves extricated from the difficulties, when we turn to the *Amphibia* and *Insecta*, for here the eggs

committed to the charge of the female are often hatched without her care, knowledge, or superintendence; and to suppose that their parasitical inhabitants are derived from eggs transmitted to them by the parent, is a figment of the imagination. This hypothesis is inapplicable, and disproved in the case of viviparous worms.

I mentioned in an early part of my paper, that in some of the worms no genital apparatus nor ova are manifest; these, therefore, being solitary, and enclosed in a cyst, do not seem to propagate, and here the hypothesis is overturned, seeing that they are not transferable. But as the ovules and genital apparatus, even in these, may really have existence, although not manifest, I will not lay much stress upon this, but pass over it in silence.

But there are *Entozoa*, and not a few, who actually do bring forth living young; and that these young are transferred by the absorbents and blood vessels to the uterus and ovaries in the *Mammalia*, or in the case of *Amphibia* and fishes, that they insinuate themselves into the ova, is a position which no man would contend for, or judge probable, however biassed by prejudice or enamoured of theory he may be. The argument is, in my humble estimation, convincing and unanswerable; for even supposing that the germs of these viviparous worms were prematurely born, (that is, before the contained animals were endowed with life,) and were in this state deposited and carried into the circulating current; even supposing this, I say, a proof would yet be wanting that such an abortion could be afterwards vivified.

We are now brought to the conclusion — that the eggs of worms are not communicated to infants and fœtuses, either by the male or female parent; that it is as false and irrational to imagine that they have been transmitted from generation to generation, from the primordial parents either of man or other animals, as to suppose that they have been carried into the body from an extrinsic source.

The reader is, I doubt not, by this time sensible of the great difficulties with which this problem is beset, and must perceive that if my positions be true, viz. that worms do not gain access to animals by the mucous cavities, nor are they transmitted by the parents, to their young, that the doctrine of spontaneous generation is inevitable. But as this is a doctrine inconsistent

with reason and analogy, the question, as I before hinted, must be left, *sub judice*, until future facts and observations shall discover the truth.

Guy's Hospital, 12th month, 1835.

ART. XXXVI.—*Notes on the Genus Aphis.* By FRANCIS WALKER.

LATREILLE separated the genus *Aphis*, Linn. into three divisions, which he thus characterised :—

- I.—Abdomen bicorniculatum. Antennæ setacæ, elongatæ.
- II.—Abdomen bituberculatum. Antennæ sæpe filiformes.
- III.—Abdomen corniculis tuberculis que nullis. Antennæ filiformes, breves; corpus in multis tomentosum; insecta sæpius in gallis improprie dictis degentia.

Lachnus, Illiger, comprises the second division, and the genera *Myzoxyle*, Blot, and *Phylloxera*, Fonscolombe, probably belong to the third, which Burmeister describes as *Chermes*, Linn.

Aphis.—This genus is still very extensive, and in some instances includes two distinct species, that feed on the same plant, so that a subdivision is required to avoid confusion, for most species are as yet only described by the names of the plants which they infest.

I. Horns of the abdomen very short, body generally small and narrow. Among the species of this division are :—

1. *Aphis* of the lime.—The prettiest species of the genus, is found in all stages of growth under the leaves of lime trees, during the summer and autumn. When full grown it is bright yellow or green, the scutel and sides of the head and thorax are black, and two rows of black spots extend along the sides of the abdomen; the antennæ have alternate rings of yellow and black; the hind thighs are black; the wings white, spotted with brown at the tips of the nervures, the costa also brown. The young ones are entirely pale green and semi-pellucid.

2. *Aphis* of the oak.—It is a small delicate green species, having sometimes, but very rarely, a bright yellow hue; the

joints of the antennæ and the horns of the abdomen are tipped with brown or black; the latter are very short; the feet also are brown, the wings colourless, with a broad pale green fore border, the nervures usually varied with black. It is found in June beneath oak leaves, and has some likeness to the lime *Aphis*, but the larger size, gayer colours, and embroidered wings of the latter easily distinguish it.

3. *Aphis* of the hazel.—This also is a very pretty species. The body, antennæ, legs, and wings have a pale lemon colour; the eyes, the feet, and a dot on the fore border of each upper wing are brown. It is rather larger than the preceding, and is found in June beneath the leaves of the hazel.

II. Horns of the abdomen long, body generally broader and more convex. The nervures of the wings are variable in some species.

1. *Aphis* of the cabbage.—Very abundant in all stages of growth beneath cabbage leaves in August. It is thickly clothed with white down.

2. *Aphis* of the white water-lily.—Found in August on the flowers of that plant. When full grown it is entirely black, and has limpid wings with green nervures; the young ones are paler.

3. *Aphis* of the cherry.—It swarms in May beneath the leaves of cherry trees, which it causes to curl up and become covered with a glutinous matter. It has a dull red colour when very young, but on arriving at maturity it becomes black and shining, with the tibiæ and third joint of the antennæ white. The body is broader and more convex than that of most of the genus. The wings are alike in colour to those of the preceding species, but the arrangement of their nervures differs.

Lachnus. Some of the larger species of this genus have the penultimate nervure of the upper wing subdivided. They usually inhabit the trunks and young shoots of trees, and among them are *Aphis piceæ*, Fabr., *A. quercus*, Linn. and *A. pini*, Linn. On a warm cloudless morning in October I saw myriads of *Scatopse picea* hovering about and settling on a larch tree, near Dolgelly, North Wales; and among them were two or three *Scatopse flavicollis*. They came to feast on the honey distilled by a colony of *Aphides* that infested a branch of that tree. These latter were of all sizes; the young ones greenish brown, the full grown deep brown, and speckled

with white. They were rather darker than *Aphis pini*, but probably not a distinct species. The smaller species have the penultimate nervure of the upper wing simply bifurcate, and inhabit the leaves of plants, &c. One very minute species is found in company with the *Aphis* of the oak described above. It is dull brown, oval, very flat, the wings limpid, and crossed horizontally over the abdomen, the costa pale green, the nervures darker.

ART. XXXVII.—*Varieties.*

11.—*The Glow-worm.*

PERCHANCE there 're many insect tribes
That hum within thy glow,
A little world! illumin'd far
Beyond their weal or woe.

And thou, to them a mighty sun
The centre of a sphere!
What time thou closest up thy beams
May close their rolling year.

But when next eve thy glory wakes,
Again their joys may rise;
Another spring again return,
With new enspangled skies,

As now;—the dew-drops twinkling round,
All sportive in thy ray,
A gorgeous kingdom, wondrous fair!
An elegant display.

But oh! how transient thy sweet beam,
How soon thy ray expires!
Thy love-lit system fades away,
And yields to other fires.

Then shall the hare-bell's music sweet
That lulls thee to repose,
Be tuned to sadness, as it waves
To each soft wind that blows.

Then shall the corn-convolvulus,
Which shuns the blaze of noon,
That oft is courted by thy smile,
To grace thy rich saloon,

Feel most severe thy beams decay.
 His tendril cease to twine,
 Relax'd and feeble shall it lay,
 And speedily decline.

The rustling heath which blooms around,
 Shall bow its purple head,
 The ferns, and all the mosses near,
 That form thy silvery bed,

Shall droop, and silently deplore,
 For mirth shall cease to be;—
 No insect with his busy hum,—
 For all will die with thee.

G. SHOVE.

12. *Colias Electra and Hyale*.—The appearance of these butterflies in the vicinity of London is so unusual as to be worth recording. They frequent the blossom of lucerne in preference to that of any other plant, and both species were to be met with on fine days from the 16th to the end of August, wherever a patch of lucerne was in fine blossom. At Deptford, Newcross, and along the Kent-road, of *Colias electra* twenty-seven specimens were taken, and of *C. hyale* thirty-four, principally by Mr. Ardly, of Rotherhithe, a collector, who catches them for sale; but I had the good fortune to take nine of each species myself.

Deptford.

EDWARD NEWMAN.

13. *Colias Hyale*.—A single specimen has been taken this autumn by a lady near Ross (Herefordshire).

London.

G. TRUSTED.

14. *Colias Europome*.—A pair of this fine species of butterfly, precisely resembling those in the cabinet of Mr. Stephens, are in the possession of Mr. Edmonds, of Worcester. I examined them closely, and find they have all the appearance of British insects as regards the pins, the mode of setting, &c. Mr. Edmonds assured me they were both taken on the south coast of England, but he could not tell me the exact spot without a reference to the captor. Mr. Edwards tells me, that neither this species nor *Hyale* have ever occurred to his knowledge in the neighbourhood of Worcester.

Deptford.

EDWARD NEWMAN.

15. *Mancipium Daplidice*.—Sir,—It may not be uninteresting to entomologists to be informed, that three specimens of this very scarce insect have been captured at Dover during the present month. Two of these I was so fortunate as to take myself, on the 20th, in the field adjoining the Castle Meadow. The other was secured by Mr. Leplastrier, jun., of Dover, on the 18th, in the Castle Meadow.

One of the specimens taken by myself (a male) is in the most perfect condition; the other (a female) is slightly worn. The one taken by Mr. L. is a very fine specimen, but has one of the lower wings a little torn.

Until the present year, one only of these insects has, I believe, been taken in the same locality since that mentioned by Mr. Stephens. It was taken by a son of Mr. Leplastrier, about ten years since, and is now in the possession of Mr. L.

Doctors' Commons, August 31, 1835.

N. B. ENGLEHEART.

16. *Colias Hyale*.—About twenty specimens of *Colias hyale* have also been taken at Dover, between the 17th and 21st of this month. Out of six of these, which were captured by myself, five are white, and I believe that not more than six or seven of the whole number are yellow.

A white specimen, which was secured by Mr. Leplastrier, has the black spots on the upper wings lozenge shaped, with the angles very sharply defined.

N. B. ENGLEHEART.

Doctors' Commons, August 31, 1835.

17. *Hipparchia Cassiope*.—On the 4th of July last, I found this species in considerable abundance in the vicinity of Sprinkling and Sty Head tarns, at the head of Borrowdale. The female appears to be rare, and the few that I captured were much wasted, although many of the males were still in fine order.

T. C. HEYSHAM.

Carlisle.

18. *Deilephila Galii*.—Two specimens of this fine sphinx were taken in a garden not far from the village of Cumwheaton, in the beginning of September, 1835, and which are the only specimens I have seen that have been captured in the vicinity of Carlisle.

T. C. HEYSHAM.

Carlisle.

19. *Papilio Podalirius*.—A friend of mine, who resides near York, informed me, a few days ago, that he this summer purchased a pair of *Papilio Podalirius* from a dealer at Portsmouth, who assures him that they were this year taken in the New Forest and brought to him alive. My friend, at the time, was perfectly aware that the best informed entomologists have great doubt whether this fine *Papilio* has ever yet been really captured in England, and consequently took considerable pains to ascertain the truth of the dealer's information; and from all he could learn he appears to be of the opinion that his testimony is worthy of credit.

T. C. HEYSHAM.

Carlisle.

20. *Cimbex femorata*.—Specimens of this rare insect, both male and female, have been captured in this vicinity during the past summer.

T. C. HEYSHAM.

Carlisle.

21. *Captures at, or near Worcester, in 1835*.—*Vanessa Antiopa* and *Colias electra* were taken together in August, at Henwick-hill, by a countryman. *Deilephila Galii* in July. *Thyatira Batis*.—This hitherto rare insect was taken plentifully this year in May and June, in Nunnery Wood, and Trench Wood. *Polyommatus Acis* has occurred in this neighbourhood plentifully, and *P. Corydon* also in abundance; the latter insect has never before been seen here.

RICHARDS.

Worcester, 13th Nov. 1835.

22. *Deilephila Galii*.—A specimen of this fine *sphinx* has been taken this summer, by Mr. Lees, in the Isle of Wight, and another by myself, in July last, on the London-road, Worcester. *Sphinx convolvuli* was taken here in September, 1834. Communicated to E. Newman by

Worcester, Nov. 1835.

A. EDMONDS.

23. *Sphinx Convolvuli*.—A fine specimen of this insect flew into the dwelling house of Mr. ———, of High-street, Deptford, on the 14th September last, and occasioned no small alarm. The ladies had called in several neighbours, to consult on the best mode of getting rid of him; and amongst them, an acquaintance of mine, who with considerable activity captured

the intruder under a tumbler, and brought him to me in triumph, amid the fears, wonders, and shrieks of the assembled spectators, who considered the deed the most presumptuous they had ever witnessed, and evidently expected some sudden evil to befall the perpetrator.

E. N. D.

24. *Longevity of a Spider.*—“A lady to whom I am indebted for several interesting facts in natural history, states that two spiders have been in possession of two webs on opposite sides of a large drawer for thirteen years. This drawer has for that period of time been used exclusively as a repository for soap and candles, and has always been kept closed and locked, except when opened to put in or take out those articles. The spiders are constantly in the same position, in a hole in the inner corner of their webs, and seldom show more of themselves than their two fore legs projecting outwards.”—*Jesse's Gleanings, Third Series.*

25. *Earwigs turn to Flies!*—Sir,—The increased taste for the study of natural history which is now apparent in this country, is, I believe with reason, in part ascribed to the numerous *popular* works on that branch of science which are daily issuing from the press. How desirable, therefore, is it that these works, which unfold to us the mysteries of nature divested of the dry technicalities of science, should, at the same time, be free from errors. I am led to this remark from having observed, with considerable regret, in a work which I am sure every one must read at once with pleasure and instruction, a statement so erroneous as to mislead those unacquainted with the facts of the case, and to induce those who really understand the subject to look with ridicule on an otherwise interesting and valuable work. I allude to *Jesse's Gleanings in Natural History*, a work which, from the abundance of curious matter it contains, and the kindly feeling in which it is written, must, I think, be a general favourite. Judge, then, of my astonishment, when, on taking up the other day, the third series, at page 149, I found the following extraordinary paragraph:—

“Earwigs turn to flies. This may easily be ascertained by developing one, after killing it, with a pointed penknife. The swallow-like tail will be discovered to be two terminations of wings.”

With all the esteem I felt for the amiable author, this

passage struck me as so utterly ridiculous, that I laid down the book, and have never since looked into it. I could point out some other errors, but as they do not belong to your branch of natural history, I will not take up your time with them. Do not misunderstand me. I have no objection to *popular* books on natural history, but rather approve of them. At the same time I wish them to be written in common sense.

Yours, &c.

W. CHRISTY, JUN.

26. *Larva of Megatoma serra*.—Sir,—Since I forwarded to you the descriptions of Coleopterous Larvæ, I have reared some more specimens of *Megatoma serra*, the pupa of which is remarkable, assuming that state (as many of the *Diptera* do) within the case of the larva; but it may be observed that, in this instance the larva case is slightly open at the back: the pupa in other respects resembles that of other *Coleoptera*.

GEORGE R. WATERHOUSE.

27. *Agriotypus armatus*.—The female of this insect was observed, in June last, on the banks of the Clyde, at New Lanark, Scotland, to descend the sides of rocks to a considerable depth under the surface of the water, remain immersed for ten minutes and upwards, and then reappear without any apparent injury: this singular operation it repeated several times. Can the object of these subaqueous wanderings be for the purpose of depositing its eggs in the aquatic larva of some Neuropterous insect?

ED.

28. *Notes on some Insects of Teneriffe*.—The volcano of Teneriffe forms five successive zones, each of which produces a distinct race of plants, and consequently of insects. The first zone is the region of pines, the next that of laurels; these are followed by the district of pines, of mountain broom, and of grass; the whole covering the declivity of the peak to the perpendicular height of 11,000 feet. Some insects collected in Teneriffe by J. Anstice, Esq. offer forms belonging to each zone, together with some peculiar to the salt deserts and borders of the sea. Among these are, *Ocypus morosus*, Dejean. A little smaller than *O. olens*, but with no other

difference—*Cercyon scitum*^a—*Aphodius fortunatus*.^b Allied to *A. rufescens*, but narrower, smaller, and darker, the thorax more finely punctured, the clypeus black, &c.—*Pimelia radula*, Dej.—*Opatrum tomentosum*? Dej. A species allied to *Philax*, &c.—*Herpysticus læsicollis*, Germar.—*Chryso-mela sanguinolenta*, or it may be a distinct species, the fore wings more coarsely punctured, and of a coppery violet colour.—*Bembex*, n. s.?—*Ammophila*, n. s.? clothed with silvery down, allied to *A. argentea*, Kirby, but more slender, and the red colour extending over a larger part of the abdomen.—*Anthophora*, n. s.?—*Bombus*, n. s.?—The universal *Cynthia cardui*.—*Polyommatus*, n. s.? nearly allied to *P. Acis*.—*Plusia*, n. s.? with gilded wings allied to *chrysitis*, *aurifera*, *aurichalcea*, *bractea*, &c.—*Eristalis taphicus*, Wiedemann, who describes it as an Egyptian insect. It is very like *E. æneus*, but rather slenderer, the stripes on the thorax are less distinct, and the fore and middle tibiæ are for the most part yellow.—*Jalla smaragdula*, Fabr. The above insects were presented to me by Wilson Saunders, Esq. F. WALKER.

29. Nest of one the fossorial *Hymenoptera*.—A few days back, as I was walking round one of our fields, I happened to cut off a branch of elder which projected from the hedge; I noticed that the pith of it was removed, and on examining it, I found that some insect had evidently entered at the top of the branch, which had apparently been broken off some time previous. The pith she must have removed, for the whole length, about eighteen inches, was divided into little cells, in each of which was an oval cocoon, of a brown colour, containing a whitish larva. From the many fragments of legs, wings, &c. of *Diptera* in the cells, these larvæ evidently belong to some one of the fossorial *Hymenoptera*. I think that Reaumur mentions a similar nidus in a dead branch of oak.

EDWARD DOUBLEDAY.

Epping, Dec. 1st.

^a *Cercyon scitum*, n. s. Atrum, subtus piceum, *Sphæridii* magnitudine et statura: antennæ rufæ: pedes et trophi rufo-picei: proalæ subtilissime punctato striatæ. (Corp. long. lin. $2\frac{1}{4}$; lat. lin. $1\frac{1}{3}$.)

^b *Aphodius fortunatus*, n. s. Piceus, nitens, fere glaber: caput et thorax supra atra, subtilissime punctata; hujus margines fulvi: proalæ fulvæ, subtilissime punctato-striatæ: palpi, antennæ, abdomen et tarsi rufo-picea. (Corp. long. lin. $2\frac{1}{2}$.)

30. *Galleria cereana*.—I could have wished to have sent you a little history of *Galleria cereana*, which most sadly annoys a relation of mine, who is an apiarian. He has burnt all fragments of comb where there were traces of them, searched out every hole and corner of his apiary, and apparently got rid of the *dirum tineæ* genus, as the auteur sans défaut calls them. But no such thing.

“ Duris ut ilex tonsa bipennibus
 Nigræ feraci frondis in Algido
 Per damna, per cædes ab ipso
 Ducit opes animumque ferro.
 Non Hydra—

But stop, I am getting into the style of Señor Tomas de la Fuente, or Padre Isla's friar, for which Corderius Secundus has so quizzed me.

Well then, to come back to the *tineæ*. This year he sent me a cigar box full of comb and larvæ. They spin, as you perhaps know, all the fragments of the comb into a mass impenetrable to the poor bees, who, being imprisoned, of course die in double quick time. The comb was soon almost entirely devoured, and replaced by the cocoons which the larvæ spun. From this mass I had about three hundred, if not more, moths. I distributed near two hundred specimens among entomologists, and have still many by me; but such lots came out that I got tired of setting them, so I gave them to my brother's nightingales.

EDWARD DOUBLEDAY.

31. *Medeterus loripes*.—The *Medeterus*, which you pronounce to be *loripes*, attracted my attention one fine day last spring, as I was walking in the woods here. It was flying in circles just above the water, in an old gravel pit, occasionally darting down to the surface of the water. On watching awhile I found that the object of its attack were some very small *Thysanura*, which, from their agility, it seemed to have much trouble in capturing. However it at last secured one, and whilst sucking this I caught it.

EDWARD DOUBLEDAY.

32. *Phytomyza flava*.—I received this insect from my relation Mr. L. Squire, as he has just commenced the study of

insects. He mentioned to me, amongst other matters on this subject, that the leaves of the *Scolopendrium vulgare*, near Falmouth, were very generally attacked by some subcutaneous larvæ, which he believed to be Dipterous. I wished him to inquire more into it, and some time after received the specimen I sent you, which was the only one he had succeeded in raising.

EDWARD DOUBLEDAY.

33. *Aphis Persicæ*.—M. Morren has presented a memoir on this insect to the Academie Royale des Sciences of Brussels. It was borne in a hurricane over many parts of Belgium, during the autumn of 1834. The emigration appeared to commence between Bruges and Gand, and from this place, as a centre, extended to the north-east and south. A single individual is able to produce 10,000 as early as the second generation. The female has an ovary of eight *ovi* or *fætigerens* sheaths, according to the season. These sheaths have each three or four apartments, where the young are gradually developed. When in the egg state they are seen in the terminating apartments. M. Morren believes that there is an individualization of organized matter in this and allied species. The saccharine matter is the nourishment of the young ones in their earliest stage of being, so that the insect may be called one of the *Mammalia*.

34. *Vanessa Antiopa*, &c.—*Antiopa* was seen by the Rev. F. Lockey, about two miles on the London side of Epping in September last. *Megachile Leachiella* has been taken this year in Heinault Forest, on the authority of Mr. Shuckard; *Sparasion frontale*, *Scelio rugosulus* and *Brachygaster minutus* in the New Forest, by the Rev. G. T. Rudd: also *Sapyga crassicornis* and *Hypophlæus castaneus*, near Nottingham, by Mr. R. Bakewell.

J. F. STEPHENS.

Camberwell, Nov. 30, 1835.

35. *Melolontha fullo*.—My friend John Ray has presented me with a fine female of this insect, which he took this year on the top of the cliff close by Margate, on the 26th of July.

Epping, Nov. 25, 1835.

EDWARD DOUBLEDAY.

36. *Sphinx Galii*.—I took a specimen of this insect in the Priory Gardens at Warwick, on the 29th of August of the

present year; it was hovering swiftly round some flowers in the hot house. When I returned to Warwick from town I found that another specimen had been taken by an entomological friend of mine, but not in the same gardens.

Hay, Dec. 8, 1835.

WM. ENOCK, JUN.

37. *Papilio Podalirius*.—I have heard that an authentic British specimen of this insect exists in a cabinet at Warwick, and that it has this year appeared in the New Forest.

E. N. D.

38. *Capture of Colias Hyale*.—On the 20th August, I took three specimens of *Colias hyale*, (males,) two much torn, the other in fine condition, in the same locality, near Mickleham, Surrey; and on the same day last year on which I captured a pair of these, and a single specimen of *Argynnis Lathonia*. I was down there twice before, viz. 4th and 16th, and once afterwards, without seeing a specimen.

WM. BENNETT.

48, Cannon-street,
9th of 12th month, 1835.

39. *Capture of Sphinx Colvolvuli, &c. at Leominster*.—A remarkably large specimen of *Sphinx convolvuli* was taken, about six weeks ago, on the palings of a pig-stye adjoining a farmhouse at Kimbolton. *Macroglossa stellatarum* appeared here about the third week in June, and continued for about a month: its appearance and disappearance does not seem to depend on the blossoming of any particular plant; it has never been observed here at any other time than as above named, although I recollect reading in the Magazine, that it is common near London all the year. *Catocala nupta* has been unusually abundant here this autumn. I never had seen but a single living specimen at Leominster previously to this year; but this year you could not go into the Midsummer Meadows without seeing them flying, even in the middle of the day, about the pollard willows: they were also frequent on the trunks and on palings in a state of repose. *Mormo maura* has appeared in equal abundance. This insect was also formerly rare. *Vanessa C. album* has been most abundant through out the autumn. A larva of *Acherontia atropos* has been found this year. A perfect insect was taken here three years ago.

Leominster, Nov. 30, 1835.

GEORGE NEWMAN, JUN.

THE
ENTOMOLOGICAL MAGAZINE.

APRIL, 1836.

ART. XXXVIII.—*Travels through North and South Carolina, Georgia, East and West Florida, &c.* By WILLIAM BARTRAM. Philadelphia: James and Johnson. 1791. London: Johnson, 1792.

THAT period in the life of a book at which it becomes secure from the critic's pen has not, we believe, been accurately defined: we think fifty years a good ripe age for a book of any kind; and, venerating age as we do, we should perhaps be inclined to deal leniently with any work that approached that period of its existence. We find also that it is not at all times expedient to criticise too freely those who are still in the field, and common honesty demands that we should not praise where no praise is due.

“ Si malus est liber
Nequeo laudare et poscere.”

From honest William Bartram, “ peace be with him!” we fear no revenge; of him we may speak as we please, and he will not answer us; but this will be no inducement for us to be severe. We may just remark, that his entomological nomenclature is by no means unexceptionable, but we must in fairness add, that he is generally careful to include it in parenthesis, as though himself aware of its possible incorrectness. It is as a lover of nature, as an observer and describer, that we admire William Bartram, and we shall attempt to extract the essence of those flowers of description which he has so liberally strewn throughout his work.

“ This world, as a glorious apartment of the boundless palace of the Sovereign Creator, is furnished with an infinite variety of animated scenes, inexpressibly beautiful and pleasing, equally free to the inspection and enjoyment of all his creatures ;” and William Bartram seems to have been one whose whole soul was wrapt in the excitement of continued “ inspection and enjoyment.” No hardships, nor labours, nor privations, could tame his ardour ; no danger could daunt his courage ; he wrapped himself in his blanket, and slept the peaceful sleep of infancy in the primeval forests of America, undisturbed by the incessant howling of the wolves and roaring of alligators.

“ The evening,” says Bartram, “ was temperately cool and calm. The crocodiles began to roar and to appear in uncommon numbers along the shores and in the river. I fixed my camp in an open plain near the utmost projection of the promontory, under the shelter of a large live oak, which stood on the highest part of the ground, and but a few yards from my boat. From this open high situation I had a free prospect of the river, which was a matter of no trivial consideration to me, having good reason to dread the subtle attacks of the alligators who were crowding about my harbour. Having collected a good quantity of wood, for the purpose of keeping up a light and smoke during the night, I began to think of preparing my supper, when, upon examining my stores, I found but a scanty provision ; I therefore determined, as the most expeditious way of supplying my necessities, to take my bob and try for some trout. About one hundred yards above my harbour began a cove or bay of the river, out of which opened a large lagoon. The mouth or entrance to it was narrow, but the waters soon after spread and formed a little lake, extending into the marshes ; its entrance, and shores within, I observed to be verged with floating lawns of *Pistia*, *Nymphæa*, and other aquatic plants, and these I knew to be excellent haunts for trout.

“ The verges and islets of the lagoon were elegantly embellished with flowering plants and shrubs. The laughing coots, with wings half spread, were tripping over the little coves, and hiding themselves in the tufts of long grass ; young broods of the painted summer teal skimming the still surface of the water, and following the watchful parent, unconscious of danger, were frequently surprised by the voracious trout.”

There! reader, is not that a pretty picture—what signifies it that it was written fifty years ago? What signifies it that now a rail-road, or a canal, may pass through the very spot, this picture of the lagoon is as fresh as on the day when it was painted; but hist! something disturbs the face of the still lagoon! an immense alligator rushes from the flags, which surround the margin, towards its centre. “His enormous body swells. His plaited tail is brandished on high above the lake. The waters descend like a cataract from his opening jaws. Clouds of smoke issue from his expanded nostrils. The earth trembles with the thunder of his roaring. From the opposite shore emerges his rival; they dart upon each other; the surface of the lake boils with the conflict; now they sink to the bottom folded in horrid wreaths; the water is discoloured and dark; again they rise, their jaws clapping together echo through the deep surrounding forest; again they sink, and the contest ends at the muddy bottom of the lake.” The vanquished then sneaks off, but the victor, exulting, returns to the surface. “The shores and forests resound his dreadful roar.”

It was amusing enough, no doubt, to our traveller to witness *this* combat, but he was in a short time engaged in one still more personally interesting. “I went on board, and penetrating the first line of those [alligators] which surrounded my harbour, they gave way; but, being pursued by several very large ones, I kept strictly on the watch, and paddled with all my might towards the entrance of the lagoon, hoping to be sheltered there from the multitude of my assailants, but ere I had half way reached the place I was attacked on all sides, several endeavouring to upset the canoe. My situation became precarious: two very large ones attacked me at the same instant, rushing up with their heads and part of their bodies above water, roaring terribly, and belching floods of water over me. They struck their jaws together so close to my ears as almost to stun me, and I expected every moment to be dragged out of the boat and instantly devoured, but I applied my club so effectually about me, although at random, that I was so successful as to beat them off a little.” As soon as our traveller had succeeded in thus gaining a temporary respite, he made for the shore as fast as possible, and gained it in safety. This, to a common man, would have been adventure enough, but Bartram was not satisfied without catching the

supper of fish on which he had set his mind. After a short time, paddled his boat again to the middle of the lagoon, caught a handsome dish of trout, and a second time returned to the shore. As he was preparing the fish for supper, he looked up and saw a gigantic alligator coming from the water, and preparing to spring at him; he instantly drew back, and the disappointed monster retreated, sweeping several of the captured fish into the water by the flourish of his tail.

But the grandest scene is yet to come: "How," says Bartram, "shall I express myself so as to convey an adequate idea of it to my readers, and at the same time avoid raising suspicions of my veracity? The river, in this place, from shore to shore, and perhaps nearly half a mile above and below me, appeared to be one solid bank of fish of various kinds, pushing through the narrow pass of St. Juan's into the little lake on their return down the river, and the alligators followed them in such incredible numbers, and so close together from shore to shore, that it would have been easy to have walked across on their heads had the animals been harmless. What expressions can sufficiently declare the shocking scene that for some minutes continued, whilst this mighty army of fish were forcing the pass? Thousands, I may say hundreds of thousands of them, were caught and swallowed by the devouring alligators. I saw an alligator take up several great fish at a time out of the water, and just squeeze them between his jaws, while their tails flapped about his ears and eyes ere he could swallow them. The horrid noise of their closing jaws, their plunging amid the broken banks of fish, and rising with their prey some feet upright above the water, the floods of blood and water rushing from their mouths, and the clouds of vapour issuing from their wide nostrils, were truly frightful."

We seriously recommend the *Floridas* to the attention of our valued friend, the author of the Letters of Delta; we particularly call his attention to "Crocodile Lick," as we presume the spot in question is now named. It is all very well for him to talk of the wonders of South America, but here we have a plain simple history by a man of strict veracity, an humble-minded Quaker, employed by the late Dr. Fothergill, of London, to collect facts in natural history in this unexplored region. Waterton the Wanderer has been disbelieved because he states a few particulars about a solitary cayman,

and Delta is in a fever to get a peep at some other solitary cayman, or, perchance, the ghost of the very cayman on which Waterton rode; let him go to "Crocodile Lick," cross rivers on a bridge of crocodiles, and then let him write Delta papers of what he has done, not of what he will do.

The range of our imagination, wide though it be, presents us with no picture half so interesting as the learned Delta, rigged in full entomological apparel, his wide white hat literally blazing with impaled butterflies—the gorgeous butterflies of the tropics—his right hand waving his net high above his head, his left ever and anon extended to preserve his balance, and his feet cautiously picking their way across the mighty streams of America coolly tripping, "with light fantastic toe," from head to head of the terrific alligators, while millions of these enraged and giant saurians half blinded him with their cloudy breath—half drowned him with deluges of water ejected from their maws—half deprived him of hearing by the incessant thunder of their roaring.

Let us pass from *Crustacea* to *Arachnoida*. Strictly speaking, or rather to make our review strictly entomological, we will suppose the crocodile a crustaceous animal, his shelly skin clearly evinces a relationship to the ————; but we are not now on system, we merely signify to our readers that we choose to call the crocodile crustaceous. Now we will go on with the spider.

"As I was gathering," says our author, "specimens of flowers from the shrubs, I was greatly surprised by the sudden appearance of a remarkably large spider on a leaf; at sight of me he boldly faced about, and raised himself up as if ready to spring upon me; his body was about the size of a pigeon's egg, of a buff colour, and, together with his legs, was covered with short silky hair; on the top of his abdomen was a round red spot encircled with black. After I had recovered from the surprise, and seeing that the wary hunter had retired under cover, I drew near again, and presently discovered that I had disturbed him on a predatory expedition against the insect tribes. I was therefore determined to watch his proceedings. I soon observed that the object of his wishes was a large fat humble bee, that was visiting the flowers and piercing their nectariferous tubes. The cunning intrepid hunter concealed his approaches with the circumspection and perseverance of a

Siminole when hunting a deer, advancing with slow steps, obliquely, and under cover of dense foliage, and behind the limbs, and when the bee was engaged in probing a flower he would leap nearer, and again instantly retire out of sight, under a leaf or behind a branch, at the same time keeping a sharp eye on me. When he had gotten within two feet of his prey, and the bee was intent on sipping the delicious nectar of a flower, with his back next the spider, he instantly sprang upon him, grasping him over the back and shoulders, and both disappeared. I expected the bee had carried off the spider, but I soon saw them, both together, suspended by a strong elastic thread, which the spider had fixed to the twig from which he leaped on the bee. The rapidity of the bee's wing, as he endeavoured to extricate himself, made them both together look like a moving vapour, until the bee became wearied with whirling; in a quarter of an hour he was completely exhausted by his struggles and the wounds of the butcher, became motionless, and expired in the arms of the devouring spider, who, ascending the rope with his game, retired to feast on it under cover of the leaves."

Now, if it please thee, gentle reader, we will exhibit a scene of peace; the roar of the alligator shall not be heard, the cruelty of the spider shall not be seen, but all shall be sunshine, flowers, and butterflies. "I continued along the beach about a quarter of a mile, and came to a forest of *Agave vivipara*, the scapes or flowering stems of which rose to the height of thirty feet, the tops regularly branched in the form of a pyramidal tree, the plants very near each other, and covering a space of several acres. When the seeds of this plant are ripe they vegetate, and grow on the branches until the scape dies, when the young plants fall to the ground, take root, and fix themselves in the sand: the plants grow to a prodigious size before the scape shoots up from the centre. Having contemplated this admirable grove, I proceeded towards the banks of the river, and though it was now late in December, the aromatic groves were in full bloom. The broad-leaved *Myrtus*, *Erythrina corallodendrum*, *Cactus cochinellifer*, *Cacalia suffruticosa*, and particularly *Rhizophora conjugata*, which stood close to and in the salt waters of the river, were covered with beautiful white sweet-scented flowers, which attracted to them two or three species of very beautiful butterflies, one of

which was black, the upper pair of wings very long and narrow, marked with transverse stripes of pale yellow, with some spots of a crimson colour near the body." This must be one of the *Heliconians*. "Another species, remarkable for splendour, was of a larger size; the wings were undulated and obtusely crenated round their ends, the nether pair terminating near the body in a narrow forked tail, the ground colour was light yellow, &c." This was, probably, *Papilio Ajax*. "But those which were most numerous were as white as snow, their wings large, their ends lightly crenated and ciliated with a cluster of little brilliant orbs of blue and crimson on the nether wings near the body. Their numbers were incredible; multitudinous as were the flowers, there was not a flower for each butterfly, and clouds of them continued hovering over the mellifluous groves."

That is a December view. Our reader will recollect we quoted, a few months back, Washington Irving's account of the progress which the honey bee was making westward; the same fact is proved by Bartram's statement. In conversation with a Dr. Grant, in company with whom he happened for a short time to travel, Bartram inquired how it was that, westward, among the Creek Indians, he had seen no bees? Dr. Grant replied that there were few or none west of the Isthmus of Florida, and but one hive in Mobile, which was lately brought from Europe, the English supposing there were none in the country, not finding any when they took possession after the Spanish and French. "I have," continues our traveller, "been assured by the traders, that there are no bees in West Florida, which, to me, seems extraordinary and almost incredible, since they are so numerous all along the eastern coast, from Nova Scotia to East Florida, even in the wild forests, as to be thought, by the generality of the inhabitants, aborigines of this continent." Our author also witnessed and enjoyed a bee hunt. "On our way," says he, "we discovered a bee-tree, which we cut down, and regaled ourselves with delicious honey, leaving one of our companions to protect the remainder until our return with a tub to collect it and carry it with us; and, in the evening, we all returned safe with our sweet booty to the trading-house." At the present time, the honey bee is abundant throughout the United States, both as a denizen of the forest and a dependant on man. Generally

speaking, the settler in the back-woods prefers the precarious but luscious supply afforded by those swarms which have deserted man, and taken up their abode in fissures of rocks or hollows of trees, to the more regular but less abundant supply from hives of his own.

Horse-biting flies seem, in the district through which our author travelled, to have been excessively numerous and annoying. We unhesitatingly pronounce these dreadful scourges to belong to the natural order *Tabanites*. A strange confusion appears to have existed on this subject, solely owing, in our opinion, to a very useless desire to make the terms used by Virgil, who was a poet and an observer of nature, but no entomologist, agree with those of Linnæus, who was an observer and an entomologist, but no poet. Our friend, Bracy Clark, and the learned author of the *Horæ Entomologicæ*, amused the entomological public with a warm and learned controversy on the subject. The matter is this—there are three distinct orders of flies, whose names and histories have been mingled and confused.

Tabanites, which suck the blood of horses and cattle.

Asilites, which prey solely on insects.

Æstrites, which feed not at all in the perfect state, but whose larvæ feed in the stomachs, under the skins, or in the frontal sinuses of horses and cattle.

Now, Virgil distinctly states that the same animal was called by the name of *Asilus* by the Romans, and *Æstrus* by the Greeks; thus, of course, making these terms no more than synonyms; but Linnæus, the scientific nomenclator, was no party to this. We beg pardon, we are so apt to wander—where were we? “These biting flies are of several species, and their numbers incredible. We travelled, almost from sun-rise to sun-set, amidst a flying host of these persecuting spirits, who formed a vast cloud around our caravan so thick as to obscure every distant object; but our van always bore the brunt of the conflict; the heads, necks, and shoulders of the leading horses were continually in a gore of blood; some of the flies were nearly as large as humble bees. They are armed with a strong, sharp beak or proboscis, shaped like a lancet, and sheathed in thin flexible valves; with this beak they instantly pierce the veins of the creatures, making a large orifice, from whence the blood springs in large drops, rolling down as tears, causing a

fierce pain, or aching, for a considerable time after the wound is made." This must be *Tabanus*. "There are three or four species of less size, but equally vexatious, as they are vastly more numerous, active, and sanguinary, particularly one about half the size of the first-mentioned, of a dusky colour, with a green head." Unquestionably *Hæmatopota*. "Another, yet somewhat less, of a splendid green, with the head of a gold colour; the sting of this is intolerable, no less acute than a prick from a red-hot needle, or a spark of fire on the skin: these are called burning flies. Besides the preceding tormentors, there are three or four species of smaller biting flies; one of a dusky grey colour, another much of the same colour, with spotted wings and a green head, and another very small and perfectly black; this last species lies in ambush in shrubby thickets and cane brakes, near the water. Whenever we approached the cool shades, near creeks, impatient for repose and relief, almost sinking from persecutions from these evil spirits, who continually followed and surrounded us over the burning ridges and plains, and entertained hopes of peace and quietness under the cool and humid groves, then we were surprised by clouds of these last-named persecuting demons, of mosquitoes, and of gnats."

One of the finest passages in this delightful book is about *Ephemera*, but it is too long to quote. The author traces their history from the egg placed floating on the surface of the water, through its long approach to maturity, until—the creature of a day—it bursts from its confinement, and makes the air its home. "Solemnly and slowly move onwards to the river shore, the rustling clouds of the *Ephemera*. How awful the procession! innumerable millions of winged beings, voluntarily verging on to destruction, to the brink of the grave, where they behold bands of their enemies with wide open jaws ready to receive them. But, as if insensible of the danger, gay and tranquil, each meets in the still air his beloved mate, inimitably decked in new nuptial robes. What eye can trace them in their varied wanton amorous chases, bounding and fluttering on the odoriferous air! With what peace, love, and joy, do they end the last moments of their existence!"

The description of the *Cactus opuntia*, and its inhabitant the *Coccus cacti*, the valuable *cochineal* of commerce, is worth transcribing. "The *Cactus opuntia* is very tall, erect,

and large, and strong enough to bear the weight of a man ; some are seven or eight feet high : the whole plant seems to be formed of great oval, compressed leaves, or articulations ; those near the earth continually increase, magnify, and indurate, as the tree advances in years, and at length lose the bright green colour and glossy surface which they promised in their youth, acquiring a ligneous quality, with a whitish scabrous cortex. Every part of the plant is nearly destitute of aculei, or those fascicles of barbs, which are in such plenty on the common dwarf Indian fig. The cochineal insects were feeding on the leaves. The female of this insect is very large and fleshy, covered with a fine white silk or cottony web, which always feels moist or dewy, and seems designed by nature to protect them from the violent heat of the sun. The males are very small in comparison to the females, and are very few in number ; each has two oblong pellucid wings. The large polypetalous flowers of the *Cactus* are produced on the edges of the last year's leaves, are of a splendid yellow colour, and are succeeded by very large pear-shaped fruit, of a dark livid purple when ripe : its pulp is charged with a juice of a fine transparent crimson colour, and has a cool pleasant taste, somewhat like that of a pomegranate."

Within the last fifty years, cultivation has widely altered the face of the country ; throughout the United States the hand of man has been busy, the " eternal " forests have yielded, throughout extensive tracts, to the flame and axe ; but still North America is a country of great and increasing interest to the naturalist. The botanist may still delight his eye with surveying forests of *Magnolia*, acres of *Yucca gloriosa*, and thousands of acres of *Rhododendra*, *Azaliæ*, and *Kalmiæ*, presenting an uninterrupted sheet of bloom far as the eye can reach, in every direction. The giant alligator still abounds in that " father of waters," the Mississippi, and may be frequently seen basking on its surface like a floating log, although a thousand steam-boats are working on its waves. It was but the other day one of these huge reptiles entered the log-cabin of a " squatter," devoured five children and their mother, while the father hardly escaped with life through the window of the cabin.

It is to the entomologist that the Southern States of America offer the greatest attraction ; from one peep at Abbott's

“Insects of Georgia,” he may be sure of being rewarded. Throughout these sunny regions there is still sufficient forest to preserve every species in almost its pristine abundance, while the dangers and the labours of the naturalist are comparatively trifling. The brilliant *Pyrophori* seem to illuminate the night almost throughout the continent; from New Orleans to Quebec, there is scarcely a locality in which we have not evidence of their presence, but it is in the Southern State of North America that they are most numerous and brilliant. In the gem-like *Buprestites*, and the more brilliant butterflies, perhaps these states can scarcely rival the Brazils; yet so immense has been the importation from the latter country, that the Floridas and Carolinas promise infinitely more of novelty, and, in every respect, appear to us to offer greater inducements to the explorer.

The climate, as a previous quotation has shown, is quite tropical. Through the whole tract of country, stretching coastward, to New Orleans, the orange, wherever cultivated, bears abundantly, and is loaded, even at mid-winter, with ripe and golden fruit, and this season seems better adapted to the European constitution than the more intense heats of summer, and promises an almost equally abundant harvest to the enterprising entomologist.

ART. XXXIX.—*Appendix to Captain Sir John Ross's Narrative of his Second Voyage, &c.* London: Webster. 1835.

THE universal interest which the achievements of Captain Ross have excited, is sufficient apology for an introduction of his name into a Magazine of this kind; but, in the volume before us, there is so complete and excellent an account of Boothian zoology that we conceive it would be nothing less than a dereliction of duty were we to pass it by unnoticed. Captain J. Clark Ross, the nephew and companion of the dauntless adventurer under whose command the expedition was undertaken, being a competent naturalist, has drawn up that portion of the volume which relates to zoology; and of this account we have attempted to give a mere outline. In the list, it will be observed, there

are nineteen species of Mammalia, and of these twelve are terrestrial and seven aquatic. There are forty-one birds, of which nineteen are terrestrial, and twenty-two aquatic. The number of fishes is fifteen. There is no mention of Batrachian or Saurian reptile. There are thirty-six insects; of these, one is a beetle, one earwig, four ichneumons, one ant, three bees, one stone-fly, six butterflies, eight moths, two plant bugs, four gnats, and five flies. The Crustacea are sixteen in number, and the Mollusca five. In the list it will be found there is a total absence of quadrumanous, feline, insectivorous, and edentate mammalia, and of xygodactyle birds; among the insects there is only one example of *Coleoptera*, one of *Orthoptera*, two of *Hemiptera*, and one of *Neuroptera*. The only new forms that occur are among the *Crustacea*; in these we have two genera, which we have not previously met with. Both of the new names given have been previously employed in entomology, so that they must fall, and others be instituted in their stead. The portion of the work which relates to entomology is illustrated by three highly finished and accurate copper-plate engravings, one of which, containing fifteen figures of insects, is elegantly coloured. There are, moreover, numerous portraits of the natives of Boothia, drawn on stone, and accurately coloured.

*Catalogue of Animals described by Captain J. C. Ross as
Natives of Boothia.*

MAMMALIOUS ANIMALS.

Ursus maritimus,	Polar bear
Gulo luscus,	wolverine
Mustela Erminea,	ermine
Canis lupus occiden- } talis,	American wolf
lagopus,	Arctic fox
Far. β. fuliginosus	
Arvicola Hudsonia,	Hudson's Bay Lemming
trimucronata,	Back's Lemming
Arctomys Parryi,	Parry's marmot
Lepus glacialis,	Polar hare
Cervus tarandus,	reindeer
Ovibos moschatus,	musk ox
Phoca fœtida,	rough seal
Greenlandica,	harp seal
Barbata,	great seal
Trichechns rosmarus,	Walrus
Delphinapterus beluga,	white whale
Monodon Monoceros,	norwhal
Balæna mysticetus,	black whale

BIRDS.

Falco Islandicus,	jerfalcon
Strix Nyctea,	snowy owl
Alauda cornuta,	shore lark
Sylvia Ananthe,	wheat ear

BIRDS continued.

Emberiza nivalis,	snow bunting
Plectrophanes lapponica,	Lapland finch
Corvus corax,	raven
Tetrao lagopus mutus,	Ptarmigan
saliceti,	willow grouse
rupestris,	rock grouse
Columba migratoria,	passenger pigeon
Charadrius semipal- } matus,	American ring plover
pluvialis,	golden plover
Vanellus melanogaster,	grey lapwing
Streptilas interpres,	turnstone
Grus Canadensis,	brown crane
Tringa maritima,	purple sandpiper
alpina,	American dunlin
Phalaropus fulicarius,	flat-billed phalarope
Sterna Arctica,	Arctic tern
Larus glaucus,	glaucous gull
argentatus,	{ black winged silvery gull
leucopterus,	{ white winged silvery gull
eburneus,	ivory gull
tridactylus,	kittiwake
Rossii,	cuneate tailed gull
Sabini,	fork tailed gull

BIRDS *continued.*

Lestris pomarinus,	pomarine jager
parasiticus,	Arctic jager
Procellaria glacialis,	fulmar petrel
Somateria spectabilis,	king duck
mollissima,	eagle duck
Heralda glacialis,	long tailed duck
Anser bernicla,	brent goose
Hutchinsii,	Lesser Canada goose
Colymbus glacialis,	great northern diver
Arcticus,	blackthroated diver
septentrionalis,	redthroated diver
Uria Brunnichii,	Brunnich's guillemot
Grylle,	black guillemot
Alle,	little guillemot

FISHES.

Cyclopterus minutus	
Liparis communis	
Ophidium Parrii	
viride	
Gadus morrhua,	common cod fish
callarias	
Merlangus polaris	
Blennius polaris	
Cottus quadricornis	
polaris	
Plenronectes hippo-	} halibut
glossus,	
Salmo Rossii,	Ross's Arctic salmon
alipes,	long finned char
nitidus,	angmalook
Hoodii,	masamacush

INSECTS.

Colymbetes mæstus,	[Dytiscites]
Forficula auricularia,	[common earwig]
Ichneumon laræ,	[Ichneumonites]
Ephialtes,	[ditto]
Campoplex arcticus,	[ditto]
Microgaster unicolor,	[Braconites]
Myrmica rubra,	[Formicites]
Bombus Kirbiellus,	[Apites]
polaris,	[ditto]
Arcticus,	[ditto]
Tinodes hirtipes,	[Phryganites]
Colias Boothii,	[Papilionites]
Chione,	[ditto]

INSECTS *continued.*

Hipparchia Rossii	[Papilionites]
subhyalina,	[ditto]
Melitæa Tarquinius,	[ditto]
Polyommatus Frank-	} [ditto]
linii,	
Laria Rossii,	[Arctiætes]
Eyrepria hyperborea,	[ditto]
Hadena Richardsoni,	[Noctuites]
Psycophora Sabini,	[Geometrites]
Oporabia punctipes	
Orthotæmia Bentleyana,	[Tortricites]
septentrionona,	[ditto]
Argyrotosa Parryana,	[ditto]
Acanthia stellata,	[Cincicites]
Pedeticus variegatus,	[ditto]
Culex capsus,	[Culicites]
Chironomus polaris,	[ditto]
borealis,	[ditto]
Tipula Arctica,	[Tipulites]
Helophilus bilineatus,	[Helophilites]
Tachina hirta,	[Muscites]
Anthomyia dubia,	[ditto]
Scatophaga apicalis,	[Scatophagites]
fucorum,	[ditto]

CRUSTACEOUS ANIMALS.

Crangon Boreas,	[Polar shrimp]
Sabinea septemcarinata	
Hypolyte aculeata	
Sowerbii	
borealis	
polaris	
Mysis flexuosus	
Themisto Gaudichaudii	
Gammarus nugax	
ampulla	
boreus	
Joricatus	
Sabini	
Amphithoë Edwardsii	
Acanthonotus cristatus	
Acanthosoma hystrix	

MOLLUSCOUS ANIMALS.

Rossia palpebrosa
Clio borealis
Limacina Arctica
Bothuia reniformis
Cystingia Griflinii

Polar Bear.—Our author mentions that, during their stay at Fury Beach, many of these animals came about them, which they killed. Some, tempted by the fine appearance of the meat, made a hearty meal of the first that was shot. All who partook complained of violent headache, which, with some, continued two or three days, and was followed by the skin peeling off the face, hands, and arms.

Wolverine.—At Victoria Harbour, two or three months before the ship was abandoned, they were surprised by a visit from one of these animals; it climbed the snow wall and came boldly on deck, where the crew were walking for exercise. He seized on a canister with some meat in it, and feasted so

ravenously, that he allowed our author to slip a noose over his head, by which he was secured.

Wolf.—They are extremely troublesome to the Esquimaux. A single wolf will go amongst any number of Esquimaux dogs, and carry off one without any resistance on the part of the rest. These dogs have such an extreme dread of the wolf that they tremble and howl when aware of its approach.

Arctic Fox.—In July, 1831, one of their burrows was found on the margin of a lake: it had several passages opening into a common cell, beyond which was an inner cell, containing six young ones. In the outer cell and passages were great numbers of lemming, ermine, and the bones of hares, fish, and ducks. Four of the cubs were kept alive, and became very tame.

Hudson's Bay Lemming.—It has been found in the highest latitude yet reached: it congregates in the summer by the sea shores, and breeds among the loose stones: in the winter it constructs a nest of dry grass on the surface of the earth, beneath the snow, and makes numerous passages from its nest, by which it roams in search of food, seldom appearing above the snow; if it happens to venture out, it burrows in the snow with such rapidity on being disturbed, that it is seldom taken. Our author made a singular experiment on this animal. Having tamed one, and kept it in the cabin, he found it did not assume the usual coat of white, almost universally worn by the Arctic quadrupeds in winter; he therefore placed it on deck, in a temperature of thirty degrees below zero; in a single day the cheeks and a patch on each shoulder had become perfectly white. The following day the white had extended: the four following days it still continued increasing in white, and on the seventh day the animal was perfectly white, except a transverse mark on the shoulders, which was prolonged some way down the back, in the form of a saddle. On examining the fur, the white hairs were the longest, and were white at the tips only: on clipping it with scissors, it was as brown as before the change.

Polar Hare.—This animal is abundant in the polar regions, and appears to seek no shelter from the inclemency of the climate. It produces from four to eight young at a birth. If caught young, it is easily tamed: one taken in June became tame enough to eat from the hand in a few days. It preferred

to share the peas-soup, plum-pudding, bread, sugar, rice, and cheese, to the grass and herbs which had been prepared for it. It would not bear being caressed, but was fond of company; would sit for hours and listen to conversation, and retire to his cabin when it was ended.

Musk Ox.—The dung of the musk ox is considered a delicacy by the natives!

Rough Seal.—This is a most valuable animal to the Esquimaux, and hunting it is one of his chief occupations, when all other animals have migrated southward to avoid the extreme cold. The Esquimaux thus traverses, with his dogs, the extensive floes of level ice until they scent the breathing holes of these seals. As soon as a hole is found, the Esquimaux builds a snow wall, to break the excessive keenness of the breeze; he then waits in patience, with unlifted spear, till the seal rises to breathe, and smites him with unerring aim.

Fulmar Petrel.—This bird follows the whale-ships, availing itself of the labours of the fishermen, by feeding on the carcases of the whale, when stripped of their blubber. In return it is exceedingly useful to the whalers, by guiding them to the places where whales are most numerous, and crowding to the spots where they first appear on the surface of the water.

Ross's Arctic Salmon.—This and the three following species of salmon, are supposed by Dr. Richardson to be entirely new, and will be figured in the forthcoming part of his "Fauna Boreali-Americana." The length of this species is 34 inches; of *S. alipes*, 24 inches; of *S. nitidus*, 20 inches; and of *S. Hoodii*, 21 inches.

Ichneumon Lariæ.—This beautiful ichneumon is figured of a bright red colour; it was bred early in July, from the pupa of *Laria Rossii*: a second specimen was taken on the 8th of July.

Colias Chione.—A very remarkable looking butterfly, partaking very considerably of the appearance and colouring of the *Polyommata*. It appears in the middle of July, and frequents the flowers of *Oxytropis campestris*, and *Arctica*.

Melitæa Tarquinius.—Of this butterfly our author was fortunate enough to find the larva. The following is his description: it measured exactly an inch in length, by 0.22 of an inch in breadth; it was composed of thirteen segments; the first and last segments were furnished with two, the second and

twelfth with four, and the remainder with six spines, dispersed in rows and equidistant on each side the back. The colour was dark brown, with a line of white spots along each side. A caterpillar, found under a stone, in the middle of March, perfectly hard frozen, showed symptoms of life in half an hour after being brought into the cabin, and in less than an hour was walking about the table.

Laria Rossii.—The caterpillars of this moth were the subject of the following experiment. Thirty of them were put in a box, and exposed to the winter temperature for three months; on bringing them into the cabin, every one of them returned to life and walked about; they were again exposed to an atmosphere of forty degrees below zero, and instantly became refrozen: after a week, they were brought again into the cabin, and twenty-three returned to life: these were again exposed, refrozen, and, after being solid for another week, eleven of them revived on being brought into the cabin; a fourth time they were frozen, and two only recovered; of these two one produced a moth, the other six flies.

Culex capsius.—It appeared about the 10th of July, 15th became extremely numerous, and so troublesome as to prevent the necessary duties of the ship. They were in perfect clouds over the marshes, and these larvæ constitute the principal food of the trout in the lakes.

Acanthonotus cristatus.—This is a new and most singular genus of *Crustacea Amphipoda*. It is nearly allied to *Talitrus* of Latreille, and was first discovered during Parry's second voyage, near the island of Igloodik. In the course of the present voyage a few specimens were taken at Felix Harbour. We subjoin the generic character. Antennæ of nearly equal length, four-jointed; the terminal joint consisting of very many rings; the third joint of the superior antennæ short; the four anterior feet monodactyle, filiform, having in the first four the terminal joint serrated; rostrum produced, acute, incurved.

Acanthosoma hystrix.—This is a still more singular animal than the preceding, and is very distinct from any thing we have seen. On each of the nine segments following the head are seven spines, forming seven longitudinal rows; there are two spines on the head, one on each side of the rostrum; on the tenth segment are five spines, and on the following one three only.

Rossia palpebrosa.—A new molluscous animal, described and figured by Mr. Owen in a manner that leaves nothing to be desired. The description has afforded us great pleasure; it is too long to extract, and too concise to abridge; we therefore entreat such of our readers as may possess a taste for anatomical detail to study the masterly production.

Limarina Arctica.—“A very abundant species, peopling as it were the Polar seas, and constituting the chief source of subsistence to the Greenland whale. It is indeed most truly wonderful that so small and apparently insignificant an animal can be made to fulfil the most important purposes: from the smaller species of crustacea to the enormous whale all derive their food directly or indirectly from this little creature. It is, in fact to the inhabitants of the Arctic ocean what the vegetable kingdom is to the inhabitants of the land—the foundation of animal existence.”

We have no space for further notice of this interesting work; we can only by this slight sketch hold out the example of these accomplished and enterprising voyagers to those of our fellow-countrymen, who have fortune and leisure at their command.

E. N. D.

ART. XL.—*On the Husk, or Hoose in Cattle.* By GEORGE COLGATE.

(Addressed to the Editor of the Greenwich Gazette.)

SIR,—As you considered a former letter on the subject of this most extraordinary disease of sufficient importance for insertion, and as several other papers copied it into their columns, perhaps some further particulars attending it, which have come under my observation, may not be uninteresting to some of your readers, and may tend to afford or elicit from others additional information as to the cause and cure.

In that letter I stated that on examination of the weaning calves which had died, I found the disease to arise from worms in the windpipe and lungs; that it prevailed to a considerable

extent in the neighbourhood; that it appeared but little understood, and very difficult to cure; that having found lime would destroy the worms when taken out, I had in addition to several other remedies caused them to inhale the dust of fresh slaked lime, with (as I considered) a beneficial effect.

I have this autumn had another attack of the same disease among my cattle. It made its appearance about the same time as last year, but did not prove so fatal in its effects. The symptoms were precisely similar, being cough, with frothy discharge at the mouth, short breathing, weeping of the eyes, hanging of the head and ears, and continual inclination to rub the throat, either on the ground or over a rail or fence.

About a dozen of my cows and heifers have had it this year; my weaned calves were slightly affected, but all have recovered. The only remedies I applied this year were lime, by inhalation, and spirits of turpentine diluted and poured into the nostrils every other morning; but although I have taken considerable pains to ascertain the comparative merits of several remedies, particularly in the previous year, I am unable to speak confidently as to the effects of any of them—all I know is, that in 1834 fourteen died of the disease, and several others were so weakened and stunted from its effects, as to be worth only about half of what they would otherwise have been; and that in 1835, with similar treatment, all have recovered; and not only so, but when the disease goes off, those to which no remedy has been applied appear to recover as well as the others.

It may be worthy of remark, that the season in 1834 and 1835 were, in this part of the country, similar; both being dry summers, and moist growing autumns. The disease in both years came on about August, and went off in November. At one time I thought it contagious, but from all I have been able to observe myself, and learn from others, I am of opinion that it is epidemic, but not infectious—that the cause is in the state of the atmosphere, as with the cholera* and other epidemic diseases, and probably taken by inhalation.

Out of the fourteen which died in 1834, two or three which had been as bad as any, but had rather stronger constitutions, remained in a dwindling state for some weeks after the disease

* Dr. Jenkins, in his treatise on the cholera, remarks, that it rages most in seasons when the progress of vegetation is most rapid.

had gone off from the others, and on examination, when they died, the worms appeared to have either died, or to have left the lungs, but left them too much diseased and ulcerated for recovery; the head and throat of these were considerably swollen, similar to what is often in a sheep in the last stage of the rot.

At the time the disease was at its height in 1834, Mr. Brown, surgeon, of Lewisham, who happened then to be attending my family, took considerable interest in the progress of the disorder, and examined the lungs and windpipe of one that died. He found a few straggling worms in the upper part of the windpipe, enveloped in frothy matter; these appeared to have either crawled or to have been coughed up. At the lower part of the windpipe, and throughout the main air vessels of the lungs, were clusters of worms knit up together, sufficient in quantity to fill a common sized tea-spoon. The inner membrane, or lining, at the lower part of the windpipe was eaten away, and considerable appearance of inflammation in that part of the lobes of the lungs were partially ulcerated. To the naked eye the worms appeared to be a sort of ascarides, about as thick as common sewing thread, and from an inch to an inch and a half in length. On examining them with a microscope, with a strong light underneath, they appeared as large as a common eel, sufficiently transparent to observe the circulation of blood in their veins, and in shape pretty much like a leach. When first taken out they appear rather dormant, but warmth seemed to revive them. The animal from which they had been taken had been dead some five or six hours.

Mr. Brown appeared to doubt whether any remedies could be applied sufficiently strong to destroy the worms without danger of killing the animal, but recommended as an experiment, giving twenty grains of calomel, with a little scammony, and to make them inhale the gas made from muriatic acid, black oxide of manganese and vitriol, similar to that used in fumigating apartments to prevent infection in fevers, scarlatina, and other contagious diseases. These remedies I tried, but without any evident effect.

In my former letter I mentioned several remedies which had been recommended by veterinary authors and others; I will now enumerate some others which I have since met with—not so much from the proofs I have had of their efficacy, as for the

purpose of affording to the better judgment of others who may have their cattle affected with the disease, an opportunity of selecting such as they think proper.

Mr. Clater, of Retford, in his "Every Man his own Cattle Doctor," says, "the hoose or cough in cows and young cattle proceeds from taking cold, either after calving, or from being kept in a warm hovel, and afterwards exposed to the inclemency of the weather. The symptoms are, shortness of breath, continual motion to cough or hoose, difficulty of breathing, which seems to press hard upon the diaphragm and abdominal muscles;" and recommends the following drink:—Balsam of sulphur, two ounces; Barbadoes tar, one ounce; two eggs; ginger, aniseed, cummin, elecampane root, grains of paradise and liquorice root, each one ounce in powder; salt of tartar, half an ounce; honey, four ounces,—given in ale or gruel, with a glass of brandy.

Let this drink be given every other or third morning, for three or four times. If it be at the commencement of the disease one or two drinks are generally sufficient. When this disease is of long standing, it is seldom removed without first giving a purging drink of one pound of Epsom salts, two ounces of ginger, and a quarter of a pound of treacle.

The same author, speaking of the "hoose in calves," says—"This disease most commonly attacks young calves the first year, while at grass in the summer. In some dry summers it has carried off great numbers. Upon examination after death the author has frequently caused the gullets to be laid open, and found a bunch of worms netted or matted together. These by their constant tickling motion cause the young animal to be in a constant state of hoosing or coughing, by which the powers of digestion are so much injured as to render the chewing of the cud impracticable, and if proper measures are not applied, they languish and pine away like a consumptive patient. The following drink will be found effective in destroying these kind of vermin:—Wormwood and savin, each, two ounces; Indian pink, half an ounce: cut and bruise them small, and put them into a pitcher with a quart of boiling water; cover them down and let stand till morning; strain them through a cloth, and add ginger in powder, half an ounce; aniseed, fresh powdered, two ounces; linseed oil, two table-spoonfuls; mix, and give it warm.

The calf must fast two hours before and two after the

drink. Repeat it every other or every third morning. This is a proper dose for a calf six or eight months old, and may be varied a little according to age and size, and continued for three weeks; then leave off a week and repeat it again, if the calf still remain unwell.

Worms in horned cattle are not very common except in the above cases. In many instances where calves have been so bad of this disease as to baffle the power of other medicines, it has instantly given way on their taking one table-spoonful of spirit of turpentine, without being mixed with any thing. It may be repeated every third morning for three times.

Now, by Mr. Clater's description of "opening the gullet," and the "powers of digestion being so much injured as to render the chewing of the cud impracticable, it appears to me that he found the worms in the ousing, or swallow, or passage to the stomach, and not to the windpipe or lungs—and the remedies, such as wormwood, savin, &c. are such as are generally used for destroying worms in the stomach and intestines; whereas, on examination of those that died of mine, and which was done very carefully in almost every case, the stomach itself, and the passage leading thereto, were perfectly healthy and free from any kind of worms, and their appetites and digestion continued good as long as they had strength to stand up to eat.

In a work of considerable note and talent, entitled "The Complete Grazier," this disease is described as follows:—"Cough—where calves are exposed at too early an age to all the vicissitudes of the weather, before they acquire sufficient strength to undergo the changes of this climate, they are liable to take frequent colds, the consequence of which is, a cough, that often proves fatal if neglected. For curing this malady it has been recommended to pour half a table-spoonful of spirit of turpentine into the calf's nostrils. The nose should be smeared with tar, and the animal kept within doors for a few hours, repeating this treatment as often as the cough becomes troublesome."

This work says nothing about worms, but treats of the disease merely as a common cold. Inhaling the fumes of burnt tar is also recommended.

Asafœtida is also strongly recommended. If in the gum, a quarter of an ounce dissolved in hot water, and given fasting,

repeated every other morning—or, which is by some thought preferable, equal proportions of asafoetida in solution, vinegar and aloes, poured into the nostrils.

The former of the two I tried pretty extensively without any apparent effect; the latter mode is said to be quite effectual, but it was only lately that I was told of it.

Mr. Green, of Westerham, had recourse to his old remedy—the juice of walnut leaves, in 1834, and found them again effectual.

If I have not already trespassed too much on your space, and on the patience of your readers, I will conclude by giving a brief account of an experimental operation performed by Mr. W. Morey, of Peckham, with complete success, and on whose skill in the performance I consider it reflects great credit. The case was this: a cow became choked, as it is termed, by part of a Swede turnip sticking in the throat; the common remedies (and which no cowkeeper should be without), choak-rope and probang, which are similar in effect, were both used, but to no purpose, as the obstruction was of such a shape that neither would remove it. The cow became hoven or blown, as is usually the case, by the constant efforts to swallow, and stabbing the side was had recourse to, which although rather formidable to appearance, is attended with little danger or inconvenience, and from neglect of which many an animal is lost, and which gave time for the operation, which was, to cut the throat open and take out the obstruction.

The outer aperture was sown up, and the cow kept upon gruel for a few days, after which she was turned out to grass. The only inconvenience which occurred was, that a portion of the food oozed out of the incision in the gullet, which was removed now and then by unsewing the throat. This was done two or three times, by which time it grew and closed up; and this inconvenience might not have occurred if the gruel diet had been longer continued. This occurred about last March, and I have the cow now perfectly sound.

I am, Sir, yours respectfully,

Lewisham, Nov. 21, 1835.

GEORGE COLGATE.

ART. XLI.—*An Epitome of the British Genera, in the Order Thysanoptera, with Indications of a few of the Species.* By A. H. HALIDAY, M. A.

ORDO.—THYSANOPTERA.

Metamorphosis semicompleta—*Alæ quatuor subæquales, haud plicatæ nec reticulatæ; longè ciliatæ; anticæ firmiores.*—*Os, haustellum breve, deflexum, carnosum, siphona bisetum includens, palpisque 4 instructum.*—*Tarsi apice vesiculosi, exungues.*

Gen. Thrips. . *Linncæus. De Geer. Geoffr. Fabr. &c.*
 Physapus . *De Geer. Act. Hohn.*
 Ordo Thripsites *Newman.*

Body elongate depressed, with the segments all inosculating by a broad surface. Head flat above, the face inclined backwards, the mouth descending under the propectus. The parts of the mouth are united to form a short conic sucker, more fleshy than horny, and not retractile. The *labium*, which composes the posterior half, has the three usual segments distinct, the *stipes* (*mentum*) being the longest, the *ligulæ* shortest; the *palpi* are inserted in a narrow membranous space between these last. The *maxillæ* are flat, triangular, without division or articulation, their base coalescing with the scape of the labium, so that they have no free motion. A little beyond the middle and near the anterior edge are seated the palpi, which are longer than the labial pair. The maxillæ are applied to the edges of the labium, so that they almost meet at the point and enclose in front a triangular space occupied by the clypeus and labrum. The *clypeus* is transverse, but not symmetrical; being longer on the left side, its anterior line descending obliquely in that direction. The *labrum* seems to be wedge-shaped or triangular; (but I have scarcely yet separated it satisfactorily.) The *mandibles* are setaceous, with a bulbous base appearing close to the edge of the maxillæ, under which they dip immediately, becoming internal, and by their junction towards the tip forming a two-valved syphon. The compound eyes are lateral and separate. The antennæ longer than the head, of eight or nine joints, but sometimes seeming to have only five or six; filiform or capilla-

ceous, inserted on the advanced margin of the front, between the eyes. Simple eyes, usually three, placed in a triangle between the eyes, before the antennæ. The prothorax is a distinct, rather ample segment, with free motion; the propectus, deeply notched to admit the mouth. The pterothorax is composed of nearly equal segments, or the anterior smaller. The abdomen of ten segments, the 1st of which (*metapodeon*,—Newman,) is concealed below by the postpectus. Wings, usually four; linear, narrow, not folded nor reticulate; the nerves and margin fringed with long hairs, which diverging in flight, compensate for the smallness of the membrane. The upper pair are of stronger consistence, sometimes true elytra. The legs are short, each pair distant, the middle most, the hind pair least so. The feet two-jointed, with a vesicular tip, without claws. The larva resembles the perfect insect, but has a softer body, with the mesothorax and metathorax distinct: the mouth is almost alike, the antennæ and legs shorter; there are no simple eyes, and the compound are replaced by conglomerate eyes. The pupa resembles the perfect insect, but the articulations of the limbs are obscured by a film, and the wings enclosed in short fixed sheaths. The antennæ are turned back on the head, and the insect, though it moves about, is much more sluggish than in the other states.

In the first family the females are oviparous. I have neglected to observe whether it be the case in the others; but the structure of the borer leaves little doubt on this point. They feed on vegetable juices, and are often extremely injurious from their multitudes. It is probable that many of them have several broods in the year; indeed Passerini expressly asserts it. Others appear in the perfect state only for a short time, during the flowering season of a particular plant.

The order *Thysanoptera* seems sufficiently distinguished from *Hemiptera* by the distinct palpi and the broad *external* maxillæ; from *Orthoptera*, by the internal capillary mandibles, and the maxillæ, which are almost fixed, and have not the *galea*. The name proposed is taken from the plume-like fringes of the wings. From the way in which the alary segments are joined, there appears to be but one complete system of muscles for both pair of wings.

Synoptic View of the Families and Genera.

- A. No borer in the female Stirps et Fam. I. TUBULIFERA.
 Gen. I. PHLÆOTHRIPS.
 AA. A 4-valved borer in the female Stirps II. TEREBRANTIA.
 B. Borer curved downwards Fam. II. STENELYTRA.
 C. Body reticulate Gen. II. HELIOTHRIPS.
 CC. Body smooth
 D. Abdomen tomentose Gen. III. SERICOTHRIPS.
 DD. Body glabrous Gen. IV. THRIPS.
 BB. Borer recurved Fam. III. COLEOPTRATA.
 C. Nine distinct joints in the antennæ . . . Gen. V. MELANTHRIPS.
 CC. Four last joints of antennæ minute and compact. Gen. VI. ÆOLOTHRIPS.

Stirps et Fam.—TUBULIFERA.

Antennæ 8-articulatæ: palpi maxillares biarticulati, articulo 1^{mo}. perbrevis: alæ arenicæ membranacæ, cruciatis—incumbentes: terebra feminæ nulla: segmentum ultimum in mare et femina attenuatum, tubulosum.—Ambulant lentè.

GEN. I.—PHLÆOTHRIPS.

Thrips spp. *De Geer. Fabr. Geoffr.*

Sect. AA. *Ocellis nullis nec alis,*

Sp. 1. *Phl. pedicularia.*

Chestnut-brown, the end of the abdomen ferruginous; the first three joints of the antennæ and the legs light ochre yellow, the thighs darker.

Sect. AA. *Ocellis 3, alis completis aut abbreviatis.*

Subs. B. *Capitis lateribus parallelis.*

Sp. 2. *Phl. aculeata. Fem. Nigra, antennis fere totis, tibiis anticis tarsisque albidis; femoribus anticis subæqualibus; corporis setis fuscis; elytris limpidis.*

Thrips aculeata. *Fabr. Syst. Rhyn. 312. No. 1.*

Distinguished from the rest by its long head and antennæ, slender fore thighs, and the dusky colour of the long hairs.

Varies (immature?) chestnut brown, with pale antennæ, shanks, and feet.

Sp. 3. *Phl. Ulmi. Piceo-nigra, antennarum articulo 3^{tio}. toto sequentibus basi, flavo-pallidis; tibiis basi apiceque, anticis totis tarsisque ferrugineis; femoribus anticis incrasatis; pollice in utroque sexu distincto.*

- Thrips ulmi . . . *Fabr. Syst. Rhynog.* 313. No. 5.
 Thrips corticis . . . *De Geer*, III. 11, No. 3, Tab. 1, fig. 8—12.
 Thrips, &c. . . . *Geoffr.* I. 334, No. 1. Tab. 7. fig. 6.

Var. a.—Alata, elytris subflavescentibus.

Var. β.—Subaptera.

Var. γ.—Subaptera fusco-castanea.

The male is much shorter than the female, with the fore thighs twice as large, and the thumb, or tooth, on the inside of the fore foot common to all of this genus, very thick. The larva is very flat, white; with the head, a cordate spot on the prothorax, the antennæ, (except the two basal joints,) and the last two segments of the abdomen, blackish.

Inhabits under the bark of old trees, feeding on mucor.

Sp. 4. *Phl. flavipes. Castanea, ano ferrugineo; antennis ante basin pedibusque flavo-ferrugineis, femoribus posterioribus basi fuscescentibus; femoribus anticis incrassatis; elytris subflavescentibus.*

Sp. 5. *Phl. Statices. Alata atra, antennis medio, tibiis anticis apice tarsisque fusco-pallidis; femoribus anticis incrassatis; pollice maris distincto, feminae obsoleto.*

Antennæ short, thicker in the middle. Is always winged: the male shorter than the female; fore thighs twice as large, and the thumb distinct. The larva is less depressed than that of *Phl. Ulmi*; blood red, with the head, tail, antennæ, and legs shaded black. The blood of the perfect insect is red, like the larva. The egg is shaped like that of *Culex*, being cylindric, rounded at one end, and crowned with a knob at the other.

Inhabits the flowers of *Armeria maritima* in myriads. I have also found the larva on the same plant so early as March.

Subs. BB. *Capitis lateribus antrorsum convergentibus.*

Sp. 6. *Phil. coriacea. Capitis lateribus muricatis.*

The largest insect of the order. Pitchy black; the 2d and 3d joints of the antennæ, and the base of those which follow, the feet, fore shanks, and extremities of the others, pale yellow. The fore thighs thick. The hairs along the sides of the head spring from

a double row of sharp tubercles. Antennæ nearly as long as in *Phl. aculeata*.

Communicated by Mr. Walker.

Sp. 7. *Phl. annulicornis. Capitis lateribus inermibus.*

In the general proportions, intermediate between *Phl. Ulmi* and *Phl. Statices*. The antennæ shorter than in the former of these; the intermediate joints pale, but all tipped with brown; the fore shanks and the feet dull ferruginous; the fore thighs thick, and the thumb as in *Phl. Ulmi, fem.*

Stirps II.—TEREBRANTIA.

Antennæ pro typo 9-articulatæ: palpi maxillares 3-articulati: elytra parallela, suturâ rectâ juxtaposita, magis coriacea, nervis 3 longitudinalibus. Feminae terebra compressa acuta 4-valvis, rimæ inferæ segmentorum 9ⁿⁱ. et 10^{mi}. reposita: segmentum 8^{vum}. in eadem subtus bipartitum, in mare integrum. Saltant abdomine repercusso.

Fam. II.—STENELYTRA.

Palpi recti teretes: antennarum articuli 3 ultimi attenuati, sæpius connati, et alter aut omnes oblitterati: elytra angusta nervis longitudinalibus tantum; margine omni nervisque longè ciliatis: terebra feminae decurva, ani ambitus inferus conformis (concausus.)

GEN. II.—HELIOTHURIPS.

Corpus reticulatum: collum incisum: antennæ apice capillaceæ: alæ angustissimæ, fere capillares.

Sp. 1. *Hel. Adonidum. Fem.*

Dusky black, the extremity of the abdomen ferruginous. Antennæ and legs white, the base and sixth joint of the former dusky. Wings almost hyaline. The body above is entirely netted with elevated lines, forming pretty regular hexagons, equal in size on the head, where they are largest, to those of the eyes, and disposed in perfect rows on the abdomen.

Inhabits flowers in hothouses. Communicated by F. Walker, Esq.

GEN. III.—SERICOTHRIPS.

Corpus læve coriaceum, abdomine tomentoso, ano in mare et femina conformi conico: alæ abbreviatæ: caput ad oculos usque immersum: antennæ stylus brevis biarticulatus.

Sp. 1. Ser. staphyinus. Mas et Fem.

Opaque black, with the abdomen silky. Second and third joints of the antennæ and the legs, pale ferruginous; the base of the thighs dusky. Elytra round, shorter than the pterothorax, white, with the base blackish.

Inhabits the flowers of *Ulex Europæa* in plenty. Is excessively active in running and leaping.

GEN. IV.—THRIPS.

Corpus læve aut subtiliter squameum, glabrum: caput pone oculos productum, collo non inciso.

Synoptic Table of Subgenera.

A. No simple eyes	Subg. III. APTINOTHRIPS.
AA. Three simple eyes.	
B. Prothorax in front produced, narrowed	Subg. I. CHIOTHRIPS.
BB. Prothorax of equal breadth.	
C. Last segment armed with 2 dorsal spines in female.	Subg. II. LIMOTHRIPS.
CC. Last segment unarmed.	
D. Style of antennæ longer than 6th joint.	Subg. V. BELOTHRIPS.
DD. Style shorter than 6th joint. . . .	Subg. IV. THRIPS, propr.

Subgen. I.—CHIOTHRIPS.

Caput perparvum: prothorax antrorsum attenuatus: pedes antici perquam incrassati: antennæ breves compressæ, stylo biarticulato.

Sp. 1. Thr. Ch. manicata.

On spikes of grass.

Subgen. II.—LIMOTHRIPS.

Prothorax æquilatus: antennæ stylus biarticulatus, articulo 6^{to}. brevior: ocelli tres: alæ feminae completæ, maris nullæ. Feminae segmenta posteriora spinosa.

Thrips spp. *Auct.*

Sp. 2. Thr. L. denticornis. Mas et Fem. *Antennæ articulo 3^{ti}. extrosum acuminato.*

Fore legs incrassate. The tip of the abdomen in the female has several spines, besides the stronger pair on the back of the last segment.

On heath and grass; but rare.

Sp. 3. Thr. L. cerealium. Mas et Fem. *Antennæ articulo 3^{ti}. rotundato.*

^aThrips physapus. Kirby. *Linn. Trans.* III. 242.

————— Vassalli-Eandi. *Mem. Acad. Turin.*
XVI. LXXVI.

The larva is yellow; the pupa paler, with long wing cases.

Exceedingly common on grass and *cerealia*. Mr. Kirby found them in the furrow of the grains of wheat. Earlier in the year Mr. Vassalli-Eandi detected them gnawing (as he expresses it, rather incorrectly, I think) the stems above the knots, and causing the abortion of the ear. It is at this period that their attacks are most mischievous. In the year 1805, one-third of the wheat crop, in the richest plains of Piedmont, is said to have been destroyed by this seemingly insignificant little insect. Whatever the causes may be which produce the alarming increase of these tribes, they appear to operate almost periodically, and over a wide space; for in the same year (1805) the wheat crops in England also suffered from a similar disease, as the communications in contemporary periodicals inform us.

Mr. Kirby was the first who observed that the male of this species is apterous.

I have found, within the stem-clasping leaves of *Elymus arcuarius*, some very small individuals, which may perhaps prove a distinct species.

Subgen. III.—APTINOTHRIPS.

Prothorax æquilatus: *ocelli nulli nec alæ: antennæ articulus 6^{tus}. apice attenuatus, absque stylo articulado.*

Thrips spp. *Gleichen* (Gmelin.)

^a Linnæus says of *Thr. physapus*, "hæc forte—unde Secalis spicæ exinaniunt:" the "perhaps" has disappeared in Gmelin's compilation.

Sp. 4. Thr. Apt. rufa. Fem. *Fulva oculis et rostri apice fuscis.*

Thr. rufa. (*Gleichen*, Tab. 16. fig. 6, 7.) *Gmelin*, No. 11.

————— *Nicholson's Journal of Nat. Phil.* Vol. XII.

Pl. 8. fig. 1. (very bad.)

In profusion in the spikes of grass and *cerealia*.

Sp. 5. Thr. Apt. nitidula. Fem. *Testacea abdominis incisuris, &c. fuscis.*

One half smaller than the preceding.

Found on a muddy sea-coast, I believe on the heads of *Plantago maritima*; but not common.

Subgen. IV.—THRIPS.

Prothorax æquilatus: antennæ stylus articulo 6^{to}. brevior: ocelli tres (alæque ut plurimum): segmentum feminæ ultimum compresso-conicum inerme.

Thrips spp. *Auctt.*

Within the limits to which this sketch must be confined, I cannot pretend even to indicate all the species I have seen. At some other time I hope to resume the subject. The following divisions are not exactly those which I should adopt, did the space allow me to characterize the species; but they will serve for the present purpose.

N. B. The males are mostly one-half smaller than the females, and paler, sometimes widely different in colour.

Sect. A. *Tibia et metatarsus anticus apice intrinsecus uncinati.*

Sp. 6. Thr. Ulicis. Mas et Fem. *Elytris nigricantibus basi albidis.*

In profusion on flowers of *Ulex Europæa*. I once met with several of the half-grown larvæ in the keel of the blossom. They were much paler than in any other species that I know. The same species sometimes strays into the blossoms of *Crocus Susianus*; and I once found an individual on corn, so late as July.

Sp. 7. Thr. phalerata. Mas et Fem. *Elytris nigricantibus, fascia ante apicem basique pallidis.*

I found a very few specimens on the borders of a corn-field; and I think they were swept off *Lathyrus pratensis.*

Sect. AA. *Tibiæ et tarsi inermes.*

Subs. B. *Elytra linearia, unicolora basi tantum pallidiora.*

Subs. C. *Antennæ stylus filiformis, distincte biarticulatus.*

Sp. 8. Thr. obscura. Fem. *Muller. Zool. Dan. No. 1084.*

The larva is like that of *Thr. cerealium*, but has a shorter head; and the wing-cases of the pupæ are shorter.

Varies in autumn, with mere rudiments of wings.

Common on wheat.

Sp. 9. Thr. ulmifoliorum. Fem.

The larva in the same situations, yellow; distinguished from most others by two small spines on the back of the last segment. Pupa pale, with very short wing cases.

I have found it undergoing the metamorphosis within the cavity of effete female *cocci* of the elm. Solitary on the under-side of elm-leaves.

Mr. Curtis has kindly shown me a tract, by Professor Passerini,^b on the *Thrips* of the olive, a species very injurious to that valuable tree, which also fixes itself under the leaves. No description is given; but as Passerini supposes it to be *Thr. physapus*, I conclude the colour to be dark, while *Thr. ulmifoliorum* is nearly as pale as *Thr. obscura*.

Sp. 10. Thr. atrata. Mas et Fem. *Nigra antennis pedibusque fere concoloribus; elytris nigricantibus, basi albidis.*

In the flowers of *Convolvulus Soldanella*, *Dianthus*, *Centaurea*, *Cyanus*, *Campanulæ*, &c.

Sp. 11. Thr. vulgatissima. Mas et Fem.

Thrips physapus. *De Geer*, III. 6. No. 1. Tab. 1. fig. 1.

————— *Shaw*, *Zool.* VI. 199. Pl. 63.

^b Notizie sopra una specie d'insetto del Gen. Thrips dannoso agli Olivi nel Territorio de Pietrasanta n. Atti dell'Accad. de Georgofili. T. xii.

By far the most abundant species, occurring on a great variety of flowers in our gardens throughout the year; appearing first in spring with the *Narcissi*; particularly fond of *Umbelliferæ*. The larva, which is yellow, I have found plentifully in the flowers of *Sinapis nigra*.

Sp. 12. Thr. Cynorrhodi. Mas et Fem.

Smaller and paler than the preceding: the style of the antennæ shorter.

Common in the flowers of wild roses.

Subs. CC. *Antennæ stylus perbrevis, articulis vix discretis.*

Subs. D. *Elytra fusca.*

Sp. 13. Thr. grossulariæ. Mas et Fem.

Common in the flowers of gooseberries in spring.

Sp. 14. Thr. physapus. Mas et Fem. *Nigra, antennis pallidis, basi apiceque summo fuscis; tibiis anticis tarsisque lutescentibus elytris fuscis.*

Thrips physapus . *Linn. Fna. S. 1027.*

A very distinct species, and uncommonly active in its movements.

The larva, in form, like that of *Thr. vulgatissima*, but deep orange red: the head, antennæ, and legs, variegated with blackish lines and rings.

Inhabits the flowers of *Cichoraceæ*. Linnæus probably did not distinguish this species from *Thrips vulgatissima*, but his description of the larva belongs to *this*, with which the locality agrees.

Sp. 15. Thr. fuscipennis. Fem.

Common on *Rumex*, and other plants.

Sp. 16. Thr. Ericæ. Fem.

On heath and mountains.

DD. *Elytra testacea aut pallida.*

Sp. 17. Thr. Urticæ. Mas et Fem. *Schra. Beytr. 31. Tab. 1. fig. 25, 26.*

—————
Fabr. Syst. Rhyng. 313. No. 6.

Common in company with *Thr. vulgatissima*, but particularly attached to yellow flowers, as *Nasturtium*, *Thalictrum*,

Ranunculus, &c. in which I find along with it a yellow larva, like that of *Thr. vulgatissima*.

Sp. 18. *Thr. corymbiferarum*. Mas et Fem.

In the flowers of *Corymbiferæ*, with a white border, in the Botanical garden at Glassnevin, near Dublin.

Sp. 19. *Thr. minutissima*. *Linn. Fna. S.* No. 1028.

In company with *Thr. vulgatissima*, and not rare.

Sp. 20. *Thr. discolor*. Mas et Fem.

In flowers of *Cruciferæ*, Glassnevin.

Sp. 21. *Thr. livida*.

In flowers of *Ulex Europæa*, very rare.

Subs. BB. *Elytra linearia, fasciata*.

Sp. 22. *Thr. Primulæ*. Mas et Fem.

Distinguished from the rest of this section by its small size and paler tints; the style of the antennæ is filiform and biarticulate.

Inhabits the flowers of the primrose abundantly.

Sp. 23. *Thr. decora*. *Nigra, antennarum articulo 2^{do}. apice, 3^{ti}. toto, 4^{to}. basi, tibiis apice, anticis fere totis tarsisque pallidis; antennarum stylo distincte biarticulato.*

The style of the antennæ, in this species, is longer than in *Thr. vulgatissima*, and distinctly biarticulate; in the remaining species it becomes much shorter.

Sp. 24. *Thr. dispar*. Fem. *Nigra, antennis fuscis medio indeterminate pallidis; tibiis tarsisque pallidis, illis basi, anticis angustius fuscis. Mas. Nigro-fusca, antennis pedibusque pallidis, illis basi et apice, femoribus basi, posterioribus latè infuscatis; elytrorum rudimentis albidis tantum.*

Style of antennæ much less distinctly articulated and shorter than in the last.

On *Festuca fluitans*, and other grasses, in autumn; not rare.

Sp. 25. *Thr. brevicornis*. Fem.

Distinguished by the short antennæ which become thicker towards the end.

Found on *Festuca fluitans*; very rare.

Subs. BBB. *Alæ pterothoracæ breviores.*

Sp. 26. Thr. subaptera. Fem.

Colour dark, like *Thr. Physapus*, but the metathorax is shorter.

Occurs on muddy coasts, on *Plantago maritima*, I believe.

Sp. 27. Thr. pallens. Fem. *Pallide testacea abdomine nigricante; antennis basi et apice fuscis stylo vix distincte biarticulato.*

[See also *Thr. obscura* var. and *Thr. dispar* male.]

Subgen. V.—BELOTHRIPS.

Antennæ stylus biarticulatus, articulo 6^{to}. longior: fem. segmentum ultimum elongatum, compresso-carinatum, spiniforme: (maris vero ut in reliquis, brevius, apice subtruncato): characteres reliqui fere Thripsidis.

Sp. 28. Thr. B. acuminata. Mas et Fem.

Black, with brown legs; darker antennæ and blackish thighs; fore-shanks incrassate and a little concave below, but less so than in *Thr. manicata*, where they may be called clypeate.

Found on sand-hills by the sea, but whether in the flowers of *Galium verum*, *Lathyrus pratensis*, or *Plantago*, I could not determine.

FAM. III.—COLEOPTRATA.

Elytra latiuscula, postice ciliata, nervis longitudinalibus et transversis: terebra recurva: antennæ variæ: corpus minus depressum.

GEN. V.—MELANTHRIPS.

Antennæ distincte 9-articulatæ: os breve: palporum maxillarium articuli subæquales: alæ anticæ costa pubescentes, nervis transversis tribus: tibiæ anticæ apice productæ: terebra a basi parum recurva.

Sp. 1. Mel. obesa. Mas et Fem.

Deep black, with blackish elytra: larva depressed, pale yellow, body broad behind, the last segment with 4 small pointed scales: antennæ rather long, 7-jointed.

Found in the flowers of *Reseda* and *Ranunculus*.

GENUS VI.—ÆOLOTHRIPS.

Antennæ quasi 5-articulatæ, scilicet articulis 4 ultimis minutissimis in apiculam teretem connatis: os longiusculum teres: palporum maxillarum articulus ultimus perbrevis: oculi versus os producti: tibiæ inermes. Fem. terebra recurva, et abdominis apex subtus fornicato-ascendens.

Subgen. I.—COLEOTHRIPS.

Corpus subdepressum: pterothorax latissimus, subquadratus: alæ anticæ costa nudæ, nervis transversis quatuor. Mar. abdomen lateribus appendiculatum.

Thrips spp. *Auctt.*

Sp. 1. Æ. C. fasciata. Mas et Fem. *Elytris basi, fascia apiceque albis.*

Thrips fasciata . *Linn. Fna. S. 1030.*

————— . *De Geer. III. 18. No. 4.*

Thrips, &c. . . *Geoffr. I. 385. No. 3.*

Larva yellow, the abdomen behind deeper orange, a whorl of hairs on each segment, more conspicuous on the last two: prothorax elongate: antennæ shorter than in the perfect insect, the number of joints similar: mouth nearly perpendicular, not inflected under the breast: joints of maxillary palpi not very unequal.

In various flowers, especially *Reseda*.

Sp. 2. Æ. C. vittata. Fem. *Elytrorum basi et costæ dimidio exteriori albis.*

Subgen. II.—ÆOLOTHRIPS.

Corpus longius, cylindricum: pterothorax constrictus: alarum vix rudimenta.

Sp. 3. Æ. albicincta. Fem. *Atra abdominis apice ferrugineo; antennis basi et abdominis antici annulo albis.*

Addenda.—I have in vain searched on the juniper and flax for *Thrips juniperina* and *Thr. variegata*. *Thr. fusca* (Muller), on account of the insinuated resemblance to *Thr. fasciata*, may perhaps be the same with *Melanthrips obesa*, but the description is too slight to afford any assistance in identifying the species intended.

ART. XLII.—*Natural History and Metamorphosis of an Anomalous Crustaceous Parasite of Carcinus Mœnas, the Sacculina Carcini.* By J. V. THOMPSON, F.L.S. Deputy-Inspector-General of Hospitals.

A LONG time previous to the discovery of the metamorphosis in the *Crustacea*, I had occasionally met with the common shore-crab (*Carcinus Mœnas*), having a purse-like appendage attached to the under-side of the tail, (figs. 1 and 2.) The

Fig. 1.

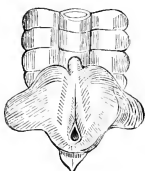


Fig. 2.



first of these being a female, it became a question whether this crab might not differ from others known to carry their ova after exclusion, attached in naked groups to the false feet under the tail. This was speedily decided, by finding males with the same appendage; and by individuals of both sexes being occasionally met with, having two or even three of them, but always attached to the median line of the tail, and to the interstices of some of its uppermost joints. These anomalies appeared to declare that they could be no part of the crab itself, but some anomalous excrescence or parasite.

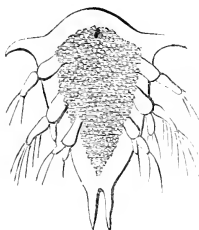
These parasites, which may be seen of various size, resemble a leathern pouch or satchel in figure and texture, are perfectly symmetrical, having an opening drawn together and closed at the lower end, and are so attached by a short thick neck to the membranous interstice between one of the upper joints of the tail of the crab, as to appear continuous with the body of the animal. On removing them by force, the neck presents the appearance of irregular branched joints, and a large opening is seen, which has every appearance of being continuous between the rectum of the crab and the cavity of the parasite, so as to conduct us to the conclusion, that it is through this

source it obtains the nutriment necessary to its support and growth. Externally the parasite does not present the slightest vestige of any kind of members.

On laying open the body of the parasite, the external coat appears to be composed of a double membrane, the outer rough, the inner smooth, within which we arrive at another whitish membranous sac, quite loose, except at the neck and lower opening, with both of which it is closely united. This membrane being slit open, a very large and flattened glandular body comes into view, of a white colour and smooth surface, filling the body from side to side, along one of which it is firmly attached to the enveloping loose membrane, as well as to the lower opening, where it terminates by a narrow neck, which is probably its secretory duct; beneath this gland the ample ovary is situated, composed of numerous elongated bunches of concatenated ova, enclosed within a very transparent membrane, attached only to the lower opening, where it terminates in two distinct apertures. Hitherto I have not been able to discover any other organs, unless a very small translucent sac, situated at the upper connected edge of the glandular body, and between it and the neck, with which it is also united. Query,—Can this be the stomach of the animal?

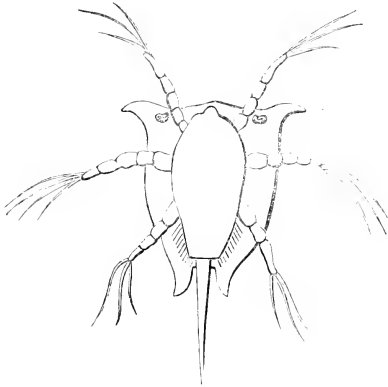
Such was the state of my knowledge in regard to this hitherto unobserved and very anomalous parasite, when I accidentally met with one of the above-named crabs in a trawl-boat, having a remarkably large and turgid parasite, from the lower aperture of which issued a purplish granular substance. Subjecting some of this substance to the microscope, it was found to consist of minute larvæ (fig. 4), in which it was easy

Fig. 4.



to recognise a resemblance to *Argulus armiger* (fig. 6), a microscopic crustacean animal, never seen but by the Dutch

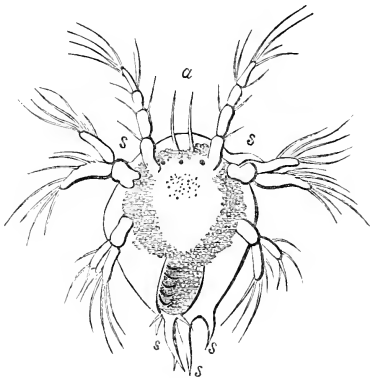
Fig. 6.



micrographer Slabber. I could not, therefore, but felicitate myself upon the recovery of this long-lost type.

Several years elapsed before I discovered this same larva in its advanced state (fig. 5), which I have since found to abound

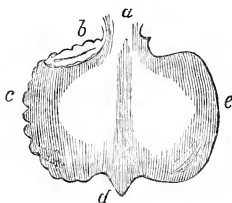
Fig. 5.



in the harbour of Cove during the Spring months; by this discovery its identity, through Slabber's rude figure, became sufficiently apparent.

Some important results and reflections naturally present themselves from a consideration of the foregoing detail, but they derive a ten-fold degree of interest by the subsequent discovery of the metamorphosis in the pedunculated *Cirripedes*, as developed in the Memoir read before the Royal Society. Without this we should still remain ignorant of the real affinities of this curious parasite, and of the mystery of its procreation. That it agrees with no tribe of the *Crustacea* is apparent, not even with the *Cirripedes*; nevertheless, its concealed affinity to these latter becomes evident, on a comparison of the respective larvæ; and yet how different and masked is the perfect animal, which presents us with another point of affinity in a union of the two sexes in the same individual; indeed, the *Sacculina* furnishes the only example in nature of an animal all generative organs, to the apparent exclusion of every other,—its body being entirely filled with the ovaria, and an enormous testicular gland. (Fig. 3.)

Fig. 3.



To an animal permanently fixed, and deriving its sustenance wholly through the medium of another, sight and members would have been useless, and are therefore cancelled by a Providence which never errs, and invariably adapts every animal to the peculiar station it is intended to fill in the scale of existence. In this respect it is however singular, as there are no other parasites of this class but retain some few members, if only for the purpose of adhesion.

If any naturalist is disposed to dispute the claim of *Sacculina* to the rank of an animal when in its last stage, and to consider it as a mere conceptacle, I have only to observe, that its long-continued growth, and the complication of an obvious testicular

gland, are in opposition to such an opinion. Indeed, we cannot but perceive in this curious animal a repetition of the singular metamorphosis of the *Cirripedes*, and of some others which I hope shortly to make known, in all of which the animal in its last stage, contrary to what we observe in insects, is less perfect and more simple in structure than its larva!

In the first stage of the *Sacculina*, it is free, provided with a remarkably powerful natatory apparatus, with sight, lives to acquire a comparatively large size, and having fastened upon the crab destined for its future support, insinuates itself, first under the tail flap, and then penetrates the rectum of its victim, and there undergoes its very singular metamorphosis; and from being little larger than a pin's head, acquires such a remarkable bulk as to exceed in width the flap or tail part even of the female crab, and to weigh as much as a quarter of an ounce, and probably contain a million of ova! This therefore, comparatively to the size of the animal from which it derives its support, is the largest parasite known, and must incommode the crab in proportion to its growth and number, independent of opening a way for the attachment of barnacles, *Serpuli* and *Zoophites*. From its prodigious fertility, and not even one-tenth of the crabs being so infested, numbers must be devoured in its first or free stage; it is in this way that it probably contributes to the grand scheme of creation, as in its second stage it appears to live merely to prolong its own race, and may have its use in filling up some link in the scale of natural affinities.

Thus I have no doubt but it will eventually tend to diminish the apparent interval between the *Balani* and *Lepadés*, should the advanced larva of the latter be found to become *binocular*, which is more than probable, considering their perfect resemblance in their nascent state.

REFERENCES TO THE FIGURES.

Fig. 1. Parasite of *Carcinus Mœnas*, as attached to the rectum of the crab, and showing its lower opening. Natural size.

Fig. 2. The other side of the same.

Fig. 4. The larva of *Sacculina Carcini*, when first hatched. Magnified.

Fig. 5. The supposed larva when fully grown, magnified; *a* horns, at the base of which its three eyes are seen, *s* the five spines of the dorsal clypeus.

Fig. 6. A copy of Slabber's figure, the *Argulus Armiger* of Latreille.

Fig. 3. The testicular gland; *a* broad upper attachment, *d* lower narrow attachment, *c* puckered edge, by which one side is attached to the enveloping tegument, *e* its opposite free edge, *b* the translucent organ, supposed to be the stomach (?) of the animal, firmly lodged in a cavity on one shoulder of the gland.

ART. XLIII.—*Extracts of Letters from C. Darwin, Esq., to Professor Henslow.*

PRINTED FOR PRIVATE DISTRIBUTION.

“ST. IAGO (Cape de Verd Islands) is singularly barren, and produces few plants or insects: on the coast I collected many marine animals, chiefly gasteropodous mollusca (I think some new).”—P. 3.

“*Rio de Janeiro*.—I am now collecting fresh water and land animals; if what was told me in London is true; *viz.* that there are no small insects in the collections from the tropics, I tell entomologists to look out, and have their pens ready for describing. I have taken as minute (if not more so) as in England, *Hydropori*, *Hygroti*, *Hydrobii*, *Pselaphi*, *Staphylini*, *Curculiones*, *Bembidia*, &c. &c. It is exceedingly interesting to observe the difference of genera and species from those I know; it is however much less than I had expected. I have just returned from a walk; and, as a specimen how little the insects are known, *Noterus*, according to Dic. Class. consists solely of three European species. I, in one haul of my net, took five distinct species.”—P. 5.

“*Monte Video*.—I made an enormous collection of Arachnidæ at Rio; also a good many small beetles in pill boxes, but it is not the best time of the year for the latter.”—P. 5.

“Amongst the lower animals, nothing has so much interested me as finding two species of elegantly coloured *Planariæ* (?) inhabiting the dry forest! The false relation they bear to snails is the most extraordinary thing of the kind I have ever seen. In the same genus (or more truly family) some of the marine species possess an organization so marvellous that I can scarcely credit my eyesight. Every one has heard of the discoloured streaks of water in the equatorial regions. One I examined was owing to the presence of such minute *Oscillatoria*, that in each square inch of surface there must have been at least one hundred thousand present.”—P. 6.

“I might collect a far greater number of invertebrate animals if I took up less time with each, but I have come to the conclusion that two animals, with their original shape noted down, will be more valuable than six with only dates and place.”—P. 6.

“ There is a poor specimen of a bird, which to my un-ornithological eyes appears to be a happy mixture of a lark, pigeon, and snipe. Mr. M^cLeay himself never imagined such an inosculating creature.”—P. 8.

“ I have taken some interesting *Amphibia*; a fine *Bipes*; a new *Trigonocephalus*, in its habits beautifully connecting *Cratalus* and *Viperus*: and plenty of new (as far as my knowledge goes), Saurians. As for one little toad, I hope it may be new that it may be christened *Diabolicus*. Milton must allude to this very individual when he talks of ‘squat like a toad.’”—P. 8.

“ Amongst the pelagic *Crustacea*, some new and curious genera. Among *Zoophites* some interesting animals. As for one, *Flustra*, if I had not the specimen to back me, nobody would believe in its most anomalous structure. But, as for novelty, all this is nothing to a family of pelagic animals, which at first sight appear like *Medusa*, but are highly organized. I have examined them repeatedly, and certainly, from their structure, it would be impossible to place them in any existing order. Perhaps *Jalpa* is the nearest animal, although the transparency of the body is almost the only character which they have in common.”—P. 9.

“ The southern ocean is nearly as sterile as the continent it washes. *Crustacea* have afforded me the most work. I found a *Zoë* of the most curious form, its body being only one-sixth the length of the two spears. I am convinced, from its structure and other reasons, it is a young *Erichthus*. I must mention part of the structure of a decapod, it is so very anomalous: the last pair of legs are small and dorsal; but instead of being terminated by a claw, as in all others, it has three curved bristle-like appendages; these are finely serrated, and furnished with cups somewhat resembling those of the *Cephalopods*. The animal being pelagic, this beautiful structure enables it to hold on to light floating objects. I have found out something about the propagation of that ambiguous tribe the *Corallines*.”—P. 11.

“ But what is of more general interest is the unquestionable (as it appears to me) existence [in Patagonia] of another species of ostrich besides the *Struthio ostrea*. All the Guachos and Indians state it is the case: and I place the greatest faith in their observations. I have the head, neck, piece of skin,

feathers, and legs of one. The differences are chiefly in the colour of the feathers and scales; in the legs being feathered below the knee, also in the nidification and geographical distribution."—P. 16.

"We were driven into Chiloë by some very bad weather. An Englishman gave me three specimens of a very fine lucanoidal insect, which is described in the Cambridge Philosophical Transactions, two males and one female." [*Chiasognathus Grantii*, Stephens.]

"In zoology I have done but very little, excepting a large collection of minute *Diptera* and *Hymenoptera*, from Chiloë. I took in one day *Pselaphus*, *Anaspis*, *Latridius*, *Leiodes*, *Cercyon*, and *Elmis*, and two beautiful true *Carabi*. I might almost have fancied myself collecting in England. A new and pretty genus of nudibranch *Mollusca*, which cannot crawl on a flat surface, and a genus in the family of *Balanidæ*, which has not a true case, but lives in minute cavities of the shells of *Concholepas*, are nearly the only two novelties."—P. 22.

"I also send a small bottle with two lizards; one of them is viviparous, as you will see by the accompanying notice. M. Gay, a French naturalist, has already published, in one of the newspapers of this country, a similar statement, and has probably forwarded some account to Paris."—P. 30.

The following is an extract from the newspaper referred to by Mr. Darwin.

"Besides these labours I employed myself during the great rains in dissecting various reptiles. It must be interesting to know the influence of the climate of Valdivia on the animals of this family. In the greater part of those which I have been able to submit to my scalpel, I have found a truly extraordinary fact, that they were viviparous. Not only the innocent snake of Valdivia has offered to my notice this singular phenomenon, but also a beautiful and new kind of *Iguana*, which approaches very near to the *Leposoma* of Spix, and to which, on account of its beautiful colours, he has given the name of *Chryso-saurus*. All the species, even those which lay their eggs in Santiago, here produce their young alive; and the same thing happens with the *Batrachia*, and particularly with a genus near to the *Rhinella* of Fitzinger, of which the numerous species have the skin pleasingly spotted with green, yellow, and black. I need not dwell on the importance of this last

example in reference to comparative anatomy: an importance which appeared to me still greater when, on analyzing a tadpole not yet transformed, I satisfied myself that nature has not varied her plan of organization. In these, as in the tadpoles, which live in water, the intestines were of a length very disproportioned to the body; now if this length was necessary to the latter, which live upon vegetable substances, it was altogether useless to those which are to undergo their metamorphosis in the belly of the mother; and thus nature has followed the march prescribed to her by a uniformity of construction, and without deviations from it, has admitted a single exception, a real hiatus, well worthy the attention of the philosophical naturalist."—P. 31.

ART. XLIV.—*Notes on various Insects.* By IONICUS.

(Continued from page 379.)

16. *Myrmeleonidæ* were common in the Ionian Isles during the summer months. The earliest and smallest species appeared about April 17th. Having captured several of these in the perfect state, I was induced to look for the larva, and on the 19th, on the sea-shore, found several of a larger species, which appeared to have been not very long developed from the egg state, as they were nearly smooth, and preyed only on the smaller species of ants. They were then not nearly so expert in gaining their livelihood as they afterwards became, their prey frequently escaping after falling into the pit, and within reach of their jaws. Having frequently destroyed its pit, the specimen I kept would not rebuild it, but lurked in the sand. On May 16th, I missed it, and digging up the sand, found it at the depth of two inches in a hollow cavity, in which it probably changed its skin, as on the 19th it had returned above ground, and was lurking in its usual manner. On the morning of the same day I found several larger larvæ, exactly resembling the one I kept, except in size: their pits were about two inches deep and two and a half inches in diameter, and were close to the train of a large black ant. I took one of them home and put it into the tumbler with my former friend, and some of the ants, when it immediately constructed a pit, and devoured several of the ants. I should observe that the

ant is naturally the more compact and stronger insect; its mandibles are more truncate, but are not so long nor sharp at the extremities, and the ant-lion being perfectly aware of this advantage, on seizing the ant invariably dragged it right under the sand, by which means the ant could not turn on it, or seize its soft body, without getting a mouthful of sand, which I suppose would not have been more agreeable than the ashes of the Dead Sea fruit were to Satan and his crew; but the larva of the ant-lion having hollow jaws, and feeding only on the juices of the ant, was by no means incommoded by the arrangement. Very shortly after this, the new ant-lion showed proofs of a very unamiable disposition: the weaker ant-lion had as yet escaped its observation, but a jerk of sand, directed at an unfortunate ant that was passing, showed our new friend that it was not the sole occupant of the tumbler. It then left its pit and ran under ground, like a mole, towards the weaker ant-lion, which ran off in the same manner, and a chase commenced. The larger larva proving the swifter, the smaller was obliged to turn round and show fight, but was easily seized and dragged under ground, when I interfered, and placed them under separate tumblers. By June 20th this new larva was nearly full grown: it was very industrious, seldom keeping its pit long entire. When a large lively ant was placed in the tumbler, and carefully avoided the pit, and the sand jerked at it, the ant-lion would frequently enlarge the pit, so as to give it the diameter of the glass, by which means the ant could not escape falling in. I also saw it occasionally catch house flies, which had happened to alight at the bottom of the pit, not observing the greedy pair of jaws which protruded and seized the fly. It spun its web about the end of June, and came out to a perfect insect on July 31st.

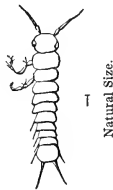
In Cephalaria were several species of ant-lion. I captured seven species, but I believe there were others.

M. Libelluloides was a very common species, and as far as my observations went, appears to differ from other ant-lions in the habits of its larva, which does not appear to excavate a pit, but lurks underground, running like a mole, and leaving a track behind it. The first of these larvæ I met with on May 19th; they are seven or eight lines in length, and are milk white with black spots; the mandibles have three side teeth: the sides of the body are clothed with short scattered

white hair, and the anus and legs have a fringe of black hair. I had previously been looking for the nests of ant-lions; and walking along the sea-shore, came to a part of the sand in which was an excavated ring, about four inches in diameter, and so mathematically circular, that I perceived at once that it was the work of some insect. Observing the sand move at one part of the circumference, I dug up this *Myrmeleon* larva, attempting to devour a beetle (*Asida grisea*). I placed them both with some sand in a pocket collecting box, and took them home, and saw it again seize the beetle, dragging it underground, where it held it for nearly three hours; but the shell of the beetle proved so hard, that it eventually escaped uninjured. I often caught a similar larva afterwards, but always lurking in the sand; and as I looked for its pit, it is not probable that that of such a large larva would escape my researches had it constructed one. This larva appears to prey principally on heteromerous beetles, such as *Pedinus*, *Tentyria*, *Asida*, *Helops*: also on the *Otiorynchi*, which are so common on the sands about Lixurie. Its bite is very severe.

Ascalaphus Italicus was common on Mount St. Salvador, in Corfu.

17. *Cetonia aurata*, *quercus*, and *metallica*, are found in the summer months in Cephalonia. *C. aurata* is rather uncommon. I used to find it on a wild white rose; and on one, to my great surprise, I discovered seven or eight of the *Pediculus*, or rather larva of *Meloe*, according to the observations of Mr. Newman and others; they were linear, pale, testaceous, and $\frac{3}{4}$ line in length, and I subjoin a magnified figure, which I



sketched at the time. The *C. quercus* and *C. metallica* were at first common on the thistle, but after most of the thistle tribe had done flowering, I found them principally on the *Ulmus campestris*, or elm. They were attracted to these and quince

trees by a sweet juice which exuded from the trunks, and which has been supposed to have been caused by the wounds inflicted by the *Cicada orni*. There were frequently twenty or thirty on one tree, and the effect produced by the numbers buzzing about with their beautiful violet wings was highly gratifying to an entomological eye.

18. *Mutillidæ*.—Of thirteen species of *Mutilla* which I found in Cephalonia, *M. europæa* was the most common, and varied much in size: male specimens were very rarely seen. I feel very little doubt but that the *Mutillidæ* are parasitical on other bees or wasps. I have frequently seen the females enter the nests of *Andrenidæ*, and occasionally those of *Cerceris*. I also once caught a female climbing the trunk of the *Ulmus campestris*, on which some of the *Eumenes* had formed their clay bottle-shaped nests. Another species I took commonly on the sea sand, in which the *Bembex rostrata* had dug its nests. The cry of the *Mutillæ* is shrill, and the sting very pungent; they are swift in their motions. The males appear to pass the night under rubbish. I caught one one evening under a stone which I had turned up for *Coleoptera*, and another under some sea-weed, when looking for *Scarites lævigatus*.

19. *Scholia 2-cincta*, Fab.—On July 19th, in the same bay, a large spider had stretched its web between two spurge bushes. One of its victims was a *Scholia*, which was completely enveloped by the spider in a shroud of white silk; and on tearing this off, I received practical, and not particularly agreeable, proof, that the *Scholia* was still alive. A few days after, I saw several females, whom I traced to a sand bank, where their nests were. The nest runs about eighteen inches under ground, and the opening to it is very wide. I poked several of the *Scholiæ* out, but found nothing in their nests; but on returning, on August 5th, and digging up another, which a female had entered, I found a large locust, *L. lineola*, which is probably the prey of this species. *S. flavifrons*, which is three times larger, and is found in Corfu, and other parts of the Mediterranean, must commit great havock. *S. 2-cincta* flies without any hum; its male I took occasionally, but singly, on flowers. Of *S. interrupta* and *4 punctata* I found only the male sex. They are extremely sluggish, crowding on ears of grass near the sea side, in societies of twenty or thirty: here

they pass the night, and scarcely make any attempt to escape when seized. I found them and the males of a large *Dasy-poda* indiscriminately intermixed. The males of *S. sex-cincta?* Fab. are found in much the same localities, whereas that of another species was solitary, and generally found on the flower of the bramble, and was tolerably active.

20. *Bembex rostrata*.—This curious hymenopterous insect was common in a bay near Argostoli, during the heat of summer. The first I observed on July 20th, and by August 7th had several opportunities of watching their habits. They appeared to differ in the size and markings of specimens, and the male was of a lighter colour, appearing almost white when flying. They appear to catch their prey on the wing, as I saw them in considerable numbers in one part of the bay, but they very seldom alighted, and on the approach of each other they fly and pursue with great velocity: here I also caught their parasite, the *Parnopes carnea*. The nests of the *B. rostrata* are constructed in the soft light sea sand, which of course blows over the mouth of the nest, and makes it too small for the bee's entrance. The *Bembex* therefore alights with its head towards the nest, and with astonishing swiftness throws off the sand, covering the aperture to several inches of distance, scraping with its forelegs like a dog. Directly the mouth is clear it enters, carrying with it the prey intended for its future progeny, and the wind blowing over the nest again must in part conceal it from all enemies. Its prey consisted of such flies as frequented the sand; amongst others I found a bottle-green fly.

21. *Geotrupes subarmatus*,^a which, at p. 377, I mentioned under the name of *Typhæus Ionicus*, is found in Herme, near Guernsey, from which small island I have procured it, and therefore think it probable that it may be found in England. In this opinion I am confirmed by having, in some collections in Edinburgh, seen the unarmed female of *G. subarmatus* placed beside, and as the other sex of, the male *Typhæus vulgaris*; whereas in others they have the real pair of *T. vulgaris*, the female of which is smaller than the male, and has shorter horns: it again very closely resembles the male of *G. subarmatus*. This I trust will soon be identified as an addition to British entomology, if not already done so.

^a *Scarabæus pumilus*, *Marsh.* I. 8; *Typhæus vulgaris* *β.* *Steph. Syst. Cat.* I. 107.—Ed.

22. *Brachycerus undatus*, feeds on the leaves of the *Arum arisarum*, on which we found it in great abundance in October in Corfu, when in company with Mr. Kuper. *Brachycerus barbarus* feeds on the medicinal squill; several are generally found at the heart of the leaves near the root, and are thus common, but not frequently met with by one unacquainted with their habits. They are nearly as hard in shell as the diamond-beetle, and they generally acquire a tinge of white from the clay, in which the squill grows, adhering to them. *Brachycerus algirus* feeds on the leaves of a very large and handsome species of lily, which grows in sea sand, and flowers in August; the beetle, however, appears earlier in the season, but rather later than *B. barbarus*. I took this species at Lixurie, Cephalonia.

ART. XLV. — *Monographia Chalciditum.* By FRANCIS WALKER.

(Continued from page 206.)

“ ——— the green myriads in the peopled grass.”

PTEROMALUS.

SECTIO XXV. Mas et Fem.

Mas. — Corpus angustum: caput thorace vix latius: antennæ filiformes, crassæ, corpore paullo breviores; articuli 5^o. ad 10^{um}. curtantes; clava fusiformis, articulo 10^o. duplo longior: thorax sublinearis, convexus: prothorax brevis: mesothoracis parapsidum suturæ conspicuæ: metathorax bene determinatus: abdomen lineare, depressum, thoracis longitudine at vix latitudine; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: sexualia exerta: alæ longæ; nervus cubitalis radiali brevior.

Fem. — Corpus latius: antennæ crassiores, clavatæ, corporis dimidio paullo breviores; clava brevi-ovata, articulo 10^o. plus duplo longior et paullo latior: abdomen ovatum, subtus angulatum, apice elevatum et acuminatum, thoracis longitudine: oviductus occultus.

Sp. 104. Pter. bellus. Mas et Fem. *Læte viridis, cupreo-variis, antennæ nigræ, abdomen cupreum mari flavo maculatum, pedes flavi, femora viridia, alæ limpidae.*

Mas.—*Læte viridis, nitens, cupreo variis*: os fulvum: oculi picei: antennæ nigræ; articulis 1^{us}. fulvus, apice viridis: abdomen cupreum, basi viride; segmenta 1^{um}. et 2^{um}. flavo maculata: sexualia fulva: pedes læte flavi; coxæ virides; femora viridia, basi et apice flava; protarsi fulvi; meso- et metatarsi apice fusci: alæ limpidae; proalæ ad costam obsolete fulvo tinctæ; squamulæ cupreo-virides; nervi fulvi; stigma fuscum, parvum.

Fem.—*Viridis*: antennis articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-æneus: mesothoracis scutellum postice æneum: abdomen purpureo-cupreum; segmentum 1^{um}. læte viride, apice cupreum; 5^{um}. et 6^{um}. basi viridia; oviductus fulvus: femora viridia, basi et apice flava. (Corp. long. lin 1 $\frac{1}{5}$ —2; alar. lin. 1 $\frac{2}{3}$ —2 $\frac{1}{2}$.)

Var. β.—*Mas*, caput et thorax æneo-viridia.

Var. γ.—*Mas*, caput viride: thorax æneo-viridis.

Var. δ.—*Mas*, caput et thorax omnino viridia.

Var. ε.—*Mas*, abdominis latera et apex æneo-viridia.

Var. ζ.—*Mas*, femora flava, medio supra viridia.

Var. η.—*Mas*, *Var. ζ.* similis: metafemora viridia, basi et apice flava.

Var. θ.—*Fem.* mesothoracis scutellum omnino viride: abdominis segmenta omnia basi viridia.

Var. ι.—*Fem.* *Var. θ.* similis: thoracis suturæ æneo-virides.

Var. κ.—*Fem.* thorax æneo-viridis; mesothoracis scutellum cupreum.

Var. λ.—*Fem.* caput et thorax viridia: abdominis segmentum 1^{um}. viridi-cyaneum, apice purpureo-cupreum.

Var. μ.—*Fem.* caput et thorax viridi-ænea.

Var. ν.—*Fem.* *Var. μ.* similis: mesothoracis scutellum et metathorax cupreo-ænea.

Var. ο.—*Fem.* caput viridi-æneum: thorax cupreo-æneus: abdomen cupreum; segmenta basi viridia.

Var. ξ.—*Fem.* thorax æneo-viridis: metathorax viridis.

Var. π.—*Fem.* thorax viridis: mesothoracis scutum utrinque cupreum.

Var. ρ.—*Fem.* *Var. λ.* similis: abdominis segmentum 1^{um}. viride, apice cupreum.

Var. σ.—*Fem.* abdominis segmentum 1^{um}. cyaneum, apice cupreo-viride; 2^{um}. et sequentia basi viridi-cyanea.

- Var. τ.*—*Fem.* alæ omnino limpidæ.
- Var. υ.*—*Fem.* cyaneo-viridis: abdominis segmenta postice cuprea: alæ omnino limpidæ.
- Var. φ.*—*Fem.* metathorax viridi-æneus: meso- et metapedum tibiæ et tarsi pallide flava: alæ omnino limpidæ.
- Var. χ.*—*Fem.* viridi-aureus: abdomen cupreum; discus cyaneo-purpureus; segmentum 1^{um}. viride, cupreo varium: alæ omnino limpidæ.
- Var. ψ.*—*Fem.* caput viride: thorax viridi-cupreus: alæ omnino limpidæ.
- Var. ω.*—*Fem.* viridi-æneus: caput viride: abdomen cupreum, basi viride.

May to September; near London, Windsor Forest, Hampshire, Isle of Wight, Dorsetshire, Devonshire, Cornwall, North Wales, Cumberland, and Lanarkshire.

Sp. 105. *Pter. chloris*. Mas. *Læte viridis, abdomen cupreum immaculatum.*

Læte viridis, nitens: oculi rufo-picei: antennæ nigrae; articulus 1^{us}. viridis, basi fuscus: mesothoracis paraptera viridi-æneo marginata: metathorax æneo-viridis: abdomen cupreum, basi et apice æneo-viride: sexualia fusca: pedes læte flavi; coxæ et femora viridia; meso- et metatarsi apice fusci; protarsi fulvi: alæ limpidæ; squamulæ æneo-virides; nervi fusci; stigma parvum, obscurius. (Corp. long. lin. $1\frac{5}{4}$ —2; alar. lin. $2\frac{1}{4}$ — $2\frac{1}{2}$.)

- Var. β.*—Thorax cupreo-maculatus: abdomen basi apice et utrinque viride: protibiæ extus fusco vittatæ.
- Var. γ.*—Protibiæ extus viridi vittatæ; meso- et metatarsi fusci, basi flavi.
- Var. δ.*—Thorax cupreo varius.
- Var. ε.*—Metacoxæ cyaneo-virides.
- Var. ζ.*—Thoracis discus cupreo-æneus.
- Var. η.*—Thorax cupreo et purpureo varius.
- Var. θ.*—Abdomen viride; discus cupreus.

June and September; near London, Hampshire, Isle of Wight.

Sp. 106. Pter. constans. Mas et Fem. *Læte viridis, antennæ nigrae, pedes rufi, abdomen cupreum basi viride, alæ limpidae.*

Læte viridis, nitens: oculi rufo-picei: antennæ nigrae; articulus 1^{us}. æneo-viridis: *mari* mesothoracis latera et metathorax æneo-varia: *fem.* thorax æneo-viridis: *mari* abdomen cupreum, apice æneo-viride; segmentum 1^{um}. viride: sexualia fusca: *fem.* abdomen æneo-viride, basi cyaneum: pedes pallide rufi; coxæ virides; protarsi fulvi; meso- et metatarsi flavi, apice fusci: alæ limpidae; squamulae fulvæ, apice virides; nervi fulvi; stigma obscurius, parvum. (Corp. long. lin. $1\frac{1}{3}$ — $1\frac{3}{4}$; alar. lin. $1\frac{2}{3}$ —2.)

Var. β.—*Mas*, mesothoracis scutellum æneo-viride.

Var. γ.—*Mas*, caput et thorax viridia, hujus discus cupreo-viridis.

Var. δ.—*Mas*, femora omnia viridi vittata.

Var. ε.—*Mas*, *Var. δ.* similis: mesothoracis scutellum, paraptera et epimera cuprea: abdomen cupreum; segmentum 1^{um}. basi viride, cupreo varium.

Var. ζ.—*Mas*, mesofemora intus viridi vittata.

Var. η.—*Mas*, *Var. γ.* et *Var. δ.* coloribus.

Var. θ.—*Mas*, abdomen læte viride; discus cupreus; segmentum 1^{um}. cyaneo-viride.

Var. ι.—*Mas*, *Var. γ.* similis: caput et mesothoracis discus cyaneo-viridia: meso- et metatarsi straminei, apice fusci.

Var. κ.—*Mas*, caput et thorax viridia: abdomen cupreum, basi et apice viride.

Var. λ.—*Mas*, abdomen viride; discus cupreo-viridis: meso- et profemora viridi vittata; meso- et metatarsi pallide straminei, apice fusci.

Var. μ.—*Mas*, caput et thorax viridi-cyanea: abdomen viride; discus cupreus: femora viridi vittata.

Var. ν.—*Fem.* cupreo-viridis: abdomen cupreum.

Var. ξ.—*Fem.* viridis: mesothorax postice et metathorax æneo-virides: abdomen cupreum; segmentum 1^{um}. basi viride.

Var. ο.—*Fem.* *Var. ξ.* similis: thorax omnino viridis.

Var. π.—*Fem.* viridi-æneus: mesothoracis scutellum cupreo-æneum: abdomen æneo-viride; discus cupreus.

Var. ρ.—*Fem.* *Var. ξ.* similis: femora supra viridi vittata.

Var. σ.—*Fem.* *Var. ρ.* similis: viridi-æneus: abdomen cupreum, basi viride.

Var. τ.—*Fem.* viridis: abdominis discus cupreus.

Var. v.—*Fem.* æneus: caput æneo-viride: thoracis suturæ virides: abdomen cupreum, basi cyaneo-viride.

May to September; near London. Isle of Wight, Dorsetshire, Devonshire, Cornwall, North Wales, Cumberland, Lanarkshire.

Sp. 107. *Pter. cliens.* *Fem.* *P. constantis statura, alæ sublimpidæ fusco obsolete nebulosæ.*

Æneus: caput viridi-æneum: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. viridis: abdomen cupreum; discus obscure purpureus; segmentum 1^{um}. læte viride: pedes fulvi; coxæ et femora viridia; meso- et metatarsi flavi, apice fusci: proalæ fusco indistincte nebulosæ; squamulæ æneæ; nervi fulvi; stigma obscurius, parvum. (Corp. long. lin. 1 $\frac{3}{4}$; alar. lin. 2.)

September; coasts of Devonshire and Cornwall.

Sp. 108. *Pter. impar.* *Mas et Fem.* *P. constante angustior.*

Mas.—Læte viridis: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. viridis: abdominis discus cupreus; segmentum 1^{um}. basi cyaneo-viride: pedes fusci; coxæ virides; trochanteres genua et tarsi flava, hi apice fusci; protarsi fulvi: alæ sublimpidæ; squamulæ virides; nervi fulvi; stigma obscurius, parvum.

Fem.—Viridi-æneus: mesothoracis scutellum cupreo-æneum: abdomen cupreum; segmentum 1^{um}. basi cyaneo-viride: pedes obscure fulvi; femora viridi vittata; trochanteres et genua flava; meso- et metatarsi pallidiores, apice fusci. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{2}{3}$.)

Var. β.—*Mas.* thoracis latera cyaneo-viridia.

Var. γ.—*Mas,* femora viridia; tibiæ flavæ, fusco vittatæ.

Var. δ.—*Fem.* æneo-viridis: abdominis segmentum 1^{um}. viride, apice cupreum.

Var. ε.—*Fem.* caput et thorax viridia: abdominis segmentum 1^{um}. basi viride: pedes rufi; femora extus et coxæ viridia; protarsi fulvi; meso- et metatarsi flavi, apice fusci.

Var. ζ.—*Fem.* *Var. ε.* similis: mesothoracis scutum viridi-æneum.

Var. η.—*Fem.* *Var. δ.* similis: femora viridia; tibiæ fuscæ.

Var. θ.—*Fem.* caput viride: thorax æneus: abdomen cupreum; segmentum 1^{um}. viride, apice cupreum: pedes rufi; coxæ virides; propedum femora extus viridi vittata, tarsi fulvi; meso- et metatarsi apice fusci.

September: near London, Isle of Wight, Lanarkshire.

Sp. 109. Pter. brevivitta. Fem. P. constante *angustior, antennæ graciliores, proalæ cujusque disco macula oblonga fusca.*

Viridi-æneus: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. viridis, basi fuscus: abdomen cupreum; segmentum 1^{um}. basi viride: pedes rufi; coxæ virides; meso- et metatarsi flavi apice fusci; protarsi fulvi: alæ sublimpidæ; squamulæ viridi-æneæ; nervi fulvi; stigma fuscum, parvum; proalæ cuique macula indistincta fusca. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{2}{3}$.)

Var. β .—Femora supra viridi vittata.

Var. γ .—Læte viridis: abdomen viridi-æneum; segmentum 1^{um}. cyaneo-viride, apice viridi-æneum; alæ limpidæ.

September; near London. Isle of Wight.

Sp. 110. Pter. illudens. Fem. P. belli *similitudine, antennæ paullo breviores, alæ angustiores, femora omnino flava.*

Læte viridis, nitens: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. fulvus; 2^{us}. nigro-viridis: abdomen cupreo-purpureum; segmentum 1^{um}. læte viride, cupreo-varium; 2^{um}. et sequentia basi utrinque viridia: pedes læte flavi; meso- et metapedum tibiæ et tarsi pallidiora, hi apice fusci: coxæ virides: alæ limpidæ; squamulæ et nervi fulva; stigma fuscum, minutum. (Corp. long. lin. 2; alar. lin. 2 $\frac{1}{2}$.)

July; New Forest.

SECTIO XXVI. Fem.

Caput thorace latius: antennæ graciles, breves, clavatæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. latior et duplo fere longior: thorax longi-ovatus; segmenta bene determinata: prothorax brevis: mesothoracis parapsidum suturæ conspicuæ: metathorax medio-cris, tristriatus: abdomen ovatum, subtus valde angulatum, apice acuminatum, thorace brevius: alæ amplæ; nervus cubitalis radiali multo brevior.

Sp. 111. Pter. pulchripes. Fem. *Viridis, antennæ nigro-fuscæ, pedes flavi, alæ limpidæ.*

Læte viridis, nitens: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. æneus: abdominis discus

cupreo-æneus: pedes læte flavi; coxæ virides; femora et protarsi fulva; meso- et metatarsi apice fusci: alæ limpidae; squamulæ et nervi fulva; stigma minimum, concolor. (Corp. long. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$; alar. lin. $2\frac{1}{4}$ — $2\frac{1}{2}$.)

Var. β.—Antennis articulus 1^{us}. fuscus, basi fulvus: femora fusca apice flava.

Var. γ.—Caput et thorax cyaneo-viridia.

Var. δ.—Abdomen viridi-cyaneum; discus cupreo-æneus.

May, June; near London. Windsor Forest.

SECTIO XXVII. Fem.

Caput thorace paullo latius: antennæ subclavatæ, corporis dimidii vix longitudine; articuli 5^o. ad 10^{um}. curtantes vix latescentes; clava longi-ovata, articulo 10^o. duplo longior et paullo latior: thorax longi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, subtus convexum, apice acuminatum, thoracis longitudine: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 112. Pter. continuus. Fem. *Viridis, antennæ nigræ, pedes flavi, alæ limpidae.*

Læte viridis, nitens: oculi rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. virides, ille basi fulvus: thoracis latera et metathorax æneo-viridia: abdomen subtus cupreum; segmenta apice ænea: pedes flavi; coxæ virides; femora et protarsi fulva; meso- et metatarsi apice fusci: alæ limpidae, fulvo minime tinctæ; squamulæ et nervi fulva; stigma obscurius, minutum. (Corp. long. lin. 2; alar. lin. $2\frac{1}{2}$.)

Var. β.—Antennis articulus 1^{us}. fulvus, apice nigro-viridis: thorax viridis: prothorax æneo-viridis: abdomen viridi-cyaneum; segmenta apice purpurea.

Var. γ.—Thorax cupreo varius.

June, October; near London. Isle of Wight.

SECTIO XXVIII. Fem.

Corpus longum, gracile: caput thorace latius, antennæ subclavatæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes vix latescentes; clava ovata, articulo 10^o. plus duplo longior vix latior: thorax longi-ovatus; segmenta bene determinata: prothorax brevis: mesothoracis parapsidum suturæ conspicuæ: metathorax

mediocris: abdomen fusiforme, acuminatum, thorace longius et angustius, subtus convexum; segmentum 1^{um}. magnum; 2^{um}. et 3^{um}. breviora; 4^{um}. et 5^{um}. longiora; 6^{um}. brevius; 7^{um}. 4ⁱ. longitudine: alæ amplæ; nervus radialis cubitali duplo longior.

Sp. 113. Pter. collaris. Fem. *Viridis, pedes fulvi, antennæ et femora nigro-fusca, abdomen cupreum, alæ sublimpidæ.*

Viridis: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: metathorax cyaneus: abdomen læte cupreum; segmentum 1^{um}. læte viride, cupreo varium; 6^{um}. apice cyaneum: pedes fulvi; coxæ virides; femora nigro-fusca, apice basique fulva; meso- et metapedum genua et tarsi flava, hi apice fuscii: alæ sublimpidæ; squamulæ et nervi fulva; stigma minutum, concolor. (Corp. long. lin. 2; alar. lin. 2 $\frac{1}{4}$.)

Var. β.—Mesothorax apice cyaneus: abdomen apice viride.

June; Windsor Forest and New Forest.

SECTIO XXIX. Fem.

Corpus parvum: caput thorace paullo latius: antennæ breves, subclavatæ, graciles, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax mediocris: abdomen ovatum, acuminatum, subtus angulatum, vix thoracis longitudine: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 114. Pter. nanus. Fem. *Cupreo-æneus, antennæ nigræ, pedes fulvi, alæ sublimpidæ.*

Cupreo-æneus, parum nitens: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. basi fulvus: abdomen nigro-viride, nitens; segmentum 1^{um}. læte cupreum: pedes obscure fulvi; coxæ æneæ; meso- et metatarsi flavi, apice fuscii: alæ sublimpidæ; squamulæ et nervi pallide fulva; stigma obscurius, minutum. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{4}$.)

Var. β.—Caput obscure viride: antennis articulus 1^{us}. nigro-viridis: abdomen nigro-æneum, basi æneo-viride.

July; near London.

SECTIO XXX.—Fem.

Caput thoracis latitudine : antennæ graciles, subclavatae, corporis dimidio longiores ; articuli 5^o. ad 10^{um}. paullo curtantes et minime latescentes ; clava fusiformis, acuminata, articulorum 9ⁱ. et 10ⁱ. longitudine : thorax ovatus : prothorax brevis : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, supra planum, subtus angulatum, apice acuminatum, thorace paullo longius : alæ mediocres ; nervus cubitalis radiali paullo brevior.

Sp. 115. Pter. discolor. Fem. *Nigro-viridis, antennæ nigræ, abdomen nigro-æneum fulvo maculatum, pedes fulvi, alæ sublimpidæ.*

Nigro-viridis, obscurus : oculi rufo-picei : antennæ nigræ ; articulus 1^{us}. fulvus ; 2^{us}. fulvo-piceus : abdomen nigro-æneum, fulvo ante medium repande at non distincte maculatum ; segmentum 1^{um}. nigro-viride : pedes fulvi ; coxæ nigro-virides ; femora fusca : alæ sublimpidæ ; squamulæ nigro-virides ; nervi fulvi ; stigma minimum, concolor. (Corp. long. lin. 1½ ; alar. lin. 1½.)

Var. β.—Thorax nigro-æneus.

Var. γ.—*Var. β.* similis : macula abdominis latera attingens.

June ; on windows, near London.

SECTIO XXXI.—Fem.

Sect. XXI. proxima.—Caput thorace paullo latius : antennæ clavatae, corporis dimidii longitudine ; articuli 5^o. ad 10^{um}. curtantes et latescentes ; clava ovata, articulo 10^o. paullo latior et fere duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, acuminatum, subtus angulatum, thorace vix longius : alæ mediocres ; nervus cubitalis radiali brevior.

Sp. 116. Pter. gaudens. Fem. *Cyaneo-viridis, antennæ nigro-fuscae, abdomen cyaneo-cupreum, pedes flavi, femora viridia, alæ limpidæ.*

Cyaneo-viridis, nitens : oculi rufi : antennæ nigro-fuscae ; articulus 1^{us}. fulvus ; 2^{us}. fusco-viridis : abdomen læte cupreum ; segmenta

1^{um}. 3^{um}. et 4^{um}. cyanea, apice cuprea: pedes flavi; coxæ et femora viridia; protibiæ et protarsi fulva; meso- et metatarsi apice fusci: alæ limpidae; squamulæ et nervi flava; stigma minutum, concolor. (Corp. long. lin. 1—1½; alar. lin. 1⅓—1⅔.)

Var. β.—Viridis: antennis articulus 1^{us}. apice fuscus: abdomen cupreo-purpureum; segmentum 1^{um}. basi cyaneum; sequentia basi viridia.

August; near London.

SECTIO XXXII.—Fem.

Sect. V. proxima. — Caput thoracis latitudine: antennæ subclavatae, corporis dimidii longitudine; articuli 5^o. ad 10^{um}. curtantes vix latescentes; clava ovata, articulo 10^o. latior et duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, subtus angulatum, thorace paullo longius: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 117. Pter. mærens. Fem. *Viridis, antennæ nigro-fusca, abdomen cupreum, pedes flavi fusco-cingulati, alæ sublimpidæ.*

Obscure viridis: oculi rufi: antennæ nigro-fusca; articulus 1^{us}. niger, basi fulvus: abdomen obscure cupreum; segmentum 1^{um}. læte viride; 2^{um}. et sequentia basi et utrinque viridia: pedes flavi; coxæ et femora viridia; metatibiæ nigro-fusco cingulatae; protibiæ et protarsi fulva; meso- et metatarsi apice fusci: alæ sublimpidæ; squamulæ et nervi fulva; stigma parvum, fuscum. (Corp. long. lin. 1—1¼; alar. lin. 1⅓—1⅔.)

Var. β.—Æneo-viridis: caput viride: mesothoracis scutellum cupreo varium: mesotibiæ fusco cingulatae.

Var. γ.—Æneus: caput obscure viride: abdomen obscure cupreum; segmenta basi viridi-ænea.

Var. δ.—*Var. γ.* similis: tibiæ fusca, basi et apice flavæ.

Var. ε.—Thorax cupreo-æneus: metathorax viridis: abdomen supra cupreum, subtus viride; segmenta basi cyaneo-viridia.

Var. ζ.—Caput viride: thorax viridi-æneus: abdomen cupreum; segmentum 1^{um}. viride, cupreo varium, 2^{um}. et sequentia basi viridia.

Var. η.—Viridis: abdomen basi subtus et utrinque cyaneo-viride; discus cupreus; segmenta basi viridia.

September; coasts of Dorsetshire, Devonshire, and Cornwall.

SECTIO XXXIII.—Mas et Fem.

Mas.—Caput thorace latius: antennæ subfiliformes, corpore paullo breviores; articuli 5^o. ad 10^{um}. curtantes; clava fusiformis, acuminata, articulo 10^o. plus duplo longior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen sublineare, thorace angustius et brevius: sexualia occulta: alæ mediocres; nervus cubitalis radialis vix brevior.

Fem.—Caput thoracis latitudine: antennæ subclavatæ, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. latescentes, non curtantes; clava ovata, articulo 10^o. duplo longior et paullo latior: abdomen brevi-ovatum, thoracis longitudine.

Sp. 118. Pter. laticornis. Mas et Fem. *Æneus* (mas) aut *viridi-cupreus* (fem.) antennæ mari nigro-fuscæ, fem. fulvæ, pedes fulvi, alæ sublimpidæ.

Mas.—*Æneus*: oculi rufo-picei: caput, pro- et metathorax viridi-ænea: antennæ nigro-fuscæ; articulus 1^{us}. basi fulvus: abdomen cupreum, basi et apice obscure viride: pedes pallide fulvi; coxæ virides; meso- et metapedum genua et tarsi pallide flava, hi apice fuscii: alæ sublimpidæ; squamulæ et nervi fulva; stigma mediocre, concolor.

Fem.—Viridi-cupreus: caput viride: antennæ fulvæ, apice obscuriores; articulus 1^{us}. pallidior: abdomen obscure viridi-cupreum; segmentum 1^{um}. læte viride, cupreo varium: pedes fulvi; coxæ æneæ; tarsi apice fuscii: alarum squamulæ, nervi et stigma pallide fusca. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{3}{4}$.)

Found near London.

SECTIO XXXIV.

Caput thorace latius: antennæ subclavatæ, corporis dimidio longiores; articuli 5^o. ad 10^{um}. curtantes vix latescentes; clava longi-ovata, apicem versus abrupte attenuata, articulo 10^o. plus duplo longior non latior: thorax brevi-ovatus, crassus: prothorax vix conspicuus: mesothoracis parapsides scuto fere in unum confusæ:

metathorax brevis : abdomen ovatum, acuminatum, subtus leviter angulatum, thorace longius et angustius : alæ mediocres ; nervus cubitalis radiali brevior.

Sp. 119. Pter. chalcomelas. Fem. *Niger, abdomen nigro-cupreum, pedes fulvi, alæ sublimpidæ.*

Niger, obscurus : oculi rufo-picei : antennæ nigræ ; articulus 1^{us}. basi fuscus : abdomen nigro-cupreum, nitens : pedes fulvi ; coxæ nigræ ; meso- et metatarsi flavi, apice fusci : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma minutum, concolor. (Corp. long. lin. $\frac{1}{2}$ --1 ; alar. lin. $\frac{3}{4}$ --1 $\frac{1}{2}$.)

Var. β .—Antennæ nigro-fuscæ ; articulus 1^{us}. basi fulvus.

Var. γ .—Abdomen nigrum ; discus nigro-æneus : pedes flavi ; meso- et metatarsi pallidiores, apice fusci : alarum squamulæ et nervi pallide fulva.

September ; coast of Devonshire.

SECTIO XXXV.—Fem.

Corpus longum, gracile : caput thorace vix latius : antennæ subclavatæ, corporis dimidio longiores ; articuli 5^o. ad 10^{um}. curtantes et minime latescentes ; clava ovata, articulo 10^o. duplo longior et paullo latior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen fusiforme, acuminatum, subtus non angulatum, thorace longius : alæ mediocres ; nervus cubitalis radiali multo brevior.

Sp. 120. Pter. terminalis. Fem. *Viridis, præcedentibus longior et gracilior, antennæ nigro-fuscæ, pedes flavi, alæ sublimpidæ.*

Viridis : oculi rufo-picei : antennæ nigro-fuscæ ; articulus 1^{us}. fulvus, apice fuscus : abdomen postice æneum ; segmentum 1^{um}. cupreo varium ; 2^{um}. et sequentia apice obscure purpurea : pedes flavi ; coxæ virides ; femora et protarsi fulva, illa supra fusca ; meso- et metatarsi apice fusci : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma minutum, obscurius. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$.)

June ; near London ; Isle of Wight.

SECTIO XXXVI.—Fem.

Caput thorace latius: antennæ clavatæ, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. latior et plus duplo longior: thorax ovatus, angustus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, acuminatum, subtus non angulatum, thorace paullo longius: alæ angustæ; nervus cubitalis radiali multo brevior et angulum quam hujus generis plerisque acutiorem fingens.

Sp. 121. Pter. compressus. Fem. *Viridis, antennæ nigro-fuscæ, abdomen cupreum basi subtus fuscum, pedes flavi, alæ limpidaæ.*

Viridis, parum nitens: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, basi pallidior: abdomen obscure cupreum, basi subtus fuscum: pedes flavi; coxæ virides; tarsi apice fusci: alæ limpidaæ; squamulæ et nervi flava; stigma minutum, concolor. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Var. β.—Antennis articulus 1^{us}. fuscus, basi fulvus: metafemora et metatibiæ fulva.

Var. γ.—*Var. β.* similis: metafemora fusca.

Found near London.

SECTIO XXXVII.—Fem.

Sect. XXXVI. similis: alæ latae; nervus cubitalis radiali angulum obtusorem fingens.

Sp. 122. Pter. gracilis. Fem. *Æneo-viridis, antennæ nigro-fuscæ, abdomen cupreum, pedes fulvi, alæ limpidaæ.*

Æneo-viridis, parum nitens: caput viride: oculi rufo-picei: antennæ nigro-fuscæ: abdomen obscure cupreum, nitens: pedes fulvi; coxæ virides; meso- et metatarsi flavi, apice fusci: alæ limpidaæ, amplæ; squamulæ et nervi pallide fulva; stigma minutum, concolor. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Found near London.

SECTIO XXXVIII.

Caput thorace paullo latius: antennæ clavatæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. duplo longior et paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, acuminatum, subtus non angulatum, apicem versus attenuatum, thorace multo longius: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 123. Pter. dorsalis. Fem. *Viridis, antennæ nigræ, abdominis discus purpureus, pedes flavi, alæ limpidæ.*

Læte viridis: oculi picei: antennæ nigræ, crassæ; articulus 1^{us}. pallide fulvus: abdominis discus et apex obscure purpurea; segmenta basi viridia: pedes flavi; coxæ virides; femora et pro-tarsi fulva; meso- et metatarsi apice fusci: alæ limpidæ; squamulæ et nervi fulva; stigma obscurius, parvum. (Corp. long. lin. 1 $\frac{3}{4}$; alar. lin. 2.)

Found near London.

SECTIO XXXIX.—Fem.

Caput thorace latius: antennæ clavatæ, corporis dimidio vix longiores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava longi-ovata, articulo 10^o. triplo fere longior et paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen oblongo-quadratum, thorace paullo longius, non angulatum nec acuminatum: alæ mediocres; nervus cubitalis radiali paullo brevior.

Sp. 124. Pter. subquadratus. Fem. *Cupreo-æneus, antennæ fuscæ, abdomen viridi-cupreum, pedes fulvi, alæ fuscæ.*

Cupreo-æneus, parum nitens: oculi picei: antennæ fuscæ; articulus 1^{us}. fulvus: abdomen obscure viridi-cupreum, nitens: pedes fulvi; coxæ æneæ; tarsi apice fusci: alæ fuscæ; squamulæ et nervi fulva; stigma concolor, minutum. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found near London.

SECTIO XL.—Fem.

Caput thorace latius: antennæ clavatæ, graciles, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10°. latior et duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen fusiforme, acuminatum, subtus leviter angulatum, thorace multo longius: alæ mediocres; nervus cubitalis radialis brevior.

Sp. 125. Pter. attenuatus. Fem. *Æneo-viridis, antennæ nigræ, abdominis discus cupreo-purpureus, pedes fulvi, alæ sublimpidæ.*

Æneo-viridis: caput viride: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. basi fulvus: mesothoracis scutellum postice cupreo-æneum: abdomen læte viride, cupreo-varium; discus obscure cupreo-purpureus: pedes fulvi; coxæ æneo-virides; meso- et metatarsi flavi, apice fusci: alæ sublimpidæ; squamulæ et nervi fulva; stigma minutum, obscurius. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{4}$.)

September; Land's End, Cornwall.

Sp. 126. Pter. signatus. Fem. *Niger, P. attenuato brevior, antennæ nigro-fuscæ, abdomen nigro-cupreum, pedes fulvi, femora viridia, alæ sublimpidæ.*

Niger, obscurus: caput thorace paullo latius: oculi picei: antennæ nigro-fuscæ, subclavatæ; articulus 1^{us}. basi fulvus; clava articulo 10°. plus duplo longior non latior: thorax brevis: metathorax nigro-*viridis*: abdomen nigro-cupreum, nitens, basi læte viride: pedes obscure fulvi; coxæ et femora viridia, hæ apice fulva; meso- et metapedum tibiæ apice et tarsi flava, hi apice fusci: alæ sublimpidæ; squamulæ et nervi fulva, stigma obscurius, minutum. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

Sp. 127. Pter. mundus. Fem. *Æneo-viridis, antennæ fuscæ, abdomen æneo-cupreum, pedes fulvo-fusci, alæ subfuscæ.*

*Æneo-*viridis**, obscurus: caput viride: oculi rufo-picei: antennæ fuscæ; articulus 1^{us}. fulvus: mesothoracis scutellum æneum:

abdomen æneo-cupreum; segmentum 1^{um}. basi viride: pedes fuscī; coxæ virides; protibiæ et protarsi fulvæ; meso- et metatarsi flavī, apice fuscī: alæ subfuscæ; squamulæ et nervi fusca; stigma minutum, concolor. (Corp. long. lin. $\frac{3}{4}$; alar. lin. $1\frac{1}{4}$.)

Found near London.

SECTIO XLI.—Fem.

Sect. XVII. proxima.—Corpus breve, latum: caput thorace latius: antennæ clavatæ, corporis dimidii longitudine; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. plus duplo longior vix latior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thoracis longitudine: alæ latæ; nervus cubitalis radiali brevior.

Sp. 128. Pter. amplus. Fem. *Nigro-æneus, antennæ nigræ, abdomen cupreum, pedes fuscī, alæ sublimpidæ, stigma minutum.*

Nigro-æneus, parum nitens: oculi picei: antennæ nigræ; articulus 1^{us}. basi fuscus: abdomen obscure cupreum; suturæ viridicyanæ; segmentum 1^{um}. læte viride, cupreo varium: pedes fuscī; coxæ ænæ; trochanteres, genua et tarsi flava, hi apice fuscī; protarsi fulvi: alæ sublimpidæ; squamulæ et nervi fulvæ; stigma minutum, concolor. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

June; Isle of Wight.

Sp. 129. Pter. divisus. Fem. *Cupreo-æneus, antennæ nigro-fuscæ, pedes fuscī, alæ sublimpidæ, stigma mediocre.*

Cupreo-æneus, parum nitens: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen cupreum; segmentum 1^{um}. cyaneo-viride, cupreo varium: pedes fuscī; coxæ ænæ; meso- et metapedum genua et tarsi flava, hi apice fuscī: alæ sublimpidæ; squamulæ et nervi fusca; stigma obscurius, mediocre. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

SECTIO XLII.—Fem.

Caput magnum, thorace latius: antennæ subclavatæ, graciles, corporis dimidio longiores; articuli 5^o. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10^o. latior et duplo longior:

thorax brevi-ovatus, latus, crassus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen brevi-ovatum, subtus convexum non angulatum, thoracis longitudine : alæ latæ ; nervus cubitalis radiali paullo brevior.

Sp. 130. Pter. cephalotes. Fem. *Æneus*, abdomen cupreum, antennæ nigro-fuscæ, pedes fulvi, femora æneo-fusca, alæ sublimpidæ.

Æneus: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen cupreum; segmentum 1^{um}. læte viridi-æneum, apice cupreum: pedes fulvi; coxæ æneo-virides; femora æneo-fusca; meso- et metapedum tibiæ fuscæ, tarsi flavi apice fusci: alæ sublimpidæ; squamulæ et nervi fulva; stigma fuscum, parvum. (Corp. long. lin. 1½; alar. lin. 1¾.)

Var. β.—Caput et thorax viridi-ænea.

Var. γ.—Abdominis segmentum 1^{um}. læte viride, cupreo-varium; sequentia basi viridia.

September; Isle of Wight.

SECTIO XLIII.—Fem.

Corpus breve: caput thoracis latitudine: antennæ clavatæ, corporis dimidii longitudine; articuli 5^o. ad 10^{um}. minime curtantes et latescentes; clava ovata, articulo 10^o. multo latior et plus duplo longior: thorax brevi-ovatus, crassus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, subtus valde angulatum, thorace longius et angustius: alæ mediocres; nervus cubitalis radiali brevior.

Sp. 131. Pter. servulus. Fem. *Viridis*, antennæ nigropiceæ, abdomen cupreum, pedes flavi fasciati, alæ sublimpidæ.

Viridis, parum nitens: oculi rufo-picei: antennæ nigro-piceæ; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen cupreum; segmentum 1^{um}. læte viride; 2^{um}. et sequentia subtus et utrinque basi viridia: pedes flavi; coxæ virides; femora viridi cingulata; tibiæ fusco cingulatæ; meso- et metatarsi apice fusci; protarsi fulvi: alæ sublimpidæ; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. ¾; alar. lin. 1.)

September; Isle of Wight.

SECTIO XLIV.—Fem.

Caput thorace paullo latius: antennæ clavatæ, graciles, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes et latescentes: clava ovata, articulo 10°. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen sublineare, angustum, compressum, acuminatum, non angulatum, thorace duplo fere longius: alæ maximæ; nervus cubitalis radiali multo brevior.

Sp. 132. Pter. eupterus. Fem. *Cyaneo-viridis*, antennæ fuscæ, abdomen nigro-cupreum, pedes fusci, femora viridia, alæ limpidæ.

Cyaneo-viridis: oculi rufi: antennæ fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen nigro-cupreum; segmentum 1^{um}. basi viride: pedes fusci; coxæ et femora viridia, hæ apice fulva; meso- et metatarsi flavi, apice fusci; protarsi fulvi: alæ limpidæ, amplæ; squamulæ et nervi fulva; stigma obscurius, mediocre. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β .—Viridis: mesothoracis scutellum viridi-cupreum.

Found near London.

SECTIO XLV.—Fem.

Caput thoracis latitudine: antennæ subclavatæ, graciles, corporis dimidii longitudine; articuli 5°. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10°. longior et paullo latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thoracis longitudine et latitudine: alæ mediocres; nervus cubitalis radiali multo brevior.

Sp. 133. Pter. rusticus. Fem. *Viridi-cupreus*, P. brevicorni *simillimus*, antennæ nigro-piceæ, pedes fulvi, femora fusco cingulata, alæ sublimpidæ.

Cupreus, nitens: caput antice et postice viride: oculi picei: antennæ nigro-piceæ; articulus 1^{us}. viridis, basi fulvus: thoracis segmentorum margines virides: abdomen viridi-cupreum; segmentum 1^{um}. micans; discus obscure purpureus: pedes fulvi; coxæ virides; femora fusco cingulata; meso- et metapedum tibiæ fusco-fulvæ; genua et tarsi flava, hi apice fusci: alæ sublimpidæ; squamulæ et nervi fulva; stigma fuscum, parvum. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$.)

Found near London.

SECTIO XLVI.—Fem.

Caput thorace paullo latius : antennæ subclavatæ, corporis dimidii longitudine ; articuli 5^o. ad 10^{um}. curtantes et paullo latescentes ; clava ovata, articulo 10^o. plus duplo longior et paullo latior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen longi-ovatum, acuminatum, non angulatum, thorace longius et angustius : alæ amplæ ; nervus cubitalis radiali brevior.

Sp. 134. Pter. diversus. Fem. *Æneo-viridis*, antennæ nigro-fuscæ, abdomen cupreum, pedes fulvi, femora fusca, alæ limpidæ.

Æneo-viridis : caput viride : oculi rufi : antennæ nigro-fuscæ ; articulus 1^{us}. nigro-viridis, basi fulvus : mesothoracis scutellum cupreo-viride : abdomen cupreum ; segmentum 1^{um}. læte viride, cupreo-varium : pedes fulvi ; coxæ virides ; femora fusca, apice basique fulva ; meso- et metapedum tibiæ fusco-fulvæ apice flavæ, tarsi flavi apice fuscii : alæ limpidæ ; squamulæ et nervi fulva ; stigma obscurius, minutum. (Corp. long. lin. $1\frac{1}{3}$ — $1\frac{1}{2}$; alar. lin. $1\frac{2}{3}$ — $1\frac{3}{4}$.)

Var. β.—Viridis : abdomen æneo-viride ; segmentum 1^{um}. cupreo-varium ; discus purpureus : femora viridia, apice fulva ; meso- et metatibiæ fusco cingulatæ.

Var. γ.—Viridis : thoracis discus æneo-viridis : antennæ fuscæ ; articulus 1^{us}. fulvus, apice supra fuscus : abdominis discus cupreus : femora et tibiæ flava : alis squamulæ et nervi flava ; stigma fulvum.

September ; Isle of Wight.

SECTIO XLVII.—Fem.

Sect. XX. proxima.—Caput thorace latius : antennæ crassæ, clavatae, corporis dimidii longitudine ; articuli 5^o. ad 10^{um}. curtantes et latescentes ; clava longi-ovata, articulo 10^o. paullo latior et plus duplo longior : thorax crassus, brevi-ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, acuminatum, elevatum, subtus valde angulatum, thorace longius et angustius : pedes validi : alæ mediocres ; nervus cubitalis radiali brevior.

Sp. 135. Pter. conifer. Fem. *Æneo-viridis*, antennæ nigræ, abdomen cupreum, pedes fulvi, alæ sublimpidæ.

Æneo-viridis: caput viride: oculi picei: antennæ nigræ; articulus 1^{us}. fulvus; 2^{us}. fusco-viridis: abdomen cupreum, nitens; segmentum 1^{um}. læte viride, cupreo varium: pedes fulvi; coxæ virides; meso- et metatarsi flavi, apice pallide fusci: alæ sublimpidæ; squamulæ et nervi fulva; stigma obscurius, minutum. (Corp. long. lin. $\frac{5}{4}$; alar. lin. 1.)

Found near London.

SECTIO XLVIII.—Fem.

Caput thorace latius: antennæ clavatæ, graciles, corporis dimidio longiores; articuli 5^o. ad 10^{um}. latescentes, non curtantes; clava longi-ovata, articulo 10^o. plus duplo longior, non latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, subtus vix angulatum, thoracis longitudine: alæ mediocres; nervus cubitalis radialis vix brevior.

Sp. 136. Pter. sobrius. Fem. *Cupreus*, antennæ nigropiceæ, abdomen nigro-æneum, pedes fulvi, alæ fuscæ.

Cupreus, parum nitens: caput antice viride: oculi picei: antennæ nigropiceæ; articulus 1^{us}. fulvus, apice fuscus: abdomen nigro-æneum, nitens; basi et apice æneo-viride: pedes obscure fulvi; meso- et metatarsi pallidiores, apice fusci; coxæ æneæ: alæ fuscæ; proalæ apud discum obscuriores; squamulæ et nervi fusca; stigma concolor, minutum. (Corp. long. lin. $\frac{2}{5}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Antennis articulus 1^{us}. nigro-viridis, basi fulvus: abdomen basi cupreo micans: femora et tibiæ fusca.

Found near London.

SECTIO I.

Sp. 137. Pter. fusci-cornis. Fem. *Præcedentibus hujus sectionis paullo brevior, caput latius, antennæ et pedes pallidiora.*

Æneo-viridis, parum nitens: caput viride: oculi rufo-picei: antennæ fuscæ; articulus 1^{us}. fulvus; 2^{us}. pallide fuscus: abdomen

nigro-cupreum, nitens: pedes pallide fulvi; femora meso- et metatibiæ obscuriora; coxæ virides; tarsi apice obscure fulvi: alæ limpidæ; squamulæ et nervi flava; stigma concolor, minutum. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—Thorax æneus: caput æneo-viride: antennis articulus 1^{us}. apice fuscus.

Var. γ.—*Var. β* similis: femora, meso- et metatibiæ fusca.

September; near London. Isle of Wight.

SECTIO III.—Subdiv. 2.

Sp. 138. Pter. thalassinus. Fem. *Viridis*, P. megachloro *affinis*, *antennæ fusco-fulvæ*, *pedes fulvi*, *femora viridi cingulata*, *alæ limpidæ*.

Caput thorace vix latius: antennæ subclavatæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10^o. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, acuminatum, non angulatum, thorace longius: alæ amplæ; nervus cubitalis radiali brevior.

Viridis, parum nitens: oculi ocellique rufi: antennæ fusco-fulvæ; articulus 1^{us}. basi fulvus: abdomen nitens; discus obscure cupreus: pedes fulvi; coxæ virides; femora fusco-viridi cingulata; meso- et metatarsi pallide flavi, apice fusci: alæ limpidæ; squamulæ et nervi fulva; stigma fuscum, minutum. (Corp. long. lin. 1 $\frac{1}{3}$; alar. lin. 1 $\frac{1}{2}$.)

September; Isle of Wight.

Sp. 139. Pter. bifrons. P. lucido et herbido *affinis*, *abdomen brevius*.

Caput thorace vix latius: antennæ clavatæ, corporis dimidii vix longitudine; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. plus duplo longior, non latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, acuminatum, non angulatum, thorace paullo longius: alæ mediocres; nervus cubitalis radiali multo brevior.

Viridis: oculi rufo-picei: antennæ nigræ; articulus 1^{us}. basi fulvus: abdomen purpureum; segmentum 1^{um}. læte viride, apice purpureum; 2^{um}. et sequentia basi utrinque viridia: pedes pallide

fulvi; coxæ virides; meso- et metapedum genua et tarsi pallide flava, hi apice fusci: alæ limpidæ; squamulæ et nervi pallide fulva; stigma obscurius, minutum. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

SECTIO III.—Subdiv. 4.

Sp. 140. Pter. epimelas. Fem. *Niger, abdomen nigro-cupreum, pedes fusci, alæ sublimpidæ.*

Caput thorace latius: antennæ subclavatae, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et minime latescentes; clava ovata, acuminata, articulo 10^o. duplo longior non latior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, subtus non angulatum, thorace paullo longius: alæ mediocres; nervus cubitalis radiali multo brevior.

Niger, obscurus: oculi picei: antennæ nigræ; articulus 1^{us}. nigro-æneus: abdomen nigro-cupreum, nitens: pedes fusci; coxæ nigræ; trochanteres et genua flava; meso- et metatarsi flavi, apice fusci: alæ sublimpidæ; squamulæ et nervi fusca; stigma concolor, parvum. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{4}$; alar. lin. 1— $1\frac{1}{2}$.)

Var. β.—Abdominis segmentum 1^{um}. basi læte viride: femora et tibiæ nigro-fusca.

Var. γ.—*Var. β* similis: antennæ nigro-fusca.

Var. δ.—Antennis articulus 1^{us}. fuscus, apice niger: abdominis segmentum 1^{um}. basi et metathorax cuprea: femora et tibiæ nigra.

Var. ε.—*Var. β* similis: antennis articulus 1^{us}. fulvus: tibiæ fusca.

September; near London. North Wales.

Sp. 141. Pter. confinis. Fem. *Æneus, præcedente brevior, antennæ fusca, abdomen nigro-cupreum, pedes flavi, alæ fulvæ.*

Æneus: caput æneo-viride: oculi rufo-picei: antennæ fusca; articulus 1^{us}. nigro-fuscus, basi fulvus: abdomen nigro-cupreum, basi viride, apice æneum: pedes flavi; coxæ virides; meso- et metatarsi apice fusci: alæ fulvæ; squamulæ et nervi fulva; stigma parvum, obscurius. (Corp. long. lin. $\frac{2}{3}$; alar. lin. $\frac{3}{4}$.)

Found near London.

Sp. 142. Pter. exilis. Fem. *Viridis*, P. tenui brevior, antennæ nigro-fuscæ, abdominis discus nigro-cupreus, pedes fulvi, alæ limpidæ.

Viridis: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: abdomen æneo-viride, nitens; discus nigro-cupreus: pedes fulvi; coxæ virides; meso- et metatarsi flavi, apice fusci: alæ limpidæ; squamulæ et nervi flava; stigma minutum, concolor. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found near London.

Sp. 143. Pter. stenotelus. Fem. *Æneus*, P. pingui similimus, antennæ fuscæ, abdomen cupreum, pedes fulvi, alæ sublimpidæ.

Corpus breve, latum: caput magnum, thorace latius: antennæ clavatæ, corporis dimidii longitudine; articuli 5_o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo 10^o. paullo latior et plus duplo longior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thorace vix longius: alæ sat latæ; nervus cubitalis radiali brevior.

Æneus: caput viride, thorace latius: oculi rufo-picei: antennæ fuscæ; articulus 1^{us}. fulvus: abdomen cupreum, basi viride: pedes fulvi; coxæ æneæ; meso- et metatarsi flavi, apice fusci: alæ limpidæ; squamulæ et nervi fulva; stigma minutum, concolor. (Corp. long. lin. 1; alar. lin. 1 $\frac{1}{2}$.)

Var. β.—Thorax æneo-viridis: antennæ fusco-fulvæ: abdomen viride, subtus æneo-varium; discus nigro-cupreus: coxæ virides.

Var. γ.—*Var. β* similis: thorax viridis: antennæ fulvæ: pedes pallide fulvi: alarum squamulæ et nervi flava.

Found near London.

Sp. 144. Pter. chrysammos. Fem. *Cupreus*, P. saturati statura, antennæ graciliores pallidiores, abdominis discus purpureus, pedes fulvi, femora fusco cingulata, alæ fulvescentes.

Caput thorace latius: antennæ clavatæ, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et latescentes; clava ovata, articulo

10°. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, subtus non angulatum, thorace paullo longius: alæ mediocres; nervus costalis radiali brevior.

Cupreus: caput viridi-æneum: oculi rufo-picei: antennæ fuscæ; articulus 1^{us}. basi fulvus: abdominis discus obscure purpureus: pedes fulvi; coxæ æneo-virides; femora fusco cingulata; meso- et metatarsi apice fusci: alæ fulvescentes; squamulæ et nervi pallide fulva; stigma minutum, concolor. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{2}{3}$.)

Found near London.

Sp. 145. Pter. concisus. Fem. *Viridi-æneus*, P. tenui *brevior*, antennæ fuscæ, abdominis discus cupreus, pedes fulvi, alæ subfuscæ. P. redacto et confini proximus at angustior.

Caput thorace paullo latius: antennæ clavatæ, corporis dimidii longitudine; articuli 5°. ad 10^{um}. latescentes non curtantes; clava ovata, articulo 10°. paullo latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thorace paullo longius: alæ angustæ; nervus cubitalis radiali brevior.

Viridis: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice nigro-piceus: abdominis discus obscure purpureus: pedes pallide fulvi; coxæ virides; meso- et metatarsi pallide flavi, apice pallide fusci: alæ sublimpidæ; squamulæ et nervi flava; stigma fulvum, minutum. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β .—Thorax viridi-æneus.

Var. γ .—Viridi-æneus: caput æneo-viride: abdominis discus obscure cupreus.

September; near London. Isle of Wight.

Sp. 146. Pter. balux. Fem. *Cupreus*, antennæ nigro-piceæ, abdomen viridi-æneum, pedes flavo-fusci, alæ sublimpidæ. P. affini proximus, caput minus, alæ angustiores.

Caput thorace paullo latius: antennæ clavatæ, corporis dimidio breviores; articuli 5°. ad 10^{um}. curtantes et latescentes; clava

longi-ovata, articulo 10°. paullo latior et plus duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, acuminatum, non angulatum, thorace paullo longius et latius : alæ mediocres ; nervus cubitalis radiali brevior.

Cupreus : oculi rufo-picei : antennæ nigro-piceæ ; articuli 1^{us}. et 2^{us}. nigro-virides, ille basi fuscus : abdomen viridi-æneum, nitens ; discus purpureo-cupreus : pedes flavi ; coxæ virides ; meso- et metapedum femora et tibiæ pallide fusca apice et basi flava, tarsi apice fusci ; protibiæ et protarsi fulva : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma fuscum, mediocre. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{4}$.)

October ; near London.

Sp. 147. Pter. pervasus. Fem. *Viridis*, P. pexati statura, antennæ nigræ, abdomen cupreum, pedes flavi, alæ sublimpidæ.

Corpus breve, latum : caput thorace paullo latius : antennæ subclavatæ, corporis dimidii longitudine ; articuli 5°. ad 10^{um}. curtantes et paullo latescentes ; clava ovata, articulo 10°. plus duplo longior non latior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, acuminatum, non angulatum, thorace vix longius : alæ mediocres ; nervus cubitalis radiali brevior.

Viridis, parum nitens : oculi rufo-picei : antennæ nigræ ; articulus 1^{us}. nigro-viridis, subtus fulvus : abdomen nitens, cupreum ; segmentum 1^{um}. læte viride : pedes flavi ; coxæ virides ; protarsi fulvi ; meso- et metatarsi apice fusci : alæ sublimpidæ ; squamulæ et nervi fulva ; stigma minutum. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{4}$.)

June ; New Forest.

Sp. 148. Pter. hilaris. Fem. *Viridis*, antennæ fuscæ, abdomen cupreum, pedes flavi, femora fusco cingulata, alæ albo limpidæ.

Caput thorace vix latius : antennæ subclavatæ, graciles, corporis dimidio vix breviores ; articuli 5°. ad 10^{um}. curtantes, vix latescentes ; clava ovata, articulo 10°. latior et plus duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum

suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, acuminatum, non angulatum, thorace longius: alæ mediocres; nervus cubitalis radiali brevior.

Læte viridis, nitens: oculi rufi: antennæ pallide fuscæ; articulus 1^{us}. fulvus: abdomen cupreum, basi cyaneo-viride: pedes læte flavi; coxæ virides; femora fusco cingulata; meso- et metatarsi apice fusci; protarsi fulvi: alæ albo-limpidæ; squamulæ et nervi pallide fulva; stigma obscurius, mediocre. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Found near London.

Sp. 149. Pter. orbiculatus. Fem. *Nigro-viridis, antennæ nigro-fuscæ, abdomen nigro-æneum, pedes fusci, alæ limpidæ.*

Corpus sublineare, breve: caput thorace vix latius: antennæ perbreves, graciles, clavatæ, thoracis vix longitudine; articuli 5^o. ad 10^{um}. latescentes, non curtantes; clava ovata, articulo 10^o. latior et plus duplo longior: thorax brevi-ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thorace paullo longius: alæ latæ; nervus cubitalis radiali brevior.

Nigro-viridis: oculi picei: antennæ nigro-fuscæ; articulus 1^{us}. niger, basi fulvus: abdomen nigro-æneum: pedes fusci; coxæ nigrae; femora nigro-fusca; meso- et metapedum genua et tarsi flava, hi apice fusci; protarsi fulvi: alæ subfuscæ; squamulæ et nervi fulva; stigma minutum, concolor. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Var. β.—Antennis articulus 1^{us}. nigro-æneus: abdomen nigro-cupreum; segmentum 1^{um}. basi viride: coxæ nigro-virides; protibiæ fulvæ.

Var. γ.—Abdomen basi et utrinque viride: coxæ et femora viridia.

September; near London. Devonshire. Isle of Wight.

Sp. 150. Pter. fulvipes. Fem. *Cupreus, P. tenui similis, antennæ fuscæ, pedes fulvi, alæ fulvescentes.*

Caput thorace paullo latius: antennæ clavatæ, corporis dimidii vix longitudine; articuli 5^o. ad 10^{um}. latescentes, vix curtantes; clava ovata, articulo 10^o. latior et plus duplo longior: thorax

ovatus, brevisculus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen longiovatum, acuminatum, non angulatum, thorace multo longius : alæ angustæ ; nervus cubitalis radiali brevior.

Cupreus : caput æneo-viride : oculi picei : antennæ fuscæ ; articulus 1^{us}. fulvus, apice fuscus : abdomen viride, basi et subtus cupreo varium ; discus obscure purpureus : pedes fulvi ; coxæ æneæ ; meso- et metatarsi flavi, apice fusci : alæ fulvescentes ; squamulæ et nervi pallide fulva ; stigma minutum, fuscum. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{4}$.)

Found near London.

Sp. 151. Pter. longulus. Fem. P. fulvipedede *longior*, alæ *latiores*.

Caput thorace vix latius : antennæ subclavatæ, corporis dimidio breviores ; articuli 5^o. ad 10^{um}. paullo latescentes, non curtantes ; clava ovata, articulo 10^o. plus duplo longior et paullo latior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen subfusiforme, acuminatum, non angulatum, thorace multo longius : alæ medioeres ; nervus cubitalis radiali brevior.

Cupreo-æneus : caput et metathorax viridi-ænea : oculi rufo-picei : antennæ nigræ ; articulus 1^{us}. nigro-fuscus, basi et subtus fulvus : mesothoracis scutellum cupreum : abdomen cupreum ; segmentum 1^{um}. læte viride, cupreo varium : pedes fulvi ; coxæ virides ; meso- et metapedum genua et tarsi flava, hi apice obscure fusci : alæ sublimpidæ ; squamulæ et nervi pallide fulva ; stigma obscurius, minutum. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{2}$.)

Found near London.

SECTIO III.—Subdiv. 5. Fem.

Sp. 152. Pter. chrysos. Fem. *Cupreus*, antennæ *nigro-fuscæ*, abdominis *discus purpureus*, pedes *fusco-fulvi*, femora *ænea*, alæ *sublimpidæ*.

Caput thorace paullo latius : antennæ subclavatæ, corporis dimidio longiores ; articuli 5^o. ad 10^{um}. curtantes vix latescentes ; clava ovata, articulo 10^o. latior et duplo longior : thorax ovatus : prothorax brevissimus : mesothoracis parapsidum suturæ vix conspicuæ : metathorax brevis : abdomen ovatum, acuminatum,

subtus non angulatum, thorace vix longius: alæ mediocres; nervus cubitalis radiali brevior.

Cupreus: oculi rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. basi fulvus: abdominis discus obscure purpureus: pedes fulvi; coxæ et femora ænea; meso- et metapedum tibiæ fusco cingulatæ apice flavæ, tarsi flavi apice fusci: alæ sublimpidæ; squamulæ et nervi fulva; stigma obscurius, parvum. (Corp. long. lin. 1½; alar. lin. 2.)

Var. β.—Caput viridi-æneum: abdomen viridi-cupreum; discus obscure purpureus.

September; Isle of Wight.

Sp. 153. Pter. comes. Fem. *Præcedenti similis, caput latius, antennæ crassiores, abdomen brevius.*

Viridi-æneus: caput viride: oculi picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus: abdomen cupreum; discus obscure purpureus: pedes fulvi; coxæ virides; femora fusco cingulata; meso- et metapedum tibiæ basi et apice pallidiores, tarsi flavi apice fusci: alæ sublimpidæ; squamulæ et nervi fulva; stigma parvum, obscurius. (Corp. long. lin. 1¼; alar. lin. 1¾.)

September; Isle of Wight.

Sp. 154. Pter. vitripennis. Fem. *Nigro-æneus, antennæ fusca, pedes fulvi, alæ albo limpidæ.*

Corpus breve, latum: caput thoracis latitudine: antennæ clavatæ, graciles, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. curtantes et paullo latescentes; clava ovata, articulo 10^o. paullo latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, non angulatum, thoracis longitudine: alæ latæ; nervus cubitalis radiali non brevior.

Nigro-æneus, parum nitens: caput nigro-viride: oculi rufo-picei: antennæ fusca; articulus 1^{us}. fulvus; 2^{us}. fusco-fulvus: abdomen nitens: pedes fulvi; femora obscuriora; coxæ æneæ; meso- et metapedum tibiæ apice tarsique flava, hi apice fusci: alæ albo-limpidæ; squamulæ et nervi flava; stigma minimum, concolor. (Corp. long. lin. 1; alar. lin. 1½.)

July; near London.

SECTIO XXI.—Fem.

Sp. 155. Pter. obscuratus. Fem. *P. cingulipedis statura, alarum nervi et pedes obscuriores.*

Viridis: oculi rufo-picei: antennæ nigro-piceæ; articulus 1^{us}. nigro-viridis, basi fuscus: mesothoracis discus æneo-viridis: abdomen cupreum; segmentum 1^{um}. læte cyaneo-viride; 2^{um}. et sequentia basi viridia: pedes flavi; coxæ virides; femora et tibiæ fusca, apice basique flava; tarsi apice fusci; protarsi fulvi: alæ sublimpidæ; squamulæ fuscæ; nervi fulvi; stigma parvum, concolor. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{2}{3}$.)

Var. β.—Abdomen subtus apice cyaneum; segmentum 1^{um}. cyaneum, apice cupreum: femora nigro-fusca, apice basique flava.

June; Isle of Wight.

Sp. 156. Pter. gentilis. Fem. *Læte viridis, antennæ et pedes fulva, abdominis discus purpureus, alæ limpidæ.*

Caput thorace paullo latius: antennæ clavatæ, corporis dimidii longitudine; articuli 5^o. ad 10^{um}. latescentes non curtantes; clava ovata, articulo 10^o. latior et duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, acuminatum, subtus angulatum, thorace longius: alæ mediocres; nervus cubitalis radialis brevior.

Læte viridis, nitens: oculi rufo-picei: antennæ pallide fulvæ; articulus 1^{us}. fulvus, apice fuscus: abdominis discus purpureus: pedes pallide fulvi; coxæ virides; meso- et metatarsi flavi, apice fusci: alæ limpidæ; squamulæ et nervi fulva; stigma minutum, fuscum. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

Sp. 157. Pter. inclusus. Mas et Fem. *Cupreo-æneus, antennæ nigro-fuscæ, pedes fusci aut fulvi, alæ sublimpidæ.*

Mas.—Caput thorace latius: antennæ extrorsum crassiores, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. subæquales; clava ovata, acuminata, articulo 10^o. paullo latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen sublineare, thorace angustius vix longius: alæ mediocres; nervus cubitalis radialis multo brevior.

Fem.—Caput thorace paullo latius: antennæ subclavatae, graciles, corporis dimidii longitudine; articuli 5^o. ad 10^{um}. curtantes vix latescentes; clava ovata, articulo 10^o. latior et duplo longior: abdomen longi-ovatum, acuminatum, subtus angulatum, thorace longius.

Mas.—Cupreo-æneus: caput viride: oculi rufo-picei: antennæ nigro-fuscae; articulus 1^{us}. fuscus, basi fulvus: mesothorax postice et metathorax cyaneo-viridia: abdomen cupreum, basi cyaneo-viride: pedes fulvi; coxæ æneae; trochanteres et genua flava, meso- et metatarsi concolores apice fusci: alæ sublimpidae; squamulae et nervi fulva; stigma fuscum, parvum.

Fem.—Cupreo-æneus, parum nitens: caput æneo-viride: antennis articulus 1^{us}. niger, basi fulvus: abdomen æneo-viride; discus obscure cupreus: pedes flavi; coxæ æneae; femora nigra; tibiae nigro-fuscae, apice basique flavae; meso- et metatarsi apice fusci; protarsi fulvi. (Corp. long. lin. 1—1½; alar. lin. 1½—1¾.)

Var. β. Mas.—Thorax viridis; discus cupreo-æneus: femora et tibiae fusca.

Var. γ. Fem.—Abdomen obscure cupreum; segmentum 1^{um}. viridi-æneum.

Var. δ. Fem.—Cupreus: caput viride.

September; Teignmouth, Devonshire. Isle of Wight.

Sp. 158. Pter. caligatus. Fem. *Nigro-viridis, antennæ nigro-piceae, abdomen nigro-cupreum, pedes fulvi, femora viridia, alæ fuscae.*

Nigro-viridis, parum nitens: oculi rufo-picei: antennæ nigro-piceae; articulus 1^{us}. nigro-viridis, basi fuscus: abdomen nigro-cupreum, nitens; segmentum 1^{um}. cupreum, basi laete viride: pedes fulvi; coxæ et femora viridia; meso- et metatarsi flavi, apice fusci: alæ obscure fuscae; squamulae et nervi fusca; stigma minutum, concolor. (Corp. long. lin. $\frac{2}{3}$ — $\frac{5}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Tibiae fuscae, basi et apice fulvae.

Found near London.

Sp. 159. Pter. conterminus. Fem. P. caligato *simillimus, paullo latior, alæ limpidæ.*

Nigro-viridis, parum nitens: oculi rufo-picei: antennæ nigro-piceae; articulus 1^{us}. nigro-viridis, basi fulvus: abdomen nigro-cupreum,

nitens; segmentum 1^{um}. basi læte viride: pedes fulvi; coxæ et femora viridia; meso- et metapedum tibiæ fusca, tarsi flavi apice fusci: alæ sublimpidæ; squamulæ et nervi fusca; stigma minutum, concolor. (Corp. long. lin. $\frac{2}{5}$ —1; alar. lin. $\frac{3}{4}$ —1 $\frac{1}{4}$.)

September; Isle of Wight.

Sp. 160. Pter. amabilis. Fem. *Cyaneus, antennæ nigro-piceæ, abdomen purpureum, pedes fulvi, alæ limpidaæ.*

Cyaneus, parum nitens: oculi rufo-picei: antennæ nigro-piceæ; articulus 1^{us}. fulvus: abdomen purpureum, nitens; segmentum 1^{um}. læte viride, cupreo varium: pedes fulvi; coxæ cyaneæ; meso- et metapedum tibiæ et tarsi flava, hi apice obscuriores: alæ limpidaæ; squamulæ et nervi fulva; stigma minutum, concolor. (Corp. long. lin. 2 $\frac{1}{4}$; alar. lin. 2 $\frac{1}{2}$.)

Found near Paris, by the Comte de Castelneau.

SECTIO XXII.

Sp. 161. Pter. equestris. Fem. *Cupreus, antennæ et pedes fusca, alæ limpidaæ.*

Caput thorace latius: antennæ subclavatae, graciles, corporis dimidio longiores; articuli 5^o. ad 10^{um}. paullo curtantes vix latescentes; clava longi-ovata, articulo 10^o. latior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen longi-ovatum, apice compressum et acuminatum, subtus angulatum, thorace longius: alæ mediocres; nervus cubitalis radiali multo brevior.

Cupreus, parum nitens: oculi rufo-picei: antennæ fusca; articulus 1^{us}. fulvus, apice obscurior: abdomen nigro-cupreum, nitens; segmentum 1^{um}. viride, cupreo varium: pedes flavi; coxæ virides; femora fusca; meso- et metapedum tibiæ fusco cingulatae, tarsi apice fusci; protibiæ et protarsi fulva: alæ limpidaæ, latae; squamulæ et nervi flava; stigma fulvum, minutum. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{2}{3}$.)

Found near London.

Sp. 162. Pter. simulans. Fem. *P. mesochloro affinis sed brevior aliterque coloratus.*

Caput thorace paullo latius: antennæ graciles, subclavatae, corporis dimidio breviores; articuli 5^o. ad 10^{um}. curtantes et paullo

latescentes; clava ovata, articulo 10°. latior et plus duplo longior: thorax brevi-ovatus, crassus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen ovatum, acuminatum, subtus angulatum, thorace longius et angustius: alæ mediocres; nervus cubitalis radiali vix longior.

Cupreus, parum nitens: caput æneo-viride: oculi rufo-picei: antennæ fuscæ; articulus 1^{us}. fulvus: abdomen cupreo-purpureum, nitens, subtus cupreum; segmentum 1^{um}. læte viride, cupreo varium; 2^{um}. et sequentia basi utrinque viridia: pedes fulvi; coxæ et femora ænea; tibiæ fusco cingulatæ; meso- et metatarsi flavi, apice fusci: alæ fulvescentes; squamulæ et nervi fulva; stigma fuscum, parvum. (Corp. long. lin. 1½; alar. lin. 2.)

Sp. 163. Pter. Endomychi (Curtis's MSS.) Mas. *Æneus*, antennæ nigro-fuscæ, abdomen basi fulvum, pedes fulvi, alæ limpida.

Corpus crassum, latum: caput thorace paullo latius: antennæ subfiliformes, corporis dimidio longiores; articuli 5° ad 10^{um}. breves, cyathiformes, subæquales; clava longi-ovata, articulo 10°. angustior et plus duplo longior: thorax ovatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax brevis: abdomen rhombiforme, thorace brevius; segmentum 1^{um}. maximum; sequentia brevissima: alæ sat latæ; nervus cubitalis radiali multo brevior.

Æneus: oculi rufo-picei: antennæ nigro-fuscæ; articuli 1^{us}. et 2^{us}. fulvi: abdomen fulvum, nitens, apice æneum: pedes fulvi; coxæ æneæ; meso- et metatarsi flavi, apice fusci: alæ limpida; squamulæ et nervi fulva; stigma obscurius, minutum. (Corp. long. lin. 1; alar. lin. 1½.)

Reared by Mr. Curtis, from the larva of *Endomychus coccineus*.—(British Entomology, XII. 570.)

ART. XLVI.—*A few Observations on the Habits of some Species of Bees.* By G. R. WATERHOUSE, Curator to the Museum of the Royal Institution, Liverpool.

UPON referring to Kirby's Monograph on the Bees of this country, I find that the male of *Megachile circumcincta* was not known to him; and not being aware of its having been

described since the publication of that work, I have extracted a few notes from my Memorandum Book relating to that insect, together with some other species of bees, which, I hope, may be acceptable to the Entomological Magazine.

On the 12th of June last, whilst taking a ramble by the side of the river Mersey, I observed a species of *Megachile* in considerable abundance; thinking it might differ from the London species, with which my cabinet is pretty well stocked, I caught a few of them, and to my delight found them to be the same, I believe, as a species which had been shown to me whilst Curator to the Entomological Society, and by the entomologists who possessed it, thought to be a new species, of which the female as yet was not known. I therefore hunted with great diligence in the hopes of finding the female, but at that time without success.

The males were flying about, and occasionally settling on the banks to bask in the sun, or sipping the honey from a little yellow flower—the *Lotus corniculatus* I believe—which was common in the neighbourhood. I never saw them settle on any other flower, though many were in bloom.^a In these same banks I observed many little holes. My digger was of course soon at work, and with success; for two or three nests, constructed in the same manner as those of *Megachile Willughbiella*, sometimes with rose leaves, but occasionally with the leaves of other plants, made their appearance. These nests I took home, and shortly after reared from them specimens of *Megachile circumcincta*. This made me suspect that the bee which I had been catching in the neighbourhood was the male of that insect,—a suspicion which was fully confirmed shortly afterwards upon going to the same place again. The females of *M. circumcincta* were then in abundance, and engaged in making their nests; the males were flying about in the neighbourhood of these nests, and many times gave me ample proofs of their relationship. Several of the pairs I caught. The male embraces the female whilst on the wing, but as they then cannot fly they come speedily to the ground.

The female, *M. circumcincta*, is well known. The insect discovered to be the male very much resembles that of *M.*

^a I mention this fact, because I think it important to ascertain, if possible, what flowers particular species of bees frequent, for many confine themselves, in a great measure, to one kind.

Willughbiella, but is rather less; the anterior tarsi, though dilated, are not so broad as in that species. The terminal joint of the antenna is likewise, as in *M. Willughbiella*, larger than the rest, but differs in being rather shorter: the head is furnished with pale brown hair anteriorly, and the vertex with hair of a sooty-black colour: on the thorax and two basal segments of the abdomen, the hair is of a reddish-brown colour, and on the apical segments of the latter, black: the underside of the body is furnished with ashy pubescence. Such is the colouring of the specimens which I afterwards reared,—but the pubescence was nearly of an uniform greyish cast in most of those caught at large. The nests of these insects are generally placed about six inches in the ground, and in a light soil, and consist of three or four cylindrical cells joined end to end. The perfect insect, when hatched, eats its way through the side of the cell near the top. I have reared many specimens of both sexes;—the eggs are laid in June, the insect has undergone all its transformations by the month of September, and remains in a torpid state until the following June.^b I set many specimens at liberty (by opening their cells) in the winter; the room being warm they crawled about pretty briskly, but were not able to fly.

June 19, 1835, caught several specimens of *Cælioxys conica* of both sexes; they were flying about the nests of the *Megachile* above-mentioned, (*M. circumcincta*). I observed a female enter a hole, and was just about to put my net over the place to secure it, when to my surprise a female *Megachile* entered the same hole. It was a minute before either came out; the *Cælioxys* came first but escaped from me; the other I caught.

Sept. 1835, found, upon looking in my breeding-cage, that the larvæ which were in the cocoons of the *Megachile* had all assumed the imago state; some few had made their escape from the cells and were found dead in the breeding-cage,—among them there was a specimen of *Cælioxys conica*, also dead.^c From this it is pretty evident that this species of

^b I have reared many species of bees, of both the families *Apidæ* and *Andrenidæ*, and invariably found that they had undergone all their transformations by the autumn.

^c As this species of *Cælioxys* abounds in neighbourhoods where *M. circumcincta* is not found, it may be thought I make some mistake in the species; hence I will send this, and all other species mentioned in these Notes, to the Entomological Society's Collection, where they may be examined by any entomologist.

Cælioxys is a parasite upon *M. circumcincta*; and I think, likewise, upon *M. Willughbiella*. It is right however to state, that I had cocoons of *one* other species of bee (*Osmia atricapilla*, on the habits of which I have some remarks to make at some future period), but it must be stated that I never observed the *Cælioxys* go near the nests of that species, which are always found in quite a different situation.

ART. XLVII. — *Entomological Notes.* By EDWARD NEWMAN.

(Continued from Vol. II. p. 516.)

CLASS.—COLEOPTERA.

NATURAL ORDER.—CARABITES, *Newman.*

GENUS.—ÆNIGMA, *Newman.*

Caput punctatum, fere trigonum, prothorace vix angustius; oculis exstantibus: labrum rotundatum, elongatum, mandibulas tegens: mandibulæ elongatæ acutæ, fulciformes, occultæ, unidentatæ: maxillæ falcatæ, acutæ; galea, articulo terminali elongato; maxipalpi articulo tertio elongato, quarto brevior, apicali complanato clavato, truncato: labium medio profunde excavatum, lateribus elongatis exstantibus, acutis; ligula rotundata, integra, elongata; labipalpi articulo penultimo elongato, apicali brevior, robustior, truncato: prothorax punctatus, cordatus, posticè truncatus: elytra elongata, penè linearia, nonnihil truncata, posticè membrana marginali diaphana, octo-striata, punctorum binis ordinibus interstrias: metalæ patefactæ ad volandum aptatæ: pedes breves, tarsi breviores, simplices non nihil cylindrici.

Sp. Iris. *Violacea, hirsuta, ore, antennis, oculis pedibusque nigris.* (Long 1 unc.; lat. 3 lin.)

This beautiful insect has, at first sight, so exactly the appearance of a large *Leistus* or *Nebria*, that I at once supposed it intermediate between those genera and *Calosoma*. A second glance, however, and an examination of its mouth, prove this idea to be wholly erroneous, and point out its relationship to the genera *Anthia* and *Graphipterus*; and it is between these and *Catascopus* of Kirby that it must

take its station. In this place, I find in the "Catalogue des Coléoptères," an insect which is described in the Supplement to the Count Dejean's "Species des Coléoptères," p. 455, that very nearly agrees with the insect before me; and what is rather remarkable, it bears the very name (*Eucheila*) which I intended to employ. There was, however, so evident a difference in magnitude, colour, and habitat, that I carefully went over the characters again, and found this important difference—*Eucheila* has the apical joint of the maxillary feelers cylindrical; *Ænigma* has the same joint flattened, clavate, and truncate. *Ænigma* may therefore with propriety be placed between *Catascopus* and *Eucheila*.

Ænigma iris was received from New Holland by Mr. Bowerbank, and has been presented by that gentleman to the Entomological Club. Its length is rather less than an inch, and its breadth rather more than a quarter of an inch. Its colour is the most lovely violet, which however varies on the slightest alteration of position. Over the whole surface of its head, prothorax, elytra, and legs, are scattered short hairs of a pale yellow colour.

CLASS.—NEUROPTERA.

NATURAL ORDER.—PERLITES, *Newman*.

GENUS.—CHLOROPERLA, *Newman*.

Sexuum amborum alis pariter repandis, pariterque abdomen tegentibus: telo setis duabus instructo; proalæ nervo subcostali cum costali parallelo.

In July, 1833, I described a new insect, under the name *Isogenus Nubecula*, distinguishing it as a genus from *Perla*, by the circumstance of the wings being of full length in both sexes; whereas, in the true *Perla*, they are abbreviated in the male. The present genus, *Chloroperla*, or green *Perla*, is so named from the species having invariably a sea-green tint. It is readily distinguished from *Perla* by its having the wings in both sexes fully developed, as in *Isogenus*. It is separated from *Isogenus* by the nervures of its fore wings; the costal and subcostal nervures in *Chloroperla* running parallel throughout their length, whereas in *Isogenus*, and also in *Perla*, the subcostal approaches and all but joins the costal nervure rather

beyond the middle. The number of transverse nervures uniting these two longitudinal ones is various; but in *Isogenus* and *Perla* it varies between twelve and eighteen; in *Chloroperla* between three and six. From *Nemoura* the genus *Chloroperla* sufficiently differs, in its possessing the two caudal setæ. Of this genus there are several species inhabiting this country, of which the most abundant are the *C. viridis* of Fabricius, and the *C. lutea* of Latreille. There is also a minute species, which abounds in Herefordshire, frequenting the alders by the sides of the trout streams:^a—it is a most transparent, delicate little creature.

Chlo. apicalis. Tota luteo-viridis, oculis antennarum apicibusque nigerrimis. (Long. 3 lin.)

Entirely of a pale delicate green, with the eyes and extreme portions of the antennæ intensely black.

ART. XLVIII.—*Notes on the Cheese and Bacon-Hoppers and the Cheese-Mite.*

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—I hope that you will excuse the liberty that I have taken in addressing this letter to you; but if you think the following observations upon those pests (as they sometimes are) of the larder and the dairy, the cheese and bacon hoppers, and the cheese-mite, worthy a corner in your interesting miscellany, they are at your service.

I am very much delighted with natural history in general, especially with that branch of it treating upon insects, their habits and dispositions, and I have observed with pleasure the great interest taken in it by all classes of persons; a certain proof of this is the increase of works treating upon natural productions, especially of those written in a popular manner, and adapted for general readers. It should be a rule with the authors or editors of such works to be the more guarded in their expressions and descriptions in proportion as they depart from scientific detail, as an error is more easily impressed

^a Common in like situations near Nantes in France.—ED.

upon the mind of a first beginner than upon one that possesses the capability of rectifying it.

I am led to the above remarks, by observing an error in a work (the general execution of which I am very much pleased with) now in course of publication. The article to which I allude is in the *British Cyclopædia*, Division III. on Natural History, Vol. II. p. 8, "Cheese-hopper, or Cheese-mite," in which the editors have confounded the larva of a dipterous insect with an apterous one (*Acarus lactei*). The error commences in the very heading of the article, by using the conjunction "or;" had they used "and," it would have been intelligible, but the name of such insect should have been the head of a separate article. It then proceeds to give an interesting account of the cheese-hopper only, for the greater part of the article. Afterwards it says,—“Shortly after which the grubs are hatched, and feed upon the cheese, causing it to decay; the fine powder which we perceive, and which is so highly prized by the gourmand, being nothing else but the excrement of the grubs.” The second part of the above quotation relates to the cheese-mites alone, as it is a well-known fact, that when a cheese is infested with the hoppers there is no powder, but, on the contrary, a moisture; now a cheese that is attacked by the mites is always powdery, wherever they harbour. Any dairy-maid knows that if the cheese is not well pressed to separate the whey entirely from the curd, it will be much more liable to the attacks of the hopper-fly than if it had been pressed as it ought to have been. They also call a cheese that is decayed by having maggots in it, “the wet rot,” in contradistinction to the “dry rot,” which the mites generally, but not always, accompany. There is also a very great difference in the attack of the two insects—the hoppers being always found in the interior of the cheese without any visible external aperture; the mites are as constant to the exterior, and never penetrate into the inside (unless there are cracks in the cheese) until the outer part where they are is entirely consumed. The flies that I have succeeded in rearing from the larva, both in cheese and bacon, vary considerably from the one described by the editors before-mentioned. But perhaps there are several species, or even a family, the larvæ of which possess similar saltatorial powers, and feed on the same sort of food, although I have met with but one species. They state, that some time after

the grub has assumed the chrysalis state, it becomes of a black colour; now I have constantly found the case of the pupa of a chestnut brown, both when the pupa was inclosed, and after it had extricated itself from its envelope. The fly is also described as of the size of the common domestic fly, and of a blackish-green colour, shining. My specimens are glossy as well as that above-described, but the size is only from two to three lines in length, and of a slighter make in proportion than the domestic fly; the colour is a light liver-brown, with a reflection of bronze; they are so very different from any other flies that are found in houses, that a person who is acquainted with them knows them easily, even at the distance of three or four yards. They in general appear in the month of May, or beginning of June, according to the forwardness of the spring or summer.

As I have heard many persons complain that it was impossible to preserve bacon from the attacks of the hopper, it perhaps may not be uninteresting to in-door economists to relate the manner in which I save my bacon, and preserve it uninjured even to the next summer, if required, and also an occurrence that has confirmed me in its efficacy. As soon as the flitches are dry, after being hung to not later than the last week in April, I prepare some bags of strong brown paper, large enough to hold one gammon or ham, and a little of the open end to spare. I then separate the hams and gammons from the middles, put them into the bags, and either tie the neck of the bag up quite close, or else double it and sew it through the doubled part, taking care that there are no holes in the bags occasioned by tying them up, and never uncovering them again until they are wanted for use, and then only the particular one that is required. The occurrence alluded to above happened a few years ago. A neighbour asked me to permit him to dry three hams in my kitchen, as his was very low and confined. I accordingly consented—the hams were brought—but whether through bad management in the salting or not I cannot tell; (it was certainly rather late in the season when they were cured;) however, before they had hung three weeks, I could perceive a quantity of flies hovering about them. In another fortnight or three weeks they literally swarmed in the kitchen, and penetrated to every room in the house full as much as the domestic fly. I began to tremble with

by George Johnston, M.D. &c. 3. *Illustrations in British Zoology, &c.*; by the same. *On a Species of Eurynome, and on other Crustaceæ*; by S. Hailstone, jun. Esq. 5. *On the Lepidopterous Insects of Switzerland*; by P. J. Brown, Esq.

10. *Monographie des Bronchides de Belgique*; par C. Wesmaël. Bruxelles, 1835.

11. *Énumération des Entomologistes vivans, suivie de Notes sur les Collections Entomologiques des principaux Musées d'Histoire Naturelle d'Europe, sur les Sociétés d'Entomologie, sur les Recueils périodiques consacrés à l'Étude des Insectes, et d'une Table alphabétique des Résidences des Entomologistes*; par G. Silberman. Paris, 1835.

12. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève. Tome VII. Partie 1. Genève, 1835.*
1. *Mémoire pour servir à l'Histoire de la Chenille du Hamac, Tinea Harrisella, Linné*; par Pierre Huber. 2. *Description de quelques nouvelles Espèces Insectes du Bassin du Léman*; par F. J. Pictet.

13. *Clavis novi Hymenopterorum Systematis adjecta Synopsi Larvarum ejusdem Ordinis Scandinavicarum Eruciformium a Gustavo Dahlbom. Lundæ, 1835.*

14. *Report on the Geology, Mineralogy, Botany, and Zoology of Massachusetts*; by Professor Hitchcock. Amherst, 1835.—This volume contains list of the animals of Massachusetts—the Crustacea by Augustus A. Gould, M.D.—the Araneides by Professor N. N. Hentz—and the Insects by Thaddeus William Harris, M.D.

15. *Histoire Naturelle des Lépidoptères, ou Papillons de France*; par Godart, continué par M. Duponchel. Tome IX. *Nocturnes, Tome VI. Livraisons 5—11. Supplément, &c. Tome I. Livraisons 18—27. Tome II. Livraisons 1—3. Paris, 1835.*

16. *Iconographie des Chenilles, &c.*; par M. Duponchel. Tome I. Livraisons 13—15. Paris, 1835.

17. *Catalogue des Coléoptères de la Collection de M. le Comte Dejean. Livraison 4. Paris, 1835.*

18. *Icones Historiques des Lépidoptères nouveaux ou peu connus*; par le D^oeur Boisduval. Livraisons 31—38. Paris, 1835.
19. *Collection Icoogaphique et Historique des Chenilles, &c.*; par MM. Boisduval, Rambur et Graslin. Livraisons 31—38. Paris, 1835.
20. *Revue Entomologique de M. Silbermann. Tome III.* Strasbourg, 1835.
21. *Magasin de Zoologie*; par F. E. Guérin. 5^e. année. Paris, 1835.
22. *Suite à Buffon, &c. Introduction à l'Entomologie*; par M. Lacordaire. Tome I. Paris, 1835.
23. *Iconographie. c. des Coléoptères d'Europe*; par M. le Comte Dejean et M. J. A. Boisduval. Tome IV. Livraisons 9, 10. Paris, 1835.
24. *Tableaux Synonymes des Lépidoptères d'Europe, &c.*; par MM. de Villier et Guénée. Tome I. Livraisons 1—5. Paris, 1835.
25. *Genera des Insectes, &c.*; par MM. E. Guérin et A. Percheron. Livraisons 2, 3. Paris, 1835.
26. *Iconographie a Règne Animal de M. le Baron Cuvier*; par M. F. E. Guérin. Livraisons 40, 41. Paris, 1835.
27. *Monographie es Cétoines et Genres voisins, &c.*; par M. H. Gory et L. A. Percheron. Livraisons 8—10. Paris, 1835.
28. *Histoire Naturelle des Lépidoptères*; par M. Boisduval. Faisant partie des Suites à Buffon. Tome I. Paris, 1835.
29. *Bulletin Zoologique, publié par Guérin. Troisième Section—Entomologie*

by George Johnston, M.D. &c. 3. *Illustrations in British Zoology, &c.*; by the same. 4. *On a Species of Eurynome, and on other Crustaceu*; by S. Hailstone, jun. Esq. 5. *On the Lepidopterous Insects of Switzerland*; by P. J. Brown, Esq.

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21. *Magasin de Zoologie*; par F. E. Guérin. 5^e. année. Paris, 1835.
22. *Suite à Buffon, &c. Introduction à l'Entomologie*; par M. Lacordaire. Tome I. Paris, 1835.
23. *Iconographie, &c. des Coléoptères d'Europe*; par M. le Comte Dejean et M. J. A. Boisduval. Tome IV. Livraisons 9, 10. Paris, 1835.
24. *Tableaux Synoptiques des Lépidoptères d'Europe, &c.*; par MM. de Villiers et Guénée. Tome I. Livraisons 1—5. Paris, 1835.
25. *Genera des Insectes, &c.*; par MM. E. Guérin et A. Percheron. Livraisons 2, 3. Paris, 1835.
26. *Iconographie du Règne Animal de M. le Baron Cuvier*; par M. F. E. Guérin. Livraisons 40, 41. Paris, 1835.
27. *Monographie des Cétaines et Genres voisins, &c.*; par M. H. Gory et M. A. Percheron. Livraisons 8—10. Paris, 1835.
28. *Histoire Naturelle des Lépidoptères*; par M. Boisduval. Faisant partie des Suites à Buffon. Tome I. Paris, 1835.
29. *Bulletin Zoologique, publié par Guérin. Troisième Section—Entomologie.*

30. *Entomographien, par Eschscholtz; traduite en Français. 1 Vol. Paris, 1835.*

31. *Annales de la Société Entomologique de France. Tome IV. Trimestres 1—3. 1835.*

32. *Die Wanzenartigen Insecten. Getren nach der Natur abgebildet und beschrieben von D. Carl. Wilh. Hahn.; Dritter Band, Erstes Heft. Mit sechs fein ausgemalten Tafeln. Nürnberg, 1835.*

33. *Die Arachniden. Getreu nach der Natur abgebildet und beschrieben von D. Carl. Wilh. Hahn.; Zweiter Band. Sechstes Heft. Mit sechs fein ausgemalten Tafeln. Nürnberg, 1835.*

34. *Histoire Naturelle et Iconographie des Insectes Coléoptères; par F. de Laporte, Comte de Castelneau, et H. Gory. Livraisons 2—4. Paris, 1835.*

35. *Schænherr Synonymia Insectorum. Genera et Species Curculionidum. Tomus III. Pars 2. Parisiis, Lipsiæ, 1836.*

36. *Recueil des Actes de la Séance publique de l'Académie Impériale des Sciences de St. Pétersbourg, 1835. Prodromus Descriptionis Animalium ab H. Mertensio observatorum; par M. J. F. Brandt.*

37. *Nouvelles Annales du Muséum d'Histoire Naturelle. Tome IV. Livraisons 2, 3. Paris, 1835. 1. Mémoire sur les Métamorphoses des Coléoptères; par W. de Haan. 2. Rapport sur le Cirron de la Gale (Acarus Scabiei); par M. de Blainville.*

38. *Suites à Buffon. Histoire des Insectes Hyménoptères; par M. le Comte Amédée Lepeletier de Saint Fargeau. Tome I. Paris, 1836.*

39. *Beitrag zur lehre von der Geographischen Verbreitung der Insecten, insbesondere der Käfer, von Dr. und Prof. G. C. Reich, in Berlin. (Acta Acad. Coes. Leop. Carol. Nat. Cur. Vol. XVI. P. 11.)*

40. *Verzeichniss aller in Europa vorkommenden geschlechter der Insekten nach Latreille's System. Geordnet von Craft Ernst Hofmann. München, 1834.*
41. *A general and systematic Treatise on Insects; by James Wilson, F. R. S. E., M.W.S., &c. Edinburgh, 1835.*
42. *M. Brandt, Bemerkungen über die Mundmagen-oder Eingeweidenerven (Nervus sympatheticus seu Nervi reproductorii) der Evertebraten. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg. Série VI. Tome III. 1835.*
43. *Observations on the Compound Eyes of Insects; by Rudolph Wagner, Professor in Erlangen.—(Lond. and Edinb. Phil. Magazine, VIII. 46, 202. March, 1826.)*
44. *Medical and Physical Researches, &c.; by R. Harlam, M.D. &c. Philadelphia, 1835.—This work contains descriptions and figures of some new species of Crustacea, &c.*
45. *Disquisitiones Animalium Vertebris carentibus in Ovo formatione, de Generatione Insectorum in Ovo. Livraison 1. Frankfort, 1835.*
46. *Nomenclator Entomologicus; par M. Herrich Schäffer. Paris.*
47. *Deutschlands Insecten; par M. Herrich Schäffer. Paris.*
48. *Crustacen, Myriapoden, und Arachniden; par M. Herrich Schäffer. Paris.*
49. *Conspectus Tenthredinidum, Siricidum et Oryssinorum Scandinaviæ; a Gustavo Dahlbom. Havnice.*
50. *Annales des Sciences Naturelles. Tome II. III. et IV. Paris, 1834, 1835.*
51. *The Zoological Journal, No. 20. 1835.*
52. *Mémoires de la Société Impériale des Naturalistes de Moscou.—(Parties Entomologiques des 6 Volumes parus.) Paris, 1835.*

53. *Insectes nuisibles à la Vigne ; par D. Salvador Lopez. Madrid, 1835.*

54. *Runde, Brachelytrorum Species Agri Halensis. Hale, 1835.*

55. *Bericht über die Fortschritte der Entomologie im Jahre, 1834, von H. Burmeister.*

ART. L.—*Varieties.*

40. SIR,—In your notices of recent captures, in the last number of the Magazine, *Papillio Podalirius* and *Colias Europome* again make their appearance. Whether or not it is really matter of any importance to know correctly what insects are indigenous, I shall not now inquire ; but all who, from want of opportunities for more extended observation, confine their notice to those of our own islands, will agree with me in wishing that some care should be used to ascertain which are truly British—not only as regards the *species* generally, but as to *specimens* also—by which our knowledge of doubtful species must be governed. A censure passed on all dealers, would be not merely illiberal, but unjust to many honest and worthy individuals : but the interest which the present widely diffused taste for Entomology has excited, has certainly roused the cupidity of some who make a profit by imposing on the credulity of collectors ; and prudence might suggest that their declarations should be received with the same kind of reverence as those of horse-dealers. That *Podalirius* has been taken in England seems now well established, and it would be difficult to prove that those said to have been taken last season in the New Forest were not so ; but it would be satisfactory to have better authority than a nameless dealer.

At page 530, Vol. I. of the Magazine, we see that “ *Colias Europome* has been noticed in the meadows, near the confluence of the Avon and Severn, flying with great swiftness in August ; but is a rare insect near Worcester.” Also, “ *C. Chrysothème*, rare near Worcester, in the cabinet of Mr. A. Edmonds.” In your last number, Mr. Newman, (taking no notice of the reputed *Chrysothème*,) says a pair of *Europome* are in the possession of Mr. Edmonds, of Worcester. The gentleman by whom *Europome* was first recorded as above, as being known at Worcester, has since said that his authority for inserting it in his list, was, the having, in 1820, seen “ a brood” of them, “ flying with very great swiftness,” near Tewkesbury. Of the pair now in Mr. Edmonds’s collection I know nothing—but I know of four or five other pairs of it, which are, or were lately, in

cabinets in Warwick and Worcester shires ; and which were all procured, a little more than two years ago, from a dealer who assured me that they had been taken in abundance in the neighbourhood of York. Being somewhat sceptical, I made inquiry, the result of which was that they had been seen at York, but only in the boxes of this dealer, who there asserted that they were taken at Manchester ; and thus succeeded in selling a pair of them as *Hyale*.

To show the facility with which the cabinets of the credulous may be enriched by dealers, I will add that I very lately saw a box containing specimens of *Mancipium Daplidicæ*, *Argynnis Lathonia*, *Vanessa Antiopa*, *Lycæna Virgaurææ* and *Chryseis*, *Deilephila Euphorbiæ* and *Lineata*, *Catocala Fraxini*, &c. &c., some of them in considerable numbers, with tolerably respectable looking pins, and all, of course, warranted British. Ere long these will have been admitted into different cabinets, and your pages may probably have to record their occurrence in the different localities assigned to them by the dealer.

I am, Sir, yours, &c.

Birmingham, February, 1836.

THOMAS MARSHALL.

41. SIR,—The Entomological Magazine of July last (No. 12) contains a somewhat circumstantial statement of the “singular fact,” of a perfect male and female of *Saturnia pavonia-minor* being produced from a single “very fine larva,” to the great astonishment of their possessor. I then took for granted that more would be said upon the subject of so surprising a phenomenon ; but time has rolled on—two more Fire-flies have been suffered to enlighten the land—but not a ray has fallen upon the “singular fact.” Of course, therefore, it is considered to be sufficiently clear, and should not be doubted. Unfortunately, however, all have not equally comprehensive minds, and my attention having recently been recalled to the subject by an application from a young friend for my opinion as to how such a wonder could be accounted for, I found myself somewhat posed. A doubt of the occurrence was not to be entertained, when it was recollected under what auspices it was introduced to the world. On referring to the original, I see that it is entitled “Two pupæ of *Saturnia* in one cocoon,” as if two animals had, for economy’s sake, sheltered under one blanket, which would have been natural enough ; but this is not borne out by the context, whence I suspect that the Editor, like myself, did not fully comprehend the account. The statement itself is entirely at variance with its title. It expressly affirms that the cocoon was formed by *one* very fine larva, and that from it emerged a male and female of the species in great perfection. The relator witnessed the “most singular fact,” having called upon

the possessor a few days afterwards, and "made such inquiry as to be fully satisfied that no other insect of the kind, in either state, could have gained admission into the box where the larvæ (? larva) had been deposited to undergo its transformation." Here all is clear and intelligible: a single larva formed its cocoon, and two moths emerged from it. Now, although we are bound to believe that which is put forth in the Magazine, gravely, and without comment, or even a single ! (which surely implies that it is almost a matter of course, as when a really wonderful thing is given three notes of admiration can be afforded; see Vol. I. p. 318,) yet I think we have a right to request that you will endeavour to obtain some more particulars, to enable dull brains, like mine, to comprehend it. Had the larva two heads, and two sets of legs, or only one of each? Is it known whether the division took place when the larva changed to pupæ, or when the pupa changed to moths? Is the cocoon preserved? Has it been opened? Does it contain one or two exuviæ? If one, what is its appearance? generally the head, eyes, antennæ, wings, feet, and segments of the abdomen may be traced on the skin of the pupa. How are they arranged here? If the possessor cannot answer these questions, pray do try to induce some of your learned friends to give us a plausible, probable, or even possible theory, that we may have some ground for our faith. My old-fashioned prejudices have said that the successive changes in the larva, and from larva to pupa, and from pupa to imago, are but as the casting off of so many garments, within which the imago was from the first encased, every part in its appropriate place, as I have often fancied I could see in the Lepidopterous pupæ.—Are these mere fancies? Does the larva contain merely an homogeneous pulp, which, if it be but sufficiently abundant, may be elaborated into two flies instead of one? If not, then how are we to suppose that the two animals were disposed in the one skin? Were they placed head to tail, or side by side, or one within the other? Had the last been the case, one would think the inner one would have burst the other when making its escape—they must therefore have been severally contained within the caterpillar's skin. Had it a double set of spiracula, or how could breathing be carried on by both? Must it have had two mouths, or could one communicate with two alimentary canals? Is it probable — but so many questions suggest themselves that I shall tire your patience; and, as I am sure you know all that I would ask, I will conclude by again begging that you will, by some means or other, gain further information on so very interesting a subject.

I am, Sir, yours, &c.

Birmingham, February, 1836.

THOMAS MARSHALL.

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DESCRIBED IN THIS VOLUME.

LEOPHRONI *Ess.*
PYGOSTOLUS *Hal.*

falcatus *Ess.*

ANCYLUS *Hal.*

ater *Ess.*

CENTISTES *Hal.*

LEIOPHRON *Ess.*

PERILITUS *Ess.*

METEORUS *Hal.*

albitarsis *Ess.*

albiditarsus *Cur.*

caligatus *Hal.*

chlorophthalmus *Spin.*

micropterus *Hal.*

abdominator *Ess.*

penulatur *Latr.*

rubens *Ess.*

colon *Hal.*

cinctellus *Ess.*

obfuscatus *Ess.*

atrator *Cur.*

filator *Hal.*

delator *Hal.*

vexator *Hal.*

profligator *Hal.*

jaculator *Hal.*

PERILITUS

rutilus *Ess.*

brevicollis *Hal.*

conterminus *Ess.*

secalis *Linn.*

cerealium *Hal.*

Æthiops *Ess.*

idalius *Hal.*

BLACUS *Hal.*

GANYCHORUS *Hal.*

pallipes *Hal.*

tripudians *Hal.*

ruficornis *Ess.*

diversicornis *Ess.*

ambulans *Hal.*

BLACUS *Ess.*

ENSINA *Desv.*

sonchi *Linn.*

OXYPHORA *Desv.*

Westermanni *Meig.*

TERELLIA *Desv.*

serratulæ *Linn.*

Alciphron *Newm.*

florescentiæ *Linn.*

FORELLIA *Desv.*

Arnicæ *Linn.*

ORELLIA *Desv.*

Wiedemanni *Meig.*

TEPHRITIS *Latr.*

cornuta *Fabr.*

Lappæ *Meig.*

Tussilaginis *Fabr.*

Arctii *De G.*

UROPHORA *Desv.*

Cardui *Linn.*

pugionata *Meig.*

solstitialis *Linn.*

ACIURA *Desv.*

Lychmidis *Fabr.*

discoidea *Fabr.*

SPHENELLA *Desv.*

signata *Meig.*

marginata *Linn.*

URELLIA *Desv.*

radiata *Fabr.*

ACINIA *Desv.*

corniculata *Fall.*

parietina *Linn.*

laticauda *Meig.*

leraclei *Linn.*

Leontodontis *De G.*

Hyoscyami *Linn.*

flavicauda *Meig.*

Absinthii *Fabr.*

NOEETA *Desv.*

guttularis *Meig.*

ANOMOIA *Walk.*

Goedii *Meig.*

EULEIA *Walk.*

Onopordinis *Fabr.*

ACIDIA *Desv.*

cognata *Wied.*

Artemisiæ *Fabr.*

Zoë *Wied.*

PTEROMALUS *Swed.*

longicornis *Walk.*

subniger *Walk.*

latipennis *Walk.*

imbutus *Walk.*

mediocris *Walk.*

spicatus *Walk.*

BLACUS *Ess.*

hastatus *Hal.*

humilis *Ess.*

paganus *Hal.*

trivialis *Hal.*

HELCON *Ess.*

TRIASPIS *Hal.*

lepidus *Hal.*

caudatus *Ess.*

obscurus *Ess.*

fulvipes *Hal.*
 ambiguus *Ess.*
CALYPTUS *Hal.*
 fasciatus *Ess.*
 puber *Hal.*
 tibialis *Hal.*
EUBADIZON *Ess.*
 semistriatus *Hal.*
 flavipes *Hal.*
 pectoralis *Ess.*
DIOSPILUS *Hal.*
 oleraceus *Hal.*
 speculator *Hal.*
MACROCENTRUS *Cur.*
 linearis *Ess.*
 thoracicus *Ess.*
 marginator *Ess.*
 infirmus *Ess.*
 picipes *Hal.*
 collaris *Spin.*
ZELE *Cur.*
 testaceator *Cur.*
 chlorophthalmus *Ess.*
ORGILUS *Hal.*
 obscurator *Ess.*

ÆGILIPS *Hal.*
MELANIPS *Hal.*
ONYCHIA *Hal.*
FIGITES *Latr.*
EUCOILA *West.*
KLEIDOTOMA *West.*
CYNIPS *Linn.*
IBALIA *Latr.*
ALLOTRIA *West.*

PLANETES *Walk.*
 extremus *Walk.*
BOLITOPHILA *Meig.*
 maculipennis *Walk.*
TACHYPEZA *Meig.*
 arenaria *Hal.*
 β ? *alata.*
 prælusio *Walk.*
 hirta *Walk.*
PLATYPEZA *Meig.*
 fumipennis *Walk.*
 aterrima *Walk.*

PTEROMALUS *Swed.*
 junceus *Walk.*
 filicornis *Walk.*
 muscarum *Linn.*
 basalis *Walk.*
 decisis *Walk.*
 lautus *Walk.*
 infectus *Walk.*
 placidus *Walk.*
 impeditus *Walk.*
 ovatus *Walk.*
 contractus *Walk.*
 linearis *Walk.*
 formosus *Walk.*

fulviventris *Walk.*
 tricolor *Walk.*
 maculipennis *Walk.*
 rufiventris *Walk.*
 transiens *Walk.*
 grandiclava *Walk.*
 congruus *Walk.*
 fucicola *Walk.*
 nubilipennis *Walk.*
 apicalis *Walk.*
 hemipterus *Walk.*
 cingulipes *Walk.*
 albipennis *Walk.*
 plenus *Walk.*
 solutus *Walk.*
 berylli *Walk.*
 thoracicus *Walk.*
 cupreus *Walk.*
 mesochlorus *Walk.*
 puparum *Linn.*
 omnivorus *Walk.*
 lugubris *Walk.*
 nigro-æneus *Walk.*

PLATYGASTER *Latr.*
 Catillus *Walk.*
 Tipulæ *Kirby.*
 Nydia *Walk.*
 Laodice *Walk.*
 Nice *Walk.*
 Osaces *Walk.*
 ventralis *West.*
 Craterus *Walk.*
 Sosis *Walk.*
 Rhanis *Walk.*
 Myles *Walk.*
 Seron *Walk.*
 Mamertes *Walk.*
 Tarsa *Walk.*
 Jasius *Walk.*
 Acco *Walk.*
 Euryale *Walk.*
 Halia *Walk.*
 Abaris *Walk.*
 Ozines *Walk.*
 Trebius *Walk.*
 scutellaris *Ess.*
 Leptines *Walk.*
 Larides *Walk.*
 Nereus *Walk.*
 Triticici *Hal.*
 Roboris *Hal.*
 Furius *Walk.*
 scelionoides *Hal.*
 Belus *Walk.*
 filicornis *Hal.*
 Crates *Walk.*
 Otreus *Walk.*
 Prorsa *Walk.*
 Abas *Walk.*
 Pisis *Walk.*
 Remulus *Walk.*
 Didas *Walk.*

LIST OF THE GENERA AND SPECIES

ruficornis Latr.
Erato Walk.
Matuta Walk.
Cotta Walk.
Rutubus Walk.
ensifer West.
Acrisius Walk.
elongatus Hal.
attenuatus Hal.
Gyge Walk.
Munitus Walk.
Tisias Walk.
Cyrsilus Walk.
Pelias Walk.
Vænia Walk.
Cebalus Walk.
Demades Walk.
Orcus Walk.
Chrysippus Walk.
Gorge Walk.
Iolas Walk.
Galenus Walk.
Otanus Walk.
Pleuron Walk.
Sonchis Walk.
Taras Walk.
Orus Walk.
Dictys Walk.
Philinna Walk.
Cratinus Walk.
Olorus Walk.
Sterope Walk.
Cebes Walk.
Deipyla Walk.
Eriphyle Walk.
Evadne Walk.
Æelus Walk.
Bucolion Walk.
Abia Walk.
Oscus Walk.
Lysicles Walk.
Vestinus Walk.
Nisus Walk.
Ægeus Walk.
Ennius Walk.
Minthe Walk.
Cleodæus Walk.
Abisares Walk.
niger Ess.
Manto Walk.
Strato Walk.
Laricis Hal.
Euhemerus Walk.
Athamas Walk.
Plotinus Walk.
Pedasus Walk.
Zosine Walk.
Dryope Walk.
inermis Hal.
Sagana Walk.
Ilione Walk.
INOSTEMMA Hal.
Boscii Jur.

Melicerta Walk.
Lycon Walk.
Menippus Walk.
scrutator Hal.
areolata Hal.
Atinas Walk.
Mecrida Walk.
IPHITRACHELUS Hal.
Lar Hal.
PLATYGASTER Latr.
cochleatus Hal.
Hyllus Walk.

SPHÆROCERA Latr.
subsultans Fabr.
monilis Hal.
vaporariorum Hal.
denticulata Meig.
scabricula Hal.
BORBORUS Meig.
nitidus Meig.
suillorum Hal.
niger Meig.
equinus Fall.
nigrifemoratus Macq.
flavipennis Hal.
longipennis Hal.
vitripennis Meig.
ater Meig.
APTERINA Macq.
pedestris Meig.
LIMOSINA Macq.
silvatica Meig.
limosa Fall.
humida Hal.
arcuata Macq.
geniculata Macq.
crassimana Hal.
ochripes Meig.
scutellaris Hal.
nivalis Hal.
quisquilia Hal.
fungicola Hal.
erratica Hal.
clunipes Meig.
spinipennis Hal.
heteroneura Hal.
fuscipennis Hal.
vagans Hal.
lugubris Hal.
Zostera Hal.
leucoptera Hal.
nigerrima Hal.
melania Hal.
HETEROPTERA Macq.
pusilla Fall.

BÆUS Hal.
seminulum Hal.
GRYON Hal.
Nanno Walk.
Phlias Walk.
Matuta Walk.

misellus *Hal.*
 TELENOMUS *Hal.*
 Eris *Walk.*
 Cebes *Walk.*
 Othus *Hal.*
 Laricis *Hal.*
 heteropterus *Hal.*
 Zethos *Walk.*
 Phylis *Walk.*
 Dorsennus *Walk.*
 Andria *Walk.*
 Tritia *Walk.*
 Horus *Walk.*
 brachialis *Hal.*
 Stilpo *Walk.*
 Othonia *Walk.*
 Vinicius *Walk.*
 Cleostratus *Walk.*
 Orphne *Walk.*
 Sities *Walk.*
 Trophonius *Walk.*
 Pilumnus *Walk.*
 Belenus *Walk.*
 Alcon *Walk.*
 Turesis *Walk.*
 Colotes *Walk.*
 Nauplius *Walk.*
 Æthra *Walk.*
 THORON *Hal.*
 metallicus *Hal.*
 XENOMERUS *Walk.*
 Ergenna *Walk.*
 TELEAS *Latr.*
 varicornis *Latr. ?*
 Metabus *Walk.*
 elatior *Hal.*
 Lycaon *Walk.*
 Therycides *Walk.*
 Cephisus *Walk.*
 Galba *Walk.*
 Aratus *Walk.*
 Doto *Walk.*
 Glaucus *Walk.*
 ephippium *Hal.*
 flavipes *Hal.*
 Mermerus *Walk.*
 Chesias *Walk.*
 Xenetus *Walk.*
 Paula *Walk.*
 Chyllene *Walk.*
 Ægle *Walk.*
 Bassus *Walk.*
 Asramanes *Walk.*
 Medon *Walk.*
 clavicornis *Latr.*
 Brasilas *Walk.*
 Ocyræ *Walk.*
 Smerdis *Walk.*
 Lamus *Walk.*
 apricans *Hal.*
 Procris *Walk.*
 Timareta *Walk.*
 pulex *Hal.*

SCELIO *Latr.*
 rugosulus *Latr.*
 SPARASION *Latr.*
 frontale *Latr.*

CERCYON *Leach.*
 scitum *Walk.*
 APHODIUS *Ill.*
 fortunatus *Walk.*

PHLÆOTHrips *Hal.*
 pedicularia *Hal.*
 aculeata *Fabr.*
 ulmi *Fabr.*
 flavipes *Hal.*
 Statices *Hal.*
 coriacea *Hal.*
 annulicornis *Hal.*
 HELIOTHrips *Hal.*
 Adonidum *Hal.*
 SERICOTHrips *Hal.*
 staphylinus *Hal.*
 THrips *Linn.*
 CHIROTHrips *Hal.*
 manicata *Hal.*
 LIMOTHrips *Hal.*
 denticornis *Hal.*
 cerealium *Hal.*
 APTINOTHrips *Hal.*
 rufa *Gleich.*
 nitidula *Hal.*
 THrips *Linn.*
 Ulicis *Hal.*
 phalerata *Hal.*
 obscura *Hal.*
 ulmifoliorum *Hal.*
 atrata *Hal.*
 vulgatissima *Hal.*
 Cynorrhodi *Hal.*
 grossulariæ *Hal.*
 physapus *Linn.*
 fuscipennis *Hal.*
 Ericæ *Hal.*
 Urticæ *Schr.*
 corymbiferarum *Hal.*
 minutissima *Linn.*
 discolor *Hal.*
 livida *Hal.*
 Primulæ *Hal.*
 decora *Hal.*
 dispar *Hal.*
 brevicornis *Hal.*
 subaptera *Hal.*
 pallens *Hal.*
 BELOTHrips *Hal.*
 acuminata *Hal.*
 MELANTHrips *Hal.*
 obesa *Hal.*
 ÆOLOTHrips *Hal.*
 COLEOTHrips *Hal.*
 fasciata *Linn.*
 vittata *Hal.*

LIST OF GENERA AND SPECIES.

ÆOLOTHRIPS Hal.
albicincta Hal.

PTEROMALUS Swed.

bellus Walk.
chloris Walk.
constans Walk.
cliens Walk.
impar Walk.
brevivitta Walk.
illudens Walk.
pulchripes Walk.
continuus Walk.
collaris Walk.
nanus Walk.
discolor Walk.
gaudens Walk.
mœrens Walk.
laticornis Walk.
chalcomelas Walk.
terminalis Walk.
compressus Walk.
gracilis Walk.
dorsalis Walk.
subquadratus Walk.
attenuatus Walk.
signatus Walk.
mundus Walk.
amplus Walk.
divisus Walk.
cephalotes Walk.
servulus Walk.
cupterus Walk.
rusticus Walk.
diversus Walk.

conifer Walk.
sobrius Walk.
fuscicornis Walk.
thalassinus Walk.
bifrons Walk.
epimelas Walk.
confinis Walk.
exilis Walk.
stenotelus Walk.
chrysammos Walk.
concisus Walk.
balux Walk.
pervasus Walk.
hilaris Walk.
orbiculatus Walk.
fulvipes Walk.
longulus Walk.
chrysos Walk.
comes Walk.
vitripennis Walk.
obscuratus Walk.
gentilis Walk.
inclusus Walk.
caligatus Walk.
conterminus Walk.
amabilis Walk.
equestris Walk.
simulans Walk.
Endomychi Curt.

ÆNIGMA Newm.

Iris Newm.

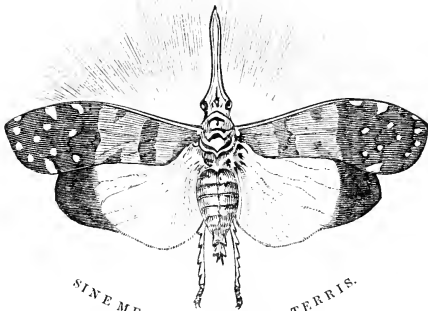
CHLOROPERLA Newm.

apicalis Newm.

END OF VOL. III.

THE
ENTOMOLOGICAL
MAGAZINE.

VOL. IV.



LONDON :

PRINTED FOR THE PROPRIETORS, BY R. CLAY, BREAD-STREET-HILL;

AND SOLD BY W. BALL, ALDINE CHAMBERS,

PATERNOSTER-ROW.

M DCCC XXXVII.

“ If we attend to the history and manners of Insects, they will furnish us with many useful lessons in ethics, and from them we may learn to improve ourselves in various virtues. We have, indeed, the inspired authority of the wisest of mankind for studying them in this view, since he himself wrote a treatise upon them, and sends his sluggard to one for a lesson in wisdom. And if we value diligence and indefatigable industry; judgment, prudence, and foresight; economy and frugality; if we look upon modesty and diffidence as female ornaments; if we revere parental affection; of all these, and many more virtues, insects, in their various instincts, exhibit several striking examples.”

KIRBY & SPENCE.

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 5. *Dicondylus pedestris*.
 6. *Epyris niger*.

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The Editor returns his best thanks to those Gentlemen who have obligingly sent him their names as Subscribers to this Volume: and also to those Entomologists who have kindly favoured him with Contributions.

THE
ENTOMOLOGICAL MAGAZINE.

JULY, 1836.

MINUTES OF THE ENTOMOLOGICAL CLUB.

(Printed by Order.)

AT a Meeting of the Entomological Club, held at Mr. Bennett's, 48, Cannon Street, on Thursday Evening, 9th of June, 1836, a Committee appointed, at a prior Meeting of the Club, to take into consideration the state of the Laws of the Entomological Club, with reference to the Property of which the Club is now becoming possessed, and to frame a Constitution adapted to its present circumstances, brought in the following Preamble and Code of Laws; which, after sundry alterations now incorporated therewith, was unanimously agreed to.

PREAMBLE.

WHEREAS, an Entomological Club established in London, in the year 1826, for the purpose of social meetings at the residences of its Members, for the communication of facts, the comparison of notes, the naming of specimens, and mutual improvement in the science of Entomology, has existed and met regularly from that time to the present—a period of ten years; and whereas the proceedings of the said Club have been governed by certain understood, but for the most part unwritten Regulations, mutually agreed on between the Members; and whereas, in consequence of the

establishment of a Collection, and the contribution of subscriptions for the purchase of cabinets, and donations of books, collections of insects, &c., the said Club is now becoming possessed of considerable property: IT IS RESOLVED AND AGREED, That all former Rules and Regulations shall cease and determine, and the following be adopted as the Laws of the Club.

CODE OF LAWS.

I.

That this Club be entitled the ENTOMOLOGICAL CLUB.

II.

That the Club consist of eight Members.

III.

That the Club may elect an unlimited number of *Honorary Corresponding Members*.

IV.

That any vacancy occurring in the Club be filled up, by election, from the Honorary Corresponding Members resident within five miles of the General Post-Office.

V.

That a Candidate for Membership be proposed and seconded at an ordinary Meeting of the Club, and be balloted for at the next Meeting. A single negative to exclude.

VI.

That the Honorary Corresponding Members have an equal right, with the Members, to attend the ordinary Meetings of the Club, and to introduce Visitors, either personally or by letter, to inspect the Collection.

VII.

That no subscription or pecuniary consideration whatever be an essential qualification to Membership in this Club, but that all

voluntary contributions from Members, Honorary Members, or others, be received and applied to the purposes of the Club.

VIII.

That a Treasurer, Secretary, and Curator, be elected annually at a Special Meeting in May, to be appointed with a Chairman for the occasion at a previous Ordinary Meeting, at which Special Meeting the Treasurer, Secretary, and Curator, for the past year, are to present their respective Reports. The exertions of these officers shall be given gratuitously.

IX.

That the Ordinary Meetings of the Club be held monthly, at the houses of the Members, in alphabetical rotation. The Member at whose house the Meeting falls shall be the Chairman, but shall not thereby lose his vote.

X.

That the property of the Club be vested in three Trustees, to be elected by ballot, but subject to removal by vote of the Club; to whom, on behalf of the Club, all donations are to be made and legacies devised, and in whose name conjointly the property of the Club shall be insured. Any vacancy occurring in the number of Trustees shall be filled up, by a fresh appointment, as soon as possible.

XI.

That no Member shall possess any right or property in the Club disposable either during life or by testament.

XII.

That no alteration in these Laws be made, nor resolution affecting them be agreed to, with less than six Members present, four of whom shall vote in the affirmative. That a copy of any proposed emendation, alteration, or repeal, of either of these Laws, and a copy of any proposed new Law or Resolution, shall be delivered, by the proposer thereof, to each Member of the Club, at least ten days previously to the debate thereon taking place.

XIII.

That every Member of the Club be required to sign these Laws.

RESOLVED also, That the following Regulations for the Cabinet and Library of the Entomological Club be adopted.

I.

That a *general* collection be made, consisting of specimens of Exotic and British Insects, Arachnoida, Myriapoda, and Crustacea, with books and MSS. relating to the science in all its branches; and that a special object of the Club be to form a model named Cabinet of Insects *unquestionably British*.

II.

That the Cabinet and Library be open at the house of the Curator, 21, Union Street, Deptford, on the Friday in every week during the months of January, February, March, April, September, October, November, and December.

III.

That Visitors be introduced either personally or by written order of a Member or Honorary Corresponding Member, and that all Entomologists consulting the Cabinet or Library shall be at perfect liberty to make any notes, memoranda, descriptions or drawings of any insect, or from any book or MS. contained therein; but that no insect be allowed to be taken from the cabinet on any pretence whatever, without the special vote of the Club first obtained for that purpose.

IV.

That the Curator keep a complete register of the insects, &c. belonging to the Club, and that any valuable or unique specimens presented to the Club be registered, with the name of the donor, and be reclaimable by him at any time in case of the dissolution of the Club.

RESOLVED also, That the thanks of the Entomological Club be given, and are hereby given, to the Rt. Hon. the EARL of MOUNTNORRIS, also to WM. CHRISTY, JUN., EDWARD DOUBLEDAY, THOMAS INGALL, WM. BENTLEY, J. CHANT, GILES MUNBY, JOHN WALTON, GEORGE NEWMAN, JUN., ROBERT FOSTER, GEORGE TRUSTED, HENRY METFORD, and J. V. THOMPSON, Esquires, for their various valuable donations to the Club.

RESOLVED also, That the present Officers of the Club, viz. Mr. J. HOYER, as Treasurer; Mr. F. WALKER, as Secretary; and Mr. E. NEWMAN, as Curator; be re-elected to their respective offices during the current year.

RESOLVED, That the whole of the foregoing Resolutions be printed in the Entomological Magazine.

FRANCIS WALKER, *Secretary.*

Contributions of Insects, Books, MSS., &c. to the Entomological Club, may be sent or addressed to either of the Members of the Club, as under:—

Mr. W. BENNETT, 48, Cannon Street.

Mr. J. B. BEVINGTON, 1, King William Street.

Mr. J. S. BOWERBANK, 3, Critchell Place, New North Road, or at Messrs. BOWERBANK and SONS, Distillers, Sun Street.

Mr. J. F. CHRISTY, Clapham Road, or at the Stangate Glass Works, Lambeth.

Mr. A. H. DAVIS, at Messrs. WESTLEY and DAVIS, 10, Stationers' Hall Court, Ave Maria Lane.

Mr. J. HOYER, at 9, Fortes' Terrace, Junction Road, or at Messrs. BOYSON and HOYER, 1, Crown Court, Threadneedle Street.

Mr. E. NEWMAN, 21, Union Street, Deptford, or at Messrs. HUTCHINSON and SON, 48, Mark Lane.

Mr. F. WALKER, Arno's Grove, Southgate, or 49, Bedford Square.

Also to the following Honorary Corresponding Members:—

Mr. W. CHRISTY, Jun., Clapham Road.

Mr. E. DOUBLEDAY, Epping, Essex.

INTRODUCTORY ADDRESS.

WE are sure that we cannot preface the Fourth Volume of the Entomological Magazine with any thing half so agreeable to the Entomologists of Great Britain as the information embodied in the foregoing Minutes. We never felt a more unmixed pleasure than we now experience in publishing a series of Resolutions which, we proudly feel, do honour to the little Association from which they emanate; and, at the same time, must contribute effectually and permanently to the advancement of the science of Entomology.

The Entomologists of this country have, for a number of years, been indebted solely to the liberality of individuals for the opportunity of comparing their captures with the regularly arranged and accurately named collections of those gentlemen on whom they had, generally, no claim, and to whom it was seldom in their power to make any adequate return. We need scarcely call the attention of our readers to the liberality of Mr. Stephens and Mr. Curtis in this respect. It is not to be expected that the collection of the Entomological Club can, at the outset, vie either in extent or in accuracy of nomenclature with the collections of Messrs. Stephens and Curtis, on which large sums of money, and almost an infinity of labour, have been expended; but it is no light matter to be able to assert that it already contains a greater number of species of British Insects than are named in Mr. Stephen's Catalogue, or Mr. Curtis's Guide. It will be an obvious interference with the duties of a Curator to enter into further detail here; we can only say that, as throughout the debates on the question of the establishment of this collection, the advance of Entomology in this country has been the single object kept in view; so we hope our brother entomologists will, in the same

spirit, and with equal zeal, contribute each his best endeavours to render the collection, as nearly as possible, perfect and complete: every locality has its peculiar insects, and there exists no local cabinet so poor but it could contribute desiderata to the richest.

At the commencement of this Magazine, now four years ago, we stated our intention of freely and fairly reviewing every entomological work that came before us. To the best of our ability we did so for a time, but by degrees the practice has been falling into disuse, until we have at last determined utterly to abandon it. *Experientia docet*. We do not say that we shall not, under the semblance of a review, occasionally extract some of the sweets contained in the publications of others, even though such publications be rife with much that our judgment condemns as illiberal or erroneous. The bee gathers honey from the most poisonous flowers. We do not say that we shall never avail ourselves of the title of a work as a shelter, from beneath which, though unseen, we may scatter the information which it ought to have contained. The mocking-bird of America warbles a thousand songs which the denizens of her primeval forests ought to have sung; but the searching and caustic critique will never again be seen in our pages—those who enjoy it will look for it in vain. Henceforth we shall give the titles of entomological works generally, occasionally, perhaps, with extracts, or a tabular view of their contents, but never again, at least such is our intention, never again shall we point out errors, or criticise opinions or assertions. Many things are written which we would were unwritten—many things which we now believe to have been far more severe than the occasion warranted, but we have some satisfaction in being able most explicitly to state, that at the moment of writing we fully and firmly believed each article to be just and impartial. If we have erred, we have done so unintentionally; let us remind those whom we have injured, if such there are, that—

“To err is human, to forgive divine.”

Coetaneous with the appearance of this work was that of “*Annales*” of the Entomological Society of France, a work

commenced under circumstances and with objects precisely similar to our own. We have great pleasure in noticing the regularity with which that valuable work has been carried on, and in expressing our opinion that its contents, so often alluded to by us with approbation, have in no degree diminished in interest.

Of the Entomological Society of London we have already said much; we have to report that it continues to flourish; a considerable library and collection have been formed, a periodical publication of much merit has been commenced, and there appears to be a constant accession of members, among whom may now be reckoned many of the most eminent British zoologists.

We have also to record the establishment of another society, called the "Practical Entomological Society," which has already enrolled a great number of members. Its meetings are held weekly, in Macclesfield-street, City Road, and its principal objects appear to be the keeping up of a social feeling among the metropolitan entomologists, and the formation of a perfect collection of British insects. The meetings of this Society are held at a tavern (the Duke of Bridgewater) until more suitable accommodation can be procured. The secretary is Mr. W. Courtney.

These recent associations, and the success which attends them, prove that the love of the science of Entomology is increasing in this country. May we not venture to express a belief that the earliest association of the kind now in existence, the Entomological Club, and this Magazine, which has emanated from it, and which is unwearied in the diffusion of information, have been in some degree instrumental in inducing the change?

ART. I.—*Monographia Chalciditum*. By FRANCIS WALKER.
(Continued from Vol. III. page 496.)

“ ——— the green myriads in the peopled grass.”

PTEROMALUS.

SECTIO XLIX.—Mas et Fem.

GASTRACANTHUS ET HETROXYS, *Westwood*.

Mas.—Caput magnum, thorace latius: antennæ filiformes, hirti, corpore paullo breviores; articuli 5^o. ad 10^{um}. longitudine decrescentes; clava fusiformis, acuminata, articulo 10^o. multo longior: mandibulæ quadratæ, subarcuatæ; una 4-dentata, dens externus mediocris incurvus acutus, 2^{us}. 3^{us}. et 4^{us}. breves obtusi; altera 3-dentata, dens externus major incurvus acutus, 2^{us}. mediocris subacutus, 3^{us}. brevis latus obtusus: maxillæ breves; lacinia longæ, angustæ, subarcuatæ, acuminatæ, lobatæ; palpi 4-articulati, subclavati, articuli 1^{us}. 2^{us}. et 3^{us}. breves subæquales, 4^{us}. fusiformis longior: labium breve, obconicum; ligula brevis, antice lata et ciliata; palpi 3-articulati breves crassi, articulus 2^{us}. brevissimus: thorax ovatus: prothorax brevis: mesothoracis parapsides convexæ, prominentes; suturæ conspicuæ: metathorax mediocris: abdomen cochleatum, planum, thorace paullo longius; segmentum 1^{um}. longum, 2^{um}. et sequentia breviora subæqualia: pedes subæquales: alæ amplæ; nervus humeralis ramulum brevem rejiciens; radialis cubitali ramulum brevissimum emittente plus duplo longior.

Fem.—Antennæ clavatæ, corporis dimidio longiores; articuli 5^o. ad 10^{um}. longitudine decrescentes; clava ovata, articulo 10^o. paullo latior et duplo longior: abdomen fusiforme, thorace paullo angustius et dimidio aut duplo longius, apicem versus attenuatum acuminatum pubescens, non angulatum; segmenta subæqualia: oviductus dum quietem agit occultus.

Sp. 164. Pter. pulcherrimus. Fem. *Viridi-æneus, abdomen cupreum subtile rufum, antennæ nigræ, pedes flavi, proalisci fasciæ 2 fuscæ.*

Gastracanthus pulcherrimus, Westwood, Loudon's Mag. Nat. Hist. VI. 121.

Caput viridi-æneum, supra cupreum: oculi ocellique rufo-picei: antennæ nigræ; articulus 1^{us}. pallide fulvus; 2^{us}. nigro-æneus:

thorax obscure æneo-viridis, subtus cupreus : abdomen cupreum, subtus rufum : pedes pallide flavi ; ungues et pulvilli fusci : alæ limpidæ ; proalæ cujusque disco fasciæ 2 fuscæ, abbreviatæ, enormes, medio connexæ ; squamulæ et nervi fulva ; stigma minutum. (Corp. long. lin. $2\frac{3}{4}$; alar. lin. $4\frac{1}{2}$.)

September ; near London. North Wales.

Sp. 165. Pter. scenicus. Mas et Fem. *Viridis aut æneus, abdomen cupreum plerunque basi et subtus rufum, antennæ nigræ, pedes rufi aut fulvi, metafemora nonnunquam supra fusca, proalæ sæpissime fusco nebulosæ.*

Mas.—Caput viride : oculi ocellique rufo-picei : antennæ nigræ ; articulus 1^{us}. fulvus, apice fuscus ; 2^{us}. nigro-viridis : mandibulæ rufæ : maxillæ et labium viridia : palpi, lacinix et ligula flava : thorax viridis ; segmentorum suturæ æneo-virides : abdomen cupreum, basi et subtus rufum : pedes pallide rufi ; coxæ virides ; meso- et metatarsi flavi, apice fulvi : alæ subfuscæ ; proalæ fusco nebulosæ ; squamulæ et nervi obscure fulva ; stigma parvum.

Fem.—Caput postice æneum : antennis articulus 1^{us}. fulvus ; 2^{us}. viridi-fuscus : thorax viridi-æneus : mesothoracis scutellum æneocupreum : abdominis segmentum 1^{um}. viridi-varium : oviductus rufus : pedes læte fulvi ; coxæ virides ; meso- et metatarsi flavi ; ungues et pulvilli fusci : alarum squamulæ et nervi fulva. (Corp. long. lin. $1\frac{1}{4}$ —2 ; alar. lin. $1\frac{5}{4}$ — $2\frac{1}{2}$.)

Var. β.—*Mas*, caput et thorax cyaneo-viridia.

Var. γ.—*Mas*, thorax æneo-viridis ; mesothoracis scutellum æneum.

Var. δ.—*Mas*, abdomen omnino cupreum : antennis articulus 1^{us}. nigro-viridis, basi fulvus : proalæ non nebulosæ.

Var. ε.—*Mas*, *Var. δ.* similis : caput et thorax omnino viridia : abdomen ante medium et subtus obsolete fulvum : metafemora apice supra fusca.

Var. ζ.—*Mas*, metafemora supra viridi-fusca.

Var. η.—*Mas*, caput et thorax viridia : abdomen cupreum.

Var. θ.—*Mas*, *Var. η.* similis : abdomen basi et subtus fulvum : pedes pallide fulvi : alæ sublimpidæ.

Var. ι.—*Fem.* antennis articulus 1^{us}. fuscus, basi et subtus fulvus ; 2^{us}. nigro-viridis.

Var. κ.—*Fem.* metathorax cyaneo-viridis.

Var. λ.—*Fem.* thorax viridis: mesothoracis scutellum æneum: abdominis rufum vix conspicuum.

Var. μ.—*Fem.* abdomen supra viride, apice cupreum.

June to August; near London. Hampshire, &c. Found in Ireland by Mr. Haliday.

Sp. 166. Pter. invenustus. Mas. *Nigro-viridis*, P. scenico *minor obscurior*, abdomen nigro-cupreum, antennæ nigræ, pedes fusci, alæ fuscæ.

Caput et thorax nigro-viridia: oculi ocellique rufo-picei: antennæ nigræ; articulus 1^{us}. viridi-fuscus, basi fulvus; 2^{us}. nigro-viridis: abdomen nigro-cupreum: pedes fusci; coxæ virides; pro- et mesopedum tibiæ et tarsi fulva: proalæ fuscæ; squamulæ et nervi fulva; stigma parvum; metalæ subfuscæ. (Corp. long. lin. 1; alar. lin. 1½.)

Var. β.—Metatarsi basi fulvi.

June; near London. Hampshire.

Sp. 167. Pter. macromerus. Mas. P. scenico *similis at gracilior*, alæ longiores angustiores.

Caput viridi-æneum: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. nigro-virides, ille basi fuscus: thorax viridi-æneus: abdomen cupreum: pedes pallide fulvi; coxæ virides: alæ sublimpidæ; proalæ fusco obsolete nebulosæ; squamulæ et nervi fulva; stigma minimum. (Corp. long. lin. 1¾; alar. lin. 2¼.)

Found near London.

Sp. 168. Pter. stenogaster. Fem. P. scenico *similis*, antennæ breviores, abdomen minus attenuatum. *Viridi-æneus*, abdomen cupreum subtus basi fulvum, antennæ nigro-fuscæ, pedes flavi aut fulvi, tibiæ nonnunquam fuscæ, proalæ subfulvæ.

Caput æneo-viride: oculi ocellique rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, subtus flavus; 2^{us}. fusco-æneus; thorax viridi-æneus; latera viridia: abdomen cupreum; segmentum 1^{um}. læte viride, subtus fulvum: pedes flavi; coxæ virides; femora et protarsi fulva: proalæ subfulvæ; squamulæ et nervi fulva; stigma minutum; metalæ sublimpidæ. (Corp. long. lin. 1½—1¾; alar. lin. 1¾—2.)

Var. β.—Caput viride: antennis articulus 1^{us}. fulvus, apice fuscus: thorax æneo-viridis.

Var. γ.—Tibiæ et tarsi fulva.

Var. δ.—*Var. β.* similis: mesothoracis scutellum cupreum: abdominis segmentum 1^{um}. supra cupreum: tibiæ fulvæ.

Var. ε.—*Var. δ.* similis: caput et thorax cuprea.

Var. ζ.—Caput cyaneo-viride: antennis articulus 1^{us}. fulvus, apice fuscus, thorax viridis; discus æneus: abdomen basi supra cyaneum: tibiæ fuscæ: alarum squamulæ et nervi obscure fulva; stigma pallide fuscum.

July; near London.

Sp. 169. Pter. præpileus. Fem. P. scenico, sæpissime minor, antennæ graciliores plus clavatæ. Viridis, abdomen cupreum, antennæ fuscæ, pedes fulvi, alæ sublimpidæ.

Caput et thorax viridia: oculi ocellique rufo-picei: antennæ obscure fuscæ; articulus 1^{us}. fulvus; 2^{us}. pallide fuscus: abdomen cupreum: pedes pallide fulvi; coxæ virides; meso- et metatarsi flavi, apice fulvi: alæ sublimpidæ; squamulæ et nervi pallide fulva; stigma minutum. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$.)

Found near London.

Sp. 170. Pter. dimidiatus. Fem. Viridi-æneus, præcedentibus brevior, abdomen cupreum, antennæ et pedes fusca, femora viridia, alæ limpidæ.

Caput viride: oculi ocellique rufo-picei: antennæ fuscæ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-fuscus: thorax æneo-viridis; discus cupreus: abdomen cupreum, subtus viride cupreo fasciatum; segmentum 1^{um}. læte viride, cupreo varium: pedes fusci; coxæ et femora viridia, hæ apice basique fulva; tarsi basi fulvi: alæ limpidæ; squamulæ et nervi fulva; stigma fuscum, mediocre. (Corp. long. lin. 1 $\frac{1}{3}$; alar. lin. 2.)

Found near London.

Sp. 171. Pter. fuscescens. Fem. Viridi-æneus, P. dimidiato brevior, abdomen cupreum basi et subtus rufum, pedes flavi aut fulvi, alæ limpidæ.

Caput obscure viride: oculi ocellique rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus; 2^{us}. fusco-fulvus: thorax obscure

viridi-æneus: abdomen cupreum, basi et subtus rufum; segmentum 1^{um}. viridi micans: pedes flavi; coxæ virides; femora pallide fulva; ungues et pulvilli fulvi: alæ limpidae; squamulæ et nervi pallide fulva; stigma minutum. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{4}$; alar. lin. 1— $1\frac{1}{2}$.)

Var. β.—Caput læte viride: thorax æneo-viridis: proalæ subfulvæ.

Var. γ.—Thorax æneus: proalæ subfulvæ.

Var. δ.—Tibiæ et protarsi fulva; femora obscuriora: proalæ subfulvæ.

Var. ε.—*Var. δ.* similis: metathorax viridis.

Var. ζ.—Caput et thorax viridia.

Var. η.—Abdomen basi supra cupreum.

Var. θ.—Antennis articulus 1^{us}. fuscus; 2^{us}. fusco-æneus: meta-femora fusca; tibiæ et protarsi fulva: proalæ subfulvæ.

Var. ι.—*Var. θ.* similis: metatibiæ fuscæ.

Found near London.

GENUS XIV.—CHEIROPACHUS, *Westwood.*

Mas.—Caput mediocre, thoracis latitudine: antennæ filiformes, graciles, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. curtantes; clava fusiformis, acuminata, articulo 10^o. multo longior: mandibulæ quadratæ; una 4-dentata, arcuata, dens externus acutus incurvus sat longus, 2^{us}. et 3^{us}. minores obtusiores, internus brevis latus obtusus; altera 3-dentata, subarcuata, dens externus acutus incurvus sat longus, 2^{us}. brevior latior subacutus, internus latus obtusus: maxillæ latæ, sat longæ; lacinia angustæ, subarcuatæ, acuminatæ, intus lobatæ; palpi 4-articulati subclavati, articuli 1^{us}. 2^{us}. et 3^{us}. breves subæquales, 4^{us}. longior fusiformis: labium angustum, fusiforme; ligula brevis, antice lata et ciliata; palpi 3-articulati breves lati, articulus 2^{us}. brevissimus: thorax sublinearis, parum convexus, basi et apice angustatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax mediocris: abdomen lineare, thorace paullo brevius et angustius; segmenta transversa, 1^{um}. magnum, sequentia breviora subæqualia: sexualia vix conspicua: femora valida: alæ mediocres; nervus humeralis ramulum rejiciens obsoletum, radialis cubitali plus duplo longior.

Fem.—Caput sat magnum, thorace paullo latius: antennæ extrorsum crassiores, corporis dimidio vix longiores; articuli 5^o. ad 10^{um}.

curtantes, vix latescentes; clava longi-ovata, acuminata, articulo 10^o. paullo latior et fere duplo longior: thorax ovatus, convexus: abdomen longi-ovatum, acuminatum, thorace longius, subtus carinatum, apice pubescens: oviductus rima ventrali occultus.

Sp. 1. Cheir. quadrum. Mas et Fem. Mas. *Viridis, abdomen cupreum fulvo maculatum, antennæ fuscae, pedes fulvi, proalis maculae 2 fuscae.* Fem. *Cupreus, abdomen immaculatum, antennæ nigro-fuscae, pedes quam mari obscuriores.*

Diplolepis quadrum . . *Fabr. Syst. Piezat. 152.*

Cleonymus maculipennis . *Curtis, Brit. Ent. IV. 194.*

Cheiopachus quadrum . *Westwood, Zool. Journ. IV. Pl. 2, fig. 2.*

Mas.—Læte viridis, cupreo varius: oculi ocellique rufo-picei: antennæ fuscae; articulus 1^{us}. fulvus: abdomen cupreum, basi læte viride, medium ante fulvo maculatum: pedes fulvi; coxæ virides; meso- et metatarsi flavi, apice fusci: alæ albo limpidæ; squamulæ et nervi fulva; stigma minutum; proalæ cuique maculae 2 quadratæ nigro-fuscae, una ad nervi ulnaris apicem, altera apud stigma major.

Fem.—Obscure cupreus: caput antice et subtus æneo-viride: oculi ocellique rufo-picei: antennæ nigro-fuscae; articulus 1^{us}. fulvus, 2^{us}. fusco-viridis: abdomen æneo-viride; segmentum 1^{um}. micans cupreo varium; discus obscure cupreus: pedes obscure fulvi; coxæ virides; femora incrassata, subtus denticulata; tarsi flavi, apice fusci; protarsi pallide fulvi. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 2—2 $\frac{1}{4}$.)

Var. β.—*Fem.* caput et metathorax æneo-viridia.

Var. γ.—*Fem.* caput et thorax æneo-viridia: abdomen basi cyaneum.

July, September; near London. Isle of Wight.

Sp. 2. Cheir. tutela. Mas et Fem. Mas, *viridis aut viridi-æneus, abdomen cupreum flavo maculatum, pedes fulvi, antennæ et femora fusca, proalis macula rotunda nigro-fusca.* Fem. *cupreus, abdomen immaculatum, antennæ nigro-fuscae, proalis macula major pallidior.*

Mas.—Caput viride, inter ocellos viridi-æneum: oculi ocellique rufo-picei: mandibulæ rufæ: maxillæ virides; lacinia fulvæ:

labium et palpi fusca; ligula flava: antennæ fuscæ; articulus 1^{us}. fulvus; 2^{us}. fusco-viridis: thorax viridis; discus cupreo varius: abdomen cupreum, medium ante flavo maculatum, apice viridi-æneum: pedes fulvi; coxæ virides; meso- et metafemora et metatibiæ pallide fusca; tarsi flavi, apice fusci; protarsi obscuriores: alæ limpidæ; squamulæ et nervi fulva; stigma minutum; proalæ cuique macula apud stigma rotunda nigro-fusca.

Fem.—Caput cupreo-æneum, antice viridi-æneum: antennæ nigro-fuscæ; articulus 1^{us}. fulvus; 2^{us}. viridi-æneus: thorax et abdomen cuprea, ejus discus obscurior, segmentum 1^{um}. micans viridi varium: pedes fulvi; coxæ æneæ; femora fusco cingulata; meso- et metatarsi flavi, apice fulvi: alarum maculæ quam *mari* majores et pallidiores. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. 2— $2\frac{1}{4}$.)

Var. β.—*Mas*, caput viride: thorax æneo-viridis; suturæ cyaneo-virides: metafemora et metatibiæ obscure fusca.

Var. γ.—*Mas*, femora et tibiæ omnino fulva.

Var. δ.—*Mas*, *Var. γ.* similis: thoracis suturæ et metathorax omnino cyaneo-viridia.

Var. ε.—*Mas*, *Var. γ.* similis: thorax æneo-viridis; mesothorax cyaneo-viridi fasciatus.

Var. ζ.—*Mas*, abdomen nigro-cupreum; macula flava vix conspicua: profemora fusco cingulata; metafemora nigro-fusca.

Var. η.—*Fem.* caput et thorax viridi-ænea, illum antice viride, ejus scutum cupreum.

Var. θ.—*Fem.* caput viridi-æneum, antice viride: femora nigro-fusca; metatibiæ fuscæ.

Var. ι.—*Fem.* alarum maculæ vix conspicuæ.

Var. κ.—*Fem.* caput et metathorax æneo-viridia.

May to September; on beams of wood perforated by *Anobium*, ash-trees, ivy, &c.; near London; North Wales. Found in Ireland by Mr. Haliday.

** *Prothorax productus*, antice angustus.

GENUS TRIGONODERUS, *Westwood*.^a

Mas.—Corpus squameum, fere glabrum: caput magnum, thorace

^a Lond. and Edinb. Phil. Mag. and Journ. of Science. Third Series. Vol. I. No. 2, p. 127.

latius, antice non impressum : oculi extantes : antennæ filiformes, pubescentes, 13-articulatæ, corporis dimidio longiores ; articuli 5^o. ad 10^{um}. curtantes ; clava fusiformis, acuminata, articulo 10^o. multo longior non latior : mandibulæ quadratæ ; una 4-dentata fere recta, dentes breves minuti subacuti ; altera 3-dentata subarcuata, dens externus mediocris subacutus incurvus, 2^{us}. et 3^{us}. lati minuti obtusi : maxillæ breves ; lacinia longæ, angustæ, acuminatæ, lobatæ ; palpi 4-articulati, subelavati, articuli 1^{us}. 2^{us}. et 3^{us}. breves subæquales, 4^{us}. longior fusiformis : labium breve, obconicum ; ligula brevis, antice lata et ciliata ; palpi 3-articulati, breves, crassi, articulus 1^{us}. mediocris, 2^{us}. brevissimus, 3^{us}. fusiformis 1^o. longior : thorax longi-ovatus : segmenta optime determinata : prothorax magnus, antice attenuatus : mesothoracis scutum angustum ; parapsides discretæ, extantes, convexæ ; scutellum angustum, obconicum : metathorax magnus ; scutellum medio canaliculatum : abdomen cochleatum, planum, fere læve, thoracis longitudine, apicem versus latius ; segmenta 6 subæqualia supra conspicua ; sexualia subexerta : pedes graciles, simplices, subæquales : alæ amplæ ; nervus humeralis ramulum rejiciens brevem, radialis cubitali triplo longior.

Fem.—Caput quam *mari* minus, breve, antice impressum : antennæ graciles, corporis dimidii longitudine, extrorsum vix crassiores ; articuli 5^o. ad 10^{um}. curtantes, vix latescentes ; clava longi-ovata, acuminata, articulo 10^o. duplo fere longior vix latior : thorax ovato fusiformis, quam *mari* angustior : abdomen lanciforme, thorace longius, apicem versus acuminatum et attenuatum, subtus carinatum et canaliculatum non angulatum nec compressum ; segmenta dorsalia 7 conspicua, 1^{um}. 2^{um}. et 3^{um}. brevia, 4^{um}. longius, 5^{um}. brevius, 6^{um}. 4^o. longius, 7^{um}. breve : oviductus ad segmenti 4ⁱ. apicem conspicuus, dum quietem agit occultus.

Sp. 1. Tri. pulcher. Fem. *Æneo-viridis, abdomen cupreo fasciatum, antennæ nigræ, pedes rufi, proalis macula sub-lunaris fusca.*

Caput viride : oculi ocellique rufo-picei : trophi rufi : antennæ nigræ ; articulus 1^{us}. flavus apice supra fuscus ; 2^{us}. viridi-æneus : clava articulo 10^o. latior : gula flava : thorax æneo-viridis : abdomen viride, pubescens ; segmenta apice obscure cuprea : pedes pallide rufi ; coxæ virides ; meso- et metatarsi flavi ; ungues et pulvilli fusci : alæ sublimpidæ, fusco obsolete nebulosæ ; squamulæ et nervi obscure fulvæ ; stigma minutum ; proalæ

macula in cujusque disco sublunaris fusca. (Corp. long. lin. $2\frac{1}{4}$ — $2\frac{1}{2}$; alar. lin. $3\frac{1}{2}$ —4.)

Var. β.—Mesothorax viridi-æneus.

June; near London.

Sp. 2. Tri. filatus. Fem. *P. pulchro gracilior, alæ longiores et angustiores. Æneo-viridis, abdomen viridicupreum basi rufum, antennæ nigræ, pedes rufi, proalis macula fusca.*

Caput cyaneo-viride: oculi ocellique rufo-picei: antennæ nigræ; articulus 1^{us}. fulvus, apice fuscus: trophi rufi: thorax viridis, hic et illuc æneo-viridi varius: abdomen supra cupreum, subtus viride fasciis cupreis, basi rufum; segmentum 1^{um}. læte cyaneo-viride; 2^{um}. et sequentia basi utrinque viridia: pedes pallide rufi; coxæ virides; meso- et metatarsi flavi; ungues et pulvilli fusci: alæ sublimpidæ, fusco obsolete nebulosæ; squamulæ et nervi obscure fulva; stigma minutum; proalæ macula in cujusque disco fusca. (Corp. long. lin. 2 — $2\frac{1}{2}$; alar. lin. $2\frac{3}{4}$ — $3\frac{1}{2}$.)

Var. β.—Thorax omnino viridis: abdomen basi subtus tantum rufum: metatarsi fusci.

Found near London.

Sp. 3. Tri. tristis. Fem. *Præcedenti similis, abdomen brevius. Æneo-viridis, abdomen cupreum, antennæ nigropiceæ, pedes fulvi, proalis macula fusca.*

Caput viride: oculi ocellique rufo-picei: antennæ nigropiceæ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-fuscus: thorax æneo-viridis: metathorax viridis: abdomen cupreum; segmentum 1^{um}. cyaneum; 2^{um}. et sequentia basi utrinque viridia: pedes fulvi; coxæ virides; metafemora supra viridi-fusca; tarsi flavi, apice fulvi; ungues et pulvilli fusci: alæ subfuscæ; squamulæ et nervi fulva; stigma minutum; proalæ macula in cujusque disco fusca. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{3}{4}$.)

Found near London.

Sp. 4. Tri. dactilis. Mas et Fem. *Viridis aut æneo-viridis, cyaneo et cupreo varius, antennæ nigræ, pedes fulvi, mari femora fusca, alæ limpidæ.*

Mas.—Viridis: caput, pro- et mesothoracis latera et metathorax viridi-cyanea: oculi ocellique rufi: maxillæ et labium viridia:

palpi fusci: ligula et laciniae flava: antennae nigrae, pilis albis hirtae; articuli 1^{us}. et 2^{us}. nigro-virides: gula flava: mesothoracis segmentorum margines aeneo-virides; scutellum basi aeneo-cupreum: abdomen obscure cupreum, apice et utrinque viridescens; segmentum 1^{um}. basi cyaneo-viride: sexualia flava: pedes fulvi; coxae virides; femora et metatibiae supra fusca; meso- et metatarsi apice pallide fusci: alae limpidae; squamulae et nervi obscure fulva; stigma minutum.

Fem.—Læte viridis: antennis articulus 1^{us}. flavus: prothoracis latera, mesothoracis paraptera et metathorax cyanea: mesothoracis scutellum antice et postscutellum cuprea: abdomen aeneo-viride, cupreo varium, apice pubescens; segmentum 1^{um}. viridi-cyaneum: oviductus pallide fulvus; vaginae nigrae: pedes pallide fulvi; tarsi flavi; ungues et pulvilli fusci: alis squamulae et nervi fulva. (Corp. long. lin. $1\frac{1}{3}$ — $2\frac{1}{4}$; alar. lin. $1\frac{3}{4}$ — $2\frac{5}{4}$.)

Var. β.—*Mas*, caput viride: mesothoracis scutellum et epimera viridi-aenea: metathorax cyaneus.

Var. γ.—*Fem.* caput cyaneum.

Var. δ.—*Fem.* mesothoracis scutum, epimera et postscutellum viridi-aenea.

Var. ε.—*Fem.* caput et mesothoracis epimera cyaneo-viridia: abdomen viridi-cyaneum; segmenta basi et apice aenea, 1^{um}. cyaneum.

Var. ζ.—*Fem.* capitis vertex cupreo varius: mesothoracis scutellum cupreum: metathorax cyaneo-viridis.

Var. η.—*Fem.* thorax cyaneo-viridis: mesothoracis scutellum et epimera aeneo-viridia, illum antice cupreum: abdominis segmenta 2^o. ad 7^{um}. viridia, basi et apice obscure aenea.

Var. θ.—*Fem.* metafemora supra pallide viridi-fusca.

Var. ι.—*Var. θ.* similis: metatibiae obscure fulvae.

Var. κ.—Caput et thorax viridi-cyanea, ejus segmentorum margines cupreo-aenci: antennis articulus 1^{us}. supra et apice fuscus.

Var. λ.—*Var. ι.* similis: corpus cyaneum: thoracis discus aeneo-varius: abdominis segmenta basi obscure cuprea.

Var. μ.—Caput cyaneo-viride: thorax aeneo-cupreus: abdomen cupreum; segmentum 1^{um}. cyaneo-viride; 2^{um}. et sequentia viridi-varia.

May and June; on posts and beams of wood perforated by Anobium, &c.

Sp. 5. Tri. affinis. Fem. *T. ductilis similitudine, abdomen brevius. Viridi-cupreus cyaneo varius, antennæ obscure fulvæ, pedes fulvi, femora fusca, alæ limpidæ.*

Caput viride: oculi ocellique rufi: antennæ obscure fulvæ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-fuscus: thorax cupreus: prothorax et mesothoracis scutum utrinque viridi-cyanea: metathorax viridis, utrinque cyaneus: abdomen cupreum; segmenta basi viridi-ænea: pedes fulvi; coxæ virides; femora et metatibiæ supra pallide fusca; meso- et metatarsi flavi, apice fuscus: alæ limpidæ: squamulæ et nervi flava; stigma fulvum, minutum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{2}{3}$; alar. lin. $1\frac{3}{4}$ — $2\frac{1}{4}$.)

Var. β.—Capitis vertex viridi-æneus: mesothoracis scutellum, paraptera et epimera viridi marginata: abdominis segmentum 1^{um}. læte viride, cupreo varium; 2^{um}. et 3^{um}. basi viridia.

Var. γ.—Prothorax et mesothoracis latera anteriora viridia: metathorax cyaneo-viridis: abdomen cupreum; segmentum 1^{um}. læte cyaneo-viride.

September; near London. North Wales.

Sp. 6. Tri. linearis. Fem. *Viridi-cupreus, cyaneo varius, T. ductili angustior, antennæ obscure fusca, pedes fulvi, femora et nonnunquam metatibiæ fusca, alæ sublimpidæ.*

Corpus longum, gracile: caput viride, antice cyaneum: oculi ocellique rufi: antennæ obscure fusca; articulus 1^{us}. fulvus, apice fuscus: thorax viridis, antice utrinque cyaneo-viridis; discus æneo-cupreus: abdomen cupreum, subtus æneo-viride, basi cyaneum: pedes fulvi; coxæ virides; femora pallide fusca; meso- et metatarsi flavi, apice fuscus: alæ sublimpidæ; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ —2.)

Var. β.—Prothorax utrinque purpureo-cyaneus: abdomen basi viride: femora fulvo fusca.

Var. γ.—*Var. β.* similis: antennæ fusca: thoracis discus æneo-viridis.

Var. δ.—Thorax viridi-æneus; latera et metathorax viridia; prothorax utrinque purpureo-cyaneus: abdomen cupreum, basi viride: metatibiæ fusca.

Found near London.

Sp. 7. Tri. amabilis. Fem. T. affinis *statura*, *alæ angustiores*. *Viridi-cupreus*, *antennæ nigro-fuscæ*, *pedes fulvi*, *femora viridi-fusca*, *metatibiæ fusco cingulatæ*, *alæ fulvescentes*.

Caput læte viride: oculi ocellique rufi: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: thorax cupreus, utrinque antice viridis: abdomen viridi-æneum; segmentum 1^{um}. læte viride; 2^{um}. et sequentia apice obscure cuprea: pedes fulvi; coxæ virides; femora viridi-fusca; metatibiæ fusco cingulatæ; meso- et metatarsi apice fusci: alæ fulvescentes; squamulæ et nervi fulva; stigma minutum, obscurius. (Corp. long. lin. 1½; alar. lin. 2.)

October; near London.

Sp. 8. Tri. figuratus. Mas. *Cupreus*, T. ductilis *statura*, *antennæ nigræ*, *pedes fulvi*, *femora fusco vittata*, *alæ subfulvescentes aut limpidæ*.

Caput æneo-viride: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. nigro-virides: thorax cupreus; latera et metathorax viridi-ænea: abdomen nigro-cupreum, basi cupreum, medio obsolete fulvum: pedes fulvi; coxæ virides; femora fusco vittata; meso- et metatarsi flavi, apice pallide fusci: alæ subfulvescentes; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. 1—1¼; alar. lin. 1½—2.)

Var. β.—Caput viride: abdomen basi viridi-æneum: alæ limpidæ.

Var. γ.—*Var. β.* similis: tibiæ flavæ.

Found near London.

Sp. 9. Tri. deductor. Mas. T. ductili *nimis affinis at obscurior et sæpissime multo minor*. *Viridi-cupreus cyaneo varius*, *antennæ nigræ*, *pedes fulvi*, *femora et nonnunquam tibiæ fusca*, *alæ subfuscæ aut sublimpidæ*.

Caput viride: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. virides: thorax cupreus, antice et utrinque viridis; prothoracis latera cyanea: abdomen nigro-cupreum; segmentum 1^{um}. basi æneo-viride: pedes fulvi; coxæ virides; femora viridi-fusca; metatibiæ pallide fuscæ: proalæ subfuscæ; squamulæ et nervi fulva; stigma minutum; metalæ sublimpidæ. (Corp. long. lin. 1—1½; alar. lin. 1½—1¾.)

Var. β.—Metathorax viridis.

Var. γ.—Metatibiæ obscure fulvæ.

Var. δ.—Caput viridi-cyaneum.

Var. ε.—Pro- et mesotibiæ basi fulvo-fuscæ.

Var. ζ.—Thorax viridis, antice utrinque cyaneum.

Var. η.—Minutus: abdomen omnino cupreum: pro- et mesotibiæ fusco fulvæ.

Var. θ.—Thorax viridis, utrinque viridi-cyaneus: mesothoracis scutellum viridi-æneum: proalæ sublimpidæ.

Var. ι.—Caput, pro- et metathorax obscure viridia: mesothorax cupreus: abdomen nigro-cupreum: tibiæ omnes fuscæ.

Var. κ.—Thorax cupreus, utrinque viridis: alæ sublimpidæ.

Var. λ.—Thorax obscure æneo-viridis: alæ sublimpidæ.

Found near London.

Sp. 10. *Tri. elegans*. Mas. *Obscure viridis, præcedentibus gracilior, abdomen nigro-cupreum, antennæ nigræ, pedes fusco-fulvi, alæ fuscæ.*

Corpus gracile: caput obscure viride, postice æneo-viride: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}, et 2^{us}, nigro-virides: thorax obscure viridis, æneo varius: abdomen nigro-cupreum, basi obscure viride: pedes fusco-fulvi; coxæ virides; tarsi et protibiæ fulva: alæ fuscæ: squamulæ et nervi fulva; stigma minutum; metalæ pallidiores. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 1 $\frac{3}{4}$ —2.)

Var. β.—Thorax omnino viridis: abdomen basi viridi-æneum: femora viridi-fusca.

Found near London.

Sp. 11. *Tri. obscurus*. Fem. *Æneo-viridis, abdomen cupreo varium, antennæ nigræ, pedes fusci, femora nonnunquam viridia, alæ sub-fuscæ, proalæ infumatae.*

Caput viridi-cyaneum: oculi ocellique picei: antennæ nigræ; articuli 1^{us}, et 2^{us}, æneo-virides: thorax æneo-viridis: mesothoracis scutellum cupreum: metathorax viridis: abdomen cupreum; segmentum 1^{um}, læte viride, cupreo varium; 2^{um}, 3^{um}, et 4^{um}, utrinque viridi-cyanea: oviductus rufus: pedes fulvi; coxæ virides; femora fusca; tibiæ fulvo-fuscæ; protarsi

obscure fulvi; meso- et metatarsi apice fusci: alæ subfuscae; squamulae et nervi fusca; stigma minutum; proalæ cujusque discus infumatus. (Corp. long. lin. $1\frac{3}{4}$ — $2\frac{3}{4}$; alar. lin. $2\frac{1}{4}$ — $3\frac{1}{4}$.)

Var. β.—Thorax viridis; scutellum viridi-æneum: abdominis segmentum 1^{um}. cyaneum: femora viridi-fusca; tibiæ fuscae.

Var. γ.—*Var. β.* similis: abdomen viridi-cyaneum; segmenta apice cuprea; 1^{um}. micans, cupreo varium.

Var. δ.—*Var. β.* similis: protarsi fusci: meso- et metatarsi obscure fulvi.

Var. ε.—Thorax æneo-viridis: tibiæ et protarsi fulva: meso- et metatarsi pallidiores.

Var. ζ.—*Var. β.* similis: meso- et metatarsi fusci, basi fulvi.

May, August, and September; near London; Devonshire.

Sp. 12. Tri. contemptus. Fem. T. obscuro *affinis at brevior et latior. Æneo-viridis, abdominis discus cupreus, antennæ nigrae, pedes ferruginei, femora extus fusca, alæ subfuscae.*

Caput viride: oculi ocellique rufo-picei: antennæ nigrae; articulus 1^{us}. fulvus, apice viridi-fuscus: thorax viridi-æneus: prothorax utrinque viridis: mesothoracis scutellum cupreo varium: abdomen viride, cupreo varium; discus cupreus: pedes ferruginei; coxæ virides; femora extus fusca; genua fulva; meso- et metatarsi basi flavi, apice fusci: alæ subfuscae; squamulae et nervi obscure fulva; stigma minutum. (Corp. long. lin. 2; alar. lin. 3.)

Found at New Lanark, Scotland.

Sp. 13. Tri. atrovirens. Fem. T. obscuro *gracilior et obscurior. Nigro-viridis, abdomen cupreum, antennæ nigro-fuscae, pedes fusci, alæ sublimpidæ.*

Corpus gracile: caput obscure viride: oculi ocellique rufo-picei; antennæ nigro-fuscae; articulus 1^{us}. viridi-fuscus: thorax obscure viridis: metathorax cyaneo-viridis: abdomen obscure cupreum, subtus et basi viridi-cyaneum: pedes fusci; coxæ virides; femora supra viridi-fusca; meso- et metatarsi basi fulvi: alæ sublimpidæ; squamulae et nervi fulva; stigma minutum. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. $1\frac{3}{4}$.)

Found near London.

Sp. 14. Tri. dolosus. Mas et Fem. *Cupreus, thoracis latera viridia aut cyanea, antennæ mari nigræ, fem. nigro-piceæ, pedes fulvo-fusci, alæ limpidæ.*

Mas.—Caput obscure viride: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. virides: thorax viridi-æneus: prothorax utrinque viridi-cyaneus: mesothoracis latera anteriora et metathorax viridia: abdomen nigro-cupreum, basi nitentius: sexualia fusca: pedes fulvi; coxæ æneo-virides; femora fusco-ænea; metatibiæ fuscæ; meso- et metatarsi basi flavi: alæ limpidæ; squamulæ et nervi fulva; stigma minutum.

Fem.—Caput viride: antennæ nigro-piceæ; articuli 1^{us}. et 2^{us}. ænei: thorax cupreus; latera anteriora cyaneo viridi et purpureo varia: metathorax læte viridis, utrinque purpureus: abdomen nigro-cupreum, basi viride. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—*Fem.* caput cyaneo-viride: antennæ pallidiores; articulus 1^{us}. æneus, basi et subtus fulvus: meso- et metatarsi flavi, apice fusci.

Var. γ.—*Fem.* metathorax cyaneus: mesotibiæ fuscæ.

Found near London.

Sp. 15. Tri. hirticornis. Mas. *Thorax quam præcedentibus brevior, proalis nervus cubitalis radiali angulum obtusorem fingens. Cupreus cyaneo varius, antennæ nigro-piceæ hirtæ, pedes fusci, tarsi flavi, alæ limpidæ.*

Caput et thorax cuprea: oculi et ocellique rufi: antennæ nigro-piceæ, pilis fulvis hirtæ; articuli 1^{us}. et 2^{us}. virides: prothorax, metathorax et mesothoracis latera cyanea: abdomen nigro-cupreum: pedes fusci; coxæ virides; femora viridi-fusca; protarsi fulvi; meso- et metatarsi flavi, apice fusci: alæ limpidæ; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. $\frac{2}{5}$ — $\frac{3}{4}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—Caput cyaneum: prothoracis discus cupreus.

Found near London.

GENUS—ISOSOMA.

Isos. vacillans. Mas. I. longulo paullo validius, antennæ et alæ latiores.

Atrum: *Eurytomæ* speciebus nonnullis simillimum: antennæ corporis dimidio longiores: prothoraci macula utrinque rufa, minima:

genua et tarsi picea: alæ fere limpidae; nervi nigro-fusci. (Corp. long. lin. $1\frac{3}{4}$; alar. lin. $2\frac{1}{2}$)

May; on grass in woods; near London.

Isos. brevicolle, (Haliday.) Mas. *Præcedenti simile at validius, antennæ crassiores, alæ latiores.*

Atrum: antennæ latae, corporis dimidio paullo longiores: abdomen thorace brevius, fere planum: tarsi nigri: alæ limpidae; nervi picei. (Corp. long. lin. $1\frac{3}{4}$; alar. lin. $2\frac{1}{2}$.)

Found on sand-hills, at Port Marnock, by Mr. Haliday.

Isos. brevipenne. Fem. I. angustato *similis, alæ breviores, angustiores.*

Atrum, angustum: abdomen thoracis longitudine: genua et tarsi picea: alæ subfuscae, breves, angustae; nervi fusci. (Corp. long. lin. 1; alar. lin. 1.)

Found near London.

GENUS—EURYTOMA.

Eur. fumipennis. Mas et Fem. *Atra, tarsi rufi, alæ fuscae.*

Mas.—Antennæ graciles, corporis dimidio multo longiores: genua rufa: alarum nervi picei.

Fem.—Multo brevior et latior. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{2}{3}$ — $1\frac{3}{4}$.)

June; Windsor Forest. New Forest, Hampshire.

GENUS—DECATOMA.

Dec. mesomelas. Fem. *Flava, antennæ metathorax abdominisque dorsum nigra, alæ limpidae, macula apud stigma quadrata minima.*

D. mellea brevior: caput inter ocellos et postice nigro-varium: oculi picei: ocelli rufi: antennæ apice piceae; articulus 1^{us}. flavus: mesothoracis scutum antice utrinque nigrum: ungues et pulvilli picei: alis nervi flavi, maculae fuscae. (Corp. long. lin. 1 — $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

June; oak woods, at Lara in the county of Wicklow; Mr. Haliday. July; near London.

Dec. flavicornis. Mas et Fem. *D. planæ similitudine, antennæ flavæ.*

Nigra : oculi ocellique piceo-rufi : antennæ flavæ ; articuli 2^{us}. 3^{us}. et *mari* 1^{us}. quoque picei : *fem.* caput antice et prothorax utrinque flava : petiolus apice fulvus : pedes picei ; trochanteres genua et tarsi flava : alæ limpidæ ; nervi flavi ; maculæ sublunatæ fuscæ, apud stigma quadratæ obscuriores. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. lin. 1—1 $\frac{1}{4}$.)

June ; oak woods, at Lara in the county of Wicklow ; Mr. Haliday.

Dec. aspilus. Fem. *Nigra, subtus fulva, alæ immaculatæ.*

Caput antice et subtus fulvum : oculi ocellique piceo-rufi : thorax subtus fulvus : prothoracis latera fulvo varia : abdomen subtus fulvum, basi supra utrinque fulvo maculatum : pedes fulvi ; femora et tibiæ nigro cingulata : alæ limpidæ ; nervi flavi, ad costam obscuriores. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{4}$.)

June ; Isle of Wight.

GENUS—CALLIMOME.

Call. rudis. Fem. *C. quadricolori similis at angustior, antennæ quoque et pedes graciliora.*

Viridis, parum nitens : caput inter ocellos mesothoracisque scutum viridi-ænea : oculi ocellique rufi : palpi flavi : antennæ nigrae ; articulus 1^{us}. flavus : abdomen nigro-æneum, basi fulvum : oviductus abdomine dimidio longior : alæ fuscae ; nervi concolores ; stigma parvum. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 2.)

June ; near London.

Call. Angelicæ. Fem. *C. Geranii coloribus at trientis tantum magnitudine.*

Torymus abdominalis ? *Boheman, Kongl. Vetens. Acad. Handl. för år 1833.*—“ Habitat in Smolandia ad Anneberg rarius.”

Viridis, nitens, subtus cyaneo-viridis : caput et mesothorax viridi-ænea : antennæ nigro-fuscæ ; articulus 1^{us}. flavus, apice supra

fuscus: gula flava: abdomen cupreo-æneum; segmentum 1^{um}. flavum, basi viride: oviductus corpore paullo brevior: pedes flavi; meso- et metatarsis traminei, apice fusci: alæ limpidæ; nervi flavi; stigma concolor, minimum. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$ —1 $\frac{5}{4}$.)

Var. β.—Mesothorax viridis.

Var. γ.—Metapedum femora et tibiæ fulvæ.

Found by Mr. Haliday, on *Angelica sylvestris*, at Holywood, in Ireland.

ART. II.—*Wanderings and Ponderings of an Insect-Hunter.*

SERIES THE SECOND.

CHAPTER I.

[The Insect-Hunter speaketh of Darenth and Greenhithe.]

WHEN I awoke the sun was high in the heaven. My companion of yesterday was gone; he had been out for hours. I had never before been on the spot; I knew nothing of the ground; however, I marched up the lane, and entered the wood. In this lane, be it recorded, I took *Drilus flavescens* and *Leptura 6-guttata*, besides a great number of *Criorhina oxycanthæ*, which till now I had never seen, and I well recollect how much I was struck by their velvety backs and beautiful appearance. Almost immediately on entering the wood there is a high sandy bank to the left; when I now first saw this bank, the beams of a cloudless sun fell full upon it, and the bees were at work mining it in all directions. I soon scrambled up nearly to the top. The black *Anthophora* was throwing the loose sand behind her from an exquisitely round hole, which she was digging with all her energies, whilst her white-nosed partner was pendulizing over and about her like a sentinel on guard. The sand-wasps were flitting about and entering their burrows, and the gorgeous

golden wasps were eagerly running over the whole surface of the bank, going in and out of the various holes in search of some occupants by which they might insidiously deposit their eggs.

After surveying this lively scene for some time, making an occasional capture of a brilliant *Chrysis*, I turned round, and saw three of that elegant butterfly, *Paphia*, sailing round in circles beneath me, their spotted wings shone on, and brightened by, a most glowing sun. I thought I had never seen any thing more lovely. They were beautifully fresh, and perhaps had that very morning burst from the chrysalis, and were for the first time essaying their powers of flight. By patient waiting, and much labour, I made them all my own, and then regretted my success; they did not appear half so beautiful when pinned in a collecting box as when sailing on sunshine in the full enjoyment of their liberty. Well does Crabbe call this butterfly a "*silvery* queen;" he surely was an entomologist.

Leaving this bank, the heat of which began to be almost unbearable, I struck more deeply into the wood, delighted beyond measure at the infinite diversity of insect forms which filled my boxes; at last, after the lapse of many hours spent in racing after every insect I saw on the wing, I found myself completely tired out; I was in a heat approaching to fever; hungry and thirsty to an extreme; and, last and not least, I had no knowledge whatever of the way, nor knew I by which path I came into the wood, or by which path I could get out. I sat down and pondered. What, thought I, is the most rational course I can pursue? it is three o'clock, the sun must be getting south-west; *there* must be the north, and if I march through the wood northward, without turning right or left, I must, before long, reach the Dover road; the river cannot be many miles to the north of me, and the Dover road must be between me and the river. Keeping this arrangement of localities constantly in view saved me from a hungry night in the woods, which, had there been no sun, I should probably have endured. I proceeded till the country opened before me; a corn-field appeared on the right, and a-head of me were fields and woods, and the placid Thames, speckled with vessels. Crossing a lane, in which I took some half-dozen of the beautiful

little scarlet frog-hopper, *Cercopis vuluerata*, I entered a chalk-pit, a very little chalk-pit, but a very productive one; here I took among other insects that pleased me exceedingly, a whole row of the brilliant beetle *Cryptocephalus lineola*, and from a dead snake I procured a multitude of carrion-beetles of all sorts and sizes. I reached Greenhithe as the sun was setting, and procured the needful restoratives.

Greenhithe is a remarkable place: its immense chalk-pits strike the beholder with wonder; what labour must there not have been in the excavation! a town of considerable magnitude, with its churches, tall spires, and stately towers, might be concealed therein from the passer by. As it is, numerous cottagers have settled there, have fenced in their garden, and cultivated fields of corn. The view over these pits from above, the precipitous steepness and the tortuous margin of their banks, and the broad Thames flowing beyond them, cannot fail to arrest the notice and attract the admiration of the most cursory beholder, while their contents amply repay the entomologist. The finest view is from the corner nearest to Gravesend, almost close to the turnpike-road. Crossing the road at this spot, into a scrubby, bushy kind of meadow, you are on the almost sole locality within many miles of London of the spider orchis, *Ophrys aranifera*; it is every year found here in the early spring, but botanists have pursued it with such vigour that it is now nearly exterminated. In the chalk-pits *Ophrys anthropophora*, and many other *Orchideæ*, are very abundant.

CHAPTER II.

[The Insect-Hunter at Paris; he visiteth the Jardin du Roi; he commenteth thereon; he returneth to England by night, and pondereth by the way.]

In London the collector of insects is supposed, at least by the many, to be insane: in Paris it is quite the reverse—he is considered a philosopher. The Insect-Hunter was not only respected, but met with every assistance. The year had moved onwards; it was September; and *Lathonia* was flying in swarms in that most elegant, most sentimental, most tasty,

and most French of all cemeteries, Père-la-Chaise. The Champs de Mars was alive with *Gryllidæ*. The Champs Elysées and Bois de Boulogne abounded in autumnal insects. In the garden of the Tuileries, flying about the China-asters, was the deep blue *Xylocopa*. This bee never comes into our colder, damper island. Be it also noticed that the China-asters in the garden of the Tuileries are magnificent; but at all seasons these gardens are a blaze of bloom; but let us pass to the Jardin du Roi. Here science seemed to predominate over beauty.

Our Zoological Gardens are the nearest approach that this country has ever made to the Jardin du Roi at Paris; but there is a difference between them that time will never remove. The Jardin du Roi has the various merits of the Zoological Gardens, the Botanical Garden at Chelsea, the British Museum, and the Museum of the College of Surgeons, united in one. In Regent's Park the garden is a pretty garden, and the flowers are pretty; and in this an approach is made to the garden of the Tuileries, but only an approach—the orange trees, the marble basin, the tasty fountain, the elegant statues, the effect, the *tout ensemble*, is wanting. In the Jardin du Roi there is no attempt at beauty, but every attention paid to science. The plants are arranged, and in accuracy of nomenclature are above, far above, an Insect-Hunter's praise, and far above his comprehension. If we compare the live stock, the English collection scarcely equals the French; the feline animals with us are very inferior. But our giraffes, our *four* giraffes! I had forgotten them. Certainly mine eyes never before beheld a sight so splendid: the graceful, snake-like flexibility of those long necks, and the statue-like repose of their usual attitude, are alike superb, and are worth a menagerie of lions and tigers. Throughout this vast and comprehensive establishment (the *Jardin des Plantes*) there appears to be every endeavour to place the animals in a situation as near to a state of nature as possible; they all look exceedingly healthy, clean, and in good condition, and the greatest possible space consistent with safety is allowed them. Much care has been exercised also in the feeding department. It has been ascertained that some of the carnivorous animals are most healthy, and most inclined to increase in bulk, if only fed once in several days. The jaguar is an animal remarkable for the

excess of this peculiar power, and will eat at a single meal sufficient to support him for a week. In the wild solitudes of which he is a native, he probably is equally abstemious during the time of repletion. The cage system for the feline animals exists here as elsewhere; it would be evidently dangerous to keep them in any other way. Day after day the Insect-Hunter visited this interesting place, and always found something new, something worthy of observation, that had before escaped him. He could almost have been willing to take up his abode in Paris for the pleasure of continually visiting the Jardin du Roi.

Sunday in Paris every one knows is a complete holiday. A few of the Parisians go to mass in the morning, and only a few, but in these few there is more appearance of sincere religion than we even meet with in our large congregations. The attenders of mass, however, are generally of the working classes: the lowest tribe of mechanics, or people from the country—men in blue frocks, and women in the high caps of Normandy and Bretagne. These people are scattered about the churches, kneeling most devoutly on the cold stones. In the afternoon all is gaiety. In September, during three successive Sundays, is a fair at St. Cloud. Thither the Insect-Hunter repaired, mixed in the scene, and enjoyed it with the rest. A person of the name of Charles was in the crowd, moving continually from place to place; staying for a moment before the beautiful water-works, then surveying the youngsters who rode in the wooden roundabouts. Charles approached the Insect-Hunter, who pressed forward to see him. "A bas les chapeaux!" shouted the gigantic Swiss mercenaries. There was Charles, and a little laughing boy in the costume of a colonel of guards, and a sweet, smiling woman holding the latter, that he might not fall out of the carriage. These three persons, a king, a prince, and a duchess, have since that time risen into notice, have played a conspicuous part in the politics of the day, have disappeared, and are forgotten. *Sic transit gloria mundi!*

France is a merry nation, a restless nation, a dancing nation. Of all people the Insect-Hunter has seen, the French dance the best, and walk the worst. The grace with which the peasants and the lower class of tradespeople dance beneath the fine old trees at St. Cloud is unequalled by any class

in England. Judging from appearances, I should say, the French women never attempt to diminish the natural size of the waist; and this freedom allows the elegance and elasticity of the frame to display itself advantageously. Nature is seldom improved by alteration; deformity may be concealed, I grant, but the alteration of a symmetrical form induces deformity: an unnaturally slender waist is, in my opinion, as great a deformity as a hump back.

Dear reader, I know very well this has little to do with entomology, but you must not suppose that I can write on and on always on the same subject. Nobody ever got any thing by playing on one string except Paganini. I shall be very entomological by and by; but I must have my talk out on any subject that comes uppermost. Well! the netted gates of Paris opened to receive the "cuckoo" that brought back the Insect-Hunter from St. Cloud. He alighted, and strolling through the Place Louis XV. entered the garden of the Tuileries by moonlight. The mass of palaces rose before me against a cloudless sky; old, and in my opinion ugly, is the whole mass, but interesting and noble, and by moonlight somewhat imposing. We say that in London the monarch has no residence worthy of a king; for my own part, I think Paris little better off in this respect. If a Frenchman should whisper, "Versailles," I reply "Windsor:" one is as much in London as the other in Paris.

From Calais you start at a certain time of tide, let the hour be what it may, or the wind blow as it pleases. It was midnight, and the wind having blown hard several days there was a heavily rolling sea. The steamer started, and as the wheels dashed aside the waves, they seemed to kindle into light; it became a sea of fire. I leaned over the vessel's side, and thus I pondered:—"Now for a lecture of the luminosity of the ocean." Gentle reader, no such thing. The "luminosity of the ocean" and the "humming in the air" are favourite themes, I know, and therefore I should perhaps be pardoned if I were to scribble a few "conjectures" on these subjects; but they have neither at present happened to disturb my peace of mind; I have never looked on them as riddles. While the countless tribes of summer are a-wing, why should we imagine it mysterious that there is a humming in the air? While multitudes of luminous atoms inhabit the ocean, why should it

be strange that the ocean itself is luminous? If the pseudo-philosophers were to manage their wonder aright, they would temper it with adoration rather than sophistry.

CHAPTER III.

[The Insect-Hunter becometh an Author.]

Shortly after my return from France I became an author, a very important era in a man's existence, and one not likely to be forgotten. It was the practice occasionally to read original essays at the meetings of the Entomological Club, (which had not then a Magazine of its own,) and I composed and read my maiden essay. I was recommended to publish it, and with considerable coyness I consented. A mutual friend, a sort of stepping-stone in the wide gulf between me and the great editor of a magazine, undertook to hand it to the latter personage. Shall I ever forget the next magazine-day? with what impatience I hastened to Paternoster-row—with what glee I laid out three shillings and sixpence—with what tremor I cut the leaves, with what eagerness I skimmed over the whole number without any previous reference to the "contents"—with what disappointment I found that my contribution had been omitted! Another magazine-day came and went in like manner; a third, and a fourth, and still my *invaluable* contribution did not see the light; fourteen shillings had been laid out in the hopes of having my vanity gratified, and I began to feel cool on the subject, and resolved not to buy any more. It is the right way to be indifferent; the number which I did not buy contained my essay, or rather a portion of it. The editor had cut it in pieces at the paragraphs, and published about half the paragraphs in a lump as a complete article; the remainder served as occasional stopgaps for the next twelvemonth. By this sage device the connexion, or rather the brains, were completely knocked out of my essay; and proud as we always are of our own performances, I must confess I think mine far below par. I have since wished a hundred times that it had been burnt by the editor rather than thus

mutilated; but it was my first-born, and I read and re-read it with infinite complacency, although it was so altered I could scarcely myself understand it: this was my first attempt with the public.

CHAPTER IV.

[The Insect-Hunter visiteth Wales. Black Mountain. Llanthony.]

SEVEN years had rolled over the head of the Insect-Hunter since his first wanderings in Darent Wood—seven whole years—a large portion of human life! And what had I been doing? Creating myself enemies. I had written myself into fame. I was feared by many, yet feared none; I was hated by many, yet hated none; I was persecuted by many, yet persecuted none. Reader, if thou art not an author, resolve never to be one. Of all parts that we can play in this world, that of an honest author is the most dangerous. It were better for an honest man never to write. I look upon it as a thing impossible for a man to write honestly and not give offence. After the offence is taken comes the retort—the revenge: a passage misquoted, a fact mistated, and a thousand other petty annoyances. Sometimes the same attack, clothed in various language, defiles half a dozen different periodicals. Honesty has no remedy for this: it cannot wield the same weapons.

Such were my ponderings as I traversed the lofty ridges of the Black Mountain for the fourth time in the summer of 1835. Far as the eye could reach there was no trace of the handy-work of man,—nothing but one wild, boundless waste of heather, interspersed with the bright young green of the whortleberry, the blossoms of which were the resort of myriads of bees. That fine humble bee, *Bombus regelationis*, was in tolerable abundance; and from the rapidity of its flight, and the inequalities of the ground, gave us much trouble and amusement in its capture. I should have explained that I was not now alone. I had two companions,—one the dreader of

dogs, the cynophobist before described, the name of the other appears in your Magazine, and I do not care to repeat it here—I will call him the grouse-shooter. The high ridges of the Black Mountain, more especially those which stretch out like promontories towards the town of Hay, are in a state of perpetual moisture. Thousands of little ponds, or maunpits, varying from five to thirty yards in circumference, are scattered over the surface of the ground. The water is perfectly clear; but being, I suppose, strongly impregnated with iron, it stains every thing immersed in it with a bright rust-coloured tint. Each pond has generally six to eighteen inches of water, and three to five feet of the blackest mud. I took *Colymbetes collaris* in great abundance in these ponds. It was very pretty to watch them paddling about on the mud, at the bottom of the water, and rising occasionally to the surface to renew their bubble of air. So luxuriant has been the growth of the heath, *Calluna vulgaris* more especially, that the masses of it not unfrequently completely met over those little pools, hiding them from the sight; and in pursuing the rapid bees, (*Bombi*), it was by no means uncommon for one or the other of us suddenly to disappear in one of the pitfalls; and in answer to the halloos of his comrades, for—

“ Though lost to sight, to memory dear,”

he would slowly emerge, dripping with wet, and plastered with mud.

We took little in the way of entomological rarities, with the exception of the *Bombus* above-mentioned, and a single specimen of *Hadena glauca*: we found a very large female of the Emperor moth, which I mention, as proving its being an inhabitant of these high grounds. The red grouse is abundant on this mountain, and is carefully preserved; they rise with a strong and rapid whirr, stretch out the neck to an extreme length, and almost invariably utter their peculiar call when on the wing. After traversing the mountain four hours, in a somewhat southerly direction, we arrived at a rude hut, built of rough stout stones, piled together in a most careless manner. I believe this was formerly used as a resting-place by the grouse shooters, or a refuge for them in storms, but it is now too ruinous to shelter any human being. Just below this hut rises a stream of the most delicious water, as clear as crystal; and

as the grouse shooter was provided with that article commonly called a pocket pistol, containing mountain dew, we thought we could not do better than seat ourselves on some large flat stones by the stream, and diluting the mountain dew with the mountain stream, refresh ourselves with the mixture. While seated, and quietly smoking our cigars, (strike that out, Mr. Editor, if you please,) numbers of a small black *Telephorus* crawled over our clothes—I believe it is *T. Æthiops*; and a single specimen of that very common fly *Eristalis vulpinus* hovered over us, and settled on a dry stone in the middle of the tiny stream; and this identical feat he persevered in for at least fifty times; at last I caught him in my bag-net, reasoned with him on the risk he ran, and throwing him up in the air, was amused to see him settle again on the very same stone.

The sight, or even the vivid remembrance of particular spots, brings to mind almost invariably particular conversations which have occurred there. I well recollect a remarkable instance of this. I travelled outside a coach, a journey of about thirty-five miles, with a most agreeably talkative companion, and returned to London with eleven other outsides, but perfectly alone. Well, every morsel of the conversation was brought to mind at the precise place at which it had been uttered. In the present instance, the very circumstance of writing in this chit-chatty way about the streamlet on the Black Mountain recalls more forcibly to my mind a remarkable history which was related on the spot by the grouse shooter: it was the history of the Dragon of Mordiford, and will range more properly further on. I will entitle a chapter “Legends of Lugge.”

The tale was told; the Insect-Hunter and his companions resumed their way and their occupation, and walked on and on over the almost interminable mountain, leaving the heights of Macnamara, with their snow-filled defiles, far to the right.

We noticed frogs of an enormous size, exceeding by more than one half any I have seen elsewhere; the colours on their backs were peculiarly varied and vivid, and beneath they were beautifully red. *Elater cupreus* abounded occasionally on tufts of long grass which marked the presence of some little spring. There was no butterfly of any rarity from one end of the mountain to the other; abundance of the little *Pamphilus*, and occasionally a specimen of *Napi*, were all that we saw. *Geometra atomaria* was flying in great abundance;

and *Dolerus niger* was on every blade of grass. The surface of the mountain became dry and solid as we advanced, without pools or springs, occasionally without heath, and with scarcely any vegetation, the ground being strewn with loose stones. Under these we hunted for beetles, but without success.

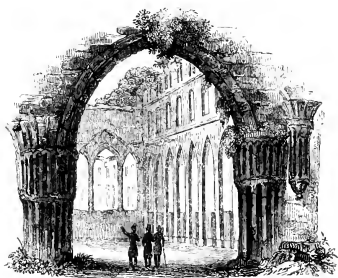
A magnificent valley, the Vale of Ewias, was now opening before us, and the beautiful and abrupt rock with which it terminates became distinctly visible; at last, about five o'clock in the afternoon, we looked down on the giant ruins of Llanthony, the hoped-for haven in which to obtain food and rest. We found the descent most wearisome and tedious; at last, with slipping, and sliding, and tumbling, I grew quite disheartened, and sat down; when, lo and behold, the effect was like a ship-launch,—off I went as a vessel from the stocks; and, seeing my advantage, I held my legs clear of the ground, waved my insect-net in the air, and trusting to chance for a rudder, proceeded with incredible rapidity, cheered by the diminishing shouts of my receding companions. The turf of this slope is short and smooth, but abounds rather too much with a species of thistle (called, I believe, *Carduus acaulis*,) to be very comfortable for this mode of progression.

When my companions at last reached me, I was catching *Melitæa Euphrosyne* in a beautiful meadow enamelled with flowers—a meadow which extended to the very walls of Llanthony.

Llanthony is one of those speaking monuments of the olden time, that assure us not only of the wealth but of the taste of the Romish church in days that are by-gone. It stands in the very bosom of the Black Mountain, the enormous and rounded masses of which rise on its every side. Luckily this beautiful spot has no road approaching it sufficiently macadamised to admit the passage of the luxurious vehicle of the opulent ruin-hunter; it is not, therefore, and never can be, the rage of the tourist. Few, very few, have seen it; few, very few, know of its existence. A portion of the Abbey is converted into an inn: what was perchance a buttery is now a kitchen, and what was a jovial lay brother is now (if Pythagoras conjectures aright) a jovial landlord, the incarnation of mirth and good humour; he may perhaps have passed the years intervening between the states of priest and publican as a fox, a bee, and a raven, being all the time a free wanderer over the scenes in

which he still delights. He spread the table for the Insect-Hunter and his friends. The venison pasty, the brown ale, the sack, and Rhenish, were produced and despatched; at least, let me say, viands and diluents which stood in the stead of these. Then the party rose, and leaving the buttery, entered the grand, but roofless hall; they passed along its whole length in silence, and beneath that spacious arch they turned to gaze upon its beauty. The moon was up, and threw an unclouded blaze of light into the interior, silvering the velvet turf, which now, instead of marble, floored the hall. They stood silently in the black shadow of the arch—and their silence was expressive—it told how deeply they were impressed with the beauty of the scene.

There is something far more satisfying in the silent gaze of admiration, even though in the presence of those whose voices and whose words have at other times delighted us, than in the most appropriate expressions talent could devise or feeling suggest.



ART. III.—*Essay on Parasitic Hymenoptera.*

By A. H. HALIDAY, M. A.

(Continued from Vol. III. page 147.)

GEN. X.—ROGAS.

Palpi maxillares 6-articulati; labiales 4-articulati. Mandibulæ prominulæ apice videntulæ, a clypei margine concavo distantes, interjectâ rimâ fere circulari. Labrum inflexum trigonum. Occiput marginatum. Alæ anticæ areola disci-antica remota. Ala postica nervo recurrente disci ducta (modo non omnibus.)

Adnot.—Neesii ab Esenbeckio Monographia Ichneumonidum Adscitorum, opus summopere desideratum cujus autem expectatio spem fidemque promissorum jam pæne eluserat, inter alia studia præclari auctoris omissum et abjectum fuisse sæpe dolebam, quum præludia ista evolverem quibus ille lustris abhinc quinque Acta Bevolinensia ditaverat. Eo gratius affulsit nuper opus illud de novo instauratum, castigatum, plurimis auctum, quibus subsidiis Ichneumonologia Europæa absoluta quodammodo fuisse videbatur. Quod e manibus nondum perfrixerat,—et ecce Wesmaelius hujus vestigia premeus protulet Monographiam Braconidarum Belgicorum, industriæ, solertiæ, judicii monumentum amplissimum. Vir inclytus a Methodo Neesii, et recentiorum fere quot in hoc campo decertarunt, absistens, Systematis vetustioris Latreilliani auspicia partim revocavit; et illa palporum computatione (lubrica sane et difficili) posthabita, ad apertiora quædam affinitatis discrimina se contulit. Unde maxima scientiæ adjumenta petenda fere spero. Malim tamen (pace viri tanti dixerim) palporum normam non penitus neglectam, quam ipse expertus sum in dubiis sæpe lucem afferre, de Generibus constituendis et disponendis ubi agitur; etsi Generum characteres artificiales quantum licet e faciliore materia ducendos concedo. *Rogades* nostros et *Bracones* Genuinos una in tribum *Cælostomæ* Wesmaelius consociavit, propter oris fabricam rima fere circulari patentis inter mandibulas prominulas et clypei elevati marginem. Palporum vero ratio discrepans, indiciiis sat constantibus structuræ reliquæ stipata,

dictrotomiam hujus tribûs me judice commendat. Etenim *Bracones* a vicinia *Agathidum* distrahi posse vix mihi persuadeo. *Rogades* ex adverso cum *Opiis* (Wesmaelii, quod genus mihi pridem *Gnamptodon* audiebat) arctissimo vinculo conjuncti, viam recta pandunt in *Alysias*.

Bracones Genuini a *Rogadibus* Heteroclitis plerisque discrepant occipite immarginato, metathorace lævi, abdominis segmentis singulis discretis, valvula ventrali acuminata adpressa, alæ anticæ areolis brachialibus absolute conterminis, posticæ nervo recurrente disci deficiente, areola vero brachiali posteriore pererigua. — *Rogades* Genuini et *Ademon* statura tota, aculeo recondito, alisque dispari modo areolatis longe discrepant ab illis. — *Opii* a *Colastis* lineâ nulla certa disjuncti sunt. — Helcontes dignoscuntur areola disci antica contigua oreque clauso — *Dyscolus lancifer* (sp. ined.) *Rhyssali* fere speciem mentitur, sed accuratius perspectus differt ore clauso et insuper nervo recurrente illo deficiente in alæ postica, cujus areola brachialis posterior major est ratione anterioris; quæ omnia palporum computatione firmata huic insecto locum proprium vindicant. — Aphidii pauci (*i.e.* Subg. *Ephedrus* m. quod Wesmaelio *Elassus*) *Colastis* non valde dissimiles sunt prima facie; sed multiplici discrimine gaudent, vel oris ratione neglecta; scil. abdominis incurvatis incisura 2^{da}, flexili, aculeo brevissimo compresso, valvula ventrali suffulto, alæ posticæ areola brachiali unica, &c. Penuria exemplarium in hoc Genere maxime obfuit mihi, quum pauculæ tantum species in hoc angulo terrarum vulgo obviæ sunt. Quas angustias multum adlevavit vir amicus Franciscus Walker, qui seriem locupletissimam Braconidarum Angliæ liberali manu ad me transmisit. Multa præterea Clm. Curtisii benevolentiae indefessæ debeo.

TABULA SYNOPTICA SUBGENERUM.

<i>Ale anticae areolae cubitales</i> tres; abdomen subscissile; <i>segmenta</i> 1 imm. et 2 dum.	haud perfecte sejuncta; <i>ale</i> marris feminae conformes; <i>ale</i> <i>anticae nervus, parallelus</i> prope limites posticos areolae disci posticae oriens; <i>caput</i>	petiolatum postice maris stigmatate crasso auctae prope limites anticos } multiarticulata areolae disci posticae } oriens; <i>antennae</i> 12-articulatae cubicum compressum, terebrâ brevius depressum } subaequalia terebra lon- } gius; <i>seg-</i> } 3-antica maxima, <i>menta</i> } reliqua minuta	IV. HECABOLUS. [V. PAMBOLUS.] I. SPATHIUS. [III. HETEROSPILUS.] VII. HORMIUS. VI. CHREMYLUS. II. DORYCTES. VIII. RHYSSALUS. IX. COLASTES. X. CLINOCENTRUS. XI. ROGAS. XII. ADEMON.

Subgen. I.—SPATHIUS.

Alæ anticæ areolæ cubitales tres, 2^{da}. nervum recurrentem excipiens. Caput cubicum. Abdomen depressum ovato-orbiculatum, petiolo gracili lineari, terebra longa.

Spathius *N. ab Es. Act. Acad. IX.*
301. Gen. III.

——— *N. ab Es. Monogr. I. 11.*
Gen. III.

*Bracon, Fam. II. Heterocl. I. *N. ab Es. Berl. Mag. V. 24.*
———, spp. *Spinola, Ins. Lig.*

Cryptus, spp. *Fab. Syst. Piez — Panzer*
Fna Germ.

Ichneumon, spp. *Schrank, Villars, Rossi,*
Thunberg, &c.

Caput globoso-cubicum, occipite lato truncato, fronte depressa late declivi, oculis parvis, ocellis in triangulum valde approximatis. Mandibulæ perbreves trigonæ apice leviter bidentes: palpi longi graciles; labialium articulus 3^{tius}. 4^{to}. vix brevior: antennæ longæ graciles multi articulatae, scapo brevi ovato-obconico, pedicello minuto globoso, articulis flagelli interioribus longis filiformibus, exterioribus longitudine decrescentibus: thorax oblongus utrinque parum attenuatus; mesothoracis dorsum sulculis ordinariis postice concurrentibus; scutellum linea porcata discretum: metathorax rotundato-declivis subtiliter areatus, solito longior, ideoque areæ dorsales longiores sunt postice oblique attenuatae, area interjecta apicis angusta rhombica aut pentagona, fere in illarum medium usque incurrente: abdominis segmentum 1^{um}. petiolum gracillimum depresso-cylindricum conficit: abdomen reliquum ambitu fere ovale, planiusculum; segmenta 2^{dum}. et 3^{tium}. vix discreta sequentium longitudinem æquiparant: pedes mediocres, femoribus validis clavatis: alæ anticæ stigma oblongo-lanceolatum cubitum e medio emittens: areola cubitalis secunda angulo posteriore baseos valde attenuato et introrsum producto nervum recurrentem recipit: ejusdem nervus interior anteriori fere æqualis: areolæ brachiales fere conterminæ, nervus parallelus^a prope limites anticos areolæ disci-posticæ oritur (quæ res *Hormii* affinitatem indicat:) alæ posticæ nervus recurrens disci manifestus; areola brachialis-posterior perexigua (ut in *Bracone*) $\frac{1}{4}$

^a *Nervus parallelus* postremus e nervis qui longitudinaliter in alæ marginem anteriorem excurrunt.—*Vid.* Wesmael. Monogr. Brac. Belg. p. 18.

anteriores longitudine vix superans.—Parasitæ sunt Coleopterorum Xylophagorum proprii quantum hactenus constat.

Sp. 1. R. Sp. rubidus : *alis fuscis, basi, fascia sub stigmatè et apice albidis ; petiolo $\frac{2}{3}$ reliqui abdominis longitudine.* Fem. *terebræ abdomine breviorè.* (Long. corp. 1—2 ; alar. $1\frac{1}{2}$ — $3\frac{1}{4}$ lin.)

Spathius rubidus . . . *N. ab E. Mongr. I. 15. sp. 2.*

Bracon rubidus . . . *Spinola, Ins. Lig. II. 137. No. 23.*

————— . . . *N. ab E. Berl. Mag. V. 24. No. 37.*

*Ichneumon rubidus . . . *Rossi, Mant. App. II. 110. No. 88.*

Cryptus umbratus . . . *Fabr. Syst. Piez. 89. No. 85.*

Ichneumon umbratus . . . *Fab. E. S. Suppl. 229. No. 207.*

Antennæ longitudine corporis, in mare longiores, articulis 21 aut pluribus (26 computavi in exemplari quodam et tamen nonnulli deerant), frons transversim striolata : thorax totus subtiliter squameus mesothoracis dorso medio non distincte canaliculato : segmentum 1^{mum}. $\frac{2}{3}$ abdominis reliqui longitudine, inter basin et medium angulatum antehac attenuatum, dorso longitudinaliter parce striatum, angulis apicis tenue membranaceo-marginatis ; segmentum 2^{dum}. vix basi squameum, reliqua lævissima : colores variant ut magnitudo : modo rubiginosus est, antennis apice, scutelli regione et abdominis apice fusciscentibus : modo piceus aut niger, capite et thorace antice vel prothorace solo rubiginosis : terebræ abdominis longitudine petiolo demto : femora, tibiæ et unguiculares rufo-ferruginei sunt, coxæ tarsi que pallidiores, tibiæ basi summa albidæ, harum posticæ annulo medio fusco distinctæ : alæ brunneæ, stigmatè brunneo basi flavo, fascia distinctissima albida inde alam transeurrente, etiam basi et apice albidæ : in minoribus vero quorum colores in piceum transeunt, alarum fasciæ et pedum pictura valde obsoletæ evadunt.

Habitat Italiam, Germaniam. *Auctt.*—In Anglia rarior occurrit ; *F. Walker* communicavit.—Cuinam speciei e Coleopteris Xylophagis infestus sit compertum non habemus. E brevitate terebræ patet illam fore diversam ab *Anobiis* quæ populatur *Sp. clavatus* nec cuniculos tam alte agentem.

Sp. 2. R. Sp. clavatus. *Alarum fasciis binis fuscis ; mesothoracis dorso canaliculato ; petiolo longitudine abdominis.* Fem. *terebræ longitudine corporis.* (Long. corp. et terebr. 3—6 ; alar. $2\frac{3}{4}$ —5.)

- Spathius clavatus . . . *N. ab E. Monogr.* I. 12. No. 1.
 Bracon clavatus . . . *N. ab E. Berl. Mag.* V. 25. No. 38.
 *Cryptus clavatus . . . *Panz. Fna. G.* 102. No. 16.
 ——— mutillarius . . . *Fabr. S. P.* 88. No. 81.
 Ichneumon mystacatus *Schranck. Ins. Austr.* No. 746.
 ——— attenuator . . . *Thunberg, Act. Petrop.* IX.
 ——— immaturus . . . *Grav. Verz.* 3753.
 ——— &c. . . . *Geoffr.* II. 359. No. 86.
 ——— exarator . . . *Lin. Fna. S.* 1614. ?

Sp. rubido simillimus at longior, subtilius squameus; metathoracis areæ productiores sunt, antennæ graciliores, tarsi antici prælongi graciles, terebra gracillima longitudine fere corporis: mesothoracis lobus medius canaliculatus: petiolus longior et gracilior, tuberculis inconspicuis fere, basi vix attenuatus, rugulosus: segmentum 2^{dum}, basi punctulatum vel subtiliter squameum: antennæ 29—38-articulatæ, *feminae* corpore parum, *mari* dimidio longiores, ferrugineæ apice fuscescentes: corpus fusco-ferrugineum aut castaneum, abdomine postice fusco, nonnunquam apice pallido fasciam fuscā designante: pedes clarius annulati fulvo-ferruginei femoribus fere castaneis, tarsis coxisque pallidioribus, trochanteribus et basi tibiæ albidis, tibiis medio fuscis: pedes antici pallidiores: alarum fuscedo dilutior et in 2 fascias soluta, quarum interior minus distincta.

Habitat Germaniam, Galliam, Sueciam. *Auctt.*—Frequens occurrit in Anglia, Scotia, et Hibernia. Destruit sobolem *Anobii striati* et *pertinacis* in tignis vetustis. *Femina* terebra ad perpendicularum immissa cuniculos *Anobii* scrutatur: huic negotio tota incumbit nec amovetur contrectata. Hujus vitæ indolem Clm. Gravenhorstius jam observavit.

Adnot.—*Bracon petiolatus* Spin. *Ins. Lig.* II. 137. No. 23, (qui a Neesio inter *Perilitos* interrogative relatus) forsitan ad varietates minores *Sp. rubidi* pertinet.—*Ich. extensor* Latr. *Hist. Nat.* XIII. 180, No. 7, et *Cryptus affinis* Fabr. *S. P.* 89, No. 82, uterque nimis breviter adumbrati, forsitan hujus subgeneris.—*Ichneumon cinctus* autorum potius pro *Hemitele* quodam habendus videtur.

Subgen. II.—DORYCTES.

Alæ anticæ areolæ cubitales tres, nervus recurrens 1^{me}. *insertus vel interstitialis, nervus parallelus prope limites posticos areolæ disci-posticæ oriens: caput cubicum: abdomen sessile oblongum segmentis* 2^{do}. *et* 3^{tio}. *concretis, aculeo exerto.*

Bracon Sphærocephali spp. . . . *N. ab E. Monogr.*

Adnot.—Inopia materiæ coactus subgenus valde incompositum relinquo. Prima species proprium fere vindicat. Sunt equidem omnes affines *Spathio*, *Heterospilo* et *Hecabolo*, a reliquis *Heteroclitis* differunt maxime capite longiore.

Sp. 3. R. D. obliteratus. *Nigro piceoque varius, tibiis basi albidis; alarum stigmatè punctisque tribus brunneis, nervo recurrente interstitiali; "feminæ terebra abdominis longitudine."* (Long. corp. $1\frac{3}{4}$ — $2\frac{1}{2}$; alar. 3—4 lin.)

**Bracon obliteratus* . . . *N. ab E. Monogr. I. 104, No. 62.*
Macrocentrus maculipes . *Curtis, Guide G. 546, No. 5.*

Caput punctulatum pubescens, oculis parvulis, fronte subtilissime rimuloso, facie lata confertim punctulata punctis 2 impressis fere contiguis in basi clypei brevissimi: mandibulæ parvæ: maxillæ lobus ut in *Hecabolo* trigono-acuminatus: palpi maxillares prælongi, articulis 2 baseos ratione reliquorum perparvis, 3 ultimis rectis filiformibus; labialium articulus 1^{mus}. obconicus; 2^{dus}., 3^{tius}. ovati breviores; 4^{tus}. binis antecedentibus conjunctim æqualis, linearis, basi subito attenuatus: antennæ maris corpore longiores articulis circiter 35, omnibus post 2^{dum}. cylindricis: thorax elongatus, utrinque attenuatus, collari conspicuo, mesothoracis dorso punctato opaco pubescente, sulcis postice leniter convergentibus, lobo medio canaliculato: metathorax attenuato-declivis, confertim punctatus; areæ dorsales magnæ, oblongæ, apice nonnil divaricatæ, basi lævigatæ; area interjecta inter illas vix incurrens et reliquæ apicales perparvæ: abdomen *maris* longitudine capitis thoracisque, oblongum utrinque attenuatum, latitudine maxima pone medium, et ano rotundato: segmentum 1^{mum}. latitudine apicis fere triplo longius, basi lenissime attenuatum, punctato-reticulatum, medio fere rugulosum lineisque 2 manifestioribus antrorsum divergentibus postice obliteratis: segmenta 2^{dum}. et 3^{tium}. indiscreta, conjunctim 1^{mo}. paulo longiora, punctato reticulata hujus margine postico lævissimo; reliqua lævissima vel proxima basi tantum punctulata: pedes sat longi femoribus validis: color totius corporis fusco-piceus, antennarum insertione, scutelli regione et pleuris medio rufescentibus at indeterminate; abdominis segmenta 3^{tium}. et sequentia margine postico fulvescunt splendore fere electreo: abdomen plerunque medio

dilutius est et caput fere nigrum : tibiæ basi et trochanteres albi : alæ fumato-hyalinæ stigmatè brunneo, punctisque tribus in area cubitali : stigma oblongo-lanceolatum cubitum e medio emittens : nervus recurrens interstitialis : areole cubitales 2^{da}. et 3^{tia}. indiscretæ inter se propter nervum interjectum decolorem : brachiales conterminæ : alæ posticæ areola brachialis posterior dimidio anterioris brevior. *Feminam* non vidi ; terebra longitudine est abdominis secundum Neesium.

Habitat Germaniam N. ab E.—Angliam, minus frequens : exhibuerunt *J. Curtis* et *F. Walker*.

Adnot.—*Bracon fuscatus* N. ab E. Mon. I. 106, No. 63, huic valde affinis et congener.^b

^b Sp. 3^b. *R. D. flaviceps*. Fem. *Rufo-castaneus capite pedibusque flavo-ferrugineis abdominis segmentis* 1^{mo}. et 2^{do}. *rugoso-striatis ; terebra abdomine longiore.* (Long. corp. 1½ ; alar. 2⅔ lin.)

R. H. Quæstori Fem. Prima facie simillimus sed abunde distinctus : de *mare* nil constat, sed verisimile est alas hujus fore conformes *feminæ* : caput lævissimum flavo-ferrugineum, ocellis fuscis : antennæ fusco-ferrugineæ articulis 2 baseos flavo-ferrugineis : mutilatæ sunt : thorax fere qualis *R. Quæstori* sed metathorace magis obtuso : nitidus est vage punctulatus, pilisque longis albidis aspersus : metathoracis areæ dorsales læves nitidæ, postice rotundatæ ; area interjecta vix ad illarum medium provecta, metathorax reliquis punctato reticulatus : abdomen oblongum utrinque parum attenuatum, segmentis 1^{mo}. et 2^{do}. rugoso-striatis, reliquis lævibus : segmentum 1^{mum}. latitudine apicis brevius est et antrorsum parum attenuatum, carinulæ baseos utrinque, mox desinente : 2^{dum}. et 3^{tium}. subæqualia, linea arcuata obsoletissima discreta, hoc linea transversa punctata bipartitum ; reliqua lente decrescunt : pedes medii perbreves quales fere *Heterospilo* sed tibiæ tarsique postici longiores : terebra rufa apice fusca : alæ fumato-hyalinæ stigmatè ovato-lanceolato nervisque brunneis, radice et squamulis ferrugineis : nervus recurrens fere interstitialis vel apici summo areolæ cubitalis 1^{mæ}. insertus : alæ posticæ areola brachialis posterior ⅓ anterioris longitudine.

Habitat Insulam Sti. Vincentii. *F. Walker* communicavit.

Subgen. III.—HETEROSPILUS.

Alæ anticæ areolæ cubitales tres, 1^{ma}. et 2^{da}. fere indiscretæ, nervus recurrens interstitialis: alæ postica maris stigmatè crasso aucta: caput cubico-transversum: abdomen subsessile depressum, segmentis 2^{do}. et 3^{tio}. indiscretis, reliquis sensim decrescentibus, terebra exerta.

Sp. 4. H. D. striatellus. Fem. *Niger pedibus rufis, tibiis basi albis; abdominis segmento 1^{mo}. et 2^{di}. basi rugulosis; terebra abdominis longitudine.* (Long. corp. 2 $\frac{1}{2}$; alar. 4 $\frac{3}{4}$ lin.)

Bracon striatellus, *N. ab E. Monogr. I. 107, No. 64.*

Frons lævis: antennæ filiformes (mutilatæ sed supersunt articuli 35) articulis 1^{mo}. et 2^{do}. piceis, reliquis nigris cylindricis, 3^{tio}. et 4^{to}. subæqualibus: palporum maxillarium articuli 3 exteriores prælongi filiformes: labialium articulus 2^{du}s. vix longior 3^{tio}. hic et sequens, qui longior, filiformes: mesothoracis sulci rugulosi, effusi ante scutellum: metathorax rotundato declivis; areæ dorsales oblongo-quadratæ postice rotundatæ antrorsum læviusculæ; reliquæ minus distinctæ ob sculpturam rugulosam: abdomen oblongo-lanceolatum dorso planiusculum: segmentum 1^{mum}. oblongum basi perparum attenuatum, latitudine apicis vix paulo longius, longitudinaliter rugulosum, carinulis baseos tantum inchoatis: segmenti 2^{di}. et 3^{tii}. limites vix apparent; illud fere totum rugulosum rufo-piceum; reliqua lævissima: pedes validi rufi tibiis basi albidis: tarsus anticus tibiâ duplo longior, medius brevis: ungues parvi: alæ hyalinæ radice ochraceo squamulis fusco piceis, nervis stigmatæque fuscis: stigma oblongo lanceolatum cubitum vix ante medium excipiente: nervus recurrens areolæ cubitali 1^{ma}. insertus; areolæ cubitales exteriores propter nervum decolorem confusæ; brachialis-posterior anteriore longior: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris vix longior.

Habitat Italiam *N. ab E.*—Angliam perraro, vidi unicum exemplar tantum.

Sp. 5. H. D. Imperator. Fem. *Niger abdominis medio pedibusque rufis; tibiis basi albis; abdominis segmento 1^{mo}. striato; terebra corporis longitudine.* (Long. corp. 3; alar. 5 $\frac{1}{2}$ lin.)

Præcedenti simillimus sed satis distinctus: frons supra antennas, facies, genæ punctato rugulosæ: antennæ basi latius rufescentes,

præsertim subtus; articuli interiores flagelli longiores, 3^{tius}. 4^{to}. longior: metathorax fere totus crasse rugosus: abdomen longius lanceolatum: segmentum 1^{mum}. sesquilingius quam latius, concinne striatum, foveolis lateralibus baseos sat profundis, adjacente carinula acuta mox desinente; reliqua lævissima fascia rubra a basi 2^{di}. in medium 3^{tii}. effusa: reliqua fere præcedentis: alarum stigma piceo ferrugineum.

Habitat in Anglia. *J. Curtis*.

Sp. 6. R. D. tabidus. Mas. *Fusco-piceus pedum geniculis pallidioribus, abdominis segmento 1^{mo}. ruguloso.* (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$ lin.)

Præcedentibus sat affinis: caput lævissimum: antennæ corpore paulo longiores 29-articulatæ: palpi fusco pallidi breviores quam illis, labialium articulo penultimo minore: metathorax punctulatus, area interjecta minuta inter dorsales vix incurrente: abdominis segmentum 1^{mum}. sesquilingius quam latius, antrorsum parum attenuatum, rugulosum; reliqua lævia pallidiora: pedum statura fere eadem: trochanteres, tibiæ tarsique basi depallescens: alæ hyalinæ nervis stigmatæque fuscis: alæ posticæ areola brachialis-posterior $\frac{1}{2}$ anterioris longior est.

Habitat prope Londinum lectus.—*F. Walker*.

Adnot.—*Bracon nobilis* N. ab E. Monogr. I. 61 No. 16 forsitan huc potius collocandus quam inter *Helcontes*.—*Br. leucogaster* N. ab E. Monogr. I. 98, No. 57. *Rogas* esse videtur; an hujus loci, aut cum *Rhyssalo* consociandus? an potius subgeneris proprii?^c

^c Sp. 6^b. R. Het. Quæstor. *Ferrugineus, capite pedibusque flavescentibus; fem. terebra dimidii abdominis longitudine.* (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{2}$ lin.)

Caput transverso-cubicum, totum aut fronte tantum subtiliter transversim aciculatum, flavo-ferrugineum: ocelli valde approximati in puncto fusco: oculi sat magni, orbiculati, sinu levi excavati prope antennas: facies longe villosa: clypeus parvus punctis 2 approximatis impressus: mandibulæ apice fuscæ: palpi graciles villosi pallidi: antennæ longæ graciles pubescentes, ferruginæ articulis longis cylindricis, 1^{mo}. et 2^{do}. brevibus flavis; (mutilatæ equidem at supersunt articuli 21:) thorax oblongus utrinque rotundatus, subtiliter squameus, ferrugineus nonnunquam fusco-inumbratus: mesothoracis lobus medius longitudinaliter depressus, carinula laterali sulcos

Subgen. IV.—HECABOLUS.

Alæ anticae areolæ cubitales duæ ; ala postica maris stigmatè crasso aucta : caput cubicum : abdomen maris lineari-lanceolatum ; feminæ lineari-clavatam, terebra elongata.

Hecabolus, *Curt. Br. Ent.* 507.

Sp. 7. R. Hec. sulcatus. *Niger abdomine piceo, antennis pedibusque ferrugineis, antennis apice, coxis posticis basi et femoribus late fuscescentibus ; fem. terebra corpore longiore.* (Long. corp. 2—2½ ; alar. 3—3½ lin.)

decurrente : sulci punctati concurrunt in foveam porcatam ad basin scutelli : metathoracis areæ dorsales postice rotundatæ, area interjecta magna rhombica fere in illarum basin usque porrecta : areæ dorsales squameæ sicut, metathorax reliquus reticulatus et vage pilosus : abdomen obovato-lanceolatum, lenissime fornicatum, ferrugineum, nonnunquam castaneum linea flava transversa in medio segmenti 3^{tii}. et sequentium : segmentum 1^{um}. apice quam basi duplo latius latitudine apicis vix longius ; lineæ 2 elevatæ e foveis basalibus in apicem excurrunt, retrorsum paulo convergentes, area interjecta punctata et striis paucis elevatis insignita, laterales confertim striatæ : secundum cum 3^{tio}. connatum et confertim striatum, hujus campo postico lævi lineâ transversâ subarcuatâ a campo striato disjuncto : reliqua segmenta lævia sunt vel basi subtiliter punctulata : terebra dimidio abdominis vix longior, valvulis fuscis : pedes pallide ferruginei villosi : intermediû perbreves tibiis basi curvatis : femora valida : coxæ posticæ crassæ obconicæ, basi angulatæ : alæ hyalinæ radice et squamulis pallide-flavis, stigmatè fusco-testaceo basi et apice pallescente : stigma sat crassum trigonum : nervus recurrens interstitialis areolæ cubitalis 2^{dæ}. angulus posterior introrsum valde productus sed nervus illam a prima segungens hyalinus est et nervo anteriore longior : areolæ longitudo postica anticam duplo excedit : nervi brachiales in apice areolæ disci-posticæ concurrunt in cuspidem, unde nervus parallelus oritur : alæ posticæ areolæ brachiales perparvæ, antica ½ alæ longitudinem non attingens, postica illâ plus duplo brevior. *Maris* ala postica ut in Hecabolo stigmatè crasso corneo aucta.

Habitat in Insula Sti. Vincentii. *F. Walker* communicavit.

* *Hecabolus sulcatus* . *Curt. Br. Ent.* 507.

Spathius sulcatus . . *Curt. Guide. G.* 545, No. 5.

Caput supra læve nitidum fronte subdeclivi subtiliter rimulosa, facie quadrata transversum subtiliter rugulosa, oculis parvis: antennæ corpore breviores, 24 aut 25-articulatæ flagelli articulis cylindricis striatis: maxillæ lobus oblique attenuatus, trigonus: palpi fere quales *Dorycti striatello*: thorax oblongo-ovatus postice magis attenuatus: mesothoracis sulci crenati in campum late rugoso-reticulatum dorsi medii concurrentes; lobus medius scuti antrorsum obtusus; scutelli regio etiam rugoso-reticulatus ipsius apice lævigato: metathorax attenuato-declivis totus rugoso-reticulatus nec areatus: abdomen *feminæ* a basi retrorsum sensim incrassatum, apice fornicato-rotundatum segmentis 1^{mo}. 2^{do}. 3^{tio}. longitudine decrescentibus et latitudine crescentibus; segmentum 1^{mum}. vix duplo longius quam latius apice fere duplo latius quam basi, ante medium obsolete tuberculatum, striatum interstitiis punctulatis; 2^{dum}. et 3^{tum}. dimidium anterius pari modo exculpta; reliqua lævissima: pedes breves: femora prævalida: tarsi medii perbreves, articulo 1^{mo}. brevior quam 5^{to}., intermediis subovatis: stigma-elliptico lanceolatum cubitum e medio emittens: areola disci-antica longe remota; radialis oblongo-lanceolata apicem alæ attingens; cubitalis 1^{ma}. apice nervum recurrentem excipiens, 2^{da}. angulo posteriore baseos attenuato: nervus parallelus e brachiali anteriore sinu excurrit, areola disci-postica deinde brevi spatio aperta: alæ posticæ areola brachialis posteriore anterioris.

Mas differt antennis paulo longioribus, abdomine versus apicem attenuato, lineari lanceolato, alæ posticæ stigmatibus crasso fusco areolas brachiales fere implente.

Corpus nigrum aut nigro-piceum, litura ad utrunque oculum et in genis picea: abdomen piceum medio dilutius: terebra rufa apice fusca: antennæ rufo-ferrugineæ apice fuscæ: pedes ferruginei coxis posticis basi, femoribus fere totis et apice summo tarsorum fuscis: alæ fumatæ stigmatibus nervisque fuscis, radice et squamulis ferruginosis.

Habitat Angliam: necum communicaverunt *J. Curtis* et *F. Walker*.
 "In larvis *Ptilini pectinicornis* sobolem procreat."—*D^{nus}. T. G. Rudd*, in *Curtis Br. Ent.* 1.1.^d

^d Subgen. V.—PAMBOLUS.

Areolæ cubitales duæ: nervus parallelus prope limites anticos areolæ disci-posticæ enatus: caput transverso-

Subgen. VI.—CHREMYLUS.

Areolæ cubitales tres; nervus recurrens interstitialis; nervus parallelus prope limites anticos areolæ disci-posticæ insertus: caput transverso-cubicum, antennis brevibus 12-articulatis: abdomen ovatum planum segmento 1^{mo}. bicarinato, 2^{do}. 3^{tio}. connatis, reliquis fere obtectis, terebra exerta.

Chremylus . . . *A. H. H. Ent. Mag.* I. 266.

* Hormius. Sect. II. *N. ab E. Act. Acad.* IX. 305.

* ————— *Monogr.* I. 155.

cubicum: abdomen sessile ovatum, segmento 1^{mo}. bicarinato, 2^{do}. et 3^{tio}. plane connatis, reliquis fere reconditis.

Sp. 7^b. R. P. biglumis. Mas. *Niger ore pedibusque brunneis.* (Long. corp. vix 1; alar. 1 $\frac{2}{3}$ lin.)

Statura capituli thoracisque fere ut in *Chremylo*; ambo subtilissime punctulata: antennæ corpore paulo longiores, nigrae, 23-articulatae articulis flagelli cylindricis: mandibulae fere quales *Chremylo*: palpi longiores, maxillarium articulus 3^{tius}. duobus antecedentibus fere æqualis; labialium ratio longitudinis 2431: scutellum basi fovea gemina porcata discretum: metathorax arcis 2 dorsalibus majoribus, reliquis plurimis parvis reticulatis: anguli postici in mucronem excurrunt: abdomen ovatum depressum; segmentum 1^{mum}. obconicum subtiliter striolatum, carinis 2 elevatis postice paulo convergentibus: segmentum 2^{dum}. (cum quo 3^{tium}. connatum esse puto, etsi nullum discrimen appareat) basi subtilissime squameum, reliqua lævissimum, sequentia minima et fere recondita: pedes brunnei trochanteribus et tibiis basi pallidioribus; femora valida: stigma lanceolatum: areola radialis ovato-lanceolata, alæ apicem vix attingens: nervus recurrens cubitalis 1^{mæ}. apici insertus: alæ posticæ areola brachialis posterior $\frac{1}{3}$ anterioris longitudine: alæ fumato-hyalinæ nervis stigmatumque brunneis: *femina mihi invisita.*

Habitat in sylvis prope Fontem Bellaqueum Galliaë lectus.—F. Walker.

Adnot.—Leiofronta putares nisi ad alas attenderis; sed nervus recurrens disci in alâ postica manifestus est, et oris fabrica cum palpis vere hujus generis.

Sp. 8. R. Chr. rubiginosus. Fem. *Fusco-castaneus antennæ pedibusque rufo-ferrugineis, capite anoque nigris; terebra $\frac{2}{3}$ abdominis longitudine.* (Long. corp. 1; alar. 2 lin.)

* *Hormius rubiginosus* . N. ab E. *Monogr.* I. 156. No. 3.
Chremylus elaphus . . A. H. H. *Ent. Mag.* I. 266.

Totus confertim subtiliter punctulatus subopacus, scutelli disco abdomineque postice nitidis, metathorace magis ruguloso: caput transverso-cubicum, in basin antennarum nonnil productum: oculi pronimuli: antennæ capitis cum thorace longitudine, 12-articulatæ, scapo cylindrico, pedicello etiam cylindrico, solito magis extricato, scapo duplo brevior; articulus 3^{tius}. gracilior est et paulo brevior 1^{mo}.; ultimus penultimo æqualis ovato-attenuatus: mandibulæ paulo longiores quam in hoc genere solet, et nonnil curvatæ: maxillæ lobus transversus obtusus: palpi breviusculi; maxillarium articuli basales ambo ratione sequentium solito longiores, ultimus apice attenuatus: labialium articulus 3^{tius}. 2^{do}. longitudine æqualis, ratio articulorum 4 $\frac{2}{3}$ 1. Thorax solito brevior oblongus subdepressus; mesothoracis scutum fere semicirculare, lobo medio longitudinaliter impresso: metathorax transversus fere rectangularis, haud areatus: abdomen thorace latius et paulo longius ovato-orbiculatum planum segmento 1^{mo}. $\frac{1}{5}$ totius constituyente fere semicirculare; lineæ 2 acute carinatae e basi excurrentes fere parallelæ, areas tres, mediam rectangularem, laterales trigonas, omnes subtiliter at confertim punctulatas, segungunt: segmenta posteriora modo non retracta intra 3^{tium}. cum secundo connatum, hoc basi punctulatissimum v sqameum, reliqua lævia: terebra dimidio abdominis longior: pedes mediocres; femora, tibiæ validæ; tarsi graciles: stigma oblongo-lanceolatum, at subtrigonum, cubitum e medio emittens: nervus recurrens interstitialis: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris brevior: colores jam expressi, antennæ apice fuscæ, thorax nonnunquam nigricans, alæ hyalinæ stigmatate nigro-fusco, nervis fusco-pallidis.

Habitat Germaniam N. ab E.—In Anglia, Scotia, Hibernia minus frequens; in fenestris ædium vetustarum plerunque obvius, nunc Coleopterum Xylophagorum pestis.

Subgen. VII.—HORMIUS.

Areolæ cubitales tres, secunda nervum recurrentem excipiens: nervus parallelus interstitialis: abdomen ovale planum segmento 1^{mo}. perbrevis marginato, 2^{do}. 3^{tio}. imperfecte sejunctis, terebra exerta: caput transverso-cubicum.

Hormius. Sect. I. *N. ab E. Act. Acad. IX.*
305. *G. X.*

————— ————— ————— *Monogr. I. 152.*

————— *A.H.H. Ent. Mag. I. 266.*

* Bracon. Fam. III. Heterocl. B. *N. ab E. B. M. V. 35.*

Sp. 9. R. Hor. moniliatus. *Metathorace nigricante reliqui corporis colore variabili; fem. terebra $\frac{1}{4}$ corporis longitudine. (Long. corp. $1\frac{3}{4}$; alar. $2\frac{2}{3}$ lin.)*

Hormius moniliatus . *N. ab E. Monogr. I. 153. No. 1.*

Bracon ————— . *N. ab E. Berl. Mag. V. 36. No. 56.*
Tab. II. fig. 11.

Caput transverso-cubicum rugulosum, occipite plano vix angustato, acule marginato, oculis prominulis: antennæ capite cum thorace longiores, articules 18—20 in *femina*, pluribus usque ad 24 in *mare*, et huic fere corpori æquales: articuli flagelle omnes cylindrici subæquales, exteriores magis discreti: palpi mediocres; maxillarium articulus 3^{tius}, binis antecedentibus conjunctim brevior, ultimus apice attenuatus: ratio longitudinis hæc fere $4\frac{3}{5}512$: labialium articulus 3^{tius}. brevior ovatus: thorax oblongus utrinque parum attenuatus, lævis nitens: mesothoracis sulci in foveam rugulosam concurrunt: scutelli basis foveâ geminâ punctato-reticulatâ discreta: metathorax rotundato-declivis, reticulato-rugosus: abdomen exacte ovale, planum pelluceus, limbo et segmentorum marginibus subincrassatis: segmentum 1^{um}, latius multo quam longius lateribus depressis, campo medio quadrato ruguloso; 2^{dum}, 3^{tio}. fere duplo longius linea impressa interrupta imperfecte sejunctum, linea laterali impressa in basin cum adversa arcuatim concurrente: segmenta 4^{tum}.—6^{tum}. longitudine subæqualia, sequentia minora: terebra perbrevis pubescens: pedes longiusculi graciles: stigma oblongo-lanceolatum, cubitum ultra medium emittens: areola cubitalis 2^{da}. nervum recurrentem excipiens in angulo interiore valde attenuato, propter nervum interiorem obliquatum et anteriore longiorem: nervus parallelus cum nervo brachiali-anteriore

continuus ideoque in limitibus ipsis areolarum disci enatus: alæ posticæ areola bracialis posterior $\frac{1}{2}$ anterioris brevior.

Variat multum coloribus.

Var. a.—Rufo-ferrugineus metathorace nigro antennis apice segmenti 1^{mi}. campo medio et pectore fuscis: pedes testacei: alarum stigma pallidum. *N. ab E.*

Modo pedes, alarum stigma flavo-testacei, antennæ basi testaceæ.

Var. β.—*Mas* orbita, collari rufo-piceis; abdomine fusco-testaceo medio flavo-pellucido; alis amplis hyalinis.

Var. γ.—*Fem.* abdomine flavo-testaceo, segmenti 1^{mi}. medio fusco; alis amplis pallidis.

Var. δ.—*Fem.* fusco-piceus orbita rufescente, alarum vitta fuscescente.

Var. ε.—*Fem.* idem sed alæ parvæ antennæ perbreves 18-articulatæ.

Modo femora postica v posteriora, cum coxis fusca; orbita thoracisque lituræ dorsales rufo-piceæ; abdominis segmenta posteriora fusca: alæ pallidæ vitta distincta fuscescente.

Var. ζ.—Alarum stigmatate testaceo.

Var. η.—Alarum stigmatate fusco.

Habitat Italiam, Germaniam, *N. ab E.*—Angliam, F. W.—Hiberniam minus frequens.—In trunco putrido quercus *Neesius* invenit; forsitan itaque Coleopteris Xylophagis infestus est, ut congeneres. Varietatis *α.* exemplar nullum inter nostratia mihi obvium fuit.

Adnot.—Species altera *H. dimidiatus* *N. ab E.* Monogr. I. 155. No. 2, nobis invisus Germaniam habitat.

Subgen. VIII.—RHYSSALUS.

Areolæ cubitales tres: abdomen subsessile segmentis 2^{do}. et 3^{tio}. connatis, feminae compressum terebra longa: caput transversum.

Rhyssalus, *A. H. H. Ent. Mag.* I. 266.

Sp. 10. R. R. clavator. *Piceus abdominis medio pedibusque ferrugineis; alarum stigmatate angustissimo; metathorace attenuato; mas tibiis posticis clavatis fuscis; fem. antennis fulvis, terebra suberecta corpore brevior.* (Long. corp. 1—1 $\frac{3}{4}$; alar. 2—3 $\frac{1}{2}$ lin.)

Caput cum oculis protuberantibus thorace latius, pone illos attenuatum: antennæ feminae corpore parum longiores fulvescentes

apice fuscae 25—26-articulatae, articulis flagelli interioribus longis exterioribus cito decrescentibus, tribus ultimis conjunctim 3ⁱⁱⁱ. longitudinem vix superantibus, ultimo acuminato precedente vix longiore; *maris* corpore dimidio longiores articulis 2 baseos ferruginosis, 25—33-articulatae: palpi longi graciles; labialium articulus penultimus minutissimus rotundus: prothoracis collum parvum, antice recta truncatum, pone hoc constrictum: mesothoracis dorsum in medio qua sulci punctati concurrunt, punctatorugosum, utrinque carinula antica abrupta sulcos decurrente: metathorax attenuatus rugoso-reticulatus, areatus; area media elongato-rhombica inter dorsales tota longitudine incurrente: abdomen *maris* lineari-clavatum, segmento 1^{mo}. fere lineari et triplo longiore quam latiore, ante medium obsolete tuberculato, nitido ruguloso, marginibus elevatis linea impressa discretis; segmenta reliqua fusco picea postrema obscuriora: *feminae* breve deltoideum, compressum, apice truncatum, segmento 1^{mo}. validiore quam *maris*, posterioribus brevissimis carinatis; 2^{do}. 3^{tio}. et 4^{ti}. basi fulvescentibus, sequentibus fuscis, tunc 2 ultimis ferrugineis: terebra abdominis thoracisque longitudine, subrecta: pedes ferruginei, femoribus subclavatis, *maris* tibiis posticis crassis clavatis et basi demta fuscis: alae subfumato-hyalinae radice et squamulis dilute ochreis, stigmatibus ochreo-fusco, nervis fuscis: stigma tenuissimum cuneiforme, cubitum ultra medium excipiens: nervus recurrens interstitialis: areolae cubitalis secundae nervus interior valde obliquus anteriori aequalis: nervi brachiales valde approximati in apice areolae brachialis, quae anteriorem superat: alae posticae areola brachialis posterior $\frac{1}{2}$ anterioris vix longior.

Habitat in nemoribus umbrosis Angliae et Hiberniae passim nec infrequens.

Adnot.—Quum species sequens ab hac pluribus discrepet, et Colastis affinis sit, hanc pro typo subgeneris profero.

Sp. 11. R. R. Indagator. *Niger pedibus ferrugineis, femoribus tibiisque posticis apice fuscis; metathorace obtuso; fem. terebra longitudine corporis.* (Long. corp. $1\frac{1}{2}$ —2; alar. $3\frac{1}{4}$ — $3\frac{3}{4}$ lin.)

Caput hujus postice minus attenuatum, oculo minus prominuli: antennae *feminae* crassiores nigrae 33-articulatae articulis flagelli interioribus arctius contiguis et brevioribus, 3^{tio}. duobus ultimis conjunctim vix longiore; *maris* 39-articulatae articulis 3^{tio}. et

ultimo subæqualibus: os ferruginosum palporum labialium articulus 3^{tus}. perparvus ut in præcedente: thorax brevior, collari obtuso, carinulis humeralibus ut in illa, sulculis punctatis effusis in foveam porcatam: metathorax brevior, obtusangulus; arcæ dorsales postice oblique divaricatæ, area interjecta in medium illarum usque incurrente: arcæ dorsales læves, apicales subtiliter transversim striatæ, laterales rugoso-reticulatæ: abdomen oblongum minus compressum et dorso planiusculum sed thorace angustius; segmento 1^{mo}. oblongo, basi vix attenuato, nitido striato, lineis 2 elevatis retrorsum parum convergentibus, margine laterali non acute elevato, tuberculis minutissimis ante medium, segmenta reliqua lævissima in *mare* nigro-picea; posteriora *feminae* brevissima lineari-transversa: terebra horizontalis, corpore fere longior: pedes ferruginei aut ochrei, coxis posticis basi, femoribus tibiisque iisdem apice, tarsis apice, posticis fere totis fuscis: alæ fumato-hyalinæ radice fusco-picea, squamulis nigris, nervis stigmatæ que nigro-fuscis: stigma duplo latius quam præcedenti: nervus recurrens apici areolæ cubitalis primæ insertus: 2^{da}. minor nervo anteriori et interiori æqualibus: nervi brachiales latius distantes nervi axillari-recurrentis rudimentum ante apicem areolæ brachialis: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris longitudine.

Habitat prope Londinum lectus.—*F. Walker.*

Subgen. IX.—COLASTES.

Areolæ cubitales tres: nervus parallelus prope limites posticos areolæ disci-posticæ entatus: caput transversum abdomen subsessile depressum segmentis 2^{do}. 3^{tio}. connatis, posterioribus longitudine sensim decrescentibus: terebra exerta abdomine brevior.

Colastes, *A. H. H. Ent. Mag.* I. 266.

Occiput his subtiliter marginatum et nonnil concavum est: antennæ ut plurimum graciles, corporis circiter longitudine: palporum labialium articuli in plerisque longitudine subæquales; in *R. lanceolatore* 3^{tus}. brevior est et cum 4^{to}. arcte conjunctus, unicum elongato-fusiforem referens,—in *R. funesto* 3^{tus}. perparvus est ut *Rhyssalis*: thoracis sculptura lævior est quam antecedentibus, mesothoracis sulculi sæpius tenuissimi, impunctati, ante scutellum concurrunt: segmenta abdominis 2^{dum}. et 3^{tium}. valde indiscreta sunt inter se, in *R. catenatore* solo lineâ crenatâ sejuncta: pedes ut plurimum longi graciles: stigma plurisque lanceolatum, in

R. braconio magis elongatum quod in *Opiis* fieri solet : nervus recurrens areolæ 1^{mæ}. vulgo insertus, in *R. braconio* et *R. lanceolatore* interstitialis, in *R. funesto* solo areolæ mediæ insertus : areola brachialis posterior anteriorem superat : alæ posticæ nervus recurrens disci in *R. Mediatore* deficit ; areola brachialis posterior $\frac{1}{2}$ anterioris longitudinem fere attingit : *Opii* cum his proxime cohærent, sed discrepant capite latiore, occipite retuso, oris rimâ transversa, mesothoracis sulculis interruptis vel oblitteratis, multi præterea areola cubitali media longiore, nervique recurrentis insertione ; tamen *O. comatus* Wesm. quoad hæc fere omnia intermedius est : O propter sculpturam crassam *Rogadibus* magis conformis, stigmatè alarum elongato, aliisque notis *Opiorum* propriis gaudet.

Sp. 12. *R. Col. Mediator.* Mas. *Niger palpis pedibusque ferrugineis stigmatè fusco ; abdomine brunneo, segmento 1^{mò}. nigro : alæ posticæ nervo recurrente deficiente.* (Long. corp. $1\frac{3}{4}$; alar. $3\frac{1}{2}$ lin.)

Caput fere hemisphericum, thoracis latitudine : antennæ 31-articulatæ, corporis longitudine : thorax elongatus, utrinque attenuatus, nitidus vage pubescens, metathorace parce rugoso-reticulato, areis minus conspicuis, area interjecta inter dorsales non incurrente : abdomen lineare, antrorsum sensim attenuatum : segmentum 1^{mum}. latitudine apicis sesqui-longius, basi duplo angustius, paulo ante medium tuberculatum, carinis 2 acutis in medio dorsi concurrentibus et dehinc in apicem continuis : reliqua superficies nitida subtiliter rugulosa : segmenta reliqua lævia, brunnea margine obscuriora : pedes longi pubescentes ferruginei : alæ subhyalinæ radice et squamulis ferrugineis ; nervis stigmatèque brunneis : stigma oblongo-lanceolatum cubitum in medio excipit : alæ posticæ areola brachialis-posterior $\frac{1}{3}$ anterioris vix longior ; nervus recurrens in disco nullus.

Habitat prope Londinum lectus.—*F. Walker.*

Sp. 13. *R. Col. fragilis.* Fem. *Niger, palpis pedibusque sordide ochreis ; alis infumatis ; terebra brevissima.* (Long. corp. $1\frac{1}{2}$; alar. $2\frac{1}{2}$ lin.)

Caput thorace paulo angustius, subglobosum, lævissimum : antennæ fere corporis longitudine graciles 24-articulatæ : thorax elongatus utrinque attenuatus collari angusto ; mesothoracis lævissimi sulculis

tantum inchoatis; metathorace scabriculo: abdomen oblongo-lanceolatum, segmento 1^{mo}. perbrevis scabriculo seu punctato-exasperato, absque carinulis: segmenta reliqua lævissima, fusco-picea: terebra brevissime exerta: pedes ochrei: alæ angustæ, infumatæ stigmatate nervisque fuscis: stigma elliptico-lanceolatum in medio cubitum excipiens: nervi brachiales medio approximati: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris brevior.

Habitat prope Londinum lectus.—*F. Walker.*

Sp. 14. R. Col. braconius. *Niger* antennæ basi, palpis pedibusque siliceis; alarum stigmatate lineari-lanceolato, testaceo, cubitum ante medium excipiente; nervo recurrente interstitiali; fem. terebra $\frac{1}{2}$ abdominis longitudine. (Long. corp. $\frac{3}{4}$ —2; alar. $1\frac{2}{3}$ — $4\frac{1}{2}$ lin.)

Colastes braconius ined. *A. H. H. Ent. Mag.* I. 266.

Caput thorace angustius, subglobosum: antennæ corpore longiores, graciles, basi pallide flavescens: thorax oblongus utrinque attenuatus, mesothoracis sulcis in depressionem latam rugulosam ante scutellum effusis: metathorax attenuato-declivis confertim punctulatus, pubescens, areis obsoletis: abdomen elliptico-lanceolatum, lateribus medio deflexis in femina (ut in *Braconibus Microcephalis*) segmentum 1^{um}. parvum obconicum, latitudine apicis longius, striolatum nonnunquam carinula media instructum, foveisque 2 contiguis pone medium in lineam transversam sitis: sequentia lævissima: terebra segmento 1^{mo}. longior: pedes graciles silicei: alæ hyalinæ stigmatate flavo-testaceo vel pallide-flavo: stigma lineari-lanceolatum, cubitum in triente prima excipiens: nervus aream cubitalem postice designans sæpe incrassatus: nervi brachiales valde approximati: alæ posticæ brachiales-posterior $\frac{1}{2}$ anterioris brevior.

Variat autem magnitudine et colore.

Var. a.—Majores. (Long. corp. $1\frac{3}{4}$; alar. $3\frac{2}{3}$ lin.): antennæ 30-articulatæ: caput, thorax, abdominis segmentum 1^{um}. nigra; segmentum 3^{um}. et nonnunquam proxima fulvescentia, reliqua fusca: mas gracilior, antennæ longiores et basi latius flavescens: abdomen lineari-clavatum segmento 1^{mo}. sublineari.

Var. β.—Maximus. (Long. corp. 2; alar. $4\frac{1}{2}$ lin.) *Var. a.* similis sed abdominis segmentum 2^{um}. tantum fuscum, sequentia fulvescentia.

Var. γ.—Minores. (Long. corp. $\frac{3}{4}$ —1; alar. $1\frac{2}{3}$ — $2\frac{1}{3}$ lin.) Antennæ 22—24-articulatæ: corpus fusco-piceum, abdominis medio dilutiore: pedes adhuc pallidiores, fere albidi: sculptura metathoracis et segmenti 1^{mi}. subtilior: *mas, fem.*

Habitat in lucis umbrosis Angliæ, Hiberniæ, passim frequens.

Sp. 15. R. Col. Lustrator. *Mas. Niger palpis pedibusque pallide flavis; abdomine fusco-medio ferrugineo; stigmatе fusco cubitam ultra medium excipiente.* (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{3}$ lin.)

Caput nigrum nitidissimum ad antennarum insertionem nonnil protuberans: antennæ corpore fere longiores 29-articulatæ, fuscæ basi dilutiùs: thorax niger nitidus; mesothoracis lobi singuli convexi; sulculi punctulati; metathorax punctulato-rugulosus: abdomen oblongum planum; segmentum 1^{um}. paulo longius quam latius, medio leviter striolatum fuscum, margine laterale apicis subdepresso flavescente: segmenta intermedia ferruginea, 2^{um}. basi media subtilissime striolatum; posteriora obscuriora: pedes pallide flavo-ferruginei, tarsorum apice summo fusco: alæ angustæ, hyalinæ, stigmatе magno elliptico fusco: nervus cubitalis propius apici insertus quam reliquis.

Habitat in Hibernia boreali mihi semel lectus.

Adnot.—Discrimen certissimum hujus e fronte protuberante alis angustis, stigmatе crasso et cubiti insertione.

Sp. 16. R. Col. lanceolator. *Niger antennis basi, palpis pedibusque flavo-ferrugineis; stigmatе sordide flavescente, cubitum medio excipiente; nervo recurrente interstitiale; abdominis segmento 1^{mo}. et 2^{di}. basi rugulosis; tibiis posticis subsinuatis; fem. terebra dimidii abdominis longitudine.* (Long. corp. $1-1\frac{1}{2}$; alar. $2\frac{1}{2}-3\frac{1}{2}$ lin.)

Bracon lanceolator, N. ab E. Monogr. I. 92, No. 53.

Caput brevius transversum, occipite contracto facie subtiliter punctulata, medio subcarinata; oris rima fere semicirculari: antennæ *feminae* corpore breviores, 20—25-articulatæ, fuscæ basi flavescentes, pedicello extricato, et articulis exterioribus solito magis discretis (ut in *Hormio*) maris graciliores, corpore vix breviores: mesothoracis sulculi læves, in depressionem confertim punctatam

et pubescentem exeunt ante scutellum: metathorax rugoso-reticulatus, areis dorsalibus postice rotundatis et nonnunquam lævigatis: abdomen obovato-lanceolatum; segmentum 1^{um}. oblongum antrorsum vix attenuatum, latitudine apicis sesquilongius, rugulosum, prope basin tuberculatum, angulis apicis margine depresso membranaceo auctis: segmenta reliqua sæpe fusco-picea; secundum nonnunquam ferrugineum margine laterali et postico determinate fusco; basi aut fere totum rugulosum; reliqua lævia: terebra dimidii abdominis longitudine, apice subattenuata et decurva, ferruginea, apice fusca: pedes mediocres: tibiæ posticæ ante medium gibbulæ ideoque manifestius extrorsum sinuatæ quam spp. cætt.: variant pedes colore, *modo* toti flavo-ferruginei tarsis apice subfuscis, *modo* coxæ posticæ basi fuscæ; tum *maribus* tibiæ vel etiam femora postica aut posteriora apice fusca sunt vel tibiæ mediæ totæ hujus coloris: tibiæ *maris* posticæ apice paulo crassiores esse videntur: alæ hyalinæ radice et squamulis flavo-ferrugineis, nervis fuscis stigmatè sordide flavo, vel ochraceo: stigma magis informam anguste trigonam effictum, cubitum perpaulo ultra medium excipit: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris paulo longior est.

Habitat Germaniam *N. ab E.*—Angliam sat frequens: *F. Walker.*—In Hibernia nonnisi rarissime mihi obvius fuit, etiam per Ebrides Insulas.

(*To be continued.*)

ART. IV.—*Observations on certain curious Indentations in the Old Red Sandstone of Worcestershire and Herefordshire, &c.* By JABEZ ALLIES, ESQ. one of the Council of the Worcestershire Natural History Society. London: Edwards. Worcester: Lees.

READER! there are times and seasons with us all when it is scarcely within the compass of our ability to follow out the dictation of even a reasonable wish; when the spirit may be fully aware of the necessity of acting, yet may not be empowered to act. Such times and seasons await us all: how needful then is it that when strong we trust not to our present strength, saying that that strength will continue till to-morrow. To-morrow has no existence. What we think worthy to be

done, should be done to-day; for we know not that we shall be able to accomplish it at any future time. We are not, nowever, about to persevere in this sad strain; we are not lachrymose, and least of all men are we lack-a-daysical; yet be it known that we scorn the coward who fears to pen sober truisms, especially when such truisms have been recently and deeply pressed on his attention. Reader! these observations have forced themselves on the writer from circumstances which in all probability thou wilt never know; to thee, rejoicing in health, they may be as chaff; to the writer they are the treasured result of daily and nightly thought. "Somewhat too much of this:" we would not make thee melancholy; and if our article contains a tinge, however slight, of melancholy, trust us not again.

In our hand is a book containing 132 pages, scarcely one of which can be read without a smile. Whether it was the intention of the author thus to make us smile, it is not in our power to say. When he gravely "submits" that "the twelve signs of the Zodiac are hieroglyphics of the antediluvian patriarchs;" when he ekes out the number twelve by making Eve a patriarch, and "submits" that *Pisces* is the sign representing Noah, from that patriarch's celebrated voyage on the waters of the deluge, and, we opine, his consequent proximity to the *fishes*; we hesitate whether we are to believe Jabez Allies, Esq. to be in earnest or in jest; whether his book, like Dr. Ure's, is an attempt to prove an exact accordance between the facts disclosed by geology and the pages of holy writ; or whether it is intended as a burlesque on those who are engaged in this arduous work. It is too ludicrous for the former, it is too serious for the latter. Jabez Allies, Esq. reminds us of an excellent *raconteur*, who keeps the whole table in a roar while his own countenance remains unmoved.

The book, though, as before stated, containing but 132 pages, treats of at least as many totally different subjects; we give a few consecutive "cases"—"fish-bones—remains of rhinoceros and mammoth—St. Catherine—St. Augustine's oak—effects of certain noxious plants on cattle, and the speedy remedy—a stratum of coal at the Berrow-hill—an ancient camp there—a body of evidence relative to the *ignis fatuus*—old English black rats—dry rot—Turkish oaks, Valonia," &c. &c.; indeed the *et ceteras* might be prolonged for whole lines.

The preface, which is in fact a table of contents, thus concludes: "The facts and evidence relative to each *case* are detailed as minutely as possible, in order that, should my learned readers not be satisfied with my conclusions, they may be enabled to draw their own deductions therefrom." This is certainly considerate, and we avail ourselves, as "learned readers," of the license here given, and express our dissatisfaction and dissent from the conclusion that the sign of the Bull represents Eve: "our own deduction therefrom" is—no, we will not publish it.

It will be obvious to our readers that we cannot enter a critique on all the "cases," contained in the book of Jabez Allies, Esq.; it has been proved possible that one man possessed sufficient knowledge to write on all these "cases," but surely it cannot be supposed that any other should be sufficiently accomplished to review him. We candidly acknowledge, that with ourselves the attempt would be idle. We are learned in the "Lives of the Saints," but we are ill versed in the bones of fish; we are amateurs in ancient camps, but utterly ignorant of black rats. We will consider one "case" only, that of St. Catherine.

In a stained glass window, in the church of West Wickham, in Kent, is a notable effigy of St. Catherine; she is represented as wearing a coronet, marvellously like that of an English duke, with its strawberry leaves, &c. complete; her left hand supports a sword fit for a giant, and a book probably intended for the Bible; her right hand is tracing the lines of the book she is reading. Beneath her feet is the Emperor Maxentius, crown, sceptre, and purple robe. The emperor is thus punished through an infinity of ages, because whilst St. Catherine and himself were both tenants of this perishable clay, he caused her head to be removed from the shoulders which it adorned.

"This saint," says William Hone, "is in the Church of England calendar and almanacks. It is doubtful whether she ever existed; [how painful to hear such doubts expressed!] yet in mass books and breviaries we find her prayed to, and honoured by hymns, with stories of her miracles so wonderfully apocryphal, that even Cardinal Baronius blushes for the threadbare legends. In Alban Butler's memoirs of this saint it may be discovered, by a scrutinizing eye, that while her

popularity seems to force him to relate particulars concerning her, he leaves himself room to disavow them; but this is hardly fair, for the great body of readers of his 'Lives of the Saints' are too confiding to criticise hidden meanings. 'From this martyr's uncommon erudition,' he says, 'and the extraordinary spirit of piety by which she sanctified her learning, and the use she made of it, she is chosen in the schools the patroness and model of christian philosophers.' According to his authorities, she was beheaded under the Emperor Maxentius, or Maximinus II. He adds,—'she is said first to have been put upon an engine made of four wheels joined together, and stuck with sharp pointed spikes, that when the wheels were moved her body might be torn in pieces.' The 'Acts' add, that at the first stirring of the terrible engine, the cords with which the martyr was tied were broken asunder by the invisible power of an angel, and the engine falling to pieces by the wheels being separated from one another, she was delivered from that death: hence the name of St. Catherine's wheel."

This St. Catherine our author supposes not to be his St. Catherine. "I am satisfied that the St. Catherine in question could not be the same as is said to have been born at Alexandria at the latter end of the second century, and suffered martyrdom under the Emperor Maxentius (and whose wheel is so celebrated) as upon consulting my *Clavis Calendaria*, by Brady, it does not appear that the Egyptian saint was ever in Britain." Our author here admits the existence of two St. Catherines; this is much better than Hone, who doubts of even one; as for ourselves, we would admit three, four, aye even five, rather than there should be the slightest hitch in the theory of Jabez Allies, Esq. Indeed we have excellent evidence of a third St. Catherine, whose sphere of existence in this world was confined to the London side of Worcester, and the immediate vicinity of our author's habitation, and after whom a whole catalogue of Catherine nomenclature has arisen, beginning with Catherine-hill, the residence of Thomas Newman, Esq.; Catherine-villa, the seat of the learned Jabez Allies, Esq.; Catherine-cottage, Catherine-house, Catherine-row, Catherine-street, Catherine-place, &c. &c.

We must give Jabez Allies, Esq. the benefit of a doubt he has expressed as to the veracity of the legend of St. Catherine:

“ I am not going to support that fiction,” says he, “ however ingenious it may be,” &c. (p. 2); yet it appears to us that every subsequent fact related, or argument urged, tend to support the “ fiction ” in question. We must proceed with the history itself:—“ A person, said to be a girl with a pair of pattens on, having stolen St. Catherine’s mare and colt, and led them down several brooks to avoid detection—the saint, upon being informed of her loss, prayed that wherever the animals and thief trod the marks of their feet might be left; and that in answer to this prayer the prints of the animals’ feet, and also of the patten rings, were deeply indented, not only in the earth, but also in the stones, wherever they trod, and that thereby they were traced to, and found at Ledbury.” Nothing can possibly be more clear: the facts are overwhelming. No sooner were we aware that the Tracks in Teme were thus readily accounted for, than we took a place per Worcester mail, inside, back to the horses, and before ten o’clock the next morning we waited on Mr. Evans, the Secretary of the Worcestershire Natural History Society, and solicited permission to view the miraculous impressions. Mr. Evans, with that cordial politeness which never forsakes him, introduced us to the wonders, and we were convinced! Dr. Buckland—how the name shrinks into insignificance before that of Jabez Allies, Esq.—Dr. Buckland had ventured to express a doubt, indeed he went so far as to suppose that the tracks were softer portions of the stone, and hinted that they might probably be traced below the surface: or, “ cavities from which concretions of marlstone and other matter have been washed out by the action of the brook.” The stone had been sawn in twain, and the doctor disappointed; the track descended not a fraction of a millimeter into the stone; and the same stone is preserved in the museum, to the eternal honour of Teme, St. Catherine, and Jabez Allies, Esq., and the eternal discomfiture of Dr. Buckland and Roderick Impey Murchison.^a

Jabez Allies, Esq. has of course made several expeditions to ascertain every particular; he has literally waded knee-deep in Teme; of one visit he speaks thus:—“ About half-a-mile further down we were shown a stone in the channel of the brook containing several very distinct tracks; namely,

^a “ I am confirmed in this opinion by Mr. Murchison, who was here yesterday.”—*Buckland*.

two called those of the mare, three of the colt, one rather doubtful track, one patten-ring impression"—“all the said tracks have protuberances corresponding with the frogs of the animals' feet, very finely developed.”—“Some distance further down the brook we found another stone, containing two tracks of the mare blended together, one of the colt,” &c.—“Upon one not very large stone we found a rather worn impression of the mare's tracks,” (p. 16.)—“At Mr. Downes', of the Farm,” they saw “a stone containing one patten-ring impression, one track of the mare, and two of the colt,” (p. 17.) “The colt's track, marked O, is a most excellent impression; the frog of this track is level with the surface of the stone, at the hinder part of it,” (p. 19.) “I must add here, that so distinct are these tracks, even now, that I should as soon be led to believe that a clear representation of the ‘human face divine’ would be produced on various stones by the attrition of the stream, as that such attrition produced these tracks,” (p. 25.) “Here then I take it we have the tracks of antediluvian horses and colts, and of patten-ring impressions. And if so, they clearly prove that this country was not only inhabited, but that it was in a state of considerable civilisation,” &c. (p. 29.)

The reader will perhaps be struck with the alteration of phraseology as the writer warms in his subjects through the pages above quoted; first, we have “*tracks called* those of the mare;” then we have it fairly stated, “one *track* of the mare;” lastly, we have the inference clearly: “Here then, I take it, we have the tracks,” &c., implying that a doubt no longer exists on the subject. We omitted to say that the prints of the mare's feet formerly exhibited traces of shoes with cockers to them, and nails; this, however, does not come as a positive fact vouched for by the author, and therefore he need not have raised a theory touching blacksmiths thereon, proving, as he says, “the use of iron in those remote ages, and the then existence of the blacksmith,” (p. 29.) The patten-ring is quite as satisfactory a proof of the existence both of iron and smith.

We have it then fairly admitted and insisted on, in the Essay before us, that tracks of an animal wearing pattens, and of two horses of very different sizes, one of them supposed to be shod, exist at this day, on the surface of the old red sandstone in Teme, Sapey, Whelpley, and other streams in the

neighbourhood of Knightsford-bridge, on the borders of Worcestershire, towards Herefordshire. We know, and the author knows, and makes no attempt to doubt or disprove it, that these impressions could only be made when the old red sand-stone was plastic, and in the process of formation. All geologists, including the author, admit that this formation of the old red sand-stone took place long anterior to the deluge; "some even contend that it was formed thousands of years previous to the creation of man;"^b (p. 29,) in fact, we are not aware that a single geologist now assigns it a more recent date. Let us attempt to gather into a simple sentence the obvious inference to be drawn from the admissions and assertions of our author, thus:—

Long before the Noachian Deluge, nay, even before the creation of man himself, there existed, in the neighbourhood of Knightsford-bridge, in Worcestershire, in England, some animals which wore pattens, and horses which were shod in the manner practised at the present day; the existence of pattens and horseshoes clearly proving, moreover, the existence of blacksmiths, as the fabricators thereof.

Risum teneatis amici! A word more and we have done. In order to prove that the good people wore pattens long, long before the flood, Jabez Allies, Esq. quotes the book of Job:—" 'It is turned as clay to the seal,' xxxviii. 14. And, unless Job meant the boils with which he was afflicted, it might reasonably be inferred that he figuratively alluded to the patten," (p. 31.) We know not whether Jabez Allies, Esq. ever heard of a *non sequitur*. We opine that the foregoing passage is an apt illustration of the term. We cannot see why, if Job meant not a boil, he meant a patten.

Jabez Allies, Esq. is a man of talent, and a man of much reading; he is one whom the Natural History Society of Worcestershire delighteth to honour; he is looked up to as a philosopher, he is consulted as an oracle, and it is not our wish to diminish his reputation; we are no geologists, but we can take a common-sense view of most subjects. We always have, and always will differ from those who consider the Bible a work on Natural History; and we believe, firmly believe, that those who attempt to prove it such, raise doubts without

^b Mark! the author himself makes this observation, in order to prove the antiquity of the impressions.

removing them; we have always wished them a better employment. Let Teme flow on in all its beauty—in all its crystal clearness. Oh that we were now a tenant of that little house above its fall, listening to the eternal hum of waters! Oh that our eyes beheld that beauteous valley, and all its orchards! Oh that we could now sweep with our net the rich grass along those meadows ere it yields to the unrelenting scythe! Oh that we could wade, with naked feet, adown its bed, and dwell with delight on those curious tracks over which our friend Allies theorises so beautifully, but in vain!

ART. V.—*New Group of Orthoptera, Family of Mantides.*

By M. A. LEFEBVRE. (*Extracted from the Annales de la Société Entomologique de France.*)

THE *Mantides* present forms and exterior anatomical distinctions so marked, that we can no longer leave them connected as they have remained for some years past. Illiger, sensible of the necessity of dividing the genus, was the first to separate, under the name of *Empusa*, those in which the head terminates in an elongated point, and the males are distinguished by pectinated antennæ. But he still left in the genus *Mantis* species as dissimilar, and capable of forming groups as distinct, as the one he had himself created.

Lichenstein was of essential service in describing a portion of the species figured by Stoll, and more especially in pointing out well-ascertained distinctions; but, in the monograph he published in the 6th vol. of the Transactions of the Linnæan Society of London, he proposed no arrangement of genera; and Latreille, in the second edition of his *Familles Naturelles*, did not think proper to establish one, although the generic history of these insects demanded the closest attention of his master mind. At length M. Audinet-Serville, in his *Revue Méthodique des Orthoptères*, published in the 22d vol. of the *Annales des Sciences Naturelles*, rescued this family from the chaos in which it had been so long buried; and from the external organic characters,—taking sometimes the foliaceous membranes observable on the legs of certain species, sometimes the elongation of the head, the swelling

of the thorax, &c.,—he established nine genera; which, added to the two already in existence, raised to the number of eleven the divisions which these *Orthoptera* now range under naturally and conveniently.

Still there was one species which had escaped the attention of this indefatigable and clever entomologist, who would, on no occasion, establish new genera except with the specimens before him, and who did not venture to form an opinion of a species, and *à fortiori* make a new genus from any figure, however correctly drawn.

It was in the account of the Expedition to Egypt, (Pl. 2, *Orthop.*) that the insects of the genus now under consideration were figured for the first time. M. Audouin had been very desirous of furnishing the descriptions to these plates, but, as he informed me, in the absence of every kind of specimens, and having only the engravings, without either the insects or the MSS., which, for thirty years, had lain buried in the possession of M. Savigny,^a he could only (as in the *Arachnoida*) give a sketch of the tribes and groups to which the insects described belonged; and these *Orthoptera* were in like manner included by him in the genus *Mantis*. I shall distinguish them here under the name of *Eremiaphila*.

When I was travelling in Egypt, in 1829 and 1830, under the guidance of Dr. Pariset, (the head of the medical commission appointed to make observations on the plague) an excursion to the Oasis of Bahryeh^b was deemed advisable by him, partly for the analysis of the thermal waters it contains, and partly for other medical investigations connected with his mission. Drs. Lagasque and Darcet were charged with the chemical and medical observations, and Dr. Pariset allowed me to avail myself of this invaluable opportunity of investigating the natural history of this isle of the desert, which is yet hardly known to us in a physiological point of view.

We left the last traces of vegetation on the 27th of February, to commit ourselves to these burning wastes; and I beheld one by one disappear, even the last vestige of animal life, with the plants which might support it. After a day and a half's journey, what was my surprise, when amongst the debris of shells, of which I collected some magnificent specimens, (now in the Museum,) amongst the nummulites which our dromedaries

^a See Note I. at the end of this article.

^b See Note II.

crushed beneath their feet, and amongst which I sought, with little hope, for insects; what, I say, was my astonishment to see slowly crawling a small species of *Mantis*, with a squat, thick-set body, apterous, or nearly so, and seeming to reconnoitre the smallest holes in the ground in search of prey!

I left our caravan, and remained with my servant Hralil, a young Arab, who had already collected insects for me with much attention. We stayed to observe this singular creature, whose presence in such a place had excited my wonder to the utmost. But vainly, for a length of time, did we follow his every motion; not a fact could I learn of his manners, habitat, or means of existence. Already two hours had been passed in these fruitless observations, and my companions had disappeared in the distance, amid the magic waters of the mirage. To have prolonged our stay in these solitudes would have been imprudent: I bid adieu to the *Mantis*, and rejoined our party. Similar insects were repeatedly seen, and I examined them in like manner, but without ascertaining one point I wished to know. The morrow brought the same adventures—the same observations fruitlessly prolonged for hours, and with as unsatisfactory results.

But what struck me most forcibly was the change of colour I observed in these insects^c according to the soil on which I found them, the tint of which they assumed in the most perfect manner; so much so, that it was only by their motions that I could distinguish them on this soil so destitute of life. No doubt from this cause numbers escaped me, worn out and overcome as I was by the vertical rays of an African sun.

The nimble *Ædicnemus*, almost the only bird which ventures amidst these desert regions, and a small Saurian, the *Trapelus Ægyptiacus*, true Arab of these sandy wastes, and which I found occasionally with my *Eremiophilæ*, presented that perfect resemblance to the colour of the ground which I had heard described, but which I never believed could have existed in so great a degree. This identity of tint was so striking that in a spot where the soil was *brown*, insects and reptiles assumed the same colour; and if, at the distance of one hundred paces, I strolled over the debris of shells, or on a calcareous surface, whose whiteness was dazzling, there these

^c See Note III.

same creatures had assumed that silvery tint which rendered them undistinguishable from the asperities of the ground.

Do they then live in these limited spheres without wandering? Can they, at pleasure, assume the colour of the soil on which they may happen for a time to sojourn? The physical cause seems incapable of explanation.

We well know that in the Polar regions several *Mammiferæ*, as well as birds, can (but only for a time) assume the white colour of the snow; but I do not think this chameleon faculty has ever been observed among the *Invertebrata*.

As for the intention of Nature in this case, must it not have been to afford the *Eremiaphilæ* more facility to escape the attacks of their enemies (since they are placed in a dangerous position, being the only insects which in these regions can serve as a prey) that she has identified these *Orthoptera* with the colour of the soil so completely that it is totally impossible to see them except when in motion.

In spite of all my care, and all my investigations, I could not find a single other insect in the habitats of the *Eremiaphilæ*. Some, indeed, were to be seen in approaching the Oases, but only in their immediate vicinity, and these were the genera *Anthia*, *Graphipterus*, *Scolia*, *Pimelia*, *Acrida*, *Mantis*, (proper,) *Formica*, the universal *Vanessa cardui*, the *Danaides*, &c., but when we came in sight of these the *Eremiaphilæ* had long disappeared!

This strange fact, which I had an opportunity of confirming on my return from Bahryeh, by another route across the desert, continued to puzzle my brains as much as before.

What indeed can be the food of these *Orthoptera* amidst such frightful wastes, where no other herbivorous insect can by possibility exist; for there is not a plant, not a vestige of vegetation; and where I met with them I never found even the glasswort and colocynth,—sad and scanty traces of vegetable life, but on which the eye dwells with pleasure,^d and which are generally seen in parts more proximate to habitable land.

These *Eremiaphilæ*, too, are armed with predatory claws, strongly toothed, and are covered with elytra, hard and solid in comparison with those of the other *Mantides*; every thing about them announces habits essentially carnivorous—a life alone de-

^d See Note IV.

pendent on rapine and plunder. Where then are the insects so strong as to require such arms for their capture, when, during a week I spent in the desert itself, (out of a month which our excursion lasted,) not one of us could find other insects at the same time as the *Eremiophilæ*?

Not only to myself, but to my companions, who took every pains for me, and to the Arabs whom I employed, especially in zoological research, all investigation proved vain. Unquestionably, if other insects had existed, the Bedouins of our escort, whom the promise of a reward, worthy of their utmost ambition, (good European powder,) kept constantly on the watch, would not have allowed them to escape; for we could well trust their eyes, shaded by long lashes, and practised to discover the smallest particle of wheat, powder, or dourrah, which chance throws before them. I am therefore almost tempted to believe that in the places where I found the *Eremiophilæ* no other insects could have existed.

On the other hand, the elytra, half petiolated, small and patelliform in their greatest development, in these *Orthoptera*, and the wings equally unadapted to flight, forbid the idea that, like the *Acridiens*, they can make distant excursions, reach the cultivated lands, there feed, and then return to the deserts. It is equally impossible to believe that their claws, useless for leaping, should be sufficiently powerful locomotives to transport them to such distances. Besides their quiet, solitary habits, and apparent want of the disposition to wander, render such excursions improbable. It is true that the wind, as at sea, blows constantly, and in every direction, over these burning tracts, rolling the sands like waves to a distance; but as I have never found these insects except in the desert, and as they disappeared when I approached vegetation, every thing tends to the belief that it is not the ordinary hurricanes of these districts which transport them by accident, but that the desert is their dwelling-place, and that they never leave it.

In spite of the extreme facility with which certain insects support a long abstinence, we can hardly imagine that the *Eremiophilæ* have no other nourishment than what the wind may carry into the desert from the cultivated lands. This precarious existence, of which the spiders, ant-lions, &c. may serve as an example, cannot be reasonably admitted here as a law of nature; neither can I suppose that she has destined

the *Orthoptera* always to devour one another, as has sometimes been accidentally observed among the *Mantides*. This question remains, therefore, to me insoluble, and this express condition of living in the most uninhabited and most uninhabitable places is, to me at least, incapable of explanation. But if the habitat of these insects attracted my attention in some particulars, the organic conformation of one of them was not less able to fix it most intently.

Up to the present time, all authors have agreed in recognising five articulations in all the tarsi of the *Mantides*; and yet one of the individuals which I found among them exhibited four only on the anterior, and three on the intermediate and posterior legs!

Although they were in the pupa state, it is not to be supposed that the development of the other articulations takes place at the time when these insects arrive at perfection, since the larvæ of species allied to them, as in all the other known *Mantides*, have five articulations in all their tarsi. I could not, with the most powerful microscope, detect even the rudiments of the missing joint, which might have been attached to the adjacent part, as is observed in some insects.

With respect to this anomalous and puzzling conformation, I should have been tempted to consider it as one of those whimsical freaks of nature which sometimes occur, had it not been for certain characters peculiar to this insect, and which I shall point out in referring to this species, which afforded a most marked difference between it and the other *Eremiaphilæ*; in short, if in the work on the Expedition to Egypt—(Pl. 2, fig. 5,) I did not find this very insect accurately figured, and (fig. 6. d,) this same anomaly faithfully portrayed. It is not probable that, after a lapse of thirty-four years, the same monstrosity should have reappeared. Laying aside this supposition, which cannot reasonably be admitted, it must be allowed that this species has in fact but four and three articulations of the tarsi, and that there may be other species of *Mantis* of a similar conformation.

Reflecting upon the recent observations on the number of the articulations of the tarsi in *Coleoptera*, and their disputed importance in classification, it must be remarked that in this anomaly of the tarsal joints nature has only followed the line she has pointed out in the heteromerous *Coleoptera*, where the

number of articulations in the tarsi is always more numerous in the anterior than in the posterior legs. The genus *Heterotarsus*, as well as showing one articulation less than the *Heteromera* possess, also gives an additional proof of the regularity in the relative number, which seems invariable, since it affords four articulations of the anterior and three of the posterior tarsi.

Here is a system of arrangement entirely overthrown by this insect, and a fresh blow given to the tarsal classification, already enough shaken by the observations recently published in the *Recueil des Annales de la Société*.

This insect then demands the institution of a new division, as we shall hereafter see.

I have in my possession the *Eremiaphila* in question, in the pupa state, whilst in the work on the Expedition to Egypt it is only figured in the larva state; therefore I am able to judge with more certainty respecting the distinctive character of this truly curious creature, and which, in whatever state we find it, is perfectly identical. But as I have before asked, may we suppose that at the same time that the elytra and wings are developed, the tarsi might assume the additional number of joints which the allied species exhibit in a perfect state?—Nothing proves this.

Though it is unadvisable, I well know, to create a genus from an insect not in the perfect state, I feel persuaded, from all the precedents we have relative to the transformations of this family of *Orthoptera*, that this species will preserve the same constancy in the conformation of the tarsi, the same difference in their claws, and the same peculiar form in the subanal plate of the female, &c. I think I may therefore make it the type of a genus, which I shall describe by the name of *Heteronutarsus*.

Fully impressed with the excellent principles laid down by M. Germar in his *Conspectus Cicadarium*, on the too great facility with which many modern entomologists have created new genera, I have long hesitated to institute this for fear of falling under the same lash, and I have only yielded to the opinion of persons whose advice has such weight with me that I could not do otherwise than obey.

NOTES.

NOTE I.

MAY I take advantage of this opportunity of observing how desirable it would be that government should require from M. Savigny the return of those valuable insects and manuscripts, which have for so many years remained useless in the possession of that entomologist, whose miserable state of health, unhappily, precludes him from rendering any further service to that science which he has adorned by his labours?

It would be offering no offence whatever to a professor whose sight is so far gone as to incapacitate him from any exertion, to entrust to another the conclusion of so valuable and splendid a work, and which has, in its progress, cost such immense sums. Daily do we see strangers publish and describe as new numberless species which have, for thirty years, been described in that work. The *Sybolæ Physicæ*, published at Berlin, affords us a sufficiently striking instance of it.

It would be to the credit of the Entomological Society of France to take the first steps in this matter, and to require of government the completion of the entomological part of that monument of science of which our misfortunes in Egypt have not been able to deprive us, but from which we see daily one of the laurel wreaths the scientific world adjudged it torn away.

The Society, in undertaking the completion of this work, would worthily act up to the object of its institution—the propagation and advancement of entomology.

NOTE II.

El Ouâh el Bahryeh, the most northerly of the four Oases which, on the left of the hill, stretch from the heights of Faioum to those of Assouan, a distance of nearly one hundred leagues. It is about four days' march from the Nile, and covers almost two leagues in extent. With respect to the three others,

Farafrea, Daket, and Khardjeh, it ranks third in importance, for by its different productions, and especially dates, it brings in at least 200,000 francs per annum to Hassan Bey, governor of Upper Egypt, who now holds it, and who reduced it, fifteen or sixteen years ago, to the yoke of the pacha, by exterminating the robbers whose resort it was.

It consists of four principal villages, which, together, contain about 2000 souls: viz. Zabou and Mendisch on one side, and Qasi and Baoneit on the other, separated by a ravine and a high promontory of granitic, silicious, and basaltic formation. Under the thick forest of dates which shadows them, may be found some of our European plants, intermixed with those peculiar to Africa,—there may be seen the peach, the apricot, the almond, the olive, the vine, the Indian fig, and some of our esculent vegetables.

The thermal waters, warm and ferruginous, (one only is cold and sulphurous,) rising often to 33° Reaumur, flow every where over the native soil, and unite to form the frequent morasses, where you may see in profusion the *Mollusca*, the splendid *Ampullaria carinata*, and, in insects, the pretty *Gyrinus Æneus*, &c.

This oasis, like another small one (the Oasis of Hanab, which is uninhabited,) contiguous to it, is protected on the west by immense hills of sand raised by the west wind, which is most prevalent there, and renders the place more healthy.

It affords few cultivated spots of great extent, and, except the fields of barley, lupins, and rice, it consists only of an infinite number of small gardens, enclosed by hedges through which it is difficult to pass.

The greater part of our birds of passage, both land and water, are to be found there: the dangerous *Cerastes*, the *Scincus officinalis*, *Sphænops Capistrata*, and other reptiles, abound. Of insects, some of our species will be seen on the wing, in company with those essentially Egyptian. Thus, in *Lepidoptera*, you will observe *Pieris Brassicæ* and *Daphidice*, mingling with *Danaïs Chrysippus*, *Argus Lysimon*, *Theophrastes*, &c.; however, the nocturnal ones offer more species exclusively African. In *Coleoptera*, *Graphipterus variegatus*, *Anthia Marginata*, and numbers of *Pimeleæ* and *Erodites*, inhabit the sand-hills, whilst *Cleonus Clathratus*, *Brachycerus Africanus*, &c. are frequent in the cultivated grounds, with

several species peculiar to Senegal. Of *Orthoptera*, the beautiful *Truxalis grandis* of Kley, the *Blepharis mendica*, &c. are in motion, with multitudes of *Acridiens*. *Hymenoptera* are no less abundant; the *Pompili* and the *Xylocopæ* are buzzing about in thousands. Quantities of the handsome *Scolia*, among others the pretty *Eriophora* of Klug, and *Vestita*, were plentiful when I was there; and in this numerous order, as in all the others, I met with the major part of the species figured in the work on Egypt, and in the *Symbolæ Physicæ* of Klug and Ehrenberg. The abundance of water attracts crowds of *Neuroptera* and *Diptera*, amongst which I met with some new and beautiful species.

The *Tipulæ* were in such numbers that their swarms render a residence in this oasis most cruel to an European newly arrived. But it is only for a time; for I remarked here, as in Sicily, when at Augusta, in the vicinity of the pestilential marshes of Lentini, that toll once taken by these little vampires, they leave you at last easy enough; but nothing can equal the sanguinary pertinacity with which they fall upon the new comer, the purgatory they make him endure, and from which he in vain attempts to escape. Fire only, instead of attracting them, drives them from the tents.

In other respects, this oasis (undoubtedly the Oasis Minor of the Romans, for a triumphal arch, coins, &c. seem to prove it,) is a sweet and tranquil residence, as much from the absence of wild beasts as from the peaceable character of its inhabitants, and their easy means of subsistence, notwithstanding the small number of cattle which they possess. Any one who could reside there some time would assuredly, at least in entomology, make a most valuable and abundant collection, and which would have a much greater interest if he should extend his excursions to the other oasis of the south.

NOTE III.

I can only speak of the Pupa; and I do not know if the perfect insect is susceptible of the same changes. What I say here upon the colour and means of living of these insects I do not mean to apply to other *Eremiphilæ* which have been sent me, as I am totally ignorant of the circumstances under which they have been found.

NOTE IV.

We must, however, believe that these insects do not exclusively inhabit those places where vegetation is impossible. Those species which occur in Syria and Lebanon, where there exist vast tracts dry but not barren, and where other insects are also found, prove the contrary; but I think we may, without fear of mistake, believe that the *Eremiaphilæ* inhabit dry places in preference to those which are cultivated.

I. F. C.

ART. VI. *A List of Coleoptera taken in the County of Sutherland, in June 1834.* By Mr. J. WILSON.

Cicindela campestris	Curtonotus aulicus
Cychrus rostratus	Bradytus apricarius
Carabus Catenulatus	Amara eurynota
Glabratus	familiaris
Clathratus	communis
Violaceus	similata
Cancellatus	vulgaris
Arvensis	Olistrophus rotundatus
Helobia brevicollis	Calathus cisteloides
Gyllenhalii	melanocephalus
Leistus rufescens	mollis
Lamprias chlorocephalus	piceus
Tarus basalis	Agonum viduum
Clivina fossor	parum-punctatum
Dischirius gibbus	mæstum. <i>Var.</i>
Brosicus cephalotes	Anchomenus prasinus
Feronia nigrata	Albipes
Orinomum	Loricera pilicornis
nigra	Badister bipustulatus
Melanaria	Trechus minutus
Abax Striola	Blemus paludosus
Pæcillus cupreus	Peryphus littoralis
Argutor erythropus	Notiophilus biguttatus
pullus	aquaticus
Patrobus rufipes	Elaphrus cupreus
Harpalus æneus	Blethisa multipunctata
limbatus	Dytiscus marginalis
ruficornis	Hydroporus trivialis

Colymbetes bipustulatus	Hypnoidus riparius
uliginosus	Elater obscurus
agilis	marginatus
Gyrinus natator	Campylus linearis
marinus	Atopa cervina
Elmis cupreus	Malthinus biguttatus
Helophorus aquaticus	Telephorus rusticus
griseus	dispar
granularis	bicolor
Hydrobius fuscipes	nigricans
melanocephalus	testaceus
orbicularis	pallidus
Sphæridium 4-maculatum	Anthobium castaneum
Necrophorus Vespillo	Hylobius abietis
Oiceoptoma sinuata	Sitona lineata
rugosa	Hypera arator
thoracica	Barynotus mercurialis
Silpha obscura, var. ?	obscurus
Phosphuga atrata	Strophosomus coryli
Meligethes viridescens	Phyllobius argentatus
Byrrhus pilula	parvulus
fasciatus	uniformis
æneus	mali
varius	mali, var. ?
Hister carbonarius	Thalacites geminatus
Geotrupes stercorarius	Sciaphilus muricatus
sylvaticus	Otiorhynchus tenebricosus
lævis	lævigatus
vernalis	atro-apterus
Onthophilus striatus	Rhagium bifasciatum
Aphodius fossor	Donacia sericea
rufipes	simplex
terrestris	cincta
fimетarius	Galeruca tanaceti
Phyllopertha horticola	capreæ
Serica brunnea	Luperus fulvipes
Trichius fasciatus	Phædon vitellinæ
Cataphagus pectinicornis	raphani
tessellatus	Chrysomela fastuosa
cupreus	staphylea
Anathrotus ruficaudis	Coccinella, 30-punctata
niger	Helops caraboides
Selatosomus æneus	Aleochara concolor
minutus	Tachyporus chrysomelinus

Tachinus marginellus	Quedius tristis
rufipes	picipennis
Creophilus maxillosus	Philonthus politus
Staphylinus murinus	splendens
castanopterus	varians
stercorarius	Othius fulgidus
æneocephalus	Gyrohypnus longiceps
Georius olens	linearis
Ocypus similis	Lathrobium lineare

Carabus hortensis was rare; *C. glabratus* and *clathratus* were frequent, and *C. catenulatus* extremely abundant.

Trichius fasciatus.—Of this insect a single specimen only was taken.

Otiorynchus lævigatus was taken on Ben-na-mac-dhui, at an elevation of 4300 feet.

Corcinella 30-punctata.—Three specimens of this insect were taken in Cromarty, between Invergorden and Tain: it is remarkable that not one other species of the genus was seen in Sutherland.

ART. VII.—*Entomological Notes*. By W. E. SHUCKARD.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

DEAR SIR,—It may be interesting to your readers to know the localities of one or two good insects, which have been captured this year by friends of mine; but I must note as one of the greatest rarities a remarkable case of hermaphroditism in the apidæ, in an *Anthophora retusa*, (Lin.,) the description of which is as follows.

Right half of the head and of the thorax, female; antennæ and legs on the right side, female; abdomen entirely female; but the whole of the thorax *above* is female; what is not described as female is of the other sex.

This insect presents a very remarkable appearance; its face being half coloured with white and black, and the difference of its legs and antennæ being so marked; but it is needless to point out that such is the case, as it will necessarily suggest

itself to every one who is acquainted with the vast discrepancy of the sexes in this species. It is also remarkable from giving a positive contradiction to theory, which makes the right side the nobler; and adduces in evidence that in all cases of hermaphroditism amongst insects the right side is male. In my humble opinion, Sir, the collecting of facts is more valuable than the constructing of crude theories; for the latter too much resembles building upon sand, which the first tide washes away, and in as far as one word of truth is worth a million of falsehoods. Instances of hermaphroditism amongst the *Hymenoptera* are rare. I possess a *Cimbex Griffinii*, in which the left anterior leg only is female; and a specimen of *Andrena fulvescens*, (Kirby, MSS.) in which the sexes are intimately intermingled. The antenna on the right side is female, on the left male, but although having thirteen joints, not longer than that of the female. The nose is only coloured in streaks; [in the male the entire clypeus is of a milky colour;] the abdomen is female, having only six segments; the podex is precisely as in the females, whereas there are seven ventral plates; and in the legs the male conformation predominates, although also (there) there is a struggle between the sexes for precedence.

The instances of the occurrence of rare insects are that of *Hylecetus dermestoides*, (Fab.) which is marked as foreign in Stephens's nomenclature, but of which Mr. T. Desvignes took seven specimens in Sherwood Forest on the 1st of May, one of which, through his kindness, I possess. Of these, six were male, and only one female. He also took the *Elater rufipennis*, (Hoffmans,) in some numbers; and my friend Mr. F. Smith has received a specimen of *Carabus intricatus*, (Lin.) included amongst many specimens of *Carabus catenulatus*, (Fab.) collected upon Horsley Downs, by a country friend of his. I should have observed, that the specimen above described, of the hermaphrodite *Anthrophora retusa*, was captured at Barnes, by Mr. F. Smith.

If these notices are worth your acceptance they are wholly at your service. Yours very truly,

31, Robert Street, King's Road, Chelsea,

June 23, 1836.

W. E. SHUCKARD.

ART. VIII.—*List of Entomological Works.*

1. *British Entomology*; by John Curtis. Nos. 147—150, March to June, 1836.
2. *Illustrations of British Entomology*; by J. F. Stephens. Nos. 80—82. December 1835, to April 1836.
3. *Coléoptères de Mexique*; par A. Chevrolat. Fascicule 7. Strasbourg, 1835.
4. *Monographie des Cétoïnes, et Genres voisins, &c.*; par M. H. Gory, et M. A. Percheron. Livraisons 11—13. Paris, 1836.
5. *Iconographie du Règne Animal de M. le Baron Cuvier*; par M. F. E. Guérin. Livraisons 42, 43. Paris.
6. *Magasin de Zoologie*; par F. E. Guérin. Paris.
7. *Iconographie, &c. des Coléoptères d'Europe*; par M. le Comte Dejean, et M. le Docteur J. A. Boisduval.
8. *Annales de la Société Entomologique de France. Tome IV. Trimestre 4.* Paris, 1835.
9. *Genera et Species Curculionidum, cum Synonymia hujus familiæ*; a C. J. Schœnherr, &c.
10. *Die Wanzenartigen Insecten. Getreu nach der Natur abgebildet und beschrieben von D. Carl Wilh. Hahn.*; Dritter Band, Zweites Heft. Drittes Heft. (Forsetzung des Hahn'schen Werks.) Von Dr. G. A. W. Herrich-Schäffer. Nürnberg, 1836.
11. *Die Arachniden. Getreu nach der Natur abgebildet und beschrieben (Forsetzung des Hahn'schen Werkes)*; von C. L. Roch. Dritter Band, Erstes Heft, Zweites Heft. Nürnberg, 1836.
12. *Iconographie des Chenilles, &c.*; par M. Duponchel.

13. *Transactions of the Zoological Society of London. Vol. I. Part IV. 1835. Character and Description of a new Genus of the Family Melolonthidæ; by John Curtis Esq. F. L. S. &c. On a Species of Moth found inhabiting the Galls of a Plant, near to Monte Video; by John Curtis, Esq. F. L. S. &c.*

14. *The Magazine of Natural History; conducted by J. C. Loudon. London: Longman. 1836. Nos. 60—62. 1. Illustrations of British Zoology; by George Johnston, M.D. &c. 2. Notes on the Habits of the Chegoe of Guiana (Pulex penetrans), and Instances of its Effects on Man and Dogs; by Charles Waterton, Esq. 3. An Account of the Pulex penetrans L., translated from Pohl and Rollar's Work on the Noxious Insects of Brazil; by W. E. Shuckard, Esq.; &c. &c.*

15. *Outlines of Comparative Anatomy; by Robert E. Grant, M.D. &c. Part III. containing Nervous System, Organs of the Senses, and Digestive Organs. With twenty-three Wood-cuts. London, 1836.*

16. *The London and Edinburgh Philosophical Magazine and Journal of Science. Third Series. Vol. VIII. No. 49, June 1836. Characters of some undescribed Species of Araneidæ; by John Blackwall, Esq. F.L.S.*

17. *Index Entomologicus; by W. Wood, F.R.S. No. XIII. containing the Tortricites.*

ART. IX.—Varieties.

Sight and Smell of Insects.—The sense of smell is unquestionably a material guide to insects in the discovery of their food: but as we are aware of the fact of the bee possessing five eyes, and others of this class having as many, and in some cases more, I think that to such as these we may with greater propriety ascribe acuter powers of vision than of smell, and especially when we consider that hitherto no naturalist has

detected the seat of smell in insects. I have often observed that when an insect discovers a flower by its sight, it does not assure itself of its reality, or of its containing honey, by using its sense of smell; for if it did so it would not waste its time in vainly searching for food in the honeyless nectaries. Bees may be frequently seen to alight upon flowers which have been completely deprived of their honey by bees that had previously visited them,—instances which show that they are led thither by their vision, for if smell were then their guide they would not be deceived. Some time since a tortoise-shell butterfly entered my room, and flew in a direct line to some artificial flowers placed under glass covers, about the smooth slippery sides of which it fluttered, spoiling its wings in vain attempts to gain its object. I once saw, at Paddington, a bee's attention for a long time engaged by the sight of some flowers painted upon a china-dish, and against which it flew, appearing much balked to find them hard and honeyless. Now, if these insects have such an acute sense of smell as some writers ascribe to them, how comes it that it allows their vision to mislead them?

JAMES FENNELLS.

Nov. 12, 1835. 4, Chester Terrace, Borough Road, Southwark.

2. *A Query*.—Kirby and Spence, in their "Introduction to Entomology," mention some insect,* the name of which I forget, which, they say, was the means of saving the life of Latreille. By explaining their allusion you will oblige myself and others.

JAMES FENNELLS.

Southwark, Nov. 12, 1835.

3. *Vanessa C. album*.—This butterfly has been exceedingly abundant at Worcester and Malvern this autumn; it settles on the apples which have fallen in the orchards, and appears to feed on their juices; the larva feeds on the leaves of the hop. (*Communicated to E. Newman by*)

Worcester, Nov. 16, 1835.

SAM. ALEX. BURLINGHAM.

4. *Colias Hyale and Electra*.—About sixty specimens of *Hyale* have been taken this year in the neighbourhood of this

* *Necrobia ruficollis*. Latreille only informs us (Gen. Crust. et Insect. l. 275,) that it secured his life and liberty by the assistance of his friends Dargelas and Bory de St. Vincent.—Ed.

town, flying over lucern fields on sunny days in August. *Electra* has been taken at Henfield. A number of *Deilephila Galii* have been bred here this summer from larvæ.

Brighton. 1835.

J. G. B.

5. *Characters of two undescribed British Coleoptera.*—

ABDERA, *Stephens.*

Abdera picea. *Picea*, *Abifasciata et quadrifasciata angustior*,
antennis basi, pedibus thoracisque margina fulvis.

Picea, nitens, subtilissime punctata, fere glabra: oculi nigro-picei: thorax fulvus; discus piceus: antennæ fuscæ, basi fulvæ: pedes fulvi. (Corp. long. lin. $1\frac{2}{3}$.)

Found near London.

ORCHESIA, *Latreille.*

Orchesia minor. *O. micante multo minor, antennæ graciliores, pedes obscuriores, thoracis foveæ optime determinatæ.*

O. micantis forma et colore, fusco-picea, sericeo-pubescentis; subtilissime punctatus: caput, thorax, pectus, abdomen et pedes picea: palpi ferruginei: antennæ graciles, subclavatæ, obscure piceæ, basi et subtus ferrugineæ. (Corp. long. lin. $1\frac{1}{2}$.)

Found at New Lanark, Scotland. In the cabinet of the Entomological Club.

F. WALKER.

6. *A Species of Coccinella new to Britain.* *C. M.-nigrum of Fabricius.*—The entire upper surface testaceous, occasionally varying, probably in immature specimens, to a dirty white; the eyes and divers spots on the head varying in different specimens, nearly black: prothorax, dirty white, with an undulated black line in the form of a W, the component parts of the W sometimes wanting connexion: elytra testaceous, the hue exceedingly variable in different specimens; each has on the disc a dark longitudinal line, frequently interrupted in the middle; this line in many specimens is totally wanting. The under surface is dark brown, anteriorly approaching to black: the legs are entirely pale. The size is precisely that of *C. variabilis*, but the form more oblong.

Beaten in some abundance from the larch on Lady Rodney's

estate at Berrington, in Herefordshire, during the second week in May, 1836. Eighteen specimens, of which no two are precisely similar, are preserved in the cabinet of the Entomological Club.

E. NEWMAN.

7. *Two perfect Specimens of the Emperor Moth produced from one Caterpillar.*—Mr. Marshall, at page 511 of the last volume, is somewhat severe on the editor of the Fire-fly, for not expressing his doubt or disbelief of the statement made by Mr. Edmonds of Worcester, touching the production of two moths from one caterpillar. Without expressing a decided opinion on the subject, we should like to call Mr. Marshall's attention to the fact, that the same assertion had been previously made by at least half a dozen different authors of respectability, among whom we may mention Kirby and Spence. Mr. Dale, in the Magazine of Natural History, asserts that he reared *Arctia Menthrasti*, and six of *Ophion Vinulæ*, from a pupa of *Cerura Vinula*. This is far more extraordinary; for supposing the six Ophions to be the natural parasites of the *Cerura* caterpillar, then from whence came *Arctia Menthrasti*? Was that insect really produced from a portion of the caterpillar of the puss moth? We believe neither the editor of the Magazine of Natural History, nor any of his correspondents, ever expressed a doubt of this "curious fact," as Mr. Dale very appropriately calls it. Another correspondent of Mr. Loudon's excellent and scientific periodical roundly asserts, that the "tail of the caterpillar becomes the head of the butterfly: this is as remarkable as if it stood thus: "the great toe of the boy becomes the nose of the man." We still would not dispute the question; we should only conclude that our researches into insect anatomy had been too shallow to develop the fact, which this insect anatomist had by almost superhuman skill and elaborate investigation discovered. The real name of this extraordinary genius, we believe, has not yet transpired; nor do we hear that he is at present publishing his researches: we venture to predict, that when they are fully received by entomologists, the works of Straus-Durckheim, Herold, Lyonnet, Dufour, and Audouin, will become waste paper.

EDITOR.

THE
ENTOMOLOGICAL MAGAZINE.

OCTOBER, 1836.

ART. X.—*Wanderings and Ponderings of an Insect-Hunter.*

(Continued from p. 37.)

CHAPTER V.

[Llanthony. Black Mountain.]

THAT evening sounds of revelry were heard within the walls of Llanthony. There was the jovial landlord with his fiddle, on which instrument, by the way, he excelled. There was his spouse, fair, fat, and forty, or perhaps a trifle more. There was Theophila, a graceful being, that seemed to have dropped amongst them from the clouds. There was a minor female help, altogether Welsh, with long hair, that appeared totally upkempt. There was a gamekeeper and grouse preserver,—a man of the mountain,—who was at first half suspicious of our appearance, for the which I cannot much blame him, for I never saw three honest travellers equipped in more poacher-like apparel, although the artist has contrived to make us look wondrously genteel in the tail-piece of the foregoing chapter. After a while the way to this man's heart was discovered, and he was jovial, and his songs were loud and tuneful. There were two others under this man's authority, and one male help, an *attaché* of the establishment. There were, moreover, the grouse-shooter, the cynophobist, and the insect-hunter; in all, eleven souls. But the human beings were not the only inhabitants of Llanthony; there were six fox-dogs, the finest creatures imaginable, long-legged, wiry-haired,

fawn-coloured, slim-tailed, bright-eyed, half-reasoning brutes, that Edwin Landseer would have been proud to paint; and there were three thorough-bred pointers, that Cooper (entomological Cooper) would have gloried in; besides sundry cats, which, like ghosts, wandered about unnoticed by the dogs. The poor cynophobist, from the praiseworthy desire to be social, dovetailed an occasional half-score words into the conversation, or delivered himself of an apology for a laugh, whenever the landlord was unusually facetious; but he was evidently in purgatory, and trembled for my safety, in addition to his own, when he beheld a fox-dog resting his wiry nose in my lap, while another, with sparkling eyes, his forefeet on my knees, was asking for every mouthful that I ate.

It was late ere we retired; and then the winding staircase lighted by loop-holes, the quaint bed-rooms, the deep-latticed gothic windows in the massive walls, had so many charms and attractions, and the moon continued to shine for hours so very brightly, that the Insect-Hunter slept not till morning was far advanced; and when at last sleep did come, he was employed in swinging censers, kneeling to crucifixes, confessing sinners, or regaling his palate with the most exquisite grayling, and quaffing the delicious wines of Germany in the cool and well-appointed cellars of Llanthony. Oh may Llanthony never become common! may it never, like the banks of Niagara, re-echo the cries—"good cigars, ginger pop, and soda water!"

'Twas morning,—all was stir and bustle, the incessant bleating of mountain sheep, brought to be washed in the river, and crying to their lambs, now unable to recognise their mothers in their cleanliness, was unutterably wearisome: then the bay of the fox-dogs, the cheering of the huntsman, and the occasional blast of his horn, called forth the echoes of every mountain, which, reverberating from side to side, seemed as though they never would be still. Alas, what labour after consistency have those to undergo whose writings are the result of imagination! Which of them all would dare to couple the Midsummer sheep-shearing and the hunting of foxes? yet these are coetaneous at Llanthony. Foxes at Llanthony are "animals of so base a nature that the law will not protect them at any season:" they are hunted to the death; the object, though never to be accomplished, is their extermination. The dogs used in the chace are of prodigious speed—they almost

equal greyhounds; and, in a few hundred yards, will run down any fox, if they have a fair start. The foxes burrow in the almost perpendicular cliffs of the mountains, which are often completely honied-combed with their holes; when they reach these the hunt is over, and the fox secure.

It is difficult to take leave of Llanthony, but my readers are tired, and I will "move on." The wanderers are again a-foot; they turn their faces northward, and pursue the course of the Honddu, the beautiful rivulet that used in the olden time to furnish grayling to the gastrological monks. The Honddu is a little fretful mountain stream; its voice was ever in our ears; it was the companion of our way for seven miles: sometimes its channel was big enough for a mighty river; its rocky banks, many hundred yards apart, and rising fifty feet on either side, covered with versicolorous lichens, and in the crevices affording a lodgment to graceful and most luxuriant ferns. Nothing could exceed the beauty of some spots, where the cold lichen-stained rocks bore at every ledge where a handful of soil would rest, a bunch of feathery fern, which was incessantly in motion, and on their summit a crest of delicate and graceful birch. Generally, however, the banks of the Honddu slope gradually to the stream; they are often cultivated for the distance of a full mile on either side, and appear to produce excellent grass; it was now ready to cut, and every field was enamelled with flowers. It would be impossible in such a walk as this for the Insect-Hunter not to meet with success; box after box was filled till it would hold no more; and then proceeding at a better pace, the travellers at last emerged from the ravine, where the stream is no longer capable of yielding its tribute to man, and was therefore untouched by his hands, and trickled over the barren and rugged side of the mountain: there they sat down and drank of its crystal waters, and rested awhile from their labours. Then they turned northward through the Bwlch-y-fingel, and wandered on under the heights of Cusop, till they found a hospitable home at Llydyadyway, the residence of the brother of the grouse-shooter.

CHAPTER VI.

[Walks in Wales.]

It has always seemed to the Insect-Hunter something like a drawback to the full enjoyment of a lofty Welsh view, that it so frequently wants the horizon. Mountain follows mountain, more and more distant in every direction, and more and more indistinct, till those in the extreme distance are not to be distinguished from the exhalations with which the air seems ever to be loaded. I speak now of bright sunny days. When the weather is overcast, of course you see no mountains: in cloudy weather one may stay at Capel Curig, at the very foot of Snowdon, for a month, without once seeing its triple head. This fact of the haziness of the air does not so much affect views from lower situations, where hill rises over hill, until some giant mountain shuts out the distance; and it is on this account that these less extensive views are often so much more satisfying.

Passing through the town of Hay, on the Brecon road, the Black Mountain presents a noble spectacle to the right; the variety of its profile seems endless, as it stretches out its promontories into the more level country; but as you advance, your attention becomes fixed on the majestic Beacon, which now occupies all the horizon before you. There is a grand and mighty confusion in Snowdon, and its giant neighbours, Glyder Vawr, David, Llewellyn, and others, which contest the point with it as to superiority in height; but the Brecon Beacon has no compeers, its bifid head rises majestically above every thing around it, in placid and unquestioned pre-eminence. The height of the Beacon, I think, cannot have been correctly taken, as it is visible at so great a distance; I have seen it in clear weather, and traced its singular outline with accuracy at more than forty miles' distance, even from low ground.

A very remarkable character of Welsh, and, I suppose, all mountainous scenery, is its excessive liability to change. One cause is the frequent variation in the purity of the atmosphere: sometimes hills at less than two miles' distance terminate the view, and present their outline as the horizon; if the air is

less loaded with vapour, others appear in the background at five, ten, twenty, thirty, or even forty miles' distance, and in every instance those at the greatest distance present their own outline as that of the horizon. Another cause of the liability to change is the varied shadows cast by vapours, clouds, or even the mountains themselves, according to the position of the sun or moon; this second cause is so unceasing, that it is next to impossible to see the same view twice under the same circumstances, consequently all its colouring is changed. The colouring of distant scenery depends wholly on extraneous causes: the blackest fir plantations, or the brightest purple heaths, entirely lose their natural colours under peculiar circumstances; the fir may become purple, and the heather black. Snow, however, is an exception; it is almost invariably white.

Reader, whoever thou mayst be, that art about to visit Brecon for the first time, take my advice on three points: 1st. visit the Priory Walk before breakfast; 2d. take up thy quarters at the Castle; 3d. engage a bedroom that commands a view of the Beacon. The Priory Walk is pretty, even of an evening, when all the fashionables, male and female, of Brecon, are flirting there; and if there has been or is expected any commotion at Merthyr, or other great iron-works, a smart sprinkling of military is mixed with the natives, making the assemblage gayer still by an admixture of scarlet; but the Insect-Hunter is no adept in country coquetry, or country finery, nor is he a lover of red coats. He does not censure all this—he applauds it; if the enactors are gratified, that is enough; but give me, for my own particular enjoyment, the hour of morning, when the voice of nature reigns supreme, when the birds are offering up their morning hymn, and—

Reader, 'tis midnight! gaze with me from the windows of my bedroom on that glorious mountain. Talk not of continental wonders, of mountains which exceed the one before us five times in height; I tell you that excessive height makes them less beautiful, less intelligible. Observe those clouds slowly floating from the north-west, the edges of each illuminated by the radiant moon, sailing in spotless purity over the summit of the Beacon, but not illuminating any single object adown its hundred slopes: the mountain is one mass of

blackness. The clouds increase and multiply; faster and faster, they float onward, borne on the wings of the wind; soon the bright but evanescent beings will pass behind the mountain, and be lost to us. Ah, how is this? they pass not behind; but, one after another, they cut the dark outline of the mountain, and float in wondrous beauty between us and that magnificent mass. On, on they come, till the mountain's base is lost, and the mountain itself, as the bank of clouds climbs higher and higher up its side, looks like an island sinking in the sea.

For hours did I ponder on this beautiful sight, till the moon, getting farther to the north-west, lighted up some of the more prominent ridges, throwing the other parts into shadow still more deeply than before: every minute now gave fresh features to the scene; the clouds parted, and were scattered or hidden behind by the projection of the mountain; few of them were in sight when the Insect-Hunter retired to rest.

CHAPTER VII.

[The Brecon Beacon.]

The next morning was cloudy; there had been rain in the night, and the atmosphere was beautifully transparent; the immediate prospect was remarkably distinct, but there was no Beacon,—this great feature in the landscape appeared to have been shorn from the earth. The Insect-Hunter had determined to ascend the mountain, and therefore listened, with somewhat amused ears, to the repeated statements of the utter impossibility of doing so. The ascent is at all times dangerous; but when the mountain is enveloped in cloud, the danger is tenfold, because you may walk over a precipice without being at all aware that you are near one. We found no one who could give the least information as to the course we ought to take; no one to whom we spoke had ever ascended the mountain, or had the slightest intention of ever doing so. The Beacon is not like Snowdon, Malvern Hills, &c.—*fashionable*,—there are no donkies or ponies pressed into your service by their disinterested proprietors: there is but a solitary feeling on the subject—wonder at the excessive

folly of any one who undertakes so useless and perilous an adventure. By the by, it was once the custom among some of the young men of Brecon to make parties to perform the ascent of this mountain; it was something to be able to boast of the achievement; these were frequently attended with loss of life, and in the summer of 1833, when, I believe, the last adventure of the kind took place, two young men fell from the highest point over the precipice, and were dashed to pieces; their bodies were with great difficulty found, and were in the most horrible condition. I believe these youths had been wrestling, as a feat to talk of, on the very summit, and grappling each other too near the edge, one slipped, and both were precipitated headlong down the abyss.

The Insect-Hunter had so accurately noted the readiest ascent of the mountain during the long approach on the previous day, that it was made with the greatest facility, although we were constantly enveloped in a cloud, and therefore could make no observation on points previously observed. If you manage well, the last 200 yards is the only very steep part, as there are stone quarries three-quarters of the way up, the tracks to which afford the easiest ascent. The mountain is almost entirely covered with *carex* and coarse sour grasses, which afford a miserably scanty living to the ragged sheep, scattered every where, even to the summit, and the few still more ragged horses, which serve the Welsh drovers as locomotives. There is occasionally to be seen a scattering of the two usual species of *vaccinium*, and sometimes, but in no abundance, one or two species of heath. As we approached the summit, the clouds were evidently much lighter, and the sky above us was beautifully blue, the wind blowing pretty strongly from the north-west. The two heads are of nearly equal height, and apparently 600 yards asunder; but, though we occasionally saw the head which we did not ascend, there were always clouds driving in the gap between, which prevented the possibility of judging the distance with any accuracy. The extreme top of each head is perfectly flat, and about 100 yards across. The one we climbed contained several small pools, with sandy bottoms; other such pools had dried with the excessive heat of the weather, and their sandy beds were resorted to by the sheep, one of which would occasionally start up, and dart off like a

wild animal driven from its lair. These sheep are frightfully fearless of the precipices; they appear to have excellently safe feet, and no idea of the extreme danger that surrounds them. That the danger is not ideal is proved by their skeletons, seen bleaching on the sides of the mountain in every direction.

(To be continued.)

ART. XI.—*Essay on Parasitic Hymenoptera,*

By A. H. HALIDAY, M.A.

(Continued from p. 59.)

Sp. 17. R. Col. decorator. Fem. *Testaceus antennis basi, palpis pedibusque silaceis; puncto verticis thoracisque lituris metathorace abdominisque segmento 1^{mo}. nigris; terebra $\frac{2}{3}$ abdominis longitudine.* (Long. corp. 2; alar. $4\frac{1}{2}$ lin.)

Caput latum, pallide testaceum, puncto vertex nigro, mandibulis apice fuscis: ocelli protuberantes: antennæ corpore longiores, graciles, 38-articulatæ; fuscæ, basi subtus, articulis 1^{mo}. 2^{do}. que totis pallide flavis: thoracis dorsum fuscum aut nigricans, plaga media testacea antrorsum bifida: sulculi impunctati ante scutellum in depressionem lævem effusi: scutellum apice rufescens metathorax niger subnitidus, vage punctulatus, pubescens, linea media elevata parum conspicua: pectus testaceum puncto fusco sub alis: abdomen oblongo-ovatum, segmento 1^{mo}. nigro, 2^{do}. 3^{tio}. basi, 7^{mo}. 8^{vo}. ferrugineis, reliquis subfuscis. Segmentum 1^{um}. fere duplo longius quam latius, antrorsum sensim attenuatum, nitidum, vage punctato-rugulosum; reliqua lævissima: pedes pallide flavescens, tarsi apice, posticis totis tibiisque iisdem apice subfuscis: alæ longæ, hyalinæ radice et squamulis flavo-ferrugineis, stigmate fusco: stigma elliptico-lanceolatum cubitum perpaulo ante medium excipiens: alæ posticæ areola brachialis-posterior $\frac{1}{2}$ anterioris brevior.

Habitat inter quercus cæduas mihi lectus in convalle *Cartland Craigs* dicta, prope fluenta *Cluthæ*.

Sp. 18. R. Col. hariolator. Fem. *Testaceus antennis basi, palpis pedibusque silaceis; capite thoracis lituris, metathorace abdominisque segmento 1^{mo}. nigris; terebra $\frac{2}{3}$ abdominis longitudine.* (Long. corp. $1\frac{1}{2}$; alar. $3\frac{1}{2}$ lin.)



Fig. 1.

Fig. 1.

Fig. 2.



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Præcedente dimidio minor sed statura et sculptura absolute similis, nisi caput paulo minus videatur: hoc totum nigro-piceum, ore testaceo; pectus fusco-testaceum lineola media punctisque nigris, litura picea insuper sub alis. Tibiæ posticæ totæ fuscescentes: reliqua præcedentis.

Habitat in Anglia lectus semel: *F. Walker.*

Sp. 19. R. Col. catenator. Fem. *Niger nitidus antennis basi, palpis, pedibus (abdominisque limbo laterali) silaceis; stigmatе fusco; abdominis segmento primo et 2^{di}. basi lineaque hujus apicem definiente rugulosis; terebra $\frac{1}{4}$ abdominis longitudine.* (Long. corp. $1\frac{1}{2}$, $1\frac{3}{4}$; alar. 3— $3\frac{1}{2}$ lin.)

Caput et thorax lævissima nitida albido-pubescentia. Occipitis margo superus tenuissimus: antennæ circiter 33-articulatæ fuscæ basi flavescentes: mesothoracis sulculi subtilissimi impunctati: metathorax declivis crebre punctulatus et pubescens, spatiis nonnullis lævigatis: abdomen thorace paulo longius et vix latius oblongo obovatum: segmentum 1^{mum}. obconicum latitudine apicis fere sesquilinguis, circa medium subtiliter tuberculatum rugulosum linea elevata longitudinali antrorsum bifurca: segmenta reliqua breviora, longitudine parum decrescentia, 2^{dum}. basi rugoso-striatum margine laterali et postico lævigatis, 3^{um}. a secundo linea crenata discretum; reliqua lævissima ante marginem albido-ciliata, margo lateralis segmentorum 2^{de}—5^{ti} flavescit in uno exemplari, in alio vero piceus est: pedes pallide flavescentes tarsis apice, posticis totis subfuscis: alæ hyalinæ radice et squamulis flavo-ferrugineis stigmatе fusco nervis pallidioribus: areolæ fere quales binis præcedentibus.

Habitat in Hibernia mihi semel lectus: alterum ex Anglia transmisit *F. Walker.*

Sp. 20. R. Col. funestus. Mas. *Niger palpis pedibusque sordide ochreis; abdominis segmento 1^{mo}. bicarinato, stigmatе fusco; nervo recurrente evecto.* (Long. corp. $1\frac{1}{2}$; alar. 3 lin.)

Antennæ corporis longitudine 32-articulatæ: palporum labialium articulus 3^{tius}. perparvus: caput, thorax subtilissime punctulati pubescentes: mesothoracis sulci oblitterati: metathorax obsolete areatus abdomen obovatum: segmentum 1^{mum}. basi angulatum dehinc in apicem fere aquilatum, sesquilinguis quam latius carinulis duabus retrorsum parum convergentibus interstitiis punctulatis angulis apicis membranaceo marginatis: segmentum 2^{dum}.

basi punctulatum; reliqua lævia breviora: pedes ochracei aut sub-fusci: alæ hyalinæ stigmatе nervisque fuscis: stigma crassum, ovato-lanceolatum, cubitum in medio fere excipiens: nervus recurrens areolæ cubitali secundæ insertus: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris longitudine. Species loci ambigui, etsi longe plurimis notis cum proxime præcedentibus conveniat.

Habitat in Anglia semel lectus. *F. Walker.*

Subgen. X.—CLINOCENTRUS.

Areolæ cubitales tres, 1^{ma}. nervum recurrentem excipiens: abdomen oblongo-ovatum, segmentis 3 anticis magnis subæqualibus, 2^{do}. et 3^{tio}. imperfecte sejuncto, reliquis minutissimis: terebra exerta caput transversum.

Clinocentrus *A. H. H., Ent. Mag. I. 266.*

Rogas spp. et *Bracon* spp. *N. ab. E.*

Hi transitum parant in *Rogades* genuinos quarum alæ conformes, sunt modo angustiores, stigmatе tenuiore: quoad corporis staturam *Clinocentri* breviores sunt, capite latiore, palpis brevioribus, sculptura corporis subtiliore, abdominis ambitu subovato, incisura 2^{da}. obsoletiore, terebra longiore. Segmentum 1^{mu}m. abdominis in *Rogadibus* prope basin, in his versus medium fert tubercula.

Sp. 21. R. Cl. excubitor. *Niger, ore, orbita, pectore, lineola ante alas pedibusque testaceis; abdominis basin rugulosi segmento 1^{mo}. obconico. Fem. Terebra $\frac{2}{3}$ abdominis longitudine.* (Long. corp. 2, 2 $\frac{2}{3}$; alar. 4 $\frac{1}{2}$, 5 $\frac{1}{2}$ lin.)

Caput nigro-fuscum ore, clypeo, orbita testaceis; palpus pallidioribus: antennæ corporis fere longitudine, circiter 33-articulatæ, articulis 2 baseos pallide testaceis: thorax niger, margine prothoracis ante alas pallide ferrugineo; pectus fusco-testaceum; abdomen obovatum nigrum, segmento 1^{mo}. et 2^{do}. rugolosis interstitiis punctatis; 3^{tio}. punctato-ruguloso, margine laterali summo nonnunquam fulvescente; reliquis sublævibus: segmentum 1^{mu}m. apice quam basi fere duplo latius, latitudine apicis vix duplo longius, linea media elevata antrorsum bifurca: pedes pallide testacei: alæ hyalinæ radice et squamulis pallide testaceis: stigmatе fusciscentе basi pallido: *maris* abdomen angustius; segmenti 2^{di}. et 3^{tii}. limites adhuc magis deleti; *variat* hic plagâ sordide rufescente ante scutellum.

Annot.—Discrimen certissimum a binis sequentibus ex abdominis sculptura rudi.

Habitat in lucis umbrosis Angliæ, Hiberniæ.

Sp. 22. R. Cl. cunctator. *Niger, ore, orbita, thoracis antici lituris, abdomine postice, pedibusque testaceis; abdominis basin striate segmento* 1^{mo}. *obconico. Fem. Terebra* $\frac{3}{5}$ *abdominis longitudine. (Long. corp. 1 $\frac{1}{3}$ —2; alar. 3—4 $\frac{1}{2}$ lin.)*

Precedenti affinis, differt præcipue abdominis sculptura: segmenta 1^{um}. et 2^{um}. subnitida sunt concinne striata, interstitiis haud punctatis; reliqua sordide testacea vel fusco inumbrata, 3^{tium}. subtilissime *transversim* aciculatum, sequentia fere lævigata: venter pallide testaceus: caput testaceum facie sub antennis, verticis medio et occipitis limbo fuscis: thorax antice cum pleuris et pectore testaceus, lituræ tres dorsi confluentes fusca: metathorax niger punctato-reticulatus, nec areatus: pedes pallide testacei: alæ hyalinæ stigmatate pallide testaceo, apice fuscescente: *mas* differt abdominis segmentis posterioribus minus abbreviatis et latius lævigatis, nonnunquam alarum nervis exterioribus incrassatis.

Habitat in nemoribus umbrosis Hiberniæ occidentalis minus frequens.

Sp. 23. R. Cl. umbratilis. Fem. *Niger, ore, orbita, pectore, thoracis antici lituris, pedibusque testaceis; abdominis basin striati segmento* 1^{mo}. *fere lineari; terebra* $\frac{1}{2}$ *abdominis longitudine. (Long. corp. 2 $\frac{3}{4}$; alar. 5 lin.)*

Præcedenti iterum sculptura similis, sed abdomen longius et angustius; segmentum 1^{um}. antrorsum vix attenuatum, latitudine apicis plus duplo longius: hoc et secundum striata, tertium vage punctatum punctis in strias irregulares subtilissimas, versus latera *transversim* ductas, diffluentibus, hujus segmenti margo lateralis summus rufescit; dorsum reliquum nigro-fuscum; venter testaceus.

Habitat, cum præcedentibus, semel lectus.

Sp. 24. R. Cl. vestigator. *Niger, ore, orbita, pedibusque testaceis; abdominis basi rugulosa; mas stigmatate toto fusco. Fem. Terebra* $\frac{1}{3}$ *abdominis longitudine. (Long. corp. 1 $\frac{1}{2}$ —2; alar. 3—4 lin.)*

Præcedentibus brevior, metathorace crassius rugoso: antennæ, 27-articulatæ: abdomen brevius ovatum segmentis 2 anticis, nonnunquam 3^{ti} basi, rugulosis; reliquis lævigatis, nigro, piceis; terebra *femine* quam illis plus duplo brevior, validior, subclavatus: alæ hyalinæ, stigmatate paulo crassiore, fusco basi pallido, in *mare* toto nigro-fusco.

Variat abdominis segmento 3^{ti}. lateribus testaceo, medio fusco.

Variat—*Mas* scutelli apice fusco.

Variat—*Mas* sculptura subtiliore, capite nigro facie pallide testacea.

Habitat Angliam, Hiberniam, cum præcedentibus; minus frequens.

Adnot.—In hoc subgenus referendi sunt præterea.

Rogas exertor, N. ab E. Monogr. I. 207. No. 10, (quem ne cum specie nostra 23^{ti}a. conjungerem obstitit rubedo clara pedum,) et *Bracon orbitator*, ibid. 91. No. 52, Species Italica a Specie 21^{ma}. thorace toto nigro; a Sp. 24^{ta}. terebræ longitudine discrepans.—Etiam *Rogas luteus*, N. ab E. Mon. 218. No. 26, propter segmenta 2^{dum}. et 3^{tium}. fere, connata et terebram exertam transitum ex his in *Rogades Genuinos* perducere videtur.—*Bracon uncinatus* vero Spinolæ, (Ins. Lig. II. 130. No. 19), quem Neesius cum *R. exertore* conjunxit, *Rogas Genuinus* foret ni fallor, propter segmenta anteriora abdominis medio carinata.

Subgen. XI.—ROGAS.

Areolæ cubitales tres 1^{ma}. *nervum recurrentem excipiens; brachialis posterior anteriorem longe superans; stigma lanceolatum: abdomen oblongum sessile, segmentis 3 anticis subæqualibus discretis, reliquis brevissimis; terebra recondita aut subexerta.*

Rogas *Curt. Br. Ent.* 512.

———— *A. H. H. Ent. Mag.* I. 266.

**Rogas*, Sect. II. *Gasteratores*, N. ab E. *Act. Acad.* IX. 306.

———— *Monogr.* I. 199. 206.

Bracon, Fam. III. *Genuini* ——— *Berl. Mag.* V. 30.

Bracon, Fam. II. *Spin. Ins. Lig.* II. 120.

Schizodes *Wesm. Mon. Brac. Belg.* 171.

Bracon, Spp. *Jurine.*

Bassus, Spp. *Fabr.*

Ichneumon, Spp. *Fabr.*

Corpus in his fere lineare, nusquam coarctatum: caput thoracis vix latitudine transversum, occipite parvo acute margiuato, oculis

prominulis: antennæ corporis longitudine articulis flagelli plurimis, breviusculis, arcte contiguis: mandibulæ perbreves trigonæ porrectæ: labrum elongato-trigonum, epipharyngis apice angulum anticum truncatum reficiente: palpi longiusculi, labialium articuli exteriores longitudine subæquales: thorax subcylindricus, mesothoracis sulculis inconspicuis; metathorace haud distincte areato, linea media elevata: abdomen lineare aut lineari-obovatum; segmenta tria anteriora majora, longitudine plerunque decrescentia et latitudine crescentia, sæpe exculpta et linea media elevata; 2^{dum}. a 3^{uo}. linea profunde incisa sejunctum; reliqua brevissima cito decrescentia: terebra recondita aut subexerta: stigma lanceolatum est, cubitum in medio plerunque recipiens, nervus recurrens areolæ 1^{mæ}. cubitali insertus longe ante apicem; areola brachialis-posterior anteriorem longe superat (ut in *Microgastre*) ideoque postica disci multo brevior est in anticâ: nervus recurrens alæ posticæ perparvus sæpe evanescit: species plerunque majores sunt ut in hoc Genere et inter nostrates. De vita et indole nil fere traditum est. Species quædam e larva *Zygæncæ Filipendulæ* Neesio prodibat.

SECTIO A. *Areola cubitali 2^{da} oblonga.*

Sp. 25. *R. rugulosus*. *Niger; pedibus crassis rufis, tibiis posticis pallidioribus, apice tarsisque iisdem totis nigris; abdomine antice attenuato, postice lævissimo nitido.*
(Long. corp. $3\frac{1}{4}$ — $3\frac{2}{3}$; alar. $5\frac{1}{2}$ —7 lin.)

Rogas rugulosus, *N. ab. E. Monogr.* I. 209. No. 13.

*Bracon id. ——— *Berl. Mag.* V. 32. No. 49.

Antennæ plusquam 50-articulatæ nigræ: palpi nigro-fusci aut rufopicei: thorax subtiliter confertim punctulatus: metathorax punctulato rugulosus: abdomen antrorsum magis attenuatum quam sequentibus; segmenta posteriora et etiam minus abbreviata sunt, postrema vero in *femina* compressa: segmenta 1^{um}. et 2^{dum}. striata sunt et inter strias punctulata 3^{tium}. basi tantum intricatim punctatum, hoc apice et reliqua lævissima nitida vage pubescentia: pedes validi sunt tarsique breviores et crassiores quam in ulla alia specie: coxæ omnes rufæ; femora postica apice subinfuscata: tarsi anteriores apice, postici totis cum apice tibi- arum earundem nigri: alæ solito majores hyalinæ cinerascens, radice et squamulis ferrugineis, vel harum puncto fusco, nervis et

stigmatè fuscis : stigma apice solito magis attenuatum ; areola radialis angustior : nervus brachiali-recurrens anterior valde obliquatus est : nervus recurrens alæ posticæ fere deletus : *maris* abdomen gracilius apice lenius attenuatum.

Var. a.—Abdomine toto nigro.

Var. β.—Litura picea, mox in fasciam rufam ampliata segmenti 1^{mi}. apicem 2^{dum}. vero totum ad summum occupante.

Var. γ.—Segmentis 1^{mo}. et 2^{do}. totis clare rufis.

Habitat Germaniam N. ab E.—Angliam, Hiberniam, autumnò non infrequens.—Apricatur in umbelliferis.

Adnot.—Sculptura hujus subtilior est quam cæteris nostratibus.^a

Sp. 26. *R. nobilis. Niger abdominis segmentis 1^{mo}. 2^{do}. et 3^{ti}. basi rufis; reliquis nigris, dense flavo-hirtis vitta media et margine nitidis: pedibus rufis, femoribus tibiisque posticis tarsisque apice nigris.* (Long. corp. $2\frac{4}{5}$; alar. 5 lin.)

R. nobilis. Curt. Br. Ent. 512. No. 8.

Antennarum scapus niger, flagellum piceo-rufum apice nigricans : os rufo-ferrugineum, palpi pallidiores : collare et propectus, abdominis segmenta 1^{mum}. 2^{dum}. et 3^{ti}. basis, pedesque rufo-ferruginei ; segmentum 1^{mum}. base nigro-maculatum, segmenta posteriora citius abbreviata quam præcedenti, confertissime punctulata villis densis flavis decumbentibus oblecta, margine postico segmenti singuli et vitta longitudinali lævi intente : pedes per paulo

^a Sp. 25.^b *R. tricolor. Rufus, metathorace, antennis pedibusque nigris; abdominis segmentis 1^{mo}. et 2^{do}. albis basi nigro-maculatis, reliquis nigris margine albo; alis fuscis basi subhyalinis.* (Long. corp. $3\frac{1}{2}$; alar. $7\frac{1}{2}$ lin.)

Caput, thorax antice, cum pleuris et pectore lævissima nitida rufa : mandibulæ apice nigro-piceæ, palpi picei basi rufi : antennæ circiter 66-articulatæ, nigrae : metathorax rotundato declivis, subtiliter punctulatus, niger nitidus : abdomen thoracis latitudine ; segmentum primum, antrorsum sensim attenuatum et secundum punctulata, linea media elevata, alba illius macula magna scutiforme baseos, hujus macula multo minora nigra ; segmenta reliqua nigra margine postico albo : venter albus, segmentorum 1^{mi}. et 2^{di}. macula communi nigra utrinque, 3^{ti}. macula magna biloba, reliquis basi nigris : pedes nigri : alæ fusca, basi subhyalinæ, nervis fusco-limbatis, stigmatè fusco, radice et squamulis pallide rufis : areolæ fere ut in nostratibus antica disci parum remota : terebra recondita.

Habitat Australasiam : communicavit *F. Walker*.

Adnot.—Propter sculpturam læviorem quam in nostratibus, hæc species primo aspectu pro *Bracone* accipi posset, a quo genere tamen longe distat.

graciliores quam præcedentis, validiores quam reliquis : tarsorum articulus ultimus tantum niger, etiam femorum et tibiæ apicis apex : alæ breviores, cinerascenti-hyalinæ radice et squamulis flavo-ferrugineis nervis stigmatæque fuscis : areolæ fere ut in præcedente : alæ posticæ nervus recurrens obsoletus.

Habitat in Hibernia boreali mihi semel lectus.

Sp. 27. *R. gasterator*. *Niger abdominis* 1^{mo}. et 2^{do}. segmento, 3^{ti}. basi pedibusque rufis; abdominis apice lævi nitido. (Long. corp. 3—3½; alar. 5½, 5¾ lin.)

Rogas *Gasterator* . . . *N. ab E. Monogr.* I. 212. No. 18.

**Bracon* id. *Jurine, Hym.* Tab. VIII. Fig. 5.

Id. id. *Var.* III. *Spin. Ins. Lig.* II. 121. No. 14.

Femina sola quæ adest differt a plerisque sequentibus tarsis brevioribus crassioribus: mandibulæ rufæ sunt, palpi picei apice rufi: antennarum flagellum basi piceo-rufum: collare rufum: abdominis segmenta anteriora rugulosa, 1^{mum}. et 2^{dum}. tota, 3^{tium}. basi rufa; reliqua nigra nitida subtilissime punctulata flavo-pubescentia in apicem rotundatum cito abbreviata: pedes rufi, tarsorum apice solo fusco: alæ subhyalinæ radice et squamulis ferrugineis, stigmatæ flavo-testaceo apice infuscato.

Mas ab *F. Walker* transmissus e Gallia meridionali congruit quidem abdominis apice lævi sed in multis discrepat: thorax niger: abdominis segmenta 1^{mo}. 2^{dum}. tota, 3^{tium}. basi rufa: pedes rufi, coxis et trochanteribus superis, femorum et tibiæ apicis apex nigri, tarsis fuscis: alæ ut in sequente.

Habitat Italiam, Germaniam, Helvetiam. *Auctt.*

Sp. 28. *R. geniculator*. *Niger abdominis segmento* 1^{mo}. apice 2^{do}. toto, 3^{tio}. basi rufis; pedibus rufis; abdominis apice punctulato. (Magnitudo præcedentis.)

*Rogas *geniculator*. . . *N. ab E. Monogr.* I. 211. No. 16.

Bracon rugulosus, Var. β. ——— *Berl. Mag.* V. 33.

Hujus tantum bina exemplaria vidi, quæ præcedenti perquam similia, tarsis longioribus, abdominisque apice subopaco discrepant: *mares* ambo in altero: segmenta 1^{mum}. et 2^{dum}. rufa sunt, illius tantum maculæ baseos nigra, 3^{tii}. basis concolor: pedes rufi, coxis anticis basi, femoribus tibiisque posticis apice nigricantibus; tarsi fusci annulis rufescentibus: palpi picei: alæ

fumato hyalinæ radice ferruginea, squamulis subfuscis stigmatè brunneo puncto baseos pallidiore areola cubitalis 2^{da}. brevior quam in *R. ruguloso*: in altero segmenti 1^{mi}. margo posticus et 2^{dum}. totum rufa sunt, reliqua nigra: pedes rufi, coxis anticis totis, femoribus tibiisque posticis apice, tarsisque nigris: palpi picei.

Habitat Italiam, Germaniam N. ab. E. Ubique rarius esse videtur: exemplar in Cæsaria Insula, et alterum in Anglia lectum transmisit *F. Walker*.

Adnot.—De tribus proxime præcedentibus quid dicam nescio: mirum foret unam speciem tantas formæ, coloris et sculpturæ mutationes subire: itaque seorsim exhibui in præsens, dum melior copia exemplarium dubia solvat.

Sp. 29. *R. alternator*. *Rufus, capite, thorace et abdomine postice, pedumque posticorum geniculis nigris; abdominis apice punctulato.* (Long. corp. 3; alar. 5½ lin.)

**Rogas alternator*. *N. ab E. Monogr. I. 213. No. 20.*
— balteatus. *Curt. Br. Ent. No. 12 et Fig.*

Caput cum antennis nigrum, orbita postica et scapi basis piceæ, palpi nigro-picei (secundum *Neesium* testacei): thorax rufo-testaceus, scutelli apice, metathoracis dorso et pectore nigris: abdomen oblongum, nec basi attenuatum, segmentis anterioribus rugulosis linea media elevatâ, posterioribus punctulatis; 1^{mo}. et 2^{do}. rufo-testaceis, illius basi nonnunquam nigro-maculata: 3^{tium}. vel basi rufescens, vel totum nigrum: pedes quam præcedentibus graciliores, sed validiores quam *R. testaceo*, rufo-testacei; femorum et tibiæ apice (saltem posticorum,) tarsisque fere totis fuscis: alæ cinerascens nervis fuscis.

Habitat Germaniam N ab. E.—Hiberniam borealem.

Sp. 30. *R. bicolor*. *Niger, capite, thorace antice, pedibusque rufis; abdominis punctulati, basin rugulosi, lateribus subsinuatis.* (Long. corp. 2½—3½; alar. 4½—5½ lin.)

Rogas bicolor. *N. ab E. Monogr. I. 213. No. 21.*

**Bracon id.* *Spin. Ins. Lig. II. 128. No. 18.*

Sculptura hujus crassior: metathorax reticulatus linea elevata distinctiore: abdomen late rugulosum, apice punctato opacum,

basi nonnil attenuatum, incisuris coarctatis (3^{tia}. præsertim;) segmentis intermediis utrinque prope stigmata leviter foveolatis postremis valde abbreviatis; linea elevata media usque in 3^{tium}. continuata: terebra subexerta: colores variant ultra modum: in *Genuinis feminis* rufa sunt caput, thorax antice cum scutello, pedesque; nigræ antennæ, pectus, metathorax et abdomen: tarsi, et nonnunquam genua postica, fuscis: alæ obscure hyalinæ, nervis fuscis, stigmate fusco-ferrugineo, basi pallescente; in *mare* præterea nigra sunt vertex medio cum genis, et scutellum.

Var. β.—Niger, ore, orbita, thoracis antici lineis, pedibusque rufis; femoribus tibiisque posticis apice fuscis; coxis posticis rarius basi nigris.

Var. γ.—Niger, ore, orbitaque rufescentibus; pedibus rufo-testaceis, posticorum geniculis tarsisque fuscis.

Rogas ater. *Curt. Br. Ent.* 512. No. 1.

Var. δ.—Orbita postica vix rufescente; reliqua *Var γ.*

Rogas prærogator. *N. ab E. Monogr.* I. 219. No. 27.

Bracon id. ——— *Berl. Mag.* V. 33. No. 52.
(*Synon. demt.*)

Var. ε.—Niger, ore, orbita, prothoracis lituris, lineola sub scutello, abdominis segmenti 1^{mi}. lateribus et apice, 2^{do}. toto, 3^{tii}. basi, pedibusque rufis.

Variat insuper (Spinola teste) abdominis dorso postice rubescente, vel etiam abdomine toto rubro.

Habitat Italiam, Germaniam, *Auctt.*—Angliam, Scotiam, Hiberniam, minus frequens: in arenis maritimis ut plurimum mihi obvius.

Sp. 31. *R. testaceus.* *Colore mutabilis, pectore semper testaceo; pedibus pallide testaceis, vel fusco-annulatis.* (Long. corp. 2 $\frac{1}{4}$ —3 $\frac{1}{4}$; alar. 4—6 lin.)

Rogas testaceus. *N. ab E. Monogr.* I. 215. No. 24.

Bracon id. ——— *Berl. Mag.* V. 34. No. 53. Tab.
II. Fig. 9.

Id. id. *Spin. Ins. Lig.* II. 131. No. 20.

Bassus id. *Fabr. S. P.* 101. No. 31.

**Ichneumon* id. *Fabr. E. S. Suppl.* 228. No. 189.

R. circumscriptus. *N. ab E. Monogr.* I. 216. No. 25.

- Var. a.* R. ochraceus. . . *Curt. Br. Ent.* 512. No. 4.
Var. η. R. similis . . . _____ No. 6.
Var. γ. R. subucola. . . _____ No. 5.
Var. θ. R. spathuliformis. _____ No. 11.

Recedit hic nonnil a reliquis (transitum in *Clinocentros* parans,) antennarum articulis paucioribus, nec tam arcte contiguis, palpis brevioribus, pedibus gracilibus, alis amplis, stigmatate crassiore, areola disci antica parum remota, cubitali media longiore. Sunt vero valde inconstantes magnitudine, colore et forma, namque exemplaria majora, longiora, metathorace subcylindrico, antennarum articulis pluribus, *R. testaceum* N. ab E. exhibent; minora vero, metathorace rotundato-declivi, antennis brevioribus, articulis paucioribus, *R. circumscriptum* ejusdem quæ tamen sensim confunduntur nec colorum legem qualem ille expressit servant.

Antennæ corporis longitudine vel paulo breviores, 33—48-articulatæ: metathorax punctulatus, lineola elevata tenui: abdomen basi nonnil attenuatum, antrorsum subtilissime striolatum, postice lævigatum: alæ latiores unde plura discrimina a congeneribus oriuntur; præsertim vero alæ posticæ areolæ brachiales latiores, nervus recurrens disci distinctus.

Var. a.—Flavo-testaceus, antennis apice punctoque verticis tantum fuscis; pedibus pallidioribus; stigmatate concolore.

Var. β.—Flavo-testaceus, stigmatate fusco basi puncto pallido.

Var. γ.—Testaceus metathorace abdominisque segmento 1^{mo}. fuscis; stigmatate flavo-testaceo immaculato, vel litura subfusca.

Var. δ.—Segmenti 2^{di}. lateribus insuper fusco-limbatis.

Var. ε.—Metathorace, abdominis basi, limbo et apice fuscis.

Var. ζ.—Verticis medio, thoracis antici lituris fuscis; reliquæ ut in *Var. γ.*

Var. η.—Segmente 2^{di}. limbo laterali insuper fuscescente.

Var. θ.—Fuscus, ore, orbita, thoracis antici lineis, scutelli apice, pectore, abdominis plagâ oblongâ mediâ, pedibusque testaceis.

Var. ι.—Femoribus posticis extrorsum late fuscis, nonnunquam mediorum et tibiæ posticarum apice fuscescente; reliqua ut ζ.

Var. κ.—Pedes ut in *Var. ι*, reliqua θ.

Habitat passim per Europam; in Hibernia obvius per æstatem totam et usque in finem Octobris: nusquam frequentiores vidi quam indumentis rupestribus ad litora insulæ Scia, Augusto mense.

SECT. AA.—*Areola cubitali media breve trapeziformi.*

Sp. 32. R. dispar. Fem. *Rufus capite, thorace antice, abdomine postice nigricantibus; antennis tricoloribus; alis cinereis lineola hyalina.* Mas. *Testaceus, thoracis lituris abdominisque dorso subfuscis; antennis gracillimis; alis glauco-hyalinis.* (Long. corp. 3; alar. 5 lin.)

Rogas dispar. *Curtis, Br. Ent. 512. No. 10.*

Statura gracilis corpus *feminæ* totum fere punctis elevatis scabrum et opacum: caput solito minus oblatum fronte protuberante: antennæ corpore paulo breviores quam in reliquis validiores fere ad $\frac{1}{3}$ longitudinis rufæ, deinde fuscæ, articulis 15^{mo}.—19^{no}. albis: mandibulæ ferrugineæ; palpi albidi basi fuscis: thorax antice cum scutello nigricans: mesothoracis sulculi obliterate: metathorax cylindricus et prope foramen apicale denticulo minuto auctus, rufus: abdomen a basi angusta in apicem segmenti 3^{ti} recta dilatatum tum reliqua sub hujus margine retracta, apiculam parvam rotundam membranaceam tantum exhibentia: segmenta 2 anteriora rufa, lineâ mediâ elevatâ, punctato-rugulosa: 3^{tium}. confertim punctatum nigrum: pedes quam in præcedente parum validiores, rufescentes, femoribus apice fuscis, trochanteribus omnibus et coxis anterioribus, posticis modo subtus, pallidis: alæ anticæ fusco-cinereæ stigmatate flavo apice fusco, nervis nonnullis areæ cubitalis lineolâ hyalinâ signatis sub stigmatate alæ posticæ subhyalinæ.

Mas longior; caput latius, fronte non protuberante: antennæ corpore fere longiores, graciliores quam in ullo alio ex *Ichneumonidis*, fuscæ basi rufescentes: capitis thoracisque sculptura multo subtilior quam *feminæ*: color testaceo fuscoque mixtus: metathorax et abdominis dorsum fusca: abdomen angustum lineare: segmentum 1^{num}. basi sensim attenuatum 2^{dum}. et 3^{tium}. subtiliter rugulosa, linea media elevata tenui: 4^{tum}. 3^{tio}. dimidio brevius confertim punctatum; reliqua fere retracta lævia: pedes prælongi et gracillimi, pallide testacei unguibus crassiusculis fuscis: alæ glauco-hyalinæ radice et squamulis ferrugineis, stigmatate flavo apice infuscato fascia pallida sub stigmatate; areolæ alarum satis conveniunt in utroque sexu stigma quam reliquis tenuius: cubiti abscissa 1^{ma}. 2^{da}. longior, quod valde insolitum: areola cubitalis 2^{da}. brevis trapeziformis, antrorsum valde attenuata nervo anteriore interioris longitudinem vix æquante: cubitalis 3^{tia}. prælonga; antica disci parum remota:

areolæ posteriores angustiores brachiales solito minus elongata: alæ posticæ brachialis vix $\frac{1}{2}$ anterioris longitudine, nervus recurrens manifestus.

Habitat in pinetis Hiberniæ borealis et Scotiæ, Augusto mense at infrequens.—Etiam in Anglia lectus. *J. C. Dale.*

Supersunt tres species Europæ septentrionalis incolæ, sed intra fines Britanniæ hactenus non inventæ quantum mihi innotuit.

1. *R. dissector*, N. ab E. Mon. I. 208, No. 11.—2. *R. signatus*, ibid. 210, No. 15, qui forsitan inter varietates *R. bicoloris* annumerandus erit.—3. *R. Zygænæ*, ibid. 210, No. 14, a varietate nigra ejusdem ut videtur sculpturâ longe subtiliore discrepans.—Species reliquæ Cisalpinæ sunt neque sperandæ sub nostro cælo. 4. *R. reticulator*, ibid. 211, No. 17.—5. *R. cruentus*, ibid. 212, No. 19.—6. *Bracon coxalis*, Spinola, Ins. Lig. II. 126, No. 17.—7. *Br. uncinctus*, ibid. 130, No. 19.—8. *Br. dimidiatus*, ibid. 123, No. 15, qui nostro *R. dispari* affinis videtur.

Rogas luteus, N. ab E. Mon. I. 218, No. 26, propter sculpturam thoracis et incisuram abdominis 2^{dam}, imperfectam dubius est etiam *Bracon bifasciatus*, Spin. Ins. Lig. II. 125, No. 16, pulchrâ species post Spinolam nemini visa, pro *Rogade* genuino vix accipi potest ob terebram longiorem.

Subgen. XII.—ADEMON.

Areolæ cubitales tres; radialis apice incompleta; stigma tenuissimum: alæ posticæ nervus recurrens disci nullus. Abdomen sessile oblongo-lanceolatum segmentis 2^{do}. et 3^{tio}. discretis, posterioribus brevissimis, terebra recondita, antennæ pedesque gracillimi, feminiæ ungues elongati.

Ademon *A. H. H. Ent. Mag.* I. 266.

Rogas, Sectio III. decrescentes, *N. ab E. Act. Acad.* IX.

————— *Monogr.* I. 220.

*Bracon, Fam. III. Heterocl. A. ——— *Berl. Mag.* V. 34.

Sp. 33. *R. A. decrescens. Abdominis segmento 3^{tio}. transversim carinato. (Long. corp. 1—1 $\frac{3}{4}$; alar. 2 $\frac{1}{2}$ —3 $\frac{1}{2}$ lin.)*

Rogas decrescens, *N. ab E. Monogr.* I. 220, No. 28.

*Bracon id. ——— *Berl. Mag.* V. 35, No. 55.

Rogadibus Genuinis statura satis similis. Caput transversum, latitudine thoracis, rugosum, occipite lato hujus et genarum finibus acute prominulis; oculi prominuli: antennæ corpore breviores,

21—27-articulatæ flagelli articulis interioribus prælongis, exterioribus cito decrescentibus: articulus ultimus penultimo non longior, 3^{tus}. quatuor ultimis æqualis. Oris partes fere quales in Subgenere præcedente: palpi paulo breviores, maxillarum articulus 4^{tus}. ratione reliquorum magis elongatus; labialium articuli exteriores ovati, decrescentes. Thorax oblongus scabriculus, collari brevi porcato; mesothoracis lobo medio canaliculato et utrinque carinula seu plica elevata antrorsum angulata instructo; fovea porcata scutelli basin sejungente; metathorace truncato, crasse rugoso-reticulato: abdomen *feminæ* subconvexum, oblongo-ovatum, segmentis 1^{mo}. 2^{do}. longitudine paribus sed antrorsum attenuatis, dense punctato-scabris; 3^{tium}. 2^{do}. duplo brevius, punctatum margine postico lævi depresso carinulam transversam fingente, 2^{dum}. a 3^{tio}. linea arcuata profunde impressa sejunctum: reliqua brevia lineari-transversa, lævia vel 4^{tum}. basi punctulatum; ultimum minutum conicum terebra recondita: pedes prælongi et graciles unguibus in *femina* elongatis: alæ angustæ, stigmate tenuissimo cuneiformi, cubitum ultra medium excipiente: nervus recurrens apici areolæ cubitalis 1^{mæ}. insertus: cubitalis 2^{dæ}. nervus anterior interiore non longior: nervi longitudinales ante marginem alæ evanescent, ideoque areola radialis apice incompleta est; brachialis posterior anteriore parum longior: alæ posticæ perangustæ nervo disci recurrente nullo, areola brachiale posteriore $\frac{1}{3}$ anterioris longitudine.—*Maris* sculptura sæpe subtilior, abdomen subdepressum, longius, segmentis posterioribus minus abbreviatis, 3^{tio}. que læviore. .

Variat quam maxime coloribus, ut varietates terminis nullis nec numero compescendæ sint. Commemorabo insigniores in serie duplici.

—1^o. Alæ fumatæ stigmate nervisque fuscis: corpus nigrum abdomine postice nonnunquam piceo;—*mares, feminæque*.

Var. a.—Pedes nigro-fusci trochanteribus dilutioribus aut flavis, in aliis insuper tibiarum et tarsorum basi dilutius fuscis.

Var. β.—Coxæ femora et tibiarum basis fusco-ferrugineæ; vel pedes ferruginosi, tibiis tarsisque apice fuscis.

Var. γ.—Prothoracis macula laterali rufa; reliqua *Var. a.*

—2^o. Alæ flavicantes basi et apice subfuscæ, stigmate flavo, nervis extrorsum depallescentibus.—Nullus *mas* in hac serie mihi obvius fuit.

Var. δ.—Niger prothorace rufo, segmentorum 3^{tii}. 4^{ti}. margine postico et sequentibus piceis: pedes nigro-fusci trochanteribus flavis, tibiis basi, tarsis fere totis ferrugineis.

Var. ε.—Niger, thorace antice abdominis segmento 4^{to}. et sequentibus rufis, femora nigro-fusca, tibiæ fuscae, coxæ tarsisque fere toti ferruginei, femora apice et tibiæ basi flavæ, in aliis litura rufa occipitis et alia sub antennis.

Var. ζ.—Rufus, vertice, metathorace, abdominis segmento 1^{mo}. nigris: antennæ nigrae: pedes fuscis, coxis, femorum apice, tibiarum basi tarsisque late flavo-testaceis; trochanteribus flavis,—in aliis metathorax et segmentum 1^{mu}m. tantum medio infuscata sunt,—in aliis color abdominis pedumque magis flavo-testaceus, femorum posteriorum ima basi, tibiis tarsisque apice fuscis.

His omnibus alarum radix et squamulæ rufæ sunt puncto nigro.

Habitat Italiam Germaniam, N. ab E.—Angliam, Hiberniam, Ebrides Insulas.—In Anglia rarior esse videtur quum inter collectanea ditissima *F. Walkerii* nonnisi unicum exemplar obvium erat.—In Hibernia deprehendi fere gregarium per margines fluviorum plantis aquaticis insidentem.

Adnot.—Altera species *R. mutuator*, N. ab E. Monogr. I. 221. No. 29. mihi invisâ Germaniam habitat.

Explicit Genus Rogas.^b

ART. XII.—*Some Scraps by the Author of the Delta Letters.*

THE early historians of the conquest, or rather the destruction of America, present us but too often with little, save details of horrid atrocities committed on those harmless, innocent lambs (as the truly excellent Bishop of Chiassa calls them) the native Americans. How heart-rending are these details!

The hand that mingled in the meal,
 At midnight drew the felon steel,
 And gave the host's kind breast to feel
 Meed for his hospitality.
 The friendly hearth which warmed that hand,
 At midnight armed it with the brand
 That bade destruction's flames expand
 Their red and fearful blazonry.
 Then woman's shriek was heard in vain;
 Nor infancy's unpitied plain,
 More than the warrior's groan, could gain
 Respite from ruthless butchery.

^b The characters of the Subgenus *Heterospilus*, which should be in connexion with the foot-note in page 47, have been misplaced in printing.

The hurricane that whistled shrill,
 The thunders echoing round each hill,
 Though wild and pitiless, had still
 Far more than Spanish clemency.

Long have my harp's best notes been gone,
 Few are its strings, and faint their tone;
 They can but sound in desert lone
 Their grey-haired master's misery.
 Were each grey hair a minstrel string,
 Each chord should imprecations fling,
 Till startled earth aloud should ring
 Revenge for blood and treachery.

Amongst these "tigers in human form" there were, however, some who could pause in their career of blood and cast a glance—a short one, truly!—over the pure page of nature. They read that page wrongly, or did not read it enough to have their minds softened by its perusal. The *auri sacra fames* was their ruling passion, and that,

Like Aaron's serpent, swallowed up the rest.

However, amongst the Conquistadares, some were curious in investigating the nature of the country, the customs of the people, &c. whom they were destroying, and from these many an interesting fact has been handed down to the more regular chroniclers, sometimes, however, not unmixed with fable.

In my perusals of these Chronicles, which often occupy my leisure hours, I sometimes find little scraps of natural history, which may serve to amuse some of your readers, if they do not profit them much. Of these I mean, if you so please, to forward you occasionally a few small extracts. Though I may not always keep quite close to Entomology, I shall expect that you will not be more severe to me than you have been to other of your correspondents, whose wanderings you have overlooked until they have run into dissertations on patten-rings, saints, blacksmiths, Windsor Castle, Versailles, *et de omnibus rebus et quibusdam aliis*.

At present I mean to confine myself to Entomology, to the narration of a fact purely entomological. I will neither enter into the history of the marvellous bird seen by *muchos y muy buenos Christianos*, which was very like a kittiwake, but had one foot like a hawk's, and one like a duck's, by means of which structure it played the part of a hawk on land, and a gull on

the water; neither will I go into the history of the aviaries or the serpent-houses of Montezuma; nor of the little bags found in his treasure-house containing entomological specimens; nor of those trees into whose bark the humming-birds, when flowers were scarce, thrust their beaks, and remained fixed there till the rainy season revived the flowers, when they drew out their beaks and flew away; nor yet of those trees whose leaves when they dropped became beetles. But, gentle reader, the subject I have chosen will serve to show how weak man is against the smallest insects, and how these little creatures can involve him in ruin, destroying in a few days the labour of years; I mean the "plague of ants" which in the year 1519 desolated the Queen of the Antilles and the adjoining island of San Juan de Puerto Rico.

The learned Antonio de Herrera, Coronista Mayor de su Magestad de las Indias y Coronista de Castilla y Leon, (I like to have name and titles at full length,) informs us that the Hieronymite Fathers not only took care (à la mode Espagnole, of course) of the Indians, but also persuaded the Spaniards to form farms, make plantations, and pay attention to agricultural affairs. That at their persuasion the cultivation of the *Cassia fistula* was commenced, which succeeded there so well that it appeared as if the soil had been made expressly for the purpose, and that had all the inhabitants of Europe, Asia, and Africa, taken to using the fruit of it instead of bread, enough could have been grown in Española to supply them. Moreover, a Spaniard of the name of Aguilon had brought in the year 1506 some plants of the sugar-cane from the Canaries, which did so well that the Bachiller Bellosa, a resident in St. Domingo, a surgeon, native of Verlanga, began a regular manufactory of sugar.

Now, as the poor Indians were pretty well exterminated, the Spaniards had got numbers of negro slaves for these plantations, and they had thrived so well that it was a firmly established opinion that a negro would never die save by hanging him,—an experiment no doubt tried by the planters as often as circumstances occurred to render it expedient. "In fact," says the learned Coronista, "they and the orange-trees found in Española a country better suited to them than even their native clime." But, notwithstanding this, when they had been set to labour at the sugar works awhile, they

did sometimes die without hanging, which the Spaniards attributed chiefly to their manufacturing spirituous liquors from the canes, and therewith getting drunk at times, though some thought that hard work had a little helped to kill them. The negroes, though liking the liquors, not liking the extreme labour they had to endure, ran away at times; and this,—as there was great plenty of them,—brought them, when captured, to their natural end, namely, the gallows.

In spite of these little troubles with runaway negroes, the plantations were now (in 1519) flourishing, and the planters rejoiced in a good return for their troubles; but on a sudden all this pleasant prospect was destroyed by a dire calamity which fell upon them. This was a “plague of ants,” to such an extent, that fears were entertained of its causing the abandonment of the Islands of Española and Porto Rico. “As to the ants,” says Oviedo, “I do say that in this island of Española there are very many, and especially in this city of Sancto Domingo, many more than we wish for, though infinitely fewer than formerly,”—that is to say in the years 1519-20, and part of the year 1521.

Countless were the myriads of myriads which desolated every plantation, especially of Española. Though in Porto Rico they were equally numerous, yet they were smaller, and not so injurious to the trees, but their sting was much more acute. Already in the glorious Vega of St. Domingo, extending from sea to sea above eighty leagues, watered by innumerable limpid streams, and blessed with a most fertile soil, had innumerable plantations been formed. The Franciscans, in particular, had a most magnificent orchard of orange trees of every variety, pomegranates, and *Cassia fistulæ*. In a moment all was destroyed. The ants attacked them at the roots; and “immediately,” says Herrera, “as if fire had fallen on them from heaven, they were withered and destroyed. Such was, likewise, the fate of every plantation in the Vega and the rest of the island. Wherever the ants were, there was desolation; and the ants were everywhere. Even the houses in the city were filled with them; and to sleep safe from them at night, it was necessary to place the feet of the bed in large vessels of water.

“And in the time of this plague,” says the gallant Alcayde of the fortress of the city of St. Domingo, “hardly could any persons live in their houses, neither could they keep provisions

of any kind from being covered with infinite swarms of small black ants; and had it continued much longer thus, it would not have been surprising had it happened to this island as to a city of Spain." Now it appears, from the Alcayde's statement, that this city was deserted by its inhabitants because the rabbits round about had multiplied so much that they burrowed under the town until the inhabitants, fearing lest their houses (the foundations being destroyed,) should tumble down about their ears, thought fit to run away. Moreover, he informs us, that in Thessaly a like misconduct on the part of the moles caused another city to be abandoned. In France another city was deserted on account of—of what, thinkest thou, kind reader?—the frogs. Another in Africa shared the same fate from the swarms of locusts; one in Italy from the vipers. Thus much sayeth the Capitan Gonzalo Hernandez de Oviedo y Valdez, Alcayde de la fortaleza de la ciudad de S^{to}. Domingo, &c. Turn we now to the Coronista mayor.

From him we learn that some tried to thin them by digging trenches round the trees, and filling them with water; others tried fire; but nothing availed them in the least. If millions were destroyed, tens of millions replaced them. "The Franciscans of the Vega placed a lump of corrosive sublimate, weighing three or four pounds, on the flat roof of the monastery; all the ants in the building at once ran to it, and, biting it, fell down dead; and as though messengers had been sent to invite all within half a league to a banquet, the roads were filled with them. They scaled the walls, and tasting the poison, fell dead like their companions, until the roof was blackened with them. This continued as long as the lump of sublimate lasted." Then the friars having found that they gained nothing by this experiment save the bringing fresh swarms of ants, did not care to renew it. It seems that they were much puzzled at two things, first, to ascertain what instinctive knowledge the ants possessed to guide them to the sublimate; secondly, considering how hard the sublimate was, to account for their being able to bite it, they being so small and weak.

The Spaniards were now, by the continuance of this plague, reduced to the greatest tribulation. It seemed as though an avenging Providence was punishing them for their atrocities; and, the more to humble them, had chosen these small creatures as the instruments of his wrath. At last they resolved to choose

by lot some saint to intercede for them; whereupon the Bishop Alexander Geraldinus, the Clergy, and all the citizens of St. Domingo, made a very solemn and grand procession; the bishop said a solemn pontifical mass, made a most devout prayer, took the catalogue of saints, wrote the names on slips of paper, blessed them, shook them together, and the first name drawn was that of St. Saturninus,—"the glorious St. Saturninus, who was born at Rome, and sent by the Pope to preach at Thoulouse on account of his great sanctity." No sooner does he enter the city than—

"The oracles are dumb;
 No voice or hideous hum
 Runs through the arched roof with words deceiving.
 Apollo from his shrine
 Can no more divine."

This of course did not please Apollo's priests, and they persuaded the people to put the saint to death. The people, therefore, tied him to the tail of a bull, and thus was he dragged through the city till he was dashed to pieces,—“as is written more at large in the history of his glorious martyrdom.”

Through the intercession of the saint, or some other cause, the numbers of ants soon began to diminish: “and if they are not yet all gone, it must be that all are not clear of sins.”

Oviedo especially desires two things to be noted, namely, that the bishop, who was a very holy man, was, like the saint, a Roman; item, that whereas the idols of Thoulouse were by the saint's presence struck dumb, his being chosen was to show idolatry was soon to be destroyed in the island. This actually did soon happen, because very soon the Indians were annihilated, or nearly so. Previous to this time, Tarquemada tells us that the priests were in the habit of passing their time away in chatting with the evil spirits which the idols represented, and which spoke from the lips of these images.

But though the ants were now nearly gone, the trees and plants they had attacked did not recover; but new plantations were formed to remedy the mischief, and again the plantations flourished.

“But even now,” says the gallant captain, “there is no want of ants, but rather, there are more than we want.”

These are chiefly of two casts, both rather red in colour: of these one is mischievous, the other not; "and it appears that they divide the soil between them, and keep it divided in good earnest, for the spot of ground is clearly marked out which one sort possesses without doing any mischief, and that which the other occupies causing destruction; and the good sort will not allow the bad to pass these limits. And what I now say is well known to all in this city and island to be true, and I can show it in a plantation of my own, one league from this city, and also it may be seen in many parts of this island."

Truly if the people of Española were delivered from their troubles by St. Saturninus, I should much doubt his humanity. Happy would it have been had the Spaniards been driven from every inch of ground they possessed in that glorious new world Columbus gave them; but, perhaps, the day is not far distant when Spain will be without a colony there; even now she has scarce foothold.

"Oh, could their ancient incas rise again,
How would they take up Israel's taunting strain—
Art thou, too, fallen, Iberia? do we see
The robber and the murderer weak as we?" &c.

But before I conclude this, I must beg you and my readers to forgive me if I trespass for a few lines. Early in this article occurs the name of one, the glory of his country, the pious, the kind-hearted, the undaunted Bishop of Chiassa, Bartolomé de Las Casas, one of the best men the world ever saw.

But there is one cloud on his fame, one dishonouring spot on the wreath that encircles his brow. This never ought to have been allowed to remain. I should not have remarked on this now, had not very recently Dr. Madden, and my friend Mr. E. Abdy, in his work on the United States, repeated the old charge,—I suppose on the authority of Robertson, who ought to have known better. What I allude to is the charge of his being the first to introduce negro slaves into the Western Indies. Herrera, the only *old* writer that I can find making the charge, sufficiently refutes himself. (Compare Decade 2, cap. 20, and cap. 8.) Other authors have followed Herrera, trusting to his usual accuracy. Not only is there no

proof that Las Casas was the first to propose the carrying negroes thither; but we have no proof that he ever sanctioned it directly or indirectly. Did not he give up his own *repartimiento* because he felt that no Christian could hold it with a clear conscience? And had he been so inconsistent after this as to sanction the slave-trade, would not some one of his enemies have cast this in his teeth? Enemies he had plenty; but it remained for the man who stole most of his decades from the manuscripts of Las Casas, to stand forth as his traducer. May we never hear more of this charge, so falsely brought against one whom we may truly call *justum et tenacem propositi virum!*

Sudbury, July 13, 1836.

ART. XIII.—*Notes on Diptera.* By FRANCIS WALKER.

MESSALA.

Messala Saundersii, *Curtis, Brit. Ent.* 581, is the same as *Bolitophila cinerea* (mas), *Hoff.*

DIXA. *Meigen.*

- D. æstivalis*, *Meigen.* Summer and autumn; near London; North Wales.
D. aprilina, *Meigen.* Autumn; near London; North Wales.
D. maculata, *Meigen.* Spring and autumn; near London; Wales; Devonshire; Scotland.
D. nebulosa, *Meigen.* Autumn; near London; Wales; Devonshire.

MACROCERA. *Meigen.*

- M. phalerata*, *Hoffmansegg.* Summer and autumn; near London; Ireland.
M. angulata, *Meigen.* Summer; near London; Scotland.
M. centralis, *Meigen.* Summer; near London.
M. maculata, *Meigen.* Summer; near London.

- M. lutea*, *Panzer*. Summer and autumn; near London; Windsor; Wales; Scotland.
M. stigma, *Curtis*. Summer; near London; Scotland.
M. fasciata, *Meigen*. Summer and autumn; near London; North Wales.
M. pusilla, *Meigen*. Autumn; near London; North Wales.
M. dorsalis, *Curtis*. Summer; near London.
M. multincta, *Curtis*. Spring to autumn; near London; Wales; Hampshire.

PLATYURA. *Meigen*.

DIV. A.

- P. marginata*, *Meigen*. May and June; Hampshire; Isle of Jersey.

DIV. B.

- P. vitripennis*, *Meigen*. }
P. rufipes, *Hoffmansegg?* } May; near London.
P. flavipes, *Meigen*. May and June; lime and oak trees; near London; Hampshire.
P. laticornis, *Meigen*. June; near London; hovering about boleti.
P. discoloria, *Meigen*. June; lime and oak trees; near London; Hampshire.
P. fasciata, *Latreille*. June; near London; Hampshire.
P. servula, n. s. Mas. *Nigro-picea*, *subnitens*, *pubescens*: *antennæ piceæ*: *coxæ et femora flava*; *tibiæ obscuriores*; *tarsi fuscii*: *alæ subfusca*, *immaculatæ*: *halteres flavi*, *apice fuscii*. (Corp. long. $1\frac{3}{4}$ lin.; alar. 3 lin.)
 Found near London.

MYCETOBIA. *Meigen*.

- Mycetobia pallipes*, *Meigen*. June; on grass in woods; near London; Windsor Forest.

LEIA. *Meigen*.

- L. fascipennis*, *Megerle*. }
L. fasciola, *Meigen*. . . } Summer and autumn; on oak trees.
L. bimaculata, *Meigen*. Found near London.

- L. *Winthemii*, *Lehmann*. Spring and summer; on box trees; near London.
- L. *flavicornis*, L. *fascipennis*, and L. *fasciola*, of *Meigen*, seem varieties of one species.
- L. *pubescens*, n. s. (Div. B. b. *Meigen*). Mas. *Atra, obscura, albo-pubescens: antennæ nigræ; palpi flavi: pedes flavi; coxæ basi, femora subtus tarsique omnino fusca: alæ sublimpidæ, apice obscuriores; nervi fusci, ad costam bene determinati: halteres pallide flavi.* (Corp. long. $1\frac{1}{2}$ lin.; alar. 3 lin.)
Found near London.

SEIOPHILA. *Hoffmansegg*.

- S. *fimbriata*, *Meigen*. June; near London; Windsor Forest.
Var.?—Abdomen black, shining: tip red.
September; North Wales.
- S. *annulata*, *Meigen*. } Spring and autumn; near London;
S. *cingulata*, *Meigen*. } North Wales.
- S. *maculata*, *Meigen*.
- S. *marginata*, *Megerle*. Common near London.
- S. *ferruginea*, *Meigen*.
- S. *hirta*, *Hoffmansegg*. September; near London; North Wales.
- S. *vitripennis*, *Meigen*. May and July; near London.
- S. *lutea*, *Macquart*. Found near London.
- S. *nigra*, *Macquart*. Spring and autumn; near London; North Wales.

Seiophila rufilatera, (Div. C. *Meigen*.) Fem. *Atra, antennæ nigro-fuscæ, thoracis latera et abdominis segmenta apice rufa, pedes fulvi, alæ sublimpidæ.*

Atra, parum nitens, fere glabra: palpi pallidi: antennæ nigro-fuscæ, basi rufæ: thoracis latera rufa: abdomen pubescens; segmenta apice rufa; pedes fulvi; tarsi obscuriores; coxæ rufæ; trochanteres fusci: alæ sublimpidæ; nervi et halteres fusci. (Corp. long. 2 lin.; alar. $3\frac{1}{2}$ lin.)

Found near London.

CORDYLA. *Meigen*.

- C. *fasciata*, *Meigen*. September; North Wales.

MYCETOPHILA. *Meigen.*

- M. biusta*, *Hoffmansegg.* September; near London; North Wales.
- M. lunata*, *Fabricius.* September; near London; Wales; Scotland; Ireland.
- M. fuscicornis*, *Meigen.* Spring and autumn; near London; Wales; Scotland.
- M. arcuata*, *Meigen.* Spring and autumn; near London; Wales.
- M. lineola*, *Meigen.* Spring and autumn; near London; Wales; Hampshire; &c.
- M. luctuosa?* *Meigen.* September; North Wales.
- M. distigma?* *Meigen.* August; near London.
- M. punctata*, *Meigen.* Spring to autumn; near London; Wales; Devonshire; Scotland.
- M. lateralis*, *Meigen.* Spring and autumn; near London.
- M. fusca*, *Meigen.* Spring and autumn; near London; North Wales.
- M. semifusca*, *Meigen.* Spring and autumn; near London.
- M. discoidea*, *Meigen.* Spring and autumn; near London; North Wales.
- M. ornatcollis*, *Meigen.* Spring to autumn; near London; Ireland; &c.
- M. lugens*, *Wiedemann.* Spring to autumn; near London; Wales.
- M. nigra*, *Meigen.* } Spring to autumn; near London; Wales;
M. nitida, *Meigen.* } Cumberland; &c.
- M. crassicornis*, *Stann.* }
M. domestica, *Meigen.* } September; near London; Ireland.
- M. cingulata*, *Meigen.* Autumn; near London; North Wales.
- M. guttiventris*, *Meigen.* June; near London; Hampshire.
- M. leptura*, *Meigen.* July; near London.
- M. seriata*, *Meigen.* September; North Wales.
- M. pusilla*, *Meigen.* Spring and autumn; near London; Wales; Scotland.
- M. sciarina*, *Meigen.* Spring and autumn; near London.
- M. trivialis*, *Meigen.* Found near London.
- M. pallida*, *Stann.* Spring and autumn; near London; North Wales.
- M. intersecta*, *Hoffmansegg.* Found near London.

- M. fenestralis*, *Hoffmansegg*. Spring and autumn; near London; North Wales.
- M. sericea*, *Macquart*. } September; near London; North
M. sericoma, *Meigen*. } Wales.
- M. nemoralis*, *Meigen*. Summer and autumn; in woods; near London; Wales.
- M. flavipes*, *Macquart*. Summer and autumn; in woods; near London; Wales; Cumberland; &c.
- M. pygmæa*, *Macquart*. Epping; near London.
- M. flava*, n. s. (Div. C. *Meigen*.) Mas et Fem. *Pallide flava: oculi picei: antennæ fuscæ, basi flavæ: thoracis discus luteus: abdomen versus apicem fuscens: tibiæ fulvæ: tarsi fusci: alæ flavo-limpidæ; nervi fulvi.* (Corp. long. $2\frac{1}{2}$ lin.; alar. $3\frac{1}{2}$ lin.)
 July; in woods; near London.
- M. ferruginea*, (Div. D. *Meigen*.) Mas et Fem. *Ferruginea, antennæ fuscæ, thorax 3-vittatus, abdomen rufo-fuscum segmentis apice flavis, pedes flavi, tarsi fusci, alæ limpidæ.*
Pallide ferruginea: oculi nigri: palpi flavi: antennæ fuscæ, capite thoraceque paullo breviores, basi flavæ: thoracis dorso vittæ 3 rufo-fuscæ, quarum media anteposita et furcata; vitta quoque unica postica: abdomen rufo-fuscum; segmenta apice flava: coxæ et femora flava; tibiæ obscuriores; tarsi fusci: alæ limpidæ, vix fulvescentes; nervi fusci: halteres flavi. (Corp. long. $3\frac{1}{2}$ lin.; alar. 5 lin.)
 Found near London.

ART. XIV.—*Researches on the Insects injurious to the Vine, known to the Ancients and Moderns, and on the Means of preventing their Ravages.*

BY M. LE BARON WALKENAER.

[Extracted from the *Annales de la Société Entomologique de France*.]

INTRODUCTION.

General Considerations.—Division of the Researches into three Sections.

IN Europe, when, after a long succession of ages passed in the darkness of barbarism, the human mind began to resume its powers of advancement, its progress was everywhere the same, and it adopted a similar method in all the sciences.

Before the invention of printing we had no other sources of instruction than those furnished by the ancients. After this invention their works were more diffused and became better known. The admiration they excited, and the influence which they had acquired over the mind, was yet more increased by means of the invention of printing; and was, indeed, a necessary consequence of the abundance and perfection of their writings.

To expound and understand them well, and to classify the notions they exhibited, was everywhere the ambition of learned men. Every treatise, on whatever branch of human learning it might be, was a compilation, more or less methodical and complete, of what the ancients had written on the subject. To this was occasionally added what the moderns thought or had observed respecting it; but these additions did not carry the same weight and authority to the mind of the reader as the rest of the book; nor was it ever intended by the author that they should do so. But little account was made of any proposition or observation without the addition of *ut ait Aristoteles, ut ait Plinius, ut ait Hippocrates*, and other phrases of the like import.

It was fortunate for the progress of natural history, that the great number of new productions brought to Europe from newly discovered countries, toward the end of the fifteenth and at the beginning of the sixteenth centuries, soon convinced every one of the incompleteness of the writings of the ancients on the science.

It was then discovered that most of the objects which they had occasion to describe were absolutely unknown to them, and that they had very superficially observed and imperfectly described those with which they were acquainted. We most readily come to this conclusion in regard to the smallest animals; because the ignorance of the ancients on this point was greater than on almost any other, and the application of their notions respecting them to the uses of modern science is proportionably difficult and perplexing.

In the case of insects it was quickly ascertained that the ancients had only treated of a small number, and of these very incorrectly. When naturalists left off studying their writings, and gave themselves up to the study of nature exclusively, the science soon made rapid advances.

However, the names which the ancients gave to some classes

of insects, the meaning of which is easy to be understood, remain, because they have become part of languages now in use, derived from ancient ones: others, more obscure than these, the meaning of which was doubtful or unknown, were employed by naturalists for the numerous genera whose establishment the progress of modern science had rendered requisite. Naturalists seemed determined to make no new names until all those employed by the ancients were exhausted; and when at length this came to pass, with but one exception, (that of M. Adanson,) they always derived them from the Greek and Latin: and when they had given a name used in ancient writers to a new genus, it was hardly ever with the intention of applying it to the kind of insect these ancient authors had intended to allude to, and without any design of its assisting in any way to ascertain the species. It has been sometimes considered sufficient authority for giving an ancient name to a new genus, that that name formerly belonged to an insect (no matter what), or in some instances even if it could not be satisfactorily proved that the word had *not* been so applied.

Some names occur in our entomological catalogues whose meaning is so entirely lost, that it is very uncertain whether they belong to a plant or an animal. My purpose will be best served here if I illustrate this by an example, which is far from being the only one I could adduce.

M. Camus, the French translator of Aristotle's Natural History of Animals,^a well observes in his notes that commentators differ as to the meaning of the word *Staphylinus* employed by that writer. Some consider it the name of an insect, others the name of a plant; but, says Camus, relying on the authority of Valmont de Bomare's Dictionary of Natural History, where he found the word *staphylinus*, "The staphylinus is an insect well known to naturalists, because it has preserved its name both in French and Latin." We learn from these words that Camus did not know that the application of the word *staphylinus* to a genus of coleopterous insects, which is now subdivided into a great number of genera to which other names have been given, cannot be traced farther back than the time of Linnæus, who first made use of this

^a Camus, *Hist. Nat. des Animaux d'Aristote*, in 4to. t. ii. p. 783.

word in naming this genus without in the least intending that this signification should interfere with the meaning it might have in Aristotle, to whom indeed he does not allude.

In the instance of the higher animals, such as quadrupeds, birds, fishes, and reptiles, naturalists have established, as far as they could, a correct synonymy of those species known to the moderns which have been described in ancient writers, because they have there met with notices of some which have not been so well observed since, and others that are now altogether unknown; so that on this account they continue to be considered as portions of the science; but the case is very different with insects. In spite of the present imperfection of entomology, which is the most difficult of all branches of natural history, the moderns have made such progress that we may rest assured we have nothing to learn from the ancients on the subject; with the exception of the honey-bee and the caterpillar of *Bombyx mori*, or the silkworm, insects which perhaps occupy as important a situation and position in the history of the human race, commerce, and the arts, as any of the largest animals. Naturalists of the present day have paid but little attention to the study of ancient writers on the subject of insects; however, the names which they have borrowed from them show that they have read them, though, in some cases, perhaps without any other intention than that of establishing a connexion by means of a similarity of nomenclature between the writings of antiquity and their own; but they appear to have considered this kind of research as too difficult for them; or else that it was impossible to undertake it with any chance of success. This is why there are so few dissertations on the subject extant; and in those we do possess it very frequently happens that no attempt has been made to determine the species or genus, but only to discover the class to which the ancient name was intended to apply.

If the science of natural history has little to hope from these investigations, we may perhaps, however, obtain by their means a better and more exact interpretation of passages of ancient authors, and the difficulty attending such pursuits should not deter us from the attempt. In entering on this subject, as indeed when about to explore any of the uncultivated portions of the vast field of science, we may say, "If

this had been easy to do, it would hardly have been left undone."

These considerations have induced me to write and to submit to the Academy^b these researches, which I was led to make by a question put to me by one of our learned brethren on the subject of the interpretation of the name of an insect infesting the vine, mentioned by Plautus. The passage appeared so plain to me that I thought I could at once have given the meaning required. In order to satisfy myself that I was not mistaken, I examined what had been said by ancient and modern authors concerning the kinds of insects injurious to the vine, and on the means of destroying them. But, in unravelling the meaning of ancient passages, in comparing these, and afterwards in considering them in connexion with the observations of the moderns, I found greater difficulties than I had anticipated; to overcome these I used every effort—such was the origin of this memoir. The subject will doubtless appear trifling to some, but as it is alike interesting whether considered in connexion with the study of ancient learning, natural history, or agriculture, I cannot consider it as useless or unworthy of attention.

This memoir will be divided into three sections. The first, which may be considered as merely preparatory, will contain a critical examination of ancient passages in relation to the meaning of the names of insects which are mentioned therein as being particularly injurious to the vine.

In the second, I shall determine, by means of results obtained in the first, what are the species of insects injurious to the vine, known to the ancients and moderns, and shall point out the best means of preventing their attacks.

In the third section, a classified concordance of names; *i. e.* a synonymy of all the names which occur in these researches, will terminate the treatise, and render it of easy reference to those naturalists and agriculturists who may wish to consult it.

^b This paper was read at the Academy of Inscriptions, of which the author is a member, before it was communicated to the Entomological Society.

SECTION I.

CRITICAL EXAMINATION, ETC.

1. *Preliminary.*

This section being, as I have just observed, only preparatory in reference to the principal object of the memoir, no application of modern names to the interpretation of passages in ancient authors will be made in it. We shall content ourselves with examining the meaning of ancient words, with such assistance as a knowledge of the sense in which the ancients themselves employed them may afford us. The circumstances or peculiarities attending this use will, in the second section, enable us to interpret ancient names, *i. e.* to ascertain those in the language of naturalists with which they correspond, which are the only ones connected with definitions and descriptions sufficiently explicit to enable us to determine the objects intended. We shall only give a secondary consideration to popular names.

The names given in ancient, and often in modern, languages to objects, the differences between which would not attract the notice of superficial observers, were often of a general description, and common to many kinds, and therefore very vague. A single word was sometimes used for beings of a very different nature. Scholiasts, grammarians, and lexicographers, by their false distinctions, frequently added error to confusion, and occasionally the prodigious erudition of commentators still further perplexed the matter. It appears to us that the best way to acquire an exact and complete idea of the notions each of the names in question represents, will be to examine every passage in which they occur, and to endeavour to ascertain the various meanings which have been attached to these names when they have been employed in different significations. By this method we shall be enabled to found our opinions and conjectures with greater certainty on ancient passages; and we shall also be less exposed to the danger which so many, before they were aware, have fallen into, and some indeed knowingly, of selecting those passages only in the writings of the ancients which supported

their interpretations and systems, while they discarded all such as were opposed to them.

2. *List of the Names of Insects injurious to the Vine, mentioned by ancient Authors.*

All the vine-insects, or those mentioned in connexion with the vine, which I have been able to find in ancient authors, are the following:—

- | | |
|-------------------------------|---|
| 1. Thola, Tholea, or Tholaat. | 9. Joulos, or Julus. |
| 2. Gaza. | 10. Biurus, or Bythurus. |
| 3. Ips. | 11. Involvolus, Involvulus,
or Involvus. |
| 4. Iks. | 12. Convolvulus. |
| 5. Spondyle, or Sphondyle. | 13. Volvox. |
| 6. Cantharis. | 14. Voluera. |
| 7. Phiteire, or Phiteira. | 15. Eruca. |
| 8. Kampé. | |

3. *List of Authorities in which these Names occur, and which consequently will have to be alluded to in this Dissertation.*

The Bible.	Strabo.	Palladius.
Homer.	Pliny.	Herodian (the Gram- marian).
Ctesias.	Columella.	Festus.
Alcman.	Athenæus.	Suidas.
Aristotle.	Origen.	Hesychius.
Theophrastus.	St. Chrysostom.	Eustathius.
Plautus.	St. Epiphanius.	Philus.
Cato.	Ammonius.	
Cicero.		

4. *Thola, or Tholea, or Tholaath.*

This is a Hebrew word: it occurs in Deuteronomy; where the animal which it designates is mentioned among the judgments the Israelites are threatened with if they transgress the law of God.^c The verse in which it occurs is rendered as under, in the translation made from the Greek and Hebrew texts by the pastors and professors of the church of Geneva:^d—
“Thou shalt plant vines and dress them, but thou shalt not

^c Deuteronomie, xxviii. 29.—? 39, Translator.

^d La Sainte Bible, ou le Vieux et le Nouveau Testament, traduit par les Pasteurs et les Professeurs de l'Eglise de Genève.—Genève, 1805, l. i. p. 276.

drink of the wine, nor gather the *fruit* thereof, for the worm shall eat it."

Sacy, translating from the Vulgate, has:—

"Thou shalt plant the vine and dress it, but thou shalt not drink the wine thereof, neither gather any thing therefrom, because it shall be destroyed by worms."

Respecting the first of these versions, we may remark, that the word "fruit" is printed in italics because there is no such word in the Hebrew, and, indeed, there was no necessity for its insertion. The sense does not require it, it is complete without the word; and it is, moreover, liable to mislead; for the insects which injure the vine by wounding the roots are not the same that eat the leaves, and these again differ from such as consume the fruit.

The word *tholath* in the interlined version of the Hebrew Bible of Arius Montanus,^e is also translated by *worms* (*vermis*). But the Hebrews had also another word for worm—*rimma*. This word is often employed in the Bible in a figurative sense, in the same way that *thola* is—for an unclean creature, or an animal which is engendered in corruption.

In this sense the word *rimma* occurs frequently in Job; it occurs also in Exod. xvi. 24; in Hosea xiv. 11.

The word *tholaat* is also used in Job xxiii. 6; in Exod. xvi. 20; in the passage in Deuteronomy we have quoted; in Psalm xxii. 17; and in the book of Jonah, iv. 7.

But it will be necessary for our purpose to quote the whole of this passage, and to demonstrate the correctness of the translation we shall ourselves make of it, which differs from that of the Geneva professors, and also from Sacy's version from the Vulgate. It is said that the prophet, having gone out of the city, stopped on the eastern side of it, and built himself a booth.

"Then," says the prophet, "God created a plant (*kikajon*), which grew higher than Jonah, and formed a shade over his head, and this caused Jonah exceedingly to rejoice; but the next day, very early in the morning, God brought a worm (*tholaat*), which injured the plant (*kikajon*), and made it wither."

It will be easy for me to show that I have good reasons for thus translating the passage, and rejecting the three versions before me.

^e Bible d'Arias Montanus.

The Hebrew word which I have rendered by plant is *kikajon*, and the sense of the phrase shews that it must have been a plant large enough to have foliage affording shade. But what was this plant? No one knows. The Septuagint make it a gourd; St. Jerome translates the word ivy; but St. Augustine, in a letter to that father, informs us this change had offended some of the African brethren, who had compelled their bishop to withdraw the word from the translation of St. Jerome; Sacy, though he retains the ivy of St. Jerome's version because it is in the Vulgate, is disposed to think it was a vine or fig-tree. The pastors of Geneva and M. Gesenius^f make *kikajon* a *palma Christi*, and Bochart^g appears to agree with them in this view of the matter, though he does not, so it seems to us, succeed in showing its soundness, for the texts he adduces in its support are precisely those which furnish the best reasons for adopting a contrary opinion.

But if we determine beforehand the plant mentioned in this passage of Jonah, we decide also what kind of insect would be likely to destroy it, and we are in danger of giving to the word *tholaat* a different meaning to what it really has. The chances of error are still greater if we translate with Sacy, "it pierced the ivy by the root;" a fact of which no mention is made, either in the Hebrew text, or in that of the Vulgate. If we adopt this version we are in danger of drawing conclusions from false premises, which will be so much the more erroneous in proportion as they shall have been regularly and critically deduced. I am, therefore, justified in altering the translation of the passage so as not to leave any word in it which does not occur in the original.

From all that has been said, it results that the words *rimma* and *thola*, or *tholaath*, have been often used in the Bible indifferently, one for the other, in the sense of worm, or grub, an animal produced in corruption, vile and contemptible, but with this difference, that twice the word *thola*, or *tholaat*, is employed to designate a worm that eats a plant. In the first of these passages the plant is the vine, in the second the kind of plant is not known; but, however, we are sure it is a plant; and we know that such an animal as there alluded to, though it may have the form of a worm, cannot be

^f Gesenius, *Handbuch*, &c., 1828, in 8vo. p. 883.

^g Bocharti, *Hieroicoicon*, tom. ii. p. 623.

a worm properly so called; we are certain it must be a grub, or a small insect, or the larva of an insect undergoing a metamorphosis. The word *rimma* is never employed in this latter sense, at least in the Bible. It would seem, therefore, that in this respect the Hebrew language is richer than our own, since, in common parlance, we have only one word to designate the worm of the nut, of the pear, of the apple, and of all other fruit, and the earth-worm, though these animals are not only not of the same genus, but belong to very different orders.^h

5. *Gaza*.

Gaza is also a Hebrew word: it is used in the Bible in one place to designate an insect injurious to the vine in particular, but afterwards for an insect destructive to all kinds of plants, in connexion with many other insects, the names of which have occasioned a vast number of dissertations, some of which would fill volumes. We too have examined the modern names which might correspond with the ancient names of insects mentioned with the word *gaza* in the Bible, and shall, perhaps, treat of them in another paper. Here we must confine ourselves to that which concerns the word *gaza*, because it is the only one of these names which is employed for an insect particularly injurious to the vine, and we shall only occupy ourselves with the other names of insects which are mentioned in connexion with the word *gaza*, as far as they may assist us in interpreting it correctly. But the diversities of opinion among translators has been so great, that it will be needful, in order to obtain clear ideas on the subject, to give the passages as we have translated them, without altering the Hebrew names.

We find the following passage, in which *gaza* is used for the name of an insect destructive of the vine, in Amos iv. 9:—
“ I have smitten you with the searching wind and mildew. *Gaza* has devastated your gardens, and all your vines and your fig and olive trees, and you have not returned to me, saith the Lord.”

^h *Vid.* Cuv. *Règne Animal*, tom. iii. p. 180, sur la troisième grand division des animaux articulés où ce naturaliste établit que les vers, autrement dit Annélides, doivent marcher en tête de cette division et avant les Crustacées, les Arachnides et les Insectes.

The word *gaza* occurs in Joel ii. 25:—" I will restore to you the fruits of the year, and all that *arbeh*, *jelek*, *chazil*, and *gaza*, that devouring multitude which I sent against you, have destroyed."

But the passage in Joel in which *gaza* occurs, that is most important to the interpretation of the word, is in chap. i. ver. 4:—" What *gaza* leaves *arbeh* eats; that which *arbeh* leaves *jelek* eats; and what *jelek* leaves *chazil* eats."

In these different passages, the Septuagint translates *gaza* by *kampè*, and the Vulgate by *eruca*, *i. e.* a caterpillar. The pastors of Geneva, and Sacy, have adopted this latter translation. Bochart and Michaelis agree with them in opinion.¹ But the Chaldean version employs the word *gaza* to designate a kind of wingless locust; and in the book of the Prophets alone, the Talmud enumerates ten species of locusts, among which *gaza* is included.

The three other insects mentioned in Joel in the same verse with *gaza*, *i. e.* *arbeh*, *jelek*, and *chazil*, are also included among the ten species enumerated by the Hebrew doctors in the Talmud. The interpreters of the Bible differ as to the signification of the words *jelek* and *chazil*, but they all agree on the meaning of the word *gaza*. There is no doubt that it was intended for a locust. The Chaldean version agrees with the Septuagint and Vulgate in all the passages where the word is found in the Bible. *Arbeh* is the first of four kinds of insects, or crawling creatures, pointed out by Moses as fit for food; and Forskael tells us that the Arabs still give the name of *arbeh* to a kind of locust they eat in their country. Now we learn from Joel, that what *gaza* leaves the *arbeh* eats, and we may safely conclude that *gaza* was the name of an insect eminently destructive, not only to the vine, but to all kinds of plants; and that to its ravages succeeded the attacks of many kinds of locusts, who finished the work of destruction, and completely consumed every thing this formidable insect had not devoured. Some learned interpreters have considered this insect to be a caterpillar; others, of equal authority, have concluded that it was a kind of wingless locust. We will endeavour to ascertain the true meaning hereafter, but at present, adhering to our proposed plan, as we have now examined all that the Hebrews have handed down to us respecting the insects

¹ Bochart, *Hieroicoicon*, part ii. p. 483.

injurious to the vine, we will turn to what the Greeks have said on the subject.

6. *Ips*.—*Iks*.

I have placed these two words together, because, as we shall see, they cannot be separated in this discussion.

The word *ips* occurs in ancient authors as the name of an insect injurious to the vine in particular; but it is also employed by Homer, St. Chrysostom, and the lexicographers and grammarians of the middle ages, to designate an insect which eats horn; and in neither of these acceptations can it be a worm, properly so called, which is named otherwise in Greek.

We will first consider the *ips* mentioned in Homer; it is in the *Odyssey*, b. xxi. v. 295. They have given Ulysses, while as yet he is unknown to his friends, his formidable bow. The poet says:—"The hero took the bow, examined it attentively, and bent it in every direction, fearful lest the horn should have been eaten by the *ips* in the absence of the master."

If we wish to know what kind of horn Homer's *ips* attacked, we have only to find out the animal whose horns were used in the time of Homer to make bows of the best description, such as would be suitable for the use of a king like Ulysses. On this point Homer himself gives us information. In the *Iliad*, b. iv. v. 105, *et seq.* we are told that the bow of the divine Pindar was made of the horns of the *aigos*, or *ægagre*, or wild goat; that these horns were sixteen hands in length; and that a skilful workman, after having polished and joined them carefully, had gilded their extremities.

The horns of the *ægagre* are frequently three feet and a half long; they bend naturally, and if united as Homer mentions, would form a bow of the size alluded to.

The *ægagre*, or wild goat, is found, though very rarely, in the mountains of western Europe: one was killed during my stay among the Pyrennees, and I saw horns of this animal which measured two feet and a half: it is, however, very common in the East. In Persia it is called *paseng*. Burckhardt tells us that the Arabs of Syria give it the name of *bidin* (*beden*): that traveller also informs us they have been seen in troops of forty or fifty in that country. Their flesh is in high esteem, and they are also sought for their horns,

which are taken to Jerusalem, where they are used for making knife and poniard handles. Burckhardt^k saw a pair three feet and a half in length. Thus the *ips* of Homer may be known and dreaded by the warriors of that country.

But this meaning of the word *ips* disappears, or is at least somewhat altered, in the Greek authors after Homer, whose works have come down to us; and in Strabo, Theophrastus, and the writings of learned agriculturists, passages from which we shall give presently, the word *ips* is always used for an insect or a worm injurious to the vine, and consequently for a larva, the food of which is plants, and not horn.

However, we again find the word with the Homeric signification in a remarkable passage of St. Chrysostom, which I shall translate:—"The injurious effects produced by copper on the body, by rust on iron, by the moth on wool, and by the *ipes* on horn, vice produces on the soul."^l

However, I maintain that the *ipes* mentioned in the best Greek authors, *i. e.* by those whose writings are of the highest authority, is an insect which eats the vine.

Strabo says:^m—"The Erythreans gave Hercules the name Ipoctone, *i. e.* the destroyer of the *ipes*, as those insects are called that injure the vine."

Theophrastus,ⁿ after having told us how the worms come in wheat, adds, that the *ipes* are produced by a south wind, and farther on he says, "There are, however, some places where the vine is not infested by them; [such as open, exposed, and dry situations."

We read in the Geoponicks:^o "To prevent the little worms

^k Burckhardt, *Travels in Syria and the Holy Land*, 1822, p. 405; Fisch., *Synopsis Animal*, p. 483; Cuvier, *Règne Animal*, 2d edit., tom i. p. 275.

^l Sanct. J. Chrysost. ap. tom. iv, p. 669, E. St. Chrysostom uses the word *scolex* for the worm which eats wood. In the grammarians of the lower ages, *scolex* is used for the earth-worm (which is the worm properly so called); *scolex* signifies also, according to the same grammarians, the worm that infests the ox, which is quite another animal, either an intestinal worm, or the larva of an insect. St. Chrysostom's *scolex*, or wood-eating worm, must be the larva of an insect, and Aristotle employs the word in this sense, since he says, every insect comes from a *scolex*.

^m Strab. edit. *Atmenoven*, in folio, liv. xiii. p. 613 au 912, de la traduction Franc. tom. iv. p. 213.

ⁿ Theoph. *de Caus. Plant.* liv. iii. c. 22, (ou 23 de l'ed. de Schneider, tom. ii. p. 299). Scaliger translates *ips* by *convolvulus*; why he does so we shall see hereafter.

^o *Geoponicas*, edit. Niklas, c. 53, v. 423.

called *ipas* attacking the vine, it is necessary to smoke the reeds that are used for props, because by decaying in the ground these produce little worms which crawl up the vine."

Galien, cited by Aldrovandus, informs us that black mould destroys the *ipes*.

In the Dictionary of Suidas^p we find the word *ipi* defined by worm, with the addition that it would be better to say *ips*. This work gives the same meaning for that word.

But the name *ips*, with a little alteration in the form of the word, or another insect with a slightly different name, is mentioned by various authors as being very injurious to the vine.

In a fragment of Alcman, quoted by Bochart,^q it is said, "the speckled *ika* is the pest of the shoots of the vine."

The grammarian Ammonius also, in his treatise on Synonyms,^r says, "The *ikes* are animalcules which eat the shoots of the vine."

Bochart thinks *ips* and *iks* the same words in different dialects.

Valckenaer, in his Notes on Ammonius, is of the same opinion. "*Ego verisimilam censeo* (says this clever critic) *Sam. Bocharti sententiam qui ab Alcman ika, ex dialecto pro ipa positum sagaciter animadvertit et ex idoneis auctoribus loca produxis in quibus, qui in vitibus nascuntur vermiculi ipes dicuntur.*" Valckenaer concludes with Bochart that *ips* is the most ancient form of the word.

However, in Hesychius, and an anonymous grammarian cited by M. Boissonade, the two words are distinct, and are used for different insects.

The Dictionary of Hesychius gives the word *iks* as the name of an animalcule (*theridion*) injurious to the vine; and in the same work the word *ips* occurs again with this explanation, that it is employed by grammarians to designate an insect which eats horn.

According to the anonymous grammarian quoted by M. Boissonade in the Notes to his *editio princeps* of Herodian,^s

^p *Suid. Lex.*, éd. de Kust. 1705, in folio, tom. ii. p. 141.

^q *Boch. Hironicon*, tom. ii. p. 213.

^r *Am. tit. ii. c. 5*, de differentia adfinium vocabulorum, nunc primum edit. opœ MSS. Primæ edit. Aldinæ. Vulgavit Valck. pp. 73, 74.

^s *Herod. Partit.* Lond. 1819, in 8vo. p. 58.

who gives the names applied to various insects from the substances they inhabit, or are destructive to, *iks* is the worm of the vine, and *ips* the worm feeding on flesh and horn.

Are we now in possession of sufficient information to enable us to distinguish these two species of insects, and shall we call them by different names? Or is the distinction alluded to one falsely established by grammarians and lexicographers, who out of one word, with some slight alteration, have uselessly made two different words? We have, however, nothing to do with these inquiries at present, we must here confine ourselves to collecting those facts which a critical examination of the passages may afford us, without any anticipatory view of the conclusions we may have to deduce therefrom: these will come afterwards. We may now conclude from all that has been said:—

First, That by the most learned ancient authors who have treated *ex professo* of agriculture, natural history, and geography, the word *ips* is only used for the larva of an insect injurious to the vine:

Secondly, That in Homer, St. Chrysostom, and the lexicographers and grammarians, who lived during the decline, the word *ips* is exclusively employed to designate the larva of an insect which eats horn:

Thirdly, That the word *iks*, whether different from *ips*, or the same word in another dialect, was applied by Alcman, and the lexicographers and grammarians of the lower ages, exclusively to an insect injurious to the vine, the shoots of which it eats.

7. *Spondylus*, or *Sphondylus*.

Aristotle, in his Natural History of Animals,[†] after having described the way in which flies and beetles copulate, adds, the *spondylus* (or *sphondylus*) the *phalangia*, and other insects, copulate in the same manner.

I have said *spondylus* or *sphondylus*, because the editors and translators of Aristotle's work are divided on the word. M. Schneider has written in the Greek text *spondylaï*, and M. Camus *sphondylaï*: both make it an insect, because here

[†] Arist. *Hist. An.* lib. v. c. 7, éd. Schneider, tom. ii. p. 181 de la traduction, et tom. i. p. 190, du grec, et liv. v. c. 8, tom. i. p. 219, de la traduction de Le Camus.

the meaning of the word is very evident: but in another passage of the same work,^u Aristotle, speaking of the diseases of the horse, mentions a case in which that animal drags his leg, and says, "he is affected in the same way if he eats the *staphylinus*." The *staphylinus* is like, and as large as, the *sphondylus*.

M. Camus, in his translation, still writes *sphondylus*, and so does Hesychius, who considers the *staphylinus*, and consequently the *spondylus*, to be an animal. M. Schneider, on the contrary, who this time also writes *sphondylus*, thinks that the word is entirely different from *spondylus*, the name of an animal in the first passage I have quoted. M. Schneider, adopting Scaliger's opinion, makes the *staphylinus* a plant (the parsnip), and consequently considers that the *spondylus* mentioned in the latter passage was also a plant.^x

M. Schneider, in his note, does not attempt to show the correctness of his translation, but is satisfied with citing Scaliger's opinion in its support. I must confess I here incline to agree in opinion with Le Camus. But what advantage are we to expect to gain by the discussion? What matter is it whether the name of the insect thus twice mentioned by Aristotle is *spondylus* or *sphondylus*, since he does not in either passage give us any information about it? In the second it is true he compares it to the *staphylinus*, but we know as little of the *staphylinus* as we do of the *spondylus*; and in neither passage is there any mention made of the vine. We should have had no occasion to allude to the *spondylus* if the word had only occurred in Aristotle; but Pliny,^y speaking of the *birthwort* and the wild vine (*vitis sylvestris*), which lives for a year in shady places, makes the remark, that no animal touches the roots of these plants, or of any other plant he has mentioned, except the *spondylus*, a kind of serpent, which attacks all. "*Et Aristolochia ac vitis sylvestris anno in umbra servantur: et animalium quidem exterorum nullum aliud radices a nobis dictas attingit excepta spondyle quæ omnes persequitur. Genus id serpentis est.*"

Schneider, after quoting this passage, adds, *Ineptè ut solet*.

^u Arist. lib. viii. c. 24; Schn. tom. iii. p. 276.

^x Sch. *Arist. des Anim. Hist.* tom. iv. p. 665.

^y Plin. *Hist. Nat.* lib. xxvii. sec. 118, c. 13; tom. viii. p. 106, de l'édit. de Franz.

Pliny had the genius to conceive, and the talent to execute, an abridged encyclopedia of human knowledge: we may, perhaps, even say that he has produced the most learned book that was ever written; and it is perfectly unallowable to speak of a writer of such merit with the rudeness and contempt which the learned German has shown on the present occasion. Pliny, however, is not altogether undeserving of censure; he has borrowed largely from Aristotle's Natural History of Animals, and in so doing he is not content merely to translate, but often perplexes, by useless or pompously obscure phrases, subjects which Aristotle has explained with precision and clearness, and mixes up with his (Aristotle's) matter, vulgar and silly stories, or vague and erroneous notions.

However, it would certainly have been better if Mr. Schneider, who unites the knowledge of a naturalist with the learning of the philosopher, instead of allowing himself to give vent to such a sally on the subject of the passage in Pliny we have quoted, had endeavoured to obtain what information he could therefrom, as he would have seen that this very passage (of which he speaks so disrespectfully,) enables us to ascertain the species of insect named *spondylus* in the first passage of Aristotle, and perhaps also of that named in the second. In fine, as we are very certain that no serpent, at least in Europe, is injurious to the roots of plants, we infer from comparing the two passages (of Pliny and Aristotle):—

First, That the larva of an insect named *spondylus* by the Greeks, was known to the Romans, and that it ate the roots of all kinds of plants;

Secondly, That this larva was very large, since it is compared to a little serpent;

We shall presently see the conclusions we shall obtain from these results.

We shall, perhaps, be told that we might have spared ourselves this long discussion on the word *spondylus*, since Pliny has only spoken of it in connexion with the wild vine, *vitis silvestris*, which is not a vine, and has nothing to do with the plant that bears grapes; but it is, as Pliny himself tells us, an annual, like *birthwort*. I reply, that the vine is included amongst the plants Pliny has spoken of, and which, he says,

are all obnoxious to the attacks of the *spondylus*; and that what concerns this insect is directly connected with our subject.

8. *Cantharis*.

In the Geoponicks, c. 49, a receipt is given to prevent the injuries of the *cantharides*: it is to macerate these insects in oil, and to rub the vine with the decoction.

Palladius also has a receipt to be used against the insects that infest the vine; he directs the *cantharides* which are found on the rose to be macerated in oil till it acquires an unctuous consistence, and the vines they intended to be pruned, to be rubbed with this liniment.^z

The name *cantharis* frequently occurs in many Greek and Latin authors; but without any mention of the vine being made at the same time. In Pliny we read, however,^a “*Verucas cantharides cum uva taminia intritæ exedunt:*” “*Cantharides*, pounded and mixed with the *uva taminia*, destroy warts.”

What *uva taminia* was is not now known; it has been translated wild grapes, but it certainly was not the fruit of the vine.

It would be superfluous to adduce here the numerous passages in the works of ancient authors, in which the word *kantharis* occurs, because the signification of this word is well known. It is evident, from all these passages, that they intended the perfect insects, and not their larvæ, by this word; that they belonged to the order *Coleoptera*, or beetles; that *cantharis* was a general term for different species of beetles, though not for all kinds indifferently. The ancients always used this word to designate certain species of *Coleoptera*, or beetles with brilliant colours, which were remarkable for their blistering or poisonous properties, differing considerably, however, as to the particular species intended.

Thus the *cantharis* of Aristotle appears to be the same species as that mentioned by Aristophanes;^b but it is a very different insect to the one with black and yellow bands, which Dioscorides has described so well that it is impossible for natu-

^z Palladius, lib. i. c. 35; tom. i. p. 43, ed. Biponti. ^a Plin. lib. xxx. c. 9.

^b Aristophane cité dans Aldrovandes, *de Insect*, c. 3, tom. i. p. 180.

ralists to mistake it; it is to this latter insect we must refer the winged *cantharide*, of a pale red colour, to which, on account of its virulent and deadly poison, Epiphanius likens heresy.^c The *cantharide* of Origen,^d which is produced from a larva subsisting on the flesh of the ass, is still different from those of St. Epiphany, Dioscorides, Aristotle, and Aristophanes; though probably most nearly allied to the last mentioned.

Pliny mentions various kinds of *cantharis*,^e but it is not easy, for want of a proper description, to make them out; when, however, he says (lib. xviii. chap. 44)—“Est et *cantharis* dictus scarabæus parvus frumenta erodens,”^f we immediately recognise the little formidable beetle to which, in this place, he gives the name *cantharis*. Theophrastus, who has also spoken of this little insect, which breeds in wheat, gives it the same name.

From all that has been just said, it results, that in order to find the insect to which the name *cantharis* was applied, considered by the ancients as injurious to the vine, we must look among perfect insects in the class *Coleoptera*; amongst such as have brilliant colours, or are known for their venomous or vesicatory properties; but which are as likely to be of large as small size.

9. *Kampus* and *Phteirus*.

I here bring these words together, though they have very different meanings, because they occur together in a passage of the *Geoponicks*,^g the only one in which the first is mentioned in connexion with the vine. The author gives a receipt in use in Africa for protecting the vine from the *phteirus* and *kampus* which breed on it. Ctesias also mentions the *phteiri* as being destructive to the vine in Greece.^h

^c S. Epiph. *Pan. rom.* p. 1067, ed. Petaz.

^d Orig. *Cont. Cels.* lib. iv. c. 57, p. 549, et ed. Delarue.

^e Plin. *Nat. Hist.* liv. xxix. c. 30; tom. iii. p. 107, de l'édit. de Miller.

^f Plin. *Hist. Nat.* c. 44, ou 17; tom. vi. p. 138, de l'édit. Franzius.

^g *Geoponic.* edit. Niklas, cap. 30; tom. iii. p. 485.

^h Ctesias *Indicor.* cap. 21, p. 253, edit. Bæhr. Francof. 1824, in Svo.

10. *Kampe*.

Aristotleⁱ was well acquainted with the metamorphosis of the butterfly, the larva of which he calls *kampe*, and he makes particular mention of the caterpillar of the cabbage.

Theophrastus,^k in his History of Plants, uses the word *kampe* for an animal which eats the leaves and flowers of all kinds of trees.

Pliny,^l abridging this passage of Theophrastus, translates *kampe* by *eruca*, the caterpillar.

We have already seen that the word *kampe* occurs three times in the Septuagint (Greek) version of the Bible; twice in Joel, and once in Amos;^m and in the Latin translation of the same passages in the Vulgate, the word *eruca* always corresponds with *kampe*, although it is by no means certain, as we have already remarked, that these are considered synonymous with the Hebrew word *gaza*, of which they are the interpretation.

St. Chrysostom, in a remarkable passage, speaks of the *kampas* as having been an object of religious worship in pagan times,ⁿ and the word is correctly rendered by *erucas*, caterpillars, in the Latin translation. In the Dialogues of Pope Gregory the Great,^o mention is made of one Boniface, Bishop of Ferentum, who went into a garden filled with caterpillars:—"Ingressus portum, magnâ hunc *erucarum* multitudine invenit esse coopertum."

Pope Zachary, in translating these Dialogues into Greek, renders *erucas* by *kampes*.

But the following passage of Columella sets the matter completely at rest:^p—"Animalia quæ a nobis appellantur *erucæ* Græcè autem *KAMPAI* nominantur:" "The animals that we (the Romans) name *erucæ* are called in Greek *kampai*."

Palladius and Columella, though writing in Latin, have

ⁱ Aris. *de Anim.* liv. v. c. 19.

^k Theophrastes, liv. iv. c. 16.

^l Pline, liv. xii. c. 24.

^m Joel i. 4; *Ibid.* ii. 25; Amos iv. 29.

ⁿ S. Joannes Chrysostom, *Homel.* 2, in *Acta Apostol.*; tom. iv. p. 621, liv. xiv. edit. Eton, 1612, in fol.

^o S. Gregor. *Dialogorum libri*, 4, lib. i. cap. 9; tom. ii. p. 396, edit. de Paris, 1675, in folio.

^p Columella, lib. xi. cap. 3.

often used the Greek word in preference, when they have had occasion to speak of the caterpillar.

Palladius, speaking of a method of destroying the insects that infest the vine and pot-herbs, for which purpose he recommends that the stalks of garlic should be burnt in the gardens, and that the knives used in pruning the vine should be rubbed with garlic, says:—"Campas fertur evincere qui fusticulos allii sine capitibus per horti omne spatium comburens, nidorum locis pluribus excitavit. Si contra easdem vitibus voluerimus consulere. Allio trito falces putatoriae feruntur unguendæ."^q

Columella, having occasion to speak of the devastations committed by the caterpillar, twice makes use of the word *campe*:—

"Nec solum teneras audent erodere frondes
Implicitus conchæ limax, hirsutaque *campe*."^r

And afterwards—

"Non alitur quam decussa pluit arbora nimbus
Vel teretes mali, vel tectæ cortice glandis,
Volvitur ad terram distorto corpore *campe*."

It is, therefore, clearly shown, that it is among caterpillars, or the larvæ of *Lepidoptera*, or butterflies, that we must look for the *kampes* which, according to the Geoponicks, breed in and are injurious to the vine.

11. *Phteire*.

We know that this Greek word was applied to an insect parasitical on man—the louse; but it is questionable whether Ctesias,^t and the author of the Geoponicks, intended to indicate by this word all kinds of vermin injurious to the vine, including the *kampes*, or caterpillars, or one insect in particular, which was very small, and was, by reason of its diminutive size, considered by husbandmen as the louse of the vine. This we shall have to examine.

^q Palladius, dans les *Scriptores de Re Rustica*, edit. Biponti, tom. i. p. 43.

^r Columell. *de Cultu Hort.* vers. 324, tom. i. p. 410, edit. Biponti, 1787, in 8vo.

^s Columell. *de Cultu Hort.* liv. x. vers. 366. Gesner dans son Dictionnaire, cite aussi Sextus Empiricus, tom. xiv. au sujet du mot *Campe*.

^t Ctesias *Indicorum*, cap. 21, p. 253, ed. Boëhr. Francof. 1824, in 8vo.

12. *Julos*, or *Julus*.

Suidas, an author of the ninth or tenth century, says in his Dictionary,^u that *julos* is the worm of the vine; that it has many feet; and is also called multipede, and that it rolls up and breeds in moist earth.

On this sole authority, the most learned lexicographers have not hesitated to make *julos* synonymous with *ips*, *iki*, and *convolvulus*, and every other insect mentioned in ancient writers as injurious to the vine. We shall soon have an opportunity of seeing what a number of errors this arrangement has caused, for which no authority can be found in any ancient manuscript. No ancient author has made mention of *julos* in connexion with the vine, or as injurious to it. The Romans employed the word *julus*, or *julius*, in many instances, with the same meanings as the Greeks; but never, as far as I know, applied the name to a worm, or an insect, or, indeed, to any animal.

Aristotle, in his History of Animals,^x mentions the *julios*; but all that he says about it is, that it is an insect without wings, like the scolopendra. In speaking of animals in general, Aristotle distinguishes those with four legs from those that have a greater number;^y and he includes the scolopendra and the bee in the latter division. It is easy to see that Aristotle intended by these two examples to give the two extremes; one, an animal with six legs, two more than quadrupeds possess, the other, an animal with a much greater number. However, a scholiast on Aristotle, forming, like the dictionary-makers, his opinion from the connexion, makes a wasp of this scolopendra—(an insect without wings a wasp!) Aristotle makes mention of the marine scolopendra,^z an animal differing from the one above alluded to, which lives in the sea. He gives a description of it, and tells us it is like the land scolopendra, but redder; that its legs are slenderer and more

^u Suidas, *Lexicon*, tom. ii. p. 126, edit. Francof.

^x Arist. *Hist. Anim.* lib. iv. c. 1; tom. i. p. 129, du texte grecque; et tom. ii. p. 126, de la traduction latine dans l'éd. de Schneider; tom. i. p. 171, de la traduction de Le Camus.

^y Arist. liv. i. c. 5; tom. ii. p. 16, de la traduction de Lecamus.

^z Arist. liv. ii. c. 4.

numerous. Concerning the land species,^a he remarks that, if cut into many pieces, each has a forward motion.

Pliny,^b translating this passage of Aristotle on the marine scolopendra, says that it resembles the centipede; and in another part of his work^c he thus defines the centipede:—"The millipede, which is called also centipede, or multipede, is a kind of earth-worm, which uses all its feet, and describes the arc of a circle in walking, and which rolls itself up at the least touch. The Greeks name it *oniskon*, and sometimes *tylon*." Farther on, he says, that kind of centipede, which some Greek writers give the name *seps*, and others *scolopendra*, is very poisonous:—"Millipeda, ab aliis centipeda aut multipeda dicta, animal e vermibus terræ pilosum, multis pedibus arcuatim repens, tactuque contrahens: se *oniskon* Græci vocant, alii *tylon*. . . . Illam (centipedem) autem quæ non arcuatur *sepa* Græci vocant, alii scolopendrem minorem perniciosumque." I may remark here, that Pliny, in this place, confounds the *julios* with another species of millipede, which Aristotle^d has mentioned by the name of the polypede of the ass, *onos a polupos*. Pliny appears afterwards to give the name of *seps* and *scolopendra* to the *onisci*, and says they are smaller than the centipede, and that they do not describe curves in walking. But errors of this kind are common in this author.

Numenius, quoted by Atheneus, calls the *julios* the entrails of the earth.

Eustathius, in commenting on this passage, and Théon, a very old author, give different reasons for the expression.

Hesychius says, the *joulos* is like the polypede; that it inhabits moist earth, and differs from the *onus*, or *asellus*.

Lycophron applies the epithet *juliopezos* to a many-oared ship.

From all these passages, we may infer, that the *julos*, or *julus*, was an apterous or wingless insect, with a great number of legs, which rolled up at the touch; which described curves or sinuosities in walking; concealed itself in the ground; is

^a Arist. *Hist. Anim.* liv. iv. c. 7.

^b Plin. *Hist. Nat.* liv. ix. c. 43.

^c Plin. *Hist. Nat.* liv. xxix. c. 6; tom. x. p. 128.

^d Plin. *Hist. Nat.* liv. xxix. c. 39; tom. viii. p. 273; Arist. *Hist. Anim.* tom. v. c. 25 (vulgo 31); Scaliger, 126, tom. ii. p. 224, edit. Schneider.

found in damp situations; and finally, that Suidas alone has said that this insect is injurious to the vine.

13. *Biurus*.

We now come to the names of insects injurious to the vine in use among the Romans, and the first is a word that, by its etymology, would appear to be derived from the Greek.

The name *biurus*, used by Cicero for an insect injurious to the vine, is only known to us by a passage of the naturalist Pliny. That ancient writer, speaking of divers medical prescriptions, and some singularities relating to the natural history of animals, ends a chapter with these words:—“ Marcus Cicero says, there are insects called *biuri*, which eat the vines in Campania:” “ M. Cicero tradit animalia *biuros* vocari qui vites in Campania erodant.”

It has been well remarked, that this word is derived from the Greek *oura*, and appears to be synonymous with *bicaudes*, an insect with two tails.

It is necessary to pay attention to this etymology, which furnishes us with the only particular which can enable us to recognise this insect. The most ancient manuscripts read *biuros*, and we must therefore reject the reading, *bytuos*, which certain of Pliny's editors have adopted, whilst they have neglected the true reading. Modern naturalists have applied the word *bytuos* to a genus of Dermestidæ.

14. *Involvolus*, *Involvulus*, or *Involvus*

The words we have now to examine are purely Latin; they have, indeed, if I may be allowed the expression, a family likeness, and appear to be derived from each other.

We will begin with the word used by the oldest author, the same which occasioned these Researches.

Involvulus, or *involvulus*, occurs in Plautus. In the *Cistilire*, Act I. Scene ii. ver. 455—458, a slave, *Lampadisca*, addressing her mistress, says of another slave, who is also one of the *dramatis personæ*, that she is like a dangerous animal:—

“ Imitatur, nequam bestiam, et damnificam.”

“Which, I pray you?” asks the mistress.

“Quamnam, amabo?”

The slave replies:—“The *involutus*; for, as that creature rolls and wraps itself up in the leaf of the vine, so she is ambiguous in her conversation.”^e

“*Involvorum*, que in pampini folio intorta implicat se
Itidem hæc exorditur sibi intortam orationem.”

I find, in the Dictionary of Pomponius Festus,^f this definition of the word *involutus*:—“Vermiculi genus qui involvit pampino.”

Every one will recognise the *involutus* of Plautus in the *involutus* of Festus. It is the same word, with a very slight alteration. The singular economy of this insect is confirmed by the testimony of two authors; and we learn from Festus, that the *bestiola* of Plautus was the larva of an insect, and not a perfect insect.

15. *Convolvulus*.

Marcus Portius Cato, in his treatise *De Re Rustica*, gives a recipe against an insect named *convolvulus*, which breeds on the vine. This recipe consists in boiling the dregs of oil till they acquire the consistence of honey, and rubbing the top and joints of each plant therewith:^g—“*Convolvulus* in vinea ne siet, amurcam condito,” &c.—and, in conclusion—“Hoc vitem circum caput, et sub brachia unguito, *convolvulus* non nascitur.”

Pliny, quoting Cato, copies this recipe:^h—“Ne *convolvulus* fiat in vinea, amurcæ congios duos decoqui in crassitudinem mellis,” &c. &c.; and afterwards says—“Hoc vites circa capita ac sub brachiis ungi, ita non fore *convolvulum*.”

^e I have translated this passage literally, because my purpose is best answered by so doing: to see how it has been translated by others, Limiers may be consulted, *Œuvres de Plaute*, in 12mo. tom. iii. p. 293; Levée, *Théâtre des Latins*, in 8vo. tom. iii. p. 416; *Théâtre de Plaute*, in 8vo. tom. iii. p. 187.

^f Pomponius Festus, liv. ix. p. 193, édit. de Dair.

^g M. P. Cato, *de Re Rustica*, c. 95; tom. i. p. 52, édit. des Deux Ponts; tom. i. p. 84, des *Scriptores Rei Agrariæ*, 2d edit. de Gesner.

^h Plin. liv. xvii. c. 28, 47; tom. ii. p. 91, de l'édit. d'Hardouin, in folio; tom. v. p. 741, de l'édit. de Franzius.

These passages, which are the only ones where the name *convolvulus* occurs, do not give us any information respecting the insect it was applied to, except that it was very injurious to the vine. We shall have to examine whether this insect is the same as the *involutus* of Plautus, or whether the two words were employed to designate two different insects.

16. *Volvox*.

We shall have no occasion to inquire if the insect called *volvox* by Pliny is the same as that to which he gives the name of *convolvulus*, for he distinguishes them himself.

This writer, after having pointed out a remedy against the *convolvulus*, informs us that the *volvox*, which eats the young grapes, is a different insect, and recommends, in order to prevent its attacks, that care should be taken to wipe the pruning-knife with the skin of a beaver, and to rub the vines in those places where they have been cut with bear's blood: "Alii *volvozem* appellant animal prærodens pubescentes uvas: quod ne accidat, falces, cum sint exacutæ fibrina pelle detergent, atque ita putant sanguine ursino liniri volunt post putationem eadem."

17. *Volucra*.—*Eruca*.

We cannot separate these two words in this discussion, because they are mentioned together in the same passage of Columella, and perhaps *volvox* ought not to have been separately considered, for I should not conceal the circumstance, that many editors read *volucra* instead of *volvozem*, in the passage of Pliny I have just quoted; but *volvozem* is the reading of all the ancient manuscripts, and *volucra* has only been introduced into his text because they have found a passage in Columella which, although somewhat different, seems to be derived from the same source; and as in Columella it is not possible to substitute the word *volvox* for *volucra*, because that word is a second time employed in the plural, in a verse which cannot be altered without injuring the metre, these editors of Pliny have determined to transfer into his text the reading of Columella. Gesner, the commentator on Columella, reasonably finds fault with them for making this change, and recommends that the readings

of the manuscripts should be retained in both authors, and the word *volvozem*, consequently, restored to the passage in Pliny.

Columella, in his Treatise on Trees,ⁱ after speaking of the mice and rats that infest the vine, says:—"Genus est animalis, *volucra* appellatur, id fere prærodet teneras adhuc pampinos et uvas: quod ne fiat, falces quibus vineam putaveris, peracta putatione sanguine ursino linito . . . vel si pellem fibri habueris, in ipsa putatione quoties falcem acueris, ea pelle aciem detergito atque ita putare incipito:" "There is a kind of animal called *volucra*, which eats the young shoots of the vine almost entirely, and consumes the grapes. To prevent its attacks, when the vine is cut, it should be frequently rubbed with bear's blood, and whilst pruning the knife must be rubbed with the skin of a beaver every time it is sharpened."

In his poem on horticulture, Columella, after having spoken of culinary plants, recapitulates the disasters that deceive the hopes of the agriculturist, *i. e.* tempests, rain, hail, floods, and what is still more to be dreaded than these, the *volucras* and the caterpillars, enemies of Bacchus and the green willows, which poison the seeds, devour the leaves, and leave nothing besides a naked trunk, withered and useless:—

"Brassica, cumque tument pallentia robora betæ,
 Mercibus atque olitor gaudet securus adultis,
 Et jam maturis quærit supponere falcem
 Sæpe ferus duros jaculatus Jupiter imbres,
 Grandine dilapidans hominumque boumque labores:
 Sæpe etiam gravidis irrorat pestifer undis
 Ex quibus infestæ Baccho, glaucisque salictis
 Nascuntur *volucres*, serpit *eruca* per hortos
 Quos super ingrediens exurit semina morsu
 Quæ capitis viduata coma, spoliataque nudo
 Vertice, trunca jacent tristi conjuncta veneno."^k

Thus the *volucra* and the *eruca* are here mentioned as different insects by Columella; the first are said to be particularly injurious to the vine, the second in osier grounds:—"Et quibus infestæ Baccho nascuntur *volucres*, glaucisque salictis (infesta) serpit *eruca* per hortos."

ⁱ Colum. *des Arbor.* c. 15; tom. i. p. 55.

^k Columella, liv. x. *de Cultu Hortorum*, ver. 3, 26, 336.

This interpretation, which we think is the correct one, will occasion us to remark the singular fact, that, with the exception of the Vulgate translation of the Bible, and that of St. Jerome in Latin, where the word *gaza* is erroneously rendered *eruca*, the word *eruca* has never been used by the Romans, in a Latin form, for an animal particularly injurious to the vine. Pliny and Columella make frequent mention of the *eruca*, as being destructive to trees and plants in general, without excepting the vine, but they do not speak of it as injurious to the vine in particular; and when Palladius, in the passage we have quoted, gives a specific against the caterpillars that injure the vine, we see he employs the word *campæ*, and not *erucæ*.

This would incline us to conclude that, amongst the number of names used by the Romans for insects injurious to the vine, there do not occur any which were applied to caterpillars, or the larvæ of Lepidoptera; and we may presume that the insects which destroyed the vine, mentioned by the names *involutus*, *convolutus*, *volvax*, *volucra*, were considered by them as particular kinds of worms, or insects, and not as the larvæ of Lepidoptera, or caterpillars, or creatures of the same kind as the *campæ* and *erucæ*, and consequently that the Romans were not acquainted with the metamorphoses of these insects.

In this critical examination, I have been careful to omit no words made use of to designate insects injurious to the vine in those Hebrew, Greek, and Roman writings, which remain to us. We now come to the second part of this discourse, in which modern science will enable us to illustrate passages of ancient authors, and where we shall also give some practical instructions on the subject likely to be useful to the agriculturist.

(To be continued.)

ART. XV.—*Additional Notes on the Order Thysanoptera.*

By A. H. HALIDAY, M. A.

(See Vol. III. page 439.)

THE insects of this order are sometimes infested by Ocyptete; and *Thr. cerealium* is often covered with the small white mites that are found in damp hay.

GENUS I.—PHLEOTHRIPS.

In the pupa the antennæ are applied to the sides of the head, forming a regular margin. The close resemblance of *Phl. ulmi* to another very common species, makes a fuller description of each necessary.

Sp. 3. *Phl. ulmi. Piceo-nigra antennarum articulo 3^{to}. toto sequentibus basi flavo-pallidis; tibiis basi apiceque anticis totis tarsisque ferrugineis; femoribus anticis incrassatis; pollice distincto. Mas, subaptera: fem. subaptera, vel alata elytris subflavescentibus.*

Larva much depressed, white; the head, a bilobed spot on the prothorax, the last two segments of the abdomen and a lateral spot on the preceding one, black. A few black dots on the thorax. Antennæ black, with the base pale. Pupa white, with a few red dots on the thorax, and in the place of the simple eyes. Sometimes a faint reddish tinge in parts of the abdomen. The pterothecæ extend to the middle of the abdomen. The insects disclosed from these pupæ had perfect wings, but the subapterous individuals are more numerous.

Inhabits under the bark of dead trees, elm, ash, &c.

Sp. 3^a. *Phl. pini. Præcedenti simillima, sed magis elongata. Mas, subaptera: fem. subaptera, vel alata elytris extrorsum infumatis.*

The eggs are milky, or bluish white, about $\frac{1}{50}$ of an inch in length, by $\frac{3}{400}$ diameter. They are cylindric, with each end equally rounded, thus differing from those of *Phl. statices*. They are attached in loose clusters to the bark, and hardened by a gummy wash, soluble in water, by the application of which they are detached, and become flaccid. The larva is longer and less depressed than that of *Phl. ulmi*: of a red flesh colour, with the head and feet paler; the body is thickly freckled with bright red on a paler ground, which produces the general tint. The last two segments of the abdomen are black; also the antennæ, which have the base pale. Very young larvæ are of a dirty watery tint, with the antennæ and tail black. The antennæ are then proportionally larger; the abdomen small and attenuate, the hairs of the body very long and conspicuous. The pupa is very pale flesh colour, the red dots being fewer: the head whitish, with a reddish patch in the middle: the legs and last two segments of the abdomen white: the fore-thighs very little thickened. The pterothecæ were very small in those

examined, which would probably have produced subapterous individuals, these being the most numerous. The perfect insect exceedingly resembles the last species, but is longer, a female of *Phl. ulmi* measuring $\frac{11}{100}$ of an inch in length, by $\frac{2}{100}$ in breadth; while one of *Phl. pini*, scarcely so broad, was $\frac{14}{100}$ in length. The fore-thighs, besides, are less thickened, which difference is particularly observable in comparing the males. The winged females evidently differ by the darker colour of their wings, the upper pair being brown in the outer half, with the hind margin paler, and the lower having that margin alone brown.

Inhabits under the bark of old pine stumps in profusion.

GEN. IV.—THRIPS.

Sp. 2. *Thr. L. cerealium*.

The larva is deep yellow, with the greater part of the head, and two spots on the prothorax, dusky. The antennæ and legs have alternate rings of pale and dusky. The pupa paler yellow, with the antennæ, legs, and wing-cases, whitish, the latter reaching to the middle of the abdomen. The eyes are dusky red, and the simple eyes sometimes indicated by red dots.

Sp. 5. *Thr. A. nitidula*.

Shorter than *Thr. rufa*, dusky chestnut, with the eyes and incisures of the abdomen darker; the antennæ (except the sixth joint) with the shanks and feet, paler.

Sp. 7. *Thr. phalerata*.

The larva is entirely reddish orange.

Is common on the flowers of *Vicia sativa*.

Sp. 10. *Thr. atrata*.

Abounds most of all upon *Spergula nodosa*.

Sp. 15^a. *Thr. Persicæ*.

The larva is entirely light yellow, not unlike that of *Thr. ulmi-foliorum*, but without the small spines at the tail.

A small species, found on the diseased leaves of peach-trees.

GEN. V.—MELANTHRIPS.

Sp. 1. *M. obesa*.

Is common in the flowers of *Sinapis nigra*.

ART. XVI. — *Notes, &c. upon Diptera.* By A. H.
HALIDAY, M.A.

1. *Notes upon Diptera.*

THE leaves of the holly often abound with the larvæ of *Phytomyza obscurella* (Fallen, *Phytom.* 4, No. 8), which mine below the cuticle, producing patches like blisters. The puparium is much flattened, of eleven segments, and light chestnut in colour. When the fly is ready to come forth, its parts may be distinctly seen through the case, the eyes and wings being dark, the rest pale; only the hairs of the thorax have their full blackness, and are laid flat on the back. The eyes of the fly lie at the fourth segment of the puparium, the first three being occupied by the frontal vesicle. When the fly is about to emerge, these segments split down each side from the double point (*i. e.* the anterior spiracles) to the eyes, and the vesicle is protruded and inflated, assuming various forms, and being at intervals contracted and wrinkled. When at its full extent it is almost as large as the thorax. It is entirely composed of a soft skin, minutely punctured, without hairs or inequalities. When the fly has nearly got free, the vesicle is contracted about the middle, so as to show the true form of the head; and its exterior pouch is soon introverted and withdrawn into the head, the two transverse lines, or wrinkles, at which it was strangled, being applied to each other, and forming the suture which separates the front from the face. When the fly is emerging, the halteres are inflated, and the antennæ reclined, with the arista pointed under the eye. The hind-legs are used to wipe and develop the wings.

Phytomyza flaviceps (Macquart, *S. a B.* II. p. 616, No. 3), was bred from subcutaneous larvæ in the leaves of woodbine, by Mr. G. C. Hyndman, from whom I received specimens of the fly.

For some seasons past, Mr. Hyndman has found plants of *Veronica chamedrys*, with the opposite leaves connected all round by their edges, forming an oval case, containing the larva of a *Cecidomyia*. The fly has the two posterior nervures of the wing connected near the middle, and in other respects seems identical with *C. bicolor*.

A capsule very similar is constructed of the leaves of *Hypericum perforatum* and *H. humifusum*, by another *Cecidomyia*, described by Mr. G. Gene, and figured in the Memoirs of the Academy of Turin, Vol. XXXVI. page 287.

Psila bicolor, which occurred abundantly in the beginning of August, at Moundstone Bay, in Connanara, appeared to be exclusively attached to *Tanacetum vulgare*.

Leucopis obscura (Ent. Mag. Vol. I. page 173) is found on larch and fir-trees, at Holywood, in the month of August.

Opomyza maculata (Macquart, S. a B. II. p. 558, No. 15), which, as well as *Geomyza marginella* (Fallen, Geom. 3, No. 5), belongs to the genus *Helomyza*, is not uncommon among *Elymus arenarius*, on the sandy coasts of the county Dublin.

Anthomyza grisea (Fall. Agrom. 7, No. 2) is found in the same situations, but very rarely.

Chyliza annulipes (Macq. S. a B. II. p. 380, No. 2) was taken in July at Blarney, near Cork.

Toxoneura fasciata (Macq. S. a B. II. p. 404, No. 1) has occurred at Holywood, and was the cause of my erroneously inserting *Otites pulchella* in a former list. This species should therefore be erased from the Irish Fauna. *Toxoneura* presents a very trifling modification of the characters of *Palloptera*. The latter genus has been rightly circumscribed by Fallen, but confounded by R. Desvoidy, with several species of *Helomyza*, in his genus *Suillia*, and by Macquart mixed with some *Lyciæ*. The larvæ of the latter are saprophagous, while the *Palloptera* breed in flowers, like *Trypetæ*. The generic name *Sapromyza*, interpreted by etymology, would probably be applicable only to the genera *Lycia* and *Scyphella*,^a as I have reason to think that the remaining groups, viz. *Sylvia*, *Minettia*, and *Peplomyza*,^b are thalerophagous, as well as their near affinities, the *Lauvania*. *Estelia*, (Rob. D.) is synonymous with *Ochthiphila*, Fallen, and should, perhaps, constitute a separate tribe.

Teichomyza fusca (Macq. S. a B. II. p. 535, No. 1) is found on the damp walls of old buildings, and Macquart states

^a With which the *Lisellæ* are not only generically, but, in one case, specifically identical.

^b Characterised in Vol. I. of this Magazine under the generic name *Phyllomyza*, previously employed by Fallen for another group.

that the larvæ feed among the decayed mortar. I have found it in Dublin, but always in winter, and have received English specimens from my friends, Mr. Curtis and Mr. F. Walker. *Teichomyza* can only be considered as a section of the genus *Ephydra*, Fallen.

Herbina suillioidea (Rob. D. p. 698, No. I.) is the insect which I referred to in Vol. I. of this Magazine, as perhaps a variety of *Helomyza ustulata*, from which I believe it is quite distinct. It occurs, but rarely, in Ireland and the Western Isles, in the same situations with *Helomyza tigrina*,^c from which, at first sight, it differs only by the more hoary tinge and generally inferior size. When examined with a lens, the pubescent arista at once discriminates the species.

2. *Characters of some undescribed Species of the Family Muscidæ.*

I. CALYPTERATI, R. D.

TRIB.—MUSCIDÆ, R. D.

GEN.—MUSCA, Meig.

Subgen.—MORELLIA, R. D.

Sp. 1. M. M. hortorum. *Calyptris infumatis*.

Musca hortorum, Fall. *Musc.* 52, No. 33.

In the male, the fore and middle shanks are nearly naked: the fore-thighs ciliate beneath: the hind-shanks scarcely curved, having a few long hairs on the inside, below the middle.

Sp. 2. M. M. importuna. *Calyptris albis*.

Morellia agilis, Rob. D. 405, No. I. ?

In the male, the fore-thighs are thickly bearded below: the fore-shanks clothed with short thick hair on the inside, and tufted with long hairs behind, from the middle downwards. The middle-thighs have a larger tuft at the tip, and the shanks are thicker, with the down on the outside standing up. The hind-shanks

^c *Suillia communis* of Rob. Desvoidy, but not *Musca suilla*, F., which seems rather to be identical with *Helomyza nemorum*.

are longer and curved, nearly naked inside, but with a few long hairs scattered on the outside.

This species is much more common than *M. hortorum*, about Holywood.

TRIB.—ANTHOMYZIDÆ, *Latr.*

GEN.—ANTHOMYIA, *Meig.*

Subgen.—FANNIA, *Rob. D.*

Sp. A. *F. aprica*. *Cinerea pedibus posterioribus testaceis.*

Except in colour, agrees with *A. F. rufipes*^d (Fall. Musc. p. 84, No. 3.) The thorax and abdomen are cinereous; the impressions of the latter in the male produce, in some lights, a band of triangular dark spots. The face and orbits are silvery in the male, duller white in the female; the frontals, antennæ, and palpi, black. The wings obscure, their base, with the calyptra and poisers, yellow. The fore-legs almost black in the male; in the female the thighs are testaceous at the base and tip. The thighs and shanks of the other legs are testaceous; the structure of the middle pair exactly as in *A. F. rufipes*.

At Holywood; in sunny places; not common.

Note.—The subgenus *Fannia* may be distributed in the following sections.

A. Legs rufous.—*A. ornata, rufipes, aprica.*

AA. Legs black.

B. Thorax streaked.—*A. scalaris, lepida.*

BB. Thorax black.—*A. manicata, armata, &c.*

I can see no sufficient cause for regarding the subgenus *Philinta* (Rob. D.) as distinct from *Fannia*.

II. ACALYPTERATI.

TRIB.—SCATOMYZIDÆ, *Fallen.*

GEN.—CORDYLURA, *Fallen.*

Subgen.—DELINA, *Rob. D.*

Sp. C. *D. flava*. *Flava alis hyalinis.*

Yellow, with hyaline wings: a dot on the vertex and the occiput

^d Described by Macquart (S. a B. II. 312, No. 10) under the name of *Limnophora hamata*. I have received it from F. Walker, Esq.

somewhat dusky: orbits and face whitish: arista black, very slender: palpi not dilated. (Length, above 2 lines; wings, $4\frac{1}{2}$.)

In moist places, Holywood; in the month of June; rare.

TRIB.—GEOMYZIDÆ, *Fallen.*

GEN.—OPOMYZA, *Meig.*

Subgen.—GEOMYZA, *Fallen.*

Sp. O. G. *sabulosa. Ferruginea puncto verticis thoraceque fuscis, abdomine nigro, alis abbreviatis.*

Head, antennæ, and legs, pale ferruginous; a spot on the vertex, and two larger patches on the occiput, brown. Thorax dusky. Abdomen glossy black. Poisers pale. Wings imperfect, scarcely longer than the thorax, and very narrow. The hairs of the arista are much shorter than in *O. G. combinata*, &c. (Length, $\frac{3}{4}$ line.)

Occurs but rarely, at the foot of the sand-cliffs which skirt the Bay of Killiney, and on the sands of Port Marnock. It leaps with great vigour, but cannot fly.

Subgen.—LEPTOMYZA, *Macq.*

Sp. O. L. *cinerella. Cinerea, fronte antice et antennis subtus ferrugineis, facie palpisque albidis.*

Ash-colour, the head and thorax, above, of a rusty tinge. The margin of the front, and the third joint of the antennæ, beneath, rusty-red. The face and palpi yellowish-white. The extremity of the abdomen, in the female, attenuate, inflected, and terminated by two styles. Halteres yellowish-white. Wings brownish; the second transverse nerve distant by twice its own length from the margin, the interval of the transverse nerves scarcely greater. The legs long and slender, black, the base of the shanks and feet sometimes brownish. (Length, 1 line; wings, 2, or less.)

On the muddy sea-shore at Holywood; in August.

GEN.—DIASTATA.

Sp. D. *fulvifrons. Thorace cinereo, abdomine nigro, fronte pedibusque ferrugineis, alarum basi fusco-maculata.*

Allied to *D. obscurella*, the antennæ similar, but the hairs of the arista shorter. Front and antennæ ferruginous, face whitish.

Occiput and thorax cinereous. Abdomen black, greyish towards the base. Poisers whitish. Wings obscure, with a dusky costal spot at the base. (Length, $1\frac{1}{2}$ line; wings, $2\frac{3}{4}$.)

Has occurred but twice at Hollywood.

A. H. H.

ART. XVII.—*Verses on Spring.* By H. S. B.

————— Medio de fonte leporum
[Surgit amari aliquid quod in ipsis floribus angat.

I.

IN rainbow garb of smile and shower
Sweet Spring returns,—desired Spring :
Caressingly o'er brake and bower
Waves the soft West his airy wing.
In higher arch Day's orient car
Refulgent climbs the southern height ;
And later gleams the Evening star,
Paled in a flood of pearly light.

II.

Wreath after wreath—how radiant Dawn
The curling mists with glory fringes !
And slanting onwards, wood and lawn
In hues almost celestial tinges.
See, springing from the spangled clod,
The early lark mount skyward, till
She, pouring all her soul abroad,
Is heard aloft,—invisible.

III.

With frequent splash and gurgle soft,
All voice and sparkle, hurries by
The elfin-rill, yet lingers oft
Where pools in browner shadow lie,
And lurking dim, the speckled trout
Insidious marks with upward gaze
The glancing swarms, that all about
Rise and revolve in lucid maze.

IV.

Now o'er the path a sultry hum
 Is floating on the breathless air ;
 And leafy groves again become
 A covert from the noon-day glare :
 There, as th' entangled sunbeams flow
 In sparkling rout athwart the glade,
 The quivering foliage plays, below
 Repeated in the chequered shade.

V.

As twilight falls, the nightingale
 And thrush in mellow concert vie,
 Filling the windings of the vale
 With long-drawn fits of melody.
 And while to Night some dewy-damp
 Pale flowers their love are whispering,
 The glow-worm hangs her tiny lamp
 By fringed copse or faery ring.

VI.

Enchanted hours of love and song !
 Spring-time of life !—why were ye ever
 Fleeting as bubbles swept along
 By hoarse Avoca's dusky river :
 Image of Time ! thy dark waves bear
 Upon the surface straws and foam,
 Flung on the bank and lost in air
 Ere thou have reached thy ocean-home.

VII.

So—fled our Spring—we learn to know
 Its joys the root of future pain,
 Our cherished fame an empty show,
 Our time mispent, our science vain :
 Happy—if warned in time, before
 We find our home the heaped sod,
 Faith and repentance may restore
 The changed spirit back to God.

H. S. B.

ART. XVIII.—*Thoughts on the Study of Entomology.*

SIR,—I do not know if the following thoughts are suited to your Magazine, but if you think that they will do any good, they are at your service.

I was very much pleased by reading, in your last Number, the Rules of the Entomological Club, and I sincerely wish that such societies were more general. It is not now very often necessary to offer any defence of entomology; yet most persons are very ignorant of the nature and habits of insects. People go through the world with their eyes shut, and complaining of having nothing to do, though surrounded by the most interesting objects. The book of Nature is open on all sides, and on every leaf is something to engage our attention; and of all the branches of natural history, I believe none is so engaging as entomology, and certainly none is easier of pursuit.

Who does not remember some happy time in his childhood, when on a bright and sunny day he ran after the butterflies in the fields, and, attracted by their beauty, and too happy to care, was heedless of flowers he trampled under foot? Who, thinking of that time, does not wish he could recall those joys and be a child again; and does not regret that his entomology ended there?

It is in vain that we complain of the vicious and immoral pursuits of men, if we do not at the same time give them some better object to engage their intellectual powers. The evil is, that their attention has too often been directed to morality and science in dry and abstract forms, and they have turned away in disgust. If our young men, instead of idling their time in the streets or in frivolous amusements, were to walk into the fields, looking for plants and insects, they would have a far higher gratification than they can at present possibly possess. But they do not these things, because they are ignorant of them, or have no taste for them; and therefore every lover of nature and mankind must be anxious to see natural history take a prominent place in our systems of education. If, for instance, boys, instead of being taught to look upon insects with disgust, were led to view them as highly beautiful instances of the skill and contrivance of the Creator, they would

soon acquire a love of the science, and would eventually become wiser and happier men than they would otherwise have been.

I hope we shall soon begin to see our way to such a desirable state of things; and wishing that the Entomological Club, and your Magazine, may continue to prosper,

I am, Sir, your obedient servant,

AMICUS.

CITY, Aug. 30, 1836.

ART. XIX.—*List of Rare Insects, taken at Darenth Wood, by Members of the Society of Practical Entomologists, from June 20 to July 11, 1836.*

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—Observing that the pages of the Entomological Magazine are open to receive all communications respecting the captures and locality of rare insects, we hand you the accompanying List of Captures, made by members of the Society of Practical Entomologists, in Darenth Wood, between the 20th of June and the 11th of July, in the present year.

Believing this List (should you think it worthy of insertion in your valuable Journal) may be interesting to collectors, particularly those residing near the metropolis,

I am, your obedient servant,

J. T. NORMAN, *Sec.*

COLEOPTERA.

Agrilus biguttatus.
Elater præustus.
Molorchus umbellatarum.
Leptura sexguttata.
Eryx nigra.

LEPIDOPTERA.

Sesia fuciformis.
bombiliformis.
Ægeria apiformis
bembeciformis.
vespiformis.
cæstriformis.

Ægeria myopæformis.
formiciformis.
Triphœna fimbria.
Acronycta ligustri.
Polypogon derivialis.
Hipparchus papilionarius.
Lozotania cinerana.
Grotiana.
Pseudotomia Jacquiniæ.
Semasia Splenditana.
Paramesia cerusana.
Macrochila marginella.
Adela Sulzella.
Frishella.
Crambus pinitellus.

Observations on the above.

Agrilus biguttatus was taken in the hollow to the left of the main path through the wood.

Elater præustus, on the western edge of the wood.

Molorchus umbellatarum was in the greatest profusion.

Ægeria apiformis, *bembeciformis*, *cynipiformis*, *myopæformis*, *formiciformis*, and *respiformis*, *Sesia fuciformis* and *bombylifomis*, and *Polypogon derivalis*, were taken in the hollow.

Acronycta ligustri, on the trunks of oaks.

Several of the larvæ of each of the following insects were found full-fed on the 11th of July:—*Notodonta perfusca*, *Chaonia roboris*, and *Biston prodromarius*.

ART. XX.—*Description of the Genera and Species of the British Chrysididæ.* By W. E. SHUCKARD, M. E. S.

IT is not from having made any notable discoveries, or additions to the already recorded indigenous species of these exceedingly pretty insects, that I am prompted to bring together the dispersed notices of them, but from a desire that season after season shall not pass away without making them more accessible to cabinets in general, by placing in the hands of the remote collector the ready means to determine his captures, and thereby stimulate him to further exertion.

Latreille, in the second edition of the *Règne Animal*, makes them the sixth tribe of the second family, viz. of the *Hymenoptera pupivora*; he had previously placed them preceding the *Oxyurites*, in his *Familles Naturelles*, but he here alters their situation. I have not leisure at the present moment to discuss the question, for this paper will be solely technical, and I therefore leave them where he places them; but they form a very natural group, the essential character of which is, an articulated ovipositor, each articulation of which is retractile within the other, like the tubes of a telescope. Latreille says they have a sting at the end of it. I know, from experience, that it will frequently puncture and produce momentary pain,

which I consider as solely mechanical, for it has no true *aculeus*, a necessary condition of which is, that it should likewise instil a poison; but no poison-secreting organs have yet been detected in them, nor have I ever understood that the puncture has produced inflammation. They are supposed to be parasites—many, to all appearance, upon species of the genus *Odynerus*, and some upon *Osmia bicornis*, *Halicti*, and *Andrenæ*. But little is known of their history. Dahlbom says, their larvæ are apods, and subvermiform. In hot, sunny, sandy places, they are to be observed running and flying with agility, and in constant motion, investigating every aperture or crevice they meet with. They are also found in numbers upon palings, posts, the trunks of trees, and the leaves of plants, but less frequently in the latter situation, and never but in the sunshine. But their habits vary as much as their habit, and did we know their history thoroughly we should, I dare say, find that they differ as much throughout their developments as when arrived at their perfect state, which will necessarily be adapted to their respective functions. But, not to weary the reader with hypotheses, I will give a short synopsis of the external characters which separate them into their several genera. But I must premise that they are, in the majority of species, of a tolerable size; and I have never observed, even amongst their minims, one less than a line in length, nor quite so small; and their colours are more or less metallic, in which copper, gold, steel, and brass, vie with each other in refulgency; but *retournons à nos moutons*.

- | | |
|---|----------------|
| A. Thorax narrowed in front: abdomen lanceolate, not convolvent | I. CLEPTES. |
| B. Thorax not narrowed in front, and truncated at both extremities: abdomen concavo-convex, convolvent. | |
| 1. Scutellum not produced. | |
| a. Abdomen semi-cylindrical | II. CHRYSIS. |
| b. Abdomen subquadrate | III. EUCHRÆUS. |
| c. Abdomen semi-circular | IV. HEDYCHRUM. |
| 2. Scutellum produced at its apex into a flat mucro | V. ELAMPUS. |

Short generic descriptions will suffice for the ostensible object of this paper, which is merely to facilitate the recognition of species, and especially as brief external generic characters will sufficiently mark the discrepancies of the British

genera, which do not interlink so closely as to require a detailed examination of the oral organs. The British entomologist may, therefore, take for granted, that sufficient differences exist, besides those given, to warrant retaining the genera already established.

GENUS I.—CLEPTES, *Latr.*

Head transverse, as wide as the mesothorax: antennæ with thirteen joints in both sexes: prothorax subquadrate, somewhat narrowed in front: metathorax truncated, and produced on each side into an acute spine: legs moderate: superior wings with a closed marginal cell, the radial^a nervure being rounded; the cubital nervure is obsolete just beyond the first recurrent, but the space it leaves for the submarginal cells is unusually wide; the first and second discoidal cells complete, small, the latter oblong-quadrate; the first apical cell almost complete, but the subdiscoidal nervure does not quite extend to the apex of the wing: abdomen ovato-conical, with five segments in the male, and in the female four, with a protruded ovipositor.

In general habit, the insects of this genus approach closely to the aculeate genera *Meria*, *Plesia*, and *Tiphia*, but their retractile ovipositor, parasitic habits, and metallic colours, necessarily bring them into the present family. They cannot, from the structure of the abdomen, roll themselves up, like the other species of the family, upon the approach of danger.

Sp. 1. *Cl. semiaurata*.

Latr. Hist. Nat. T. XIII. 236. 1. Nouv. Dict. VII. 190. Fab. Piez. 154. 1. Le Pelet. Ann. du Mus. T. VII. 119. 1.

Sphex semiaurata . . *Lin. Fn. Succ. 1661. Systema, Ed. 12. 946. 35.*

Chrysis semiaurata . . *Fab. S. E. 357. 14. Sp. 457. 17. Oliv. Ency. Méth. Ins. II. 676. 21.*

^a For an explanation of the terms I use in the description of the nervures of the superior wings, I must refer to my Essay on the Indigenous Fossorial Hymenoptera, p. 17, and the illustrative plate; and also to a Paper on the Neuration of the Superior Wings of the Hymenoptera in general, where they are treated in greater detail, which will appear in Part III. of the Transactions of the Entomological Society.

- Ichneumon semiauratus, *Fab. Mant.* 269. 127. *Ent. System.*
II. 184. 210.
Id. splendens . *Fab. Ent. Syst. Sup.* 229. 211. ♂
Cleptes splendens . . *Fab. Piez.* 155. 3.
Ichneumon auratus . . *Panz. F. G.* 52. 1. ♀ Cleptes.
Panz. Krit. Rev. II. 95.
Id. semiauratus, *Panz. F. G.* 51. 2. ♂ Cleptes.
Panz. Krit. Rev. II. 95.
Id. id. *Rossi.* II. 8vo. 78. 790.

In the *male*. Head, first joint of the antennæ, and thorax, of a brilliant metallic green or blue, and very much punctured, especially the vertex and the prothorax; the metathorax rugose: the wings slightly fuscous, with an iridescent reflection; the nervures piceous: the legs testaceous, excepting the femora, which are all of the same colour as the thorax; but the posterior ones are above testaceous, which becomes fuscous towards the apex: the extreme tip of the coxæ, the four posterior trochanters, and the extreme base of the femoræ, are red: the tarsi dusky: the abdomen shining testaceous, with the marginal half of the third segment black, and the fourth and fifth of a steely-blue.

In the *female*, the head and thorax are of a rich coppery-red, or gold-colour, less deeply punctured than in the male: the antennæ testaceous; the eight apical joints fuscous: the wings with a clouded fascia passing over the base of the space apportioned to the submarginal cells and the discoidal cells, and another dark cloud towards the apex: the legs entirely testaceous: the abdomen the same, except the black margin of the third segment, as in the male, and the fourth of a metallic blue or green: ovipositor exerted. (Length, 3—3½ lines; expansion of the wing, 5 lines.)

This species has been found all round the metropolis. Mr. Westwood once took it in numbers at Chelsea; it has occurred near Southgate, captured by Mr. Walker; and it has been taken in the Regent's Park. I have taken males this year at Old Brompton. St. Fargeau considers that it is parasitic on a *Tenthredo*.

Sp. 2. *Cl. nitidula.* *Rossi.*

Latr. Hist. Nat. T. XIII. 236. 2. *Le Pelet. An. du Mus.* VII. 119. 2. *Fab. Piez.* 154. 2.

Ichneumon nitidulus. *Rossi,* II. *Fab. Ent. System.* 184. 211. *Coquebert,* 19. Pl. 4. Fig. 5.

The *male*. I can detect no difference between the insect I possess, as the male of this species, and the male of the preceding, with the exception of the slighter exertion of the fifth abdominal segment, and the colour of the head and thorax being more blue. The *female* has the head bronzy, inclining to coppery; the scape of the antennæ bronzy above, red beneath; and the two first joints of the flagellum also red, the rest black; vertex and face with scattered deep punctures: prothorax testaceous; mesothorax bronzy black, both slightly punctured; metathorax blue and rugose; legs testaceous: the intermediate and posterior coxæ, trochanters, and femoræ, of a bronzy black: abdomen shining testaceous, with the posterior half of the third segment black, and the fourth steely-blue: ovipositor exerted.

I believe this species has not occurred near London; it has been found in Suffolk, by Mr. Rudd, and it has also occurred in the New Forest, Hants. The male is not yet fully or well determined; the differences between the one I have received as such from my friend, the Rev. G. T. Rudd, and the preceding species, are too slight to admit of my considering it determinate, for I have carefully examined it under a lens of high power.

GENUS II.—CHRYISIS, *Linn.*

Head transverse, as wide as the thorax, which is truncated anteriorly and posteriorly, and the metathorax has a minute tooth on each side: abdomen consisting of three segments, the third being sulcated towards its extremity, and along the margin of this sulcation it has a row of minute fossulets: the apex frequently dentate, but the teeth, in some species, obsolete, or entirely deficient: the superior wings with a marginal^b and first and second discoidal cells complete, and a first apical cell nearly complete: the radial nervure forms an angle (except in *Chr. cyanea*, where it is rounded,) and the second discoidal is quadrangular (except in *Chr. neglecta*, where it is triangular): legs moderate.

The insects of this genus possess the power of rolling themselves up into a ball upon the approach of danger. They are supposed to be parasitic, but their history is not known, as their earlier stages have not been ascertained. They are to be

^b This cell is open in *Chrysis neglecta*.

found almost every where in the height of summer in sunny situations; they are extremely active.

Sect. I. *Abdomen more or less dentate at the apex.*

Sp. 1. Chr. ignita.

Linn. F. S. 1665. *S. N.* 947. 1.

Fab. S. E. 358. 6. *Sp. I.* 455. 8. *Mant.* 283. 9.

Ent. Syst. II. 241. 10. *Piez.* 173. 14.

Olivier, Ency. Mét. Ins. II. 673. 11.

Latr. Hist. XIII. 238. 4. *Nouv. Dict.* VII. 71.

Le Pelet. Ann. du Museum, VII. 126. 12.

Cuvier, Tableau Élémentaire, 502. 1.

Panz. F. G. 5. 22.

Spin. I. 64. 6.

Rossi, F. E. II. 119. 842. in 8vo.

Donovan, Brit. Insects, Vol. I. pl. 7.

Schrank, F. B. II. 2. 344. 2195.

Var. 1.—(*Alcione.*) Head, thorax, and legs, (except the tarsi, which are black,) of a beautiful metallic blue or green, occasionally and variously splashed with a golden refulgence; sometimes dull blue: abdomen of rich refulgent metallic crimson, red, or purple, sometimes obscure, the apex terminated by four teeth; the two central ones distant from each other and nearer the lateral ones, their apices describing a curve: head, thorax, and abdomen, very coarsely and deeply punctured, the margin of the second and entire third segment being less deeply so; an elevated longitudinal smooth line running down the centre of the abdomen, frequently obsolete upon the third segment. (Length, varying from 3—7 lines; expansion of wings, from $5\frac{1}{4}$ — $10\frac{1}{2}$ lines; from the inspection of twenty individuals.)



Var. 2. (*Asterope.*) Colour and sculpture nearly the same as in the former, but the terminal teeth of the abdomen are at equal distances, their apices describing a decided curve. The colour is generally somewhat less vivid, and the apical portion of the second segment, and the entire third, is a little more punctured, but in general habit it much resembles it. (Length from 4— $5\frac{1}{2}$ lines, from the inspection of seventeen individuals.)



Var. 3. (Celeno.) In this variety the abdomen is much more punctured than in the two preceding; it is also more quadrate, being broader in proportion to the general size.

Its colour is more opaque; the terminal

teeth also have the two central ones closer together, and the lateral ones wider from them, the depth of the central curve or emargination being considerably less than that of the lateral ones, and the apices of the teeth nearly equal. (Length from $3\frac{1}{4}$ — $4\frac{1}{2}$ lines; from the inspection of thirty-four individuals.)



Var. 4. (Electra.) In this the puncturing and refulgence of the abdomen resemble *Var. 3*, but the terminal teeth are all at equal distances, the emarginations they form are of equal depth, and their apices are in a straight line.

(Length 3 — $4\frac{1}{2}$ lines; from the inspection of nineteen individuals.)^c



Var. 5. (Maia.) In this the puncturing and refulgence is the same as the *Var. 3* and *4*,

but the terminal teeth are considerably bent round the lateral emarginations, describing two-thirds of a circle, and the lateral teeth advance beyond the central ones.

(Length from $3\frac{1}{2}$ — $5\frac{1}{2}$ lines; from the inspection of two individuals.)



Var. 6. (Taygeta.) In this the sculpture of the abdomen is the same as in the last, but the

apices of the teeth describe a slight curve, and the two central ones are closer together than to the lateral ones.

(Length $3\frac{1}{2}$ — $4\frac{1}{2}$ lines; from the inspection of two individuals.)



I must make a few observations upon the colours of these insects, which have been too often had recourse to for specific subdivision in British entomological cabinets. In every variety above described, the colours vary in intensity from brilliant green and gold to deep blue, and the abdomen from crimson, with a golden refulgence, to purple, and even its darker shades, arising, I conceive, from the quantity of juices within the insect at the time of its death, and also from the mode of killing, or the length of time in dying. As no two specimens agree exactly in colour, I was obliged to resort to what I consider safer characters, but which I think are also doubtful, and characterise nothing more than varieties; still

^c In this wood-cut there should be but four teeth.

it has struck me as remarkable, that *Vars.* 1 (the type) and 2, agree together in general habit and sculpture, as do also *Vars.* 3 and 4. In the former two varieties the effulgence of the abdomen is greatest, having smooth portions, but in the latter two, it is uniformly punctured throughout, which gives them a more opaque appearance; and even those which have a golden glow are less vivid than in the two first varieties. In these, both sexes appear to be mixed, but there are fewer males than females. *Var.* 3 appears to consist entirely of females, and *Var.* 4 of males; these, perhaps, may constitute species, viz. 1 and 2, one, and 3 and 4, another. I have not data sufficient to found any hypothesis upon as to their habits, or thence to separate them, as I have omitted distinguishing those which I have collected upon old road rails, &c., from those that I have taken upon sand; but this description of them may perhaps lead to some satisfactory result in giving a clue for entomologists to thread the maze by. Species in other orders have certainly been established upon much less tangible characters, and therefore, although I have considered them as varieties merely of one insect, I have given them names, which can be rejected or adopted at pleasure. In general habit, *Vars.* 5 and 6 resemble 3 and 4, but too few have occurred to admit of my considering them more than varieties; upon which subject I may observe, that we find, throughout the domains of nature, some genera and species have a constant inclination to vary from their types, whereas, others are constantly true to one peculiar structure. This species, therefore, may possibly admit of being classed amongst the regular irregularities.

Sp. 2. Chr. Ruddii.

Head, first and second joints of the antennæ, and legs, excepting the tarsi, of a rich green or blue, more or less splashed with gold; the collar and scutellum more or less cupreus; the tarsi and flagellum of the antennæ black: the abdomen of a rich carmine pink, opaque, and occasionally with a golden glow, very densely and minutely punctured with a slight longitudinal carina along the centre, becoming obsolete on the third segment: the terminal teeth approximating to *Var.* 2 of *Chry. ignita*. (Length 4—5 lines.)

It will be expected that I should give my reasons for considering this, which has the same distribution of colour as all

the varieties of the *C. ignita*, a distinct species, and why I treat those merely as varieties. I may refer to my observations under that species for some reasons; others are, the minutely punctured abdomen, its invariably carmine pink colour, and the coppery refulgence, always in some degree present, of the prothorax and scutellum. I have much pleasure in dedicating this elegant species to my kind friend the Rev. G. T. Rudd, he having first attracted my attention to it by some splendid specimens from the New Forest. His claims upon entomologists for his discoveries in the obscure families of the *Staphylinidæ* and of the *Ichneumonæ adsciti*, justify also a departure from the rigid rules of scientific nomenclature, which are but too frequently sinned against to record merely a private friendship. This species has occurred near London, and in the New Forest, Hampshire.

Sp. 3. *Chr. fulgida*.

Lim. F. S. 1699. *S. N.* 948. 7.

Fab. Sp. I. 455. 7. *Mant.* 283. 7. *Ent. Sys.* II.
240. 8. *Piez.* 172. 11.

Coquebert, 59. Pl. 14. 6.

Olivier, Ency. Mét. Ins. II. 673. 9.

Latreille, Hist. XIII. 237. 2.

Le Peletier, Ann. du Muséum, VII. 126. 13.

Panz. F. G. 79. 15. *Spinola*, I. 64. 4.

Schrank, F. B. II. 2. 343. 2194.

Head, first joint of antennæ, thorax, and first segment of abdomen, of a metallic green, playing into blue, with occasionally bright golden spottings; all these colours varying in almost every individual; second and third segments of the abdomen of a golden red, sometimes obscured, the terminal teeth the same as in my *Var. 2* of *Chr. ignita*: venter green: wings fuscous, very slightly iridescent; nervures piceous: legs metallic green or blue: tarsi and flagellum of antennæ black: head, thorax, and abdomen, very much and deeply punctured, the latter having a central, longitudinal, smooth, elevated line. (Length, $4\frac{1}{2}$ — $5\frac{1}{2}$ lines; expansion of wings, $6\frac{3}{4}$ — $7\frac{1}{2}$ lines.)

This species has occurred at Combe, Darenth, Birch Wood, and Bexley; Mr. Walker has taken it near Southgate; Mr. Ingall, at Camberwell; and Mr. F. Smith, at Blackwater, Hampshire.

Sp. 4. Chr. Stoudera.

Jurine, Pl. 12. F. 9.*Spinola*, II. 169. 14.

Head, first joint of antennæ, thorax, first segment of abdomen, and a large semicircular spot at the centre of the base of the second segment, of a metallic green or blue, splashed occasionally with gold, the remainder of the abdomen of a golden red: the terminal teeth as in my *Var. 6* of *Chr. ignita*: wings slightly clouded; nervures piceous, legs metallic green or blue: tarsi black or piceous: sculpture as in *Var. 6* of *Chr. ignita*. (Length, $3\frac{3}{4}$ lines; expansion of wings, $6\frac{1}{2}$ lines.)

Mr. Stephens, to whom I am indebted for this insect, tells me, he used to take it formerly at Darenth; I know no other locality where it has occurred.

Sp. 5. Chr. analis.

Spinola, *Ins. Lig.* II. 26. No. 26.

Deeply punctured: the abdomen without the central, smooth, longitudinal, and elevated line: head, thorax, legs (except the tarsi, which are reddish), and third segment of the abdomen, of a metallic blue or green, splashed with gold: the first and second segments of the abdomen of a golden red, the apex of the third with four teeth. (Length, 3 lines.)

“The only British specimen of this beautiful insect I have seen, was certainly taken at Yarm, by me.” (Note of T. Meynell, jun. Esq. to the Rev. G. T. Rudd, to whose kindness I am indebted for a sight of the insect, and for being able to describe it.) It is singular that the name Mr. Rudd proposed for it should agree with that which I subsequently discovered Spinola had applied to it. I have seen a foreign specimen of it in the collection of Mr. Curtis, taken by him at Rouen, in Normandy.

Sp. 6. Chr. bidentata.

Linm. Syst. Nat. 947. 2.*Fab. S. E.* 358. 7. *Sp.* I. 456. 9. *Mant.* 283. 10.*Ent. Syst.* II. 241. 11. *Picz.* 173. 16.*Olivier, Ency. Méth. Ins.* II. 674. 12. *Le Peletier, Ann. du Muséum*, VII. 128. 23.*Panz. F. G.* 77. 15. *Donovan, Brit. Insects*, Vol. I. Pl. 19.

Chr. dimidiata? *Fab. E. S. Sup.* 258. 15. 16. *Picz.* 174. 22. *Coquebert*, 58. Pl. 14. F. 2 and 3. *Latr. Hist.* XIII. 238. 5. *Le Peletier, Ann. du Muséum*, VII. 127. 20. *Spin.* II. 170. 15.

Head, first joint of antennæ, metathorax, excepting post dorsolum, extreme base of the first segment of the abdomen, and its terminal segment, of a rich metallic golden green or blue: pro- and mesothorax, and the post dorsolum, the first segment of the abdomen, excepting as above, and the second segment, of a rich crimson red, sometimes obscured: legs green or blue; tarsi pitchy: wings slightly clouded: entire insect sculptured as in the preceding species: abdomen terminated by two lateral teeth, generally obsolete, and sometimes by four obsolete equidistant teeth.

This species is exceedingly common. I always find it in sand-banks, chiefly abundant where *Epipone spinipes* abounds. I have not the least doubt the above authors have described this species under the above two names, and it stands in the Banksian cabinet, named by Fabricius, as his *Chr. bidentata*.

Sp. 7. Chr. succincta.

Linn. Sys. Nat. 947. 3.

Fab. S. E. 358. 8. *Sp.* I. 456. 10. *Mant.* 283. 12.

Ent. Sys. II. 241. 13. *Picz.* 174. 19.

Oliv. Ency. Méth. Ins. II. 674. 14. *Le Peletier,*

Ann. du Muséum, VII. 128. 24.

Panz. F. G. 77. 16. *Spin.* I. 64. 7. *Rossi*, Vol. II.

Svo. 122. 846.

Of a metallic blue or green, splashed with gold: the dorsolum and abdomen of a rich crimson red, splashed with gold, especially the first segment; the terminal segment having four obtuse teeth; the central ones nearer together than to the lateral ones: tarsi pitchy: head and thorax rather coarsely punctured: the abdomen delicately so, and wanting the central, elevated, smooth line, conspicuous in the majority of the species of this genus: the prothorax has usually a couple of golden red spots in the centre of its anterior margin, above. (Length, 3 lines; expansion of wings, 4½ lines.)

The only localities I know for this very pretty species, is the sandy lane near Brockenhurst, in the New Forest, where

several of my friends have taken it, and Blackwater, on the borders of Berkshire and Hampshire.

Sp. 8. *Chr. cyanea*.

Linn. F. S. 1667. *S. N.* 948. 5.

Fab. S. E. 359. 11. *Sp. I.* 456. 14. *Mant.* 283.

12. *Ent. Sys. II.* 241. 13. *Piez.* 174. 19.

Olivier, Ency. Méth. Ins. II. 675. 19.

Latr. Hist. XIII. 238. 6. *Le Peletier, Ann. du Muséum, VII.* 128. 22.

Cuvier, Tableau Elémentaire, 502. 2.

Panz. F. G. 51. 10. *Schrank, F. B. II.* 2. 345. 2199.

Spinola, 1. 65. 12. *Rossi, Vol. II. Svo.* 122. 845.

Donovan, Brit. Ent. Vol. VII. Pl. 235.

Entirely of a rich metallic blue or green, splashed with gold; occasionally obscure: head and thorax deeply punctured: abdomen delicately so, without the central, elevated, smooth, longitudinal line; the apex of the abdomen distinctly tridentate: the tarsi pitchy, and the flagellum of the antennæ black: the wings nearly hyaline, but very slightly clouded.

This species is common; but I have found it only on palings and worm-eaten trunks of trees.

SECTION II.—*The apex of the abdomen edentate.*

A. *Marginal cell complete.*

Sp. 9. *Chr. cœrulipes*.

Chr. cœrulescens. *Fab. Ent. Syst. Sup.* 357. 9. 10. *Coquebert,* 59. Pl. 14. Fig. 5.

Chr. cœrulipes. *Fab. Sys. Piez.* 173. 13. *Spin.* I. 64. 5.

Chr. Leachii. *Stephens's Catalogue.*

Chr. cuprea. *Rossi, Vol. II. Svo.* 126. 851.

Entirely of a rich crimson, with the exception of the metathorax, legs, and first joint of the antennæ, which are of a metallic blue or green: the flagellum of the antennæ, the tarsi, and nervures of the wings, are black: the wings themselves clouded: head and thorax coarsely punctured, and the abdomen delicately so. (Length, 5 lines.)

The only British specimen of this splendid insect is in the British Museum. I do not know its locality. It is a common species in the South of France and Italy.

Sp. 10. Chr. Leachii.

Face and occiput blue: vertex green: prothorax, mesothorax, and scutellum, of a rich golden red, with their sutures playing into a deep blue-green: metathorax blue: abdomen, with the first segment, of a golden green, playing into blue; the second and third, as far as its transverse ridge, of a rich golden red, with a central, elevated, longitudinal, blue line passing down the second; the apical portion of the third segment blue: the femoræ, tibiæ, and first joint of the antennæ, of a golden green; the flagellum of the latter black: the tarsi piceous: the wings hyaline: the head and thorax are deeply punctured, and the abdomen delicately so. (Length, 2 lines.)

• This very beautiful species stands as *Chrysis nitidula?* in the collection of the British Museum; but Fabricius having described one by that name from America, I have altered it to the name of a gentleman, who deservedly stands high in the estimation of all naturalists, and especially of entomologists.

Sp. 11. Chr. Austriaca.

Fab. Piez. 173. 15. *Le Peletier, Ann. du Mus.* VII. 128. 28.

Chr. refulgens? . *Spinola, Ins. Lig.* I. 8. 4; II. 170. 16.

Very pubescent: head, several of the basal joints of the antennæ, above, thorax, legs, excepting the tarsi, which are black, either blue or green, variously intermingled, and occasionally splashed with gold: the wings subfuscous; the nervures piceous: post-scutellum and metathorax gibbous: abdomen edentate at its extremity, and of a rich golden red, varying in intensity and metallic refulgence; it is coarsely punctured, chiefly on the sides, with a central, smooth, longitudinal carina. (Length, 4—5 lines.)

This is apparently a rare species; in general external habit, it greatly resembles the larger specimens of the 1st and 2d *Vars.* of the *Chr. ignita*, and might therefore be easily mixed with that species unless the apex of the abdomen be examined. It has occurred in the vicinity of London; one of my own specimens was taken at Hampstead, and a second at Bexley, in Kent.

B. *Marginal cell open at its apex.*Sp. 12. *Chr. neglecta.*

Closely punctured: head, thorax, basal joints of the antennæ, and legs, excepting the tarsi, which are black, of a dull blue or green, or variously intermingled, and occasionally splashed with gold: wings subfuscous; nervures piceous: abdomen edentate at its extremity, very minutely punctured, of an opaque carmine colour, with a slight longitudinal elevation in the centre of its second segment. (Length, 3—3½ lines.)

This common and very distinct species appears to be undescribed; it may probably have been intermixed, or mistaken on the continent for the *Chr. Austriaca*, from which it considerably differs, not only in size, (for it is never more than half the size of that species,) but by its open marginal cell, and its very opaque abdomen. In British cabinets and catalogues, it has hitherto stood as the *Chr. rufa* of Panzer, which, however, is the *Hedychrum roseum* of Illiger's Rossi. It frequents sandy situations, and is very abundant, with the *Chr. bidentata*, at Highgate.

GENUS III.—EUCHRÆUS, *Latr.*

Head transverse, as wide as the base of the prothorax: thorax truncated anteriorly and posteriorly, with an acute tooth on each side of the metathorax, placed low: abdomen very convex above, consisting of three segments, the terminal segment having an elevated transverse ridge just before its apex, which is multi-dentate: superior wings with an incomplete marginal and first apical cell, and complete first and second discoidal cells; the radial nervure obtusely angulated, and that, as well as the subdiscoidal nervure, gradually terminating before reaching the extremity of the wing: legs moderate.

Sp. 1. *Euch. quadratus.* *Leach, MSS.*

Euch. sexdentata . *Latr. Nouv. Dict. T. X. 529.* (without his synonymes.)

Chrysis festiva? . *Fab. Piez. 171. 3.*

Entirely of a rich, refulgent, metallic green or blue: the flagellum of the antennæ black: the femoræ and tibiæ of a golden green: the

knees and tarsi piceous: the occiput, the centre of the mesothorax, the base of the second segment, and the entire third segment of the abdomen, of a beautiful blue, the latter serrated at its extremity, having thirteen teeth, the three central ones most distant from each other, the others smaller and closer together: head and thorax deeply punctured, the abdomen less so; the second segment having an elevated, central, longitudinal, smooth line: the wings slightly clouded. (Length, 4 lines.)

I know no locality for this beautiful and apparently very rare insect; the only British specimen I have seen is in the British Museum; it is said to have been captured by Dr. Leach. I have been obliged to reject every synonyme of the *Chr. sexdentata* of Fabricius and Panzer, as all mention six terminal teeth to the abdomen, Latreille only noticing its serration; but, as he calls it by a name evidently belonging to another insect, and not at all appropriate, I cannot do better than retain Leach's MS. name, under which it stands in the collection of the Museum. I quote Fabricius's synonyme with doubt, on account of the locality he gives, and yet I think it deserves retaining, as the species may be widely distributed, for I possess specimens from the Cape of Good Hope which perfectly correspond, differing only a little in size; but, if this doubt can be overruled, Fabricius's name must take the place of Leach's.

GENUS IV.—HEDYCHRUM, *Latr.*

Head transverse: thorax oblong, quadrate, truncated at both extremities, the metathorax having a minute tooth on each side: abdomen consisting of three segments; in the first section, semi-circular, convex above; in the second section, more elongate, gibbous above, and marginate at its extremity: superior wings in the first section with a marginal cell nearly complete, the radial nervure which encloses it gradually terminating upon the superficies, before reaching the extremity; a first recurrent nervure, and incipient cubital, and the discoidal nervures, very slightly traced, but distinctly existing; the commencement of the subdiscoidal more strongly marked, but leaving the first apical cell incomplete; in the second section the radial nervure terminates very abruptly shortly after its commencement, and in some specimens a line of colour merely indicates its course, which also obsoletely

marks the course of the commencement of the cubital, first recurrent, and discoidal nervures, but which do not exist: whereas, by a singular irregularity, the subdiscoidal nervure is present, and tolerably strongly marked, but it does not extend to the apex of the wing: legs moderate.

The same observations apply here as those noticed under the genus *Chrysis*; but for the individual habits of the species, I must refer to the observations under their several descriptions.

SECTION I.—*Abdomen not emarginate.*

Sp. 1. Hed. regium.

Le Peletier, Ann. du Muséum, 7. 122. 4.

Chrysis regia . . *Fab. Ent. Sys. II. 243. 19. Piez. 175. 26.*
Coquebert, 60. Pl. 14. Fig. 8. Panz. F.
G. 51. 9. Spin. 1. 65. 11.

Id. punctatum, Leach. MSS.

The head and thorax very coarsely punctured; the abdomen more delicately so; a minute tooth on each side towards the base of the terminal segment: the head, first joint of the antennæ, thorax and legs, (except the tarsi,) of a deep blue, or green: the tarsi rufescent: the wings very fuscous: the abdomen of a rich carmine. (Length, 3—4 lines; expansion of the wings, 6 lines.)

There are several specimens of this insect distributed in cabinets; but I do not know any locality for it. The above is described from one of the specimens in the collection of the British Museum, in which the series varies from 3—4 lines.

Sp. 2. Hed. lucidulum.

Latr. Hist. XIII. 239. 2. Nouv. Dict. XIV. 255.
Le Pelet. Ann. du M. VII. 122. 9.

Chrysis lucidula . . *Fab. S. E. 358. 9. Sp. I. 456. 11.*
Mant. 283. 13. Ent. Syst. II. 242. 15.
Piez. 174. 21. Coquebert, 58. Pl.
14. Fig. 4. Oliv. Ency. Méth. Ins.
II. 675. 15. Spin. I. 64. 8. Rossi,
Vol. II. 8vo. 123. 847. Schrank, F.
B. II. 2. 344. 2198.

Id. fervida . . *Panz. F. G. 51. 6.*

The head, scape of the antennæ, scutellum, and metathorax, pectus, and legs, (excepting the tarsi, which, as well as the flagellum of the antennæ, are black,) of a rich green or blue : the dorsal portion of the pro- and mesothorax, of a refulgent red : head and thorax deeply and coarsely punctured ; abdomen minutely so, with its apex much rounded. (Length, $2\frac{1}{2}$ —3 lines.)

This conspicuous and rare species is in several cabinets. I believe it has been caught in the vicinity of London.

Sp. 3. Hed. cœrulescens. *St. Farg.*

Le Peletier, Ann. du Muséum, VII. 122. 10.

Violacea? . *Rossi, Vol. II. Svo. 123. 848.*

Entirely of a beautiful blue, (excepting the flagellum of the antennæ and the tarsi, the former black, the latter piceous :) wings clouded : head and thorax coarsely punctured : abdomen delicately so. (Length, 2 lines.)

There are two specimens of this insect in the British Museum. I do not know any locality for them.

Sp. 4. Hed. ardens. *Curtis.*

Hed. nitidum? *Le Peletier, Ann. du Muséum, VII. 123. 12.*

Chrysis ardens? *Latr. in Coquebert, 59. Pl. 14. Fig. 7.*

The vertex of the head, dorsal portion of the pro- and mesothorax, the scutellum, and abdomen, of a vivid coppery red, under certain lights reflecting a greenish refulgence : the scape of the antennæ, face, anterior angles, sides, and pectus of the thorax, as well as the metathorax, and legs, (excepting the tarsi,) of a rich green or blue : tarsi, rufescent : flagellum of the antennæ, black : wings, slightly clouded : venter, black. (Length, 1 — $2\frac{1}{2}$ lines.)

I have occasionally found this species at Hampstead. The Rev. F. W. Hope has taken it in plenty at Southend ; and the Rev. G. T. Rudd, in the New Forest. The specimens from the latter locality are invariably larger than all others that I have seen. I have always captured it settling upon sand.

Sp. 5. Hed. fervidum. *Fab.*

Latr. II. XIII. 240. 3. Le Pelet. Ann. du Muséum,

VII. 122. 7.

Chrysis fervida. *Fab. Sp.* I. 456. 12. *Mant.* 283. 14. *Ent. Sys.* II. 242. 16. *Piez.* 175. 23. *Oliv. Ency. Méth. Ins.* II. 675. 16. *Spin.* I. 64. 9.

The head and thorax very coarsely punctured ; the abdomen more delicately so, but more coarsely than in its congeners ; the abdomen very broad, and much rounded at its extremity ; the last segment having a minute tooth on each side towards the base : the vertex and dorsal portion of the pro- and mesothorax, with the scutellum, of a rich coppery green, intermingled with red : the face, legs, (excepting the tarsi, which are ficeous,) pectus, and metathorax, of an intense blue : wings very fuscous, especially towards their extremity : abdomen of a pinkish red, with a golden refulgence : the venter, black. (Length, 4 lines.)

This splendid species, which has been taken three times at Wandsworth, by my friend, W. W. Sanders, Esq. (to whose liberality I am indebted for my specimen,) is the largest British one I am acquainted with. There is a specimen in the British Museum, but I am unacquainted with the place of its capture.

Sp. 6. *Hed. roseum.*

Chrysis rosæ, *Rossi, Fauna Etrusca,* T. II. ed. 8vo.
Le Peletier, Ann. du Muséum, VII. 123. 13.

Chrysis rufa *Panz. F. G.* 79. 16.

Head and thorax very coarsely punctured ; abdomen delicately so : head, scape of the antennæ, thorax, and legs, (excepting the tarsi, which are piceous,) green or blue, occasionally splashed with gold : the scutellum frequently golden : the wings hyaline ; the apex with a broad fuscous band : the abdomen testaceous or carneous, sometimes darker towards its apex, which is much rounded, and it has occasionally a violet reflection.

This very pretty insect, which I had the pleasure of introducing to the British Fauna, occurs in abundance at one particular spot on Hampstead Heath, where I captured it settling on the sand. I have for hours endeavoured to trace its habits, but in vain ; all that I have been able to observe is, that it alights on the ground, runs a few inches, turns round, and flies off again. I have not been able to find whence it comes, or whither it goes ; it may probably be parasitic upon *Tachytes pompiliformis*, or *Gorytes tumidus*, for I have

- Chrysis ænea*? *Fab. Mant.* I. 284. 15. *Ent. Syst.*
 II. 242. 17. *Piez.* 175. 24.
Panz. F. G. 51. 7.
Omalus nitidus? *Panz. F. G.* 97. 17.
Hedychrum nitidum? . . . *Spin.* II. 170. 15. 1
 Id. *æneum*? . . . *Ib.*
Chrysis cœrulea *Dahlbom. Excercitationes Hy-*
menopterologicæ P. 33. 17.

Var. 1. (Imperiale.) Entirely of a deep dark blue or purple, with the exception of the flagellum of the antennæ and the tarsi, which are black: the venter green: the wings edged with a broad fuscous band: the head and thorax very coarsely punctured: the abdomen more delicately, and very gibbous; the latter pubescent, especially the last segment, which is also much acuminate. (Length, $3\frac{1}{2}$ lines.)

Var. 2. (Bidentulum.) Of a brilliant bluish green, excepting the disc of the abdomen, which is of a shining blackish green, punctured, and the form of the entire abdomen similar to the preceding, but not more than two-thirds of its size, and not at all pubescent: the antennæ, wings, and legs, as in the preceding. (Length $1-2\frac{1}{2}$ lines.)

Var. 3. (Viride.) When alive entirely of a brilliant green; it differs from the preceding in the green not having a blue tinge; after death, the head and thorax change to a deep blue green, and the disc of the abdomen becomes black: the punctures as in the last, and, like it, it wants the pubescence of the first variety, but the wings, antennæ, and legs are similar, but it differs in the terminal segment of the abdomen being much more rounded, and the abdomen itself not so gibbous. (Length, $1\frac{1}{2}-2\frac{1}{4}$ lines.)

Var. 4. (Ænea.) Entirely of a dark æneous tinge, nearly black: in sculpture and in the form of the abdomen, it resembles *Vars. 1* and *2*, as also in its legs, wings, and antennæ: from *Var. 2* it differs only in colour. (Length, 2 lines.)

Var. 1, of which I have one specimen only, was taken at Bexley, by Mr. Bainbridge, who kindly gave it to me; it stands in the cabinet of the British Museum as the *imperiale* of Leach; it is certainly *Var. 2* of the *Chrysis cœrulea* of Dahlbom. *Vars. 2* and *3*, I have taken in Battersea-fields; *Var. 2* appears to be the *bidentulum* of St. Fargeau; *Var. 3* I have called *viride*, from its colour when alive; and I have

named it in case further observation should confirm it as a species; *Var. 4* was captured at Yarm, in Yorkshire, by the Rev. G. T. Rudd, who tells me it is common there, where it occurs amongst grass, and that all are exactly alike; its dark colour is remarkable; it is evidently the *Chrysis ænea* of Panzer and Fabricius. Why I treat all these as varieties of one species is, because the two which differ most essentially in habit I captured within a hundred yards of each other, and observed they had precisely the same habits, and because their differences are but a trifling degree wider than those I detect in my series of the *Hedychrum auratum*.

GENUS V.—ELAMPUS, *Spinola*.

Head and thorax as in the preceding, with the exception of the scutellum being produced posteriorly into a porrect spine, which is plane above: abdomen rather more elongate than the second section of the preceding genus, but above, convex, not gibbous, but like it, emarginate at its extremity: superior wings, with merely the commencement of a radial nervure, which terminates very abruptly; and all, excepting the basal nervures of the wings, totally obsolete, or their course very slightly coloured, but no nervures existing: legs, moderate.

Sp. 1. El. Panzeri.

Chrysis Panzeri . . *Fab. Piez.* 172. 9. *Spin.* I. 63. 3.

Id. scutellaris . *Panz. F. G.* 51. 11.

Hedychrum spina . *Le Peletier, Ann. du Mus.* VII. 121. 2.

Head and thorax deeply and coarsely punctured; abdomen very delicately so: the mucro of the postscutellum flat upon the top, and also very coarsely punctured: an obtuse tooth on each side of the last segment of the abdomen, half-way between the emargination and the base: head, scape of the antennæ, thorax, and legs, (excepting the tarsi, which are rufescent,) of a metallic blue and green, variously disposed, and occasionally splashed with gold: the abdomen of a rich, golden, or carmine red, the refulgence upon it sometimes, under some aspects, appearing green. (Length, $2\frac{3}{4}$ lines.)

My specimens of this apparently rare insect were taken at Leaves Green, in Kent; the Rev. G. T. Rudd has captured

it this year in the New Forest. Panzer figures his with the abdomen green, which, under some lights, and in some specimens, will appear so, from their excessive refulgency; but the positive colour of the abdomen is red.

ART. XXI.—*Note on Butterflies questionably British.*

IN the Lists of British Lepidoptera which have been published by Messrs. Stephens and Curtis, many names occur which, in our cabinets, that is, in the cabinets of those few entomologists who are scrupulous, stand, year after year, as names only; now, if there really are British insects corresponding to these names, it is very well to allow the vacancies left for them to remain, until some fortunate entomologist discovers the locality for these rarities, and supplies our cabinets; but, on the contrary, if there exist no such insects in Britain, it is surely ill-advised in us to retain the names; I suggest that it would be far better to forget that such insects have ever been recorded as British, and should they hereafter occur, I would re-introduce them as entire novelties. The following butterflies are more or less abundant in cabinets of professedly British insects, but of any authentic record of capture in this country we are wholly ignorant.

Podalirius, far from uncommon.

Europome, very common, existing in thirty-one cabinets that I have inspected.

Palæno, in catalogues only.

Chrysothème (?)

Apollo, a fine series in a cabinet in the North of England, and single specimens in several cabinets.

Mnemosyne, *Tessellata*, *Maturna*, *Hampsteadensis*, *Niobe*, *Populi*, *Sibilla*, *Levana*, *Huntera*, *Mæra*, *Phædra*, *Alcyone*.

Ligea, in the cabinet of Mr. Stephens, and lately introduced into those of Mr. B. Standish, and several of our dealers. Mr. Stephens, in his Illustrations, acknowledges himself ignorant of the time and place of its capture, and of the name of its captor.

Muestra.

Hero, not uncommon in cabinets.

Arcanius, not uncommon in cabinets.

Spini.

Chryseis. In every collection of any importance, either in town or country; sometimes a whole series of males, females, and undersides, being displayed; to be purchased abundantly of dealers, at a price seldom exceeding one shilling for a specimen.

Hippothoe. Introduced as *dispar*?

Virgauriæ. In every collection; I have seen nearly a thousand of this species, said to be British; fine recent specimens, said to be taken last year (1835), may be purchased abundantly, and at a very low price, of many dealers. I am not aware that a single syllable, even hinting at a capture of this insect in Britain, has ever been written.

Dorylas, *Icarius*, *Eros*. Those described under these names varieties of *Alexis*? or intended as recording the capture in this country of the species so named on the continent?

Titus, *Malvæ*, *Oileus*, *Sylvius*, *Bucephalus*, *Vitellius*.

Can any of your correspondents oblige the writer of this article with any information on either of the above-mentioned species, or with any positive fact relative to the capture of any butterflies, with the exception of the sixty-five following:—

Machaon, *Rhamnii*, *Electra*, *Hyale*, *Brassicæ*, *Rapæ*, *Napi*, *Daphnidice*, *Cardamines*, *Sinapis*, *Cratægi*, *Lucina*, *Athalia*, *Artenus*, *Cinxia*, *Dia*, *Selene*, *Euphrosyne*, *Lathonia*, *Adippe*, *Aglaiæ*, *Paphia*, *C. album*, *Polychloros*, *Urticæ*, *Io*, *Antiopa*, *Atalanta*, *Cardui*, *Iris*, *Camilla*, *Ægeria*, *Megæra*, *Semele*, *Galathea*, *Tithonus*, *Janira*, *Blandina*, *Cassiope*, *Hyperanthus*, *Davus*, *Pamphilus*, *Betulæ*, *Pruni*, *W. album*, *Quercus*, *Rubi*, *Phlæas*, *Dispar*, *Argiolus*, *Alsus*, *Acis*, *Arion*, *Corydon*, *Adonis*, *Alexis*, *Argus*, *Agestis*, *Alveolus*, *Tages*, *Paniscus*, *Linea*, *Actæon*, *Sylvanus*, *Comma*.

The above-named sixty-five butterflies I consider unquestionably British; and of this number, *three* have been introduced since the publication of that portion of Mr. Stephens's "Illustrations," in which they would have occurred. These are *Dia*, on the authority of Mr. Weaver; *Pruni*, on the authority of Mr. Seaman; and *Actæon*, on the authority of Mr. Dale

But it must be observed that, although specimens unquestionably British of all these sixty-five insects do exist, yet the majority of the rarer ones, as *Daplidice*, *Lathonia*, *Antiopa*, &c., although exhibited as British, are decidedly and evidently exotic: the three last-named species may be purchased for a mere song. In order that I may not offend gentlemen possessing rich series of the questionable species, I subscribe myself simply,

INQUISITOR.

ART. XXII.—*Observations on the Circulation of Blood and the Distribution of the Tracheæ in the Wing of Chrysopa Perla.* BY J. S. BOWERBANK.

(For the references see Plate XV.)

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—You did me the honour of inserting in an early Number of the Entomological Magazine, the result of a series of observations on the circulation of the blood in the larva of *Ephemera marginata*; and I regret much that other occupations have prevented me from following up those researches with that degree of attention which so interesting a subject demands. I have, however, occasionally, as opportunities occurred, examined such adult insects as I imagined were likely to enable me to proceed with the subject, and more particularly those whose wings I considered would form favourable subjects for investigation, but without arriving at any very satisfactory results until lately. A few evenings since, while strolling with some friends in the cool of the evening, in my garden, I was requested by one of them, who had taken a fine specimen of the *Chrysopa perla*, to place it beneath the microscope, that he might gratify himself by viewing its extremely brilliant eyes. After having pleased ourselves for some time, by examining these beautiful objects, I could not resist the inclination I felt to take a passing glance at the wing, whose transparency, I thought, might enable me to observe some traces of the circulation; and, to my great delight, I saw globules of the blood rushing with rapidity through the two large canals of the under wing. As, however, I had unfortunately grasped the thorax of the insect with the forceps, life very shortly became extinct, and with it

terminated my expectations for that evening. But I had seen enough to assure me that I might now, with every reasonable prospect of success, expect to attain the long wished-for object of my researches; I mean, a view of the course of the circulation in the adult insect. On the following day I was fortunate enough to procure several specimens of *C. perla*. I immediately commenced upon one of these, by fixing it with a little thick gum-water upon its back, upon a small slip of glass, and having extended its wings as nearly at right angles to its body as I could place them, I retained them in this position by a small drop of gum-water under the tip of each, leaving the intermediate spaces of the wings quite free. I am thus particular in the description of my proceedings, as it will be seen hereafter that my great care in thus stretching the wings was most probably the occasion of much vexation and loss of time. When I sat down to the instrument, I was gratified beyond measure by seeing the particles of the blood flowing with considerable rapidity from the proximal end of the wing towards its opposite extremity, through the large canal *A*, and with equal rapidity through the canal *B*, from the distal point of the wing towards the proximal; and was congratulating myself upon having the satisfaction of observing, at one view, the course of the circulation through canals, which might be considered as equivalent to artery and vein, when all at once, to my great surprise, the blood in the supposed vein *B* commenced flowing in the opposite direction; while that in the canal *A* was stationary for several seconds, and then again flowed forward in the same direction as before, at the same time a series of oscillations, of a very singular description, took place in the canal *B*. I must here state, that the power used in making these observations was 230 linear, and the field of view was equal to $\frac{1}{25}$ of an inch in diameter. In this exceedingly minute portion of the canal *B*, a number of oscillations of the same globules occurred, in one instance for 21 times, before I lost sight of them, in consequence of the struggling of the insect giving fresh impetus to the blood. In another instance, 84 oscillations took place before the group of globules, upon which my eye was fixed, quitted the field of the microscope. These oscillations seldom exceeded half the length of the field, or $\frac{1}{50}$ of an inch, and were extremely irregular in the time of their occurrence; sometimes the motion of the globules was most rapid when the blood

was flowing towards the distal point of the wing; at other times, when it passed in the opposite direction. Occasionally, two or three oscillations followed each other with considerable rapidity, while at other periods the alternations were comparatively slow and irregular; but the general average was at the rate of about 20 in two minutes. Being thus foiled in determining the proper direction in which the blood flowed in the canal *B*, I mounted another of the insects in a like careful manner, and was much mortified to find the result of my second examination, after several hours' careful observation, so similar in every respect to the first, as to leave me still undecided as to the true course of the blood in the canal *B*. The only certain result I gained was, that the proper motion of the blood in the canal *A* was from the proximal towards the distal extremity of the wing. The weather on the following days was wet and cold, and we did not succeed in capturing any fresh insects; I therefore continued my observations on those I had remaining, but which became so languid as to allow me to gain very few fresh results, beyond that of detecting a solitary globule slowly winding its way through some of the small canals of the wing, near its centre; but this was something. I now confidently expected, if I could but secure some fresh insects, I might yet succeed in satisfying my doubts, and in determining the true course of the blood in the canal *B*, which the before-mentioned circumstances had rendered very uncertain. Fortunately, the evening of the following day produced me another specimen, and I addressed myself to the task of preparing it for observation, and profiting by my previous failures; after having fixed the back of its head, thorax, and abdomen, firmly to the glass, I separated the under wings just so far from the body as to allow me to see distinctly the whole of their surface, slightly fixing them by a small speck of gum-water beneath each tip—and by these means I avoided that unnatural strain which was the consequence of their former position, and which had been so detrimental in my former attempts. I was now amply repaid for my care. I at once perceived the globules of the blood flowing steadily forwards towards the distal extremity of the wing, not only in the canal *A*, as before mentioned, but also in the canal *B*, in which its course in my former observations appeared so ambiguous. I was now able clearly to trace the progress of the blood in both canals, from near the proximal

to the distal point of the wing, where it was discharged into the great incurrent canal *C*, which, as may be seen in the figure, passes in one unbroken line from the distal extremity of the wing, until it arrives at the point *D*, near the proximal extremity, where it divides into two branches before entering the body of the insect. This canal I believe to be the only incurrent one in the wing, as upon a careful examination of the canals *EFGH*, Fig. 1, near their origin, I perceived at each spot, where an arrow is placed, the globules flowing in the direction to which they point, pursuing their course in a direct line along them, as indicated by the straight arrows, or quitting the larger ones, and passing, as indicated by the curved arrows *llll*, Fig. 1, into the small lateral branches. In a similar manner I saw the globules quit the large canal *B*, and flow in the direction of the curved arrows at Fig. 1, *aa*, through the small branches *bc*; and in many other cases I detected single globules struggling through these small transverse canals, sometimes gliding slowly forward, while at other times they were stationary for a considerable period, but always while in motion progressing towards the incurrent canal *C*. In the upper marginal canal *I*, marked with double-headed arrows, the blood oscillated so continually and equably, that I could not determine from the motion of the globules its proper direction; but from its position, and the direction of the lateral canals connecting it with the great one *B*, I think I may be warranted in considering it as an ex-current one, particularly as the quantity and character of the motion of the blood contained in it differed so materially from that in the canal *C*, for while the motion of the blood was of such an indeterminate character in the former, it was rushing steadily through the latter with a rapidity greatly superior to that of any other canal, and this we may conclude would naturally be the case, as the canal *C* appears to be the sole incurrent canal for the whole of the blood flowing through the two large canals *A B* and their branches.

The blood in its progress through the principal canals, *A* and *B*, presents some singular features. While it was flowing in a steady, continuous stream in the latter, it frequently occurred that it would either ebb with considerable rapidity in the former, for several seconds, or in the place of ebbing, would oscillate for a similar period, and then resume its natural course towards the distal extremity of the wing, but its velocity at no time appeared to be quite equal to that in the canal

B, nor was it of equal steadiness, for in this latter canal, any reflux or interruption to its progress was comparatively rare.

On first viewing the circulation of the blood in these canals, I imagined I perceived an irregular pulsation, but am now inclined to think no such motion exists naturally in the wing, but that the proper flow of the blood is in a steady, uniform stream. This apparent pulsation I think may be attributed to momentary obstructions, which the large elongated globules meet with in their progress through their comparatively small channels, as in several instances I observed a sudden stoppage of the circulation, and consequent accumulation of globules within the range of the field of view, which was followed by an equally rapid disengagement upon the blood resuming its course; slight struggling of the insect likewise produces momentary interruptions very similar to pulsations.

Within the whole of the excurrent canals, branches of the trachea are seen that in the canal *A* is comparatively small compared with the like vessel in the canal *B*. Upon measuring these canals and the trachea contained within them, I found the former at the point *d*, Figs 1 and 2, to be $\frac{1}{408}$, and its trachea $\frac{1}{2222}$ of an inch in diameter, while the diameter of the latter was $\frac{1}{500}$, and of its trachea $\frac{1}{1310}$. Upon examining the wings of several other specimens of the insect, I found the same disparity in the proportions of the trachea to the canals to exist in the whole of them, and this also appears to be the case on the corresponding canals of the upper wings, which have hitherto been but slightly examined, the under wing having been selected as preferable for examination on account of its superior delicacy and transparency.

The trachea in the canal *A*, throughout nearly the whole of its course, runs in a straight line along the anterior part of the cavity which contains it, as at Fig. 2, *A*, and lessens gradually in diameter, until at the termination of that canal it can no longer be traced in consequence of its extreme tenuity. Near its proximal extremity it gives off a small branch to the transverse canal *n*, which terminates in a fine point at its junction with the canal *I*; excepting in this instance, I could not, after a careful examination, detect any other branch given off from it to the transverse canals which connect it with the canal *I*, although from its position in the canal *A* we might naturally be led to suspect that was the case; for, although these small transverse canals, throughout nearly their whole

length, were so opaque as not to allow of their internal cavity being examined, yet at their junction with the canal *A* they were so far transparent as to allow of the branch of the trachea being seen had it been present, neither did the trachea in the canal *A* curve towards the mouths of the transverse canals, as it usually does when it gives off a branch. The trachea in the canal *B*, unlike that in canal *A*, pursues an exceedingly tortuous course, with very little diminution in its diameter for about three-fourths of its length; it then gradually decreases in size until it reaches the distal extremity of the canal *B*, when it becomes so slender as generally to elude observation. In its progress it gives off a branch to the canal *E*, at its origin *i*, Fig. 1; which, shortly after its entrance into that canal, divides into two parts; one of these branches passes at *k* into the canal *K*, Fig. 1. Here the trachea is very large in proportion to the space containing it, filling up at least three-fourths or four-fifths of the cavity, and giving off small branches to each of the posterior transverse canals; which canals appear, in every wing I have examined, to receive the branch of the trachea destined for their use from the trachea of the large canal immediately above them, and in no instance that I have observed from that belonging to the one beneath them. These fine branches, which pass through the small transverse canals, do not enter the trachea, which runs through the large longitudinal one beneath them, but usually terminate in a fine point at the spots where the transverse canals join the longitudinal ones beneath; sometimes instead of terminating at the junction of the two they run for a short distance into the large longitudinal one; and in one instance, *g*, Figs. 4 and 1, I observed that the trachea divided at the spot where it usually terminates, into two branches, which after running for a short distance along the canal *C*, the one towards the distal, and the other towards the proximal extremity of the wing, then terminated in the usual manner in a fine point. Generally speaking each canal contains but one branch of the trachea, and in the large ones, *A* and *B*, I believe this to be universally the case, but in one wing in the canal *E*,[†] Fig. 1, at the point *m*, and in *F*, Figs. 1 and 4, at the point *b*, I observed two branches in each, and in one instance in the latter, as many as three branches; and indeed, in this canal, the trachea seems to be more subject to divide into separate branches than in any other in the wing. In the upper marginal canal *I*,

I did not succeed in tracing any branch of the trachea, neither could I in any part of the incurrent canal *C*, although I could readily perceive the terminations of these vessels in the canal *B*, where it enters the incurrent one *C*, and of the branches which run down the small transverse canals, and discharge their contents into it throughout its whole course.

The tracheæ, in their passage through the large canals, seldom pursue a straight course, but run in a serpentine direction, as represented at *B*, Fig. 2, through the space containing them, and frequently at the spots where they give off branches to supply the transverse canals, they curve so much as to drop in the form of a loop within its mouth, as at Fig. 3, *e f*, which is a magnified representation of *e f*, canal *K*, Fig. 1, and likewise as at *o*, Fig. 4, which is an enlarged view of the transverse canal *h g*, connecting canals *F* and *C*, Fig. 1.

During the course of these observations, I have used every endeavour to discover, if possible, whether the blood had proper vessels, or only occupied the internal cavity of the canals; the latter I am convinced is the case, as I could frequently perceive the particles not only surrounding all parts of the tracheæ, and occupying the whole of the internal diameter of the canals, but it frequently happened that globules experienced a momentary stoppage in their progress, occasioned by their friction against the curved surface of the tracheæ, which sometimes gave them a rotatory motion.



THE GULL INN, BRUSHWOOD CORNER.

ART. XXIII.—*Proceedings of the Entomological Club.*

SITTING OF THE 15th SEPTEMBER, 1836.

Present,—Messrs. Bevington, Bennett, Bowerbank, J. F. Christy, Alex. Christy, Davis, Hanson, Hoyer, Ingall, Stanger, Trusted, and Newman.

Mr. J. F. CHRISTY in the Chair.

After the minutes of the last meeting had been read, a discussion of considerable length took place, touching the propriety of the appointment of Trustees, agreeably to the tenth law, as agreed to at the last meeting. A legal opinion had been taken as to the necessity of the appointment of Trustees previous to an insurance on the property of the club being effected; which opinion was unfavourable to such appointment, on account of the great expense of a deed of trust; stating also, that no additional security would be afforded thereby. The propriety of forthwith insuring the property of the club, the office in which to insure, and the amount to be insured, were then considered; and the decision of the club on all these points was embodied in the following resolution, which was carried unanimously:—

That the CURATOR be directed to insure the property of the club in the Sun Fire Office, in the names of the members conjointly, to the following amount:—

Museum and glass	£600
Cabinets, furniture, &c.	150
	<hr/>
Total	£750

The CURATOR read the following list of donations to the club:—

Mr. BENNETT. The whole of his collection of insects.

Mr. BEVINGTON. The whole of his collection of insects.

Mr. BOWERBANK. The whole of his collection; being some exceedingly valuable New Holland insects, and some British Crustacea.

Mr. J. F. CHRISTY. A handsome mahogany cabinet, of forty drawers, each 18 inches square; together with his whole collection of insects.

Mr. DAVIS. The whole of his exotic insects, and numerous rare British ones.

Mr. HOYER. The whole of his collection of insects.

Mr. NEWMAN. The whole of his collection of insects.

Mr. WALKER. An immense collection of British and exotic insects.

The EARL OF MOUNTNORRIS. Some rare exotic *Crustacea*.

Mr. WILLIAM CHRISTY, jun. of London. The whole of his collection of British and exotic insects, with the exception of the British *Lepidoptera*. Also, the following books:—Dejean's "Catalogue des Coléoptères," 4 Nos.; Wilson's "Entomologia Edinensis;" Kirby's "Century of Insects;" Stephens's "Nomenclature."

Mr. EDWARD DOUBLEDAY, of Epping. Numerous valuable British and exotic Coleoptera, including an unquestionably British specimen of *Melolontha fullo*, recently taken.

Mr. INGALL, of London. His whole collection of exotic insects and British Arachnoida, and a large number of British insects of all classes. Also, the following books:—"Transactions of the Entomological Society," 1 vol.; Geoffroy's "History of Insects," 2 large vols. 4to. with numerous plates.

Mr. BENTLEY, of London. His whole collection of exotic and numerous rare British insects.

Mr. CHANT, of London. His whole collection of exotic and numerous rare British insects.

Mr. MUNBY, of Edinburgh. A collection of French insects.

Mr. WALTON, of Byard's Lodge, near Knaresborough. Various British *Curculionites*.

Mr. GEORGE NEWMAN, jun. A splendid series of African species of the genus *Cetonia*.

Mr. ROBERT FOSTER, of London. An immense number of British insects, collected principally at Leominster, Hastings, and Mickleham.

Mr. GEORGE TRUSTED, of Ross. His whole collection of insects, being principally Scotch and French.

Mr. HENRY METFORD, of Stoke Newington. A collection of French insects.

Mr. J. V. THOMPSON. Some rare exotic *Crustacea*.

Mr. JOSEPH EVELEIGH, of Manchester. Remarkably fine specimens, of *Apatura iris*, *Carabus arvensis*, *Saperda scalaris*, *Aegeria bembeciformis*, and other rare British insects.

MR. HENRY NEWMAN, of Liverpool. Some rare British Crustacea.

MR. SAMUEL ALEXANDER BURLINGHAM, of Worcester. A collection of rare British *Crustacea* in a high state of preservation, also numerous British insects of all classes.

MR. WILLIAM SPRIGGS, jun. of Worcester. Some rare British *Libellulidæ*.

MR. WILLIAM ENOCH, of Hay. Some rare British *Crustacea*.

Rev. Mr. AINGER, of Greenwich. British *Arachnoida*.

MR. J. BOND, of London. Some rare British *Cerambycites*, in a high state of preservation.

MR. ALEXANDER CHRISTY, of London. Some beautiful *Lepidoptera*, from Jersey.

MR. ROGERSON, of the Royal Observatory, Greenwich. Some living specimens of the larva of the common glow-worm, just hatched from the egg, and about a line in length: these little creatures are distinctly luminous, and Mr. Rogerson states that the egg also is luminous: (the glow-worms were on the table for inspection).

MR. J. C. LOUDON, of London. The 65th number of the Magazine of Natural History.

Resolved Unanimously,

That the thanks of the Entomological Club be given to these gentlemen, for their various and valuable donations to the club.

MR. BENNETT exhibited a splendid collection of Brazilian insects, consisting of nearly 1000 specimens of all classes, and in the highest possible state of preservation. Mr. Bennett announced that he had purchased this beautiful collection for the purpose of presenting it to the Entomological Club. The announcement was received with great applause, and it was

Resolved Unanimously,

That the thanks of the Club be given to Mr. Bennett, for his superb donation.

After the nomination of two gentlemen as honorary corresponding members, the Chairman made some observations on the necessity of limiting the number of members as much as possible, and using great caution in the nomination of new ones;

his observations had no reference to the gentlemen now nominated, but he thought if the Club became very large, there would be a difficulty in entertaining its members in the present way, and if that difficulty ever occurred the present social character of the club would be in a great measure destroyed.

Mr. BOWERBANK and Mr. DAVIS took a different view of the subject; it was suggested that if the club had honorary members in every county it would tend to its general benefit, and that even supposing this to be the case, the average attendance of honorary members at each meeting of the club would not amount to half a dozen, a number which every member of the club would feel gratified in entertaining.

The Chairman said that his observations had reference solely to honorary members residing in the neighbourhood of London, the number of whom he hoped would not be very large.

Mr. NEWMAN agreed in the view of the subject taken by the Chairman, but thought it still necessary there should be some honorary members resident in London, from amongst whom to recruit any defalcation in the number of the regular members, agreeably to the fourth law.

The club then adjourned to Thursday evening, the 20th of October, at Mr. Bennett's, 48, Cannon Street.

ART. XXIV.—*List of Captures at Lyndhurst and Ryde.*

By SIR JOHN LIGHTON and the Rev. G. T. RUDD.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

DEAR SIR,—If you have a corner to spare, and think the inclosed Lists of Captures, by my friend, Sir John Lighton, and myself, of interest, will you oblige me by their insertion? I hope to have sufficient leisure to prepare descriptions of what I consider new genera of *Staphylinidæ*, and for the favour of your notice in a future Number of your Magazine.

I am, dear Sir, truly yours,

G. T. RUDD.

YARM, Sept. 10, 1836.

List of a few of the Insects captured by the Rev. G. T. Rudd, at Lyndhurst and at Ryde, during July and August, 1836.

COLEOPTERA.

Cicindela Germanica, R.
 Zabrus gibbus, R.
 Anthicus humilis, R.
 Mordella pumila, R.
 variegata, R.
 fasciata, R.
 Abdera bifasciata, R.
 Three very distinct new genera
 of Staphylini, R.
 Cucujus unifasciatus, L.
 a n. s. (?) R.

HYMENOPTERA.

Astata boops, L.
 Tachytes pompiliformis, L. R.
 unicolor, L. R.
 Pompilus rufipes, R.
 Alyson Kennedii (both
 sexes), R.
 Nysson 3-maculatus, R.
 Elampus Panzeri, L.
 Chrysis succincta, L. common.
 Plancus apicalis, R.
 Elasmus.
 Rhopalum tibiale, R.
 rufiventre, R.

R. Ryde.

L. Lyndhurst.

It is, I believe, doubtful how far *A. Kennedii* is distinct from *A. spinosus*.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—The following butterflies and moths have come under the notice of my brothers and self, during the past summer, in the immediate vicinity of Ryde, Isle of Wight.

I remain, Sir, your obedient servant,

J. W. LIGHTON.

RYDE, Sept. 10, 1836.

Colias hyale.
 Leucophasia sinapis
 Pieris crataegi.
 Melitæa cinxia.
 selene.
 Argynnis paphia.
 Vanessa polychloros.
 Cynthia cardui.
 Limenitis camilla.
 Hipparchia galathea.

Thecla quercus.
 Polyommatus argiolus.
 Smerinthus populi.
 Macroglossa stellatarum.
 Ægeria ichneumoniformis.
 Lasiocampa quercus.
 Psilura monacha.
 Arctia villica.
 Agrotis ocellina.
 Catocala nupta.

ART. XXV.—*Pith of the Periodicals.*

WE once plumed ourselves pretty considerably on being an editor; it was something a little above the common, a little select; but now, forsooth, the tables are turned, and it is equally select not to be an editor. The whole world of naturalists are now editors. Every one who can string ten lines together must announce himself as the editor, or the half-editor, or the third-part editor, or the quarter-editor, of some magazine, designed to teach the science of natural history. Our table, positively, groans with Transactions of Zoological, Natural History, Entomological, &c. Societies, with Naturalists, and Field-Naturalists, and Zoological Magazines, and Magazines of Zoology, and Natural History Magazines, and Magazines of Natural History, *et genus id omne*. Whither, whither will the mania carry us at last! But, oh! the partnership editorships! Oh! the strings of editorial names, with tails longer than those of the comet or O'Connell. We have "registered a vow in" the Firefly, never again to criticise an entomologist;—fear not, therefore—piracy, put on thy most unblushing front; quackery, rejoice; dulness, resume thy helm; stupidity, thy reign. It is with the determination of finding something to admire, something to commend, that we have turned over the mass before us, and we find the following:—

1. *Natural History of the British Entomostraca*, by WILLIAM BAIRD, Surgeon.^a

The appearance of the *Entomostraca*, insects inclosed in a shell, is enough to excite curiosity; numbers of them are so like shells that an uninstructed person would so consider them, and this singularity of structure has suggested their name, derived from two Greek words, signifying "an insect" and "a shell;" a name given by Müller, and since retained. Before Müller's work, all the *Entomostraca* were comprised in one genus, called *Monoculus*, from its being supposed they possessed but a single eye. Linnæus, in his "*Systema Naturæ*," describes nine species of *Monoculus*. Seven others were figured by Joblot, Baker, Frisch, Geoffroi, and Ledermüller, and a few added by Stroem, Goeze, and Herbst. Degeer describes and figures accurately seven species; he appears to have been aware of the transformations of *Cyclops*, figuring and

^a *Ibid.* Magazine of Zoology.

describing the young, but not tracing them to their final state, which Rhamdohr and Jurine have since done. Leeuwenhoek, Swammerdam, and Schæffer, give some details respecting these insects; but it is to Müller we are chiefly indebted. He collected in one memoir, and arranged into genera and species, not only those previously known, but added a number of new species found in the fresh waters of Denmark and Norway, and gave many important and interesting details respecting them. Although Müller has subsequently been detected in some errors, his work, published in 1785, is a most interesting and valuable memoir. The memoirs of Straus, on *Daphnia* and *Cypris*, are exceedingly perfect, and Jurine (fils), Daubert de Ferussac (fils), Adolpe-Brogniard, Hermann (fils), and Prevost, Milne, Edwards, and Andouin, have each further extended our knowledge of these animals.

With the exception of Dr. Leach, British naturalists have done little for the *Entomostraca*: this author, in the Edinburgh Encyclopædia, enumerates sixteen British species. Samouelle increases these to twenty, and at about this number the catalogue remains at the present period.

The natural arrangement of *Entomostraca* has been disputed by naturalists. Desmarest gives a view of all arrangements of them, previous to his own. Latreille, in his "Cours d'Entomologie," gives the following arrangement of *Crustacea* generally:—

(MALACOSTRACA.)

First Division—CRUSTACEA MAXILLOSA.

<i>First Order</i>	DECAPODA.
<i>Second</i>	STOMAPODA.
<i>Third</i>	LEMNIPODA.
<i>Fourth</i>	AMPHIPODA.
<i>Fifth</i>	ISOPODA.
<i>Sixth</i>	DICLAPODA.

(ENTOMOSTRACA.)

<i>Seventh</i>	LOPHYROPA.
<i>Eighth</i>	OSTRACODA.
<i>Ninth</i>	PHYLLLOPA.
<i>Tenth</i>	TRILOBITES.

Second Division—CRUSTACEA EDENTATA.

<i>Eleventh</i>	XIPHOSURA.
<i>Twelfth</i>	SIPHONOSTOMA.

Of the Entomostracous orders he gives the following characters:—

ORDER.—LOPHYROPA.

From the observations of Rhamdohr, &c. it appears that the last pair of thoracic feet in these *Entomostraca* correspond with the third pair in the *Amphipoda* and *Isopoda*, and to the first pair in the *Decapoda*. According to Jurine, the number of thoracic feet is eight, but we observed, from the succession of the appendages which precede them, that those which he has designated by the name of *hands* answer to the second pair of maxillæ, and therefore the three anterior pair of feet, properly so called, represent as many foot-maxillæ (*pieds-machoirs.*) The genus *Daphnia* has, according to Straus, ten feet, of which the two first answer to the second pair of maxillæ.

First family.—*Seticera*. The thorax is more or less oval, and divided into four segments, of which the anterior is much the largest, and includes the head, and presents anteriorly and centrally the organ of vision. The superior antennæ are long, setaceous, simple, and composed of numerous minute articulations. The inferior antennæ are short, filiform, and simple, or forked; they seem to have but four articulations. Each mandible bears a feeler, which is sometimes entire, at others divided into two branches. Immediately behind the organs, answering to the superior maxillæ, are five pair of feet, divided into two cylindrical branches, more or less furnished with hair. The tail is composed of six rings, with two spears and bristles at the extremity. Under the first, we observe in the female two appendages, in the form of feet; and under the second, in both sexes the organs of generation, and two oviferous pedunculated sacs. Genus, *Cyclops*.

Second family.—*Cladocera*. Head large, projecting, often terminating below in a beak-like point, and bearing superiorly an eye varying in size, preceded in some species by an oculiform black spot, and having at its junction with the thorax an antenna always projecting, commonly very large, in the form of an arm, and serving as an oar; it is divided into two or three branches, and furnished with bristles. Testaceous covering folded in two, but without a hinge, enveloping the thorax and feet, and generally terminating in a point at its

posterior extremity. Feet ten, more or less divided, and furnished at their extremities with bristles. Tail short, folded below the body, and terminated by two conical or setaceous appendages. Eggs interior, until the moment of deposition in the water; ovary lateral, in a dorsal cavity between the body and testaceous covering. Genera, *Polyphemus*, *Daphnia*, *Lynceus*.

ORDER.—OSTRACODA.

Covering forming an oval bivalve shell laterally compressed, bent and dorsally inflated, and almost straight, or a little notched on the opposite side. Before the hinge in the median line the eye appears like a large black spot. The antennæ inserted immediately below are setaceous, shorter than the body, composed of seven or eight articulations, of which the last are the shortest, and terminated by a fascicle of bristles, which assist the creature in swimming, and which, according to Jurine, the animal develops in different degrees, as it desires to move itself more or less rapidly. The mouth is composed of a carinated labrum and two dentate mandibles, each bearing a triarticulate palpus. The feet are six in number, of which the anterior (the strongest pair), are directed forwards, terminated by two joints, furnished with stiff bristles, or long hooks, and situated below the antennæ; the other feet are without these bristles; the second are first thrown back, bent and terminated in a long and strong hook; the last pair are not seen outwardly; they are raised and placed by the sides of the body, they support the ovaries, and terminate in two small hooks. Genera, *Cypris*, *Cytherea*.

ORDER.—PHYLLOPODA.

The *Phyllopoda* have a body sometimes naked, at others defended by a case which envelops them, in the manner of a bivalve shell, or else covering them above, in the form of a semi-oval buckler, is divided into a great number of small segments, each of which, with the exception of the last, bear a pair of foliaceous feet: it is often terminated by a tail, having at its extremity two threads or appendages adapted for swimming. The head has two eyes, and sometimes even three; four or two antennæ, a labrum, two mandibles; four or two maxillæ and a tongue.

First family.—*Myteloides*. These have only two eyes, which are situate close together, and borne by a head which is perfectly distinct from the case. The case is in the form of a bivalve shell, capable of enclosing the body. It has four antennæ, of which the exterior pair are very large, each composed of an eight-jointed peduncle, and two setaceous branches of twelve joints each. Below the inflated, armed and truncate mandibles, is a pair of foliaceous maxillæ. The body is divided into twenty-three segments, each, with the exception of the last, bearing a pair of similar feet, bifid at the end, with the exterior division simply ciliated internally, at the other quadri-articulate, and strongly ciliated exteriorly. The ovaries extend under the sides of the body, from the first pair of feet to the eighteenth, and the eggs, some time prior to oviposition, pass into the dorsal cavity, as into a matrix, where they finish their development. At first they are round and transparent, but they finally become more obscure, and assume an irregular and angular shape. Genus, *Limnadia*.

Second family.—*Aspidiphora*. The body stripped of its case is at first almost cylindrical, above convex, below concave, with a central longitudinal furrow, and terminated by an elongate cone. It is composed of a head, and thirty or more rings, which diminish greatly in size towards the posterior extremity, and of which the last five or seven are without feet. Genus, *Apus*.

Third family.—*Ceratophthalma*. Of which Latreille has given no general characters, but described the genera which appear to differ very considerably from each other. Genera, *Eulimene*, *Artemia*, *Branchipus*.

ORDER.—XYPHOSURA,

Being the first edentate order of *Crustacea*. There is no *siphon*; maxillæ formed by a maxilliform and spinous prolongation of the internal and superior extremities of the coxæ of the six anterior pair of legs, and surrounding the pharynx: the case of two pieces; the anterior large and semilunar, having two compound eyes on its superior surface, the second piece of the case is much less, and in shape is somewhat triangular, truncate, and notched at its posterior extremity; to this second piece is appended a sharp, solid, triangular tail. Genus, *Limulus*.

ORDER.—SIPHONOSTOMA.

These have a siphon, or sucker, more or less distinct, formed of four pieces, corresponding to the labrum, tongue, and two mandibles, of the dentate *Crustacea*. Number of feet never exceeding fourteen; case composed of a single piece, forming in front a kind of buckler.

First family.—*Caligides*. These have many of their feet, more especially the posterior ones, formed for swimming. The posterior extremity of the body is preceded by a shield-like or semi-lunar case. Genera, *Argulus*, *Caligus*, *Pandarus*, *Pterygopoda*, *Dinemoura*, *Anthosoma*, *Cecrops*.

Second family.—*Lernæiformes*. Their body is elongate, cylindrical, attenuated posteriorly, composed of from seven to ten segments. The feet are small, or the analogues of the natatory feet in the preceding order are composed of but a single articulation, and two fingers, or two minute articulated stalks; sometimes the sides of the thorax are dilated into large lobes, bent in the form of a horse-shoe, and embracing the posterior portion of the body: they have at least two antennæ, and the feet are furnished with claws. Genus, *Nicothoë* (found in branchiæ of the lobster), *Dichelestium* (found on the sturgeon), *Nemesis*.

ORDER.—TRILOBITES.

This singular order of *Crustacea*, apparently belonging to another and an older creation, are, perhaps, of all animals the most difficult to place naturally. They at first sight appear to supply a void which occurs between the *Crustacea* and the genus *Glomeris*, at the commencement of the *Myriapoda*. Genera, *Calymenes*, *Asaphus*, *Oxygya*, *Paradoxides*.

(To be continued.)

THE
ENTOMOLOGICAL MAGAZINE.

JANUARY, 1837.

ART. XXVI.—*Wanderings and Ponderings of an Insect-Hunter.*

(Continued from p. 92.)

CHAPTER VIII.

[Cwm Elan.]

VAST beyond man's conception was the shock that gave Cwm Elan birth: the solid rock was forced upwards from the bowels of the earth, and rent in twain, a portion subsiding either way, while the shattered and loosened fragments thundered down the sides of either precipice, till they met, with deafening clang, in the yawning abyss beneath. This abyss, thus formed of fragments of rock of every size and shape, is the channel through which the boisterous Elan pours its snowy-crested waters. The rocky banks are partially clothed with vegetation. The bare cliff anon presents its perpendicular face to the pass; then a shelf above will be seen affording footing for a little forest of oak, and birch, and witch elm; and the wild rose, honeysuckle, and brier intermingle and consolidate the mass: the wild rose throwing its streamers of red blossoms—in Wales how brightly red!—far adown the face of the bare cliff below. Above this forest the naked rock again appears, and again a nature-planted garden, and so alternately to the top, the green gradually decreasing, and the pinnacles of weather-beaten rock peering over all. It is in such a place as this, when we are alone with nature, and commune with her face to face, gazing on her in her wildest forms—when we are

amidst the rush of waters, roaring so that thunder might pass over us unheeded—when we are overwhelmed with the grandeur and majesty of the scene, “dazzled and drunk with beauty,” that we feel most deeply our own insignificance.

The Insect-Hunter may, perhaps, never have a reader who has roamed, or who even will roam, where he next bent his footsteps, though Cwm Elan may be better known than it is; and even now it is known, though but little admired or toured. There is a gentleman's residence, known by the same name beyond the pass, and another beautiful place embosomed in wood, called Nantgwilt: leaving these behind, and proceeding towards Rhayader, you enter the stupendous pass of Cwm Elan. After feasting himself upon the scene, the Insect-Hunter scaled the rocky mountain to the left; it was a toilsome and wearisome ascent. As he ever and anon sat down to rest and refresh himself with gazing on the scene below, he oft repeated—“I am not what I have been;” and, in truth, he was not: disappointment had stricken him, sickness had weakened him; limbs, once untiring, had lost their vigour—he was but as the shadow of his former self. His eye dwelt on the landscape beneath his feet; as a map, the country was spread before him. He traced the course of Elan up to the town of Rhayader, a town through which the joyous Wye comes leaping to meet Elan, his mountain-bride. Elan, though considerably the larger stream, loses its name at the junction, and assumes that of Wye. The Insect-Hunter gazed on the meeting of the waters, and then followed them in imagination (for a mountain concealed them from his eye), till they were united with the waters of Severn, and lost in the Bristol Channel. These beautiful rivers, Wye and Severn, rise side by side, on the mighty Plinlimmon, and side by side they flow into the ocean. The Severn makes a fine curve northward, passing through Shrewsbury, then southward through Worcester and Gloucester. The Wye runs southward through Rhayader, Bualt, Hay, Hereford, Ross and Monmouth, and they again unite at the entrance of the Bristol Channel. Here let the reader supply a simile—two brothers—different courses through life—old age—settle down together, &c.

Time, which has clad the scene before and about me with such surpassing majesty and loveliness, may, in days to come, overthrow these features of ages by the tempestuous workings

of an hour. Earth may again tremble to its very centre ; these stupendous rocks, which century after century have become more and more beautiful, as time has established for Flora a footing here and there amidst the general desolation, may fall headlong to earth, may lose their flowers and leafy honours, and be ground to powder in the rush of elements. When earth again rests from the convulsion, Cwm Elan may be the centre of an all but boundless plain ; the muddy waters of some mighty river may twice a day slowly ebb and flow through cattle-feeding meadows, in the very track over which the headlong Elan now hurries in all its boiling haste. On this river stately ships, with their smoky chimneys, may be incessantly running to and fro, warehouses may raise their heads half way to the clouds, and myriads of money-hunting men may be traversing the streets of some mighty city.

So pondered the Insect-Hunter ; and as he gazed, the hateful scene forced itself on his imagination. He arose, and clambered up the cliff,—the summit was gained ; and though higher lands rose before him, the ascents were comparatively easy ; he strode on and on, he stretched over moss and moor, waded knee-deep through acres of bog covered with smiling green, or beds of luxuriant heaths purpling the mountain far as the eye could reach : on he went, guided solely by the sun's position in the heavens, for the sun was for a moment seen through the driving clouds ; at last he reached a point which seemed higher than all around him, and here he scared a dozen carrion crows from the carcase of a sheep on which they were feeding ; the crows flew round and round him, uttering their awful imprecations. In every direction the same wild desert met his eye ; a thousand mountains were around him, all alike covered with moss, and carex, and cotton-grass and heath. Not a single tree, not a track, not a trace of man was to be seen ; the clouds thickened, and swept the mountain top on which he stood, completely shutting out the scene, whose very sameness began to weary him, clothing him in a mantle of vapour. The Insect-Hunter sat down to rest.

* * * * *

The Insect-Hunter is looking on the Wye ; the banks are crowded with people, some with hooks, some with spears, some with lines ; a hundred or more stationed on the bridge were, like the Insect-Hunter, merely lookers on. The object of the

pursuit was salmon, which were just now on the move. Unfortunately not one was captured while he was there; he cannot, therefore, give a circumstantial account of the affair, but the zest with which the sport was followed was highly animating. About 100 yards above the bridge—it was at Rhayader-y-Gowy—the Wye falls five feet, in one unbroken sheet, over a ledge of rocks, and thirty yards below the bridge about as much over a similar ledge: the salmon make nothing of leaping these falls in their way up the river. In the very midst of the agitated water, directly beneath the falls, the anglers were incessantly plying their lines, with what chance of success I know not; but with one accord, at the sudden arrival of the fish, butchers, bakers, shoemakers and blacksmiths had left their various employments, and, with tucked-up shirt sleeves, had joined in the animating pursuit.

CHAPTER IX.

[The Insect-Hunter again descanteth on Welsh mountains; he arriveth at Llandegly.]

The road from Rhayader, or more properly Rhayader-y-Gowy, through Pen-y-bont to Llandegly, has little in it that is worthy of remark. The Rhayader mountains present a character wholly different from those I have noticed in the neighbourhood of Hay and Brecon; these last are of gentle ascent near the base, and carefully cultivated half way up their sides, and above this limit are to be found sheep walks, which increase in poverty, and give way to carex, heath, and maun pits on the summits. The Rhayader mountains rise abruptly, are generally beautifully wooded at the base, the wood decreasing gradually with the ascent, and here and there intermingled with bare grey rock, which, above the limit of wood, becomes more apparent. The summits are peaty and wet, producing heath, *Carex*, *Eriophoron*, and *Nartheicum ossifragum*, which was now in blossom; and afford wretched sheep walks. Again, as we approach Pen-y-bont, but far beyond both this place and Llandegly, we have before us quite another character of mountain, highly cultivated two-thirds of the height, and above this an exquisitely rounded summit, smooth, covered with velvet tuft, affording the finest possible pasturage for sheep.

This is preeminently the character of Radnor Forest, the highest land of the kind, and is possessed by all that mass of Radnorshire mountains which now present themselves in front of the traveller. Approaching Pen-y-bont a minor object attracts our notice—a chain of hills running along the valley, with a clearly defined and exquisitely picturesque outline, standing out in bold relief against the distance-dimmed forest. This chain has a character peculiar to itself; its summit is craggy, rocky, and uneven, and is in no part rounded like the mountains which surround it: it is totally unconnected with other hills, and forms the most striking object of the neighbourhood. This chain is known by the name of Llandegly Rocks.

At Pen-y-bont the old and new bridge are objects worthy of a passing note; the old bridge is built of wood, is very long, and very tottering. The fair at Pen-y-bont was annually held on this bridge. It was a strange and a dangerous place for the Welsh folk to congregate, but nevertheless they would not forsake it; so the authorities took on themselves to hang a suspension bridge across the Ithon, which has been accomplished in a most masterly style; and is not only an elegant object, but capable of bearing all the fair folk, were they increased a hundred fold: the two bridges stand side by side, the wooden one supported by a hundred props, the iron without a single one. The “*twa brigs*,” the old and the new, are now conveniently situated to hold a discourse, if it so pleased them, on times past, present, and to come; they would at least know quite as much of the future as any of the wiseacres who are continually predicting thereanent.

From Pen-y-bont to Llandegly there is little to attract attention; the Llandegly rocks accompany the road on the left nearly all the way, but the traveller is on ground too low to observe any of the higher grounds in the neighbourhood.

CHAPTER X.

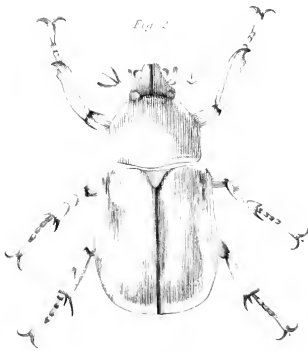
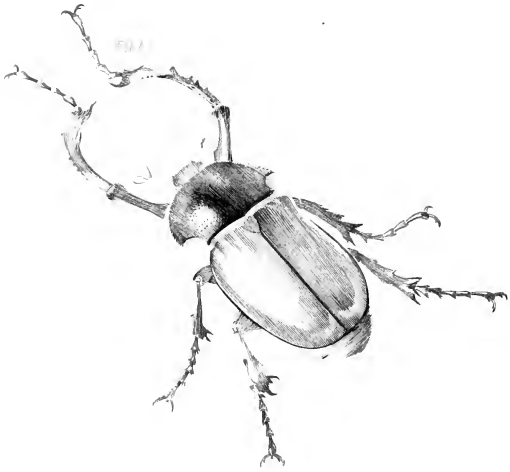
[Llandegly Rocks. Sunset. Water-break-its-neck, Kington, Leominster.]

The Insect-Hunter tarried some days at Llandegly, and found much to admire and to enjoy. At evening he mounted

the "Rocks," and watched the sun sink into a tumultuous mass of mountains. The mists rising at sunset became resplendent, as the god of day finished his daily course, and the mountain tops threw their long black shadow on the illuminated vapour, as though it were a solid plain. When the sun was gone, the mist flooded the scene, and imposed a level surface where a thousand hills had reared their heads a few moments before. But the sky seemed to gain the beauty that the earth had lost; first it became golden, afterwards the loveliest red, and finally subsided into a clear transparent green, over which little rosy clouds continued floating for hours. The Llandegly rocks are about as high as Malvern Hills; around on every side the mountains rise far above them; to the north and east, the nearer and more exquisitely rounded masses of Radnor forest close the view; to the south and south-west, the gigantic Black Mountain and majestic Beacon tower above the surrounding scenery; west and north-west, the Rhayader mountains, and the Plinlimmon chain beyond, present a numberless series of summits, amongst which Plinlimmon itself is not to be distinguished.

Although the Insect-Hunter stayed some days at Llandegly—*mem.* not to drink its nauseous waters,—he did but very little for Entomology. Here, as at other places, the dogs became his friends; Taffy and Trusty, tenants of the same roof, were his constant companions. The Llandegly country is abundant in flowers; the meadows—and I think the character is peculiarly Welsh—are really brilliant with the assemblage of colours; the hedges were half filled with the exquisitely beautiful *Vicia cracca*, and roses of the deepest red. The Entomology of such a country must be rich. Leaving Llandegly, the Insect-Hunter once more turned his face towards England; the road passes over a part of Radnor forest, and the constantly varying views present many scenes of interest. Water-break-its-neck is a wild spot, a dark and dull chasm, in the mountain side, apparently torn long since by some violent convulsion of the earth. The rocks are beautifully adorned with shrubs and stunted trees, springing in wild and grotesque forms from every ledge; a silvery stream of water issues from the summit of the chasm, and falls into the abyss; the rocks, which are steep and of very difficult access, afford building-places to numberless hawks, some of which may be constantly seen floating, ghost-





like, within the chasm, or hovering on winnowing wings about it. The innumerable rabbits which frequent this part of the forest are probably a considerable attraction to these birds. Water-break -its-neck is after all but a little affair, though striking from its peculiarity; the looking down—for the traveller can only see it to advantage from the top—on rocks and trees, and the backs of the hawks and other birds as they float across, is pleasing from its novelty.

Approaching Kington, Stanner Cliff, to the left, is a much finer object. The Insect-Hunter has never seen a better instance of the beautiful effect of intermingled trees and rocks. It is isolated and unconnected in character with the surrounding scenery. It derives no beauty from any thing but itself, and alone is perfect. It would make a most lovely picture, but is a subject that a painter would never choose. It has no foreground, no distance,—it is in itself the picture. At Kington the Insect-Hunter entered England, and the same evening reached Leominster. At that town he has spent many happy days, and its natural history has claimed his particular attention; but whether he detail the result of that attention, or pass on in his narrative to other scenes, remains for chance and time to determine.

ART. XXVII.—*Essay on Parasitic Hymenoptera,*

By A. H. HALIDAY, M. A.

(Continued from p. 106.)

GEN. XI.—OPIUS.

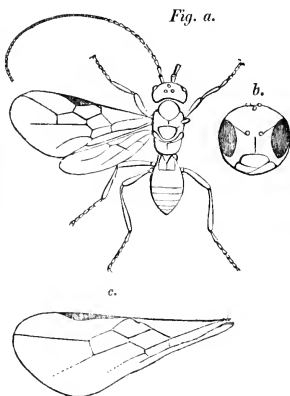
Palpi maxillares 6-articulati. Mandibulae forcipatae, clypeo contiguae vel rima transversa distantes. Occiput retusum immarginatum. Abdominis segmentum 2 cum 3 concretum, reliqua discreta. Alarum anticarum areola disci antica remota, cubitales tres. Posticae nervo recurrente disci auctae in plerisque.

Subgen. I.—OPIUS.

Palpi labiales 4-articulati. Terebra linearis. Areola cubitalis 2 longior quam latior.

- Opius *Wesm. Monogr. Brac. Belg.* 115.
G. IX.
- *Bracon, Fam. I. Heterocl. I. *N. ab E. Berl. Mag.* V. 15.
—— Sectio III. *Act. Acad.* IX. 303.
——— *Monogr.* I. 52.
- Gnamptodon *A. H. H. Ent. Mag.* I. 265.

Characteres generici a Wesmaelio jam optime determinat sunt: paucula tantummodo pro regula nostra animadvertenda erunt: labrum transversum fere semicirculare, epipharyngis ligula apicali brevissima obtusa prostante: palpi maxillares longitudine varii, articulis 2 interioribus minimis: labialium articulus basalis plerunque brevior est, reliqui subæquales: occiput ut in *Alysiis* retusum, superne cum vertice sensim collabatur: abdominis segmenta septem tantum integra apparent, e quibus 2 maximum, quippe e duobus conflatum, quorum juncturam stria subtilissima raro prodit.



Opii statura universa alisque non obscure referunt *Alysiis*. Cum *Rogadibus* ex adverso mediante subgenere *Colaste* facile concurrunt. Typum genericum præstabunt *O. carbonarius* atque proxime affines.

Specierum descriptiones in Monographia Braconidarum Belgicorum Clm. Wesmaelii, plene et accurate quantum fieri poterat expressas hic iterum perscribere nolui. Illas tantum ex integro illustrandas mihi delexi, quæ vel hactenus ineditæ videbantur, vel in multitudine aucta discrimina quædam adjuncta posebant.

A. *Cubitus e basi stigmatis exortus.* (Fig. c.)

Sp. 1. *O. abnormis.* *Niger, antennarum basi ore pedibus abdomineque longe petiolato testaceis, fem. terebra exerta brevissima.*
(Long. 1—1¼ lin.)

O. abnormis. *Wesm. Monogr.* 117. No. I.

Habitat in Hibernia boreali mihi semel lectus *fem.*: *marem* ex Anglia (prope Vindisoram Junio mense lectum) transmisit *F. Walker.*

AA. *Cubitus a stigmatē exceptus.*

B. *Areolæ cubitalis* 2^{dæ}. *limes anterior interiore longior.*

C. *Pleuræ læves, aut sulco medio impunctato.*

D. *Nervus recurrens erectus in areolam cubitalem* 2^{dæ}.

E. *Mesothoracis dorsum lævissimum.*

F. *Os patulum i.e. mandibulæ a clypeo distantes.*^a

Sp. 2. *O. Pygmæator.* *Niger, mandibulis testaceis, palpis breviusculis pedibusque piceis, femoribus anticis et tibiæ basi dilutius, fem. terebra* $\frac{1}{2}$ — $\frac{2}{3}$ *abdominis longitudine.* (Long. 1 lin.)

**Bracon pygmeator* *N. ab. E. Berl. Mag.* V. 15. No. 19.

Id. id. N. ab. E. Monogr. 52. No. 6.

Opius funebris. *Wesm. Monogr.* 124. No. 8.

Habitat in nemoribus Angliæ et Hiberniæ passim sat frequens.

Sp. 3. *O. pendulus.* *Niger, palpis elongatis et mandibulis testaceis, pedibus piceis, femorum plaga laterali et tibiæ basi dilutiùs, fem. terebra* $\frac{1}{4}$ *abdominis longitudine.* (Long. 1 lin.)

Statura O. instabilis. Antennæ corpore breviores 19-articulatæ nigrae: clypeus fuscus: mandibulæ testaceæ, basi dilatatae et subtus excisæ: palpi longissimi testacei basi fusci: metathorax nitidus sublævis: abdominis segmentum 1 subtiliter rimulosum at subnitidum: pedes fusco-testacei, coxis nigris, trochanteribus femorum margine supero et infero tibiis apice tarsisque fusco-piceis: alæ hyalinæ, squamulis piceis, stigmatē nervisque fuscis: cubiti abscissa 1 e stigmatē breviter extricata, quæ speciei præcedenti subnulla: præterea areola radialis minûs effusa, cubitalis 2 longior et alæ posteriores latiores existunt.

Habitat Hiberniam borealem rarissime.—*Marem feminamque* prope Londinum inventos misit, *F. Walker.*

^a *Conferendus* Rogas funestus, ante, p. 93, No. 20.

Sp. 4. *O. lugens*. *Niger, mandibulis testaceis, pedibus piceis, femoribus anticis tibiis tarsisque dilutiis, fem. terebra subexerta.* (Long. $\frac{3}{4}$ lin.)

Niger nitidissimus: antennæ corporis longitudine, 21—23-articulatæ; metathorax lævissimus: abdomen suborbiculatum, segmento 1 gracili obconico-attenuato lævissimo: palpi pedesque fusco-testacei, coxæ nigræ, femora basi, posteriora fere tota, tibiae posticæ, tarsisque apice fusco picei: alæ hyalinæ, stigmatibus nervisque fuscis: areola radialis alæ apicem non attingit: præterea stigma paulo latius et areola cubitalis 2 brevior apice attenuata a sequente distinguit: nervi recurrentis vestigium in alis posticis.

Habitat Angliam, Hiberniam, Ebudes insulas, at infrequens.

Sp. 5. *O. apiculator*. *Niger, ore pedibusque testaceis, tibiis posticis apice fuscis, fem. terebra exerta brevissima.* (Long. $\frac{3}{4}$ lin.)

**Bracon apiculator*. *N. ab. E. Monoqr.* 56. No. 10.

Opius levis. . . *Wesm. Monoqr.* 122. No. 5.

A præcedente discrepat, præter alas et pedum colores, abdominis segmento 1 sublineari nitidiusculo quidem at subtilissime rimuloso: exemplaria *varietatis*, mas plerunque majora et stigma paulo crassius videtur: discrepant hæc ab *O. spreto* coloribus, statura minore, antennis pauci-articulatis et cubiti abscissâ extimâ subrectâ, quæ in illo lenissime reflexa seu postice concava extat.

Var. β.—Abdominis segmento 2 basi pallide piceo.

Var. γ.—Coxis et femoribus posticis superne fuscis.

Var. δ.—Antennarum scapo pedibusque totis testaceis.

Opius exiguus. *Wesm. Monoqr.* No. 123. No. 6.?

Habitat in nemoribus Angliæ, Hiberniæ passim frequens.

Sp. 6. *O. clarus*. *Niger, antennarum scapo ore pedibus abdominisque segmento 2 antice rufis, terebra subexerta, fem.* (Long. 1 lin.)

Antennæ corpore longiores, articulis 34, binis interioribus rufis: mandibulæ basi subtus excisæ et clypeus rufi: metathorax lateribus rugulosus medio lævigatus: abdominis segmentum 1 oblongum rugulosum, 2 rufum apice determinate nigrum, sequentia nigra: pedes rufi, coxis anticis testaceis: alæ hyalinæ, squamulis rufis, nervis fuscis: stigma dilutiûs fuscum, lineari-lanceolatum angustum, intra primam trientem cubitum excipiens: areola

radialis in alæ apicem fere effusa, cubitalis 2 apice parum attenuata: alæ posticæ nervi recurrentis vestigio.

Sp. 7. *O. spretus*. *Niger, antennarum scapo ore abdominisque segmento 2 antice testaceis, pedibus flavo-testaceis, fem. terebra subexerta.* (Long. 1 lin.)

Præcedentis statura, sculptura alæque; colores tantum nonnihil diversi: antennæ 31—34-articulatæ; articuli 2 priores, clypeus, mandibulæ testacei: palpi pedesque pallidiores; tibiæ posticæ apice subtus obscuriores, tarsi iidem fuscescentes: abdominis segmentum 2 basi sordide testaceum, utrinque obsolete foveolatum, apice fuscum: venter pallidus.

Habitat in Hibernia boreali lectus Octobre ineunte,—etiam prope Senani ripas,—marem ex Anglia misit *F. Walker*.

Sp. 8. *O. victus*. *Niger, antennarum basi late ore pedibusque flavo-testaceis, tibiis posticis apice fuscis, stigmatate longo lineari, terebra exerta brevissima, fem.* (Long. $\frac{5}{4}$ —1 lin.)

Antennæ *feminæ* corpore fere sesquilingiores, articulis 31—34, interioribus testaceis, exterioribus fuscis: facies obsolete carinata: mandibulæ et clypeus testacei: palpi longi pallidiores: metathorax et abdominis segmentum 1 punctato-rugulosa subnitida, hoc sublineare, 2 basi utrinque foveolatum, fusco-testaceum: pedes flavo-testacei, tibiæ posticæ apice fuscæ, tarsi iidem concolores pallidiûs annulati: alæ longæ hyalinæ, squamulis testaceis, nervis stigmatæque fuscis: stigma tenuissimum lineare, cubitum prope basin excipit: areola radialis alæ apicem attingit, cubitalis 2 elongata extimam æquiparans, apice nusquam attenuata: postica disci clausa: nervi recurrentis vestigium in alis posticis.

Obs.—*O. anali* non dissimilis, sed os patulum, cubitus propior a basi stigmatis abscissâ primâ brevior, et areola cubitalis 2 multo longior.

Habitat prope ripas Senani autumno lectus rarissime.

FF. *Os clausum* i. e. *Mandibulæ clypeo contigæ.*

Sp. 9. *O. tacitus*. *Niger, antennarum basi late ore pedibusque testaceis, abdominis segmento 2 antice rufo, mas.* (Long. 1 lin.)

Bracon orbulator. *N. ab. E. Berl. Mag. V. Tab. I. Fig. 2.?*

Antennæ corpore fere sesquilingiores, 30-articulatæ, articuli longiores quam *O. spreto*, interiores late rufescunt: facies subcarinata:

clypeus et mandibulæ testaceæ: pleuræ stria media impunctata metathorax et abdominis segmentum 1 rugulosa: alæ hyalinæ, squamulis testaceis, nervis fuscis, stigmatibus dilutius fusco aut fusco-testaceo, lineari lanceolato: areola cubitalis 2 apice attenuata, brevior quam *O. spreto*: nervi recurrentis vestigium in alis posticis.

Var. β? minor; antennæ basi fuscae, articulis 2 interioribus testaceis: pedes pallidius testacei: abdominis segmentum 2 fuscum: terebra exerta brevis: alarum stigma angustius. (Long. $\frac{5}{4}$ lin.)

Habitat Hiberniam borealem rarissime, prioribus olim commixtus; exemplar genuinum prope Londinum lectum exhibuit *F. Walker*.

Sp. 10. *O. exilis*. *Niger*, antennarum scapo ore pedibusque testaceis, abdominis segmento 2 basi rufo-piceo, areola cubitali 2 brevi apice attenuata, fem. (Long. $\frac{3}{4}$ lin.)

Hic iterum similis *O. tacito* et *parvulo*: antennæ, corpore parum longiores 26-articulatæ, articulis 2 prioribus tantum testaceis: metathorax medio lævigatus nitens: pedes testacei, coxis posticis basi tarsis apice fuscis: areola cubitalis 2 limes anterior interiore vix longior: antennarum articuli breviores quam *O. parvulo*.

EE. *Mesothoracis dorsum foveola punctiformi impressum ante basin scutelli.*

F. *Os clausum.*

Sp. 11. *O. pallipes*. *Niger*, antennarum basi ore pedibusque testaceis, fem. terebra subexerta. (Long. $\frac{3}{4}$ —1 lin.)

O. pallipes. *Wesm. Monogr.* 118. No. 2.

Antennæ basi latius obscure rufescunt in nostro.

Habitat mas—prope Londinum lectus *F. Walker*.

Var. β. Abdominis segmento 3 rufo-piceo.

Sp. 12. *O. analis*. *Niger*, antennarum scapo ore pedibusque testaceis, posticorum tibiis apice tarsisque fuscis, abdomine medio fusco, apice rufo, terebra exerta brevissima, fem. (Long. $1\frac{1}{4}$ lin.)

O. analis. *Wesm. Monogr.* 130 No. 13.

Habitat in Anglia semel lectus, in Hibernia boreali iterum.

FF. *Os patulum.*

Sp. 13. *O. instabilis.* *Niger, antennarum basi ore pedibusque testaceis, metathorace lavi nitido; fem. coxis posticis basi fuscis, terebra $\frac{1}{4}$ abdominis longitudine.* (Long. 1 lin.)

O. instabilis. *Wesm. Monogr. 126. No. 9.*

Obs.—In nostris abdominis segmentum 2 medio læve nitens: alæ albido-hyalinæ: nervus recurrens in areolam cubitalem 2 longe evertus: tarsorum articulus unguicularis *femina* incrassatus.

Habitat Hiberniam borealem in nemoribus at infrequens.

Sp. 14. *O. crassipes.* *Niger, mandibulis pedibusque crassis testaceis, coxis trochanteribus femorumque margine supero et infero nigris, stigmatate elliptico; fem. terebra $\frac{1}{4}$ abdominis longitudine.* (Long. 1 lin.)

O. crassipes. *Wesm. Monogr. 127. No. 10.*

Habitat in Hibernia boreali semel atque iterum lectus.

Sp. 15. *O. sævus.* *Niger, antennarum scapo ore pedibusque testaceis, nervo recurrente subinterstitiali, metathorace ruguloso; fem. terebra $\frac{1}{4}$ abdominis longitudine.* (Long. corp. $1\frac{1}{3}$; alar. $3\frac{1}{2}$ lin.)

O. instabili major, antennæ longiores, alæ multo ampliores, areola radialis longior, nervi recurrentis insertio fere interstitialis: antennæ corpore longiores, articulis *mas* 34, *fem.* 29, duobus interioribus testaceis: clypeus et mandibulæ testaceæ, hæ basi non excisæ: metathorax abdominisque segmentum 1 rugulosi, hoc validum basi bicarinatum: alæ hyalinæ, squamulis testaceis, nervis et stigmatate fuscis: stigma tenuissimum lineari lanceolatum, cubitum in triente prima excipiens: areola radialis in apicem alæ effusa, cubitalis 2 sat longa, apice parum attenuata, nervus recurrens in alis posticis manifestus.

Habitat per Ebudes insulas *mas* et *femina* lecti Augusto mense,—*femina* Damnoniensem misit *F. Walker.*

Sp. 16. *O. celsus.* *Niger, antennarum scapo ore pedibusque testaceis, metathorace ruguloso, areola cubitali 2 elongata æquilata, mas.* (Long. $1-1\frac{1}{4}$ lin.)

Antennæ corpore longiores, 33—36-articulatæ: alæ amplæ glaucohyalinæ, squamulis testaceis, stigmatate nervisque fuscis: *E.*

terebra *femine* discrimen quale petendum sit ignotum: *mas* præcedenti simillimus, nervi recurrentis insertione areolae cubitali longiore nec apice attenuata differt. *O. cingulato*, *mas* areola radialis et stigma quam huic latiores sunt, metathoracis abdominalisque segmenti 1 sculptura crassior.

Sp. 17. *O. vindex*. *Niger*, antennarum scapo ore pedibusque testaceis, areola cubitali 2 perbrevis, *mas*. (Long. $1\frac{1}{2}$ lin.)

O. sævo, *mas* similis; diversus tamen videtur. Mandibulæ basi subtus dentato-excisæ: antennæ 37-articulatæ corpore sesquilingiores: metathorax medio lævigatus: areola cubitalis 2 limes anterior interiore vix longior, nervus recurrens ab illa exceptus. Thorax acu perforatus, ideo situs in hac sectione (E.E.) incertus.

Habitat in Hibernia boreali semel lectus.

Sp. 18. *O. maculipes*. *Niger*, antennarum scapo ore pedibus abdominis segmento 2 et sequentibus rufo-testaceis, tibiis posticis apice fuscis, *mas* abdomine postice fusco, fem. terebra exerta brevissima. (Long. $\frac{3}{4}$ —1 lin.)

O. maculipes. *Wesm. Monogr.* 128. No. 11.

Obs.—Exemplaria Belgica. *O. cingulato* majora erant, nostra vero minora.

Habitat—marem feminamque cepi Maio mense in Salice Hiberniæ borealis, fem. prope Senanum Augusto; alteram eamque minimam ex Anglia misit *F. Walker*.

Sp. 19. *O. cingulatus*. *Niger*, antennarum basi ore pedibusque testaceis, abdominis segmento 2 et sequentibus testaceis fusco-cingulatis, fem. terebra exerta brevissima. (Long. 1 lin.)

O. cingulatus. *Wesm. Monogr.* 120. No. 3.

Var. β.—Abdominis segmentis posterioribus totis fuscis.

Habitat in nemoribus Angliæ, Hiberniæ, passim frequens.

DD. *Nervus recurrens in areolam cubitalem 1 rejectus, aut interstitialis.*

Conferendus *O. sævus*, No. 15 ante; *Rogas braconius*, ante, p. 57. No. 14.

Sp. 20. *O. irregularis*. *Niger*, antennarum basi ore pedibusque testaceis, abdominis segmento 2 rufo-piceo, fem. terebra exerta brevissima. (Long. vix 1 lin.)

O. irregularis. *Wesm. Monogr.* 132. No. 15.

Add.—Thoracis dorsum puncto antescutellari impressum, ut in proxime præcedentibus: abdominis segmentum 2 basi utrinque obsolete rugulosum.

Habitat Angliam, Hiberniam, passim frequens.

CC. *Pleuræ sulco medio crenato vel rugoso.*^b

D. *Nervus recurrens evectus.*

E. *Os clausum.*

Sp. 21. *O. leptostigma*. *Niger*, antennarum scapo ore pedibus abdominis segmento 2 et sequentibus testaceis, stigmate lineari longissimo, terebra exerta brevissima, fem. (Long. 1—1 $\frac{1}{4}$ lin.)

O. leptostigma. *Wesm. Monogr.* 138. No. 20.

Habitat—semel tantum lectus, et cum *O. cingulato* diu commixtus, quare de loco dubius sum.

Sp. 22. *O. parvulus*. *Niger*, ore pedibusque testaceis, coxis posticis fuscis, mas oris regione et antennarum basi testaceis, fem. terebra exerta brevissima. (Long. $\frac{1}{2}$ — $\frac{5}{4}$ lin.)

O. parvulus. *Wesm. Monogr.* 139. No. 21.

Var. β.—Abdominis segmento 2 basi rufescente.

Add.—Mesothoracis dorsum lævissimum foveolâ nullâ præ scutello.

Habitat—mas semel lectus et cum Sp. 5, diutius commixtus.

EE. *Os patulum.*

F. *Mesothoracis dorsum lævissimum.*

Sp. 23. *O. docilis*. *Niger*, antennarum scapo ore pedibus abdominisque segmento 2 antice testaceis, mas. (Long. vix 1 lin.)

Antennæ corpore longiores, articulis 31, duobus interioribus testaceis: facies carinata: clypeus mandibulæ testaceæ, hæ basi

^b Sulcus ille supra coxas medias oblique ductus epimeron ab episterno discernit.

subtus excisæ: genæ apice, prothorax, suturæque thoracis laterales rufo-piceæ: metathorax abdominisque segmentum 1 rugulosa, hoc basi piceum: alæ hyalinæ stigmatibus nervisque fuscis: stigma latius quam Sp. 25, attenuato-trigonum, cubiti abscissam anteriorem opprimens: areola cubitalis 2 quam illi longior, extrorsum parum attenuata: postica disci clausa: nervi recurrentis in alis posticis vestigium nullum.

Habitat prope ripas Senani autumnis semel lectus.

FF. *Mesothoracis dorsum foveola antescutellari impressum, sulcis humeralibus inchoatis tantum.*

Conferendus O. reconditor, No. 29 post.

Sp. 24. O. æthiops. *Niger, mandibulis rufis, pedibus piceis, femoribus anticis apice et tibiæ basi dilutiùs, mas. (Long. $\frac{4}{5}$ lin.)*

Antennæ corporis longitudine 21-articulatæ nigræ: palpi breves fuscis: metathorax medio lævis nitens: abdominis segmentum 1 sublineare punctulatum, reliqua lævissima: alæ hyalinæ, stigmatibus nervisque fuscis: stigma angustum fere lineare: areola radialis ante apicem alæ clausa, cubitalis 2 longa vix apice attenuata, postica disci haud perfecte clausa: nervi recurrentis vestigium in alis posticis O. *pygmæatori, mas, prima facie similis, differt sculptura, alis hyalinis, areola radiali strictiore, cubitali vero longiore.*

Sp. 25. O. pactus. *Niger, antennarum scapo mandibulis pedibus abdominisque segmento 2 antice rufo-testaceis, fem. terebra subexerta. (Long. 1 lin.)*

Antennæ corpore paulo longiores 29-articulatæ: metathorax abdominisque segmentum 1 rugosa, opaca, hoc basi utrinque carinatum: alarum stigma angustum lineari-lanceolatum: cubiti abscissa prima brevissima extricata: alæ latiores quam O. *spreti* (cujus simillimæ,) et areola cubitalis 2 minus attenuata: nervi recurrentis in alis posticis vestigium nullum.

Habitat prioribus olim commixtus.

Sp. 26. O. æmulus. *Niger antennarum basi late ore pedibus abdominisque segmento 2 antice testaceis terebra exerta brevi, fem. (Long. 1 lin.)*

Antennæ graciles corpore longiores 27-articulatæ testaceæ apice fuscæ: oris rima tenuis: clypeus et mandibulæ testaceæ:

metathorax subtiliter rugulosus: pleuræ sulco tenui in fundo crenulato: abdominis segmentum 1 lineare rugulosum, 2 testaceum, posteriora fusca: terebra fere $\frac{1}{4}$ abdominis longitudine (annon casu longius protrusa?) pedes toti flavo-testacei: alæ quales *O. pallipedi*, antennarum articuli longiusculi etiam hujus affinitatem innuunt, etsi os non absolute clausum et sulcus pleurarum crenulatus diversum vindicant.

Habitat ———? Unicum modo vidi.

Sp. 27. *O. polyzonius*. *Niger*, antennarum scapo facie orbita pedibusque testaceis, abdominis segmento 2 et sequentibus testaceis fusco cingulatis, areola cubitali 2 latiuscula, terebra subexerta, fem. (Long. $1\frac{1}{4}$ lin.)

O. polyzonius. *Wesm. Monogr.* 136. No. 18.

Habitat in Anglia, semel lectus.

Sp. 28. *O. nitidulator*. *Niger*, antennarum scapo facie orbita thoracis lineis 4 dorsalibus scutello pedibus abdominisque subcircularis segmento 2 antice rufis, mas. (Long. $1\frac{3}{4}$ lin.)

Bracon nitidulator. *N. ab. E. Monogr.* 56. No. 11.

Caput rufum, vertice medio nigro, linea fusca clypei basin cingente: antennæ corpore parum longiores 34-articulatæ articulis 2 interioribus rufis: thoracis lineæ intermediæ postice inter se antice cum exterioribus connexæ: metathorax abdominisque segmentum 1 crasse rugosa, hoc late obconicum: pedes testacei: alæ obscure hyalinæ, squamulis testaceis, nervis stigmatæque fuscis; stigma attenuato-trigonum cubitum paulo præ medio excipit: areola radialis ante apicem alæ acute clausa, cubitalis 2 sat longa apice attenuata: alæ posticæ latiusculæ nervo recurrente manifesto.

Habitat in Salicetis Hiberniæ borealis mihi semel lectus.

F. F. *Mesothoracis sulci plus minusve distincti.*

Sp. 29. *O. reconditor*. *Niger*, antennarum basi palpis pedibusque testaceis, mandibulis (mas clypeo) rufo-testaceis, fem. abdomine subcirculari, terebra recondita. (Long. $1-1\frac{1}{2}$ lin.)

O. reconditor. *Wesm. Monogr.* 134. No. 17.

Exemplaria quæ *F. Walker* prope Londinum legit pertinent *Var. 3*. His præterea incisuræ posteriores abdominis pallido micant, fem.

venter anusque flavo-pallidi : pedes toti silacei aut pallide-estacei, coxis fere albidis : alæ latæ hyalinæ squamulis flavidis, nervis stigmatæque fuscis : hoc attenuato-trigonum cubitum paulo præ medio excipit ; cubiti abscissa 1 brevis extricata ; areola cubitalis 2 brevis apice attenuata : thoracis sulci humerales læves postice in medio dorsi evanescent, linea media præ scutello profundius impressa antrorsum evanescit.

Var. 1.—Abdominis segmento 2 plus minus rufo-testaceo, *mas* et *fem.*

Var. 2. ut *Var. 1.*—Sed prothorace testaceo, *mas.*

Var. 3. ut *Var. 1.*—Sed facie orbitisque rufo-testaceis, *fem.*

Sp. 30. *O. truncatus.* *Niger, antennarum scapo ore pedibusque testaceis, mesothoracis humeris truncatis, fem. abdomine subcirculari, terebra exerta brevissima.* (Long. $1\frac{1}{2}$ lin.)

O. truncatus. *Wesm. Monogr.* 137. No. 19.

Habitat prope Londinum et Vindisoram etiam in Insula Vecti lectus Junio—Septembre. *F. Walker.*

Sp. 31. *O. bajulus.* *Niger, mandibulis pedibusque rufis, coxis nigris, scutello rugoso, mas.* (Long. $1\frac{1}{4}$ lin.)

Niger nitidus : facies punctulata subcarinata : palpi fusci : antennæ (mutilatæ) nigræ pedicello piceo : mesothoracis sulci tenues ante scutellum acute concurrunt : scutellum gibbum basi lævigatum : metathorax rugoso-punctatus : abdominis segmentum 1 late obconicum concinne striatum, reliqua lævissima : alæ hyalinæ squamulis piceis, nervis stigmatæque fuscis ; stigma elongatum tenuissimum cubitum intra primam trientem excipit, areola radialis oblonga apicem alæ non attingit, cubitalis 2 elongata extimam æquiparans, apice æquilata : nervi recurrentis vestigium in alis posticis.

Habitat—*maris* unici reliquias valde læsas in Sylvâ Regia prope Hantoniam lecti dedit *F. Walker.*

Sp. 32. *O. rudis.* *Niger, ore orbita abdominis segmento 2 antice pedibusque rufis, facie et thoracis dorso scabriculis, fem. terebra recondita.* (Long. 1 lin.)

O. rudis. *Wesm. Monogr.* 141. No. 23.

Obs.—Propter puncturam reliqui capitis occiput hujus læve superne

sat definitum extat, ut in *Rogadibus* e subgenere 9^o, sed characteres vere *Opii*.

Habitat prope Londinum, lectus *F. Walker*.

Sp. 33. *O. cæsus*. *Niger*, *mandibulis pedibusque testaceis, femoribus posticis tibiisque apice fuscis, abdominis segmento 2 scabriculo, fem. terebra subexerta.* (Long. $\frac{5}{4}$ —1 lin.)

Niger parum nitens vage punctulatus et pubescens: os late patulum, facies subcarinata; antennæ corporis fere longitudine (*mas* longiores) 21—24-articulatæ: mesothoracis sulci parum discreti, punctulati, postice non concurrentes: humeri subangulati: pleurarum sulcus late rugosus: metathorax rugulosus: abdomen *fem.* late ovatum subdepressum, *mas* angustius; segmentum 1 breve latè obconicum, gibbum rugulosum, basi abrupte bicarinatum, 2 latè scabriculum, basi utrinque oblique impressum, impressionibus in arcum concurrentibus: pedes longi testacei; femora posteriora apice, tibiæ apice aut fere totæ cum tarsis fuscæ; rarius pedes toti fere testacei: alæ hyalinae, squamulis piceis, nervis stigmatæque fuscæ; stigma angustissimum; areola cubitalis 2 apice vix attenuata: alæ posticæ angustæ ner vi recurrentis nullo vestigio.

Habitat in pratis humidis Angliæ, Hiberniæ, minus frequens.

DD. *Nervus recurrens rejectus aut interstitialis.*

Conferendus *O. rudis*, No. 32 ante, etiam e Subgenere 9^o. *Rogadum*, *R. lanceolator*, ante, p. 58. No. 16.

Sp. 34. *O. comatus*. *Niger*, *antennarum basi late ore orbita thoracis lituris dorsalibus scutello pedibusque testaceis, fem. terebra subexerta.* (Long. $1\frac{1}{4}$ lin.)

O. comatus. *Wesm. Monogr.* 145. No. 26.

Caput sordide testaceum, vertice medio late et occipite fuscis: oris rima fere semicircularis: palpi longi pallidi: antennæ *feminæ* corporis fere longitudine, 23-articulatæ, articulo 3 longo, testaceæ articulis apice fusco-punctatis exterioribus fuscis; *mas* longiores graciliores latiùs infuscatae: thoracis dorsum lineis 2 testaceis postice in lituram confusis, sulcis subtilissime crenulatis aut punctatis ante scutellum concurrentibus: scutellum sutura porcata

discretum, apice testaceum : metathorax niger rugoso-reticulatus : abdomen obovatum subdepressum segmento 1 longiusculo obconico, ruguloso, medio subcarinato : 2 pone medium stria transversa obsolete bipartitum et ibidem sæpe testaceo signatum, basi nonnunquam substriatum ; reliqua lævissima nigra : alæ obscure hyalinæ, squamulis pallide testaceis, nervis subfuscis, stigma lanceolatum fusco-testaceum, medio fere cubitum excipiens, nervus recurrens vix rejectus : areola radialis alæ apicem attingit, cubitalis 2 extrorsum vix angustata, postica disci subincompleta : nervus recurrens in alis posticis manifestus.

Obs.—Ambigit hic si ullus alter in ipsis finibus *Opiorum* et *Rogadum* conterminis.

Habitat in lucis umbrosis Angliæ, Hiberniæ rariùs.

Sp. 35. *O. rufipes*. *Niger, antennarum scapo ore pedibus abdominisque segmento 2 antice rufis, cubito e medio stigmate prodeunte, fem. terebra recondita.* (Long. 1—1 $\frac{3}{4}$ lin.)

O. rupides. *Wesm. Monogr.* 147. No. 28.

Var. β.—Abdomine toto nigro.

Habitat in Hibernia boreali rarissime,—*feminam* ex Anglia misit etiam *F. Walker*.

Sp. 36. *O. cælatus*. *Niger, antennarum scapo subtus mandibulis pedibusque testaceis, posticorum tibiis apice tarsisque fuscis, facie thoraceque latè rugosis, stigmate lineari attenuato, mas.* (Long. 2 lin.)

Caput oblatum punctatum, occipite lævi, facie rugulosa subcarinata : oris rima ampla fere semicircularis : palpi longi pallidi : antennæ corpore multo longiores, mutilatæ at supersunt articuli 40, duo interiores subtus rufescunt : thorax solito longior, confertim punctatus subopacus, mesothoracis lobis humeralibus medio lævigatis, intermedio vage punctato : abdomen oblongum, segmento 1 longo lineari subtiliter ruguloso, reliquis lævissimis : alæ hyalinæ, squamulis rufo-testaceis, nervis fuscis, stigmate fusco-testaceo angusto lineari, cubitum in triente prima excipiente ; areola cubitalis 2 apice non attenuata, nervus recurrens insigniter rejectus : nervus recurrens in alis posticis manifestus.

Habitat—*marem* unicum ex Anglia mecum communicavit benevole *Rev. G. T. Rudd*.

BB. *Areola cubitalis 2 limes interior æqualis.*

C. *Cubitus ultra medium stigmatis crassi exceptus;—os patulum.*

Sp. 37. *O. caffer.* *Niger nitidus, tibiis basi piceis, alis obscuris, cubito versus apicem evanescente, fem. terebra $\frac{1}{4}$ abdominis longitudine.* (Long. $1\frac{1}{2}$ lin.)

O. caffer. *Wesm. Monogr.* 150. No. 30.

Habitat prope Londinum lectus, mas et fem. F. Walker.

Sp. 38. *O. fulgidus.* *Rufus, antennis metathorace pectore abdominis segmento 1 et sequentium cingulis nigris, alis fuscis, mas.* (Long. $1\frac{2}{3}$ lin.)

Statura hujus crassa: caput rufum, palpi picei, antennæ nigræ, articulis 2 baseos subtus piceis, mutilatæ at supersunt articuli 28 breves (ideoque plurimi forent integris), mesothoracis dorsum rufum, sulcis impunctatis in medio evanescentibus et foveola præ scutello: pleuræ rufo-piceæ, sulco profunde crenato: scutellum et metathorax nigri, hic crasse rugosus: abdomen ovato-orbiculatum, segmento 1 oblongo ruguloso: segmenta posteriora fusco-cingulata, cingulis confluentibus: alæ fuscæ, squamulis rufis; stigma obovato-lanceolatum, nervus recurrens fere interstitialis: alarum posticarum nervus recurrens incurvus areolam disci fere perficit.

Habitat in Insula Vecti legit Junio mense F. Walker.

CC. *Stigma angustius cubitum in medio, vel ante medium, excipiens.*

D. *Os patulum.*

Sp. 39. *O. placidus.* *Niger, antennarum scapo subtus ore abdominis segmento 2 antice pedibusque rufis, posticorum tibiis apice tarsisque fuscis, terebra recondita, fem.* (Long. $1\frac{1}{2}$ lin.)

Antennæ corpore longiores 38-articulatæ, articulis 2 baseos subtus piceis: facies carinata: mesothoracis sulci inchoati tantum et foveola præ scutello: pleuræ sulco impunctato: metathorax subtiliter rugulosus: abdomen ovatum, segmento 1 striato, 2 basi rufo, apice et sequentibus piceis: pedes testacei, coxis basi nigris, tibiis posticis apice tarsis iisdem totis fuscis: alæ hyalinæ, squamulis testaceis, nervis fuscis, stigma longissimum lineare, fusco-testaceum, cubitum in triente prima excipiens.

Habitat in Hibernia boreali semel lectus.

DD. *Os clausum.*F. *Pleuræ sulco lævi.*

Sp. 40. *O. carbonarius.* *Niger, antennarum scapo subtus clypeo mandibulis pedibusque testaceis, fem. terebra recondita.* (Long. 2—2½ lin.)

* *Bracon id.* . *N. ab E. Monogr.* 58. No. 13.

Opius procerus. *Wesm. Monogr.* 156. No. 35.

Obs.—Nervi alarum in *maribus crassi, feminis tenuiores.*

Habitat in pratis, Angliæ, Hiberniæ, passim autumno frequens.

Sp. 41. *O. impressus.* *Niger antennarum scapo clypeo mandibulis pedibusque testaceis, abdominis medio fusco-testaceo, fem. terebra recondita.* (Long. 2 lin.)

O. impressus. *Wesm. Monogr.* 157. No. 36.

O. carbonarii omnia fere, modo abdominis segmentum 2 apice et tria sequentia fusco-testacea sunt, cute molliori, quæ in exsiccatis late subsidit; tunc singula medio transversim impressa videntur margine undique elevato.

Habitat Hiberniam borealem et occidentalem, præcedente longe rarior;—marem ex Anglia misit *F. Walker.*

EE. *Pleuræ sulco crenato scu rugoso.*

Sp. 42. *O. Rusticus.* *Niger, antennarum scapo clypeo mandibulis pedibusque testaceis, scutelli apice punctato, stigmate lineari cubitum ante medium excipiente, fem. terebra recondita.* (Long. 1½ lin.)

O. carbonarii alæ et omnia fere sed pleuræ sulco late rugoso et statura minor; ab *O. Wesmaelii* et proxime affinibus differt, antennis longioribus, thoracis sculptura leviori, stigmate longiore, cubiti insertionem et areola radialis paulo longiore.

Habitat in Brassica Rapa Hiberniæ borealis autumno lectus rariùs.

Sp. 43. *O. scabriculus.* *Niger, mandibulis trochanterum apice tibiis femoribusque rufis, his superne tarsisque fuscis, capite thoraceque late rugosis, fem. "terebra ½ abdominis longitudine."* (Long. 1¾ lin.)

O. scabriculus. *Wesm. Monogr.* 154. No. 33.

Obs.—*Maris* segmenta abdominis 2, 3 et 4 singula ante apicem spinulas geminas subtilissimas alidas gerunt.

Habitat—*marem* unicum ex Anglia misit *F. Walker*.

Sp. 44. *O. Wesmaelii*. *Niger*, *antennarum scapo subtus clypei apice mandibulis pedibusque testaceis, scutello rugoso, stigmatate lineari-lanceolato, maris nigro, feminae fusco, terebra recondita.* (Long. vix 2 lin.)

O. carbonarius. *Wesm. Monogr.* 152. No. 32.

Areola radialis ab alæ apice sat remota, oblongo-lanceolata; cubiti abscissa extima recta vel apice lenissime inflexa.

Habitat in *Salicetis Hiberniæ borealis* nec infrequens, Maio—Junio; ex Anglia misit etiam *F. Walker*.

Sp. 45. *O. sylvaticus*. *Niger*, *antennarum scapo subtus mandibulis pedibusque testaceis, scutello rugoso, stigmatate lineari-lanceolato fusco-testaceo, fem. terebra recondita.* (Long. vix 2 lin.)

O. carbonarius. *Wesm. Monogr.* 152. No. 32. (cum præcedente conjunctus, an jure?)

Præcedenti similis, facies et thorax confertiùs rugosi: discrimen certissimum e forma areolæ radialis quæ perpaulo longior est cubiti abscissâ extimâ levissime reflexâ seu postice concavâ: stigma semper fusco-testaceum.

Habitat *Hiberniam borealem præcedente* longe rariùs, — *marem* unicum ex Anglia misit *F. Walker*.

Sp. 46. *O. hæmorrhœus*. *Niger*, *antennarum scapo clypeo mandibulis pedibus abdominisque dimidio anali rufo-testaceis, scutello rugoso, fem. terebra recondita.* (Long. 2 lin.)
Fig. a. b.

O. carbonarius, Var. 2. *Wesm. Monogr.*

O. Wesmaelii affinis, major, latior: scutellum totum rugosum: alæ fere quales *O. sylvatico*, stigmatate obscure testaceo. Abdominis segmentum 2 apice sequentia tota rufo-testacea.

Var. β .—Abdominis segmento 2 apice et sequentibus rufo-piceis nigro-cingulatis, stigmatate fusco.

Habitat—*marem feminasque* prope Londinum lectos misit *F. Walker*. — *feminam* Var. β . cepi ipse in *Salice Hiberniæ borealis*.

Sp. 47. *O. blandus*. *Niger*, antennarum scapo subtus, ore pedibusque rufis, tibiis posticis apice fuscis, scutelli apice punctato, fem. capite rufo, vertice medio nigro, abdominis segmento 2 rufo, posterioribus fuscis, fem. orbita genis abdominisque segmento 2 et sequentibus rufo-piceis, his nigro-cingulatis, terebra recondito. (Long. vix 2 lin.)

Caput *maris* latissimum. rufum, vertice medio et occipite nigris; facies punctata medio carinata, litura fusca utrinque prope clypeum: palpi breviusculi testacei: antennæ vix corporis longitudine 41-articulatæ nigræ vel piceæ: thoracis dorsum nitidum sulcis humeralibus inchoatis et foveola ante scutellum; hoc apice crasse punctatum: pleuræ sulco lato transversim porcato: metathorax rugulosus medio lævior: abdomen oblongum segmento 1 basi perparum attenuato, ruguloso, carinula media antrorsum bifurca, 2 rufo, sequentibus sensim obscurioribus: pedes breves, femoribus validis, rufo-testacei, tibiis posticis apicis spatio brevi tarsis iisdem totis fuscis: alæ hyalinæ, squamulis testaceis, nervis fuscis, stigmatе subfusco cubitum medio fere excipiente.—*Femina* minor colore obscurior, abdomine latiùs ovato.

Habitat in Salicetis Hiberniæ borealis mense Maio, *femina* semel, *mas* nonnisi rarissime lectus.

Sp. 48. *O. bicolor*. *Niger*, antennarum scapo subtus ore pedibus abdominis segmento 2 et sequentibus rufis, fem. terebra recondita. (Long. $1\frac{1}{4}$ lin.)

O. bicolor. *Wesm. Monogr.* 151. No. 31.

Habitat Hiberniam borealem mihi semel lectus.

Subgen. II.—GNAPTODON.

Palpi labiales 3-articulati. *Terebra brevissima* subulata deflexa: areola cubitalis 2 latior fere quam longior.

Bracon Microcephali, Spp. *N. ab. E. Monogr.*

Sp. 49. *O. Gn. pumilio*. *Niger*, ore antennarum basi pedibusque flavis, abdominis segmento 2 basi apiceque arcuatim impresso. (Long. $\frac{3}{4}$ —1 lin.)

Bracon. *pumilio*. *N. ab. E. Monogr.* 90. No. 51.

Niger nitidus: caput subtilissime punctulatum facie media levigata: mandibulæ parvæ a clypeo rima brevi distantes, flavo-testacæ:

palpi flavi: antennæ corpore vix longiores articulis 21—23, quatuor aut quinque interioribus flavis: mesothoracis dorsum sulcis binis subtilissimis postice evanescentibus: metathorax et pleuræ læves: abdomen *fem.* ovatum convexum, segmento 1 obconico subtilissime rimuloso basi bicarinato; 2 lineâ transversâ arcuatâ in fundo punctatâ prope basin impressum, et alterâ in apice, utriusque sinu in basin abdominis obverso, pone illam subtiliter rimulosum, arcu antico tumido lævi: venter carinato-compressus pallidus: terebra subexerta subulata deflexa, ut in *Leiphronitibus* nonnullis et *Euphoris*.—*Maris* abdomen angustius ovato-lanceolatum: pedes flavi unguibus fuscis: alæ (*fig. d.*) limpidae, squamulis flavis, stigmatibus fusco, nervis expallidis: stigma ovato lanceolatum cubitum perpaulo præ medio excipit: areola radialis oblongo-lanceolata alæ apicem non attingit, cubitalis 2 brevis antrorsum angustata et minor primâ, hæc apice summo nervum recurrentem excipit: nervi recurrentis vestigium in alis posticis.

Fig. d.



Variat mas antennis nigris, articulis 2 baseos tantum subtus flavescentibus, coxis posticis femorum margine supero tibiis posticis tarsisque apice fuscis.

Habitat per Ebudes Insulas et Hiberniam in foliis *Betulæ albæ* at infrequens, mensibus, Julio et Augusto.

Explicit Genus *Opius*.

ART. XXVIII.—*Notes on various Insects.* By J. W. BOND.

1. *Combat of Ants.*

SIR,—I beg to call your attention to one of the most astonishing phenomena regarding insects that ever came under my notice. A relation of mine, Mr. R. Long, having employment near Hornsey church, in the summer of 1828, was attracted by the singular actions of some sawyers, who were at work at a short distance from the house in which he was staying. On reaching them, he found they were annoyed by an immense body of ants flying above their heads, numbers of which were incessantly falling on them. The saw-pit was

situated between two trees, one of which appeared to be the station of an army of black, the other of an army of red ants. After each army had been flying for awhile round the tree of which it had taken possession, both, as by some mutual signal, rushed forward, and, meeting in mid-air, commenced a most desperate battle.

It clamor totis per propugnacula muris ;
 Intendunt acres arcus, amentaque torquent.
 Sternitur omne solum telis ; tum *scuta* cavæque,
 Dant sonitum flictu *galeæ*, pugna aspera surgit.

VIRG. *Æn.* ix. 664.

As they fought, numbers fell to the ground, and always in pairs, one black and the other red ; and, when thus engaged, as it were hand to hand, each pair continued the horrid combat until one or both were completely disabled and unable again to rise. At last a truce was sounded, and each party retired to its respective post ; but, alas ! this was but for a time—it was only to recover their strength and recruit their exhausted energies. Burning with cruel rage and insatiable revenge, each party again rushed into battle—again the horrors of war were repeated and prolonged—and again they retreated. This continued during the whole day ; and the carnage did not cease till the sun was below the horizon. The air was then deserted by the combatants ; but the earth was strewn with the slain, the dying, and maimed. Not one that bit the dust ever again left the earth, to which his own rashness and savageness had brought him !

2. *Economy of Clytus arcuatus.*

SIR,—I published some remarks on this insect in the Entomological Magazine, Vol. I. p. 212 ; perhaps you will oblige me by inserting the following particulars, in addition. The females lay their eggs in the chinks of the bark of oak-trees that have been felled, but not stripped of their bark ; and, as they appear to frequent the trees for this purpose only, it is obviously the reason why the insect is never found on those trees which have the bark stripped. As soon as the eggs are

hatched, the larvæ begin to burrow in the bark, and they are frequently so numerous as completely to undermine it and detach it from the wood; as they proceed, the passage through which they pass is filled up with their excrement, which becomes as hard as the wood itself. The larva is white, and the pupa of the same colour, until within a few days of the change, when the elytra become darker, and the golden marks of the perfect insect become visible, and of a cream colour. To the eye of the Entomologist, this insect, at large, is a beautiful and truly interesting sight. When the sun is shining in its fullest splendour, these insects run over the surface of the bark, occasionally stop, and moving their thorax, produce a little creaking noise, indicative of happiness. Then they approach some little eminence, wave their antennæ backwards and forwards, as if elate with pride and joy, and, opening up their wing-cases, fly off in quest of other scenes. As I mentioned in my former communication, the males are excessively quarrelsome. I have often watched their combats; they stand at a little distance from each other, like bulls, then rush together with great violence, each aiming at the antennæ and legs of his opponent. On these occasions there is usually a female standing by, coolly looking on. I have this year (1836) taken above two hundred specimens of this insect, besides a great number of larvæ and pupæ, which, I believe, were before unknown to Entomologists.

3. *Nests of the Common Wasp.*

It is necessary to observe, that the nests of this insect are situated in banks, and sometimes a considerable distance from the surface. The best mode is to attack them by night, putting into the external aperture a lighted fusee, composed of moistened gunpowder mixed with sulphur and saltpetre. After this has been in the nest about five minutes, the wasps become so stupified with the fumes of the powder, that the nest may be dug out in perfect safety. Great care should now be taken not to cut the nest with the spade; it is frequently so large that there is great danger of this. After the nest is obtained, it is best to bring it home in a bag, carefully

tied up, as the wasps are very tenacious of life, and soon recover from the effects of the powder.

No. 1.—This specimen was nearly of a globular form; it contained seven plates, placed horizontally above each other; the central one was the largest, and the others gradually diminished in size. The plates were supported by rudely-constructed pillars, placed at irregular distances from each other, and composed of the same material as the plates themselves, a material resembling pulverized decayed leaves. The purpose of these pillars is to support the plates, and keep them at an equal distance from each other, so that the working wasps can freely visit all parts of the nest. The plates are divided into numerous inverted hexagonal cells, in each of which is deposited an egg of an oblong form, attached to the side, nearly at the bottom, by a glutinous matter, which envelops it at the period of its extrusion. From the egg is produced the white larva, which is so favourite a bait with fishermen; after this has been fed by the working wasps for a few days, it is covered in by them with a substance resembling whity-brown paper, and becomes a pupa, which resembles the larva in being perfectly white.

The cells do not, as might be supposed, contain, indifferently, males, females, and neuters on the same plate, but each kind is confined to a separate plate, one containing all males and neuters, and another all females. Those plates which contain the females are very readily distinguished from the others, by the superior size of the cells. Having observed a number of worm-like substances at the bottom of the cells, I was at a loss to know what they could be. It struck me they might have some reference to the black streak contained in each larva. On dissecting several larva I found that this streak was the intestinal canal; and I further learned, from the dissection of pupæ, that they were entirely without the black streak. On carefully examining the cells, I found that each of the cells in which were pupæ possessed one of the worm-like substances, and that the cells in which there were larvæ were invariably without them. I therefore conclude, that this substance is the contents of the intestinal canal, discharged at the time of transformation from the larva to the pupa state.

No. 2 contains but five plates, the central one the largest,

as before, and all of them somewhat convex; the plates were supported by pillars of much less strength than those of No. 1. The substance of which the nest was constructed was of a lighter colour, and there was but one single perfect female in the whole hive. In every other respect this nest agreed with No. 1. On examining the perfect insects, I found them to belong to a totally different species from *V. vulgaris*; they were smaller, and of a brighter colour. As I was examining the cells of this nest, one of those which had been covered in was gently opened, and the black antennæ of a male *Ripiphorus paradoxus* protruded through the opening. Its appearance in emerging was truly singular; first the antennæ, then the head, the thorax, and abdomen; at last, when quite clear of its prison, it ran about with amazing celerity. I had shortly afterwards the pleasure of seeing a female *Ripiphorus* escape in the same manner.

No 3 was, in every respect, similar to No. 1. containing seven plates, and of this the perfect insect was the common wasp.

No. 4 was also similar, and was an amazingly large specimen, the central plate measuring upwards of fourteen inches in diameter. The larvæ, when in a state of rest, lay with their heads bent somewhat downward, but on moving anything before the cell which contains them, they stretch out their necks and open their mouths, reminding you of a nest of young birds. If a fly or piece of bread is given them, they emit a small portion of very transparent fluid from the mouth, and then attempt to eat, but I could never ascertain that the food diminished.

I am, Sir, yours, &c.

J. W. BOND.

4, Lenham's-buildings, Friar's-mound,
Church-street, Bethnal-green.

ART. XXIX.—*Notes on Diptera.* By FRANCIS WALKER.*(Continued from page 117.)*MOLOBRUS. *Latreille.*

- Molobrus Thomæ*, *Linnaeus*. Autumn; seashore; North Wales.
- M. morio*, *Fabricius*. Spring and autumn; near London; Wales; Isle of Wight.
- M. præcox*, *Meigen*. Spring and autumn; near London; Wales.
- M. fuscipes*, *Meigen*. Spring to autumn; near London; Wales.
- M. fucatus*, *Megerle*. Spring to autumn; near London; Wales.
- M. vitripennis*, *Hoffmansegg*. Spring to autumn; near London.
- M. fenestratus*, *Meigen*. Spring to autumn; near London; Wales; Isle of Wight.
- M. fuscipennis*, *Meigen*. Spring and autumn; near London; Isle of Wight; Scotland.
- M. pulicarius*, *Hoffmansegg*. Spring to autumn; near London.
- M. scatopsoides*, *Meigen*. Autumn; near London.
- M. sylvaticus*, *Meigen*. Near London.
- M. nervosus*, *Meigen*. Spring to autumn; near London; Windsor Forest.
- M. nitidicollis*, *Megerle*. Spring; near London.
- M. minimus*, *Meigen*. Spring; near London.
- M. flavipes*, *Panzer*. Spring and autumn; near London; North Wales.
- M. annulatus*, *Meigen*. Near London.
- M. pallipes*, *Fabricius*. Autumn; near London; Wales; Isle of Wight.
- M. hyalipennis*, *Meigen*. Summer and autumn; near London.
- M. aprilinus*, *Meigen*. Spring and autumn; near London.
- M. pusillus*, *Meigen*. Autumn; near London; Wales.
- M. longipes*, *Meigen*. Spring to autumn; near London; Windsor Forest.

- M. brunnipes*, *Meigen*. Summer and autumn; near London; Windsor Forest; Wales; Cumberland.
M. nemoralis, *Meigen*. Near London.
M. hirticornis, *Meigen*. Near London.

PLATYPALPUS. *Macquart*.

- P. ciliaris*, *Fallen*. June; July; September; near London; Windsor Forest; New Forest; Devonshire.
P. longicornis, *Meigen*. May to October; near London; Devonshire; Wales; Isle of Wight.
P. luteus, *Meigen*. June to October; woods, near London; Windsor Forest; New Forest.
P. dissimilis, *Fallen*. June; Windsor Forest; New Forest.
P. ventralis, *Megerle*. Near London.
P. candicans, *Fallen*. July; near London.
P. flavicornis, *Meigen*. June; near London; Windsor Forest.
P. bicolor, *Fabricius*. May; June; August; near London; Windsor Forest; Isle of Wight.
P. flavipes, *Fabricius*. June to October; near London; New Forest; Devonshire; Isle of Wight; Scotland.
P. cursitans, *Fabricius*. May; June; near London; Windsor Forest.
P. fasciatus, *Meigen*. Near London.
P. fascipes, *Meigen*. June; September; Isle of Wight; Isle of Portland; Cumberland.
P. annulatus, *Fallen*. June to August; near London; Windsor Forest.
P. annulipes, *Meigen*. }
P. flavipalpis, *Macquart*. } Near London.
P. articulatus, *Macquart*. September; near London; Cumberland.
P. calceatus, *Meigen*. June; July; near London.
P. exiguus, *Meigen*. June to September; near London; Windsor Forest; New Forest; Isle of Wight; Cumberland.
P. minutus, *Meigen*. May to September; near London; Isle of Wight; North Wales; Devonshire; Cumberland.
P. dichroas, *Meigen*. June; September; New Forest; North Wales.

P. comptus. Mas et Fem. *Ater, nitens, pedes rufi fusco cincti, alæ subfuscæ, nervi bene determinati.*

Ater, nitens, lævis : antennæ nigræ, capite paullo longiores : thorax fere glaber : abdomen pubescens : pedes rufi ; mesofemora parum incrassata, nonnunquam apice supra fusca ; metafemora apice nigra ; protibiæ fuscæ ; metatibiæ apice fuscæ ; tarsi fusci, basi rufi : alæ subfuscæ ; nervi obscuriores, optime determinati : halteres flavi. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$.)

Spring to autumn ; near London ; Hampshire ; Dorsetshire ; Wales ; Isle of Wight ; Cumberland ; Cornwall ; grass in woods.

P. robustus. Mas. *Niger, obscurus, antennæ nigro-piceæ, pedes flavi, tarsi nigro-annulati, alæ limpidae, nervi flavi.*

Niger, obscurus, pubescens : antennæ nigro-piceæ, capite vix longiores : trophi fusci : abdomen basi fuscum : pedes flavi ; mesofemora valde incrassata ; tarsorum articuli apice nigri : alæ limpidae ; nervi flavi, non bene determinati : halteres flavi. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

P. mundus. Fem. *Ater, parum nitens, antennæ nigræ, pedes flavi, meso- et metafemora nigra, alæ sublimpidæ, nervi bene determinati.*

Ater, parum nitens, parce pubescens : antennæ nigræ, capite vix longiores : trophi nigri : pedes flavi ; meso- et metafemora nigra ; unguis et pulvilli fulvi : alæ sublimpidæ ; nervi fusci, tenues, bene determinati ; halteres flavi. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

HEMERODROMIA. *Hoffmansegg.*

H. obsecratoria. Mas et Fem. *Ferruginea, abdomen et thoracis dorsum fusca antennæ fulvæ, pedes flavi, alæ sub-fuscæ, nervi obscuriores.*

Ferruginea, parum nitens, fere glabra : caput fuscum : oculi nigri : antennæ fulvæ, capite longiores : trophi fulvi : abdomen fuscum,

subtus fulvum: pedes flavi: alæ subfuscæ; nervi fulvi, bene determinati: halteres flavi. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. 2.)

Summer and autumn; in woods; near London; North Wales.

RAGAS. *Walker.*

Microphoræ similis, at nervus longitudinalis apice ramulum emittens.

Sp. 1. Ra. unica. Mas et Fem. *Atra, pubescens, alæ nigro-fuscæ, ad costam obscuriores, nervi nigri.* (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

June; Isle of Wight.

ATELESTUS. *Walker.*

Collomyiæ et Platypezæ similis, at alarum nervi aliter collocati.

Sp. 1. Ate. sylvicola. Mas et Fem. *Nigra obscura, pubescens, antennæ pedes et halteres picea, alæ fuscæ, nervi obscuriores.* (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

June; New Forest; Hampshire.

CYRTOMA. *Meigen.*

C. atra, *Meigen.* Spring to autumn; near London; Windsor Forest; Hampshire; Ireland; Scotland.

C. melæna, *Haliday.* Spring and summer; near London; Windsor Forest.

MICROPHORA. *Macquart.*

M. velutinus, *Macquart.* Spring to autumn; near London; Windsor Forest; Isle of Wight.

M. crassipes, *Macquart.* Summer; near London; Isle of Wight.

TRICHINA. *Meigen.*

T. flavipes, *Meigen.* Autumn; near London; North Wales.

- T. clavipes*, *Meigen*. Summer; Windsor Forest; Isle of Wight.
T. elongata, *Haliday*. Summer; near London.

HILARA. *Meigen*.

- H. thoracica*, *Macquart*. Spring to autumn; on windows; grass in woods, &c.; near London; Windsor Forest; Scotland.
H. nana, *Macquart*. Summer and autumn; near London; Hampshire; Cumberland.
H. litorea, *Fallen*. Summer and autumn; near London; Windsor Forest; Cumberland; Ireland.

LONCHOPTERA. *Meigen*.

- L. lutea*, *Panzer*. Summer and autumn; near London; Windsor Forest; Isle of Wight; Devonshire; Cornwall.
L. lacustris, *Meigen*. Spring and autumn; near London; North Wales.
L. palustris, *Meigen*. Spring and autumn; near London; North Wales.
L. flavicauda, *Meigen*. Spring to autumn; near London; North Wales.
L. rivalis, *Meigen*. Summer; near London.
L. tristis, *Meigen*. Autumn; woods; North Devonshire; North Wales.

L. flavicauda, *riparia*, and *rivalis* are probably varieties of one species, so also *L. lacustris* and *palustris*, so also *L. nigriana* and *thoracica*.

ART. XXX.—*Notes of Captures*. By DELTA.

DEAR SIR,—Though the past summer has been by no means favourable to the Entomologist, yet I have a few species to add to the list of Lepidoptera found near Epping, published in your Magazine, Vol. III, p. 157, the discovery of which, with one exception, are due to Mr. Henry Doubleday. Although

the species are somewhat rare, and one or two peculiarly interesting,^a I should not have troubled you with this, had it not afforded me an opportunity of stringing to it a few remarks I made whilst collecting at Sudbury and Colchester, having, when at home, been too much immersed *civilibus undis*, to have leisure for Entomology.

The first insect I have to allude to is, *Limenitis Camilla*. A specimen of this butterfly was captured by Mr. Ray, near Park-hall, about a mile and a half from Epping, in a spot I have often hunted. The occurrence of a single specimen is rather remarkable; but, perhaps, is the prelude of a more numerous appearance next year, as I have observed to be the case sometimes.

For the first time in my life I saw this beautiful butterfly near Colchester last July, and its elegant appearance when on the wing will not soon be effaced from my mind. It is vain to try to describe it, but any Entomologist who would journey from London to Colchester, would be well repaid all expence, trouble and time, were he only to pass one fine July day in the woods bordering the road from Colchester to Ipswich. There he will find *L. Camilla* in profusion, *Apatura Iris*, *Melitava Athalia*, &c.;^a and should he be fond of the fossorial Hymenoptera, and bees, he will find every sunny bank alive with them.

The larva of *L. Camilla* may be found by carefully hunting the leaves of the honeysuckles. The figure in Curtis is not the larva of *Camilla*, but of some other European species. I here also may remark that *Apatura Iris* was more common at Epping this summer than we have ever known it before; but alas! none could be taken. Had I been at home, I should have tried a plan which I know has proved very successful at Colchester. This is merely to have a quantity of black, very wet mud spread in some open place in the woods where *Iris* is seen,

Mille trahens varios, adverso sole, colores.

They will soon come down to it, to enjoy its coolness and moisture, and are then easily taken.

The next insect which I have to mention is *Paranthrene Vespiformis*, touching which, a little book was once written. This was captured, being "*in hortulo suo*," by Mr. H. Double-

^a Specimens of all these may also be purchased for a trifle of a person named Biggs, residing in these woods.

day, very early one morning in June, flying over the path, like an *Odynerus*, for which he took it at first sight.

Ægeria Bembeciformis appeared in July in different parts of our woods; but from the rapidity of their flight over the fern and underwood, only two were taken.

Orgyia gonostigma. Several larvæ of this insect have occurred this autumn; as well as one of—

Stauropus fagi, which was beaten out by a person who was assisting me in collecting autumn caterpillars.

Charæa graminis and cæspitum. A new road from Epping to Woodford, through the forest, has been some years in hand. A labourer employed upon it, brought to Mr. H. Doubleday a number of pupæ which he had found in paring some turf to put on the sides of the embankments. Most were injured from their lying exactly the depth below the surface that the turf had to be cut. Mr. D. went himself to try and obtain more, and uninjured. Whilst there, he observed some moths darting like lightning over the turf, and occasionally over the low beech bushes. These proved to be *Charæa graminis*.

Referring to Mr. Wailes's paper in your first volume, we found that they came out chiefly early in the morning. Accordingly he proceeded to the same spot very early one morning, in order to be there at the time Mr. Wailes mentions, but none appeared. However, about nine, out they came whizzing about in all directions over a small space of open ground. Their swiftness rendered them very hard to capture; but yet many were secured ere they retired to rest, which was in about two hours.

Wishing to see the insect alive, I went to the spot the next day but one, but after waiting two or three hours I could not see one; so I ran off into the thick of the forest for a ramble. The weather afterwards set in bad, so we could get no more. The pupæ found were chiefly *Heliophobus popularis* and *Hama testacea*, but two or three were *Charæa cæspitum*.

The entire additions to our list of Lepidoptera are as under:—

Limenitis Camilla	Charæa graminis
Parathrene vespiformis	cæspitum
Ægeria Bembeciformis	Cymatophora Oo.
Orgyia gonostigma	Xanthia rufina.
Cerura bicuspis	

I have also one bird to add to the list published at page 290 of your last volume, as well as an omission to correct. A specimen of *Muscicapa luctuosa*, (the pied fly-catcher,) was killed in this town last May. The omission to which I allude, is that of the common kingfisher, *Alcedo ispida*.

In a little wood near Sudbury, I this summer met with several specimens of *Laphria nigra* and *Thecla W. album*. I also took there *Cleptes semiaurata* and *nitidula*, &c. Sudbury is, perhaps, one of the best localities in England for land and fresh water shells; but is not, from the deficiency of wood, very favourable to the Entomologist. However, some rare Lepidoptera occur, as *Agrotis æqua*, *Orthosia lota*, &c. Last July, *Leucania pallens*, common, to be sure, everywhere, swarmed in countless myriads over the meadows. A large lime tree in the garden of Mr. W. P. King, when in flower, offered a most interesting spectacle. Millions, I might say, of *Noctuites* visited it every evening. They were chiefly *Leucania pallens*, *Polia dysodea*, *Agrotis exclamationis*, *Segetum*, *Hortorum*, &c., intermixed with *Mamestra brassicæ*, *Oleracea*, *Persicariæ*, and other *Noctuites* in smaller numbers.

Colchester and its vicinity appears to me to be one of the most favourable spots in our country for the Entomologist, and at the same time one of the most beautiful. I hope to be able to enter more into its Entomology soon, as I trust it will another year be fully investigated by one quite competent to the task, and residing on the spot. Of our Lepidoptera I have no doubt that a very large proportion are to be found there. The sandy soil is peculiarly favourable to Hymenoptera and Coleoptera.

I find amongst my papers a note of the following extract, from Oviedo, touching scorpions, which I may be allowed to append here. I have a lot of notes of other little scraps of natural history, to be extracted from some of the Spanish historians of America, but have not time now to search them out and arrange them. They relate, at least many of them, to the bees of tropical America, but I wish first to study Latreille's paper in Humboldt's Zoologie, &c.; which, at this moment, I have not by me. Some of these bees are said to produce *sour* honey, others are—

Like to those bees of Trebezond,
 Which, from the sunniest flowers that glad
 With their pure smile the gardens round,
 Draw venom forth which drives men mad.

Should I have leisure, I may do this for your next Number, but it may happen that Delta may have something better to do before that time.

Now to the scorpions; and we shall see that Oviedo was fully convinced of the exaggerations of those who talk of fatal effects ensuing from their stings.

“There are in all the West Indies and Terra Firma scorpions, which are what in Castille we call *Alacranes*, and in some parts there are many of them. Concerning this animal, Pliny says, book ii. cap. 25, that it causes death in three days after it has stung any one, and that its sting is always mortal to virgins, and in fact, to women in general: and he says other things of it, of which most will not apply to the scorpions of these parts. For here their sting is not mortal, although it causes much pain for about the space of a quarter of an hour, and sometimes longer. And in these parts I have many times been stung by these scorpions, and I have found out that some give much more pain than others: and this, perhaps, may depend on a person being stung immediately after a meal, or when hungry, or may arise from the state of the scorpion itself; but, be this as it may, no man or woman incurs any danger from it. And I consider the sting of a wasp, (*abispa*,) to cause quite as much pain as that of the scorpion of these Indies, and of some wasps more. But I, as one who have experienced both, consider that the pain from the scorpion's sting lasts longest.”

Yours, most truly,

Δ.

Epping, Nov. 27, 1836.

ART. XXXI.—*Further Observations on the Septenary System.*
 By EDWARD NEWMAN.

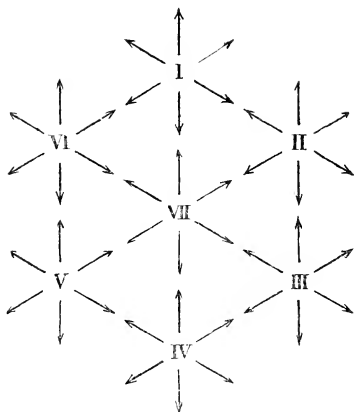
“Quicquid ex Phenomonis non deducitur hypothesis vocanda est.”—NEWTON.

FOUR years have elapsed since the publication of “Sphinx Vespiformis.” During this period, although it has been coarsely and virulently criticised, no single attempt has been made to demonstrate, by fair argument, the unsoundness of a single

proposition which it contained. The bitter and declamatory language of these criticisms was, doubtless, intended to supersede the necessity of argument, as by this device the various scribes cunningly preclude the possibility of a reply. Still, though there has appeared nothing like a refutation of the proposition contained in "Sphinx Vespiformis," I am unable to boast of success in the way of proselytism. Unwilling that a system, which I believe to be the only true one, should so early sink into oblivion, I have attempted, in the following pages, again to call the attention of Entomologists to the subject. I am well aware there are many excellent Entomologists, who say that system is inapplicable to any useful purpose; and, therefore, that the inquiry is an idle one. Others, however, think differently, and regard system as the high object and aim of their researches. It is to the latter class I more particularly address myself.

It will be my endeavour to avoid entirely the dangerous and difficult subject of affinity and analogy. If either of the words occur, it will be incidentally, and without any reference to their theoretical value. With every attempt at precision of language, it is difficult wholly to exclude words in common use, yet I am persuaded, that a great benefit would be conferred on zoology if every word were restricted to one decided meaning, and employed with that meaning only. In attempting to attain this precision, writing may occasionally appear pedantic, but even this fault is preferable to that of vagueness.

The object of the present article is not to retrace the arguments employed in "Sphinx Vespiformis," but to supply some deficiencies which occur therein. It will not, however, I trust, be deemed an unnecessary prolixity if I here recapitulate the principles of the Septenary System. They are these:— 1st. That all natural groups are divisible into seven minor groups. 2dly. That in all groups thus composed of seven minor groups, one of such minor groups contains beings more perfect than those in the other six. 3dly. That each of the six minor groups contains individuals equally related to the more perfect group, though each probably through some different character. 4thly. That each of the inferior groups containing individuals equally related to the more perfect group, such relation could only be accommodated by placing the more perfect group in the centre, and the others around it, *thus*—



By supposing the diagram to contain forty-nine individuals, it will be evident that each individual must be related to at least three others, and if central, to no less than six. The Roman numerals express the seven typical or more perfect individuals, VII. being most perfect of the whole; the arrows express six other individuals around each type, each of them after its fashion related to some other group to which the arrow is pointing.

The arguments whence this view of the subject was deduced, in the pages of "Sphinx Vespiformis," were expressed without that attention to precision, or that reference to detail which such a proposition obviously demands; and I cannot feel surprised that my opinions have made so little progress. I further attempted, in that Essay, to show that the seven classes of insects occupied places in the above diagram, corresponding with the numerals now attached to them: I. Lepidoptera, II. Diptera, III. Hymenoptera, IV. Coleoptera, V. Orthoptera, VI. Hemiptera, and VII. Neuroptera. (*See the diagram opposite*).

The central position of the class Neuroptera implies its superiority to the classes by which it is surrounded; but as this may not be admitted by the whole of my readers, it would, perhaps, have been the most courteous plan to have defined, at length, the grounds on which I have imagined this superiority. As, however, the space which an article of this kind necessarily

occupies is very considerable, I must decline entering, at present, on that very intricate subject; at the same time, of course, relinquishing the very important assistance my views would obtain from the established superiority of the Neuroptera. I cannot, however, dispense with the necessity of taking a cursory view of this interesting class.

The heterogeneous contents of the class Neuroptera are excessively perplexing; but, I find, the more strenuously we attempt to place them naturally, the more nearly will such arrangement accord with that which a Septenary System requires. Latreille divided them into four "natural families." Three of these appear sufficiently precise, "*Libellulines*, *Ephémérines* and *Phryganides*." The fourth, called "*Planipennes*," including *Nemopteryx*, *Bittacus*, *Panorpa*, *Boreus*, *Ascalaphus*, *Myrmeleon*, *Osmylus*, *Hemerobius*, *Psocus*, *Termes*, *Embia*, *Raphidia*, *Mantispa*, *Corydalis*, *Sialis*, *Nemoura* and *Perla*. A glance at these genera will show that this group is a most carelessly constructed one; its very name leads one to expect as much. *Psocus*, *Termes*, and *Embia*, are isomorphous genera, and possess a limited, though various, prothoracic development; their tarsi are tri-articulate. *Perla* and *Nemoura* are also isomorphous, but have a much more extensive prothoracic development; their tarsi are likewise tri-articulate. *Ascalaphus*, *Myrmeleon*, *Osmylus*, *Sialis*, *Hemerobius*, *Raphidia* and *Mantispa* are necromorphous; they have moderate prothoracic development, with the exception of *Raphidia* and *Mantispa*, in which that segment is exceedingly elongate, as in *Collyuris*, *Mormolyce*, and other carnivorous Coleoptera: all these genera have five-jointed tarsi. There is another group still remaining, which consists of *Bittacus*, *Panorpa*, *Boreus*, and *Nemopteryx*. These singular genera agree in the structure of the parts of the mouth, which are prolonged in the form of a beak; their metamorphosis is unknown; their tarsi are five-jointed; their prothorax is restricted as in Hymenoptera. Here, then, we have seven groups, some of which, though very closely allied in appearance, present still those striking structural differences which render it impossible to unite them. I will attempt to sketch an arrangement of these groups.

To begin with the central or typical group, I select the *Libellulina*, as in every way the most perfect; whether we consider their powers of locomotion, or parts of manducation. It

will be observed that each of the remaining groups, in some of their genera, copy, as it were, the quantity of surface and power, as well as reticulation of wing, possessed by the *Libellulina*. The differences in the development of the pro-meso- and metathorax, afford us steady assistance in the distribution of the circumferential groups. The *Ephemerina* possess the minimum degree of prothorax and metathorax. The reverse is the character of the *Perlina*; in these we find the prothorax and metathorax of considerable volume, though not the maximum degree, and the mesothorax proportionally decreased.

The *Ephemerina* and *Perlina* are thus placed in exact opposition to each other. From *Ephemera* we perceive very slight difference in structure, if we pass to *Nemopteryx*, thence to *Panorpa*, and thence to *Bittacus*; and the minute *Boreus* is too closely related to *Panorpa* to be excluded. These four genera constitute the Stirps *Panorpina*. The hind wings in this group equal or exceed the fore wings in size. From the *Panorpina* we pass to another group, distinguished by a still greater development of prothorax and metathorax, a less development of mesothorax, a greater perfection of mouth, and a decided necromorphous metamorphosis. This group includes the *Myrmeleonina* and *Corydalina* of Mr. MacLeay. The larvæ are among the most singular productions of nature. They are exceeding voracious, subsisting on the juices of other insects which they kill: they conceal themselves on leaves, under rubbish, or construct pitfalls in the earth. They have mandibles perforated at the extremities, through which they suck the juices of their victims. *Raphidia* seems, in some degree, a departure from the typical character of this group, its larvæ, according to Mr. Waterhouse, feeding on the bark of trees. On this subject I cannot speak from observation; but, if the description is correct, it is a singular proof of the waywardness of nature, which seems to defy our arbitrary laws. *Sialis* has a quiescent pupa. Thence we pass to *Perla*, or rather the *Perlina*: here the metamorphosis is strictly isomorphous; the mouth strictly mandibulate, the pro- and metathorax fully developed, and the mesothorax restricted. From the *Perlina* we proceed to *Embia*, thence to *Termes*, and from *Termes* to *Psocus*. The Genus *Embia* exists without a history; its general habit points to *Termes*, as the type of its economy, but at this we can only guess. The connexion between *Psocus*

and *Perla* is readily traced, by means of this genus and the genuine *Termites*. In many of the *Psoci* the mouth undergoes a complete change, the component parts become linear and rigid. By this character, as well as the narrow prothorax, increasing mesothorax, and often folded hind wings, we are prepared for the obsolete mouth, obsolete prothorax, fully developed mesothorax and folded hind wings, which characterise the Stirps *Phryganina*. The circle is here complete; from the *Phryganina* to the *Ephemerina*, the transition is perfectly natural.

I am well aware how very little this tends to the corroboration of any system. I am as unable as my readers to see any striking relation between these groups and the classes to which I suppose they lead. All that I assert is, that, attending solely to structure and metamorphosis, the foregoing appears a natural arrangement of the principal groups into which Neuroptera may be divided. It possesses points which indicate the truth of a septenary arrangement, an assertion that we shall see exemplified as we proceed. To myself these gradual indications appear of paramount importance. An insect may hereafter be met with which shall possess the hind wings of Neuroptera, with a pair of rudimental or protecting fore wings; the prothorax may be that of Coleoptera, the head and mouth those of *Mantispa* or *Raphidia*. These peculiarities, coupled with the relations shown above, would render such a genus invaluable; without them it would be a mere stumbling-block, like *Stylops* and *Atractocerus*.

The supposed position of the classes surrounding Neuroptera may be seen by the diagram.

The arguments on which the proposed position of the seven classes was defended, were drawn up with scarcely a reference to those important characters on which natural arrangement essentially depends. On more attentively considering the subject, I found that the exact points of union between neighbouring classes was a subject of very limited importance, while the approximating location of great groups was the grand object to achieve. With this view I determined to learn before again attempting to teach. I sought out, and, I think I may say, mastered every arrangement of insects that has been transmitted to us. When we look back at our predecessors in Entomology; when we consult the works of Aristotle, Linneus, Fabricius,

Ray, Swammerdam, Latreille, Cuvier, and a host of others, we cannot for a moment hesitate in acknowledging that they were men well versed in the science which they professed to teach. As regards divisional characters no recent writers have attempted to undervalue those which these authors proposed. On the contrary, all our systems, however various, have reference to the writings of these great men. If we build systems of our own, we are compelled to use their materials, or rather their writings are the materials with which we build.

It requires long and close attention to any branch of Natural History, to ascertain what characters are the least liable to change. Those which remain unaltered, or but little altered, while all around them has undergone repeated change, are invaluable. On the contrary, those parts over which generic, specific, and even sexual distinction holds an unlimited power of change, are amusing and instructive as objects of study; but in the formation of great and important divisions, even colour and size could not be more utterly valueless.

Though Entomologists, who have attempted a general arrangement of the objects of which their science treats, have taken various views of those differences on which divisions are founded, all appear to admit the truth that system depends on differences, but scarcely two seem agreed as to what differences, or what mode of differences, are of paramount importance. Some prefer for purposes of division the differences observable in the structure of the mouth, some the differences in the structure of the wings, or of those parts whence the wings arise; others again have insisted that the only true guide is to be found in the differences of metamorphosis; and a fourth class of systematists have availed themselves of all these differences. These last are certainly in the right. I say this not because their views correspond with my own, but because we have abundant proof that nature will not be bound by any of our arbitrary and rigid laws. We must trace her in *all* her infinitely varied creations; and, if we would understand her, we must avail ourselves of each.

With a view to work out the systems dependent on each series of differences, pointed out by the great men to whom I have already referred, I have endeavoured to trace the characters in question through their every change. The result of the inquiry has been published in three chapters of consider-

able length : in these it has been my wish clearly to explain the principal differences that are to be found among insects in the structure of the segments, and the mouth, and in the stages of metamorphosis. I would not be guilty of the impertinence of referring to my own works, but that they really form a part of my subject, and, united, constitute the source from which my present observations are drawn. Moreover, the three chapters in question are to be found in the prior pages of this Magazine, and may fairly be considered introductory to the present inquiry. The chapters are these—" Art. XLVI. Osteology, or External Anatomy of Insects." Ent. Mag. Vol. I. p. 394. " Art. VI." on the same subject. Ent. Mag. Vol. II. p. 60. " Art. II. A few words on the Transformation of Insects." Ent. Mag. Vol. III. p. 12.

In the first of these chapters I have detailed the principal differences occurring in the segments of which every insect is composed, both as regards bulk and form; particular stress being laid on the differences of those segments which bear the implements of locomotion, and on those differences which exist in the structure and design of such implements. On these differences is founded the Alary System. In the second chapter the differences occurring in the mouth have been carefully described, and this not solely with a view to their subsequent employment as the support of a theory, but also with a design to introduce a uniform anatomical nomenclature of the various component parts. On the differences in the mouth is founded the Maxillary System. In the third chapter the different modes of transformation are described and compared. On these differences is founded the Metamorphic System. The facts detailed in these chapters have, without exception, (as far as I recollect at the present moment,) passed under my own observation, and are not dependent, in any degree, on the assertions of others. This I mention, because facts so stated should be subject to contradiction only from those who can speak from observation, and should not be disputed because previous writers may have stated them differently. And here I may further state, that the inquiry was, in every instance, made with perfect fairness, and a fixed determination to abandon such parts of my proposed system as would not harmonize with these three great and indisputable systems. So far from avoiding the application of any other extensive series of differ-

ences to my proposed location of the classes, I would willingly test it by a dozen such series, could they be shown me. I know of none besides those I have here adduced. This I consider a triumphant superiority over every restricted system, because the authors of such are compelled to abandon *one* or *two* of these highly natural series of differences. Not to mention minor Entomologists, I refer the reader to Swammerdam's published opinion of the Maxillary System; Fabricius' opinion of the Alary System, and MacLeay's of the Metamorphotic System. Each of these great men condemns one principal character as proving no natural affinity; and each differs in the one so condemned.

The object of this article is, to show that the Septenary System is not dependant on any real or fancied similarity of external appearances, but will bear the most rigid scrutiny, founded either on the structure of those parts in the perfect insect, the differences of which have always been considered of paramount importance, or, on the still grander and more decided differences of transformation itself. If it appear at the conclusion that these tests, instead of invalidating, establish the propositions previously made, I hope there will be found those candid enough to admit that such propositions are not founded in error.

Of the Systems in question, I think the Alary, dependent on the structure of the wings, has been the most widely employed; and I will, therefore, suppose it the most perfect. It will be needless to enumerate the great men, from Aristotle to our contemporaries, who have employed the differences of the wings as divisional characters; it is amply sufficient for my purpose, that the classes now universally employed are founded on these differences; and that from these differences arise the names by which the classes are at present universally designated. Now although it is to the wings we must look for the differences in question, the Entomologist will not be contented without a reference also to the parts which bear them. It will be readily seen that a series of differences must occur in general structure, in order to accommodate the different degree of exertion for which the wings may be required. We find the most exact and symmetrical correspondence between the differences in the pairs of wings, and the difference in the segments which bear them, and even in those of adjoining segments. Thus so far

from the differences in the pairs of wings at all interfering with each other, or with those in the prothorax, mesothorax and metathorax, and therefore requiring a different chain of relations, we find that all of them follow a similar system of variation, and each, used as a divisional character, would dissect the figure in the same way. The following modifications of structure are almost invariably found co-existent in the same group.

Prothorax nearly obsolete, or appearing as a narrow ring immediately behind the head: mesothorax fully developed and very conspicuous: metathorax a narrow ring: fore wings ample, strong; the chief, sometimes the sole instruments, of flight: hind wings nearly obsolete.

These characters are, in a great measure, dependent on each other. The circumstance of the fore wings being the chief or sole organs of flight, insures an increase or maximum of volume in the mesothorax, and a decrease in the volume of the prothorax. The rudimental and inactive character of the hind wings is accompanied by a decrease or minimum of volume in the metathorax. These characters are those possessed by the class Diptera: we will, therefore, draw a diagonal line through the diagram from A O B, and we shall find that all insects possessing ample fore wings, and a maximum of mesothoracic development, are on the right side of the line.

The characters so fully possessed by the class Diptera, are also in a great degree observable in Hymenoptera and Lepidoptera; the power of the hind wings, however, has greatly increased, and these become implements of flight, little inferior to the fore wings; the mesothorax also yields a great portion of its volume to the metathorax. Part of the class Neuroptera, the *Phryganina*, the *Ephemerina*, and the *Panorpina* possess the whole of the characters in question, but in a degree much modified, in accordance with their supposed situation in the figure. We also find a portion of the Hemiptera, (I allude to the true *Cicadites*,) possessing the Dipterous character of mesothoracic development; and a corresponding portion of the Hymenoptera; the *Cephites* and *Sirecites*, possessing a character belonging to the classes below the line, that of prothoracic development. With these exceptions a complete dichotomy is effected by the alary line marked A O B. The exceptions, beautifully balanced as they are, serve to confirm rather than invalidate the divisional character.

The opposite characters to those possessed in the highest degree by Diptera, and in the second degree by Lepidoptera and Hymenoptera, may be given thus:—

Prothorax fully, often prodigiously, developed: mesothorax reduced to a narrow ring: fore wings weak, often reduced to mere rudimental appendages, generally incapable of employment as implements of flight: hind wings extremely voluminous, and usually the only organs of flight.

The Orthoptera possess these characters in the maximum degree: we find in Coleoptera and Hemiptera decidedly the same characters, though occasionally in some degree modified. Some of the Neuroptera, more particularly the *Perlina*, have a fully developed prothorax. The structure of this last named group, their quadrate prothorax, their caudal setæ, their ample hind wings, point out a near relation to various genera in Orthoptera. It will, therefore, be impossible to exclude them from that portion of the central circle in the diagram which approaches Orthoptera. The whole of the winged insects, with the intentional exception of some of the more typical forms of Neuroptera, are thus disposed of; and, I trust the candid reader will admit, not only without the slightest violation of the principles of the Alary System, but in a manner to support that ancient and excellent system, and proclaim more forcibly than ever its paramount importance.

Let it not be supposed for a single moment, that I wish, in thus insisting on general laws, to beg the question founded on exceptions. When I speak of Orthoptera, I would be understood to mean the mass of Orthoptera, the *Locustites*, *Achetites*, *Gryllites*, *Blattites*, *Forficulites*, &c. The *Spectres* are an exception. The singular structure of these animals might be made matter of much speculation. By general character, although imperfect, we may define masses; but how often it happens that some individuals contained in those classes will defy our utmost precision!

The prothorax and metathorax follow so exactly the same laws, and are so completely interwoven with the differences of the mesothorax, that it would be nothing more than useless repetition to pursue the subject farther. The line already em-

ployed would serve for each. I will, therefore, proceed to the next division of my subject.

Fabricius, as I have stated, thought and proclaimed that the Alary System was defective and insufficient. In its place he attempted the introduction of another, the Maxillary System. This was to smoothe away all asperities in the path of Entomology. He divided true insects into eight classes, five of which were comprised in one group, and three in another. The first group contained Coleoptera, Orthoptera, Hymenoptera, and Neuroptera, the last being divided by the separation of the *Libellulina* from the remainder of its contents. The second group contained Lepidoptera, Hemiptera, and Diptera. Subsequently, Clairville, following up this Maxillary System, reunited the contents of Neuroptera, and reduced the number of classes again to seven. To the seven classes both Fabricius and Clairville gave new names, which for the sake of simplicity, are here omitted; and Clairville adopting the groups of classes pointed out by Fabricius, named them *Mandibulata* and *Haustellata*. He placed his classes thus:—

I. MANDIBULATA.

- I. Coleoptera.
- II. Orthoptera.
- III. Neuroptera.
- IV. Hymenoptera.

2. HAUSTELLATA.

- V. Diptera.
- VI. Lepidoptera.
- VII. Hemiptera.

The collocation of classes, or of minor groups, is supposed to indicate relation. It is to be observed that every relation thus indicated in the Maxillary System is preserved in the Septenary. I believe it is now pretty generally admitted, the term *Mandibulata* is not sufficiently precise. All insects are furnished with mandibles, and therefore all are mandibulate. “The division is a dichotomous one. Like all dichotomies it consists of a positive and a negative. It is this:—in the mandibulate classes the mandibles *do*, in the haustellate classes the man-

dibles *do not*, move horizontally." The maxillary line M O L in the diagram divides the seven classes agreeably to this definition, leaving Clairville's *Mandibulata* on one side, and his *Haustellata* on the other. In Neuroptera the *Phryganina* and *Ephemerina*, whose mandibles are obsolete or rudimental, and possess no motion, range with the Lepidoptera, &c.; and the *Perlina*, *Hemerobiina* and *Panorpina*, which have strong mandibles, formed for active employment, range with the Orthoptera, Coleoptera, and Hymenoptera. It is here to be observed, that the supposed typical or central group of Neuroptera, and therefore of insects, is decidedly mandibulate. The maxillary line, consequently, cannot pass directly through the centre of this class. Here, as in the prior figure, the line has more decided reference to the circumferential classes than to the central.

It has been, I trust, fully shown in my second letter on Osteology, that "the mouth of insects is not in its differences confined to two plans." The mouth in each class differs widely, and the transition of the various parts from one form to another is to be traced with the greatest ease. Yielding, however, to the trammels of the Maxillary dichotomy, in order to show that it is in perfect consonance with the Septenary System, I will attempt to compile characters by which to distinguish from each other the contents of the classes separated by the maxillary line.

Mandibles fully developed, strong, corneous, possessed of horizontal motion, formed for mastication: maxillæ corneous, possessed of horizontal motion, occasionally formed for detrition or mastication.

Such is preeminently the character of the insects comprised in the class Coleoptera. As we pass right and left, we find these characters strongly exhibited in the Orthoptera and Hymenoptera. In a portion of the Hymenoptera, the bees, the maxillæ evince symptoms of departure from the typical character. They become leathery, lengthened, linear, and united with the ligula form as in Diptera, Lepidoptera, and Hemiptera. a suctorial tube. Above the maxillary line the following characters may serve:—

Mandibles and maxillæ linear, weak, leathery, often elongate, incapable of horizontal motion, and also of mastication or detrition.

The type of this kind of mouth is found among the Lepidoptera, where the maxillæ are frequently of prodigious length, and convolute; but as we descend the figure right and left, we find this typical character considerably modified in the Hemiptera and Diptera, though still abundantly different from any form of mouth existing among the classes below the maxillary line. The position of the classes in the Septenary System is, therefore, in perfect accordance with the Maxillary System as promulged by its originators.

The third grand system of Entomology is called the Metamorphic System. Chronologically, this system intervenes between the Alary and Maxillary Systems. These two systems being founded on the structure of the perfect insect could not be separated. The Metamorphic System, therefore, though chronologically the second, must here rank as the third. It appears that the merit of the invention of this system is due to Swammerdam; but the definitions employed by this philosopher and his contemporary, our illustrious countryman, Ray, are not sufficiently precise to furnish tests by which to try the value of another system. The line TOE in the diagram separates the six circumferential classes into those which, in the language of Swammerdam, possessed a *complete* or an *incomplete* metamorphosis; and, it may be stated, that no single item in the systems of Ray and Swammerdam is at variance with the Septenary System, except such untenable divisions as have long been abandoned by universal consent,—such, for instance, as the singular location of portions of the *Ichneumonites* in separate classes. In this case it becomes necessary to have recourse to more precise and recent definitions.

It has been seen in the chapter to which I have before alluded, that the differences of transformation divide insects into three very natural groups; the characters of which are thus defined:—

1. AMORPHA, in which the penultimate state is provided neither with mouth nor organs of locomotion: consequently it neither eats nor moves, nor does it bear any resemblance to the perfect state.
2. NECROMORPHA, in which the penultimate state is provided with mouth and organs of locomotion detached from the body, but so enveloped in a case that it cannot employ them. The resemblance, therefore, to the perfect state is very considerable, excepting in the total want of motion.

3. ISOMORPHA, in which all the stages are active and voracious, and of similar forms.

Besides these there is a fourth group, or rather there is a class containing orders approaching all these divisions, besides a typical order peculiar to itself. This heterogeneous group is called Anisomorpha.

It now remains to be seen whether this Metamorphotic System, differing in every respect from either the Alary or Maxillary, founded on a totally different basis, and offering a trinary instead of dichotomous division; it remains, I say, to be seen, whether this system will at all invalidate the propriety of a circular and central distribution of the seven classes. It should be observed that, although the terms and definitions in the Metamorphotic System are proposed by myself, the system contains no deviation from the system of Swammerdam, except in a few minor points, to which I have previously alluded, where his view is known to have been erroneous.

The amorphous classes are Lepidoptera and Diptera; the necromorphous, Hymenoptera and Coleoptera; and the isomorphous, Orthoptera and Hemiptera. Now, a single glance at the diagram will shew how the Septenary arrangement of the classes harmonizes with the great character of metamorphosis. Where else than in the centre could that anisomorphous class be placed, whose character, as defined by one of our profoundest writers, is "varied metamorphosis." The diagram is thus a third time divided by a genuine and perfectly natural character, and now by a ternary and not dichotomous line AOE and AOL. With respect to the contents of the anisomorphous class, it is well known that the *Termitina* and *Perlina* undergo a nearly isomorphous metamorphosis; the *Phryganina* are nearly amorphous; the *Ephemerina* have an anomalous metamorphosis, it is true, but it is also true, and singularly corroborative of the correctness of the situation which the Septenary System requires that they should occupy, that this anomalous metamorphosis is precisely intermediate between that of the *Libellulina* and that of the *Culicina*. The metamorphosis of the *Panorpinæ* appears to be unknown; that of the *Hemerobina* is necromorphous, thus indicating their proximity to the Coleoptera.

Having thus shown, and I trust I have shown, that the Septenary System is not only borne out, but in a great measure

dependent on the Alary, Maxillary, and Metamorphic Systems, I beg to say, that on these three systems are founded all others which owe their existence to scientific inquiry, unassisted by theory. Latreille in France, Burmeister in Germany, and Kirby in England, themselves, *longo intervallo*, at the head of Entomology in their respective countries, have reviewed the labours of others, and each proposed what he imagines a more perfect system than any previously existing. These three systems have been styled *Eclectic*; they are very similar, and are all of them *founded exclusively* on those characters which I have shown to constitute the Alary, Maxillary, and Metamorphic Systems, and which harmonize so beautifully with the Septenary. These Eclectic Systems are entirely practical; there appears no leaven of theory to be found in either of them. They may be called linear series of insects, arranged with every possible attention to structural differences.

These Eclectic Systems, however, do not numerically accord with the Septenary; and this difference does not arise solely from the erection of isolated animals of anomalous structure, as the earwig, flea, *Stylops*, &c., into groups of equal value with Hymenoptera and Coleoptera, containing almost myriads of species. With this practice I consider it would be childish to combat. A large group, *Trichoptera*, comprising the *Phryganina*, has been separated from Neuroptera by Mr. Kirby. This author has not, at least I cannot find that he has, explained why the *Phryganina* should be separated from the Neuroptera generally; but he uses very elaborate arguments to prove the propriety of their being separated from the *Perlina* in the same class. "Whoever examines," says Mr. Kirby, "the several tribes into which Mr. MacLeay has divided the Neuroptera, will observe, in all of them, a distinct prothorax, a circumstance which they possess in common with those orders (classes) that use their mandibles for mastication; whereas, in those which do *not* use them for mastication, as the Hymenoptera, or that take their food by suction, this part is replaced by a mostly narrow collar forming a part of the alitrunk: the existence then of the *prothorax* in the *Perlidae*, and of the *collar* in the *Trichoptera*, affords no slight presumptive evidence that they belong to different orders (classes)." I think this argument will scarcely bear a keen investigation. The premises are not sufficiently sound. It may be objected that the pro-

thorax of the *Ephemerina*, among the Neuroptera, is often indistinct, or formed like a collar. 2dly. That Hymenoptera may be found which masticate with their mandibles. 3dly. That the *Cimicidæ*, *Cercopidæ*, and myriads of similar insects, which take their food by suction, have an immense, often a preposterous, prothorax. These, therefore, I imagine are insufficient grounds for the separation in question. But allowing the separation to take place, I still find Mr. Kirby placing the *Phryganites* exactly where the Septenary System requires their presence. At p. 422 of the same volume, in some observation on analogy, the new division *Trichoptera* is entirely omitted, being again merged in the Neuroptera. This is a proof of the exact value at which it was estimated by its author.

Another class, or division, of equal value with the Lepidoptera, Diptera, &c. occurs in Mr. Kirby's arrangement. I allude to the *Aptera*, a group in which he includes *Thysanura*, *Anoplura*, *Arachnida*, and *Myriapoda*. I rather regret having to mention this division at all, for reasons which it would appear impertinent in me to avow. Let it be sufficient that I state my adherence to the arrangement of these groups, which has been long before the public in "The Grammar of Entomology," and therefore, that as constituting one of the classes (or orders, as they are termed by Mr. Kirby) of true insects, I consider the *Aptera* out of place. The primary divisions of insects are thus reduced to seven.

Let us now suppose seven individuals before us, instead of seven groups of individuals, and let us express them by the numerals I. II. III. IV. V. VI. and VII. Some learned man writes a book and argues very elaborately that the insect VII. is constructed so exactly similarly to the insect I., and the insect III., that it must, without doubt, be placed between them. Just as the practical Entomologist is about to adopt the suggestion, another argumentative work is placed in his hand, and now he finds the subject may be viewed in another light. The first writer was right as far as he went, but he had not looked in the insect's mouth; "and here," says the second, "is the sole secret of arrangement." The second writer proves, in fine, that the insect VII. comes between the insects III. and V. An angry discussion takes place, which terminates in the second writer's gaining the day, and promulgating his opinion. Now a third enters the field of controversy; he boldly asserts

the others knew nothing at all of the matter, that he has a peculiar view, founded on metamorphosis, which supersedes the necessity of further inquiry, and which establishes the place of the insect VII. to be between the insects IV. and VI. He demonstrates very clearly that both the others were wrong. Opinions innumerable are given on the subject; books are written; every opinion, as it emerges from the press, is proved correct. However, some persons venture to suppose, that as the writers differ so widely they cannot *all* be right. These persons are wrong; for the various characters in question can be accommodated by placing the insect VII. in the centre, and forming the others into a circle around it; then all the relations, on which the writers so strenuously insisted, will be accommodated. Is this the work of chance? Will any Entomologist, blessed with reasoning powers, contend that this wonderfully harmonizing of three diametrically, fundamentally, opposed systems, is the effect of accident?

Then abandoning this restricted view of the subject, let me ask if it is by accident that the Septenary System so entirely harmonizes with the three diametrically opposing systems on which all our Entomology is built?

It may be contended, and probably proved, that opinions were hazarded in "*Sphinx Vespiformis*," which are not supported in this article. It may also be contended that views are now broached which have no prototypes in "*Sphinx Vespiformis*." Be it so: I have no objection. I should consider it highly discreditable to adhere to views which more precise information rendered no longer tenable. As far as ideas go, I feel some doubt whether I did not once attach more value to the circular chain of relation, than I do at present; the more important characteristic of the Septenary System now appears, to me, to be radiation from a centre.

ART. XXXII.—*Notes about Cillenum Laterale and a submarine Species of Aleocharidæ.* By A. H. HALIDAY, M. A.

IN the month of May last, I found *Cillenum laterale* common under stones and tufts of sea-weed on the Port Rain sands (County Dublin), near low-water mark. They prey upon

sandhoppers (*Talitrus Locusta*, Leach,) seizing them by the soft parts of the underside, and, in this way, are able singly to master game many times their own bulk. Sometimes three or four beetles may be found in concert attacking a sandhopper of the largest size. The tide retiring has scarcely uncovered the sand, when these little depredators are abroad from their hiding-places and alert in the chase. A great part of their existence is passed under the sea, and the mode in which they obtain the necessary supply of oxygen during their prolonged submersion, when the small quantity in the air-bubble which they may convey with them is exhausted, seems to deserve a more particular investigation.^a It was at the same time and in the same situations that I detected the small brachelytrous beetle, which I have named and characterised below, supposing it to be undescribed. It is evidently allied to the genus *Gymnusa* (Karsten,) but while the latter assumes the appearance of the adjoining family *Tachyporidae*, the present has more the air of the *Oxytelidae*.^b The peculiar character of the mouth is more developed than in that genus, the appendages of the labium retaining nothing in their form to recall their typical function as palpi.

GEN.—DIGLOSSA.

Os rostratum. Palpi maxillares elongati; articulo 3 subclarato, 4 obsoleto: palporum labialium loco lacinia 2 setaceæ os superantes: antennæ extrorsum rix incrassatæ, articulo 2 longissimo: thorax postice attenuatus: abdomen lineare: tarsi 4-articulati, articulo unguiculare subæquali.

Sp. 1. *Diglossa mersa* (Long. 1 lin.)

Dull black, slightly pubescent; head, thorax, and elytra minutely punctulate: palpi and legs dusky ferruginous, the middle of the shanks, the thighs, and antennæ darker, the mandibles and feet lighter: head rounded at the sides, without a distinct neck: eyes minute: antennæ rather longer than the head and thorax, slender,

^a Consult on this head the remarks on *Aepus fulvescens*, a species of similar habits, by Mr. Audouin. (Nouv. Annales du Museum, iii. 117.)

^b Observe the facts recorded in this Magazine, Vol. II. p. 180, relative to the submarine habits of *Hesperophilus*.

very little thickened externally; the 2d joint the longest, clavate; 1st nearly as long and more robust, cylindric; 3d shorter, obconic; those which follow very short globose, the exterior ones gradually broader and oblate; the last again longer globose-ovate: labrum transversely quadrangular, a little hollowed out in front: mandibles produced beyond the labrum, slender, acute, the tip slightly incurved, a small tooth on the inside beyond the middle: maxillæ very long, the junction of the scape and stern projecting in an angle from the cheek; the blades very slender, the outer setaceous, with its first joint short; the inner acute and slightly incurved at the extremity; the inside bordered sparingly with minute spines: palpi about as long as the head, slender; the 1st joint minute, the 2d and 3d of equal length, the latter slightly clavate, 4th entirely concealed: mentum transversely quadrangular, narrowed in front, with the margin straight: ligula ———? palpi represented by two parallel spines, so long as to pass beyond the extremity of the mandibles: thorax narrower than the head or elytra, longer than broad, narrowed behind (oblong-obcordate); elytra together, almost quadrate, the posterior angle not evidently notched: wings none: abdomen nearly as long as the rest of the body, linear, only the last two segments tapering: legs not long, shanks pubescent, foreshanks notched and spinous at the tip: fore feet exceedingly short, the joints scarcely distinct: hind feet not half as long as the shank, four-jointed, the last joint shorter than the first, but more robust; the claws strong and hooked.

Habitat in arenis maritimis (Hiberniæ) æstu alterno opertus et reiectus.

A. H. H.

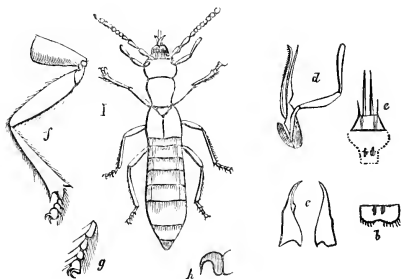


Fig. a. *Diglossa mersa*.

f. Fore leg.

g. Hind foot.

b—e. Details of the mouth.

h. A claw.

ART. XXXIII.—*Note on the Economy of Gyrinus Villosus.*

By the Rev. A. W. GRIESBACH.

SIR,—In Vol. II. pp. 530, 531, of the Entomological Magazine, is a communication by Mr. Haliday, describing a curious fact in relation to the economy of *Gyrinus Villosus*. The following observation, accidentally made by myself, of the sort of place in which that insect, *sometimes* at least, undergoes its metamorphosis, may be read in connexion with it.

On the 21st of May last, I was by the side of the river Derwent, which is distant about one mile from this village; and seeing an old dead willow tree, I pulled off some of the bark, and poked about among the decayed wood, to see if I could find any thing. There was not much in it save “wood lice,” (*oniscus*?) and three small cocoons made of a whitish silk, interwoven on the outer part with minute fragments of the decayed wood. These cocoons were attached to each other, or were at least in contact, and contained what (without much examination) I mistook for the pupæ of *Anobium tessellatum*. I brought them home and put them into a pill-box, which I deposited in a drawer, and forgot. However, by a mere chance I opened this box about a month ago; and in it were three specimens of *Gyrinus villosus*—two quite perfect, the other with crumpled elytra. They were as dark coloured as the species usually is, but all of them were dead.

The willow-tree in which I found the cocoons was a yard, perhaps, from the edge of the river, and the cocoons were about two feet from the ground, in the decayed wood of the tree.

On the strength of this fact, I am disposed to agree with Mr. Haliday, that the specimen of *Gyrinus villosus* (which is the subject of his communication) did not go through its changes in the shell in which it was found. What it really was doing or about to do—whether its being there was “an accidental occurrence,” or an indication of some “peculiarity in the habits of the subgenus” to which it belongs—must, I suppose, remain for the present, mere matter of conjecture.

I am, Sir,

Your obedient servant,

A. W. GRIESBACH.

ART. XXXIV.—*Note on Elater crocatus of Zeigler.*

By THOMAS DESVIGNES.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—It having been stated by my friend Mr. Shuckard, in No. 16 of the Entomological Magazine, that I had taken *Elater rufipennis*, in some abundance, in Shirewood Forest; I beg to state, that the Elater in question is not *rufipennis*, but *E. crocatus*,^a (Zeigler,) making a new species to this country. It has been previously captured by my friend Dr. Howitt, of Nottingham, in the same locality, who was unacquainted with its specific name. Your inserting this observation of mine, will oblige

Your obedient Servant,

THOMAS DESVIGNES.

No. 2, Golden Square,
November 17, 1836.

ART. XXXV.—*Description of two Scarabæi in the cabinet of Samuel Hanson, Esq., M.E.S., &c.* By EDWARD NEWMAN.
(See plate XIV.)

ALTHOUGH the two *Scarabæi* figured in the plate do not appear to be characterised in any of the descriptive lists of the genus which I have seen; yet I think it highly probable that one, or both of them, may have been named in some detached paper, with which I have not chanced to meet. It is, therefore, with considerable reluctance that I propose names for them, seeing that they are so likely to sink as synonyms.

The form of Figure 1 is so exceedingly different from the usual conformation of the *Scarabæi*, that I shall venture to describe it under a new generic name.

GENUS.—PROPOMACRUS. *Newman.*

^a This name I obtained through the kindness of the Rev. T. W. Hope.

Caput parvum inerme, prothorace fere reconditum : mandibulæ maxillæque haud clypeum attingentes reconditæ, mihi invisæ : maxipalpi (quasi) 3-articulati ; articulo 1^{mo}. obconico ; 2^{do}. vix crassiori, liquido breviori ; 3^{io}. elongato, incrassato subtruncato : labipalpi (quasi) 3-articulati ; articulo 1^{mo}. 2^{do}que. obconicis, 3^{io}. elongato apice rotundato : pedes longi ; tibiis angulatis, spinis validis armatis : protibiis longissimis, incurvatis, dentatis, unguiculis omnibus *duobus* apicibus, acutis, valde curvatis, subæqualibus ; plantula inter unguiculos brevis, apice bisetosa. Scarabæarum neque antennæ nec profecto prothorax, distributionis discrepantiæ exhibent. An. *Euchirus* celeberrimi *Kirbii* ?

Sp. 1. Propo. Arbaces. *Brunneus glaber ; prothorax corpore vix latior, valde convexus, inermis, rugose punctatus, lateribus subserratis, angulis posticis valde, semicirculariter emarginatis, subtus pilis aureis vestitus ; protibiæ subtus pilis aureis vestitæ.*
Tab. xiv. Icon. 1.

This beautiful insect nearly corresponds in structure with the *Scarabæus longimanus* of Linnæus ; a sketch of the anatomy of which has been obligingly handed me by Mr. Westwood ; it is, however, I am led to believe, a perfectly distinct species. It is said to have been taken at Smyrna, but appears to me rather more of a Brazilian than European or Asiatic form. The only specimen I have seen is in the rich cabinet of Mr. Hanson.

GENUS.—SCARABÆUS. *Linnaeus.*

I know of no group in Entomology that calls so loudly for further generic division as that immense mass known by the common appellation of *Scarabæus*, or, according to some authors, *Dynastes* ; and, in Fabricius, described under the name of *Geotrupes*. The separation of an isolated species or two as the proposed genus *Propomacrus* for the reception of *Arbaces*, and perhaps *longimanus*, is altogether insufficient, and is a task from which I would most willingly have shrunk.

Scarabæus Cræsus. *Totus testaceus ; pedibus villosis.* Tab. xiv. Icon. 2.

There are several examples of this fine insect in the London cabinets, all of them, I believe, imported from Jamaica by Mr.

Hanson, and without exception, females; a circumstance which makes it doubly riskful to describe as a new species, that which may prove the female of some one previously described. The colour is wholly testaceous, the legs being clothed with long hair of the same colour.

The plate drawn and engraved by Mr. Ingall, is most liberally presented by that gentleman to the Entomological Magazine. It was intended for colouring, and the impressions were taken off for that purpose; circumstances preventing this have, however, supervened: any explanation of these would be as painful to ourselves as uninteresting to our readers.

ART. XXXVI.—*A Sonnetoid on Llanthony.*

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—It is difficult to say what the enclosed has to do with Entomology, except as the common subject of a vignette in one of your late numbers. But it is so rarely that any of our *Nugæ* can be hooked on to your exceedingly dry and scientific details, that, perhaps, the attempt may be received with indulgence. Observe, it is not a sonnet, but a *species* as yet *undescribed*, being two lines longer than all the rest of the family.

A. S. K.

Crickhowell, 21st. Nov. 1836.

Llanthony.

There may be mightier ruins;—Conway's flood
 Mirrors a mass more noble far than thine;
 And Aberystwith's gaunt remains have stood
 The ceaseless shock where winds and waves combine;
 Lone is Dalbadarn, and the lovely shrine
 Of Valle Crucis is a spell of power
 By which each meaner thought and sense are chained;
 Proud of that long array of arch and tower,
 Raglan may claim a rude pre-eminence;
 Tintern is peerless at the moonlit hour

Neath, Chepstow, Goodriche, each has its pretence;—
 But mid thy solitary mountains, gained
 By no plain beaten track, my spirit turns
 To thee, Llanthony; and, as yet untrained,
 Would freely worship where thine altar burns,
 All, save by nature's priests, unseen and unprofaned!

ART. XXXVII.—*Notes on Tenthredinina.*

By EDWARD NEWMAN.

IN looking through Mr. Stephens's descriptive list of the *Tenthredinidae*, with a view to naming the specimens in the possession of the Entomological Club, I have made several marginal memoranda, some of which I thought might perhaps be of service to the public. Others, relating to the general arrangement and the characters of genera, I shall not at present publish, contenting myself with saying, that I consider many of the genera, as *Allantus*, *Selandria*, &c. as not sufficiently definite or precise. In the group of genera with clavated antennæ, I have no remark to make on the species, not having a sufficient series before me to decide. With respect to these, I acknowledge it has occurred to me that sexes are occasionally elevated to the rank of species; but this is no more than a surmise.

In the genus *Hylotoma*, I am unacquainted with *H. pilicornis* and *H. Berberidis*, the latter of which was reported as British by the late lamented Dr. Leach. Of *H. enodis* I possess a fine series, and among them, specimens precisely agreeing with Mr. Stephens's description of *H. Anglica*. Again, in the descriptions of *H. Violacea* and *H. carulea*, differing only in the tibiæ of the latter being occasionally obscurely banded with white, I cannot perceive a specific difference. In like manner, *H. Leachii* appears to me to be scarcely a striking variety of *H. ustulata*. *H. Klugii*, and *H. segmentaria*, again vary but very slightly; and *H. Stephensii* and *H. Pagana* are to be distinguished principally by the colouring of their legs; a character in which scarcely two specimens precisely agree.

Schizocerus furcatus I have taken at Birch-wood, and *S. pallipes*, at Shobden, in Herefordshire. I have also received the latter from Brighton. Allied to *Cladius* and *Pristophora*, I possess several insects which appear unnoticed by Mr. Stephens.

PRISTOPHORA, A. Stephens?

Sp. 1. *Pris. cincta*. *Niger, corpore rubro-cincto, pedibus pallidis, nigro diversis.*

Antennæ and head, with the exception of a yellow labrum, black; body black, with a bright red belt, which passes completely round, occupying four abdominal segments: legs pale; profemora dusky at the base; mesofemora at the base and apex, black; metafemora at the apex, metatibiæ at the apex, and metatarsi, wholly black.

I have seen but a single specimen of this insect, taken by myself in Herefordshire, in May. This will perhaps be the best time to say, that the foregoing and other insects described as new in this article, have been carefully compared with the specimens in Mr. Stephens's collection; a comparison in which that gentleman's assistance has been most kindly given.

GENUS—EUURA. *Newman*. Mas. et fem.

Antennæ 9-articulatæ vix pilosæ, breves, tenues; proalæ cellula marginali 1, submarginalibus 3, quarum 1^{ma} parva quadrata, 2^{da}. longa nervos 2 recurrentes recipiens; ano *femine* oviductu prorecto, 2que setis validis divaricatis armato.

This genus, in the disposition of the wing nervures, corresponds very nearly with *Pristophora* B. of Stephens, but in other respects it widely differs; the antennæ are short, slender, and very slightly pilose in both sexes. In the male there is a slight disposition to elongation in the joints, the sheath of the oviduct of the female is very pilose, elongate, and conspicuous: two strong bristle-like pilose appendages (existing in a less degree in cognate genera) arise, one on each side of the *paratelum*; these three points present a somewhat trident-like appearance at the tail, which at once distinguishes the insect.

Sp. 1. *Euura gallæ*. *Nigra*: *antennis nigris, apice ferrugineis: pedibus pallidis.*

Black: mouth yellow; antennæ rust-coloured at the tip; the legs entirely pale.

The insect is the size of *Nematus pallipes*: the only specimen I have observed was taken by Mr. Walker, in Scotland.

Sp. 2. *Euura cynips*. *Nigra*: *antennis* mare *ferrugineis: fem. nigris: pedibus pallidis, tarsi fuscis.*

Black: mouth ferruginous: antennæ of the male dull ferruginous, with the exception of the basal joint, which is jetty black; of the female, very obscurely ferruginous towards the apex: legs pale yellow, with the tarsi fuscous.

This insect is abundant, and appears universally distributed: it is less than half the size of the preceding; may be beaten off willows, in the leaves of which the larva forms excrescences, in the neighbourhood of London throughout the summer. On referring to Mr. Stephens's species *Nematus gallicola*, I find the description would suit my insect very tolerably; but yet that insect, (I speak of Mr. Stephens's specimens,) has no other characters than size and distribution of colour in common with *Euura*.

GENUS.—NEMATUS. *Leach.*

Sp. 1. *Nematus tibialis*. *Flavus: oculis, antennis, dorsoque nigris; pedibus flavis; metatibiis metatarsisque nigerrimis.*

Yellow: eyes, upper side of the antennæ, crown of the head, and a large block occupying the dorsal portion of every segment, black; the mesoscutellum alone yellow: the legs are yellow, with the exception of the hind tibiæ and tarsi, which are jet black: the nervures of the wings are intensely black.

This insect is from the Isle of Wight, where it was taken by Mr. Walker. The black hind tibiæ are very conspicuous, and distinguish from the other species I possess: its size corresponds with that of *Nematus luteus*, Fab. In the species nearly allied to the one before me, I fear Messrs. Stephens and Le Pelletier St. Fargeau have carried division much too far; but I must not attempt the task of reducing this fearful group.

GENUS.—CRÆSUS, *Leach.*

I have received specimens of a *Cræsus* from Ireland, with the body entirely black, with the MS. name *Cræsus Stephensii*. Mr. Stephens mentions this as a variety, saying it is probably referrible to a distinct species. I could wish that so fine an insect, with Mr. Stephens's name attached to it, may prove distinct.

GENUS.—FENUSA, *Leach.*

The two insects which I am about to describe as belonging to the genus *Fenusa*, differ extremely in general appearance from the insects ordinarily described as constituting the genus; nevertheless, in the neuration of the upper wings, and in the number and relative proportion of the joints of the antennæ, there exists no observable difference; and as the genera of the family seem founded on these characters, I shall not venture to propose new ones.

Sp. 1. Fen. Ianthe. *Nigra lateribus flavæolis: proalæ fumosæ costâ flavæola: pedes pallidi, femoribus omnibus plaga magna nigra.*

This insect has a very large head, considerably wider than any part of the body: the mouth, and a wide band round the eyes, are yellow: the face, antennæ, and crown of the head, black: the body is black above and beneath, but the sides are pale yellow: this colour forms a broad lateral line from end to end, in which line the wings are situated: the forewings have the costal portion tinted with the most delicate straw-colour, the remaining part clouded; the two marginal cells are of nearly equal size; the first submarginal cell is elongate, the second of moderate size: the hind wings are transparent and uncoloured; legs delicately straw-coloured, with a black patch on the femora: size rather less than that of *Cladius difformis*.

This insect appears generally distributed; it occurs in the woods of the metropolitan district in May and June.

Sp. 2. Fen. parviceps. *Nigra, pedibus albidis, femoribus nigris; alis amplissimis nigro nebulatis; caput (pro genere) minimum.*

This insect has a very small head: the face, region of the insertion of the antennæ extending upwards in two lobes, and margin of

the eyes, are of a dirty white: the antennæ are brown: the eyes and crown of the head are black: the body is entirely black and shining, with the exception of a row of white spots on each side of the abdominal segments: the fore wings are elongate and ample; they have the costal margin as far as the stigma, the inferior margin to the same extent, and a direct fascia uniting these two, blackish: the marginal as well as submarginal cells are of nearly equal proportions: the hind wings have a slight black cloud: legs white, with a black patch on the femora: size that of *Cladius difformis*.

Not common; taken twice by Mr. Walker.

The Club Cabinet appears to possess many other *Fenusa* undescribed; but none are so distinct as the foregoing.

GENUS.—SELANDRIA, *Leach*.

Sp. 1. Selan. pallida. *Pallide viridis, oculis ocellisque nigris*.

This insect is entirely of a pale, sickly, green colour, with black eyes and ocelli: its size is that of *Selandria ferruginea*.

Occurs commonly on the mountain ash.

Sp. 2. Selan. versicolor. *Niger; abdominis dorso flavo, lateribus ventrique albidis nigro-sparsis, pedes pallidi*.

Head very broad, black: pro- meso- and metathorax black; the latter with two white spots above: propodeon black above, with a white posterior margin, and a central oblong white spot: the seven following segments dorsally bright yellow, laterally and ventrally white, sprinkled with black spots, disposed in some specimens in somewhat regular lines: telum dusky: wings hyaline, but completely covered with minute brown dots, nervures brown: coxæ white: trochanters white, with a black spot: the legs pale yellow: about the size of *Cladius difformis*.

Neighbourhood of London; May and June.

Sp. 3. Selan. chrysorrhæa. *Niger, alis nigro-tinctis ano pedibusque croceis*.

Tenthredo chrysorrhæa. *Klug*.

Very small, being less than *Nematus gallicola* of Stephens.

London, Birch Wood; Worcester, Leominster, &c.

GENUS.—ALLANTUS, *Leach*.

Sp. 1. Allan. hæmatopus. Mas. *Niger, cingulo abdominis rufo: pro- et mesopedibus stramineis metafemoribus sanguineis plaga nigra metatarsis atris.*

Tenthrido hæmatopus,—*Panzer*.

Head and antennæ black, with the clypeus, labrum, and palpi delicately straw-coloured: body black, excepting the 7th, 8th, and 9th segments, which are bright red: the fore and middle legs are delicately straw-coloured: the hind legs particolours: the coxæ are exteriorly straw-coloured, but towards the body jet black: the trochanters are wholly straw-coloured; the femora bright red, with a jet black patch above the tarsi wholly black; all the claw and pulvilli are blue. This insect is about the size of *Allanti neglutus* and *blandus*.

This splendid insect is not uncommon. I have observed it in the collection of the British Museum and elsewhere, and it has been presented to the Entomological Club from the neighbourhood of Worcester, by Mr. Burlingham, and from the neighbourhood of Ramsgate, by Mr. Foster. I have little doubt that it is the male of *Ten. hæmatopus* of Panzer: if it prove otherwise, I would propose calling it *Allantus Ione*. Many other observations might be made on the genus *Allantus*, both as regards the value of the genus, and of the species it contains; but a general work is in progress, in which, I trust, the genus will be remodelled.

ART. XXXVIII.—*Some Account of the Birds of Godalming*
By WARING KIDD and OTHERS.

THE observations contained in this article have been principally made by Mr. Waring Kidd, whose long residence at Godalming, coupled with the nature of his favourite and almost only employment, the preservation of birds, have given opportunities of acquiring local knowledge in Ornithology superior to those which almost any other individual is ever likely to possess. The second person whose authority is adduced is Mr. William Stafford, for many years the assiduous assistant of Mr. Kidd in the exercise of his profession. The third

person is the author of various papers in Loudon's Magazine of Natural History, and other journals, under the signature of "Rusticus;" and the fourth, a long resident at Godalming, and a frequent participator in the discoveries of the other three. This fourth (although the least capable) individual is the compiler of this paper. One bird is introduced on the authority of White, of Selbourne.

Godalming is situate thirty-four miles S.S.W. of London, in the county of Surrey; the town stands in a low situation on the river Wey, and is completely surrounded by little hills, the various ascents of which present pleasing prospects in every direction. The soil is a bright red sand, which extends from the chalky range of cold, poverty-stricken Downs, crossing the country from Reigate to Farnham; between the chalk and the sand is an exceedingly narrow tract of blue clay, sometimes scarcely ten yards in width. These three distinct soils do not gradually intermingle, but are separated by the most abrupt transition, and their effect on the produce where the three soils occur in the same field is very marked. The sandy soil produces a variety of surface; in most parts it is excessively poor, and wholly unprofitable to man: when this is the case, if situated on the low grounds, it becomes an almost continuous marsh, occasionally presenting immense sheets of water; these ponds, in the process of time, enrich the soil which they cover, and make it worth the expense of draining;—thus the once fine piece of water, known as Old Pond, has been embanked, divided, drained, and filled at different times and in various ways, until nearly an hundred acres are redeemed and devoted to agriculture; still it is a pool of respectable dimensions, and is a site around which some of my memory's most unfaded flowers have been wreathed. In many places this labour would be ill bestowed, and we find fine pools of water that have existed for centuries all along that valley which winds by Peperharrow, Elsted, Frensham, Thursley, the Pudmores, Headley, &c. Ascending thence by Bramshot to Liphook, we find a track of similar surface as regards vegetation, producing heath, furze, and wortleberry, but now light and dry, and easily scattered by the wind; this is a peculiar character of Hindhead. Wherever the sand bears the red tint of iron, the chief natural produce is furze; but this colour, as we proceed westward, yields to a blue tint. The two colours stain the wool of the sheep, which

range the wastes, and the red and blue are very conspicuous in their fleeces, the blue being much preferred. The chief natural produce of the blue sand is heath of the three usual species, which are very apt to be completely matted together with *Cuscuta*. The marshes or moors, as they are here called, produce immense quantities of the beautiful little *Drosera*. In the low lands we find an almost infinity of water-fowl; on the hills grouse; and, if abundant in furze, the Dartford warblers; and both situations are assiduously hunted by hawks and owls, frequently of the rarer species. This desert district is a favourite resort of the Fern Owl; it is exceeding abundant, so much so, that its cry is quite wearisome of an evening. The bird is plentiful on every heathy district in the neighbourhood. On Highdown heath Mr. Stafford shot forty-seven in a very short space of time.

The hills in the immediate neighbourhood of Godalming are completely covered with coppices, abounding with trees in all stages of growth, forming as excellent a resort for the Passerine birds as the ponds and moors do for the swimmers and waders. In the underwood of these hills the shy hawfinch breeds annually, and remains throughout the year; but the parent birds are difficult to obtain, flying the instant they catch sight of a gunner, although many hundred yards distant.

The fir-trees on the higher grounds are frequently the resort of whole troops of crossbills. The higher trees in the coppices are often selected as building-places by the carrion crow and magpie; the latter, however, is not a very common bird in the district. Noblemen's and gentlemen's seats are abundantly scattered throughout the district, and there is scarcely one without its rookery, so that these birds abound. The hooded crow is also extremely plentiful; and it is next to impossible to cross the common between Godalming and Guildford without driving several of them from the turnpike road, on which they remain in the most fearless manner, until the horses of a coach are within twenty yards of them: on being disturbed they take a short circuit, and settle on the identical spot from which they had risen. The sand-banks existing throughout the district are completely honey-combed by the sand martin, but in many places the original excavators

have been dispossessed by the common sparrow; this is particularly the case at the Holloway Hill sand-bank, immediately adjoining the town.

In the List which follows, Mr. H. Doubleday's excellent "Nomenclature" has been scrupulously followed.^a

Catalogue of Birds which have occurred in the Neighbourhood of Godalming.

Pandion Haliaeetus,	Osprey	Calamophilus biarmicus,	Bearded Titmouse
Accipiter fringillarius,	Sparrow-hawk	Bombycilla garrula,	Waxen Chatterer
Falco Peregrinus,	Peregrine Falcon	Alanda arvensis,	Sky Lark
subbuteo,	Hobby	arborea,	Wood Lark
æsalon,	Merlin	Plectrophanes nivalis,	Snow Bunting
tinnunculus,	Kestrel	Emberiza miliaria,	Common Bunting
Buteo vulgaris,	Common Buzzard	schœniculus,	Reed Bunting
Pernis apivorus,	Honey Buzzard	citrinella,	Yellow Hammer
Circus rufus,	Moor Buzzard	cirlus,	Girl Bunting
cyaneus,	Hen Harrier	Fringilla cœlebs,	Chaffinch
cineraceus,	Ash-coloured Harrier	montifringilla,	Brambling
Scops Aldrovandi,	Scops-eared Owl	Passer domesticus,	House Sparrow
Otus vulgaris,	Long-eared Owl	Coccothraustes vulgaris,	Hawfinch
Brachyotus,	Short-eared Owl	Chloris,	Greenfinch
Strix flammea,	White Owl	Carduelis spinus,	Siskin
Syrnium Aluco,	Tawney Owl	elegans,	Goldfinch
Lanius collurio,	Red-backed Shrike	Lanaria cannabina,	Linnet
excubitor,	Ash-coloured Shrike	montium,	Twite
Muscicapa grisola,	Spotted Flycatcher	borealis,	Mealy Redpole
luctuosa,	Pied Flycatcher	minor,	Lesser Redpole
Turdus viscivorus,	Missel Thrush	Pyrhula vulgaris,	Bulfinch
pilaris,	Fieldfare	Loxia curvirostra,	Cross-bill
muscius,	Song Thrush	Sturnus vulgaris,	Starling
hiacus,	Redwing	Corvus corax,	Raven
merula,	Blackbird	corone,	Crow
torquatus,	Ring Onsel	frugilegus,	Rook
Oriolus Galbula,	Golden Oriole	cornix,	Hooded Crow
Accentor modularis,	Hedge Sparrow	monedula,	Jackdaw
Erithaca rubecula,	Redbreast	Pica melanoleuca,	Magpie
Phœnicura ruticilla,	Redstart	Garrulus glandarius,	Jay
Salicaria lœnestella,	Grasshopper Warbler	Nucifraga caryocatactes	Nutcracker
phragmitis,	Sedge Warbler	Picus viridis,	Green Woodpecker
arundinacea,	Reed Warbler	major,	Gr. Spotted Woodpecker
Philomela huscinia,	Nightingale	minor,	Lr. Spotted Woodpecker
Curruca atricapilla,	Blackcap	Yunx Torquilla,	Wryneck
hortensis,	Greater Pettychaps	Certhia familiaris,	Creep
cincea,	White throat	Troglodytes Europæus,	Wren
garrula,	Lesser White throat	Upupa Epops,	Hoopoe
Sylvia sibilatrix,	Wood Wren	Sitta Europæa,	Nuthatch
trochilus,	Willow Wren	Cuculus canorus,	Cuckoo
rufa,	Chiffchaff	Merops Apiaster,	Bee-eater
Melizophilus provin-		Alcedo ispida,	Kingfisher
cialis,	Dartford Warbler	Hirundo rustica,	Swallow
Regulus auricapillus,	Gold-crested Wren	urbica,	House Martin
Motacilla alba,	Pied Wagtail	riparia,	Sand Martin
boarula,	Grey Wagtail	Cypselus apus,	Swift
flaveola,	Yellow Wagtail	Caprimulgus Europæus,	Goat-sucker
Anthus pratensis,	Meadow Pipit	Columba palumbus,	Ring Dove
arboreus,	Tree Pipit	œnas,	Stock Dove
Saxicola œnanthe,	Wheatear	livia,	Rock Dove
rubetra,	Whinchat	turtur,	Turtle Dove
rubicola,	Stonechat	Phasianus Colchicus,	Pheasant
Parus major,	Great Titmouse	Torquatus,	Ring Pheasant
œruleus,	Blue Titmouse	Tetrao Tetrix,	Black Grouse
palustris,	Marsh Titmouse	Perdix cinerea,	Partridge
ater,	Cole Titmouse	Coturnix vulgaris,	Common Quail
Mecistura caudata,	Long-tailed Titmouse	Edicnemus crepitans,	Common Thick-knee

^a A Nomenclature of British Birds, by Henry Doubleday. London, Westley and Davis, 1836.

Charadrius pluvialis,	Golden Plover	Fulica Atra,	Common Coot
hiaticula,	Ringed Plover	Anser ferus,	Grey Lag Goose
Squatarola cinerea,	Grey Plover	albifrons,	White-fronted Goose
Vanellus cristatus,	Lapwing	Anas Boschas,	Wild Duck
Calidris arenaria,	Sanderling	Dafila Acuta,	Pintail
Hæmatopus ostralegus,	Pied Oyster-catcher	Querquedula crecca,	Teal
Ardea cinerea,	Heron	Mareca Penelope,	Widgeon
Botaurus stellaris,	Bittern	Fuligula ferina,	Common Pochard
Ibis falcinellus,	Glossy Ibis	cristata,	Tufted Duck
Numenius arquata,	Common Curlew	Clangula chrysopteral-	
Totanus ochropus,	Green Sandpiper	mos,	Golden Eye
hypoleucos,	Common Sandpiper	Podiceps cornutus,	Horned Grebe
glottis,	Greenshanks	minor,	Little Grebe
Himantopus melanop-	Black-winged Long	Colymbus glacialis,	Great Northern Diver
terus,	shanks	arcticus,	Black-throated Diver
Scolopox rusticola,	Woodcock	Sterna Hirundo,	Common Tern
gallinago,	Snipe	minuta,	Little Tern
gallinula,	Jack Snipe	nigra,	Black Tern
Machetes pugnax,	Ruff	Larus canus,	Common Gull
Phalaropus lobatus,	Grey Phalarope	atricilla,	Black-headed Gull
Rallus aquaticus,	Water Rail	Thalassidroma pelagica	Storm Petrel
Crex pratensis,	Corn Crake	Leachii,	Fork-tailed Petrel
Gallinula Chlo-	Common Moorhen		
ropus,			

Remarks on the foregoing List.

Pandion Haliaetetus.—This bird has appeared at various times in the neighbourhood of the Pudmoors, Frensham Pond, and similar situations. No less than seven have been presented by *W. K.* An Osprey was shot at Frensham Pond, in 1772, while it was sitting on the handle of a plough devouring a fish. *White.*

Falco Peregrinus.—Very uncommon; one has been shot in Hindhead, *W. K.*; a second was taken in a rabbit trap at Eshing, *E. N. D.*

Falco subbuteo and *F. æsalon*.—The Hobby is by no means uncommon throughout the Godalming district, but the Merlin is much more rare; specimens of the latter, shot by gamekeepers, have been occasionally brought to *W. K.* The Kestrel and Sparrow Hawk abound.

Buteo Vulgaris.—The common Buzzard is very abundant, *W. K.*

Pernis apivorus.—Two specimens of the Honey Buzzard have been shot at Shillinglee Park, the seat of Lord Winterton. *W. K.* A pair of Honey Buzzards built a nest in a tall, slender beech tree at Selbourne, in 1786. *White.*

Circus rufus.—Three specimens, shot in the neighbourhood of Godalming, have been preserved by *W. K.*

Circus cyaneus and *Cineraceus*.—These birds, although never abundant, are continually to be seen; the remarkable

colour of the Hen Harrier readily distinguishes it. On the Hogsback and about Loseley it may frequently be observed traversing the fields with an owl-like flight, probably in quest of similar objects. *E. N. D.* Several of both species have been preserved by *W. K.*

Scops Aldrovandi.—A single specimen of this singular little owl was shot at Shillinglee Park. *W. K.*

Otus vulgaris and *O. brachyotus.*—The long-eared Owl is abundant; the short-eared less common, but has not unfrequently been preserved by *W. K.*

Lanius Excubitor.—A great ash-coloured Butcher-Bird was shot in the winter of 1772-3 in Tisted Park. *White.* Seen occasionally in the higher grounds in the neighbourhood; and a single specimen has been preserved by *W. K.*

Muscicapa luctuosa.—A single specimen was shot in Mr. Kidd's orchard, at Godalming, about fifteen years ago, *W. K.*; and a second at Witley Park, in the middle of May, 1836. *W. S.*

Turdus torquatus.—The Ring Ouzel is frequently found on Hindhead, and other high sandy grounds in the neighbourhood of Godalming. *W. K.*

Oriolus galbula.—A single specimen of the Golden Oriole was seen near the town of Godalming in the year 1833. *W. K.*

Philomela luscinia.—The neighbourhood of Godalming has been called the Valley of Nightingales, and well it deserves the name: throughout the fine nights in May there is a complete chorus of these birds; every coppice contains numbers, and every garden two or three pair: it is really glorious to listen to them in a moonlight midnight after a showery day. *Rusticus.*^a

Melizophaqus provincialis.—I have seen the furze quite alive with these birds. They are, however, very hard to shoot; darting down directly they see the flash or hear the crack, I do not know which. I have seen excellent shots miss them while rabbit shooting with beagles. They prefer those places where the furze is thick, high, and difficult to get in. *Rusticus.*^b The Dartford Warblers continue in the same situation throughout the winter. *E. N. D.*

Calamophilus biarmicus.—The Bearded Tit has appeared in various places in the neighbourhood of Godalming, but in no

^a Magazine of Natural History, Vol. VI. p. 114.

^b Id. Vol. VI. p. 112.

instance plentifully. Two or three specimens have been seen at Catshall, and a pair at Ockford Pond. *E. N. D.* A few have been shot at Elsted, and also at Hampton Lodge, the seat of H. B. Long, Esq. *W. K.*

Bombycilla garrula.—A single specimen of the Waxen Chatterer was seen near Godalming in the year 1832. *E. N. D.*

Plectrophanes nivalis.—On the Moors near Selbourne. *White.*

Emberiza cirius.—The Cirl Bunting has occasionally been shot in the neighbourhood of Godalming. *W. S.* This bird is very abundant at Alton, in Hampshire, and also in the Isle of Wight, where it breeds. *W. K.*

Coccothraustes vulgaris.—This bird has been continually observed in the thick coppices at Westbrook, and in Eshing-park; it seems to feed on berries and seeds fallen to the ground, and flies up into the highest trees at the least alarm. It certainly breeds in the neighbourhood of Godalming. *W. S.* This appears to be one of the most common of British birds, although from its wildness it is seldom observed. *E. N. D.*

Carduelis spinus.—The Siskin may be frequently found in great abundance in the alders on the covers near Catshall, close to the river. *W. K.* The siskin is a regular winter visitor with us, keeping company with the little redpoles, which abound wherever there are alders along the banks of the Wey; they are almost entirely females; at least, in the proportion of fifty or sixty to one. *Rusticus.^c*

Linaria Montium.—The Twite, a bird perfectly distinct from the linnet, is now and then shot on Munsted Heath. *Rusticus.^d*

Loxia curvirostra.—The Crossbill is by no means uncommon here in the winter. I have seen them of every hue, from bright yellow-green to bright red, and of all intermediate shades between each of these and dull brown. Strange as it may appear, the bright red ones appear to be the young birds; the yellow green ones old hens, and the brown ones old cocks: at least, this has been the case in those which I have had an opportunity of examining. The cry of the crossbill is very peculiar; it is sharper than that of the greenfinch, and not so much of a *chuck* as that of a linnet: generally while sitting they are silent and very quiet birds, a number of them sitting in a Scotch

^c Mag. of Nat. Hist. Vol. VI. p. 113.

^d Id. Ib.

pine, and remaining in it even a whole day ; at any rate, if not disturbed, until every cone has been pried into and its contents taken out. *Rusticus*.^e

Corvus monedula.—The Jackdaw builds in great numbers in the Chalk-pits, particularly one on Katherine-hill. *E. N. D.*

Nucifraga caryocatactes.—One specimen of this exceedingly rare bird was seen, and closely observed by Samuel Haines, Esq. surgeon, of Godalming, in Peperharrow-park, the seat of Viscount Middleton. From the description given by Mr. Haines, who is a good Ornithologist, there is not the slightest doubt as to the identity of the bird. *W. K.*

Picus minor.—The lesser spotted Woodpecker is far from uncommon in this neighbourhood. I have seen it at Eshing, Peperharrow, Crooksbury-hill, &c. *E. N. D.* Common at Godalming. *W. K.* The green Woodpecker and the greater spotted Woodpecker are still more common.

Certhia familiaris.—It is a singular and unpublished fact relative to the Creeper, that in the summer, when multitudes of gnats are to be found reposing throughout the day on the trunks of trees, this little bird will take a gnat in its bill without swallowing it, then hunt for another and take it in like manner, and not swallow at all until its little slender bill is quite distended with the number of gnats contained. *H. Newman.*

Upupa Epops.—The Hoopoe has on several occasions been shot near Godalming. *W. K.*

Merops Apiaster.—A single specimen of this beautiful bird was shot in a garden in the town some years back, and is now in the possession of Robert Moline, Esq. *W. K.*

Caprimulgus Europæus.—One particular district called the Pudmoors, is the favourite resort of the Fern Owl. In the day time, while walking across the moor, you will every now and then put up one of these singular birds ; their flight is perfectly without noise, and seldom far at a time ; but of an evening it is far different : about twenty minutes after sun-set the whole moor is ringing with their cry, and you see them wheeling round you in all directions. They look like spectres, and often, coming close over you, assume an unnatural appearance of size against a clear evening sky. I believe its very

^e Mag. of Nat. Hist. Vol. VI. p. 113.

peculiar note is uttered sitting, and never on the wing. I have seen it on a stack of turf with its throat nearly touching the turf, and its tail elevated, and have heard it in this situation utter its call, which resembles the brrr of a mole-cricket,—an insect very abundant in this neighbourhood. I have almost been induced to think that this bird serves as a decoy to the mole-cricket, this being occasionally found in the craw of these birds when shot. Those who are not acquainted with the cry of the bird or the insect may imagine an auger boring oak, or any hard wood, continued and not broken off, as is the noise of the auger, from the constant changing of hands. The eggs of the fern owl have frequently been brought me by boys; there are only two in number, greyish-white, clouded and blotched with deeper shades of the same colour; the hen lays them on the soil, which is either peat or a fine soft blue sand, in which she merely makes a slight concavity, but no nest whatever. The cry of the fern owl is the signal for the night-flying moths to appear on the wing, or rather the signal for the Entomologist's expecting them. *Rusticus*.^f

Columba Livia.—The Rock Dove is sometimes met with near Godalming. *W. K.*

Tetrao Tetrix.—From time immemorial the Black Cock has been an inhabitant of Hindhead. It seems strange that White should lament its loss, for he might generally have found it within an hour's ride of Selbourne. They are certainly not abundant, being apparently entirely unpreserved; but no season passes without some few brace being killed by the sportsmen of Godalming. The black cock is a noble bird on the wing; in addition to his colour, his forked tail distinguishes him from all other game. *E. N. D.* When I was a little boy I recollect a black cock used to come now and then to my father's table. *White.* The black cock frequents Hindhead. *W. K.*

Coturnix vulgaris.—The Quail is not common, but is occasionally found in the neighbourhood of Godalming. *W. K.*

Edicnemus crepitans.—This bird abounds in the champaign parts of Hampshire, and breeds, I think all the summer, having young ones, I know, very late in the autumn. They frequent dry, open, upland fields and sheepwalks. *White.* Guildford Downs. *W. K.*

^f Mag. of Nat. Hist. Vol. V. p. 603.

Charadrius pluvialis.—The Golden Plover is common near Farnham. *W. K.*

Charadrius hiaticula.—A few of the Ring Plover have been shot at Frensham Pond. *W. K.*

Squatarola cinerea.—A few of the Grey Plover have been shot at Godalming. *W. K.*

Vanellus cristatus.—The Lapwing is a most abundant bird throughout the moor district, occasionally congregated in flocks of many thousands. *E. N. D.*

Calidris arenaria.—The Sanderling has been shot not unfrequently at Frensham Pond. *W. K.*

Hematopus ostralegus.—Four specimens of the Oystercatcher have been shot in the vicinity of Godalming. *W. K.*

Ardea cinerea.—The Heron is very abundant round Godalming, particularly in the moor district. *E. N. D.*

Botaurus stellaris.—The Bittern is scarce here; but in one spot, a little reedy swamp, near Eshing Bridge, two or three are shot every winter. It is hard to put up, running excessively fast, and even standing to bay your spaniel when overtaken; you are therefore sure of him when once on his trail, provided you are not prevented by the reeds from seeing him when he rises. The bittern is a light loose-feathered bird. A charge which a mallard would fly away with, and which a guillemot would laugh at, will rag a bittern to pieces. One reason of this may be, that he hates flying by day, and will not get up till you are close on him, and then flusters about this way and that, and seems to be uncertain what to do. I once saw one get up, a hundred and fifty yards from me; but not seeing me he came right over where I stood. I pulled but missed him, after which he kept on soaring upwards till he was completely lost in the clouds. I never heard the bittern boom on rising, he usually gives a sharp harsh cry like that of a grey goose on the wing. *Rusticus. g.*

Ibis falcinellus.—A single specimen of the Glossy Ibis was shot at Witmore Pond, near Guildford, in March, 1833. *W. S.*

Numenius arquatus.—The Curlew has been shot on the moors, near Frensham. *W. K.*

Totanus ochropus.—The Green Sandpiper is frequently met with near Godalming. *W. K.*

Totatus glottis.—A single specimen of the Greenshanks has been shot at Hampton Lodge. *W. K.*

Himantopus melanopterus.—In the last week of April, 1779, five of these birds were shot upon the verge of Frensham Pond, a large lake belonging to the Bishop of Winchester, and lying between Wolmer Forest and the town of Farnham, in the county of Surrey. The pond-keeper says there were three brace in the flock, but that after he had satisfied his curiosity he suffered the sixth to remain unmolested. One of these specimens I procured, and found the length of the legs to be so extraordinary, that, at first sight, one might have supposed the shanks had been fastened on, to impose on the credulity of the beholder: they were legs *in caricatura*; and had we seen such proportions on a Chinese or Japan screen, we should have made large allowances for the fancy of the draughtsman. My specimen, when drawn and stuffed with pepper, weighed only four ounces and a quarter, though the naked part of the thigh measured three inches and a half, and the legs four inches and a half. Hence we may safely assert that these birds exhibit, weight for inches, incomparably the greatest length of legs of any known birds. *White.*

Machetes pugnax.—A considerable flight of these birds, apparently all of them young ones, were found near Godalming, on the 20th August, 1836. *W. K.*

Phalaropus lobatus.—The Grey Phalarope is found occasionally round Godalming and Guildford. *W. K.*

Anser albifrons.—This bird has been repeatedly shot at Frensham Pond. *W. K.*

Anser ferus.—The Grey Lag Goose had sometimes occurred at Godalming, on Old Pond, Frensham, and other large ponds. *W. K.*

Dafla acuta.—A flight of Pintail Ducks has several times been observed on Old Pond. Two were shot there in Jan. 1836, by Mr. H. Moline. *E. N. D.*

Querquedula crecca.—The Teal has repeatedly occurred on the river Wey, in considerable numbers. *E. N. D.*

Mareca penelope.—The Widgeon has occurred at Godalming. *W. K.*

Fuliga ferina.—The Pochard occurs frequently in large flocks on Frensham and various other ponds. I have seen fifty or more on Old Pond at a time, sometimes intermingled

with the common wild duck, from which, however, they always separate on rising. *E. N. D.*

Podiceps cornutus.—A pair of the Horned Grebe were shot at Elsted, and preserved for R. Moline, Esq. by *W. K.*

Colymbus glacialis.—A very fine specimen of the Great Imber Goose or Diver, was shot a few years back at Old Pond: its power of diving, and the length of time it stayed under water, were wonderful; for this purpose I find it is furnished with an immense bladder, extending the whole length of its neck, which it can inflate at pleasure; and this being connected with the windpipe is of course available as a reservoir of air. *Rusticus*.^h Two of the Great Northern Divers have been shot at Frensham Pond. *W. K.* As one of my neighbours was traversing Wolmer Forest, from Bramshot, across the moors, he found a large uncommon bird fluttering in the heath, but not wounded, which he brought home alive. On examination it proved to be the *Colymbus glacialis* of Linnæus. *White.*

Colymbus arcticus.—The Black-throated Diver has been occasionally shot at Frensham Pond. *W. K.*

Sterna Hirundo.—This bird has been shot not unfrequently at Frensham Pond. *W. K.*

Sterna minuta.—The Little Tern occurs at Frensham Pond, where it has occasionally been killed. *W. K.*

Sterna nigra.—The Black Tern is shot at Frensham Pond. *W. K.*

Thalassidroma pelagica.—The Stormy Petrel, or Mother Cary's Chicken, has been shot near Godalming. *W. K.*

Thalassidroma Leucii.—A single specimen of the Fork-tailed Petrel was shot on Hindhead, near Liphook, and stuffed by *W. S.*

It will be seen that a great number of the aquatic and wading birds can only be considered accidental visitors, probably driven inland by stress of weather. Godalming cannot be considered the habitat of such. Nevertheless, as birds having no claim whatever to a place in our British fauna, have been admitted into all our works, on the strength of their having, on unquestionable authority, been occasionally killed or seen, although never suspected of being residents, so have

^h Mag. of Nat. Hist. Vol. VI. p. 114.

these rare visitants a like claim to be admitted into the restricted lists of a particular district. The memoranda which follow the list in this instance, will show that there is no desire on the part of the compiler to lay claim to them as natives. On the large ponds in the neighbourhood, a number of Gulls have, at various times, been killed; most have been in an immature state of plumage, and therefore not easily distinguished; a circumstance excusable when it is recollected the only authority possessed by Ornithologists was Bewick's, whose descriptions, nomenclature, and figures of the Gulls, are very far from satisfactory. The total number of birds suffers a diminution on this account, as those species not ascertained have been wholly omitted. *E. N. D.*

ART. XXXIX.—*Proceedings of the Entomological Club.*

SITTING OF THE 20th OCTOBER, 1836.

Present,—Messrs. Bevington, Bennett, Bowerbank, J. F. Christy, Davis, Hanson, Stanger, Shaw, Trusted, and Newman.

Mr. BEVINGTON in the Chair.

The Minutes of the last sitting were read and confirmed.

The CURATOR reported, that in compliance with the directions of the Club, embodied in a Minute of the last sitting, he had insured the property of the Club, in his possession, to the amount of £750.

The CURATOR read the following list of donations:—

Mr. J. LOUNDS, of Quebec. Various Coleoptera collected by himself in the neighbourhood of Quebec, transmitted through the hands of Mr. Hoyer.

IONICUS of the Entomological Magazine. Various Coleoptera collected by himself in Cephalonia, Corfu, &c. transmitted through the hands of Mr. Walker.

Mr. HENRY DOUBLEDAY, of Epping. About two hundred and fifty specimens of British Lepidoptera, collected by himself

in the neighbourhood of Epping, expressly for the Entomological Club: the whole of these Lepidoptera were in the finest possible condition, and many of them very rare.

Mr. DAVIS, of London. A fine series of British specimens of *Saperda oculata* and *Trachys pygmaea*, and some specimens of *Orgyia gonostigma*.

Mr. T. INGALL, of London. Some rare Coleoptera from New Holland.

Mr. J. W. BOND, of London. Various Brazilian insects.

Mr. BOWERBANK, of London. A copy of Fuessly's "Archives," and a nest of *Vespa Crabro*, the common Hornet.

Mr. J. C. LOUDON. The 66th number of the Magazine of Natural History.

Mr. G. NEWMAN, Jun. A nest of *Vespa Britannica*.

Resolved Unanimously,

That the thanks of the Entomological Club be given to these gentlemen, for their various and valuable donations to the Club.

Mr. BOWERBANK exhibited a beautifully perfect specimen of *Castnia Coronis*; it was observed fluttering about some flowers in the garden of the Messrs. Loddige, of Hackney, and was taken alive. The pupa of this fine insect is supposed to have been imported from South America, in the earth attached to the roots of plants lately received from that continent.

SAMUEL ALEXANDER BURLINGHAM, Esq. of Worcester, having been at the last sitting proposed by Mr. Newman, and seconded by Mr. Bevington, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club, and Mr. Newman was appointed to inform him thereof.

JOHN WALTON, Esq. of Byard's Lodge, near Knaresborough, Yorkshire, having been at the last sitting proposed by Mr. Davis, and seconded by Mr. Hoyer, was unanimously elected an honorary corresponding member of the Entomological Club, and Mr. Bowerbank was appointed to inform him thereof.

The club then adjourned to Thursday evening, the 16th of November, at Mr. Davis's.

SITTING OF THE 16th NOVEMBER, 1836.

Present,—Messrs. Bennett, W. Christy, Davis, E. Doubleday, Hoyer, Showell, and Newman.

Mr. DAVIS in the Chair.

After the minutes of the last sitting had been read, a discussion of some length took place, as to the propriety of publishing the minutes of the Entomological Club. Mr. W. Christy observed, that as no notice whatever was taken of the proceedings of the Entomological Society, he thought the publication of the minutes of the Club might be construed, by those who were disposed to cavil, into something like an act of hostility. Mr. Christy had not the slightest wish to shun publicity, as he was sure that the more widely the acts of the Club were known, the more they would be approved; but he questioned the expediency of publication, at a time when all notice of the Entomological Society was abandoned.

Mr. BENNETT thought that the better way of getting rid of all such *appearance* of hostility,—he said *appearance*, for he knew of no hostility whatever existing towards the Society on the part of the Club,—was to notice the proceedings of the Society; and he regretted that such notice had been abandoned.

Mr. DAVIS inquired who would undertake to attend the meetings of the Society, in order to take minutes of the proceedings.

Mr. NEWMAN said, that there was a great difficulty in obtaining any correct information on the subject (especially as to the list of donations;) and this was the only reason why, as Editor of the Entomological Magazine, he had not noticed the Society's proceedings. The accounts prepared for the morning papers were, to use the mildest term, grossly erroneous. A recent report he had seen, stated that Mr. CURTIS, F.L.S., took the chair at the October meeting: he found, on inquiry, that Mr. CURTIS not only had never presided, but was not a member of the Society. It would never do to copy this as correct information.

The CURATOR read the following list of donations:—

Mr. A. INGPEN, of London. A portrait of the late Mr. Haworth.

Mr. G. R. GRAY, of the British Museum. A copy of his "Synopsis of the Species of Insects belonging to the Family of *Phasmidae*."

Mr. C. J. PAGET, of Yarmouth. Various rare British insects.

Mr. HOYER, of London. Several rare British insects.

Mr. INGALL, of London. Several British *Noctuae*.

Mr. G. SHOVE, of Deptford. Various British insects.

Mr. G. TRUSTED, of Ross. Several British *Curculionidae*.

Mr. W. STANGER, of Edinburgh. Some specimens of *Pycnogonum Balanarum*.

Mr. M'NAB, of Epping. A perfect specimen of that beautiful and valuable cerambycoid insect, *Omocantha Gigas*.

Mr. E. DOUBLEDAY, of Epping. His entire collection of Exotic Coleoptera; the Curator returning to the donor such as were duplicates, unrequired by the Club. By this munificent donation about 200 species are added to the collection of the Club.

Mr. J. C. LOUDON. The sixty-seventh number of the Magazine of Natural History.

Mr. W. CHRISTY, of London. His entire collection of British Lepidoptera, including many insects of great rarity.

Mr. JOSEPH FELL CHRISTY, of London. Various Lepidopterous and other insects, collected by himself in Jersey.

Mr. DAVIS, of London. A copy of Hoffnagel's "Diversæ," and a copy of Mouffett's "Theatrum Insectorum."

Mr. SHOWELL, of London. A splendid copy of Rœmur's "Genera Insectorum;" this work contains upwards of 700 highly-finished engravings of insects, accurately coloured.

Resolved Unanimously,

That the thanks of the Club be given to these gentlemen for their various and valuable donations to the Club.

THOMAS MARSHALL, Esq. of Birmingham, having been at the last sitting proposed by Mr. Davis, and seconded by Mr. Newman, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club; and Mr. Newman was appointed to inform him thereof.

HENRY METFORD, Esq. of Stoke Newington, having been at the last sitting proposed by Mr. Bennett, and seconded by

Mr. J. F. Christy, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club; and Mr. Bennett was appointed to inform him thereof.

The Club then adjourned to Thursday evening, the 15th December, at Mr. Hoyer's.

SITTING OF THE 15TH DECEMBER, 1836.

Present,—Messrs. Bennett, Bentley, Chant, J. F. Christy, Foster, Hoyer, and Newman.

Mr. HOYER in the Chair.

The minutes of the last Meeting were read and confirmed.

Mr. NEWMAN, as Curator, exhibited the insects which Messrs. Walker and W. Christy had collected in the neighbourhood of North Cape; and also those collected by Mr. Walker alone in the course of an overland journey from thence to Tornea. In the Lepidoptera from the extreme north of Europe, the total absence of the *Noctuites*, at a season of the year when there was no night, might have been anticipated; yet there was one *Hepialus*, apparently *H. Velleda*, taken at the time of incipient nights. No *Colias* or *Vanessa* appeared among the butterflies. *Pontia Napi* was taken, and a specimen of *P. Rapæ* was seen. *Melitæa Dia* were taken, and also *Hipparchiæ Ligea* and *Blandina*, the varieties so intermingled that it was impossible to separate them; (a circumstance which leads to the conclusion that these constitute but a single species :) numbers of *Polyommatus Argus*, and a pair of *Hesperia Comma*; —in all, six butterflies. In *Geometrites*, there were several species, and a few minor Lepidoptera. In Diptera, the collection was rich; four noble *Tabani*, among them *T. Tarandi*, and all different from our British species; also abundance of the beautiful *Æstrus Tarandi*, and several very fine *Volucellæ*. In the *Tipulites* and minor Diptera, there was a great number of genera and species. In Hymenoptera, there were examples of the fine genera, *Cimbeæ*, *Lyda*, and *Sireæ*, &c.; also, several species of *Bombi*, the common wasp, and numerous ants (one of the latter was of an enormous size;) but only one fossorial insect. In Coleoptera, there was apparently a scanty supply; of the long horned tribes, there were fine examples of *œdilis*, and *scalaris*, also, numerous *Lepturæ*; abundance of *Pytho*

depressus, *Agabus serricornis*, *Chrysomela marginata*, &c. A single example of *Trichius fasciatus*: a few *Carabus glabratus*, *Miscodera arctica*, *Elaphrus Lapponicus*, *Campylus linearis*, &c. The other classes offered nothing remarkable, excepting *Boreus Hyemalis*, which Mr. Walker found in abundance, skipping about some rocks with great activity. Mr. NEWMAN said, he believed that an entire list, with descriptions of the novelties, would appear in the Entomological Magazine.

The CURATOR read the following lists of donations:—

Mr. W. CHRISTY, of London. A copy of “the Aurelian’s Pocket Companion,” by Moses Harris.

Mr. NEWMAN, of Deptford. The 16th and 17th numbers of the Entomological Magazine, a copy of his “Sphinx Vespi-formis,” and a copy of his “Essay on the Head of Insects.”

Mr. BENNETT. A superb specimen of *Urania Patroclus*, and various other rare Eastern Lepidoptera.

Mr. BUSK, of the Dreadnought. Some Chinese insects.

Mr. R. FOSTER, of London. A singular old print, representing a scorpion and tarantula.

Mr. J. W. BOND, of London. Some Brazilian insects.

Mr. J. S. BOWERBANK, of London. A collection of about 500 Brazilian insects, from Rio; among them numerous desiderata to the Club.

Mr. J. CHANT, of London. Various British Lepidoptera and Coleoptera.

Mr. J. C. LOUDON. The 68th number of the Magazine of Natural History.

Mr. W. BENTLEY, of London. Various British Lepidoptera and Coleoptera.

Mr. W. CHRISTY, of London. Various interesting insects collected by himself in the neighbourhood of Hammerfest, in Norway.

Mr. W. RADDON, of Bristol. A fine series of *Actebia praxos*, *Mamestra Albicolaris*, several species of *Agrotis*, and various other *Noctuities*, and also of *Sirex Juvencus*, *Anomala Frischii*, &c.

Mr. J. EVELEIGH, of Manchester. A fine series of *Triphana fimbria*, and of *Nyssia zonaria*, besides various other British insects.

Mr. E. DOUBLEDAY, of Epping. A specimen of *Entimus Splendidus*, and other exotic Coleoptera.

Mr. J. HOYER, of London. A copy of "Harris's Exposition of British Insects."

Mr. F. WALKER, of London. A collection of insects made by himself in the vicinity of North Cape, or subsequently in a pedestrian tour from thence to Tornea.

Resolved Unanimously,

That the thanks of the Entomological Club be given to these gentlemen, for their various and valuable donations to the Club.

Mr. NEWMAN said, that in reference to what had passed at the last sitting, he had obtained, purposely for publication, a Report of the only meeting of the Entomological Society which had since occurred. In this Report the list of donations was deficient: he had, therefore, written the following note to the Secretary of the Society, hoping to obtain them.

To J. O. WESTWOOD, Esq.

"DEAR SIR,—It has been a matter of complaint from several members of the Entomological Society of London, that, as Editor of the Entomological Magazine, I have not published the list of donations presented each month to the Entomological Society, and also given a slight notice of the proceedings of the Society. I can remedy the latter very readily, by employing a competent person to take notes; but I have no means of obtaining a correct list of donations except from yourself; and I conceive an incorrect list would be nearly useless. I wish therefore to say, that if it be consonant with your views to hand me such a list, I shall feel obliged for it, as an addition to the information I am desirous of disseminating, and also as a probable means of serving the Entomological Society.

(Signed,) "EDWARD NEWMAN."

Mr. WESTWOOD replied immediately to this note as follows:—

To E. NEWMAN, Esq.

"DEAR SIR,—As the lists you mention will be too late for the next number of the Entomological Magazine, I must defer

replying definitely concerning them at present. I will only observe, that I have no personal objection to furnishing them to the Entomological Magazine; although I have refused taking upon myself the trouble of supplying notices of the proceedings of the Society to several of the periodicals.

(Signed,) " J. O. WESTWOOD."

Mr. NEWMAN thought Mr. Westwood's communication a very obliging one. He thought it would be unfair to burden Mr. Westwood, whose duties were most onerous, with copying the list of donations for a Magazine in which he took no interest:—permission to copy would be quite sufficient.

C. J. PAGET, Esq. of Yarmouth, having been at the last sitting proposed by Mr. Davis, and seconded by Mr. Hoyer, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club; and Mr. Hoyer was appointed to inform him thereof.

ROBERT FOSTER, Esq., of Stamford Hill, having been at the last sitting proposed by Mr. Newman, and seconded by Mr. Bennett, was balloted for, and unanimously elected an honorary corresponding member of the Club.

The following routine of meetings was then agreed on for the year 1837:—

January	at	Mr. BENNETT'S.
February	—	Mr. BOWERBANK'S.
March	—	Mr. BEVINGTON'S.
April	—	Mr. NEWMAN'S.
May	—	ANNIVERSARY.
June	—	Mr. CHRISTY'S.
July	—	Mr. DAVIS'S.
August	—	Mr. HOYER'S.
September	—	Mr. NEWMAN'S.
October	—	Mr. BENNETT'S.
November	—	Mr. BOWERBANK'S.
December	—	Mr. BEVINGTON'S.

ART. XL.—*Proceedings of the Entomological Society of France.*

SITTING OF THE 1st JUNE, 1836.

M. DUPONCHEL in the Chair.

Present,—Messrs. Lefebure, De Cerisy, Rippert, &c.

The following list of donations was announced :—

M. DUMENIL. “Buffon Classique,” livr. 181^e à 195^e.

MR. WALKER, of London. Number XV. of the Entomological Magazine.

M. DE SAINT FARGEAU. “Histoire Naturelle des Insectes Hyménoptères,” tome 1^{er}.

M. J. F. PICTET. “Note sur les Organes Respiratoires des Capricornes,” also “Description de quelques nouvelles Espèces de Néuroptères du Musée de Genève.”

THE ACADEMY OF BONN. “Acta Academiæ Naturæ Curiosorum,” tom. xvii. part 2.

The thanks of the Society were returned for these donations.

M. AMYOT read the translation of a letter written in Chinese, by M. Joseph Li, who left Paris in 1829 as a missionary, to preach the Roman Catholic religion to the Chinese. The letter was dated 8th December, 1835, and addressed to M. S. Julien, member of the Institute. It was as follows :—

“We have not this year suffered losses by water, but the ravages of certain yellow insects have been truly terrible. The oldest residents here, 80, 90 years of age, have never seen the like. This extraordinary pest has afflicted alike the marshy and the mountainous regions. The drought at first did great injury to the crops, both in high and low situations; then came these insects to unite with it in causing destruction; they formed clouds in the distance, which as they rose obscured both sun and moon. All who saw them were terrified. Wherever they alighted the finest and most abundant harvest was instantly devoured, and the fields became as bare as one’s hand. The inhabitants everywhere fled to the mountains.

These ravages continued, and produced immense loss in every quarter. The crops, though housed, often became the prey of these devourers, excepting always the *sesanne*, the *dolichos*, and buckwheat; these were left untouched. Wherever the country had been inundated, and in consequence no crops were left to be destroyed, these destructive insects entered the houses, devouring cloth and whatever they could meet with. These insects began to appear in April, and continued their ravages incessantly till the frost and snow."

M. SERVILLE communicated to the Society an intended journey to Sardinia, by M. Géné, of Turin. M. Géné, he said, was now at Genoa.

M. SERVILLE read a Report of a Collection made in Cuba, by M. Ramon de la Sagra: a copy of the Report signed by the Council was forwarded to M. Ramon de la Sagra.

M. DUPONCHEL read a paper by M. de Fonscolombe, on the economy of a spider, which appeared to belong to the genus *Atypus*. The memoir being unfinished, the secretary was commissioned to apply to the author for the concluding portion.

M. D'DARDOUIN, of Aix, having been proposed by M. Serville, was admitted a member of the Society.

SITTING OF THE 6th JULY, 1836.

M. DUPONCHEL in the Chair.

The following list of donations was announced:—

M. DUMENIL. "Buffon Classique," livr. 196^e à 199^e.

ROYAL SOCIETY OF LONDON. A catalogue of 7385 stars, observed at Paramatta, and published in the Transactions of the Royal Society of London. Also a list of the Fellows of the Royal Society of London, and a record of their sittings.

M. DUPONCHEL. "Complement de l'Histoire Naturelle des Lépidoptères," 19^e livr.

MM. CASTLENEAU and GORY. "Histoire Naturelle et Iconographie des Insectes Coléoptères," 6^e et 7^e livr.

M. ANTONIO VILLA, of Milan. "Saggio della Storia Naturale del Monte Legnone e del Piano di Colico Dissertazione Inaugurale;" also, "Coleoptera ex Fontibus Tanari, in Alpibus Niracensibus."

M. GUERIN communicated to the Société the ravages occasioned by a species of *Alucita*, which had destroyed the wheat in the department of *Indre*. This insect in certain years, though at unequal periods, appeared in great abundance; in other years a parasitic Ichneumon destroyed the greater part of them. These observations had been transmitted to M. Guérin by M. Herpin, a physician at Neboursin, near Vatan, on the road from Paris to Toulouse. M. Guérin was requested by the Society to point out the various remedies proposed for the ravages of those insects, which have been found to attack corn whilst they are in the larva state. They are collected in a pamphlet, entitled "*Programme des prix proposés par la Société Royale d'Agriculture, dans sa séance publique d'Avril, 1831.*"

M. BUQUET gave a satisfactory report of M. Leprieur, who is engaged in traversing the interior of Guiana.

The death of M. ALBERT ALAVOINE, of La Basse (Nord), was announced. He had been a member of the Society. He died on the 25th June, 1835. His collection is now in the museum of Valenciennes.

M. VON GEHEUR, of Paris, having been previously proposed by M. Solde, was admitted a member of the Société.

SITTING OF THE 3D OF AUGUST, 1836.

M. DUPONCHEL in the Chair.

The following list of donations was announced:—

M. ALPHONSE KARR. "Du Ver Blanc: exposé dans des ravages, etc. par M. Vibert."

M. DUPONCHEL. "Supplément a l'Histoire Naturelle des Lépidoptères," 6 Livr.

M. GUERIN. "Memoirs sur les Hypérines." "Recueil No. XXVI. de la Société libre d'Agriculture, Sciences, &c. d'Evreux." "Memoirs de la Société de Physique et Histoire Naturelle de Genève," Tome VII.

M. KLUG. "Insectes de l'Ile du Prince, du Voyage d'Ermann, décrits par M. Klug:" also "Trois Genres de Carabiques nouveaux, extraits des Annales de Wiegmann."

M. DUPONCHEL read a letter which had been addressed to him by M. Daube, a member of the Society, on the subject of *Colaspis barbara*, Fab. "It were much to be desired," said the writer, "that the insects in question, denounced previously in the '*Annales*' as injurious to farmers, were confined to the kingdom of Valence; every year our lucern, after the first cutting (that is to say in the month of June), is devoured by the larvæ of this insect. If, instead of collecting the larvæ in a net, as is the present practice, they were to collect and destroy the perfect female, there is no doubt but a better result would follow. Indeed, from a plant so bushy as the lucern, one can only sweep into the net those larvæ which happen to be on the tops: and as the larvæ fall at the least movement of the plant, it is very difficult to destroy any considerable number, even though the operation be continued repeatedly. I employ the following plan, which I consider every way preferable; for if it does not entirely destroy the evil, it undoubtedly greatly abates it. The *Colaspis barbara* begins to appear in the beginning of May. At this period they may be found *in copula*, and closely adhering to the stem of the lucern. Some days after, the males disappear, and the females, with bodies remarkably increased in size, being no longer able to use their wings, run hither and thither to deposit their eggs. The laying of eggs continues from eight o'clock in the morning till between two and three in the afternoon. Nothing is more easy than to take the females during the operation; for they lay the eggs at the very tips of the lucern, and the enlargement of their bodies renders them very conspicuous. Every female lays, in my opinion, about 500 eggs; now, if a woman were employed in collecting them, supposing she gathered but 2000 per day, it is evident how many would be destroyed, for the period of oviposition lasts but from ten to twelve days. I had this year a field of lucern enclosed by walls; and perceiving that the lucern in the neighbourhood was already becoming a prey to this insect, I employed a woman, who, in eight days, collected from thirty-five to forty kilogrammes of the females. By this means I have had the pleasure of cutting a hundred *quintals* of lucern at a time, when the crops of my neighbours have been entirely destroyed. Having no longer any thing to eat, the larvæ attacked the santfoin, and even the wheat. M. DAUBE, in the same communication, mentions the injury done to the

vines by *Altica oleracea*, which, for ten or eleven years, has been the scourge of the neighbourhood of Montpellier. Great quantities of them are destroyed every year: in one district alone they collected a hundred *quintals*. The perfect insect gnaws the buds, and the larvæ eat the leaves and the grapes."

M. GUERIN exhibited a fragment of a branch of the horse-chestnut sent to him by M. Aubé, in the interior of which the larva of *Bryophila Algæ* had taken up its habitation. This peculiarity in the economy of this larva was before entirely unknown. It was only known that the larva fed on those lichens which grow on the bark of trees, and in which it usually constructs its little cocoon against the bark, and composed of the fragments of the lichen. The larva brought by M. Guérin did not leave its hole: M. Rombur, in order to examine it more closely, broke off a part of the branch, and the larva did not remain long exposed, but dug its way further in, throwing behind it *débris*, which resembled fine sawdust.

M. SERVILLE gave an account of the work of M. Vibert on the Larva of the common Cockchafer, and remarked on the new discoveries recorded in this book. This observation related more especially to the period occupied in the full development of the insect, which is three complete years. This larva encircles the plant just below the ground, to devour it at its leisure; and itself serves as the food of the mole-cricket, which insect destroys an immense number of them, but which itself causes great injury by eating through the roots of those plants which oppose its progress.

M. SERVILLE read the following note, extracted from the *Cabinet de Lecture* of the 29th June last. "A German paper states, that a Society formed at Quedlinbourg has collected nineteen million cockchafers, for the purpose of extracting oil from them. The experiment had been previously made in Hungary, and three measures of oil had been extracted from eight measures of cockchafers. The insects were placed in pots of earth, which were covered with straw, and then with network of metallic threads; then the whole was placed upside down on a heated utensil destined to receive the oil, which flowed from the insects. This oil will be particularly serviceable in greasing wheels."

M. CHEVROLAT announced that he had received from Porto Rio a species of *Carabus*, which he named *basilaris*, and of

which he exhibited a drawing. He observed that there existed already in the Antilles, a species described by Fabricius, under the name *Splendens*. The country assigned by Fabricius to this insect, had hitherto been regarded as erroneous; because it was not thought that a true *Carabus* could be found in the Antilles; and the name *Splendens* had consequently been applied to a species from the Pyrenees. As the latter insect displayed on its suture the coppery shade, M. Chevrolat presumed that it was different, and therefore that a new name should be given it.

M. GUENEE addressed to the Society the following note on the larvæ of two species of *Bryophila*, which he had described in the "Annales:" these were *B. raptricula* and *B. perla*. "Having committed the fault," says the author, "of rearing together those larvæ which were found in the same places, and almost at the same time, I have been led into the error which I now correct. The larva which is thought to be that of *B. raptricula*, and which I have described under that name, really produces *B. perla*; and that which has hitherto been supposed that of *B. perla*, produces *B. raptricula*. The rearing of a great number of individuals leaves me without a doubt on this head. These two larvæ, well figured in the works of MM. Boisduval, Rombur, and Graslin, are there also transposed in the naming. M. Treitche was about publishing the same statement in his Supplement; but not having his work before me, I cannot say whether he has fallen into the same error. Nevertheless, as he refers for the figure of *B. raptricula*, to the above-named works of Boisduval, Rombur, and Graslin, it may fairly be inferred that he is equally mistaken. He has only, described the larva of *B. perla*, from one of his correspondents, M. Musschl; but I have neglected, in translating that volume, to take a description of the larva, supposing myself certain of its identity. I shall give figures and rectified descriptions of these larvæ in the work published by M. Duponchel, who has kindly wished me to join with him as a fellow-labourer."

M. VILLIERS. A note on *Branchipus Stagnalis*.

M. SOLIER. A description of a new species of *Cryptocephalus*.

M. H. LUCAS. Some observations on the manner of oviposition in Ixodes; and an addition to a work entitled "Memoires sur plusieurs Acachnides Nouvelles appartenent au genre *Atta* de M. Walcnaker."

M. GRASLIN. "Memoir, with descriptions of *Chelonia verecunda*, *Zygæna Europæa*, *Thanoas Cercantes*, *Cleophana Cyclopea*, *Ophiusa nubilaris* and *Orgyia Zoraida*.

M. DE WAGA, Professor of Natural History at Warsaw, having been proposed by M. de Theys, was admitted a member of the Society.

M. BOUCHARD CHANTERREAUX, having been proposed by M. Serville, was admitted a member of the Society.

ART. XLI.—*Proceedings of the Entomological Society of London.*

SITTING OF THE 5th DECEMBER, 1836.

Rev. F. W. HOPE in the Chair.

The minutes of the last meeting were read and confirmed:—

A list of donations, from various British and Foreign Societies and individuals, was read; and thanks voted to the respective donors.

Mr. YARRELL exhibited the larvæ of *Agrotis Segetum*, received from near Walden, in Essex. He said it was stated to be as destructive to the turnip as the fly; eating into the bulb of the root, and entirely destroying whole crops. Mr. Hope, in some subsequent observations, mentioned the occurrence of the same in great numbers in Shropshire and Herefordshire.

Mr. WESTWOOD exhibited the nest of a *Vespa*, from which he had taken a specimen of the insect, with a parasite. The nest had a circular hole penetrating through the centre, which he supposed to be a common gangway; and that, when occasion required, the insects effected an enlargement of their nest by accretions ranged round the hole, working from the inside.

Mr. WESTWOOD exhibited an original letter of Linnæus to the late Mr. Drury.

The CHAIRMAN exhibited a collection of *Trilobites*. He said it was his intention to publish a Monograph of British species; and should be obliged to any gentleman for any communication; or the loan of any specimen should be duly acknowledged.

A list of Coleoptera, taken in the Scilly Islands by Mr. HOME, was read in a letter from that gentleman; with a description of a single specimen of a genus which he claimed to be entirely new to British Entomology.

A Flower-Pot in which had been deposited some roots of the sugar cane, with the original mould, exhibited last year, was produced; in which had sprung up, in the Society's room, a grass new to several British botanists who had seen it; and on the blades of grass had been discovered an *Aphis*, which Mr. Westwood described as entirely new. Specimens of the *Aphis* were exhibited.

A letter communicated by Mr. JOHNSON was read, giving an account of the rapid increase of the mole-cricket in the island of Jamaica, since a particular hurricane a few years back. This insect had become so destructive to the grass and young cane, that any suggestions for its extermination would be truly valuable. With regard to the hurricane, it was suggested, that probably some destroyer of the insect in one or more of its stages had been swept away by the hurricane, rather than that it had been brought to the island by that visitation. One or two members thought that the eggs might be searched after, and destroyed in sufficient quantities to keep the insect down; others thought that the full-grown insect, being of so considerable size, might be persecuted to destruction. Mr. Waterhouse doubted whether any such destroying means could match the fruitful powers of nature. He attributed the great increase of particular species of insects very much to a succession of the same crops in or near the same localities; and thought that a remedy would be found in a skilful distribution and occasional total omission of infested crops.*

An original communication from PALLAS, the Russian Entomologist, addressed to the Aurelian Society of London, was read. It gave a very interesting account of the habits of

* The idea that the mole-cricket is injurious to vegetation, is daily losing ground: it is now generally supposed to be beneficial than otherwise, by devouring subterraneous larvæ, &c.—ED.

the Purple Emperor, from personal observation, and of the growth and changes of the larva. Mr. Westwood adduced the fact, of this valuable communication from so distinguished an individual never having yet seen the light, as a powerful argument in favour of such a Society publishing its transactions.

Mr. WESTWOOD read a Monograph by himself, on *Scleroderma*, an exotic family of *Chalcidites*, from specimens in the Royal Museum of Berlin, and in his own possession; illustrated by drawings.

Specimens of a collection of insects made by Mr. Darwin, (principally in Australasia,) were exhibited; with descriptions and drawings by Mr. Waterhouse. Among them was an Hymenopterous insect with distinct Coleopterous Elytra, and other strikingly aberrant specimens. An interesting discussion ensued on circular systems. Mr. Waterhouse went at length into the subject of analogy and affinity, and said that they were often confounded by system-makers. He had closely investigated the class Coleoptera, with a view of discovering natural affinities; but had been obliged to abandon the idea, though he stated his belief that analogies existed, frequently running parallel through whole groups. Mr. Westwood severely ridiculed Mr. Swainson's illustrations of typical perfection, and subtypical tendency to imperfection, or evil; and the CHAIRMAN expressed his total disbelief in all circular arrangements.—Adjourned to the 2d January, 1837.

ART. XLII. *List of Entomological Works.*

1. *British Entomology; by John Curtis.* Nos. 151—156. July to December, 1836.

2. *Illustrations of British Entomology; by J. F. Stephens.* Nos. 83, 84. 1836.

3. *Monographie des Cétôïnes et Genres voisins, &c.; par M. H. Gory et M. A. Percheron.* Livraisons 14, 15.

4. *Magazin de Zoologie; par F. E. Guérin.* Paris.

5. *Iconographie, &c. des Coléoptères d'Europe*; par M. le Comte Dejean et M. le Docteur J. A. Boisduval. *Tome IV. Livraison 12.*

6. *The Edinburgh New Philosophical Journal, conducted by Professor Jamieson. April—July, 1836. Further Illustrations of the Propagation of Scottish Zoophytes*; by John Graham Dalgell, Esq. *July—October, 1836. Memoir on the Metamorphoses in the Macroura, or Long-tailed Crustacea, exemplified in the Prawn (Palæmon serratus)*; by J. V. Thomson, Esq. F.L.S. *Deputy Inspector General of Hospitals. (Communicated by Sir James M'Gregor, Bart., M.D., F.R.S., &c.)*

7. *The American Journal of Science and Arts, conducted by Benjamin Silliman, M.D., LL.D. Vol. XXX. No. 2. July 1836. On two American Species of the Genus Hydrachna*; by James D. Dana and James Whelpley.

8. *Thomson's Records of General Science. Vol. I. An Account of some Fossil Crustacea, which occur in the Coal Formation*; by John Scouler, M.D., F.L.S., *Lecturer on Mineralogy to the Royal Dublin Society.*

9. *Transactions of the Zoological Society of London. Vol. II. Part I. 1836. Some Account of the Crustacea of the Coasts of South America, with Descriptions of New Genera and Species, &c.*; by Thomas Bell, Esq., F.R.S., L.S., G.S., & Z.S. *Some Observations on the Economy of an Insect destructive to Turnips*; by William Yarrell, Esq., V.P.Z.S., F.L.S., &c.

10. *Annales de la Société Entomologique de France. 1836. Troisième Trimestre.*

11. *Synopsis of the Species of Insects belonging to the Family of Phasmidæ*; by George Robert Gray, M.E.SS. *London and France. London. Longman: 1835.*

THE
ENTOMOLOGICAL MAGAZINE.

APRIL, 1837.

ART. XLIII.—*Researches on the Insects injurious to the Vine, known to the Ancients and Moderns, and on the Means of preventing their Ravages.*

BY M. LE BARON WALCKENAER.

[Extracted from the *Annales de la Société Entomologique de France.*]

(Continued and concluded from p. 144.)

SECTION II.

DETERMINATION OF THE SPECIES OF INSECTS INJURIOUS TO
THE VINE KNOWN TO THE ANCIENTS AND MODERNS.
REMEDIES AGAINST THEIR ATTACKS.

1. *Preliminary Observations.*

IN the first part of these Researches I have examined the passages of ancient writers relating to the names of insects injurious to the vine, in chronological order, where this order did not interfere with their derivation, because that plan appeared best calculated to attain the end I had in view.

No language remains stationary: on the contrary, all, like the people who speak them, are subject to the influences of time, revolutions, and custom. Contemporary writers use the same word with very different significations, either because they are not equally well acquainted with the objects the word is usually intended to designate, or, because they have not the same intention in employing it. The intention of one author may perhaps be best answered by a word being used in its

simple and precise meaning; while that of another writer, wishing to convey a vague or general idea, will, by its being used in a figurative sense, require that it should bear a meaning totally different.

The examination of every passage in which the same word occurs will afford us an opportunity, in the first place, of ascertaining, with a greater or less degree of precision, the meaning which each author attached thereto, and also various circumstances in connexion with the insect, by means of which it may be identified.

Each word has been submitted to a critical investigation; and we shall recapitulate the results thus obtained. To compare the imperfect notions of the ancients with the more accurate knowledge of the moderns, it will merely be requisite to remember the results of these investigations; and we shall not in this last and most difficult inquiry have the least occasion to perplex ourselves with philological discussions: should it seem requisite to enter into any fresh disquisitions, it will only be on the occurrence of such words as may give occasion to useful or curious digressions, and not of those which necessarily belong to our more immediate and avowed subject.

Here, however, it does not appear requisite to observe the same order of discussion as in our first Section.

It is not now our object to inquire further into the meanings given by each author to the same word, independently of its true and legitimate signification, but to fix its real sense from the different significations attached to each, and from a consideration of the various ways in which the words have been employed. Things, not words, are here the subject of our inquiry: and this will guide us in the choice of the plan best adapted to the end proposed.

Thus we shall begin with insects which have not a great deal to do with the main object of our inquiry, or rather those concerning which the information furnished by the ancients has only given us vague or general notions: and we shall afterwards pass on to those which are the principal object of our research, and respecting which the passages we shall examine will afford us circumstantial details or precise information; thus following the method of algebraists, who first discard from their equations adventitious numbers, or those which can only give imperfect results.

2. *Spondylus*, or *Sphondylus*.—*Scarabæus Melolontha*, Linn.—*The Cockchaffer*.—*Digression on the several kinds of Cockchaffer known to the ancients, and on some allied genera; and respecting the use of the word Melolontha by ancient and modern writers.*

Agreeably to our proposed plan, *Spondylus*, or *Sphondylus*, will be the first word for our consideration.

From a comparison of passages we are warranted in concluding that the larva of this insect is of sufficient size to have been considered a kind of small serpent; that it eats the roots of every kind of plant except the *birthwort*, or wild vine, *Vitis sylvæstris*, which is by some supposed to be the *Clematis*, but which is certainly not the vine.^a

We are acquainted with but one kind of larva which entirely agrees with this description: it is that of the common cockchaffer, so well known to horticulturists by the name of white worm. The larva of *Melolontha Fullo*, or *M. vulgaris* of modern naturalists, is, we consider, the *Spondylus* of Pliny and Aristotle.

We read in Aldrovandus,^b that Agricola says the modern Greeks give the name of *Spondylus* to a kind of worm with a red head and white belly, about the size of the little finger, which is found under ground, rolled up amongst the roots of culinary vegetables. This is, certainly, the larva of the cockchaffer. But here we would ask, was Agricola acquainted with the insect alluded to by the modern Greeks; and do they now use the word *Spondylus* for the white worm?

If the *Spondylus* of Pliny and Aristotle be the same insect, it follows that this last named naturalist, who has designated a perfect insect under this name, was aware of its metamorphosis; and this will not appear surprising, when we recollect that Aristotle, as I before remarked, has correctly described the metamorphosis of the cabbage-butterfly; and afterwards alludes to the general fact, observing, that most insects come from a worm (*scolex*); “the worm grows,” he says, “and becomes an articulated animal.”^c Aristotle well observes, that

^a Arist. and Plin.

^b Aldrovandus *de Insectis*, 1618, Frankfort, p. 225.

^c Arist. lib. v. c. 19, tom. i. pp. 286 et 287; lib. i. c. 4, No. 1, et l. 5, 12 et 17, de l'ed. de Schn. 1811, 8vo.; tom. ii. c. 17; tom. ii. p. 207.

spiders, *Cicada*, and crickets are not produced from worms, but from animals resembling the perfect insect.

The opinions of Aristotle on the metamorphosis of insects, although not entirely free from errors, are on the whole singularly correct, and prove him to have been a most persevering observer, and to have possessed a wonderful degree of skill and tact in the generalization of scientific facts: at times even foreseeing discoveries which have since been made.

We must not forget to remark, that it is in connexion with the subject of the mode in which insects copulate, that Aristotle mentions the *Spondylus*; and the cockchaffer is the most likely insect of all others to be frequently seen in the act of copulation.

From the passage in Pliny, and the assertion of Agricola, it would seem that the Romans and the Greeks of the Lower Empire used the word *Spondylus* to designate the larva of that large species of cockchaffer of whose metamorphoses we are ignorant.

Though there can be no doubt that the Latins as well as the Greeks were acquainted with an insect so generally distributed as the cockchaffer, and which does so much mischief to agriculturists, even in the perfect state eating the leaves of plants and trees; we do not know whether the Romans gave a specific name to this insect, or designated it by the general denomination, *Scarabæus*, or *Cantharis*, words thus so often made use of for all kinds of *Coleoptera*.

Fabricius, who separated the cockchaffers from the genus *Scarabæus*, Linn., gave the name *Melolontha* to the genus to which they belong; a word employed by the Swedish naturalist for the specific name of the commonest species. This word is taken from Aristotle, who uses it, as well as *Cantharis* and *Carabus*, for several kinds of beetles, which in our natural systems belong to widely different genera, and even families. It is in conformity with the opinion of the learned in the time of Aldrovandus,^d—an opinion adopted by Bochart,^e—that Linnæus makes the *Melolontha* of Aristotle, and our common cockchaffer, the same insect; but, as Latreille^f has well observed, a comparison of certain passages in Suidas, Pollux,

^d Aldrovandus, *de An. Insect.*, p. 17.

^e Boch. *Hier.*, pt. ii. lib. iv. c. 2.

^f See Latreille's memoir on the insects painted or sculptured on ancient Egyptian monuments, in the *Mémoires sur divers Sujets*, 8vo.

and a scholiast on Aristophanes, show that the word *Melolontha* was applied by the Greeks to insects of brilliant colours, and cannot, therefore, be considered synonymous with our cockchaffer.

Aristophanes, in his "Clouds," makes Socrates say to Strepsiades, "Let your thoughts go like the *Melolontha*, which they let go into the air with a string to its leg." The ancient scholiast remarks that this *Melolontha* is an insect of a golden colour, which the children hold with a string, and which they let off to fly.^s

Now we know that in modern Greece at the present day children tie a piece of thread to the legs of that beautiful golden-coloured insect known to naturalists by the name of *Cetonia fastuosa*, which is common there, and make them fly, just as children here serve the common cockchaffer; the name *Melolontha* must, therefore, have been applied to an insect of the genus *Cetonia*, and not to our cockchaffer.—And here an exceedingly interesting question for the antiquarian occurs, respecting the exact interpretation of a very remarkable passage of Pliny. That naturalist, speaking of the different kinds of amulets that were in use in his time for the cure of quartan agues, says they made use of, for this purpose, three kinds of beetles. "The first," he says, "is the beetle which rolls up little balls (*qui pilas volvit*), and on account of which the Egyptians include beetles amongst the number of the gods." In this description we shall at once recognise two or three insects belonging to the coprophagous family, *Ateuchus sacer*, Fab. (*Scarabæus sacer*, Linn.), or *A. Laticollis*, and *A. Egyptiorum*, brought from Nubia by M. Caillaud, and recently described by M. Latreille,^h who is inclined to consider this species exclusively as the sacred *Scarabæus*, so often sculptured by the Egyptians on their monuments, and separately out of hard stones of different kinds. But it appears to me he is in error. I have lately examined all the ancient figures of Egyptian *Scarabæi* in the *Bibliothèque du Roi*, where the specimen of *Ateuchus Egyptiorum*, presented by M. Caillaud, is also preserved; and I am convinced that amongst the Egyptian sculptures which represent *scarabæi* with smooth elytra, a certain number have been modelled after *Ateuchus sacer*, Fab.;

^s See Camus's Notes on Aristotle's *Hist. Anim.* 4to. vol. ii. p. 478.

^h Caillaud, *Voyage à Méroë et à Fleuve Blanc*, p. 192; *Atlas d'Hist. Nat. et d'Ant.* pl. 58. Latreille in Cuvier's *Règne Anim.* vol. iv. p. 533.

and some, but a much smaller number, in imitation of *A. laticollis*, but all the figures with striate elytra have *A. Egyptiorum* for their type. Thus the *Scarabæus* of the Egyptians is referrible to three different species, which, after all, are very much alike, and probably possess an economy perfectly identical, but which are readily and with certainty to be distinguished in the sculptured figures.¹ *A. sacer* is black, and seems to have been more common than *A. Egyptiorum*, which is of a golden green colour, and would appear to have been the insect imitated by the artists of Lower Egypt, whilst *A. Egyptiorum* furnished the model for the sculptors of Upper Egypt. M. Caillaud found this insect in Senaar, not in Egypt. However, he found elytra and some other parts of this insect in mummy cases, entombed in Egypt; from which it would appear that it formerly existed in that country, and possibly does so even at the present day. Aristotle and Aristophanes have both used the word *Cantharis* to designate the sacred *Scarabæus*. I therefore infer, that both intended *A. Egyptiorum* of M. Caillaud.

This first kind of *Scarabæus* of which Pliny speaks, is, I think, the first also of the three species mentioned by Horus Apollo, as being held in great veneration by the Egyptians.

The second kind of *Scarabæus*, employed as an amulet for the cure of the quartan ague, is made use of, Pliny says, by the magicians, and must be picked up with the left hand. It has small bent horns, *cui sunt cornicula reflexa*.

From this description Hardouin, and other commentators after him, erroneously consider this insect to have been a *Lucanus*.

The *Lucanus*, vulgarly called the stag-beetle, is an insect of which Pliny has given a most correct description, and the name which he assigned it has on this account been retained by subsequent naturalists. He mentions its long mandibles, forked at the extremity, and armed with teeth; and he relates a custom then prevalent of suspending these mandibles, or, as he terms them, horns, round the necks of children, as a preservative against the bites of venomous animals—"Cornua praelonga

¹ Compare Olivier, *Col.*, vol. i., No. 3, p. 150, No. 183. pl. 8, f. 59, var. *B*. His var. *A*. is another insect: it has a scutellum between the elytra, and the form of its elytra is different. Schon. *Syn. Ins.* vol. i. p. 18; Cail. *Voyage à Méroë et à Fleuve Blanc*, vol. iv. p. 272; *At. d'Hist. Nat. et d'Ant.* ii. 58, p. 10.

² Pl., *Hist. Anim.* lib. xii. c. 34.

bisulcis dentata forcipibus in cacumine. This by no means agrees with the little bent horns of that kind of beetle which is considered by some to be alluded to in this passage.

Pliny's second kind of *Scarabæus* seems to me to be also the second sort mentioned by Horus Apollo; it has, according to that author, two horns, and resembles a bull, and is dedicated to the moon.

We think that this is the same species as the large dung-beetle with two horns, brought from Egypt by M. Savigny, and named by him *Midas*. It is sculptured in the temple of Karnak, and appears, according to Latreille, to belong to the genus *Onitis*, recently separated from the other *Coprophaga*.¹

M. Millin, in his notice on the Egyptian sculptures, in the *Bibliothèque du Roi*, says, that he saw in the Cabinet of Antiquities of St. Genevieve the figure of a *Scarabæus*, which he considered to be *S. Mimas*. In this, however, M. Millin is mistaken, for *S. Mimas* is a species peculiar to America; but the error of this worthy archæologist is by no means an important one, for *S. Mimas* is coprophagous, like the Egyptian *Midas*, and in colour resembles it also. We may conclude, therefore, that the Egyptian figure mentioned by M. Millin represents *Onitis Midas*, found in Egypt by Savigny.

The third kind of beetle mentioned by Pliny as used as an amulet against the quartan ague, was called "the fuller," (*fullo*); it was spotted with white; they cut it in two, and tied a half to each arm, while the two other kinds were only tied to the left arm. *Tertium qui vocatur fullo, albis guttis, dissectum utriusque lacerto adligant, cætera sinistro.*

No commentator has said any thing on this remarkable passage, or respecting the insect known to the Romans by the name of *Fullo*: naturalists have not been equally careless.

Mouffet, in his posthumous work, published in 1634, describes the largest species of European cockchaffer, which is $1\frac{1}{2}$ inch long, and is readily known by the white spots on its prothorax and elytra, and combats the opinion of those authors who consider the *Fullo* of Pliny a dung-beetle, or an earwig; and argues that the Roman naturalist intended to designate the large cockchaffer with white spots by this name.^m

Ray, whose History of Insects appeared in 1710, coincides

¹ Lat., *Mem.*, pp. 148 and 153. Consult also *Desc. de l'Égypte*, vol. iii. p. 34.

^m Mouf. *Insect. sive Minim. Animal. Theatrum*, 1634, folio, p. 160.

in this opinion; and, more lately, M. Schœnherr, in his laborious work, especially devoted to the synonymy of insects, quotes Pliny for his *Melolontha Fullo*.^o

It is with regret that I differ from an opinion so well established as this certainly is by the authority of eminent naturalists; but observations which I have made appear to me to prove its incorrectness. I have examined a great number of sculptures, in which insects are introduced, and many figures of insects, and observed some which had probably been used as amulets, having holes bored in them in such a way as to allow of their being hung round the neck, and in every instance the insects represented were *coprophaga* or *Cetonia*,^p and can in no instance be taken for any kind of cockchaffer, all the species of which are so easily distinguished by their longer make. A similar result has been obtained from the examination of all the obelisks and other Egyptian monuments, of which drawings have been published. I only speak here of *Scarabæi* and other coleopterous insects, and not of the bee or wasp, which is sculptured on the obelisks of Luxor.

Latreille, from a similar examination, has obtained similar results. It would therefore appear that the *Melolontha Fullo* of Pliny must be looked for amongst the *coprophaga* or *Cetonia*, and not among cockchaffers.

Pliny says that the green *Scarabæus* has the property of improving the sight, and that the engravers of precious stones rest their eyes by looking at these insects. *Scarabæi viridis natura contuentium visum exacuit, itaque gemmarum sculptores contuitu eorum acquiescunt.*^q

Marcellus Empiricus follows Pliny in relating the same fact, and adds that this beetle is of the colour of the emerald, *scarabæus coloris smaragdini*. This description applies exactly to *Cetonia fastuosa* and *Cetonia aurata*, especially the former.

These two species are of a beautiful golden green colour, or of the colour of the emerald; but *C. aurata* has white spots on its elytra (*albis guttis*), which serve to distinguish it from the other species: it is nine lines in length, and is frequently

ⁿ Ray, *Hist. Insect.*, 1710, 4to, p. 93.

^o Schœnherr, *Synon. Insect.*, p. 3. Upsalia, 1817, 8vo. p. 164.

^p Amongst the *Scarabæi*, in the *Bibliothèque du Roi*, there are several figures which may be referred to the *coprophaga*, but no *cetonia*; but I have seen great numbers of these in other cabinets.

^q Plin. *Hist. Nat.*, lib. xxix. c. 38; tom. viii. p. 270.

found in gardens on roses and other flowers. The large cockchaffer with white spots, *Melolontha Fullo*, of modern naturalists, is, on the contrary, very rare, and is never met with except on high downs and in the neighbourhood of the sea-coast. From all this I conclude it is *Cetonia aurata* which is the object of the superstition Pliny speaks of, and to which he gives the name *Fullo*.

To recapitulate : Aristotle applies the word *Spondylus*, or *Sphondylus*, to the common cockchaffer, in the states of both larva and imago.

In Pliny, who was not acquainted with the metamorphosis of the cockchaffer, the word *Spondylus* is used only for the larva of that insect, or white worm, considered then by some as a small serpent, and which was known to the Greeks in Agricola's time (the seventeenth century) by the name of *Spondylus*.

In Pliny the *Scarabæus qui pilas volvit*, which is an object of religious worship with the Egyptians, and which cures the quartan ague, is the *Ateuchus Sacer*, and *A. laticollis* of Fabricius, and also the *A. Ægyptiacus* of Latreille and Caillaud.

The *Scarabæus*, properly so called, of Horus Apollo, the unfolded wings of which formed rays, is also the same insect.

In both Aristotle and Aristophanes the sacred *Scarabæus* alluded to under the name of *Cantharis*, is *Ateuchus Ægyptiacus*.

Pliny's *Scarabæus cui sunt cornicula reflexa* is *Ateuchus Midas*, common in Egypt, and brought from thence to this country by Savigny.

The *Scarabæus* with two horns, consecrated to the moon, mentioned in Horus Apollo, is also *A. Midas*.

In Aristotle and other Greek writers the *Melolontha* children play with is *Cetonia fastuosa*.

Pliny's *Scarabæus viridis*, which engravers delight to contemplate, is also *C. fastuosa*.

The *Scarabæus Fullo albis guttis* of Pliny is the *C. aurata*, which has white marks on its elytra.

Since it is proved that the *Spondylus* of Aristotle and Pliny is the cockchaffer, that word necessarily belongs to our subject, as the cockchaffer is injurious to the leaves of the vine, as well as to every other kind of plant. There is a smaller species than the common sort belonging to the cockchaffer genus, which has been named by entomologists *Melolontha vitis*, because it is often found on the vine in company with *Melolontha*

Frischii, of which it is perhaps merely a variety:† but this insect is met with as frequently on the leaves of the willow and rose as on those of the vine; and it is not one of those considered particularly noxious by the cultivator; and for these reasons probably did not attract the notice of agriculturists in ancient times.

Before we pass on from the word *Spondylus*, I ought not to omit remarking that Fabricius has employed this word to designate a genus of *Coleoptera* which he has formed in the family *Prionidæ*, and named *Spondylis Buprestoides*; but this insect, whose larva inhabits the wood of trees, can have no connexion with the *Spondylus* of ancient authors, the larva of which attacks the roots of young or annual plants. It would seem that the intention of Fabricius in making choice of this name, was thereby to furnish an argument in support of his opinion that there was some relation between the insects: now what I have said at the commencement of these Researches, applies so exactly to the case in question as to render further comments unnecessary.

3. *Joulos*, or *Julus*.—*Centipede*.

The *Joulos* has even less claim than *Spondylus* to be included amongst insects hurtful to the vine, though Suidas has called it the worm of the vine; but this lexicographer, who lived in the middle ages, is the only writer who has so much mistaken the *Joulos* of the ancients. From a comparison of passages, it appears that the *Joulos* is an apterous or wingless insect, with a great number of legs; long, like a worm; has a sinuous mode of progression; rolls up when touched; and that it is found in moist places.

Modern naturalists have not made any mistake about this insect, and they have retained its ancient name. The name *Julus*, given to a genus of insects by the moderns, corresponds exactly with the *Julus* or *Joulos* of the ancients, especially if we consider its modern signification to be restricted to the genus *Julus* of Leach,^s in his excellent work on the *Myriapoda*, from which he has very properly separated *Polydesmus*, and some other genera.

† Walckenaer, *Faune Parisienne*, vol. i. p. 185; Oliv., *Entomologie genre Hanneton*, No. 39, pl. 2, f. 12, a, b, c, p. 34, vol. i.; Schæn. *Synon. Insect.*, vol. i. pt. 3, p. 193.

^s Leach, *Zoological Miscellany*, 1817, 8vo. vol. iii. pp. 32—48.

The *Julos* of the ancients was probably the *Julus terrestris* and *J. sabulosus* of modern naturalists, and not the common centipede of M. Soavi.

These insects are found on the ground under stones; they eat the leaves and fruits which fall on the ground and decay there; but are not injurious to the vine or any living plant. As they are met with under the shade of the vine, as also in other shady and moist places, it has happened that injuries have been attributed to them which were owing to some other cause.

4. *Biurus*.—*Gryllo-talpa*.—*The Mole-cricket*.

Biurus, the next word for our consideration, has not much more to do with our subject than the words *Spondylus* and *Joulos*. It only occurs in a passage of Cicero quoted by Pliny, in which it is said that this animal eats the vines in Campania. Thus the *Biurus* is not alluded to as generally injurious to the vine, but only to the vines of Campania in particular, and there by reason of its great abundance. It seems probable, however, that this passage of Cicero, which Pliny only quotes incidentally, refers to a peculiar case; and that these *Biuri*, which were so noxious to the young plantations of vines in Campania, would not have been capable of injuring the roots of the vines when they had attained greater strength and hardness.

However that may be, the etymology of *Bi-uros*, which, as we have already remarked, implies an insect with two tails, leads us to refer the animal to which it was applied to the locust or the mole-cricket, the only insects to which this description is applicable; for, from their size and the injuries they occasion, these, and these only, are likely to be mentioned as ravaging a whole country planted with the vine.

But as the locust was well known to the Romans under the name of *Locusta*, and to the Greeks by that of *Acris*,[†] it would appear that the word *Biurus* could only be used for the mole-cricket; and this synonymy seems the more likely to be the right one, on account of its being the largest European insect (it is not less than 1½ inch in length), and from its singular shape and destructive habits; and that it is not recognised in any de-

[†] Vulgate, and Septuagint Bible. Aldrovandus *de Insectis*, p. 160.

scriptions of insects in ancient writers ; and finally, that in all the writings of ancient authors which remain to us, the only word which can be considered properly to apply to it is *Biurus*.

Latreille has said that the history of the mole-cricket commences with Mouffet. This is not correct. It is true that Mouffet was the first who published a good figure of this insect, and the first who gave it the name of mole-cricket, or rather that of *Gryllo-talpa*.¹¹ He very properly rejects the previously assigned names *Spondylus* and *Buprestis* ; and this decidedly shows that the mole-cricket had, before his time, engaged the attention of naturalists. In fact, Aldrovandus had given a correct description of this insect, though his figure of it is a bad one, but yet easily to be known : he names it *Talpa Ferrantis*, because it had formerly been called the mole, and figured by Ferrante Imperato—“ *Neapolitanus, diligentissimus aromatarius in naturali sua historia.*” Thus Mouffet borrowed half the name of this insect from Ferrante. He was acquainted with his work, for he copied his figure of the Tarantula from it. Ferrante’s work was printed in Italian in 1599, after his death, and translated into Latin. The original edition is rare, and was not known, that I am aware of, to any naturalist of later times, from Linnæus downwards ; at least no one has ever quoted it. Many have thought they have done great things in going back as far as old Aldrovandus : now we have just shown that the history of the mole-cricket begins before him, before Mouffet, and even before Ferrante ; for if our application of the word *Biurus* be correct, (and we think it will be found so,) we must necessarily refer the first mention of this insect to very ancient times.

The mole-cricket is supposed to do much injury in Europe, particularly in the southern countries ; it makes subterranean galleries, tears and removes the roots of plants by means of its palmated fore-feet, in order to form a habitation for its young, and also in the pursuit of insects, multitudes of which, especially such as are injurious to agriculturists, it pursues and destroys : it never eats the roots or any other parts of vegetables.⁷

¹¹ Mouf. *Insect. Theat.*, c. xxiv. p. 104.

^{*} Ferrante Imperato, *del Historia Naturale*, libri 28. Naples, 1599, p. 787. *Talpa Insecto*. His figure is better than Aldrovand’s.

⁷ *Acheta Gryllo-Talpa*, Fab., *Syst. Entom.*, vol. ii. p. 28, No. 1 ; Walckenaer, *Faun.*, Paris., vol. ii. p. 282.

The injuries caused by the mole-cricket have been confounded with those produced by the larva of the cockchaffer; for we find from a Dictionary of Agriculture, recently published,² the name *Courterolle* has been given to both insects in several cantons of France.

5. *Gaza*.—*The Saddled Locust*.—*Locusta ephippiger*.—*Wingless Locust*.—*Locusta aptera*.—*Pupa-like Locust*.—*Locusta puppa*.

It will be recollected that our examination of the word *Gaza*, as employed by the prophets Amos and Joel, served to show that their *Gaza* was an insect eminently destructive not only to the vine but to every kind of plant; and that its ravages were succeeded by those of several kinds of locusts, who completed the work of destruction, devouring every thing which this formidable insect had left. The Septuagint and the Vulgate translate *Gaza* by the word "caterpillar," and the Chaldean version by "crawling locust," that is to say, without wings, or apterous.

If we pay attention to the facts, that in Ptolemy's time the Jews of Egypt, to whom we are indebted for the Greek translation of the Bible, were only imperfectly acquainted with Hebrew, which was to them a dead language; that St. Jerome, whose translation was the basis of the Vulgate, in regard of the designation of material objects, had still less acquaintance with Hebrew, we shall see that the Chaldean version is here a higher authority than either of the others; and when we have consulted the works of Messieurs Rosenmüller and Œdmann,³ who have discussed this critical question with equal sagacity and learning, we shall be convinced, in spite of the contrary opinion of Michaelis and Bochart, that the four different words employed by Amos and Joel as names of insects, all designate locusts.

We consider that the observations of M. Shaw, a judicious traveller, set this matter completely at rest. He tells us that in Africa it frequently happens, that in March and April the locusts, driven by the south wind, darken the sky, and increasing

² Baron de Morogué, *Cours complet d'Agriculture*, 1834, 8vo. vol. vii. p. 349, on the word *Courterolle*.

³ Rosenmüller, *Handbuch der Biblische*, &c. Leipsik, 4^o band. 1831, 8vo. pp. 386 and 388; Œdmann *Vermischte Sammlungen*, &c. aus dem Schwedischen, Uebersetz von D. Groning, 1787, 12mo. 2^o heft. pp. 116 and 117.

till the middle of May, ravage every thing; and, after laying their eggs, they diminish in numbers. M. Shaw further informs us, that to these succeed, after an interval of several days, some smaller species, whose mode of progression is similar to that of the others, and that they are successively replaced by one or two other kinds which leave nothing unconsumed.

M. Œdmann, in order more completely to prove the correctness of the Chaldaic text, has thought it necessary to suppose that the *Gaza* was a locust which had not come to the perfect state, without either wings or elytra; that the Hebrews took it for a perfect insect, and designated it particularly by that name. But the oriental nations having from the most ancient times used the locust as an article of food, were much too well acquainted with them to make this mistake.

Nor is such a supposition at all required. We are acquainted at the present day with several species of locusts, which exactly agree with the account of the crawling locust of the Chaldean version, but with which it would appear M. Œdmann was wholly unacquainted: there is one species especially, the prothorax of which is considerably hollowed near the middle, and elevated posteriorly like a saddle; this prothorax conceals the arched sound-producing elytra, which are very short, and are not used as organs of flight: these locusts resemble pupæ, but have, nevertheless, arrived at the perfect state, and are capable of propagation: the species has been named *Locusta Ephippiger*. There are other species, the females of which have neither wings nor elytra, and are exactly like larvæ. *Locusta Apta* and *L. Puppa*, Fab., answer this description.

But I am inclined to think that the saddle-locust is more likely to be the *Gaza* of the Bible than either of the two other kinds just alluded to. Of all crawling locusts, *L. Ephippiger* is most frequently found on the vine. It is, however, never sufficiently abundant thereon to be injurious, and so cannot be ranged with vine-insects, properly so called; nor is it in this manner mentioned in the Scriptures.

6. *Cantharis of the Geoponicks*.—*Ninth Cantharide of Aldrovandus*.—*Rhynchites Bacchus*, or *R. Betuleti*; or *Attelabus of the Vine*.—*Becmar*.—*Diablaeu*.—*Lisette and Velours vert of Vine-dressers*.—*Coleoptera or Beetles which eat the Vine, and*

which cannot be referred to the *Cantharis* of the *Geoponicks*.—*Lethrus Cephalotes*.—*Grey Weevils*.

Ancient authors have given the name of *Cantharis* to certain insects which they used, after having pounded them, as an ingredient in an unguent or liniment, which was rubbed on the vines to preserve them from the attacks of insects: but it is only in the *Geoponicks* that, in speaking of this use of the *Cantharides*, it is said these insects are produced on or in the vine, and are injurious to it; and the author or authors of this compilation give also a receipt for macerating *Cantharides* in oil, to be used as a remedy against the injurious effects on the vine of these very insects.^b

We have seen that the word *Cantharis* was employed by the Greeks as well as by the Romans, to designate *Coleoptera*, or Beetles generally; that this word was often applied to Coleopterous insects of brilliant colours, or to those which possessed corrosive or blistering properties; and that it was frequently used for such insects as were remarkable from their injurious effects, whether of large or small size.

Among the first we have cited the *Mylabris*, which feeds on the endive, *Mylabris Cichorii* of modern entomologists, so well described by Dioscorides; and the *Lytta*, or *Melœ vesicatoria*, the *Cantharides* of the shops.^c

Among those of smaller size is the *Scarabæus parvus*, *Cantharis dictus* of Pliny, the *Curculio*, or *Calandra granaria* of modern entomologists; the *Curculio frumentarius*, Linn., the *Apion frumentarium* of Schœnherr and Latreille. This last is of a brightish red colour, the former of a dull yellow; and I consider it Pliny's insect, as it attacks wheat, while the other is chiefly injurious to the oat.^d

These indications leave us in a good deal of uncertainty respecting the *Cantharis* of the *Geoponicks*. However, as it must have been on account of their corrosive or vesicatory properties that the *Cantharides* were used by the ancients in the

^b Latreille in Cuvier's *Règne Anim.* vol. v. p. 63; Oliv. *Coleop.* iii. p. 47. pl. 1; Schœn. *Syn.* 1817, 8vo. p. 31; *Mylabris*, vol. i. pt. 3. p. 31; Oliv. *Ent.* iii. 47, 7, pl. i. fig. b, c.

^c Latreille, dans Cuvier, t. v. p. 67; Schœnherr, *Synonymia*, t. i. p. 20.

^d Schœnherr, *Synonymia Curculionidum*, t. i. p. 283, No. 75, Genus *Apion*; Walckenaer, *Faun. Paris.* t. i. p. 237, No. 15; Latreille *Gener. Crustaceor et Insect.* t. ii. p. 249 et 271; *ibid.* Cuvier, t. v. p. 88; Oliv. *Entom.* vol. v. 83, 16, 196.

liniment intended to destroy other insects, it would seem that the *Cantharides* of the vine were insects of that nature, or at least whose similarity of colour occasioned them to be confounded or compared with them. Now, since neither *Mylabris*, *Lytta*, *Melœ*, *Cantharis*, nor any Coleopterous insect possessing blistering properties lives on the vine, it is evident that the insect we are in search of must be looked for among those which from their colour would be likely to be compared to, or mistaken for, these insects; particularly with the *Mylabris* of the endive, with yellow stripes, or the *Cantharides* of the shops, which are of a brilliant green colour; for we know that the ancients made use of both these insects in medicine and agriculture.

We will now examine those *Coleoptera* or Beetles which are injurious to the vine; and the one which best fulfils these indications, will be the *Cantharis* of the vine mentioned in the Geoponicks.

The largest of these is *Lethrus cephalotes*, which gnaws off the young shoots of shrubs generally, and especially those of the vine, and carries them into its burrow.^e But this species seems peculiar to Hungary, where it is called *Schneider*, cutter; it is frequently met with also in the western parts of Russia; it is not known as a pest of the vine, by French or Italian cultivators. I do not find any thing about this insect in ancient writers; if it was known to them, they included it amongst those which they designated by the general term, *Scarabæus*.

This is not the case with the Weevils, many species of which are injurious to the vine with us.

The one which I have most frequently found upon this plant, is the *Curculio Picipes*, Fab. probably the same as *C. Corruptor* of M. Host, and *C. Vastator* of Marsham.^f

These weevils eat the buds of the vine just as they are expanding. They are injurious to its fruitfulness, but they also attack pear and apple trees. They do more mischief in Germany and the south of Europe, than in this country.

^e Latreille, *Gener. Crust. et Ins.* t. ii. p. 95; *ibid.* Cuvier, t. iv. p. 542; Fischer, *Entom. de la Russie*, p. 133, xiii. 1; Kirby, *Introd. to Entom.* t. i. p. 204; *Ann. des Scienc. Natr.* t. i. p. 221.

^f Walckenaer, *Faun. Paris.*, t. ii. p. 249; Fabricius, *System Eleuth.* t. ii. p. 540, No. 201; Marsham, *Entomologia Britannica*, t. i. p. 300, No. 180.

A third species of beetle, still more destructive than the two of which we have just spoken, is the *Eumolpus vitis*, vulgarly known by the name of *Coupe-Bourgeon*; but this insect, of which we shall presently treat more at length, is, like the two preceding, of sober colours.

Amongst all the beetles which are injurious to the vine, there are, as we think, but two species which would be likely to have been confounded by the ancients, as indeed they were for a long time by the moderns, and which would appear by their colours to answer the indications afforded by an examination of ancient passages in reference to the word *Cantharis*. These two species are *Rhynchites Betuleti*, and *R. Bacchus* of modern entomologists, the *Attelabus vitis*, or *A. Bacchus*, and *Attelabus Betuleti* of their predecessors. These two species, considered as one kind by vine-dressers, have obtained from them in France, according to the various dialects or different provinces, or even in different cantons of the same province, the names—*Becmare*, *Urbec*, *Urbère*,^f or *Urbèe*, *Diableau*, *Bèche*, *Lisette*, *Velours vert*, *Destraua*, and probably others we have not heard of.

R. Betuleti^g is of a brilliant glossy green, or of a violet-blue colour equally glossy and brilliant. *R. Bacchus*^h is of a golden purple, or of a golden green mixed with purple.

These insects cut the stalks of the leaves, which causes them to wither and become pliable, and more easy to roll up: this they do with great skill, making a cavity in which they place their eggs, and by this means do a great injury to the plants which they attack. *R. Bacchus*ⁱ gives a preference to the leaves of the vine and cherry; *R. Betuleti*, to those of the white birch and vine. In the neighbourhood of Paris, I have found *R. Bacchus* most frequent on the vine; but it was *R. Betuleti* that did so much injury to the vines of Burgundy some fifteen years ago.

M. Silbermann of Strasburgh tells me, that *R. Betuleti* is the most injurious to the vines of Alsatia and the banks of the

^g Walckenaer, *Faun. Paris.* t. i. p. 235, *Attelabus betule*; Schœnherr, *Synonymia Insector*, t. i. p. 222; Panzer *Faun. Insect. Germ.* xx. No. 6.

^h Schœnherr, *Gener. et Species Curculionidum*, *Rhynchites Bacchus*, t. i. p. 219, No. 15; Latreille, *Hist. Nat. des Inst.* t. xi. p. 85, *Attelabus Bacchus*; Panzer, *Faun. Ins. Germ.* fasc. 20, No. 5; Charanson Cramoisi de Geoff. *Attelabe cuivre d'Olivier*.

ⁱ Kirby, *Introd. to Entomology*, t. i. p. 199.

Rhine; and that *R. Bacchus* is seldom found there, according to the observations of this clever entomologist. *R. Betuleti* first appears in the perfect state on the surface of the leaves of the vine in that country, towards the end of August. The larva rolls up the leaf in order to conceal itself, and attacks the young grapes, but not the buds, because these are out before it has left the egg.

Schranck, in his *Fauna Boïca*,^k has placed these two insects in a genus of his own construction, which he has named *Involvulus*; but the ancient *Involvulus* being a Lepidopterous insect, does not belong to *Coleoptera* at all: and I may here remark, that this genus *Involvulus* of M. Schranck is not a well-formed genus, and that it has not been adopted by any other naturalist. Although it contains but few species, Schœnherr has separated several from it, referring them to three separate genera, *Apo-derus*, *Attelabus*, and *Rhynchites*.

Aldrovandus was perfectly well acquainted with *R. Bacchus*; and I am surprised that no naturalist has hitherto quoted this venerable father of natural history, in Europe, in reference to this diminutive but formidable insect. He places it amongst the *Cantharides*, to which he devotes a whole chapter, thus separating them from the *Scarabæi*, which occupy another chapter. This is his account of this weevil:—“*Nonus numerus significat convolvulum ἴσα Græcis, Tagliadezzo vulgo apud Italos agricolas, corpore cæruleo, pedibus obscure lutescentibus, in vite repertum ac folia ejus depopulantem. Nascitur ex oris bombycum oris similibus magnitudine colore rubicundis. Hic cum parere vult multa cumulat, convolvitque folia (unde forte a Latinis id nominis datum), at qui in his sua ora reponit.*”

Thus the name *Tagliadezzo*, cutter, given by the vine-dressers of Italy, its blue colour, the injuries it does to the leaves of the vine, which it rolls up and lays its eggs in, all contribute to prove the synonymy between our *Rhynchites Betuleti* or *R. Bacchus*, and the ninth *Cantharide* of Aldrovandus.^l But with respect to the identity of this insect with the *Ips* of the Greeks, and the *Convolvulus* of Roman authors, which Aldrovandus considers he has proved, we shall, in continuation, show that his opinion in this matter is erroneous.

^k Schranck, *Fauna Boïca*, t. i. p. 474, No. 498.

^l Aldrovand. *de Anim. Insect.* c. 4, 1638, in folio, p. 472.

7. *Ips*.—*Iks*.—*Volucra*.—*Volvox*.—*Eumolpus vitis*.—*Eumolpus of the Vine*.—*Coupe Bourgeois*.—*Tête-cache*.—*Bêche*.—*Lisette*.—*Gribouris de la Vigne*.

Aldrovandus, after having treated of the *Cantharides*, devotes a whole chapter to the *Ips* of the Greeks, his object in so doing being to support what he had advanced in the foregoing chapter, viz. that this insect is the *Tagliadezzo* of the Italian cultivators; but he remarks, that he has never found it upon the vine, although the ancients have said that it eats horn and the vine. Although Aldrovandus was mistaken in asserting that the *Ips* of the Greeks was the same insect as the *Convolvulus* of Roman authors, he was right in considering *Ips* to be a Coleopterous insect, and one of those which the Italian agriculturists included amongst the *Tagliadezzi*, or cutters.

We think, and are supported in this opinion by the authority of Vackenaer, Bochart, and other learned philologists, that the *Iks* of certain authors which is injurious to the vine is the same word as the *Ips* employed by other writers, to designate also an insect which eats the vine; and that between *Ips Ipses*, and *Iks Ikes*, there is only a difference of dialect.

This being the case, the critical examination we have just made warrants us in concluding, (from the consideration of passages in the writings of Grecian authors, including the grammarians and lexicographers of the lower ages,) that the word *Ips* is alike employed to designate an insect which eats horn and meat, and an insect which is injurious to the vine, eating the buds either in the state of larva, or after it has come to the perfect state. From these indications we learn, that the words *Ips* or *Iks* have been applied by ancients to two or three species of insects, or to the larvæ of different insects.

There must certainly be some analogy between these species, or the ancients could not have confounded them, and designated them by the same name. Now there is only one genus of Coleoptera the larva of which has *trophæ* or organs of mastication sufficiently strong to pierce horn. The *Ips* of Homer and of St. Chrysostom is therefore a Coleopterous insect; and, consequently, the *Ips of meat* and the *Ips of the vine* must also belong to the class *Coleoptera*.

As the insect in question eats horn and meat, naturalists will be aware that it belongs to the large tribe *Dermestes*, of

Linnæus, the larvæ of which do so much mischief in their museums. They are well aware also, that these insects are met with in fur-warehouses, in pantries and larders, and, indeed, in every place where animal substances are kept; in short, that nothing is too hard or too soft for them. But we are still too little acquainted with the history of these insects, to be able to determine to what genus of modern entomology the *Dermestides* belong which eat horn, and particularly the horns of the wild-goat (*Capra Ægagra*), the material of which the bow of Ulysses was made, and which is especially mentioned by Homer. We are perfectly well acquainted with the metamorphosis of *Dermestes lardarius* and *Dermestes Pellio*, the fur and bacon beetles.

These insects belong to the large family *Nitidulaires* of Latreille.^m Degeerⁿ long since had judiciously separated a genus from *Dermestes*, to which he gave the name *Ips*; but this name has since been given to very different genera still separated from the extensive family of *Dermestes*.

It is very possible, (as the ancient grammarian quoted by M. Boissonade has observed,) that the larva of the same insect should eat horn and meat; it is even probable that the ancients might have confounded the larvæ of two different though nearly allied genera; but most certainly the insect described by ancient writers as eating horn or meat, could not have been the same as the one the grub or larva of which feeds on the buds of the vine. As the same name was applied to them, they must both have belonged to the class *Coleoptera*, the larvæ of which could not be confounded with caterpillars, or the larvæ of *Lepidoptera*. The perfect insect also which eats the buds of the vine, must have resembled a *Dermestes* in shape and size; all these conditions are fulfilled in the *Eumolpus* of the vine,—*Eumolpus vitis* of modern entomologists,—which is one of the greatest pests of the vine. This insect, which is of a black and red colour, belongs to a recently constructed genus,^o and is vulgarly known by the names *Gribouris de la Vigne*,

^m Latreille, dans le *Tableau du Règne Animal de Cuvier*, t. iv. p. 503; Schœnherr, *Synonymia Insect.* t. i. pt. 2, p. 236, No. 25; Walckenaer, *Faun. Paris.* t. i. p. 124, No. 2; Panzer, *Faun. Insect. Germ.* t. lxxxix. 12; Fabricius, *Syst. Eleuth.* t. i. p. 422.

ⁿ Degeer, *Mémoire pour servir à l'Histoire des Insectes*, t. v. p. 190.

^o Buchoz, *Hist. Nat. des Ins. nuisibles à l'Homme*, 1782, in 12, p. 158 à 163.

Bêche, *Lisette* and *Tête-cache*, because its head is concealed by the prothorax. It feeds on the buds and young shoots of the vine, which it cuts in two, and thus destroys; it also eats the grapes.

The great injury which this insect does to the vine is another reason for our considering it the *Ips* of the ancients. We readily conceive, as Strabo observes, that the pretended destruction of this scourge by Hercules should, in a country where the vine is much cultivated, have caused the memory of that hero to be held in greater veneration than his victory over the Nemean lion. The larva of the *Eumolpus* of the vine is the one which the ancients alluded to when they spoke of the *Ips* or the *Iks* as a grub which appears in the Spring: this larva is of an oval form; it has six legs; its head is scaly, and armed with two small jaws.^p

The same insect which the Greeks called *Ips* or *Iks*, was named *Volucra* and *Volcox* by the Romans, but with this difference, that the words *Ips* and *Iks*, designated the larva of the insect, and the words *Volucra* and *Volcox*, the perfect insect; this is shown by the word *animal*, and not *worm*, being used by Pliny and Columella in speaking of the *Volucra* and *Volcox*, whilst the *Ips* of the Greeks is always designated as a worm. The name *Volucra* was probably given to this larva on account of the celerity with which it escapes from the hand that attempts to take it; it drops on the ground directly the leaf in which it is enveloped is touched; and the name *Volcox* was doubtless given, from the habit the insect has of wrapping itself up in leaves. Forcellini gives in his Italian dictionary for the word *Volucra*, the word *Ritorelli*. This vulgar appellation of the vine insect in Italy is evidently derived from the same origin as *Volcox*. Almost all the insects of the genus *Dermestes* counterfeit death on being touched; and this similarity of habit has occasioned the ancients to confound the *Ips* which eats horn, and the *Ips* which devours the vine, together.

But there are still stronger reasons than these to prove that the *Volucra* or *Volcox* of the Romans is the same insect as the *Ips* or *Iks* of the Greeks.

^p Latreille, *Nouv. Dict. d'Hist. Nat.* t. x. p. 358. He quotes Olivier, No. 96, pl. 1, fig. 1; but Olivier's figure certainly does not represent the insect which infests the vine: it is *Eumolpus Ignitus*, a Brazilian species, totally different from the one in question.

We learn from Pliny and Columella that the *Volucra* or *Volvoæ* was a different insect from the one which they named *Convolvulus*.

The difference between two insects which are both injurious to the vine must have been considerable, or it would not have been noticed by the ancients, whose knowledge of these animals was extremely limited.

We shall presently show that the *Convolvulus* was a Lepidopterous insect, or a butterfly: the *Volucra* or *Volvoæ* belongs to a different class. But we see that it is only the larvæ or perfect insects of the class *Coleoptera*, and caterpillars or the larvæ of *Lepidoptera*, which are very injurious to the vine. The *Volucra* or *Volvoæ*, therefore, belongs to the class *Coleoptera*.

Further, we know from the information Pliny and Columella have afforded us on this subject, that the *Volucra* or *Volvoæ* eat at the same time the young shoots of the vine and the grapes. Pliny says, "*Volvoceni animal prærodens pubescentes uvas;*" and Columella observes, "*Genus animalis Volucra prærodit teneras adhuc pampinas et uvas.*" These expressions exactly and only apply to the *Eumolpus* of the vine, the *Ips* of the Greeks, and not at all to the *Cantharides* of the Geoponicks, or to *Rhynchites Bacchus*, or *Betuleti*, which injures the vine, by rolling up the leaves and causing them to wither, but does not attack the fruit. Nor does it apply, as we shall hereafter see, to any of the various caterpillars or larvæ of *Lepidoptera* which feed on the vine.

We have now shown that the *Ips* or *Iks* of the Greeks is the same as the *Volucra* or *Volvoæ* of Roman authors, the *Eumolpus* of the vine (*Eumolpus Vitis*).

8. *Involvulus*.—*Convolvulus*.—*Pyralis Danticana*.—*Ver-coquin*—*Procris Vitis*, or *Procris Ampelophaga*.—*Teigne de la Vigne*.—*Teigne du Raisin*.—*Tortrix Hyperana*.—*Cochylis Roserana*.

We learn from the recipes given by Pliny and Cato to prevent the increase of the *Convolvulus*, that it was an insect highly injurious to the vine; but as these writers give no description of the insect, and only afford us information on one particular respecting it, viz., that it was a different kind from *Volucra* or *Volvoæ*, we have no means of knowing whether this word was

employed to designate the same insect as the *Involulus* of Plautus.⁹ In this perplexity, the similarity of the words and their derivations, which indicate the same habits and economy, will not allow of their separation, and should satisfy us that they were used to designate one and the same insect; or rather that it is the same name with the addition of two different particles which do not alter its meaning. No insects except the caterpillars or larvæ of Lepidoptera have an economy similar to that attributed by Plautus to the *Involulus*: “*Bestiola quæ in Pampini folio intorta implicat se.*”

The caterpillar not only rolls up the leaf of the plant in which it wraps itself up, like the larva of the *Eumolpus Vitis*, or *Coupe-bourgeon*, but it fastens itself therein, and, by means of silken threads spun from its body, constructs a cocoon wherein to undergo its metamorphosis; it infolds itself, *implicat se*. We know a whole family of Lepidoptera who have this habit of rolling themselves up in the leaves of plants.

In order, therefore, to find the *Involulus* or *Convolvulus* of the ancients, we must look amongst those species in the numerous family *Torticites*, the caterpillars whereof attack the vine.

According to Bosc, the cultivators of the south of France designate a Lepidopterous insect, which is but little known in the neighbourhood of Paris, by the name of *Teigne de la Vigne*. The caterpillar of this moth attacks the grapes when they are about half grown, travelling from grape to grape by a gallery of its own construction.^r

Another species, the *Teigne du Raisin*,^s also eats the grapes, beginning at the same time as the other, but it seldom attacks more than one grape at a time: it was this insect which committed such great devastation in the vineyards in the neighbourhood of Constance.

A species resembling this, or the preceding, two or three individuals of which are sufficient entirely to destroy a vine, was seen by Pallas, in the Crimea.^t This appears to be the caterpillar of a *Procris*, or *Zygana* (a genus separated from *Sphinx*),

⁹ See the former part of these *Researches*, p. 141 of this volume.

^r Bosc. *Notice sur la Pyrale et autres insectes, qui nuisent aux Vignobles*. Esprit des Journaux, p. 132, et Bulletin de la Société d'Encouragement.

^s Kirby, *Introduction to Entomology*, vol. i. p. 205.

^t Pallas, *Travels in Russia*, t. ii. p. 241.

and is very similar to *Zygæna Statices*, “the forester:” it is found on the dock and sorrel in the neighbourhood of Paris.^u

The *Pyralis Fasciana*^x of Fabricius, whose fore-wings are of a dull ash colour, with a brown fascia, and dots of the same colour, has been mentioned as also injurious to the vine, or as corresponding with one of the beforementioned species.

There is yet another insect possibly referrible to the *Teigne de la Vigne*, or *Teigne du Raisin*, of our cultivators: it is *Tinea Ambiguella*, Hubn.^y

In order to ascertain the correct synonymy of the various species of *Lepidoptera* especially injurious to the vine, mentioned under various names in the writings of naturalists, travellers, and agriculturists, I have had recourse to the practised skill and judicious criticism of one of the first Lepidopterists in Europe, M. Duponchel.

From the results of our united and careful examination it would appear, that with the exception of those *Lepidoptera* occasionally met with on the vine, and also on other plants, without producing much injurious effect, (and of these we shall speak hereafter,) all the *Lepidoptera* which can be considered especially injurious to the vine are reduced to the following four species, the caterpillars of each of these rolling themselves up in the leaves; and the ancient names *Involuculus* and *Convolvulus*, therefore, applying to them in common, we can hardly suppose that the observations made by the ancients on this subject were sufficiently exact to enable them to determine the differences between insects, a knowledge whereof, notwithstanding the great labour of late bestowed on them, has been but recently attained by modern naturalists.

The first of these species is the one which was observed by Bosc, and named by him *Pyralis Vitis*. Fabricius has described this insect from the specimen in Bosc’s collection, under the

^u Walckenaer, *Faun. Paris.*, t. ii. p. 284, No. 2; Fabricius, *Entom. Syst.*, t. iii. pt. i. p. 406, No. 8; Godart, *Hist. des Lépidoptères de France*, t. iii. p. 158, pl. 22; *Dict. Classique d’Hist. Nat.*, t. xiv. p. 289, article *Procris*.

^x Fabricius, *Entom. Syst.* t. iii. pt. i. p. 261, No. 78; Fabricius, la Rapporte à la *Tortrix Heparana* du Catalogue de Vienne. It is not the *Fasciana* of Linné. Consult Friedrich Treitschke; *Die Smetterlinge, von Europa*, t. viii. p. 28.

^y Hubner, tab. 22, fig. 153, sect. 64, No. 61, du texte; Treitschke, *Die Schmetterlinge von Europa*, t. viii. pp. 280 et 281, No. 8; *Cochylis Roserana alis anticis argente ochroleucis, nitidis, fascia media intus angustiore fusca*.

name of *Pyralis Vitana*. For certain reasons, which I shall presently adduce, neither of these names can be retained: in order to avoid all confusion we have named this insect *Pyralis Danticana*, after Bosc's second name—Dantic; as we could not make use of Bosc, his first name, Fabricius having already appropriated it in his *Pyralis Boscana*.

The second species is the *Procris Ampelophaga* of Duponchel, Bayle, and Passerini, named *P. vitis* by Boisduval.

The third is the *Tortrix Roserana* of Frolich, or the *Cochylis Roserana* of Duponchel and Treitschke, *Tinea Ambiguella* Hubn.

The fourth is the *Tortrix Heperana* of Treitschke and Duponchel, or *Pyralis Fasciana*, Fab.

The caterpillar of *Cochylis Roserana*, which has been mentioned by Frolich as committing great devastation in the vineyards in the neighbourhood of Stuttgart, has not been described by him, nor, as I believe, by any other entomologist.

There is then *Pyralis Danticana*,² the *Ampelophaga*³ of Boyle and Passerini, and *Fasciana*, respecting the destructive effects on the vine of which, there can be no doubt. Except on the caterpillars of two species, we have no observations sufficiently exact to enable us to determine the species.

The caterpillar of the first of these,^b *P. Danticana*, is, according to Bosc, comprehended, in the neighbourhood of Paris, in the collective term *Larvæ*, or *grubs hurtful to the vines*; in Burgundy, and the vine countries, it is called *Vercoquin*, an epithet sometimes applied to the larva of the cock-chaffer (the *Spondylus* of Pliny).

This caterpillar is, a short time after it leaves the egg, about a third of an inch in length; its head is black, body green; it has a yellow spot on each side of the neck.

It is first seen in the month of May, towards the end; the

² *Pyralis Vitana*, *alis fusco virescentibus: fasciis tribus obliquis fuscis marginalis*: Bosc. Dantic. *Mém. de la Société d'Agricult.* 1786, trimestre d'été, p. 22. pl. 4. fig. 6; *Pyralis Vitis*, Fabricius, *Entom. Syst.* t. iii. p. 2, pl. 249; A. J. Coquebert, *Illust. Iconographica specierum Insect. quæ in Musæis Parisinis observavit*, J. C. Fabricius, duas 1, tab. 7, fig. 9.

³ *Procris Ampelophaga*, C. Passerini, *Memoria sopra duo specie d'insetti nocivi; Zigana Ampelophaga*, Bayle-Barelle, *Degli insetti novici al nomo alle bestie, al agricoltoire*; Miland 1824, pl. 1. fig. 7. à 12.

^b Bosc. *Nouv. Dict. d'Hist. Nat.* t. xxxv. p. 392.

time it effects the greatest injury is about the middle of June. It eats the leaf-stalks half through; this causes the leaves to wither and to roll up readily. When one leaf dries up, the insect goes to another. One caterpillar destroys a good many leaves; the vine is weakened, and the grapes prevented from acquiring their full size and sweetness. This caterpillar does not attack the grape, but eats the grape-stalk, so that even if it does not dry up, the fruit is small and without flavour. After most of the leaves are affected, the grapes cannot long escape, because they are thickest towards the bottom of the plant, and it is there these caterpillars commence the work of destruction.

The moth produced from this caterpillar is about the size of the nail of the little finger. Its wings are of a yellowish green, with three oblique brown bands.

These moths are most abundant in July. During the day they are to be found on the vine, sitting under the leaves; they are easily disturbed, and fly off on the least alarm. It is in the dusk of the evening that the male seeks his mate; those who leave their retreats earlier, quickly become the prey of swallows and other insectivorous birds.

I have before said that Bosc referred the moth he named *Pyralis Vitis* to a new species which Fabricius named *P. Vitana*. I have also said it was described in Paris by Fabricius, from Bosc's specimen. M. Coquebert has published four plates of insects drawn and coloured from individuals observed and described by the Danish naturalist; and amongst these is *P. Vitana*.

Thus it would seem the insect was well known; but this was not the case.

M. Duponchel has not found Fabricius and Bosc's descriptions, or the figure of Coquebert, sufficiently exact for the determination of the species.

The German authors, Frolich, Treitschke, and others, who have paid great attention to this tribe of moths, would appear to think with M. Duponchel on this subject, as they have not mentioned *P. Vitana*, Fab. in any of their voluminous works.

In this difficulty M. Duponchel has had recourse to Bosc's collection, which now forms a part of our museum. He finds a *Pyralis* there with the name *Vitana* attached, described by the

German authors under the name *Pillerana*, and said by them to live on *Stachys Germanica*, a plant so different from the vine that the insect was hardly likely to feed on both.

But more than this, Fabricius has given a description of *P. Pillerana*, different from that he has given to *Vitana*.

M. Duponchel has compared the description given by Bosc of the larva of *P. Vitana*, with the descriptions of all the caterpillars of *Pyralidæ* mentioned by writers who have treated of these insects.

However I maintain, and I remarked to M. Duponchel, that even supposing M. Bosc to be mistaken about the moth, he could not respecting the existence of the caterpillar, nor could he be deceived in the very curious observations he has made on its economy; that two years ago, when I was on the banks of the Rhine at Baubach, in Nassau, I had noticed a cultivator (he was the innkeeper of the place,) very busy picking the leaves which were rolled up from his vines, and he told me it was to destroy a very injurious insect. I opened several; they contained little caterpillars; and I immediately recognised the caterpillar described by Bosc. I expressed my surprise to M. Duponchel, that after so much progress had been made in this department of entomology, by the discoveries therein of many German and French naturalists, a moth should not be known which had been twice figured and described; and which, since the caterpillar was so abundant, must be common. To this M. Duponchel replied, that he considered I was mistaken in my belief of having recognised the caterpillar described by Bosc, as the description which this naturalist gives in his Memoir is so general, that it would apply to all the caterpillars of this genus which have green bodies and a black head, but which differ in other characters to which Bosc does not allude, such, for example, as the colour of the warty protuberances, a character which all the caterpillars of this group possess.

Although the silence of the Italian naturalists respecting this caterpillar does not prove that it is not to be found in Italy, and that therefore it could not have received from the ancients the name *Involuculus*, information may perhaps be obtained on this point by attention to the fact of there being another to which the names *Involuculus* and *Convolutulus* would more correctly and particularly apply: it has been more accurately observed than the caterpillar of Bosc, and its moth, *Procris*

Ampelophaga, is perfectly well known, and very much dreaded by all the Tuscan cultivators.

Some years this insect does much mischief to the buds and young shoots of the vine. It has sometimes devastated half the vineyards of Piedmont. It is five or six lines in length; its colour is greyish brown; the hairs are in tufts, disposed in four rows. Underneath it is smooth and of a yellowish white: it attains its full size towards the end of May; it is at this time that it eats the leaves of the vine. It is always found on the upper side of the leaves. When a branch is shook, the caterpillar bends its body in the form of an arc, and lets itself fall to the ground. The largest number of these caterpillars I have ever seen on one vine, is ten; but there are not generally nearly so many.

Some time between the 20th and 30th of May, this caterpillar spins a white cocoon, wherein it remains motionless, and afterwards changes to a chrysalis about the 5th or 10th of June.

The chrysalis is at first of a yellow colour, with black dots on each segment; but as the time of transformation approaches its colour becomes deeper, and changes to a dirty blue.

The transformation of the chrysalides to moths, generally takes place from the 19th to the 25th of June.

The moth which comes from this caterpillar is the *Procris Vitis* or *P. Ampelophaga* of modern entomologists; its wings are of a blackish colour, changing to dull green. Body, bluish green.

Musca brevis frequently introduces its eggs into the body of the chrysalis of this moth. The larva of the fly feeds on the substance of the chrysalis, without altering the appearance of its external covering, and it seems to be transformed into a fly instead of producing a moth.

Each female of this *Procris* lays about three hundred eggs, which are of a straw-colour, and so small that they are hardly to be seen with the naked eye. About the 3d of July these eggs produce little white transparent caterpillars, covered with very minute hairs. The caterpillars of this second brood undergo transformation towards the 26th of August.

I have myself in part verified Bosc's observations on the caterpillar of *Pyralis Danticana*. I am only acquainted with

the habits of *Procris Ampelophaga* through the Memoir of Passerini. But if the first species is as abundant in Italy as the second, I shall be inclined to consider that it is the one to which the ancients more particularly applied the names *Incolcolus*, *Incolculus*, *Incolous*, and *Convolculus*.

9. *Kampe*. — *Eruca*. — *Caterpillars of Sphinx Elpenor, or Sphinx of the Vine,—of Bombyx Purpurea, or Ecaille Moucheté,—of Sphinx Porcellus, or the Sphinx with red bands.*

The other caterpillars which are found on the vine, and are occasionally injurious to it as well as to all other plants, do not belong to either the tribes *Tortrices* or *Pyralides*, nor to the genus *Procris*.

Those which I have most frequently met with on the vine, are the caterpillars of *Bombyx Purpurea*, Fab., *Arctia Purpurea* of modern entomologists, the *Ecaille Moucheté* of Geoffroy, which lives also on the broom and elm and twenty other kinds of plants.^c

The *Sphinx Elpenor*, or the Sphinx of the Vine, (not the *Sphinx Vitis* of modern entomologists, which is an American insect that does not feed upon the vine,) is pretty often found on the vine, but is as frequently met with on the *Epilobium*, *Salicaria*, balsam and bindweed.^d

Lastly, *Sphinx Porcellus* or Red-banded Sphinx, the caterpillar of which occurs occasionally on the vine, but still oftener on the honeysuckle and lavender, and especially on *Galium rerum*.^e

The caterpillars of the two last kinds are of the size of the little finger; and as they frequent the buds, are readily seen and destroyed.

These are the caterpillars of Lepidoptera, which the Greeks and Romans, in speaking of the insects injurious to the vine, designated by the general names *Kampe* and *Eruca*. But they

^c *Arctia Purpurea*, Fabr. *Entom. Syst.* t. iii. 1^{re} part. p. 466, No. 185; Walckenaer, *Faun. Paris*, t. ii. p. 291; Godart. *Papillons Nocturnes*, t. i. p. 339, No. 105.

^d *Sphinx Elpenor*, Fabr. *Ent. Syst.* t. iii. p. 372, No. 51; Walckenaer, *Faun. Paris*, t. ii. p. 276, No. 6; Godart *Crepusculaires*, p. 46.

^e *Sphinx Porcellus*, Fabr. *Ent. Syst.* t. iii. p. 373; Walckenaer, *Faun. Paris*, t. ii. p. 279; Godart *Crepusculaires*, p. 51; Dupouchel, *Iconographie des Chenilles*, Tribu des Spingides, pl. 5, fig. 1, a, b.

did not confound them with worms, and were aware of their undergoing metamorphosis.

10. *Phteiras*.—*Tholea* or *Tholaath*.—*Coccus Vitis*.—*Kermes of the Vine*.—*Coccus Adonidum*.—*Coccus of the Hothouse*.

The *Phteiras*, or Lice of the Vine, mentioned by Ctesias as insects which cause the vine to die, and which the Geoponicks include with caterpillars amongst the greatest enemies of this plant, cannot, we consider, correspond with the *Coccus Vitis*, or Kermes of the Vine.^f

We know that the *Coccus* or *Gallinsectæ* are, with the *Aphides* or *Pucerons*, the insects which, on account of their diminutive size, or powers of rapid increase, most resemble the louse; and also from the circumstance of their females being without wings. The *Cocci* sometimes collect on, and cover the bark of trees, in such a way as to give it a scurfy appearance. When the females of these insects have laid their eggs, their body dries up, and becomes a solid crust, which covers the eggs, and which has no small resemblance to an immense nit.

These insects injure the vine by piercing the wood with their long rostrum, which is of a sheath-like form. It is with this instrument that they suck the sap and cause it to flow.

Our cultivators are but little annoyed by these insects, and do not appear to be much acquainted with them, because the yearly pruning which they give the vines is unfavourable to their increase, as the *Coccus* can only feed on the young wood whilst the bark is tender. They are at times, however, very abundant on those vines which are left to themselves; and in the countries where the vine is only cultivated in hothouses they multiply to a great extent, whilst the other insect pests of the vine are unknown.^g But in the hothouse the *Coccus* that attacks the vine is a different species to the one which is injurious to it out of doors. The *Coccus* of the hothouse vine is *C. Adonidum*^h and not *C. Vitis*; if this insect originally

^f Ctesias, *Indicorum*, cap. 21, p. 253, édit. Boeher. Francofurti, 1824. in 8vo. Ctesias speaks of a red insect which in India destroys the Amber-bearing trees in the same manner that the *Phteiras* destroys the Vine. Larcher in his translation of Herodotus has not rendered this passage correctly.

^g Major, *a Treatise on the Insects most prevalent on fruit trees and garden produce*, 1829. in 8vo. p. 112.

^h *Coccus Adonidum*, Fabr. *Syst. rhyngstor.* p. 307, No. 4; J. Major, *a Treatise*

came, as is alleged, from Senegal, it is not amongst the number of those designated by the ancients; who indeed could hardly have distinguished the different species of *Coccus*, since, although M. Fonscolombe's beautiful work on these insects had appeared, it required all the assistance that the most practised eye, with the help of glasses of high magnifying power, could give, to enable a modern entomologist to ascertain the distinction.

M. Fonscolombe has well remarked that no good limits have been drawn between the Kermes and the Cochineal insects, between the *Gallinsecta* and the *Proqallinsecta* of Reaumur. This accomplished naturalist has therefore adopted the plan of making only one genus of *Coccus* and *Chermes*; but he subdivides this genus into many sections, and the *Coccus* of the vine¹ belongs to the section composed of species having the body naked, without any trace of rings or limbs at the period of laying the egg, during which time they remain on the nest, which looks as if it were made of cotton.

The *Coccus Adonidum*, or Hothouse Kermes, is also remarkable for the white cottony substance it exudes, which gives it the appearance of being covered with flour.

The word *Phteire*, given to one of the *Gallinsecta* by the author of the *Geoponicks*, is connected with the interpretation of the word *Thola*, *Tholea* or *Tholaath* in the Bible; which subject claimed our attention at the commencement of these Researches.

It will be remembered that the result of our long discussion respecting it was, that *Thola* was employed in the Bible not only to signify a worm, vermin, an insect, or the larva of an insect, or an animal vile and contemptible, but also an insect, or the larva of an insect, which ate the vine, and another plant of whose name we are ignorant, but which was of some size, since it was capable of affording considerable shade: indications so vague would scarcely enable us to form a probable conjecture concerning it, if the word, which only occurs in the Bible, had not been several times used there joined to the

on the *Insects most prevalent on fruit trees and garden produce*, 1829, in 8vo. p. 144, the Mealy Bug.

¹ *Coccus Vitis*, Boyer de Fonscolombe, *Ann. de la Société Entomologique*, t. iii. p. 214, No. 14; Reaumur, *Mem. Insect.* t. iv. p. 62, pl. 6. fig. 1 à 7; Fabr. *Syst. rhyngotor*, 1803, in 8vo. p. 310, No. 4. *Coccus vitis viniferæ*.

word *Dibaphi*,^k to designate an insect which the Arabs call *Kermes*, and which gives out, when treated with vinegar, a red colour, in a word—the cochineal. The species which produce this colour, in Europe, are *Coccus Ilicis*, which feeds on the *Ilex* or Holm-oak,^l and this therefore may be the insect mentioned in the Bible as destroying a tree affording shade: and *Coccus Polonicus*,^m which adheres to the roots of *Scleranthus annuus* and other plants.

The *Coccus* of the vine does not produce this colour; but the similarity of these insects, and their generic affinities, it would appear, has caused them to be confounded with the other *Cocci* or the *Tholaath Dibaphi*, or at least occasioned their being included under one and the same denomination: just as we say—much more incorrectly—the worm of the apple, and the worm of the nut, although these are the larvæ of insects of very different genera. In the same way the word *Thola* or *Tholaath* was used in the Bible for vermin, louse, little insect, insignificant, vile, and contemptible, as *Phiteire*; but the epithet *Dibaphi* employed to designate the *Kermes* or insect used in dyeing, which was sometimes added to the word *Thola* or *Tholaath*, sufficiently indicates the similarity of the species, the kind of insect or vermin designated by the word which was so injurious to the vine and some other plants.

11. *On the means used in destroying the Insects injurious to the Vine.*

From the recipes given by Pliny and Columella to protect the vines from the insects which attacked them, it would appear that the *Coccus* was much more injurious to the vine in ancient times than it is at present. These recipes consisted in rubbing the stalks and branches with unctuous substances, such as oil or the fat of bears; substances possessing blistering properties were also sometimes used for the same purpose.

Our modern cultivators prevent the injuries of the *Coccus* by the annual pruning to which I have already alluded.

^k Bochart, *Hieron.* p. 22.

^l *Coccus Ilicis*, Fabr. *Syst. rhyngotor.* p. 308; Reaumur, *Insect.* IV. tab. 5; Garidel *Plantes des Environs d'Aix*, p. 250. pl. 35; Boyer de Fonscolombe, *Ann. de la Société Entomologique*, t. iii. p. 210.

^m *Coccus Polonicus*, Fabr. *Syst. rhyngotor.* p. 310, No. 26; Frisch. *Insect.* 56; Walckenaer, *Faun. Paris.* t. ii. p. 363.

To destroy the *Becmares*, the *Coupe-bourgeois*, the *Rhynchites Bacchus* and *Betuleti* and *Eumolpus Vitis*, it is necessary to use other means.

The best plan seems to be—taking care to choose a time for the operation when the insects undergo transformation and the sexes unite—to place under each vine a kind of basket, made for the purpose, of a somewhat circular form, in such a way that it will go all round the bottom of the vine, and then to shake the branches; this will cause all the insects to fall into it. It has been proposed by some to substitute for the basket a capacious tin funnel, with a bag attached to the smaller end, for the insects to drop into.

The same method may be advantageously employed against the caterpillars of the moths which injure the vine, especially when they have attained a considerable size; though, indeed, by that time they have well nigh completed the work of devastation, the leaves being half eaten and completely withered; yet by destroying them in this state some check is given to their increase in future years.

In connexion with this, another plan may be mentioned, which is particularly adapted for the destruction of the *Pyralis* of the vine, and the *Procris Ampelophaga* of Passerini, and generally to that of all the small moths which attack the vine: it is to make fires at night-fall, in the opposite direction to the wind; when the insects come in crowds to the flame, and are destroyed. These fires should be kept up for ten or twelve nights running, except when there is much wind or rain, as, besides other objections, in such weather the moths will not fly, but remain on the leaves.

The most efficacious way of destroying all the various kinds of Lepidopterous and Coleopterous larvæ that infest the vine, is to pick off the curled-up leaves in which the eggs have been deposited, and to throw the leaves into an oven and burn them. This method necessarily occupies a good deal of time, and is much the most expensive, but it is also, after all, the most certain;—I have seen it practised with much care and patience in Nassau, amongst the cultivators on the banks of the Rhine.

SECTION III.

SYNONYMY OF ALL THE SPECIES OF INSECTS WHICH HAVE BEEN MENTIONED IN THESE RESEARCHES.

In this section we shall give a synonymy of all those insects of which we have had occasion to treat; and thus present a summary of great importance as regards the object of these Researches. In this it will best answer our purpose to adopt a different order to that observed in the preceding section: that is to say, we shall give a synonymy of the insects most hurtful to the vineyards *first*, then passing on to such as are only occasionally injurious, finish with those which have been erroneously alluded to by the ancients as enemies to the vine; taking care, however, to subject each of these three divisions to that classification which is most generally adopted by modern naturalists. Finally, we shall give, in the same way, a list of those insects which are not injurious to the vine, but the synonymy of which has been determined in these Researches.

I.

Synonymy of the Insects most hurtful to the Vine.

COLEOPTERA.

1.

Ancient Names.

Greek.—ΙΡΣ (Vitis). ΙΚΣ.

Names of Modern Naturalists.

Eumolpus Vitis (the larva).

Common Names.

French.—Gribouris de la Vigne (the larva). Coupe-Bourgeon. Ebourgeonneur. Couturières. Ver de la Vigne.

2.

Ancient Name.

Latin.—VOLUCRA.

Names of Modern Naturalists.

Eumolpus Vitis (the perfect insect). Eumolpe de la Vigne.

Common Names.

Gribouris de la Vigne (perfect insect). Coupe-Bourgeon, &c.

3.

Ancient Name.

Latin.—VOLVOX.

Names of Modern Naturalists.

1. Rhynchites Bacchus (larva). 2. Attalebus Betuleti (larva)
Attelabe de la Vigne. Charanson de la Vigne.

Common Names.

French.—Urbie. Béche. Lisette. Diableaux. Destreaux.

Italian.—Tagliadizzo.

4.

Ancient Names.

Greek.—KANTHARIS.

Names of Modern Naturalists, Latin and French.

1. Rhynchites Bacchus (the perfect insect).
2. Rhynchites Betuleti (perfect insect).
Charanson de la Vigne. Attelabe de la Vigne.

Common Names.

Becmare. Velours vert.

5.

Ancient Names.

Greek.—KANTHARIS. MELOLONTHA.

Latin.—SCARABÆUS.

Names of Modern Naturalists.

Lethrus Cephalotes.

Common Names.

German.—Sneider (the Cutter).

ORTHOPTERA.

I.

*Ancient Name.**Hebrew.*—GAZA.*Names of Modern Naturalists.*

1. *Locusta Ephemigera* (Sauterelle à selle ou à cymbole).
2. *Locusta Apta* (Sauterelle aptère).
3. *Locusta Puppa* (Sauterelle-Nymphe).

HEMIPTERA.

I.

*Ancient Names.**Hebrew.*—THOLA, THOHA, or THOLAATH.

THOLAATH DIBAPHI.

Greek.—PHTEIRE.*Names of Modern Naturalists.*

1. *Coccus Vitis*, . . Cochenille de la Vigne.
 ——— Adoninum, ——— des terres.
 ——— Illicis, . ——— du Chêne vert.
 ——— Polonicus, ——— de la Scleranthe.

*Common Names.**English.*—Mealy-bug.

LEPIDOPTERA.

I.

*Ancient Names.**Latin.*—INVOLVULUS, or INVOLVULUS. INVOLVUS.

CONVOLVULUS. CAMPE.

Greek.—KAMPE.*Names of Modern Naturalists, Latin and French.**Pyralis Dantiana*? (the caterpillar.) *Pyralis Vitis*.

Bosc DANTIC. Mem. de la Soc. d'Agriculture, 1786, trimestre d'été,
 p. 22, pl. 4, fig. 6.

Pyralis Vitana. *Pyralis Fasciana.*

FABRIC. Ent. Syst.

Common Names.

Ver-Coquin. Teigne de la Vigne.

2.

Ancient Names.

Latin.—CONVOLVULUS. INVOLVULUS.

Names of Modern Naturalists, Latin and French.

2. *Procris Ampelophaga* (the caterpillar).

DUPONCHEL, Supp. à l'Hist. de Lépidopt. de France, tom. ii. p. 92,
pl. 8, fig. 2.

Procris Ampelophaga.

BAYLE-BARELLE, dei Insetti nocivi all Uomo, alle Bestie, all Agricoltura, Milano, 1824.

Procris Ampelophaga.

PASSERINI, Mem. s. due spec. d'insetti nocivi, un alle vite, l'altro all cavolo arborea nelle Mem. dell Acad. dei Georgifili, 1830, p. 4, tom. i. figs. 1 and 14.

Sphinx Ampelophaga.

HUBN. Supp. tom. xxiv. figs. 153 and 154.

Atychia Ampelophaga.

TREITSCHKE, tom. x. Supp. p. 100.

Sphinx Vitis.

FREYER, Beytr. 11, Band. xii. Hist. 5, 69, tab. 68, fig. 3.

Procris Vitis.

BOISDUVAL, Icones historiques des Lépidoptères nouveaux ou peu connus, tom. ii. p. 79, pl. 56, figs. 2 and 3.

Common Names.

Teigne du Raisin. Ver-Coquin.

Italian.—Ritorello.

3.

*Ancient Names.**Latin.*—INVOLVULUS. CONVULVULUS.*Names of Modern Naturalists.*

Cochylis Roserana (the caterpillar).

DUPONCHEL, Hist. des Lép. de France, tom. ix. p. 418, pl. 257,
fig. 8.

Tortrix Roserana.

FRÆLICH, Enum. tortric. regno Wurtemberg. indigen. sistens spec.
diff. synon. selecta, earum domicilia, et tempus cum descrip. p. 52,
No. 511.

Tinea Ambiguella.

HUBN., tab. 22, fig. 153 (fem.).

Cochylis Roserana.

TREITSCHKE, tom. viii. p. 280.

*Common Names.**French.*—Teigne de la Vigne. Rouleuse. Tordeuse.

4.

*Ancient Names.**Latin.*—INVOLVULUS. CONVULVULUS.*Names of Modern Naturalists.*

Tortrix Heparana (the caterpillar).

DUPONCHEL, Hist. Nat. de Lépidop. de France, tom. ix. p. 67,
pl. 238, fig. 7.

Tortrix Heparana.

WIEN, VERZ? ILLIGER, SCHRANCK, GOTZE, and TREITSCHKE, b. viii.
p. 58, No. 8.

Tortrix Padana.

SCHR., Faun. Boica, 11, 32, Ab. 5, 78, No. 1755.

Tortrix Carpiniana.

HUBN., tab. xviii. fig. 16 (fem.).

Tortrix Pasquayana.

FROEL., Vien, Verz, p. 36, No. 55.

Pyralis Fasciana.

FABRIC. Syst. Ent. iii. 2, 348, 24.

Lozotænia Carpiniana.

STEPHENS, Syst. Cat. of British Insects, p. 169, No. 6852.

La Chape-Brune.

GEOFFROY, tom. ii. p. 169, No. 118.

Phalène Chape-Brune du Lilas.

DEGEER, tom. i. Mem. 13, p. 403.

Common Names.

French.—Chape-Brune. Teigne du Lilas. Teigne du Raisin.
Teigne de la Vigne.

II.

Insects which are only occasionally Injurious to the Vine.

COLEOPTERA.

1.

*Ancient Name.**Greek.*—1. SPONDYLE.

Names of Modern Naturalists, Latin and French.

Melolontha vulgaris. Le Hanneton vulgaire.

*Common Names.**French.*—Le Hanneton.*English.*—Cockchaffer. Chaffer.

2.

Ancient Name.

Latin.—SPONDYLE GENUS SERPENTIS (Plin.)

Names of Modern Naturalists.

Melolontha vulgaris (the larva). *Melolontha vitis* (the larva).

Common Names.

Ver blanc. Turc. Man. Courterolle.
 Petit Hanneton d'été, or Hanneton vert (the grub).

ORTHOPTERA.

1.

Ancient Name.

BIURUS.

Names of Modern Naturalists.

Acheta Grillo-Talpa (Fab.). Talpa Ferrantis (Ald.).

Common French Name.

La Courtillière.

Common English Name.

The Mole-cricket.

LEPIDOPTERA.

1.

Ancient Names.

Greek.—KAMPE. *Latin.*—ERUCA.

Names of Modern Naturalists.

1. Arctia Purpurea (the caterpillar). L'écaille mouchetée.
2. Sphinx Elpenor (the caterpillar).
Sphinx, or Papillon rouge de la Vigne.
3. Sphinx Porcellus (the caterpillar).
Sphinx, or Papillon à bande rouge dentelée.

Common Name.

Chenilles de la Vigne.

III.

Insects said to be injurious to the Vine by the Ancients, but erroneously.

POLYPODA.

1.

Ancient Names.

Greek.—JULIOS.

Latin.—CENTIPEDES. MILLIPEDES.

Names of Modern Naturalists, Latin and French.

1. *Julus sabulosus.* Jules des sables.
2. *Julus terrestris.* Jules terrestre.
3. *Julus communis.* Jules commun.

French Common Names.

Mille-pieds.

English Common Names.

Centipedes. Hundred-legs.

COLEOPTERA.

1.

Ancient Names.

Greek.—KANTHARIS. *Latin.*—CANTHARIS.

Names of Modern Naturalists.

1. *Mylabris cichorii.* Mylabre de la chicorée.
2. *Lytta vesicatoria.* La Cantharide.

Common French Name.

Mouches-cantharides.

Common English Name.

Blister-fly.

2.

Ancient Names.

Greek.—IPS (Homer).

Names of Modern Naturalists.

Dermestes (the larva).

Common French Name.

Ver.

IV.

Names of Insects mentioned in ancient Authors, which are not injurious to the Vine, but of which the modern Names have been determined in these Researches.

1.

*Ancient Names.**Greek.*—MELOLONTHA. KANTHARIS.*Latin.*—SCARABÆUS. CANTHARIS.*Names of Modern Naturalists.*

Coleoptera (Lin.). Eleutherata (Fab.).

Common French Names.

Scarabées. Escarbots.

Common English Names.

Beetles. Black-beetles

2.

*Ancient Names.**Greek.*—KANTHARIS.*Latin.*—SCARABÆUS QUI PILAS VOLVIT (Plin.).*Names of Modern Naturalists, Latin and French.*

1. Ateuchus sacer. Scarabæus sacer.

2. Ateuchus Ægyptiorum. Scarabée sacré. Bousier sacré.

Common French Name.

Le Pillulaire.

3.

Ancient Names.

2. SCARABÆUS CUI SUNT CORNICULA REFLEXA (Plin.).

DUNG-BEETLE OF HORUS APOLLO, WHICH HAS TWO HORNS,
AND RESEMBLES A BULL.

Names of Modern Naturalists.

Latin.—Onitis Midas. *French.*—Bousier à deux cornes.

Common French Name.

Le Pillulaire.

4.

Ancient Names.

3. LUCANUS CUI SUNT CORNUA PRÆLONGA BISULCIS
DENTATA FORCIPIBUS IN CACUMINE (Plin.).

Names of Modern Naturalists.

Latin.—Lucanus cervus.

French.—Lucane Cerf-volant. Le Cerf-volant.

Common English Name.

The Stag-beetle.

5.

Ancient Names.

4. SCARABÆUS FULLO ALBIS GUTTIS (Plin.).

Names of Modern Naturalists.

Latin.—Cetonia aurata. *French.*—Cétoine dorée.

English.—Rose-chaffer. June-bug.

6.

Ancient Names.

5. IPS of HOMER, of St. Chrysostom, and the Grammarians
of the Lower Ages.

Names of Modern Naturalists.

Larva of Dermestes Pello, and of D. Lardarius; larva of

another Dermestes (species unknown), very similar to the two foregoing, which eats the horns of the wild goat (*Capra Ægagra*).

7.

Ancient Names.

Greek.—KANTHARIS.

Latin.—SCARABÆUS PARVUS CANTHARIS DICTUS (Plin.).

Names of Modern Naturalists.

1. *Latin.*—*Curculio granarius*. Calandra granaria.
French.—La Calandre, or, le Charanson des grains.
2. *Latin.*—*Curculio frumentarius*. Apion frumentarius.
French.—Charanson du froment.
English.—Weevil. Wheat-weevil.

V.

Recapitulation of the Synonymy of the Insects, of which mention has been made in these Researches, arranged according to their natural order.

In order to render the synonymy of the insects of which mention has been made in these Researches useful to writers on agriculture, and to the learned, we have divided it, in the preceding pages, into three sections.

For the convenience of naturalists, it will be requisite to give this synonymy again, according to the natural order, without distinguishing the insects, which are very, or but little, or not at all, injurious to the vine. For the sake of shortness, we shall designate each insect by the name which it has in our best systems; this will be followed by the name in most general use in French: and we shall give the ancient names last printed in small capitals.

MYRIAPODA.

1. *Julus sabulosus*, Jule des sables.
JULIOS, CENTIPEDES, MILLIPEDES.

2. *Julus terrestris*, Jule terrestre.
JULIOS, CENTIPEDES, MILLIPEDES.
3. *Julus communis*, Jule commun.
JULIOS, CENTIPEDES, MILLEPEDES.

COLEOPTERA.

1. *Dermestes Lardarius*, D. Pello, aut species proxuma, (the larva.)
Le Dermeste des fourrures ou de la corne, (the larva.)
IPS of HOMER.
2. *Ateuchus sacer*, le Bousier sacré, le Pelulaire.
CANTHARIS, SCARABÆUS QUI PILAS VOLVIT (Plin.).
3. *Ateuchus Ægyptiorum*, Bousier Egyptien.
CANTHARIS, SCARABÆUS QUI PILAS VOLVIT (Plin.).
4. *Onitis MIDAS*, le Bousier à deux cornes.
SCARABÆUS CUI SUNT CORNICULA REFLEXA.
5. *Lethrus cephalotes*, Schneider, le Coupeur.
KANTHARIS, MELOLONTHA, SCARABÆUS.
6. *Melolontha vulgaris*, le Hanneton ordinaire.
SPONDYLUS, (perfect insect.)
SPHONDYLIS GENUS SERPENTIS (Plin.), the larva.
7. *Cetonia aurata*, la Cétoine dorée.
SCARABÆUS FULLO ALBIS GUTTIS (Plin.).
8. *Lucanus cervus*, le Cerf-volant.
LUCANUS.
9. *Mylabris cichorii*, Mylabre de la chicorée.
KANTHARIS, CANTHARIS.
10. *Lytta vesicatoria*, la Cantharide.
KANTHARIS, CANTHARIS.
11. *Eumolpus vitis*, Gribouri de la vigne, (the perfect insect.)
Ver-Coquin, (the larva.)
IPS, (larva.) VOLUCRA, (perfect insect.)
12. *Rhynchites Bacchus*, Attelabe de la vigne, Becmare,
Tagliadizzo.
VOLVOX, CANTHARIS.

13. *Rhynchites Betuleti*, Velours-vert.
CANTHARIS.
14. *Calandra granaria*, la Calandre, Charanson des grains.
SCARABÆUS PARVUS CANTHARIS DICTUS (Plin.).
15. *Curculio frumentarius*, Charanson du froment.
SCARABÆUS PARVUS CANTHARIS DICTUS (Plin.).

ORTHOPTERA.

1. *Acheta Gryllo-Talpa*, Grillon-Taupe, la Courtillière.
BIURUS (Cicero, Plin.).
2. *Locusta Ephippiger*, *Locusta aptera*, *Locusta puppa*.
Sauterelle à cymbales, Sauterelle aptère, Sauterelle
nymphé.
GAZA (Hebrew).

HEMIPTERA.

1. *Coccus vitis*, *Coccus Adonidum*, *Coccus Polonicus*, Cochenille de la vigne, Cochenille des serres, Cochenille de la Scleranthe.
THOLA, or THOLAATH (Hebrew). PHTEIRE (Greek).

LEPIDOPTERA.

1. *Arctia Purpurea*, l'Ecaille-mouchetée.
KAMPE, ERUCA (the caterpillar).
2. *Sphinx Elpenor*, Papillon rouge de la vigne.
KAMPE, ERUCA.
3. *Sphinx Porcellus*, Papillon à bande rouge dentelée.
KAMPE, ERUCA (the caterpillar).
4. *Pylalis Danticana*, *P. Vitana*, Chenille, or Teigne de la vigne, Ver-coquin, la Chenette.
CAMPE, INVOLVULUS, INVOLVUS, CONVOLVULUS.
5. *Procris Ampelophaga*, *Atychia Ampelophaga*, *Procris vitis*, Teigne du raisin, Ritoritello.
CAMPE, INVOLVULUS, INVOLVUS, CONVOLVULUS (caterpillar).

6. *Cochylis roserana*, *Tortrix roserana*, *Tinea ambiguella*,
Teigne de la vigne.

CAMPE, INVOLVULUS, INVOLVUS, CONVOLVULUS (the caterpillar).

7. *Tortrix heparana*, *Pyralis fasciana*, *Lozotænea Carpiniana*, *Tortrix Padana*, *Tortrix Pasquayana*, Chenille de la chape-brune, Teigne du Lilas, Teigne de la vigne.

CAMPE, INVOLVULUS, INVOLVUS, CONVOLVULUS (the caterpillar).

Thus it appears there are thirty-six species of insects known to the moderns, of which the corresponding names in Hebrew, Greek, and Latin, have been determined in these Researches.

VI.

Conclusion.

There are at the present time in France 800,000 hectares^m of land employed in the cultivation of the vine; the wine produced from which affords an annual revenue of 760,000,000 francs.

We can hardly, therefore, at it appears to me, be uselessly occupied in investigating the history and habits of the insects injurious to a plant which is the source of so much wealth. I am therefore inclined to believe that these Researches may not be so entirely devoid of interest or utility as to give me any reason to feel great regret at having thusⁿ taken up the time usually devoted by the Academy to objects of a much higher importance.

^m A *hectare* is two acres nearly.

ⁿ This paper was read at the Academy of Inscriptions and Belles-Lettres of the Institute, before it was communicated to the Entomological Society.

[*Done into English, expressly for the Entomological Magazine, by George Newman the Younger.*]

ART. XLIV.—*Random Thoughts on Entomology, &c.*

By J. W. DOUGLAS.

“ O Nature, holy, meek, and mild,
 Thou dweller on the mountain wild;
 Thou haunter of the lonesome wood,
 Thou wanderer by the secret flood;
 Thou lover of the daisied sod,
 Where Spring’s white foot hath lately trod;
 Finder of flowers fresh sprung and new,
 Where sunshine comes to seek the dew;
 Twiner of bowers for lovers meet;
 Smoother of sods for poets’ feet;
 Thrice-sainted matron! in whose face,
Who looks in love will light on grace;
 Far worshipped goddess! one who gives
 Her love to him who wisely lives;
 O, take my hand, and place me on
 The daisied footstool of thy throne;
 And pass before my darkened sight
 Thy hand, which lets in charmed light;
 And touch my soul, and let me see
 The ways of God, fair dame, in thee.”

FROM my earliest years I have been a lover of nature, and the study of her various forms and features has always been to me a source of great delight. When but a boy, I have many a time wandered in the fields, admiring the beauties spread around me, and I look back on those hours as some of the happiest of my existence. And so it must ever be: the observation and examination of nature must always be productive of the purest pleasure.

Who, then, convinced of this, can look upon society, as at present constituted, and not regret that natural objects are so much neglected? I am aware that a taste for natural history has greatly increased of late, and I rejoice at it; but I am afraid that there is too much mere book-knowledge, which never can make that impression upon the mind as the actual examination of the objects does. Books are useful to teach the elementary parts of science, but for any thing more the real lover of nature will go to the fountain-head.

Much as I was delighted with the graphic account of the *Macroglossa Stellatarum* in the *Journal of a Naturalist*, yet how much greater was the pleasure when I first saw this fairy-like creature! It was the month of July; I was in the garden

looking at a splendid bed of Heartsease, when, quick as a sunbeam, the beauty came dancing over the flowers, now advancing, now retreating, sipping first at this flower and then at that, and seeming too happy to remain at rest: how I envied the little thing its joy! If I had merely read of this Sphinx without seeing it, I should not have known the pleasure that I then felt.

It is natural to wish, that the gratification we derive from any subject should be shared by those around us; such, at least, must be the desire of all those who love their species. Science is valuable in proportion to the number that it benefits. As a branch of natural history, Entomology presents as many advantages and pleasures as any other, and some that are peculiar to itself. I may be enthusiastic, but I cannot help thinking, that if a knowledge of it were more general, it would exert a very beneficial influence on the community. It may be said that this is questionable, because Entomology is only a collection of facts. But the same may be said of every other science; without facts there would be no reflection; and reflection, combined with the moral feelings, is the way to produce upright and proper conduct. Let none, therefore, despise mere facts, when he considers that on them hang all philosophy, and all hope of the amendment of the human race.

It is lamentable to reflect, that in the past ages of the world, thousands of beings capable of admiring and appreciating the works of nature, should, for want of education, have passed through life as mere animals, to whom existence has been comparatively a blank.

“ How many a rustic Milton has passed by,
 Stifling the speechless longings of his breast,
 In unremitting drudgery and care!
 How many a vulgar Cato has compelled
 His energies, no longer tameless then,
 To mould a pin or fabricate a nail!
 How many a Newton, to whose passive ken
 Those mighty spheres that gem infinity
 Were only specks of tinsel, fixed in heaven
 To light the midnight of his native town!”

Chimerical as they appear to some, I do entertain high hopes and expectations of what human nature will eventually become. Though to the eye of benevolence the present state of

mankind is truly deplorable, yet, if we look back for only a few years, we shall see that it was much worse: society, therefore, has advanced, and who will attempt to set the bounds to its improvement? *That* can only be limited by the utmost development of man's mental powers, and until this becomes universal, man must go forward.

I wish I might live to see the day, when some branch of natural history shall be taught to *every* one. What science will then become we cannot now imagine. The mass of facts that will be collected, when every one contributes something, will be immense; some master mind will then arise to shape the whole into a system worthy of the great Creator, and the universal spirit of love will be clearly seen as animating and maintaining all creation.

At present, society resembles a field that has long been barren, but on which mind, like a plough, has entered. On a small portion the seed of education has been sown, and is springing up; another part is being broken up; but by far the largest part yet lies waste. It is the duty of every one to use his endeavours, however humble, to "speed the plough," and such a desire has influenced me to pen these thoughts.

"What is writ, is writ;
Would it were worthier!"

J. W. DOUGLAS.

16, *Edward-street, Windsor-terrace, City-road,*
3d *February, 1837.*



PALE'S MEETING-HOUSE.

ART. XLV.—*Query respecting the Collection belonging to the Entomological Club.*—By J. W. DOUGLAS.

SIR,—I have several insects, principally Coleopterous, which, being but a tyro in the science, I am unable to name; and from the limited nature of my Entomological acquaintance, I cannot compare them with a named collection. By the rules of the Entomological Club, published in the Entomological Magazine, I perceive that a visitor must be introduced by a member. Not being acquainted with any of the members, I take the liberty of asking you, if this rule is strictly enforced, or if an application to the Curator, to be allowed to compare my specimens with those of the Club, would meet with a refusal.

I am, Sir, yours respectfully,

J. W. DOUGLAS.

16, Edward-street, Windsor-terrace, City-road,
3d February, 1837.

EDITOR *loquitur*.

Although a reply has been sent to Mr. Douglas, it is proper to observe here that the restriction implied, as regards the admission of Entomologists to inspect the cabinets belonging to the Entomological Club, was never intended as any restriction at all; some form in affairs of this kind is necessary, in order to exclude persons who might be better avoided. We imagine there is scarcely an Entomologist in the kingdom unacquainted with all the eight members of the Club; and if there be, he will find nothing more easy than to obtain an introduction to one or other of them.

ART. XLVI.—*New Group of Orthoptera, Family of Mantides.*

By M. A. LEFEBVRE. (*Extracted from the Annales de la Société Entomologique de France.*)

(Continued and concluded from p. 76.)

THE *Eremiaphila*, in their perfect state, are furnished with exceedingly small elytra and wings, the relative proportions of which are most unequal. Referring to these organs among the other *Eremiaphila*, where they are better developed, and

do not present this striking disproportion, it would seem that these etiolated specimens have not been placed (like their allied species), at the period of their transformation from the pupa to the perfect state, in circumstances so favourable to the development of their organs of flight, but nevertheless they have just as much arrived at maturity. It must, however, be remarked that this imperfect organization appears more perceptible in the wings than in the elytra, inasmuch as they are merely rudiments, scarcely differing from what they were in the pupa state; whilst the elytra, though still etiolated, yet much larger than the wings, hide a part of the thorax, and possess the form and characters they would have assumed if yet further developed.

In calling attention to this abortive state, I have been induced to class together those species in which it is apparent, that it may be understood as regards the size of these parts, they *may* be met with much better developed; and consequently what I have said is susceptible of modification according to their dimensions.

It is extremely difficult to fix the precise time when the wings and elytra in *Orthoptera*, (but especially in certain groups,) attain their full size; for few insects in their last state afford such variety in their organs of flight, and that too in specimens unquestionably of the same genus, and which seem so nearly allied, that the knowledge we possess of the normal size of these parts in certain species would favour the opinion with respect to others of the same genus, that though apparently more or less abortive, their alary organs had attained their perfect state.

In fact, in a new species nothing is more difficult than to define the standard size, if the wings and elytra have not acquired that expansion which the allied species indicate. But though these organs may be a little scanty, it does not follow that they must always remain so, or that they are incapable of expansion, if, at its last change, the insect were placed in circumstances favourable to their development. Here is a difficulty: for in some well-known species we have sometimes large elytra and small wings, and *vice versâ*; in others, again, we find merely the rudiments of both organs, which would lead one to suppose that their imperfection was no deviation from the intention of nature:—I will cite, amongst others, a

curious example of this fact in the genus *Saga* of Charpentier (*Tettigopsis*, Fischer).

Judging from the known species indigenous to temperate as well as more tropical lands, such as the south of France, Madagascar, the Crimea, Syria, Spain, South America, &c., we should say that the genus *Saga* is devoid of wings and elytra, and in its perfect state would only possess the rudiments of them. Like many other entomologists, I should have readily made the absence of these organs one of the characters of the genus, if a female specimen, (and, according to M. Serville, the *males* in Orthoptera are best provided with the organs of flight,) unquestionably of the genus *Saga*, which I saw in his collection, and which Stoll figures, (*Sauterelles à sabre*, pl. 11, No. 53,) had not been furnished with elytra, and the wings of which equalled in their expansion almost half the size of the insect!

Must we then conclude that the *Sagæ* which are known to us have not attained the full growth of which their alary organs are susceptible, or that there exist in the genus species, whose wings and elytra are sometimes developed, sometimes abortive, or more, that their full expansion can only happen very rarely? for we cannot admit their size in the present instance to be an anomaly.

Such is the doubt which in some groups seems almost impossible to resolve. But as it is evident that the organs of flight in *Orthoptera* are mostly very secondary, it is quite as certain that we shall be liable to fall into error when we attempt to determine by them whether or not an Orthopterous insect be in the perfect state; since many of these insects, if we may judge by the wings and elytra, remain all their life either in the larva or pupa state, and which, from the number of instances of it, may be considered their final stage. We meet also many specimens in the pupa state which would readily be supposed to have reached their last change, but more or less abortive in their organs; in fact, this last stage presents a host of anomalies. Still it is on the wings and elytra that I must rest the characters which I am compelled to establish of the different states in the *Eremiophile*; so fugitive and unsatisfactory are the other distinctions to which I would fain have had recourse, but the investigation of which has hitherto baffled me.

In defining the three periods of life in which the *Eremiaphilæ* now under discussion are found, I shall make use of the usual terms, larva, pupa, and perfect state, and shall give a sketch of the characters by which I recognise their having reached them.

I consider as larvæ the *Eremiaphilæ* in which the rudiments of the elytra are joined, and where the wings are attached by a membrane loose only behind, and which so completely unites them, that it is almost impossible to discern their inner edge. These membranes do not permit the slightest movement. (Ex. *Erem. Typhon.*) In this first state, the insect, which continues to grow from its birth till its full development, will be found of various sizes. In these *Orthoptera* the membranes are very broad, and cover, one the metathorax, the other the mesothorax; and the elytra, still mere rudiments, reach as far as the roots of the wings.

In the pupa state, the elytra, on the form and expansion of which this new change seems to have had most effect, have increased more than the wings. They have become very apparent, but still very scanty, and in truth appear mere stumps, and, like the wings, much turned back at their edges; their inner margin is, however, separated from the metathorax, and they are capable of motion in their joints. This edge is closely seated in a groove on the metathorax, and one would readily suppose the elytrum still adhered to it, if it could not be moved from its place by lifting it: in short it is no longer the mere rudiments of an organ—it is the elytron itself, but not yet fully developed. I do not think that the metallic colour often observable on the under side is yet apparent, at least I have never seen any trace of it. The wing, though its extremity passes beyond the elytron, is still far from equalling it in size; its root is still attached to the metathorax by its inner edge, and the fold which appears in the perfect state does not yet exist. (Ex. *Erem. Khamsin.*)

The perfect state, though it affords, as I have before said, examples with the wings and elytra etiolated, must be acknowledged in the fullest development of these organs. The elytra now lap over each other; the wings, too, which have undergone a remarkable enlargement, now equal them in size, and their tendons, though still thick, are but just apparent, and accord

perfectly with the membrane of the wing, &c. (Ex. *Erem. Audouin, Cerisy, &c.*)

I have not remarked, as in the other *Mantidæ*, in the small number of *male Eremiaphilæ* I have examined, that their alary organs were more ample than those of the female; in both sexes they appear proportioned to the size of the specimen, and almost exactly alike, except in the more or less extended size of certain species.

The males have the abdomen more slender, and their elytra exceed it in dimensions, whilst in the females it protrudes far beyond the elytra, and is, indeed, often exceedingly bulky.

Notwithstanding the reluctance I feel to establish a new species, from knowledge only of the larva and pupa, and to furnish at best a defective description, since it must necessarily be as imperfect as the insect from which it is taken; yet I cannot think it right to omit those species which in their two states have no analogy to their neighbours. The desire to render this essay as complete as possible prompts me to this course.

I have met with few of the distinctive characters of the *Eremiaphilæ* amongst them in the forms of the head or prothorax. In fact, it would seem that these distinctions, if carefully examined, are subject to variation: in the first place naturally, and afterwards from the mode of preservation; for in many specimens the imperfect state of preservation destroys the shape, and more particularly that of the abdomen.

It is particularly in the figure and colour of the elytra and wings that we find the principal differences by which these insects are distinguished from each other; and these I shall employ, on account of the greater constancy which I find in these organs.

Whatever I may say about the prevailing colours in these descriptions must only be considered of secondary importance, as they are more or less altered in death. Although they take, at least in the pupa state, the tint of the soil they inhabit, their colour in the perfect state seldom varies from brown or dingy yellow, which are mostly the tints of the desert parts of Egypt and Syria.

In return for the sombre hue of their external covering, their wings and elytra are mostly ornamented beneath with a metallic blue or green, which vies in brilliancy with the most gaudy of the *Buprestidæ* or *Cetoniæ*.

Their size, in comparison with the other *Mantidæ*, is very diminutive; the length never exceeds 35 millimètres in the largest, and 20 millimètres in the smallest species I know.

It was between the 20th of February and the 15th of March that I took, in that part of the Lybian desert which lies between the Nile and the oasis of Bahryeh, the greater part of these *Orthoptera*; and had I not found *Erem. Hrabil* in the pupa state in December, I should have concluded it was in May or June that they arrive at their full growth. I may just observe that I never met with any *Eremiaphilæ* in the desert of Cosseïr, although the rocky tracks, of which great part consists, bear a strong resemblance to the mountainous districts of Lebanon, where, however, these insects are found,—a fact which proves that they are not inseparable from desert wastes.

These *Orthoptera*, figured to the number of six in the work on Egypt, are (with the exception of fig. 4,) only shown in the larva and pupa state. I think I may add four species of them to those I know, including the genus *Heteronutarsus*.

The *Eremiaphilæ* which I here describe in the perfect state have been kindly furnished me by M. Audouin, professor of our Natural History Museum at Paris; by M. Géné, superintendent of that of Turin, and by Messrs. Audinet-Serville and Guérin. Unfortunately these liberal friends could give me no particulars but the habitats of these insects, which seem to be found alike in the sandy regions of Syria, in the Arabian Desert, and probably even in Desert Arabia itself. M. Bové, for some years chief gardener at Schoubra (the residence of the Pacha, near Cairo), who lately brought home a great number of Egyptian insects, was unable to inform me when he took the three species of *Eremiaphilæ* I found amongst them.

I must here beg those learned entomologists, whose names I have just mentioned, to accept my best thanks for their kind assistance. It is to me a pleasure as well as a duty to make known the worthy use they make of the precious materials they have at their disposal, and which they have so generously given up to me. In their hands, no doubt, they would have been far more profitable to the science which their learned writings are continually enriching.

[Translated for the *Entomological Magazine*, by J. F. Christy.]

ART. XLVII. — *Monographia Chalciditum.* By FRANCIS WALKER.

(Continued from p. 26.)

“ ——— the green myriads in the peopled grass.”

Family CLEONYMIDÆ.

GENUS CLEONYMUS, *Latreille.*

Mas. Corpus squameum, pubescens: caput parvum, thorace paullo angustius, antice non impressum: oculi mediocres, subrotundi, non extantes: ocelli in vertice triangulum fingentes: antennæ fusiformes, latæ, pubescentes, 12-articulatæ, thorace breviores; articulus 1^{us}. longus, fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. brevissimus; 4^{us}. et sequentes ad 10^{um}. breves, approximati, subcyathiformes; 11^{us}. et 12^{us} clavam fingentes conicam, acutam, subcavam, articulo 10^o. duplo longiorem: mandibulæ arcuatæ, bidentatæ, similes, basi latæ subquadratæ, apice angustæ; dentes parvi acuti, externus paullo longior: maxillæ longæ, angustæ, subarcuatæ; lacinia acuminatæ, intus dilatatæ; palpi 4-articulati graciles filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. mediocres subclavatæ æquales, 4^{us}. longifusiformis acuminatus 3^o. plus duplo longior: labium conicum; ligula brevis, lata, antice ciliata; palpi 3-articulati lati clavati, articulus 1^{us}. mediocris clavatus, 2^{us}. brevis subrotundus, 3^{us}. latus securiformis 1^o. longior: thorax longi-ovatus, angustus, subtus per longum sulcatus: prothorax magnus, antice angustior: mesothoracis scutum planum, sat magnum; parapsides vix conspicuæ; scutellum parvum, convexum, rhombiforme; paraptera et epimera bene determinata: metathorax conspicuus, postice angustior: abdomen cochleatum, planum, scite squameum, parce pubescens, thorace vix longius; segmenta 7 dorsalia conspicua subtus fere convenientia, 1^{um}. sat longum basi impressum, 2^{um}. brevissimum, 3^{um}. paullo longius, 4^{um}. adhuc longius, 5^{um}. maximum, 6^{um}. et 7^{um}. minima; segmenta ventralia dorsalibus nisi ad abdominis apicem oblecta: sexualia dum quietem agunt occulta: pedes subæquales, simplices; coxæ magnæ; femora gracilia; tibiæ rectæ; tarsorum

articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^o. 4^o. longior; unguis et pulvilli minuti; metapedes longiores, femora latiora, tibiæ subarcuatæ: alæ angustæ; nervus humeralis ramulum rejiciens nullum, ulnari fere duplo longior; cubitalis longus, arcuatus, radiales dimidio brevior.

Fem.—Antennæ subfusiformes, quam *mari* breviores; articulus 1^{us}. longus, fusiformis; 2^{us}. cyathiformis; 3^{us}. parvus, subrotundus; 4^{us}. longior et latior; 5^{us}. major; 6^{us} adhuc major; 7^{us}. et sequentes ad 10^{um}. 6ⁱ. magnitudine; 11^{us}. angustior, subcavus; 12^{us}. minimus, cuspidiformis, 11. basi obtectus: abdomen fusiforme, thorace fere duplo longius, supra planum, subtus carinatum, non angulatum nec compressum; segmentum 1^{um}. breve, 2^{um}. brevissimum, 3^{um}. paullo longius, 4^{um}. 3^o. duplo longius, 5^{um}. adhuc majus, 6^{um}. et 7^{um}. parva: segmenta ventralia nisi ad abdominis apicem vix conspicua: oviductus dum quietem agit occultus.

Sp. 1. Cleo. depressus. Mas et Fem. *Cupreus*, antennæ *mari* *nigræ* fem. *fulvæ* apice *nigræ*, abdomen *cyaneum*, pedes *rufi*, alæ *fusco maculatæ*.

Ichneumon depressus. *Fabr. Ent. Syst. Supp.* 231. 220, 221; *Coqueb. Illustr. Icon.* I. 21. Tab. 5. fig. 5.

Diplolepis depressa. *Fabr. Syst. Piezat.* 151. 13; *Spin. Ins. Lig. Fasc.* 4. 220.

Cinips depressus. *Lamarck, Hist. Nat. des Anim. sans Vertèbres* IV. 156. 7.

Cleonymus depressus. *Latr. Gén. Crust. & Ins.* IV. 29; *Spin. Classif. Diplo. Ann. Mus.* VII. 149; *Nees ab Ess. Hym. Ich. affn. Monogr.* II. 88; *Leach, Edin. Encycl.* IX. 144; *Westw. Zool. Journ.* IV. 16. Pl. II. Fig. 1; *Nouv. Dict. d'Hist. Nat.* VII. 89.

Mas. Caput cupreum, viridi varium: oculi obscure rufi: ocelli læte rufi: palpi flavi: antennæ nigræ; articulus 1^{us}. æneus, basi fulvus: thorax cupreus, viridi-æneo varius: metathorax læte viridis: abdomen cyaneo-viride: segmenta apice basique ænea: sexualia pallide flava, apice fusca: pedes rufi; coxæ æneo-virides; meso- et metatarsi flavi, apice fusci: alæ sublimpidæ, fusco obsolete nebulosæ; proalæ cuique vitta angusta fusca, apud stigma latior; squamulæ et nervi fusca, stigma minutum concolor.

Fem. Caput læte cupreum, antice viride: palpi pallide rufi:

antennæ fulvæ; articuli 11^{us}. et 12^{us}. nigri: thorax læte cupreus, subtus cyaneo et purpureo varius: abdomen cyaneum, basi cyaneo-viride et fere glabrum, apice pubescens; segmenta apice basique cuprea, 6^{um}. omnino cupreum: oviductus fuscus: pedes rufi; coxæ æneo-virides; meso-et metapedum tibiæ fuscæ, tarsi flavi apice rufi; protibiæ obscure rufæ: alæ albæ: proalæ fusco obsolete marginatæ, cuique fasciæ 2 connexæ fuscæ, una ante alæ medium interrupta, altera prope apicem latior obscurior: metalæ apice et postice subfuscæ. (Corp. long. lin. $1\frac{1}{3}$ — $2\frac{1}{4}$; alar. lin. $2\frac{1}{3}$ —3.)

Var. β.—*Mas*, metathorax cupreus: abdomen apice læte cupreum.

Var. γ.—*Mas*, thoracis suturæ virides: metathorax viridi-æneus, antice læte viridis.

Var. δ.—*Mas*, meso- et metatibiæ pallide fuscæ; mesotarsi fusci, basi albid.

Var. ε.—*Fem.* antennis articulus 1^{us}. apice 2^{us}. que omnino fusci.

Var. ζ.—*Fem.* thoracis suturæ æneo-virides: abdominis segmenta 1^o. ad 3^{um}. cyaneo-viridia, apice basique cuprea.

Var. η.—*Fem.* abdominis segmentum 1^{um}. læte cupreum.

Var. θ.—*Fem.* antennis articuli 1^{us} et 2^{us}. omnino fusci.

Var. ι.—*Fem.* abdomen cyaneum, basi viridi-cyaneum, apice cupreo-æneum.

Common near London, from May to August, on posts which are perforated by *Ptinus* and *Anobium*, &c.; the males are to the females in the proportion of one to twenty. It runs fast, and is also found on windows, box trees, and elms; on the latter it has been taken at Paris by the Comte de Castelneau.

Sp. 2. Cleo. laticornis, (Haliday, MSS.) *Mas. Viridi-æneus cupreo varius, antennæ nigræ, pedes nigro-virides, alæ fusco maculatæ.*

Caput cupreo-æneum; vertex viridis: oculi obscure rufi: ocelli læte rufi: trophi obscuri: antennæ nigræ; articulus 1^{us}. viridi-æneus: thorax æneo-viridis: mesothoracis scutellum æneo-cupreum: abdomen obscure viride; segmenta apicalia æneo-varia: pedes virides; tibiæ nigræ; tarsi fusci; meso- et metatarsi basi fulvi: alæ sublimpidæ, fusco obsolete nebulosæ; proalæ cuique vitta arcuata fusca, apud stigma latior et obscurior; squamulæ et nervi fusca, stigma minutum concolor. (Corp. long. lin. $1\frac{1}{3}$; alar. $2\frac{1}{3}$.)

Found by Mr. Haliday at Bexley.

Sp. 3. Cleo. obscurus. Mas. *Viridis, antennæ nigrae, abdomen cupreum, pedes rufi, alæ immaculatæ.*

Caput viride : oculi obscure rufi : ocelli læte rufi : antennæ nigrae ; articulus 1^{us}. viridis : thorax viridis : abdomen obscure cupreum, basi læte viride : pedes rufi ; coxæ virides ; tibiæ pallide fuscaë ; meso- et metatarsi albidi, apice obscure fusci : alæ sublimpidæ, immaculatæ ; squamulæ et nervi fusca ; stigma minutum concolor. (Corp. long. lin. 1½ ; alar. lin. 2.)

August, on the hazel, near London.

GENUS NOTANISUS.^a

Fem. Caput mediocre, transversum, thorace paullo latius, antice non impressum : oculi mediocres, subrotundi, non extantes : ocelli in vertice triangulum fingentes : antennæ subclavatæ, 13-articulatæ, versus os insertæ, thorace breviores ; articulus 1^{us}. longus, gracilis, subarcuatus ; 2^{us}. brevis, cyathiformis ; 3^{us}. et 4^{us}. minimi ; 5^{us}. et sequentes ad 10^{um}. curtantes et latescentes ; clava longi-ovata, apice abrupte attenuata acuminata et subtus truncata, articulo 10^o. longior : palpi maxillares 4-articulati, filiformes ; articuli 1^{us}. 2^{us}. et 3^{us}. mediocres subæquales, 4^{us}. fusiformis 3^o. plus duplo longior : thorax longus, fusiformis, inæqualis ; segmenta convexa, optime determinata : prothorax longissimus, antice angustior et declivis : mesothoracis scutum breve ; parapsidum suturæ vix conspicuæ ; paraptera et epimera maxima ; scutellum mediocre, subrhombiforme : metathorax maximus, per medium sulcatus, apice angustus : metascutellum abdomini petiolum fingens : abdomen ovatum, convexum, petiolatum, thorace brevius ; segmenta 1^o. ad 6^{um}. transversa parallela subæqualia, 7^{um}. parvum ; ventralia dorsalibus oblecta : oviductus occultus : pedes mediocres, subæquales ; coxæ magnæ ; femora subclavata ; tibiæ rectæ ; tarsi graciles, articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^{us}. 4^o. longior, ungues et pulvilli parvi ; mesotarsi incrassati : alæ angustæ ; nervus humeralis ramulum nullum rejiciens, ulnari longior ; cubitalis longus, subarcuatus, angulum acutum radiali fingens et vix brevior ; stigma ramulum brevem emittens ad nervi radialis apicem propensum.

Sp. 1. Not. versicolor. Fem. *Cupreus rufo cyaneo et purpureo varius, antennæ fulvæ, abdomen purpureum, pedes rufi, alæ fusco maculatæ.*

^a *νωτος* dorsum, *ἀνισος* inæqualis.

Corpus scitissime squameum, glabrum, nitens; caput æneo-viride, subtus rufum: oculi et ocelli rufi: palpi maxillares nigri: antennæ læte fulvæ: gula rufa: thorax subtus rufus: prothorax cupreus, antice rufus: mesothoracis scutum purpureum, antice cyaneo viridi et cupreo varium: scutellum paraptera et epimera cuprea: metathorax læte purpureus, basi cyaneo viridi et cupreo varius: petiolus rufus: abdomen purpureum, basi viride micans: pedes rufi; coxæ, trochanteres et femora supra fusco-purpurea; tarsi apice fusci: alæ albæ; proalis fasciæ 2 fuscæ, una ad nervi humeralis apicem angusta, altera apud stigma latior; squamulæ et nervi fusca, stigma minutum concolor. (Corp. long. lin. $1\frac{2}{3}$; alar. lin. $1\frac{2}{3}$.)

July; south of France.

The structure of the four following genera excludes them from the families of Chalcidites. *Prosopon* resembles *Pteromalus*, but has dilated middle-feet like *Eupelmus*, &c.

GENUS MACRONEURA.^b

Mas. Corpus sublineare: caput mediocre, thorace vix latius, antice non impressum: oculi mediocres, subrotundi, non extantes; ocelli in vertice triangulum fingentes: antennæ moniliformes, 13-articulatæ, corpore paullo breviores; articulus 1^{us}. crassus longus fusiformis; 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. et sequentes ad 10^{um}. subovati, æquales; clava subfusiformis, articulo 10^o. duplo longior non latior: mandibulæ quadratæ, subarcuatæ, tridentatæ, intus concavæ, apice angustæ; dentes minuti recti, externus acutus, internus latus brevissimus: maxillæ longæ, subarcuatæ; lacinia lobatæ, acuminatæ; palpi 4-articulati, filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. subæquales, 4^{us}. longifusiformis 3^o. multo longior: labium ovatum; ligula brevis, lata; palpi tri-articulati, breves, moniliformes; articulus 2^{us}. brevissimus: thorax longi-ovatus; segmenta convexa, bene determinata: prothorax magnus, antice angustus et declivis: mesothoracis scutum breve, parapsidum suturæ distinctissimæ; paraptera et epimera magna; scutellum ovatum: metathorax magnus, per medium sulcatus: abdomen longiovatum, planum, thorace paullo brevius; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: pedes validi, simplices, æquales; coxæ sat magnæ; femora et tibiæ

^b μικρὸς longus, νεύρα nervus.

recta; tarsorum articuli 1^o. ad 4^{um}. longitudine decrecentes, 5^{us}. 4^o. longior; ungues et pulvilli minuti; protibiæ ejusque apice spina longa valida subarcuata: alæ mediocres; nervus humeralis ulnari multo longior, ante costam attingit incrassatus, ramulum nullum rejiciens; cubitalis longus, subarcuatus, radiali dimidio brevior; stigma ramulum vix conspicuum emittens.

Fem. Caput thoracis latitudine: antennæ clavatæ, submoniliformes, juxta corporis dimidio longi; articuli 3^{us}. et 4^{us}. minimi; 5^o. ad 10^{um}. latescentes; clava conica, articulo 10^o. paullo longior vix latior: abdomen sublineare, thorace paullo longius, apice acuminatum, subtus carinatum; segmenta dorsalia subæqualia, ventralia vix conspicua; oviductus non exertus.

Sp. 1. *Mac. maculipes.* Mas et Fem. *Viridi-æneus, antennæ nigre, abdomen cupreum, pedes nigri flavo-cincti, alæ fuscæ.*

Mas. Obscure viridis: oculi ocellique obscure rufi: antennæ nigre; articulus 1^{us}. nigro-viridis: mesothoracis scutellum, paraptera et epimera cupreo-ænea: abdomen cupreum, basi viride; sexualia fusca, subexerta: pedes læte flavi; coxæ et femora nigro-ænea; tibiæ apice nigre; tarsi apice nigro-fusci; protibiæ et protarsi fulva, hi apice et illæ subtus fusca: alæ angustæ, fuscæ; squamulæ et nervi nigro-fusca; stigma minutum, concolor.

Fem. Caput viride, postice æneum: thorax cupreo-æneus: prothorax viridis: abdomen cupreum, basi micans et viridi varium: coxæ et femora ænea; trochanteres, genua et protarsi fulva; tibiæ nigro-fuscæ; tarsi læte flavi apice nigri. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{2}{3}$ —1 $\frac{1}{4}$.)

Var. β. *Mas*, abdomen cupreum, apice nigro-cupreum.

Var. γ. *Fem.* abdomen basi omnino cupreum.

June to September; on grass beneath trees; near London; Isle of Wight. Found by Mr. Haliday, at Port Marnock, Ireland; and by the Rev. G. T. Rudd, in Durham.

GENUS MEROSTENUS.^c

Mas. Corpus angustum, sublineare: caput magnum, transversum, thorace paullo latius: oculi mediocres, subrotundi, extantes: ocelli in vertice triangulum fingentes: antennæ 13-articulatæ, graciles, filiformes, corporis longitudine; articulus 1^{us}. longus, gracilis, subarcuatus; 2^{us}. mediocris, cyathiformis; 3^{us}. et 4^{us}. minimi;

^c μέρος pars, στενός angustus.

5^{us}. et sequentes ad 12^{um}. lineares, curtantes; 13^{us}. 12^o. longior, apice conicus: thorax longus, linearis; segmenta bene determinata, convexa: prothorax magnus, subquadratus: mesothoracis scutum parvum; parapsidum suturæ optime determinatæ; scutellum breviovatum; paraptera et epimera magna: metathorax magnus, per medium sulcatus; abdomen sublineare, planum, thorace brevius, basi angustum, apice subquadratum; segmenta transversa subæqualia: pedes longi, graciles, simplices; coxæ magnæ; femora juncea; tibiæ rectæ; tarsi longi, articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^{us}. 4^o. longior; ungues et pulvilli minuti; alæ longæ, angustæ; nervus humeralis ulnari vix longior, ramulum nullum emittens; cubitalis mediocris, rectus; radialis cubitali duplo longior; stigma ramulum brevem emittens.

Sp. 1. Mer. Phedyma. Mas. *Viridis, antennæ nigræ, abdomen nigro-æneum basi rufum, pedes flavi, alæ subfuscæ.*

Corpus scite squameum, pubescens: caput viride, antice cyaneo-viride: oculi ocellique rufi: antennæ nigræ, pubescentes; articulus 1^{us}. fulvus, apice fuscus, 2^{us}. fusco-viridis: thorax viridis: abdomen nigro-æneum, læve, basi rufescens viridi indistincte varium, fere glabrum, apice hirtum: sexualia fusca: pedes flavi; metafemora apice fusca; mesotibiæ fusco cinctæ; tarsi fusci: alæ subfuscæ; squamulæ et nervi pallide fusca: stigma minutum concolor. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

August; near London,

GENUS CEA, Haliday.

Fem. Caput mediocre, transversum, subquadratum, antice impressum, thorace paullo latius: oculi mediocres, subrotundi, non extantes: ocelli in vertice triangulum fingentes: antennæ graciles, filiformes, corporis dimidio longiores; articulus 1^{us}. longissimus, gracilis; 2^{us}. longi-cyathiformis, mediocris; 3^{us}. et sequentes breviores, æquales, approximati; thorax longi-ovatus, angustus, convexus: prothorax mediocris: mesothoracis parapsidum suturæ bene determinatæ; scutellum parvum: metathorax magnus, abdomini petiolum fingens: abdomen longi-ovatum, angustum, compressum, thorace paullo longius; segmenta transversa, subæqualia, ventrem obtegentia: oviductus exertus: pedes longi, graciles, subæquales; coxæ magnæ; femora recta; tibiæ simplices; tar-

sorum articuli 1°. ad 4^{um}. longitudine decrescentes, 5^{us}. 4°. longior; unguis et pulvilli minuti: alæ nullæ.

Sp. 1. *Cea pulicaris*. Fem. *Nigro-ænea*, *aptera*, *antennæ nigrae*, *tarsi nigro-picei*.

Nigro-ænea, *nitens*, *lævis*, *glabra*, *aptera*: *oculi et ocelli obscure rufi*: *antennæ nigrae*: *oviductus vaginæ nigrae*, *abdominis dimidio longiores*: *pedes nigri*; *coxæ et femora nigro-ænea*; *tarsi nigro-picei*. (Corp. long. lin. $\frac{2}{3}$.)

Found by Mr. Haliday, at Holywood, on grass under trees.

GENUS PROSOPON.^d

Mas. Caput mediocre, transversum, thorace vix latius: oculi mediocres, subrotundi, non extantes: ocelli in vertice triangulum fingentes: antennæ graciles, clavatae, 13-articulatae, corporis dimidio paullo breviores; articulus 1^{us}. longus, rectus; 2^{us}. cyathiformis; 3^{us}. et 4^{us}. minimi; 5^{us}. et sequentes ad 10^{um}. mediocres, subæquales; clava ovata, articulo 10°. multo latior et plus duplo longior: mandibulæ quadratae, 4-dentatae, subarcuatae; dentes parvi acuti, externus arcuatus longior: maxillæ longæ, angustæ, arcuatae; lacinia acuminata, lobata; palpi 4-articulati, graciles, filiformes; articuli 1^{us}. 2^{us}. et 3^{us}. subæquales, 4^{us}. fusiformis acuminatus 3°. multo longior: labium longi-ovatum, angustum; ligula brevis; palpi 3-articulati, breves, moniliformes; articulus 2^{us}. brevissimus: thorax ovatus; prothorax brevissimus, supra vix conspicuus: mesothoracis parapsidum suturæ bene determinatae; scutellum brevi-ovatum: metathorax mediocris, per medium carinatus: abdomen ovatum, planum, thoracis longitudine; segmenta transversa, subæqualia: pedes graciles; femora recta; tibiæ simplices; tarsorum articuli 1°. ad 4^{um}. curtantes, 5^{us}. 4°. longior; mesotarsi lati; unguis et pulvilli minuti: alæ mediocres: nervus humeralis ulnari multo longior, ramulum nullum rejiciens; cubitalis longus, rectus; radialis cubitali dimidio longior; stigma ramulum nullum emittens.

Sp. 1. *Pro. montanum*. *Mas*. *Viridi-æneus*, *antennæ fuscae*, *abdomen nigro-cupreum*, *pedes fulvi-æneo et fusco varii*, *alæ sublimpidæ*.

^d πρόσωπον, persona.

Æneus, squameus, parum nitens, parce pubescens: oculi et ocelli obscure rufi: antennæ pallide fuscae; articulus 1^{us}. nigro-æneus; 2^{us}. supra nigro-fuscus: abdomen nigro-cupreum, nitens, læve, fere glabrum: sexualia fulva, exerta: pedes fulvi; coxæ et femora ænea; tibiæ fusco cinctæ; mesotarsi fuscii; pro- et metatarsi apice fuscii: alæ sublimpidæ; squamulæ et nervi fulva; stigma parvum, fuscum. (Corp. long. lin. $\frac{3}{4}$; alar. lin. 1.)

Var. β. Caput et thorax viridia: mesothoracis scutellum cupreo-æneum: abdomen basi viridi-æneum: tibiæ fuscae, basi fulvæ.

September, on heath; Cumberland and North Wales.

GENUS STENOCERA.^c

Fem. Corpus longum, gracile, sublineare, scitissime punctatum, fere glabrum: caput mediocre, subquadratum, thorace paullo latius; frons sulcata et utrinque elevata: oculi magni, extantes, supra non approximati: ocelli in vertice triangulum fingentes: antennæ gracillimæ, filiformes, 11-articulatæ, prope os insertæ, thorace longiores; articulus 1^{us}. longus, gracilis, subarcuatus; 2^{us}. longi-cyathiformis, mediocris; 3^{us}. brevissimus; 4^{us}. et sequentes ad 10^{um}. curtantes; 11^{us}. longi-ovatus, 10^o. paullo latior et longior: thorax fusiformis: prothorax maximus, angustus, antice attenuatus: mesothoracis scutum magnum, planum, semicirculum fingens; parapsidum suturæ vix conspicuæ; scutellum subrhombiforme; paraptera bene determinata, utrinque inter scutum et scutellum conspicua: metathorax mediocris: abdomen fusi-forme, thorace longius et paullo angustius; segmenta 1^o ad 5^{um}. transversa, incurva, subæqualia; 6^{um}. angustum, convexum, acuminatum: oviductus occultus: pedes longi, graciles; coxæ parvæ; femora juncea; tibiæ rectæ; tarsorum articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior: ungues et pulvilli minimi; mesopedum tibiæ longiores apice spina valida armatæ, tarsi breviores lati: alæ mediocres; nervus humeralis ulnari multo longior, ramulum nullum rejiciens; cubitalis brevissimus, stigmati punctiformi ramulum nullum emittente terminatus; radialis brevis, cubitali duplo longior.

Sp. 1. *Sten. Walkeri.* Fem. *Cupreus viridi varius, antennæ nigrae, pedes fusco-virides, alæ limpidæ.*

^c στενός angustus, κέρα cornu.

Stenocera Walkeri. *Curtis, Brit. Ent.* 596.

Caput viride, postice cyaneo-viride: oculi ocellique rufi: antennæ nigrae, pubescentes; articulus 1^{us}. viridis: thorax cupreus, obscurus, utrinque postice et subtus viridis: abdomen cupreum; discus ater: pedes fere glabri; coxæ necnon propedum femora et tibiæ viridia; genua fulva; meso- et metapedum femora et tibiæ fusca, apice fulva; tarsi nigro-fusci, basi fulvi; mesotarsi pallidiores: alæ limpidae; squamulae et nervi pallide fusca; stigma minimum, concolor. (Corp. long. lin. 1 $\frac{1}{3}$; alar. lin. 1 $\frac{1}{2}$.)

July, near London, on lime and oak trees.

GENUS CALOSOTER.^f

Mas.—Corpus angustum, sublineare, scitissime punctatum, fere glabrum: caput mediocre, thoracis latitudine, antice vix impressum: oculi magni, subrotundi, extantes, supra approximati: ocelli in vertice triangulum fingentes: antennæ filiformes, graciles, pubescentes, 13-articulatae, thorace paullo longiores, ad os insertae; articulus 1^{us}. longus fusiformis, 2^{us}. medioeris sublinearis, 3^{us}. parvus, 4^{us}. et sequentes ad 10^{um}. gradatim cartantes vix latetcentes; clava longi-ovata, articulo 10^o. paullo latior et plus duplo longior: mandibulae quadratae, subarcuatae, tridentatae, similes; dentes parvi, externus et medius acuti subaequales, internus latus obtusus: maxillae longae, angustae, subarcuatae; laciniae dilatissimae, subrotundae, ciliatae; palpi 4-articulati, breves; articulus 1^{us}. medioeris longi-cyathiformis, 2^{us}. et 3^{us}. subcyathiformes 1^o. paullo longiores et latiores, 4^{us}. fusiformis ciliatus 3^o. multo longior: labium conicum; ligula brevis, lata, ciliata; palpi 3-articulati, subclavati, breves, articulus 1^{us}. medioeris longi-cyathiformis, 2^{us}. minutus subrotundus, 3^{us}. latior ovatus: thorax longi-ovatus, depressus: prothorax magnus, antice angustior et declivis: mesothoracis latera elevata; scutum concavum; parapsides distinctae, parallelae, approximatae; scutellum latum, postice semicirculum fingens: metathorax conspicuus: pectoris segmenta bene determinata: abdomen sublineare, planum, basi angustius, apice conicum, thorace paullo longius; segmenta 6 dorsalia, 1^{um}. 3^{um}. 4^{um}. et 5^{um}. subaequalia, 2^{um}. et 6^{um}. breviora; ventralia dorsalibus obteeta: sexualia occulta: pedes medioeres; propedes breviores; metapedes longiores; mesopedum tibiæ apice latae et spina longa valida armatae, tarsi incrassati; coxæ parvae; femora gracilia; tibiæ rectae;

^f Καλον lignum, σωτήρ servator.

tarsorum articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues et pulvilli parvi: alæ mediocres; nervus humeralis ulnari brevior, ante costam attingit incrassatus, ramulum nullum rejiciens; cubitalis subarcuatus, radiali paullo brevior; ramulus stigmatem emissus nervi radialis apicem fere attingens.

Fem.—Corpus quam *mari* longius: antennæ extrorsum crassiores; articulus 2^{us}. longi-cyathiformis; 3^{us}. et sequentes ad 10^{um}. curtantes et latescentes: abdomen longi-fusiforme, thorace multo longius, apice attenuatum et acuminatum; segmenta dorsalia subæqualia, 2^{um}. brevius, 6^{um}. angustius acuminatum, 1^{um}. et sequentia fere ad 4ⁱ. apicem depressa utrinque elevata.

Sp. 1. Cal. vernalis. Mas. et Fem. *Nigro-cupreus, antennæ nigre, pedes nigri, alæ fuscæ.*

Mas.—Caput nigro-viride: oculi et ocelli rufi: antennæ nigre; articulus 1^{us}. nigro-viridis: gula fulva: thorax æneo-cupreus, obscurus, subtus viridis nitens: metathorax cyaneo-viridis nitens: abdomen nigro-cupreum, fere læve, breviter et parce pubescens: sexualia fusca: pedes nigri; femora et coxæ nigro-ænea; mesotibiis spinæ fuscæ; protarsi basi et genua fulva; meso- et metatarsi fusci, basi fulvi: alæ fuscæ; squamulæ et nervi obscure fusca; stigma minutum, concolor.

Fem.—Caput cyaneo-viride: thorax nigro-cupreus; latera viridi varia; metathoracis latera læte cyanea: abdomen nigro-cupreum, basi micans, subtus cyaneo-viride: oviductus subexertus; vaginæ nigre: protarsi nigro-fusci: meso- et metapedum tibiæ apice fulvæ, tarsi fulvi apice fusci. (Corp. long. lin. $1\frac{1}{2}$ — $2\frac{1}{2}$; alar. lin. $1\frac{3}{4}$ — $2\frac{3}{4}$.)

Var. β.—*Mas.* abdominis segmentum 1^{um}. basi æneo-viride.

Var. γ.—*Fem.* mesothoracis scutum cyaneo-vittatum: abdomen basi purpureo-cupreum.

Var. δ.—*Fem.* protarsi pallide fusci, basi subtus fulvi.

May; near London: with *Cleonymus depressus*; and the males and females in the same proportion. It runs slowly, and moves sideways when approached. Found at Holywood, Ireland, by Mr. Haliday.

Sp. 2. Cal. æstivalis. Mas. et Fem. *Nigro-cupreus, antennæ nigre, pedes nigri flavo cincti, alæ limpidæ.*

Mas.—Caput æneum, postice et subtus cyaneo-viride: palpi maxil-

lares nigri, labiales fusci: oculi et ocelli rufi: antennæ nigræ; articulus 1^{us} nigro-viridis: thorax nigro-æneus, obscurus: pectus viridi-cyaneum: abdomen æneo-cupreum, parum nitens: pedes nigri; coxæ virides; femora nigro-viridia; genua et tibiæ apice subtus flava; mesotibiæ flavæ, basi nigræ: alæ limpidæ; squamulæ et nervi pallide fusca; stigma minimum, concolor.

Fem.—Caput cupreo-æneum, subtus et postice cyaneo-viride: thorax cupreo-æneus: metathoracis latera viridi-ænea: abdomen cupreum, basi fere glabrum, apice dense pubescens: oviductus subexertus; vaginae nigræ: metapedum tibiæ flavæ basi nigræ, tarsi basi flavi: mesotarsi fusci, basi flavi; alarum squamulæ et nervi fulva. (Corp. long. lin. 1—2; alar. lin. $1\frac{1}{3}$ — $2\frac{1}{4}$.)

Var. β.—*Mas.* metathorax et abdominis latera viridia.

Var. γ.—*Fem.* caput cyaneo-viride; vertex æneus.

Var. δ.—*Fem.* abdominis segmentum ultimum basi cyaneum.

Var. ε.—*Fem.* metatibiæ nigræ, apice flavæ.

Var. ζ.—*Fem.* pectus purpureo-cyaneum: coxæ et femora cyanea.

June and July; near London. In habit like *C. vernalis*. The males are most abundant in June, and stand in clusters near the holes perforated by *Anobium*.

GENUS EUPELMUS, *Dalman*.

Caput *mari* magnum transversum subquadratum thorace latius non impressum, *fem.* mediocre juxta thoraci latum antice subimpressum: oculi sat magni, subrotundi, vix extantes: ocelli in vertice triangulum fingentes: antennæ clavatæ, 13-articulatæ, pubescentes; articulus 1^{us}. longus, validus, subfusiformis; 2^{us}. longi-cyathiformis, mediocris; 3^{us}. et 4^{us}. minimi; 5^{us}. et sequentes subcyathiformes, usque ad 10^{um}. latescentes et curtantes; clava ovata, articulo 10^o. latior et plus duplo longior: mandibulæ oblongo-quadratæ, subarcuatæ, tridentatæ, basi latæ; dentes parvi, externus longior acutior, internus brevior obtusior: maxillæ longæ, subtrigonæ, basi latæ; laciniæ subarcuatæ, acuminatæ, intus lobatæ; palpi 4-articulati, graciles, breves, fere filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. mediocres subæquales, 4^{us}. fusiformis acuminatus 3^o. duplo longior: labium breve, ovatum; ligula brevis, lata, ciliata; palpi 3-articulati, breves, crassi, filiformes, articulus 1^{us}. longi-cyathiformis, 2^{us}. brevissimus, 3^{us}. fusiformis vix 1ⁱ. longitudine: thorax longi-ovatus: prothorax mediocris, antice declivis: mesothoracis scutum longum, depressum, utrinque elevatum; scutellum obconicum: metathorax mediocris: abdomen longi-ovatum, thorace

paullo angustius vix longius; segmenta per discum incurva, 1^{um}. longum, 2^{um}. breve, 3^{um}. 2^o. longius, 4^{um}. adhuc longius, 5^{um}. 1ⁱ. longitudine, 6^{um}. breve: pedes validi; coxæ sat magnæ; femora recta; tibiæ simplices; tarsorum articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^{us}. 4^o. longior; ungues et pulvilli parvi; mesopedum tibiæ apice spina longa valida armata, tarsi lati ciliati: alæ completæ mutilatæ aut nullæ.

Sp. 1. Eup. urozonus. Fem. *Viridi-æneus, antennæ nigrae, pedes flavi viridi et fusco cincti, alæ limpidæ completæ.*

Eupelmus urozonus. *Dalman, Kongl. Vetens. Acad. Handl. för år 1820; N. ab Ess. Ich. affn. monogr. II. 74.*

Viridi-æneus, parum nitens, scitissime squameus, parce et breviter pubescens: caput antice cyaneo-viride: oculi ocellique obscure rufi: palpi maxillares nigri: antennæ nigrae; articulus 1^{us}. nigro-viridis: thorax planus: abdomen planum, nitens, fere læve, basi æneo-viride; discus cupreus: oviductus vaginæ nigrae, flavo late cinctæ, abdominis dimidio vix breviores: pedes flavi; coxæ, pro et metafemora viridia; trochanteres fusci; tibiæ et mesofemora viridi cincta; protarsi nigro-fusci, basi pallidiores; meso- et metatarsi pallide fusci, basi flavi, horum scopulæ nigrae: alæ limpidæ, completæ; squamulæ et nervi fulva; nervus humeralis ulnari vix longior, ramulum nullum rejiciens; cubitalis mediocris, subincurvus; radialis brevissimus, cubitali non longior; stigma minutum, ramulum brevissimum emittens. (Corp. long. lin. $\frac{1}{2}$ —1 $\frac{1}{2}$; alar. lin. $\frac{3}{4}$ —2.)

Var. β.—Prothoracis latera antice cyanea.

Var. γ.—Thorax viridis: protarsi pallide fusci: mesotibiæ flavæ, medio supra fusca.

Var. δ.—Caput et thorax viridia: mesothoracis scutellum cupreum.

Var. ε.—Pro- et metatibiæ virides, apice flavæ: mesotibiæ fuscocinctæ: tarsi flavi, apice pallide fusci: protarsi obscure fulvi.

Var. ζ.—Thorax cyaneo-viridis.

Var. η.—Thorax cupreo-æneus.

May to October; near London, Windsor Forest, Isle of Wight, Devonshire, South of France. Taken at Paris by the Comte de Castelneau.

Sp. 2. Eup. Degeeri. Fem. *Viridi-æneus, antennæ nigrae, abdomen cupreum basi fulcum, pedes fusco-flavi, alæ brevissima*

Ichneumon non ailé à deux vessies mobiles. *De Geer*. II. 909.
Tab. 31. fig. 22.

Diplolepis vesicularis . *Spin. Ins. Lig.* III. 161. 13.

Eupelmus De Geeri . *Dalman, Kongl. Vetens. Acad. Handl.
för år 1820; N. ab Ess. Hym. Ich.
affin. monogr.* II. 76.

Viridi-æneus, parum nitens, scitissime squameus, parce et breviter pubescens: oculi ocellique obscure rufi: palpi nigri: antennæ nigræ; articulus 1^{us}. fulvus, basi fuscus: gula fulva: pro- et metathorax quam *E. uroazono* majores: abdomen cupreum, convexum, subcylindricum, scitissime rugosum, basi fulvum; segmenta subæqualia, supra non incurva: oviductus exertus, fulvus, medium ante abdomen subtus apparens; vaginæ nigræ, fulvo cinctæ, abdomine quartato longitudine: coxæ et femora ænea; trochanteres et genua fulva; tibiæ æneo-fuscæ, apice flavæ; tarsi flavi, apice pallide fusi: alæ limpidæ, brevissimæ. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{4}$.)

Var. β.—Antennis articulus 1^{us}. flavus.

Var. γ.—Tibiæ flavæ, basi fuscæ.

Var. δ.—Femora omnia subtus, mesofemora basi quoque æneo-fusca; mesotibiæ flavæ, basi fuscæ.

Var. ε.—Caput cyaneo-viride.

Var. ζ.—Thorax cyaneo-viridis.

June to September; near London, Cumberland, Isle of Wight, Devonshire, Cornwall. Found by Mr. Haliday, on sand-hills, at Port Marnock, in Ireland; and at Paris by the Comte de Castelneau.

Sp. 3. Eup. excavatus. Mas. *Cyaneus rufo varius, antennæ nigræ, abdomen cupreum, pedes rufi, alæ nullæ.*

Eupelmus excavatus . *Dalman, Kongl. Vetens. Acad. Handl.
för år 1820; N. ab Ess. Hym. Ich.
affin. monogr.* II. 79.

Caput æneo-viride, magnum, thorace latius, non impressum: oculi ocellique obscure rufi: antennæ nigræ, robustæ, corporis dimidio longiores; articulus 1^{us}. flavus: thorax rufus, inæqualis, glaber, fere lævis; discus cyaneus, rufo varius: abdomen cupreum, ovatum, subcylindricum, nitens, læve, glabrum, basi cyaneum, thorace paullo brevius et latius; segmenta subæqualia: pedes pallide rufi; tarsi flavi, apice fusi; mesopedum femora coxæ et tibiæ supra fusca; meso- et metafemora apice supra fusca: alæ nullæ. (Corp. long. lin. 1.)

Var. β.—Thorax cyaneus, cupreo varius, utrinque et subtus piceus : meso- et metafemora necnon metatibiæ supra fusca.

May, September; near London; Isle of Wight. Taken at Paris by the Comte de Castelneau.

GENUS ERICYDNUS, *Haliday.*

Mas.—Caput mediocre, transversum, convexum, juxta thoraci latum, non impressum : oculi mediocres, subrotundi, non extantes : ocelli in vertice triangulum fingentes : antennæ 13-articulatæ, longissime fusiformes, corpore paullo breviores ; articulus 1^{us}. longus, rectus ; 2^{us}. longi-cyathiformis ; 3^{us}. et sequentes ad 10^{um}. æquales, subquadrati, approximati ; clava conica, acuminata, articulo 10^o. angustior et plus duplo longior : mandibulæ subtrigonæ, arcuatæ, angustæ, acuminatæ, edentatæ : maxillæ longæ, angustæ, subarcuatæ ; lacinia acuminatæ, lobatæ ; palpi 3-articulati, filiformes, articuli 1^{us}. et 2^{us}. mediocres subæquales, 3^{us}. fusiformis acuminatus 2^o. multo longior : labium brevi-ovatum ; ligula brevis ; palpi 3-articulati breves crassi moniliformes, articulus 2^{us}. brevissimus : thorax ovatus, planus : prothorax minimus, supra non conspicuus : mesothoracis segmenta maxima ; parapsidium suturæ vix conspicuæ ; paraptera inter scutum et scutellum convenientia ; scutellum subrhombiforme : metathorax brevissimus : abdomen ovatum, planum, basi latum, thorace paullo brevius et angustius ; segmentum 1^{um}. longum ; sequentia breviora, subæqualia : pedes longi ; femora recta ; tibiæ simplices ; tarsorum articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior ; metapedes propedibus longiores ; mesopedes adhuc longiores, tibiæ cuique spina longa valida, tarsi crassi ciliati : ungues et pulvilli parvi : alæ breves, angustæ ; nervus humeralis ulnari plus triplo longior, ramulum nullum rejiciens ; cubitalis mediocris, rectus ; stigma ramulum brevem emittens.

Fem.—Caput thorace angustius : antennæ subelavata, 12-articulata, corporis dimidio longiores, quam *mas* paullo breviores ; articuli 3^o. ad 9^{um}. curtantes ; clava ovata, articulo 9^o. latior et fere duplo longior : abdomen ovatum, thoracis statura et forma oviductus occultus.

Sp. 1. *Eri. paludatus.* (Haliday, MSS.) *Mas.* et *Fem.* *Nigro-cyaneus, rufo varius, antennæ nigrae, abdomen cupreo-piceum, pedes rufi fusco cincti, alæ subfuscae.*

Mas.—Caput nigro-cyaneum : oculi ocellique rufi : antennæ nigrae ; articulus 1^{us}. nigro-viridis, basi pallidus : thorax nigro-cyaneus,

utrinque et subtus rufus: abdomen cupreo-piceum: sexualia fusca: pedes pallide rufi; tarsi apice fusci; metafemora apice supra fusca; protibiæ pallide fusca; metatibiæ et metatarsi nigro-fusca: alæ subfusca, apice obscuriores; squamulae et nervi fusca; stigma minutum, concolor.

Fem.—Thorax antice rufo fasciatus: abdomen basi rufum: protibiæ pallide rufæ. (Corp. long. lin. $\frac{5}{4}$ —1; alar. lin. 1—1 $\frac{1}{4}$.)

Found by Mr. Haliday at Holywood and Port Marnock.

Sp. 2. *Eri. strigosus*. Mas. et Fem. *Viridis aut æneus, antennæ nigræ, abdomen cupreum, pedes fusco-fulvi, alæ subfusca.*

Encyrtus strigosus. *Nees ab Ess. Hym. Ich. affin. monogr. II. 227.*

Mas.—Viridis, scite squameus, parum nitens, fere glaber: oculi ocellique obscure rufi: antennæ nigræ, pubescentes; articulus 1^{us}. nigro-viridis: palpi maxillares flavi; articulus 3^{us}. fuscus: abdomen nigro-cupreum, nitens, basi fusco-cupreum: sexualia fusca: pedes pallide fulvi, pubescentes; tarsi supra fusci; metapedum femora supra fusco vittata, tibiæ et tarsi nigro-fusca, illæ basi fulvæ: alæ subfusca; squamulae et nervi fusca; stigma minutum, concolor.

Fem.—Viridi-æneus: abdomen cupreum, basi fusco-cupreum: propedes obscure fulvi, tarsi fusci: mesopedes pallide fulvi, tarsi fusci: metapedes nigro-fusci, femora subtus fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—*Mas.* caput et thorax viridi-ænea: abdomen basi fulvo-cupreum.

Var. γ.—*Mas.* profemora et protibiæ obscure fulva.

Var. δ.—*Mas.* caput et thorax ænea: abdomen basi fulvum.

Var. ε.—*Fem.* caput, prothorax et mesothoracis scutum viridia: abdomen omnino nigro-cupreum: pro- et mesopedes pallide fulvi; metapedes fusci, tibiæ basi et femora subtus fulva.

Var. ζ.—*Fem.* *Var. ε.* similis: caput et thorax omnino viridia.

Var. η.—*Fem.* caput cyaneo-viride: thorax viridis.

Var. θ.—*Fem.* pro- et metapedes obscure fulvi.

Var. ι.—*Fem.* caput, prothorax et mesothoracis scutum viridi-cyanea: abdomen omnino cupreum: propedes obscure fulvi.

March, June, September, October; near London, Windsor Forest, Isle of Wight, North Wales, Cumberland, Scotland. Found by Mr. Haliday, at Port Marnock on the sea-coast, at Holyhead, and in the Isle of Skye.

ART. XLVIII.—*Note on Malachius ruficollis, Panz.; and M. bipunctatus, Bab.* By C. C. BABINGTON, M.A.

IN the *Magazine of Natural History*, vol. vii. p. 278, fig. 49, I have given, in conjunction with Mr. Westwood, figures of male and female specimens of the latter of the above-mentioned insects. We then considered, that the fact of both sexes having been found, was a sufficient proof of its specific distinctness from *M. ruficollis*. My friend, Mr. J. L. Brown, has this year taken in Norfolk, specimens of both of these supposed species, and by placing them in company, under glasses, he has been enabled to see them in such a situation, as to prove that they are only the sexes of one species. As one of my specimens of *M. bipunctatus* is a female, it must be considered as a curious instance of that sex appearing with the markings, although not the form of the male. Panzer's figure (*Index Entom.* pt. viii. No. 2,) is not my supposed species, but a rather poor representation of the true *ruficollis*. It would appear also to be a male! as it has not the prominent abdomen of the females of this genus. Will not this fact throw great doubt upon the specific distinctness of several of the species in this genus and family?

As your journal is more generally read by entomologists than any other with which I am acquainted, I send this notice for insertion in your pages.

CHARLES C. BABINGTON.

Oct. 1836.

P.S. It may be interesting to mention, that I took a single specimen of *Carabus clathratus* in Glen Castle, Erris county, Mayo, in the month of July, 1836.

ART. XLIX.—*Observations on Spontaneous or Equivocal Generation.* By J. B.—N.

SIR,—Upon looking over the *Manual of Entomology* by Burmeister, I observe that he declares himself an adherent of the doctrine of equivocal generation: he speaks of it in so

decisive a manner, without giving hardly any arguments for it, that a person may think it was so plainly and fully established as to require none. As the work is likely to be much used by young entomologists, as an introduction to the science, they may be led to believe, from the positive way in which he states it, that it is a well-established fact; which is well known not to be the case. If you think the following observations upon it worthy a place in your magazine, they are at your service. I wish that some abler person had undertaken the task, as the above doctrine has always formed one of the favourite arguments of those who deny the superintendence of a Supreme Being over the material world, and contend that every thing has sprung from a fortuitous assemblage of atoms; which the doctrine of equivocal generation expressly supports.

Burmeister, in his description of the generation of insects, § 203, says, "With respect to observations upon the equivocal generation of insects, we possess many credible authorities which confirm it;" he then cites the phenomenon of the *Plithiriasis*, and the authorities for it. The Acari or mites being referred to a different class from insects by modern entomologists, he discards, after a few remarks, from consideration in his observations, which are chiefly confined to the above species of lice. He then considers, that it is from the secretions that have a tendency to corruption that they originate. At the conclusion of the above section, he says: "Precisely the same takes place in the *Entozoa*. Von Bâr has observed this development in the remarkable *Bucephalus*, and it is as good as proved in many others; why should not, therefore, the skin, which has precisely the same structure as the mucous membrane of the intestinal canal, give rise also to parasites peculiar to it? I know nothing that satisfactorily opposes the adoption of it. Equivocal generation consequently takes place in the lowest insects; they can originate from it, and do so frequently." When philosophers are wedded to an opinion or theory, how ludicrous it is to observe (were it not also a lamentable proof of the weakness of the human mind) their earnest and anxious endeavours to wrest every fact they possibly can to the support of their favourite doctrine, until they prove too much, and some succeeding writer, with ruthless hand, uncovers and exposes the sandy foundation on which they have built, and dashes the whole superstructure to the ground. I know not what Von

Bâr's observations were, but Mr. Metford seems not to have paid any attention to them; for at the conclusion of his essay upon the origin of *Entozoa*, in your last volume, (p. 204,) after proving the fallacy of the different hypotheses that have been assumed to account for their origin, he says, "The reader is, I doubt not, by this time sensible of the great difficulties with which this problem is beset; and must perceive that if my position be true, viz. that worms do not gain access to animals by the mucous cavities, nor are they transmitted by the parent to their young, that the doctrine of spontaneous generation is inevitable. *But as this is a doctrine inconsistent with reason and analogy*, the question, as I before hinted, must be left *sub judice* until future facts and observations shall discover the truth;" thus, after he had exposed the false positions they had assumed, he, notwithstanding, hesitated not in the least to declare his firm opinion against equivocal generation.

Burmeister has laid himself open to the above observation of proving too much, in the last quotation I made from him: in the preceding section, (§ 202,) he assumes the principle, "that from nothing, nothing can be produced." We may also assume, without fear of contradiction, the converse principle expressed in the common proverb, "like produces like;" if, therefore, "the skin has precisely the same structure as the mucous membrane of the intestinal canal," how comes it to pass that if we admit equivocal generation, it does not produce the same parasites? why should they be in one situation *Insecta*, and in the other *Vermes*? Certainly the same structure must of necessity produce the same forms upon the germs that are excreted from it. It would, I doubt not, puzzle the most ardent advocate of the doctrine, to give a satisfactory solution to the above query. If "the universally distributed organizable matter" is the parent of the germs, (admitting, for argument, that it is endowed with the principle of vitality,) it must likewise produce the same forms wherever it is situated, or otherwise we must admit as many sorts of organizable matter as species of parasites, both external and internal. With regard to the supposed transformation of the intestinal floccs into intestinal worms, do we not know that every part that is separated externally from any of the higher or more fully developed organized beings, (be it remembered he is treating of man, the highest organized being,) dies the instant that it is severed from the

part to which it was attached? We know of no instance where it ever has been observed to have the least vitality after separation: if a large piece has been severed, it has a little muscular contraction, which continually decreases, until, in a short time, it entirely ceases; then from what argument can we suppose a part that is severed internally, should possess an independent life, so as to form an organized being?

But what does Burmeister mean by using the expression, "universally distributed organizable matter" being the parent of the germs of new organisms? I always understood that organizable matter meant matter that could be taken by an organized being, and by its nutritive system assimilated into itself, to supply the continued waste of its parts. I have never yet heard that it supplied any part of the vitality of the being: when the vital principle stops, the whole system stops with it: the organism may be surrounded with innumerable quantities of organizable matter, yet it will not be revived; or, if by any means its nutritive system is rendered incapable of duly performing its operations, it may take what quantity of organizable matter it pleases, without receiving any benefit from it, until at last it dies, notwithstanding its supply of organizable matter. This is a convincing proof that there resides no vitality in matter, however highly it may be capable of being organized. Certainly there is an organizable matter generally distributed, but then it never was endued with vitality since the Almighty called the type of every being into existence. Burmeister seems not to have distinguished between the vital principle, and the matter of which an organized being is composed. We cannot assume that the vitality of an organized being resides in any of its parts separate from the other, because an injury, whether by sudden violence or long-continued disease, in any of its chief functions, so as to stop its operations, will produce equally fatal results: though the chemical composition of its parts remains the same as during life, it then becomes subject to the laws of inanimate matter. If, therefore, we cannot predicate life of any of the separate parts of which a being is composed, how can we assume that the sweat, or any other secretion, (one particular one excepted, which is diametrically opposed to the doctrine,) can give origin to any germ? As we descend in the scale of animated nature below insects, we find some beings capable of propagating

themselves by division or by shoots ; but it must be remembered that the greater part of them may be considered as an assemblage of beings,—as for instance, in a *tania*, in which each succeeding joint, as they are commonly called, is an exact repetition of the preceding, so that if a part of it is broken off, it is as equally organized as the parent ; none of its functions are deficient ; the only difference is, that it has not so many of its descendants attached to it. The shoots of a polypus, animal flower, &c. are equally perfect animals with the parent, capable of receiving nutriment, or even of propagating, before they separate. This mode of generation is only found in those animals whose organization is the most simple and the most equally distributed through the whole body, so that when the parts separate, each possesses a sufficient organization for its future life. It is never found in the higher organized beings ; still, even where it is found, a parent of the same type is required. There is no doubt but that a particular state of the secretions is more favourable for the nutriment and increase of all parasites, whether external or internal ; just as every plant requires a particular soil, or every other organized being a particular kind of nourishment.

We know of no instance of equivocal generation in any of the lower grades of animal or vegetable life that are open to continued observation : it is only assumed in the case of those beings whose minute size evades the sight unless aided by the most delicate instruments, or whose habitation is so obscure, that in order to be seen, their lives must pay the price of it : and therefore in neither case can they be observed, but at detached periods of their lives. In those whose reproduction has been observed, it varies very much : nearly, if not quite all the different modes that have been observed, have been found among the *Infusoria* or *Intestina* ; we cannot tell whence the germs come in the infusions ; but that is no reason that we should declare they spring from nothing. In the various vegetable infusions which produce animalcules, what a dilemma spontaneous generation leaves us in ! we must either admit that the vital principle of the animalcule springs from absolute nothing, or else that vegetable matter, whether living or dead, can produce animal life ;^a which I hope shows the absurdity of

^a The difficulties attending spontaneous generation, induced one celebrated natural historian of the last century to deny life to the infusoria and spermatic

the doctrine. It is of no avail to say, that it is only the lowest in the scale of organized beings that are so produced; if the vitality of an invertebrated being can be produced from dead matter, what hinders the same matter from producing the vitality of a vertebrated? The various intestinal parasites are much lower than the articulated *invertebrata*.^b If, as Burmeister urges, some in different sections of the *invertebrata*,—as intestinal worms, mites, and insects,—possess an equivocal generation, what puts a stop upon its progress, and prevents it proceeding one step further, namely, to the lowest vertebrata? It is needless to pursue the argument further, as we are on the confines of that part of it where it is opposed by the strongest reasoning, both moral and divine.

Burmeister merely says of the *Acari*, that it is certain they originate from equivocal generation; and from the accordance of the habits of the *Acari* and *Pediculi*, he assumes that these originate spontaneously also. Now, is it not a well known fact, that if a person is in company with another that is infected with the itch, if they entirely abstain from coming in contact with each other, he will entirely escape the infection? and, on the contrary, if he makes use of any thing the other has been laying hold on, or shakes hands, or otherwise comes in bodily contact, he is equally certain to be infected. I ask any unprejudiced person, if that is not a pretty certain proof of the modes in which the disease and parasites originate? How can any one tell, in the multitudinous affairs of life, whether every person that he touches is not infected, or that every thing he touches has not been contaminated by the use of it by an infected person? it is evidently impossible. If, therefore, we have such probable evidence of their generation being according to the regular course of nature, why should we adopt such a difficult hypothesis (to say the best of it) as to give them a spontaneous origin?

Burmeister furnishes another argument against himself in the same section; he states an instance of a woman at Bonn

animalcules, and assert that they were only a fortuitous assemblage of organized atoms moving in disorder.

^b Burmeister divides the animal kingdom into three groups — *Gastrozoa*, *Arthrozoa* and *Osteozoa*; the two first corresponding to the invertebrata, and the last to the vertebrata of authors. The class Insects is placed the highest in the second group, or limbed animals; consequently the highest developed invertebrated, or next to the lowest vertebrated animals.

being cured of phthiriasis by the rubbing in of oil of turpentine; and it is also well known, that the *Acarus scabei* can also be destroyed by topical applications, without any medicines taken internally. Now, is it consistent with observed facts, that a few external applications can so far affect the system as to cause the secretions to assume a different aspect? Is it not done by giving medicine internally instead of topically? Would it not be more rational to ascribe the above cure to the efficacy of the turpentine in destroying insect life, (spirits of turpentine will kill an insect much sooner than the fumes of burning sulphur or spirits of wine, I have found by experience many times,) by which means it cleanses the skin from its parasites and destroys their eggs and larva also? Burmeister asserts their spontaneous origin in *Phthiriasis*, from their not being contagious. I recollect an instance in point, with regard to *Pediculus vestimenti*. A person worked in a shop where several others also worked, when, after having felt an unusual itching for some time, which at last became intolerable, he began to search his clothes, when he found one of the seams swarming with this insect; something occurred, so that he could not cleanse himself from them for a day or two; he slept in a bed with another person during all the time the above occurrence took place, but who was not infested with any of them: why might not a spontaneous origin with regard to them be asserted, as well as in Phthiriasis? This is exactly the argument put forward by Burmeister. They were not contagious to his bedfellow, and he knew not at the time whence they came; but it was afterwards found that one of his shopmates was infested with them, which easily accounted for their appearance. It is only from the infrequent occurrence of the *Pediculus tubescens* that we are in ignorance of its production; if it happened as frequently as other external parasites, we should soon become acquainted with its mode of propagation.

If Burmeister had reflected a little upon the fate of equivocal generation within the last century and a half, he would doubtless have hesitated before he had committed himself so fully upon the subject: he would have observed how it has been driven from one hold after another: from the vegetable it is now entirely discarded. Surely he would hardly dare to assert that the various species of Cryptogamous plants, or even the most humble of them, such as toadstools, mushrooms,

puff-balls, lichens, or even the green mantle of the ruined wall, were produced by spontaneous generation engendered by corruptible matter. If the corruption of vegetables is unable to produce vegetable life, how can the "secretions that are inclined to corruption" produce animal life? the analogy holds to the utmost minutia. A parent of the same type is absolutely required to produce the animal as well as the vegetable. It is commonly said that facts are stubborn things: equivocal generation has been obliged to yield to them in the vegetable world, and it will no doubt soon yield to them in the animal world likewise. Burmeister should also have recollected how the naturalists who denied the doctrine of equivocal generation, about the commencement of the last century, were puzzled to account for the appearance of a quantity of parasites from the pupa of a butterfly,—a fact then as triumphantly appealed to by the asserters of the doctrine, as the appearance of the *Phthiriasis* is appealed to by himself. But what was the expression of Ray? Although even with his great knowledge of nature he could not give a positive explanation of it, yet he sincerely declared that he thought they were produced from eggs laid by a parent of the same species. In what a striking view does his opinion show itself, now that it is ascertained to be the fact. Equivocal generation has here been signally overthrown and vanquished.

Burmeister does not plainly assert that the head-lice springs spontaneously, because he knew that every day's experience would contradict him; and that if it could be shown that one of the species described by him as generating equivocally, did not originate in that manner, analogy would conclude that the remaining species were generated also in the common mode. I have known children to be entirely cleansed from them by combing only. I have also known a dog cleansed in the same manner from the lice with which it was infested; which is a plain proof that they spring not from the secretions, but from individuals of the same species. Would Burmeister dare to assert that the cheese-mites and the cheese-hoppers spring spontaneously (which is still the opinion of many of the vulgar)? surely not. The cheese has no vital principle to impart; and he would scarcely go the length to assert that dead matter can originate a living organized being: indeed he said as much, in speaking of the dead lappets of the skin that peel off; but

perhaps he might urge that the milk of which the cheese is made is an animal secretion. But what can be urged in the case of mites found in the mould of gardens under flower-pots, &c. The mould is not an animal secretion; if, therefore, several species of *Acari* do not originate equivocally, why should one species of the same genus have a spontaneous origin given to it?

Burmeister also says, respecting unimpregnated females being fruitful, that it perfectly proves the possibility of spontaneous development: this I positively deny. Equivocal generation means, according to the instances cited by Burmeister, that the secretions of one type of beings produce a germ, and that germ in its development produces a being of a different type, (the secretions of man, for instance, producing worms, mites, and lice.) Now, in what respects does the generation of the *Aphides* resemble this or any of the exceptions to the general law mentioned by him? (upon some of which he casts well-founded doubts.) Do they not produce the very same typical beings? The same principle I laid down at first—"like produces like"—is most strictly adhered to: a parent of the same type is invariably required. When was an aphis, moth or bee^c ever observed to produce the germs of any other insect? Does not, in every instance which he quotes, the unimpregnated female lay eggs which produce the same species? The eggs were laid according to the regular course of nature, in the very same manner in which impregnated ones were laid: they sprung not from external secretions, but from the proper oviduct of the insect; so that, so far from supporting spontaneous generation, they point directly contrary. There are organs whose sole function is the secreting of germs: and the germs produced by those secretory powers in their full development, produce the same typical beings; the only difference being in the non-impregnation by the male, which takes place regularly in one family; being in fact their regular mode of propagation: the common sexual generation of other insects being their exception—not their rule. But it appears that when the fruitfulness of the females is exhausted by exposure to cold, or what other cause

^c Burmeister, or his translator, has made a ludicrous error at the bottom of page 312, where he speaks of a queen-bee laying unfruitful eggs, which produced fruitful females.

it may be, it then requires renovation; which is provided for by the last laying of germs by the female,—many of which are males, who, after they come to maturity, impregnate the females and proceed as before. How can it be cited in support of equivocal generation? If an *aphis* was observed to spring from the exudation of vegetables, then it would support it, but not otherwise.

I have purposely avoided using any theological arguments in support of my view against the doctrine; not that I think they should not be used, but because I wished to show how untenable it is, from the consideration of fully observed facts in the economy of organized beings, and from analogical reasoning; but I should wish very much that every asserter of the doctrine would consider them fully, and observe how inconsistent with the true notions of a creative Being it is, that any assemblage of matter alone should produce animal or even vegetable life.

I remain, Sir, yours most respectfully,

J. B——N.

Note to the word Kerfe.

P.S.—It appears by Burmeister, in his Introduction, p. 48, that some German authors have adopted the word *kerfe*, derived from *kerben*, signifying to notch or indent, as a name for insects in the German language. Mr. Shuckard, in his note to the above, states that he has retained the paragraph. Although it has more a German than English interest, perhaps he was not aware that the word is also used technically in the English language, by all workers in wood, (whether sawyers, joiners, cabinet-makers, &c.) to designate the incision made by a saw in a piece of wood: in fact there is no other word to express the same meaning. A cut may be made by any cutting instrument,—as knives, chisels, axes, &c.—no part of the substance cut being taken away, but only severed with them; but a *kerf* signifies an open incisure, the sides of which are parallel to each other, and a part of the substance taken out, which can only be done with a saw; it is, in general, used in apposition with saw,—as saw-*kerf*; I have seen it printed *kirf*, *kerf*, and even *carf*,—the pronunciation being always *kerf*. The application of the word to insects, is, I believe, as happy an expression in our language, as *Insecta* to the Latins, or *Evropa*

to the Grecians ; but whether it would be worth while to overthrow the common name of the class, in order to adopt a vernacular term, is a question that must be left to the discretion of future writers to decide.

ART. L.—*Narrative of Capt. Henry Foster's Voyage to the Southern Atlantic Ocean, in His Majesty's Ship, Chanticleer.*
By W. H. B. WEBSTER. Bentley, London, 1834.

[EDITOR *loquitur.*]

THE times in which we live are troublous times, and we see no reason why we should be exempted from the trouble that surrounds us, that hems us in on every side. Now is the time when we shall be expected to solicit a truce from that steady animosity which, on the part of certain individuals, has dogged us so unweariedly, to kneel to those who have perhaps at times trembled at the bare mention of our rod. Of these acts of humiliation we will consider at a more convenient opportunity ; but there is an act of justice which we must first perform. Some years ago our zeal for Entomology led us to set our faces against a constant bickering at that time carried on between the authors of two rival publications. We thought this bickering highly injurious to the true interests of the science. We determined to oppose it to the uttermost. The practice was continued, and we kept our resolution. The offender was our personal friend ; but this was no screen ; we fancied it a public duty to reprehend, and we reprehended most severely. We were perfectly sincere in what we said ; we weighed the consequences well, and, as the result proved, accurately : we counted and paid the cost. The infinite ramifications of the opposition to our progress, by the friends of the work in question, was a perfect model of human ingenuity : the mind of man is shrewd in the science of persecution, to a degree with which few are thoroughly acquainted. It seems a most luxurious occupation. Now, it may appear strange to thee, dear reader ! that it is in consequence of this *very* science of persecution being now cultivated most elaborately against Mr. Curtis's work — that *very* work which we criticised so

severely — that *very* work whose friends pursued us so long and so assiduously with this *very* persecution — that we now pen these sentences in condemnation of a system whose exquisitely organized power we have resisted, conquered, and outlived. It is difficult to contend with a hidden system of evil, and the perpetrators, in this instance, are careful to veil their deeds in kindred darkness. Every one who reads the pages of the *Entomological Magazine*, in simplicity of heart, will, we are confident, acknowledge that the system of injuring individuals has never there, for a moment, been entertained; we have been very severe to what, in our judgment, appeared wrong; but we have, at the same time, diligently sought out the good and the useful, for the very pleasure of praising and recommending. The ill feeling that exists in some breasts against Mr. Curtis, is a matter with which we cannot contend; but we advise, — in perfect sincerity we advise, — those who entertain such a feeling, against its exhibition in a manner calculated to injure him. The works of Mr. Curtis and Mr. Stephens are not only useful but beautiful works: they are the works of our fellow-countrymen, — and that is in itself a claim on us. That we can agree with every thing that these authors are pleased to say, — that we can praise and approve of all they write, — is not to be expected. Perfection is not the inheritance of man; but until we are faultless ourselves, let us bear with the faults of others. We have already said, that the knowledge of the existence of this evil spirit against Mr. Curtis called forth these remarks; furthermore, our abhorrence of the system is so great, that we think it our duty to oppose it, and it will give us real pleasure if these honest observations tend to that gentleman's advantage, by opening the eyes of the unwary, by cautioning the yet uninitiated lover of Entomology against evil counsel.

Now, with respect to our own observations on Mr. Curtis's work, we do unhesitatingly declare our conviction, that they were too severe: it was a quarrel in which we ought not to have interfered, and over which we had no jurisdiction. We regret the publication of these observations, and we trust Mr. Curtis will be satisfied with this confession.^a

^a Mr. Curtis's name was omitted in the two last lists, as a Subscriber for five copies of the *Entomological Magazine*. The Editor was not aware that Mr. Curtis continued to take them; no further reason for the omission existed. We

All this is foreign to our subject, therefore, let us now turn to the volumes on our table: let us become "Skimmers of the Sea." The South Atlantic regions seem, until late years, to have possessed but slight attractions to the Naturalist, or, if attractive, his researches have been few and unimportant. We cannot look on the voyage of the *Chanticleer* as one at all calculated to furnish us with a clear and complete view of the productions of the Southern Seas. Captain Foster was an Astronomer only; and it appears to us, that, not content with the laurels he must necessarily win from his own important observations, he entertained an idea that the discoveries of his comrades in other branches of science might, perhaps, eclipse his own; and as, though actuated by a feeling so entirely unworthy of him, he does not seem to have afforded that assistance to others, which was requisite to render their discoveries of real and permanent utility.

Captain King, employed, at the period of the *Chanticleer's* voyage, in a survey of the Straits of Magellan, has brought to this country a valuable collection of insects, of which an account will appear in the Transactions of the Linnæan Society, by Messrs. Curtis, Haliday and Walker. Mr. Darwin also has returned from South America with multitudes of novelties, many of them of most singular forms. We hope to say something of both these collections hereafter.

The narrative of Captain Weddell's voyage to the Antarctic regions, published many years ago, contains a variety of interesting matter. This navigator, we believe, pushed his course further southward than any other, either before or since, and he describes the sea in the extreme south, as being perfectly free from ice. His narrative is also remarkable, as containing the best authenticated story of a mermaid,—a story so interesting that we shall make no apology for introducing it in Captain Weddell's words. The event occurred at Hall Island.

A man was stationed on one side of the island, to take care of some produce, while the rest of the crew were engaged on the other side. He had gone to bed, and about ten o'clock he heard a noise resembling human cries; and as day-light in those latitudes never disappears, he got up, and looked about,

have great pleasure in now saying, that the numbers were taken regularly, and of thanking Mr. Curtis for his kind support.

expecting to find some one in need of assistance; however, he found nothing, and returned to bed. He very soon heard the noise repeated, and got up a second time, but still saw nothing. Conceiving, however, the possibility of a boat being upset, and that some of the crew might be clinging to some detached rocks, he walked along the beach, and presently heard the noise more distinctly than before, but now in a musical strain. On searching round, he saw an object lying on a rock about a dozen yards from the shore, at which he was somewhat frightened. The face and shoulders were of human form, and of a reddish colour; over the shoulders hung long green hair; the tail resembled that of a seal, but the extremities of the arms he could not see distinctly. The creature continued to make a musical noise while he was gazing, for about two minutes, but, on perceiving him, disappeared in an instant. Immediately the man saw his officer, he told this wild tale, which was of course doubted; but to add to the weight of his testimony, (being a Catholic,) he made a cross on the sand, which he kissed, in form of making oath to the truth of the statement. Captain Weddell afterwards swore him to the facts, on the Gospels, with a paper cross under his hand.

Captain Weddell's observations on the native Fuegians are highly interesting. He appears to have taken great delight in closely observing their economy; for that word seems best to express the usages of these poor savages. But we are forgetting the Chanticleer.

Captain Henry Foster, commander of the Chanticleer, having completed the observations entrusted to him, and being about to return to his native land, accidentally fell from a canoe, in the river Chargres, in the Gulf of Mexico, and was thus lost, as the monument erected to his memory expresses it, "to his country and his friends." The objects of the voyage were entirely scientific; the principal one was to discover, by pendulum observations made at various places in the northern and southern hemispheres, the true figure of the earth. It is, however, solely for the sake of transferring to our pages some of Mr. Webster's observations in Natural History, that we have introduced his narrative to the readers of the *Entomological Magazine*. We shall take these memoranda as they occur, without attempting any thing like a classified arrangement.

On the 23d May, the surface of the sea was covered with very minute particles of something which appeared like dust, or the shakings of hemp. Having obtained some of it in a vessel, on examination Mr. Webster found it to be composed of very small worms, extremely slender and delicate, and about the hundredth part of an inch in length. They were of a brown colour, in general, and acuminate at each extremity, having also a slight bending motion at times. Besides these, the water from which they were taken contained a few hairy globules, about the size of a pin's head, which opened and contracted, having a bright glistening speck in their centre. There were, besides these, some little red capillary worms, bifurcated at one extremity, and some *medusa* of a chocolate colour, about the size of a pea.

We heartily wish Mr. Webster had been somewhat more full in his description of the hairy globules: we fain would know whether the glistening speck was visible when the animal was contracted; and again, whether the "opening" of the animal could be caused by agitating the water. Presuming that the luminous speck was only visible when the animal opened; and presuming, also, the opening could be caused by agitating the water, we have, at once, before us, in this hairy globule, the immediate cause of that luminosity of the ocean which exhibits itself in evanescent sparks, as the waves dash against a vessel's prow.

On the night of the 30th May the voyagers were much gratified by a phenomenon of rather uncommon occurrence, relating to the luminosity of the sea. It was about ten at night, when the vessel was sailing through the water at the rate of five knots, the weather clear, and the stars shining brightly above them, when their attention was suddenly attracted by a great number of dolphins sporting round the ship, and darting about in all directions with the swiftness of an arrow. The water was extremely brilliant, and appeared to be a sea of stars, so numerous were the specks of light. But, beautiful as was this appearance, (they having become, in some degree, accustomed to it, from having witnessed it on former occasions,) their attention was now principally directed to the dolphins. They could distinctly see their whole form to a considerable depth below the surface of the water, from the bright light which they emitted, and were delighted with their

gambols. A train of vivid light, not unlike that left by a rocket in its flight, but more continuous, suddenly appeared, and marked the dolphins to be in pursuit of prey.—Vol. i. p. 19.

On the 12th June, in latitude 6° N., Mr. Webster found the sea again covered with the dust already spoken of; but on examination, it exhibited no symptoms of animation. During the long calms by which they were delayed in the vicinity of the equator, Mr. Webster had frequent opportunities of examining several kinds of *medusæ*, or sea blubber. One day, while several of the crew were bathing in a sail secured for the purpose, by the side of the vessel, several of them were severely stung by these *medusæ*; and the carpenter was so much injured by them, as to be unable to swim: he suffered much pain and irritation from them, but nothing further. Mr. Webster frequently handled them; and, on afterwards applying his hands to his lips and face, experienced pain, which he considers proceeds from the secretion of an acrid matter, rather than from any electric property. He contracted a disease in his hands, much resembling the itch, in consequence of handling these *medusæ*, and the *physalis*, or Portuguese man-of-war.—Vol. i. p. 22.

On arriving on the coast of South America, the tree-ferns on the Corcovado, a mountain in the neighbourhood of Rio Janeiro, attracted Mr. Webster's attention: they may be classed amongst the most elegant productions of the vegetable kingdom. These ferns grow to the height of twenty feet, and are frequently entwined with lesser ferns; thus clothing their stems with all the elegance of ivy. The anvil bird perches on the branches of these tree-ferns, and repeats its singular note, which sounds like the blow of a hammer on an anvil. The beauty of plumage which forms the peculiar feature of the birds of Brazil is well known. Nature may, truly, be said to have lavished her favours in decking out the feathered tribes of these regions, for they are all remarkably handsome, and objects of admiration to every visiter. The insects are equally magnificent, particularly the butterflies, many collections of which are sent to Europe. Fireflies, beetles, and grasshoppers, are abundant: the webs of some of the spiders are strong enough to entangle a little bird; and ants are so large that they are fried and made into a delicate dish. Snakes are very common and plentiful; every variety of these creatures is to be had, from the boa-constrictor, of thirty-five feet in length,

to the little delicate green snake, which does not exceed four inches. Rio is tolerably supplied with fish. The shrimps are very large, and, when made into pies, are an excellent dish.—Vol. i. p. 51.

At Monte Video immense quantities of snails are sold in the markets, and are used for soup. The birds are remarkable for their beautiful plumage. The *Rhea*, or American ostrich, is common, both in a wild and domesticated state, and may frequently be seen bounding over the plains with remarkable swiftness. This bird lays three or four eggs in the month of October, which are to be had in the markets, and are used for domestic purposes; they generally weigh about a pound and a quarter each; and the country people make a custard of the yolk, which they bake in the shell among wood embers. Wild swans, vultures, owls, kites, kawks, parrots, woodpeckers, rose-breasted thrushes, and a variety of elegant finches, are common, besides the *Loxia cardinalis*, or cardinal-bird, so called from a tuft of feathers on the head. Game and fish are plentiful.—Vol. i. p. 91.

Our author gives a very detailed account of the natural history of Staten Island, situate near the extreme southern point of South America. Of mammalia he found there two species of seal, the otter, the rat, and the mouse. The penguins of different species, ducks, and the albatross, seem to have been the only birds. The rocks abounded with muscles and limpets. The mullet appears to have been the only fish discovered. In using the dredge, pieces of wood were frequently brought up, bored in every direction by the *Teredo navalis*, a worm varying in length from two to six inches, and from a quarter of an inch to an inch in circumference. It is pale white, smooth, and not annulated. The anterior extremity has a slender, double, extensile, cleft proboscis, or mouth-piece, which the creature has the power of thrusting forward to a considerable length from it. This proboscis is of a flesh colour, and finely pointed. From the neck or anterior portion of the body, proceed two plumated processes, which are firm and long, well articulated, and about two inches in length. These consist of a footstalk or pedicle, firmly implanted into the sides of the worm, and the other half terminated by a plano-convex doubly-feathered edge. The plane surfaces of these feathered borers are applied together, and, by a semi-revolution, work at first a small hole; till, getting

gradually larger, the whole feathered process enters. It resembles in some measure a very fine double-edged saw, working by half turns as it destroys the wood. It is frightful to contemplate the ravages which these creatures are capable of committing on ships; they would soon scuttle a first-rate man-of-war.—Vol. i. p. 124.

Early in December the water in the harbour at Staten Island was covered with *Medusa*, and on the following night a most brilliant illumination of the water ensued. On the external convex side of those *Medusæ*, which Mr. Webster examined, were eight longitudinal rows of small imbricated processes, slightly curved, and acting as a series of little flippers, for they had the power of rapid motion, and appeared like the delicate cogs of a small wheel. When desirous of moving, several or all these flippers were put in motion, and thus the animal could proceed with great rapidity; the motion of the flippers imparting to them a succession of beautiful colours, green, rose colour, gold, crimson, blue and purple. The moment the motion ceased, the colours were no longer perceptible.—Vol. i. p. 126.

From Staten Island, Captain Foster sailed southward, to the group of islands known by the name of South Shetland, and anchored in a cove or basin within Deception Island. This island, and indeed even the description of it, must be a treat to the geologist. Although it is twenty-seven miles in circumference, it bears every appearance of having been the summit of a volcano, abounding in ashes, &c.; it consists of a circle of rocky hills, united excepting at one point, and enclosing a large harbour or basin, which occupies nearly the whole of the interior. The number of objects in natural history found here was very limited; the only mammalious animal mentioned, is called the sea-leopard, a species of seal, nine feet in length, five feet in circumference, and in weight eight hundred pounds. Among birds, the voyagers saw myriads of penguins, two species of tern, the black-headed gull, the stormy petrel, and two other species of *Procellaria*; the *Pelicanus graculus*, or blue-eyed shag, and the *Vaginalis alba*, or Cape pigeon; the last mentioned appeared merely to have accompanied the ship, and not to have been an inhabitant of the island. There were plenty of a small species of shrimp, but they were not fit to be eaten, and a small lizard-tailed

star-fish was numerous. There was also a very handsome species of *Echinus*. There was not a single phænogamous plant,—but one moss, one striped coralloid lichen, and a few uninteresting sea-weeds. The climate is excessively cold, and the ground covered with ice and snow even in summer.

From Deception Island, Captain Foster returned northward to Cape Horn and Hermite Island. Here no mammalious animals were noticed; there were no penguins, and but few other birds, and very few fish.

The little Chanticleer now shaped her course across the Atlantic, and reached the Cape of Good Hope on the 27th of June, having performed the passage in twenty-seven days; a great number of birds, particularly the graceful and elegant pintadoes, accompanied her throughout the passage. In Mossel Bay, our author was struck with the variety of shells, and the beauty of some of them, particularly that of the paper *Nautilus*. He also mentions the following genera: *Haliotis*, *Trochus*, *Buccinum*, and *Pholas*.

ART. LI.—*Proceedings of the Entomological Society of London.*

SITTING OF THE 2d OF JANUARY, 1837.

Rev. F. W. HOPE in the Chair.

THE minutes of the last meeting were read and confirmed.

Mr. RADDON exhibited a drawing of the turnip leaf, with two Lepidopterous ova deposited thereon, which had been reared, and turned out to be, the one *Leucophasia sinapis*, and the other *Plusia gamma*. He stated, that a friend of his had discovered the undoubted larva of the turnip fly, feeding between the Epidermis and Parenchyma of the leaf, which obscure habit rendered it so difficult of detection. He hoped to be able to forward to the Society more complete information, in detail, from his friend, than he was then in possession of. He exhibited a series of phials containing various foreign larvæ, &c., found in turpentine, and extracted therefrom by

means of strong spirit of ammonia; and also a pan containing the insects in the turpentine in the rough.

The PRESIDENT, in some subsequent observations, confirmed the great success of this method of obtaining many foreign insects, stating that some of the finest specimens he had seen in any European cabinets had been procured in this manner, and a fine North American cabinet might thus be obtained for a few pounds, and without stirring from our own firesides. He recommended spirit of caoutchouc as a solvent.

Mr. RADDON further mentioned his success in obtaining insects from a gum, which he believed to be copal; but which the President doubted, never having known any authenticated instance of insects found in that gum, but always in gum animè, which received its name, originally, from the great number of ex-animated remains found in it.

Mr. RADDON next exhibited a phial containing hymenopterous and other insects, sent over in rum from the Gambia, which he recommended as by far the best mode of transmitting all insects, excepting Lepidoptera, from abroad; and, as a proof, displayed some of the most delicate specimens taken out and set, which were as brilliant and perfect as if just captured.

Mr. WATERHOUSE bore testimony to the safety and excellency of this method of transmitting foreign specimens.

Mr. RADDON, lastly, exhibited two specimens, which he forbore to give any name to. They *had been* Lepidoptera, but were completely eaten up by a fungus.

The PRESIDENT remarked, that a wasp's nest had been exhibited in that room with some of the wasps in a similar predicament.

A very interesting paper by Mr. Sells was read, on the *Cteniza nidulans*, the trap-door-making spider of Jamaica. He exhibited a perfect specimen of the insect, with some beautiful drawings of its curiously-constructed nest.

Mr. MACLEAY confirmed the accuracy of Mr. Sells' description, from his own personal observation, and mentioned the existence of a spider of similar habits in India and the South of Europe.

A paper by Mr. Waterhouse, containing further descriptions of insects, collected by Mr. Darwin, was read; specimens of the insects, principally *Attica*, were exhibited: one of these Mr. Westwood considered nearly identical with

our turnip fly, and he stated it to be equally destructive in New Holland.

Mr. WESTWOOD read a curious and interesting paper by himself, on caprification; an operation by which certain Hymenoptera of the family *Cynips*, after undergoing a very remarkable gradulatory process, performed an essential part in the ripening of the garden fig, by piercing the immature fruit, and thus occasioning an excitement of the juices, and a precocious maturity of the fruit, as is frequently the case with our own fruits that have been attacked externally by insects. The peasants, in some of the Greek islands, are perfectly aware of this curious economy of the insects, and watch the development of the mature insect daily, for the purpose of assisting nature, and conveying the little operators, which are bred in the fruit of the wild fig-tree, to the fruit of the garden fig, if, from any cause, they should not be strong enough to effect the transport themselves;—by which means they frequently obtain fine crops, when otherwise there would be a failure. A double crop is likewise obtained by the same means, but is considered to deteriorate the fruit. Drawings of these insects accompanied the paper.

ANNIVERSARY SITTING.—JANUARY 23, 1837.

Rev. F. W. HOPE, President, in the Chair.

Minutes of the last meeting were read and confirmed.

The meeting then proceeded to the customary business of the election of officers for the year ensuing. Four members were recommended by the Council to be removed, and four to be elected into the council in their stead. The ballot having been taken, the Chairman declared, upon report of the Scrutineers, that the election had unanimously fallen on the following gentlemen, viz.: Messrs. Bennett, Children, MacLeay,* and Waterhouse, as members of the Council; J. F. Stephens, Esq., as President; W. Yarrell, Esq., Treasurer; J. O. Westwood, Esq., Secretary; and W. E. Shuckard and J. O. Westwood, Esqrs., as joint Curators.

The TREASURER presented his account for the past year, signed by the Auditors; from which it appeared that the funds of the Society were in a prosperous condition, there being a

* Mr. MacLeay has since resigned.

considerable cash balance in hand, and large assets due to the Society, while every current claim whatever had been discharged.

The PRESIDENT, in his concluding speech, enlarged upon the very flourishing state of the Society, forty-four members having been added to it during the past year, while only four resignations had taken place; and he was happy to say no loss had occurred from death. Sixty-three publications had been presented to the Society in the course of the year, including many from Literary and Scientific Societies. He lamented, at considerable length, the loss the science had sustained in the death of Dr. Leach. He enlarged on the great service that had been rendered, in the preservation of the beautiful park of Brussels, from hints given by one of the members, (Mr. Spence;) and deprecated the conduct of our own Commissioners of Woods and Forests, who appeared to listen to the advice of interested timber-speculators, rather than to such as would arrest the ravages of the same insect, now rapidly proceeding with the work of destruction in Kensington Gardens. He finally recommended a MS. account to be kept of all Entomological publications.

The speech was received with much applause, and ordered to be printed.

The usual votes of thanks were then passed.

The SECRETARY announced, that the Council had agreed upon "*Athalia centifolia*, or the Blacks of Turnips," as the subject of the prize essay for the year 1837.—None had been received on the *Coccus* of the pine apple, the subject proposed last year.

The Third Part of the Transactions of the Society, being the completion of Volume I., was laid upon the table.

SITTING OF THE 6TH OF FEBRUARY, 1837.

J. F. STEPHENS, President, in the Chair.

After the usual business had been gone through, a black letter volume was exhibited, with an accompanying letter from Mr. Bohn the bookseller, presenting it to the Society as a matter of curiosity, being rendered of no value to him by the perforations of the little insect that attacks books, which had

all been done within the last twelve months. The letter stated, that the discovery of a mode of preventing these attacks, would be the means of saving many a rare and valuable book to the amateur and the trade. On examination, three species of insects were discovered; one, the usual *Anobium*; another, *Lepisma saccharina*; and a third, apparently, the larva of an *Aphis*. Prussic acid, corrosive sublimate, quassia, and the oven, were severally recommended by different members, to destroy these pests of the bibliopolist.

The Rev. F. W. HOPE stated, that it was principally books coming from abroad, and which had been injured by salt water, that were subject to be thus attacked.

A paper was read, descriptive of the various genera and species of Coleoptera, found in the neighbourhood of Penzance, by Mr. Howe. Two of the specimens exhibited were pronounced to belong to exotic genera.

The Rev. F. W. HOPE read some observations on the economy of Ants. He traced the authorities from Scripture, downwards, and quoted many passages from the classics, to prove the general belief in their provident economy; which, however, had been questioned by many modern entomologists. To settle that point, he proposed several queries, more particularly directed to ascertain the food of exotic species, and whether, or not, they were torpid during any part of the year in the tropics. In the discussion, much reference was made to a communication from Col. Sykes, published in the Transactions of the Society, which Mr. Hope considered to establish the prevalent opinion of their provident habits, but which Mr. Westwood contended did no such thing; and, also, that the ancients were not entitled to any weight as observers of natural history.

SITTING OF 6TH MARCH, 1837.

Rev. F. W. HOPE in the Chair.

Minutes, &c. &c. of the previous meeting, were confirmed.

A specimen of *Cerura vinula*, found imbedded in a solid piece of pine, was exhibited.

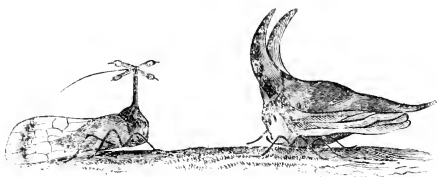
A letter from Mr. Petit was read, noticing a decoction of staves-acre root (common larkspur) as a remedy very anciently

employed for the destruction of vermin infesting either animals, or the habitations of man.

A paper, containing some further remarks on the curious construction of the nest of *Cteniza nedulans*, by Mr. Sells, was read.

A paper by the Rev. W. F. Hope, was read, in reference to a passage in Kirby's Bridgewater Treatise, wherein the insect that infested the Egyptians in the plague of flies, is supposed to be the cock-roach. The author expressed his deference to Mr. Kirby; but on this point contested his opinion as unnecessary and unsupported. He cited many authorities for the prevalence of several descriptions of fly in Egypt in the present times, and concluded that there was no reason for supposing that the insect designated by the Hebrew words in Exodus, was a *Blatta*, or otherwise than a proper fly. In the discussion on this paper, several members stated, that the cock-roach attacked man in tropical countries, by night, at the extremities.

The CHAIRMAN announced that he had in preparation a paper, which he hoped to have ready by the next meeting, on the insects found alive in the human subject, and should be much obliged by any facts or assistance thereon.



THE
ENTOMOLOGICAL MAGAZINE.

JULY, 1837.

ART. LII.—*Wanderings and Ponderings of an Insect-Hunter.*

(Continued from p. 203.)

CHAPTER XI.

[The Insect-Hunter taketh a view of Lemster from Eaton-hill.]

IT is sweet, it is very sweet, to stretch one's self at full length on a hill top, in the early summer grass, while Summer is yet little more than Spring,—the brightly-green, quickly-grown, thyme-scented summer grass! It is sweet, it is very sweet, while thus prostrate, and propping up the physiognomy between the hands to gaze forward on the summer earth, or into the summer air! It is sweet, it is very sweet, to watch the varied and ever-varying insect tribes as they mount to the tips of the individual blades from the more secure hiding-places about the roots and on the ground,—some beaten down by the morning shower,—some making their first pilgrimage after a winter's sleep in the deathlike chrysalis! It is sweet, it is very sweet, to watch them as they plume their antennæ, and stretch out their tiny wings, waiting a moment, as in coy hesitation, then essaying, fearfully at first, their newly-acquired powers, rise and float upon the balmy summer air. Mark that black bee, of all vagabonds the happiest, how she revels in the ground-ivy, which appears wherever the grass is more thinly scattered; with what joyous eagerness she hums from bloom to bloom, followed by her attentive mate, so different from

herself in colour! Mark that *Bombylius!* what words can tell the wondrous powers of his flight! poised on wing, painfully murmuring,—a murmur never to be mistaken,—he seems part and parcel of the air, too gross, indeed, to rise, yet too ethereal to fall; like the coffin of Mahommed, he is suspended motionless betwixt the heavens and the earth: attempt to catch him, and he is off at viewless speed; in a minute he has returned, and is again poised in air before me, near the place from whence I frightened him: he now descends, and after a most elaborate scrutiny, selects a spot on which to settle: there he sits bolt upright, his spotted wings still vibrating, though not so rapidly, as in flight.

Farther down the hill, the swallows and sand-martins are entomologizing; they sweep along the surface of the grass, picking off the insects that have mounted in preparation for an aerial wandering: each blade and each bent that bears a living being is robbed of its load; ever and anon a bird, more eager than the rest, dips deep into the grass for some glittering creature that has caught his beaming eye, and is for a few seconds wholly lost to sight. In the morning there was rain, and the gauze-winged nations were beaten to the earth, and the swallows gave up their labours as useless; but now the sky is cloudless, the air warm and still, and the insects have again emerged from their hiding-places; and as they prepare to wander, the hungry swallows, more hungry from their morning's fast, sweep with untiring wing over the surface of the earth, and arrest the progress of myriads at the very threshold of a happy flight.

The Insect-Hunter is looking from Eaton Hill down upon the valley of Lemster, and upon the course of Lug and the course of Oney, and upon the town, and the Etnam-street, and the old blue-roofed church, and the Priory, now, alas, the parish poor-house. On the left rise the well-wooded and often-hunted heights of Brierley; above Brierley, and stretching boldly forward to an abrupt headland, is the black, bleak, and barren West Hope; above and beyond West Hope is the beautifully fir-clad Foxley; and again, above and beyond Foxley, the Black Mountain, in all its gloomy grandeur, bounds the view; the superior and more distant height of Pen-y-Cader-Vawr, near Talgarth, just peeping in one spot above the level back of the vast mountain. Jutting out beyond the Black Mountain, to the right, but of far inferior height, is the baronial

Kewsop,^a and above Kewsop the bifid head of the mighty Beacon at Brecon looms in the distance. Farther to the right, but much nearer to the beholder, is the British encampment of Croft Ambery, oft visited by the Insect-Hunter. Still farther to the right, the sharp, abrupt bluff of the gigantic Clee frowns over the fair scene beneath. A motley multitude of minor hills complete the landscape. It is sweet, it is very sweet, to gaze on such a scene,—the outline of the ever-during mountains is as the countenance of a long-loved friend.

CHAPTER XII.

[Treateth of the Waters of Lemster and the course of Lug.]

Impressed with the deep importance of his subject, the Insect-Hunter must assume a somewhat severer diction than has characterised his lighter labours. The waters of Lemster are seven,—Humber, Cheaton, Ridgemoor, Lug, Oney, Arro, and Stretford Brook. The inhabitants of Lemster invariably speak of their streams in this mode, the definite article so commonly used before the names of rivers being justly considered superfluous. Some say that this usage of the Lemstrians arises from the elegant, refined, and poetic taste, universally acceded to them; others, less indulgent, insinuate that the small value of the streams, in a commercial point of view, none of them being navigable,^b induces the laconic phraseology. As rather favouring the latter opinion, it may be observed, that the principal streets, and the marts where money is made, are almost invariably spoken of with the definite article prefixed, as “the Bargates,” “the Poplands,” “the Etnam-street,” “the Draper’s-lane,” &c. &c. The Insect-Hunter must not presume to theorize on such an intricate subject as the origin of these customs, but leave the important inquiry to the resident and enlightened Lemstrians, a race of men alike eminent for the liberality of their views and the variety of their attainments.

^a Also spelt Kewstope.

^b An Act of Parliament was passed in the fourteenth year of the reign of Charles II. “to open and improve the navigation of the river Lug in Herefordshire.”

The seven waters or streams of Lemster eventually merge in one, now called Lug. The earliest name we find for this highly important and picturesque river is Llug-Gowy; we subsequently trace it through these various etymologies,—Llugowy, Llugwy, Lugwy, Luggie, and Lug. I will now endeavour to trace the course of this stream: whether this be more correctly done upwards or downwards I know not; but as more becoming so modest a hydrographer as myself, I shall begin at the little end, and so float downward with the current. The Lug rises in Radnorshire, eleven miles N.W. by W. of Presteign, at a place called Pool Hill; it flows by Lea Hall, crossing the road leading toward England at Llangynllo, then by Upper and Lower Weston, and Dole; then, after turning Mynaughty Mill, it passes under the road from Pen-y-bont to Knighton; hence it accompanies the road to the south, or right, for four miles towards Presteign, then crosses the road, and accompanies it to the north, or left, passing north of the town of Presteign, and crossing the two roads leading thence to Knighton and Lentwardine; then through Upper, Middle, and Letch Moors, under Rosses Bridge, by Kinsham, under Deerfold Bridge, to Shirley; then under Lyepool Bridge, by the Vallets, and under a bridge in the village of Aymestree, on the road from Lemster to Lentwardine; hence to Mortimer's Cross, the supposed field of a York and Lancaster battle.^c The Lug now passes under the road leading from

^c I say "supposed field," because there appears no proof whatever of the fact; some of the enlightened Lemstrians, however, thought otherwise, and from Grafton and Stowe, or perhaps some copier of these authors, they contrive to extract the following particulars, which, by subscription, they caused, a few years since, to be engraved on a pedestal erected near Mortimer's Cross:—"This pedestal is erected to perpetuate the memory of an obstinate, bloody, and decisive battle, fought near this spot, between the ambitious houses of York and Lancaster, on the 2d day of February, 1460, between the forces of Edward Mortimer, Earl of Marche, afterwards Edward IV., on the side of York, and those of Henry VI. on the side of Lancaster. The king's forces were commanded by Jasper, Earl of Pembroke. Edward commanded in his own person, and was victorious. The slaughter was great on both sides, four thousand being left dead on the field; and many Welsh persons of the first distinction were taken prisoners, among whom was Owen Tudor, great grandfather to Henry VIII., and a descendant of the illustrious Cadwallader, who was afterwards beheaded at Hereford. This was the decisive battle that fixed Edward IV. on the throne of England: he was proclaimed king on the 5th of March following. Erected by subscription, 1799." In this inscription there is scarcely one point wholly correct. The battle was not fought, at least we have no evidence that it was, near this spot;

Mortimer's Cross to Croft Castle, then by Kingsland, turning Kingsland Mill, it runs to the weir above Croward's Mill. Since the construction of this weir, the main stream runs in nearly a direct line to the town of Lemster; this course has all the appearance of being artificial, the original bed of Lug being the stream separated at the weir, and known by the name of Kenwater; the stream thus divided flows through the town under two separate bridges, and again unites near the Poplands turnpike, on the Ludlow road. About two hundred yards below this, the Lug receives the united waters of Cheaton and Ridgemoor, and then pursues its serpentine course by the Easters and through the Midsummer Meadows, passing under the London road at Eaton Bridge, one mile from the town of Lemster; immediately afterwards it receives Oney, and a mile lower, in the Volca Meadows,^d the waters of Arro also become tributary; it now accompanies the Hereford road by Wharton Court, running under Ford Bridge, and also a new bridge on the Ledbury road, to Hampton Park, then at the back of Hampton Court, the residence of Mr. Arkwright: it here receives Humber, and then takes a fine turn round Dinmore Hill, running under the bridge at Bodenham, and again comes nearly to the Hereford road, under Laston, Moreton, and Wergins Bridges; then through Lug Meadows, under Lug Bridge, where it turns a flour-mill, and by Bainton Wood, Tidnor Forge, Court Farm, where it receives the river Frome, and Hampton Bishop to Mordiford, where it falls into the Wye.

The course of Lug is explained.

the day, the month, and the year of the date, are incorrect; the number of men killed is not so given by any historian; and the victory did not fix Edward IV. on the throne of England, or the dreadful battle of St. Alban's, which was previous to his accession, would not have been subsequently fought, nor would the house of Lancaster have been then triumphant. Cadwallader was never beheaded, as far as I can ascertain, although Owen Tudor was. Speed has thus described the battle in question. "Upon the virge of this shire, betwixt Ludlow and Little Hereford, a great battail was fought by Jasper Earle of Pembroke, and James Butler, Earle of Ormond and Wiltshire, against Edward Earle of March, in which 3800 men were slain. The two earles fled and Owen Teuther taken and beheaded. This field was fought on the day of the Virgin Marie's purification in anno 1461; Wherein before the battail was strok appeared visibly in the firmament three sunnes, which after a while joyned all together, and became as before; for which cause (as some have thought) Edward afterwards gave the sunne in his full brightness for his badge and cognizance."

^d The Lemster race-course.

CHAPTER XIII.

[Legends of Lug.]

It may possibly be remembered by some of my readers, that in a former part of this narrative the Grouse-shooter, (now, alas ! no more) the Cynophobist, and the Insect-Hunter, are represented as sitting on the summit of the Black Mountain and communing together : further, that the Grouse-shooter then and there narrated the history of the Monster of Mordiford ; and further still, that the Insect-Hunter deferred the publication of that history to a more convenient and appropriate time ; that time has now arrived, and together with the history of the Monster of Mordiford, the Insect-Hunter will now present to his readers two other histories equally instructive.

A great deal may be said or written very sensibly, (and withal very argumentatively, conclusively and satisfactorily, to the speaker or writer,) on the impropriety of introducing into a strictly veracious narrative, legends which are not attested by witnesses in whom perfect confidence can be placed ; but in reply to orations and essays on this subject I would say, in the first place, that I do not record these matters as facts, but as fables. I would say, secondly, that the fables connected with a particular spot are to be reckoned as portions of its history, they are the peculiar property of that spot, and were they passed over unnoticed an evident injustice would be done. There are few legends, moreover, that are not founded on fact, actually based on truth ; it is the sad propensity to exaggeration seemingly inherent in man that has so altered them that their pristine form is wholly lost ; this spirit of exaggeration is universal. It is but a few weeks since a poor man came to a most melancholy end, by the locomotive engine on a railway passing over him. The penny-a-line men were instantly at work ; the accident was recorded in every paper ; the cause was in every instance stated to be the bursting of a boiler, the lowest number of persons killed was stated at " nine ;" the highest at " nearly a hundred, besides many so seriously injured, that we regret to state there is little prospect of their recovery." Yet mark this ! an *accident* did happen, and a *steam* accident, and a man was *killed* ; the wild statements and maudlin regrets of the scribes were therefore based on truth.

In the same way do fictions of the most marvellous kinds rise out of facts. Fact is the source, the clear well-head of the stream, fiction is the mud that afterwards defiles it. Fact is more abundant, more fertile, indeed, more amusing than fiction. With regard more especially to local legends, the learned antiquarians, though foiled in all attempts to strip them of their fictitious garb, are yet often glad to consult them, as giving a decided clue to an obscure etymology, or a doubtful site. The Insect-Hunter may refer to Leland, Speed, Camden, Baker, Smollett, Rapin, and others, as his authorities, and also to several residents, who can bear witness that these legends have been handed down from generations long forgotten, and many persons will be found still living, who speak of them as of matters of fact.

Legend the First.

The Monster of Mordiford.

Once upon a time there was a great dragon lived on a hill near the town of Mordiford. His body was covered with bright scales, which shone like burnished brass, and the scales were so hard, that no weapon could pierce them; his teeth were a foot in length, and as sharp at the points as needles, and there were three hundred and fifty-two in each jaw. The claws of his feet were bent, and as long as a mower's scythe; his eyes were as large as a man's head, and shot forth flashes of lightning which killed whatever they struck; his breath was a flame of sulphur, and killed every beast that breathed it. He devoured all the sheep and the lambs, all the cows and the oxen, and the horses, and all the sows and the pigs, and hundreds of men that worked at the farms on the hill. He glanced at them with the lighting of his eye, and slew them and devoured them: of the cows and the oxen and horses he made two mouthfuls each, and of the sheep and the lambs, and the sows and the pigs, he made one mouthful each.

Great rewards were offered to any one who would undertake to kill this monster, and a great many men went out well armed against him, but the monster first slew the men with his eye, and then ate them with his mouth. It so happened that at this very time there was a notorious criminal under sentence of death in the jail at Hereford, for having cut off the ears of

his wife, and the nose of his wife's mother. Now this criminal said he would kill the monster, if the king would spare his life. So the mayor of Hereford sent for a priest, and ordered him to write a letter to the king, and to tell him of the monster and of the offer of the criminal. And the priest, wrote the letter and sealed it; and the mayor gave it to a groom, who rode eight days with it, and on the eighth night he arrived at Windsor, while the king was sitting at supper, eating a venison pasty, with the queen and his eight children, and two priests. When one of the priests read the letter to the king, he was much troubled, and he rose and left his pasty, and walked up and down the room, and he girt on a double-handed sword at his back, and took courage, and told the priest to write to the mayor of Hereford to allow the criminal to live if he would kill the monster. Then the priest wrote as the king commanded, and the groom took back the letter, and in seven days he arrived at Hereford, and gave the letter to the mayor.

The next day when the criminal was told that the king had agreed to pardon him if he would kill the monster, he provided himself with a gun with a very long barrel, and he loaded it with a bullet made of silver. He then bought an empty cider hogshead, and took out the head; and he put the cider hogshead in a waggon, and then got into the hogshead with his gun, and the head of the hogshead was again put in its place, and the criminal carefully concealed inside. There was a certain place at the meeting of the waters of Lug and Wye where the monster came down every day to drink exactly as the clock struck twelve: so the criminal directed that the hogshead, with himself inside, should be drawn in the waggon, and taken out and left at this place; and all this was done, and the man drove the waggon away.

Exactly at twelve o'clock the monster came down to drink, which the criminal knew by the hideous roaring, and also by the powerful smell of sulphur which oozed through the crevices of the hogshead, so he knocked out the bung, and thrust the barrel of the gun through the bung-hole. Then he saw the monster come up slowly out of the water and look about him for somebody to eat: and the criminal trembled with affright, but, recollecting the opportunity of saving his own life, he took steady aim at the monster's left eye, and shot him through the head. Then the dragon breathed forth a terrible stench, and

leaped in the air to the height of fifty-three feet, and fell on his back. His wings stretched out for a moment, quivered, and then folded over him, and he died. But the stench which the monster sent forth, came through the bung-hole of the hogshead, and killed the man; which shows very clearly that he should have taken the precaution to take out the bung from the inside, and instantly replace it when he had fired.

Legend the Second.

The Lion of Lug.

Merivald, or Merowald, or Merwald, or Merewalch, was king of Hereford, A.D. 625. This kingdom originally formed part of the great kingdom of Mercia, founded by Crida, A.D. 584, but was separated therefrom by Ethelred, in favour of his brother Merowald. Now Ethelred himself had no title to the kingdom of Mercia, but therein supplanted his nephew Kenrid, the son of Wolpher, the son of Penda. Merowald was a man of very good intentions, but it does not appear he had the honesty to act on them. He was always lamenting that his brother Ethelred and himself should usurp that which belonged to their nephew Kenrid, but he had not the honesty to give up even that portion which he himself held. His heart constantly wavered between avarice and generosity. Merowald held his court at Llednau, now Lemster,^d the principal town in his kingdom, and his mind was ill at rest. So he left his palace one night, and wandered down to the banks of Lug, and made as though he would have drowned himself in its waters. And he reasoned with himself: "Wherefore," said he, "do I hold a kingdom that is not mine? I will hold it no longer; yet will not turn out a beggar and a vagabond; I will die, and my kingdom will pass to its rightful owner." He stood on the river's bank. Then there was a loud rushing noise, and a huge lion came up out of Lug, and shook himself thrice, and came and stood before him. Merowald trembled with affright. Then the lion spoke and said: "Merowald, I know thy determination, and I come to turn thy mind to better things: thy

^d Leland says that king Merwald had a castle or palace on a hill-side by the town of Lemster. "The place," he adds, "is now called Comfor Castle, and there are to be seen tokens of ditches where buildings have been." The Insect-Hunter is not aware of the precise spot to which Leland refers.

life will be short enough, so hasten not its end. Kenrid shall rule over all Mercia; but go thou and build a house for religious virgins; and build it over the brook called Oney, so that the brook may flow through the house, and refresh it. Do this, and thy mind shall be at peace." Then the lion returned to the river, and Merowald went home to his palace: and he arose the next morning, and called together the masons, and the builders, and the drawers of plans; and he forthwith began, and he built a nunnery over the brook Oney; and from that day, the house was called Le-Oney-minster, and the town was known by the same name. When the religious house was completed, Merowald died, and his brother Mercelin succeeded to his kingdom. Mercelin died without issue, and the kingdom of Hereford was again united to the kingdom of Mercia. Ethelred, the king of Mercia, then resigned his kingdom to his nephew Kenrid, to whom it of right belonged, and retired to the monastery of Bardney, of which he became abbot.^e

Legend the Third.

The March of Marcle Hill.^f

There is in Herefordshire a hill called Marcle Hill; it is situate eight miles S.E. of Hereford, four miles S.E. of Lug at Mordiford, six miles N. of Ross, two miles N. by E. of the river Wye at How Caple, two miles N.W. of Much Marcle, nine miles S.E. of Malvern, and three miles S.W. of Little Marcle. It is a long ridge, running north and south, and forms part of a circle or amphitheatre of hills, which extend unto Stoke Edith on the north, unto Mordiford on the west, and unto Settler's Hope on the south; Marcle Hill and Seagar Hill constitute the eastern portion of the circle. Marcle Hill has wood land, and corn land, and pasture land.

^e Camden, in his "Britannia," treats this history with disdain.

^f In this instance I shall give the account of the wonderful movement of this hill in the words of Speed. I quote his "Theatrum Imperii Magnæ Britannæ, imprinted at London anno 1610:" the event occurred in this author's life-time.—
"Majoris vero miraculi vel admirationis, opus Dei Omnipotentis nostrâ etiam memoriâ, anno Jesu Christi 1571, illud fuit: cùm collis quem Marcle Hill vocant, in hac regione, ad ortum, alto quasi somno solutus consurrexit, et horrido reboans mugitu, à loco ubi constiterat se promovit, ac triduum a priore sede sua magno cum stupore attonituque spectantium timore progressus est. Inijt illi quidem hoc iter suum septimo Februarij, qui fuit Saturni dies ad sextam horam

It was at six o'clock in the evening of the seventh^s day of the month of February, in the year of our Lord one thousand five hundred and seventy-one,^h that the wonderful movement of this hill began to take place, and it was not till twelve o'clock at noon on the following Monday that the hill again stood still. The earth opened along the brow of the hill on both sides, with a mighty bellowing noise, which resounded along the earth and re-echoed in the air, and was heard at the distance of hundreds of miles; and then a huge rock heaved up from beneath more than twenty acres of the hill, and lifted it to a great height; and when it had so lifted it, the trees that grew upon it remained upright, and there were cattle grazing in the fields, and sheep in their folds. When it was lifted, it began to move forwards; and passing along, it came to Kinnaston Chapel, and threw it down, and crumbled it to atoms, and buried it. And it still pressed forwards, and tore up the trees in the fields, and destroyed the crops, and buried the cattle, and the horses, and the sheep: and two public king's highways were wholly buried beneath its mass; and they were afterwards made altogether afresh, in far different directions, more than three hundred feet from where they originally were. At last it stood still in its present situation, having marched forwards for the space of two-and-forty hours. And the gap from whence it first rose remained empty, and was forty feet in breadth, and more than four hundred feet in length.

vespertina: ante septimam verò insequentis diei matutinam; quadriginta passus processerat, obvia quæque secum deferens et propellens, oves suis in ovilibus, sepimenta arboresque: quarum aliæ prostratæ feruntur, aliæ quæ in plano antea sitæ nunc in locum superiorem et ipsum montis clivum elatæ firmiter increscunt: quæ ad ortum positæ, in occasum versæ sunt; et vice versa, ab occasu in ortum permutatione facta translata. Quo quidem motu suo, Kinnaston Capellam funditus evertit, publicasque sive regias vias duas tercentum ferè pedes è consuetis suis tritisque tramitibus divertit. Solum ipsum quod hunc in modum iter (ut ita dicam) fecit; viginti plus minus jugera occupavit: quod sese aperiens cum saxeis Rupibus et quibuscunque intra suum ambitum perpetuo motu terræ molem præ se spatio mille ducentorum pedum protrusit: relictis post se arborum loco pascuis, arvisque pascuorum viriditate jam obductis. Tandem verò, obrutis prorsus inferioribus suis partibus, in molem surrexit, ad duodecim orgyiarum altitudinem, atque ibi post triduanum iter suum requievit. Specimen sanè et argumentum illius qui huic Rupi manum immisit suam, cujus potentia montes etiam et colles bilance sua libravit."

^s Sir Richard Baker, in his "Chronicles of the Kings of England," gives the 17th of February as the date, but still says it was Saturday evening.

^h Camden, in his "Britannia," dates this event 1575, but afterwards corrects this and substitutes 1571, the date given by Speed and Baker.

CHAPTER XIV.

[In which the Insect-Hunter treateth of the brook Oney, and of the Lady Pools.]

The brook Oney, like its companion Lug, rejoices in a variety of appellations; and we find its course laid down in all the maps, though in no two alike, and its title given as Oney, Pinsoley, Pinsoly, Pensoly, Pensilly, and Pinsley; but Speed, Camden, and all the best early authorities, call it Oney. This stream rises at Milton, to the west of Shobden Marshes, and runs through those marshes; and, south of Kingsland, forms the mill-head at Waterloo Mill, near Cobnash, and winds along the Kingsland meadows, by Walton's and Wegnall's, into the town of Lemster, through which it passes, flowing under an inhabited house, beside the Priory, or poor-house. It turns two flour-mills near the bottom of the Etnam-street, and then runs nearly in a direct line along the Midsummer meadows, passing under the London road, about a mile out of Lemster, and immediately afterwards falling into Lug, as before specified.

Although the extreme source of Oney, or Pinsley, as it is more generally called, is undoubtedly at Milton, a great portion of its water is derived from the Lady Pools, in Shobden Marshes. These are large basins, shaped like inverted cones, and of great depth, varying from thirty to forty feet; the largest is about twenty or twenty-five feet in diameter, but the margins are so unstable, that it is difficult to measure them with much accuracy. They contain water of the most brilliant purity, and their bottoms are covered with sand almost as white as snow, which is thrown up by the great force of the spring, and seems to be in a perpetual boil: the surface is perfectly calm, and without the least ripple.

The Insect-Hunter had frequently heard of the fame of these strange pools, and therefore determined to visit them. A company, consisting of the Cynophobist, and three industrious Insect-Hunters, was formed; and two gigs being obtained, the party started on a cloudless summer day, to examine these natural curiosities. We left our vehicles at a way-side public-house of humble pretensions, and, procuring a guide, were

quickly conducted to the marshes. The ground, in many parts of these marshes, is more than semiaqueous. Our guide had provided himself with a pole, nearly twenty feet in length; and demonstrated the nature of the substance on which we trod, by occasionally running its whole length into what appeared merely a puddle. On reaching the Lady Pools, we found them quite answer our expectations—rather a rare occurrence, when you have heard much in favour of any particular object. The description Southey has given, in his rhapsodical fiction of *Thalaba*, is so exceedingly accurate, that, although the Insect-Hunter is but little given to the practice of quoting, he cannot in this instance forbear:—

“ His aching eye pursued her path,
 When, starting onwards, went the dogs ;
 More rapidly they hurried on,
 In hope of near repose.
 It was the early morning yet,
 When by the well-head of a brook
 They stopt, their journey done.
 The spring was clear, the water deep,
 A venturous man were he, and rash,
 That should have probed its depths ;
 For all the loosened bed below
 Heaved strangely up and down,
 And to and fro, from side to side,
 It heaved, and waved, and tost ;
 And yet the depths were clear,
 And yet no ripple wrinkled o'er
 The face of that fair well.

“ And on that well, so strange and fair,
 A little boat there lay,
 Without an oar, without a sail ;
 One only seat it had—one seat,
 As if alone for *Thalaba*.”

It appears, from a note appended to this passage in *Thalaba*, that a similar pool exists near Bristol, about a mile from Stokes Croft. There is something very strange about these pools. The excessive agitation at the bottom, demonstrated by the boiling up of the sand, and the continual and rapid motion of luxuriant weeds, which grow from the sides—the mirror-like stillness of the surface—the extreme pellucidness of the water—the symmetry of the circular form, are all remarkable characters. In the most severe frost, they are never

crusted with the slightest covering of ice; indeed, ice thrown into them is rapidly melted. In warm weather—and it was a remarkably warm day when we paid our respects to them—the water is painfully cold. These facts as to temperature are, however, to be expected, seeing so great a volume of water, and probably from a considerable depth in the earth, is continually thrown up.

In the neighbourhood of these pools, and on the margins of Oney, the Insect-Hunter observed numerous tracks of otters. This animal is here a kind of game in much request, and is hunted by large wire-haired dogs, bred for the purpose.

CHAPTER XV.

[This Chapter treateth of the Priory.]

Reader, if the hydrography of Leominster prove uninteresting to thee, I shall be very sorry; but the remedy is in thine own hands. I recollect an old lady, who used to teach the rudiments of our vernacular tongue, unto whom, not being very profound in the science, it frequently happened that a word occurred, altogether beyond the power of tutor or pupil to decipher: the old lady would not then allow one to hammer at the word for half an hour, but would dismiss the intricate inquiry by saying at once, “Skip it, child! Skip it.” So, dear reader, if my stupidity leads thee to dose over the Insect-Hunter, I can only say, “Skip it, child! skip it; there is abundance of Latin further on.”

It has, I believe, been before stated, that the Priory is built over the brook Oney. Now, those who have visited many religious houses either in Britain or on the continent of Europe, will doubtless have observed, that a majority of them are thus accommodated with a stream of pure water, running, as it were, through their very hearts. We shall, perhaps, be able to throw a little light on this subject. In all ages, the members of the priesthood have regarded with infinite care the welfare of their own bodies and of others' souls; yet, without intending the slightest disrespect to the divines of 1836, I must in candour say, that I consider those of 1400, *et ante*, infinitely better versed in the science of gasterology. Gasterology appears,

for many hundred years, to have been their single study—the sole object to which their gigantic powers of intellect were directed. The opera did not exist—fox-hunting had never been dreamed of—games of chance were considered unclerical—what could they do? Is it surprising that the operation of eating became a science of the deepest interest? The object, then, of this close propinquity of running water was to preserve fish in living freshness, until the very hour they were required for the table.

It is best here to state, that some doubt has been thrown upon the historical account of the Priory having been built by Merowald, over the brook Oney; and there are those who state, that the present channel of the stream was cut by order of the monks, after their taking possession of this edifice, in the reign of Henry I., who, it is said, abolished the nunnery, in consequence of the sins of the fair sisterhood, and established this building as a priory, under the government of the celebrated monastery at Reading. Whoever will take the trouble to examine the course of Oney, from the town to its union with Lug, will think this conjecture far from improbable. We must not, however, forget that still greater praise is due to these scientific divines, supposing the conjecture correct; for it then appears, that they actually accomplished the laborious task of turning the course of a river, for the advancement of their favourite science of gasterology. What an example to its lukewarm professors at the present day!

The fact is obvious, that this exquisitely clear stream actually flowed under the kitchen of the Priory. On either side, above and below, there was, doubtless, as in a hundred other instances, a fine grating. Within the inclosure were preserved hundreds of that most exquisitely flavoured fish, the grayling; a fish still abundant in the stream. It is not, perhaps, generally known, that this princely fish has, when cooked immediately on being taken from the water, a taste and smell like a fresh cut cucumber: it is very seldom this treat can be obtained. The monks were perfectly aware of this quality, and of the great difficulty in availing themselves of it. They therefore contrived, by thus keeping a living supply of the delicacy as near as possible to the fire that was to cook it, to command the luxury whenever required. At a minute's notice the stone in the kitchen-floor was removed, the

landing-net introduced into the *receptaculum*, and the fish transferred to the gridiron. The Insect-Hunter has never partaken of a grayling cooked alive, and in truth, does not desire to do so: the delicacy is too *recherché* for a layman: but he can bear witness to the excellence of the Lemster grayling, and does not wonder at the trouble taken by the reverend gourmands to procure this luxury in its greatest perfection.

CHAPTER XVI.

[In which the Insect-Hunter speaketh of Fishing and Fishing-flies.]

It may be supposed that Lemster, seeing that its entire neighbourhood is so intersected with streams, must be essentially a fishing town. It is peculiarly pleasant to see the Lemstrians throw off the cares and toils of life, and issue forth on a calm summer's evening, to enjoy the luxury of fishing. I have often been delighted at the intense interest displayed in watching the float in its passage down the stream; had kingdoms depended on the result, the interest taken could not have been greater: it is, moreover, exceedingly pleasing to contemplate the content with which an angler will return home without even having had a single bite. It is no uncommon thing for men, much engaged during the day, to rise at three or four o'clock of a summer's morning, walk many miles to a favourite spot, fish whole hours without a bite, and return with beaming countenances and contented hearts, to the business of the day.

Although this is so completely a trout country, there exists a great prejudice against fly-fishing. It is occasionally resorted to when the grey drake¹ is on the wing; but even then very partially adopted. The banks of all the rivers are much overgrown with alder, whitethorn, and other shubby trees; and these are a very great annoyance in whipping with a fly, as the line is constantly getting entangled. I recollect an instance in which the feeling against fly-fishing was eminently called forth; Sir Humphrey Davy's delightful *Salmonia* was indignantly rejected by a Book Society, expressly because it professed to

¹ The grey drake is the imperfect imago of *Ephemera vulgata*.

treat of fly-fishing. The argument used was, that true fishermen always fished "bottom;" and, therefore, that Sir Humphrey did not understand fishing. Thus, it seems, that although an author may write never so pleasantly, and be a master of general knowledge, he must not hope to obtain a reading on subjects of such vast importance as angling; for those more skilful than himself are more qualified to teach than to learn: still, to the unlearned, Sir Humphrey's is a delicious book.

The grey drake is a fly after which trout are excessively greedy, and on which they get in excellent condition. It may, perhaps, be said, that this preference for the immature *Ephemera* is only ideal, and that the same insect, after having cast its last skin, would be equally acceptable, but that its flight is now so active, that it seldom has the ill-luck to fall in the water;—whereas, its sluggish, ill-sustained flight in the prior state makes it an easy prey. It is not unworthy of notice, that the *Ephemera* has a metamorphosis different from that of every other insect, and that this very difference causes it to become, as it were by wholesale, the prey of the scaly tribes. There are a variety of flies besides the grey drake, at which the trout rise eagerly; among these I may mention more particularly the pearl-flies and the stone-flies: the latter frequent the banks of the rivers in countless myriads: of an evening, when they are on the wing, the atmosphere is loaded with them. By day they rest on the alders and other trees by the river side; and, by a slight touch of his beating-stick, the Insect-Hunter has sometimes knocked hundreds into his net.

I have never yet seen an insect on the wing that possessed so elegant a flight as the perfect *Ephemera*, the white drake of fishermen. This common though beautiful insect is fond of company, seldom flying alone. It rises by an elegant movement of its wings, its slender triple tail being pendant and without motion: having mounted about four feet, it spreads its wings, and, holding them perfectly still, descends by its own weight to the spot whence it rose: in descending, the tail points upwards. Although words may describe the kind of flight in which this happy creature delights, the Insect-Hunter knows how vain would be his attempt to give any idea of its surpassing grace. He has watched for hours a company of these aerial dancers, and has never yet been tired of gazing

on them. The only object of the flight appears to be the enjoyment of the moment—it is the overflowing of that cup of happiness, which a great and beneficent Creator freely offers to all his creatures.

CHAPTER XVII.

[In which the Insect-Hunter traceth the course of Arro, and other minor streams.]

The source of Arro is unknown to me ; nor can I tell which of the various streams, uniting in its early course, is entitled to the name of Arro. A considerable brook rises in Glascwn Hill, and runs by Fualt, Dole-y-frau, and Llanyoyn, to Newchurch. Another stream flows out of Rhos Goch, a wet marsh, north of Clyro, and is called Cum Illa Brook ; this joins the Glascwn stream near Newchurch, and, from the junction, the stream is known by the name of Arro. From Newchurch Arro winds up a long valley to Kington, turning Milton's, Hale's, Hergest, and one or two other mills ; for three miles before it reaches Kington, it is accompanied by the road leading from Hay, which crosses it at Hergest Court, a mile and a half out of Kington. From Kington it runs N.E. to Staunton-on-Arro, turning two mills ; then S.E. to Pembridge, passing a quarter of a mile N. of that village ; then E. to Eardisland and Monkland ; at both places are bridges over it ; thence under a bridge between Newton and Ivington ; soon afterwards it receives Stretford Brook, and the united stream runs under Broadward bridge, a mile and a half S. of Lemster, on the Hereford road, and along the Volca meadows to its junction with Lug.

Stretford Brook rises near Sarnesfield, and passes near the ancient borough of Weobly, and thence through Stretford and Ivington to Broadward, where it joins Arro.

Ridgemoor Brook rises N. of Leominster, at Orleton common, and comes through Eye and Luston, and through the Portley Marshes, in a very direct line to Ridgemoor Bridge, one mile from Leominster, on the Lower Ludlow road.

Cheaton, or Stockton Brook, rises N. of Kimbolton, and, running by Stockton, joins another brook, which appears unnamed : the latter rises N. of Olden Barn, and runs S. by the

Brook Farm and Hennor; then turns N., taking the circuit of Eaton Hill, and joining Cheaton, falls into Ridgemoor at Ridgemoor Bridge; and the united stream immediately afterwards falls into Lug.

Humber rises near Bockelton, runs S.W. under the London road at Steen Bridge, four miles from Lemster; then S. by Risbury Camp, under the Ledbury road, four miles and a half from Leominster; and unites with Lug at Hampton Court.

The waters of Leominster are described.

CHAPTER XVIII.

[In which the Insect-Hunter talketh of Fish.]

A fish occasionally occurs in the waters of Lemster, which has given rise to considerable difference of opinion among fishermen; it is called the Samlet. Some insist that it is a yearling salmon; others as confidently assert that it is a totally distinct species. This fish was formerly found in considerable abundance, but is now so rare, that, although making continual inquiries, I have been unable to obtain the sight of a single one since the publication of Yarrell's *British Fishes*; and, therefore, have never had an opportunity of comparing it with the description and figure of the samlet in that work. Owing to some regulation by the proprietor of the fish lower down the Lug, the passage of the salmon has been stopped, or nearly so, and the capture of a salmon so high up as Lemster is now a very uncommon circumstance. Formerly, salmon used to be tolerably abundant, and averaged between five and six pounds in weight: those of a larger size than eight or nine pounds were always esteemed rarities; but there is on record an instance of one having been killed at Osborne's Mills, that weighed no less than thirty-two pounds. The simultaneous and almost total disappearance of both salmon and samlet, favours the opinion that they are one and the same fish; because, whatever means may have been taken to arrest the bulky salmon in their way up the stream at the season of migration, the same means would scarcely stop so diminutive a fish as the samlet. Salmon and samlet were more abundant in Lug than in Arro; in Oney, they were very rarely seen.

Trout are abundant in all the streams except Oney ; and, in this stream, they are not only comparatively rare, but inferior both in quality and size. There are two very different kinds of trout, as regards the colour of their flesh, some being very red, others nearly white ; intermediate shades of colour are uncommon. Whether, by a careful investigation, two species might be found, I am unable to say ; but it is the universal opinion of the fishermen, that there is but one. The trout of Arro are invariably of the red kind, and are finer in flavour than those of Lug. The redness of the Arro trout is attributed by the fishermen to the redness of the soil through which that river flows.

Grayling occur in all the streams, and are sought after with great avidity, on account of their excellence. Trout and grayling are taken by night in great numbers, with illegal nets, and are sold in the town the next morning : the price is almost invariably 10d. per lb., and the average weight of fish so sold is 12 ounces. The wives of the poachers carry the fish from door to door, and offer them for sale in the most open manner : the buyer never inquires how the women come by them ; he knows perfectly well that the ready answer would be, that they were taken with a rod and line—a sport perfectly open to all.

Pike are met with in all the streams except Oney, and even in this I have seen *one*. It was lying under the bank of the stream, in the Midsummer Meadows, not more than three hundred yards from the union with Lug. It was in the hay-making season : a countryman, with a fork in his hand, was passing, and it caught his eye. He crossed the stream to the opposite side, and, standing exactly over it, by a sudden stroke he ran his fork completely through the fish, and instantly brought it to land. It weighed two pounds and a half. Pike are much more abundant in the ponds than in the rivers, and attain a larger size.

Eels occur plentifully in all the waters ; in Oney they are particularly abundant : vast numbers are taken by night-lines.

Chub of large size—seven pounds and upwards—have been taken out of Lug. In Arro, Oney, &c., they occur, but of less size and less frequently : they are not uncommon in ponds.

Carp, trench, perch, roach and dace occur in all the ponds and streams ; in the latter sparingly : with the exception of

tench and perch, they are little esteemed, and, consequently, little sought after.

A large lamprey was killed in Lug many years ago; but this fish is usually very small, not exceeding 10 inches in length.

The miller's-thumb is abundant, particularly in the shallow streams with stony bottoms; the loche, minnow, and stickleback occur in the same situations. The stickleback is said never to have been seen in Arro; but this seems very unaccountable, and I am inclined to doubt the accuracy of the statement.

Gudgeon occur in Lug, but much more frequently in the canal. The canal also produces pike, carp, tench, perch, roach, dace, eels, minnow, loche, and miller's-thumb.

The fishes of Leominster are enumerated.

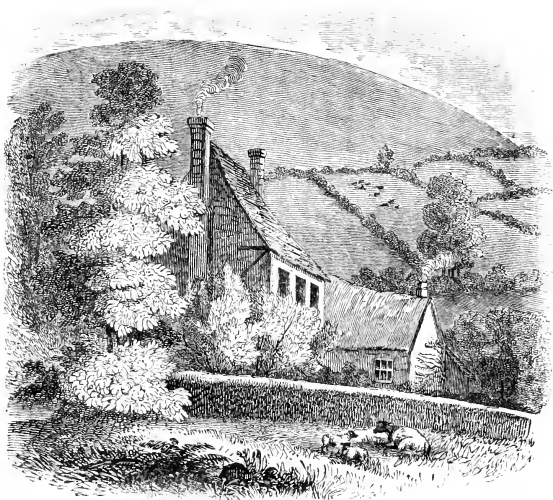
Preface to the Second Series.

It is known to every book-writer, that the preface is the very end of his labours. Still, such is the mendaciousness of man, that he always places it at the beginning—the author of *Tristram Shandy* excepted, who veraciously places it where he wrote it—in the middle. I think it is rather new to put the preface at the end.

The reader, the courteous and gentle reader, of the *Entomological Magazine*, has observed divers wood-cuts, having no apparent connexion with the text: thus, a public-house was made to illustrate “Bowerbank on the Circulation of the Blood;” and a Quaker's meeting-house embellished “Douglas' Random Thoughts.” Now, although the sapient may attempt to prove, that public-houses cause a circulation of the blood, and that Quakers' meeting-houses are places for random thoughts, be it distinctly understood that no conclusions of the kind were intended. Again, the residence of Thomas Rogers is to be placed at the end of this article, whether convenient or inconvenient, although that great man is yet in need of an introduction to my readers; moreover, in the next space an intended representation of the Needles, as seen from Alum Bay, is to be introduced. All these were designed by the Insect-

Hunter as illustrations of his "Wanderings." They represent very faithfully the objects from which they were drawn; although, in justice to the engravers, it should be stated, that they complained grievously of the want of composition in the drawings, and also of their being positively commanded to make exact copies without embellishment. In these respects, tastes widely differ. The Insect-Hunter likes faithful representations of all things. He would rather possess exact though homely likenesses of his friends, than more brilliant ones, nominally representing the same person, but modelled after the Venus de Medicis and the Apollo Belvidere.

But the Wanderer is wandering from his subject. The want of connexion between the cuts and the accompanying text is the difficulty before us; and that difficulty he hopes to obviate on a future, and, mayhap, not far distant occasion, by reprinting these chapters, with an illustrative cut at the head of each.



ART. LIII.—*On the Dryinidæ, &c.* By FRANCIS WALKER.

DRYINIDÆ, *Haliday.*

Metallæ lobatæ.

SECTIO I.

Caput longitudine latius : antennæ *mari* et *fem.* 10-articulatæ.

Genus DICONDYLUS, *Haliday.*

—— DRYINUS, . *Latreille.*

—— APHELOPUS, *Dalman.*

—— LABEO, . . *Haliday.*

SECTIO II.

Caput longitudine vix latius : antennæ articulis *mari* 10, *fem.* 13 :
alæ areolatæ.

Genus EMBOLEMUS, *Westwood.*

SECTIO III.

“ Caput latitudine longius : antennæ prope os insertæ articulis nu-
merum 10 superantibus : alæ disco exareolatæ.”—*Haliday, MSS.*

Genus EPYRIS, *Westwood.*

The name *Dryinidæ* should be confined to the first section. I have added the description of *Bethylus*, which has much external resemblance to *Epyris*, though it is one of the aculeate Hymenoptera.^a

SECTIO I.

Palpi maxillares	}	5-articulati	DICONDYLUS.
		6-articulati <i>Fem.</i> propedum	maximi. . DRYINUS.
		ungues	minuti. . APHELOPUS.
		3-articulati	LABEO.

Genus DICONDYLUS, *Haliday.*

Corpus pubescens : caput magnum, transversum, breve, thorace multo latius, scite et conferte punctatum, parum nitens, supra impressum, postice concavum ; frons abrupte declivis : oculi ovati,

^a Ent. Magazine, I. 273, 276 ; II. 219.

extantes, maximi, capitis latera tota occupantes: ocelli approximati, vertice triangulum fingentes: palpi maxillares 5-articulati: antennæ clavatæ, pubescentes, corporis dimidio breviores; articulus 1^{us}. fusiformis, validus; 2^{us}. sublinearis, brevis; 3^{us}. longissimus; 4^{us}. et sequentes sublineares, usque ad 9^{um}. curtantes et latescentes; 10^{us}. apice conicus, 9°. paullo longior: thorax longus, angustus, convexus, subnitens, leviter rugosus, medio coarctatus; discus fere lævis: prothorax magnus, mesothoracis latera antica amplectens: mesothorax longus, angustus; segmenta fere in unum confusa: metathorax ovatus, magnus, altus, ad apicem tranverse sulcatus: petiolus brevissimus: abdomen ovatum, convexum, nitens, læve, glabrum, thorace latius et multo brevius; segmentum 1^{um}. maximum; 2^{um}. mediocre; 3^{um}. et sequentia brevia: propedes longi, crassi; coxæ magnæ; trochanteres arcuati, longissimi; femora incrassata; tibiæ validæ; tarsi lati, articuli 2^{us}. et 3^{us}. brevissimi; ungues maximi, reflexi: meso- et metapedes simplices; coxæ sat magnæ; trochanteres breves; femora valida, metapedum clavata; tibiæ rectæ; tarsi graciles, articuli 1°. ad 4^{um}. curtantes, 5^{us}. 4°. paullo longior: ungues et pulvilli minuti: alæ nullæ.

Sp. 1. Dic. pedestris. Fem. *Ater*, caput subtus fulvum, antennæ basi fulvæ, thorax fulvo varius, pedes fulvi picco varii. Pl. XVI. fig. 5.

Dryinus formicarius. Dalman, *Analecta Entomologica*, 14. 12.
Dryinus pedestris. . Dalman *Kongl. Vetens. Acad. Handl. för år 1818*.

Dryinus bicolor. . Haliday, *Curt. Brit. Ent.* v. 206, 207.

Gonatopus sepsoides, oratorius et Ljunghii. Westwood, *Lou- don's Mag. Nat. Hist.* vi. 496.

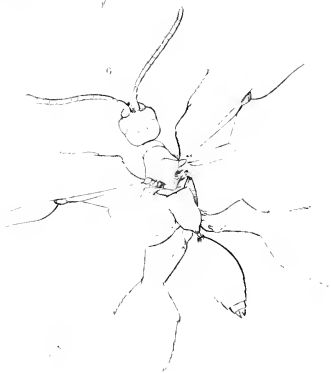
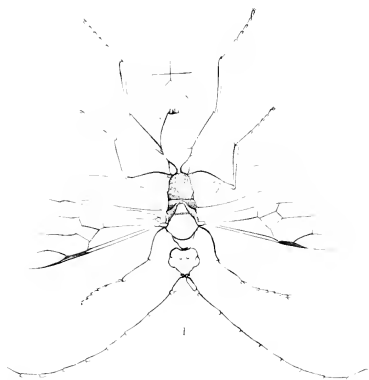
Ater: caput antice et subtus fulvum: oculi et ocelli picei: antennæ nigrae; articuli 1^{us}. et 2^{us}. fulvi; 3^{us}. basi fulvus: pedes fulvi; propedum coxæ piceæ; femora picea apice fulva; mesocoxæ piceo-fulvæ; metacoxæ piceæ; meso- et metapedum femora pallide picea apice fulva; tarsi fuscii. (Corp. long. lin. 2—2½.)

Var. β.—Propedum trochanteres flavi, femora nigro-picea apice flava, tarsi fusco cincti: meso- et metatarsi flavi apice fulvi: metapedum femora fulva, basi et apice picea, tibiæ apice fusca.

Var. γ.—Propedes fulvi, femora basi extus picea: meso- et metapedes fulvi, tarsi pallidiores apice fuscii.

Var. δ.—Caput subtus fulvum: antennis articuli 1^{us}. et 2^{us}. flavi:

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pro- et mesothorax plerumque fulvi: pedes fulvi: propedum coxæ et trochanteres flava, femora basi et tibiæ extus nigro-picea: mesofemora piceo vittata; meso- et metatarsi pallidiores, apice fusci.

Found in Kent, by Mr. Haliday.^b June, Isle of Jersey.

Genus.—*DRYINUS*. *Latreille*.

Gonatopus, *Klug*. *Anteon*, *Jurine*.

Caput transversum, vix convexum, non impressum: oculi ovati, mediocres, laterales: ocelli 3 vertice triangulum fingentes: mandibulæ oblongæ, angustæ, subarcuatæ, 4-dentatæ: maxillæ parvæ; lacinia brevis; palpi 6-articulati, graciles, filiformes, articuli 1^{us}. et 2^{us}. breves: labium longum; ligula brevis, lata; palpi 3-articulati, submoniliformes breves, validi: propedum ungues maximi, reflexi: pro-ungues *Dryinorum* brevicollium quasi articulo tarsorum penultimo affixi.

Fem.—Caput magnum, thorace latius, pubescens, scitissime punctatum, utrinque rotundatum, postice concavum: oculi vix exstantes: antennæ extrorsum crassiores, pubescentes, ad os insertæ, corporis dimidio longiores; articulus 1^{us}. fusiformis, longus, validus, subcurvus; 2^{us}. longi-ovatus; 3^{us}. et sequentes sublineares, usque ad 9^{um}. minime curtantes et latescentes; 10^{us}. fusiformis, 9^o. paullo longior: thorax longi-ovatus, convexus, nitens, pilis nonnullis albis hirtus: prothorax transversus, scite squameus, antice angustior: mesothorax lævis, fere glaber: sutura transversa punctata; scutum transversum; paraptera et epimera non bene determinata; scutellum breve, fere hemisphæricum: metathorax magnus, crassus, obconicus, scaber, obscurus, per longum carinatus, ad apicem abrupte declivis: petiolus gracilis, brevis: abdomen ovatum, convexum, læve, glabrum, nitens; segmenta 5 dorsalia conspicua, 1^{um}. magnum, 2^{um}. et sequentia breviora: oviductus occultus: pedes longi, validi; coxæ magnæ; femora crassa; tibiæ rectæ; tarsi graciles, articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues et pulvilli parvi: propedibus femora valde incrassata; tibiæ latæ; tarsis articulus 1^{us}. longus, 2^{us}. et 3^{us}. breves, 4^{us}. longus, 5^{us}. brevior: alæ breves, angustæ, pubescentes, iridescentes; nervus humeralis stigma fere attingens; nervus basalis in discum declivis ramulo occurrit nervi humeralis apice rejecto, angulumque fingit obtusum; nervuli quoque nonnulli spurii; stigma magnum oblongum, ramulum emittens angulatum ad alæ apicem propensum.

^b Entom. Mag. II. 219.

Sp. 1. *Dry. collaris*. Fem. *Ater*, antennæ basi flavæ, prothorax fulvus, pedes flavi, femora fulva fusco varia, alæ limpidæ nonnunquam fusco fasciatæ. Pl. XVI. fig. 4.

Gonatopus collaris . *Dalman, Kongl. Vetens. Acad. Handl. för är*, 1818, 82. 7.

Dryinus collaris . . *Dalman, Analecta Entomologica*, 9. 2; *Nees ab Ess. Hym. Ich. affin. Monogr.* II. 373. 3.

Dryinus dorsalis . *Nees ab Ess. Hym. Ich. affin. Monogr.* II. 372. 2.

Ater: caput ad os pilis albis sericeis vestitum: oculi et ocelli picei: antennæ nigrae; articuli 1^{us}. et 2^{us}. flavi; 3^{us}. et 4^{us}. fulvi; 5^{us}. fuscus: prothorax fulvus: petiolus piceus: pedes flavi; femora fulva; metafemora apice nigro-fusca; meso- et metatarsi apice fulvi: alæ limpidæ; nervi flavi; stigma piceum. (Corp. long. lin. 1½—2; alar. lin. 1½—2.)

Var. β.—Antennis articulus 3^{us}. fuscus; 4^{us}. et sequentes nigri.

Var. γ.—Prothorax antice fuscus: profemora intus basi fusca: alæ longiores, latiores.

Var. δ.—Proalæ apud stigma late at indistincte fusco fasciatæ.

Found at Holywood, near Belfast, by Mr. Haliday. July, in woods near London.

Fem.—Antennæ corporis dimidio vix longiores: thorax fere glaber: mesothorax inter scutum et scutellum depressus; parapsides conspicuæ, posticæ approximatae: alæ breves, angustæ.

Sp. 2. *Dry. ephippiger*. Fem. *Fulvus*, thorax postice niger, abdominis discus fuscus, alæ sæpe fulvo-tinctæ.

Gonatopus ephippiger . *Dalman, Kongl. Vetens. Acad. Handl. för är*, 1818, 81. 5.

Dryinus ephippiger . . *Dalman, Analecta Entomologica*, 9. 1; *Nees ab Ess. Hym. Ich. affin. Monogr.* II. 371. 1.

Læte fulvus: caput supra obscurius, antice flavum, ad os non vestitum: oculi et ocelli picei: antennæ flavæ: prothorax flavus: metathoracis discus niger: petiolus supra fuscus: abdominis discus obscurior: pedes flavi; ungues et pulvilli fusci: alæ fulvæ;

squamulæ et nervi læte flava. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Var. β.—Metathorax supra omnino ater: petiolus supra ater: metafemora apice fulva.

Var. γ. *Var. β.* similis: prothorax postice fuscus: mesothoracis scutum antice fuscum, postice nigrum: scutellum et metathorax omnino atra: abdominis dorsum basi piceum, apice fuscum: alæ limpidæ.

Found in Ireland, by Mr. Haliday. July, in woods, near London.

Sp. 3. *Dry. fulviventris.* Fem. *Ater, antennæ fuscae apice flavæ, abdomen fulvum, pedes fulvi, alæ limpidæ.*

Dryinus fulviventris . *Haliday, Curtis, Brit. Ent. v. 206. 6.*

Ater: oculi et ocelli picei: antennæ fuscae; articulus 1^{us}. fulvus; 7^{us}. et sequentes ad 10^{um}. flavi: abdomen fulvum, supra piceum: oviductus flavus: pedes flavi; propedibus coxæ basi fulvæ, femora basi fulva, tibiæ extus fulvo vittatæ, tarsi apice fulvi; mesopedibus femora et tibiæ pallide fulva; metapedibus coxæ basi et femora apice fusca: alæ limpidæ; squamulæ et nervi læte flava. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Var. β.—Antennis articulus 1^{us}. supra fuscus: abdomen supra fulvum, basi piceum: propedibus femora omnino fulva: metafemora fulva: tarsi basi fulvi.

Var. γ.—Antennis articulus 1^{us}. fuscus: propedibus femora fulva, basi fusca: mesofemora basi obscure fulva: metafemora fulva, apice fusca.

Var. δ.—*Var. γ.* similis: metatibiæ fulvæ.

Var. ε.—Pro- et mesothorax picei: pro- et mesopedes omnino flavi.

Found at Holywood, near Belfast, and in Kent, by Mr. Haliday. June, July; in woods near London. Isle of Wight.

Sp. 4. *Dry. lucidus.* Fem. *Ater, antennæ fuscae basi flavæ apice fulvæ, pedes fulvi flavo varii, metafemora apice fusca, alæ limpidæ.*

Dryinus lucidus . *Haliday, Curt. Brit. Ent. v. 206. 4.*

Ater, nitens, fere glaber: caput parce punctatum, antice pubescens: oculi et ocelli picei: antennæ fuscæ; articuli 1^{us}. et 2^{us}. flavi; 7^{us}. et sequentes ad 10^{um}. fulvi: pro- et mesothorax parce punctati: abdomen nitens, læve, glabrum: pedes fulvi; propedes flavi; femora et tibiæ extus fulva; meso- et metapedum trochanteres genua et tarsi flava, hi apice fulvi; metafemora apice fusca: alæ limpidae; squamulæ et nervi flava; stigma fusco-cinctum; ramulus fuscus. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Var. β.—Antennis articuli 7^o. ad 10^{um}. supra nigri: propedes omnino flavi.

Var. γ.—Antennæ fuscæ; articuli 1^{us}. et 2^{us}. fulvi: prothorax ferrugineus: abdomen basi utrinque et subtus fulvum: alis stigma fulvo-cinctum; ramulus fulvus.

Var. δ.—*Var. γ.* similis: antennis articuli 8^o. ad 10^{um}. subtus fulvi.

Var. ε.—*Var. γ.* similis: antennæ fulvæ; articuli 3^o. ad 5^{um}. fuscæ.

Var. ζ.—Species distincta?: antennæ et pedes omnino læte flava, illæ longiores: metacoxæ basi fuscæ: alis squamulæ et nervi pallide flava.

Found at Holywood, by Mr. Haliday. May to September, in woods, near London, Windsor Forest, Isle of Wight, North Wales. Taken at Paris by the Comte de Castelneau.

Sp. 5. *Dry. longicornis*. Fem. *Ater, antennæ fuscæ, basi et apice fulvæ, pedes fulvi, alæ limpidae vix fulvescentes.*

Dryinus longicornis. *Dalman, Analecta Entomologica*, 10. 4; *Nees ab Ess. Hym. Ich. affin. Monogr.* II. 375. 5.

Ater, nitens, fere glaber: caput scite sed non dense punctatum, antice albo pubescens: os flavum: oculi et ocelli picei: antennæ fuscæ; articuli 1^{us}. 2^{us}. 9^{us}. et 10^{us}. fulvi; 7^{us}. et 8^{us}. subtus fulvi: thorax fere lævis: mesothoracis parapsides distinctæ, postice approximatae; scutellum basi et apice in ordinem punctatum: abdomen læve, glabrum: pedes fulvi; tarsi pallidiores, apice obscure fulvi: metacoxæ basi fuscæ: alæ limpidae, minime fulvo tinctæ; squamulæ et nervi flava; stigma fulvo-cinctum. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. 2.)

Found at Holywood, by Mr. Haliday.

Sp. 6. Dry. flavicornis. Fem. *Præcedenti similis at crassior latior hirtior.*

Gonatopus flavicornis . *Dalman, Kongl. Vetens. Acad. Handl. för år 1818, 83. 8.*

Dryinus flavicornis . *Dalman, Analecta Entomologica, 10. 3; Nees ab Ess. Hym. Ich. affn. Monogr. II. 373. 4.*

Dryinus crassimanus . *Haliday, Curt. Brit. Ent. V. 206. 5.*

Antennæ fulvæ; articulo 3^o. ad 6^{um}. fuscæ: caput et prothorax dense punctata: mesothorax fere lævis: alæ fulvescentes. (Corp. long. lin. 1½; alar. lin. 2.)

Var. β.—Antennæ omnino pallide fulvæ: metafemora fusco vittata: alis stigma flavum.

Found at Holywood by Mr. Haliday. July, in woods, near London.

Fem.—Caput subquadratum, nitens, parce punctatum, thorace latius, antice albo-pubescentis; latera convexa: oculi vix extantes: antennæ graciles, extrorsum crassiores, corpore vix breviores, prope os insertæ; articulus 1^{us}. fusiformis, crassus; 2^{us}. longi-ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. minime curtantes et latescentes; 10^{us}. apice conicus, 9^o. longior: thorax longi-ovatus, nitens, vix convexus, parum punctatus, fere glaber; prothorax longus, antice angustior; mesothoracis scutum in uno confusum, scutellum breve transversum; metathorax obconicus, convexus, rugosus, obscurus, postice declivis: petiolus brevis, gracilis: abdomen longi-ovatum, convexum, nitens, læve, glabrum, thorace paullo brevius, apice acuminatum; segmentum 1^{um}. magnum; 2^{um}. et sequentia breviora: pedes graciles: alæ angustæ.

Sp. 7. Dry. ruficornis. Fem. *Ater, antennæ fusæ basi fulvæ, pedes fulvi, metafemora apice fusca, alæ limpide fulvo tinctæ.*

Gonatopus ruficornis . *Dalman, Kongl. Vetens. Acad. Handl. för år 1818, 83. 9.*

Dryinus ruficornis . . *Dalman, Analecta Entomologica, II. 5; Nees ab Ess. Hym. Ich. affn. Monogr. II. 375. 6.*

Dryinus rapax *Haliday, Curt. Brit. Ent. V. 206. 3.*

Ater: oculi et ocelli picei: os fulvum: antennæ fuscæ; articuli 1^{us}. et 2^{us}. fulvi; 9^{us}. et 10^{us}. fulvo-fusci: pedes pallide fulvi; tarsi flavi, apice fulvi; metapedum coxæ basi fuscæ, femora apice fusca: alæ limpidae, fulvo tinctæ; squamulæ et nervi flava. (Corp. long. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$; alar. lin. 1 $\frac{3}{4}$ —2.)

Var. β .—Antennis articuli 6°. ad 10^{um}. fulvi.

Var. γ .—Femora basi subtus fusca; metacoxæ fuscæ.

Found at Holywood by Mr. Haliday. June; Windsor Forest; Isle of Wight.

Fem.—Corpus longum, convexum, pubescens: caput magnum, nitens, parce punctatum, thorace multo latius: oculi vix extantes: antennæ subclavatae, validæ, pubescentes, corpore non breviores; articulus 1^{us}. fusiformis, validus, arcuatus; 2^{us}. fusiformis, gracilis, 1ⁱ. dimidio vix longior; 3^{us}. et sequentes longil inearis, ad 9^{um}. usque curtantes et latescentes; 10^{us}. fusiformis, 9°. longior vix latior: thorax longus, sublinearis, punctatus, parum nitens; discus lævior, nitentior: prothorax subquadratus, bene determinatus: mesothoracis parapsidum suturæ conspicuæ: metathorax rugosus, obscurus, ad apicem abrupte declivis: pectus scitissime et confertissime punctatum: petiolus brevis, gracilis: abdomen ovatum, convexum, nitens, læve, glabrum, thorace brevius non angustius; segmenta 1°. ad ultimum decrescentia: pedes longi, validi.

Sp. 8. Dry. frontalis. Fem. *Ater, antennæ nigræ basi fulvæ, pedes fulvi, metafemora apice picea, alæ sublimpidæ.*

Gonatopus frontalis . *Dalman, Kongl. Vetens. Acad. Handl. för år 1818, 84. 10.*

Dryinus frontalis . . *Dalman, Analecta Entomologica, II. 6; Nees ab Ess. Hym. Ich. affin. Monogr. II. 376. 7.*

Ater: oculi et ocelli picei: os fulvum: antennæ nigræ, pubescentes: articuli 1^{us}. et 2^{us}. fulvi: pedes fulvi; tarsi apice fusci; metafemora apice picea: alæ sublimpidæ; squamulæ et nervi flava; stigma fuscum basi flavum, ramulus fulvus. (Corp. long. lin. 1 $\frac{1}{2}$; alar. lin. 2.)

Found at Holywood by Mr. Haliday. June or July, near London.

Fem.—Corpus crassum, latum: caput subquadratum, thorace latius, nitens, parce punctatum, parum pubescens, utrinque convexum: oculi vix extantes: antennæ subclavatae, sat validæ, prope os insertæ, corporis dimidio longiores; articulus 1^{us}. fusiformis, crassus; 2^{us}. longi-ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. curtantes et latescentes; 10^{us}. fusiformis, 9^o. longior et paullo gracilior: thorax ovatus, convexus, pubescens, parum punctatus: prothorax brevis, antice angustior; mesothoracis scutum transversum, parapsides vix conspicuæ, scutellum breve: metathorax obconicus, rugosus, obscurus, ad apicem abrupte declivis: petiolus brevissimus: abdomen ovatum, parum convexum, nitens læve, glabrum, juxta thoraci longum et latum, apice acuminatum; segmenta 1^o. ad 5^{um}. decrescentia: pedes longi, validi.

Sp. 9. Dry. infectus. (Haliday MSS.) *Fem. Ater, antennæ fusca basi et subtus fulvæ, pedes fulvi nigro et fusco varii, alæ limpidæ fusco fasciatæ.*

Ater: oculi et ocelli picei: os fulvum: antennæ fulvæ, pubescentes; articuli 6^o. ad 10^{um}. supra fusci: pedes fulvi, albo pubescentes; coxæ fusca, apice fulvæ; femora basi subtus fusca; tarsi apice obscuriores; metapedum coxæ et femora nigra, tibiæ fusca: alæ limpidæ; proalæ cuique fascia lata fusca, apud stigma obscurior, postice dilutior; squamulæ et nervi flava; stigma fuscum, ramulus concolor. (Corp. long. lin. 1½—1¾; alar. lin. 1¾—2.)

Var. β.—Metatibiæ fulvæ, fusco bicinctæ.

Var. γ.—Antennis articuli 4^o. ad 10^{um}. supra fusci: metatibiæ fulvæ, apice fusca.

Var. δ.—Proalis fascia postice oblitterata.

Found in Kent, and in Ireland, by Mr. Haliday. May to July; near London; Windsor Forest.

Sp. 10. Dry. scapularis. (Haliday MSS.) *Fem. Ater, antennæ fusca aut fulvæ, pedes fulvi, femora basi nigra, meta-femora apice fusca, alæ limpidæ.*

Ater: oculi et ocelli picei: antennæ supra nigro-fusca, subtus fulvæ; articuli 1^{us}. basi et apice 2^{us}.que basi supra fulvi: pedes fulvi; coxæ et femora basi nigra; tarsi flavi, apice fusci; meta-femora

apice fusca: alæ limpidæ; squamulæ et nervi flava; stigma fuscum; ramulus fulvus. (Corp. long. lin. 2; alar. lin. 2½.)

Var. β.—Antennæ fulvæ; articuli 3^o. ad 10^{um}. supra fusci.

Found in Kent, by Mr. Haliday. June or July, near London.

Fem.—Caput subquadratum, parum nitens, scitissime et dense punctatum, thorace latius, antice albo-pubescentis; latera convexa: oculi non extantes: antennæ clavatæ, sat crassæ, submoniliformes, corporis dimidio paullo longiores, prope os insertæ; articulus 1^{us}. fusiformis, crassus; 2^{us}. longi-ovatus; 3^{us}. et sequentes oblongo-quadrati, usque ad 9^{um}. curtantes et latescentes; 10^{us}. longi-ovatus, 9^o. longior: thorax ovatus, convexus, nitens, parce punctatus, fere glaber; prothorax brevissimus, antice angustior; mesothorax magnus, scutum transversum, parapsidum suturæ vix conspicuæ, scutellum breve; metathorax magnus, obscurus, rugosus, parum nitens, ad apicem abrupte declivis: petiolus brevis, crassus: abdomen longi-ovatum, parum convexum, nitens, læve, glabrum, juxta thoraci longum ac latum, apice acuminatum; segmenta 1^o. ad 5^{um}. decrescentia: pedes breves, validi.

Sp. 11. *Dry. brachycerus*. *Fem. Ater, antennæ nigræ, pedes fulvi, femora fusca, alæ sublimpidæ.*

Dryinus brachycerus. *Dalman, Analecta Entomologica, 12. 9; Nees ab Ess. Hym. Ich. affin. Monogr. II. 378. 10.*

Ater: oculi et ocelli picei: antennæ nigræ, pubescentes: pedes fulvi; coxæ nigræ, apice fulvæ; profemora basi fusca; mesofemora fusca; metafemora nigra, punctata; tarsi apice obscuriores: alæ sublimpidæ; squamulæ et nervi flava; nervus humeralis fuscus; stigma fulvum. (Corp. long. lin. 1¼—1½; alar. lin. 1½—1¾.)

Var. β.—Mesofemora nigra.

Found in Kent, by Mr. Haliday. June, in woods near London; Scotland.

Fem.—Corpus parvum, pubescens: caput magnum, thorace paullo latius, obscurum, scitissime et confertissime punctatum: antennæ subclavatæ, graciles, corpore breviores; articulus 1^{us}. fusiformis; 2^{us}. longi-ovatus; 3^{us}. et sequentes longi, sublineares, ad 9^{um}. usque paullulum curtantes et latescentes; clava fusiformis, arti-

culo 9°. paullo longior non latior: thorax longi-ovatus, subconvexus, scitissime et confertissime punctatus, parum nitens; prothorax brevis; mesothoracis parapsidum suturæ vix conspicuæ, scutellum læve nitens; metathorax rugosus, ad apicem abrupte declivis: abdomen ovatum, convexum, nitens, læve, glabrum, thorace brevius vix angustius; segmenta basi ad apicem gradatim decrescentia: pedes mediocres: alæ angustæ.

Sp. 12. Dry. cursor. Fem. *Ater, antennæ nigrae basi fulvæ, pedes picei fulvo varii, alæ albidæ.*

Dryinus cursor. Haliday, Curtis, Brit. Ent. V. Pl. 206. 2.

Ater: oculi et ocelli picei: antennæ nigrae; articulus 1^{us}. fulvus, apice supra fuscus; 2^{us}. fuscus, apice fulvus: pedes fulvi; coxæ basi piceæ; tarsi apice fusi; profemora extus piceo vittata; meso- et metapedum femora et tibiæ picea, hæ pallidiores: alæ albæ; squamulæ et nervi flava; stigma fuscum, ramulus fulvus. (Corp. long. lin. 1; alar. lin. 1¼.)

Found at Holywood, by Mr. Haliday.

Mas.—Corpus punctatum, subnitens, albo-pubescent: caput magnum, breve, utrinque convexum, thorace latius: oculi vix extantes: antennæ subsetaceæ, sat latæ, dense pubescentes, corpore paullo breviores, prope os insertæ; articulus 1^{us}. fusiformis, crassus; 2^{us}. ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. paullulum diminuti; 10^{us}. fusiformis, 9°. longior et paullo angustior: thorax ovatus, convexus, postice angustior: prothorax brevissimus, supra vix conspicuus: mesothorax maximus, latus; scutum transversum, parapsidum suturæ non conspicuæ; scutellum et postscutellum brevia: metathorax magnus, brevi-obconicus, rugosus, obscurus, ad apicem abrupte declivis: petiolus brevissimus: abdomen ovatum, convexum, nitens, læve, glabrum, thorace paullo brevius et angustius; segmentum 1^{um}. longum; 2^{um}. et sequentia breviora, subæqualia: pedes validi, sat longi: alæ latæ.

Sp. 13. Dry. inclytus, (Haliday MSS.) *Mas. Ater, antennæ nigro-piceæ apice et subtus fulvæ, pedes fulvi, femora fusco-fulva, metapedes obscuriores, alæ limpida.*

Ater: caput antice albo pubescens: os flavum: oculi et ocelli picei: antennæ fulvæ; articuli 1°. ad 7^{um}. supra nigro-picei:

pedes fulvi; coxæ basi nigræ; femora fusco-fulva; tarsi flavi, apice fulvi; metapedum femora nigra, tibiæ fuscæ, tarsi fulvi: alæ limpidae; squamulæ et nervi flava; stigma fuscum, ramulus fulvus. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{3}{4}$.)

Var. β.—Antennis articulus 7^{us}. omnino fulvus.

Found in Kent by Mr. Haliday. June or July, near London.

Mas.—Caput thorace fere latius: antennæ corpore vix breviores; articulus 10^{us}. fusiformis, 9°. paullo longior non angustior: mesothoracis parapsidum suturæ conspicuæ.

Fem. D. infecti statura.

Sp. 14. Dry. Jurineanus. Mas et Fem. *Ater*, antennæ mari fulvo-fuscæ, fem. nigræ basi fulvæ, pedes mari flavo-fulvi fusco varii, fem. obscuriores, alæ sublimpidæ.

Anteon Jurineanum . *Latr. Nouv. Dict. Nat. II.* 141.

Ater: oculi et ocelli picei: os fulvum: antennæ mari fulvæ; articuli 2°. ad 7^{um}. supra fusci: antennæ fem. nigræ; articuli 1^{us}. et 2^{us}. fulvi; 3^{us}. fuscus: pedes flavi; metapedes fulvi, femora et tibiæ apice fusca: alæ sublimpidæ, squamulæ et nervi fulva; nervi subcostales flavi; stigma fulvum. (Corp. long. lin. 1— $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, metapedes flavi; femora et tibiæ apice fulva: alis squamulæ et nervi flava.

Var. γ.—*Mas*, *Var. β* similis: antennæ pallide fulvæ; articuli 2°. ad 5^{um}. supra fusci.

Var. δ.—*Mas*, antennis articuli 2°. ad 10^{um}. supra fusci.

Var. ε.—*Fem.* antennæ fusco-fulvæ; articulis 1^{us}. supra piceus; 7^{us}. et sequentes ad 10^{um}. nigri: mesofemora subtus nigro-vittata; metafemora nigra, basi fulva.

Found in Ireland by Mr. Haliday. June, September; near London, Windsor Forest, Hampshire, Isle of Wight.

Mas.—Caput subnitens, pubescens, scite et dense punctatum, antice et utrinque convexum, postice concavum: antennæ corpore non breviores: thorax nitens, lævis, pubescens: scutelli margines anticus et posticus ordine punctati.

Sp. 15. Dry. Penidas. Mas. *Ater, antennæ nigræ, pedes fulvi, femora picea, metapedes obscuriores, alæ albidæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes fulvi; coxæ et femora basi picea; metapedum coxæ nigræ apice fulvæ, femora nigro-picea, tibiæ pallide fuscæ: alæ albidæ; squamulæ et nervi costales fulva; stigma fuscum; nervi subcostales flavi; ramulus angulatus. (Corp. long. lin. 1—1½; alar. lin. 1½—2.)

Var. β.—Pro- et mesofemora picea, apice flava; protibiæ flavæ.

Var. γ. *Var. β* similis: protarsi basi flavi.

Var. δ. *Var. β* similis: tarsi apice fusci: metatibiæ fulvæ, apice fuscæ.

Var. ε.—Pro- et mesofemora picea, apice fulva; metatibiæ fuscæ; tarsi fusci, basi fulvi.

Found near Holywood by Mr. Haliday. June or July, near London.

Sp. 16. Dry. Lyde. Mas. *Ater, antennæ nigræ, pedes nigri, tarsi picei, alæ sublimpidæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes nigri; pro- et mesogenua fulva; protibiæ piceæ, subtus fulvæ; pro- et mesotarsi picei; mesotibiæ et metatarsi nigro-picea; metagenua picea: alæ sublimpidæ; squamulæ et nervi fulva; stigma piceum. (Corp. long. lin. 1¼—1½; alar. lin. 1½—2.)

Var. β.—Propedum tibiæ omnino fulvæ; tarsi fusci, basi fulvi.

April to June, near London.

Sp. 17. Dry. Daos. Mas. *Ater, præcedenti similis: antennæ longiores graciliores nigræ, pedes fulvo-picei, metapedes obscuriores, alæ sublimpidæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes fulvi; pro- et mesopedum coxæ et femora picea apice fulva, tarsi pallide fusci basi fulvi; metapedum coxæ et femora nigra, tibiæ piceæ, trochanteres et tarsi fusci: alæ sublimpidæ; squamulæ et nervi pallide fusca; stigma fuscum. (Corp. long. lin. 1½; alar. lin. 2.)

Var. β.—Pro- et mesopedes fulvi, coxæ et femora horum picea apice fulva illorum basi picea; metapedes picei, tibiæ fulvæ apice fuscæ,

tarsi fusci apice picei; alis squamulæ et nervi costales fulva; stigma fusco-fulvum; nervi subcostales flavi.

Found near London.

Mas.—Præcedentium statura: antennæ corpore paullo longiores: alis stigmatis ramulus angulatus.

Sp. 18. Dry. Ilus. *Mas. Ater, antennæ nigræ, pedes fulvi, metafemora nonnunquam picea, metapedes obscuriores, alæ fulvo-limpidæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes fulvi; coxæ basi nigræ; metapedum femora apice nigra, tibiæ apice fuscæ, tarsi fusci: alæ fulvo-limpidæ; squamulæ et nervi flava; stigma fuscum, ramulus fulvus. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{5}{4}$ —2.)

Var. β.—Metapedum femora apice picea, tibiæ omnino fulvæ, tarsi fusco-fulvi.

Var. γ.—Femora basi picea; metafemora nigro-picea.

Var. δ.—Femora et coxæ nigro-picea, apice fulva.

Found near Holywood by Mr. Haliday. June, July; near London, Windsor Forest, Hampshire, Isle of Wight.

Mas.—Præcedentis statura: alæ longiores latiores; stigmatis ramulus arcuatus: parapsidum suturæ vix conspicuæ.

Sp. 19. Dry. Misor. *Mas. Ater, antennæ nigræ, pedes fulvi plus minusve piceo varii, alæ subfuscæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes fulvi; pro- et meso-pedum coxæ trochanteres et femora picea, apice fulva; metapedum coxæ nigræ, femora nigro-picea, trochanteres et tibiæ fusca, tarsi fusco-fulvi apice obscuriores: alæ subfuscæ; squamulæ et nervi fulva; stigma piceum; nervi subcostales flavi. (Corp. long. lin. $1\frac{1}{2}$ — $1\frac{5}{4}$; alar. lin. 2— $2\frac{1}{4}$.)

Var. β.—Metapedum femora fulvo-picea, tibiæ fusco-fulvæ.

Var. γ.—Antennis articulus 1^{us}. fulvus, apice piceus: pro- et meso-pedum coxæ et femora fulva, basi picea; protibiæ et protarsi flava, hi apice fulvi; metapedes fulvi, coxæ et femora basi picea, tarsi apice fusci.

Var. δ. *Var. γ.* similis: metafemora apice fusca.

Found near London.

Sp. 20. Dry. Otiartes. Mas. *Ater, antennæ nigræ, quam præcedentium latiores, pedes fulvi, femora piceo varia, alæ limpidae.*

Ater: os fulvum: palpi læte flavi: oculi et ocelli picei: antennæ nigræ, latæ, pubescentes, corpore paullo longiores: pedes fulvi; coxæ basi piceæ; femora piceo vittata; tarsi apice fusci; metapedum femora picea, tibiæ fuscæ: alæ limpidae; squamulæ fulvæ; nervi costales picei, subcostales flavi; stigma piceum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{5}{4}$ —2.)

Var. β.—Antennis articulus 1^{us}. fulvus, supra et apice piceus: pro- et mesopedum tibiæ et tarsi flava; metapedum femora basi et tibiæ subtus fulva.

Var. γ.—Mesopedum femora picea basi fulva, tibiæ fuscæ; metatarsi supra fusci.

Var. δ.—*Var. β* similis: mesotibiæ supra pallide fuscæ: alis nervi costales fulvi.

Found near London.

Sp. 21. Dry. Alorus. Mas. *Ater, præcedentibus minor angustior, antennæ nigræ graciliores, pedes fulvi piceo aut fusco varii, alæ limpidae.*

Ater: os flavum: oculi et ocelli picei: antennæ nigræ, graciles, pubescentes, corpore paullo longiores; articulus 1^{us}. basi fuscus: pedes fulvi; coxæ basi piceæ; tarsi apice fusci; metafemora apice fusca; protibiæ et protarsi flava: alæ limpidae; squamulæ et nervi flava; stigma fuscum, ramulus fulvus. (Corp. long. lin. 1 — $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—Mesofemora basi picea: metafemora picea.

Var. γ.—Antennis articulis 1^{us}. omnino niger: propedum femora basi fusca, tibiæ et tarsi fulva; meso- et metacoxæ nigræ, apice fulvæ; mesofemora picea, apice fulva; metapedum femora nigra, tibiæ apice et tarsi supra fusca: alis nervi costales fulvi, subcostales flavi; stigma piceum.

June; near London, Windsor Forest, Isle of Wight.

Fem.—Corpus latum, crassum, convexum: caput sat magnum, punctatum, pubescens, parum nitens, thorace vix latius: oculi extantes: antennæ clavatæ, validæ, corporis dimidio longiores;

articulus 1^{us}. fusiformis; 2^{us}. longi-ovatus; 3^{us}. et sequentes breviores, usque ad 9^{um}. curtantes et latescentes; 10^{us}. longi-ovatus, 9^o. longior vix latior: thorax ovatus, altus, parce pubescens: prothorax obscurus, bene determinatus, transverse rugosus: mesothoracis scutum scitissime et confertissime punctatum, parum nitens; parapsidum suturæ vix conspicuæ; scutellum nitens, læve: metathorax obscurus, rugosus, ad apicem abrupte declivis: abdomen longi-ovatum, convexum, subtus fere planum, apice acuminatum, thorace angustius et paullo brevius; segmenta 1^o. ad 6^{um}. decrescentia: alæ latae.

Sp. 22. Dry. Sisithrus. Fem. *Ater*, antennæ nigræ basi fulvæ, pedes fulvi, femora piceo varia, alæ albæ.

Ater: oculi et ocelli picei: antennæ nigræ; articulus 1^{us}. fulvus, supra piceus; 2^{us}. piceus, apice fulvus: pedes fulvi; coxæ basi piceæ; profemora basi picea; meso-et metapedum femora et tibiæ supra picea; tarsi apice fusci: alæ albæ; squamulæ et nervi fulva; stigma piceum; nervi subcostales flavi. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{3}{4}$ —2.)

Var. β.—Antennis articulus 3^{us}. fuscus; alis ramulus flavus.

Var. γ.—*Var. β* similis: antennis articuli 4^o. ad 10^{um}. nigro-picei.

Var. δ.—Mesotibiæ omnino fulvæ.

Found near London.

Mas.—Caput sat magnum, breve, obscurum, pubescens, scitissime et confertissime punctatum, thorace vix latius, antice convexum, postice concavum: oculi non extantes: antennæ moniliformes, pubescentes, corpore paullo breviores; articulus 1^{us}. fusiformis, validus; 2^{us}. ovatus; 3^{us}. et sequentes subfusiformes, usque ad 9^{um}. paullulum coarctati; 10^{us}. fusiformis 9^o. multo longior: thorax pyriformis, convexus, scitissime et confertissime punctatus, obscurus, pubescens: prothorax brevissimus, supra vix conspicuus; mesothoracis scutum magnum, transversum; parapsidum suturæ non bene determinatæ; scutellum brevi-obconicum, nitens, fere læve: metathorax obconicus, rugosus, ad apicem abrupte declivis; petiolus brevis: abdomen ovatum, convexum, nitens, læve, glabrum; apice acuminatum, thorace multo brevius et angustius; segmenta 1^{um}. et 2^{um}. magna; 3^{um}. et sequentia breviora: pedes graciles: alæ amplæ; stigmati ramulus brevis, angulatus.

Sp. 23. *Dry. nanus*. (Haliday MSS.) Mas. *Ater, antennæ nigræ, pedes nigri, tarsi picei, protibiæ fulvæ, alæ limpidaæ.*

Ater: oculi et ocelli picei; antennæ nigræ; pedes nigri; propedum trochanteres et tarsi fuscii, genua et tibiæ fulva; meso- et metapedum trochanteres genua et tarsi picea: alæ limpidaæ; squamulae et nervi fulva; stigma fuscum; nervi subcostales flavi. (Corp. long. lin. $\frac{3}{4}$; alar, lin. 1.)

Found in Wicklow, by Mr. Haliday.

GENUS.—APHELOPUS, *Dalman*.

Mas.—Caput mediocre, transversum, vix convexum, thorace fere angustius, antice subproductum, utrinque convexum, postice concavum, obscurum, pubescens, scitissime et confertissime punctatum: oculi ovati, mediocres, laterales, vix extantes; ocelli vertice triangulum fingentes: antennæ filiformes, sat graciles, pubescentes, corpore fere longiores; articulus 1^{us}. fusiformis, validus; 2^{us}. ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. subprotracti; 10^{us}. fusiformis, 9^o. paullo longior et gracilior: thorax pyriformis, convexus, scitissime et confertissime punctatus, obscurus, pubescens: prothorax brevissimus, supra non conspicuus: mesothoracis scutum magnum transversum, parapsides bene determinatae; scutellum et metascutellum brevi-obconica, læviora, nitentia: metathorax brevi-obconicus, rugosus, ad apicem abrupte declivis: petiolus brevis, validus: abdomen longi-ovatum, subconvexum, fere compressum, nitens, læve, glabrum, thorace brevius et multo angustius; segmentum 1^{um}. maximum, dorsi plus dimidium obtegens; 2^{um}. et sequentia brevina: pedes graciles; propedes simplices breviores, ungues minuti; metapedes longiores, coxæ magnæ: proalis nervus unicus basi emissus subcostam usque ad stigma percurrens, hoc magnum oblongum ramulum emittens arcuatum.

Fem.—Antennæ extrorsum crassiores, corpore breviores; articulus 2^{us}. longi-ovatus; 3^{us}. et sequentes ad 9^{um}. parum curtantes et latescentes; 10^{us}. fusiformis, 9^o. multo longior vix latior: abdomen ensiforme, compressum, thorace multo angustius et brevius.

Sp. 1. *Aphel. melaleucus*. Mas et Fem. *Ater, fem. caput antice album, antennæ et pedes nigra picea aut fulva, alæ albidaæ.* Pl. XVI. Fig. 3.

Gonatopus melaleucus. *Dalman, Kongl. Vetens. Acad. Handl. för år, 1818. 82. 6.*

Dryinus (Aphelopus) mela-
leucus

{ *Dalman, Analecta Entomologica,*
14. 13; *Nees ab Ess. Hym.*
Ich. affin. Monogr. II. 388. 1.

Dryinus (Aphelopus) atratus, *Dalman, Analecta Entomologica,*
15. 14; *Nees ab Ess. Hym.*
Ich. affin. Monogr. II. 389. 2.

Mas.—Ater: oculi et ocelli picei: os flavum: palpi albidi: antennæ nigrae: pedes picei, pubescentes; propedes flavi, femora basi picea, tarsi fulvi; mesopedum coxæ fulvæ basi piceæ, trochanteres genua et tarsi fulva; metapedes nigro-picei, coxæ apice fulvæ, trochanteres fulvi, genua fusca, tarsi fusci subtus fulvi: alæ albo-limpidæ; squamulæ et nervi fulva; stigma nigro-piceum.

Fem.—Caput antice et circum oculos album: antennis articuli 1^{us}. 2^{us}. 6^{us}. et 7^{us}. picei; 8^{us}. 9^{us}. et 10^{us}. fulvi: propedes flavi, femora basi et tarsi apice fulva: mesopedes picei, trochanteres flavi, tibiæ fulvæ fusco cinctæ, tarsi fulvi basi flavi: metapedes nigro-picei, trochanteres et femora basi flava, genua fulva, tarsi fusci subtus fulvi; alis squamulæ et nervi flava; stigma piceum, ramulus fulvus. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, mesotibiæ fulvæ.

Var. γ.—*Mas*, propedum coxæ et femora picea, apice fulva; mesopedum coxæ piceæ, trochanteres genua et tarsi fusca; metapedum coxæ nigra, tarsi picei.

Var. δ.—*Mas*. *Var. γ* similis: mesotarsi fulvi; metafemora nigra.

Var. ε.—*Mas*. Propedes flavi, tarsi apice fulvi; mesopedes fulvi, tarsi basi flavi; metapedes picei, trochanteres fulvi, tarsi fusci subtus fulvi: alis squamulæ et nervi flava; stigma piceum.

Var. ζ.—*Mas*, *Var. ε* similis: mesopedes flavi: metapedum coxæ apice trochanteres et femora basi flava, tibiæ fusca, tarsi flavi apice fulvi.

Var. η.—*Fem.* antennæ nigrae; articuli 8^o. ad 10^{um}. fusci, subtus fulvi: mesopedum femora apice fulva, tibiæ pallide fulvæ.

Var. θ.—*Fem.* *Var. η* similis: mesopedum coxæ et femora fulva.

Var. ι.—*Fem.* *Var. θ* similis: metapedum coxæ et femora picea, tibiæ fusco-fulvæ, tarsi fulvi apice fusci.

Var. κ. Fem. Var. ι similis: antennæ piceæ, subtus fulvæ; articuli 7^o. ad 10^{um}. omnino fulvi.

Var. λ.—Fem. caput antice et utrinque omnino album: antennæ piceæ; articuli 1^{us}. 8^{us}. 9^{us}. et 10^{us}. fulvi, 2^{us}. et 7^{us}. fusci: pedes pallide flavi; metapedum femora picea, tibiæ fuscæ.

Var. μ.—Fem. Var. λ similis: metapedum femora flava apice picea, tibiæ fulvæ, tarsi apice fusci.

Var. ν.—Fem. Var. μ similis: antennis articulus 7^{us}. fulvus: alis stigma pallide fuscum.

Var. ξ.—Fem. antennæ piceæ; articuli 1^{us}. 8^{us}. 9^{us}. et 10^{us}. fulvi: pedes flavi; metapedum femora et tarsi apice fusca, tibiæ fulvo-fuscæ.

Var. ο.—Fem. Var. ν similis: antennæ læte fulvæ: metapedum tibiæ flavæ, tarsi apice fulvi.

May to July; on lime trees; near London; Windsor Forest; Scotland; Isle of Jersey. Found in Ireland by Mr. Haliday.

GENUS.—LABEO. *Haliday.*

Corpus lineare, pubescens, subplanum; caput mediocre, transversum, convexum, obscurum, scite et conferte punctatum, antice subproductum, utrinque rotundum, postice concavum, juxta thoraci latum: oculi mediocres, non extantes: ocelli vertice triangulum fingentes: mandibulæ arcuatæ, tridentatæ; dentes longi acuti: palpi maxillares 3-articulati: antennæ filiformes, graciles, pubescentes, corpore vix longiores; articulus 1^{us}. fusiformis præ 2^o. brevis, hic longi-ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. curtantes; 10^{us}. acuminatus, 9^o. multo longior: thorax pyriformis, vix convexus: prothorax brevissimus, supra non conspicuus: mesothoracis scutum magnum, transversum, obscurum, scitissime et confertissime punctatum; parapsidum suturæ conspicuæ; scutellum et metascutellum parva, transversa, nitentia, lævia, fere glabra: metathorax magnus, obconicus, rugosus, obscurus, ad apicem abrupte declivis: abdomen longi-ovatum, planum, subsessile, nitens, læve, glabrum, thorace brevius et paullo angustius; segmenta transversa, ad apicem breviora: pedes graciles, simplices, pubescentes; coxæ sat longæ; femora gracilia; tibiæ rectæ; tarsorum articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues et pulvilli minuti: alæ amplæ; nervus subcostalis stigma attingens; ramulus nervo subcostali ante stigma rejectus angulum

nervo alæ basi medio projecto fingens, et nervo spurio alæ marginem posticum percurrente lapsus; nervi quoque nonnulli vix conspicui in alæ disco cellulas 2 spurias fingentes; stigma longum, angustum, ramulum arcuatum ad alæ apicem productum emittens.

Sp. 1. Lab. excisus. Mas. *Ater, antennæ nigræ, pedes picei, protibiæ fulvæ, alæ limpidæ*. Pl. XVI. Fig. 2.

Antæxon? excisus. *Westwood, Loudon's Mag. Nat. Hist.* VI. 497.

Ater: oculi et ocelli picei: antennæ nigræ: pedes picei; coxæ nigræ; trochanteres et tarsi fuscii; propedum femora apice et tibiæ fulvæ; meso- et metapedum genua et tibiæ basi fulvæ; alæ limpidæ; squamulæ et nervi fulvæ; stigma fuscum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{3}{4}$ — $2\frac{1}{4}$.)

Var. β.—Nervus subcostalis et ramulus fuscii.

Var. γ.—Propedum femora fulvæ basi picea, tarsi obscure fulvi; mesopedum tibiæ fuscæ basi et apice fulvæ.

Var. δ.—*Var. γ* similis: mesotarsi obscure fulvi: alis stigma pallide fuscum.

Found in Ireland by Mr. Haliday. July; on lime-trees; near London.

SECTIO II.

GENUS.—EMBOLEMUS. *Westwood*.

Polyplanus. Nes ab Essenbeck.

Mas.—Caput parvum, subrotundum, convexum, pubescens, parum nitens, scitissime punctatum, thorace angustius, antice productum et deinde subtus ad os retractum: oculi parvi, laterales, extantes: ocelli vertice triangulum fingentes: mandibulæ oblongo-quadratae, tridentatae, rectae; dentes acuti subæquales: maxillæ parvæ, breves, subovatae; palpi 5-articulati, setaceæ, graciles; articuli fusiformes, 1^{us}. gracilis subarcuatus, 2^{us}. dilatatus, 3^{us}. gracilis, 4^{us}. 3^o. brevior, 5^{us}. linearis 4^o. multo longior: labium parvum, angustum, sublineare; ligula transversa, brevis; palpi 3-articulati, submoniliformes, validi, breves, articuli ovati subæquales: antennæ filiformes, pubescentes, corpore longiores, basi approximatae, fronte insertae; articulus 1^{us}. fusiformis, validus; 2^{us}. brevissimus; 3^{us}. et sequentes longi, lineares, approximati,

usque ad 9^{um}. curtantes; 10^{us}. acuminatus, 9^o. vix longior: thorax fusiformis, convexus, subnitens, pubescens, parce et scite punctatus: prothorax brevis, supra conspicuus: mesothoracis scutum latitudine fere longius; parapsidum suturæ vix conspicuæ; scutellum obconicum: metathorax obconicus, rugosus, per longum sulcatus, ad apicem abrupte declivis: abdomen longi-ovatum, convexus, petiolatum, nitens, læve, basi scite punctatum, thorace brevius non augustius; segmenta 1^{um}. et 2^{um}. maxima, reliqua parva: pedes longi; coxæ magnæ; femora valida; tibiæ rectæ; tarsi graciles, articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues et pulvilli parvi: alæ amplæ; nervi *Aulaci* more collocati; nervus subcostalis stigma attingens; nervus 2^{us}. alæ basi medio emissus, disco divisus et cellulam fingens, deinde ad apicem productus; nervus 3^{us}. alæ marginem posticum percurrens, apud medium quasi recta semita abductus; nervuli quoque nonnulli transversi, 1^{us}. interruptus inter stigmatis ramulum et nervum 2^{um}., 2^{us}. inter nervos 2^{um}. et 3^{um}., 3^{us}. inter cellulæ angulum et nervum 3^{um}. renovatum; nervus subcostalis ramulum rejiciens cellulæ angulo junctum; stigma longum, perangustum, ramulum arcuatum ad alæ apicem productum emittens; metalis nervi 2, unus costalis, alter spurius ramulos emittens.

Fem.—Antennæ 13-articulatæ, subclavatæ, corpore breviores; articulus 1^{us}. præ *mari* brevis; 3^{us}. et sequentes lineares, subæquales, usque ad 12^{um}. paullulum latescentes; 13^{us}. fusiformis, 12^o. longior vix latior: abdomen thorace longius: alæ quam *mari* angustiores; nervi non bene determinati.

Sp. 1. Emb. Ruddii. Mas et Fem. *Ater, antennæ nigræ, pedes rufo-fusci aut picei, alæ mari fusæ, fem. albidæ.*
Pl. XVI. Fig. 1.

Embolemus Ruddii *Westwood. Lond. and Edin. Phil. Mag. and Journ. of Science. Third series. II. 444.*

Polyplanus Sickershusanus . *Nees ab Ess. Hym. Ich. affn. Monogr. II. 349.*

Mas.—*Ater*: oculi et ocelli picei: palpi flavi: antennæ nigræ: abdominis segmentum 1^{um}. apice piceum: pedes rufi; trochanteres et genua pallidiora; tibiæ et tarsi fusca: alæ fusæ; squamulæ et nervi picea.

Fem.—Pedes picei; trochanteres et genua rufa; tarsi fusci: alæ albidæ; nervi pallide flavi; squamulæ, nervus subcostalis et stigma fulva. (Corp. long. lin. 1 $\frac{1}{2}$ —2; alar. lin. 1 $\frac{5}{4}$ —3.)

Var. β.—*Mas*, antennis articuli 1^{us}. et 2^{us}. rufi, supra picea: pedes pallide rufi; femora et coxæ picea, apice rufa: alis nervi pallide fusci.

Var. γ.—*Mas*, coxæ piceæ; trochanteres fusci; femora nigropicea.

Var. δ.—*Mas*, *Var. γ* similis: pro- et mesopedum tibiæ et tarsi rufa, illæ supra fuscæ.

Found in Scotland, and in the Isle of Skye, by Mr. Haliday. September; Isle of Wight, Wales, Devonshire, Cornwall.

SECTIO III.

GENUS.—EPYRIS. *Westwood.*

Caput ovatum nutans latitudine thoracis: antennæ *maris* 13-articulatæ articulis flagelli cylindricis: areola radialis elongata in alæ apice incompleta: unguis integri.

Sp. 1. *Epyris niger.* (*Westwood in Philosophical Magazine, August, 1832, page 129.*) *Statura fere Bethylli, differt capite minore, antennis propius ab oculis, his pilosis: thorace longiore: tarsis gracilioribus; alarum anticarum nervis humeralibus disjunctis, areolæ brachialis anterioris formâ et radialis.* (Long. corp. $2\frac{1}{4}$ lin.; alar. $3\frac{1}{2}$.) Pl. XVI. Fig. 6.

Mas.—Caput ovatum nutans: oculi mediocres ovati distantes laterales ab occipite remoti raro pilosi: ocelli tres in vertice in triangulum collocati: antennæ prope oculos ad basin clypei foveolæ quæque insertæ thoracis longitudine filiformes pubescentes 13-articulatæ articulo primo majore cylindrico 2 minore obconico reliquis cylindricis subæqualibus ultimo paulo longiore apice attenuato: carinula faciei longitudinalis antennis integraret: clypeus (vel epistoma?) brevis transversa antrorsum attenuata margine antico recto: mandibulæ validæ oblongæ forcipatæ apice decurvæ ibidem paululim dilatatæ et oblique truncatæ denticulis 4 extimo acuto: thorax oblongus deplanatus capite vix latius et plus duplo longius: collare fere trigonum: mesothoracis scutum transversum parapsides parvæ deflexæ trigonæ dorsum lineolis 2 parallelis postice abbreviatis impressum: scutellum scuti fere longitudine deplanatum trigonum: paraptera profunde excavata: metathoracis paraptera in fundo crenata in dorso medio carinulæ

parvæ ope conjuncta, scutello haud aliter explicato : postscutellum mesothorace parum brevius basi truncatum dorso planiusculum apice rotundatum : abdomen thorace brevius et fere angustius depressum ellipticum (structura qualis *Bethyllo*) segmentis 7 longitudine subæqualibus 1°. basi sensim attenuato petiolo vix manifesto : alarum forma fere qualis *Bethyllo* : nervus subcostalis a costali disjunctus : stigma minutum oblongum in costa media : nervus radialis vix ultra conspiciendus ; cubitalis a stigmate leni flexurâ discedens mox parallelus prope marginem excurrit, ante apicem alæ abrupte desinens areolam radialem elongatam linearem apice apertam designans : areola brachialis anterior acute trigona stigma non attingit ; posterior linearis illius apicem perpaulo superat nervo claudente arcuato : nervi brachiales ultra hunc cito evanescent : nervus subulnaris^c obsoletissimus : alarum posticarum nervi decolores quasi deletæ modo subcostalis in alæ basi vestigium et alterum adhuc minus in lobo axillari cujus incisura profunda : pedes sat longi, graciliores quam *Bethyllo*, coxis obconicis trochanteribus breviusculis femoribus compressis fusiformibus tibiis rectis pubescentibus calcaribus conspicuis tarsis longioribus tenuibus articulo primo trium sequentium longitudinem æquiparante unguibus tenuibus acutis integris.

“Niger hic, abdomine nitido glabro, antennarum articulo 1°. apice reliquis cunctis pedibusque rufo-piceis, trochanteribus tibiis tarsisque ferruginosis, mandibulis apice ferrugineis, capite thoraceque subtiliter intricatim punctulatis, fronte vertice pro- et mesothoracis dorso præterea punctis majoribus sparsis pilisque raris albidis, scutelli disco læviore nitente, metathorace basi ruguloso linea longitudinali elevata postice evanescente, alis subfumato hyalinis, squamulis radice nervis stigmatæque fusco-ferrugineis : de sexus discrimine et oris structura intimâ nil adhuc constat.”—*Haliday, MSS.*

September ; Isle of Wight. Found near Paris, by the Comte de Castelneau.

GENUS.—*BETHYLUS*. *Latreille.*

Omalus. *Jurine.*

Fem.—Caput ovatum, nutans, planum, thorace latius, scitissime et confertissime punctatum, obscurum, pubescens : oculi parvi, subovati, remoti, laterales : ocelli vertice triangulum fingentes

^c “Nervus cubitalis.” St. F. &c.

parvum : mandibulæ longæ, angustæ, arcuatæ, 4-dentatæ ; dentes parvi, subæquales, vix acuti : palpi maxillares 4-articulati, longi, graciles, filiformes ; articulus 1^{us}. longi-cyathiformis ; 2^{us}. et 3^{us}. longiores, subæquales ; 4^{us}. 3^o. multo longior, apice acuminatus : antennæ 12-articulatæ, setaceæ, graciles, ad os insertæ, corporis dimidio breviores ; articulus 1^{us}. validus, fusiformis ; 2^{us}. et sequentes subfusiformes, usque ad 12^{um}. decrecentes : thorax fusiformis, planus, obscurus, pubescens, scitissime et confertissime punctatus ; prothorax maximus, conicus ; mesothoracis scutum transversum, parapsidum suturæ non conspicuæ, scutellum obconicum nitens fere læve ; metathorax maximus, obconicus fere glaber, ad apicem abrupte declivis, linea per medium nitens lævis postice dilatata : petiolus brevissimus : abdomen ovatum, subconvexum, nitens, læve, fere glabrum, thorace paullo brevius et latius ; segmentum 1^{um}. maximum ; 2^{um}. magnum ; 3^{um}. mediocre ; 4^{um}. et sequentia brevia : pedes validi ; propedes breviores ; metapedes longiores ; coxæ magnæ ; trochanteres parvi ; femora clavata ; tibiæ rectæ ; protarsi crassi, articulus 1^{us}. longus, 2^{us}. 3^{us}. et 4^{us}. breves, 5^{us}. longior ; meso- et metatarsi longiores, graciliores, articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior ; ungues magni : alæ angustæ, pubescentes : proalis nervi 3 per longum excurrentes ; 1^{us}. costæ trienti attingens, in discum descendit et cellulam longam angustam fingens stigmatē desinit, 2^{us}. ante alæ medium desinit, 3^{us}. adhuc brevior, amborum apices ramulis 2 transversis nervis anterioribus alligati ; stigma parvum, breve, ramulum emittens longum subarcuatum apice angulatum et costæ propensum.

Mas, fem. similis : abdomen brevius, postice subquadratum : antennæ fere filiformes.

Sp. 1. *Bet. fuscicornis*.^d *Mas et Fem. Ater, antennis et pedibus piceis aut fulvis, proalis plus minusve fuscis.*

Bethylus fuscicornis. *Latr. Gén. Crust. et Ins.* IV. 41 ; *Spin. Ins. Lig. Fasc.* III. 168.

Omalus fuscicornis. *Jurine, Hymen.* 301. Pl. 13. 43 ; *Nees ab Ess. Hym. Ich. affin. Monogr.* II. 392. 1.

Ater : oculi et ocelli picei : antennæ fulvæ, supra et apice piceæ ; articulus 1^{us}. piceus, apice fulvus : pedes fulvi ; coxæ et femora nigro-picea ; meso- et metapedum tibiæ pallide piceæ basi et apice

^d Ent. Magazine, II. 219.

fulvæ, tarsi apice fuscæ; alæ limpidæ; proalis discus plus minusve fuscus; nervi costales fuscæ, subcostales flavæ; stigma piceum. (Corp. long. lin. 1—2½; alar. lin. 1½—2½.)

Var. β.—*Mas*, protibiæ basi fuscæ; meso- et metatibiæ piceæ; proalæ omnino fuscæ; metalæ apice subfuscæ.

Var. γ.—*Mas*, *Var. β* similis: antennæ fulvæ, apice supra fuscæ.

Var. δ.—*Mas*, proalæ fere omnino limpidæ; nervi costales flavæ, ramulus fulvus.

Var. ε.—*Fem.* antennæ basi omnino fulvæ.

Var. ζ.—*Fem.* protibiæ basi fuscæ; meso- et metatibiæ piceæ.

Var. η.—*Fem.* *Var. ε* similis: mesotibiæ fulvæ; metatibiæ piceo-fulvæ; tarsi flavæ, apice fuscæ.

Var. θ.—*Fem.* antennæ fulvæ, basi pallidiores, apice supra fuscæ; propedes flavæ, femora basi supra fusco-vittata; meso- et metapedes fulvæ, coxæ et femora picea illæ apice fulvæ, tarsi apice fuscæ, metatibiæ fusco-cinctæ: proalis nervi costales flavæ.

June to September; England and Scotland. Found in Ireland by Mr. Haliday, and near Paris by the Comte de Castelneau.



ART. LIV.—*Descriptions of two new Genera belonging to the family Chalcididæ.* By J. O. WESTWOOD, F. L. S. &c.

THE family *Chalcididæ*, independent of the great beauty of many of its species, and the singularity of the economy of the whole, possesses additional claims to the attention of the Entomologist on two other grounds. 1st, No family presents more numerous instances of anomalous structure in the different organs; and, 2d, The series of affinity amongst the different sub-families is so complicated, that it would require far more philosophical views of the nature of the relations of animals than we at present possess, to account for so many of, what may be termed, cross-affinities. The two insects described below exemplify both these peculiarities of this family

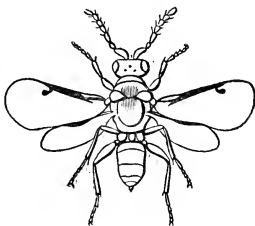
They are both distinguished by the remarkable incrassation of the costa of the anterior wings, of which I recollect, at present, no other analogous example. Mr. Walker has, indeed, characterized a genus belonging to the same family under the name of *Pachyneuron*; but the incrassation of the costa of the forewings in that genus is quite trifling compared to that observed in either of the following insects;—whilst, at the same time, the insect secondly described, presents a most striking passage between two sub-families (*Encyrtides* and *Eulophides*), between which two equally strong modes of transition have already been proved to exist; *Agonioneurus* and *Coccophagus* forming one passage, and *Tetracnemus* and the typical *Eulophi* a second. It will be evident that the two insects described below, although possessing a nearly similar incrassated structure of the costa of the wings, are by no means nearly allied together by affinity; they, indeed, evidently belonging to distinct sub-families. Hence, in respect to this character, these insects are allied together by no nearer relation than that of analogy.

PLATYNOCHEILUS, *Westwood*.^a

Cleonymo affinis; differt antennarum articulis, costâ alarum incrassatâ, &c. Corpus elongatum, gracile: caput thoracis latitudine, oculis magnis lateralibus: antennæ thoracis fere longitudine 11- (vel 12-?) articulatae, articulo 1°. elongato, 2°. præcedentis fere dimidii longitudine, articulis sequentibus parvis et quasi coalitis, proximis 5 distinctis æqualibus, clava crassiori ovata 3-articulata: collare elongatum trigonum: thorax oblongus postice rotundatus: abdomen oblongum depressum lateribus subelevatis, pedunculus brevis: pedes graciles simplices tarsis 5-articulatis: alæ anticæ costâ dilatatâ et ad originem rami deflexi extensâ, nervo subcostali nullo.

Mas.

Species unica mihi adhuc cognita.



^a Πλατυνω, dilato, et χειλος, mergo.

PLATYNOCHEILUS ERICHSONII, *Westwood.*

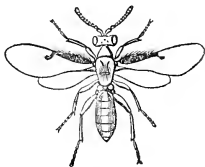
Caput et thorax aureo-viridia, punctata: abdomen viridi-auratum, nitidissimum; antennæ et pedes fuscii, geniculis flavis, femoribus viridescensibus, costâ alarum anticarum nigrâ. (Long. corp. lin. $1\frac{1}{4}$.)

Habitat prope Berolinem. Mense Maio captus.

In Musæo Dom. Erichson, Entomologi clarissimi, amicissimi.

PLEUROPACHUS,^b *Westwood.*

Genus inter *Eulophides* et *Encyrtides* osculans, his structurâ thoracis et pedum intermediorum, illis tarsi 4-articulatis et antennis affinis. Caput transversum, thoracis fere latitudine: antennæ thorace breviores, et, ut videtur 7-articulatæ, articulo 1° elongato subtus paullo dilatato, 2° brevi, 3° duplo longiori, (inter 2^{um}. et 3^{um}. articulus, minutissimus cyathiformis exstat,) 4°. 5°. et 6°. æqualibus discretis, 2°. paullo majoribus, ultimo oblongo-ovato apice acuto (4-? articulo): thorax ovatus crassus ut in *Encyrtis* constructus scutello, et mesosterno maximis: pedes satis graciles, intermedii et postici ad basin valde approximati: tarsi 4-articulati pulvillo magno: tibiæ intermediæ paullo extus curvatæ, calcari longiori et intùs ciliato instructæ, articuloque basali tarsorum intermediorum paullo dilatato: alæ anticæ nervo subcostali brevi, costâ pone ejus conjunctionem dilatatâ usque ad originem ramuli stigmatalis, hoc curvato et clavato; costâ etiam alarum posticarum in medio incrassatâ: abdomen ovato-orbiculatum obtusum planum, fere latitudine thoracis, apice mucronatum, petiolo triplo breviori, recto, cylindrico, striolato, adfixum. *Mas.*



Species unica adhuc mihi cognita.

Sp. 1. *Pleuropachus costalis*. (Long. corp. 1 lin.; expans. alar. 2 lin.)

Entedon costalis . . *Dalm. Act. Holm.* 1820, p. 174.

Elachestus costalis . *Nees ab Esenbeck, Hymen. Monog.* Vol. II. p. 143.

^b Πλευρα, membrana succingens costas, et παχυσ, crassus.

Habitat "in floribus *Chærophylli sylvestris* prope Seckershausen."
Captus Esenb. loc. cit.

In Mus. Academiæ Bounæ, olim celeberr. Neesii ab Esenbeck, cujus curâ benevolenti hoc insectum cum collectione totâ *Chalcididarum* et *Proctotrupidarum* ipso descriptâ, mecum ad examinandum, communicatum est.

ART. LV.—*Note on Macroplea Zosteræ*.—By C. C.
BABINGTON, M. A.

As the habits of *Macroplea zosteræ* do not appear to be generally known to Entomologists, a slight notice of them, from my own observation, may not be considered uninteresting. On the 4th of June, 1834, when on a visit to a friend at Cley-next-the-Sea, Norfolk, I accidentally captured about eighty specimens of this rare insect. We were botanizing in the marshes near to that place, and having gathered a specimen of *Potamogeton pectinatus* (a plant which always grows under water, only raising its small heads of flowers above the surface), in a ditch of fresh water, I was much surprised by finding in the centre of its dense mass of leaves and branches, a single specimen of *Macroplea*. There being a great quantity of that plant in the ditch, we of course examined numerous specimens, and were gratified by the discovery of two or three, and sometimes six or eight individual insects in each of them. The insects, which are very sluggish, appear to live quite under water, since they never occurred upon the outside of the dense tufts of the *Potamogeton*, but always in the interior of the mass, quite enclosed by the branches, and not easy to discover without a close examination. There were many of them found in pairs, showing that this is their natural habitation, and that they do not live, like their allies the *Donaciæ*, upon those parts of water plants which are above the surface. Although the ditch was full of various plants, several of which formed dense mats, (such as *Ranunculus aquatilis*,) yet we could not discover a single specimen of *Macroplea* upon any plant except the *Potamogeton*.

CHARLES C. BABINGTON.

St. John's College, Cambridge.
April 15, 1837.

ART. LVI.—*Monographia Chalciditum.* BY FRANCIS
WALKER.

(Continued from page 364.)

“—— the green myriads in the peopled grass.”

Family ENCYRTIDÆ.

GENUS ENCYRTUS, *Dalman.*

Antennæ 11-articulatæ,* ad os insertæ: thorax antice angustatus, postice quadratus: prothorax et metathorax minima, vix conspicua: abdomen breve, basi latum; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: pedes plerumque validi; femora recta; tibiæ simplices; tarsorum articuli 1^o. ad 4^{um}. curtantes, 5^o. 4^o. longior; ungues et pulvilli parvi; mesopedum tibiæ spinis armatæ, tarsi lati ciliati: proalis nervus humeralis longus, cubitalis mediocris, ulnaris et radialis brevissimi.

Corpus punctatum, nitens, parce et breviter pubescens: caput transversum, mediocre, latitudine thoracis, antice convexum: oculi magni, subrotundi: ocelli in vertice triangulum fingentes, medius antepositus: antennæ clavatæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. fusiformis; 2^{us}. cyathiformis; 3^{us}. et sequentes breves, subcyathiformes, usque ad 8^{um}. late-scentes; clava ovata, articulo 8^o. latior et plus duplo longior: mandibulæ tridentatæ, subquadratæ, non arcuatæ; dentes minuti, acuti: maxillæ longæ, subarcuatæ; lacinia acuminatæ, intus lobatæ; palpi 4-articulati, filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. mediocres, 4^{us}. multo longior fusiformis: labium obconicum; ligula brevis, lata; palpi biarticulati, breves, validi: thorax ovatus, planus: parapsidum suturæ non conspicuæ: paraptera supra convenientia: scutellum obconicum, apice subacuminatum: abdomen ovatum, planum, læve, glabrum, apice acuminatum et parce pubescens, thoracis longitudine: oviductus exertus; vaginæ pubescentes: metapedum femora et tibiæ lata: alæ angustæ. (*Cerchysius*, Westwood.)

Sp. 1. En. urocerus. Fem. *Viridis aut cyaneus, abdomen cupreum, antennæ nigræ, pedes flavi nigro et fusco varia, alæ limpidæ, proalæ fusco plerumque fasciatæ.*

* Antennæ *E. Jugæo* 9-articulatæ?

Encyrtus urocerus . *Dalman, Kongl. Vetens. Acad. Handl. för år 1820, p. 368.*

Cerchysius urocerus } *Westwood, Lond. and Edin. Phil. Mag.*
et stigmatalis . } *and Journ. of Science, Third Series,*
 I. 127.

Fem.—Læte viridis : oculi et ocelli obscure rufi : antennæ nigræ ; articulus 1^{us}. viridis : mesothoracis epimera et metathorax cuprea : abdomen cupreum, basi viridi varium : oviductus fulvus ; vaginæ nigra, abdominis dimidio paullo longiores : pedes flavi ; coxæ virides ; propedum femora nigra, tibiæ basi fuscæ, tarsi obscure fulvi ; mesopedum femora nigro-fusca basi et apice flava, tibiæ basi fusco-cinctæ, tarsi apice fuscii ; metapedum femora et tibiæ nigra, tarsi apice nigro-fuscii : alæ limpidae ; squamulæ et nervi nigro-fusca, stigma minutum concolor ; proalæ cuique apud stigma fascia postice abbreviata fusca. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{4}$; alar. lin. 1— $1\frac{1}{2}$.)

Var. β.—Mesotibiæ omnino flavæ.

Var. γ.—Abdomen basi læte viride : propedum tibiæ fuscæ, tarsi pallide fuscii ; mesopedum femora nigra, tibiæ nigro-fuscæ.

Var. δ.—Thorax cyaneo-viridis : abdomen basi læte viride.

Var. ε.—Mesopedum femora et tibiæ flava, illa basi fusca.

Var. ζ.—Proalis fasciæ perfectæ.

Var. η.—Mesothoracis scutum æneo-viride.

Var. θ.—Caput cyaneum : mesothoracis scutum et scutellum cyaneo-viridia : abdomen basi læte viride : mesotibiæ nigro-fuscæ : proalis fasciæ perfectæ.

Var. ι.—Proalæ immaculatæ.

Var. κ.—Mesothoracis scutellum apice æneum : profemora supra fusco-vittata : proalæ immaculatæ.

Var. λ.—Thorax omnino viridis : tarsi fuscii, apice obscuriores.

Var. μ.—Caput et thorax cyanea : abdomen basi cyaneo-viride : pro-tibiæ nigræ : proalis fasciæ perfectæ.

June, July, September ; near London, Dorsetshire, Devonshire, Isle of Wight. Found at Port Marnock, Ireland, by Mr. Haliday.

Fem.—Corpus crassum, latum, convexum, nitens, punctatum, parce pubescens: caput transversum, thoracis latitudine, postice concavum; vertex angustus; frons convexa: oculi magni, non extantes: os velut *E. uroceri* formatum: antennæ crassæ, clavatæ, pubescentes; articulus 1^{us}. fusiformis; 2^{us}. longicyathiformis; 3^{us}. et sequentes subquadrati, usque ad 8^{um}. curtantes et laterescentes; clava longiovata, articulo 8^o. paullo latior et plus duplo longior: thorax breviovatus; scutum transversum; paraptera non convenientia; scutellum rhombiforme: abdomen breviovatum, læve, supra planum, thorace paullo latius vix brevius: oviductus subexertus; vaginæ pubescentes; alæ angustæ.

Sp. 2. *En. cyaneus*. *Fem. Cyaneus viridi varius, abdomen viridi-cupreum, antennæ nigræ, pedes fulvi fusco-cincti, alis apices plerumque fusci.*

Encyrtus cyaneus. *Dalman, Kongl. Vetens. Acad. Handl. för år 1820; Nees ab Ess. Hym. Ich. affn. Monogr. II. 228.*

Caput nigrum, obscurum: oculi et ocelli picei: antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. fulvus, apice supra fuscus: scutum læte cyaneum: paraptera nigra, obscura: scutellum viride: metathorax nigro-cupreus: abdomen viride, nitens; discus cupreus: pedes fulvi; coxæ virides; femora nigra, apice flava; tarsi apice obscuriores; metatibiæ basi fusæ; mesopedum tibiæ et tarsi flava, illæ basi fusæ: alæ sublimpidæ, apice fusæ; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{5}{4}$ — $1\frac{1}{3}$.)

Var. β.—Caput nigro-cyaneum: scutum cyaneo-viride: abdomen cupreum, basi cupreo-viride micans.

Var. γ.—*Var. β* similis: antennis articulus 1^{us}. nigro-fuscus, basi fulvus.

Var. δ.—Metatibiæ fusæ.

Var. ε.—*Var. δ* similis: cyaneus: abdomen cupreum, basi viride: proalæ omnino sublimpidæ, apud stigma fulvescentes.

Var. ζ. Immatura? *Var. ε* similis: antennæ nigro-fusæ: alæ omnino limpidæ; squamulæ et nervi flava.

Var. η.—Pedes fulvi; femora nigra; metatibiæ fusæ; mesotibiæ fusco-cinctæ.

Var. θ.—*Var. ε* similis: caput nigro-cyaneum, antennæ nigro-fuscæ, articulus 1^{us}. fulvus: thorax cyaneo-viridis: scutum cyaneum: pedes fulvi; tarsi apice obscuriores; metafemora fusca, apice fulva.

Var. ι.—Viridi-cyaneus: antennis articulus 1^{us}. nigro-fuscus, basi flavus: abdomen cupreum, basi viride: pedes flavi; femora basi fusca; tibiæ fusco-cinctæ; tarsi apice fusci: protarsi fulvi; metapedum femora et tibiæ fusca: alæ fulvo-limpidæ.

June to October; on grass in fields; Windsor Forest, Hampshire, Isle of Wight, Cumberland, North Wales. Found by Mr. Haliday, near Belfast.

“Bred from a bundle of cocoons attached to a leaf, and covered with cottony yellow wool, like that which envelopes some spiders’ eggs.”—*Curtis’s British Entomology*, 395.

Mas.—Corpus breve, crassum, convexum, punctatum, nitens, parce pubescens: caput transversum, thorace paullo latius; vertex latus; frons abrupte declivis: oculi majusculi: antennæ filiformes pubescentes, corpore paullo longiores; articulus 1^{us}. fusiformis; 2^{us}. cyathiformis, parvus; 3^{us}. et sequentes longi, lineares, usque ad 8^{um}. paullulum curtantes; clava fusiformis, articulo 8°. fere duplo longior: thorax ovatus: mesothoracis scutum transversum; paraptera non convenientia; scutellum brevi-obconicum: abdomen brevi-ovatum, planum, thorace brevius non augustius: alæ amplæ.

Sp. 3. En. Batillus. *Mas. Viridis, abdomen cupreum, antennæ fulvæ, pedes flavi, metapedes fusci, alæ sublimpidæ.*

Viridis: capitis vertex cupreo varius: frons læte viridis: oculi et ocelli obscure rufi: antennæ pallide fulvæ, corporis longitudine; articulus 1^{us}. læte flavus; 2^{us}. supra basi fuscus: scutellum cupreo varium: abdomen nigro-cupreum: pedes flavi; coxæ virides; tarsi fulvi; metapedum femora et tibiæ fusca: alæ sublimpidæ, latæ, corpore longiores; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β.—Tibiæ fulvo-cinctæ.

Var. γ.—Metafemora et metatibiæ nigro-fusca.

Var. δ.—Mesotarsi flavi apice fusci.

June, September; on grass in fields; near London, Berkshire, Wales, Devonshire.

Mas.—Corpus breve, crassum, punctatum, pubescens, nitens : caput transversum, convexum, postice concavum ; vertex latus ; frons abrupte declivis : oculi magni : thorax ovatus, convexus ; mesothoracis scutum transversum, paraptera fere convenientia, scutellum rhombiforme : abdomen longi-obconicum supra planum, thorace paullo brevius et angustius : antennæ filiformes, hirtæ, corpore longiores ; articulus 1^{us}. fusiformis, gracilis ; 2^{us}. parvus, subrotundus ; 3^{us}. et sequentes longi, lineares, usque ad 8^{um}. paullulum curtantes ; clava fusiformis articulo 8^o. multo longior vix latior : pedes longi, graciles.

Fem.—Antennæ subclavatae, corporis longitudine ; articulus 1^{us}. gracilis ; 2^{us}. longi-cyathiformis ; 3^{us}. et sequentes usque ad 8^{um}. latescentes et curtantes ; clava longi-ovata, articulo 8^o. latior et plus duplo longior : abdomen brevi-ovatum, subtus carinatum, thorace multo brevius vix angustius : oviductus occultus.

Sp. 4. En. Gabinius. *Mas et Fem. Viridis cupreo aut cyaneo varius, abdomen cupreum, antennæ nigræ aut fuscae, pedes flavi fulvo et fusco varii, metapedes nigri, alæ limpidæ.*

Mas.—Læte viridis : oculi et ocelli obscure rufi : antennæ fuscae ; articulus 1^{us}. basi flavus : os fuscum : mesothoracis discus cupreo varius : metathorax cupreus : abdomen cupreum, basi læte viride : propedes fulvi, coxæ femora et tibiæ supra fusco-vittata ; mesopedes pallide flavi ; metapedes nigri, femora subarcuata, tibiæ nigro-fuscae basi et apice fulvæ, tarsi pallide fusci : alæ limpidæ ; squamulæ fuscae ; nervi fulvi.

Var. β.—Mesothorax cyaneo-viridis : mesopedes flavi ; femora et tibiæ fusco-cincta, tarsi fulvi basi flavi ; metapedum tibiæ omnino nigro-fuscae, tarsi fusci.

Var. γ.—Læte cyaneo-viridis : antennæ nigræ ; articulus 1^{us}. fuscus, basi et subtus pallide flavus : abdomen nigro-cupreum, basi læte viride : pedes flavi ; propedum femora et tibiæ supra fulvo-vittata, tarsi fulvi ; mesopedum femora et tibiæ basi fulva, tarsi apice fusci : metapedes nigri, genua et tarsi fusca.

Fem.—Antennæ nigro-fuscae ; articulus 1^{us}. nigro-viridis : scutellum cupreum : abdomen cupreum, basi micans et viridi varium : tarsi fulvi, apice fusci ; propedum femora nigra apice flava, tibiæ fuscae apice fulvæ ; mesopedes flavi, femora fusco-cincta, tarsi pallidiores

apice fusci; metafemora recta quam *mari* crassiora. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{5}$; alar. lin. $\frac{5}{4}$ —1.)

May, September; on grass in fields, near London. Found by Mr. Haliday in Ireland.

Fem.—Corpus sat longum, nitens, scite punctatum, brevissime pubescens: caput transversum, thorace paullo latius; frons convexa: oculi magni: antennæ clavatæ, hirtæ, corporis dimidio longiores; articulus 1^{us}. gracilis, fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes subcyathiformes, usque ad 8^{um}. latescentes; clava ovata, articulo 8^o. latior et plus duplo longior: thorax ovatus, planus; mesothoracis scutum transversum, paraptera non convenientia, scutellum brevissime obconicum: abdomen ovatum, planum, læve, subtus carinatum, apice parce hirtum, thorace paullo latius vix longius: oviductus subexertus: alæ angustæ.

Sp. 5. En. Marsus. Fem. *Viridi-cyaneus*, abdomen cupreum, antennæ nigræ, pedes fusci, alæ subfuscæ.

Viridi-cyaneus: oculi et ocelli obscure rufi: antennæ nigræ; articulus 1^{us}. fuscus, basi et subtus fulvus: abdomen cupreum, basi viridi varium: pedes fusci; coxæ virides; femora et tibiæ apice fulvæ; pro- et meso-tibiæ fulvæ, basi supra fuscæ, trochanteres et tarsi fulvi, hi apice fusci: alæ subfuscæ; squamulæ et nervi fulvæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

July; on grass, in fields, near London.

Fem.—Corpus parvum, angustum, punctatum, pubescens, parum nitens: caput transversum, subquadratum, thoracis latitudine; vertex angustus; frons convexa, antice abrupte declivis: oculi magni, non extantes: antennæ clavatæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes parvi, breves, usque ad 8^{um}. latescentes; clava fusiformis, articulo 8^o. latior et triplo longior: thorax ovatus; mesothoracis scutum transversum, paraptera non convenientia, scutellum breve semicirculum fingens: abdomen ovatum, planum, apice angustum acuminatum, thorace vix brevius: oviductus occultus: pedes graciles: alæ angustæ.

Sp. 6. En. argentifer. (Haliday MSS.) Fem. *Viridis*, sericeus, alarum basi ferrugineus, abdomen cupreum, antennæ fuscæ flavo cinctæ, pedes fusco-flavi, proalæ fuscæ basi limpide.

Viridis: oculi et ocelli obscure rufi: antennis articulus 1^{us}. fuscus, apice flavus; 2^{us}. et 3^{us}. fusci; 4^{us}. et 5^{us}. flavi; 6^{us}. et sequentes nigro-fusci: scutum albo-sericeum: humeri et paraptera ferruginea: scutellum nigrum, obscurum metathorax æneo-viridis, micans: abdomen læte cupreum, basi viridi varium: pedes læte flavi; mesofemora apice fulvo-cincta; metapedum femora et tibiæ fusca, basi hæ apice quoque flava: proalæ fuscæ, basi limpida; squamulae et nervi fulva, hi apice fusci; metalæ limpida. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Found in the Isle of Arran, by Mr. Haliday.

Fem.—Corpus breve, crassum, punctatum, pubescens, parum nitens: caput subrotundum, thorace paullo latius; vertex latus; frons convexa, ad os abrupte declivis: oculi sat magni, non extantes: antennæ clavatae, graciles, subcylindricæ, corpore vix breviores; articulus 1^{us}. gracilis, fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes breves, subquadrati, usque ad 8^{um}. latescentes; clava fusiformis, articulo 8^o. paullo latior et triplo longior: thorax ovatus, convexus; mesothoracis scutum transversum, paraptera non convenientia, scutellum obconicum: abdomen brevi-ovatum, planum, subtus carinatum, apice acuminatum, thorace paullo brevius et angustius: oviductus non exertus: pedes longi, graciles: alæ vix ullæ.

Sp. 7. En. Sipyly. *Fem. Nigro-æneus ferrugineo varius, antennæ nigræ, pedes fulvi, alæ limpida.*

Nigro-æneus: caput nigro-viride: oculi et ocelli obscure rufi: antennæ nigræ; articulus 1^{us}. basi et apice fuscus: humeri ferruginei: abdomen æneo-fuscum, basi ferrugineum: oviductus vaginæ nigræ: pedes fulvi; tarsi flavi, apice pallide fusci: alæ limpida, mutilata. (Corp. long. lin. $\frac{1}{3}$.)

Var. β.—Abdomen basi fuscum: metapedes pallide fusci; tarsi fulvi, apice fusci.

October, on grass in fields, near London.

Mas.—Corpus parvum, angustum, pubescens, nitens, scitissime punctatum: caput transversum, subquadratum, thorace latius; vertex latus, convexus; frons convexa: oculi mediocres, non extantes: antennæ filiformes, pilosæ, corpore longiores; articulus 1^{us}. fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes ad 8^{um}. longi, lineares, subæquales; clava fusiformis, acuminata, articulo 8^o. multo longior: thorax ovatus; mesothoracis scutum vix latius

quam longum, paraptera non convenientia, scutellum brevi-obconicum: abdomen ovatum, planum, læve, fere glabrum, apice hirtum, thorace paullo brevius et angustius: sexualia occulta: pedes longi, graciles; mesotarsi parum incrassati: alæ vix ullæ.

Sp. 8. En. Comara. Mas. *Æneo-viridis, abdomen cupreum, antennæ fulvæ, pedes flavi.*

Æneo-viridis: oculi et ocelli picei: antennæ fulvæ; articulus 1^{us}. flavus: abdomen cupreum: pedes flavi; metafemora fusca, apice flava: alæ limpidae, brevissimæ, volatu ineptæ. (Corp. long. lin. $\frac{1}{3}$.)

Var. β.—Caput et thorax cyaneo-viridia, illius vertex æneo-viridis.

Found near London; also in Ireland, by Mr. Haliday.

Fem.—Corpus angustum, punctatum, pubescens, parum nitens: caput transversum, convexum, thoracis latitudine; vertex angustus; frons convexa, ad os abrupte declivis: oculi magni: antennæ clavatæ, corpore breviores; articulus 1^{us}. gracilis, fusi-formis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes transversi, subquadrati, usque ad 8^{um}. latescentes; clava longiovata, articulo 8^o. paullo latior et plus triplo longior: thorax ovatus, planus; mesothoracis scutum transversum, paraptera non convenientia, scutellum breve rhombiforme: abdomen ovatum, planum, thorace paullo angustius non longius: oviductus occultus: pedes validi: alæ angustæ.

Sp. 9. En. Paralia. Fem. *Nigro-piceus fulvo varius, abdomencupreum, antennæ nigræ albo cinctæ, pedes fusco-flavi, proalæ fuscæ basi limpidae.*

Caput nigrum, obscurum: oculi et ocelli obscure rufi: antennæ nigræ, articulus 1^{us}. fulvus, basi supra fuscus; 2^{us}. nigro-fuscus; 3^{us}. pallidior, apice albidus; 4^{us}. et 5^{us}. albidus: thorax nigro-piceus, parum nitens, antice et utrinque fulvus; paraptera et scutellum fulva: abdomen nigro-cupreum, basi cupreo-viride micans: pedes flavi; femora fusca, basi et apice flava; metatibie fuscæ, basi et apice flavæ: proalæ fuscæ, basi limpidae; metalæ limpidae; squamulæ et nervi fulva, hi apud stigma fusci. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar lin. $\frac{3}{4}$ —1.)

July; south of France.

Fem.—Corpus breve, crassum, latum, punctatum, pubescens, parum nitens: caput transversum, vix thoracis latitudine, antice subproductum et semicirculum fingens: oculi magni, non extantes:

antennæ clavatæ, crassæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. fusiformis, subtus dilatatus; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes breves, transversi, usque ad 8^{um}. latescentes; clava longiovata, articulo 8°. paullo latior et triplo fere longior: thorax ovatus, convexus; scutum transversum, paraptera non convenientia, scutellum subrotundum: abdomen rotundum, supra planum, thorace brevius et latius: metatibiæ subarcuatæ.

Sp. 10. En. barbarus. Fem. *Nigro-cyaneus*, abdomen cupreum, antennæ fuscæ albo cinctæ apice nigræ, pedes fulvi, alæ fulvæ.

Encyrtus barbarus. *Dalman, Kongl. Vetens. Acad. Handl. för är, 1820; Nees ab Ess. Hym. Ich. affin. Monogr. II. 211.*

Nigro-cyaneus: oculi et ocelli obscure rufi: antennæ fuscæ; articulus 1^{us}. niger; 7^{us}. et 8^{us}. albidus; clava nigra: abdomen cupreum, nitens, læve, fere glabrum: pedes fulvi; tarsi flavi, apice fuscus; mesopedes flavi: alæ limpidæ, breves, angustæ, apice subfuscæ; squamulæ et nervi fulva; stigma minutum; proalæ cuique apud stigma fascia lata fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β .—Antennis articuli 5^{us}. et 6^{us}. nigro-fusci.

August, September; near London, North Wales, Scotland. Found at Holywood, Ireland, by Mr. Haliday.

Sp. 11. En. Zarina. Fem. *Cyaneus*, abdomen cupreum, antennæ fusco-fulvæ, pedes fulvi, alæ brevissimæ.

Læte cyaneus: caput viride: oculi et ocelli obscure rufi: antennæ fusco-fulvæ; articulus 1^{us}. fulvus; clava fusca: abdomen cupreum: pedes fulvi; mesopedes flavi, tarsi apice fulvi: alæ sublimpidæ, mutilatæ. (Corp. long. lin. $\frac{3}{4}$.)

Found in Ireland, by Mr. Haliday.

Sp. 12. En. ænei-ventris (Hal. MSS.) Fem. *Fulvus*, abdomen viridi-cupreum, antennæ nigræ, pedes fulvi, alæ brevissimæ.

Læte fulvus: oculi et ocelli picei: antennæ nigræ, pubescentes; articulus 1^{us}. fulvus: scuti discus viridescens; abdomen viridi-cupreum; pedes læte fulvi; tarsi apice obscuriores: mesopedes flavi: alæ limpidæ, mutilatæ, brevissimæ. (Corp. long. lin. $\frac{1}{2}$.)

Var. β.—Scutum omnino fulvum.

Found on heathy hills, in the Isle of Bute, by Mr. Haliday.

Fem.—Corpus breve, latum, crassum, pubescens, scitissime punctatum, parum nitens: caput semicirculum fingens thoracis latitudine; vertex latus; frons convexa, antice abrupte declivis: antennæ clavatæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. maxime dilatatus; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes transversi, brevissimi, usque ad 8^{um}. latescentes; clava brevi-ovata, articulo 8^o. latior et plus duplo longior: thorax breviconicus, planus; mesothoracis scutum transversum, paraptera non convenientia, scutellum subrhombiforme: abdomen subtrotundum, supra planum, thorace latius et brevius: oviductus occultus: alæ parvæ aut nullæ.

Sp. 13. En. Jalysus. *Fem. Fulvus, abdomen nigro-cupreum, antennæ nigræ, pedes fulvi, alæ nullæ.*

Obscure fulvus: oculi et ocelli picei: antennæ nigræ: abdomen nigro-cupreum, nitens: pedes fulvi; metafemora fusca; tarsi flavi, apice fusci. (Corp. long. lin. $\frac{2}{3}$.)

September; on Skiddaw, Cumberland.

Fem.—Niger: oculi et ocelli picei: antennæ nigræ, pubescentes; articulus 1^{us}. ater, nitens: abdomen æneo-atrum, nitens, læve, fere glabrum, apice quasi truncatum: pedes fulvi; tarsi apice obscuriores; coxæ nigræ; propedum femora nigro-fusca apice basique flava, tibiæ basi fusca; metapedum femora nigra, tibiæ nigro-fusca: alæ sublimpidæ, angustæ, brevissimæ; proalæ cuique apud stigma fascia lata fusca; squamulæ et nervi fusca.

Mus.—Antennæ submoniliformes, extrorsum crassiores, corporis longitudine; articulus 1^{us}. fusiformis, non dilatatus; 2^{us}. parvus, ovatus; 3^{us}. et sequentes sublineares, usque ad 8^{um}. curtantes vix latescentes; clava longiovata, articulo 8^o. multo longior vix latior: abdomen quam *fem.* brevius; segmentum 1^{um}. ejus dorsum fere totum occupans.

Sp. 14. En. Madyes. *Fem. Niger, abdomen æneo-atrum, antennæ mari fusca fem. nigræ, pedes nigro-fusci, fem. alæ fusco fasciatæ.*

Antennæ fusca: pro- et mesopedum femora nigro-fusca, basi et apice nigra; tibiæ basi fusca: alæ mutilatæ, vix conspicuæ. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{3}$.)

Found on the *Arbutus Uva Ursi*, on the top of Goatfell, in the Isle of Arran, by Mr. Haliday.

Mas.—Corpus parvum, nitens, scitissime squameum, fere glabrum : caput longitudine latius et in ea thoraci æquum ; vertex angustus ; frons abrupte declivis : oculi sat magni : antennæ gracillimæ, extrorsum crassiores, corpore paullo breviores ; articulus 1^{us}. gracilis, fusiformis ; 2^{us}. longi-cyathiformis ; 3^{us}. et sequentes longi, lineares, usque ad 8^{um}. paullulum curtantes et latescentes ; clava fusiformis, acuminata, articulo 8^o. triplo longior vix latior : thorax ovatus, planus ; mesothoracis scutum transversum ; paraptera supra convenientia ; scutellum rhombiforme, postice subproductum : abdomen ovatum, planum, ac si thorax longum et latum : sexualia subexerta.

Fem.—Antennis clava quam *mari* longior et latior : abdomen longiovatum, thorace paullo longius : oviductus subexertus.

Sp. 15. En. Imandes. *Mas* et *Fem*. *Cyaneus*, abdomen nigro-cupreum, antennæ fuscæ, pedes flavo-fusci, femora nigra, alæ subfuscæ.

Cyaneus : caput nigrum : os flavum : palpi fusci : oculi et ocelli picei : antennæ *mari* fuscæ, *fem*. nigro-fuscæ ; articulus 1^{us}. niger : abdomen nigro-cupreum : sexualia fusca : pedes nigri ; tibiæ flavæ, basi fuscæ ; tarsi fulvi ; metatibiæ nigro-fuscæ, apice flavæ : alæ subfuscæ ; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{3}$ — $\frac{3}{4}$.)

Var. β.—*Mas* metatibiæ fulvæ, basi fuscæ.

Var. γ.—*Fem*. thorax purpureo-cyaneus.

July ; on grass in woods, near London.

Fem.—Corpus crassum, squameum, nitens, pubescens : caput convexum longitudine latius et in ea thoraci æquum ; vertex latus ; frons subimpressa, abrupte declivis : oculi mediocres : antennæ subclavatae, graciles, corporis dimidio paullo longiores ; articulus 1^{us}. gracilis, fusiformis ; 2^{us}. longicyathiformis ; 3^{us}. et sequentes parvi, transversii, subcyathiformes, usque ad 8^{um}. latescentes ; clava fusiformis, acuminata, articulo 8^o. plus quadruplo longior : thorax brevi-ovatus, planus ; mesothoracis scutum transversum ; paraptera non convenientia ; scutellum rhombiforme : abdomen ovatum, planum, thorace paullo latius non longius : oviductus occultus : pedes graciles.

Sp. 16. En. Chærilus. Fem. *Æneo-viridis*, abdomen nigro-cupreum, antennæ nigræ, pedes fusci, alæ subfuscæ.

Æneo-viridis: oculi et ocelli rufi: antennæ nigræ; articulus 1^{us}. nigro-viridis: abdomen nigro-cupreum: pedes fusci; genua fulva; tarsi flavi, apice fusci: alæ subfuscæ; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

September; roots of grass, sandhills, North Wales.

Fem.—Corpus breve, latum, crassum, punctatum, obscurum, albhirtum: caput magnum, brevissimum, non aliter thorace latum, ad os abrupte declivis: mandibulæ bidentatæ, angustæ, arcuatæ; dentes acuti, subæquales: maxillæ longæ, subarcuatæ; lacinia acuminatæ, intus dilatatæ; palpi filiformes, graciles, articulus 2^{us}. 1^o. longior, 3^{us}. adhuc longior, 4^{us}. fusiformis 3^o. longior: labium angustum, obconicum; ligula brevis, lata, conica: palpi biarticulati, breves, subfiliformes: antennæ extrorsum crassiores, corpore paullo breviores; articulus 1^{us}. longissimus, fusiformis, subtus dilatatus; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes longi, sublineares, usque ad 8^{um}. curtantes et paullo latescentes; clava fusiformis, articulo 8^o. duplo longior et paullo latior: thorax subquadratus, convexus: mesothorax dorsum omne occupans; segmenta maxima; parapsidum suturæ non conspicuæ; paraptera supra non convenientia; scutellum rhombiforme: pectoris laminae maximæ: abdomen planum, subtus carinatum, apice compressum et acuminatum; segmentum 1^{um}. maximum: segmenta ventralia occulta: oviductus non exertus: pedes validi.

Mas.—Corpus quam *fem.* angustius: caput antice convexum: antennæ filiformes, corporis longitudine; articulus 1^{us}. non dilatatus; 2^{us}. cyathiformes; 3^{us}. et sequentes ad 8^{um}. curtantes; clava articulo 8^o. multo longior: abdomen ovatum, subtus convexus, thorace brevius.

Sp. 17. En. hemipterus. Mas et Fem. *Nigro-æneus*, antennæ nigræ, tarsi et mari mesopedes pallidi, alæ bifasciatæ aut vix ullæ.

Encyrtus hemipterus . *Dalman, Kongl. Vetens. Acad. Handl. för är, 1820; Nec ab Ess. Hym. Ich. affn. Monogr. II. 252.*

Nigro-æneus, obscurus, unicolor: oculi et ocelli obscure rufi: palpi flavi, apice fusci: antennæ nigræ, brevissime pubescentes; articulus 1^{us}. nigro-æneus; clava apice fusca: trophi flavi: pectoris

laminæ nigro-cyanæ : pedes nigro-ænei ; genua et protarsi fusca ; meso- et metatarsi flavi, apice fusci : alæ fuscæ, mutilatæ, subcoarictæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. 1.)

Mas.—Abdomen cupreum : tarsi fusci : mesopedes fulvi, femora fusca.

Var. β.—*Fem.* protarsi fulvi.

Var. γ.—*Fem.* caput et thorax nigro-viridia.

Var. δ.—*Fem.* alæ perfectæ, fuscæ ; squamulæ et nervi obscuriora, horum cubitalis crassus ; proalæ cuique fasciæ 2, apicalis lunata alba ; metalæ sublimpidæ.

June, September ; on ferns ; Hampshire, Isle of Wight, Wales, Cumberland, Dorsetshire, Devonshire, Cornwall, Ireland, Auvergne.

Fem.—Corpus crassum, latum, nitens, glabrum, scitissime punctatum : caput brevissimum, thoracis latitudine ; vertex latus, convexus ; frons abrupte declivis : oculi mediocres : antennæ extrorsum crassiores, corpore vix breviores ; articulus 1^{us}. longissimus, gracilis, subfusiformis ; 2^{us}. longus, linearis, 3^{us}. et sequentes longi, linearis, usque ad 8^{um}. paullulum latescentes et curtantes ; clava longi-ovata, articulo 8^o. duplo fere longior vix latior : thorax oblongus, subquadratus, convexus : prothorax supra conspicuus : mesothoracis scutum breve, transversum ; paraptera magna, supra convenientia ; scutellum rhombiforme : metathorax sat bene determinatus : abdomen ovatum, supra planum, subtus carinatum, basi latum, apice angustum et acuminatum : alæ angustæ.

Sp. 18. En. Lindus. *Fem.* *Cyaneo-fulvus, antennæ fuscæ apice flavæ, pedes fulvi, alæ subfuscæ aut nullæ.*

Fulvus : capitis vertex et thoracis discus cyaneo-fusca : oculi et ocelli rufi : antennæ fuscæ ; articulus 1^{us}. fulvus ; 2^{us}. basi et subtus fulvus ; clava pallide flava, basi fusca : abdominis discus cyaneo-fuscus : pedes fulvi ; tarsi flavi, apice fusci ; protarsi obscure fulvi ; metapedum femora et tibiæ supra fusca : alæ subfuscæ ; squamulæ et nervi fusca ; proalæ cujusque apicem versus fascia lunata alba. (Corp. long. lin. $\frac{1}{4}$ — $\frac{3}{4}$; alar. 1 $\frac{1}{4}$.)

Var. β.—Antennis articulus 1^{us}. supra apice fuscus ; 3^{us}. et sequentes ad 9^{um}. nigro-fusci : alæ nullæ.

June ; on chalk downs, Isle of Wight.

Fem.—Corpus angustum, scitissime squameum, parce et breviter pubescens: caput breve, antice convexum, thorace paullo angustius: antennæ gracillimæ, fere filiformes, corpore longiores; articulus 1^{us}. longissimus, gracilis, linearis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes ad 8^{um}. longi, lineares; clava longissima, linearis, articulo 8^o. paullo latior et plus duplo longior: thorax ovatus, subconvexus: mesothoracis scutum longitudine latius; parapsidium suturæ non conspicuæ; paraptera supra non convenientia; scutellum subrhombiforme: abdomen læve, planum, subtus carinatum, apice compressum et acuminatum, thoracis longitudine at eodem multo angustius: oviductus subexertus: pedes longi, graciles: alæ angustæ.

Sp. 19. En. Anceus. *Fem. Viridis sericeus, abdomen cupreo-æneum, antennæ nigræ, pedes flavi, alæ limpidæ.*

Læte viridis, quasi sericeus: oculi et ocelli rufi: antennæ nigræ, vix pubescentes: abdomen cupreo-æneum, nitens, glabrum, apice parce pubescens: oviductus vaginæ, nigræ, pubescentes: pedes læte flavi; tarsi apice fusci: alæ limpidæ; squamulæ et nervi fulva. (Corp. long. lin. $\frac{5}{4}$; alar. lin. $1\frac{1}{4}$.)

Var. β.—Metapedum femora et tibiæ fusco fasciata.

July, September; on lauristinus and ivy, near London, North Wales.

Sp. 20. En. Didius. *Fem. Viridis aut cupreus, sericeus, antennæ nigræ aut fuscæ, pedes flavi, mesopedes nigri, alæ limpidæ.*

Læte viridis, sericeus: capitis vertex viridi-æneus: oculi et ocelli obscure rufi: antennæ nigræ; articulus 1^{us}. nigro-viridis, apice fuscus; 2^{us}. apice fuscus: humeri albi: mesothoracis scutum antice cupreum; scutellum obscure cupreum: metathorax æneus: abdomen cupreum, basi viride, apice parce pubescens: oviductus vaginæ nigræ, pubescentes: pedes pallide flavi; coxæ virides; tarsi apice fulvi; propedum femora et tibiæ extus fulvo vittata, tarsi fulvi; metapedum femora et tibiæ nigra apice basique flava, tarsi apice fusci: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β.—Mesopedum femora basi fusca; tibiæ fuscæ, basi et apice flavæ.

Var. γ.—*Var. β* similis: antennæ fuscæ; articulus 1^{us}. viridis; 2^{us}. niger.

Var. δ.—Caput et thorax cupreo-ænea.

Var. ε.—Caput viride: thorax æneo-viridis, cupreo varius.

July to September; on grass in fields, near London; Devonshire.

Mas.—Corpus angustum, sublineare, nitens, scite punctatum, pubescens: caput breve, transversum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: thorax longiovatus, fere planus: mesothoracis scutum latitudine paullo longius; paraptera fere convenientia; scutellum brevi-obconicum: abdomen ovatum, planum, læve, fere glabrum, thorace brevius vix angustius, apice hirtum: antennæ longæ, filiformes, pilosæ; articulus 1^{us}. fusiformis; 2^{us}. subrotundus, parvus; 3^{us}. et sequentes longi, æquales, sublineares; clava fusiformis, acuminata, articulo 8^o. multo longior non latior.

Sp. 21. *En. melanopus* (Haliday MSS.) *Mas. Viridis, abdomen cupreum, antennæ fusæ, pedes nigro-fusci, mesopedes flavi, alæ limpidæ.*

Læte viridis: oculi et ocelli obscure rufi: antennæ fusæ, subtus fulvæ, corpore vix breviores; articulus 1^{us}. flavus, subdilatus, supra apicem versus niger; 2^{us}. supra nigro-fuscus: humeri læte flavi: abdomen cupreum, basi et utrinque viride: sexualia flava: pro- et metapedum femora et coxæ viridia, illa apice fulva; tibiæ nigro-fusæ, subtus pallidiores, apice fulvæ; tarsi pallide fusci: mesopedes flavi; tibiæ basi et tarsi apice fusca: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—Antennis articulus 1^{us}. nigro-viridis; 2^{us}. nigro-fuscus: propedes fusci, femora fulva supra viridi vittata, tibiæ supra et apice fulvæ; mesotibiæ omnino flavæ; metapedum tibiæ nigræ, tarsi fusci basi flavi.

July, October; near London. Found in August on the coast near Belfast, by Mr. Haliday.

Sp. 22. *En. subplanus*. *Mas. Præcedenti similis at angustior, antennæ longiores graciliores fulvæ.*

Encyrtus subplanus. *Dalman, Kongl. Vetens. Acad. Handl. för år, 1820; Nees ab Ess. Hym. Ich. affin. Monogr. II. 245.*

Mas.—Læte viridis, micans: oculi et ocelli rufi: antennæ fulvæ,

corporis longitudine; articuli 1^{us}. et 2^{us}. supra virides: humeri læte flavi: abdomen cupreum, basi viridi-cyaneum: pedes læte flavi; coxæ virides; tarsi apice fusci; propedum femora basi nigra, tibiæ extus fusco vittatæ, tarsi fulvi; mesopedum femora fulva apice flava, tibiæ basi supra fusco maculatæ; metapedum femora et tibiæ nigra, tarsi fusci basi flavi: alæ limpidæ; squamulæ et nervi fulva, hi apice fusci. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

May, September; on grass in fields, near London, Wales, Isle of Wight.

Sp. 23. En. Gellius. Mas. E. subplano *adhuc gracilior multoque minor*.

Viridis, quasi sericeus: capitis vertex viridi-æneus: oculi et ocelli obscure rufi: antennæ fulvæ, corporis longitudine; articulus 1^{us}. viridis, basi et apice flavus; 2^{us}. basi fuscus: mesothoracis scutum antice cupreum; scutellum obscure cupreum: metathorax æneus: abdomen cupreum, basi viride: pedes pallide flavi; coxæ virides; tarsi apice fulvi; propedum femora et tibiæ extus fulvo vittata, tarsi fulvi; mesopedum femora basi fusca, tibiæ fuscæ basi et apice flavæ; metapedum femora et tibiæ nigra apice basique flava, tarsi apice fusci: alæ limpidæ; squamulæ et nervi pallide fusca: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

September; on grass in fields; near London.

Mas.—Corpus longum, sublineare, nitens, scite punctatum, brevissime pubescens: caput transversum, convexum, subquadratum, latitudine thoraci æquum; vertex latus; frons abrupte declivis: oculi mediocres: antennæ graciles, filiformes, pilosæ aut pubescentes, corpore paullo longiores; articulus 1^{us}. fusiformis; 2^{us}. subrotundus; 3^{us}. et sequentes longi, lineares, discreti, usque ad 8^{um}. paullulum curtantes; clava fusiformis, acuminata, articulo 8^o. multo longior: thorax ovatus, planus: mesothoracis scutum vix latius quam longum; paraptera fere convenientia; scutellum obconicum: abdomen ovatum, planum, thorace paullo brevius et angustius: alæ amplæ.

Sp. 24. En. Glaphyra. Mas. *Viridis æneo et cyaneo varius, abdomen cupreum, antennæ nigræ aut fuscæ pilosæ, pedes nigro-fuscæ, tarsi flavi, alæ sublimpidæ*.

Viridis: caput æneo-varium: oculi et ocelli picei: antennæ nigræ;

articulus 1^{us}. nigro-viridis: abdomen cupreum, basi micans: coxæ et femora nigro-viridia; tarsi flavi, apice fusci; meso- et metatibiæ nigro-fuscæ, basi albidæ, apice flavæ; protibiæ et pro-tarsi pallide fusca: alæ sublimpidæ; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Femora nigro-fusca, apice flava; tibiæ pallidiores; protibiæ flavæ, basi supra fuscæ.

Var. γ.—Thorax æneo-viridis.

Var. δ.—Caput et thorax cyaneo-viridia.

Var. ε.—*Var. β* similis: mesotibiæ flavæ, fusco cinctæ.

Var. ζ.—Antennæ nigro-fuscæ.

Var. η.—Metapedum tibiæ nigræ, basi et apice pallide flavæ; tarsi fulvi, apice fusci.

Var. θ.—Antennis articuli 3^o. ad 11^{um}. pallide fusci.

May to September; on grass in fields; near London, Berkshire, Isle of Wight, Dorsetshire, &c.

Sp. 25. En. Mattinus. Mas. *Cyaneo-viridis, abdomen cupreum, antennæ fuscæ pubescentes, pedes fusco-fulvi, metapedes nigri, alæ sublimpidæ.*

Mas.—Cyaneo-viridis: capitis frons læte viridis: oculi et ocelli picei: palpi fusci: antennæ fuscæ; articulus 1^{us}. flavus, apice supra fuscus: abdomen cupreum, basi cyaneum: pedes fulvi; coxæ virides; femora et tibiæ pallide fusca, basi et apice fulva; metapedum femora et tibiæ nigra: alæ sublimpidæ, latæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β.—Profemora flava.

May, September; on grass in fields; near London, Hampshire.

Mas.—Corpus longum, lineare, punctatum, subnitens, parce et breviter pubescens: caput brevissimum, convexum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: antennæ subfiliformes, planæ, pubescentes, corpore vix breviores; articulus 1^{us}. fusiformis, gracilis; 2^{us}. subrotundus; 3^{us}. et sequentes longi, lineares, usque ad 8^{um}. paullulum curtantes; clava fusiformis, articulo 8^o. plus dimidio longior: thorax ovatus, convexus; mesothoracis scutum longitudine vix latius; paraptera non convenientia; scutellum obconicum, basi utrinque angulatum:

abdomen ovatum, planum, longum et latum ac si thorax : alæ longæ

Sp. 26. *Eu. serricornis*? Mas. *Viridis aut æneus, scutellum et abdomen cuprea, antennæ nigrae, pedes nigro-fuscae, mesopedes pallidiores, alæ limpidae.*

Encyrtus serricornis? *Dalman, Kongl. Vetens. Acad. Handl. för år, 1820; Nees ab Ess. Hym. Ich. affin. Monogr. II. 244.*

Encyrtus chalconotus? *Ditto ditto. 232.*

Læte viridis, nitens : gula et os fulva : oculi et ocelli obscure rufi : antennæ nigrae ; articulus 1^{us}. nigro-viridis : thorax subtus æneo-viridis, cyaneo varius : humeri albi : scutellum cupreum : metathorax nigro-cupreus : abdomen nigro-cupreum, basi micans : oviductus subexertus ; vaginæ nigrae : pedes nigri ; coxæ virides ; genua flava ; tarsi flavi, apice fusci ; propedum femora nigro-fusca, tibiæ fusca, tarsi fulvi ; mesopedum femora et tibiæ fulva, apice basique flava : alæ limpidae ; squamulae et nervi fulva, hi apice obscuriores. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—Cyaneo-viridis : capitis vertex postice cupreus : antennæ fusca ; articulus 1^{us}. nigro-viridis ; 2^{us}. niger : abdomen cupreum, basi viride : pro- et metagenua fulva ; mesotibiæ fusca ; metapedum tibiæ nigro-fusca, tarsi fulvi apice fusci.

Var. γ.—Protarsi pallide fusci : mesopedum femora nigro-fusca, apice flava ; tibiæ fusca : metatarsi fulvi, apice fusci.

Var. δ.—Capitis vertex æneus : scutum cyaneo-viride, antice cupreum ; mesopedum femora nigra, apice flava.

Var. ε.—Caput et thorax ænea.

September ; Dorsetshire, Cornwall. Found in August on the coast near Belfast, by Mr. Haliday.

Mas.—Corpus angustum, nitens, scite punctatum, fere glabrum : caput transversum, convexum, thoracis latitudine ; vertex latus ; frons abrupte declivis : oculi mediocres : antennæ filiformes, pilosæ, corpore vix breviores ; articulus 1^{us}. fusiformis, subtus dilatatus ; 2^{us}. parvus, brevi-cyathiformis ; 3^{us}. et sequentes longi, æquales, sublineares ; clava fusiformis, acuminata, articulo 8^o. multo longior : thorax longi-ovatus fere planus : mesothoracis scutum transversum ; paraptera non convenientia ; scutellum obconicum : abdomen ovatum, planum, thorace brevius vix angustius.

Sp. 27. En. Anebus. Mas. *Viridis, abdomen cupreum, antennæ nigræ, pedes nigro-fusci, tarsi flavi, alæ limpidae.*

Læte viridis: capitis vertex cupreo varius: oculi et ocelli picei: antennæ nigræ; articulus 1^{us}. viridis: abdomen nigro-cupreum: sexualia fulva: propedes fulvi, femora nigra, tibiæ fusco cinctæ; mesopedes flavi, femora nigra, tibiæ fusco-cinctæ, tarsi flavi apice fulvi; metapedum femora et tibiæ nigra, genua fulva, tarsi flavi apice fusci: alæ limpidae; squamulæ fuscae; nervi fulvi, apice fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β.—Capitis vertex cupreus: thorax cupreo-viridis.

June; Hampshire, Isle of Wight.

Mas.—Corpus breve, crassum, scabre punctatum, parce pubescens, parum nitens: caput transversum, breve, convexum, thorace paullo latius; vertex latus; frons abrupte declivis: antennæ submoniliformes, pilosæ, corporis longitudine; articulus 1^{us}. gracilis, fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. et sequentes ad 8^{um}. longi, æquales, sublineares, discreti; clava longi-ovata, articulo 8^o. latior et multo longior: thorax ovatus, altus, fere planus: mesothoracis scutum vix longitudine latius; paraptera non convenientia; scutellum obconicum: abdomen brevi-ovatum, planum, læve, nitens, fere glabrum, thorace paullo angustius et plus dimidio brevius: pedes longiusculi.

Sp. 28. En. Aralius. Mas. *Viridi-æneus, antennæ fuscae aut fulvæ, pedes nigro-fuscae, femora viridia, mesopedes fusco-fulvæ, alæ limpidae.*

Æneo-viridis: caput viride: oculi et ocelli obscure rufi: antennæ nigro-fuscae; articulus 1^{us}. viridis; 2^{us}. niger: scutellum viridi-æneum: abdomen cupreo-æneum, viridi varium: pro- et metapedum coxæ et femora viridia; genua fulva; tibiæ nigræ; tarsi fulvi, apice fusci: mesopedum femora et tibiæ fusca, hæ apice fulvæ; genua flava; tarsi pallide fulvi, apice fulvo-fusci: alæ limpidae; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β.—Thorax viridis: scutellum æneo-viride.

Var. γ.—Thorax æneus: caput viridi-æneum: protibiæ nigro-fuscae, apice fulvæ: mesotarsi flavi, apice fusci: alarum nervi fulvi, apice obscuriores.

Var. δ.—Antennæ fulvæ; articulus 1^{us}. viridis; 2^{us}. niger: scutellum æneum: abdomen nigro-æneum: genua flava; tarsi pallide fusci: mesopedum tibiæ apice flavæ; tarsi flavi, apice fusci; protibiæ nigro-fuscæ: alarum nervi fulvi, apice obscuriores.

September; near London, Isle of Wight.

Mas.—Corpus breve, crassum, pubescens, subnitens, scite punctatum: caput transversum, breve, convexum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: antennæ filiformes, pilosæ, corporis longitudine; articulus 1^{us}. gracilis, fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. et sequentes longi, lineares, approximati, usque ad 8^{um}. curtantes; clava fusiformis, acuminata, articulo 8^o. multo longior non latior: thorax ovatus, convexus: mesothoracis scutum transversum; paraptera non convenientia; scutellum brevi-obconicum: abdomen brevi-ovatum, planum, thorace multo brevius vix angustius.

Sp. 29. En. Teuteus. *Mas. Cyaneo-viridis, abdomen æneum, antennæ nigro-fuscæ, pedes fusci, mesopedes fulvi, alæ limpidæ.*

Cyaneo-viridis: caput nigrum, obscurum, postice æneum: oculi et ocelli obscure rufi: antennæ nigro-fuscæ; articulus 1^{us}. basi fulvus: metathorax æneus: abdomen cupreo-æneum, viridi varium: propedes fusci, genua et tarsi pallidiora: mesopedes læti fulvi, tarsi apice obscuriores: metapedes nigro-fusci, genua fulva, tarsi pallide fusci: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found near London.

Mas.—Corpus sublineare, pubescens, subnitens, scite punctatum: caput transversum, breve, convexum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: antennæ filiformes, pubescentes, corpore paullo breviores; articulus 1^{us}. gracilis, fusiformis; 2^{us}. cyathiformis, brevis; 3^{us}. et sequentes ad 8^{um}. longi, lineares, subæquales; clava fusiformis, articulo 8^o. fere duplo longior: thorax longi-ovatus, convexus: mesothoracis scutum transversum; paraptera non convenientia; scutellum obconicum: abdomen ovatum, planum, thorace brevius.

Sp. 30. En. Aithya. *Mas. Viridis aut cupreus, antennæ fusca, pedes fusci, tarsi pallidiores, alæ limpidæ.*

Viridis: oculi et ocelli obscure rufi: antennæ fusca; articuli 1^{us}. et

2^{um}. nigri: thorax cupreo-varius: abdomen nigro-cupreum: sexualia fusca: pedes nigro-fusci; genua fulva; tarsi pallide fusci; mesotarsi flavi, apice fusci: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β.—Caput cupreo varium: thorax omnino cupreus.

Var. γ.—Genua et tarsi flava, hi apice fusci: protarsi fulvi.

July, September; near London, Cornwall.

Mas.—Corpus crassum, punctatum, pubescens, parum nitens: caput thoracis latitudine, transversum, breve, convexum; vertex latus; frons abrupte declivis: oculi mediocres: thorax ovatus, altus, convexus: mesothoracis scutum transversum; paraptera fere convenientia; scutellum obconicum: abdomen ovatum, planum, thorace paullo brevius multo angustius; antennæ longitudine corporis, filiformes, pubescentes, articulus 1^{us}. gracilis, fusiformis; 2^{us}. subrotundus; 3^{us}. et sequentes longi, sublineares, usque ad 8^{um}. paullulum curtantes; clava fusiformes, acuminata, articulo 8^o. multo longior non latior: pedes longi.

Sp. 31. En. Sphærus. *Mas. Niger aut viridis, abdomen cupreum, antennæ nigro-fuscæ, pedes nigro-fusci, tarsi pallidiores, alæ albæ.*

Niger: oculi et ocelli picei: antennæ nigro-fuscæ; articulus 1^{us}. niger: abdomen nitens, læve, fere glabrum: sexualia fusca: pedes nigro-fusci; genua fulva; tarsi pallide fusci: alæ albæ; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$; alar. lin. $\frac{1}{2}$ — $\frac{3}{4}$.)

Var. β.—Pedes fusci; tarsi flavi, apice obscuriores.

Var. γ.—Viridis: antennis articulus 1^{us}. viridis: scutellum cupreo-æneum: abdomen nigro-cupreum: mesotarsi basi et subtus flavi.

Var. δ.—*Var. γ* similis: antennæ nigro-fuscæ; articulus 1^{us}. fuscus, basi flavus: scutum viridi-cupreum.

September; near London, North Wales, Dorsetshire.

Mas.—Corpus longum, angustum, scite squameum, parce pubescens, parum nitens: caput thoracis latitudine, transversum, breve; vertex convexus; frons abrupte declivis: oculi mediocres: antennæ subserratae, corporis longitudine; articulus 1^{us}. fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. et sequentes ad 8^{um}. latiores, cyathi-

formes, subæquales; clava fusiformis, articulo 8^o. duplo longior: thorax longi-ovatus, planus: mesothoracis scutum ut latum sic longum; paraptera non convenientia; scutellum brevi-obconicum: metathorax bene determinatus: abdomen longi-ovatum, depressum basi angustius, thoracis longitudine: pedes sat longi; meta-femora subclavata.

Sp. 32. En. Machæras. Mas. *Cupreus, antennæ fuscæ, pedes fulvo-fusci, femora nigra, alæ limpidæ.*

Cupreus: oculi et ocelli picei: antennæ pallide fuscæ; articuli 1^{us}. et 2^{us}. nigro-ænei, hic apice et ille basi fulvi: metathorax nigro-cupreus: scutellum et abdomen nigro-cuprea, hoc nitens læve fere glabrum: sexualia fusca: pedes fusci; coxæ et femora nigra, hæ apice albida; tibiæ basi albida; tarsi fulvi; mesotarsi flavi, apice fusci: alæ limpidæ; squamulæ et nervi fulva, hi apud stigma obscuriores. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

September; on grass in fields, near London.

Fem.—Corpus breve, sublineare, punctatum, nitens, pubescens: caput transversum, breve, convexum, thoracis latitudine; frons abrupte declivis: antennæ clavatæ, graciles, corporis dimidio vix breviores; articulus 1^{us}. fusiformis, gracilis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes breves, subquadrati, usque ad 8^{um}. late-scentes et curtantes; clava longi-ovata, articulo 8^o. paullo latior et plus duplo longior: thorax ovatus, planus: mesothoracis scutum transversum; paraptera supra non convenientia; scutellum brevi-obconicum: abdomen brevi-ovatum, planum, thorace paullo latius vix brevius, subtus convexum, apice acuminatum: oviductus occultus: alæ amplæ.

Mas.—Corpus quam *fem.* angustius: antennæ moniliformes, verticillato-pilosæ, corporis dimido longiores; articulus 2^{us}. subrotundus, parvus; 3^{us}. et sequentes ad 8^{um}. discreti, subtrigoni; clava longi-ovata, articulo 8^o. duplo longior non latior: abdomen thorace non latius.

Sp. 33. En. subcupratus. Mas et Fem. *Cupreus, antennæ mari fulvæ fem. fuscæ, pedes flavi, metapedes aneo-fusci, alæ limpidæ.*

Encyrtus subcupratus. *Dalman, Kongl. Vetens. Acad. Handl. för är, 1820; Nees ab Ess. Hym. Ich. affin. Monogr. II. 252.*

Fem.—Cupreus: caput viridi-æneum, subtus viride: oculi et ocelli

obscure rufi: antennæ fuscæ: thorax subtus cyaneo-viridis: abdomen cupreum, læve, fere glabrum, basi viridi varium: pedes læte flavi; coxæ cupreæ; tarsi apice fusci: metapedum femora nigro-ænea, tibiæ nigro-fuscæ apice basique flavæ; alæ limpidæ, fulvo subinctæ, corporis longitudine; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Mas.—Antennæ fulvæ; articuli 1^{us}. et 2^{us}. supra fusci.

Var. β.—*Fem.* Abdomen basi omnino viride.

Var. γ.—*Fem.* Caput læte viride, antice viridi-cyaneum, postice viridi-æneum: thorax antice æneo-viridis.

Var. δ.—*Mas.* Thoracis scutum viridi varium.

Var. ε.—*Mas.* Caput et thorax viridia: scutellum cupreum.

April, May, July to September; on grass in woods near London, North Wales, Scotland. Found in Ireland by Mr. Haliday.

Sp. 34. En. coniferæ. (Haliday MSS.) *Mas* et *Fem.* *Viridis aut cupreus, antennæ fulvæ, pedes mari fusci fem. flavi, metapedes nigri, alæ limpidæ.*

Fem.—Viridis, cupreo-varius: caput antice viridi micans: oculi et ocelli obscure rufi: antennæ fulvæ; articuli 1^{us}. et 2^{us}. fusci, apice flavi: mesothoracis scutellum apice cupreum: abdomen læte cupreum: pedes flavi; tarsi apice fusci; protibiæ et protarsi fulva; metafemora et metatibiæ nigra, basi et apice flava: alæ limpidæ; squamulæ et nervi fulva, hi apice obscuriores.

Var. β.—Scutellum cupreum: abdomen basi viridi-cupreum.

Var. γ.—*Var. β* similis: caput postice cupreum: scuti discus cupreus.

Var. δ.—Antennis articuli 1^{us}. et 2^{us}. apice fulvi; 3^{us}. et sequentes fusco-fulvi.

Var. ε.—Antennæ fuscæ: caput et thorax supra cuprea.

Mas.—Cupreus, nitens: oculi et ocelli obscure rufi: antennæ fulvæ; articuli 1^{us}. et 2^{us} fusci: abdomen nigro-cupreum: pedes flavi; coxæ æneæ; pro- et mesopedum femora et tibiæ nigro-fusca, basi et apice flava: pro- et metatarsi fulvi: metafemora et metatibiæ nigra: alæ limpidæ; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. $\frac{3}{4}$ — $1\frac{1}{4}$.)

Var. β.—Antennis articuli 1^{us}. et 2^{us} nigri.

September; Dorsetshire, Devonshire. Found in Ireland, by Mr. Haliday.

ART. LVII.—*Notes of a Voyage to Alten, Hammerfest, &c.*
By WILLIAM CHRISTY, Jun. [Note.—The Entomological
Remarks are mostly added from MR. WALKER'S Notes.]

1836, *July 12.*—After a pleasant voyage from the Thames, of twelve days, we were roused by the cry of land, and, on coming on deck, were gratified by a sight of the magnificent range of the Lofoden Islands, whose mountains, of great height, and in many places capped with snow, were glittering in the rays of the morning sun. Several large whales were sporting about, and spouting the water to a considerable height, with a noise resembling that occasioned by the ascent of a large rocket. A fine specimen of that rare British fish the Bergylt (*Sebastes Norvegicus*,) was procured, and Coal-fish, (*Merlangus carbonarius*,) were leaping from the water in great numbers.

13th.—In our passage along the Lofoden Isles, we were much amused in witnessing the piratical propensities of the Arctic Gull (*Lestris Richardsoni*,) exercised among the immense flocks of gulls, kittiwakes, &c., which were flying round us. From some of the latter which were shot, we procured two species of parasites. We fell in with a fishing boat, from which we obtained a large halibut, some cod, ling, and torsk, (*Brosmius vulgaris*, Cuv.)

On the skin of the halibut were numerous flat, oval, white bodies, probably parasites, and the liver was infested with small vermes about an inch long, rolled in circles. On various parts of the bodies of most of the fish were observed numerous parasitical entomostracous animals, belonging to the genus *Pandarus*. They were probably *P. alatus*, Milne Edwd., although certainly much resembling *P. Lamue*, Johnst. (*Mag. Nat. Hist.* viii. p. 204.) When placed in a phial of water they swam about vigorously, using their fins,^a which move by pairs, with a quick abrupt motion. Antennæ short, projecting beyond the head, branched, ciliate, terminated by setæ. Two long filaments at the extremity of the abdomen, with four or five joints. Colour pale yellow. Another and smaller kind, was paler and more transparent, and had three

^a Pattes thoraciques, Edwards.

red setæ on each side of the extremity of the abdomen, which was shorter, and wanted the long filaments. Perhaps it was only the other sex, as, according to Milne Edwards and Johnstone, these appendages are peculiar to the females. Those which we found with filaments were evidently females, from the bunches of ova beneath the abdomen.

14th.—We passed the Island of Fugeloe, which we viewed with much interest, as being one of the various spots on the Norwegian coast, where the skeletons of whales are said to occur on the summits of mountains. Unfortunately we were outside a dangerous reef, and could not land to visit it. With the telescope we could discern nothing of the kind; but this might be owing to the highest ridges being still covered with snow. The sunset, if it may be so called, was the most beautiful we had yet seen. At midnight the sun was considerably above the horizon, and the sky was literally without a cloud. The whales and gulls were as numerous and active as during the day, and it is difficult to know when these creatures sleep in summer time.

15th.—This morning we found ourselves just entering Soroe Sund, between the islands of Soroe and Lopper. Here we observed several insects flying over us, amongst which were a *Tipula* and a large dragon-fly. The sail up Soroe Sund is extremely beautiful. On one side, the rocky and barren shores, Soroe, with the little town of Hasvig; and on the other, the lofty mountains of the island of Seyland, crowned by a magnificent glacier, which in some places descended the ravines almost to the water's edge. To such of us as had never been in Switzerland, the sight of the clear green ice projecting through the snow, was novel and interesting. Being becalmed, we resolved to land on the island of Soroe, and accordingly went ashore a little north of Hasvig. As we approached the shore we saw several eider ducks, and some others, but not sufficiently near to discern the species. Landing on the rocks, covered with sea weed, we immediately came upon a rich carpet of *Empetrum nigrum*, *Azalea procumbens*, *Cornus suecica*, and *Trientalis Europæa*. Another boggy spot, in a low situation, was distinguished by more luxuriant vegetation, consisting of *Geranium sylvaticum*, *Polemonium cæruleum*, *Epilobium angustifolium*, *Sonchus alpinus*, *Lotus corniculatus*, &c. &c. Here also, our first personal introduction to the insects of

Norway took place, by our falling in with clouds of musquitoes, which were but too ardent in welcoming us to their shores. A shady ravine afforded a few *Salices*, *Polypodium dryopteris*, *Aspidium dilatatum*, and last, but not least, the lovely *Viola biflora*. *Pinguicula vulgaris* and *Rubus chamamorus* were abundant, as were also *Bartsia alpina* and *Pedicularis lapponica*, while the highest rocks were adorned with the neat dense tufts and white flowers of *Diapensia lapponica*. On the banks of a small lake I was delighted to find a large patch of the beautiful *Menziesia carulea*, which I greeted with pleasure, not merely from its rarity as a British plant, but also as recalling to my remembrance in a foreign land, my venerable friend whose name it bears. Among other insects we noticed *Carabus glabratus*, *Malthinus* 1 species, *Lestera* 2 species, *Deporaus Betulae*, *Telephorus* 1 species, *Allantus* 2, *Ichneumones genuini* 13, *Ichneumones adsciti* 5, *Cinetus* 1, *Pteromalus* 1, *Culex* abundant, *Chironomus* 3, *Ceratopogon* 1, *Molophilus brevipennis*, *Erioptera* 1, *Limnobia* 2, *Tipula* 1, *Leia* 1, *Sciophila* 1, *Mycetophila* 1, *Molobrus* 1, *Rhagio scolopaceus*, *Rhamphomyia* 3, *Dolichopus* 1, *Sphaerophoria* 1, *Scara* 1, *Anthomyia* 12, *Cordylura* 1, *Psila* 1, *Scatophaga* 1, *Cælopa* 1, *Libellula* 1, *Nemoura* 1, *Zygæna Loti* very abundant and many *Acari*, under stones on the sea shore. On the rocks and sea weeds I observed abundance of a small *Littorina*, and dead shells of *Cyprina Islandica* and *Pholas crispatus*, and the rocks were strewed with shells of *Echinus esculentus*, broken by the gulls and hooded crows. I found many of these also on the mountains, at a considerable elevation, and consider it not impossible that abundance of sea shells, carried to elevated spots by this means, may in some cases have led to the idea of the level of the sea having sunk, or the land risen. I do not, however, by any means wish to invalidate the truth of this theory, which appears to have been established beyond dispute.

16th. The wind having died away, it was late in the afternoon before we reached Hammerfest. This most northern town in Europe is situated in a beautiful bay, completely landlocked, and has a very pretty appearance from the water. A closer inspection rather disappointed us, from the irregularity of the buildings, although, taken individually, some of the houses are large and handsome. The church is a very primi-

tive structure, built of wood, as is the whole town. It is apparently old, but contains relics of an older edifice, in the curiously carved pulpit, &c.

In the church-yard, which is just outside the town, we found *Cornus suecica*, *Trientalis Europæa*, and *Polygonum viviparum* growing on the graves. Some rocks a little further along the shore afforded us *Saxifraga ricularis*, *Cerastium alpinum*, and other alpine plants.

We supped at the house of one of the principal merchants, where we were regaled with the sour milk of the country, and rein-deer venison killed the previous winter, which was perfectly fresh and good. The remarkably dry air of this country greatly retards the putrefaction of animal matter. The greater part of the fish which is cured for exportation is merely dried by exposure to the air, without any salt.

17th.—After attending divine service in the church, we took the track towards the Tyvefield or Thief Mountain,—the highest point of elevation in the immediate neighbourhood. It is only about 1,200 feet high, but still affords a magnificent view over the islands and fiords. From its summit the North Cape on the island of Mageroe is distinctly seen at the distance, in a straight line, of about thirty-six miles. A small ravine at the foot of the mountain was filled with stunted birches, the only *trees*, if I may so call them, which occur so far north. Beneath them the ground was quite yellow with the blossoms of the lovely *Viola biflora*. Here I also met with abundance of *Menziesia cœrulea*. The mosquitoes were too abundant to render botanizing here at all agreeable. With the exception of this troublesome little insect, we have been much struck with the very great dearth of animal life in these northern regions. Hardly a bird breaks the desolate repose of the scene, except now and then a solitary eagle, (*F. albicilla*?) or a few golden plovers or stonechats.

Even insects are almost entirely wanting. A few small Lepidoptera (principally moths,) and some minute Diptera, comprise all we have seen. Amongst other plants, *Salix lanata*, so rare with us, was not uncommon. On our return to Hammerfest we were much amused by the little patches of ground called gardens. The principal houses each possessed one, a few yards square, containing potatoes, which attain the size of walnuts, turnips about the size of our turnip-radishes,

and a few other annual esculents. In the whole neighbourhood there is not the slightest attempt at agriculture; indeed we only saw one enclosed pasture. This, however, being backed by high rocks, and open to the south, displayed as luxuriant a crop of grass and buttercups as ever adorned an English meadow.

18th.—Landed on the Peninsula of Fugelness, on the opposite side of the Bay of Hammerfest. It is low and covered with turf, through which the schistose rocks of the district appear. Here, owing to its exposed situation, there are no attempts at gardening. In an old enclosure, formerly a burying ground, I sowed, round the only tomb now remaining, *Malcomia maritima*, *Lupinus Nootkatensis*, *Eschscholtzia crocea*, and *Californica*, with the stately *Heracleum giganteum*. Here I also gathered *Botrychium lunaria*, *Parnassia palustris*, *Cochlearia Grœnlandica*? and *Carex incurva*.

In proceeding round the bay towards Hammerfest, the coast becomes more rocky, and about midway there are some tolerably high cliffs, on which we gathered *Potentilla alpestris*, *Eriogonum uniflorum*, *Rhodiola rosea*, *Saxifraga oppositifolia*, and *nivalis*, with *Cyrtia fragilis*. A *Libellula* and few specimens of *Hipparchia Blandina* were captured, and under stones we found *Miscodera arctica*. In the evening, at the house of the Tollder (chief of the customs,) who has a collection of some of the natural productions of the country, I saw beautiful specimens of the fine *Alcyonium arboreum* and *Gorgonia lepadifera*, both of which are figured in De Capell Brook's Travels.

The wind blowing violently from the north-east, with every prospect of continuance, we reluctantly abandoned an expedition to the North Cape, in company with some French gentlemen, who are here for that purpose, but who, having more time to spare, are determined to remain till the weather permits their making the excursion.

19th.—Rambled up a large valley among the mountains at the back of Fugelness, with the intention of ascending the highest point. Our way lay through a most desolate track, with a succession of small lakes, and abounding in *Salices*. From the remains of large birch trees which present themselves at every step, it is evident that this valley was at no distant period extensively wooded. It is difficult to say what has caused the mortality, but in some instances it is evidently the result of

avalanches having fallen from above, and lain so long as to destroy the vitality of the trees.

The ascent of the mountain was rather difficult, owing to the loose fragments of rock which cover the upper part of it. Amongst them grew abundance of *Cryptogramma crispa*, and on a small bare spot I was delighted to espy a solitary patch of that most lovely little plant, *Andromeda hypnoides*. This, like some other plants I have noticed, was very local, as the most diligent search failed in discovering more of it.

The rocks on the summit were completely carpeted with *Diapensia lapponica*, and *Dryas octopetala*. The wind was so high and the cold so great, that I was glad to descend towards Fugleness. On my way down I gathered a large stock of *Bartsia alpina*, *Pedicularis lapponica*, with other good plants.

20th.—The rain kept us on board all the day, and the cold was such that we were glad to have a fire in the cabin. This, however, afforded me a good opportunity for arranging the collection of plants I had made.

21st.—Weather still wet and cold. In the afternoon it cleared up and we went to Hammerfest, where we visited every respectable house in the town, for the purpose of inviting the inhabitants to a ball, which we resolved to give. After making our calls, we rambled among some rocks above the town, and gathered some *Salices*, &c. One of our party, who had been shooting sea-fowl on the Great Hielm, a rock somewhat resembling the Bass, about five miles out in the bay, returned with some fine specimens of *Lithospermum maritimum*.

22d.—The fore part of this day was devoted to another ascent of the Tyvefield, from which, the weather being clear, we had a splendid view. The North Cape in one direction, and the Glacier opposite Hasvig in the other, were distinctly visible. The plants gathered were much the same as on a former occasion, with the exception of a *Luzula*, apparently *L. hyperborea*, R. Br. Among the few insects seen was a species of *Melitæa*, at an elevation of about 1,000 feet. On our return to the vessel we had barely time to dine and dress for the ball, as in this country such entertainments commence at an early hour. At half-past six the company began to arrive, but the gentlemen only were shown into the refreshment room, where we received them. The table was loaded

with "schnaps," in the form of ham, salt beef, dried salmon, &c. &c., with wines, spirits, and liqueurs. After every one had taken something to eat and drink, and most of our visitors had smoked a pipe, we adjourned to the ladies, whom we found seated round the ball-room, awaiting our arrival.

Dancing immediately commenced, and was kept up with great spirit for twelve hours. Waltzes and country dances were the favourites. A quadrille was indeed attempted, out of compliment to us, but it turned out a decided failure. Our orchestra, consisting of three violins, was not the best in the world, but it served the purpose. Refreshments were from time to time handed round to the ladies, while the gentlemen paid not unfrequent visits to the refreshment room, for another whiff at their pipes, or to discuss some of the good things, amongst which, excellent but very potent rum punch was not the least conspicuous.

The ladies, although inhabiting so northern and remote a region, certainly would not have discredited the ball-rooms of more favoured countries. Some of them were distinguished for personal beauty, and I could not help agreeing with a remark^b which my friend Forbes made, in reference to a more southern point of Norway, that "the ladies of Norway are decidedly well worthy the attention of the naturalist."

What appeared most strange to us was, that the whole affair took place by broad daylight. At six o'clock our visitors began to depart, but not before we had received the thanks of the party, for one of the most distingué assemblies that had ever been given in Hammerfest. The number present was between sixty and seventy, and the whole expense, including refreshments, hire of room, musicians, &c. &c. did not exceed 10*l*.

23*d*.—After a few hours' sleep we went on shore to make our farewell visits to our partners of the preceding evening. Having performed this duty, and got on board various furs, &c., which we had purchased, we weighed anchor in the evening, and with a light breeze left this hospitable place. Some of our fair friends, stationed on an elevated spot near the church, waved their adieus as we passed down the bay, and we

^b Mag. Nat. Hist. vol. viii. p. 250.

continued to salute them with all the fire-arms we could muster, as long as we were in sight. The short nights we had lately had made us inclined to turn in at an early hour, especially as the scenery through which we were passing was not particularly fine.

24th.—During the night we entered the Great Alten Fiord, but the wind dying away we made but little progress. The scenery began decidedly to improve. In some places the Fiord resembled a large lake, in others it was contracted to a narrow passage, between high and almost perpendicular rocks. On some of these precipices we observed a few pines, and the farther we advanced the larger and more numerous they became. It was not, however, till the evening when we entered Kaafiord (pronounced *Køfiord*), that they constituted an important feature of the scene. Here we saw mountains covered with them to a considerable elevation. The wind having quite died away, we had much difficulty in working up the narrow fiord, but at length anchored a little below the establishment of the Alten Mining Company, to which our vessel was bound.

The narrow Fiord was bounded on one side by mountains upwards of 1000 feet in height, which rose almost perpendicularly from the water, while on the opposite side, between the high mountains and the shore, were hills covered with pine and birch, below which were scattered the smelting-houses, cottages and other buildings belonging to the establishment. We were most hospitably received at the house by Messrs. Woodfall and Crowe, the resident Directors, the latter of whom had been our fellow-passenger from England. His knowledge of the language, and extensive acquaintance, proved of great service to us at Hammerfest and elsewhere. From these gentlemen, and indeed every one connected with the mines, we received every possible kindness and assistance.

Before retiring to rest I ran up into the pine woods above the house, and was repaid by seeing a bank entirely covered with the delicate flowers of *Linnaea borealis*, which quite perfumed the air. As long as I remained in Finmark, I almost always wore a bouquet of *Linnaea* and *Menziesia* in my cap.

25th and 26th.—We visited the mines, which are numerous, and are worked by means of levels or adits in the Greenstone mountains. The copper ore is amorphous pyrites, accompanied sometimes by specular iron. Beautiful crystals of

calcareous spar also occur, as well as a coarse Asbestos containing Epidote.

The ascent to the mines afforded us many good plants, comprising many we had previously found. Among the new ones, were *Pyrola rotundifolia* and *secunda*, *Saxifraga cernua*, *Veronica saxatilis*, *Gentiana nivalis*, &c. &c. *Linnaea* and *Menziesia* completely cover the ground in many places; indeed the latter supplies here the place of the *Erica*, of which we have only met with one (*Calluna vulgaris*), and that very sparingly.

27th.—To-day we crossed the upper part of the Fiord, and rambled up the banks of a river which comes down from a lake a few miles up the valley. A short distance from its mouth is a tolerably large and very picturesque cataract, close to which I gathered, for the first time in my life, that beautiful plant *Astragalus alpinus*. *Hieracium alpinum?* was also plentiful, and the more shaded and mossy parts of the wood abounded with *Pyrola secunda* and *Pedicularis Lapponica*, with here and there a specimen of *Goodyera repens*. Almost every flowering plant was covered with *Geometra cœsiata*, which rose in clouds at every step we took. The mosquitoes, as usual, were very numerous and troublesome. In dryer and more open places among dead leaves, &c., a species of *Blatta* (*B. Lapponica?*) was abundant. It runs actively, and flies from bush to bush.

28th, 29th and 30th.—We rambled about the neighbourhood in different directions, and obtained some plants and insects, but nothing very rare. On the banks of a little stream above the mines, which abounds in willows, is a large rock of a porous soft limestone, containing abundance of green mica. From the leaves of the willows I got a few specimens of a fine scarlet and black *Chrysomela?* Another small greenish species was plentiful, accompanied by its larvæ, which have several white lateral tentacula drawn in when touched. The highest rocks were covered with *Diapensia Lapponica* and *Arbutus alpina*, the latter with ripe fruit.

31st, Sunday.—Mr. Crowe read prayers to the English connected with the mines, there being no church of any kind nearer than Talvig, a distance of twelve or fifteen miles. While we were thus engaged a party of ladies arrived from Tromsœ, consisting of the Amptmaninde (the Lady of the Ampman, of Finmark), and two relatives, one of whom,

Jomfrue Figenschow, was a very pretty girl. I may perhaps here notice the different appellations of ladies in this country. The ladies of official persons have the title *Frue* prefixed to their name, whilst other ladies are simply called *Madame*. Thus the lady of our kind host was, from Mr. Crowe's consular station, addressed as Frue Crowe, whilst her sister is merely called Madame Aasberg. These ladies some years since visited England, and both speak English remarkably well. Generally, however, the Finmark ladies speak no other language than their own, which we found rather a drawback on the social intercourse which we enjoyed; but we managed to pick up a few words here and there: by means of these and signs we contrived to get on pretty well. In the evening we had a dance, which, after six o'clock on Sundays, is considered perfectly orthodox.

August 1st.—The French gentlemen whom we had met at Hammerfest arrived from thence, having succeeded, after our departure, in reaching the North Cape. The weather, however, was very hazy and unfavourable. We obtained from them some specimens of the quartz and other rocks of the Cape. In the evening some of our party accompanied them over the Fiord to Bossekop.

2d.—Rowed over to Bossekop with the Amptmaninde and the other ladies, and literally filled the hospitable mansion of Madame Klerck. Our French friends were still there, and the party being further increased by some neighbouring ladies, who played and sung delightfully, we spent a most agreeable evening.

3d.—After breakfast we set out to pay a visit to the Reipas mines, which are situated some miles on the other side of the Alten river. The valley of this river, I should imagine, can be equalled by few in Finmark. It is finely wooded and adorned with rich meadows, and several pretty villages. The Alten river is a noble stream, which appears at times to pour down an immense volume of water, as is evident from the extensive beds of rocks of various kinds, which in some places cover its banks.

Between Bossekop and the river, the meadows were adorned with many plants; the most interesting among which was *Gentiana nivalis*, whose brilliant azure stars were very conspicuous among the short grass. Just as we descended the last slope

toward the river, we were delighted to gather the beautiful deep rose-coloured blossoms of *Rubus arcticus*, which we had not previously met with. Our way now lay for about half a mile across a perfect desert, being an ancient bed of the river, consisting of rolled masses of rock of all sizes and formations. Generally speaking it was quite destitute of vegetation, but its scanty Flora exhibited a strange mixture of plants. *Saxifraga oppositifolia* and *aizoides*, *Ljchnis alpina*, and *apetala*, were growing with *Epilobium angustifolium* *Tamarix Germanica* and *Astragalus alpinus*; whilst here and there even the delicate *Trientalis Europaea* expanded its modest blossoms.

Immediately on crossing the river a very great change was apparent. The woods extending to the water's edge were quite carpeted with *Rubus arcticus*, intermixed with the blue spikes of a species of *Veronica*. The more mossy places afforded a tolerable harvest of *Goodyera repens*, and a boggy spot in the wood the regal *Pedicularis Sceptrum-Caroli*. After crossing a small mountain-stream the track began to ascend, and in some places was so steep as to make no wonder how it was possible to bring down the sledges with ore from the mines. We stopped about half way to rest at an unfinished house, where we unpacked some of our provisions, and made a hearty meal after our fatigue. On the banks of a small mountain lake before the house, I gathered for the first time *Pinguicula alpina*, *Pyrola uniflora*, and *Eriophorum alpinum*. After a long and tedious ascent we reached the mines, which are situated within a few yards of the summit of a mountain. As they are worked by shafts we did not descend them, but mineralogized among the heaps of ore above ground. These mines are very much richer than those of Kaafiord. The ore is that beautiful variety of pyrites commonly called *Peacock copper ore*, and is accompanied by a good deal of red Arseniate of Cobalt. I also obtained some good specimens of blue carbonate of copper and Bitterspar. From the rocks immediately above the mines, the view over the head of the Alten Fiord and mouth of the Alten river was very fine. On the face of a precipice, I gathered abundance of *Woodsia hyperborea*, which recalled to my mind another far distant friend. A few specimens of *Phaca frigida* also occurred, but almost out of flower. A part of our plan was to take a barometrical observation of the height of these mines, but owing to an accident to the

instrument during the ascent we were prevented from doing so. It was fortunate for us that our homeward way lay downhill, for we were so heavily laden with minerals, &c. as hardly to be able to walk. We reached Bossekop very much fatigued, and intending to go at once to bed, but we found our kind hostess absent, and a message left for us to follow her to spend the evening at the Fogedtgaard. Luckily this was at no great distance; so, after renovating our dress as far as possible, we bent our steps there. We were most hospitably received; and in listening to the delightful songs of Frue Gruntwyt and her sister Jomfrue Stabell, we soon forgot the fatigues of the day. Among other airs I was delighted to hear my great favourite "Una voce poco fa," which I think even pleased me more (coming thus unexpectedly in such a remote spot) than when I had last heard it warbled by Grisi within the charmed circle of the King's Theatre.

4th.—A picnic party having been agreed upon, it was determined to visit the Sandfall, a very beautiful and remarkable spot, near the mouth of the Alten river. This is a singular flat-topped ridge, running for several miles parallel to the Fiord, and only a short distance from it. The side next the water is very steep, but covered with trees, while the inland declivity is less abrupt. The breadth cannot be above one hundred yards, although in some places it varies considerably. At the extremity, the Alten river, making an abrupt curve, washes its base; in fact, evidently has cut off a portion, and by this section has disclosed its structure. This singular ridge is composed of sand and rolled pebbles of various sizes, evidently deposited gradually, as the different strata plainly show. Its height at the truncated end, which is nearly perpendicular, must be at least one hundred feet. The view from the extremity is most splendid. The head of the Fiord, backed by richly wooded cliffs and high mountains, the magnificent valley of the Alten river stretching away in the distance, the river winding its way through beautiful meadows and dense forests, with the pretty villages of Elvebachen and Upper Alten on its banks, altogether combined to form one of the loveliest prospects I ever beheld. However, we could not, even amid all these beauties, forget our provision baskets, and were soon seated hard at work on all the good things Madame Klerck had liberally provided. These were accompanied by liba-

tions of punch, champagne, &c. &c., so that on the whole we did not fare amiss. Some national songs from the ladies formed a very agreeable dessert to our repast. When this was over, such of us as were naturalists left our other companions to escort the ladies, and rambled away in search of objects of natural history. The locality afforded few plants, excepting very common ones. The *Linnaea*, indeed, covered the ground under the fir-trees, but then that grows *every where* in Norway. A thicket of red currant bushes near the water's edge was full of *Actæa spicata*, a rare British plant, which I had never before seen growing wild. In some stumps of fir-trees were abundance of *Formica herculeana*, and two other species of ants, all living in juxtaposition.

Pytho depressus occurred in considerable numbers under the bark of felled fir-trees, with its larva and pupa. It makes circular flat holes, whose diameters exceed by half their depth. These are surrounded by a close mass of grains of wood. A species of *Rhagium* was also abundant in all stages. It forms circular holes rather deeper and smaller than those of *Pytho*, and surrounded by twisted fibres of wood.

On the river were a few ducks, but we could not get within shot of them. Our anglers were equally unsuccessful, though the river is said to abound with fine salmon. On the level between the Sandfall and the shore of the Fiord, is a large house, called the Amptmangaard, formerly the residence of the Amptmans of Finmark, and I believe the birth-place of our fair companion the Amptmaninde. It has stood unoccupied for many years, which, in so lovely a situation, seems much to be regretted. The high ridge of the Sandfall, which rises directly behind it, completely screens it from the north, while from the front a large extent of the most beautifully level turf stretches to the water's edge, and being interspersed with clumps of trees gives it quite the appearance of an English park. The house, with some of the surrounding land, might be purchased for 300 or 400*l.*, and would make a delightful occasional summer residence for a member of the Yacht Club. We returned to Bossekop along the sea side of the Sandfall, enjoying most delightful views over the Fiord. The great glaciers of Seyland were very conspicuous in the distance. At supper we had abundance of the berries of *Rubus chamaemorus*, called by the Norwegians "*Moltebær.*" These are

either boiled down with sugar, or eaten fresh, with sugar and cream. In either way they are very palatable, and considered very wholesome. *Rubus arcticus*, although abundant in some spots, does not produce fruit so far north. The only other fruit which ripens well, and is of frequent occurrence, is the common red-currant, which is very plentiful in the moister woods. The berries are gathered for preserving, but the plant is but little cultivated.

The whortleberry, *Vaccinium myrtillus* (“*Blæbar*” of the natives), is also common, and sometimes eaten. The plant is usually less luxuriant than with us, but the berries are, if any thing, larger. Another plant of which the fruit is eaten is the “*Kraakebar*” (*Empetrum nigrum*), but it is only made use of by the Laplanders. We some of us became fond of the berries, which are much larger, and more juicy, than on our English mountains. Some of the mountain tops afforded us plenty of the fruit of *Arbutus alpina*, which is *eatable*, but not very palatable. The berries are mealy and insipid, with a very slight flavour of black currants. They form a very favourite food for the ptarmigan. The raspberry occasionally occurs in moist woods, but rarely produces fruit, neither did I observe it in the gardens.

5th.—Having heard that the skeleton of a human being was lying among some rocks in the neighbourhood of Bossekop, one of our party visited the spot, and possessed himself of the skull. The orbit of the eye and some other parts were overgrown with moss, which, on examination, proved to be *Splachnum mnioides*. It is singular to observe how almost invariably this genus delights to grow upon animal substances. The skeleton was that of a Russian, who died many years since on board a vessel at Bossekop. His companions not wishing to take him so far as Talvig, or objecting to bury him in a Lutheran church-yard, placed the body in a cleft of rock. In the evening we returned to Kaafiord.

6th.—Rambled up the valley towards Matthieson's Lake; but the extreme heat and the mosquitoes conspired to prevent us reaching our destination. The only birds we saw were abundance of young fieldfares, which had just left the nest, a few specimens of the cole titmouse, and some ptarmigan, which were probably *Lagopus Saliceti*. The natives distinguish two species or varieties,—the one affecting the woods, and the other

the mountain tops, by the respective names of "*Dahl Rypa*," and "*Field-Rypa*." The nests of the fieldfare were abundant in low bushes. In one of them I found the eggs, which very nearly resemble those of the blackbird. In a marshy part of the wood we gathered fine specimens of *Pyrola uniflora*.

7th.—We started early on our way to Iby, on the river of that name (a tributary of the Alten), where we were to meet our friends from Bossekop, at a picnic. Rowing a few miles down Kaafiord, we landed at the little village of Quainvig, and proceeded inland. Our way lay for some distance by the side of a chain of small lakes, whose rushy banks seemed very favourable for waterfowl. Not a bird, however, did we see; indeed, I believe the only living creatures I observed, except mosquitoes, were a solitary eagle, and one specimen of *Carabus glabratus*. Having crossed a rocky ridge, we began to descend, through a fine dense forest, towards the Iby river, the rush of whose rapids was distinctly heard.

No very good plants occurred, excepting that on a small patch of dung in the pathway I found no less than three species of *Splachnum* growing together, including the fine *S. luteum*. At length we arrived at the place of destination, a lone farm-house, belonging to Madame Klerck.

Here we found the ladies waiting for us, and a most glorious collation spread out, to which, after our long and fatiguing walk, we did full justice. The woods close to the house were glowing with the rose-coloured flowers of *Rubus arcticus*, which also was abundant in the grass of the meadows.

Some parts of the wood were also filled with *Struthiopteris Germanica*, which made a magnificent appearance, with its fine circles of fronds, of a most delicate and lively green. The fructification was yet hardly apparent; but some of the old spikes of former years remained on the plants. Attracted by the sound of the river, we strolled down to it, and had to cross a similar stony waste to that I have before mentioned on the Alten. It had a yet more singular appearance, from the quantity of large bushes of *Tamarix Germanica*, which were scattered over it. These were now covered with spikes of beautiful silky white seeds, and here and there a few flowers.

After coffee, the ladies and their escort returned to Bossekop, whilst the remainder of us resolved to stay, and devote the next day to a further expedition up the valley.

Accordingly, after a very good supper on fine salmon, just out of the river, we made beds of skins on the floor, and contrived, after the fatigues of the day, to get a pretty good night's rest, in spite of the musquitoes, which, from the proximity of the river, were very numerous.

8th. — We managed to make a pretty good breakfast on the remains of our provisions, with the addition of some coffee, and then started off into the forest. Our guide was a wood-cutter, who carried a sort of wooden horn, called a Lure, which he blew from time to time, to call in the stragglers of the party. These instruments are much used in the south of Norway and Sweden, for the purpose of calling cattle from the woods. In Finmark they are, I believe, little known. The one in question had been brought by our guide from the vicinity of Röras, of which place he was a native. When heard at a little distance, the note is not unmusical, especially when repeated by the mountain echoes. One of the party shot a very pretty species of owl,* somewhat resembling a miniature *Strix nyctea*; several specimens were afterwards met with. It appears to be almost diurnal, like our *S. Brachyotus*.

I was not a little startled, whilst gathering a plant near the river side, by the sudden rising, within a yard of me, of a fine cock of the woods (*Tetrao Urogallus*). Shortly afterwards I heard several shots, and on rejoining my companions I found they had succeeded in bringing down a female, and several half-grown young ones. In the course of the day several other young males were shot, but we were unable to procure one in adult plumage. The only other living creatures we saw in the woods were a few of the common squirrel. A dead lemming having been picked up, led to a conversation with our guide on the subject of their occasional appearance in immense numbers; he described to us a visitation of this kind, which he had witnessed some years ago in the south. I thought this a good time to make some inquiry as to the truth of the oft-repeated story that the reindeer eat these animals; and accordingly my friend Mr. Woodfall was kind enough to question him very closely on the subject. He stated that he had never seen the reindeer eat the lemming, as there are but

* I have since learned from Mr. Gould, that this bird is *Strix funerea*, Gmelin (*T. Hudsonia*, Wilson).

few deer in the south, but that it was very common for sheep to do so, and the fact had come under his own observation : those sheep, however, who did so, very soon became emaciated, or, to use his own words, "dried up." As soon, therefore, as a sheep was seen to commit this act, it was killed before it became useless. It appears to me far more probable that the disease was the cause, and not the result, of this strange perversion of nature. Equally singular cases of depraved appetite occur both among animals and the human species, and generally attended with great emaciation ; I was certainly much pleased to find the fact established, and at the same time to find a reasonable cause for its occurrence. In the course of our ramble our guide showed us a little hollow, in which during the previous winter he had discovered and killed a large bear. They are, however, now by no means of frequent occurrence, especially in summer time ; indeed, both bears and wolves seem rapidly decreasing in number.

The ground we traversed afforded us but few new plants. One very interesting species, *Kœnigia Islandica*, occurred in abundance in the half dry bed of a small rivulet, and near it I found a few plants of *Corallorhiza innata*. We reached the hut at Iby pretty well fatigued, and after resting ourselves, and finishing the remaining fragments of our provisions, we set out on our return to Bossekop. It was a lovely evening, and we had a most delightful walk along the banks of the Alten river.

9th.—We rambled among the mountains at the back of the Fagedtgaard, having as our guide the Postmaster Norager, who, although not a botanist, is well acquainted with the native plants, and possesses a small herbarium. Unluckily this was formed many years ago, and he has forgotten the places where he gathered some of the rarest plants. This was especially the case with the rare and beautiful *Rhododendron Lapponicum*. We did not find many good plants, except that, near the summit of one mountain, I observed a few plants out of flower, of the very rare *Andromeda tetragona*.

A part of our descent towards the valley of the Alten was through a very remarkable reft or crevice in the mountain, in some places not three yards wide, and with lofty perpendicular rocks on each side. In a part of the forest adjoining the desert bed of the river before mentioned, Mr. Norager pointed out to

us the only station with which he was acquainted, for a species of rose; it is a pretty small shrub, with deep purple-crimson flowers and red-barked stems. I had previously noticed it cultivated in Madame Klerck's garden, and learned that the roots had been procured from the forest. It does not exactly agree with *Rosa cinnamomea* of our gardens, but may perhaps be *R. majalis*, if that be not, as Sir J. C. Smith suspects, merely a variety of *cinnamomea*.

Gentiana nivalis was abundant on the grassy hills, accompanied by a less showy, but much rarer species, *G. involucrata*. *Ranunculus flammula* var. *reptans* also occurred commonly on the half-dried mud of little pools in low ground.

Again accompanied by Mr. Norager, we made a second excursion beyond the Alten river, which we crossed very near its mouth. A very extensive sandy flat was in some places literally covered with *Lathyrus pisiformis*, which the peasantry were busy cutting for hay; the two gentians were abundant, and I also met with another species, *G. serrata*. Almost close to the Fiord was abundance of *Elymus arenarius* the seeds of which, as Mr. Norager informed us, are sometimes gathered and eaten in time of scarcity.

Astragalus alpinus was in many parts mixed with the *Lathyrus*.

In some marshes adjoining the river I found many plants of a *Primula*, out of flower, which appeared to be the same as the one I had found on the island of Soroe. It might, however, be *P. strieta*, Flor. Dan., which much resembles it in the leaves. A heathy piece of ground was quite a sheet of white from the immense quantity of *Trientalis Europæa*, with which it was covered, and I found that this flower has a very delicate honey-suckle smell, which is perhaps hardly perceptible in a single flower, but was now very apparent.

We proceeded up the valley of a small river which falls into the Alten, and soon came to a very romantic part, where it rushes for a considerable distance over a succession of rocky ledges. A saw-mill and house were picturesquely situated on a point of rock just over the principal fall. The proprietor, Mr. Jakobsen, received us very kindly, and his good lady spread for us a very inviting repast, to which we were not backward in doing justice. The river above the falls forms a strange contrast to its appearance below them. It flows slowly along

between smooth turfey banks, and more resembles an artificial canal than a mountain stream.

On its banks I gathered a species of *Lathyrus*, of which I unfortunately lost the specimens. It somewhat resembled our *L. palustris*, but the flowers were of a deeper colour, and the leaves were much longer and narrower than in the specimens of *L. palustris* I have gathered in Cambridgeshire. In the course of the day, I obtained from Mr. Norager the native names for many of the commoner plants, especially those with eatable fruits, or which are used in medicine.

Some of these were interesting, as very closely resembling those applied to the same plants in Scotland, and some parts of the north of England. I only regret that the accidental loss of the note-book in which these memoranda were made, prevents me from giving some of them.

The evening was devoted to skinning birds, &c.; the proceeds of our trip to Iby. I was also occupied till a late hour in changing the papers of my plants, and putting away the acquisitions of the day.

11th.—During the morning we employed ourselves in arranging our spoils, and after dinner went with our kind hostess to visit a poor woman, who required the medical attention of one of the party. Our course lay towards the river, but in rather a new direction, and we had some very fine views over the valley. On our return we determined to take a vapour-bath, and therefore walked over to one about a mile and a half distant. I think I never saw a lovelier situation than that occupied by this cottage. It stood at the brink of a rocky ridge, which descends almost perpendicularly towards the valley, so that it commands an uninterrupted view in that direction. A little patch of corn (bear or bigg) close to it, contained abundance of *Asperugo procumbens*; a plant which, although British, I had not previously met with. The bath was at a little distance from the house, and consisted of a small wooden building, with a door and very small window. It was furnished with a sort of furnace, built of large stones, on which is made a fire of wood; the smoke going out of the door as in an Irish cabin. About half-way up the building is a broad sort of shelf, to which access is gained by a ladder. When the stones are sufficiently heated, water is thrown on them, which makes of course a very dense steam. As soon as all is ready you enter, ascend the ladder,

and lie down upon the shelf, which is covered with birch boughs. The woman who attends the bath then hands you up a large rod, dipped in hot water, with which you are to whip yourself well all over; she, in the meantime, throwing water on the stones to increase the steam. To do the thing properly, you ought to lie there till a most copious burst of perspiration takes place; but after I had endured two volleys of steam, I could bear it no longer, and roaring out to the old lady, "Ikke mere" (no more), I descended the ladder as fast as possible. On coming down you step into a large tub of hot water, and are very carefully washed with soap from head to foot. You then wrap yourself in a sheet, and go to the open air, or into the house, where you must sit undressed till the perspiration subsides. We all agreed that the affair was rather disagreeable than otherwise; but this was in a great measure owing to the steam being combined with the suffocating wood smoke. A very little alteration in building the furnace with a chimney would obviate the inconvenience.

Although the heat in the bath was very great, and its situation very open and exposed, we felt no inconvenience on coming into the open air. I much regret that I had not a thermometer with me, in order to have ascertained the temperature of the interior of the bath. I have described the operation at some length, as what we saw and heard of the baths, differed much from the account given by Acerbi.

12th.—Rambled about Bossekop, sketching, &c., and in the evening returned to Kaafjord.

13th.—We were much amused at witnessing the public flogging of a man, who had been detected in purloining something from the Company's store. It took place opposite the store, just after the miners had been paid their weekly wages, consequently there was a numerous assemblage. The culprit did not even take off his jacket, and he received a few blows across the back with a stout rope. It was altogether a very ridiculous affair, and, as a gentleman present remarked, any English sailor would have taken the same punishment for a glass of grog.

14th.—Early in the morning a large party started for Talvig, where the parish church is situated, a distance by water of about twelve miles.

The principal object of our visit was to be present at the

christening of the child of one of the English attached to the mines, as well as for the sake of seeing the place. There being but little wind, we did not get on very fast, but eventually reached Talvig long before service commenced.

We landed on a promontory called Jans Ness, where we discussed some provisions we had brought. On the rocks I observed a few specimens of *Purpura lapillus*, and some willows near the shore were infested with a species of *Chryso-mela*, of a dark bronze green colour, differing from any I had previously found.

After calling on the principal merchant, Mr. Nörberg, we proceeded to the church, which is a plain wooden building, much larger than, but not nearly so much ornamented as that at Hammerfest.

It can boast, however, of two large chandeliers, apparently of silver. The order of the service is much the same as that of the English Church. The altar being adorned with a large crucifix, pictures, candles, &c., looks rather unlike a Protestant place of worship; and the dress of the clergyman is very unlike ours, consisting of a plain black gown, with a wide stiff double muslin frill round the neck.

He read the lesson for the day (the parable of the Pharisee and Publican) from the pulpit, and preached from it. There were two weddings, and numerous christenings, the services for which differ little from ours. After the service was over, we dined with Mr. Nörberg, and were much pleased to meet the clergyman, who is an extremely agreeable man. He speaks German and French well, and reads, though he does not speak English. We had a pleasant though rather tedious row back to Kaafjord, which we did not reach till late.

15th, 16th, 17th.—Botanizing, sketching, paying farewell visits, &c. occupied these days, and we found so many *last things* to do, that we were very busily engaged.

18th.—After taking a reluctant leave of our many very kind friends, some of whom accompanied us on board, we dropped with the tide into the outer Fiord, and took a last look at the spot where we had spent so many happy hours, with most cordial wishes to visit it again.

Sept. 1st.—The interval between this date and the last was spent at sea in most dreadfully stormy weather, and distinguished by no incidents worth recording. On this day we put

into the harbour of Balta Sound, in the island of Unst, Shetland, where we were most hospitably received by the proprietor, Mr. Edmondstone. The change from our late discomforts on board, to a civilized house and excellent table, was most agreeable.

2d.—The brother of our host, Dr. E. (well known as an ornithologist), kindly took us to the northern point of the island, to see the breeding-place of that fine and now rare bird, the Skua (*Larus Cataractes*). The breeding season being over, they had mostly deserted the place, but we had the good fortune to see several specimens. We visited the mines of chromate of iron, from which Mr. Edmondstone has drawn a valuable prize.

3d.—We again reluctantly left a place, where, as strangers, we had been most hospitably received, and turned our course homewards.



ART. LVIII.—*Proceedings of the Entomological Club.*

SITTING OF THE 19TH JANUARY, 1837.

Mr. BENNETT in the Chair.

The CURATOR read the following list of donations, received since the last meeting:—

Mr. VENESS, of Deptford. A specimen of *Cymothœa Œstrus*.

Mr. R. FOSTER, of London. Various East Indian *Arachnoïda*.

Mr. RADDON, of Bristol. Various rare British *Noctuites*, also various *Coleoptera*, from Gambia.

Mr. J. W. BOND, of London. Various British insects.

Mr. E. NEWMAN, of Deptford. The 18th number of the *Entomological Magazine*, and the Grammar of Entomology.

Mr. E. CHARLESWORTH, of London. The 1st number of the Magazine of Natural History, new series.

Mr. GEORGE BEVINGTON, of London. A collection of insects, principally *Coleoptera*, from the Cape of Good Hope.

Mr. WILLIAM STAFFORD, of Godalming. Various rare British *Coleoptera*, collected in the neighbourhood of Godalming.

Mr. T. MARSHALL, of Birmingham. Several hundred British insects of all classes; some of them rare.

Mr. R. WEAVER, of the Birmingham Museum. Various rare British insects; among them, beautiful specimens of *Catocala sponsa*, and *C. promissa*.

Mr. W. CHRISTY, jun., of London. Geoffroy's "*Histoire abrégée des Insectes*," 2 vols. 4to. with numerous plates; also "*Monstrositates Coleopterorum*," by Dr. Hermann Martin Asmuss.

Messrs. JAMES D. DANA and JAMES WHELPLEY, "A Treatise on two American species of the genus *Hydraena*," written by the donors, and published in the American Journal of Science, and Arts, No. 2, Vol. XXX.

Mr. J. B. BEVINGTON, of London. Drury's work on Insects, entitled, "*Illustrations of Natural History*," 3 vols., 4to., containing 150 highly finished copper-plate engravings; also, a fine pair of *Prionus*, from Africa. The species is apparently undescribed.

Mr. BENNETT, of London. The First and Second Parts of the Transactions of the Zoological Society.

Mr. BUSK, of the Dreadnought. Portions of a *Squilla*, apparently undescribed, which had been put together in the fancied similitude of an animal, and brought by a sailor from the island of Timor for the purpose of deceiving the scientific. It had been offered for ten pounds at the British Museum and elsewhere, as an entirely new animal.

Mr. E. DOUBLEDAY, of Epping. About four thousand British Coleoptera, most of them minute. Mr. E. Doubleday also gives the Curator permission to select from his exotic Diptera, Hymenoptera, Orthoptera, Hemiptera, and Neuroptera, all that are desirable to be possessed by the Club. This collection contains many exceedingly rare insects, particularly among the Orthoptera.

Mr. N. T. WETHERELL, of Highgate. A specimen of that fine Cerambicideous insect, *Macrodontia cervicornis*; also, a nest of *Vespa Brittanica*.

THOMAS INGALL, Esq., of the Camberwell New Road, having been, at the previous meeting, proposed by Mr. Hoyer, and seconded by Mr. J. F. Christy, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club.

SITTING OF THE 16TH FEBRUARY, 1837.

Mr. BEVINGTON in the Chair.

Mr. INGALL exhibited, and presented to the Club, a specimen of *Scarabæus Hercules*.

Mr. BENNETT exhibited a fine and very perfect specimen of the genus *Mallodon*, which was cut out of a piece of rosewood, and was presented to the Club by Mr. W. Smee, of London.

SITTING OF THE 16TH MARCH, 1837.

Mr. BOWERBANK in the Chair.

The CURATOR read the following list of donations:—

Mr. ISAAC GRAY BASS, of Brighton. A British specimen of *Deilephila Galii*; also *Acherontia Atropos*.

Mr. BENJAMIN STANDISH, of London. A variety of exceedingly fine and perfect specimens of British *Noctuities*.

Mr. BRACY CLARK, of London. About 300 species of exotic insects, principally Lepidoptera, from the collection

of the late Mr. Francillon, and many of them collected in Georgia, by Mr. Abbott. By this munificent gift, the cabinet of the Entomological Club receives an addition of about 200 species of Lepidoptera.

Mr. NEWMAN, of Deptford. A copy of Stephens's Systematic Catalogue.

Mr. Edward Doubleday and Mr. Robert Foster, honorary members of the Entomological Club, took leave of the Club, previously to starting on an entomological tour to North America. They purpose landing on New York, then visiting the Falls of Niagara, and passing down the St. Lawrence, to Quebec; after staying a month or two in British America, they will return to New York, and then proceed by way of Philadelphia, Pittsburg, and Cincinnati, towards the extreme west of the Union, residing two or three months in the state of Illinois; thence they will travel down the Mississippi, to New Orleans; then through West and East Florida, to the extreme southern part of the latter, and return by the Atlantic States to New York. The whole journey will occupy from eighteen months to two years. A portion of the specimens collected will be, from time to time, transmitted to London, for the cabinet of the Entomological Club, and duplicates of every species will, as far as possible, be reserved in the possession of the travellers, to be brought to England by themselves. Mr. Doubleday will also transmit, monthly, an account of the progress made, with permission to the Editor of the *Entomological Magazine* to publish the same; a duplicate of this account will also be kept. By this means, the results of the expedition will be, as far as possible, secured to the public.

SITTING OF THE 20TH APRIL, 1837.

Mr. NEWMAN in the Chair.

The CURATOR read the following list of donations:—

Mr. W. E. SHUCKARD, of London. His Essay on the Fossorial Hymenoptera of Great Britain.

Mr. E. QUEKETT, of London. A pair of *Polyommatus Arion*.

Mr. SHOWELL. A series of 35 folio copper-plate engravings, representing various objects in natural history.

M. LAPORTE, Comte de Castelneau, of Paris, having been, by his own desire, proposed by Mr. Walker at a previous meeting, and having been seconded by Mr. Newman, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club.

SITTING OF THE 10TH MAY, 1837.

This being the anniversary, the members of the Club and their friends dined together at the Bull Inn, Birch Wood Corner; Mr. Hoyer presiding.

SITTING OF THE 15TH JUNE, 1837.

Mr. J. F. CHRISTY in the Chair.

The CURATOR read the following List of Donations:—

Mr. C. C. BABINGTON, of Cambridge. Various rare British insects.

Mr. J. WILSON, of Edinburgh. A fine series of Javanese insects; amongst them *Buprestis Boisduvalii*, and *Mormolyce Phyllodes*.

Mr. J. B. SPENCER, of Blackheath. Various fine Lepidoptera, from the Himalaya mountains.

Mr. S. A. BURLINGHAM, of Worcester. Forty beautifully perfect specimens of *Clostera reclusa*, reared from the larva.

Mr. J. WALTON, of Knaresborough. A copious series of specimens of the British species of the genus *Apion*, and other British *Curculionites*.

A communication has been received from our corresponding members, Messrs. Foster and Doubleday, merely stating their safe arrival at New York; and a second, on the 18th June, from Mr. Doubleday, dated Hudson, 7th May, 1837, from which we have made a few extracts below. The want of space compels us to omit much that would be generally interesting, and to confine ourselves strictly to that portion of the communication which has reference to natural history.

“During the last few days of our passage, we saw great numbers of porpoises. One night, when the sea was very luminous, we had scores of them close to the ship, and, as they shot through the water, they left a line of fire of a pure white

colour; we also saw scores of small cetaceous fish, from ten to sixteen feet in length. On the evening of the 24th of April we had a pilot come on board; since the loss of the *Mexico*, these men are much better behaved, and come out 40 miles from New York: soon after dark we saw the lighthouses at the entrance of the outer bay.

“The persons we met with at our hotel at New York, gave me a good opinion of the Americans; they were very civil, and communicative, but *not inquisitive*. From all to whom we had letters, we have received the greatest kindness. A gentleman, to whom we had an introduction, accompanied us to the custom-house, and all our luggage was passed without examination, or even uncording the boxes. We called on two brothers of the name of Carey, Englishmen, botanists, and very kind persons; they know W. Christy, Newman, and most of our Club; we dined with them on the 30th. We went to the Lyceum of Natural History. They have here a good many minerals, some very fine fossils; not many birds, but some beautifully stuffed by Ward, who resides here; also a library. On the 1st May we went to a meeting at the Lyceum; there was not much to interest: a paper on a new *Arvicola*, and a new *Sorex*: Cooper, who helped Bonaparte, was there, and several other members; all very pleasant people.

“My first journey was on the 27th, to the residence of J. S., directly after breakfast. I crossed the ferry to Jersey city, where the rail-road to New Brunswick commences. The first part of this is unfinished, and too uneven to allow the passage of locomotives: we were therefore drawn by two horses at length; the tram is so near the cut made for the permanent road, that I consider it anything but safe. In some places there is an intervening space of not more than six inches between the tram and the edge of a precipice, cut perpendicularly through the rock, thirty or forty feet deep, and not a morsel of fence to prevent the carriages going over: at Newark we exchanged for locomotives, and soon got to Rahway, about ten miles further. Newark, Elizabethtown, and Rahway are all places of considerable trade in coals, and there are some manufactories in the latter: all these are rather irregularly built; the houses are mostly of wood. The country around is salt marsh, with some good pasture land; in places scattered about are large rocks, almost rising into considerable

hills. *Veratrum nigrum* grows in plenty among the rocks. The climate was more like our March than the end of April. I saw few birds, and fewer insects.

“We are now staying at the house of a friend, about two miles E. of the city of Hudson: it is a most beautiful place, but how to describe it I know not. In looking from the window where I am now writing, the first object that attracts my notice is the gigantic range of the Catskill mountains, distant eighteen miles, with their summits still covered with snow. The Hudson lies below, invisible from the house, and a gently rolling country extends from its shore. The tops of the hills are covered with pine, hickory, oak, and other trees; and here and there is seen the genteel house of some opulent farmer, or the humbler dwelling of him who has to depend on his own industry. Meadows not yet verdant, and arable land, fill up the space to the little river (*Americé creek*), which runs at the bottom of a steep orchard, belonging to the premises. The fruit trees are alive with birds. The day before yesterday I saw the first blue bird; as he glanced between the trees in the sun, nothing could be more beautiful. A pair of these birds are now building in a hole in an old apple-tree. They go and pull off moss, and, returning with it, hang a moment at the mouth of the hole before they enter. Sometimes they hover over the ground, and pick up an insect; but seem mostly to find their food on the trees. They are as tame as possible: their nest is not twenty yards from the window at which I am writing. Just now, a pair of Baltimores were sitting on an apple-tree, close to the corner of the house; I went out and got right under them, and had a good view of them.

“Yesterday, whilst pinning some beetles, I saw some birds in a tree, by the side of the creek; I took R. Foster’s telescope, and found them to be golden-winged woodpeckers, apparently two males and a female; the males were twisting their heads, erecting the feathers on their crowns, and spreading their tails in a most odd manner. I used to think our English green woodpecker put itself into the oddest attitudes at such times; but ’tis nothing to the golden-winged. At last, the two males had a furious battle; after which one flew away, followed by the female, and the other remained behind. Just after this, an Osprey passed like lightning along the creek, and perched on a large white oak, close by.

“This morning, 6th May, I heard a great screaming and scolding noise in the garden, and some of the oddest noises that bird ever made. I went to try to make it out, and found it was a *Pipra polyglotta* of Wilson, *Icteria viridis* of Bonaparte. But of all noises I ever heard made by birds I must confess that of the blue jays to be the worst; there are a good many round about here, but I have only seen one, which came into the garden to-day. The mewling of the cat-bird I also heard to-day, for the first time: a pair of them allowed me to get within ten yards: the birds here are all as tame as possible. The beautiful little summer yellow birds, *Sylvia citrinella*, are very numerous, and come so close that you can see the colour of every feather. There are also plenty of flycatchers, and several of the sparrow tribe, which I cannot yet make out: one has a note like a yellow-hammer; another, with a very pleasing note, I at first took to be a *Sylvia*, but have since made it out to be *Fringilla melodia*. There are also wrens and blackheaded tits in plenty, the note of the last is nearly like that of our blue-headed tit. The day before yesterday, walking from Hudson, I saw three meadow larks at play in the air; they alighted on a tree just by, and then crossed the road with their wings about two-thirds expanded, and scarcely moving: they passed so near that I could see every mark on their breasts. Of crows there are plenty, in flight and note as different as can be from ours; no one need mistake them. Not so the swallows, between which and our own in flight and note I cannot discover any difference. Besides plenty of swallows, there are to-day a great many swifts, here called chimney swallows, *Cypselus pelasgia*; and one, if not two, species of *Hirundo*, which I cannot make out. The first woodpecker I have seen in the garden came to-day; he stayed so short a time that I could not make him out. A pair of *Turdus rufus* seem to have a nest somewhere near; they are as tame as the poultry. I have seen one or two grackles, and a bird which I take to be Wilson's *Alauda rufa*, Bonaparte's *Anthus spinoletta*; also a sandpiper, a partridge, *Tetrao umbellus*, some wild ducks, and one hawk I could not make out.

“I find that there are in this neighbourhood grey and red squirrels, ground squirrels, musk rats, &c.; but as yet I have only seen one ground squirrel. We walked yesterday to a hill covered with fir, arbor-vitæ, cedar, cypress, &c.; here we

found two box tortoises, those which close their shells; and saw the *Tetrao umbellus*. Among the clefts of the rocks, the little Hepaticas were flowering more beautifully than I have ever seen them in England; they are bright blue, pale blue and white; I have seen no pink ones. *Aquilegia Canadensis* was also in plenty, just coming into flower. The sides of the creek and the meadows are yellow for yards together, with the yellow dog's-tooth violet, and in other places white, with the beautiful *Sanguinaria Canadensis*.

“ We had a deal of thunder yesterday, which continued most of the night: such thunder and lightning I never witnessed: the lightning was rose-coloured. The rain has caused the woods to put on rather a greener hue; but, save the willows, not a leaf of any deciduous tree is out: one or two cherry blossoms, and a peach blossom are nearly out, and the apple-trees are budding a little. Besides the plants I have mentioned, I have only seen a *Viola*, an *Anemone*, and a *Saxifraga*, which I do not know; also a *Gnaphalium* and a *Taraxacum*. The sallows are in bloom partially, and yesterday I saw some *Vireo* (*V. olivaceus*, I think) catching flies off them. The wild vines in the woods have stems as large as my arm.

“ Of insects few are out yet: of Lepidoptera none, save *Antiopa*; another *Vanessa*, resembling *Urticæ*, which I could not catch; we found also one crushed specimen of *Arctia fuliginosa*; one *Noctua*, and two or three *Tineæ*. Of Coleoptera we have taken many; *Cicindela*, two species; *Carabus*, 1; *Brachinus*, 1; *Lebia*, 1; *Cymindis*, 1; *Chlœnius*, several; *Pœcilus*, 1; *Harpalus*, several; *Anchomenus*, *Agonum*, and *Bembidium*, several; and one beautiful thing allied to *Carabus*. I have also a *Byrrhus*; one or two *Aphodii*; three or four *Melolonthæ*; several *Elatères*, one allied to *E. hæmorrhoidalis*, by dozens; *Nitidula*, one species; *Meligethes*, 1; *Altica*, several; and among these are several large and beautiful species, one the form of *A. Nemorum*, but much larger; it has a red thorax, and black elytra; each elytron having a white longitudinal line. The most extraordinary Coleopterous insect I have seen is a thing something like *Sepidium*, but shorter; it is heteromerous, covered with tubercles, and the male has two horns on the thorax; it is rather longer than our biggest *Trox*, which it a little resembles; I found one male and two females

of this insect on a fungus. I have also got a most beautiful *Chrysomela*, as large as *C. polita*, of a pale cream-colour with a green suture, and several green litureæ on the elytra; the thorax is also green. I have likewise taken a *Thanasimus*, an *Onthophagus*, a beautiful thing allied to *Ips*, and many others; but as they are still in their winter-quarters, it requires good hunting to find them. The old rotten stump swarms with ants, some species an inch long; also a small species of white ant, *Termes*; these are at present in the pupa state. The *Bombi*, *Andrenæ* and *Osmiæ* are just coming out. I have taken a very beautiful *Abia* or *Zarava*, with clouded wings; a species of *Dosythens*, just like *D. Junci*, is abundant.

“Another bird this morning, a *Sylvia striata*; it has been running up and down the stem of a cherry-tree, about eight feet from the window, like a creeper; there are a great many robins about. Returning from Hudson to-day, I saw two large round winged hawks, as big as buzzards, and having the same cry: they were soaring very high, and in circles. I also saw another male Baltimore; these and the blue birds appear much brighter living than dead. I go on to Utica to-morrow, for a few days.”

Death of Mr. Standish.

IT is our duty to record the death of Mr. JOSEPH STANDISH, one of our oldest and most successful collectors of Lepidoptera. Mr. Standish was formerly in business as a stationer, and resided under the Royal Exchange, but has for many years been living independent of trade. He was not only a collector, but a close observer of the economy of Lepidoptera; he made an immense number of drawings of larvæ in all stages of their growth, and these, as well as others of the perfect insects, were executed with much fidelity and beauty. He died at Camberwell, in the eighty-fourth year of his age.

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DESCRIBED IN THIS VOLUME.

PTEROMALUS *Swed.*

pulcherrimus *West.*
scenicus *Walk.*
invenustus *Walk.*
macromerus *Walk.*
stenogaster *Walk.*
præpileus *Walk.*
dimidiatus *Walk.*
fuscescens *Walk.*

CHEIROPACHUS *West.*

quadrum *Fabr.*
tutela *Walk.*

TRIGONODERUS *West.*

pulcher *Walk.*
filatus *Walk.*
tristis *Walk.*
ductilis *Walk.*
affinis *Walk.*
linearis *Walk.*
amabilis *Walk.*
figuratus *Walk.*
deductor *Walk.*
elegans *Walk.*
obscurus *Walk.*
contemptus *Walk.*
atrovirens *Walk.*
dolosus *Walk.*
hirticornis *Walk.*

ISOSOMA *Walk.*

vacillans *Walk.*
brevicolle, *Hal.*
brevipenne *Walk.*

EURYTOMA *Hal.*

fumipennis *Walk.*

DECATOMA *Spin.*

mesomelas *Walk.*
flavicornis *Walk.*
aspilus *Walk.*

CALLIMOME *Spin.*

rudis *Walk.*
Angelicæ *Walk.*

SPATHIUS *Ess.*

rubidus *Rossi.*
clavatus *Panz.*

DORYCTES *Hal.*

obliteratus *Ess.*
flaviceps *Hal.*

HETEROSPILUS *Hal.*

striatellus *Ess.*
Imperator *Hal.*
tabidus *Hal.*
Quæstor *Hal.*

HECABOLUS *Hal.*

sulcatus *Curt.*
PAMBOLUS *Hal.*

CHREMYLUS *Hal.*

rubiginosus *Ess.*
HORMIUS *Ess.*

moniliatus *Ess.*

RHYSSALUS *Hal.*
clavator *Hal.*

Indagator *Hal.*

COLASTES *Hal.*

Meditator *Hal.*
fragilis *Hal.*

braconius *Hal.*

Lustrator *Hal.*

lanceolator *Ess.*

ABDERA *Steph.*

picea *Walk.*

ORCHESIA *Latr.*

minor *Walk.*

COLASTES *Hal.*

decorator *Hal.*

hariolator *Hal.*

catenator *Hal.*

funestus *Hal.*

CLINOCENTRUS *Hal.*

excubitor *Hal.*

cunctator *Hal.*

umbratilis *Hal.*

vestigator *Hal.*

ROGAS *Ess.*

rugulosus *Ess.*

nobilis *Hal.*

tricolor *Hal.*

LIST OF THE GENERA AND SPECIES

- gasterator *Spin.*
 geniculator *Ess.*
 alternator *Ess.*
 bicolor *Spin.*
 testaceus *Fabr.*
 dispar *Hal.*
ADEMON *Hal.*
 decrescens *Ess.*
-
- PLATYURA** *Meig.*
 servula *Walk.*
LEIA *Meig.*
 pubescens *Walk.*
SEIOPHILA *Hoff.*
 rufilatera *Walk.*
MYCETOPHILA *Meig.*
 flava *Walk.*
 ferruginea *Walk.*
-
- PHLÆOTHIRIPS** *Hal.*
 Ulmi *Fabr.*
 Pini *Hal.*
THRIPS *Linn.*
 cerealium *Hal.*
 nitidula *Hal.*
 phalerata *Hal.*
 atrata *Hal.*
 Persicæ *Hal.*
MELANTHRIPS *Hal.*
 obesa *Hal.*
-
- MORELLIA** *Desv.*
 hortorum *Fall.*
 importuna *Hal.*
FANNIA *Desv.*
 aprica *Hal.*
DELINA *Desv.*
 flava *Hal.*
GEOMYZA *Fall.*
 sabulosa *Hal.*
LEPTOMYZA *Macq.*
 cinerella *Hal.*
DIASTATA
 fulvifrons *Hal.*
-
- CLEPTES** *Latr.*
 semiaurata *Linn.*
 nitidula *Rossi.*
CHRYSIS *Linn.*
 ignita *Linn.*
Var. 1. Alcione
 — 2. Asterope
 — 3. Celeno
 — 4. Electra
 — 5. Maia
 — 6. Taygeta
 Ruddii *Shue.*
 fulgida *Linn.*
 stoudera *Spin.*
 analis *Spin.*
 bidentata *Linn.*
 succincta *Linn.*
- cyanea *Linn.*
 cærulipes *Fabr.*
 Leachii *Shuc.*
 Austriaca *Fabr.*
 neglecta *Shuc.*
EUCHRÆUS *Latr.*
 quadratus *Leach.*
HEDYCHRUM *Latr.*
 regium *Fabr.*
 lucidulum *Fabr.*
 cærulescens *St. Farg.*
 ardens *Curt.*
 fervidum *Fabr.*
 roseum *Rossi.*
 auratum *Linn.*
 bidentulum *St. Farg.*
Var. 1. imperiale *Leach.*
 — 2. bidentulum *St. Farg.*
 — 3. viride *Shuc.*
 — 4. aneum *Fabr.*
ELAMPUS *Spin.*
 Panzeri *Fabr.*
-
- OPIUS** *Hal.*
 abnormis *Wesm.*
 Pygmeator *Ess.*
 pendulus *Hal.*
 lugens *Hal.*
 apiculator *Ess.*
 clarus *Hal.*
 spretus *Hal.*
 victus *Hal.*
 tacitus *Hal.*
 exilis *Hal.*
 pallipes *Wesm.*
 analis *Wesm.*
 instabilis *Wesm.*
 crassipes *Wesm.*
 sævus *Hal.*
 celsus *Hal.*
 vindex *Hal.*
 maculipes *Wesm.*
 cingulatus *Wesm.*
 irregularis *Wesm.*
 leptostigma *Wesm.*
 parvulus *Wesm.*
 docilis *Hal.*
 æthiops *Hal.*
 pactus *Hal.*
 æmulus *Hal.*
 polyzonius *Wesm.*
 nitidulator *Ess.*
 reconditor *Wesm.*
 truncatus *Wesm.*
 bajulus *Hal.*
 rudis *Wesm.*
 casus *Hal.*
 comatus *Wesm.*
 rufipes *Wesm.*
 calatus *Hal.*
 caffer *Wesm.*
 fulgidus *Hal.*

placidus *Hal.*
 carbonarius *Ess.*
 impressus *Wesm.*
 Rusticus *Hal.*
 scabriculus *Wesm.*
 Wesmaelii *Hal.*
 sylvaticus *Hal.*
 hæmorrhæus *Hal.*
 blandus *Hal.*
 bicolor *Wesm.*
 GNAPTODON *Hal.*
 pumilio *Ess.*

PLATYPALPUS *Macq.*

comptus *Walk.*
 robustus *Walk.*
 mundus *Walk.*
 HEMERODROMIA *Hoff.*
 Obsecratoria *Walk.*
 RAGAS *Walk.*
 unica *Walk.*
 ATELESTUS *Walk.*
 sylvicola *Walk.*

DIGLOSSA *Hal.*

mersa *Hal.*

PROPOMACRUS *Newm.*

Arbaces *Newm.*
 SCARABÆUS *Linn.*
 Cræsus *Newm.*

PRISTIPHORA *Steph.*

cineta *Newm.*
 EUURA *Newm.*
 gallæ *Newm.*
 cynips *Newm.*
 NEMATUS *Leach.*
 tibialis *Newm.*
 FENUSA *Leach.*
 lanthe *Newm.*
 parviceps *Newm.*
 SELANDRIA *Leach.*
 pallida *Newm.*
 versicolor *Newm.*
 chrysorrhæa *Klug.*
 ALLANTUS *Leach.*
 hæmatopus *Panz.*

CLEONYMUS *Latr.*

depressus *Fabr.*
 laticornis *Hal.*
 obscurus *Walk.*
 NOTANISUS *Walk.*
 versicolor *Walk.*
 MACRONEURA *Walk.*
 maculipes *Walk.*
 MEROSTENUS *Walk.*
 Phedyma *Walk.*
 CEA *Hal.*
 pulicaris *Hal.*
 PROSOPON *Walk.*

montanum *Walk.*
 STENOCERA *Walk.*
 Walkeri *Curt.*
 CALOSOTER *Walk.*
 vernalis *Walk.*
 æstivalis *Walk.*
 EUPELMUS *Dal.*
 urozonus *Dal.*
 Degeeri *Dal.*
 excavatus *Dal.*
 ERICYDNUS
 paludatus *Hal.*
 strigosus *Ess.*

DICONDYLUS *Hal.*

pedestris *Hal.*
 DRYINUS *Latr.*
 collaris *Dal.*
 ephippiger *Dal.*
 fulviventris *Hal.*
 lucidus *Hal.*
 longicornis *Dal.*
 flavicornis *Dal.*
 ruficornis *Dal.*
 frontalis *Dal.*
 infectus *Hal.*
 scapularis *Hal.*
 brachycerus *Dal.*
 cursor *Hal.*
 inclytus *Hal.*
 Jurineanus *Latr.*
 Penidas *Walk.*
 Lyde *Walk.*
 Daos *Walk.*
 Ilus *Walk.*
 Misor *Walk.*
 Otiartes *Walk.*
 Alorus *Walk.*
 Sisithrus *Walk.*
 nanus *Hal.*
 APHELOPUS *Dal.*
 melaleucus *Dal.*
 LABEO *Hal.*
 excisus *West.*
 EMBOLEMUS *West.*
 Ruddii *West.*
 EPYRIS *West.*
 niger *West.*
 BETHYLUS *Latr.*
 fuscicornis *Latr.*

PLATYNOCHEILUS *West.*

Erichsonii *West.*
 PLEUROPACHUS *West.*
 costalis *Dal.*
 ENCYRTUS *Dal.*
 (CERCHYSIUS *West.*)
 urocerus *Dal.*
 cyaneus *Dal.*
 Batillus *Walk.*
 Gabinius *Walk.*
 Marsus *Walk.*

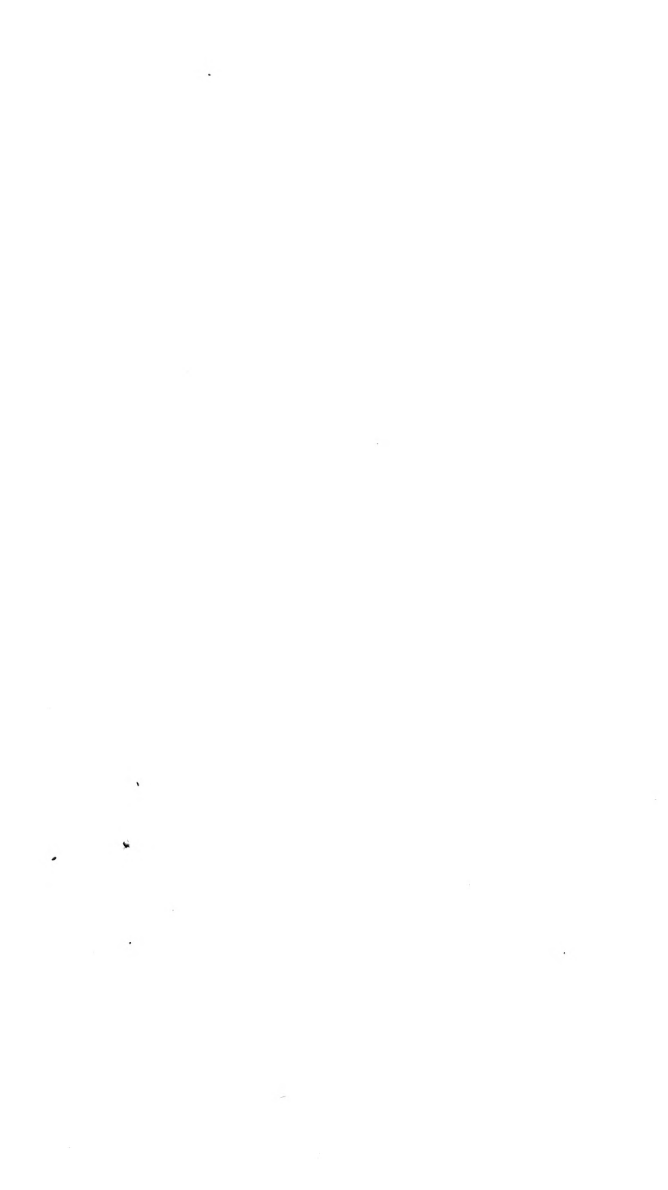
LIST OF THE GENERA AND SPECIES.

argentifer *Hal.*
 Sipylus *Walk.*
 Comara *Walk.*
 Paralia *Walk.*
 barbarus *Dal.*
 Zarina *Walk.*
 æneiventris *Hal.*
 Jalysus *Walk.*
 Madyes *Walk.*
 Imandes *Walk.*
 Chærilus *Walk.*
 hemipterus *Dal.*
 Lindus *Walk.*
 Anceus *Walk.*
 Didius *Walk.*

melanopus *Hal.*
 subplanus *Dal.*
 Gellius *Walk.*
 Glaphyra *Walk.*
 Mattinus *Walk.*
 serricornis? *Dal.*
 Anebus *Walk.*
 Aralius *Walk.*
 Teuteus *Walk.*
 Aithyia *Walk.*
 Sphærus *Walk.*
 Machæras *Walk.*
 subcupratus *Dal.*
 coniferæ *Hal.*

END OF VOL. IV.





PROPERTY OF
Z. P. MELLOR

